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ENVIRONMENTAL RADIOACTIVITY LEVELS  
SEQUOYAH NUCLEAR PLANT  
ANNUAL REPORT

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## CONTENTS

|  |    |
|--|----|
| Introduction . . . . .   | 1  |
| Figure 1 - Tennessee Valley Region . . . . .   | 3  |
| Table 1 - Environmental Radioactivity Sampling Schedule . . . . .                      | 4  |
| Table 2 - Atmospheric and Terrestrial Monitoring<br>Station Locations . . . . .        | 5  |
| Table 3 - Detection Capabilities for Environmental<br>Sample Analysis . . . . .        | 6  |
| Table 4 - Radioactivity in Air Filter . . . . .  | 8  |
| Table 5 - Maximum Permissible Concentrations for<br>Nonoccupational Exposure . . . . . | 11 |
| Atmospheric Monitoring . . . . .   | 13 |
| Figure 2 - Atmospheric and Terrestrial Monitoring<br>Network . . . . .                 | 15 |
| Figure 3 - Local Monitoring Stations . . . . .   | 16 |
| Figure 4 - Site Monitoring Stations . . . . .  | 17 |
| Table 6 - Radioactivity in Air Filter . . . . .  | 18 |
| Table 7 - Radioactivity in Rainwater . . . . .   | 19 |
| Table 8 - Radioactivity in Heavy Particle Fallout . . . . .                            | 20 |
| Table 9 - Radioactivity in Charcoal Filters . . . . .                                  | 21 |
| Table 10 - Radioactivity in Atmospheric Moisture . . . . .                             | 22 |
| Terrestrial Monitoring . . . . .   | 23 |
| Table 11 - Radioactivity in Milk . . . . .   | 25 |
| Table 12 - Radioactivity in Vegetation . . . . .                                       | 26 |
| Table 13 - Radioactivity in Soil . . . . .   | 27 |
| Table 14 - Radioactivity in Well Water . . . . .                                       | 28 |
| Table 15 - Radioactivity in Public Water Supply . . . . .                              | 29 |
| Table 16 - Environmental Gamma Radiation Levels . . . . .                              | 30 |
| Table 17 - Radioactivity in Food Crops . . . . .                                       | 31 |
| Table 18 - Radioactivity in Poultry . . . . .  | 33 |
| Reservoir Monitoring . . . . .   | 35 |
| Table 19 - Sampling Schedule - Reservoir Monitoring . . . . .                          | 37 |
| Figure 5 - Reservoir Monitoring Network . . . . .                                      | 38 |
| Table 20 - Radioactivity in Surface Water Total . . . . .                              | 39 |
| Table 21 - Radioactivity in Channel Catfish (Flesh) . . . . .                          | 40 |
| Table 22 - Radioactivity in White Crappie (Flesh) . . . . .                            | 41 |
| Table 23 - Radioactivity in Smallmouth Buffalo (Flesh) . . . . .                       | 42 |
| Table 24 - Radioactivity in Smallmouth Buffalo ( Whole) . . . . .                      | 43 |
| Table 25 - Radioactivity in Plankton . . . . .   | 44 |
| Table 26 - Radioactivity in Sediment . . . . .   | 45 |
| Table 27 - Radioactivity in Clam Flesh . . . . .                                       | 46 |
| Table 28 - Radioactivity in Clam Shell . . . . .                                       | 47 |
| Quality Control . . . . .  | 49 |
| Conclusions . . . . .  | 49 |

## ENVIRONMENTAL RADIOACTIVITY LEVELS

### SEQUOYAH NUCLEAR PLANT

1979

#### Introduction

The Sequoyah Nuclear Plant (SQN), being constructed by the Tennessee Valley Authority, is located on a site owned by TVA containing 525 acres of land in Hamilton County, Tennessee, bounded on the east by Chickamauga Reservoir. See figure 1. The site is 12 miles (19.3 kilometers) northeast of Chattanooga, Tennessee and 11 miles (17.7 kilometers) west-northwest of Cleveland, Tennessee. The plant will consist of two pressurized water reactors; each unit is rated at 3,423 Mwt and 1,171 MWe. Fuel was loaded in unit 1 on March 1, 1980.

The preoperational environmental monitoring program has the objective of establishing a baseline of data on the distribution of natural and manmade radioactivity in the environment near the plant site.

TVA has collected data in this preoperational environmental monitoring program since 1971. Since the operation of the plant has been delayed, the program was reduced as of November 1, 1973. All continuous collections (air and charcoal filters) were discontinued as were milk and monthly river water samples. Only quarterly samples of soil, vegetation, well water, public water, river water, plankton, Asiatic clams, sediment, and fish, and annual samples of food products were collected. The full sampling program was reinstated in February 1976. The program outlined herein describes the sampling program as conducted in 1979.

Field staffs in the Division of Occupational Health and Safety, the Division of Water Resources, and the Division of Natural Resources Services carried out the sampling program outlined in Tables 1 and 19. Sampling locations are shown in figures 2, 3, 4, and 5, and Table 2 describes the locations of the atmospheric and terrestrial monitoring stations. All the radiochemical and instrumental analyses were conducted in a central laboratory at Muscle Shoals, Alabama. Alpha and beta analyses were performed on Beckman Low Beta II and Beckman Wide Beta II low-background proportional counters. Two Nuclear Data Model 100 multichannel analyzer systems employing sodium iodide, NaI (T2) detectors and one Nuclear Data Model 4420 in conjunction with germanium, Ge(Li) detection systems, were used to analyze the samples for specific gamma-emitting radionuclides. Samples of water, vegetation, air particulates, food crops, and charcoal (specific analysis for  $^{131}\text{I}$ ) are routinely counted with NaI (T2) detection systems.

If significant concentrations of radioisotopes are identified, or if there is a reasonable expectation of increased radioactivity levels (such as during periods of increased fallout), these samples are counted on the Ge(L) system. Identification of gamma-emitting radionuclides in all other types of samples is routinely performed by analysis on the Ge(Li) system. TVA fabricated beta-gamma coincidence counting systems are utilized for the determination of  $^{131}\text{I}$  concentrations in milk.

Data were entered in computer storage for processing specific to the analysis conducted. A computer, employing an ALPHA-M least-squares code, was used to solve multimatrix problems associated with estimating the activities of the gamma-emitting nuclides analyzed by NaI(Tl). The data obtained by Ge(Li) detectors were resolved by the ND-4420 software.

The detection capabilities for environmental sample analyses given as the nominal lower limits of detection (LLD) are listed in Table 3. Samples processed by NaI(Tl) gamma spectroscopy were analyzed for 13 specific gamma-emitting radionuclides and radionuclide combinations\*. For these analyses, radionuclide combinations such as  $^{103,106}\text{Ru}$  and  $^{95}\text{Zr-Nb}$  are analyzed as one radionuclide. All photopeaks found in Ge(Li) spectra were identified and quantified. Many of the isotopes identified by Ge(Li) spectral analysis are naturally occurring or naturally produced radioisotopes, such as  $^7\text{Be}$ ,  $^{40}\text{K}$ ,  $^{212}\text{Bi}$ ,  $^{214}\text{Bi}$ ,  $^{212}\text{Pb}$ ,  $^{214}\text{Pb}$ ,  $^{226}\text{Ra}$ , etc. LLD's for the analysis of the radionuclides listed below\* are given in Table 3B. LLD's for additional radionuclides identified by Ge(Li) analysis were calculated for each analysis and nominal values are listed in the appropriate data tables. In the instance where an LLD has not been established, an LLD value of zero was assumed. A notation in a table of "\_\_\_ values <LLD" for an isotope with no established LLD does not imply a value less than 0; rather it indicates that the isotope was not identified in that specific group of samples. For each sample type, only the radionuclides for which values greater than the LLD were reported are listed in the data tables.

TVA's Radioanalytical Laboratory participates in the Environmental Radioactivity Laboratory Intercomparison Studies Program conducted by EPA-Las Vegas. This program provides periodic cross-check samples of the type and radionuclide composition normally analyzed in an environmental monitoring program. Routine sample handling and analysis procedures were employed in the evaluation of these samples. Gamma spectral analyses were performed on NaI detectors. The results received during calendar year 1979 are shown in Table 4. The  $\pm 3\sigma$  limits are corrected for triplicate determinations.

\*The following radionuclides and radionuclide combinations are quantified by the ALPHA-M least-squares computer code:  $^{141,144}\text{Ce}$ ;  $^{51}\text{Cr}$ ;  $^{131}\text{I}$ ;  $^{103,106}\text{Ru}$ ;  $^{134}\text{Cs}$ ;  $^{137}\text{Cs}$ ;  $^{95}\text{Zr-Nb}$ ;  $^{58}\text{Co}$ ;  $^{54}\text{Mn}$ ;  $^{65}\text{Zn}$ ;  $^{60}\text{Co}$ ;  $^{40}\text{K}$ ; and  $^{140}\text{Ba-La}$ .

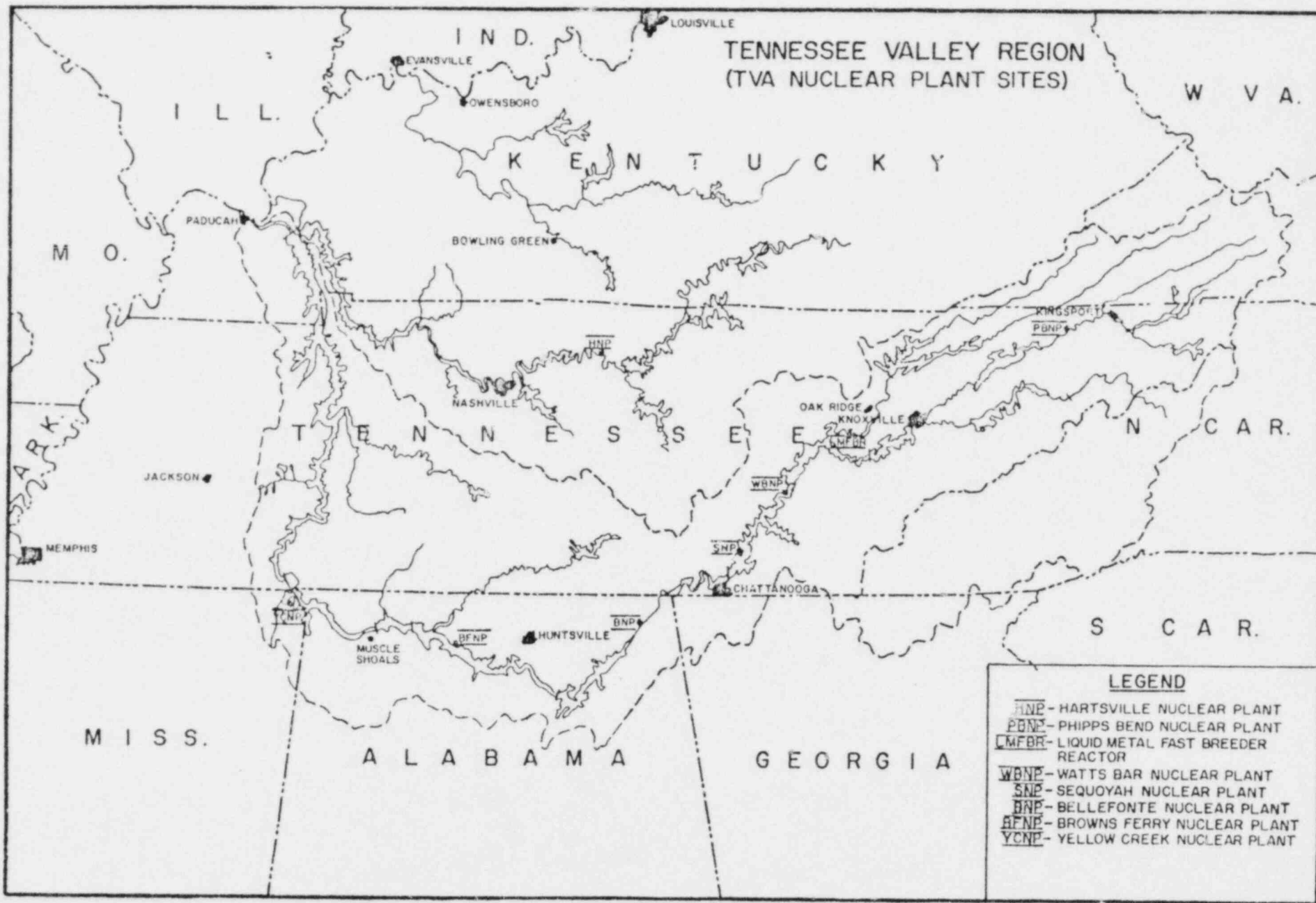


Figure 1

Table 1

ENVIRONMENTAL RADIOACTIVITY SAMPLING SCHEDULE

| <u>Station Location</u>              | <u>Air Filter</u> | <u>Charcoal Filter</u> | <u>Rain-water</u> | <u>Heavy Particle Fallout</u> | <u>Atmospheric Moisture</u> | <u>Soil</u> | <u>Vegetation</u> | <u>Milk</u> | <u>River Water</u> | <u>Well Water</u> | <u>Public Water</u> | <u>Aquatic Life and Sediment</u> |
|--------------------------------------|-------------------|------------------------|-------------------|-------------------------------|-----------------------------|-------------|-------------------|-------------|--------------------|-------------------|---------------------|----------------------------------|
| Chattanooga                          | W                 | W                      | M                 | M                             |                             | A           |                   |             |                    |                   | M                   |                                  |
| Dayton                               | W                 | W                      | M                 | M                             | BW                          | A           |                   |             |                    |                   | M                   |                                  |
| Sale Creek                           | W                 | W                      | M                 | M                             |                             | A           |                   |             |                    |                   |                     |                                  |
| Daisy                                | W                 | W                      | M                 | M                             |                             | A           |                   |             |                    |                   | M                   |                                  |
| Red Bank                             | W                 | W                      | M                 | M                             |                             | A           |                   |             |                    |                   |                     |                                  |
| Volunteer Ordinance Works (Harrison) | W                 | W                      | M                 | M                             |                             | A           |                   |             |                    |                   |                     |                                  |
| Harrison Bay                         | W                 | W                      | M                 | M                             |                             | A           |                   |             |                    |                   |                     |                                  |
| Georgetown                           | W                 | W                      | M                 | M                             |                             | A           |                   |             |                    |                   |                     |                                  |
| Hamilton County Park                 | W                 | W                      | M                 | M                             |                             | A           |                   |             |                    |                   |                     |                                  |
| Work                                 | W                 | W                      | M                 | M                             |                             | A           |                   |             |                    |                   |                     |                                  |
| Site N                               | W                 | W                      | M                 | M                             | BW                          | A           |                   |             |                    |                   |                     |                                  |
| Site S                               | W                 | W                      | M                 | M                             | BW                          | A           |                   |             |                    |                   |                     |                                  |
| Farm L                               |                   |                        |                   |                               |                             |             | Q                 | M           |                    |                   |                     |                                  |
| Farm J*                              |                   |                        |                   |                               |                             |             | Q                 | W           |                    |                   |                     |                                  |
| Farm M                               |                   |                        |                   |                               |                             |             | Q                 | M           |                    |                   |                     |                                  |
| Chickamauga Reservoir                |                   |                        |                   |                               |                             |             |                   |             | M                  |                   |                     | Q/S                              |
| E. I. Dupont                         |                   |                        |                   |                               |                             |             |                   |             |                    |                   | M                   |                                  |
| Cleveland, TN                        |                   |                        |                   |                               |                             |             |                   |             |                    |                   | M                   |                                  |
| C. F. Industries                     |                   |                        |                   |                               |                             |             |                   |             |                    |                   | M                   |                                  |
| On Site Well                         |                   |                        |                   |                               |                             |             |                   |             |                    | M                 |                     |                                  |
| Farm Ma                              |                   |                        |                   |                               |                             |             |                   |             |                    | M                 |                     |                                  |
| Farm S (control)                     |                   |                        |                   |                               |                             |             | Q                 | M           |                    | M                 |                     |                                  |
| Farm B (control)*                    |                   |                        |                   |                               |                             |             | Q                 | M           |                    |                   |                     |                                  |
| Farm C (control)*                    |                   |                        |                   |                               |                             |             | Q                 | M           |                    |                   |                     |                                  |

W - Weekly      BW - Biweekly      M - Monthly (every 4 weeks)      Q - Quarterly      S - Semiannually      A - Annually

\*Sampling began: Farm J, 5/30/79; Farm B, 6/7/79; and Farm C, 6/14/79.

Table 2

ATMOSPHERIC AND TERRESTRIAL MONITORING STATION LOCATIONSSEQUOYAH NUCLEAR PLANT

| <u>Sample Station</u>              | <u>Approximate Distance and<br/>Direction from Plant</u> |
|------------------------------------|--|
| LM-1 SQ, Southwest                 | 0.75 miles SW (1.2 kilometers)                           |
| LM-2 SQ, Northeast                 | 0.75 miles N (1.2 kilometers)                            |
| PM-1 SQ, Northwoods, TN            | 10.5 miles WSW (16.9 kilometers)                         |
| PM-2 SQ, County Park, TN           | 3.75 miles SW (6.0 kilometers)                           |
| PM-3 SQ, Daisy, TN                 | 5.5 miles W (8.8 kilometers)                             |
| PM-4 SQ, Sale Creek, TN            | 10.5 miles N (16.9 kilometers)                           |
| PM-5 SQ, Georgetown, TN            | 9.0 miles ENE (14.5 kilometers)                          |
| PM-6 SQ, Work, TN                  | 4.5 miles NNE (7.2 kilometers)                           |
| PM-7 SQ, Harrison Bay, TN          | 3.5 miles SE (5.6 kilometers)                            |
| PM-8 SQ, Harrison, TN              | 8.75 miles SSW (14.1 kilometers)                         |
| RM-1 SQ, Chattanooga, TN (Control) | 16.75 miles SW (27.0 kilometers)                         |
| RM-2 SQ, Dayton, TN (Control)      | 17.75 miles NNE (28.6 kilometers)                        |
| Farm J                             | 1.25 miles W (2.0 kilometers)                            |
| Farm L                             | 2.75 miles NNE (4.4 kilometers)                          |
| Farm M                             | 3.5 miles NNE (5.6 kilometers)                           |
| Farm Ma                            | 0.75 miles W (1.2 kilometers)                            |
| Farm B (Control)                   | 43.0 miles NE (69.2 kilometers)                          |
| Farm C (Control)                   | 16.0 miles NE (25.7 kilometers)                          |
| Farm S (Control)                   | 12.0 miles NNE (19.3 kilometers)                         |

Table 3  
DETECTION CAPABILITIES FOR ENVIRONMENTAL SAMPLE ANALYSIS

A. Specific Analyses

NOMINAL LOWER LIMIT OF DETECTION (LLD)\*

|                  | <u>Air<br/>Particulates<br/>pCi/m<sup>3</sup></u> | <u>Charcoal<br/>pCi/m<sup>3</sup></u> | <u>Fallout<br/>mCi/km<sup>2</sup></u> | <u>Water<br/>pCi/l</u> | <u>Vegetation<br/>and grain<br/>pCi/g, dry</u> | <u>Soil and<br/>Sediment<br/>pCi/g, dry</u> | <u>Fish,<br/>clam flesh,<br/>plankton,<br/>pCi/g, dry</u> | <u>Clam shells<br/>pCi/g, dry</u> | <u>Foods, meat,<br/>poultry,<br/>pCi/kg, wet</u> | <u>Milk<br/>pCi/l</u> |
|------------------|---|---------------------------------------|---------------------------------------|------------------------|--|---|---|-----------------------------------|--|-----------------------|
| Total α          |   |                                       |                                       | 0.4                    | 0.01   |   |   |                                   | 1.5  |                       |
| Gross α          | 0.005   |                                       |                                       | 2.0                    | 0.05   | 0.35  | 0.1   | 0.7                               |  |                       |
| Gross β          | 0.01  |                                       | 0.05                                  | 2.4                    | 0.20   | 0.70  | 0.1   | 0.7                               | 25   |                       |
| <sup>3</sup> H   |   |                                       |                                       | 330                    |  |   |   |                                   |  |                       |
| <sup>131</sup> I |   | 0.01                                  |                                       |                        |  |   |   |                                   |  | 0.5                   |
| <sup>90</sup> Sr | 0.005   |                                       |                                       | 10                     | 0.25   | 1.5   | 0.5   | 5.0                               | 40   | 10                    |
| <sup>90</sup> Sr | 0.001   |                                       |                                       | 2                      | 0.05   | 0.3   | 0.1   | 1.0                               | 8  | 2                     |

\*All LLD values for isotopic separations are calculated by the method developed by Pasternack and Harley as described in HASL-300. Factors such as sample size, decay time, chemical yield, and counting efficiency may vary for a given sample; these variations may change the LLD value for the given sample. The assumption is made that all samples are analyzed within one week of the collection date. Conversion factors: 1 pCi =  $3.7 \times 10^{-2}$  Bq; 1 mCi =  $3.7 \times 10^7$  Bq.



Table 3

## DETECTION CAPABILITIES FOR ENVIRONMENTAL SAMPLE ANALYSIS

## B. Gamma Analyses

## NOMINAL LOWER LIMIT OF DETECTION (LLD)

|                       | Air particulates   |          | Water and milk |        | Vegetation and grain |        | Soil and sediment |        | Fish       |        | Clam flesh and plankton |        | Clam shells |        | Foods, tomatoes, potatoes, etc.) |        | Meat and poultry |        |
|-----------------------|--------------------|----------|----------------|--------|----------------------|--------|-------------------|--------|------------|--------|-------------------------|--------|-------------|--------|----------------------------------|--------|------------------|--------|
|                       | pCi/m <sup>3</sup> |          | pCi/l          |        | pCi/g, dry           |        | pCi/g, dry        |        | pCi/g, dry |        | pCi/g, dry              |        | pCi/g, dry  |        | pCi/kg, wet                      |        | pCi/kg, wet      |        |
|                       | NaI*               | Ge(Li)** | NaI            | Ge(Li) | NaI                  | Ge(Li) | NaI               | Ge(Li) | NaI        | Ge(Li) | NaI                     | Ge(Li) | NaI         | Ge(Li) | NaI                              | Ge(Li) | NaI              | Ge(Li) |
| <sup>137</sup> Cs     | 0.03               |          | 38             |        | 0.55                 |        | 0.35              |        | 0.35       |        | 0.35                    |        | 0.35        |        | 38                               |        | 90               |        |
| <sup>134</sup> Cs     |                    | 0.02     |                | 33     | 0.22                 |        | 0.06              |        | 0.06       |        | 0.35                    |        | 0.06        |        | 33                               |        | 40               |        |
| <sup>51</sup> Cr      | 0.07               | 0.03     | 60             | 44     | 1.10                 | 0.47   | 0.60              | 0.10   | 0.60       | 0.10   | 0.56                    | 0.60   | 0.10        | 60     | 44                               | 200    | 90               |        |
| <sup>131</sup> I      | 0.01               | 0.01     | 15             | 8      | 0.35                 | 0.09   | 0.20              | 0.02   | 0.20       | 0.02   | 0.07                    | 0.20   | 0.02        | 15     | 8                                | 50     | 20               |        |
| <sup>103,106</sup> Ru | 0.04               |          | 40             |        | 0.65                 |        | 0.45              |        | 0.45       |        |                         | 0.45   |             | 40     |                                  | 150    |                  |        |
| <sup>106</sup> Ru     |                    | 0.03     |                | 40     |                      | 0.51   |                   | 0.11   |            | 0.11   | 0.74                    |        | 0.11        |        | 40                               |        | 90               |        |
| <sup>134</sup> Cs     | 0.01               | 0.02     | 10             | 26     | 0.20                 | 0.33   | 0.12              | 0.08   | 0.12       | 0.08   | 0.48                    | 0.12   | 0.08        | 10     | 26                               | 40     | 50               |        |
| <sup>137</sup> Cs     | 0.01               | 0.01     | 10             | 5      | 0.20                 | 0.06   | 0.12              | 0.02   | 0.12       | 0.02   | 0.08                    | 0.12   | 0.02        | 10     | 5                                | 40     | 15               |        |
| <sup>95</sup> Zr-Nb   | 0.01               |          | 10             |        | 0.20                 |        | 0.12              |        | 0.12       |        |                         | 0.12   |             | 10     |                                  | 40     |                  |        |
| <sup>95</sup> Zr      |                    | 0.01     |                | 10     |                      | 0.11   |                   | 0.03   |            | 0.03   | 0.15                    |        | 0.03        |        | 10                               |        | 20               |        |
| <sup>95</sup> Nb      |                    | 0.01     |                | 5      |                      | 0.05   |                   | 0.01   |            | 0.01   | 0.07                    |        | 0.01        |        | 5                                |        | 15               |        |
| <sup>58</sup> Co      | 0.02               | 0.01     | 15             | 5      | 0.23                 | 0.05   | 0.20              | 0.01   | 0.20       | 0.01   | 0.07                    | 0.20   | 0.01        | 15     | 5                                | 55     | 15               |        |
| <sup>54</sup> Mn      | 0.02               | 0.01     | 10             | 5      | 0.20                 | 0.05   | 0.15              | 0.01   | 0.15       | 0.01   | 0.08                    | 0.15   | 0.01        | 10     | 5                                | 40     | 15               |        |
| <sup>65</sup> Zn      | 0.02               | 0.01     | 15             | 9      | 0.25                 | 0.11   | 0.23              | 0.02   | 0.23       | 0.02   | 0.17                    | 0.23   | 0.02        | 15     | 9                                | 70     | 20               |        |
| <sup>60</sup> Co      | 0.01               | 0.01     | 10             | 5      | 0.17                 | 0.06   | 0.11              | 0.01   | 0.11       | 0.01   | 0.08                    | 0.11   | 0.01        | 10     | 5                                | 30     | 15               |        |
| <sup>40</sup> K       | 0.10               |          | 150            |        | 2.50                 |        | 0.90              |        | 0.90       |        |                         | 0.90   |             | 150    |                                  | 400    |                  |        |
| <sup>140</sup> Ba-La  | 0.02               |          | 15             |        | 0.68                 |        | 0.15              |        | 0.15       |        |                         | 0.15   |             | 15     |                                  | 50     |                  |        |
| <sup>140</sup> Ba     |                    | 0.02     |                | 25     |                      | 0.34   |                   | 0.07   |            | 0.07   | 0.30                    |        | 0.07        |        | 25                               |        | 50               |        |
| <sup>140</sup> La     |                    | 0.01     |                | 7      |                      | 0.08   |                   | 0.02   |            | 0.02   | 0.10                    |        | 0.02        |        | 7                                |        | 15               |        |

\*The NaI(Tl) LLD values are calculated by the method developed by Pasternack and Harley as described in HASL-300 and Nucl. Instr. Methods 91, 533-40 (1971). These LLD values are expected to vary depending on the activities of the components in the samples. These figures do not represent the LLD values achievable on a given sample. Water is counted in a 3.5-L Marinelli beaker. Vegetation, fish, soil, and sediment are counted in a 1-pint container as dry weight. The average dry weight is 120 grams for vegetation and 400-500 grams for soil sediment and fish. Meat and poultry are counted in a 1-pint container as dry weight, then corrected to wet weight using an average moisture content of 70%. Average dry weight is 250 grams. Air particulates are counted in a well crystal. The counting system consists of a multichannel analyzer and either a 4" x 4" solid or 4" x 5" well NaI(Tl) crystal. The counting time is 4000 seconds. All calculations are performed by the least-squares computer program ALPHA-M. The assumption is made that all samples are analyzed within one week of the collection date.

\*\*The Ge(Li) LLD values are calculated by the method developed by Pasternack and Harley as described in HASL-300. These LLD values are expected to vary depending on the activities of the components in the samples. These figures do not represent the LLD values achievable on given samples. Water is counted in either a 0.5-L or 3.5-L Marinelli beaker. Solid samples such as soil, sediment, and clam shells are counted in a 0.5-L Marinelli beaker as dry weight. The average dry weight is 400-500 grams. Air filters and very small volume samples are counted in petrie dishes centered on the detector endcap. The counting system consists of a ND-4420 multichannel analyzer and either a 25%, 14%, 16%, or 29% Ge(Li) detector. The counting time is normally 8 hours. All spectral analysis is performed using the software provided with the ND-4420. The assumption is made that all samples are analyzed within one week of the collection date.  
Conversion factor: 1 pCi =  $3.7 \times 10^{-2}$  Bq.

Table 4

## Results Obtained in Interlaboratory Comparison Program

## A. Air Filter (pCi/filter)

| Date  | Gross Alpha                    |             | Gross Beta                     |             | Strontium-90                   |             | Cesium-137                     |             |
|-------|--------------------------------|-------------|--------------------------------|-------------|--------------------------------|-------------|--------------------------------|-------------|
|       | EPA value<br>( $\pm 3\sigma$ ) | TVA<br>Avg. | EPA value<br>( $\pm 3\sigma$ ) | TVA<br>Avg. | EPA value<br>( $\pm 3\sigma$ ) | TVA<br>Avg. | EPA value<br>( $\pm 3\sigma$ ) | TVA<br>Avg. |
| 1/79  | 5 $\pm$ 9                      | 4           | 18 $\pm$ 9                     | 20          | 6 $\pm$ 2.7                    | 6           | 6 $\pm$ 9                      | 7           |
| 3/79  | 14 $\pm$ 9                     | 14          | 63 $\pm$ 9                     | 64          | 21 $\pm$ 2.7                   | 17          | 21 $\pm$ 9                     | 18          |
| 6/79  | 9 $\pm$ 9                      | 9           | 30 $\pm$ 9                     | 31          | 10 $\pm$ 2.7                   | 9           | 10 $\pm$ 9                     | 9           |
| 10/79 | 10 $\pm$ 9                     | 10          | 31 $\pm$ 9                     | 33          | 10 $\pm$ 2.7                   | 10          | 12 $\pm$ 9                     | 11          |

## B. Water (pCi/l)

| Date  | Gross Alpha                    |             | Gross Beta                     |             | Strontium-89                   |             | Strontium-90                   |             | Tritium                        |             | Iodine-131*                    |             |
|-------|--------------------------------|-------------|--------------------------------|-------------|--------------------------------|-------------|--------------------------------|-------------|--------------------------------|-------------|--------------------------------|-------------|
|       | EPA value<br>( $\pm 3\sigma$ ) | TVA<br>Avg. | EPA value<br>( $\pm 3\sigma$ ) | TVA<br>Avg. | EPA value<br>( $\pm 3\sigma$ ) | TVA<br>Avg. | EPA value<br>( $\pm 3\sigma$ ) | TVA<br>Avg. | EPA value<br>( $\pm 3\sigma$ ) | TVA<br>Avg. | EPA value<br>( $\pm 3\sigma$ ) | TVA<br>Avg. |
| 11/78 | 11 $\pm$ 9                     | 12          | 26 $\pm$ 9                     | 27          |                                |             |                                |             |                                |             |                                |             |
| 12/78 |                                |             |                                |             |                                |             |                                |             | 2030 $\pm$ 400                 | 2100        |                                |             |
| 1/79  | 6 $\pm$ 9                      | 7           | 16 $\pm$ 9                     | 17          | 14 $\pm$ 9                     | 14          | 6 $\pm$ 2.7                    | 6           |                                |             |                                |             |
| 2/79  |                                |             |                                |             |                                |             |                                |             | 1280 $\pm$ 570                 | 1260        |                                |             |
| 3/79  | 10 $\pm$ 9                     | 10          | 16 $\pm$ 9                     | 18          |                                |             |                                |             |                                |             |                                |             |
| 4/79  |                                |             |                                |             |                                |             |                                |             | 2270 $\pm$ 400                 | 2270        | 40 $\pm$ 7                     | 40          |
| 5/79  | 13 $\pm$ 9                     | 15          | 22 $\pm$ 9                     | 22          | 23 $\pm$ 9                     | 24          | 30 $\pm$ 2.7                   | 26          |                                |             |                                |             |
| 6/79  |                                |             |                                |             |                                |             |                                |             | 1540 $\pm$ 580                 | 1590        |                                |             |
| 7/79  | 9 $\pm$ 9                      | 11          | 12 $\pm$ 9                     | 13          |                                |             |                                |             |                                |             |                                |             |
| 8/79  |                                |             |                                |             |                                |             |                                |             | 1480 $\pm$ 580                 | 1300        | 26 $\pm$ 9                     | 26          |
| 9/79  | 5 $\pm$ 9                      | 8           | 40 $\pm$ 9                     | 43          | 3 $\pm$ 9                      | 4           | 23 $\pm$ 2.7                   | 25          |                                |             |                                |             |
| 10/79 |                                |             |                                |             |                                |             |                                |             | 1560 $\pm$ 640                 | 1400        |                                |             |

\*Specific analysis for  $^{131}\text{I}$  to test the procedures used for the analysis of  $^{131}\text{I}$  in milk.

Table 4 (Contd)

## Results Obtained in Interlaboratory Comparison Program

## C. Gamma-Emitting Radionuclides in Water (pCi/l)

| Date  | <sup>51</sup> Cr   |             | <sup>60</sup> Co   |             | <sup>65</sup> Zn   |             | <sup>106</sup> Ru  |             | <sup>134</sup> Cs  |             | <sup>137</sup> Cs  |             |
|-------|--------------------|-------------|--------------------|-------------|--------------------|-------------|--------------------|-------------|--------------------|-------------|--------------------|-------------|
|       | EPA value<br>(±3σ) | TVA<br>Avg. | EPA value<br>(±3σ) | TVA<br>Avg. | EPA value<br>(±3σ) | TVA<br>Avg. | EPA value<br>(±3σ) | TVA<br>Avg. | EPA value<br>(±3σ) | TVA<br>Avg. | EPA value<br>(±3σ) | TVA<br>Avg. |
| 10/78 | 117 ± 10           | 150         | 23 ± 9             | 24          | 82 ± 9             | 78          | 46 ± 9             | 42          | 25 ± 9             | 29          | 125 ± 10           | 120         |
| 2/79  | 0 ± 9              | 0           | 9 ± 9              | 9           | 21 ± 9             | 25          | 0 ± 9              | 0           | 6 ± 9              | 6           | 12 ± 9             | 12          |
| 6/79  | 0 ± 9              | 0           | 47 ± 9             | 48          | 0 ± 9              | 0           | 0 ± 9              | 0           | 71 ± 9             | 72          | 0 ± 9              | 0           |
| 10/79 | 113 ± 10           | 108         | 6 ± 9              | 7           | 0 ± 9              | 0           | 0 ± 9              | 0           | 7 ± 9              | 9           | 11 ± 9             | 11          |

## D. Tritium in Urine (pCi/l)

| Date  | EPA value (±3σ) | TVA avg. |
|-------|-----------------|----------|
| 12/78 | 2,150 ± 400     | 2330     |
| 3/79  | 3,300 ± 600     | 2350     |
| 6/79  | 1,610 ± 580     | 1590     |
| 9/79  | 13,200 ± 710    | 13350    |

Table 4 (Contd)

Results Obtained in Interlaboratory Comparison Program

E. Milk (pCi/l)

| Date  | <sup>89</sup> Sr   |             | <sup>90</sup> Sr   |             | <sup>131</sup> I   |             | <sup>137</sup> Cs  |             | <sup>140</sup> Be  |             | <sup>40</sup> K    |             |
|-------|--------------------|-------------|--------------------|-------------|--------------------|-------------|--------------------|-------------|--------------------|-------------|--------------------|-------------|
|       | EPA value<br>(±3σ) | TVA<br>Avg. | EPA value<br>(±3σ) | TVA<br>Avg. | EPA value<br>(±3σ) | TVA<br>Avg. | EPA value<br>(±3σ) | TVA<br>Avg. | EPA value<br>(±3σ) | TVA<br>Avg. | EPA value<br>(±3σ) | TVA<br>Avg. |
| 1/79  | 33 ± 9             | 33          | 19 ± 2.7           | 21          | 105 ± 10           | 110         | 49 ± 9             | 48          | 0 ± 9              | 2           | 1560±135           | 1520        |
| 4/79  | 38 ± 9             | 38          | 54 ± 5.2           | 61          | 96 ± 9             | 95          | 154 ± 14           | 150         | 0 ± 9              | 0           | 1560±135           | 1450        |
| 7/79  | 5 ± 9              | 5           | 11 ± 2.7           | 13          | 17 ± 9             | 21          | 12 ± 9             | 11          | 0 ± 9              | 0           | 1630±145           | 1570        |
| 10/79 | 25 ± 9             | 25          | 17 ± 3.5           | 22          | 637 ± 55           | 636         | 49 ± 9             | 45          | 0 ± 9              | 0           | 1470±125           | 1490        |

F. Food (pCi/kg wet weight)

|       |                                   |    |          |    |        |    |        |    |       |   |          |      |
|-------|-----------------------------------|----|----------|----|--------|----|--------|----|-------|---|----------|------|
| 3/79  | 48 ± 9                            | 53 | 22 ± 2.7 | 27 | 90 ± 9 | 91 | 74 ± 9 | 73 | 0 ± 9 | 0 | 2700±235 | 2810 |
| 7/79  | 8 ± 9                             | 12 | 3 ± 1.1  | 7  | 18 ± 9 | 16 | 33 ± 9 | 35 | 0 ± 9 | 0 | 2650±225 | 3000 |
| 11/79 | Results not received at this time |    |          |    |        |    |        |    |       |   |          |      |

Table 5  
MAXIMUM PERMISSIBLE CONCENTRATIONS  
FOR NONOCCUPATIONAL EXPOSURE

|                                      | MPC                |                                |
|--------------------------------------|--------------------|--------------------------------|
|                                      | In Water<br>pCi/l* | In Air<br>pCi/m <sup>3</sup> * |
| Alpha                                | 30                 |                                |
| Nonvolatile beta                     | 3,000              | 100                            |
| Tritium                              | 3,000,000          | 200,000                        |
| <sup>137</sup> Cs                    | 20,000             | 500                            |
| <sup>103,106</sup> Ru                | 10,000             | 200                            |
| <sup>144</sup> Ce                    | 10,000             | 200                            |
| <sup>95</sup> Zr- <sup>95</sup> Nb   | 60,000             | 1,000                          |
| <sup>140</sup> Ba- <sup>140</sup> La | 20,000             | 1,000                          |
| <sup>131</sup> I                     | 300                | 100                            |
| <sup>65</sup> Zn                     | 100,000            | 2,000                          |
| <sup>54</sup> Mn                     | 100,000            | 1,000                          |
| <sup>60</sup> Co                     | 30,000             | 300                            |
| <sup>89</sup> Sr                     | 3,000              | 300                            |
| <sup>90</sup> Sr                     | 300                | 30                             |
| <sup>51</sup> Cr                     | 2,000,000          | 80,000                         |
| <sup>134</sup> Cs                    | 9,000              | 400                            |
| <sup>58</sup> Co                     | 90,000             | 2,000                          |

\*1 pCi =  $3.7 \times 10^{-2}$  Bq.

### Atmospheric Monitoring

The atmospheric monitoring network is divided into three subgroups. Two local air monitors are located within the plant boundary. Eight perimeter air monitors are located at distances out to 10.5 miles (16.9 kilometers) from the plant in the towns of Sale Creek, Daisy, Red Bank (Northwoods), Harrison, and four other densely populated areas. The remote air monitors used as control or baseline stations, are located at distances out to 17.75 miles (28.6 kilometers) from the plant in the town of Dayton and the city of Chattanooga. See figures 2, 3, and 4.

At each monitor, air is continuously pulled through a Hollingsworth and Voss HV-70 particulate filter at a regulated flow of 3 ft<sup>3</sup>/min (0.085 m<sup>3</sup>/min). In series with, but downstream of, the particulate filter, is a charcoal filter used to collect iodine. Each monitor has a collection tray and storage container to collect rainwater on a continuous basis, and a horizontal platform covered with gummed acetate to catch and hold heavy particle fallout. Moisture is collected from the atmosphere at each local monitor and at one remote monitor and analyzed for tritium. Thermoluminescent dosimeters are used to record gamma radiation levels at each remote and perimeter station and at 8 onsite stations.

Each of the local and perimeter air monitors is fitted with a GM tube that continuously scans the particulate filter. The disintegration rate of the atmospheric radioactivity is continuously recorded at each station. These stations will detect any significant airborne release from SQN.

Air filters are collected weekly and analyzed for gross beta activity. During this period ten samples were not obtained because of equipment malfunction and two samples were not analyzed because of the loss of sample flow data. Two samples were lost during the strontium analysis. No analyses are performed until three days after sample collection. The samples are composited monthly for analysis of specific gamma-emitting radionuclides and quarterly for <sup>89</sup>Sr, <sup>90</sup>Sr analysis. The results are presented in Table 6.

With reference to Table 5, which contains the maximum permissible concentrations (MPC) recommended by 10 CFR 20 for nonoccupational exposure, it is seen that the maximum beta concentration is 0.40 percent MPC.

Rainwater is collected and analyzed for gross beta activity, specific gamma-emitting isotopes, radiostrontium, and tritium. During this period two samples were not obtained because of insufficient rainfall. For the gross beta analysis, a maximum of 500 ml of the sample is boiled to dryness and counted. A gamma scan is performed on a 3.5-liter monthly sample. The strontium isotopes are separated chemically and counted in a

low background system. The results are shown in Table 7. The highest value reported for beta activity is 0.56 percent of the MPC for drinking water.

The gummed acetate that is used to collect heavy particle fallout is changed monthly. The sample is ashed and counted for gross beta activity. The results are given in Table 8.

Charcoal filters are collected and analyzed for radioiodine. During this period three samples were lost, ten were not obtained because of equipment malfunction, and two were not analyzed because of the loss of sample flow data. The filter is counted in a single channel analyzer system. The data are shown in Table 9, where the highest value reported is 0.08 percent MPC for  $^{131}\text{I}$ .

An atmospheric moisture collection device containing molecular sieve is located at each local monitor and at one remote monitor. Samples are taken every other week, the moisture driven off the molecular sieve, collected in a cold trap, distilled, and counted for tritium content. The results are shown in Table 10, where the highest value reported is 0.004 percent MPC for  $^3\text{H}$  in air. In this reporting period, insufficient material for analysis was available in four samples, and five samples were not collected because of equipment malfunction.

### Atmospheric Monitoring

The atmospheric monitoring network is divided into three subgroups. Two local air monitors are located within the plant boundary. Eight perimeter air monitors are located at distances out to 10.5 miles (16.9 kilometers) from the plant in the towns of Sale Creek, Daisy, Red Bank (Northwoods), Harrison, and four other densely populated areas. The remote air monitors used as control or baseline stations, are located at distances out to 17.75 miles (28.6 kilometers) from the plant in the town of Dayton and the city of Chattanooga. See figures 2, 3, and 4.

At each monitor, air is continuously pulled through a Hollingsworth and Voss HV-70 particulate filter at a regulated flow of 3 ft<sup>3</sup>/min (0.085 m<sup>3</sup>/min). In series with, but downstream of, the particulate filter, is a charcoal filter used to collect iodine. Each monitor has a collection tray and storage container to collect rainwater on a continuous basis, and a horizontal platform covered with gummed acetate to catch and hold heavy particle fallout. Moisture is collected from the atmosphere at each local monitor and at one remote monitor and analyzed for tritium. Thermoluminescent dosimeters are used to record gamma radiation levels at each remote and perimeter station and at 8 onsite stations.

Each of the local and perimeter air monitors is fitted with a GM tube that continuously scans the particulate filter. The disintegration rate of the atmospheric radioactivity is continuously recorded at each station. These stations will detect any significant airborne release from SQN.

Air filters are collected weekly and analyzed for gross beta activity. During this period ten samples were not obtained because of equipment malfunction and two samples were not analyzed because of the loss of sample flow data. Two samples were lost during the strontium analysis. No analyses are performed until three days after sample collection. The samples are composited monthly for analysis of specific gamma-emitting radionuclides and quarterly for <sup>89</sup>Sr, <sup>90</sup>Sr analysis. The results are presented in Table 6.

With reference to Table 5, which contains the maximum permissible concentrations (MPC) recommended by 10 CFR 20 for nonoccupational exposure, it is seen that the maximum beta concentration is 0.40 percent MPC.

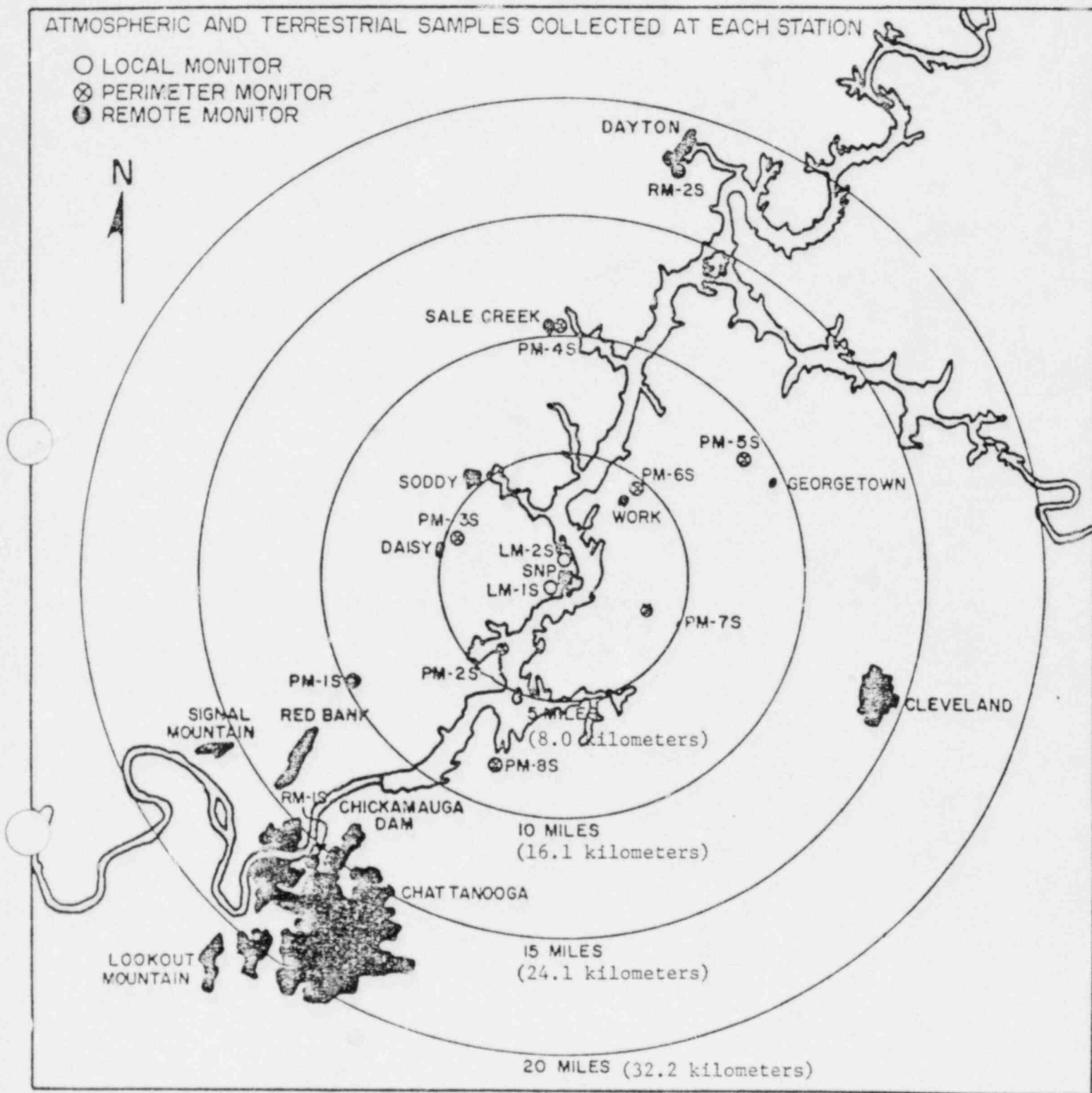
Rainwater is collected and analyzed for gross beta activity, specific gamma-emitting isotopes, radiostrontium, and tritium. During this period two samples were not obtained because of insufficient rainfall. For the gross beta analysis, a maximum of 500 ml of the sample is boiled to dryness and counted. A gamma scan is performed on a 3.5-liter monthly sample. The strontium isotopes are separated chemically and counted in a



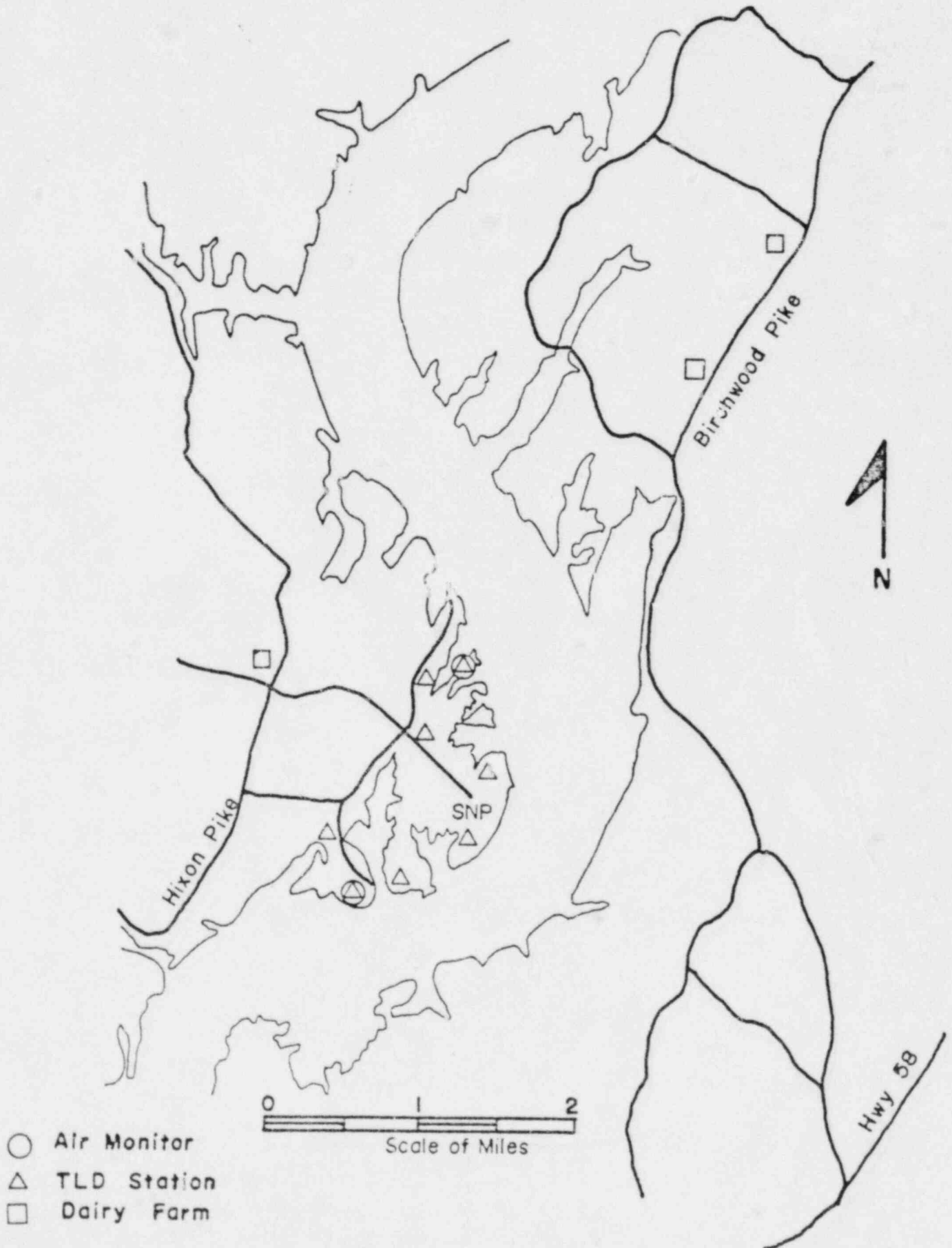
# ATMOSPHERIC AND TERRESTRIAL MONITORING NETWORK

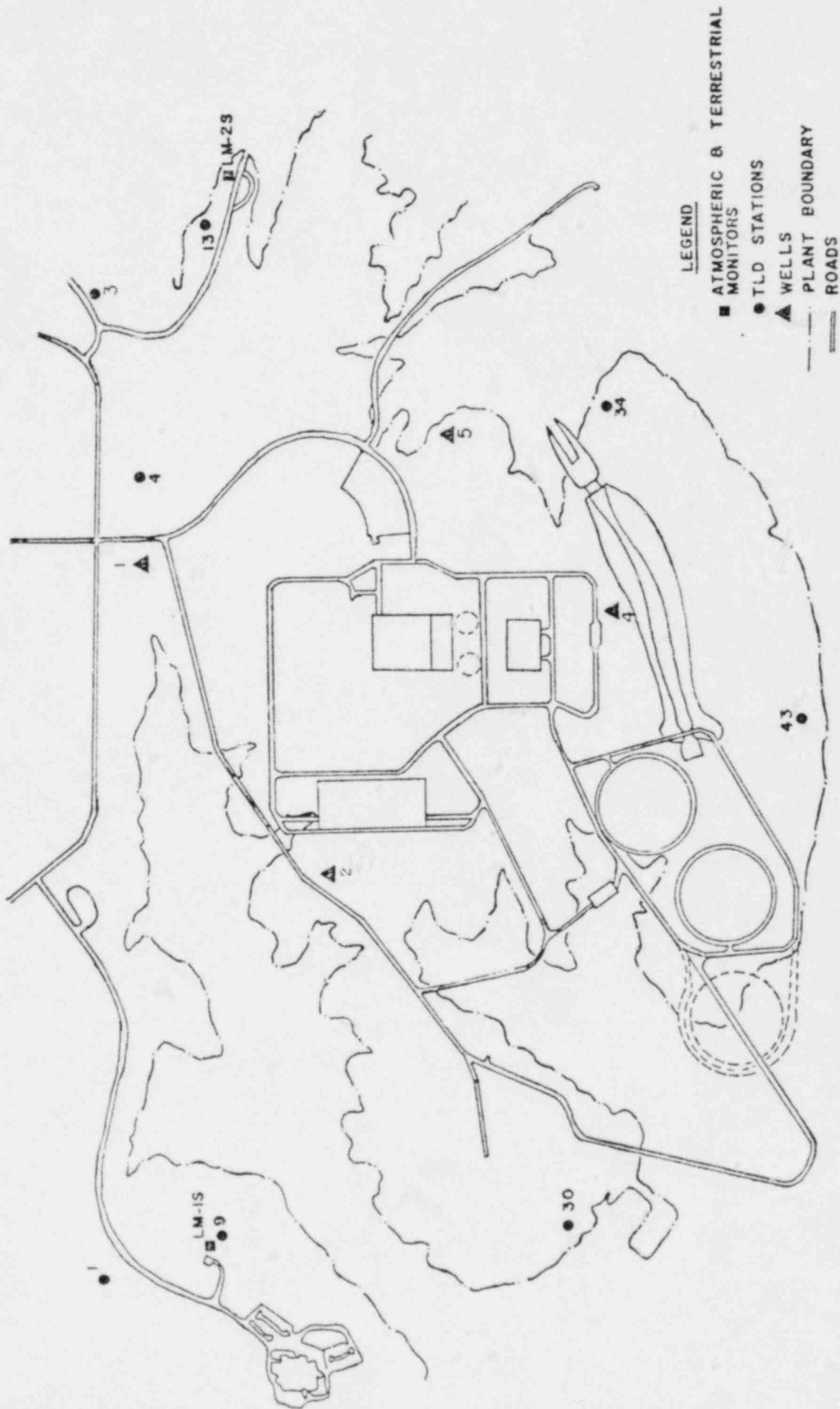
ATMOSPHERIC AND TERRESTRIAL SAMPLES COLLECTED AT EACH STATION

- LOCAL MONITOR
- ⊗ PERIMETER MONITOR
- REMOTE MONITOR



### LOCAL MONITORING STATIONS SEQUOYAH NUCLEAR PLANT





SEQUOYAH NUCLEAR PLANT  
SITE MONITORING STATIONS

TABLE 6

RADIOACTIVITY IN AIR FILTER

PCI/M(3) - 0.037 60/M(3)

| TYPE AND TOTAL NUMBER OF ANALYSIS PERFORMED | GROSS BETA | NAME OF FACILITY | LOCATION OF FACILITY | LOWER LIMIT OF DETECTION (LLD) <sub>a</sub> | INDICATOR LOCATIONS | LOCATION WITH HIGHEST ANNUAL MEAN |                        | CONTROL LOCATIONS  | NUMBER OF NONROUTINE REPORTED MEASUREMENTS <sup>b</sup> |
|---|------------|------------------|----------------------|---|---------------------|-----------------------------------|------------------------|--------------------|---|
|   |            |                  |                      |   |                     | NAME                              | MEAN (F)               |                    |   |
|   |            | SEQUOYAH         | HAMILTON             | 0.010                                       | ALL                 | INDICATOR LOCATIONS               | DISTANCE AND DIRECTION | RANGE <sup>b</sup> | RANGE <sup>b</sup>                                      |
|   |            |                  |                      | 0.010                                       | 0.03 ( 506/ 511)    |                                   | NORTHWOODS, TN         | 0.03 ( 51/ 52)     | 0.03 ( 100/ 101)  |
|   |            |                  |                      | 0.010                                       | 0.01-               | 10.5 MILES SW                     |                        | 0.02-              | 0.01-   |
|   |            |                  |                      | 0.030                                       | 112 VALUES <LLD     |                                   |                        |                    |   |
|   |            |                  |                      | 0.020                                       | 0.03 ( 3/ 112)      | DAISY, TN                         |                        | 0.03 ( 1/ 12)      | 0.04 ( 1/ 24)   |
|   |            |                  |                      | 0.010                                       | 0.02-               | 5.5 MILES W                       |                        | 0.03-              | 0.04-   |
|   |            |                  |                      | 0.010                                       | 0.02 ( 7/ 112)      | DAISY, TN                         |                        | 24 VALUES <LLD     | 24 VALUES <LLD  |
|   |            |                  |                      | NOT ESTAB                                   | 0.01-               | 5.5 MILES W                       |                        | 0.02 ( 4/ 24)      | 0.02 ( 4/ 24)   |
|   |            |                  |                      | NOT ESTAB                                   | 0.10 ( 110/ 112)    | NORTHWOODS, TN                    |                        | 0.01-              | 0.01-   |
|   |            |                  |                      | NOT ESTAB                                   | 0.02-               | 10.5 MILES SW                     |                        | 0.10 ( 24/ 24)     | 0.10 ( 24/ 24)  |
|   |            |                  |                      | NOT ESTAB                                   | 0.02-               | 10.5 MILES SW                     |                        | 0.03-              | 0.03-   |
|   |            |                  |                      | NOT ESTAB                                   | 0.12 ( 8/ 18)       | GEORGETOWN, TN                    |                        | 0.06 ( 1/ 2)       | 0.06 ( 1/ 2)  |
|   |            |                  |                      | NOT ESTAB                                   | 0.08-               | 9.0 MILES ENE                     |                        | 0.06-              | 0.06-   |
|   |            |                  |                      | 0.020                                       | 0.03 ( 8/ 18)       | NORTHWOODS, TN                    |                        | 0.02 ( 1/ 2)       | 0.02 ( 1/ 2)  |
|   |            |                  |                      | 0.020                                       | 0.02-               | 10.5 MILES SW                     |                        | 0.02-              | 0.02-   |
|   |            |                  |                      | NOT ESTAB                                   | 0.04 ( 7/ 18)       | NORTHWOODS, TN                    |                        | 2 VALUES <LLD      | 2 VALUES <LLD   |
|   |            |                  |                      | NOT ESTAB                                   | 0.02-               | 10.5 MILES SW                     |                        | 0.01 ( 1/ 2)       | 0.01 ( 1/ 2)  |
|   |            |                  |                      | NOT ESTAB                                   | 0.01 ( 8/ 18)       | LM2 NORTHEAST                     |                        | 0.01-              | 0.01-   |
|   |            |                  |                      | 0.050                                       | 0.00-               | 0.75 MILES N                      |                        | 0.08 ( 2/ 2)       | 0.08 ( 2/ 2)  |
|   |            |                  |                      | NOT ESTAB                                   | 0.06 ( 16/ 18)      | GEORGETOWN, TN                    |                        | 0.05-              | 0.05-   |
|   |            |                  |                      | NOT ESTAB                                   | 0.01 ( 3/ 18)       | 9.0 MILES ENE                     |                        | 2 VALUES <LLD      | 2 VALUES <LLD   |
|   |            |                  |                      | NOT ESTAB                                   | 0.00-               | 10.5 MILES SW                     |                        | 2 VALUES <LLD      | 2 VALUES <LLD   |
|   |            |                  |                      | NOT ESTAB                                   | 0.02 ( 1/ 18)       | LM1 SOUTHWEST                     |                        | 2 VALUES <LLD      | 2 VALUES <LLD   |
|   |            |                  |                      | 0.005                                       | 0.02-               | 0.75 MILES SW                     |                        | 7 VALUES <LLD      | 7 VALUES <LLD   |
|   |            |                  |                      | 0.001                                       | 39 VALUES <LLD      |                                   |                        |                    |   |
|   |            |                  |                      | 0.001                                       | ANALYSIS PERFORMED  |                                   |                        |                    |   |
|   |            |                  |                      |   | 0.00 ( 10/ 39)      | SALE CREEK, TN                    |                        | 0.00 ( 1/ 4)       | 0.00 ( 4/ 7)  |
|   |            |                  |                      |   | 0.00-               | 10.5 MILES N                      |                        | 0.00-              | 0.00-   |

a. Nominal Lower Limit of Detection (LLD) as described in Table 3.

b. Mean and range based upon detectable measurements only. Fraction of detectable measurements of specified locations is indicated in parenthesis (F).

TABLE 7

## RADIOACTIVITY IN RAINWATER

PCI/L - 0.037 BQ/L

NAME OF FACILITY SEQUOYAH DOCKET NO. RH-80-7-502  
 LOCATION OF FACILITY HAMILTON TENNESSEE REPORTING PERIOD 1979

| TYPE AND<br>TOTAL NUMBER<br>OF ANALYSIS<br>PERFORMED | LOWER LIMIT<br>OF<br>DETECTION<br>(LLD) <sup>a</sup> | ALL<br>INDICATOR LOCATIONS            |  | LOCATION WITH HIGHEST ANNUAL MEAN |                                  | CONTROL<br>LOCATIONS<br>MEAN (F)<br>RANGE <sup>b</sup> | NUMBER OF<br>NONROUTINE<br>REPORTED<br>MEASUREMENTS <sup>c</sup> |
|--|--|---------------------------------------|--|-----------------------------------|----------------------------------|--|--|
|  |  | MEAN (F)<br>RANGE <sup>b</sup>        |  | NAME<br>DISTANCE AND DIRECTION    | MEAN (F)<br>RANGE <sup>b</sup>   |  |  |
| GROSS BETA<br>154                                    | 2.400  | 4.19( 62/ 128)<br>2.49- 8.20          |  | LM1 SOUTHWEST<br>0.75 MILES SW    | 4.50( 9/ 13)<br>2.69- 8.02       | 5.98( 16/ 26)<br>2.63- 16.73                           |  |
| GAMMA (NAI)<br>135                                   | 15.000   | 19.76( 5/ 113)<br>15.80- 23.80        |  | DAISY, TN<br>5.5 MILES W          | 23.80( 1/ 12)<br>23.80- 23.80    | 22 VALUES <LLD   |  |
| I-131<br>131   | 15.000   | 38.88( 5/ 113)<br>24.90- 50.10        |  | HARRISON, TN<br>8.75 MILES SSW    | 50.10( 1/ 11)<br>50.10- 50.10    | 16.40( 3/ 22)<br>15.50- 17.20                          |  |
| BE-7<br>135  | NOT ESTAB  | 44.78( 44/ 113)<br>7.30- 108.90       |  | HARRISON, TN<br>8.75 MILES SSW    | 62.56( 5/ 11)<br>12.20- 108.90   | 36.38( 10/ 22)<br>14.40- 60.30                         |  |
| GAMMA (GELI)<br>21                                   | NOT ESTAB  | 106.74( 2/ 17)<br>87.47- 126.00       |  | HARRISON, TN<br>8.75 MILES SSW    | 126.00( 1/ 2)<br>126.00- 126.00  | 124.33( 3/ 4)<br>67.10- 156.00                         |  |
| BI-214<br>156  | NOT ESTAB  | 29.22( 8/ 17)<br>13.95- 40.73         |  | DAISY, TN<br>5.5 MILES W          | 40.73( 1/ 1)<br>40.73- 40.73     | 10.72( 1/ 4)<br>10.72- 10.72                           |  |
| PB-214<br>156  | NOT ESTAB  | 22.08( 6/ 17)<br>13.26- 35.13         |  | LM1 SOUTHWEST<br>0.75 MILES SW    | 35.13( 1/ 2)<br>35.13- 35.13     | 4 VALUES <LLD  |  |
| PB-212<br>156  | NOT ESTAB  | 21.94( 5/ 17)<br>9.41- 35.42          |  | DAISY, TN<br>5.5 MILES W          | 35.42( 1/ 1)<br>35.42- 35.42     | 4 VALUES <LLD  |  |
| BE-7<br>156  | NOT ESTAB  | 55.00( 1/ 17)<br>55.00- 55.00         |  | SALE CREEK, TN<br>10.5 MILES N    | 55.00( 1/ 1)<br>55.00- 55.00     | 113.01( 2/ 4)<br>49.01- 177.00                         |  |
| SR 89<br>156   | 10.000   | 130 VALUES <LLD<br>ANALYSIS PERFORMED |  |                                   |                                  | 26 VALUES <LLD   |  |
| SR 90<br>156   | 2.000  | 130 VALUES <LLD<br>ANALYSIS PERFORMED |  |                                   |                                  | 26 VALUES <LLD   |  |
| TRITIUM<br>147                                       | 330.000  | 398.16( 11/ 122)<br>332.00- 511.00    |  | HARRISON BAY, TN<br>3.5 MILES SE  | 511.00( 1/ 12)<br>511.00- 511.00 | 367.50( 2/ 25)<br>364.00- 371.00                       |  |

a. Nominal Lower Limit of Detection (LLD) as described in Table 3.

b. Mean and range based upon detectable measurements only. Fraction of detectable measurements of specified locations is indicated in parenthesis (F).

TABLE 8

## RADIOACTIVITY IN HEAVY PARTICLE FALLOUT

MCI/KM(2) - 37000000.00 RC/KM(2)

NAME OF FACILITY SEQUOYAH DOCKET NO. RH-80-7-SQ2  
 LOCATION OF FACILITY HAMILTON TENNESSEE REPORTING PERIOD 1979

| TYPE AND<br>TOTAL NUMBER<br>OF ANALYSIS<br>PERFORMED | LOWER LIMIT<br>OF<br>DETECTION<br>(LLD) <sup>a</sup> | ALL<br>INDICATOR LOCATIONS       |  | LOCATION WITH HIGHEST ANNUAL MEAN |                                | CONTROL<br>LOCATIONS<br>MEAN (F)<br>RANGE <sup>b</sup> | NUMBER OF<br>NONROUTINE<br>REPORTED<br>MEASUREMENTS * |
|--|--|----------------------------------|--|-----------------------------------|--------------------------------|--|---|
|  |  | MEAN (F)<br>RANGE <sup>b</sup>   |  | NAME<br>DISTANCE AND DIRECTION    | MEAN (F)<br>RANGE <sup>b</sup> |  |   |
| GROSS BETA<br>156                                    | 0.050  | 0.20 ( 130 / 130 )<br>0.06- 0.54 |  | SALE CREEK, TN<br>10.5 MILES N    | 0.28 ( 13 / 13 )<br>0.11- 0.49 | 0.20 ( 26 / 26 )<br>0.07- 0.46                         |   |

a. Nominal Lower Limit of Detection (LLD) as described in Table 3.

b. Mean and range based upon detectable measurements only. Fraction of detectable measurements of specified locations is indicated in parenthesis (F).

TABLE 9

## RADIOACTIVITY IN CHARCOAL FILTERS

PCI/M(3) - 0.037 BQ/M(3)

| NAME OF FACILITY <u>SEQUOYAH</u>                      |  | DOCKET NO. <u>RH-80-7-502</u>                         |   |  |   |
|---|--|---|---|--|---|
| LOCATION OF FACILITY <u>HAMILTON</u> <u>TENNESSEE</u> |  | REPORTING PERIOD <u>1979</u>                          |   |  |   |
| TYPE AND<br>TOTAL NUMBER<br>OF ANALYSIS<br>PERFORMED  | LOWER LIMIT<br>OF<br>DETECTION<br>(LLD) <sup>a</sup> | ALL   | LOCATION WITH HIGHEST ANNUAL MEAN                                 | CONTROL<br>LOCATIONS<br>MEAN (F)<br>RANGE <sup>b</sup> | NUMBER OF<br>NONROUTINE<br>REPORTED<br>MEASUREMENTS |
|   |  | INDICATOR LOCATIONS<br>MEAN (F)<br>RANGE <sup>b</sup> | NAME<br>MEAN (F)<br>RANGE <sup>b</sup><br>DISTANCE AND DIRECTION  |  |   |
| IODINE IN AIR<br>609                                  | 0.010  | 0.02 ( 143/ 509 )<br>0.01- 0.05                       | COUNTY PARK, TN<br>3.75 MILES SW<br>0.02 ( 15/ 52 )<br>0.01- 0.05 | 0.02 ( 25/ 100 )<br>0.01- 0.08                         |   |

a. Nominal Lower Limit of Detection (LLD) as described in Table 3.

b. Mean and range based upon detectable measurements only. Fraction of detectable measurements of specified locations is indicated in parenthesis (F).

TABLE 10

## RADIOACTIVITY IN ATMOSPHERIC MOISTURE

PCI/M(3) - 0.037 BQ/M(3)

NAME OF FACILITY SEQUOYAH DOCKET NO. RH-80-7-502  
 LOCATION OF FACILITY HAMILTON TENNESSEE REPORTING PERIOD 1979

| TYPE AND<br>TOTAL NUMBER<br>OF ANALYSIS<br>PERFORMED | LOWER LIMIT<br>OF<br>DETECTION<br>(LLD) <sup>a</sup> | ALL<br>INDICATOR LOCATIONS     |                               | LOCATION WITH HIGHEST ANNUAL MEAN |                             | CONTROL<br>LOCATIONS<br>MEAN (F)<br>RANGE <sup>b</sup> | NUMBER OF<br>NONROUTINE<br>REPORTED<br>MEASUREMENTS <sup>c</sup> |
|--|--|--------------------------------|-------------------------------|-----------------------------------|-----------------------------|--|--|
|  |  | MEAN (F)<br>RANGE <sup>b</sup> | DISTANCE AND DIRECTION        | MEAN (F)<br>RANGE <sup>b</sup>    |                             |  |  |
| TRITIUM<br>69  | NOT ESTAB  | 2.761 (40/ 47)<br>0.00- 8.00   | LM2 NORTHEAST<br>0.75 MILES N | 3.001 (20/ 24)<br>0.00- 8.00      | 2.00 (21/ 22)<br>0.00- 5.00 |  |  |

a. Nominal Lower Limit of Detection (LLD) as described in Table 3.

b. Mean and range based upon detectable measurements only. Fraction of detectable measurements of specified locations is indicated in parenthesis (F).



## Terrestrial Monitoring

### Milk

Milk was collected from two farms within a 5-mile radius of the plant (see figure 3), and from one control farm. In addition, sampling was initiated in May at a farm within 2 miles of the plant and in June at 2 additional control farms. Samples from the farm nearest the plant were collected weekly while all other samples were collected monthly. Raw milk is analyzed for  $^{131}\text{I}$ , gamma-emitting isotopes, and for radiostrontium. The results are shown in Table 11. Five samples were unavailable during this reporting period and insufficient sample was available for  $^{131}\text{I}$  analysis in nine samples and for strontium analysis in ten samples.

### Vegetation

Vegetation samples were collected quarterly from the farms from which milk was collected and analyzed for gross beta activity, gamma-emitting radionuclides, and strontium-89,90 content. Approximately 1-2 kilograms of grass was broken or cut at ground level and returned for analysis. Efforts were made to sample vegetation that was representative of the pasturage where cattle graze. Table 12 gives the results obtained from the laboratory analyses.

### Soil

Soil samples were collected annually near each monitoring station to provide an indication of any long-term buildup of radioactivity in the environment. An auger or "cookie cutter" type sampler was used to obtain samples of the top two inches (5 cm) of soil. These samples were analyzed for gross beta activity, gamma-emitting radionuclides, and for strontium-89 and -90. The results are given in Table 13.

### Ground Water

An automatic sequential type sampling device has been installed on a well down-gradient from Sequoyah Nuclear Plant. A composite sample from this well is analyzed for gross beta activity and gamma-emitting radionuclides monthly and composited quarterly for determination of tritium. A grab sample is also taken from a farm near the plant and a control well across the river from the plant. The results of the analysis of well water are shown in Table 14 and indicate the maximum beta concentration with reference to Table 5 is 0.17 percent MPC. A gross beta analysis was not performed on one sample during this period.

### Public Water

Potable water supplies taken from the Tennessee River in the vicinity of Sequoyah Nuclear Plant are sampled and analyzed for gross beta, gamma-emitting radionuclides,  $^{89,90}\text{Sr}$ , and tritium. The first potable water supply downstream from the plant is equipped with an automatic sampler with composite samples analyzed monthly. Five additional water supplies are sampled monthly by the collection of grab samples. One of the grab samples was not taken during this period. The results, shown in Table 15, indicate that the maximum beta concentration is 0.23 percent MPC.

### Environmental Gamma Radiation Levels

Thermoluminescent dosimeters (TLD's) were placed at eight stations around the plant near the site boundary (see figures 3 and 4) and at the perimeter and remote monitors to determine the gamma exposure rates at these locations. The TLD's were changed approximately every three months. The quarterly gamma radiation levels determined from these TLD's are given in Table 16. It should be noted that, even though the plant has not achieved criticality, the average radiation levels onsite are generally 2-5 mR/quarter higher than the levels offsite. This may be attributable to natural variations in environmental radiation levels, earth moving activities onsite, the mass of concrete employed in the construction of the plant, or other influences.

### Poultry and Food Crops

Food crops and poultry raised in the vicinity of Sequoyah Nuclear Plant are sampled annually as they become available during the growing season. During this sampling period, samples of corn, green beans, turnip greens, tomatoes, and poultry were collected and analyzed for gross beta and specific gamma-emitting radionuclides. The results are given in Tables 17 and 18. No sample of corn was taken from a control location.

TABLE 11  
RADIOACTIVITY IN MILK  
PCI/L - 0.037 BQ/L

NAME OF FACILITY SEQUOYAH DOCKET NO. RH-80-7-502  
LOCATION OF FACILITY HAMILTON TENNESSEE REPORTING PERIOD 1979

| TYPE AND TOTAL NUMBER OF ANALYSIS PERFORMED | LOWER LIMIT OF DETECTION (LLD) <sup>a</sup> | ALL INDICATOR LOCATIONS MEAN (F) RANGE <sup>b</sup> | LOCATION WITH HIGHEST ANNUAL MEAN |                        | CONTROL LOCATIONS MEAN (F) RANGE <sup>b</sup> | NUMBER OF NONROUTINE REPORTED MEASUREMENTS <sup>c</sup> |
|---|---|---|-----------------------------------|------------------------|---|---|
|   |   |   | NAME                              | DISTANCE AND DIRECTION |   |   |
| GAMMA (NAI)<br>78                           | 10.000                                      | 12.09( 14/ 51)<br>10.20- 16.70                      | JONES FARM                        | 1.25 MILES W           | 12.37( 12/ 26)<br>10.20- 16.70                | 27 VALUES <LLD  |
| K-40  | 150.000                                     | 1243.69( 51/ 51)<br>1034.30- 1541.90                | LOVELL FARM                       | 2.75 MILES NNE         | 1306.52( 12/ 12)<br>1165.00- 1541.90          | 1269.08( 27/ 27)<br>1052.10- 1467.60<br>27 VALUES <LLD  |
| IODINE IN MILK<br>72                        | 0.500                                       | 45 VALUES <LLD<br>ANALYSIS PERFORMED                |                                   |                        |   |   |
| GAMMA (GELI)<br>3                           | 5.000                                       | 13.35( 1/ 3)<br>13.35- 13.35                        | JONES FARM                        | 1.25 MILES W           | 13.35( 1/ 2)<br>13.35- 13.35                  |   |
| K-40  | NOT ESTAB                                   | 1400.67( 3/ 3)<br>1225.00- 1620.00                  | JONES FARM                        | 1.25 MILES W           | 1422.50( 2/ 2)<br>1225.00- 1620.00            |   |
| BI-214                                      | NOT ESTAB                                   | 33.10( 2/ 3)<br>29.67- 36.53                        | LOVELL FARM                       | 2.75 MILES NNE         | 36.53( 1/ 1)<br>36.53- 36.53                  |   |
| PB-214                                      | NOT ESTAB                                   | 20.52( 2/ 3)<br>20.41- 20.63                        | LOVELL FARM                       | 2.75 MILES NNE         | 20.63( 1/ 1)<br>20.63- 20.63                  |   |
| PB-212                                      | NOT ESTAB                                   | 10.59( 2/ 3)<br>9.98- 11.20                         | JONES FARM                        | 1.25 MILES W           | 10.59( 2/ 2)<br>9.98- 11.20                   | 27 VALUES <LLD  |
| SR 89                                       | 10.000                                      | 44 VALUES <LLD<br>ANALYSIS PERFORMED                |                                   |                        |   |   |
| SR 90                                       | 2.000                                       | 12.56( 44/ 44)<br>3.19- 32.56                       | JONES FARM                        | 1.25 MILES W           | 22.99( 18/ 18)<br>4.06- 32.56                 | 4.45( 27/ 27)<br>2.69- 8.32                             |

a. Nominal Lower Limit of Detection (LLD) as described in Table 3.

b. Mean and range based upon detectable measurements only. Fraction of detectable measurements of specified locations is indicated in parenthesis (F).

TABLE 12

## RADIOACTIVITY IN VEGETATION

PCI/G - 0.037 BQ/G (DRY WEIGHT)

NAME OF FACILITY SEQUOYAH DUCKET NO. RH-80-7-S02  
 LOCATION OF FACILITY HAMILTON TENNESSEE REPORTING PERIOD 1979

| TYPE AND<br>TOTAL NUMBER<br>OF ANALYSIS<br>PERFORMED | LOWER LIMIT<br>OF<br>DETECTION<br>(LLD) <sup>a</sup> | ALL<br>INDICATOR LOCATIONS           |  | LOCATION WITH HIGHEST ANNUAL MEAN |                                | CONTROL<br>LOCATIONS           |  | NUMBER OF<br>NONROUTINE<br>REPORTED<br>MEASUREMENTS <sup>1</sup> |
|--|--|--------------------------------------|--|-----------------------------------|--------------------------------|--------------------------------|--|--|
|  |  | MEAN (F)<br>RANGE <sup>b</sup>       |  | NAME<br>DISTANCE AND DIRECTION    | MEAN (F)<br>RANGE <sup>b</sup> | MEAN (F)<br>RANGE <sup>b</sup> |  |  |
| GROSS ALPHA<br>20                                    | 0.050  | 0.43( 11/ 11)<br>0.12- 1.59          |  | JONES FARM<br>1.25 MILES W        | 0.79( 3/ 3)<br>0.15- 1.59      | 0.47( 8/ 9)<br>0.05- 1.09      |  |  |
| GROSS BETA<br>20                                     | 0.200  | 40.62( 11/ 11)<br>17.30- 65.74       |  | MALONE FARM<br>3.5 MILES NNE      | 43.20( 4/ 4)<br>32.38- 56.09   | 42.04( 9/ 9)<br>15.36- 62.76   |  |  |
| GAMMA (GELI)<br>20                                   |  |                                      |  |                                   |                                |                                |  |  |
| CE-144   | 0.220  | 0.35( 1/ 11)<br>0.35- 0.35           |  | MALONE FARM<br>3.5 MILES NNE      | 0.35( 1/ 4)<br>0.35- 0.35      | 9 VALUES <LLD                  |  |  |
| CS-137   | 0.060  | 0.12( 2/ 11)<br>0.07- 0.18           |  | MALONE FARM<br>3.5 MILES NNE      | 0.18( 1/ 4)<br>0.18- 0.18      | 0.10( 1/ 9)<br>0.10- 0.10      |  |  |
| K-40   | NOT ESTAB  | 22.96( 11/ 11)<br>14.36- 39.18       |  | LOVELL FARM<br>2.75 MILES NNE     | 23.76( 4/ 4)<br>17.00- 39.18   | 24.81( 9/ 9)<br>6.42- 36.11    |  |  |
| BI-214   | 0.100  | 0.39( 7/ 11)<br>0.13- 0.92           |  | JONES FARM<br>1.25 MILES W        | 0.51( 3/ 3)<br>0.19- 0.92      | 0.42( 8/ 9)<br>0.12- 0.89      |  |  |
| PB-214   | NOT ESTAB  | 0.28( 7/ 11)<br>0.11- 0.67           |  | JONES FARM<br>1.25 MILES W        | 0.39( 3/ 3)<br>0.14- 0.67      | 0.28( 8/ 9)<br>0.12- 0.50      |  |  |
| PB-212   | NOT ESTAB  | 0.15( 8/ 11)<br>0.05- 0.36           |  | JONES FARM<br>1.25 MILES W        | 0.27( 3/ 3)<br>0.16- 0.36      | 0.16( 8/ 9)<br>0.02- 0.31      |  |  |
| BE-7   | NOT ESTAB  | 6.75( 11/ 11)<br>2.33- 11.78         |  | LOVELL FARM<br>2.75 MILES NNE     | 8.71( 4/ 4)<br>6.09- 11.78     | 6.88( 9/ 9)<br>1.98- 15.31     |  |  |
| TL-208   | NOT ESTAB  | 0.10( 3/ 11)<br>0.03- 0.21           |  | JONES FARM<br>1.25 MILES W        | 0.12( 2/ 3)<br>0.03- 0.21      | 0.12( 1/ 9)<br>0.12- 0.12      |  |  |
| AC-228   | NOT ESTAB  | 0.44( 2/ 11)<br>0.36- 0.52           |  | JONES FARM<br>1.25 MILES W        | 0.52( 1/ 3)<br>0.52- 0.52      | 0.54( 1/ 9)<br>0.54- 0.54      |  |  |
| SR 84<br>20  | 0.250  | 11 VALUES <LLD<br>ANALYSIS PERFORMED |  |                                   |                                | 9 VALUES <LLD                  |  |  |
| SR 90<br>20  | 0.050  | 0.29( 11/ 11)<br>0.14- 0.53          |  | JONES FARM<br>1.25 MILES W        | 0.44( 3/ 3)<br>0.30- 0.53      | 0.19( 9/ 9)<br>0.13- 0.27      |  |  |

a. Nominal Lower Limit of Detection (LLD) as described in Table 3.

b. Mean and range based upon detectable measurements only. Fraction of detectable measurements of specified locations is indicated in parenthesis (F).

TABLE 13  
RADIOACTIVITY IN SOIL

<sup>137</sup>CS/G - 0.037 BQ/G (DRY WEIGHT)

| TYPE AND TOTAL NUMBER OF ANALYSIS PERFORMED | GROSS BETA | GAMMA (GELI) | LOWER LIMIT OF DETECTION (LLD) <sup>a</sup> | NAME OF FACILITY | LOCATION OF FACILITY | STATE     | DOCKET NO.  | REPORTING PERIOD | YEAR | NUMBER OF NONROUTINE REPORTED MEASUREMENTS <sup>a</sup> | CONTROL LOCATIONS |                    | LOCATION WITH HIGHEST ANNUAL MEAN |                        | INDICAT <sup>b</sup> /R LOCATIONS |                    |
|---|------------|--------------|---|------------------|----------------------|-----------|-------------|------------------|------|---|-------------------|--------------------|-----------------------------------|------------------------|-----------------------------------|--------------------|
|   |            |              |   |                  |                      |           |             |                  |      |   | MEAN (F)          | RANGE <sup>b</sup> | NAME                              | DISTANCE AND DIRECTION | MEAN (F)                          | RANGE <sup>b</sup> |
|   |            |              | 0.700                                       | HAMILTON         | GEORGETOWN, TN       | TENNESSEE | RH-80-7-592 | 1979             |      |   | 29.44             | 18.81-40.06        | 56.89                             | 56.89                  | 32.46                             | 26.82-56.89        |
|   |            |              |   |                  |                      |           |             |                  |      |   |                   |                    |                                   |                        |                                   |                    |
| CE-144                                      | 12         |              | 0.060                                       |                  |                      |           |             |                  |      |   | 0.10              | 0.10               | 10 VALUES <LLD                    |                        |                                   |                    |
| CS-137                                      | 12         |              | 0.020                                       |                  | HARRISON, TN         |           |             |                  |      |   | 0.10              | 0.10               | 10/ 10                            | 2.24                   | 0.98                              | 10/ 10             |
| K-40  |            |              | 0.250                                       |                  | 8.75 MILES SSW       |           |             |                  |      |   | 0.97              | 0.97               | 2/ 2                              | 2.24                   | 0.10                              | 2/ 2               |
| BI-214                                      |            |              | 0.050                                       |                  | GEORGETOWN, TN       |           |             |                  |      |   | 0.36              | 0.36               | 1/ 1                              | 19.13                  | 7.79                              | 10/ 10             |
| BI-212                                      |            |              | 0.100                                       |                  | 9.0 MILES ENE        |           |             |                  |      |   | 5.84              | 5.84               | 2/ 2                              | 19.13                  | 2.68                              | 19.13              |
| PB-214                                      |            |              | 0.050                                       |                  | LM1 SOUTHWEST        |           |             |                  |      |   | 2.49              | 2.49               | 2/ 2                              | 1.23                   | 0.99                              | 10/ 10             |
| PB-212                                      |            |              | NOT ESTAB                                   |                  | 0.75 MILES SW        |           |             |                  |      |   | 0.65              | 0.65               | 2/ 2                              | 1.23                   | 0.76                              | 1.23               |
| HA-226                                      |            |              | 0.050                                       |                  | 0.75 MILES SW        |           |             |                  |      |   | 0.51              | 0.51               | 2/ 2                              | 1.13                   | 0.64                              | 10/ 10             |
| TL-208                                      |            |              | 0.020                                       |                  | 0.75 MILES SW        |           |             |                  |      |   | 0.78              | 0.78               | 2/ 2                              | 1.13                   | 0.47                              | 10/ 10             |
| AC-228                                      |            |              | 0.060                                       |                  | WORK, TN             |           |             |                  |      |   | 0.66              | 0.66               | 2/ 2                              | 1.17                   | 0.99                              | 10/ 10             |
| SH 89                                       | 17         |              | 1.500                                       |                  | 4.5 MILES NWE        |           |             |                  |      |   | 0.76              | 0.76               | 2/ 2                              | 1.66                   | 0.78                              | 1.17               |
| SH 90                                       | 12         |              | 0.300                                       |                  | LM1 SOUTHWEST        |           |             |                  |      |   | 0.51              | 0.51               | 1.00                              | 1.66                   | 0.91                              | 10/ 10             |
|   |            |              |   |                  | 0.75 MILES SW        |           |             |                  |      |   | 0.76              | 0.76               | 2/ 2                              | 1.23                   | 0.99                              | 10/ 10             |
|   |            |              |   |                  | 0.75 MILES SW        |           |             |                  |      |   | 0.65              | 0.65               | 0.86                              | 1.23                   | 0.76                              | 1.23               |
|   |            |              |   |                  | LM1 SOUTHWEST        |           |             |                  |      |   | 0.29              | 0.29               | 2/ 2                              | 0.53                   | 0.35                              | 10/ 10             |
|   |            |              |   |                  | LM1 SOUTHWEST        |           |             |                  |      |   | 0.19              | 0.19               | 0.39                              | 0.53                   | 0.26                              | 0.53               |
|   |            |              |   |                  | 0.75 MILES SW        |           |             |                  |      |   | 0.84              | 0.84               | 2/ 2                              | 1.61                   | 1.65                              | 10/ 10             |
|   |            |              |   |                  | 0.75 MILES SW        |           |             |                  |      |   | 0.56              | 0.56               | 1.12                              | 1.61                   | 0.74                              | 1.61               |
|   |            |              |   |                  |                      |           |             |                  |      |   | 2 VALUES <LLD     |                    |                                   | 10 VALUES <LLD         |                                   |                    |
|   |            |              |   |                  | HARRISON, TN         |           |             |                  |      |   | 0.49              | 0.49               | 1/ 2                              | 1.66                   | 0.81                              | 3/ 10              |
|   |            |              |   |                  | 8.75 MILES SSW       |           |             |                  |      |   | 0.49              | 0.49               | 0.49                              | 1.66                   | 0.35                              | 1.66               |

a. Nominal Lower Limit of Detection (LLD) as described in Table 3.

b. Mean and range based upon detectable measurements only. Fraction of detectable measurements of specified locations is indicated in parenthesis (F).

TABLE 14  
 RADIOACTIVITY IN WELL WATER  
 PCI/L - 0.037 BQ/L

NAME OF FACILITY SEQUOYAH DOCKET NO. RH-80-7-502  
 LOCATION OF FACILITY HAMILTON TENNESSEE REPORTING PERIOD 1979

| TYPE AND<br>TOTAL NUMBER<br>OF ANALYSIS<br>PERFORMED | LOWER LIMIT<br>OF<br>DETECTION<br>(LLD) <sup>a</sup> | ALL<br>INDICATOR LOCATIONS           |  | LOCATION WITH HIGHEST ANNUAL MEAN |                                    | CONTROL<br>LOCATIONS<br>MEAN (F)<br>RANGE <sup>b</sup> | NUMBER OF<br>NONROUTINE<br>REPORTED<br>MEASUREMENTS <sup>c</sup> |
|--|--|--------------------------------------|--|-----------------------------------|------------------------------------|--|--|
|  |  | MEAN (F)<br>RANGE <sup>b</sup>       |  | NAME<br>DISTANCE AND DIRECTION    | MEAN (F)<br>RANGE <sup>b</sup>     |  |  |
| GROSS BETA<br>38                                     | 2.400  | 2.68 ( 2 / 25 )<br>2.49- 2.86        |  | SGW WELL #6<br>ONSITE NNE         | 2.68 ( 2 / 12 )<br>2.49- 2.86      | 3.46 ( 10 / 13 )<br>2.41- 5.00                         |  |
| GAMMA (NAI)<br>37                                    |  | 24 VALUES <LLD<br>ANALYSIS PERFORMED |  |                                   |                                    | 13 VALUES <LLD   |  |
| GAMMA (GELI)<br>2                                    | NOT ESTAB  | 178.70 ( 1 / 2 )<br>178.70- 178.70   |  | HAYS FARM<br>0.75 MILES W         | 178.70 ( 1 / 1 )<br>178.70- 178.70 |  |  |
| TRITIUM<br>12  | 330.000  | 8 VALUES <LLD<br>ANALYSIS PERFORMED  |  |                                   |                                    | 4 VALUES <LLD  |  |

a. Nominal Lower Limit of Detection (LLD) as described in Table 3.

b. Mean and range based upon detectable measurements only. Fraction of detectable measurements of specified locations is indicated in parenthesis (F).

TABLE 15

## RADIOACTIVITY IN PUBLIC WATER SUPPLY

PCI/L - 0.037 BQ/L

|  |  | NAME OF FACILITY <u>SEQUOYAH</u>     |  | DOCKET NO. <u>RH-80-7-592</u>     |                                |  |  |
|--|--|--------------------------------------|--|-----------------------------------|--------------------------------|--|--|
|  |  | LOCATION OF FACILITY <u>HAMILTON</u> |  | REPORTING PERIOD <u>1979</u>      |                                |  |  |
| TYPE AND<br>TOTAL NUMBER<br>OF ANALYSIS<br>PERFORMED | LOWER LIMIT<br>OF<br>DETECTION<br>(LLD) <sup>a</sup> | ALL<br>INDICATOR LOCATIONS           |  | LOCATION WITH HIGHEST ANNUAL MEAN |                                | CONTROL<br>LOCATIONS<br>MEAN (F)<br>RANGE <sup>b</sup> | NUMBER OF<br>NONROUTINE<br>REPORTED<br>MEASUREMENTS <sup>c</sup> |
|  |  | MEAN (F)<br>RANGE <sup>b</sup>       |  | NAME<br>DISTANCE AND DIRECTION    | MEAN (F)<br>RANGE <sup>b</sup> |  |  |
| GROSS BETA   | 2.400  | 3.51 ( 10/ 51)                       |  | CF INDUSTRIES                     | 4.00 ( 11/ 13)                 | 3.85 ( 7/ 26)  |  |
| GAMMA (NAI)  | 77   | 2.42- 6.84                           |  | TRM 473.0                         | 2.42- 6.84                     | 2.48- 5.95   |  |
|  | 70   | 46 VALUES <LLD<br>ANALYSIS PERFORMED |  |                                   |                                | 24 VALUES <LLD   |  |
| GAMMA (GELI)   | 7  |                                      |  |                                   |                                |  |  |
| K-40   | NOT ESTAB  | 70.68 ( 1/ 5)                        |  | CHICKAMAUGA DAM                   | 70.68 ( 1/ 2)                  | 2 VALUES <LLD  |  |
| BI-214   | NOT ESTAB  | 70.68- 70.68                         |  | TRM 465.3                         | 70.68- 70.68                   |  |  |
|  |  | 9.59 ( 3/ 5)                         |  | CF INDUSTRIES                     | 10.96 ( 1/ 2)                  | 2 VALUES <LLD  |  |
| PB-212   | NOT ESTAB  | 7.28- 10.96                          |  | TRM 473.0                         | 10.96- 10.96                   |  |  |
|  |  | 2.07 ( 1/ 5)                         |  | DAISY, TN                         | 2.07 ( 1/ 1)                   | 6.54 ( 2/ 2)   |  |
| SR 89  | 10.000   | 2.07- 2.07                           |  | 5.5 MILES W                       | 2.07- 2.07                     | 5.68- 7.46   |  |
|  | 24   | 16 VALUES <LLD<br>ANALYSIS PERFORMED |  |                                   |                                | 8 VALUES <LLD  |  |
| SR 90  | 2.000  | 16 VALUES <LLD<br>ANALYSIS PERFORMED |  |                                   |                                | 8 VALUES <LLD  |  |
| TRITIUM  | 330.000  | 542.60 ( 5/ 16)                      |  | E.I. DUPONT                       | 762.00 ( 1/ 4)                 | 8 VALUES <LLD  |  |
|  | 24   | 365.00- 762.00                       |  | TRM 470.5                         | 762.00- 762.00                 |  |  |

a. Nominal Lower Limit of Detection (LLD) as described in Table 3.

b. Mean and range based upon detectable measurements only. Fraction of detectable measurements of specified locations is indicated in parenthesis (F).

Table 16

ENVIRONMENTAL GAMMA RADIATION LEVELS

| <u>Quarter</u>                  | <u>Location</u> | <u>Environmental Gamma Radiation Levels</u> |                   |
|---------------------------------|-----------------|---|-------------------|
|                                 |                 | <u>μR/Hour</u>                              | <u>mR/Quarter</u> |
| November 1978 -<br>January 1979 | On-Site (8)*    |   |                   |
|                                 | Maximum         | 11.0  | 24.1              |
|                                 | Minimum         | 9.7   | 21.2              |
|                                 | Average**       | 10.3 ± 0.9                                  | 22.6 ± 2.0        |
|                                 | Off-Site (10)   |   |                   |
|                                 | Maximum         | 10.8  | 23.6              |
| Minimum                         | 6.8             | 15.0  |                   |
| Average                         | 8.5 ± 2.5       | 18.7 ± 5.4                                  |                   |
| February-May 1979               | On-Site (8)     |   |                   |
|                                 | Maximum         | 10.1  | 22.2              |
|                                 | Minimum         | 7.6   | 16.6              |
|                                 | Average         | 8.9 ± 1.8                                   | 19.5 ± 4.0        |
|                                 | Off-Site (10)   |   |                   |
|                                 | Maximum         | 9.0   | 19.6              |
| Minimum                         | 6.8             | 14.8  |                   |
| Average                         | 8.0 ± 1.3       | 17.4 ± 2.8                                  |                   |
| June-July 1979                  | On-Site (7)     |   |                   |
|                                 | Maximum         | 8.6   | 18.8              |
|                                 | Minimum         | 6.8   | 15.0              |
|                                 | Average         | 7.9 ± 1.5                                   | 17.3 ± 3.2        |
|                                 | Off-Site (10)   |   |                   |
|                                 | Maximum         | 7.8   | 17.0              |
| Minimum                         | 5.4             | 11.8  |                   |
| Average                         | 6.4 ± 1.4       | 13.9 ± 3.0                                  |                   |
| August-October 1979             | On-Site (8)     |   |                   |
|                                 | Maximum         | 10.4  | 22.7              |
|                                 | Minimum         | 5.2   | 11.3              |
|                                 | Average         | 9.3 ± 3.6                                   | 20.4 ± 7.8        |
|                                 | Off-Site (10)   |   |                   |
|                                 | Maximum         | 8.2   | 17.9              |
| Minimum                         | 5.8             | 12.6  |                   |
| Average                         | 6.9 ± 1.5       | 15.2 ± 3.2                                  |                   |

\*Number of stations (normally three TLD's at each station)

\*\*All averages reported ±2σ



TABLE 17

## RADIOACTIVITY IN FOOD CROPS

PCI/KG - 0.037 BQ/KG (WET WEIGHT)

|  |  | NAME OF FACILITY <u>SEQUOYAH</u>     |              | DOCKET NO. <u>RH-80-7-592</u>     |                                |  |  |
|--|--|--------------------------------------|--------------|-----------------------------------|--------------------------------|--|--|
|  |  | LOCATION OF FACILITY <u>HAMILTON</u> |              | <u>TENNESSEE</u>                  |                                | REPORTING PERIOD <u>1979</u>                           |  |
| TYPE AND<br>TOTAL NUMBER<br>OF ANALYSIS<br>PERFORMED | LOWER LIMIT<br>OF<br>DETECTION<br>(LLD) <sup>a</sup> | ALL<br>INDICATOR LOCATIONS           |              | LOCATION WITH HIGHEST ANNUAL MEAN |                                | CONTROL<br>LOCATIONS<br>MEAN (F)<br>RANGE <sup>b</sup> | NUMBER OF<br>NONROUTINE<br>REPORTED<br>MEASUREMENTS <sup>4</sup> |
|  |  | MEAN (F)<br>RANGE <sup>b</sup>       |              | NAME<br>DISTANCE AND DIRECTION    | MEAN (F)<br>RANGE <sup>b</sup> |  |  |
| RADIOACTIVITY IN CORN                                |  |                                      |              |                                   |                                |  |  |
| GROSS BETA   | 25.000   | 4175.06( 1/ 1)                       | JONES FARM   | 4175.06( 1/ 1)                    |                                |  |  |
| 1  |  | 4175.06- 4175.06                     | 1.25 MILES W | 4175.06- 4175.06                  |                                |  |  |
| GAMMA (GELI)   |  |                                      |              |                                   |                                |  |  |
| 1  |  |                                      |              |                                   |                                |  |  |
| K-40   | NOT ESTAB  | 1685.00( 1/ 1)                       | JONES FARM   | 1685.00( 1/ 1)                    |                                |  |  |
|  |  | 1685.00- 1685.00                     | 1.25 MILES W | 1685.00- 1685.00                  |                                |  |  |
| TL-208   | NOT ESTAB  | 5.41( 1/ 1)                          | JONES FARM   | 5.41( 1/ 1)                       |                                |  |  |
|  |  | 5.41- 5.41                           | 1.25 MILES W | 5.41- 5.41                        |                                |  |  |
| RADIOACTIVITY IN GREEN BEANS                         |  |                                      |              |                                   |                                |  |  |
| GROSS BETA   | 25.000   | 6393.81( 1/ 1)                       | JONES FARM   | 6393.81( 1/ 1)                    | 4536.39( 1/ 1)                 |  |  |
| 2  |  | 6393.81- 6393.81                     | 1.25 MILES W | 6393.81- 6393.81                  | 4536.39- 4536.39               |  |  |
| GAMMA (GELI)   |  |                                      |              |                                   |                                |  |  |
| 2  |  |                                      |              |                                   |                                |  |  |
| K-40   | NOT ESTAB  | 2327.00( 1/ 1)                       | JONES FARM   | 2327.00( 1/ 1)                    | 2344.00( 1/ 1)                 |  |  |
|  |  | 2327.00- 2327.00                     | 1.25 MILES W | 2327.00- 2327.00                  | 2344.00- 2344.00               |  |  |
| PB-212   | NOT ESTAB  | 1 VALUES <LLD                        |              |                                   | 5.76( 1/ 1)                    |  |  |
|  |  |                                      |              |                                   | 5.76- 5.76                     |  |  |

a. Nominal Lower Limit of Detection (LLD) as described in Table 3.

b. Mean and range based upon detectable measurements only. Fraction of detectable measurements of specified locations is indicated in parenthesis (F).

TABLE 17 (Contd)

## RADIOACTIVITY IN FOOD CROPS

PCI/KG - 0.037 BQ/KG (WET WEIGHT)

NAME OF FACILITY SEQUOYAH DOCKET NO. RH-80-7-592  
 LOCATION OF FACILITY HAMILTON TENNESSEE REPORTING PERIOD 1979

| TYPE AND<br>TOTAL NUMBER<br>OF ANALYSIS<br>PERFORMED | LOWER LIMIT<br>OF<br>DETECTION<br>(LLD) <sup>a</sup> | ALL<br>INDICATOR LOCATIONS     |  | LOCATION WITH HIGHEST ANNUAL MEAN |                                | CONTROL<br>LOCATIONS<br>MEAN (F)<br>RANGE <sup>b</sup> | NUMBER OF<br>NONROUTINE<br>REPORTED<br>MEASUREMENTS <sup>c</sup> |
|--|--|--------------------------------|--|-----------------------------------|--------------------------------|--|--|
|  |  | MEAN (F)<br>RANGE <sup>b</sup> |  | NAME<br>DISTANCE AND DIRECTION    | MEAN (F)<br>RANGE <sup>b</sup> |  |  |
| RADIOACTIVITY IN TOMATOES                            |  |                                |  |                                   |                                |  |  |
| GROSS BETA   | 25.000   | 4606.08( 1/ 1)                 |  | JONES FARM                        | 4606.08( 1/ 1)                 | 5814.02( 1/ 1)   |  |
|  |  | 4606.08- 4606.08               |  | 1.25 MILES W                      | 4606.08- 4606.08               | 5814.02- 5814.02                                       |  |
| GAMMA (GELI)   |  |                                |  |                                   |                                |  |  |
| K-40   | NOT ESTAB  | 2821.00( 1/ 1)                 |  | JONES FARM                        | 2821.00( 1/ 1)                 | 2904.00( 1/ 1)   |  |
|  |  | 2821.00- 2821.00               |  | 1.25 MILES W                      | 2821.00- 2821.00               | 2904.00- 2904.00                                       |  |
| PB-212   | NOT ESTAB  | 5.63( 1/ 1)                    |  | JONES FARM                        | 5.63( 1/ 1)                    | 1 VALUES <LLD  |  |
|  |  | 5.63- 5.63                     |  | 1.25 MILES W                      | 5.63- 5.63                     |  |  |
| RADIOACTIVITY IN TURNIP GREENS                       |  |                                |  |                                   |                                |  |  |
| GROSS BETA   | 25.000   | 3718.92( 1/ 1)                 |  | JONES FARM                        | 3718.92( 1/ 1)                 | 9413.37( 1/ 1)   |  |
|  |  | 3718.92- 3718.92               |  | 1.25 MILES W                      | 3718.92- 3718.92               | 9413.37- 9413.37                                       |  |
| GAMMA (GELI)   |  |                                |  |                                   |                                |  |  |
| CS-137   | 5.000  | 15.69( 1/ 1)                   |  | JONES FARM                        | 15.69( 1/ 1)                   | 1 VALUES <LLD  |  |
|  |  | 15.69- 15.69                   |  | 1.25 MILES W                      | 15.69- 15.69                   |  |  |
| K-40   | NOT ESTAB  | 1701.00( 1/ 1)                 |  | JONES FARM                        | 1701.00( 1/ 1)                 | 2178.00( 1/ 1)   |  |
|  |  | 1701.00- 1701.00               |  | 1.25 MILES W                      | 1701.00- 1701.00               | 2178.00- 2178.00                                       |  |
| BI-214   | NOT ESTAB  | 18.18( 1/ 1)                   |  | JONES FARM                        | 18.18( 1/ 1)                   | 1 VALUES <LLD  |  |
|  |  | 18.18- 18.18                   |  | 1.25 MILES W                      | 18.18- 18.18                   |  |  |
| PB-214   | NOT ESTAB  | 1 VALUES <LLD                  |  |                                   |                                | 7.41( 1/ 1)  |  |
|  |  |                                |  |                                   |                                | 7.41- 7.41   |  |
| PB-212   | NOT ESTAB  | 18.02( 1/ 1)                   |  | JONES FARM                        | 18.02( 1/ 1)                   | 1 VALUES <LLD  |  |
|  |  | 18.02- 18.02                   |  | 1.25 MILES W                      | 18.02- 18.02                   |  |  |
| BE-7   | NOT ESTAB  | 138.50( 1/ 1)                  |  | JONES FARM                        | 138.50( 1/ 1)                  | 1 VALUES <LLD  |  |
|  |  | 138.50- 138.50                 |  | 1.25 MILES W                      | 138.50- 138.50                 |  |  |

a. Nominal Lower Limit of Detection (LLD) as described in Table 3.

b. Mean and range based upon detectable measurements only. Fraction of detectable measurements of specified locations is indicated in parenthesis (F).

TABLE 18

## RADIOACTIVITY IN POULTRY

PCI/KG - 0.037 BQ/KG (WET WEIGHT)

NAME OF FACILITY SEQUOYAH DOCKET NO. RH-80-7-502  
 LOCATION OF FACILITY HAMILTON TENNESSEE REPORTING PERIOD 1979

| TYPE AND<br>TOTAL NUMBER<br>OF ANALYSIS<br>PERFORMED<br>GAMMA (GELI) | LOWER LIMIT<br>OF<br>DETECTION<br>(LLD) <sup>a</sup> | ALL<br>INDICATOR LOCATIONS              |  | LOCATION WITH HIGHEST ANNUAL MEAN          |   | CONTROL<br>LOCATIONS<br>MEAN (F)<br>RANGE <sup>b</sup> | NUMBER OF<br>NONROUTINE<br>REPORTED<br>MEASUREMENTS <sup>c</sup> |
|--|--|---|--|--|---|--|--|
|  |  | MEAN (F)<br>RANGE <sup>b</sup>          |  | NAME<br>DISTANCE AND DIRECTION             | MEAN (F)<br>RANGE <sup>b</sup>          |  |  |
| K-40<br>2  | NOT ESTAB  | 7.30( 1/ 1)<br>7.30- 7.30               |  | JONES FARM<br>1.25 MILES W                 | 7.30( 1/ 1)<br>7.30- 7.30               | 1 VALUES <LLD  |  |
| BI-214   | NOT ESTAB  | 0.05( 1/ 1)<br>0.05- 0.05               |  | JONES FARM<br>1.25 MILES W                 | 0.05( 1/ 1)<br>0.05- 0.05               | 1 VALUES <LLD  |  |
| PB-214   | NOT ESTAB  | 0.06( 1/ 1)<br>0.06- 0.06               |  | JONES FARM<br>1.25 MILES W                 | 0.06( 1/ 1)<br>0.06- 0.06               | 1 VALUES <LLD  |  |
| PB-212   | NOT ESTAB  | 0.03( 1/ 1)<br>0.03- 0.03<br>0.03- 0.03 |  | JONES FARM<br>1.25 MILES W<br>1.25 MILES W | 0.03( 1/ 1)<br>0.03- 0.03<br>0.03- 0.03 | 1 VALUES <LLD  |  |

a. Nominal Lower Limit of Detection (LLD) as described in Table 3.

b. Mean and range based upon detectable measurements only. Fraction of detectable measurements of specified locations is indicated in parenthesis (F).

## Reservoir Monitoring

Samples are collected from the Tennessee River as detailed in Table 19. Samples collected for radiological analysis include water, plankton, and Asiatic clams from three of these cross sections, sediment from four cross sections, and fish from three contiguous reservoirs. The locations of these cross sections are shown on the accompanying map (figure 5) and conform to sediment ranges established and surveyed by the Data Services Branch, TVA.

### Water

Water samples are collected automatically by sequential type sampling devices at three cross sections and composite samples analyzed monthly for gross alpha and beta activity and gamma-emitting radionuclides. Further composites are made quarterly for strontium and tritium analyses. Sampling locations are shown in Table 19. During this reporting period, three samples were not collected because of the malfunction of automatic sampling equipment. Results are displayed in Table 20 and indicate the maximum beta concentration with reference to Table 5 is 0.34 percent MPC.

### Fish

Radiological monitoring for fish was accomplished by analyses of composite samples of adult fish taken semiannually from each of three contiguous reservoirs--Watts Bar, Chickamauga, and Nickajack. No permanent sampling stations have been established within each reservoir; this reflects the movement of fish species within reservoirs as determined by TVA data from the Browns Ferry Nuclear Plant preoperational monitoring program. Three species, white crappie, channel catfish, and smallmouth buffalo, are collected representing both commercial and game species. Sufficient fish are collected in each reservoir to yield 250 or 300 grams oven-dry weight for analytical purposes. All samples were analyzed for gamma, gross alpha, gross beta  $^{89}\text{Sr}$ , and  $^{90}\text{Sr}$  activity. The composite samples contained approximately the same quantity of flesh from each fish. For each composite a subsample of material was drawn for counting. Results are given in Tables 21, 22, 23, and 24.

### Plankton

As indicated in Table 19, net plankton was collected for radiological analyses at three stations by vertical tows with a one-half meter, 100 micro-mesh net. For analytical accuracy, at least 50 grams (wet weight) of material is required; and collection of such amounts is usually practical only during the period April to September because of seasonal variability

in plankton abundance. Samples were analyzed for gross beta activity. Sample quantities were not sufficient for the analysis of specific gamma-emitting radionuclides,  $^{89}\text{Sr}$  and  $^{90}\text{Sr}$ , and three samples yielded insufficient quantities for gross beta analyses. Sample results are given in Table 25.

#### Sediment

Sediment samples were collected from dredge hauls made for bottom fauna. Gamma, gross alpha, and gross beta activity and  $^{89}\text{Sr}$  and  $^{90}\text{Sr}$  content were determined in samples collected from points in four cross sections. Each sample was a composite obtained by combining equal volumes of sediment from each of three dredge hauls at a point in the cross section. Results are given in Table 26.

#### Asiatic Clams

Samples of Asiatic clams were collected with a Ponar dredge from three stations and analyzed for gamma, gross alpha, and gross beta activity. The  $^{89}\text{Sr}$  and  $^{90}\text{Sr}$  content was determined in the shells. Results are given in Tables 27 and 28.

Table 19

SAMPLING SCHEDULE - RESERVOIR MONITORING

| <u>Tennessee River •</u><br><u>(Mile)</u> | <u>Biological Samples</u>   |                                 |                  |               | <u>Water Samples</u> |
|---|---|---------------------------------|------------------|---------------|----------------------|
|   | <u>Zooplankton,</u><br><u>Chlorophyll,</u><br><u>Phytoplankton*</u> | <u>Benthic</u><br><u>Fauna*</u> | <u>Sediment*</u> | <u>Fish**</u> |                      |
| 472.8                                     | ****  |                                 | 2                |               |                      |
| 473.2                                     |   |                                 |                  |               | Automatic sampler*** |
| 480.8                                     | 2   | 1                               | 2                |               |                      |
| 483.4                                     | 2   | 1                               | 2                |               | Automatic sampler*** |
| 483.6                                     |   |                                 |                  |               | Grab sample          |
| 496.5                                     | 2   | 1                               | 2                |               |                      |
| 497.0                                     |   |                                 |                  |               | Automatic sampler*** |

\*Replicate samples.

\*\*Fish samples are taken from Watts Bar, Chickamauga, and Nickajack Reservoirs.

\*\*\*Composite sample analyzed monthly.

\*\*\*\*Samples taken during one sampling period only.

# RESERVOIR MONITORING NETWORK SEQUOYAH NUCLEAR PLANT

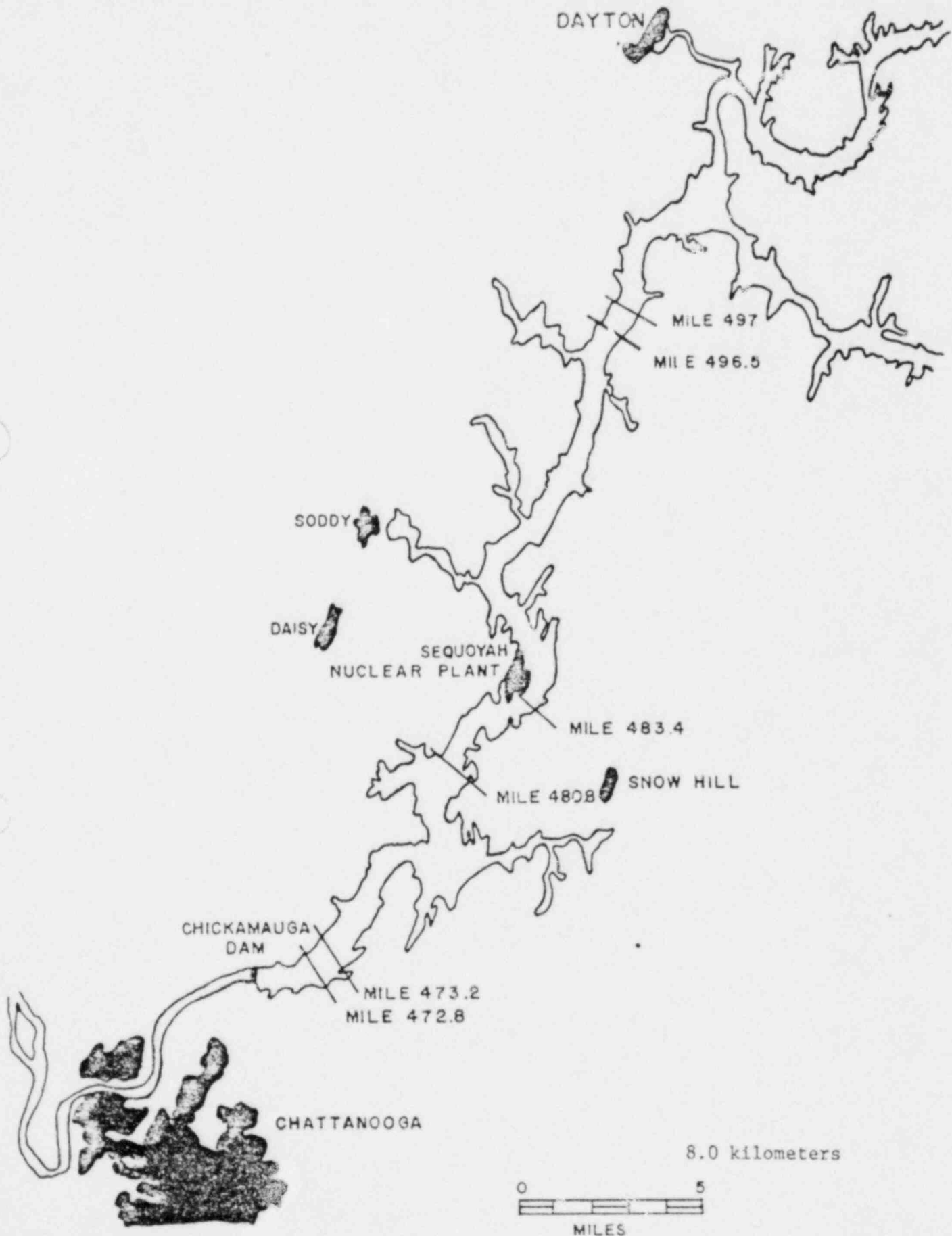


TABLE 20

## RADIOACTIVITY IN SURFACE WATER TOTAL

PCI/L - 0.037 BQ/L

NAME OF FACILITY SEQUOYAH DOCKET NO. RH-80-7-502  
 LOCATION OF FACILITY HAMILTON TENNESSEE REPORTING PERIOD 1979

| TYPE AND<br>TOTAL NUMBER<br>OF ANALYSIS<br>PERFORMED | LOWER LIMIT<br>OF<br>DETECTION<br>(LLD) <sup>a</sup> | ALL<br>INDICATOR LOCATIONS     |  | LOCATION WITH HIGHEST ANNUAL MEAN |                                | CONTROL<br>LOCATIONS           |  | NUMBER OF<br>NONROUTINE<br>REPORTED<br>MEASUREMENTS * |
|--|--|--------------------------------|--|-----------------------------------|--------------------------------|--------------------------------|--|---|
|  |  | MEAN (F)<br>RANGE <sup>b</sup> |  | NAME<br>DISTANCE AND DIRECTION    | MEAN (F)<br>RANGE <sup>b</sup> | MEAN (F)<br>RANGE <sup>b</sup> |  |   |
| GROSS ALPHA  | 2.000  | 26 VALUES <LLD                 |  |                                   |                                | 3.60( 1/ 10)                   |  |   |
| 36   |  |                                |  |                                   |                                | 3.60- 3.60                     |  |   |
| GROSS BETA   | 2.400  | 4.56( 16/ 26)                  |  | TRM 483.4                         | 5.67( 9/ 13)                   | 5.38( 5/ 10)                   |  |   |
| 36   |  | 2.46- 10.26                    |  |                                   | 2.47- 10.26                    | 2.60- 9.22                     |  |   |
| GAMMA (NAI)  |  |                                |  |                                   |                                |                                |  |   |
| 33   |  |                                |  |                                   |                                |                                |  |   |
| RN-222   | NOT ESTAB  | 14.96( 13/ 24)                 |  | TRM 473.2                         | 17.31( 7/ 13)                  | 18.65( 4/ 9)                   |  |   |
| 33   |  | 2.70- 24.20                    |  |                                   | 11.60- 24.20                   | 12.40- 31.80                   |  |   |
| GAMMA (GELI)   |  |                                |  |                                   |                                |                                |  |   |
| 3  |  |                                |  |                                   |                                |                                |  |   |
| K-40   | NOT ESTAB  | 100.10( 1/ 2)                  |  | TRM 483.4                         | 100.10( 1/ 2)                  | 73.82( 1/ 1)                   |  |   |
| 3  |  | 100.10- 100.10                 |  |                                   | 100.10- 100.10                 | 73.82- 73.82                   |  |   |
| BI-214   | NOT ESTAB  | 23.65( 2/ 2)                   |  | TRM 483.4                         | 23.65( 2/ 2)                   | 52.32( 1/ 1)                   |  |   |
| 3  |  | 12.41- 34.88                   |  |                                   | 12.41- 34.88                   | 52.32- 52.32                   |  |   |
| PB-214   | NOT ESTAB  | 23.63( 1/ 2)                   |  | TRM 483.4                         | 23.63( 1/ 2)                   | 24.89( 1/ 1)                   |  |   |
| 3  |  | 23.63- 23.63                   |  |                                   | 23.63- 23.63                   | 24.89- 24.89                   |  |   |
| PB-212   | NOT ESTAB  | 15.04( 2/ 2)                   |  | TRM 483.4                         | 15.04( 2/ 2)                   | 12.44( 1/ 1)                   |  |   |
| 3  |  | 11.33- 18.75                   |  |                                   | 11.33- 18.75                   | 12.44- 12.44                   |  |   |
| SR 89  | 10.000   | 8 VALUES <LLD                  |  |                                   |                                | 4 VALUES <LLD                  |  |   |
| 12   |  | ANALYSIS PERFORMED             |  |                                   |                                | 4 VALUES <LLD                  |  |   |
| SR 90  | 2.000  | 8 VALUES <LLD                  |  |                                   |                                | 4 VALUES <LLD                  |  |   |
| 12   |  | ANALYSIS PERFORMED             |  |                                   |                                | 4 VALUES <LLD                  |  |   |
| TRITIUM  | 330.000  | 475.33( 3/ 8)                  |  | TRM 473.2                         | 481.50( 2/ 4)                  | 534.00( 1/ 4)                  |  |   |
| 12   |  | 454.00- 509.00                 |  |                                   | 454.00- 509.00                 | 534.00- 534.00                 |  |   |

a. Nominal Lower Limit of Detection (LLD) as described in Table 3.

b. Mean and range based upon detectable measurements only. Fraction of detectable measurements of specified locations is indicated in parenthesis (F).



TABLE 21

## RADIOACTIVITY IN CHANNEL CATFISH (FLESH)

PCI/G - 0.037 BQ/G (DRY WEIGHT)

NAME OF FACILITY SEQUOYAH DOCKET NO. RH-80-7-502  
 LOCATION OF FACILITY HAMILTON TENNESSEE REPORTING PERIOD 1979

| TYPE AND<br>TOTAL NUMBER<br>OF ANALYSIS<br>PERFORMED | LOWER LIMIT<br>OF<br>DETECTION<br>(LLD) <sup>a</sup> | ALL<br>INDICATOR LOCATIONS<br>MEAN (F)<br>RANGE <sup>b</sup> |              | LOCATION WITH HIGHEST ANNUAL MEAN<br>NAME<br>MEAN (F)<br>RANGE <sup>b</sup> |              | CONTROL<br>LOCATIONS<br>MEAN (F)<br>RANGE <sup>b</sup> |              | NUMBER OF<br>NONROUTINE<br>REPORTED<br>MEASUREMENTS |
|--|--|--|--------------|---|--------------|--|--------------|---|
|  |  | 4 VALUES <LLD<br>ANALYSIS PERFORMED                          |              | DISTANCE AND DIRECTION  |              | 2 VALUES <LLD  |              |   |
| GROSS ALPHA  | 0.100  | 4 VALUES <LLD<br>ANALYSIS PERFORMED                          |              |   |              | 2 VALUES <LLD  |              |   |
| GROSS BETA   | 0.100  | 25.54( 4/ 4)   | 15.72- 33.44 | CHICKAMAUGA RES   | 33.30( 2/ 2) | 28.68( 2/ 2)   | 26.46- 30.90 |   |
| GAMMA (GELI)   |  |  |              |   |              |  |              |   |
| CS-137   | 0.020  | 0.09( 4/ 4)  | 0.03- 0.16   | CHICKAMAUGA RES   | 0.13( 2/ 2)  | 0.16( 2/ 2)  | 0.12- 0.20   |   |
| K-40   | NOT ESTAB  | 15.33( 4/ 4)   | 9.68- 22.01  | CHICKAMAUGA RES   | 19.01( 2/ 2) | 15.96( 2/ 2)   | 12.87- 19.04 |   |
| BI-214   | 0.020  | 0.25( 4/ 4)  | 0.06- 0.53   | CHICKAMAUGA RES   | 0.30( 2/ 2)  | 0.35( 2/ 2)  | 0.32- 0.38   |   |
| PB-214   | NOT ESTAB  | 0.17( 4/ 4)  | 0.07- 0.31   | CHICKAMAUGA RES   | 0.19( 2/ 2)  | 0.16( 1/ 2)  | 0.16- 0.16   |   |
| PB-212   | NOT ESTAB  | 0.03( 1/ 4)  | 0.03- 0.03   | CHICKAMAUGA RES   | 0.03( 1/ 2)  | 0.12( 1/ 2)  | 0.12- 0.12   |   |
| SR 89  | 0.500  | 4 VALUES <LLD<br>ANALYSIS PERFORMED                          |              | TRM 471-530   | 0.03- 0.03   | 2 VALUES <LLD  |              |   |
| SR 90  | 0.100  | 4 VALUES <LLD<br>ANALYSIS PERFORMED                          |              |   |              | 2 VALUES <LLD  |              |   |

a. Nominal Lower Limit of Detection (LLD) as described in Table 3.

b. Mean and range based upon detectable measurements only. Fraction of detectable measurements of specified locations is indicated in parenthesis (F).

TABLE 22

## RADIOACTIVITY IN WHITE CRAPPIE (FLESH)

PCI/G - 0.037 BQ/G (DRY WEIGHT)

|  |  | NAME OF FACILITY <u>SEQUOYAH</u>                             |              | DOCKET NO. <u>RH-80-7-502</u>   |              |  |  |
|--|--|--|--------------|---|--------------|--|--|
|  |  | LOCATION OF FACILITY <u>HAMILTON</u>                         |              | REPORTING PERIOD <u>1979</u>  |              |  |  |
| TYPE AND<br>TOTAL NUMBER<br>OF ANALYSIS<br>PERFORMED | LOWER LIMIT<br>OF<br>DETECTION<br>(LLD) <sup>a</sup> | ALL<br>INDICATOR LOCATIONS<br>MEAN (F)<br>RANGE <sup>b</sup> |              | LOCATION WITH HIGHEST ANNUAL MEAN<br>NAME<br>MEAN (F)<br>RANGE <sup>b</sup> |              | CONTROL<br>LOCATIONS<br>MEAN (F)<br>RANGE <sup>b</sup> | NUMBER OF<br>NONROUTINE<br>REPORTED<br>MEASUREMENTS <sup>c</sup> |
|  |  | DISTANCE AND DIRECTION                                       |              | DISTANCE AND DIRECTION  |              |  |  |
| GROSS ALPHA  | 0.100  | 4 VALUES <LLD  |              |   |              | 2 VALUES <LLD  |  |
| 6  |  | ANALYSIS PERFORMED   |              |   |              |  |  |
| GROSS BETA   | 0.100  | 33.81( 4/ 4)   | 24.10- 45.91 | CHICKAMAUGA RES   | 39.65( 2/ 2) | 34.67( 2/ 2)   |  |
| 6  |  |  |              | TRM 471-530   | 33.38- 45.91 | 34.39- 34.94   |  |
| GAMMA (GELI)   |  |  |              |   |              |  |  |
| 6  |  |  |              |   |              |  |  |
| CS-137   | 0.020  | 0.12( 4/ 4)  | 0.05- 0.15   | CHICKAMAUGA RES   | 0.15( 2/ 2)  | 0.25( 2/ 2)  |  |
|  |  |  |              | TRM 471-530   | 0.14- 0.15   | 0.22- 0.29   |  |
| K-40   | NOT ESTAB  | 17.59( 4/ 4)   | 12.10- 20.89 | CHICKAMAUGA RES   | 19.65( 2/ 2) | 20.38( 2/ 2)   |  |
|  |  |  |              | TRM 471-530   | 18.41- 20.89 | 19.81- 20.94   |  |
| BI-214   | 0.020  | 0.29( 2/ 4)  | 0.28- 0.30   | CHICKAMAUGA RES   | 0.30( 1/ 2)  | 0.39( 2/ 2)  |  |
|  |  |  |              | TRM 471-530   | 0.30- 0.30   | 0.38- 0.40   |  |
| PB-214   | NOT ESTAB  | 0.10( 3/ 4)  | 0.01- 0.16   | NICKAJACK RES   | 0.13( 1/ 2)  | 0.29( 2/ 2)  |  |
|  |  |  |              | TRM 425-471   | 0.13- 0.13   | 0.25- 0.32   |  |
| PB-212   | NOT ESTAB  | 0.05( 2/ 4)  | 0.04- 0.06   | NICKAJACK RES   | 0.06( 1/ 2)  | 0.17( 1/ 2)  |  |
|  |  |  |              | TRM 425-471   | 0.06- 0.06   | 0.17- 0.17   |  |
| SR 89  | 0.500  | 4 VALUES <LLD  |              |   |              | 0.69( 1/ 2)  |  |
| 6  |  |  |              |   |              | 0.69- 0.69   |  |
| SR 90  | 0.100  | 4 VALUES <LLD  |              |   |              | 2 VALUES <LLD  |  |
| 6  |  | ANALYSIS PERFORMED   |              |   |              |  |  |

a. Nominal Lower Limit of Detection (LLD) as described in Table 3.

b. Mean and range based upon detectable measurements only. Fraction of detectable measurements of specified locations is indicated in parenthesis (F).

TABLE 23

## RADIOACTIVITY IN SMALLMOUTH BUFFALO (FLESH)

PCI/G - 0.037 BQ/G (DRY WEIGHT)

NAME OF FACILITY SEQUOYAH DOCKET NO. RH-80-7-502  
 LOCATION OF FACILITY HAMILTON TENNESSEE REPORTING PERIOD 1979

| TYPE AND<br>TOTAL NUMBER<br>OF ANALYSIS<br>PERFORMED | LOWER LIMIT<br>OF<br>DETECTION<br>(LLD) <sup>a</sup> | ALL<br>INDICATOR LOCATIONS          |                    | LOCATION WITH HIGHEST ANNUAL MEAN |              | CONTROL<br>LOCATIONS |              | NUMBER OF<br>NONROUTINE<br>REPORTED<br>MEASUREMENTS |
|--|--|-------------------------------------|--------------------|-----------------------------------|--------------|----------------------|--------------|---|
|  |  | MEAN (F)                            | RANGE <sup>b</sup> | NAME                              | MEAN (F)     | RANGE <sup>b</sup>   | MEAN (F)     |   |
| GROSS ALPHA  | 0.100  | 4 VALUES <LLD<br>ANALYSIS PERFORMED |                    | DISTANCE AND DIRECTION            |              | 2 VALUES <LLD        |              |   |
| 6  |  |                                     |                    |                                   |              |                      |              |   |
| GROSS BETA   | 0.100  | 24.80( 4/ 4)                        | 12.86- 34.06       | CHICKAMAUGA RES                   | 30.58( 2/ 2) | 27.91( 2/ 2)         | 26.10- 29.72 |   |
| 6  |  |                                     |                    | TRM 471-530                       | 27.90- 34.06 |                      |              |   |
| GAMMA (GELI)   |  |                                     |                    |                                   |              |                      |              |   |
| 6  |  |                                     |                    |                                   |              |                      |              |   |
| CS-137   | 0.020  | 0.03( 1/ 4)                         | 0.03- 0.03         | NICKAJACK RES                     | 0.03( 1/ 2)  | 0.12( 2/ 2)          | 0.11- 0.13   |   |
| K-40   | NOT ESTAB  | 12.57( 4/ 4)                        | 8.64- 16.37        | TRM 425-471                       | 0.03- 0.03   |                      |              |   |
| HI-214   | 0.020  | 0.29( 3/ 4)                         | 0.23- 0.38         | CHICKAMAUGA RES                   | 15.80( 2/ 2) | 14.02( 2/ 2)         | 12.19- 15.84 |   |
| PB-214   | NOT ESTAB  | 0.13( 3/ 4)                         | 0.07- 0.17         | TRM 471-530                       | 15.23- 16.37 |                      |              |   |
| PB-212   | NOT ESTAB  | 0.11( 3/ 4)                         | 0.02- 0.23         | NICKAJACK RES                     | 0.38( 1/ 2)  | 0.19( 2/ 2)          | 0.12- 0.26   |   |
| TL-208   | 0.020  | 0.07( 1/ 4)                         | 0.07- 0.07         | TRM 425-471                       | 0.38- 0.38   | 0.17( 1/ 2)          | 0.17- 0.17   |   |
| SR 89  | 0.500  | 4 VALUES <LLD<br>ANALYSIS PERFORMED |                    | NICKAJACK RES                     | 0.23( 1/ 2)  | 0.07( 1/ 2)          | 0.07- 0.07   |   |
| 6  |  |                                     |                    | TRM 425-471                       | 0.23- 0.23   |                      |              |   |
| SR 90  | 0.100  | 4 VALUES <LLD<br>ANALYSIS PERFORMED |                    |                                   | 0.07( 1/ 2)  | 2 VALUES <LLD        |              |   |
| 6  |  |                                     |                    |                                   | 0.07- 0.07   | 2 VALUES <LLD        |              |   |

a. Nominal Lower Limit of Detection (LLD) as described in Table 3.

b. Mean and range based upon detectable measurements only. Fraction of detectable measurements of specified locations is indicated in parenthesis (F).

TABLE 24

## RADIOACTIVITY IN SMALLMOUTH BUFFALO (WHOLE)

PCI/G - 0.037 BQ/G (DRY WEIGHT)

NAME OF FACILITY SEQUOYAH DOCKET NO. RH-80-7-502  
 LOCATION OF FACILITY HAMILTON TENNESSEE REPORTING PERIOD 1979

| TYPE AND<br>TOTAL NUMBER<br>OF ANALYSIS<br>PERFORMED | LOWER LIMIT<br>OF<br>DETECTION<br>(LLD) <sup>a</sup> | ALL<br>INDICATOR LOCATIONS |                    | LOCATION WITH HIGHEST ANNUAL MEAN |                                | CONTROL<br>LOCATIONS           |  | NUMBER OF<br>NONROUTINE<br>REPORTED<br>MEASUREMENTS * |
|--|--|----------------------------|--------------------|-----------------------------------|--------------------------------|--------------------------------|--|---|
|  |  | MEAN (F)                   | RANGE <sup>b</sup> | NAME<br>DISTANCE AND DIRECTION    | MEAN (F)<br>RANGE <sup>b</sup> | MEAN (F)<br>RANGE <sup>b</sup> |  |   |
| GROSS ALPHA  | 0.100  | 0.13( 2/ 4)                |                    | CHICKAMAUGA RES                   | 0.14( 1/ 2)                    | 2 VALUES <LLD                  |  |   |
| 6  |  | 0.11- 0.14                 |                    | TRM 471-530                       | 0.14- 0.14                     |                                |  |   |
| GROSS BETA   | 0.100  | 20.10( 4/ 4)               |                    | CHICKAMAUGA RES                   | 21.52( 2/ 2)                   | 19.04( 2/ 2)                   |  |   |
| 6  |  | 17.94- 22.83               |                    | TRM 471-530                       | 20.21- 22.83                   | 14.66- 23.42                   |  |   |
| GAMMA (GELI)   |  |                            |                    |                                   |                                |                                |  |   |
| 6  |  |                            |                    |                                   |                                |                                |  |   |
| CS-137   | 0.020  | 0.05( 4/ 4)                |                    | CHICKAMAUGA RES                   | 0.06( 2/ 2)                    | 0.04( 1/ 2)                    |  |   |
|  |  | 0.04- 0.06                 |                    | TRM 471-530                       | 0.06- 0.06                     | 0.04- 0.04                     |  |   |
| K-40   | NOT ESTAB  | 8.51( 4/ 4)                |                    | CHICKAMAUGA RES                   | 8.93( 2/ 2)                    | 8.30( 2/ 2)                    |  |   |
|  |  | 6.78- 9.42                 |                    | TRM 471-530                       | 8.44- 9.42                     | 6.23- 10.37                    |  |   |
| BI-214   | 0.020  | 0.19( 4/ 4)                |                    | NICKAJACK RES                     | 0.20( 2/ 2)                    | 0.16( 2/ 2)                    |  |   |
|  |  | 0.07- 0.26                 |                    | TRM 425-471                       | 0.15- 0.26                     | 0.05- 0.28                     |  |   |
| PB-214   | NOT ESTAB  | 0.12( 4/ 4)                |                    | NICKAJACK RES                     | 0.14( 2/ 2)                    | 0.11( 2/ 2)                    |  |   |
|  |  | 0.05- 0.19                 |                    | TRM 425-471                       | 0.10- 0.17                     | 0.08- 0.15                     |  |   |
| PB-212   | NOT ESTAB  | 0.05( 2/ 4)                |                    | NICKAJACK RES                     | 0.07( 1/ 2)                    | 0.02( 1/ 2)                    |  |   |
|  |  | 0.04- 0.07                 |                    | TRM 425-471                       | 0.07- 0.07                     | 0.02- 0.02                     |  |   |
| TL-208   | 0.020  | 0.03( 2/ 4)                |                    | NICKAJACK RES                     | 0.03( 2/ 2)                    | 2 VALUES <LLD                  |  |   |
|  |  | 0.02- 0.03                 |                    | TRM 425-471                       | 0.02- 0.03                     |                                |  |   |
| SR 89  | 0.500  | 1.18( 2/ 4)                |                    | CHICKAMAUGA RES                   | 1.18( 2/ 2)                    | 2 VALUES <LLD                  |  |   |
| 6  |  | 0.85- 1.50                 |                    | TRM 471-530                       | 0.85- 1.50                     |                                |  |   |
| SR 90  | 0.100  | 0.18( 4/ 4)                |                    | NICKAJACK RES                     | 0.26( 2/ 2)                    | 0.24( 2/ 2)                    |  |   |
| 6  |  | 0.11- 0.40                 |                    | TRM 425-471                       | 0.11- 0.40                     | 0.14- 0.33                     |  |   |

a. Nominal Lower Limit of Detection (LLD) as described in Table 3.

b. Mean and range based upon detectable measurements only. Fraction of detectable measurements of specified locations is indicated in parenthesis (F).

TABLE 25

## RADIOACTIVITY IN PLANKTON

PCI/G - 0.037 BQ/G (DRY WEIGHT)

NAME OF FACILITY SEQUOYAH DOCKET NO. RH-80-7-592  
 LOCATION OF FACILITY HAMILTON TENNESSEE REPORTING PERIOD 1979

| TYPE AND<br>TOTAL NUMBER<br>OF ANALYSIS<br>PERFORMED | LOWER LIMIT<br>OF<br>DETECTION<br>(LLD) <sup>a</sup> | ALL<br>INDICATOR LOCATIONS     |  | LOCATION WITH HIGHEST ANNUAL MEAN |                                 | CONTROL<br>LOCATIONS<br>MEAN (F)<br>RANGE <sup>b</sup> | NUMBER OF<br>NONROUTINE<br>REPORTED<br>MEASUREMENTS <sup>1</sup> |
|--|--|--------------------------------|--|-----------------------------------|---------------------------------|--|--|
|  |  | MEAN (F)<br>RANGE <sup>b</sup> |  | NAME<br>DISTANCE AND DIRECTION    | MEAN (F)<br>RANGE <sup>b</sup>  |  |  |
| GROSS BETA<br>9                                      | 0.100  | 28.62 ( 7 / 7 )<br>9.40- 69.77 |  | TRM 493.4                         | 32.12 ( 3 / 3 )<br>14.55- 58.55 | 50.03 ( 2 / 2 )<br>49.96- 50.09                        |  |

a. Nominal Lower Limit of Detection (LLD) as described in Table 3.

b. Mean and range based upon detectable measurements only. Fraction of detectable measurements of specified locations is indicated in parenthesis (F).

TABLE 26

## RADIOACTIVITY IN SEDIMENT

PCI/G - 0.037 BQ/G (DRY WEIGHT)

NAME OF FACILITY SEQUOYAH DOCKET NO. RH-80-7-502  
 LOCATION OF FACILITY HAMILTON TENNESSEE REPORTING PERIOD 1979

| TYPE AND<br>TOTAL NUMBER<br>OF ANALYSIS<br>PERFORMED | LOWER LIMIT<br>OF<br>DETECTION<br>(LLD) <sup>a</sup> | ALL<br>INDICATOR LOCATIONS<br>MEAN (F)<br>RANGE <sup>b</sup> |              | LOCATION WITH HIGHEST ANNUAL MEAN<br>NAME<br>DISTANCE AND DIRECTION<br>MEAN (F)<br>RANGE <sup>b</sup> |                              | CONTROL<br>LOCATIONS<br>MEAN (F)<br>RANGE <sup>b</sup> |  | NUMBER OF<br>NONROUTINE<br>REPORTED<br>MEASUREMENTS <sup>c</sup> |
|--|--|--|--------------|---|------------------------------|--|--|--|
|  |  |  |              |   |                              |  |  |  |
| GROSS ALPHA<br>16                                    | 0.350  | 11.92( 12/ 12)   | 6.93- 16.79  | TRM 480.82  | 14.82( 4/ 4)<br>13.36- 16.79 | 11.15( 4/ 4)<br>8.60- 13.95                            |  |  |
| GROSS BETA<br>16                                     | 0.700  | 52.89( 12/ 12)   | 31.30- 63.82 | TRM 480.82  | 60.27( 4/ 4)<br>54.74- 63.82 | 44.88( 4/ 4)<br>36.08- 55.28                           |  |  |
| GAMMA (GELI)<br>16                                   |  |  |              |   |                              |  |  |  |
| CE-144   | 0.060  | 0.15( 1/ 12)   | 0.15- 0.15   | TRM 472.80  | 0.15( 1/ 4)<br>0.15- 0.15    | 0.40( 1/ 4)<br>0.40- 0.40                              |  |  |
| CO-60  | 0.010  | 0.22( 9/ 12)   | 0.07- 0.33   | TRM 480.82  | 0.26( 4/ 4)<br>0.20- 0.33    | 0.16( 4/ 4)<br>0.13- 0.21                              |  |  |
| CS-137   | 0.020  | 2.65( 12/ 12)  | 0.18- 6.37   | TRM 472.80  | 4.16( 4/ 4)<br>1.08- 6.37    | 1.65( 4/ 4)<br>1.17- 2.31                              |  |  |
| K-40   | NOT ESTAB  | 16.05( 12/ 12)   | 10.40- 21.39 | TRM 480.82  | 18.13( 4/ 4)<br>16.58- 21.39 | 13.94( 4/ 4)<br>11.22- 15.91                           |  |  |
| BI-214   | 0.020  | 1.32( 12/ 12)  | 0.66- 1.71   | TRM 480.82  | 1.48( 4/ 4)<br>1.28- 1.71    | 0.97( 4/ 4)<br>0.77- 1.20                              |  |  |
| BI-212   | 0.100  | 1.05( 12/ 12)  | 0.54- 1.29   | TRM 480.82  | 1.09( 4/ 4)<br>0.93- 1.29    | 0.80( 4/ 4)<br>0.51- 1.14                              |  |  |
| PB-214   | NOT ESTAB  | 1.38( 12/ 12)  | 0.66- 1.83   | TRM 490.82  | 1.57( 4/ 4)<br>1.32- 1.83    | 0.99( 4/ 4)<br>0.77- 1.21                              |  |  |
| PB-212   | NOT ESTAB  | 1.67( 12/ 12)  | 0.81- 2.21   | TRM 480.82  | 1.86( 4/ 4)<br>1.66- 2.21    | 1.17( 4/ 4)<br>0.95- 1.55                              |  |  |
| RA-226   | NOT ESTAB  | 1.32( 11/ 12)  | 0.66- 1.71   | TRM 480.82  | 1.48( 4/ 4)<br>1.28- 1.71    | 0.97( 4/ 4)<br>0.77- 1.20                              |  |  |
| RA-223   | NOT ESTAB  | 0.40( 3/ 12)   | 0.23- 0.58   | TRM 483.4   | 0.58( 1/ 4)<br>0.58- 0.58    | 4 VALUES <LLD  |  |  |
| BE-7   | NOT ESTAB  | 12 VALUES <LLD   |              |   |                              | 0.94( 1/ 4)<br>0.94- 0.94                              |  |  |
| TL-208   | 0.020  | 0.57( 12/ 12)  | 0.27- 0.75   | TRM 480.82  | 0.60( 4/ 4)<br>0.51- 0.70    | 0.41( 4/ 4)<br>0.33- 0.50                              |  |  |
| AC-228   | 0.060  | 1.71( 12/ 12)  | 0.82- 2.32   | TRM 480.82  | 1.86( 4/ 4)<br>1.58- 2.32    | 1.26( 4/ 4)<br>1.00- 1.70                              |  |  |
| PA-228   | NOT ESTAB  | 0.07( 1/ 12)   | 0.07- 0.07   | TRM 483.4   | 0.07( 1/ 4)<br>0.07- 0.07    | 4 VALUES <LLD  |  |  |
| SR 89  | 1.500  | 12 VALUES <LLD   |              |   |                              | 4 VALUES <LLD  |  |  |
| SR 90  | 0.300  | ANALYSIS PERFORMED   |              |   |                              |  |  |  |
|  | 16   | 0.45( 2/ 12)   | 0.37- 0.52   | TRM 472.80  | 0.45( 2/ 4)<br>0.37- 0.52    | 4 VALUES <LLD  |  |  |

a. Nominal Lower Limit of Detection (LLD) as described in Table 3.

b. Mean and range based upon detectable measurements only. Fraction of detectable measurements of specified locations is indicated in parenthesis (F).

TABLE 27  
RADIOACTIVITY IN CLAM FLESH  
PCI/G - 0.037 BQ/G (DRY WEIGHT)

| TYPE AND<br>TOTAL NUMBER<br>OF ANALYSIS<br>PERFORMED | LOWER LIMIT<br>OF<br>DETECTION<br>(LLD) <sup>a</sup> | NAME OF FACILITY           |          | LOCATION OF FACILITY |                                   | NAME OF FACILITY |                    | LOCATION OF FACILITY             |                    | DOCKET NO. RM-80-7-SG2 |  | REPORTING PERIOD 1979 |  | NUMBER OF<br>NONROUTINE<br>REPORTED<br>MEASUREMENTS <sup>b</sup> |
|--|--|----------------------------|----------|----------------------|-----------------------------------|------------------|--------------------|----------------------------------|--------------------|------------------------|--|-----------------------|--|--|
|  |  | HAMILTON                   |          | TENNESSEE            |                                   | SEQUOYAH         |                    | HAMILTON                         |                    | RM-80-7-SG2            |  | 1979                  |  |  |
|  |  | ALL<br>INDICATOR LOCATIONS | MEAN (F) | RANGE <sup>b</sup>   | LOCATION WITH HIGHEST ANNUAL MEAN | MEAN (F)         | RANGE <sup>b</sup> | CONTROL<br>LOCATIONS<br>MEAN (F) | RANGE <sup>b</sup> |                        |  |                       |  |  |
| 12<br>GROSS ALPHA                                    | 0.100  | 0.73( 8/ 8)                | 0.29-    | TRM 480.82           | 0.84( 4/ 4)                       | 0.64-            | 0.77( 4/ 4)        | 0.63-                            | 0.95               |                        |  |                       |  |  |
| 12<br>GROSS BETA                                     | 0.100  | 6.63( 8/ 8)                | 0.15-    | TRM 480.82           | 6.95( 4/ 4)                       | 0.15-            | 8.41( 4/ 4)        | 3.79-                            | 11.75              |                        |  |                       |  |  |
| 12<br>GAMMA (GELI)                                   |  |                            |          |                      |                                   |                  |                    |                                  |                    |                        |  |                       |  |  |
| 12<br>A-40   | NOT ESTAB  | 7.33( 5/ 8)                | 5.20-    | TRM 483.4            | 7.76( 2/ 4)                       | 7.76( 2/ 4)      | 10.94( 3/ 4)       | 9.37-                            | 12.61              |                        |  |                       |  |  |
| 12<br>BI-214   | NOT ESTAB  | 0.83( 6/ 8)                | 0.43-    | TRM 483.4            | 0.91( 3/ 4)                       | 0.91( 3/ 4)      | 2.09( 2/ 4)        | 2.05-                            | 2.14               |                        |  |                       |  |  |
| 12<br>PB-214   | NOT ESTAB  | 0.98( 4/ 8)                | 0.58-    | TRM 483.4            | 1.04( 2/ 4)                       | 1.04( 2/ 4)      | 1.23( 4/ 4)        | 0.47-                            | 2.35               |                        |  |                       |  |  |
| 12<br>PB-212   | NOT ESTAB  | 0.43( 6/ 8)                | 0.23-    | TRM 483.4            | 0.45( 2/ 4)                       | 0.45( 2/ 4)      | 0.98( 2/ 4)        | 0.70-                            | 1.25               |                        |  |                       |  |  |
| 12<br>TL-208   | NOT ESTAB  | 0.14( 1/ 8)                | 0.14-    | TRM 480.82           | 0.14( 1/ 4)                       | 0.14( 1/ 4)      | 0.41( 2/ 4)        | 0.32-                            | 0.50               |                        |  |                       |  |  |
| 12<br>AC-228   | NOT ESTAB  | 1.02( 1/ 8)                | 1.02-    | TRM 480.82           | 1.02( 1/ 4)                       | 1.02( 1/ 4)      | VALUES <LLD        | VALUES <LLD                      |                    |                        |  |                       |  |  |

a. Nominal Lower Limit of Detection (LLD) as described in Table 3.

b. Mean and range based upon detectable measurements only. Fraction of detectable measurements of specified locations is indicated in parenthesis (F).

TABLE 28

RADIOACTIVITY IN CLAM SMELL  
PCI/G - 0.037 RO/G (DRY WEIGHT)

| TYPE AND TOTAL NUMBER OF ANALYSIS PERFORMED | LOWER LIMIT OF DETECTION (LLD) <sup>a</sup> | NAME OF FACILITY | LOCATION OF FACILITY | NAME OF FACILITY | SEQUOYAH HAMILTON | TENNESSEE | DOCKET NO. RH-80-7-502 | REPORTING PERIOD 1979 | INDICATOR LOCATIONS |                    | LOCATION WITH HIGHEST ANNUAL MEAN |                        | CONTROL LOCATIONS |                    | NUMBER OF NONROUTINE REPORTED MEASUREMENTS <sup>b</sup> |
|---|---|------------------|----------------------|------------------|-------------------|-----------|------------------------|-----------------------|---------------------|--------------------|-----------------------------------|------------------------|-------------------|--------------------|---|
|   |   |                  |                      |                  |                   |           |                        |                       | MEAN (F)            | RANGE <sup>b</sup> | NAME                              | DISTANCE AND DIRECTION | MEAN (F)          | RANGE <sup>b</sup> |   |
| GROSS ALPHA 12                              | 0.700                                       |                  |                      |                  |                   |           |                        |                       | 1.85 ( 3/ 8)        | 0.90- 2.86         | TRM 480.82                        | 1.85 ( 3/ 4)           | 0.94- 1.93        | 1/ 4               |   |
| GROSS BETA 12                               | 0.700                                       |                  |                      |                  |                   |           |                        | 7.15 ( 8/ 8)          | 4.95- 9.07          | TRM 480.82         | 8.14 ( 4/ 4)                      | 7.50 ( 4/ 4)           | 5.76- 8.41        | 4/ 4               |   |
| GAMMA (GELI) 12                             |   |                  |                      |                  |                   |           |                        |                       |                     |                    |                                   |                        |                   |                    |   |
| CC-60                                       | 0.010                                       |                  |                      |                  |                   |           |                        | B VALUES <LLD         |                     |                    |                                   |                        |                   |                    |   |
| CS-137                                      | 0.020                                       |                  |                      |                  |                   |           |                        | 0.04 ( 3/ 8)          | 0.03- 0.05          | TRM 480.82         | 0.04 ( 3/ 4)                      | 0.02- 0.02             | 0.02 ( 2/ 4)      | 0.02               |   |
| K-40  | 0.250                                       |                  |                      |                  |                   |           |                        | 0.51 ( 5/ 8)          | 0.36- 0.72          | TRM 480.82         | 0.54 ( 4/ 4)                      | 0.03- 0.03             | 0.42 ( 3/ 4)      | 0.03               |   |
| BI-214                                      | 0.050                                       |                  |                      |                  |                   |           |                        | 0.17 ( 8/ 8)          | 0.06- 0.33          | TRM 480.82         | 0.18 ( 4/ 4)                      | 0.30- 0.30             | 0.15 ( 4/ 4)      | 0.48               |   |
| PB-214                                      | 0.050                                       |                  |                      |                  |                   |           |                        | 0.14 ( 8/ 8)          | 0.06- 0.25          | TRM 480.82         | 0.17 ( 4/ 4)                      | 0.11- 0.11             | 0.14 ( 4/ 4)      | 0.18               |   |
| PB-212                                      | NOT ESTAB                                   |                  |                      |                  |                   |           |                        | 0.10 ( 8/ 8)          | 0.04- 0.19          | TRM 480.82         | 0.13 ( 4/ 4)                      | 0.13 ( 4/ 4)           | 0.11- 0.18        | 0.18               |   |
| RA-226                                      | 0.050                                       |                  |                      |                  |                   |           |                        | 0.15 ( 4/ 8)          | 0.10- 0.19          | TRM 480.82         | 0.17 ( 2/ 4)                      | 0.05- 0.05             | 0.12 ( 2/ 4)      | 0.27               |   |
| TL-208                                      | 0.020                                       |                  |                      |                  |                   |           |                        | 0.10- 0.19            | 0.06 ( 6/ 8)        | TRM 480.82         | 0.15- 0.19                        | 0.11- 0.11             | 0.11- 0.12        | 0.12               |   |
| AC-228                                      | 0.060                                       |                  |                      |                  |                   |           |                        | 0.03- 0.08            | 0.17 ( 6/ 8)        | TRM 480.82         | 0.06 ( 3/ 4)                      | 0.02- 0.02             | 0.04 ( 3/ 4)      | 0.05               |   |
| SR 89                                       | 5.000                                       |                  |                      |                  |                   |           |                        | 0.08- 0.29            | 0.08- 0.29          |                    | 0.20 ( 4/ 4)                      | 0.11- 0.11             | 0.20 ( 3/ 4)      | 0.27               |   |
| SH 90                                       | 1.000                                       |                  |                      |                  |                   |           |                        | B VALUES <LLD         |                     |                    |                                   | 4 VALUES <LLD          |                   |                    |   |
|   |   |                  |                      |                  |                   |           |                        | ANALYSIS PERFORMED    |                     |                    |                                   |                        |                   |                    |   |
|   |   |                  |                      |                  |                   |           |                        | 1.88 ( 8/ 8)          | 1.48- 2.19          | TRM 480.82         | 1.94 ( 4/ 4)                      | 1.67 ( 4/ 4)           | 1.19- 2.09        | 4/ 4               |   |

a. Nominal Lower Limit of Detection (LLD) as described in Table 3.

b. Mean and range based upon detectable measurements only. Fraction of detectable measurements of specified locations is indicated in parenthesis (F).



### Quality Control

A quality control program has been established with the Tennessee Department of Public Health Radiological Laboratory and the Eastern Environmental Radiation Facility, Environmental Protection Agency, Montgomery, Alabama. Samples of air, water, milk, fish, and soil collected around nuclear plants are forwarded to these laboratories for analysis, and results are exchanged for comparison.

### Conclusions

Since Sequoyah Nuclear Plant has not achieved criticality, there has been no contribution of radioactivity from the plant to the environment. The levels of radioactivity being reported in this document are due to natural background radiation, nuclear weapons testing, or other nuclear operations in the area.

10010