NIAGARA MOHAWK POWER CORPORATION

ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

January 1, 1996 - December 31, 1996

for

NINE MILE POINT NUCLEAR STATION UNIT 1

Facility Operating License DPR-63

Docket Number 50-220

and

NINE MILE POINT NUCLEAR STATION UNIT 2

Facility Operating License NPF-69

Docket No. 50-410

# 9999999999

# TABLE OF CONTENTS

## LIST OF TABLES

## LIST OF TABLES
(Continued)

## LIST OF TABLES
(Continued)

## LIST OF FIGURES

# 1.0 INTRODUCTION

## 1.0 INTRODUCTION

This report is submitted in accordance with Appendix A (Technical Specifications), Section 6.9.1.d to License DPR-63, Docket No. 50-220 for the Nine Mile Point Nuclear Station Unit 1 and Section 6.9.1.7 to License NPF-69, Docket No. 50-410 for the Nine Mile Point Nuclear Station Unit 2 for the calendar year 1996.

The Radiological Environmental Monitoring Program (REMP) is a joint program between the Nine Mile Point Nuclear Station (NMPNS) and the James A. FitzPatrick Nuclear Power Plant (JAFNPP). The sample collections for the radiological programs are performed in large part by EA Engineering Science and Technology (EA). This staff performs the majority of the terrestrial and aquatic sampling required for the REMP. In-plant canal water sampling, air sample collection, and environmental TLD collections are performed jointly by the NMPNS and JAFNPP staffs.

The sample collection and analysis schedule required by the Technical Specifications for the Nine Mile Point Nuclear Station Unit 1 and 2 is listed in Tables 1 and 2.

The majority of REMP samples were analyzed by the Site (James A. FitzPatrick) Environmental Laboratory during 1996 and included the following analyses:

- Shoreline sediment (gamma spectral analysis)
- Fish (gamma spectral analysis)
- Lake water (monthly gamma spectral analysis only)
- Air particulate filter (weekly gross beta analysis)
- Air particulate filter (monthly gamma spectral analysis)
- Airborne radioiodine cartridge (weekly gamma spectral analysis)
- Milk (gamma spectral and radioiodine analysis)
- Food products (gamma spectral analysis)
- Thermoluminescent dosimetry processing

Lake water was analyzed for iodine and tritium by Teledyne Isotopes.

Data are evaluated only from locations required by the Technical Specifications. Data from optional locations are not evaluated unless indicated otherwise.

There were four separate groups of radionuclides that were detected in the environment during

# 1.0 INTRODUCTION

1996. Several radionuclides could possibly fall into two of the four groups. The first of these groups is naturally occurring radionuclides. It must be realized that the environment contains a broad inventory of naturally occurring radioactive elements. Background radiation, as a function of primordial radioactive elements and cosmic radiation of solar origin, offers a constant exposure to the environment and man. These radionuclides, such as Ra-226, Be-7 and especially K-40, account for a majority of the annual per capita background dose. Nearly all environmental samples collected in 1996 contained naturally occurring radionuclides.

A second group of radionuclides that were detected are a result of the detonation of thermonuclear devices in the earth's upper atmosphere. The detonation frequency during the early 1950's produced a significant inventory of radionuclides found in the lower atmosphere as well as in ecological systems. A ban was placed on atmospheric weapons testing in 1963 which greatly reduced the inventory through the decay of short lived radionuclides, deposition, and the removal (by natural processes) of radionuclides from the food chain. Since 1963, several atmospheric weapons tests have been conducted by the People's Republic of China. In each case, the usual radionuclides associated with nuclear detonations were detected several months afterwards, and after a peak detection period, diminished to a point where most could not be detected. The last such weapons test was conducted in October of 1980. The resulting fallout or deposition from this test had influenced the background radiation in the vicinity of the site and was very evident in many of the sample media analyzed during 1981. Calculations from 1981 of the resulting doses to man from fallout related radionuclides in the environment show that the contribution from such nuclides (such as Sr-90 or Cs-137) was significant and second in intensity only to natural background radiation. Quantities of Nb-95, Zr-95, Ce-141, Ce-144, H-3, Ru-106, Ru-103, La-140, Cs-137, Mn-54 and Co-60 were also typical in air particulate samples during 1981 and have a weapons test origin. During 1996, Cs-137 and H-3 were the only radionuclides detected in environmental samples that may have had a weapons testing origin.

The third group of radionuclides includes those that were a result of the Chernobyl Nuclear Plant accident. These radionuclides were first detected in May of 1986 and were found in samples of air particulates, air radioiodine and milk. Applicable radionuclides include I-131, Cs-134, Cs-137, Nb-95, Ru-103, Ru-106, and La-140. Cs-137 was the only radionuclide in this category that, combined with other sources of Cs-137, could have contributed to the total amount of Cs-137 detected during 1996.

The fourth group of radionuclides are those that could be related to operations at the site. Many of these radionuclides are a by-product of both nuclear detonations and the operation of light water reactors. Therefore, making a distinction between the two sources can be difficult, if not impossible. During 1996, Cs-137 and H-3 were the only radionuclides which were detected that would fall into this category. It is difficult to determine if the Cs-137 and H-3 were a result of site operations since, as mentioned above, they both are present as a result of weapons testing and Chernobyl fallout.

The evaluation and interpretation of environmental data must be made at several levels including

trend analysis, dose to man, etc. An attempt has been made not only to report the data collected during 1996, but also to assess the significance of the radionuclides detected in the environment as compared to natural radiation sources. 1996 data results are also evaluated with respect to pre-operational results and historical results collected since commercial operation. It is important to note that detected concentrations of radionuclides that are possibly related to operations at the site are very small and are not an indication of environmental significance. In regards to these very small quantities, it will be further noted that at such minute concentrations the assessment of the significance of detected radionuclides is very difficult. Therefore, a concentration in one sample that is two times the concentration of another, for example, is not significant overall. Moreover, concentrations at such low levels may show a particular radionuclide in one sample and yet not in another because of counting statistics at such low concentrations.

The average annual dose equivalent to individuals in the United States has been estimated to be 360 mrem (NCRP 93, 1987). The majority of this dose (300 mrem) is attributed to natural background of which radon and daughter products contributed 200 mrem. Of man-made sources, medical diagnosis was the highest, contributing approximately 50 mrem. Consumer products added the remaining 10 mrem. The annual dose from the nuclear fuel cycle (including the operation of nuclear power facilities) is considered essentially negligible.

Background gamma radiation around the Nine Mile Point Site, as a result of radionuclides in the atmosphere and the ground, accounted for approximately 50 mrem during 1996. This dose is a result of radionuclides of cosmic origin (for example, Be-7), of a primordial origin (Ra-226, K-40, and Th-232) and, to a much smaller extent, of a man-made origin from weapons testing. A dose of 50 mrem, as a background dose, is significantly greater than any possible dose as a result of operations at the site during 1996.

Environmental Sample Locations - Table 3

Table 3 contains the locations of the environmental samples presented in the data tables. The locations are given in degrees and distance from the Nine Mile Point Nuclear Station Unit 2 reactor centerline. Table 3 also gives the figure (map) number as well as the map designation for each sample location by sample medium type. The requirement for Table 3 is found in Section 6.9.1.d of the Technical Specifications for the Nine Mile Point Nuclear Station Unit 1 and Section 6.9.1.7 of the Technical Specifications for the Nine Mile Point Nuclear Station Unit 2.

Radiological Environmental Monitoring Program Annual Summary - Table 4

Table 4 contains a summary of basic statistics for environmental sample media as required by the Technical Specifications. Table 4 is in the format presented on Table 3 of the NRC Branch Technical Position (Revision 1 dated November 1979) to NRC Regulatory Guide 4.8 "Environmental Technical Specifications for Nuclear Power Plants". The table is presented to meet the requirements of Section 6.9.1.d and Section 6.9.1.7 of the Technical Specifications for Nine Mile Point Nuclear Station Unit 1 and Unit 2 respectively.

# 2.0 AQUATIC SAMPLES

## 2.0 AQUATIC SAMPLES

### I. SHORELINE SEDIMENT

#### A. Sample Collection Methodology and Analysis

Shoreline sediment samples are collected twice per year from one area of existing or potential recreational value and from one area beyond the influence of the site. The area of potential recreational value is the only area from which samples are required by the Technical Specifications. Approximately one kilogram of shoreline sediment is obtained from areas washed by the lakeshore surf at the two locations twice per year. All samples are analyzed for gamma emitters at the Site Environmental Laboratory. Optional samples may be collected from other shoreline locations at or near the site.

Shoreline sediment locations are shown on Figure 1 (refer to Table 3 for location designations and descriptions).

#### B. Evaluation of Shoreline Sediment Data - Tables 5A and 5B

Shoreline sediment samples were obtained in April and October of 1996 at one off-site control location (near Oswego Harbor) and at one indicator location (shoreline area with recreational value just east of the site).

The results of the shoreline sediment samples collected during 1996 at the indicator and control locations are shown on Tables 5A and 5B. Table 5A shows results in units of pCi/g (dry) for purposes of data evaluation. Table 5B shows results in units of pCi/kg (dry), as required by the Technical Specifications. Only the Sunset Beach location was required by the Technical Specifications during 1996.

Several radionuclides were detected in sediment samples using gamma spectral analysis. K-40 was detected at both the control location and indicator location for both collection periods during 1996. K-40 is a naturally occurring primordial radionuclide. In addition to K-40, Ra-226 and AcTh-228 were also detected in control and indicator samples and are also naturally occurring radionuclides.

During 1996, Cs-137 was detected twice at the indicator location at concentrations ranging from 0.13 to 0.18 pCi/g (dry). Cs-137 has been detected each year since 1989 at the indicator location at concentrations ranging from 0.10 to 0.49. Cs-137 had not been detected prior to 1989 (1985 - 1988). Cs-137 was not detected at the control location during 1996, however, it had been detected intermittently in the past (1979, 1980, 1982 and 1993). Detectable control location quantities have ranged from 0.03 to 0.22 pCi/g (dry).

## 2.0 AQUATIC SAMPLES

I. SHORELINE SEDIMENT (Cont'd)

B. Evaluation of Shoreline Sediment Data - Tables 5A and 5B (Cont'd)

The source of Cs-137 in 1996 indicator shoreline sediment samples is difficult to determine. Possible sources are fallout from past weapons tests or from site operations. It is highly probable that the Cs-137 is from fallout. As mentioned previously, Cs-137 has been detected from control locations in the past. Due to the fact that few shoreline regions west of the site contain fine sediment and/or sand, it is difficult to obtain control samples which are comparable to the physical and chemical characteristics of the indicator samples. Other factors, which include changing lake level and shoreline erosion, further complicate any consistency in shoreline sediment sampling. Soil samples in areas which are likely to be affected by plant operations, as well as soil beyond any influence from the site, all contain levels of Cs-137 at or greater than the concentration found in 1996 shoreline sediment. Cs-137 in soil samples has been attributed to weapons testing fallout. The indicator location, unlike the control location, is very close to eroding ground areas and is believed to contain soil residues. Therefore, any shoreline sediment sample containing soil would reveal Cs-137. These factors support the likelihood that the trace amounts of Cs-137 detected in the indicator shoreline sediment samples are due to fallout from past weapons testing.

Using Regulatory Guide 1.109 methodology, and conservatively assuming that the maximum exposed individual (adult or teenager) would spend approximately 67 hours per year at this location, a conservative dose due to Cs-137 was calculated to be 0.001 mrem to the whole body and 0.001 mrem to the skin. These doses are very small when compared to average annual whole body doses due to natural background and may be considered insignificant. For the purpose of comparison, soil sampled at a location beyond any influence of the site contained Cs-137 at a concentration of 0.46 pCi/g. Using the same methodology and assumptions for that of sediment, annual whole body and skin doses of 0.002 mrem were calculated. Thus, it is shown that a dose to an individual at this shoreline area is less than an individual would receive from soil more distant from the plants. Both doses may be considered insignificant.

No other radionuclides were detected in shoreline sediment samples using gamma spectral analysis.

Tables 21 and 22 show historical environmental data for shoreline sediment samples. Shoreline sediment samples at the indicator location were not collected prior to 1985.

## 2.0 AQUATIC SAMPLES

### II. FISH

#### A. Sample Collection Methodology and Analysis

Available fish species are obtained from collections during the spring and fall. Samples are collected from two of four possible on-site sample transects located in the vicinity of the site discharge points and one off-site sample transect. Available species are selected under the following guidelines:

1. Samples of 0.5 to 1 kilogram of edible fish portions for a minimum of two species per location.

2. When two independent species are not available at all sample locations, a species may be divided into two samples for each location. This procedure may be accomplished provided that a sufficient sample size is available for the species in question at all three locations.

Selected fish samples are segregated by species and location and are processed immediately after collection. Samples are shipped frozen in insulated containers. Edible portions of samples are analyzed for gamma emitting radionuclides.

Fish sample transects are shown on Figure 1 (refer to Table 3 for location designations and descriptions).

#### B. Evaluation of Fish Data - Tables 6A and 6B

A total of thirty fish samples were analyzed as a result of collections in the spring season (June 1996) and in the fall season (September/October 1996). Collections were made utilizing gill nets at one location greater than five miles from the site (Oswego Harbor area), and at two locations in the vicinity of the lake discharges for the Nine Mile Point Unit #1 (02), and the James A. FitzPatrick (03) generating facilities. The Oswego Harbor samples (00) served as control samples while the NMP (02) and JAF (03) samples served as indicator samples. Samples were analyzed for gamma emitters. Table 6A shows results in units of pCi/g (wet) for purposes of data evaluation. Table 6B shows results in units of pCi/kg (wet), as required by the Technical Specifications.

Spring fish sample collections were comprised of four separate species and twelve individual samples. Brown trout, white sucker, lake trout, and smallmouth bass were collected at the indicator locations (NMP and JAF) and at the control location (Oswego Harbor).

## 2.0 AQUATIC SAMPLES

II. FISH (Cont'd)

B. Evaluation of Fish Data - Tables 6A and 6B (Cont'd)

Cs-137 was not detected in any of the eight indicator samples collected during the spring. Cs-137 was detected in one sample of Lake Trout collected at the control location at a concentration of 0.014 pCi/g (wet). Cs-137 has been detected in fish samples from both indicator and control locations in the past.

K-40 was detected in all of the spring samples collected. K-40 is a naturally occurring radionuclide and is not related to power plant operations. Ra-226, also naturally occurring, was detected intermittently in both indicator and control samples. No other radionuclides were detected in the spring fish samples.

Fall fish sample collections were comprised of six separate species and eighteen individual samples. Brown trout, lake trout, smallmouth bass, white sucker, walleye, and chinook salmon samples were collected at indicator sampling locations (NMP and JAF). At the control location (Oswego Harbor), white sucker, brown trout, lake trout, chinook salmon, and smallmouth bass samples were collected.

Cs-137 was detected in three of the eighteen samples which included the control samples. Indicator samples showed an average Cs-137 concentration that was slightly less than the control sample mean from the off-site location. The detected concentrations were not significantly different from one another because of the extremely small quantities detected. Cs-137 in samples at the indicator locations ranged from 0.014 to 0.016 pCi/g (wet) and was 0.018 pCi/g (wet) at the control location. Cs-137 was detected in lake trout sampled at NMP at a concentration of 0.014 pCi/g (wet), and in smallmouth bass at a concentration of 0.016 pCi/g (wet). Cs-137 was not detected in lake trout sampled at JAF. Brown trout sampled at the control location contained Cs-137 at a concentration of 0.018 pCi/g (wet). Cs-137 was not detected in any other control or indicator samples of fish collected during the fall of 1996.

Naturally occurring K-40 was detected in all of the Fall samples collected. Ra-226, also naturally occurring, was detected intermittently in the control and the indicator samples. No other radionuclides were detected in the Fall fish samples.

Review of past environmental data indicates that the mean annual Cs-137 concentration has decreased significantly from the 1976 through 1996 results for indicator samples. Average concentrations for these samples decreased from a level of 1.4 pCi/g (wet) in 1976 to a level of 0.015 pCi/g (wet) in 1996. Control

II. FISH (Cont'd)

B. Evaluation of Fish Data - Tables 6A and 6B (Cont'd)

sample results have also decreased from a level of 1.2 pCi/g (wet) in 1976 to a level of 0.016 pCi/g (wet) in 1995. Results from 1980 to 1986 have shown a fairly consistent decreasing trend for control and indicator samples. During 1987 through 1994, control and indicator mean results increased slightly when compared to 1986.

The general decreasing trend for Cs-137 is most probably a result of ecological cycling. The concentrations of Cs-137 detected since 1976 in fish are a result of weapons testing fallout, and the general downward trend in concentrations will continue as a function of ecological cycling and nuclear decay. There was no significant effect from the 1986 Chernobyl Nuclear Plant accident during 1986 relative to Cs-137 results in fish samples although an effect may have been detected during the period of 1987 through 1991 since both indicator and control location mean results increased slightly.

Tables 23 and 24 show historical environmental sample data for fish.

Lake Ontario fish are considered an important food source by many. Therefore, fish are an integral part of the human food chain. Based on the importance of fish in the local diet, a reasonable conservative estimate of dose to man can be calculated. Assuming that an adult and teen consume 21.0 kg and 16 kg respectively, of fish per year (Regulatory Guide 1.109 maximum exposed age group) and the fish consumed contains an average Cs-137 concentration of 0.015 pCi/g (wet) (annual mean result of indicator samples for 1996), the adult whole body dose received would be 0.022 mrem per year. The critical organ, in this case, is the teen liver which would receive a calculated dose of 0.036 mrem per year. The Cs-137 whole body and critical organ doses are conservative calculated doses associated with consuming fish from the Nine Mile Point area (indicator samples). No radiological decay is assumed for the calculation of doses.

Conservative whole body and critical organ doses can be calculated for the consumption of fish from the control location as well. In this case the consumption rate is assumed to remain the same (21 kg per year for an adult and 16 kg per year for a teen), but the average annual Cs-137 concentration for the control samples is 0.016 pCi/g (wet). The calculated Cs-137 adult whole body dose is 0.024 mrem per year and the associated dose to the teen liver is 0.038 mrem per year. In this case, the fish from the control location resulted in doses which were slightly

II. FISH (Cont'd)

B. Evaluation of Fish Data - Tables 6A and 6B (Cont'd)

greater than that from the indicator locations (near the nuclear facilities). The control location is located beyond any influence of the site.

In summary, the whole body and critical organ doses observed as a result of consumption of fish is small. Doses received from the consumption of indicator and control sample fish are approximately the same. The doses from indicator sample fish are slightly less, and well within natural variability. For example, the whole body and organ doses from the indicator samples were greater than control samples during 1995. Doses from both sample groups are considered background doses and negligible.

III. SURFACE WATER

A. Sample Collection Methodology and Analysis

Surface water samples are taken from the respective inlet canals of the J.A. FitzPatrick facility and Niagara Mohawk's Oswego Steam Station. The FitzPatrick facility removes water from Lake Ontario on a continuous basis and generally represents a "down-current" sampling point from the Nine Mile Point Unit 1 and Unit 2 facilities. The Oswego Steam Station inlet canal removes water from Lake Ontario at a point approximately 7.6 miles west of the site. This "up-current" location is considered a control location because of the distance from the site as well as the result of the lake current patterns and current patterns from the Oswego River located nearby (see Figure 2).

Samples from the FitzPatrick facility are composited from automatic sampling equipment which discharges into a compositing tank. Samples are obtained from the tank monthly and analyzed for gamma emitters. Samples from the Oswego Steam Station are also composited from automatic sampling equipment which discharges to a compositing tank. Samples from this location are obtained weekly and are composited to form monthly composite samples. Monthly samples are analyzed for gamma emitters.

A portion of the sample from each of the locations is saved and composited to form quarterly composite samples for each calendar quarter. Quarterly composite samples are analyzed for tritium.

## 2.0 AQUATIC SAMPLES

### III. SURFACE WATER (Cont'd)

#### A. Sample Collection Methodology and Analysis (Cont'd)

In addition to the FitzPatrick and Oswego Steam Station facilities, data are presented for the Nine Mile Point Unit 1 and Unit 2 facility inlet canals and water from the City of Oswego. The latter three locations are not required by the Technical Specifications, but are optional samples. Monthly composite samples from these three locations are analyzed for gamma emitting nuclides and quarterly composite samples are analyzed for tritium. Surface water sample locations are shown on Figure 2 (refer to Table 3 for location designations and descriptions).

Sampling for ground water and drinking water, as found in Section 3.12.1 of the Nine Mile Point Unit 2 Technical Specifications, was not required during 1996 because these pathways were not applicable to the Site during the year. Applicable sampling requirements and conditions are presented in the Unit 2 Off-Site Dose Calculation Manual.

Gamma spectral analysis results for the 1996 surface water samples showed no evidence of plant related radionuclide buildup in the surface water in the vicinity of the site. Indicator samples were collected from the inlet canal at the James A. FitzPatrick facility. The control location samples were collected at the inlet canal of Niagara Mohawk's Oswego Steam Station. These two locations are required to be sampled by the Technical Specifications. Results of the three optional locations also revealed no plant-related nuclides. Tables 7 and 8 show the results of all surface water samples analyzed during 1996. Only naturally occurring radionuclides were detected in samples from the five locations over the course of the year. K-40 was detected consistently in both indicator and control samples. Ra-226 was detected intermittently in samples from all five locations.

Review of past environmental data for Cs-137 from 1979 through 1995 shows that this radionuclide was detected only once at the control location during 1979 at a concentration of 2.5 pCi/liter. Cs-137 at the indicator location (JAF inlet canal) was detected only once during 1982 at a concentration of 0.43 pCi/liter. The 1979 control sample result is suspect and may have been a result of contamination during handling or instrument background since Cs-137 was not detected in the indicator inlet canal. The one result from the indicator location (JAF inlet canal) during 1982 was detected in a January composite sample and may have been a result of inlet canal tempering (the addition of discharge water to the inlet canal) or instrument background. Cs-137 was not detected during 1996 in surface water samples.

## 2.0 AQUATIC SAMPLES

III. SURFACE WATER (Cont'd)

A. Sample Collection Methodology and Analysis (Cont'd)

Other plant related radionuclides detected during a review period of 1979 - 1995 include only Co-60. The control sample location results showed that Co-60 was detected once in 1981 (the May composite sample). This result is suspect and, as noted above, may be a result of contamination during handling or may be instrument background. This result was 1.4 pCi/liter. Results from the indicator location showed that Co-60 was detected three times during 1982 and averaged 1.9 pCi/liter. These positive results were attributed to inlet canal tempering and instrument background. Co-60 was not detected during 1996 in surface water samples.

Tables 25 and 26 show historical environmental sample data for surface water using gamma spectral analysis.

Tritium samples are quarterly samples that are a composite of the appropriate calendar months. Tritium results are presented on Table 8. Tritium was detected at only one location in one of the four quarters. At the Nine Mile Point inlet (optional location), tritium was detected in the second quarter sample at a concentration of 160 pCi/liter. Tritium was not detected at any other Technical Specification or optional location during 1996.

The impact of tritium in water to members of the public is minimal. This can be evaluated by calculating an annual dose to the whole body and maximum organ. Using Regulatory Guide 1.109 methodology, ingestion of water from the Nine Mile Point inlet location would result in an annual dose of 0.017 mrem to the whole body and 0.017 mrem to the child liver. This calculated dose is insignificant and a result of background concentrations of tritium in water. In 1995, tritium was detected in drinking water collected from a location more distant than control samples and resulted in a calculated dose of 0.021 mrem to the adult whole body and child liver. Both doses are considered background doses and negligible.

Previous annual mean results for tritium at the indicator sample location (FitzPatrick inlet canal) have generally decreased since 1976. Mean sample results reviewed from 1976 through 1994 showed a peak average value of 627 pCi/liter (1976) and a minimum value of 220 pCi/liter (1994).

Mean tritium results for the control location (Oswego Steam Station) can not be evaluated with regard to long term historical data since sampling was only initiated at this location in 1985. Some idea of the variability of control sample data can be obtained, however, by review of previous data from the City of Oswego drinking

III. SURFACE WATER (Cont'd)

A. Sample Collection Methodology and Analysis (Cont'd)

water samples. The drinking water samples are not likely to be affected by the station because of the effects of the distance, lake currents, and the discharge of the Oswego River. Therefore, this previous sample data represents acceptable control sample data for evaluation purposes.

Historical mean annual tritium results from previous city water samples (1976-1984) and Oswego Steam Station samples (1985-1991) show that the tritium concentrations have decreased. The maximum annual average was found in 1976 (652 pCi/liter) and the minimum in 1982 (165 pCi/liter). Mean annual results from 1979 to 1994 have remained relatively consistent. The Oswego Steam Station annual mean result for 1995 was 230 pCi/liter.

Tables 27 and 28 show historical environmental sample data for surface water tritium.

## 3.0 DIRECT RADIATION

## 3.0 DIRECT RADIATION

### A. Sample Collection Methodology and Analysis

Thermoluminescent dosimeters (TLD's) are used to measure direct radiation (gamma dose) in the environment. TLD's are processed at the Site Environmental Laboratory on a quarterly basis. Control TLD's accompany the TLD's when they are being placed or collected and are shielded by lead when they are not being used. TLD data results are corrected by use of the data from the control TLD's.

Five different types of areas are evaluated by environmental TLD's. These areas include on-site areas (areas within the site boundary not required by the Technical Specifications), the site boundary area in each of the sixteen meteorological sectors, an outer ring of TLD's located four to five miles from the site in eight available land based meteorological sectors, special interest TLD's located at sites of high population density and control TLD's located at sites beyond significant influence of the site. Special interest TLD's are located at or near large industrial sites, schools, proximal towns or communities or other special activity areas. Field control TLD's are placed to the southwest, south, south-southeast and northeast of the site at distances ranging from 12.6 to 24.7 miles, and are used to measure the general background radiation levels.

TLD's used during 1996 were Panasonic UD-814 dosimeters. These were placed in polyethylene packages to ensure dosimeter integrity. TLD packages were placed in open webbed plastic holders and were attached to supporting structures; usually trees or utility poles.

Environmental TLD locations are shown on Figures 3 and 4 (refer to Table 3 for location designations and descriptions).

### B. Evaluation of TLD Data - Tables 9A and 9B

TLD's were collected and read once per quarter during the 1996 sample year. The TLD results are reported in mrem per standard month (Table 9A) and in mrem per quarterly period (Table 9B).

Two TLDs were utilized at each location. The results presented in this report represent an average of the two TLDs. TLD results included on Tables 9A and 9B are comprised of TLD's required by the Technical Specifications and special interest TLD's not required by the Technical Specifications. During 1996, TLD's were primarily collected during the weeks of March 27, 1996, June 25, 1996, September 29, 1996, and January 8, 1997.

Overall TLD results are evaluated by organizing environmental TLD's into five different groups. These groups include: (1) on-site TLD's (TLD's within the site

B. Evaluation of TLD Data - Tables 9A and 9B (Cont'd)

boundary not required by the Technical Specifications), (2) site boundary TLD's (one in each of the sixteen 22 1/2 degree meteorological sectors), (3) a ring of TLD's four to five miles from the site in each of the land based 22 1/2 degree meteorological sectors, (4) special interest TLD's in areas of high population density, and (5) control TLD's in areas beyond any significant influence of the generating facilities. Special interest TLD's are located at or near large industrial sites, schools, or proximal towns or communities. Control TLD's are located to the southwest, south, south-southeast, and northeast of the site at distances of 12.6 to 24.7 miles from the site.

Most of the TLD locations required by the Technical Specifications during 1996 were initiated in 1985 as a result of the issuance of new Technical Specifications by the NRC. Therefore, these TLD results can only be compared to 1985 - 1995 results. Other TLDs, which include a few TLDs required by the Technical Specifications (i.e., numbers 7, 14, 15, 18, 23, 49, 56, and 58) and other optional TLDs, can be compared to results prior to 1985 since these TLDs were established prior to 1985.

On-site TLD's are TLD's at special interest areas and, with the exception of TLD numbers 7 and 23, are not required by the Technical Specifications. These are located near the generating facilities and at previous or existing on-site air sampling stations. TLD's located at the air sampling stations include numbers 3, 4, 5, 6, 7, 23, 24, 25 and 26. The results for these TLD's are generally consistent with previous years results with the exception of TLD number 3. This TLD is located in closest proximity to the FitzPatrick facility and reflected an increased dose rate due to the hydrogen water chemistry conducted during plant operation. These results ranged from 3.1 to 32.6 mrem per standard month during 1996 and up to six times control TLD results.

Other on-site TLD's include special interest TLD's located near the shoreline north of the Unit 1, Unit 2 and FitzPatrick facilities, but in close proximity to radwaste facilities and the Unit 1 reactor building. These TLD's include numbers 27, 28, 29, 30, 31, 39, and 47. Results for these TLD's during 1996 were variable and ranged from 4.1 to 68.1 mrem per standard month as a result of activities at the radwaste facilities, the operating modes of the generating facilities (and hydrogen injection at JAF). Results for 1996 are consistent with the ranges of variability noted in 1995 for TLD's at or near these locations. TLD's in this group ranged up to approximately fourteen times control TLD results.

Additional on-site TLD's are located near the on-site Energy Center and the associated northeast shoreline. These TLD's include numbers 18, 103, 106 and

## 3.0 DIRECT RADIATION

B. Evaluation of TLD Data - Tables 9A and 9B (Cont'd)

107. TLD's 103, 106 and 107 are located to the east of the Energy Center and to the west of the Unit 1 facility. TLD number 18 is located on the west side of the Energy Center. Results during 1996 showed these TLD's ranged from 4.1 to 6.4 mrem per standard month and were consistent with the 1995 results.

Site boundary TLD's are required by the Technical Specifications and are located in the approximate area of the site boundary with one in each of the sixteen 22 1/2 degree meteorological sectors. These TLD's include numbers 7, 18, 23, 75, 76, 78, 79, 80, 81, 82, 83, 84, 85, 86 and 87. TLD numbers 7, 18, 78, 79, 80, 81, 82, 83, and 84 showed results that were consistent with control TLD results and ranged from 3.2 to 5.3 mrem per standard month. Site boundary TLD's during 1996 were consistent with 1985-1995 results. TLD numbers 23, 75, 76, 77, 85, 86, and 87 showed results that ranged up to three times the results of control TLD's. These results ranged from 4.7 - 9.1 mrem per standard month. This latter group of TLD's are located near the lake shoreline (approximately 100 feet from the shoreline), but are also located in close proximity of the reactor building and radwaste facilities of Unit 1 and Unit 2 and the radwaste facilities of the FitzPatrick facility.

A net site boundary dose can be estimated from available TLD results and control TLD results. TLD results from TLD's located near the site boundary in sectors facing the land occupied by members of the public (excluding TLD's near the generating facilities and facing Lake Ontario) are compared to control TLD results. The site boundary TLD's include numbers 78, 79, 80, 81, 82, 83, 84, 7 and 18. Control TLD's include numbers 8, 14, 49, 111 and 113. Net site boundary doses for each quarter in mrem per standard month are as follows:

| Quarter | Net Site Boundary Dose* |
|---|---|
| 1 | +0.0 |
| 2 | -0.6 |
| 3 | -0.1 |
| 4 | +0.2 |

*Dose in mrem per standard month

Site boundary TLD numbers 75, 76, 77, 23, 85, 86, and 87 were excluded from the net site boundary dose calculation since these TLD's are not representative of doses at areas where a member of the public may be located. These areas are near the north shoreline which are in close proximity to the generating facilities and are not accessible to members of the public.

## 3.0 DIRECT RADIATION

B. Evaluation of TLD Data - Tables 9A and 9B (Cont'd)

The third group of environmental TLD's are those TLD's located four to five miles from the site in each of the land based 22.5 degree meteorological sectors. These TLDs are required by the Technical Specifications. At this distance, eight of the sixteen meteorological sectors are located over Lake Ontario.

Results for this group of TLD's during 1996 fluctuated slightly as a result of changing naturally occurring conditions and the different concentrations of naturally occurring radionuclides in the ground at each of the locations. These TLD's were established in 1985 and include numbers 88, 89, 90, 91, 92, 93, 94 and 95. Results ranged from 3.2 to 5.3 mrem per standard month. These results are generally consistent with control TLD results during 1996. Results for this group of TLDs were consistent with the 1985 - 1995 results. Results were also consistent with other off-site TLD results during 1996 and previous to 1996.

The fourth group of environmental TLD's are those TLD's located near the site boundary and at special interest areas such as industrial sites, schools, nearby communities, towns, off-site air sampling stations, the closest residence to the site, and the off-site environmental laboratory. Many of these TLDs are required by the Technical Specifications. Others are optional. This group of TLD's include numbers 9, 10, 11, 12, 13, 15, 19, 51, 52, 53, 54, 55, 56, 58, 96, 97, 98, 99, 100, 101, 102, 108 and 109. TLD numbers 108 and 109 are TLD locations that were established to assist in the evaluation of the critical residence. Results ranged from 3.2 to 5.6 mrem per standard month. All the TLD results from this group were within the general variation noted for the control TLD's. Results during 1996 for TLD's established during previous years were consistent with results noted for those years.

The fifth group of TLD's include those TLD's considered as control TLD's. These TLD's are required by the Technical Specifications and include numbers 14 and 49. Optional control locations are TLD numbers 8, 111, and 113 and were added to the program to expand the data base for control TLD's. Results for 1996 ranged from 3.4 to 5.6 mrem per standard month. Results from 1996 were consistent with previous years results. However, an annual average increase was noted in 1986. This increase may have been a result of the Chernobyl Nuclear Plant accident and was not noted during 1987-1996.

Review of past TLD results required by the Technical Specifications show that these TLDs can be separated into four groups. These groups include site boundary TLDs in each meteorological sector (16 TLDs total), TLDs located off-site in each land based sector at a distance of 4 to 5 miles (8 TLDs total), TLDs located at

## 3.0 DIRECT RADIATION

B. Evaluation of TLD Data - Tables 9A and 9B (Cont'd)

special interest areas (6 TLDs total) and TLDs located at control locations (2 TLDs total). As noted previously, since the present Technical Specifications became effective in 1985, these TLDs, for the most part, can only be evaluated for 1985 - 1996.

Technical Specification TLDs located at the site boundary averaged 6.2 mrem per standard month during 1985. During the period of 1986 - 1995 site boundary TLDs ranged from 4.8 - 7.0 mrem per standard month. As noted previously, this group of TLDs can fluctuate because several of these TLDs are located in close proximity to the generating facilities. An increase was noted during 1986 although such an increase was noted for all TLDs including control TLDs. During 1996, site boundary TLDs averaged 5.2 mrem per standard month.

Technical Specification TLDs located off-site at a distance of 4 to 5 miles from the site in each of the land based meteorological sectors averaged 5.0 mrem per standard month during 1985. During the period of 1986 - 1995 off-site sector TLDs ranged from 4.1 - 6.0 mrem per standard month. The 1986 results demonstrated an increase for this group of TLDs. Results for 1996 for the group averaged 4.2 mrem per standard month. This is consistent with previous year's results.

Special interest Technical Specification TLDs are located at areas of high population density, such as major work sites, communities, schools, etc. and at residences near the site (critical receptor areas). This group of TLDs averaged 5.3 mrem per standard month during 1985. During 1986, this same group of TLDs averaged 6.1 mrem. During the period of 1987 - 1995 these TLDs averaged between 4.0 - 5.3 mrem per standard month. 1996 results for these locations averaged 4.2 mrem per standard month.

The final group of TLDs required by the Technical Specifications is the control group. This group utilizes two TLD locations positioned well beyond the site. Results from 1985 for the control group averaged 5.4 mrem per standard month. During 1986, this same group of TLDs averaged 6.3 mrem per standard month. A marked increase was noted in the second quarter of 1986. The increase may have been a result of the Chernobyl Nuclear Plant accident. Results for 1987 - 1995 ranged from 3.9 - 5.4 mrem per standard month. Results for 1996 averaged 4.2 mrem per standard month.

## 3.0 DIRECT RADIATION

B. Evaluation of TLD Data - Tables 9A and 9B (Cont'd)

Tables 29 and 30A-30E show the historical environmental sample data for environmental TLD's.

During 1996, all environmental TLD groups required by the Technical Specifications were generally consistent with the results observed during 1995. Overall, environmental TLD results for 1996 showed no significant impact from direct radiation measured outside the site boundary.

# 4.0 TERRESTRIAL SAMPLES

# 4.0 TERRESTRIAL SAMPLES

## I. AIR PARTICULATE/IODINE

### A. Sample Collection and Methodology

The air sampling stations required by the Technical Specifications are located in the general area of the site boundary (within 0.7 miles) in sectors of highest calculated meteorological deposition factors (D/Q) based on historical meteorological data. These stations (R-1, R-2, and R-3) are located in the east, east-southeast, and southeast sectors as measured from the center of the Nine Mile Point Nuclear Station Unit 2 reactor building. The Technical Specifications also require that a fourth air sampling station be located in the vicinity of a year round community having the highest calculated deposition factor (D/Q) based on historical meteorological data. This station is located in the southeast sector (R-4). A fifth station required by the Technical Specifications is located at a site 16.4 miles from the site in a northeast direction (R-5). This location is considered a control location.

In addition to the Technical Specification required locations, there are six sampling stations located within the site boundary (D1, G, H, I, J, and K). These locations generally surround the area occupied by the three generating facilities, but are well within the site boundary. One other air sampling station is located off-site in the southwest sector and is in the vicinity of the City of Oswego. Three remaining air sampling stations (D2, E and F) are located in the east-southeast, south-southeast and south sectors and range in distance from 7.2 to 9.0 miles.

At each station, airborne particulates are collected by glass fiber filters and radioiodine by charcoal filters. Air particulate glass fiber filters are approximately two inches (47 millimeters) in diameter and are placed in sample holders in the intake line of a vacuum sampler. Directly down stream from the particulate filter is a 2 x 1 inch charcoal cartridge used to adsorb airborne radioiodine. The samplers run continuously and the charcoal cartridges and particulate filters are changed on a weekly basis, or as required by dust loading. Gross beta analysis is performed for the individual particulate filters on a weekly basis. Charcoal cartridges are analyzed weekly for radioiodine by GeLi detector.

The particulate filters are composited by location for gamma analyses on a monthly basis after all weekly particulate filters have been counted for gross beta activity.

### B. Evaluation of Air Particulate Gross Beta - Tables 10 and 11

Air sampling stations are shown in Figures 3 and 4 (refer to Table 3 for location designations and descriptions). Tables 10 and 11 contain the results for the weekly air particulate gross beta analysis for a total of nine off-site and six on-site

## 4.0 TERRESTRIAL SAMPLES

I. AIR PARTICULATE/IODINE (Cont'd)

B. Evaluation of Air Particulate Gross Beta - Tables 10 and 11 (Cont'd)

sample locations. Five of the nine off-site locations are required by the Technical Specifications. These sample locations are R-1, R-2, R-3, R-4 (all located near the site boundary) and R-5 (located at a control location beyond any significant influence from the site). Data contained on Tables 10 and 11 also shows the results from other air sampling locations not required by the Technical Specifications. These locations are designated as D1 on-site, G on-site, H on-site, I on-site, J on-site, K on-site, D2 off-site, E off-site, F off-site and G off-site locations. A total of 52 control samples from location R-5 and 208 indicator samples from locations R-1, R-2, R-3, and R-4 were collected and analyzed during 1996.

The minimum, maximum, and average gross beta results for sample locations required by the Technical Specifications are presented below.

| Location** | Minimum* | Maximum* | Average* |
|---|---|---|---|
| R-1 | 0.007 | 0.025 | 0.013 |
| R-2 | 0.007 | 0.024 | 0.013 |
| R-3 | 0.007 | 0.023 | 0.013 |
| R-4 | 0.006 | 0.021 | 0.013 |
| R-5 (control) | 0.009 | 0.023 | 0.014 |

* - Concentration in pCi/m$^3$
** - Locations required by the Technical Specifications

The observed small increases and decreases in general gross beta activity can be attributed to changes in the environment, especially seasonal changes. The concentration of naturally occurring radionuclides in the lower limits of the atmosphere directly above land areas are affected by processes such as wind direction, snow cover, soil temperature and soil moisture content. Little change was noted in gross beta activity which corresponded with weapons testing as has been observed in past years.

In general, the trend in air particulate gross beta activity has been one of decreasing activity since 1977 (extent of the review period). The mean gross beta concentration at control locations has decreased from a level of 0.165 pCi/m$^3$ in 1981 to 0.012 in 1992. Results from indicator air sampling locations ranged from 0.151 pCi/m$^3$ in 1981 to 0.012 pCi/m$^3$ in 1992. For both indicator locations and control location, the gross beta concentration during 1977 to 1987 fluctuated with the detonation of thermonuclear weapons.

## 4.0 TERRESTRIAL SAMPLES

### I. AIR PARTICULATE/IODINE (Cont'd)

#### B. Evaluation of Air Particulate Gross Beta - Tables 10 and 11 (Cont'd)

Tables 31 and 32 show historical environmental sample data for air particulate gross beta levels.

#### C. Evaluation of Monthly Air Particulate Composites - Table 12

Weekly air particulate samples were composited by location to form monthly composite samples. The monthly composite samples required by the Technical Specifications include R-1, R-2, R-3, R-4, and R-5. Other sample locations not required by the Technical Specifications include D1 on-site, G on-site, H on-site, I on-site, J on-site, K on-site, D2 off-site, E off-site, F off-site and G off-site locations. The results of all monthly composite samples are included on Table 12.

The results for the monthly composite samples showed positive results for Be-7, K-40, and Ra-226. All three of these radionuclides are naturally occurring. Be-7 was found in all of the monthly composite samples from the locations required by the Technical Specifications. K-40 was found intermittently in the monthly composite samples required by the Technical Specifications. Ra-226 was also detected intermittently in both indicator and control samples. No other plant-related radionuclides were detected at Technical Specification or optional locations using gamma spectral analysis during 1996.

Co-60 concentrations in air particulate samples have shown a general decrease in both indicator and control samples. In 1977, Co-60 concentrations in control samples averaged 0.0172 pCi/$m^3$. A decrease was observed until 1985 when no Co-60 was detected. From the period 1985-1996, no Co-60 was detected in control samples. Co-60 concentrations in indicator samples have shown a similar decrease. In 1977, the average concentration of Co-60 in indicator samples was 0.0179 pCi/$m^3$. By 1982, this value had decreased to 0.0005 pCi/$m^3$. Slight increases were observed in 1983 and 1984, but these anomalies were due to contamination during handling of the unused samples and not due to plant operations (this has been previously documented in the 1984 annual report). Since 1984, no Co-60 has been detected in any Technical Specification indicator location.

Historically, the presence of Cs-137 has been variable and has been present in air particulate samples since 1977. During 1977, both indicator and control Cs-137 average concentrations were approximately equal and averaged 0.0038 pCi/$m^3$. Since that time the concentration in both control and indicator samples has been steadily decreasing. The decreasing concentrations of Cs-137 are due to ecological cycling and nuclear decay of Cs-137 which was produced during

# 4.0 TERRESTRIAL SAMPLES

## I. AIR PARTICULATE/IODINE (Cont'd)

### C. Evaluation of Monthly Air Particulate Composites - Table 12 (Cont'd)

weapons testing. 1978 concentrations of Cs-137 in control and indicator locations both averaged 0.0017 pCi/m$^3$, and steadily decreased to 0.0002 pCi/m$^3$ in 1983.

Cs-137 was not detected during 1984 and 1985. In 1986, Cs-137 was detected as a result of the Chernobyl accident in April 1986. Average concentrations during that year for indicator and control samples were 0.0183 and 0.0193 pCi/m$^3$ respectively. During the period of 1987-1996 Cs-137 was not detected at any indicator or control location.

Prior to 1984, several radionuclides were detected that were associated with the 1980 Chinese weapons test and other weapons tests prior to 1980. These radionuclides were not detected after 1983 as a result of nuclear decay and ecological cycling. These include Zr-95, Ce-141, Nb-95, Ce-144, Mn-54, Ru-103, Ru-106 and Ba-140.

During 1986, however, several fission product radionuclides were detected that were a result of the Chernobyl Nuclear Plant accident. These included Cs-134, Cs-137, Nb-95, Ru-103, Ru-106, La-140 and I-131. During 1987 through 1995, none of the radionuclides associated with the 1986 Chernobyl accident or past weapons testing were detected in air particulate samples.

During 1996, no radionuclides were detected in monthly air particulate composite samples that could have been attributed to plant operations. Therefore, no dose calculations were performed.

Tables 33 and 34 show historical environmental sample data for air particulate composites.

### D. Evaluation of Airborne Radioiodine - Tables 13 and 14

During the 1996 sampling program, airborne radioiodine was not detected in any of the weekly samples from the locations required by the Technical Specifications. LLD values at the control location ranged from 0.006 - 0.016 pCi/m$^3$. The indicator locations ranged from less than 0.004 to 0.019 pCi/m$^3$. I-131 was also not detected at any of the optional monitoring locations (not required by the Technical Specifications) during 1996. Since I-131 was not detected at any of the indicator or control locations during 1996, no dose calculations are presented.

## 4.0 TERRESTRIAL SAMPLES

I. AIR PARTICULATE/IODINE (Cont'd)

D. Evaluation of Airborne Radioiodine - Tables 13 and 14 (Cont'd)

I-131 has been detected in the past at control and indicator locations and was attributed to past weapons testing, the Chernobyl accident, and, to a lesser extent, plant operations. For example, during 1986, I-131 was detected at the controland indicator locations. This was a result of the 1986 Chernobyl Nuclear Plant accident. The I-131 mean concentration at the control location was 0.151 pCi/m$^3$ and 0.119 at the indicator locations. I-131 was not detected at the control location during the period 1987 through 1996.

Prior to the Chernobyl accident of 1986, I-131 had been detected intermittently during the years of 1976-1985. Concentrations ranged from 0.013 to 0.33 pCi/m$^3$ at indicator locations. During this same period, I-131 was also detected at the control locations at concentrations ranging from 0.030 to 0.60 pCi/m$^3$. For the most part, I-131 in indicator and control locations was a result of past weapons testing fallout. A small portion of the concentrations detected may have been a result of site operations.

Tables 35 and 36 show the historical environmental sample data for airborne radioiodine.

II. MILK

A. Sample Collection Methodology and Analysis

Milk samples are collected in polyethylene bottles from a bulk storage tank at each sampled farm. Before the sample is drawn, the tank contents are agitated from three to five minutes to assure a homogenous mixture of milk and butterfat. Two gallons are collected during the first half and second half of each month from each of the selected locations within ten miles of the site and from a control location. The samples are chilled, preserved with sodium bisulfite, and then shipped to the analytical laboratory within thirty-six hours of collection in insulated shipping containers.

The selection of milk sample locations is based on maximum deposition factors (D/Q). Deposition factors are generated from average historical meteorological data based on all licensed reactors. The Technical Specifications require three sample locations within 5.0 miles of the site with the highest calculated deposition

# 4.0 TERRESTRIAL SAMPLES

II. MILK (Cont'd)

A. Sample Collection Methodology and Analysis (Cont'd)

factors. During 1996, there were no milk sample locations within 5.0 miles that could be sampled. However, there were several optional locations beyond five miles that were sampled.

A fourth sample location required by the Technical Specifications is located in a least prevalent wind direction from the site. This location is in the southwest sector and serves as a control location.

Milk samples are collected twice per month (April - December) and analyzed for gamma emitters and I-131. Samples are collected and analyzed in January - March in the event I-131 is detected in November and December of the preceding year.

The milk sample locations are found on Figure 2. (refer to Table 3 for location designations and descriptions).

B. Evaluation of Milk Data - Tables 15 and 16

Milk samples were collected from a total of four indicator locations (within 10 miles of the site) and one control location (beyond 10 miles from the site) during 1996. The Technical Specifications require that three locations be sampled for milk within 5.0 miles of the site. During 1996, there were no milk sample locations within 5.0 miles of the site. The locations that were sampled during 1995 are located from 7.8 to 9.5 miles from the site. The only sample location required by the Technical Specifications during 1996 was the control location.

During 1996, milk samples were collected at each of the four indicator locations and the control location in the first half and the second half of each month. Samples were collected during the months of April through December 1996. Since I-131 was not detected during November and December of 1995, no additional samples were collected in January through March of 1996. For each sample, analyses were performed for gamma emitters (analysis by GeLi detector) and for I-131 using a resin extraction. Sample analysis results for gamma emitters are found on Table 15 and for I-131 on Table 16.

Gamma spectral analyses of the bimonthly samples showed only naturally occurring radionuclides such as K-40 and Ra-226 to be detected in milk samples during 1996. K-40 was detected in all indicator and control samples. Ra-226 occurred intermittently in milk samples. K-40 and Ra-226 are naturally occurring radionuclides and are found in many of the environmental media sampled.

II. MILK (Cont'd)

B. Evaluation of Milk Data - Tables 15 and 16 (Cont'd)

During 1996, Cs-134 or Cs-137 were not detected in any control or indicator location milk samples. Cs-137 had been last detected in 1988 and was attributed to the use of silage containing trace amounts of Cs-137 from the 1986 Chernobyl Nuclear Plant accident. Evaluation of site historical milk data shows that Cs-137 has been detected in environmental milk samples at both indicator (within 10 miles) and control locations (beyond 10 miles). Mean Cs-137 concentrations for 1976 - 1988 remained fairly consistent and ranged from 5.7 (1982) to 17.1 pCi/liter (1977) at the indicator locations. No Cs-137 was detected in milk samples during 1989 through 1996.

At the control location, Cs-137 had been detected intermittently during the years 1978 - 1982. Control samples were not obtained prior to 1978. Cs-137 ranged from 3.9 - 5.8 pCi/liter during this period. Results from 1986 showed a mean Cs-137 concentration of 8.4 pCi/liter at the control location. The positive Cs-137 results during 1986 were a result of the Chernobyl Nuclear Plant accident. Cs-137 was not detected during 1987 through 1995 at the control location. Past Cs-137 in milk samples is, for the most part, a result of previous weapons testing and more recently, the Chernobyl accident. The continued reduction of Cs-137 levels is a result of nuclear decay and ecological cycling.

No other radionuclides were detected in milk samples using gamma spectral analysis.

Milk samples were collected and analyzed twice per month for I-131. I-131 was not detected during 1995 in any of the indicator or control samples. All 1996 I-131 milk sample results are reported as the lower limit of detection (LLD). The LLD results for 1996 milk samples ranged from <0.26 pCi/liter to <0.57 pCi/liter.

An evaluation of historical data for I-131 in milk samples shows that annual mean results ranged from 0.19 pCi/liter to 6.88 pCi/liter at the indicator locations during 1976 - 1980. I-131 during these years is a result of intermittent weapons testing. Results from 1986 showed that I-131 was detected at a mean concentration of 5.2 pCi/liter as a result of the Chernobyl accident. I-131 was not detected during the period 1987 through 1996 in milk samples.

Historical data for I-131 from the control location showed that I-131 was detected during 1980 at a mean concentration of 1.4 pCi/liter. During 1986, I-131 from the control location showed a mean concentration of 13.6 pCi/liter as a result of the

II. MILK (Cont'd)

B. Evaluation of Milk Data - Tables 15 and 16 (Cont'd)

Chernobyl accident. I-131 was not detected during the period 1987 through 1996 at the control location.

Tables 37 and 38 show the historical environmental sample data for milk.

During 1996, only naturally occurring radionuclides such as Ra-226 and K-40 were detected in milk samples. Therefore, no doses to man have been calculated.

III. FOOD PRODUCTS

A. Sample Collection Methodology and Analysis

Food products are collected once per year during the late summer at the approximate height of the harvest season. Approximately one kilogram of a broadleaf vegetable or other broadleaf vegetation is collected from garden locations with the highest deposition factors (D/Q) based on average historical meteorological data. Five indicator sample locations were utilized from at least two sectors. Additional samples may also be obtained. Control samples are also collected from available off-site locations 9 to 20 miles distant in a least prevalent wind direction. Control samples are of the same or of a similar type of vegetation. All samples are shipped fresh as soon as possible after collection.

Food product samples are analyzed for gamma emitters (gamma isotopic analysis). The gamma isotopic analysis also includes I-131.

Food product locations are shown on Figure 1 (refer to Table 3 for location designations and descriptions).

B. Evaluation of Food Product Data - Tables 17A and 17B

Food product samples collected during 1996 were comprised of garden vegetables and other types of vegetation. Samples were collected from five indicator locations and one control location. The indicator locations were represented by nearby gardens in areas of highest D/Q (deposition factor) values based on historical meteorology and all site release points at operating facilities. The control location was represented by a garden location 9-20 miles distant in a least prevalent wind direction. Garden vegetables were comprised of kale, tomatoes, collard greens, and swiss chard, which are all (except tomatoes) considered broadleaf vegetables.

III. FOOD PRODUCTS (Cont'd)

B. Evaluation of Food Product Data - Tables 17A and 17B (Cont'd)

Other broadleaf vegetation consisted of bean leaves, beet leaves, pepper leaves, grape leaves, squash leaves, and cucumber leaves. At the control location, one sample of each of the same or of a similar type of vegetable or vegetation was collected. Vegetables and vegetation were collected in the late summer harvest season (mid-September 1996).

Results for food products are shown on Tables 17A and 17B. Table 17A shows results in pCi/g (wet) while Table 17B results are in units of pCi/kg (wet). Several naturally occurring radionuclides were detected in food product samples during 1996. K-40 was detected in all samples of food products. Be-7, Ra-226 and AcTh-228 were detected intermittently in the vegetation samples. K-40, Be-7, Ra-226 and AcTh-228 are all naturally occurring radionuclides.

No other radionuclides were detected in the 1996 samples of food products.

Although not detected during 1996, a review of past environmental data indicates that Cs-137 has been detected intermittently during the years of 1976 - 1995 at the indicator locations and during the years of 1980 - 1995 at the control locations (control samples were not obtained prior to 1980). During the period of 1977 - 1995, Cs-137 in fruits and/or vegetables sampled at indicator locations ranged in mean concentrations of 0.004 pCi/g (wet) in 1977 to 0.047 pCi/g (wet) in 1985. Control sample results during 1980-1995 showed Cs-137 detected only twice during this period; once in 1980 at a concentration of 0.020 pCi/g (wet) and once in 1993 at a concentration of 0.007 pCi/g (wet).

Tables 39 and 40 show historical environmental sample data for food products.

IV. LAND USE CENSUS

A. Methodology

A land use census is conducted to determine the utilization of land in the vicinity of the site. The land use census actually consists of two types of census. A milk animal census is conducted to identify all milk animals within a distance of 10 miles from the site. A residence census is conducted to identify the closest residence in each of the meteorological sectors.

# 4.0 TERRESTRIAL SAMPLES

## IV. LAND USE CENSUS (Cont'd)

### A. Methodology (Cont'd)

The milk animal census is an estimation of the number of cows and goats within an approximate ten mile radius of the Nine Mile Point Site. A census is initiated once per year in the spring. The census is conducted by sending questionnaires to previous milk animal owners and also by road surveys to locate any possible new owners. In the event questionnaires are not answered, then the owners are contacted by telephone or in person. The local agricultural agency was also contacted.

A second type of census is a residence census. This census is conducted in accordance with the Technical Specifications in order to identify the closest residence within three miles in each of the 22.5 degree meteorological sectors. A residence, for the purposes of this census, is a residence that is occupied on a part time basis (such as a summer camp), or on a full time, year round basis. For the residence census, several of the meteorological sectors are over Lake Ontario because the site is located at the shoreline. Therefore, there are only eight sectors over land where residences are located within 3 miles.

During 1996, a residence census was conducted to identify the nearest residence in each of the sixteen 22.5 degree meteorological sectors within a distance of five miles from the site in order to provide more comprehensive census data. At this distance, some of the meteorological sectors are over water. These sectors include: N, NNE, NE, ENE, W, WNW, NW, and NNW.

### B. Evaluation of Data - Tables 18 and 19

The number of milk animals located <u>within</u> an approximate ten mile radius of the site was estimated to be 998 cows and 17 goats for the 1996 census. The number of cows increased by 30 and the number of goats increased by 10 with respect to the 1995 census. No new milk locations were identified during the 1996 census. Most of the goats found on the census were milking goats. However, any milk produced was utilized by the owners and was not available for the sampling program. The results of the milk animal census are found on Table 18. Milk animal locations are shown on Figure 2.

The results of the 1996 residence census showing the applicable sectors and degrees and distance of each of the nearest residences are found on Table 19. The nearest residences are shown in Figure 1. No changes were noted in 1996.

# 5.0 INTERLABORATORY COMPARISON PROGRAM

## 5.0 INTERLABORATORY COMPARISON PROGRAM

### A. Description

Technical Specification sections 3.6.21 and 3.12.3 for the Nine Mile Point Nuclear Station Unit 1 and Unit 2, respectively, require that a summary of the results obtained as part of an Interlaboratory Comparison Program be included in the Annual Radiological Environmental Operating Report. Prior to 1996, the results from the EPA Program Evaluation Studies Program were used to satisfy this requirement. At the end of 1995, the EPA discontinued the Performance Evaluation Program. A new cross check program was established and utilized during 1996 to replace the EPA program. This program consists of utilizing the Analytics commercial laboratory and the Environmental Measurements Laboratory (EML) to supply the required reference samples. Both of these laboratories provide a program which is traceable to the National Institute of Standards and Technology (NIST). The Analytics supplied program was effective the first quarter of 1996 (March) and the EML program became effective during the third quarter of 1996 (September).

The current interlaboratory comparison program with Analytics and EML exceeds the number of samples that were previously supplied by the EPA.

### B. Results

The following table summarizes the types of spiked, intercomparison samples received by Analytics and EML during 1996:

| Media | Analysis | Analytics | EML | Total |
|---|---|---|---|---|
| Water | Gross Beta | 0 | 1 | 1 |
| Water | Tritium | 1 | 1 | 2 |
| Water | I-131 | 2 | 0 | 2 |
| Water | Mixed Gamma | 2 | 1 | 3 |
| Air | Gross Beta | 2 | 1 | 3 |
| Air | I-131 | 2 | 0 | 2 |
| Air | Mixed Gamma | 2 | 1 | 3 |
| Milk | I-131 | 2 | 0 | 2 |
| Milk | Mixed Gamma | 2 | 0 | 2 |
| Soil | Mixed Gamma | 1 | 1 | 2 |
| Vegetation | Mixed Gamma | 0 | 1 | 1 |
| | | 16 | 7 | 23 |

# 5.0 INTERLABORATORY COMPARISON PROGRAM

## B. Results (Cont'd)

### 1. Analytics Results

Results of the samples received by Analytics as part of the 1996 Interlaboratory Comparison Program are summarized on Table 20. The Site Environmental Laboratory analyzed all spiked samples received from Analytics using standard laboratory procedures. In order to compare the "known" quantity of radioactivity to the site laboratory results, the site laboratory submitted results to Analytics, who then issued a statistical summary report to the site laboratory. A Normalized Deviation from the Known Value (NDKV) acceptance criteria methodology was utilized in order to evaluate the site laboratory's performance. Acceptable NDKV was determined to be between -3 and 3 NDKV.

The 16 spiked samples from Analytics required 68 isotopic analyses and 2 gross beta analyses. All results, except for a single gamma analysis of Fe-59 in soil were within -3 and 3 NDKV. The Fe-59 analytical results for soil sample 96-06A had a calculated NDKV of 6.11 which placed the results outside the acceptable limits. The nonconformity for Fe-59 was a result of the low level of Fe-59 activity provided in the blind sample. The Fe-59 concentration of 0.17 pCi/gm was near the routine detection limit of analysis. One of the three analyses which made up the reported mean result was higher than the remaining two which biased the mean high. Seven other isotopes were present in the sample. The mean results for the other seven isotopes were within the +3 to -3 NDKV range and acceptable. The nonconformity does not indicate a laboratory systematic error.

### 2. EML Results

Results of the samples provided by EML as part of the 1996 Interlaboratory Program are provided on Table 20. EML samples analyzed by the site environmental laboratory were analyzed for gross beta, tritium and gamma emitting nuclides, as appropriate. Following analysis, results were submitted to EML. Acceptance criteria (evaluating the laboratory's performance of these samples) differs from the Analytic sample evaluation. EML determined performance utilizing the following criteria:

| Result | Cumulative Normalized Distribution |
|---|---|
| Acceptable | 15% - 85% |
| Acceptable, with warning | 5-15% or 85-95% |
| Not Acceptable | <5% or >95% |

## 5.0 INTERLABORATORY COMPARISON PROGRAM

B. Results (Cont'd)

2. EML Results (Cont'd)

Of the 17 analyses performed on the EML samples, none were found to be "Not Acceptable," thirteen were found to be "Acceptable" and four analyses were placed in the "Acceptable with Warning" category.

The two samples, which required two analyses each (total of four analyses) which resulted in an "acceptable with warning" evaluation were soil and vegetation samples. Each of these samples contained Cs-137 and Co-60. The bias in the sample results were the result of density differences between the EML sample matrix and the JAF Environmental Laboratory calibration standards. The soil isotopic results were in the range of 28% - 30% higher than EML known value. This is attributable to a difference in sample density compared to the calibration source density. The density of the EML sample was 0.20 gm/cc compared to the calibration source density of 1.33 gm/cc. This difference in density resulted in a sample analysis which is biased high. A similar evaluation can be made for the vegetation results. The density of the EML sample is 0.30 gm/cc compared to the laboratory calibration source density of 1.15 gm/cc. Again, this difference in density provided a sample result which is biased high.

Neither of these sample results evaluations represent laboratory systematic error.

## 6.0 HISTORICAL ENVIRONMENTAL SAMPLE DATA

## 6.0 HISTORICAL ENVIRONMENTAL SAMPLE DATA

### A. Description

Technical Specification requirements for the Annual Radiological Environmental Operating Report require a comparison of data from the current reporting period with that of previous years REMP results, including pre-operational data if available. As such, each sample media section of this report provided a written discussion of the year 1996 results with previous years results. Data for all sample media is additionally provided in tabular form for each year on Tables 21-40. Tables 21 - 40 show historical environmental sample data for critical radionuclides or radionuclides routinely detected in environmental sample media. Data show the minimum, maximum, and mean for each year evaluated. The data only consider detectable quantities and do not consider lower limit of detection (LLD) quantities. Data on Tables 21 - 40 were obtained from previous Annual Radiological Environmental Operating Report tables.

### B. Results

The historical data provided on Tables 21-40 show a general decreasing trend of detected radioactivity when compared with pre-operational and early operational data of the Nine Mile plants. The majority of radioactivity detected throughout the years has been attributed to weapons testing fallout and natural background radiation, with a small fraction attributed to plant operations. A combination of atmospheric weapons testing bans, ecological cycling and radioactive decay have resulted in the overall reduction in the concentration of radioactive materials detected in environmental samples.

## 7.0 CHANGES AND EXCEPTIONS TO THE PROGRAM

## 7.0 CHANGES AND EXCEPTIONS TO THE PROGRAM

A. Changes to the 1996 Sample Program

1. Food product location J was added to the program during 1996. This is a new location which was added due to its higher D/Q.

2. Food product location Q was not utilized by the sampling program during 1996 because of the higher deposition potential of location J.

B. Exceptions to the 1996 Sample Program

Exceptions to the 1996 sample program concerns those samples or monitoring requirements which are required by the Technical Specifications. This section implements section 3.6.20 of the Nine Mile Point Nuclear Station Unit 1 Technical Specifications and Section 3.12.1 of the Nine Mile Point Nuclear Station Unit 2 Technical Specifications.

- Air radioiodine and particulate sampling required by the Technical Specifications

  1. Environmental air sample equipment at R-4 off-site sampling station was found to be inoperable during the period 1/29/96 - 1/30/96 for approximately 31 hours. The breaker had tripped. Breaker was reset to bring station operational.

  2. Environmental air sample equipment at R-5 off-site station was inoperable on 8/20/96 from 0900 to 1200 hours due to a localized power outage in that area.

  No other sample downtime was observed during 1996 for any Technical Specification required air radioiodine and particulate sampling locations. Other occurrences of downtime for optional air sampling stations were documented for 1996. However, these occurrences were minimal and are not presented here because optional air sampling stations are not required by the Technical Specifications.

- Direct Radiation Measurements

  1. Thermoluminscent Dosimeter (TLD) number 76 which is required by the Technical Specifications was discovered to be missing during the fourth quarter changeout. A new TLD was placed at that location.

## 7.0 CHANGES AND EXCEPTIONS TO THE PROGRAM

B. Exceptions to the 1996 Sample Program (Cont'd)

No other Technical Specification required TLDs were lost during 1996.

Other occurrences of missing TLDs which were placed at optional locations were documented during 1996. However, these occurrences were minimal (1 occurrence) and are not presented here because the optional locations were not required by Technical Specifications.

C. Lower Limit of Detection for Environmental Samples

The Technical Specifications require that environmental samples analyzed for the Radiological Environmental Monitoring Program meet the lower limits of detection (LLD) found on Table 4.6.20-1 of the Nine Mile Point Unit 1 Technical Specifications and Table 4.12.1-1 of the Nine Mile Point Unit 2 Technical Specifications. All of the 1996 environmental samples required by the Technical Specifications which showed no net activity were less than the required values found on Table 4.6.20-1 and Table 4.12.1-1.

D. Deviations from the Interlaboratory Comparison Program

Section 3.6.21 of the Nine Mile Point Unit 1 Technical Specifications and Section 3.12.3 of the Nine Mile Point Unit 2 Technical Specifications require the site to conduct an Interlaboratory Comparison Program. This section also requires that deviations from the sample schedules be reported in the Annual Radiological Environmental Operating Report.

During 1996, sample media for which environmental samples are routinely collected and analyzed, were obtained and analyzed. There were no deviations noted in the Interlaboratory Comparison Program.

# 8.0 CONCLUSION

## 8.0 CONCLUSION

### CONCLUSION

The Radiological Environmental Monitoring Program (REMP) was established to detect and evaluate any possible impact to the environment surrounding the Nine Mile Point area resulting from operations at the site.

Samples representing food sources consumed at higher trophic levels, such as fish and milk, were reviewed closely to evaluate any impact to the general environment or to man. In addition, the data was reviewed for any possible historical trophic level bioaccumulation trends. Little or no impact could be determined resulting from radionuclide deposition considering all sources (natural, weapons testing, etc.). In regards to doses as a result of man-made radionuclides, a significant portion of the small doses received by a member of the public was from past nuclear weapons testing. Doses as a result of naturally occurring radionuclides, such as K-40, contributed a major portion of the total annual dose to members of the public.

Any possible impact as a result of site operations is extremely minimal when compared to the impact from natural background levels or weapons testing. It has been demonstrated that almost all environmental samples contain traces of radionuclides which are a result of weapons testing or naturally occurring sources (primordial and/or cosmic related). Whole body doses to man as a result of natural sources (naturally occurring radionuclides in the soil and lower atmosphere) in Oswego County account for approximately 50 mrem per year as demonstrated by control environmental TLD's. Possible doses due to site operations are a minute fraction of this particular natural exposure.

During 1996, the presence of one fission product radionuclide was noted in two different sample media. These media included sediment and fish samples. The most likely source of this fission product is past weapons testing. The impact, expressed as a dose to man, from this radionuclide is minimal and insignificant when compared to the natural background dose.

Therefore, as determined by review of the data presented herein, no impact due to operations at the Nine Mile Point Nuclear Station was detected that would affect the health and safety of the public.

# 9.0 GENERAL REFERENCE MATERIAL

## 9.0 GENERAL REFERENCE MATERIAL

1. U.S. Nuclear Regulatory Commission Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I", March 1976 (Revision 0).

2. U.S. Nuclear Regulatory Commission Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance With 10 CFR Part 50, Appendix I", October 1977 (Revision 1).

3. U.S. Nuclear Regulatory Commission Regulatory Guide 4.8, "Environmental Technical Specifications for Nuclear Power Plants", December, 1975.

4. U.S. Nuclear Regulatory Commission Branch Technical Position to Regulatory Guide 4.8, "An Acceptable Radiological Environmental Monitoring Program", Revision 1, November 1979.

5. National Council on Radiation Protection and Measurements (NCRP), Environmental Radiation Measurements, NCRP Report No. 50, 1976.

6. National Council on Radiation Protection and Measurements (NCRP), Natural Background Radiation in the United States, NCRP Report No. 45, 1975.

7. National Council on Radiation Protection and Measurements (NCRP), Cesium-137 from the Environment to Man: Metabolism and Dose, NCRP Report No. 52, 1977.

8. National Council on Radiation Protection and Measurements (NCRP), Radiation Exposure from Consumer Products and Miscellaneous Sources, NCRP Report No. 56, 1977.

9. International Commission on Radiological Protection (ICRP), Radionuclide Release into the Environment; Assessment of Doses to Man, ICRP Publication 29, 1979.

10. Eichholz, G. Environmental Aspects of Nuclear Power, First Edition, Ann Arbor Science Publishers, Inc., Ann Arbor, Michigan, 1976.

11. Eisenbud, Merrill, Environmental Radioactivity, Second Edition, Academic Press, New York, NY 1973.

12. Thomas, C.W. etc al., Radioactive Fallout from Chinese Nuclear Weapons Test, September 26, 1976. (BNWL-2164) Battelle, Pacific Northwest Laboratories, U.S. ERDA, 1979.

## 9.0 GENERAL REFERENCE MATERIAL

13. Pochin, Edward E., Estimated Population Exposure from Nuclear Power Production and Other Radiation Sources, Nuclear Energy Agency, Organization for Economic Co-Operation and Development, 1976.

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16. U.S. Department of Health and Human Services. Preparedness and Response in Radiation Accidents, National Center for Devices and Radiological Health, Rockville, Maryland 20857. August 1983.

17. National Council on Radiation Protection and Measurements (NCRP), Ionizing Radiation Exposure of the Population of the United States, NCRP Report No. 93, 1987.

# 10.0 DATA TABLES - 1996

## TABLE 1

## SAMPLE COLLECTION AND ANALYSIS

## SITE RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM *

| A. AQUATIC PROGRAM | | | |
|---|---|---|---|
| MEDIA | ANALYSIS | FREQUENCY | LOCATIONS (1) |
| 1. Shoreline Sediment | Gamma Spectroscopy | 2/Year | 1 Indicator (2) |
| 2. Fish | Gamma Spectroscopy | 2/Year | 2 Indicator (3), 1 Control |
| 3. Surface Water | Gamma Spectroscopy<br>Tritium | Monthly Composite<br>Quarterly Composite | 1 Indicator (4), 1 Control<br>1 Indicator (4), 1 Control |
| **B. DIRECT RADIATION** | | | |
| 1. TLD | Gamma Dose | Quarterly | 30 Indicator, 2 Control (5) |

NOTES:

* Sampling and analysis program as required by the Technical Specifications.
(1) Aquatic program indicator samples collected in the vicinity of the site; control samples collected at a distance of at least five miles from the site.
(2) Indicator sample from an area of potential recreational value.
(3) Indicator samples from an area near the vicinity of a site discharge point. Control samples of the same species or of species of similar feeding habits.
(4) Indicator sample from the J.A. Fitzpatrick inlet canal.
(5) Indicator samples from the site boundary, four-five miles from the site, special interest areas and control areas (greater than ten miles from the site).

## TABLE 2

## SAMPLE COLLECTION AND ANALYSIS

## SITE RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM*

### C. TERRESTRIAL PROGRAM

| MEDIA | ANALYSIS | FREQUENCY | LOCATIONS |
|---|---|---|---|
| 1. Air Particulates | Gross Beta<br>Gamma Spectroscopy | Weekly<br>Monthly Composite | 4 Indicator, 1 Control (1) |
| 2. Airborne - I-131 | Gamma Spectroscopy | Weekly | 4 Indicator, 1 Control (1) |
| 3. Milk | I-131<br>Gamma Spectroscopy | 2/Month<br>2/Month | 3 Indicator, 1 Control (2) |
| 4. Human Food Crops | I-131 (4)<br>Gamma Spectroscopy | Annually | See note below (3) |

NOTES:

* Sampling and analysis program as required by the Technical Specifications.
(1) Three indicator samples from near the site boundary in three of the highest D/Q meteorological sectors, one indicator sample from near a year round community, and one control sample from an area of least prevalent wind direction or previously established control location.
(2) Three indicator samples from areas within 5.0 miles of the site. Control sample from an area in a least prevalent wind direction.
(3) Samples of three different kinds of broadleaf vegetation nearest to each of two different off-site locations of highest D/Q and one sample of each of similar broadleaf vegetation at least 9.3-20 miles distant in a least prevalent wind direction.
(4) Gamma spectral analysis to include I-131.

## TABLE 3

## 1996 ENVIRONMENTAL SAMPLE LOCATIONS

| SAMPLE MEDIUM | MAP DESIGNATION | FIGURE NUMBER | LOCATION DESCRIPTION | DEGREES & DISTANCE (1) |
|---|---|---|---|---|
| Shoreline Sediment | 05* | Figure 1 | Sunset Bay | 80° at 1.5 miles |
| | 06 | Figure 1 | Langs Beach, Control | 230° at 5.8 miles |
| Fish | 02* | Figure 1 | Nine Mile Point Transect | 315° at 0.3 miles |
| | 03* | Figure 1 | FitzPatrick Transect | 55° at 0.6 miles |
| | 00* | Figure 1 | Oswego Transect | 235° at 6.2 miles |
| Surface Water | 3* | Figure 2 | FitzPatrick Inlet | 70° at 0.5 miles |
| | 08* | Figure 2 | Oswego Steam Station Inlet | 235° at 7.6 miles |
| | 9 | Figure 2 | NMP Unit 1 Inlet | 305° at 0.3 miles |
| | 10 | Figure 2 | Oswego City Water | 240° at 7.8 miles |
| | 11 | Figure 2 | NMP Unit 2 Inlet | 304° at 0.1 miles |
| Air Radioiodine and Particulates | R-1* | Figure 3 | R-1 Station, Nine Mile Point Road | 88° at 1.8 miles |
| | R-2* | Figure 4 | R-2 Station, Lake Road | 104° at 1.1 miles |
| | R-3* | Figure 4 | R-3 Station, Co. Rt. 29 | 132° at 1.5 miles |
| | R-4* | Figure 4 | R-4 Station, Co. Rt. 29 | 143° at 1.8 miles |
| | R-5* | Figure 3 | R-5 Station, Montario Point Road | 42° at 16.4 miles |
| | D1 | Figure 4 | D1 On-Site Station | 69° at 0.2 miles |
| | G | Figure 4 | G On-Site Station | 250° at 0.7 miles |
| | H | Figure 4 | H On-Site Station | 70° at 0.8 miles |
| | I | Figure 4 | I On-Site Station | 98° at 0.8 miles |
| | J | Figure 4 | J On-Site Station | 110° at 0.9 miles |
| | K | Figure 4 | K On-Site Station | 132° at 0.5 miles |
| | G | Figure 3 | G Off-Site Station, Saint Paul Street | 225° at 5.3 miles |
| | D2 | Figure 3 | D2 Off-Site Station, Rt. 64 | 117° at 9.0 miles |
| | E | Figure 3 | E Off-Site Station, Rt. 4 | 160° at 7.2 miles |
| | F | Figure 3 | F Off-Site Station, Dutch Ridge Road | 190° at 7.7 miles |

## TABLE 3 (Continued)

## 1996 ENVIRONMENTAL SAMPLE LOCATIONS

| SAMPLE MEDIUM | MAP DESIGNATION | FIGURE NUMBER | LOCATION DESCRIPTION | DEGREES & DISTANCE (1) |
|---|---|---|---|---|
| Thermoluminescent Dosimeters (TLD) | 3 | Figure 4 | D1 On-Site Station | 69° at 0.2 miles |
| | 4 | Figure 4 | D2 On-Site Location | 140° at 0.4 miles |
| | 5 | Figure 4 | E On-Site Location | 175° at 0.4 miles |
| | 6 | Figure 4 | F On-Site Location | 210° at 0.5 miles |
| | 7* | Figure 4 | G On-Site Station | 250° at 0.7 miles |
| | 8 | Figure 3 | R-5 Off-Site Station | 42° at 16.4 miles |
| | 9 | Figure 3 | D1 Off-Site Location | 80° at 11.4 miles |
| | 10 | Figure 3 | D2 Off-Site Station | 117° at 9.0 miles |
| | 11 | Figure 3 | E Off-Site Station | 160° at 7.2 miles |
| | 12 | Figure 3 | F Off-Site Station | 190° at 7.7 miles |
| | 13 | Figure 3 | G Off-Site Station | 225° at 5.3 miles |
| | 14* | Figure 3 | Southwest Oswego - Control | 226° at 12.6 miles |
| | 15* | Figure 3 | West Site Boundary | 237° at 0.9 miles |
| | 18* | Figure 4 | Energy Information Center | 265° at 0.4 miles |
| | 19 | Figure 3 | East Site Boundary | 81° at 1.3 miles |
| | 23* | Figure 4 | H On-Site Station | 70° at 0.8 miles |
| | 24 | Figure 4 | I On-Site Station | 98° at 0.8 miles |
| | 25 | Figure 4 | J On-Site Station | 110° at 0.9 miles |
| | 26 | Figure 4 | K On-Site Station | 132° at 0.5 miles |
| | 27 | Figure 4 | North Fence, JAFNPP | 60° at 0.4 miles |
| | 28 | Figure 4 | North Fence, JAFNPP | 68° at 0.5 miles |
| | 29 | Figure 4 | North Fence, JAFNPP | 65° at 0.5 miles |
| | 30 | Figure 4 | North Fence, JAFNPP | 57° at 0.4 miles |
| | 31 | Figure 4 | North Fence, NMP-1 | 276° at 0.2 miles |
| | 39 | Figure 4 | North Fence, NMP-1 | 292° at 0.2 miles |
| | 47 | Figure 4 | North Fence, JAFNPP | 69° at 0.6 miles |
| | 49* | Figure 3 | Phoenix, NY - Control | 170° at 19.8 miles |
| | 51 | Figure 3 | Oswego Steam Station, East | 233° at 7.4 miles |
| | 52 | Figure 3 | Fitzhugh Park Elementary School, East | 227° at 5.8 miles |
| | 53 | Figure 3 | Fulton High School | 183° at 13.7 miles |
| | 54 | Figure 3 | Mexico High School | 115° at 9.3 miles |
| | 55 | Figure 3 | Pulaski Gas Substation, Rt. 5 | 75° at 13.0 miles |

## TABLE 3 (Continued)

## 1996 ENVIRONMENTAL SAMPLE LOCATIONS

| SAMPLE MEDIUM | MAP DESIGNATION | FIGURE NUMBER | LOCATION DESCRIPTION | DEGREES & DISTANCE (1) |
|---|---|---|---|---|
| Thermoluminescent Dosimeters (TLD) (Continued) | 56* | Figure 3 | New Haven Elementary School | 123° at 5.3 miles |
| | 58* | Figure 3 | County Route 1 and Alcan | 220° at 3.1 miles |
| | 75* | Figure 4 | North Fence, NMP-2 | 5° at 0.1 miles |
| | 76* | Figure 4 | North Fence, NMP-2 | 25° at 0.1 miles |
| | 77* | Figure 4 | North Fence, NMP-2 | 45° at 0.2 miles |
| | 78* | Figure 4 | East Boundary, JAFNPP | 90° at 1.0 miles |
| | 79* | Figure 4 | County Route 29 | 115° at 1.1 miles |
| | 80* | Figure 4 | County Route 29 | 133° at 1.4 miles |
| | 81* | Figure 4 | Miner Road | 159° at 1.6 miles |
| | 82* | Figure 4 | Miner Road | 181° at 1.6 miles |
| | 83* | Figure 4 | Lakeview Road | 200° at 1.2 miles |
| | 84* | Figure 3 | Lakeview Road | 225° at 1.1 miles |
| | 85* | Figure 4 | North Fence, NMP-1 | 294° at 0.2 miles |
| | 86* | Figure 4 | North Fence, NMP-1 | 315° at 0.1 miles |
| | 87* | Figure 4 | North Fence, NMP-2 | 341° at 0.1 miles |
| | 88* | Figure 3 | Hickory Grove Road | 97° at 4.5 miles |
| | 89* | Figure 3 | Leavitt Road | 111° at 4.1 miles |
| | 90* | Figure 3 | Route 104 and Keefe Road | 135° at 4.2 miles |
| | 91* | Figure 3 | County Route 51A | 156° at 4.8 miles |
| | 92* | Figure 3 | Maiden Lane Road | 183° at 4.4 miles |
| | 93* | Figure 3 | County Route 53 | 205° at 4.4 miles |
| | 94* | Figure 3 | County Route 1 and Kocher Road | 223° at 4.7 miles |
| | 95* | Figure 3 | Lakeshore Camp Site | 237° at 4.1 miles |
| | 96* | Figure 3 | Creamery Road | 199° at 3.6 miles |
| | 97* | Figure 4 | County Route 29 | 143° at 1.8 miles |
| | 98* | Figure 3 | Lake Road | 101° at 1.2 miles |
| | 99 | Figure 3 | Nine Mile Point Road | 88° at 1.8 miles |
| | 100 | Figure 4 | County Route 29 and Lake Road | 104° at 1.1 miles |
| | 101 | Figure 4 | County Route 29 | 132° at 1.5 miles |
| | 102 | Figure 3 | Oswego County Airport | 175° at 11.9 miles |
| | 103 | Figure 4 | Energy Center, East | 267° at 0.4 miles |
| | 104 | Figure 3 | Parkhurst Road | 102° at 1.4 miles |

## TABLE 3 (Continued)

## 1996 ENVIRONMENTAL SAMPLE LOCATIONS

| SAMPLE MEDIUM | MAP DESIGNATION | FIGURE NUMBER | LOCATION DESCRIPTION | DEGREES & DISTANCE (1) |
|---|---|---|---|---|
| Thermoluminescent Dosimeters (TLD) (Continued) | 105 | Figure 4 | Lakeview Road | 198° at 1.4 miles |
| | 106 | Figure 4 | Shoreline Cove, West of NMP-1 | 274° at 0.3 miles |
| | 107 | Figure 4 | Shoreline Cove, West of NMP-1 | 272° at 0.3 miles |
| | 108 | Figure 4 | Lake Road | 104° at 1.1 miles |
| | 109 | Figure 4 | Lake Road | 103° at 1.1 miles |
| | 111 | Figure 3 | Sterling, NY - Control | 214° at 21.8 miles |
| | 113 | Figure 3 | Baldwinsville, NY - Control | 178° at 24.7 miles |
| Cows Milk | 50 | Figure 2 | Indicator Location | 93° at 9.3 miles |
| | 55 | Figure 2 | Indicator Location | 95° at 9.0 miles |
| | 60 | Figure 2 | Indicator Location | 90° at 9.5 miles |
| | 4 | Figure 2 | Indicator Location | 113° at 7.8 miles |
| | 73* | Figure 2 | Control Location | 234° at 13.9 miles |
| Food Products | J | Figure 1 | Indicator Location | 110° at 2.1 miles |
| | R | Figure 1 | Indicator Location | 97° at 1.8 miles |
| | S* | Figure 1 | Indicator Location | 94° at 1.9 miles |
| | K* | Figure 1 | Indicator Location | 96° at 1.7 miles |
| | L | Figure 1 | Indicator Location | 115° at 1.9 miles |
| | M* | Figure 1 | Control Location | 225° at 15.6 miles |

* - Technical Specification location.
(1) - Degrees and distance based on Nine Mile Point Unit 2 reactor centerline.

## TABLE 4

## RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY
## NINE MILE POINT NUCLEAR STATION UNIT 1 DOCKET NO. 50-220
## NINE MILE POINT NUCLEAR STATION UNIT 2 DOCKET NO. 50-410
## OSWEGO COUNTY, STATE OF NEW YORK, JANUARY - DECEMBER 1996*

| MEDIUM (UNITS) | TYPE AND NUMBER OF ANALYSES* | LLD(a) | INDICATOR LOCATIONS: MEAN (f) RANGE | LOCATION (b) OF HIGHEST ANNUAL MEAN: LOCATION & MEAN (f) RANGE | CONTROL LOCATION: MEAN (f) RANGE | NUMBER OF NONROUTINE REPORTS |
|---|---|---|---|---|---|---|
| Shoreline Sediment* | GSA(4): | | | | | |
| (pCi/kg-dry) | Cs-134 | 150 | <LLD | <LLD | <LLD | 0 |
| | Cs-137 | 180 | 156 (2/2)<br>130-183 | Sunset Bay: 156 (2/2)<br>1.5 at 80° 130-183 | <LLD | 0 |
| Fish* | GSA(30): (h) | | | | | |
| (pCi/kg-wet) | Mn-54 | 130 | <LLD | <LLD | <LLD | 0 |
| | Fe-59 | 260 | <LLD | <LLD | <LLD | 0 |
| | Co-58 | 130 | <LLD | <LLD | <LLD | 0 |
| | Co-60 | 130 | <LLD | <LLD | <LLD | 0 |
| | Zn-65 | 260 | <LLD | <LLD | <LLD | 0 |
| | Cs-134 | 130 | <LLD | <LLD | <LLD | 0 |
| | Cs-137 | 150 | 15 (2/20)<br>14-16 | OSW: 16 (2/10)<br>6.2 at 235° 14-18 | 16 (2/10)<br>14-18 | 0 |
| Surface Water* | H-3 (8): | | | | | |
| (pCi/liter) | H-3 | 3000(c) | <LLD | <LLD | <LLD | 0 |
| | GSA (24): | | | | | |
| | Mn-54 | 15 | <LLD | <LLD | <LLD | 0 |
| | Fe-59 | 30 | <LLD | <LLD | <LLD | 0 |
| | Co-58 | 15 | <LLD | <LLD | <LLD | 0 |
| | Co-60 | 15 | <LLD | <LLD | <LLD | 0 |
| | Zn-65 | 30 | <LLD | <LLD | <LLD | 0 |
| | Zr-95 | 15 | <LLD | <LLD | <LLD | 0 |
| | Nb-95 | 15 | <LLD | <LLD | <LLD | 0 |
| | I-131 | 15(c) | <LLD | <LLD | <LLD | 0 |
| | Cs-134 | 15 | <LLD | <LLD | <LLD | 0 |
| | Cs-137 | 18 | <LLD | <LLD | <LLD | 0 |
| | Ba/La-140 | 15 | <LLD | <LLD | <LLD | 0 |

## TABLE 4 (Continued)

### RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY
### NINE MILE POINT NUCLEAR STATION UNIT 1 DOCKET NO. 50-220
### NINE MILE POINT NUCLEAR STATION UNIT 2 DOCKET NO. 50-410
### OSWEGO COUNTY, STATE OF NEW YORK, JANUARY - DECEMBER 1996*

| MEDIUM (UNITS) | TYPE AND NUMBER OF ANALYSES* | LLD(a) | INDICATOR LOCATIONS: MEAN (f) RANGE | LOCATION (b) OF HIGHEST ANNUAL MEAN: LOCATION & | MEAN (f) RANGE | CONTROL LOCATION: MEAN (f) RANGE | NUMBER OF NONROUTINE REPORTS |
|---|---|---|---|---|---|---|---|
| TLD* (mrem per quarterly period) | Gamma Dose(127): | (d) | 14.7(119/119)<br>9.3-31.1 | TLD #85 (g)<br>0.2 at 294° | 24.7(4/4)<br>21.2-31.1 | 13.2(8/8)<br>10.1-17.2 | 0 |
| Air Particulates* pCi/m³ | Gross Beta(260): | 0.01 | 0.013(208/208)<br>0.006-0.025 | R-5<br>16.4 at 42° | 0.014(52/52)<br>0.009-0.023 | 0.014(52/52)<br>0.008-0.023 | 0 |
| | I-131(260): | 0.07 | <LLD | <LLD | | <LLD | 0 |
| | GSA(60): | | | | | | |
| | Cs-134 | 0.05 | <LLD | <LLD | | <LLD | 0 |
| | Cs-137 | 0.06 | <LLD | <LLD | | <LLD | 0 |
| Milk* (pCi/liter) | GSA(90): (e) | (h) | | | | | |
| | Cs-134 | 15 | <LLD | <LLD | | <LLD | 0 |
| | Cs-137 | 18 | <LLD | <LLD | | <LLD | 0 |
| | Ba/La-140 | 15 | <LLD | <LLD | | <LLD | 0 |
| | I-131(90):<br>I-131 | 1 | <LLD | <LLD | | <LLD | 0 |
| Food Products* (pCi/kg-wet) (broadleaf vegetation) | GSA(23):(h) | | | | | | |
| | I-131 | 60 | <LLD | <LLD | | <LLD | 0 |
| | Cs-134 | 60 | <LLD | <LLD | | <LLD | 0 |
| | Cs-137 | 80 | <LLD | <LLD | | <LLD | 0 |

TABLE 4 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY
NINE MILE POINT NUCLEAR STATION UNIT 1 DOCKET NO. 50-220
NINE MILE POINT NUCLEAR STATION UNIT 2 DOCKET NO. 50-410
OSWEGO COUNTY, STATE OF NEW YORK, JANUARY - DECEMBER 1996*

TABLE NOTES:

| | | |
|---|---|---|
| * | = | Data for Table 4 is based on Technical Specification required samples unless otherwise indicated. |
| (a) | = | LLD values as required by the Radiological Technical Specifications. LLD units are specified in the medium column. |
| (b) | = | Location is distance in miles and direction in compass degrees based on NMP-2 reactor center-line. Units for this column are specified in medium column. |
| (c) | = | The Technical Specifications specify an I-131 and tritium LLD value for surface water analysis (non-drinking water) of 15 pCi/liter and 3000 pCi/liter respectively. |
| (d) | = | The Technical Specifications do not specify a particular LLD value to environmental TLDs. The NMP-1 and NMP-2 Off-Site Dose Calculation Manuals contain specifications for environmental TLD sensitivities. |
| (e) | = | The Technical Specification criteria for indicator milk sample locations includes locations within 5.0 miles of the site. There are no milk sample locations within 5.0 miles of the site. Therefore, the only sample location required by the Technical Specifications is the control location. There were four optional indicator locations during 1996. |
| (f) | = | Fraction of number of detectable measurements to total number of measurements. Mean and range results are based on detectable measurements only. |
| (g) | = | The results for TLD #85 must be evaluated with the knowledge that this TLD is in close proximity (300-500 feet) of the Nine Mile Point Unit 1 reactor building and the radwaste buildings. This TLD, as well as other TLDs in this area, are adjacent to the lake shoreline which is a restricted area to members of the public. There are no residences or private property near this area. |
| (h) | = | Data includes results from optional samples in addition to samples required by the Technical Specifications. |

## TABLE 5A

## CONCENTRATION OF GAMMA EMITTERS IN SHORELINE SEDIMENT SAMPLES

**Results in units of pCi/g (dry) ± 1 sigma**

| SAMPLE LOCATION | COLLECTION DATE | Be-7 | K-40 | Co-60 | Cs-134 | Cs-137 | Ra-226 | AcTh-228 | Other |
|---|---|---|---|---|---|---|---|---|---|
| Langs Beach (Control) | 4-25-96 | <0.25 | 18.0 ± 0.45 | <0.04 | <0.03 | <0.04 | 0.82 ± 0.30 | 0.49 ± 0.06 | <LLD |
| | 10-25-96 | <0.31 | 11.3 ± 0.29 | <0.03 | <0.03 | <0.04 | 1.13 ± 0.29 | 0.54 ± 0.06 | <LLD |
| Sunset Beach (Off-Site)* | 4-25-96 | <0.44 | 17.4 ± 0.64 | <0.06 | <0.04 | 0.13 ± 0.02 | 2.26 ± 0.43 | 0.54 ± 0.09 | <LLD |
| | 10-25-96 | <0.34 | 17.4 ± 0.57 | <0.05 | <0.03 | 0.18 ± 0.02 | 1.32 ± 0.34 | 0.87 ± 0.08 | <LLD |

*Sample required by the Technical Specifications
Results in units of activity per gram dry weight.

**TABLE 5B**

**CONCENTRATION OF GAMMA EMITTERS IN SHORELINE SEDIMENT SAMPLES**

**Results in units of pCi/kg (dry) ± 1 sigma**

| SAMPLE LOCATION | COLLECTION DATE | Be-7 | K-40 | Co-60 | Cs-134 | Cs-137 | Ra-226 | AcTh-228 | OTHERS |
|---|---|---|---|---|---|---|---|---|---|
| Langs Beach | 4-25-96 | <25 | 18000 ± 453 | <36 | <34 | <35 | 817 ± 303 | 491 ± 58 | <LLD |
| (Control) | 10-25-96 | <31 | 15600 ± 410 | <31 | <25 | <35 | 1130 ± 288 | 541 ± 55 | <LLD |
| Sunset Beach | 4-25-96 | <44 | 17400 ± 642 | <60 | <42 | 130 ± 22 | 2260 ± 434 | 539 ± 93 | <LLD |
| (Off-Site)* | 10-25-96 | <34 | 17400 ± 566 | <49 | <31 | 183 ± 20 | 1320 ± 341 | 872 ± 79 | <LLD |

* Sample required by the Technical Specifications
Results in units of activity per kilogram dry weight

## TABLE 6A

## CONCENTRATION OF GAMMA EMITTERS IN FISH SAMPLES

**Results in units of pCi/g (wet) ± 1 sigma**

| | | GAMMA EMITTERS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE DATE | SAMPLE TYPE | Fe-59 | Co-58 | K-40 | Mn-54 | Co-60 | Cs-134 | Cs-137 | Zn-65 | Ra-226 | OTHER |
| OSWEGO (CONTROL) - 00 | | | | | | | | | | | |
| 6-7-96 | Whitesucker | <0.08 | <0.03 | 4.29 ± 0.23 | <0.03 | <0.02 | <0.03 | <0.023 | <0.06 | <0.40 | <LLD |
| 6-7-96 | Lake Trout | <0.08 | <0.03 | 3.75 ± 0.19 | <0.02 | <0.02 | <0.02 | 0.014 ± 0.007 | <0.04 | <0.37 | <LLD |
| 6-7-96 | Brown Trout | <0.08 | <0.03 | 8.13 ± 0.22 | <0.02 | <0.02 | <0.02 | <0.022 | <0.05 | 1.15 ± 0.19 | <LLD |
| 6-7-96 | Smallmouth Bass | <0.09 | <0.04 | 4.02 ± 0.25 | <0.04 | <0.03 | <0.03 | <0.029 | <0.08 | <0.43 | <LLD |
| 9-17-96 | Whitesucker | <0.10 | <0.04 | 9.64 ± 0.26 | <0.03 | <0.03 | <0.02 | <0.026 | <0.05 | 0.85 ± 0.17 | <LLD |
| 9-17-96 | Lake Trout #1 | <0.07 | <0.03 | 3.06 ± 0.16 | <0.02 | <0.02 | <0.02 | <0.016 | <0.05 | 0.54 ± 0.12 | <LLD |
| 9-17-96 | Lake Trout #2 | <0.11 | <0.04 | 3.95 ± 0.26 | <0.04 | <0.04 | <0.03 | <0.030 | <0.08 | 0.36 ± 0.17 | <LLD |
| 9-17-96 | Brown Trout | <0.08 | <0.03 | 4.50 ± 0.21 | <0.02 | <0.02 | <0.02 | 0.018 ± 0.007 | <0.06 | 0.42 ± 0.14 | <LLD |
| 9-17-96 | Smallmouth Bass | <0.10 | <0.04 | 3.88 ± 0.24 | <0.03 | <0.03 | <0.03 | <0.026 | <0.06 | 0.48 ± 0.15 | <LLD |
| 9-17-96 | Chinook Salmon | <0.09 | <0.03 | 9.76 ± 0.25 | <0.03 | <0.03 | <0.02 | <0.025 | <0.04 | 0.39 ± 0.16 | <LLD |
| NINE MILE POINT - 02 | | | | | | | | | | | |
| 6-18-96 | Whitesucker | <0.06 | <0.03 | 8.40 ± 0.22 | <0.02 | <0.02 | <0.02 | <0.024 | <0.04 | 0.87 ± 0.18 | <LLD |
| 6-4-96 | Lake Trout | <0.11 | <0.04 | 3.01 ± 0.22 | <0.04 | <0.04 | <0.03 | <0.026 | <0.07 | <0.43 | <LLD |
| 6-4-96 | Brown Trout | <0.08 | <0.03 | 4.81 ± 0.21 | <0.02 | <0.02 | <0.02 | <0.020 | <0.06 | <0.36 | <LLD |
| 6-4-96 | Smallmouth Bass | <0.06 | <0.02 | 2.99 ± 0.19 | <0.02 | <0.02 | <0.02 | <0.018 | <0.05 | 0.46 ± 0.12 | <LLD |
| 9-26-96 | Whitesucker | <0.10 | <0.03 | 4.77 ± 0.24 | <0.03 | <0.03 | <0.03 | <0.026 | <0.06 | 0.29 ± 0.15 | <LLD |
| 10-8-96 | Lake Trout #1 | <0.06 | <0.03 | 3.30 ± 0.18 | <0.02 | <0.03 | <0.02 | 0.014 ± 0.007 | <0.05 | 0.55 ± 0.13 | <LLD |
| 10-8-96 | Lake Trout #2 | <0.11 | <0.04 | 4.10 ± 0.30 | <0.04 | <0.04 | <0.04 | <0.040 | <0.10 | 0.29 ± 0.18 | <LLD |
| 9-25-96 | Smallmouth Bass | <0.08 | <0.03 | 4.51 ± 0.21 | <0.02 | <0.02 | <0.03 | 0.016 ± 0.007 | <0.07 | 0.53 ± 0.14 | <LLD |
| 9-26-96 | Brown Trout | <0.08 | <0.03 | 4.57 ± 0.24 | <0.03 | <0.03 | <0.03 | <0.021 | <0.06 | <0.42 | <LLD |
| 9-25-96 | Walleye | <0.10 | <0.04 | 4.67 ± 0.25 | <0.03 | <0.03 | <0.04 | <0.028 | <0.08 | <0.46 | <LLD |

## TABLE 6A (Continued)

## CONCENTRATION OF GAMMA EMITTERS IN FISH SAMPLES

### Results in units of pCi/g (wet) ± 1 sigma

| | | GAMMA EMITTERS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE DATE | SAMPLE TYPE | Fe-59 | Co-58 | K-40 | Mn-54 | Co-60 | Cs-134 | Cs-137 | Zn-65 | Ra-226 | OTHER |
| JA FITZPATRICK - 03 | | | | | | | | | | | |
| 6-12-96 | Whitesucker | <0.07 | <0.03 | 4.75 ± 0.21 | <0.02 | <0.02 | <0.02 | <0.018 | <0.06 | 0.39 ± 0.16 | <LLD |
| 6-11-96 | Lake Trout | <0.07 | <0.03 | 4.18 ± 0.20 | <0.02 | <0.02 | <0.02 | <0.018 | <0.06 | 0.37 ± 0.14 | <LLD |
| 6-18-96 | Brown Trout | <0.05 | <0.02 | 2.59 ± 0.16 | <0.02 | <0.02 | <0.02 | <0.018 | <0.04 | 0.48 ± 0.12 | <LLD |
| 6-12-96 | Smallmouth Bass | <0.09 | <0.03 | 3.34 ± 0.23 | <0.03 | <0.03 | <0.03 | <0.029 | <0.06 | 0.30 ± 0.16 | <LLD |
| 10-2-96 | Whitesucker | <0.07 | <0.03 | 4.57 ± 0.22 | <0.02 | <0.02 | <0.02 | <0.019 | <0.06 | <0.38 | <LLD |
| 10-8-96 | Lake Trout #1 | <0.06 | <0.02 | 3.07 ± 0.20 | <0.02 | <0.02 | <0.02 | <0.020 | <0.05 | 0.43 ± 0.12 | <LLD |
| 10-8-96 | Lake Trout #2 | <0.06 | <0.02 | 2.53 ± 0.17 | <0.02 | <0.02 | <0.02 | <0.019 | <0.05 | 0.46 ± 0.13 | <LLD |
| 10-2-96 | Smallmouth Bass | <0.10 | <0.04 | 3.77 ± 0.25 | <0.03 | <0.03 | <0.03 | <0.028 | <0.08 | 0.33 ± 0.15 | <LLD |
| 10-2-96 | Chinook Salmon | <0.09 | <0.04 | 4.68 ± 0.28 | <0.03 | <0.03 | <0.03 | <0.031 | <0.06 | <0.41 | <LLD |
| 10-8-96 | Walleye | <0.07 | <0.03 | 11.0 ± 0.28 | <0.03 | <0.03 | <0.02 | <0.028 | <0.05 | 0.78 ± 0.20 | <LLD |

## TABLE 6B

## CONCENTRATION OF GAMMA EMITTERS IN FISH SAMPLES

**Results in units of pCi/kg (wet) ± 1 sigma**

| | | GAMMA EMITTERS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE DATA | SAMPLE TYPE | Fe-59 | Co-58 | K-40 | Mn-54 | Co-60 | Cs-134 | Cs-137 | Zn-65 | Ra-226 | OTHER |
| OSWEGO( CONTROL)-00 | | | | | | | | | | | |
| 6-7-96 | Whitesucker | <77 | <33 | 4290 ± 229 | <29 | <24 | <29 | <23 | <64 | <403 | <LLD |
| 6-7-96 | Lake Trout | <80 | <26 | 3750 ± 190 | <21 | <22 | <21 | 14 ± 7 | <39 | <372 | <LLD |
| 6-7-96 | Brown Trout | <75 | <30 | 8130 ± 222 | <25 | <24 | <18 | <22 | <51 | 1150 ± 192 | <LLD |
| 6-7-96 | Smallmouth Bass | <89 | <40 | 4020 ± 253 | <36 | <27 | <30 | <29 | <79 | <434 | <LLD |
| 9-17-96 | Whitesucker | <96 | <36 | 9640 ± 257 | <31 | <28 | <20 | <26 | <49 | 846 ± 173 | <LLD |
| 9-17-96 | Lake Trout #1 | <66 | <26 | 3060 ± 162 | <18 | <20 | <16 | <16 | <46 | 536 ± 121 | <LLD |
| 9-17-96 | Lake Trout #2 | <113 | <41 | 3950 ± 257 | <36 | <36 | <32 | <30 | <79 | 363 ± 166 | <LLD |
| 9-17-96 | Brown Trout | <81 | <31 | 4500 ± 209 | <24 | <24 | <22 | 18 ± 7 | <61 | 422 ± 139 | <LLD |
| 9-17-96 | Smallmouth Bass | <98 | <38 | 3880 ± 236 | <29 | <33 | <31 | <26. | <62 | 477 ± 148 | <LLD |
| 9-17-96 | Chinook Salmon | <91 | <34 | 9760 ± 246 | <29 | <26 | <17 | <25 | <44 | 393 ± 246 | <LLD |
| NINE MILE POINT -02 | | | | | | | | | | | |
| 6-18-96 | Whitesucker | <57 | <26 | 8400 ± 224 | <24 | <22 | <18 | <24 | <41 | 870 ± 185 | <LLD |
| 6-4-96 | Lake Trout | <109 | <43 | 3010 ± 225 | <36 | <35 | <28 | <26 | <74 | <427 | <LLD |
| 6-4-96 | Brown Trout | <78 | <26 | 4810 ± 208 | <20 | <21 | <20 | <20 | <58 | <364 | <LLD |
| 6-4-96 | Smallmouth Bass | <58 | <23 | 2990 ± 186 | <20 | <22 | <15 | <18 | <51 | 458 ± 117 | <LLD |
| 9-26-96 | Whitesucker | <95 | <34 | 4770 ± 242 | <28 | <29 | <32 | <26 | <57 | 294 ± 150 | <LLD |
| 10-8-96 | Lake Trout #1 | <55 | <29 | 3300 ± 183 | <21 | <25 | <21 | 14 ± 7 | <52 | 546 ± 132 | <LLD |
| 10-8-96 | Lake Trout #2 | <113 | <44 | 4100 ± 295 | <38 | <37 | <35 | <40 | <103 | 288 ± 183 | <LLD |
| 9-25-96 | Smallmouth Bass | <82 | <31 | 5300 ± 135 | <24 | <20 | <24 | 16 ± 7 | <67 | 530 ± 135 | <LLD |
| 9-26-96 | Brown Trout | <84 | <33 | 4570 ± 241 | <28 | <28 | <26 | <21 | <65 | <423 | <LLD |
| 9-25-96 | Walleye | <103 | <38 | 4670 ± 247 | <30 | <32 | <29 | <28 | <76 | <461 | <LLD |

**TABLE 6B (Continued)**

**CONCENTRATION OF GAMMA EMITTERS IN FISH SAMPLES**

**Results in units of pCi/kg (wet) ± 1 sigma**

| | | GAMMA EMITTERS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE DATE | SAMPLE TYPE | Fe-59 | Co-58 | K-40 | Mn-54 | Co-60 | Cs-134 | Cs-137 | Zn-65 | Ra-226 | OTHER |
| J. A. FITZPATRICK - 03 | | | | | | | | | | | |
| 6-12-96 | Whitesucker | <68 | <26 | 4750 ± 210 | <20 | <22 | <22 | <18 | <58 | 386 ± 160 | <LLD |
| 6-11-96 | Lake Trout | <66 | <26 | 4180 ± 198 | <22 | <24 | <18 | <18 | <59 | 369 ± 137 | <LLD |
| 6-18-96 | Brown Trout | <51 | <18 | 2590 ± 161 | <22 | <19 | <19 | <18 | <44 | 481 ± 116 | <LLD |
| 6-12-96 | Smallmouth Bass | <90 | <33 | 3340 ± 227 | <32 | <32 | <26 | <29 | <64 | 296 ± 155 | <LLD |
| 10-2-96 | Whitesucker | <69 | <28 | 4570 ± 222 | <24 | <23 | <23 | <19 | <64 | <379 | <LLD |
| 10-8-96 | Lake Trout #1 | <56 | <22 | 3070 ± 197 | <18 | <18 | <19 | <20 | <53 | 430 ± 124 | <LLD |
| 10-8-96 | Lake Trout #2 | <55 | <23 | 2530 ± 174 | <18 | <23 | <22 | <19 | <45 | 457 ± 130 | <LLD |
| 10-2-96 | Smallmouth Bass | <100 | <36 | 3770 ± 250 | <30 | <31 | <32 | <28 | <77 | 330 ± 146 | <LLD |
| 10-2-96 | Chinook Salmon | <94 | <37 | 4680 ± 276 | <32 | <34 | <31 | <31 | <57 | <413 | <LLD |
| 10-8-96 | Walleye | <71 | <33 | 1100 ± 281 | <32 | <27 | <20 | <28 | <52 | 781 ± 204 | <LLD |

# TABLE 7

## CONCENTRATION OF GAMMA EMITTERS IN SURFACE WATER SAMPLES

**Results in units of pCi/liter ± 1 sigma**

**LOCATION: FITZPATRICK INLET*** 1996

| NUCLIDE | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE |
|---|---|---|---|---|---|---|
| K-40 | 222 ± 18 | 206 ± 17 | <37 | 46 ± 11 | 702 ± 20 | 181 ± 21 |
| Ra-226 | 54 ± 25 | 87 ± 28 | 66 ± 22 | 86 ± 24 | 79 ± 25 | <84 |
| Cs-134 | <2.79 | <3.14 | <2.50 | <2.56 | <2.03 | <4.58 |
| Cs-137 | <2.93 | <2.78 | <2.59 | <2.61 | <2.73 | <3.76 |
| Zr-95 | <6.68 | <5.24 | <5.65 | <6.23 | <5.19 | <6.84 |
| Nb-95 | <4.07 | <3.50 | <3.62 | <4.26 | <3.94 | <4.48 |
| Co-58 | <3.51 | <3.22 | <3.56 | <2.84 | <3.31 | <4.08 |
| Mn-54 | <2.88 | <3.04 | <2.95 | <2.81 | <2.64 | <4.22 |
| Fe-59 | <6.57 | <7.20 | <7.01 | <7.07 | <7.01 | <9.35 |
| Co-60 | <2.86 | <2.80 | <2.70 | <3.62 | <2.71 | <4.58 |
| Zn-65 | <6.50 | <7.49 | <6.32 | <7.50 | <4.19 | <10.7 |
| I-131 | <0.66 | <0.30 | <0.35 | <0.70 | <0.44 | <1.0 |
| Ba/La-140 | <8.22 | <7.85 | <8.21 | <8.38 | <7.02 | <10.4 |

| NUCLIDE | JULY | AUGUST | SEPTEMBER | OCTOBER | NOVEMBER | DECEMBER |
|---|---|---|---|---|---|---|
| K-40 | 34 ± [illegible]2 | 191 ± 19 | 58 ± 11 | 888 ± 26 | 208 ± 16 | 50 ± 11 |
| Ra-226 | 64 ± 23 | 80 ± 25 | 90 ± 21 | 113 ± 32 | 62 ± 23 | 83 ± 22 |
| Cs-134 | <[illegible].4[illegible] | <4.08 | <1.97 | <2.48 | <3.04 | <2.44 |
| Cs-137 | <2.56 | <3.60 | <2.48 | <3.51 | <2.65 | <2.11 |
| Zr-95 | <4.63 | <7.46 | <5.08 | <6.47 | <5.11 | <5.32 |
| Nb-95 | <3.35 | <4.50 | <3.04 | <4.18 | <3.33 | <3.35 |
| Co-58 | <2.91 | <4.43 | <2.62 | <3.63 | <3.06 | <3.07 |
| Mn-54 | <2.19 | <3.57 | <2.41 | <3.44 | <2.72 | <2.63 |
| Fe-59 | <5.98 | <9.23 | <6.53 | <7.16 | <8.22 | <5.89 |
| Co-60 | <3.07 | <3.83 | <1.96 | <3.12 | <2.65 | <3.07 |
| Zn-65 | <6.55 | <8.26 | <6.34 | <5.08 | <6.11 | <5.89 |
| I-131 | <0.80 | <0.31 | <0.50 | <0.70 | <0.46 | <0.38 |
| Ba/La-140 | <6.15 | <11.2 | <6.62 | <6.23 | <7.81 | <8.03 |

* - Sample required by the Technical Specifications.

TABLE 7 (Continued)

CONCENTRATION OF GAMMA EMITTERS IN SURFACE WATER SAMPLES

Results in units of pCi/liter ± 1 sigma

LOCATION: NINE MILE POINT U-1 (INLET)** 1996

| NUCLIDE | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE |
|---|---|---|---|---|---|---|
| K-40 | 165 ± 24 | 47 ± 11 | 184 ± 20 | 205 ± 21 | 259 ± 18 | 44 ± 11 |
| Ra-226 | 80 ± 32 | 37 ± 15 | <78 | <92 | <70 | 71 ± 22 |
| Cs-134 | <5.40 | <2.58 | <4.07 | <4.51 | <2.69 | <2.23 |
| Cs-137 | <4.31 | <2.83 | <4.42 | <4.06 | <2.86 | <2.48 |
| Zr-95 | <9.68 | <6.07 | <8.74 | <7.98 | <5.55 | <5.46 |
| Nb-95 | <5.84 | <3.29 | <5.78 | <5.34 | <3.19 | <3.71 |
| Co-58 | <5.47 | <2.96 | <5.11 | <4.37 | <3.31 | <2.55 |
| Mn-54 | <5.05 | <2.81 | <4.91 | <4.05 | <2.83 | <2.53 |
| Fe-59 | <13.0 | <7.02 | <9.20 | <10.1 | <7.74 | <6.36 |
| Co-60 | <6.43 | <3.04 | <3.88 | <5.01 | <3.05 | <2.80 |
| Zn-65 | <11.4 | <6.48 | <9.82 | <8.81 | <6.02 | <5.58 |
| I-131 | <11.7 | <6.67 | <14.7 | <12.9 | <8.18 | <9.72 |
| Ba/La-140 | <12.3 | <8.53 | <13.7 | <10.1 | <8.19 | <10.5 |
| NUCLIDE | JULY | AUGUST | SEPTEMBER | OCTOBER | NOVEMBER | DECEMBER |
| K-40 | 191 ± 16 | 40 ± 12 | 168 ± 16 | 54 ± 12 | 818 ± 24 | 48 ± 11 |
| Ra-226 | <70 | 76 ± 20 | 79 ± 25 | 92 ± 22 | <85 | 87 ± 22 |
| Cs-134 | <2.98 | <1.74 | <2.93 | <1.94 | <2.29 | <2.35 |
| Cs-137 | <2.81 | <2.23 | <2.72 | <2.25 | <3.16 | <2.25 |
| Zr-95 | <5.04 | <4.56 | <4.75 | <4.45 | <6.45 | <4.86 |
| Nb-95 | <3.26 | <3.03 | <3.36 | <3.02 | <4.47 | <3.13 |
| Co-58 | <3.15 | <3.05 | <3.40 | <2.71 | <3.69 | <2.96 |
| Mn-54 | <3.03 | <2.47 | <2.67 | <2.54 | <3.49 | <2.65 |
| Fe-59 | <7.82 | <6.18 | <8.12 | <6.47 | <7.66 | <3.83 |
| Co-60 | <3.13 | <3.07 | <3.13 | <2.80 | <2.95 | <3.19 |
| Zn-65 | <6.12 | <6.48 | <6.69 | <6.62 | <5.34 | <6.81 |
| I-131 | <8.57 | <6.44 | <7.97 | <7.84 | <11.1 | <7.48 |
| Ba/La-140 | <7.03 | <6.98 | <6.80 | <9.33 | <6.34 | <8.36 |

** - Optional sample location. Sample not required by the Technical Specifications.

TABLE 7 (Continued)

**CONCENTRATION OF GAMMA EMITTERS IN SURFACE WATER SAMPLES**

**Results in units of pCi/liter ± 1 sigma**

**LOCATION: NINE MILE POINT U-2 (INLET)**** 1996

| NUCLIDE | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE |
|---|---|---|---|---|---|---|
| K-40 | 239 ± 19 | 858 ± 24 | 695 ± 22 | 208 ± 26 | 245 ± 22 | 56 ± 11 |
| Ra-226 | 67 ± 23 | 155 ± 31 | 129 ± 27 | 53 ± 30 | 177 ± 32 | 58 ± 24 |
| Cs-134 | <2.11 | <3.07 | <2.07 | <4.96 | <4.94 | <2.17 |
| Cs-137 | <2.99 | <3.24 | <3.17 | <5.16 | <3.79 | <2.07 |
| Zr-95 | <6.35 | <5.90 | <6.20 | <8.87 | <7.98 | <5.17 |
| Nb-95 | <4.18 | <4.01 | <4.24 | <5.31 | <4.94 | <3.19 |
| Co-58 | <3.57 | <3.67 | <3.36 | <5.23 | <4.03 | <2.72 |
| Mn-54 | <3.39 | <3.27 | <3.22 | <5.74 | <4.49 | <2.70 |
| Fe-59 | <6.68 | <7.34 | <7.67 | <11.4 | <9.35 | <4.90 |
| Co-60 | <2.74 | <2.98 | <2.95 | <5.10 | <4.73 | <2.55 |
| Zn-65 | <7.30 | <5.43 | <6.15 | <11.3 | <9.71 | <6.12 |
| I-131 | <9.41 | <10.3 | <13.2 | <14.6 | <11.5 | <7.59 |
| Ba/La-140 | <8.68 | <6.18 | <6.92 | <13.2 | <8.99 | <7.63 |
| **NUCLIDE** | **JULY** | **AUGUST** | **SEPTEMBER** | **OCTOBER** | **NOVEMBER** | **DECEMBER** |
| K-40 | 205 ± 23 | 212 ± 16 | 51 ± 11 | 204 ± 17 | 230 ± 22 | 184 ± 16 |
| Ra-226 | 71 ± 30 | 84 ± 25 | 61 ± 23 | <17 | 148 ± 34 | <71 |
| Cs-134 | <4.21 | <3.27 | <2.27 | <2.39 | <4.54 | <2.74 |
| Cs-137 | <4.32 | <3.01 | <2.04 | <2.78 | <3.81 | <2.75 |
| Zr-95 | <9.26 | <5.39 | <5.02 | <5.91 | <7.75 | <5.95 |
| Nb-95 | <5.38 | <3.46 | <2.80 | <3.81 | <5.10 | <3.41 |
| Co-58 | <4.91 | <3.32 | <2.88 | <3.36 | <4.54 | <3.89 |
| Mn-54 | <4.83 | <2.94 | <2.42 | <3.25 | <4.41 | <3.21 |
| Fe-59 | <10.6 | <7.90 | <5.95 | <8.27 | <9.17 | <7.84 |
| Co-60 | <4.62 | <2.88 | <2.62 | <3.07 | <4.18 | <2.72 |
| Zn-65 | <9.92 | <6.01 | <6.60 | <6.20 | <8.84 | <6.92 |
| I-131 | <12.7 | <8.56 | <6.91 | <8.92 | <12.0 | <9.39 |
| Ba/La-140 | <12.8 | <7.71 | <8.39 | <7.35 | <10.1 | <9.13 |

** - Optional sample location. Sample not required by the Technical Specifications.

## TABLE 7 (Continued)

## CONCENTRATION OF GAMMA EMITTERS IN SURFACE WATER SAMPLES

Results in units of pCi/liter ± 1 sigma

LOCATION: OSWEGO STEAM STATION* 1996

| NUCLIDE | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE |
|---|---|---|---|---|---|---|
| K-40 | 64 ± 11 | 44 ± 11 | 216 ± 17 | 728 ± 23 | <30 | 184 ± 24 |
| Ra-226 | 88 ± 22 | 111 ± 23 | <72 | 118 ± 26 | 77 ± 25 | <87 |
| Cs-134 | <1.77 | <2.58 | <2.77 | <2.21 | <3.03 | <4.72 |
| Cs-137 | <2.89 | <2.31 | <2.81 | <3.24 | <2.80 | <4.84 |
| Zr-95 | <5.47 | <4.87 | <5.11 | <5.68 | <5.86 | <9.37 |
| Nb-95 | <3.47 | <3.60 | <3.60 | <3.97 | <4.12 | <6.44 |
| Co-58 | <2.91 | <3.16 | <3.24 | <3.35 | <3.00 | <5.72 |
| Mn-54 | <2.93 | <2.56 | <3.37 | <2.79 | <2.93 | <5.39 |
| Fe-59 | <7.34 | <6.51 | <6.88 | <7.45 | <7.80 | <11.6 |
| Co-60 | <2.98 | <2.97 | <3.05 | <2.86 | <2.76 | <5.22 |
| Zn-65 | <6.93 | <6.48 | <6.99 | <6.01 | <6.81 | <11.0 |
| I-131 | <0.59 | <0.30 | <0.35 | <0.80 | <0.48 | <1.0 |
| Ba/La-140 | <6.79 | <7.52 | <6.40 | <5.41 | <9.55 | <12.2 |
| **NUCLIDE** | **JULY** | **AUGUST** | **SEPTEMBER** | **OCTOBER** | **NOVEMBER** | **DECEMBER** |
| K-40 | <30 | 222 ± 22 | 205 ± 22 | 245 ± 22 | 221 ± 22 | 210 ± 22 |
| Ra-226 | 81 ± 23 | 70 ± 31 | 113 ± 31 | 46 ± 25 | 59 ± 28 | 91 ± 35 |
| Cs-134 | <2.63 | <4.60 | <4.49 | <4.99 | <4.60 | <3.32 |
| Cs-137 | <2.72 | <4.13 | <3.84 | <4.22 | <4.33 | <3.47 |
| Zr-95 | <6.16 | <6.41 | <7.29 | <8.08 | <7.86 | <7.49 |
| Nb-95 | <3.54 | <4.91 | <4.72 | <4.94 | <5.03 | <4.98 |
| Co-58 | <3.21 | <3.97 | <4.69 | <4.71 | <3.95 | <4.95 |
| Mn-54 | <2.54 | <4.00 | <4.35 | <3.75 | <4.22 | <4.16 |
| Fe-59 | <7.46 | <9.05 | <9.35 | <9.44 | <8.95 | <11.7 |
| Co-60 | <2.87 | <4.80 | <5.09 | <4.18 | <4.34 | <4.43 |
| Zn-65 | <7.28 | <8.30 | <8.91 | <9.54 | <9.44 | <10.5 |
| I-131 | <0.80 | <0.29 | <0.60 | <0.50 | <0.56 | <0.46 |
| Ba/La-140 | <9.29 | <9.35 | <9.88 | <10.5 | <10.1 | <11.3 |

* - Sample required by the Technical Specifications.

## TABLE 7 (Continued)

## CONCENTRATION OF GAMMA EMITTERS IN SURFACE WATER SAMPLES

Results in units of pCi/liter ± 1 sigma

LOCATION: OSWEGO CITY WATER** 1996

| NUCLIDE | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE |
|---|---|---|---|---|---|---|
| K-40 | 59 ± 11 | 45 ± 11 | 51 ± 11 | 810 ± 23 | 230 ± 20 | 37 ± 11 |
| Ra-226 | 91 ± 24 | 106 ± 24 | 82 ± 21 | 130 ± 29 | 113 ± 30 | 90 ± 26 |
| Cs-134 | <3.09 | <2.37 | <2.38 | <2.13 | <4.50 | <2.54 |
| Cs-137 | <3.21 | <2.35 | <2.33 | <2.93 | <3.87 | <2.70 |
| Zr-95 | <4.59 | <5.43 | <5.17 | <5.89 | <8.15 | <6.20 |
| Nb-95 | <2.95 | <3.66 | <3.72 | <4.05 | <4.21 | <3.17 |
| Co-58 | <3.04 | <3.44 | <3.00 | <3.10 | <4.56 | <3.36 |
| Mn-54 | <2.63 | <2.69 | <2.82 | <2.95 | <3.66 | <2.31 |
| Fe-59 | <7.14 | <6.23 | <4.75 | <7.26 | <8.70 | <8.60 |
| Co-60 | <3.10 | <3.20 | <3.07 | <3.02 | <4.32 | <2.82 |
| Zn-65 | <6.92 | <6.13 | <6.21 | <6.04 | <8.93 | <4.74 |
| I-131 | <9.56 | <10.3 | <9.47 | <11.4 | <14.6 | <8.61 |
| Ba/La-140 | <7.54 | <9.57 | <8.25 | <6.34 | <11.1 | <10.9 |
| **NUCLIDE** | **JULY** | **AUGUST** | **SEPTEMBER** | **OCTOBER** | **NOVEMBER** | **DECEMBER** |
| K-40 | 164 ± 24 | 38 ± 11 | 41 ± 13 | <34 | 233 ± 22 | 222 ± 21 |
| Ra-226 | <88 | 52 ± 21 | 110 ± 25 | 77 ± 25 | 87 ± 33 | <78 |
| Cs-134 | <4.97 | <2.56 | <2.41 | <2.61 | <4.74 | <2.89 |
| Cs-137 | <5.26 | <2.80 | <2.22 | <2.83 | <3.58 | <4.35 |
| Zr-95 | <9.26 | <5.79 | <5.82 | <6.31 | <7.91 | <8.44 |
| Nb-95 | <5.34 | <3.72 | <3.70 | <3.88 | <5.22 | <5.39 |
| Co-58 | <6.15 | <3.11 | <2.86 | <3.04 | <4.46 | <5.32 |
| Mn-54 | <5.06 | <2.94 | <2.67 | <2.76 | <4.52 | <4.60 |
| Fe-59 | <13.1 | <6.75 | <7.72 | <7.85 | <10.6 | <9.80 |
| Co-60 | <4.99 | <2.81 | <3.14 | <2.55 | <4.43 | <4.35 |
| Zn-65 | <11.9 | <6.07 | <6.49 | <7.12 | <9.71 | <10.4 |
| I-131 | <13.1 | <5.30 | <7.22 | <7.17 | <13.9 | <12.4 |
| Ba/La-140 | <10.7 | <7.74 | <7.62 | <8.96 | <8.40 | <11.6 |

** - Optional sample location. Sample not required by the Technical Specifications.

## TABLE 8

### CONCENTRATION OF TRITIUM IN SURFACE WATER SAMPLES (QUARTERLY COMPOSITE SAMPLES)

**Results in units of pCi/liter ± 1 sigma**

| LOCATION | PERIOD | DATE | TRITIUM |
|---|---|---|---|
| JAF INLET * | First Quarter | 1/2/96 - 4/1/96 | <230 |
| | Second Quarter | 4/1/96 - 7/1/96 | <150 |
| | Third Quarter | 7/1/96 - 9/30/96 | <170 |
| | Fourth Quarter | 9/30/96 - 1/2/97 | <190 |
| NMP-1 INLET ** | First Quarter | 12/29/95 - 2/1/96 | <220 |
| | Second Quarter | 2/1/96 - 6/28/96 | 160 ± 100 |
| | Third Quarter | 6/28/96 - 9/30/96 | <170 |
| | Fourth Quarter | 9/30/96 - 12/31/96 | <190 |
| NMP-2 INLET ** | First Quarter | 12/29/95 - 2/1/96 | <240 |
| | Second Quarter | 2/1/96 - 6/28/96 | <150 |
| | Third Quarter | 6/28/96 - 9/30/96 | <170 |
| | Fourth Quarter | 9/30/96 - 12/31/96 | <190 |
| OSWEGO CITY WATER ** | First Quarter | 12/29/95 - 2/1/96 | <230 |
| | Second Quarter | 2/1/96 - 6/28/96 | <150 |
| | Third Quarter | 6/28/96 - 9/30/96 | <170 |
| | Fourth Quarter | 9/30/96 - 12/31/96 | <190 |
| OSWEGO STEAM STATION * (CONTROL) | First Quarter | 12/29/95 - 2/1/96 | <230 |
| | Second Quarter | 2/1/96 - 6/28/96 | <150 |
| | Third Quarter | 6/28/96 - 9/30/96 | <170 |
| | Fourth Quarter | 9/30/96 - 12/31/96 | <190 |

* - Sample required by the Technical Specifications.
**- Optional sample.

## TABLE 9A

## DIRECT RADIATION MEASUREMENT RESULTS

**Results in units of mrem/standard month ± 2 sigma**

| LOCATION NUMBER | LOCATION | JANUARY THROUGH MARCH | APRIL THROUGH JUNE | JULY THROUGH SEPTEMBER | OCTOBER THROUGH DECEMBER | LOCATION (DIRECTION & DISTANCE)(2) |
|---|---|---|---|---|---|---|
| | | | 1996 | | | |
| 3 | D1 On Site | 20.4 ± 1.2 | 32.6 ± 1.1 | 20.9 ± 1.0 | 14.7 ± 0.8 | 0.2 miles @ 69° |
| 4 | D2 On Site | 3.8 ± 0.3 | 6.0 ± 0.3 | 4.5 ± 0.2 | 5.7 ± 0.4 | 0.4 miles @ 140° |
| 5 | E On Site | 4.0 ± 0.2 | 5.0 ± 0.3, | 4.0 ± 0.2 | 5.1 ± 0.2 | 0.4 miles @ 175° |
| 6 | F On Site | 3.1 ± 0.1 | 4.0 ± 0.2 | 3.6 ± 0.3 | 4.3 ± 0.3 | 0.5 miles @ 210° |
| 7* | G On Site | 3.2 ± 0.2 | 3.9 ± 0.3 | 3.2 ± 0.1 | 4.2 ± 0.3 | 0.7 miles @ 250° |
| 8 | R-5 Off Site-Control | 4.0 ± 0.1 | 5.5 ± 0.6 | 4.6 ± 0.2 | (1) | 16.4 miles @ 42° |
| 9 | D1 Off Site | 3.5 ± 0.2 | 4.8 ± 0.4 | 3.5 ± 0.1 | 4.4 ± 0.1 | 11.4 miles @ 80° |
| 10 | D2 Off Site | 3.4 ± 0.1 | 4.5 ± 0.4 | 3.6 ± 0.2 | 4.6 ± 0.3 | 9.0 miles @ 117° |
| 11 | E Off Site | 3.3 ± 0.3 | 4.4 ± 0.2 | 3.6 ± 0.2 | 4.8 ± 0.3 | 7.2 miles @ 160° |
| 12 | F Off Site | 3.4 ± 0.5 | 4.3 ± 0.3 | 3.8 ± 0.1 | 4.6 ± 0.1 | 7.7 miles @ 190° |
| 13 | G Off Site | 3.5 ± 0.1 | 4.6 ± 0.4 | 3.7 ± 0.1 | 4.8 ± 0.1 | 5.3 miles @ 225° |
| 14* | DeMass Rd., SW Oswego-Control | 3.7 ± 0.1 | 5.6 ± 0.6 | 4.0 ± 0.1 | 5.1 ± 0.3 | 12.6 miles @ 226° |
| 15* | Pole 66, W. Boundary-Bible Camp | 3.3 ± 0.1 | 4.0 ± 0.2 | 3.2 ± 0.1 | 4.4 ± 0.3 | 0.9 miles @ 237° |
| 18* | Energy Info. Center - Lamp Post, SW. | 4.1 ± 0.1 | 4.9 ± 0.3 | 4.2 ± 0.1 | 5.1 ± 0.4 | 0.4 miles @ 265° |
| 19 | East Boundary-JAF, Pole 9 | 4.0 ± 0.2 | 4.7 ± 0.2 | 4.2 ± 0.2 | 5.4 ± 0.4 | 1.3 miles @ 81° |
| 23* | H On Site | 4.7 ± 0.3 | 6.1 ± 0.1 | 4.8 ± 0.1 | 5.7 ± 0.1 | 0.8 miles @ 70° |
| 24 | I On Site | 4.0 ± 0.3 | 5.0 ± 0.4 | 4.3 ± 0.3 | 5.2 ± 0.2 | 0.8 miles @ 98° |
| 25 | J On Site | 3.8 ± 0.2 | 4.9 ± 0.3 | 4.2 ± 0.2 | 5.0 ± 0.3 | 0.9 miles @ 110° |
| 26 | K On Site | 3.8 ± 0.3 | 4.5 ± 0.1 | 3.9 ± 0.3 | 4.7 ± 0.1 | 0.5 miles @ 132° |
| 27 | N. Fence, N. of Switchyard, JAF | 34.4 ± 2.4 | 57.8 ± 2.8 | 28.1 ± 0.6 | 21.3 ± 0.8 | 0.4 miles @ 60° |
| 28 | N. Light Pole, N. of Screenhouse, JAF | 39.6 ± 3.3 | 59.9 ± 8.6 | 28.6 ± 2.2 | 30.6 ± 1.1 | 0.5 miles @ 68° |
| 29 | N. Fence, N. of W. Side Screenhouse, JAF | 41.1 ± 3.3 | 68.1 ± 5.2 | 30.5 ± 3.1 | 26.9 ± 2.2 | 0.5 miles @ 65° |

## TABLE 9A (Continued)

## DIRECT RADIATION MEASUREMENT RESULTS

**Results in units of mrem/standard month ± 2 sigma**

| LOCATION NUMBER | LOCATION | JANUARY THROUGH MARCH | APRIL THROUGH JUNE | JULY THROUGH SEPTEMBER | OCTOBER THROUGH DECEMBER | LOCATION (DIRECTION & DISTANCE) (2) |
|---|---|---|---|---|---|---|
| | | 1996 | | | | |
| 30 | N Fence (NW) JAF | 18.1 ± 1.9 | 29.3 ± 2.4 | 16.1 ± 0.2 | 12.8 ± 1.0 | 0.4 miles @ 57° |
| 31 | N Fence (NW) NMP-1 | 5.7 ± 0.3 | 7.1 ± 0.3 | 5.7 ± 0.1 | 7.6 ± 0.3 | 0.2 miles @ 276° |
| 39 | N Fence, Rad Waste, NMP-1 | 6.8 ± 0.5 | 8.8 ± 0.6 | 7.7 ± 0.3 | 8.5 ± 0.6 | 0.2 miles @ 292° |
| 47 | N Fence, NE, JAF | 8.8 ± 0.8 | 13.4 ± 0.9 | 7.5 ± 0.6 | 7.4 ± 0.7 | 0.6 miles @ 69° |
| 49* | Phoenix, NY-Control | 3.4 ± 0.5 | 4.1 ± 0.2 | 3.4 ± 0.2 | 4.3 ± 0.3 | 19.8 miles @ 170° |
| 51 | Liberty & Bronson Sts., E. of OSS | 3.6 ± 0.2 | 4.5 ± 0.2 | 4.0 ± 0.2 | 4.7 ± 0.3 | 7.4 miles @ 233° |
| 52 | East 12th & Cayuga Sts., Osw. School | 4.2 ± 0.2 | 4.4 ± 0.2 | 3.7 ± 0.2 | 4.6 ± 0.0 | 5.8 miles @ 227° |
| 53 | Broadwell & Chestnut Sts., Fulton H.S. | 4.0 ± 0.2 | 5.0 ± 0.3 | 4.1 ± 0.2 | 4.9 ± 0.2 | 13.7 miles @ 183° |
| 54 | Liberty St., & Co Rt 16, Mexico H.S. | 3.7 ± 0.2 | 4.3 ± 0.4 | 3.7 ± 0.2 | 4.7 ± 0.3 | 9.3 miles @ 115° |
| 55 | Gas Substation & Co Rt 5 - Pulaski | 3.5 ± 0.1 | 4.5 ± 0.2 | 4.6 ± 0.3 | 4.5 ± 0.4 | 13.0 miles @ 75° |
| 56* | Rt 104 - New Haven School (SE Corner) | 3.6 ± 0.1 | 4.7 ± 0.4 | 3.9 ± 0.2 | 4.9 ± 0.2 | 5.3 miles @ 123° |
| 58* | Co Rt 1A - Alcan (E. of E. Entrance Rd.) | 3.5 ± 0.3 | 4.5 ± 0.1 | 3.9 ± 0.2 | 5.1 ± 0.4 | 3.1 miles @ 220° |
| 75* | Unit 2, N. Fence, N. of Reactor Bldg. | 5.5 ± 0.2 | 7.2 ± 0.3 | 6.1 ± 0.0 | 7.0 ± 0.4 | 0.1 miles @ 5° |
| 76* | Unit 2, N. Fence, N. of Change House | 5.3 ± 0.3 | 6.5 ± 0.4 | 5.3 ± 0.2 | (1) | 0.1 miles @ 25° |
| 77* | Unit 2, N. Fence, N. of Pipe Bldg. | 6.2 ± 0.3 | 9.1 ± 0.5 | 6.7 ± 0.3 | 7.1 ± 0.5 | 0.2 miles @ 45° |
| 78* | JAF, E. of E. Old Lay Down Area | 4.3 ± 0.4 | 5.1 ± 0.3 | 4.2 ± 0.2 | 5.3 ± 0.3 | 1.0 miles @ 90° |
| 79* | Co Rt 29, Pole #63, 0.2 mi. S. of Lake Rd | 3.5 ± 0.3 | 4.1 ± 0.1 | 3.6 ± 0.1 | 4.5 ± 0.2 | 1.1 miles @ 115° |
| 80* | Co Rt 29, Pole #54, 0.7 mi. S. of Lake Rd | 3.6 ± 0.2 | 4.4 ± 0.4 | 3.9 ± 0.2 | 4.9 ± 0.0 | 1.4 miles @ 133° |
| 81* | Miner Rd., Pole #16, 0.5 mi. W. of Rt 29 | 3.6 ± 0.1 | 4.3 ± 0.3 | 3.5 ± 0.3 | 4.6 ± 0.4 | 1.6 miles @ 159° |
| 82* | Miner Rd., Pole #1 1/2, 1.1 mi. W of Rt 29 | 3.5 ± 0.2 | 4.6 ± 0.5 | 3.7 ± 0.1 | 4.8 ± 0.1 | 1.6 miles @ 181° |
| 83* | Lakeview Rd, Tree, 0.45 mi. N. of Miner Rd | 3.7 ± 0.2 | 4.5 ± 0.3 | 3.8 ± 0.2 | 4.9 ± 0.2 | 1.2 miles @ 200° |

## TABLE 9A (Continued)

## DIRECT RADIATION MEASUREMENT RESULTS

**Results in units of mrem/standard month ± 2 sigma**

| LOCATION NUMBER | LOCATION | JANUARY THROUGH MARCH | APRIL THROUGH JUNE | JULY THROUGH SEPTEMBER | OCTOBER THROUGH DECEMBER | LOCATION (DIRECTION & DISTANCE) (2) |
|---|---|---|---|---|---|---|
| | | 1996 | | | | |
| 84* | Lakeview Rd. N, Pole #6117, 200 Ft. N. of Lake Rd. | 3.6 ± 0.1 | 4.7 ± 0.3 | 3.7 ± 0.1 | 4.8 ± 0.1 | 1.1 miles @ 225° |
| 85* | Unit 1, N. Fence, N. of W. Side of Screen House | 7.1 ± 0.1 | 8.9 ± 0.8 | 7.2 ± 0.4 | 9.0 ± 0.3 | 0.2 miles @ 294° |
| 86* | Unit 2, N. Fence, N. of W. Side of Screen House | 6.1 ± 0.4 | 7.4 ± 0.3 | 6.4 ± 0.9 | 7.0 ± 0.3 | 0.1 miles @ 315° |
| 87* | Unit 2, N Fence, N. of E. Side of Screen House | 6.0 ± 0.3 | 7.7 ± 0.4 | 5.9 ± 0.4 | 6.8 ± 0.1 | 0.1 miles @ 341° |
| 88* | Hickory Grove Rd., Pole #2, 0.6 mi. N. of Rt. 1 | 3.5 ± 0.1 | 5.0 ± 0.3 | 4.1 ± 0.3 | 4.7 ± 0.2 | 4.8 miles @ 97° |
| 89* | Leavitt Rd., Pole #16, 0.4 mi. S. of Rt 1 | 3.7 ± 0.3 | 4.8 ± 0.2 | 4.2 ± 0.2 | 4.8 ± 0.2 | 4.1 miles @ 111° |
| 90* | Rt. 104, Pole #300, 150 Ft. E of Keefe Rd. | 3.5 ± 0.3 | 4.3 ± 0.3 | 3.8 ± 0.2 | 4.6 ± 0.1 | 4.2 miles @ 135° |
| 91* | Rt. 51A, Pole #59, 0.8 mi. W. of Rt. 51 | 3.2 ± 0.2 | 4.4 ± 0.3 | 3.7 ± 0.2 | 4.6 ± 0.2 | 4.8 miles @ 156° |
| 92* | Maiden Lane Rd., Power Pole, 0.6 mi., S of Rt. 104 | 3.5 ± 0.2 | 5.0 ± 0.3 | 4.4 ± 0.2 | 5.3 ± 0.2 | 4.4 miles @ 183° |
| 93* | Rt. 53, Pole 1-1, 120 Ft. S. of 104 | 3.8 ± 0.1 | 4.5 ± 0.4 | 3.8 ± 0.2 | 4.6 ± 0.3 | 4.4 miles @ 205° |
| 94* | Rt. 1, Pole #82, 250 Ft. E. of Kocher Rd. | 3.8 ± 0.2 | 4.8 ± 0.1 | 3.6 ± 0.1 | 4.6 ± 0.2 | 4.7 miles @ 223° |
| 95* | Lakeshore Camp Site, from Alcan W. Access Rd., Pole #21, 1.2 mi. N. of Rt. 1 | 3.5 ± 0.2 | 4.9 ± 0.4 | 3.5 ± 0.2 | 4.3 ± 0.3 | 4.1 miles @ 237° |
| 96* | Creamery Rd., 0.3 mi. S. of Middle Rd., Pole 1 1/2 | 3.8 ± 0.2 | 4.5 ± 0.2 | 3.9 ± 0.2 | 4.6 ± 0.4 | 3.6 miles @ 199° |
| 97* | Rt. 29, Env. Station R4, 200 Ft. N. of Miner Rd. | 3.8 ± 0.1 | 4.2 ± 0.2 | 3.6 ± 0.1 | 4.4 ± 0.2 | 1.8 miles @ 143° |
| 98* | Lake Rd., Pole #145, 0.15 mi. E. of Rt. 29 | 4.1 ± 0.1 | 5.3 ± 0.4 | 4.0 ± 0.1 | 4.9 ± 0.0 | 1.2 miles @ 101° |

## TABLE 9A (Continued)

## DIRECT RADIATION MEASUREMENT RESULTS

**Results in units of mrem/standard month ± 2 sigma**

| LOCATION NUMBER | LOCATION | JANUARY THROUGH MARCH | APRIL THROUGH JUNE | JULY THROUGH SEPTEMBER | OCTOBER THROUGH DECEMBER | LOCATION (DIRECTION & DISTANCE) (2) |
|---|---|---|---|---|---|---|
| | | | 1996 | | | |
| 99 | NMP Rd., 0.4 miles N. of Lake Rd., Env. Station R1 Off-Site | 3.8 ± 0.2 | 5.6 ± 0.4 | 3.9 ± 0.2 | 4.8 ± 0.2 | 1.8 miles @ 88° |
| 100 | Rt. 29 and Lake Rd., Env. Station R2 Off-Site | 3.7 ± 0.3 | 5.6 ± 0.6 | 3.8 ± 0.2 | 4.6 ± 0.4 | 1.1 miles @ 104° |
| 101 | Rt. 29, 0.7 mi. S. of Lake Rd., Env. Station R3 Off-Site | 3.6 ± 0.3 | 4.4 ± 0.2 | 3.6 ± 0.3 | 4.2 ± 0.2 | 1.5 miles @ 132° |
| 102 | EOF/Env. Lab, Oswego Co. Airport (Fulton Airport), Rt. 176, E. Driveway Lamp Post | 3.6 ± 0.2 | 4.8 ± 0.3 | 3.8 ± 0.2 | 4.5 ± 0.3 | 11.9 miles @ 175° |
| 103 | EIC, East Garage Rd., Lamp Post | 4.1 ± 0.2 | 5.8 ± 0.4 | 4.2 ± 0.2 | 4.9 ± 0.3 | 0.4 miles @ 267° |
| 104 | Parkhurst Road, Pole 148 1/2-A, 0.1 mi. S. of Lake Rd. | 3.6 ± 0.2 | 4.9 ± 0.4 | 3.9 ± 0.3 | 4.4 ± 0.2 | 1.4 miles @ 102° |
| 105 | Lakeview Road, Pole 6125, 0.6 mi. S. of Lake Rd. | 4.2 ± 0.7 | 5.2 ± 0.4 | 4.3 ± 0.1 | 4.4 ± 0.1 | 1.4 miles @ 198° |
| 106 | Shoreline Cove, E of NMP-1, Tree on W Edge | 4.4 ± 0.1 | 6.4 ± 0.4 | 4.6 ± 0.3 | 5.3 ± 0.3 | 0.3 miles @ 274° |
| 107 | Shoreline Cove, E of NMP-1, Tree 30 Ft. S. of TLD #106 | 4.6 ± 0.3 | 6.1 ± 0.5 | 4.6 ± 0.2 | 5.3 ± 0.2 | 0.3 miles @ 272° |
| 108 | Lake Rd. Pole #142 - 300' East of Co. Rt. 29 (S) | 4.1 ± 0.2 | 5.6 ± 0.3 | 4.1 ± 0.1 | 5.0 ± 0.1 | 1.1 miles @ 104° |
| 109 | Lake Rd. Tree 300' E. of Co. Rt. 29 (N) | 3.9 ± 0.0 | 4.9 ± 0.4 | 3.9 ± 0.2 | 4.7 ± 0.4 | 1.1 miles @ 103° |
| 111 | Sterling, NY - Control Blasiak Residence | 3.7 ± 0.3 | 5.2 ± 0.3 | 3.7 ± 0.2 | 4.3 ± 0.1 | 26.4 miles @ 166° |
| 113 | Baldwinsville, NY - Control Coates Residence | 3.8 ± 0.1 | 5.2 ± 0.5 | 3.9 ± 0.2 | 4.7 ± 0.2 | 21.8 miles @ 214° |

(1) TLD lost in the field.
(2) Direction and distance based on NMP-2 reactor centerline and sixteen 22.5° sector grid.
* Technical Specification location

## TABLE 9B

## DIRECT RADIATION MEASUREMENT RESULTS

**Results in units of mrem/quarterly period ± 2 sigma**

| LOCATION NUMBER | LOCATION | JANUARY THROUGH MARCH | APRIL THROUGH JUNE | JULY THROUGH SEPTEMBER | OCTOBER THROUGH DECEMBER | LOCATION (DIRECTION & DISTANCE) (2) |
|---|---|---|---|---|---|---|
| 1996 | | | | | | |
| 3 | D1 On Site | 61.8 ± 3.7 | 86.9 ± 2.9 | 60.0 ± 3.0 | 50.6 ± 2,7 | 0.2 miles @ 69° |
| 4 | D2 On Site | 10.9 ± 0.7 | 18.8 ± 0.9 | 14.1 ± 0.8 | 19.3 ± 1.4 | 0.4 miles @ 140° |
| 5 | E On Site | 11.2 ± 0.7 | 15.7 ± 0.8 | 12.8 ± 0.6 | 17.3 ± 0.8 | 0.4 miles @ 175° |
| 6 | F On Site | 9.5 ± 0.4 | 12.0 ± 0.7 | 10.1 ± 0.8 | 14.5 ± 0.9 | 0.5 miles @ 210° |
| 7* | G On Site | 9.7 ± 0.7 | 11.3 ± 0.9 | 9.3 ± 0.3 | 14.5 ± 1.1 | 0.7 miles @ 250° |
| 8 | R-5 Off Site-Control | 13.9 ± 0.2 | 15.3 ± 1.6 | 13.5 ± 0.7 | (1) | 16.4 miles @ 42° |
| 9 | D1 Off Site | 11.9 ± 0.7 | 13.9 ± 1.1 | 10.1 ± 0.3 | 14.9 ± 0.3 | 11.4 miles @ 80° |
| 10 | D2 Off Site | 10.3 ± 0.4 | 14.7 ± 1.4 | 10.7 ± 0.6 | 15.8 ± 1.2 | 9.0 miles @ 117° |
| 11 | E Off Site | 9.3 ± 0.8 | 13.1 ± 0.6 | 11.5 ± 0.6 | 16.2 ± 1.0 | 7.2 miles @ 160° |
| 12 | F Off Site | 9.6 ± 1.3 | 12.8 ± 0.9 | 10.8 ± 0.3 | 15.6 ± 0.3 | 7.7 miles @ 190° |
| 13 | G Off Site | 10.7 ± 0.4 | 14.0 ± 1.2 | 11.9 ± 0.3 | 16.1 ± 0.2 | 5.3 miles @ 225° |
| 14* | DeMass Rd., SW Oswego-Control | 11.2 ± 0.4 | 16.9 ± 1.7 | 12.9 ± 0.4 | 17.2 ± 1.1 | 12.6 miles @ 226° |
| 15* | Pole 66, W. Boundary-Bible Camp | 11.4 ± 0.3 | 11.6 ± 0.7 | 10.2 ± 0.3 | 15.0 ± 1.0 | 0.9 miles @ 237° |
| 18* | Energy Info. Center-Lamp Post, SW. | 12.8 ± 0.4 | 14.1 ± 0.8 | 12.2 ± 0.3 | 17.3 ± 1.5 | 0.4 miles @ 265° |
| 19 | East Boundary-JAF, Pole 9 | 12.7 ± 0.5 | 14.5 ± 0.6 | 12.1 ± 0.5 | 18.2 ± 1.4 | 1.3 miles @ 81° |
| 23* | H On Site | 14.0 ± 0.8 | 19.6 ± 0.4 | 13.9 ± 0.4 | 19.0 ± 0.5 | 0.8 miles @ 70° |
| 24 | I On Site | 11.8 ± 0.9 | 16.0 ± 1.2 | 12.0 ± 0.9 | 17.5 ± 0.8 | 0.8 miles @ 98° |
| 25 | J On Site | 11.2 ± 0.6 | 15.4 ± 0.8 | 11.7 ± 0.5 | 17.3 ± 0.9 | 0.9 miles @ 110° |
| 26 | K On Site | 10.7 ± 0.8 | 14.2 ± 0.3 | 11.3 ± 0.7 | 16.3 ± 0.5 | 0.5 miles @ 132° |
| 27 | N. Fence, N. of Switchyard, JAF | 119.3 ± 8.4 | 152.3 ± 7.4 | 91.8 ± 1.8 | 67.3 ± 2.7 | 0.4 miles @ 60° |
| 28 | N Light Pole, N. of Screenhouse, JAF | 137.2 ± 11.3 | 157.7 ± 22.7 | 93.5 ± 7.2 | 97.0 ± 3.4 | 0.5 miles @ 68° |

TABLE 9B (Continued)

DIRECT RADIATION MEASUREMENT RESULTS

Results in units of mrem/quarterly period ± 2 sigma

| LOCATION NUMBER | LOCATION | JANUARY THROUGH MARCH | APRIL THROUGH JUNE | JULY THROUGH SEPTEMBER | OCTOBER THROUGH DECEMBER | LOCATION (DIRECTION & DISTANCE) (2) |
|---|---|---|---|---|---|---|
| | | 1996 | | | | |
| 29 | N Fence, N of W Side Screenhouse, JAF | 142.4 ± 11.5 | 179.2 ± 13.7 | 99.7 ± 10.1 | 85.3 ± 7.0 | 0.5 miles @ 65° |
| 30 | N Fence (NW) JAF | 62.8 ± 6.6 | 77.1 ± 6.4 | 52.6 ± 0.8 | 40.4 ± 3.0 | 0.4 miles @ 57° |
| 31 | N Fence (NW) NMP-1 | 17.1 ± 0.8 | 18.5 ± 0.9 | 18.0 ± 0.4 | 25.0 ± 0.9 | 0.2 miles @ 276° |
| 39 | N Fence, Rad Waste, NMP-1 | 20.5 ± 1.4 | 23.2 ± 1.6 | 24.7 ± 1.0 | 29.4 ± 2.0 | 0.2 miles @ 292° |
| 47 | N Fence, NE, JAF | 30.4 ± 2.9 | 35.4 ± 2.4 | 24.5 ± 1.9 | 23.4 ± 2.2 | 0.6 miles @ 69° |
| 49* | Phoenix, NY-Control | 10.5 ± 1.4 | 12.5 ± 0.7 | 10.1 ± 0.5 | 14.4 ± 0.9 | 19.8 miles @ 170° |
| 51 | Liberty & Bronson Sts., E of OSS | 10.8 ± 0.5 | 13.6 ± 0.6 | 11.6 ± 0.7 | 15.6 ± 0.9 | 7.4 miles @ 233° |
| 52 | East 12th & Cayuga Sts., Oswego School | 9.9 ± 0.4 | 13.4 ± 0.6 | 11.8 ± 0.5 | 15.1 ± 0.1 | 5.8 miles @ 227° |
| 53 | Broadwell & Chestnut Sts., Fulton H.S. | 11.7 ± 0.6 | 15.1 ± 1.0 | 13.3 ± 0.7 | 16.2 ± 0.8 | 13.7 miles @ 183° |
| 54 | Liberty St., & Co Rt 16, Mexico H.S. | 11.2 ± 0.6 | 14.5 ± 1.3 | 10.6 ± 0.6 | 16.0 ± 1.1 | 9.3 miles @ 115° |
| 55 | Gas Substation & Co Rt 5 - Pulaski | 12.1 ± 0.4 | 12.9 ± 0.5 | 9.0 ± 0.6 | 15.3 ± 1.2 | 13.0 miles @ 75° |
| 56* | Rt 104 - New Haven School (SE Corner) | 10.2 ± 0.2 | 14.2 ± 1.2 | 12.8 ± 0.8 | 16.4 ± 0.7 | 5.3 miles @ 123° |
| 58* | Co Rt 1A - Alcan (E. of Entrance Rd.) | 9.6 ± 0.9 | 13.6 ± 0.3 | 12.2 ± 0.5 | 17.0 ± 1.4 | 3.1 miles @ 220° |
| 75* | Unit 2, N. Fence, N. of Reactor Bldg. | 16.4 ± 0.6 | 19.0 ± 0.9 | 19.6 ± 0.1 | 24.4 ± 1.3 | 0.1 miles @ 5° |
| 76* | Unit 2, N. Fence, N. of Change House | 16.1 ± 0.8 | 17.0 ± 1.0 | 17.0 ± 0.6 | (1) | 0.1 miles @ 25° |
| 77* | Unit 2, N. Fence, N. of Pipe Bldg. | 19.0 ± 1.0 | 23.9 ± 1.3 | 21.3 ± 0.9 | 24.6 ± 1.6 | 0.2 miles @ 45° |
| 78* | JAF, E. of E. Old Laydown Area | 11.8 ± 1.1 | 16.7 ± 1.0 | 11.5 ± 0.6 | 18.0 ± 1.0 | 1.0 miles @ 90° |
| 79* | Co Rt 29, Pole #63, 0.2 mi. S. of Lake Rd | 11.4 ± 1.0 | 11.7 ± 0.4 | 10.3 ± 0.2 | 15.3 ± 0.7 | 1.1 miles @ 115° |
| 80* | Co Rt 29, Pole #54, 0.7 mi. S. of Lake Rd | 11.8 ± 0.8 | 12.5 ± 1.0 | 11.2 ± 0.5 | 16.6 ± 0.1 | 1.4 miles @ 133° |
| 81* | Miner Rd, Pole #16, 0.5 mi. W. of Rt 29 | 12.5 ± 0.5 | 12.3 ± 0.8 | 10.1 ± 0.9 | 15.7 ± 1.2 | 1.6 miles @ 159° |
| 82* | Miner Rd, Pole #1 1/2, 1.1 mi. W of Rt 29 | 12.3 ± 0.6 | 13.1 ± 1.5 | 10.9 ± 0.4 | 16.2 ± 0.5 | 1.6 miles @ 181° |

**TABLE 9B (Continued)**

**DIRECT RADIATION MEASUREMENT RESULTS**

**Results in units of mrem/quarterly period ± 2 sigma**

| LOCATION NUMBER | LOCATION | JANUARY THROUGH MARCH | APRIL THROUGH JUNE | JULY THROUGH SEPTEMBER | OCTOBER THROUGH DECEMBER | LOCATION (DIRECTION & DISTANCE) (2) |
|---|---|---|---|---|---|---|
| | | 1996 | | | | |
| 83* | Lakeview Rd., Tree, 0.45 mi. N of Miner Rd | 13.0 ± 0.8 | 13.0 ± 0.9 | 11.3 ± 0.6 | 16.3 ± 0.8 | 1.2 miles @ 200° |
| 84* | Lakeview Rd. N, Pole #6117, 200 Ft. N. of Lake Rd. | 12.2 ± 0.3 | 13.5 ± 0.7 | 10.7 ± 0.4 | 16.3 ± 0.5 | 1.1 miles @ 225° |
| 85* | Unit 1, N. Fence, N. of W Side of Screen House | 21.2 ± 0.4 | 23.3 ± 2.2 | 23.2 ± 1.3 | 31.1 ± 0.9 | 0.2 miles @ 294° |
| 86* | Unit 2, N. Fence, N. of W Side of Screen House | 18.5 ± 1.3 | 19.5 ± 0.8 | 20.5 ± 2.9 | 24.4 ± 1.1 | 0.1 miles @ 315° |
| 87* | Unit 2, N. Fence, N. of E Side of Screen House | 18.0 ± 1.0 | 20.2 ± 1.1 | 19.0 ± 1.4 | 23.4 ± 0.3 | 0.1 miles @ 341° |
| 88* | Hickory Grove Rd., Pole #2, 0.6 mi. N. of Rt. 1 | 10.7 ± 0.4 | 15.0 ± 0.9 | 13.1 ± 0.9 | 15.7 ± 0.7 | 4.8 miles @ 97° |
| 89* | Leavitt Rd., Pole #16, 0.4 mi. S. of Rt 1 | 10.4 ± 0.9 | 14.5 ± 0.7 | 13.5 ± 0.5 | 16.1 ± 0.6 | 4.1 miles @ 111° |
| 90* | Rt. 104, Pole #300, 150 Ft. E of Keefe Rd. | 9.7 ± 0.8 | 13.0 ± 0.9 | 12.4 ± 0.6 | 15.4 ± 0.2 | 4.2 miles @ 135° |
| 91* | Rt. 51A, Pole #59, 0.8 mi. W. of Rt. 51 | 10.5 ± 0.7 | 11.2 ± 0.8 | 11.6 ± 0.5 | 15.7 ± 0.6 | 4.8 miles @ 156° |
| 92* | Maiden Lane Rd., Power Pole, 0.6 mi., S. of Rt. 104 | 10.8 ± 0.5 | 15.0 ± 0.9 | 13.9 ± 0.5 | 18.2 ± 0.6 | 4.4 miles @ 183° |
| 93* | Rt. 53, Pole 1-1, 120 Ft. S. of 104 | 11.8 ± 0.5 | 13.6 ± 1.1 | 11.9 ± 0.7 | 15.5 ± 1.0 | 4.4 miles @ 205° |
| 94* | Rt. 1, Pole #82, 250 Ft. E. of Kocher Rd. | 13.2 ± 0.7 | 12.3 ± 0.1 | 11.4 ± 0.3 | 15.3 ± 0.8 | 4.7 miles @ 223° |
| 95* | Lakeshore Camp Site, from Alcan W. Access Rd., Pole #21, 1.2 mi. N. of Rt. 1 | 10.6 ± 0.6 | 14.6 ± 1.3 | 11.0 ± 0.5 | 14.7 ± 0.9 | 4.1 miles @ 237° |
| 96* | Creamery Rd., 0.3 mi. S. of Middle Rd., Pole 1 1/2 | 11.8 ± 0.5 | 13.6 ± 0.7 | 12.2 ± 0.5 | 15.8 ± 1.2 | 3.6 miles @ 199° |

## TABLE 9B (Continued)

## DIRECT RADIATION MEASUREMENT RESULTS

**Results in units of mrem/quarterly period ± 2 sigma**

| LOCATION NUMBER | LOCATION | JANUARY THROUGH MARCH | APRIL THROUGH JUNE | JULY THROUGH SEPTEMBER | OCTOBER THROUGH DECEMBER | LOCATION (DIRECTION & DISTANCE) (2) |
|---|---|---|---|---|---|---|
| | | 1996 | | | | |
| 97* | Rt. 29, Env. Station R4, 200 Ft. N. of Miner Rd. | 13.0 ± 0.4 | 11.7 ± 0.5 | 10.6 ± 0.2 | 14.9 ± 0.7 | 1.8 miles @ 143° |
| 98* | Lake Rd., Pole #145, 0.15 mi. E. of Rt. 29 | 12.3 ± 0.2 | 16.7 ± 1.2 | 11.5 ± 0.2 | 16.9 ± 0.2 | 1.2 miles @ 101° |
| 99 | NMP Rd., 0.4 miles N. of Lake Rd., Env. Station R1 Off-Site | 12.2 ± 0.5 | 16.0 ± 1.1 | 12.1 ± 0.6 | 16.4 ± 0.6 | 1.8 miles @ 88° |
| 100 | Rt. 29 and Lake Rd., Env. Station R2 Off-Site | 11.9 ± 0.9 | 17.5 ± 1.8 | 10.9 ± 0.4 | 15.7 ± 1.3 | 1.1 miles @ 104° |
| 101 | Rt. 29, 0.7 mi. S. of Lake Rd., Env. Station R3 Off-Site | 11.6 ± 0.9 | 13.2 ± 0.7 | 10.0 ± 0.8 | 14.3 ± 0.8 | 1.5 miles @ 132° |
| 102 | EOF/Env. Lab, Oswego Co. Airport (Fulton Airport), Rt. 176, E. Driveway Lamp Post | 10.6 ± 0.5 | 14.5 ± 0.8 | 12.2 ± 0.6 | 14.7 ± 0.9 | 11.9 miles @ 175° |
| 103 | EIC, East Garage Rd., Lamp Post | 12.8 ± 0.7 | 16.5 ± 1.2 | 12.2 ± 0.6 | 16.6 ± 0.9 | 0.4 miles @ 267° |
| 104 | Parkhurst Rd., Pole 148 1/2-A; 0.1 mi. S. of Lake Rd. | 10.5 ± 0.5 | 15.4 ± 1.2 | 11.3 ± 0.8 | 15.1 ± 0.7 | 1.4 miles @ 102° |
| 105 | Lakeview Rd., Pole 6125, 0.6 mi. S of Lake Rd. | 12.8 ± 2.0 | 14.8 ± 1.0 | 12.5 ± 0.3 | 15.0 ± 0.5 | 1.4 miles @ 198° |
| 106 | Shoreline Cove, E of NMP-1, Tree on W Edge | 13.7 ± 0.4 | 19.1 ± 1.1 | 13.0 ± 0.7 | 17.7 ± 1.1 | 0.3 miles @ 274° |
| 107 | Shoreline Cove, E of NMP-1, Tree 30 Ft. S. of TLD #106 | 14.2 ± 0.9 | 18.2 ± 1.5 | 12.9 ± 0.5 | 17.9 ± 0.6 | 0.3 miles @ 272° |
| 108 | Lake Rd Pole #142 - 300' E of Co Rt 29 (S) | 12.1 ± 0.6 | 17.5 ± 1.1 | 11.8 ± 0.4 | 17.2 ± 0.5 | 1.1 miles @ 104° |
| 109 | Lake Rd Tree, 300' E. of Co. Rt. 29 (N) | 11.7 ± 0.0 | 15.4 ± 1.2 | 11.3 ± 0.5 | 16.0 ± 1.3 | 1.1 miles @ 103° |
| 111 | Sterling, NY - Control Blasiak Residence | 11.2 ± 0.8 | 15.6 ± 1.0 | 12.3 ± 0.6 | 14.2 ± 0.4 | 26.4 miles @ 166° |
| 113 | Baldwinsville, NY - Control Coates Residence | 11.5 ± 0.4 | 18.2 ± 1.7 | 10.7 ± 0.5 | 15.3 ± 0.5 | 21.8 miles @ 214° |

(1) TLD lost in the field.

(2) Direction and distance based on NMP-2 reactor centerline and sixteen 22.5° sector grid.

* Technical Specification location.

# TABLE 10

## NMP/JAF SITE
## ENVIRONMENTAL AIRBORNE PARTICULATE SAMPLES - OFF-SITE STATIONS

**GROSS BETA ACTIVITY pCi/m$^3$ ± 1 SIGMA**

**LOCATION**

| WEEK END DATE | R-1 OFF* | R-2 OFF* | R-3 OFF* | R-4 OFF* | R-5 OFF* | D-2 OFF | E-OFF | F-OFF | G-OFF |
|---|---|---|---|---|---|---|---|---|---|
| 01/09/96 | 0.025±0.001 | 0.024±0.001 | 0.023±0.001 | 0.021±0.001 | 0.023±0.001 | 0.023±0.001 | 0.022±0.001 | 0.024±0.001 | 0.021±0.001 |
| 01/16/96 | 0.023±0.001 | 0.024±0.001 | 0.021±0.001 | 0.020±0.001 | 0.022±0.001 | 0.017±0.001 | 0.024±0.001 | 0.021±0.001 | 0.020±0.001 |
| 01/23/96 | 0.014±0.001 | 0.015±0.001 | 0.015±0.001 | 0.016±0.001 | 0.014±0.001 | 0.015±0.001 | 0.014±0.001 | 0.014±0.001 | 0.013±0.001 |
| 01/30/96 | 0.015±0.001 | 0.015±0.001 | 0.014±0.001 | 0.014±0.001 | 0.012±0.001 | 0.013±0.001 | 0.014±0.001 | 0.012±0.001 | 0.012±0.001 |
| 02/06/96 | 0.015±0.001 | 0.016±0.001 | 0.016±0.001 | 0.015±0.001 | 0.015±0.001 | 0.015±0.001 | 0.017±0.001 | 0.016±0.001 | 0.015±0.001 |
| 02/13/96 | 0.017±0.001 | 0.019±0.001 | 0.017±0.001 | 0.014±0.001 | 0.019±0.001 | 0.016±0.001 | 0.020±0.001 | 0.016±0.001 | 0.016±0.001 |
| 02/20/96 | 0.013±0.001 | 0.014±0.001 | 0.012±0.001 | 0.012±0.001 | 0.010±0.001 | 0.012±0.001 | 0.013±0.001 | 0.013±0.001 | 0.012±0.001 |
| 02/27/96 | 0.011±0.001 | 0.010±0.001 | 0.011±0.001 | 0.009±0.001 | 0.009±0.001 | 0.007±0.001 | 0.010±0.001 | 0.081±0.001 | 0.010±0.001 |
| 03/05/96 | 0.014±0.001 | 0.013±0.001 | 0.013±0.001 | 0.015±0.001 | 0.014±0.001 | 0.014±0.001 | 0.015±0.001 | 0.015±0.001 | 0.015±0.001 |
| 03/12/96 | 0.015±0.001 | 0.017±0.001 | 0.016±0.001 | 0.016±0.001 | 0.017±0.001 | 0.015±0.001 | 0.016±0.001 | 0.013±0.001 | 0.015±0.001 |
| 03/19/96 | 0.015±0.001 | 0.013±0.001 | 0.015±0.001 | 0.012±0.001 | 0.014±0.001 | 0.013±0.001 | 0.016±0.001 | 0.016±0.001 | 0.013±0.001 |
| 03/26/96 | 0.012±0.001 | 0.010±0.001 | 0.010±0.001 | 0.011±0.001 | 0.012±0.001 | 0.011±0.001 | 0.014±0.001 | 0.011±0.001 | 0.011±0.001 |
| 04/02/96 | 0.016±0.001 | 0.014±0.001 | 0.015±0.001 | 0.015±0.001 | 0.014±0.001 | 0.016±0.001 | 0.016±0.001 | 0.014±0.001 | 0.014±0.001 |
| 04/09/96 | 0.016±0.001 | 0.017±0.001 | 0.014±0.001 | 0.014±0.001 | 0.015±0.001 | 0.015±0.001 | 0.015±0.001 | 0.013±0.001 | 0.014±0.001 |
| 04/16/96 | 0.010±0.001 | 0.011±0.001 | 0.010±0.001 | 0.008±0.001 | 0.010±0.001 | 0.009±0.001 | 0.011±0.001 | 0.009±0.001 | 0.010±0.001 |
| 04/23/96 | 0.013±0.001 | 0.012±0.001 | 0.010±0.001 | 0.012±0.001 | 0.011±0.001 | 0.012±0.001 | 0.012±0.001 | 0.012±0.001 | 0.010±0.001 |
| 04/30/96 | 0.010±0.001 | 0.010±0.001 | 0.011±0.001 | 0.009±0.001 | 0.009±0.001 | 0.012±0.001 | 0.012±0.001 | 0.013±0.001 | 0.009±0.001 |
| 05/07/96 | 0.010±0.001 | 0.009±0.001 | 0.009±0.001 | 0.010±0.001 | 0.011±0.001 | 0.011±0.001 | 0.010±0.001 | 0.009±0.001 | 0.009±0.001 |
| 05/14/96 | 0.011±0.001 | 0.011±0.001 | 0.009±0.001 | 0.009±0.001 | 0.010±0.001 | 0.011±0.001 | 0.010±0.001 | 0.090±0.001 | 0.009±0.001 |
| 05/21/96 | 0.011±0.001 | 0.012±0.001 | 0.012±0.001 | 0.014±0.001 | 0.013±0.001 | 0.011±0.001 | 0.015±0.001 | 0.011±0.001 | 0.011±0.001 |
| 05/28/96 | 0.011±0.001 | 0.009±0.001 | 0.010±0.001 | 0.010±0.001 | 0.010±0.001 | 0.010±0.001 | 0.011±0.001 | 0.012±0.001 | 0.011±0.001 |
| 06/04/96 | 0.012±0.001 | 0.013±0.001 | 0.013±0.001 | 0.013±0.001 | 0.012±0.001 | 0.011±0.001 | 0.010±0.001 | 0.012±0.001 | 0.012±0.001 |
| 06/11/96 | 0.007±0.001 | 0.008±0.001 | 0.007±0.001 | 0.006±0.001 | 0.009±0.001 | 0.008±0.001 | 0.009±0.001 | 0.009±0.001 | 0.007±0.001 |
| 06/18/96 | 0.010±0.001 | 0.007±0.001 | 0.009±0.001 | 0.011±0.001 | 0.011±0.001 | 0.011±0.001 | 0.010±0.001 | 0.010±0.001 | 0.010±0.001 |
| 06/25/96 | 0.007±0.001 | 0.007±0.001 | 0.007±0.001 | 0.008±0.001 | 0.009±0.001 | 0.007±0.001 | 0.008±0.001 | 0.008±0.001 | 0.007±0.001 |

* Sample locations required by Technical Specifications

# TABLE 10 (Continued)

## NMP/JAF SITE
## ENVIRONMENTAL AIRBORNE PARTICULATE SAMPLES - OFF-SITE STATIONS

**GROSS BETA ACTIVITY pCi/m$^3$ ± 1 SIGMA**

**LOCATION**

| WEEK END DATE | R-1 OFF* | R-2 OFF* | R-3 OFF* | R-4 OFF* | R-5 OFF* | D-2 OFF | E-OFF | F-OFF | G-OFF |
|---|---|---|---|---|---|---|---|---|---|
| 07/02/96 | 0.011±0.001 | 0.009±0.001 | 0.008±0.001 | 0.012±0.001 | 0.011±0.001 | 0.012±0.001 | 0.012±0.001 | 0.013±0.001 | 0.014±0.001 |
| 07/09/96 | 0.011±0.001 | 0.016±0.001 | 0.010±0.001 | 0.011±0.001 | 0.012±0.001 | 0.011±0.001 | 0.011±0.001 | 0.009±0.001 | 0.010±0.001 |
| 07/16/96 | 0.009±0.001 | 0.009±0.001 | 0.008±0.001 | 0.010±0.001 | 0.012±0.001 | 0.011±0.001 | 0.011±0.001 | 0.010±0.001 | 0.011±0.001 |
| 07/23/96 | 0.015±0.001 | 0.017±0.001 | 0.018±0.001 | 0.015±0.001 | 0.019±0.001 | 0.017±0.001 | 0.017±0.001 | 0.017±0.001 | 0.013±0.001 |
| 07/30/96 | 0.011±0.001 | 0.012±0.001 | 0.011±0.001 | 0.011±0.001 | 0.011±0.001 | 0.013±0.001 | 0.011±0.001 | 0.011±0.001 | 0.011±0.001 |
| 08/06/96 | 0.011±0.001 | 0.017±0.001 | 0.011±0.001 | 0.012±0.001 | 0.013±0.001 | 0.013±0.001 | 0.013±0.001 | 0.014±0.001 | 0.012±0.001 |
| 08/13/96 | 0.011±0.001 | 0.013±0.001 | 0.014±0.001 | 0.013±0.001 | 0.011±0.001 | 0.014±0.001 | 0.011±0.001 | 0.013±0.001 | 0.014±0.001 |
| 08/20/96 | 0.015±0.001 | 0.017±0.001 | 0.013±0.001 | 0.015±0.001 | 0.014±0.001 | 0.019±0.001 | 0.014±0.001 | 0.015±0.001 | 0.014±0.001 |
| 08/27/96 | 0.015±0.001 | 0.017±0.001 | 0.019±0.001 | 0.018±0.001 | 0.018±0.001 | 0.020±0.001 | 0.017±0.001 | 0.018±0.001 | 0.018±0.001 |
| 09/03/96 | 0.015±0.001 | 0.016±0.001 | 0.016±0.001 | 0.017±0.001 | 0.015±0.001 | 0.018±0.001 | 0.016±0.001 | 0.017±0.001 | 0.014±0.001 |
| 09/10/96 | 0.015±0.001 | 0.014±0.001 | 0.015±0.001 | 0.018±0.001 | 0.015±0.001 | 0.017±0.001 | 0.013±0.001 | 0.016±0.001 | 0.014±0.001 |
| 09/17/96 | 0.009±0.001 | 0.009±0.001 | 0.010±0.001 | 0.010±0.001 | 0.012±0.001 | 0.012±0.001 | 0.008±0.001 | 0.010±0.001 | 0.008±0.001 |
| 09/24/96 | 0.020±0.001 | 0.016±0.001 | 0.018±0.001 | 0.020±0.001 | 0.019±0.001 | 0.021±0.001 | 0.015±0.001 | 0.019±0.001 | 0.018±0.001 |
| 10/01/96 | 0.010±0.001 | 0.008±0.001 | 0.010±0.001 | 0.010±0.001 | 0.012±0.001 | 0.009±0.001 | 0.010±0.001 | 0.010±0.001 | 0.011±0.001 |
| 10/08/96 | 0.014±0.001 | 0.017±0.001 | 0.016±0.001 | 0.016±0.001 | 0.017±0.001 | 0.022±0.001 | 0.014±0.001 | 0.017±0.001 | 0.015±0.001 |
| 10/15/96 | 0.014±0.001 | 0.013±0.001 | 0.014±0.001 | 0.013±0.001 | 0.015±0.001 | 0.012±0.001 | 0.013±0.001 | 0.015±0.001 | 0.015±0.001 |
| 10/22/96 | 0.012±0.001 | 0.010±0.001 | 0.014±0.001 | 0.014±0.001 | 0.014±0.001 | 0.014±0.001 | 0.013±0.001 | 0.012±0.001 | 0.013±0.001 |
| 10/29/96 | 0.012±0.001 | 0.011±0.001 | 0.012±0.001 | 0.013±0.001 | 0.015±0.001 | 0.015±0.001 | 0.010±0.001 | 0.014±0.001 | 0.013±0.001 |
| 11/05/96 | 0.014±0.001 | 0.012±0.001 | 0.016±0.001 | 0.011±0.001 | 0.014±0.001 | 0.016±0.001 | 0.013±0.001 | 0.014±0.001 | 0.011±0.001 |
| 11/12/96 | 0.011±0.001 | 0.009±0.001 | 0.008±0.001 | 0.006±0.001 | 0.008±0.001 | 0.010±0.001 | 0.007±0.001 | 0.010±0.001 | 0.009±0.001 |
| 11/19/96 | 0.009±0.001 | 0.010±0.001 | 0.010±0.001 | 0.008±0.001 | 0.012±0.001 | 0.010±0.001 | 0.008±0.001 | 0.010±0.001 | 0.010±0.001 |
| 11/26/96 | 0.015±0.001 | 0.014±0.001 | 0.016±0.001 | 0.014±0.001 | 0.014±0.001 | 0.014±0.001 | 0.013±0.001 | 0.014±0.001 | 0.014±0.001 |
| 12/03/96 | 0.012±0.001 | 0.012±0.001 | 0.012±0.001 | 0.013±0.001 | 0.014±0.001 | 0.011±0.001 | 0.011±0.001 | 0.012±0.001 | 0.012±0.001 |
| 12/10/96 | 0.016±0.001 | 0.012±0.001 | 0.015±0.001 | 0.016±0.001 | 0.014±0.001 | 0.016±0.001 | 0.012±0.001 | 0.016±0.001 | 0.016±0.001 |
| 12/16/96 | 0.011±0.001 | 0.008±0.001 | 0.009±0.001 | 0.008±0.001 | 0.010±0.001 | 0.008±0.001 | 0.006±0.001 | 0.011±0.001 | 0.010±0.001 |
| 12/23/96 | 0.017±0.001 | 0.013±0.001 | 0.015±0.001 | 0.018±0.001 | 0.017±0.001 | 0.018±0.001 | 0.010±0.001 | 0.016±0.001 | 0.013±0.001 |
| 12/30/96 | 0.017±0.001 | 0.016±0.001 | 0.013±0.001 | 0.019±0.001 | 0.020±0.001 | 0.020±0.001 | 0.010±0.001 | 0.016±0.001 | 0.016±0.001 |

* Sample locations required by Technical Specifications

TABLE 11

NMP/JAF SITE
ENVIRONMENTAL AIRBORNE PARTICULATE SAMPLES - ON-SITE STATIONS

**GROSS BETA ACTIVITY pCi/m$^3$ ± 1 SIGMA**

**LOCATION**

| WEEK END DATE | D1 ON-SITE | G ON-SITE | H ON-SITE | I ON-SITE | J ON-SITE | K ON-SITE |
|---|---|---|---|---|---|---|
| 01/08/96 | 0.027±0.001 | 0.026±0.001 | 0.024±0.001 | 0.025±0.001 | 0.029±0.001 | 0.029±0.001 |
| 01/15/96 | 0.027±0.001 | 0.023±0.001 | 0.026±0.001 | 0.028±0.001 | 0.025±0.001 | 0.023±0.001 |
| 01/22/96 | 0.016±0.001 | 0.016±0.001 | 0.015±0.001 | 0.016±0.001 | 0.012±0.001 | 0.015±0.001 |
| 01/29/96 | 0.012±0.001 | 0.016±0.001 | 0.013±0.001 | 0.013±0.001 | 0.015±0.001 | 0.014±0.001 |
| 02/05/96 | 0.017±0.001 | 0.020±0.001 | 0.015±0.001 | 0.020±0.001 | 0.019±0.001 | 0.019±0.001 |
| 02/12/96 | 0.018±0.001 | 0.020±0.001 | 0.020±0.001 | 0.024±0.001 | 0.021±0.001 | 0.018±0.001 |
| 02/19/96 | 0.013±0.001 | 0.013±0.001 | 0.012±0.001 | 0.015±0.001 | 0.014±0.001 | 0.011±0.001 |
| 02/26/96 | 0.008±0.001 | 0.012±0.001 | 0.008±0.001 | 0.014±0.001 | 0.015±0.001 | 0.010±0.001 |
| 03/04/96 | 0.014±0.001 | 0.018±0.001 | 0.014±0.001 | 0.017±0.001 | 0.015±0.001 | 0.016±0.001 |
| 03/11/96 | 0.016±0.001 | 0.018±0.001 | 0.018±0.001 | 0.020±0.001 | 0.014±0.001 | 0.019±0.001 |
| 03/18/96 | 0.018±0.001 | 0.018±0.001 | 0.016±0.001 | 0.017±0.001 | 0.017±0.001 | 0.014±0.001 |
| 03/25/96 | 0.012±0.001 | 0.011±0.001 | 0.009±0.001 | 0.012±0.001 | 0.013±0.001 | 0.012±0.001 |
| 04/01/96 | 0.017±0.001 | 0.018±0.001 | 0.015±0.001 | 0.016±0.001 | 0.018±0.001 | 0.018±0.001 |
| 04/08/96 | 0.012±0.001 | 0.015±0.001 | 0.014±0.001 | 0.017±0.001 | 0.015±0.001 | 0.014±0.001 |
| 04/15/96 | 0.011±0.001 | 0.010±0.001 | 0.012±0.001 | 0.012±0.001 | 0.012±0.001 | 0.011±0.001 |
| 04/22/96 | 0.012±0.001 | 0.012±0.001 | 0.010±0.001 | 0.012±0.001 | 0.013±0.001 | 0.012±0.001 |
| 04/29/96 | 0.010±0.001 | 0.012±0.001 | 0.011±0.001 | 0.012±0.001 | 0.013±0.001 | 0.012±0.001 |
| 05/06/96 | 0.008±0.001 | 0.011±0.001 | 0.009±0.001 | 0.010±0.001 | 0.009±0.001 | 0.009±0.001 |
| 05/13/96 | 0.008±0.001 | 0.010±0.001 | 0.009±0.001 | 0.008±0.001 | 0.010±0.001 | 0.011±0.001 |
| 05/20/96 | 0.010±0.001 | 0.012±0.001 | 0.012±0.001 | 0.012±0.001 | 0.012±0.001 | 0.013±0.001 |
| 05/27/96 | 0.011±0.001 | 0.009±0.001 | 0.010±0.001 | 0.012±0.001 | 0.010±0.001 | 0.011±0.001 |
| 06/03/96 | 0.010±0.001 | 0.013±0.001 | 0.013±0.001 | 0.012±0.001 | 0.011±0.001 | 0.014±0.001 |
| 06/10/96 | 0.008±0.001 | 0.010±0.001 | 0.009±0.001 | 0.010±0.001 | 0.008±0.001 | 0.009±0.001 |
| 06/17/96 | 0.008±0.001 | 0.009±0.001 | 0.011±0.001 | 0.008±0.001 | 0.010±0.001 | 0.009±0.001 |
| 06/24/96 | 0.007±0.001 | 0.009±0.001 | 0.006±0.001 | 0.007±0.001 | 0.008±0.001 | 0.008±0.001 |

# TABLE 11 (Continued)

## NMP/JAF SITE
## ENVIRONMENTAL AIRBORNE PARTICULATE SAMPLES - ON-SITE STATIONS
**GROSS BETA ACTIVITY pCi/m$^3$ ± 1 SIGMA**

**LOCATION**

| WEEK END DATE | D1--ON | G--ON | H--ON | I--ON | J--ON | K--ON |
|---|---|---|---|---|---|---|
| 07/01/96 | 0.012±0.001 | 0.016±0.001 | 0.012±0.001 | 0.010±0.001 | 0.010±0.001 | 0.010±0.001 |
| 07/08/96 | 0.013±0.001 | 0.012±0.001 | 0.014±0.001 | 0.011±0.001 | 0.011±0.001 | 0.013±0.001 |
| 07/15/96 | 0.010±0.001 | 0.012±0.001 | 0.010±0.001 | 0.010±0.001 | 0.011±0.001 | 0.012±0.001 |
| 07/22/96 | 0.016±0.001 | 0.014±0.001 | 0.018±0.001 | 0.011±0.001 | 0.010±0.001 | 0.016±0.001 |
| 07/29/96 | 0.010±0.001 | 0.012±0.001 | 0.012±0.001 | 0.012±0.001 | 0.012±0.001 | 0.011±0.001 |
| 08/05/96 | 0.013±0.001 | 0.011±0.001 | 0.014±0.001 | NO SAMPLE | 0.011±0.001 | 0.012±0.001 |
| 08/12/96 | 0.017±0.001 | 0.015±0.001 | 0.014±0.001 | 0.014±0.001 | 0.015±0.001 | 0.015±0.001 |
| 08/19/96 | 0.015±0.001 | 0.015±0.001 | 0.016±0.001 | 0.015±0.001 | 0.014±0.001 | 0.013±0.001 |
| 08/26/96 | 0.018±0.001 | 0.019±0.001 | 0.018±0.001 | 0.018±0.001 | 0.020±0.001 | 0.017±0.001 |
| 09/03/96 | 0.017±0.001 | 0.020±0.001 | 0.018±0.001 | 0.018±0.001 | 0.019±0.001 | 0.017±0.001 |
| 09/09/96 | 0.019±0.001 | 0.021±0.001 | 0.020±0.001 | 0.019±0.001 | 0.020±0.001 | 0.018±0.001 |
| 09/16/96 | 0.009±0.001 | 0.012±0.001 | 0.008±0.001 | 0.010±0.001 | 0.011±0.001 | 0.008±0.001 |
| 09/23/96 | 0.020±0.001 | 0.019±0.001 | 0.019±0.001 | 0.020±0.001 | 0.020±0.001 | 0.018±0.001 |
| 09/30/96 | 0.011±0.001 | 0.010±0.001 | 0.011±0.001 | 0.009±0.001 | 0.009±0.001 | 0.009±0.001 |
| 10/07/96 | 0.014±0.001 | 0.014±0.001 | 0.012±0.001 | 0.013±0.001 | 0.014±0.001 | 0.013±0.001 |
| 10/14/96 | 0.015±0.001 | 0.018±0.001 | 0.016±0.001 | 0.016±0.001 | 0.014±0.001 | 0.017±0.001 |
| 10/21/96 | 0.015±0.001 | 0.014±0.001 | 0.014±0.001 | 0.015±0.001 | 0.016±0.001 | 0.012±0.001 |
| 10/28/96 | 0.013±0.001 | 0.013±0.001 | 0.013±0.001 | 0.012±0.001 | 0.012±0.001 | 0.011±0.001 |
| 11/04/96 | 0.013±0.001 | 0.015±0.001 | 0.013±0.001 | 0.015±0.001 | 0.015±0.001 | 0.016±0.001 |
| 11/12/96 | 0.012±0.001 | 0.012±0.001 | 0.010±0.001 | 0.011±0.001 | 0.012±0.001 | 0.011±0.001 |
| 11/18/96 | 0.010±0.001 | 0.011±0.001 | 0.010±0.001 | 0.012±0.001 | 0.013±0.001 | 0.010±0.001 |
| 11/25/96 | 0.015±0.001 | 0.018±0.001 | 0.017±0.001 | 0.015±0.001 | 0.016±0.001 | 0.016±0.001 |
| 12/02/96 | 0.014±0.001 | 0.014±0.001 | 0.016±0.001 | 0.015±0.001 | 0.019±0.001 | 0.015±0.001 |
| 12/09/96 | 0.019±0.001 | 0.020±0.001 | 0.022±0.001 | 0.020±0.001 | 0.018±0.001 | 0.022±0.001 |
| 12/16/96 | 0.010±0.001 | 0.012±0.001 | 0.012±0.001 | 0.015±0.001 | 0.016±0.001 | 0.011±0.001 |
| 12/23/96 | 0.016±0.001 | 0.018±0.001 | 0.018±0.001 | 0.018±0.001 | 0.014±0.001 | 0.017±0.001 |
| 12/30/96 | 0.020±0.001 | 0.022±0.001 | 0.019±0.001 | 0.021±0.001 | 0.019±0.001 | 0.022±0.001 |

## TABLE 12

## CONCENTRATION OF GAMMA EMITTERS IN MONTHLY COMPOSITES OF NMP AIR PARTICULATE SAMPLES

### R-1 OFF-SITE STATION *

**Results in units of $10^{-3}$pCi/m$^3$ ± 1 sigma**

| NUCLIDES | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE |
|---|---|---|---|---|---|---|
| 1996 | | | | | | |
| Co-60 | <1.4 | <1.5 | <1.3 | <1.3 | <1.0 | <0.9 |
| Mn-54 | <1.2 | <1.5 | <0.9 | <1.3 | <0.9 | <1.0 |
| Cs-134 | <1.2 | <1.5 | <0.9 | <1.1 | <0.7 | <1.0 |
| Cs-137 | <1.2 | <1.0 | <1.0 | <1.0 | <0.9 | <1.3 |
| Nb-95 | <1.4 | <1.9 | <1.4 | <1.6 | <1.5 | <1.4 |
| Zr-95 | <2.0 | <2.5 | <2.1 | <2.5 | <1.9 | <2.2 |
| Ce-141 | <1.7 | <1.9 | <1.6 | <1.0 | <1.1 | <1.0 |
| Ce-144 | <3.9 | <5.2 | <4.5 | <4.4 | <3.5 | <3.5 |
| Ru-106 | <8.3 | <14.2 | <9.4 | <13.9 | <7.7 | <9.2 |
| Ru-103 | <1.4 | <1.4 | <1.3 | <1.6 | <1.2 | <0.9 |
| Be-7 | 81 ± 7 | 81 ± 7 | 104 ± 7 | 88 ± 8 | 98 ± 7 | 59 ± 6 |
| K-40 | <16 | 34 ± 7 | 36 ± 6 | 6 ± 4 | 6 ± 4 | <17 |
| BaLa-140 | <3.2 | <4.8 | <3.7 | <4.6 | <6.1 | <3.4 |
| Ra-226 | 10 ± 5 | 16 ± 7 | <15 | <16 | <13 | 9 ± 4 |
| I-131 | <3.8 | <4.3 | <5.6 | <4.3 | <6.9 | <3.5 |
| Others** | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |
| **NUCLIDES** | **JULY** | **AUGUST** | **SEPTEMBER** | **OCTOBER** | **NOVEMBER** | **DECEMBER** |
| Co-60 | <1.5 | <1.3 | <1.2 | <0.7 | <1.5 | <1.1 |
| Mn-54 | <1.0 | <1.1 | <0.8 | <0.8 | <1.1 | <0.9 |
| Cs-134 | <1.0 | <0.9 | <0.9 | <0.9 | <1.2 | <1.1 |
| Cs-137 | <1.0 | <1.1 | <0.9 | <0.7 | <0.8 | <1.0 |
| Nb-95 | <1.4 | <1.3 | <1.6 | <1.4 | <2.2 | <1.4 |
| Zr-95 | <1.6 | <2.0 | <2.0 | <2.1 | <3.1 | <2.2 |
| Ce-141 | <1.4 | <1.8 | <1.2 | <1.2 | <1.6 | <1.5 |
| Ce-144 | <3.8 | <3.8 | <3.6 | <3.4 | <4.5 | <4.0 |
| Ru-106 | <8.9 | <11.3 | <9.6 | <8.4 | <10.2 | <10.5 |
| Ru-103 | <1.4 | <1.4 | <1.2 | <1.1 | <1.2 | <1.4 |
| Be-7 | 94 ± 7 | 87 ± 7 | 79 ± 6 | 74 ± 6 | 55 ± 6 | 38 ± 6 |
| K-40 | <13 | 33 ± 6 | <12 | 10 ± 4 | 27 ± 6 | 41 ± 7 |
| BaLa-140 | <3.6 | <6.2 | <5.7 | <3.8 | <4.1 | <2.5 |
| Ra-226 | 12 ± 6 | <14 | <14 | <14 | <11 | <12 |
| I-131 | <4.8 | <5.7 | <3.7 | <2.8 | <4.3 | <3.7 |
| Others** | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |

* - Location required by the Technical Specifications.
**- Other plant related radionuclides.

TABLE 12 (Continued)

CONCENTRATION OF GAMMA EMITTERS IN MONTHLY COMPOSITES OF NMP AIR PARTICULATE SAMPLES

G ON-SITE STATION*

Results in units of $10^{-3}$pCi/m$^3$ ± 1 sigma

| NUCLIDES | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE |
|---|---|---|---|---|---|---|
| 1996 | | | | | | |
| Co-60 | <1.0 | <1.4 | <0.9 | <1.8 | <1.1 | <2.5 |
| Mn-54 | <0.8 | <1.7 | <1.1 | <1.2 | <0.6 | <2.0 |
| Cs-134 | <1.0 | <1.2 | <1.0 | <1.4 | <0.9 | <1.4 |
| Cs-137 | <1.4 | <1.4 | <0.7 | <1.0 | <0.7 | <1.6 |
| Nb-95 | <1.7 | <2.1 | <1.5 | <2.1 | <1.3 | <2.0 |
| Zr-95 | <2.4 | <2.8 | <1.6 | <3.4 | <2.0 | <4.2 |
| Ce-141 | <1.9 | <1.8 | <1.5 | <2.0 | <1.4 | <1.9 |
| Ce-144 | <5.6 | <5.2 | <4.3 | <6.2 | <1.3 | <5.2 |
| Ru-106 | <10.4 | <16.9 | <8.3 | <14.8 | <8.7 | <15.4 |
| Ru-103 | <1.7 | <1.5 | <1.2 | <1.9 | <1.3 | <2.0 |
| Be-7 | 94 ± 8 | 83 ± 9 | 125 ± 7 | 100 ± 8 | 97 ± 7 | 68 ± 8 |
| K-40 | 44 ± 8 | 32 ± 8 | 37 ± 7 | 30 ± 7 | <11 | 32 ± 8 |
| BaLa-140 | <6.6 | <5.3 | <4.6 | <6.4 | <3.6 | <7.1 |
| Ra-226 | <18 | <19 | 8 ± 4 | <21 | <14 | <20 |
| I-131 | <4.7 | <6.6 | <4.6 | <5.7 | <5.2 | <5.5 |
| Others** | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |
| NUCLIDES | JULY | AUGUST | SEPTEMBER | OCTOBER | NOVEMBER | DECEMBER |
| Co-60 | <1.4 | <0.8 | <1.8 | <1.1 | <1.0 | <1.6 |
| Mn-54 | <1.2 | <0.8 | <0.9 | <1.2 | <1.1 | <1.1 |
| Cs-134 | <1.0 | <0.9 | <1.5 | <1.0 | <0.9 | <1.0 |
| Cs-137 | <1.1 | <0.7 | <1.7 | <1.2 | <0.8 | <0.7 |
| Nb-95 | <1.9 | <1.5 | <2.1 | <1.5 | <1.3 | <1.5 |
| Zr-95 | <2.4 | <1.9 | <4.2 | <2.1 | <1.4 | <2.6 |
| Ce-141 | <1.7 | <1.6 | <1.9 | <1.6 | <1.3 | <1.4 |
| Ce-144 | <5.6 | <3.9 | <5.2 | <4.6 | <3.5 | <4.5 |
| Ru-106 | <12.1 | <10.1 | <14.5 | <12.5 | <8.4 | <13.7 |
| Ru-103 | <1.2 | <1.2 | <1.9 | <1.2 | <1.0 | <1.4 |
| Be-7 | 111 ± 8 | 92 ± 7 | 85 ± 8 | 92 ± 7 | 58 ± 5 | 51 ± 6 |
| K-40 | 53 ± 9 | 31 ± 6 | <14 | 45 ± 8 | 22 ± 5 | 36 ± 7 |
| BaLa-140 | <6.3 | <5.3 | <7.4 | <5.7 | <5.1 | <6.3 |
| Ra-226 | <19 | <14 | <17 | <16 | <14 | <16 |
| I-131 | <4.9 | <4.8 | <7.9 | <3.7 | <4.1 | <16 |
| Others** | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |

* - Optional sample location.
** - Other plant related radionuclides.

## TABLE 12 (Continued)

## CONCENTRATION OF GAMMA EMITTERS IN MONTHLY COMPOSITES OF NMP AIR PARTICULATE SAMPLES

## H ON-SITE STATION*

**Results in units of $10^{-3}$pCi/m$^3$ ± 1 sigma**

| NUCLIDES | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE |
|---|---|---|---|---|---|---|
| 1996 | | | | | | |
| Co-60 | <0.5 | <1.2 | <0.9 | <1.5 | <1.0 | <1.6 |
| Mn-54 | <0.6 | <1.0 | <0.9 | <1.2 | <1.0 | <1.4 |
| Cs-134 | <0.8 | <1.0 | <0.9 | <0.9 | <0.8 | <1.0 |
| Cs-137 | <0.5 | <0.8 | <0.9 | <1.6 | <1.1 | <1.4 |
| Nb-95 | <1.4 | <1.4 | <1.2 | <2.1 | <1.8 | <2.3 |
| Zr-95 | <2.4 | <1.7 | <1.8 | <2.7 | <2.3 | <3.0 |
| Ce-141 | <1.1 | <1.2 | <1.1 | <2.1 | <1.7 | <2.0 |
| Ce-144 | <3.3 | <3.1 | <3.2 | <5.9 | <4.3 | <6.3 |
| Ru-106 | <12.3 | <10.3 | <8.2 | <14.2 | <10.0 | <14.6 |
| Ru-103 | <1.0 | <1.4 | <1.0 | <1.6 | <4.3 | <1.3 |
| Be-7 | 88 ± 7 | 69 ± 6 | 104 ± 7 | 95 ± 7 | 112 ± 7 | 69 ± 6 |
| K-40 | <16 | <12 | <10 | 159 ± 12 | 118 ± 9 | 172 ± 12 |
| BaLa-140 | <6.0 | <3.6 | <6.4 | <4.4 | <3.8 | <4.6 |
| Ra-226 | 10 ± 5 | 12 ± 6 | 8 ± 4 | <22 | 11 ± 6 | <22 |
| I-131 | <2.8 | <3.5 | <4.5 | <6.6 | <6.4 | <5.9 |
| Others** | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |
| **NUCLIDES** | **JULY** | **AUGUST** | **SEPTEMBER** | **OCTOBER** | **NOVEMBER** | **DECEMBER** |
| Co-60 | <1.2 | <1.0 | <2.1 | <1.4 | <0.6 | <1.4 |
| Mn-54 | <1.2 | <0.9 | <1.7 | <1.0 | <0.8 | <1.2 |
| Cs-134 | <0.8 | <0.7 | <1.5 | <1.0 | <0.8 | <1.0 |
| Cs-137 | <0.9 | <0.6 | <1.2 | <0.9 | <0.5 | <0.9 |
| Nb-95 | <1.9 | <1.4 | <1.9 | <1.7 | <1.4 | <1.6 |
| Zr-95 | <2.9 | <2.3 | <2.5 | <2.0 | <1.9 | <2.1 |
| Ce-141 | <1.2 | <1.1 | <2.4 | <1.1 | <1.0 | <1.0 |
| Ce-144 | <3.8 | <2.6 | <6.3 | <3.3 | <2.8 | <3.4 |
| Ru-106 | <9.5 | <6.5 | <16.2 | <9.2 | <8.8 | <7.2 |
| Ru-103 | <1.3 | <1.1 | <1.9 | <1.6 | <1.0 | <1.5 |
| Be-7 | 91 ± 7 | 78 ± 6 | 73 ± 8 | 69 ± 6 | 66 ± 6 | 54 ± 5 |
| K-40 | <13 | <11 | 36 ± 7 | 8 ± 3 | <11 | <12 |
| BaLa-140 | <5.5 | <6.6 | <4.1 | <3.5 | <4.9 | <5.8 |
| Ra-226 | 9 ± 5 | <10 | <19 | 8 ± 5 | <8 | <13 |
| I-131 | <4.0 | <4.2 | <7.1 | <4.2 | <3.7 | <4.0 |
| Others** | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |

* - Optional sample location.
** - Other plant related radionuclides.

TABLE 12 (Continued)

CONCENTRATION OF GAMMA EMITTERS IN MONTHLY COMPOSITES OF NMP AIR PARTICULATE SAMPLES

I ON-SITE STATION*

Results in units of $10^{-3}$pCi/m$^3$ $\pm$ 1 sigma

| NUCLIDES | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE |
|---|---|---|---|---|---|---|
| 1996 | | | | | | |
| Co-60 | <1.7 | <1.6 | <1.5 | <2.3 | <2.1 | <1.6 |
| Mn-54 | <1.5 | <1.0 | <1.5 | <2.2 | <1.5 | <1.0 |
| Cs-134 | <1.1 | <1.6 | <1.3 | <1.8 | <1.4 | <1.0 |
| Cs-137 | <1.7 | <1.3 | <1.0 | <1.3 | <1.5 | <0.9 |
| Nb-95 | <2.4 | <1.4 | <1.6 | <1.7 | <2.0 | <1.6 |
| Zr-95 | <3.8 | <3.0 | <2.0 | <3.3 | <2.2 | <2.3 |
| Ce-141 | <2.4 | <1.9 | <2.0 | <2.1 | <1.8 | <1.3 |
| Ce-144 | <6.9 | <5.8 | <5.3 | <5.8 | <4.8 | <3.7 |
| Ru-106 | <18.3 | <15.8 | <14.2 | <11.0 | <13.7 | <11.4 |
| Ru-103 | <1.9 | <1.6 | <1.6 | <2.4 | <1.6 | <1.1 |
| Be-7 | 75 ± 8 | 94 ± 8 | 92 ± 8 | 112 ± 10 | 112 ± 9 | 67 ± 7 |
| K-40 | 233 ± 15 | 34 ± 8 | 34 ± 7 | 24 ± 9 | <10 | 8 ± 4 |
| BaLa-140 | <5.2 | <4.7 | <3.2 | <6.3 | <4.5 | <4.9 |
| Ra-226 | <25 | <20 | <17 | <18 | <18 | <14 |
| I-131 | <7.0 | <4.2 | <7.5 | <6.5 | <6.6 | <3.9 |
| Others** | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |
| **NUCLIDES** | **JULY** | **AUGUST** | **SEPTEMBER** | **OCTOBER** | **NOVEMBER** | **DECEMBER** |
| Co-60 | <1.2 | <1.4 | <1.5 | <2.0 | <1.5 | <2.0 |
| Mn-54 | <1.2 | <1.4 | <1.1 | <1.7 | <1.1 | <1.6 |
| Cs-134 | <1.2 | <1.6 | <1.1 | <1.0 | <1.1 | <1.2 |
| Cs-137 | <0.9 | <1.5 | <1.0 | <1.2 | <1.3 | <0.9 |
| Nb-95 | <2.0 | <2.3 | <2.2 | <1.5 | <1.9 | <2.2 |
| Zr-95 | <2.6 | <3.6 | <3.0 | <2.4 | <2.2 | <2.8 |
| Ce-141 | <1.6 | <1.6 | <1.5 | <1.8 | <1.5 | <1.8 |
| Ce-144 | <4.5 | <4.7 | <3.5 | <5.3 | <3.7 | <5.0 |
| Ru-106 | <9.4 | <18.0 | <11.3 | <13.4 | <14.8 | <13.5 |
| Ru-103 | <1.6 | <2.0 | <1.3 | <1.9 | <1.4 | <1.5 |
| Be-7 | 97 ± 8 | 91 ± 9 | 87 ± 7 | 63 ± 8 | 48 ± 6 | 41 ± 6 |
| K-40 | <13 | 25 ± 8 | <14 | 33 ± 8 | 22 ± 6 | 44 ± 9 |
| BaLa-140 | <8.1 | <5.9 | <5.0 | <5.8 | <3.4 | <4.6 |
| Ra-226 | <17 | <15 | <16 | <18 | <12 | 12 ± 6 |
| I-131 | <7.8 | <7.8 | <4.9 | <4.2 | <4.1 | <5.4 |
| Others** | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |

* - Optional sample location.

**- Other plant related radionuclides.

## TABLE 12 (Continued)

## CONCENTRATION OF GAMMA EMITTERS IN MONTHLY COMPOSITES OF NMP AIR PARTICULATE SAMPLES

## J ON-SITE STATION*

**Results in units of $10^{-3}$pCi/m$^3$ ± 1 sigma**

| NUCLIDES | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE |
|---|---|---|---|---|---|---|
| | | | 1996 | | | |
| Co-60 | <1.2 | <1.8 | <1.2 | <1.2 | <0.9 | <1.0 |
| Mn-54 | <1.2 | <1.5 | <0.8 | <1.0 | <0.7 | <1.2 |
| Cs-134 | <1.3 | <1.2 | <0.9 | <1.2 | <1.0 | <1.0 |
| Cs-137 | <1.2 | <1.3 | <0.8 | <1.0 | <0.8 | <1.2 |
| Nb-95 | <1.7 | <1.9 | <1.8 | <1.8 | <1.0 | <1.7 |
| Zr-95 | <2.8 | <2.6 | <2.4 | <2.2 | <1.4 | <2.1 |
| Ce-141 | <1.7 | <1.9 | <1.1 | <1.7 | <1.6 | <1.4 |
| Ce-144 | <5.0 | <6.2 | <2.7 | <4.7 | <3.4 | <4.2 |
| Ru-106 | <11.6 | <14.0 | <8.9 | <12.8 | <11.6 | <10.5 |
| Ru-103 | <1.3 | <1.7 | <1.3 | <1.5 | <1.2 | <1.5 |
| Be-7 | 88 ± 8 | 83 ± 7 | 111 ± 8 | 109 ± 8 | 119 ± 8 | 57 ± 6 |
| K-40 | 40 ± 8 | 155 ± 12 | <11 | 44 ± 8 | 40 ± 6 | <12 |
| BaLa-140 | <6.3 | <5.5 | <2.9 | <4.8 | <3.9 | <5.8 |
| Ra-226 | <18 | <22 | <14 | <17 | <15 | <17 |
| I-131 | <4.7 | <6.4 | <4.7 | <5.2 | <5.2 | <5.2 |
| Others ** | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |
| **NUCLIDES** | **JULY** | **AUGUST** | **SEPTEMBER** | **OCTOBER** | **NOVEMBER** | **DECEMBER** |
| Co-60 | <1.9 | <1.1 | <1.3 | <1.9 | <1.3 | <2.2 |
| Mn-54 | <1.8 | <1.2 | <1.0 | <1.2 | <1.3 | <1.2 |
| Cs-134 | <1.9 | <1.3 | <1.2 | <1.7 | <1.2 | <1.6 |
| Cs-137 | <1.7 | <1.1 | <1.1 | <1.3 | <1.1 | <1.5 |
| Nb-95 | <2.2 | <1.4 | <1.9 | <2.2 | <1.9 | <2.1 |
| Zr-95 | <2.9 | <2.5 | <2.2 | <2.7 | <2.0 | <3.7 |
| Ce-141 | <2.0 | <1.8 | <1.5 | <1.9 | <2.0 | <1.9 |
| Ce-144 | <6.1 | <5.5 | <3.6 | <6.6 | <5.0 | <5.1 |
| Ru-106 | <18.3 | <14.0 | <10.0 | <13.9 | <13.1 | <15.9 |
| Ru-103 | <2.0 | <1.[illegible] | <1.3 | <1.7 | <1.5 | <2.5 |
| Be-7 | 111 ± 10 | 71 ± 8 | 81 ± 8 | 66 ± 7 | 59 ± 7 | 38 ± 7 |
| K-40 | 26 ± 9 | 38 ± 7 | <14 | 32 ± 7 | 26 ± 7 | 25 ± 8 |
| BaLa-140 | <7.4 | <5.7 | <5.2 | <5.8 | <6.1 | <6.7 |
| Ra-226 | <23 | <16 | <14 | <19 | <16 | <16 |
| I-131 | <6.6 | <7.5 | <3.6 | <5.3 | <5.8 | <7.2 |
| Others** | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |

* - Optional sample location.
** - Other plant related radionuclides.

TABLE 12 (Continued)

CONCENTRATION OF GAMMA EMITTERS IN MONTHLY COMPOSITES OF NMP AIR PARTICULATE SAMPLES

K ON-SITE STATION*

Results in units of $10^{-3}$pCi/$m^3$ ± 1 sigma

| NUCLIDES | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE |
|---|---|---|---|---|---|---|
| 1996 | | | | | | |
| Co-60 | <1.9 | <1.3 | <1.2 | <1.4 | <1.0 | <1.3 |
| Mn-54 | <1.0 | <1.4 | <0.9 | <1.4 | <0.8 | <1.2 |
| Cs-134 | <1.0 | <1.4 | <0.9 | <1.3 | <0.9 | <1.2 |
| Cs-137 | <0.8 | <1.3 | <0.9 | <1.1 | <0.8 | <1.1 |
| Nb-95 | <1.3 | <2.0 | <1.3 | <2.0 | <1.4 | <1.0 |
| Zr-95 | <2.5 | <3.0 | <1.6 | <2.9 | <1.1 | <2.3 |
| Ce-141 | <1.3 | <2.0 | <1.2 | <1.9 | <1.0 | <1.7 |
| Ce-144 | <3.4 | <6.4 | <2.7 | <5.6 | <2.5 | <4.4 |
| Ru-106 | <12.5 | <15.8 | <5.3 | <13.5 | <6.5 | <10.5 |
| Ru-103 | <1.3 | <1.7 | <0.8 | <1.6 | <0.9 | <1.2 |
| Be-7 | 78 ± 7 | 82 ± 7 | 119 ± 7 | 108 ± 7 | 127 ± 8 | 69 ± 7 |
| K-40 | 8 ± 5 | 199 ± 12 | <8 | 146 ± 10 | <11 | 38 ± 7 |
| BaLa-140 | <4.0 | <3.6 | <4.9 | <5.1 | <3.8 | <5.4 |
| Ra-226 | <12 | <21 | 6 ± 3 | 12 ± 7 | <10 | <19 |
| I-131 | <3.9 | <6.3 | <3.9 | <6.8 | <3.8 | <5.2 |
| Others** | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |
| **NUCLIDES** | **JULY** | **AUGUST** | **SEPTEMBER** | **OCTOBER** | **NOVEMBER** | **DECEMBER** |
| Co-60 | <1.3 | <1.0 | <1.6 | <1.7 | <1.6 | <1.3 |
| Mn-54 | <1.1 | <1.2 | <1.2 | <1.6 | <1.4 | <1.3 |
| Cs-134 | <0.9 | <0.7 | <1.0 | <1.0 | <1.2 | <1.0 |
| Cs-137 | <1.2 | <0.7 | <1.2 | <1.2 | <1.3 | <0.9 |
| Nb-95 | <1.4 | <1.5 | <1.9 | <2.0 | <1.7 | <1.2 |
| Zr-95 | <2.2 | <1.8 | <2.1 | <2.7 | <2.5 | <1.6 |
| Ce-141 | <1.9 | <1.1 | <1.8 | <2.2 | <1.5 | <1.1 |
| Ce-144 | <5.0 | <2.9 | <4.2 | <7.1 | <3.8 | <3.2 |
| Ru-106 | <13.5 | <6.1 | <12.4 | <15.2 | <14.6 | <9.6 |
| Ru-103 | <1.5 | <1.0 | <1.4 | <1.8 | <1.7 | <1.2 |
| Be-7 | 100 ± 8 | 82 ± 6 | 81 ± 7 | 58 ± 6 | 52 ± 6 | 45 ± 6 |
| K-40 | 40 ± 7 | <10 | 35 ± 8 | 193 ± 12 | 32 ± 8 | <10 |
| BaLa-140 | <6.4 | <44 | <5.0 | <4.6 | <7.5 | <4.8 |
| Ra-226 | <18 | <13 | <17 | <22 | <14 | <16 |
| I-131 | <4.7 | <5.3 | <6.0 | <5.9 | <5.0 | <4.9 |
| Others** | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |

* - Optional sample location.
** - Other plant related radionuclides.

TABLE 12 (Continued)

**CONCENTRATION OF GAMMA EMITTERS IN MONTHLY COMPOSITES OF NMP AIR PARTICULATE SAMPLES**

**G OFF-SITE STATION ***

**Results in units of $10^{-3}$pCi/m$^3$ ± 1 sigma**

| NUCLIDES | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE |
|---|---|---|---|---|---|---|
| 1996 | | | | | | |
| Co-60 | <0.8 | <1.2 | <1.3 | <1.4 | <0.9 | <0.8 |
| Mn-54 | <1.6 | <1.4 | <1.0 | <1.2 | <1.2 | <0.8 |
| Cs-134 | <1.2 | <1.5 | <0.9 | <1.2 | <0.8 | <1.0 |
| Cs-137 | <1.2 | <1.1 | <1.1 | <1.2 | <1.0 | <0.8 |
| Nb-95 | <1.8 | <1.6 | <1.8 | <1.6 | <1.5 | <1.3 |
| Zr-95 | <2.2 | <2.9 | <2.6 | <2.4 | <2.6 | <1.5 |
| Ce-141 | <1.6 | <1.7 | <1.8 | <1.4 | <1.4 | <1.2 |
| Ce-144 | <4.9 | <5.6 | <4.8 | <3.4 | <4.2 | <3.0 |
| Ru-106 | <10.8 | <11.1 | <12.0 | <13.5 | <11.9 | <7.0 |
| Ru-103 | <1.5 | <1.3 | <1.6 | <1.1 | <1.2 | <0.6 |
| Be-7 | 65 ± 7 | 75 ± 7 | 85 ± 6 | 94 ± 8 | 94 ± 8 | 69 ± 6 |
| K-40 | 54 ± 10 | 39 ± 8 | 145 ± 10 | <18 | <15 | <14 |
| BaLa-140 | <5.6 | <6.4 | <4.0 | <3.3 | <5.1 | <5.8 |
| Ra-226 | <17 | <17 | <19 | <12 | <13 | <10 |
| I-131 | <4.6 | <5.4 | <7.3 | <4.4 | <3.8 | <3.5 |
| Others** | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |
| NUCLIDES | JULY | AUGUST | SEPTEMBER | OCTOBER | NOVEMBER | DECEMBER |
| Co-60 | <1.1 | <1.7 | <1.0 | <1.8 | <1.0 | <1.0 |
| Mn-54 | <0.9 | <1.4 | <0.9 | <1.3 | <0.6 | <1.0 |
| Cs-134 | <0.8 | <1.4 | <1.1 | <1.5 | <0.7 | <0.9 |
| Cs-137 | <0.8 | <1.0 | <0.9 | <1.2 | <0.5 | <0.7 |
| Nb-95 | <1.5 | <1.8 | <1.6 | <1.2 | <1.2 | <1.2 |
| Zr-95 | <2.2 | <2.5 | <1.8 | <3.0 | <1.6 | <2.2 |
| Ce-141 | <1.2 | <2.1 | <1.1 | <1.5 | <1.0 | <1.0 |
| Ce-144 | <3.5 | <6.0 | <3.4 | <4.8 | <2.1 | <3.0 |
| Ru-106 | <10.5 | <12.3 | <9.4 | <15.6 | <7.5 | <9.5 |
| Ru-103 | <1.4 | <1.9 | <1.1 | <1.6 | <0.8 | <1.4 |
| Be-7 | 82 ± 6 | 81 ± 8 | 73 ± 6 | 57 ± 7 | 56 ± 5 | 35 ± 5 |
| K-40 | 71 ± 4 | 19 ± 6 | 12 ± 4 | 44 ± 9 | <9 | <8 |
| BaLa-140 | <4.9 | <5.9 | <3.3 | <5.8 | <3.5 | <4.3 |
| Ra-226 | <15 | 22 ± 6 | 14 ± 5 | 13 ± 6 | <10 | <16 |
| I-131 | <4.1 | <7.5 | <3.5 | <4.2 | <2.8 | <4.4 |
| Others** | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |

* - Optional sample location.
**- Other plant related radionuclides.

## TABLE 12 (Continued)

## CONCENTRATION OF GAMMA EMITTERS IN MONTHLY COMPOSITES OF NMP AIR PARTICULATE SAMPLES

## R-2 OFF-SITE STATION *

**Results in units of $10^{-3}$pCi/m$^3$ ± 1 sigma**

| NUCLIDES | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE |
|---|---|---|---|---|---|---|
| 1996 | | | | | | |
| Co-60 | <1.4 | <1.2 | <1.5 | <1.4 | <0.7 | <1.9 |
| Mn-54 | <1.2 | <0.8 | <1.2 | <1.3 | <0.7 | <1.2 |
| Cs-134 | <1.0 | <1.0 | <1.2 | <1.2 | <0.7 | <1.4 |
| Cs-137 | <1.4 | <1.0 | <0.8 | <0.9 | <0.7 | <1.4 |
| Nb-95 | <1.8 | <1.9 | <1.8 | <1.4 | <0.8 | <1.8 |
| Zr-95 | <2.8 | <2.0 | <2.2 | <2.5 | <1.9 | <2.6 |
| Ce-141 | <1.9 | <1.2 | <1.6 | <1.6 | <1.2 | <1.5 |
| Ce-144 | <6.2 | <3.4 | <4.3 | <5.2 | <3.0 | <4.8 |
| Ru-106 | <13.5 | <9.5 | <10.9 | <10.8 | <9.2 | <16.0 |
| Ru-103 | <1.6 | <1.4 | <1.4 | <1.3 | <1.1 | <2.1 |
| Be-7 | 72 ± 7 | 72 ± 7 | 94 ± 8 | 102 ± 8 | 109 ± 7 | 54 ± 7 |
| K-40 | 210 ± 13 | <13 | 28 ± 6 | 44 ± 8 | <10 | 22 ± 7 |
| BaLa-140 | <4.6 | <4.6 | <7.1 | <3.7 | <4.1 | <6.7 |
| Ra-226 | 21 ± 8 | <13 | <13 | <18 | <13 | <18 |
| I-131 | <5.3 | <3.3 | <6.2 | <4.2 | <3.1 | <5.4 |
| Others** | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |

| NUCLIDES | JULY | AUGUST | SEPTEMBER | OCTOBER | NOVEMBER | DECEMBER |
|---|---|---|---|---|---|---|
| Co-60 | <1.3 | <1.1 | <1.9 | <0.8 | <1.0 | <1.3 |
| Mn-54 | <1.1 | <1.1 | <1.6 | <0.9 | <1.0 | <1.0 |
| Cs-134 | <1.3 | <0.8 | <1.3 | <1.3 | <0.6 | <0.8 |
| Cs-137 | <1.2 | <0.8 | <1.3 | <1.0 | <0.8 | <1.0 |
| Nb-95 | <1.7 | <1.5 | <2.2 | <1.6 | <1.2 | <1.1 |
| Zr-95 | <2.5 | <3.0 | <2.8 | <1.9 | <1.8 | <2.4 |
| Ce-141 | <2.0 | <1.2 | <1.6 | <1.5 | <0.8 | <1.1 |
| Ce-144 | <4.8 | <3.2 | <5.2 | <4.4 | <2.3 | <2.8 |
| Ru-106 | <13.6 | <5.7 | <12.7 | <9.6 | <6.2 | <10.8 |
| Ru-103 | <1.3 | <1.4 | <2.0 | <1.1 | <0.9 | <1.3 |
| Be-7 | 89 ± 8 | 101 ± 8 | 70 ± 8 | 61 ± 6 | 58 ± 5 | 28 ± 5 |
| K-40 | 25 ± 7 | <11 | 25 ± 8 | 41 ± 8 | <9 | 10 ± 5 |
| BaLa-140 | <4.2 | <5.2 | <4.2 | <3.7 | <2.4 | <3.3 |
| Ra-226 | <17 | 12 ± 5 | <17 | <18 | <9 | <10 |
| I-131 | <5.2 | <4.3 | <4.7 | <3.7 | <3.1 | <3.3 |
| Others** | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |

* - Location required by the Technical Specifications.
**- Other plant related radionuclides.

## TABLE 12 (Continued)

## CONCENTRATION OF GAMMA EMITTERS IN MONTHLY COMPOSITES OF NMP AIR PARTICULATE SAMPLES

### R-3 OFF-SITE STATION *

### Results in units of $10^{-3}$pCi/m$^3$ ± 1 sigma

| NUCLIDES | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE |
|---|---|---|---|---|---|---|
| | | | 1996 | | | |
| Co-60 | <1.4 | <1.1 | <1.5 | <1.2 | <0.9 | <1.3 |
| Mn-54 | <1.3 | <1.1 | <1.2 | <1.1 | <1.0 | <1.0 |
| Cs-134 | <1.2 | <1.0 | <0.8 | <0.9 | <1.0 | <1.1 |
| Cs-137 | <0.9 | <1.0 | <1.1 | <0.7 | <0.9 | <1.1 |
| Nb-95 | <1.6 | <1.2 | <1.7 | <1.8 | <1.5 | <1.2 |
| Zr-95 | <2.6 | <2.7 | <2.5 | <2.6 | <2.3 | <1.7 |
| Ce-141 | <1.5 | <1.4 | <1.9 | <1.0 | <1.5 | <1.5 |
| Ce-144 | <5.1 | <3.6 | <4.9 | <3.0 | <3.9 | <4.0 |
| Ru-106 | <11.1 | <12.8 | <11.7 | <11.6 | <10.2 | <14.3 |
| Ru-103 | <1.0 | <1.4 | <1.5 | <1.0 | <1.2 | <1.2 |
| Be-7 | 79 ± 7 | 70 ± 7 | 93 ± 6 | 99 ± 8 | 101 ± 7 | 53 ± 6 |
| K-40 | 53 ± 8 | <16 | 122 ± 9 | <11 | 28 ± 6 | 30 ± 7 |
| BaLa-140 | <4.4 | <3.4 | <4.8 | <3.2 | <4.5 | <4.8 |
| Ra-226 | <16 | <17 | <19 | <12 | <13 | 6 ± 4 |
| I-131 | <4.5 | <4.4 | <8.9 | <3.6 | <4.1 | <5.6 |
| Others** | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |
| **NUCLIDES** | **JULY** | **AUGUST** | **SEPTEMBER** | **OCTOBER** | **NOVEMBER** | **DECEMBER** |
| Co-60 | <1.4 | <1.1 | <1.5 | <1.2 | <1.0 | <1.9 |
| Mn-54 | <0.9 | <1.5 | <1.2 | <1.0 | <0.8 | <1.5 |
| Cs-134 | <0.9 | <1.4 | <0.9 | <0.7 | <0.9 | <1.6 |
| Cs-137 | <0.6 | <1.2 | <1.0 | <0.9 | <0.7 | <1.6 |
| Nb-95 | <1.4 | <1.7 | <1.4 | <1.4 | <1.0 | <2.2 |
| Zr-95 | <2.0 | <3.4 | <2.6 | <2.6 | <1.7 | <2.8 |
| Ce-141 | <1.2 | <2.1 | <1.7 | <1.2 | <1.1 | <1.7 |
| Ce-144 | <3.7 | <5.2 | <5.0 | <3.1 | <2.7 | <6.0 |
| Ru-106 | <10.7 | <11.9 | <14.8 | <8.6 | <10.0 | <17.9 |
| Ru-103 | <1.4 | <2.2 | <1.5 | <1.4 | <1.0 | <2.2 |
| Be-7 | 72 ± 7 | 108 ± 10 | 72 ± 6 | 55 ± 6 | 57 ± 5 | 30 ± 7 |
| K-40 | 10 ± 6 | 43 ± 10 | 36 ± 7 | <11 | <11 | 36 ± 9 |
| BaLa-140 | <6.0 | <5.7 | <3.0 | <4.5 | <4.5 | <8.2 |
| Ra-226 | <13 | <16 | <16 | <11 | <13 | <18 |
| I-131 | <3.4 | <8.2 | <4.5 | <2.9 | <4.2 | <7.2 |
| Others** | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |

* - Location required by the Technical Specifications.
**- Other plant related radionuclides.

**TABLE 12 (Continued)**

**CONCENTRATION OF GAMMA EMITTERS IN MONTHLY COMPOSITES OF NMP AIR PARTICULATE SAMPLES**

**R-4 OFF-SITE STATION***

**Results in units of $10^{-3}$pCi/m$^3$ ± 1 sigma**

| NUCLIDES | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE |
|---|---|---|---|---|---|---|
| 1996 | | | | | | |
| Co-60 | <1.1 | <1.3 | <1.5 | <1.4 | <1.1 | <1.3 |
| Mn-54 | <1.0 | <1.4 | <1.8 | <1.4 | <1.1 | <1.0 |
| Cs-134 | <1.1 | <1.1 | <1.0 | <1.2 | <0.7 | <1.1 |
| Cs-137 | <1.2 | <1.0 | <0.9 | <1.4 | <0.7 | <0.8 |
| Nb-95 | <1.5 | <1.6 | <1.5 | <1.7 | <1.6 | <1.8 |
| Zr-95 | <1.9 | <2.8 | <2.3 | <3.2 | <1.8 | <1.9 |
| Ce-141 | <1.4 | <1.7 | <1.5 | <1.7 | <1.0 | <1.3 |
| Ce-144 | <3.9 | <4.7 | <3.9 | <5.0 | <2.6 | <3.3 |
| Ru-106 | <10.0 | <10.3 | <11.9 | <20.0 | <9.6 | <10.9 |
| Ru-103 | <1.2 | <1.4 | <1.1 | <1.7 | <1.0 | <1.2 |
| Be-7 | 70 ± 6 | 76 ± 7 | 99 ± 8 | 73 ± 9 | 101 ± 6 | 77 ± 7 |
| K-40 | <15 | 34 ± 8 | <14 | 21 ± 6 | <10 | <14 |
| BaLa-140 | <5.2 | <3.4 | <4.1 | <4.0 | <4.7 | <4.3 |
| Ra-226 | <14 | <18 | <15 | <17 | <10 | 23 ± 6 |
| I-131 | <3.0 | <5.1 | <4.1 | <6.2 | <2.9 | <3.9 |
| Others** | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |

| NUCLIDES | JULY | AUGUST | SEPTEMBER | OCTOBER | NOVEMBER | DECEMBER |
|---|---|---|---|---|---|---|
| Co-60 | <2.7 | <2.0 | <1.3 | <1.6 | <1.0 | <1.2 |
| Mn-54 | <1.7 | <1.6 | <1.1 | <1.7 | <1.0 | <1.0 |
| Cs-134 | <1.5 | <1.2 | <1.1 | <1.7 | <0.8 | <0.8 |
| Cs-137 | <1.1 | <1.3 | <0.8 | <1.4 | <0.8 | <1.1 |
| Nb-95 | <2.6 | <2.2 | <1.8 | <1.6 | <1.3 | <1.3 |
| Zr-95 | <2.8 | <3.2 | <3.3 | <3.0 | <1.5 | <2.1 |
| Ce-141 | <1.7 | <2.4 | <2.0 | <1.6 | <1.3 | <1.4 |
| Ce-144 | <5.6 | <6.9 | <5.5 | <5.4 | <3.7 | <3.7 |
| Ru-106 | <15.5 | <16.7 | <16.7 | <19.2 | <10.3 | <10.1 |
| Ru-103 | <1.5 | <1.8 | <2.3 | <1.6 | <0.7 | <1.0 |
| Be-7 | 84 ± 9 | 108 ± 9 | 78 ± 7 | 70 ± 8 | 46 ± 5 | 42 ± 5 |
| K-40 | 28 ± 7 | 48 ± 8 | 29 ± 7 | 32 ± 8 | 23 ± 5 | 8 ± 4 |
| BaLa-140 | <8.5 | <7.2 | <7.2 | <6.5 | <3.6 | <4.2 |
| Ra-226 | <21 | <21 | <20 | <16 | 9 ± 4 | 10 ± 5 |
| I-131 | <6.3 | <8.4 | <5.7 | <4.6 | <3.6 | <4.8 |
| Others** | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |

* - Location required by the Technical Specifications.
**- Other plant related radionuclides.

TABLE 12 (Continued)

CONCENTRATION OF GAMMA EMITTERS IN MONTHLY COMPOSITES OF NMP AIR PARTICULATE SAMPLES

R-5 OFF-SITE STATION * (CONTROL)

Results in units of $10^{-3}$pCi/m$^{3}$ ± 1 sigma

| NUCLIDES | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE |
|---|---|---|---|---|---|---|
| | | | 1996 | | | |
| Co-60 | <0.7 | <1.0 | <0.6 | <1.5 | <1.1 | <1.1 |
| Mn-54 | <0.9 | <0.6 | <0.8 | <1.2 | <0.8 | <1.3 |
| Cs-134 | <1.1 | <0.9 | <0.6 | <5.3 | <0.7 | <1.2 |
| Cs-137 | <1.2 | <0.8 | <0.7 | <1.4 | <0.5 | <1.0 |
| Nb-95 | <1.2 | <1.5 | <1.3 | <2.1 | <1.2 | <1.3 |
| Zr-95 | <1.8 | <2.0 | <1.6 | <2.4 | <1.2 | <2.4 |
| Ce-141 | <1.4 | <1.1 | <0.9 | <1.9 | <1.2 | <1.7 |
| Ce-144 | <3.9 | <3.8 | <2.7 | <5.1 | <3.0 | <4.8 |
| Ru-106 | <10.7 | <9.3 | <10.9 | <14.9 | <7.4 | <10.3 |
| Ru-103 | <1.0 | <1.2 | <1.1 | <1.7 | <1.2 | <1.2 |
| Be-7 | 72 ± 6 | 69 ± 6 | 114 ± 7 | 81 ± 8 | 105 ± 7 | 69 ± 6 |
| K-40 | <10 | <12 | <8 | 30 ± 8 | 11 ± 3 | 40 ± 7 |
| BaLa-140 | <5.1 | <2.7 | <5.4 | <4.3 | <4.6 | <5.3 |
| Ra-226 | <14 | 7 ± 4 | <10 | <18 | 12 ± 4 | <17 |
| I-131 | <3.6 | <3.6 | <3.4 | <5.3 | <4.0 | <5.6 |
| Others** | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |
| NUCLIDES | JULY | AUGUST | SEPTEMBER | OCTOBER | NOVEMBER | DECEMBER |
| Co-60 | <1.2 | <0.9 | <0.9 | <1.9 | <1.6 | <0.7 |
| Mn-54 | <1.1 | <1.0 | <1.0 | <1.0 | <1.4 | <1.1 |
| Cs-134 | <1.0 | <1.0 | <0.7 | <1.3 | <0.9 | <1.1 |
| Cs-137 | <0.7 | <1.1 | <0.9 | <1.4 | <1.1 | <0.9 |
| Nb-95 | <1.7 | <1.5 | <1.4 | <1.7 | <1.8 | <1.3 |
| Zr-95 | <2.2 | <2.2 | <2.2 | <2.3 | <2.4 | <2.4 |
| Ce-141 | <1.5 | <1.4 | <1.0 | <1.7 | <1.4 | <1.6 |
| Ce-144 | <3.9 | <3.7 | <3.2 | <5.5 | <4.2 | <4.4 |
| Ru-106 | <9.6 | <8.2 | <6.8 | <13.0 | <11.0 | <12.3 |
| Ru-103 | <1.6 | <1.7 | <1.2 | <1.7 | <1.1 | <1.2 |
| Be-7 | 107 ± 8 | 111 ± 8 | 90 ± 7 | 79 ± 7 | 81 ± 7 | 36 ± 6 |
| K-40 | 11 ± 5 | 10 ± 5 | <13 | 52 ± 9 | 31 ± 7 | 26 ± 6 |
| BaLa-140 | <3.8 | <5.5 | <5.2 | <4.1 | <5.3 | <5.0 |
| Ra-226 | 15 ± 5 | <17 | 7 ± 4 | <20 | <13 | 12 ± 6 |
| I-131 | <4.5 | <5.3 | <3.6 | <3.3 | <4.6 | <4.5 |
| Others** | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |

* - Location required by the Technical Specifications.
** -Other plant related radionuclides.

## TABLE 12 (Continued)

## CONCENTRATION OF GAMMA EMITTERS IN MONTHLY COMPOSITES OF NMP AIR PARTICULATE SAMPLES

## D-2 OFF-SITE STATION *

**Results in units of $10^{-3}$pCi/m$^3$ ± 1 sigma**

| NUCLIDES | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE |
|---|---|---|---|---|---|---|
| 1996 | | | | | | |
| Co-60 | <1.3 | <1.4 | <1.2 | <1.2 | <1.1 | <0.8 |
| Mn-54 | <1.5 | <1.4 | <0.9 | <0.9 | <1.2 | <1.2 |
| Cs-134 | <1.4 | <1.4 | <0.9 | <1.1 | <0.9 | <1.0 |
| Cs-137 | <1.4 | <1.5 | <0.5 | <1.0 | <0.7 | <0.6 |
| Nb-95 | <2.0 | <2.1 | <1.3 | <1.5 | <1.4 | <1.6 |
| Zr-95 | <2.8 | <2.9 | <2.1 | <2.3 | <2.0 | <2.8 |
| Ce-141 | <2.1 | <2.0 | <0.9 | <1.4 | <1.3 | <1.2 |
| Ce-144 | <6.2 | <6.1 | <3.0 | <4.0 | <4.2 | <3.5 |
| Ru-106 | <13.8 | <13.2 | <7.3 | <8.8 | <10.6 | <8.8 |
| Ru-103 | <1.4 | <1.6 | <1.1 | <1.4 | <1.1 | <1.2 |
| Be-7 | 73 ± 6 | 67 ± 7 | 89 ± 7 | 90 ± 7 | 124 ± 8 | 58 ± 6 |
| K-40 | 186 ± 12 | 167 ± 7 | <10 | <16 | 24 ± 5 | <13 |
| BaLa-140 | <4.8 | <4.8 | <3.4 | <6.0 | <2.6 | <4.4 |
| Ra-226 | <22 | 20 ± 8 | <10 | 11 ± 6 | <16 | <12 |
| I-131 | <6.0 | <5.7 | <5.0 | <4.6 | <3.7 | <3.6 |
| Others** | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |
| **NUCLIDES** | **JULY** | **AUGUST** | **SEPTEMBER** | **OCTOBER** | **NOVEMBER** | **DECEMBER** |
| Co-60 | <0.7 | <2.0 | <2.5 | <1.6 | <1.2 | <1.3 |
| Mn-54 | <1.1 | <1.2 | <1.8 | <1.5 | <1.1 | <0.8 |
| Cs-134 | <0.9 | <1.2 | <1.5 | <1.0 | <1.1 | <1.0 |
| Cs-137 | <1.0 | <1.0 | <1.4 | <1.4 | <1.0 | <0.9 |
| Nb-95 | <1.9 | <1.7 | <2.3 | <1.8 | <1.7 | <2.0 |
| Zr-95 | <2.3 | <1.9 | <2.3 | <2.8 | <2.1 | <2.6 |
| Ce-141 | <1.3 | <1.9 | <1.6 | <2.2 | <1.6 | <1.0 |
| Ce-144 | <3.5 | <4.8 | <5.0 | <6.5 | <4.7 | <3.8 |
| Ru-106 | <8.2 | <10.6 | <16.0 | <14.1 | <13.2 | <7.9 |
| Ru-103 | <0.9 | <1.6 | <2.3 | <1.6 | <1.6 | <0.8 |
| Be-7 | 95 ± 8 | 95 ± 8 | 87 ± 9 | 64 ± 6 | 56 ± 6 | 38 ± 5 |
| K-40 | <16 | 38 ± 7 | <19 | 164 ± 11 | 34 ± 6 | <15 |
| BaLa-140 | <3.9 | <5.5 | <9.4 | <3.8 | <3.1 | <4.5 |
| Ra-226 | <12 | <18 | <18 | 14 ± 8 | 10 ± 5 | <11 |
| I-131 | <4.7 | <7.4 | <6.6 | <4.7 | <3.9 | <4.1 |
| Others** | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |

* - Optional sample location.
** - Other plant related radionuclides.

## TABLE 12 (Continued)

## CONCENTRATION OF GAMMA EMITTERS IN MONTHLY COMPOSITES OF NMP AIR PARTICULATE SAMPLES

## E OFF-SITE STATION *

### Results in units of $10^{-3}$pCi/m$^3$ $\pm$ 1 sigma

| NUCLIDES | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE |
|---|---|---|---|---|---|---|
| | | | 1996 | | | |
| Co-60 | <2.1 | <2.0 | <1.3 | <1.3 | <0.8 | <1.4 |
| Mn-54 | <0.9 | <2.1 | <1.3 | <1.5 | <0.8 | <1.5 |
| Cs-134 | <1.3 | <1.9 | <0.9 | <1.3 | <0.8 | <0.9 |
| Cs-137 | <1.3 | <1.3 | <1.1 | <1.1 | <0.7 | <1.0 |
| Nb-95 | <2.1 | <1.8 | <2.4 | <1.4 | <1.3 | <2.2 |
| Zr-95 | <4.0 | <3.7 | <1.8 | <2.6 | <1.7 | <3.0 |
| Ce-141 | <1.8 | <1.8 | <1.5 | <1.6 | <1.1 | <1.6 |
| Ce-144 | <5.6 | <5.7 | <4.6 | <5.4 | <3.1 | <5.0 |
| Ru-106 | <17.5 | <15.3 | <13.1 | <11.4 | <9.0 | <14.1 |
| Ru-103 | <1.9 | <2.0 | <1.6 | <1.6 | <1.2 | <2.0 |
| Be-7 | 87 ± 9 | 91 ± 9 | 111 ± 9 | 87 ± 8 | 111 ± 7 | 75 ± 8 |
| K-40 | 30 ± 7 | 18 ± 8 | 36 ± 8 | 46 ± 8 | <8 | <20 |
| BaLa-140 | <5.4 | <6.7 | <8.6 | <4.8 | <4.0 | <5.4 |
| Ra-226 | <18 | <17 | <15 | <18 | <13 | <15 |
| I-131 | <5.3 | <5.1 | <6.8 | <5.1 | <3.6 | <6.2 |
| Others** | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |
| **NUCLIDES** | **JULY** | **AUGUST** | **SEPTEMBER** | **OCTOBER** | **NOVEMBER** | **DECEMBER** |
| Co-60 | <1.4 | <0.9 | <1.9 | <1.5 | <1.0 | <1.6 |
| Mn-54 | <1.0 | <1.4 | <1.5 | <1.2 | <0.9 | <1.7 |
| Cs-134 | <1.6 | <0.9 | <1.6 | <1.0 | <0.6 | <1.3 |
| Cs-137 | <1.6 | <1.1 | <1.4 | <1.0 | <0.8 | <1.3 |
| Nb-95 | <2.4 | <1.8 | <2.0 | <1.4 | <1.3 | <1.9 |
| Zr-95 | <2.4 | <2.5 | <3.0 | <2.2 | <1.5 | <2.7 |
| Ce-141 | <1.9 | <1.2 | <2.0 | <1.6 | <1.0 | <1.5 |
| Ce-144 | <5.0 | <3.4 | <6.4 | <4.5 | <2.4 | <4.0 |
| Ru-106 | <17.1 | <10.2 | <16.1 | <12.6 | <7.7 | <10.9 |
| Ru-103 | <1.2 | <1.6 | <1.5 | <1.3 | <1.2 | <1.8 |
| Be-7 | 103 ± 10 | 103 ± 8 | 56 ± 7 | 63 ± 6 | 56 ± 5 | 39 ± 6 |
| K-40 | 17 ± 6 | 12 ± 5 | 39 ± 8 | 37 ± 7 | 12 ± 5 | <18 |
| BaLa-140 | <7.7 | <4.4 | <6.9 | <5.3 | <4.4 | <3.9 |
| Ra-226 | <18 | <12 | <18 | <16 | 8 ± 5 | <13 |
| I-131 | <5.8 | <4.2 | <6.3 | <3.3 | <3.3 | <3.8 |
| Others** | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |

* - Optional sample location.
** - Other plant related radionuclides.

## TABLE 12 (Continued)

## CONCENTRATION OF GAMMA EMITTERS IN MONTHLY COMPOSITES OF NMP AIR PARTICULATE SAMPLES

## F OFF-SITE STATION *

**Results in units of $10^{-3}$pCi/$m^3$ $\pm$ 1 sigma**

| NUCLIDES | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE |
|---|---|---|---|---|---|---|
| 1996 | | | | | | |
| Co-60 | <1.4 | <1.7 | <1.1 | <2.3 | <1.3 | <2.1 |
| Mn-54 | <1.2 | <1.2 | <1.4 | <1.2 | <1.2 | <1.4 |
| Cs-134 | <1.1 | <1.1 | <1.1 | <1.3 | <1.0 | <1.5 |
| Cs-137 | <0.9 | <1.0 | <1.1 | <1.6 | <0.9 | <1.5 |
| Nb-95 | <1.7 | <1.2 | <1.7 | <2.3 | <1.1 | <2.1 |
| Zr-95 | <2.3 | <1.9 | <2.5 | <4.2 | <1.7 | <3.2 |
| Ce-141 | <1.5 | <1.4 | <2.0 | <1.7 | <1.6 | <2.1 |
| Ce-144 | <4.3 | <3.6 | <5.0 | <5.8 | <4.2 | <6.3 |
| Ru-106 | <12.7 | <9.8 | <14.7 | <17.0 | <11.8 | <14.9 |
| Ru-103 | <1.2 | <1.4 | <1.7 | <2.3 | <1.2 | <2.2 |
| Be-7 | 58 ± 6 | 64 ± 7 | 112 ± 8 | 93 ± 9 | 92 ± 7 | 73 ± 7 |
| K-40 | <11 | 10 ± 4 | 34 ± 7 | 24 ± 7 | 29 ± 6 | 33 ± 7 |
| BaLa-140 | <4.2 | <5.5 | <6.0 | <7.3 | <3.5 | <4.9 |
| Ra-226 | 11 ± 5 | 10 ± 5 | <16 | <19 | <14 | 18 ± 7 |
| I-131 | <4.2 | <4.3 | <7.0 | <6.1 | <4.5 | <6.8 |
| Others** | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |
| **NUCLIDES** | **JULY** | **AUGUST** | **SEPTEMBER** | **OCTOBER** | **NOVEMBER** | **DECEMBER** |
| Co-60 | <1.1 | <1.8 | <1.6 | <1.3 | <1.3 | <2.2 |
| Mn-54 | <1.0 | <1.3 | <0.9 | <0.8 | <1.0 | <1.4 |
| Cs-134 | <1.2 | <1.3 | <0.9 | <1.0 | <1.0 | <1.4 |
| Cs-137 | <1.1 | <1.5 | <1.0 | <0.8 | <0.9 | <1.1 |
| Nb-95 | <1.4 | <2.3 | <2.3 | <1.7 | <1.5 | <1.8 |
| Zr-95 | <2.4 | <3.0 | <2.0 | <2.2 | <2.0 | <2.5 |
| Ce-141 | <1.8 | <1.8 | <1.4 | <1.1 | <1.7 | <1.9 |
| Ce-144 | <4.6 | <5.6 | <3.8 | <2.9 | <4.0 | <5.7 |
| Ru-106 | <11.3 | <14.4 | <10.9 | <7.7 | <9.9 | <11.3 |
| Ru-103 | <1.5 | <2.0 | <1.4 | <1.2 | <1.1 | <1.8 |
| Be-7 | 89 ± 7 | 113 ± 10 | 62 ± 6 | 76 ± 7 | 56 ± 6 | 37 ± 6 |
| K-40 | 32 ± 6 | 31 ± 8 | <9 | <11 | 27 ± 5 | 39 ± 8 |
| BaLa-140 | <3.3 | <10.8 | <6.8 | <3.7 | <5.8 | <6.9 |
| Ra-226 | <17 | <20 | <14 | <11 | <14 | <17 |
| I-131 | <5.7 | <6.0 | <3.7 | <3.0 | <4.8 | <6.9 |
| Others** | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |

* - Optional sample location
**- Other plant related radionuclides

TABLE 12 (Continued)

**CONCENTRATION OF GAMMA EMITTERS IN MONTHLY COMPOSITES OF NMP AIR PARTICULATE SAMPLES**

**D-1 ON-SITE STATION ***

**Results in units of $10^{-3}$pCi/m$^3$ ± 1 sigma**

| NUCLIDES | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE |
|---|---|---|---|---|---|---|
| 1996 | | | | | | |
| Co-60 | <0.7 | <1.7 | <1.0 | <1.5 | <0.6 | <1.5 |
| Mn-54 | <1.0 | <1.0 | <0.7 | <1.0 | <1.0 | <1.2 |
| Cs-134 | <1.5 | <1.0 | <0.8 | <1.4 | <0.9 | <1.2 |
| Cs-137 | <1.1 | <1.0 | <0.7 | <1.0 | <0.9 | <0.9 |
| Nb-95 | <1.8 | <1.7 | <1.4 | <1.9 | <1.4 | <1.1 |
| Zr-95 | <2.7 | <1.8 | <1.8 | <3.0 | <2.2 | <1.9 |
| Ce-141 | <1.4 | <1.4 | <1.0 | <1.6 | <1.6 | <1.3 |
| Ce-144 | <4.6 | <3.8 | <3.2 | <4.7 | <4.1 | <3.6 |
| Ru-106 | <10.9 | <9.7 | <8.7 | <12.7 | <11.6 | <11.9 |
| Ru-103 | <1.3 | <1.3 | <0.9 | <1.6 | <1.4 | <1.4 |
| Be-7 | 79 ± 7 | 86 ± 8 | 104 ± 7 | 92 ± 8 | 20 ± 5 | 73 ± 7 |
| K-40 | 23 ± 6 | 12 ± 4 | <9 | 22 ± 6 | 110 ± 8 | <9 |
| BaLa-140 | <5.0 | <3.0 | <5.1 | <6.9 | <5.1 | <4.4 |
| Ra-226 | 10 ± 6 | <14 | <11 | <18 | <15 | <16 |
| I-131 | <3.9 | <4.0 | <3.9 | <6.1 | <5.4 | <3.9 |
| Others** | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |
| **NUCLIDES** | **JULY** | **AUGUST** | **SEPTEMBER** | **OCTOBER** | **NOVEMBER** | **DECEMBER** |
| Co-60 | <1.1 | <0.9 | <2.3 | <1.0 | <1.0 | <1.2 |
| Mn-54 | <1.0 | <0.9 | <1.6 | <1.3 | <1.0 | <0.9 |
| Cs-134 | <0.8 | <0.9 | <1.6 | <1.1 | <0.7 | <1.0 |
| Cs-137 | <0.9 | <0.6 | <1.1 | <1.1 | <0.7 | <0.7 |
| Nb-95 | <1.7 | <1.4 | <2.9 | <1.4 | <1.2 | <1.1 |
| Zr-95 | <2.4 | <1.7 | <4.0 | <2.6 | <1.4 | <1.7 |
| Ce-141 | <1.4 | <1.2 | <2.0 | <1.3 | <1.0 | <1.1 |
| Ce-144 | <4.0 | <3.4 | <6.7 | <3.7 | <2.9 | <3.3 |
| Ru-106 | <9.9 | <9.2 | <18.5 | <10.0 | <9.3 | <10.6 |
| Ru-103 | <1.4 | <1.1 | <1.7 | <1.5 | <1.0 | <1.0 |
| Be-7 | 87 ± 7 | 105 ± 7 | 71 ± 9 | 91 ± 7 | 56 ± 5 | 40 ± 4 |
| K-40 | <11 | 15 ± 4 | <16 | 10 ± 4 | <11 | 8 ± 3 |
| BaLa-140 | <3.6 | <5.8 | <9.0 | <3.3 | <4.7 | <4.2 |
| Ra-226 | <15 | <14 | <22 | <18 | 14 ± 5 | <12 |
| I-131 | <5.2 | <4.4 | <7.0 | <3.7 | <4.1 | <3.6 |
| Others** | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |

* - Optional sample location.
** - Other plant related radionuclides.

# TABLE 13

## NMP/JAF SITE
## ENVIRONMENTAL CHARCOAL CARTRIDGE SAMPLES - OFF-SITE STATIONS

**I-131 ACTIVITY pCi/m³ ± 1 SIGMA**
**LOCATION**

| WEEK END DATE | R-1* OFF-SITE | R-2* OFF-SITE | R-3* OFF-SITE | R-4* OFF-SITE | R-5* OFF-SITE | D-2 OFF-SITE | E OFF-SITE | F OFF-SITE | G OFF-SITE |
|---|---|---|---|---|---|---|---|---|---|
| 01/09/96 | <0.012 | <0.013 | <0.010 | <0.012 | <0.009 | <0.015 | <0.008 | <0.015 | <0.012 |
| 01/16/96 | <0.009 | <0.013 | <0.009 | <0.012 | <0.011 | <0.013 | <0.009 | <0.014 | <0.009 |
| 01/23/96 | <0.014 | <0.009 | <0.015 | <0.013 | <0.010 | <0.011 | <0.016 | <0.009 | <0.017 |
| 01/30/96 | <0.014 | <0.011 | <0.012 | <0.019 | <0.012 | <0.012 | <0.012 | <0.017 | <0.012 |
| 02/06/96 | <0.013 | <0.014 | <0.012 | <0.013 | <0.010 | <0.014 | <0.015 | <0.011 | <0.014 |
| 02/13/96 | <0.010 | <0.009 | <0.008 | <0.013 | <0.012 | <0.012 | <0.013 | <0.010 | <0.011 |
| 02/20/96 | <0.009 | <0.011 | <0.015 | <0.014 | <0.011 | <0.009 | <0.009 | <0.014 | <0.016 |
| 02/27/96 | <0.012 | <0.012 | <0.016 | <0.012 | <0.007 | <0.012 | <0.011 | <0.020 | <0.018 |
| 03/05/96 | <0.010 | <0.012 | <0.009 | <0.015 | <0.015 | <0.010 | <0.014 | <0.010 | <0.011 |
| 03/12/96 | <0.013 | <0.010 | <0.010 | <0.015 | <0.016 | <0.009 | <0.010 | <0.011 | <0.012 |
| 03/19/96 | <0.010 | <0.012 | <0.008 | <0.014 | <0.011 | <0.011 | <0.012 | <0.010 | <0.015 |
| 03/26/96 | <0.012 | <0.012 | <0.009 | <0.013 | <0.012 | <0.013 | <0.012 | <0.007 | <0.013 |
| 04/02/96 | <0.012 | <0.014 | <0.007 | <0.013 | <0.015 | <0.018 | <0.013 | <0.014 | <0.015 |
| 04/09/96 | <0.010 | <0.013 | <0.016 | <0.011 | <0.016 | <0.018 | <0.014 | <0.011 | <0.017 |
| 04/16/96 | <0.009 | <0.013 | <0.008 | <0.013 | <0.010 | <0.014 | <0.012 | <0.011 | <0.010 |
| 04/23/96 | <0.012 | <0.007 | <0.013 | <0.016 | <0.014 | <0.009 | <0.010 | <0.015 | <0.017 |
| 04/30/96 | <0.008 | <0.010 | <0.007 | <0.016 | <0.013 | <0.009 | <0.014 | <0.009 | <0.013 |
| 05/07/96 | <0.008 | <0.010 | <0.009 | <0.012 | <0.012 | <0.017 | <0.008 | <0.012 | <0.009 |
| 05/14/96 | <0.011 | <0.011 | <0.015 | <0.013 | <0.015 | <0.010 | <0.014 | <0.014 | <0.013 |
| 05/21/96 | <0.008 | <0.019 | <0.008 | <0.011 | <0.008 | <0.016 | <0.018 | <0.010 | <0.012 |
| 05/28/96 | <0.011 | <0.009 | <0.016 | <0.013 | <0.014 | <0.012 | <0.009 | <0.007 | <0.011 |
| 06/04/96 | <0.007 | <0.013 | <0.015 | <0.016 | <0.006 | <0.016 | <0.013 | <0.014 | <0.008 |
| 06/11/96 | <0.009 | <0.007 | <0.015 | <0.009 | <0.007 | <0.008 | <0.011 | <0.017 | <0.009 |
| 06/18/96 | <0.010 | <0.014 | <0.009 | <0.012 | <0.010 | <0.008 | <0.010 | <0.011 | <0.014 |
| 06/25/96 | <0.010 | <0.009 | <0.009 | <0.013 | <0.016 | <0.015 | <0.008 | <0.011 | <0.008 |

* Sample locations required by Technical Specifications

# TABLE 13 (Continued)

## NMP/JAF SITE
## ENVIRONMENTAL CHARCOAL CARTRIDGE SAMPLES - OFF-SITE STATIONS

**I-131 ACTIVITY pCi/m$^3$ ± 1 SIGMA**
**LOCATION**

| WEEK END DATE | R-1* OFF-SITE | R-2* OFF-SITE | R-3* OFF-SITE | R-4* OFF-SITE | R-5* OFF-SITE | D-2 OFF-SITE | E OFF-SITE | F OFF-SITE | G OFF-SITE |
|---|---|---|---|---|---|---|---|---|---|
| 07/02/96 | <0.009 | <0.008 | <0.008 | <0.013 | <0.015 | <0.009 | <0.010 | <0.010 | <0.013 |
| 07/09/96 | <0.010 | <0.016 | <0.009 | <0.011 | <0.013 | <0.014 | <0.007 | <0.011 | <0.009 |
| 07/16/96 | <0.013 | <0.011 | <0.009 | <0.014 | <0.011 | <0.011 | <0.014 | <0.010 | <0.015 |
| 07/23/96 | <0.008 | <0.010 | <0.008 | <0.009 | <0.011 | <0.008 | <0.013 | <0.011 | <0.011 |
| 07/30/96 | <0.009 | <0.010 | <0.016 | <0.006 | <0.009 | <0.008 | <0.008 | <0.010 | <0.012 |
| 08/06/96 | <0.008 | <0.013 | <0.012 | <0.008 | <0.015 | <0.014 | <0.010 | <0.018 | <0.012 |
| 08/13/96 | <0.007 | <0.012 | <0.009 | <0.013 | <0.010 | <0.011 | <0.009 | <0.013 | <0.009 |
| 08/20/96 | <0.008 | <0.012 | <0.006 | <0.014 | <0.015 | <0.009 | <0.010 | <0.010 | <0.014 |
| 08/27/96 | <0.011 | <0.012 | <0.012 | <0.012 | <0.010 | <0.009 | <0.016 | <0.014 | <0.014 |
| 09/03/96 | <0.011 | <0.013 | <0.011 | <0.013 | <0.012 | <0.011 | <0.014 | <0.013 | <0.016 |
| 09/10/96 | <0.009 | <0.017 | <0.013 | <0.014 | <0.006 | <0.012 | <0.012 | <0.011 | <0.018 |
| 09/17/96 | <0.009 | <0.010 | <0.016 | <0.013 | <0.009 | <0.009 | <0.017 | <0.019 | <0.012 |
| 09/24/96 | <0.012 | <0.010 | <0.016 | <0.008 | <0.009 | <0.007 | <0.014 | <0.016 | <0.011 |
| 10/01/96 | <0.008 | <0.013 | <0.013 | <0.014 | <0.009 | <0.012 | <0.010 | <0.012 | <0.013 |
| 10/08/96 | <0.013 | <0.010 | <0.014 | <0.016 | <0.008 | <0.009 | <0.011 | <0.015 | <0.012 |
| 10/15/96 | <0.013 | <0.016 | <0.012 | <0.015 | <0.011 | <0.013 | <0.012 | <0.020 | <0.011 |
| 10/22/96 | <0.013 | <0.012 | <0.007 | <0.012 | <0.008 | <0.015 | <0.012 | <0.014 | <0.009 |
| 10/29/96 | <0.008 | <0.012 | <0.010 | <0.014 | <0.013 | <0.016 | <0.010 | <0.012 | <0.007 |
| 11/05/96 | <0.010 | <0.008 | <0.015 | <0.014 | <0.015 | <0.012 | <0.010 | <0.016 | <0.015 |
| 11/12/96 | <0.009 | <0.007 | <0.013 | <0.010 | <0.008 | <0.010 | <0.005 | <0.016 | <0.012 |
| 11/19/96 | <0.010 | <0.008 | <0.013 | <0.009 | <0.007 | <0.014 | <0.010 | <0.014 | <0.007 |
| 11/26/96 | <0.008 | <0.011 | <0.013 | <0.013 | <0.013 | <0.010 | <0.011 | <0.015 | <0.010 |
| 12/03/96 | <0.011 | <0.008 | <0.010 | <0.016 | <0.010 | <0.013 | <0.013 | <0.011 | <0.013 |
| 12/10/96 | <0.010 | <0.010 | <0.008 | <0.017 | <0.013 | <0.008 | <0.011 | <0.010 | <0.006 |
| 12/16/96 | <0.013 | <0.014 | <0.011 | <0.014 | <0.007 | <0.012 | <0.013 | <0.010 | <0.012 |
| 12/23/96 | <0.011 | <0.011 | <0.015 | <0.011 | <0.011 | <0.014 | <0.010 | <0.012 | <0.011 |
| 12/30/96 | <0.007 | <0.009 | <0.004 | <0.015 | <0.012 | <0.013 | <0.010 | <0.010 | <0.014 |

* Sample locations required by Technical Specifications

# TABLE 14

NMP/JAF SITE
ENVIRONMENTAL CHARCOAL CARTRIDGE SAMPLES - ON-SITE STATIONS
**I-131 ACTIVITY pCi/m$^3$ ± 1 SIGMA**
**LOCATION**

| WEEK ENDING DATE | D1 ON-SITE | G ON-SITE | H ON-SITE | I ON-SITE | J ON-SITE | K ON-SITE |
|---|---|---|---|---|---|---|
| 01/08/96 | <0.009 | <0.012 | <0.009 | <0.015 | <0.016 | <0.013 |
| 01/15/96 | <0.011 | <0.012 | <0.020 | <0.022 | <0.011 | <0.010 |
| 01/22/96 | <0.009 | <0.014 | <0.010 | <0.014 | <0.011 | <0.010 |
| 01/29/96 | <0.015 | <0.011 | <0.016 | <0.012 | <0.009 | <0.012 |
| 02/05/96 | <0.016 | <0.011 | <0.008 | <0.013 | <0.011 | <0.007 |
| 02/12/96 | <0.014 | <0.010 | <0.010 | <0.012 | <0.012 | <0.007 |
| 02/20/96 | <0.009 | <0.011 | <0.008 | <0.014 | <0.013 | <0.013 |
| 02/26/96 | <0.010 | <0.012 | <0.018 | <0.006 | <0.012 | <0.016 |
| 03/04/96 | <0.010 | <0.012 | <0.011 | <0.011 | <0.012 | <0.014 |
| 03/11/96 | <0.008 | <0.010 | <0.009 | <0.013 | <0.016 | <0.008 |
| 03/18/96 | <0.013 | <0.008 | <0.014 | <0.014 | <0.012 | <0.005 |
| 03/25/96 | <0.009 | <0.010 | <0.015 | <0.012 | <0.017 | <0.010 |
| 04/01/96 | <0.014 | <0.008 | <0.012 | <0.016 | <0.011 | <0.008 |
| 04/08/96 | <0.008 | <0.012 | <0.008 | <0.014 | <0.009 | <0.010 |
| 04/15/96 | <0.010 | <0.014 | <0.015 | <0.016 | <0.008 | <0.011 |
| 04/22/96 | <0.011 | <0.014 | <0.009 | <0.015 | <0.016 | <0.017 |
| 04/29/96 | <0.010 | <0.014 | <0.008 | <0.011 | <0.011 | <0.005 |
| 05/06/96 | <0.012 | <0.010 | <0.014 | <0.015 | <0.012 | <0.013 |
| 05/13/96 | <0.008 | <0.013 | <0.011 | <0.011 | <0.010 | <0.011 |
| 05/20/96 | <0.014 | <0.015 | <0.014 | <0.018 | <0.009 | <0.008 |
| 05/28/96 | <0.010 | <0.012 | <0.008 | <0.009 | <0.011 | <0.015 |
| 06/03/96 | <0.011 | <0.014 | <0.017 | <0.012 | <0.010 | <0.014 |
| 06/10/96 | <0.007 | <0.014 | <0.016 | <0.015 | <0.010 | <0.007 |
| 06/17/96 | <0.012 | <0.010 | <0.015 | <0.018 | <0.013 | <0.010 |
| 06/24/96 | <0.008 | <0.017 | <0.008 | <0.017 | <0.013 | <0.010 |

# TABLE 14 (Continued)

NMP/JAF SITE
ENVIRONMENTAL CHARCOAL CARTRIDGE SAMPLES - ON-SITE STATIONS
I-131 ACTIVITY pCi/m$^3$ ± 1 SIGMA
LOCATION

| WEEK ENDING DATE | D1 ON-SITE | G ON-SITE | H ON-SITE | I ON-SITE | J ON-SITE | K ON-SITE |
|---|---|---|---|---|---|---|
| 07/01/96 | <0.010 | <0.012 | <0.008 | <0.011 | <0.011 | <0.011 |
| 07/08/96 | <0.010 | <0.010 | <0.018 | <0.017 | <0.016 | <0.010 |
| 07/15/96 | <0.014 | <0.011 | <0.012 | <0.014 | <0.013 | <0.012 |
| 07/22/96 | <0.012 | <0.008 | <0.016 | <0.012 | <0.013 | <0.008 |
| 07/29/96 | <0.012 | <0.014 | <0.010 | <0.014 | <0.016 | <0.015 |
| 08/05/96 | <0.009 | <0.007 | <0.008 | No Result | <0.015 | <0.021 |
| 08/12/96 | <0.011 | <0.011 | <0.012 | <0.012 | <0.007 | <0.012 |
| 08/19/96 | <0.011 | <0.011 | <0.014 | <0.010 | <0.015 | <0.013 |
| 08/26/96 | <0.010 | <0.011 | <0.018 | <0.015 | <0.008 | <0.008 |
| 09/03/96 | <0.010 | <0.006 | <0.017 | <0.014 | <0.011 | <0.015 |
| 09/09/96 | <0.011 | <0.010 | <0.020 | <0.017 | <0.013 | <0.010 |
| 09/16/96 | <0.012 | <0.010 | <0.016 | <0.007 | <0.009 | <0.013 |
| 09/23/96 | <0.010 | <0.015 | <0.014 | <0.021 | <0.014 | <0.009 |
| 09/30/96 | <0.014 | <0.013 | <0.010 | <0.017 | <0.013 | <0.019 |
| 10/07/96 | <0.007 | <0.011 | <0.008 | <0.009 | <0.012 | <0.009 |
| 10/14/96 | <0.010 | <0.014 | <0.012 | <0.010 | <0.011 | <0.014 |
| 10/21/96 | <0.111 | <0.009 | <0.015 | <0.011 | <0.019 | <0.010 |
| 10/28/96 | <0.014 | <0.013 | <0.010 | <0.015 | <0.010 | <0.014 |
| 11/04/96 | <0.010 | <0.009 | <0.016 | <0.009 | <0.009 | <0.012 |
| 11/12/96 | <0.025 | <0.024 | <0.014 | <0.008 | <0.016 | <0.014 |
| 11/18/96 | <0.007 | <0.009 | <0.009 | <0.013 | <0.013 | <0.007 |
| 11/25/96 | <0.014 | <0.012 | <0.016 | <0.012 | <0.010 | <0.016 |
| 12/02/96 | <0.007 | <0.010 | <0.010 | <0.010 | <0.010 | <0.009 |
| 12/09/96 | <0.009 | <0.010 | <0.012 | <0.008 | <0.011 | <0.015 |
| 12/16/96 | <0.014 | <0.014 | <0.014 | <0.016 | <0.013 | <0.018 |
| 12/23/96 | <0.008 | <0.012 | <0.010 | <0.012 | <0.016 | <0.018 |
| 12/30/96 | <0.008 | <0.011 | <0.008 | <0.010 | <0.012 | <0.006 |

# TABLE 15

## CONCENTRATION OF GAMMA EMITTERS IN MILK

**Results in units of pCi/liter ± 1 sigma**

| LOCATION | NUCLIDES | 4-1-96 | 4-22-96 | 5-6-96 | 5-20-96 | 6-3-96 | 6-17-96 |
|---|---|---|---|---|---|---|---|
| 60 | K-40 | 1710 ± 71 | 1550 ± 12 | 1670 ± 89 | 1420 ± 92 | 1480 ± 71 | 1520 ± 65 |
| | Cs-134 | <5.4 | <5.4 | <7.3 | <8.9 | <4.0 | <4.1 |
| | Cs-137 | <5.3 | <5.1 | <7.5 | <7.8 | <5.6 | <4.2 |
| | Ba/La-140 | <8.4 | <5.8 | <7.3 | <10.0 | <9.2 | <5.2 |
| | Ra-226 | <137 | <132 | <155 | <157 | <110 | <109 |
| | Others | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |
| 55 | K-40 | 2210 ± 62 | 1650 ± 85 | 1620 ± 68 | 1600 ± 68 | 1430 ± 71 | 1510 ± 65 |
| | Cs-134 | <3.8 | <6.1 | <5.8 | <4.2 | <5.4 | <5.4 |
| | Cs-137 | <5.6 | <7.0 | <4.8 | <4.5 | <4.8 | <5.0 |
| | Ba/La-140 | <5.4 | <9.7 | <5.6 | <7.4 | <8.7 | <5.3 |
| | Ra-226 | <143 | <160 | <129 | 114 ± 49 | <103 | 114 ± 49 |
| | Others | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |
| 50 | K-40 | 1700 ± 97 | 1450 ± 62 | 1510 ± 65 | 1410 ± 62 | 1510 ± 65 | 2190 ± 60 |
| | Cs-134 | <8.6 | <5.0 | <4.2 | <5.4 | <4.3 | <3.6 |
| | Cs-137 | <10.1 | <5.0 | <4.8 | <4.3 | <4.7 | <5.2 |
| | Ba/La-140 | <9.4 | <6.1 | <4.7 | <7.8 | <6.6 | <5.4 |
| | Ra-226 | 124 ± 57 | 88 ± 5 | <111 | 110 ± 40 | 64 ± 36 | 171 ± 50 |
| | Others | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |
| 4 | K-40 | 1470 ± 93 | 1380 ± 71 | 1500 ± 71 | 1520 ± 85 | 1540 ± 97 | 1430 ± 92 |
| | Cs-134 | <4.8 | <5.0 | <5.1 | <8.7 | <9.4 | <9.1 |
| | Cs-137 | <4.3 | <6.5 | <4.7 | <7.3 | <9.1 | <8.5 |
| | Ba/La-140 | <6.0 | <7.0 | <7.2 | <3.5 | <12.8 | <9.3 |
| | Ra-226 | <113 | <108 | <107 | <153 | <149 | <162 |
| | Others | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |
| 65* (Control) | K-40 | 1320 ± 68 | 2280 ± 62 | 2270 ± 62 | 2250 ± 62 | 1500 ± 80 | 1440 ± 71 |
| | Cs-134 | <4.3 | <3.7 | <4.0 | <4.3 | <7.1 | <4.0 |
| | Cs-137 | <5.9 | <5.4 | <5.7 | <5.8 | <6.8 | <4.9 |
| | Ba/La-140 | <5.9 | <4.0 | <5.9 | <4.6 | <7.6 | <5.3 |
| | Ra-226 | 133 ± 41 | 104 ± 46 | <139 | 195 ± 62 | <158 | 117 ± 39 |
| | Others | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |

* - Technical Specification location.

TABLE 15 (Continued)

**CONCENTRATION OF GAMMA EMITTERS IN MILK**

Results in units of pCi/liter ± 1 sigma

| LOCATION | NUCLIDES | 7-8-96 | 7-22-96 | 8-5-96 | 8-19-96 | 9-9-96 | 9-23-96 |
|---|---|---|---|---|---|---|---|
| 60 | K-40 | 2160 ± 60 | 1570 ± 68 | 1410 ± 71 | 1440 ± 71 | 1490 ± 97 | 1570 ± 68 |
| | Cs-134 | <3.8 | <5.3 | <2.4 | <5.3 | <9.0 | <5.1 |
| | Cs-137 | <5.9 | <4.7 | <5.2 | <5.4 | <8.5 | <4.7 |
| | Ba/La-140 | <5.2 | <6.2 | <9.1 | <7.0 | <6.8 | <5.9 |
| | Ra-226 | 80 ± 46 | <128 | 96 ± 46 | <105 | 87 ± 54 | <133 |
| | Others | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |
| 55 | K-40 | 1420 ± 65 | 1620 ± 97 | 1530 ± 97 | 1790 ± 71 | 1450 ± 62 | 1340 ± 27 |
| | Cs-134 | <4.7 | <9.3 | <8.0 | <5.3 | <4.9 | <6.5 |
| | Cs-137 | <4.9 | <8.5 | <9.9 | <5.2 | <4.7 | <9.7 |
| | Ba/La-140 | <7.0 | <11.6 | <10.3 | <5.9 | <7.3 | <11.0 |
| | Ra-226 | 94 ± 47 | <163 | <166 | <125 | <107 | <156 |
| | Others | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |
| 50 | K-40 | 1440 ± 92 | 1520 ± 74 | 1560 ± 68 | 1470 ± 65 | 1390 ± 92 | 1420 ± 62 |
| | Cs-134 | <8.6 | <5.1 | <5.4 | <4.3 | <8.8 | <4.2 |
| | Cs-137 | <8.6 | <5.5 | <5.4 | <4.7 | <10.2 | <4.2 |
| | Ba/La-140 | <9.8 | <7.9 | <5.7 | <5.4 | <6.4 | <5.4 |
| | Ra-226 | <165 | <92 | <125 | <126 | <155 | <117 |
| | Others | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |
| 4 | K-40 | 1430 ± 71 | 1510 ± 80 | 1520 ± 65 | 1670 ± 102 | 1380 ± 71 | 1520 ± 80 |
| | Cs-134 | <4.8 | <4.6 | <4.6 | <8.7 | <5.3 | <8.6 |
| | Cs-137 | <4.9 | <8.2 | <4.9 | <9.4 | <6.3 | <7.2 |
| | Ba/La-140 | <8.7 | <9.6 | <7.5 | <9.4 | <7.7 | <8.5 |
| | Ra-226 | 73 ± 41 | <160 | <109 | <156 | <109 | 113 ± 59 |
| | Others | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |
| 65* (Control) | K-40 | 1370 ± 62 | 1550 ± 68 | 1420 ± 71 | 1680 ± 85 | 1560 ± 85 | 1420 ± 71 |
| | Cs-134 | <5.0 | <3.7 | <4.9 | <8.3 | <8.7 | <4.0 |
| | Cs-137 | <4.7 | <4.5 | <5.3 | <7.9 | <7.0 | <5.6 |
| | Ba/La-140 | <7.6 | <6.2 | <7.0 | <6.9 | <9.0 | <6.6 |
| | Ra-226 | 118 ± 40 | <127 | <100 | <163 | <161 | <101 |
| | Others | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |

* - Technical Specification location.

## TABLE 15 (Continued)

## CONCENTRATION OF GAMMA EMITTERS IN MILK

**Results in units of pCi/liter ± 1 sigma**

| LOCATION | NUCLIDES | 10-7-96 | 10-21-96 | 11-4-96 | 11-18-96 | 12-2-96 | 12-16-96 |
|---|---|---|---|---|---|---|---|
| 60 | K-40 | 1440 ± 62 | 1580 ± 85 | 1680 ± 85 | 1460 ± 97 | 1570 ± 68 | 1530 ± 97 |
| | Cs-134 | <4.4 | <8.4 | <5.7 | <9.4 | <5.0 | <8.4 |
| | Cs-137 | <4.3 | <8.0 | <7.4 | <8.7 | <4.5 | <10.0 |
| | Ba/La-140 | <5.4 | <7.8 | <6.2 | <11.1 | <5.3 | <12.5 |
| | Ra-226 | <108 | <159 | <158 | <158 | <124 | <163 |
| | Others | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |
| 55 | K-40 | 1530 ± 97 | 1340 ± 68 | 1410 ± 92 | 1590 ± 85 | 1580 ± 74 | 1490 ± 71 |
| | Cs-134 | <8.4 | <4.7 | <10.0 | <5.8 | <4.9 | <3.9 |
| | Cs-137 | <8.3 | <5.6 | <8.6 | <7.8 | <4.8 | <4.9 |
| | Ba/La-140 | <13.4 | <5.3 | <12.1 | <8.0 | <9.3 | <5.0 |
| | Ra-226 | <156 | 78 ± 39 | <160 | 102 ± 54 | 87 ± 41 | <101 |
| | Others | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |
| 50 | K-40 | 1430 ± 71 | 1520 ± 12 | 1490 ± 65 | 1480 ± 92 | 1470 ± 65 | 1460 ± 52 |
| | Cs-134 | <5.1 | <3.8 | <3.5 | <9.4 | <4.4 | <3.8 |
| | Cs-137 | <5.8 | <5.3 | <4.2 | <9.7 | <4.8 | <4.0 |
| | Ba/La-140 | <6.7 | <7.7 | <6.0 | <10.4 | <6.4 | <14.6 |
| | Ra-226 | <103 | <136 | 112 ± 40 | <156 | <115 | 90 ± 33 |
| | Others | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |
| 4 | K-40 | 1580 ± 68 | 1400 ± 65 | 1590 ± 68 | 1550 ± 74 | 2250 ± 63 | 1350 ± 71 |
| | Cs-134 | <5.7 | <4.3 | <3.8 | <5.8 | <5.4 | <5.2 |
| | Cs-137 | <5.0 | <4.5 | <5.1 | <5.4 | <5.6 | <4.8 |
| | Ba/La-140 | <6.5 | <4.2 | <4.7 | <7.8 | <5.5 | <5.7 |
| | Ra-226 | <121 | <117 | <133 | <104 | 101 ± 54 | <109 |
| | Others | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |
| 65* (Control) | K-40 | 1570 ± 85 | 1470 ± 62 | 1320 ± 62 | 1520 ± 85 | 1560 ± 68 | 1560 ± 68 |
| | Cs-134 | <8.7 | <4.6 | <4.5 | <9.4 | <5.3 | <4.8 |
| | Cs-137 | <7.5 | <4.7 | <4.3 | <7.1 | <5.1 | <4.7 |
| | Ba/La-140 | <7.3 | <4.7 | <5.1 | <8.0 | <7.0 | <5.6 |
| | Ra-226 | 99 ± 56 | 126 ± 44 | <107 | <157 | <125 | <122 |
| | Others | <LLD | <LLD | <LLD | <LLD | <LLD | <LLD |

* - Technical Specification location.

## TABLE 16

## CONCENTRATION OF IODINE - 131 IN MILK (1)

### Results in units of pCi/liter

| LOCATION | 4-1-96 | 4-22-96 | 5-6-96 | 5-20-96 | 6-3-96 | 6-17-96 |
|---|---|---|---|---|---|---|
| 60 | <0.33 | <0.26 | <0.28 | <0.39 | <0.30 | <0.56 |
| 55 | <0.37 | <0.36 | <0.34 | <0.29 | <0.50 | <0.29 |
| 50 | <0.33 | <0.31 | <0.28 | <0.52 | <0.47 | <0.52 |
| 4 | <0.51 | <0.46 | <0.50 | <0.49 | <0.52 | <0.35 |
| 65* | <0.53 | <0.49 | <0.51 | <0.31 | <0.37 | <0.47 |
| **LOCATION** | **7-8-96** | **7-22-96** | **8-5-96** | **8-19-96** | **9-9-96** | **9-23-96** |
| 60 | <0.27 | <0.52 | <0.48 | <0.28 | <0.34 | <0.51 |
| 55 | <0.38 | <0.29 | <0.31 | <0.38 | <0.38 | <0.34 |
| 50 | <0.33 | <0.34 | <0.37 | <0.33 | <0.52 | <0.32 |
| 4 | <0.51 | <0.38 | <0.36 | <0.50 | <0.29 | <0.36 |
| 65* | <0.47 | <0.53 | <0.32 | <0.48 | <0.47 | <0.48 |
| **LOCATION** | **10-7-96** | **10-21-96** | **11-4-96** | **11-18-96** | **12-2-96** | **12-16-96** |
| 60 | <0.29 | <0.46 | <0.45 | <0.47 | <0.49 | <0.33 |
| 55 | <0.37 | <0.43 | <0.44 | <0.34 | <0.57 | <0.28 |
| 50 | <0.34 | <0.47 | <0.35 | <0.31 | <0.28 | <0.30 |
| 4 | <0.40 | <0.27 | <0.51 | <0.45 | <0.37 | <0.46 |
| 65* | <0.50 | <0.30 | <0.28 | <0.28 | <0.27 | <0.44 |

* - Control Result. Technical Specification location.
(1) Iodine 131 results are corrected for decay to the sample stop date.

## TABLE 17A

## CONCENTRATION OF GAMMA EMITTERS IN FOOD PRODUCTS

**Results in units of pCi/g (wet) ± 1 sigma**

| LOCATION | DATE | SAMPLE TYPE | Be-7 | K-40 | I-131 | Cs-134 | Cs-137 | Ra-226 | AcTh-228 | OTHER |
|---|---|---|---|---|---|---|---|---|---|---|
| L | 9-9-96 | Pepper Leaves | 0.26 ± 0.03 | 5.38 ± 0.13 | <0.02 | <0.01 | <0.01 | <0.11 | 0.04 ± 0.01 | <LLD |
| L | 9-9-96 | Squash Leaves | 0.81 ± 0.04 | 2.59 ± 0.10 | <0.01 | <0.01 | <0.01 | <0.15 | 0.04 ± 0.01 | <LLD |
| L | 9-9-96 | Bean Leaves | 0.44 ± 0.04 | 2.32 ± 0.09 | <0.02 | <0.01 | <0.01 | 0.18 ± 0.06 | <0.04 | <LLD |
| R | 9-9-96 | Collard Greens | 0.17 ± 0.03 | 3.51 ± 0.10 | <0.01 | <0.01 | <0.01 | 0.21 ± 0.05 | <0.03 | <LLD |
| R | 9-9-96 | Swiss Chard | 0.12 ± 0.02 | 4.91 ± 0.10 | <0.01 | <0.01 | <0.01 | 0.11 ± 0.04 | 0.03 ± 0.01 | <LLD |
| R | 9-9-96 | Kale | 0.10 ± 0.02 | 4.13 ± 0.10 | <0.02 | <0.01 | <0.01 | 0.22 ± 0.05 | <0.03 | <LLD |
| J | 9-10-96 | Squash Leaves | 0.83 ± 0.03 | 2.94 ± 0.08 | <0.01 | <0.01 | <0.01 | 0.28 ± 0.05 | 0.04 ± 0.01 | <LLD |
| J | 9-10-96 | Pepper Leaves | 0.22 ± 0.02 | 6.17 ± 0.12 | <0.02 | <0.01 | <0.01 | <0.13 | 0.02 ± 0.01 | <LLD |
| J | 9-10-96 | Tomatoes | <0.05 | 1.74 ± 0.06 | <0.01 | <0.01 | <0.01 | 0.10 ± 0.04 | <0.02 | <LLD |
| J | 9-10-96 | Cucumber Leaves | <0.06 | 4.68 ± 0.11 | <0.03 | <0.01 | <0.01 | 0.15 ± 0.05 | <0.03 | <LLD |
| K | 9-19-96 | Tomatoes | <0.05 | 2.23 ± 0.04 | <0.01 | <0.01 | <0.01 | 0.09 ± 0.04 | <0.03 | <LLD |
| K | 9-19-96 | Squash Leaves | 1.14 ± 0.05 | 2.52 ± 0.11 | <0.01 | <0.01 | <0.01 | <0.17 | <0.04 | <LLD |
| K | 9-19-96 | Pepper Leaves | 0.68 ± 0.03 | 5.62 ± 0.13 | <0.01 | <0.01 | <0.01 | 0.26 ± 0.06 | <0.03 | <LLD |
| S | 9-19-96 | Tomatoes | <0.06 | 2.45 ± 0.09 | <0.01 | <0.01 | <0.01 | 0.09 ± 0.04 | <0.03 | <LLD |
| S | 9-19-96 | Cucumber Leaves | 1.74 ± 0.08 | 1.88 ± 0.08 | <0.01 | <0.01 | <0.01 | 0.11 ± 0.06 | 0.02 ± 0.01 | <LLD |
| S | 9-19-96 | Pepper Leaves | 0.94 ± 0.09 | 8.56 ± 0.27 | <0.03 | <0.03 | <0.03 | 0.66 ± 0.18 | <0.11 | <LLD |
| M* | 9-9-96 | Grape Leaves | 0.67 ± 0.04 | 2.30 ± 0.08 | <0.02 | <0.01 | <0.01 | 0.26 ± 0.05 | 0.04 ± 0.01 | <LLD |
| M* | 9-9-96 | Squash Leaves | 0.49 ± 0.03 | 3.63 ± 0.10 | <0.01 | <0.01 | <0.01 | 0.14 ± 0.04 | 0.03 ± 0.01 | <LLD |
| M* | 9-9-96 | Cucumber Leaves | 0.98 ± 0.06 | 3.26 ± 0.13 | <0.02 | <0.01 | <0.01 | 0.21 ± 0.08 | <0.05 | <LLD |
| M* | 9-9-96 | Pepper Leaves | 0.28 ± 0.04 | 7.97 ± 0.17 | <0.01 | <0.01 | <0.01 | 0.16 ± 0.06 | <0.04 | <LLD |
| M* | 9-9-96 | Tomatoes | <0.07 | 2.24 ± 0.08 | <0.01 | <0.01 | <0.01 | <0.11 | <0.03 | <LLD |
| M* | 9-9-96 | Beet Leaves | 0.10 ± 0.04 | 8.37 ± 0.19 | <0.03 | <0.01 | <0.01 | 0.17 ± 0.08 | <0.05 | <LLD |

* - Control result
All results in units of activity per gram wet weight

## TABLE 17B

## CONCENTRATION OF GAMMA EMITTERS IN FOOD PRODUCTS

**Results in units of pCi/kg (wet) ± 1 sigma**

| LOCATION | DATE | SAMPLE TYPE | Be-7 | K-40 | I-131 | Cs-134 | Cs-137 | Ra-226 | AcTh-228 | OTHER |
|---|---|---|---|---|---|---|---|---|---|---|
| L | 9-9-96 | Pepper Leaves | 255 ± 27 | 5380 ± 128 | <15 | <6 | <7 | <113 | 41 ± 11 | <LLD |
| L | 9-9-96 | Squash Leaves | 809 ± 42 | 2590 ± 105 | <11 | <9 | <9 | <146 | 38 ± 13 | <LLD |
| L | 9-9-96 | Bean Leaves | 443 ± 36 | 2320 ± 91 | <20 | <7 | <9 | 184 ± 64 | <37 | <LLD |
| R | 9-9-96 | Collard Greens | 174 ± 27 | 3510 ± 99 | <12 | <8 | <7 | 206 ± 50 | <30 | <LLD |
| R | 9-9-96 | Swiss Chard | 124 ± 21 | 4910 ± 99 | <8 | <6 | <6 | 113 ± 42 | 31 ± 9 | <LLD |
| R | 9-9-96 | Kale | 102 ± 25 | 4130 ± 105 | <16 | <5 | <7 | 218 ± 48 | <30 | <LLD |
| J | 9-10-96 | Squash Leaves | 831 ± 33 | 2940 ± 85 | <7 | <5 | <6 | 276 ± 46 | 37 ± 10 | <LLD |
| J | 9-10-96 | Pepper Leaves | 224 ± 25 | 6170 ± 116 | <15 | <7 | <6 | <132 | 19 ± 10 | <LLD |
| J | 9-10-96 | Tomatoes | <48 | 1740 ± 60 | <10 | <4 | <6 | 104 ± 36 | <24 | <LLD |
| J | 9-10-96 | Cucumber Leaves | <64 | 1480 ± 52 | <27 | <7 | <7 | 148 ± 52 | <29 | <LLD |
| K | 9-19-96 | Tomatoes | <51 | 2230 ± 74 | <7 | <8 | <6 | 93 ± 44 | <27 | <LLD |
| K | 9-19-96 | Squash Leaves | 1140 ± 53 | 2520 ± 113 | <14 | <11 | <12 | <170 | <41 | <LLD |
| K | 9-19-96 | Pepper Leaves | 683 ± 33 | 5620 ± 126 | <7 | <5 | <7 | 257 ± 57 | <29 | <LLD |
| S | 9-19-96 | Tomatoes | <62 | 2450 ± 91 | <8 | <9 | <7 | 94 ± 44 | <28 | <LLD |
| S | 9-19-96 | Cucumber Leaves | 1740 ± 84 | 1880 ± 78 | <8 | <9 | <8 | 107 ± 56 | 23 ± 10 | <LLD |
| S | 9-19-96 | Pepper Leaves | 935 ± 90 | 8560 ± 271 | <29 | <31 | <26 | 660 ± 179 | <110 | <LLD |
| M* | 9-9-96 | Grape Leaves | 673 ± 35 | 2300 ± 78 | <16 | <5 | <7 | 256 ± 49 | 36 ± 10 | <LLD |
| M* | 9-9-96 | Squash Leaves | 494 ± 30 | 3630 ± 102 | <13 | <4 | <7 | 138 ± 39 | 29 ± 10 | <LLD |
| M* | 9-9-96 | Cucumber Leaves | 985 ± 59 | 3260 ± 130 | <24 | <8 | <12 | 211 ± 78 | <46 | <LLD |
| M* | 9-9-96 | Pepper Leaves | 283 ± 35 | 7970 ± 167 | <13 | <11 | <11 | 164 ± 64 | <43 | <LLD |
| M* | 9-9-96 | Tomatoes | <66 | 2240 ± 83 | <11 | <5 | <7 | <107 | <27 | <LLD |
| M* | 9-9-96 | Beet Leaves | 96 ± 36 | 8370 ± 194 | <27 | <12 | <13 | 167 ± 76 | <46 | <LLD |

* - Control result
All results in units of activity per kilogram wet weight

## TABLE 18

## MILK ANIMAL CENSUS

## 1996

| TOWN OR AREA(a) | NO. ON CENSUS MAP(1) | DEGREES(2) | DISTANCE(2) | NO. OF MILK ANIMALS |
|---|---|---|---|---|
| Scriba | 16 | 190° | 5.9 | None |
| | 3 | 190° | 4.5 | None |
| | 62 | 183° | 6.7 | 12G (3) |
| | 63 | 185° | 8.0 | 30C |
| | 74 | 195° | 5.6 | None |
| New Haven | 9 | 95° | 5.2 | 40C |
| | 4* | 113° | 7.8 | 106C |
| | 10 | 130° | 2.6 | None |
| | 5 | 146° | 7.2 | None |
| | 7 | 107° | 5.5 | None |
| | 64 | 107° | 7.9 | 52C |
| Mexico | 12 | 107° | 11.5 | 22C |
| | 14 | 120° | 9.8 | 56C |
| | 17 | 115° | 10.2 | 1C |
| | 19 | 132° | 10.5 | 35C |
| | 60* | 90° | 9.5 | 40C |
| | 50* | 93° | 9.3 | 160C |
| | 55* | 95° | 9.0 | 60C |
| | 21 | 112° | 10.5 | 80C |
| | 68 | 108° | 11.6 | 70C |
| | 49 | 88° | 7.9 | 5G (3) |
| | 72 | 98° | 9.9 | 40C |
| Oswego | 73** | 234° | 13.9 | 38C |
| Richland | 22 | 85° | 10.2 | 52C |
| Pulaski | 23 | 92° | 10.5 | 60C |
| Volney | 25 | 182° | 9.5 | None |
| | 70 | 147° | 9.4 | 30C |
| | 66 | 156° | 7.8 | 74C |

| | |
|---|---|
| MILKING ANIMAL TOTALS: (including control locations) | 1046 Cows<br>17 Goats |
| MILKING ANIMAL TOTALS: (excluding control locations) | 998 Cows<br>17 Goats |

## TABLE 18 (Continued)

## MILK ANIMAL CENSUS

## 1996

NOTES:

| | | |
|---|---|---|
| C | = | Cows |
| G | = | Goats |
| * | = | Milk sample location |
| ** | = | Milk sample control location |
| (1) | = | References Figure 4 |
| (2) | = | *Degrees and distance are based on NMP-2 reactor building centerline* |
| (3) | = | *Goat is not currently producing milk or any milk produced is utilized by the owner* |
| None | = | No cows or goats at that location. Location was a previous location with cows and/or goats. |

TABLE 19

1996 RESIDENCE CENSUS

| LOCATION | MAP LOCATION (1) | METEOROLOGICAL SECTOR | DEGREES (2) | DISTANCE (2) |
|---|---|---|---|---|
| * | | N | – | – |
| * | | NNE | – | – |
| * | | NE | – | – |
| * | | ENE | – | – |
| Lake Road | A | E | 99° | 1.3 miles |
| Lake Road | B | ESE | 102° | 1.1 miles |
| County Route 29 | C | SE | 130° | 1.4 miles |
| Miner Road | D | SSE | 163° | 1.6 miles |
| Miner Road | E | S | 170° | 1.6 miles |
| Lakeview Road | F | SSW | 207° | 1.2 miles |
| Bible Camp Retreat | G | SW | 234° | 0.9 miles |
| Bible Camp Retreat | H | WSW | 238° | 0.9 miles |
| * | | W | – | – |
| * | | WNW | – | – |
| * | | NW | – | – |
| * | | NNW | – | – |

* This meteorological sector is over Lake Ontario. There is no residence within five miles.
(1) Corresponds to Figure 1.
(2) Based on NMP2 reactor centerline.

## TABLE 20

## INTERLABORATORY COMPARISON PROGRAM RESULTS

| SAMPLE ID | SAMPLE TYPE | ANALYSIS | SITE LABORATORY RESULT[1] | REFERENCE LAB. RESULT[1] | NDKV[2] |
|---|---|---|---|---|---|
| QA 96-01A | Water | GSA: Ce-141 | 71 ± 13 pCi/l<br>99 ± 11 pCi/l<br>109 ± 17 pCi/l | 88 ± 4 pCi/l (A) | 0.87 |
| | | Cr-51 | 248 ± 72 pCi/l<br>330 ± 63 pCi/l<br>187 ± 88 pCi/l | 322 ± 16 pCi/l (A) | -1.34 |
| | | Cs-134 | 60 ± 4 pCi/l<br>55 ± 4 pCi/l<br>50 ± 4 pCi/l | 58 ± 3 pCi/l (A) | -1.73 |
| | | Cs-137 | 61 ± 5 pCi/l<br>56 ± 6 pCi/l<br>58 ± 6 pCi/l | 64 ± 3 pCi/l (A) | -1.08 |
| | | Co-58 | 32 ± 7 pCi/l<br>48 ± 7 pCi/l<br>42 ± 7 pCi/l | 48 ± 2 pCi/l (A) | -0.87 |
| | | Mn-54 | 30 ± 5 pCi/l<br>37 ± 6 pCi/l<br>33 ± 5 pCi/l | 31 ± 2 pCi/l (A) | 0.35 |
| | | Fe-59 | 89 ± 13 pCi/l<br>86 ± 14 pCi/l<br>97 ± 17 pCi/l | 83 ± 4 pCi/l (A) | 1.21 |
| | | Zn-65 | 83 ± 12 pCi/l<br>86 ± 12 pCi/l<br>84 ± 12 pCi/l | 97 ± 5 pCi/l (A) | 1.25 |
| | | Co-60 | 82 ± 5 pCi/l<br>74 ± 5 pCi/l<br>82 ± 5 pCi/l | 76 ± 4 pCi/l (A) | 0.0 |
| QA 96-02A | Air Filter | GSA: Ce-141 | 158 ± 39 pCi/filter<br>163 ± 31 pCi/filter<br>159 ± 40 pCi/filter | 170 ± 9 pCi/filter (A) | -1.02 |

## TABLE 20

## INTERLABORATORY COMPARISON PROGRAM RESULTS (continued)

| SAMPLE ID | SAMPLE TYPE | ANALYSIS | SITE LABORATORY RESULT[1] | REFERENCE LAB. RESULT[1] | NDKV[2] |
|---|---|---|---|---|---|
| QA 96-02A (continued) | Air Filter | Cs-134 | 96 ± 6 pCi/filter<br>101 ± 5 pCi/filter<br>89 ± 5 pCi/filter | 112 ± 6 pCi/filter (A) | -2.63 |
| | | Cs-137 | 107 ± 8 pCi/filter<br>121 ± 7 pCi/filter<br>114 ± 6 pCi/filter | 123 ± 6 pCi/filter (A) | -1.27 |
| | | Co-58 | 72 ± 17 pCi/filter<br>87 ± 13 pCi/filter<br>92 ± 15 pCi/filter | 93 ± 5 pCi/filter (A) | -1.56 |
| | | Mn-54 | 72 ± 9 pCi/filter<br>52 ± 6 pCi/filter<br>63 ± 7 pCi/filter | 61 ± 3 pCi/filter (A) | 0.17 |
| | | Fe-59 | 132 ± 62 pCi/filter<br>161 ± 44 pCi/filter<br>192 ± 53 pCi/filter | 162 ± 8 pCi/filter (A) | 0.0 |
| | | Zn-65 | 211 ± 27 pCi/filter<br>191 ± 17 pCi/filter<br>203 ± 12 pCi/filter | 188 ± 9 pCi/filter (A) | 1.38 |
| | | Co-60 | 144 ± 9 pCi/filter<br>136 ± 7 pCi/filter<br>152 ± 6 pCi/filter | 148 ± 7 pCi/filter (A) | -0.47 |
| QA 96-03A | Water | H-3 | 3359 ± 107 pCi/liter<br>3355 ± 107 pCi/liter<br>3323 ± 107 pCi/liter | 2982 ± 149 pCi/liter (A) | 1.76 |
| QA 96-04A | Air | I-131 | 83 ± 5 pCi/cc<br>71 ± 12 pCi/cc<br>70.7 ± 12.4 pCi/cc<br>87 ± 13 pCi/cc | 83 ± 4 pCi/cc (A) | -0.63 |
| QA 96-05A | Air Filter | Gross Beta | 29.7 ± 0.6 pCi/filter<br>30.0 ± 0.6 pCi/filter<br>30.0 ± 0.6 pCi/filter | 27 ± 1 pCi/filter (A) | 0.52 |

# TABLE 20

## INTERLABORATORY COMPARISON PROGRAM RESULTS (continued)

| SAMPLE ID | SAMPLE TYPE | ANALYSIS | SITE LABORATORY RESULT[1] | REFERENCE LAB. RESULT[1] | NDKV[2] |
|---|---|---|---|---|---|
| QA 96-06A | Soil | GSA: Ce-141 | 0.51 ± 0.06 pCi/g | 0.47 ± 0.02 pCi/g (A) | 0.49 |
| | | Cr-51 | 0.99 ± 0.10 pCi/g | 1.22 ± 0.06 pCi/g (A) | -2.17 |
| | | Cs-134 | 0.31 ± 0.03 pCi/g | 0.36 ± 0.02 pCi/g (A) | -0.64 |
| | | Cs-137 | 0.96 ± 0.01 pCi/g | 0.89 ± 0.04 pCi/g (A) | 0.91 |
| | | Co-58 | 0.21 ± 0.07 pCi/g | 0.20 ± 0.01 pCi/g (A) | 0.58 |
| | | Mn-54 | 0.70 ± 0.10 pCi/g | 0.65 ± 0.03 pCi/g (A) | 0.71 |
| | | Fe-59 | 0.26 ± 0.05 pCi/g | 0.17 ± 0.01 pCi/g (A) | 6.11 |
| | | Co-60 | 0.17 ± 0.05 pCi/g | 0.08 ± 0.01 pCi/g (A) | 0.0 |
| QA 96-07A | Milk | I-131 | 10 ± 3 | 15 ± 1 | -1.18 |
| QA 96-07A | Milk | GSA: Ce-141 | 216 ± 9 pCi/liter | 215 ± 11 pCi/l (A) | 0.07 |
| | | Cr-51 | 581 ± 17 pCi/liter | 563 ± 28 pCi/l (A) | 0.45 |
| | | Cs-134 | 156 ± 1 pCi/liter | 166 ± 8 pCi/l (A) | -0.85 |
| | | Cs-137 | 403 ± 6 pCi/liter | 410 ± 21 pCi/l (A) | -0.24 |
| | | Co-58 | 93 ± 2 pCi/liter | 93 ± 5 pCi/l (A) | 0.0 |
| | | Mn-54 | 315 ± 9 pCi/liter | 300 ± 15 pCi/l (A) | 0.71 |
| | | Fe-59 | 82 ± 2 pCi/liter | 77 ± 4 pCi/l (A) | 0.71 |
| | | Zn-65 | 60 ± 4 pCi/liter | 58 ± 3 pCi/l (A) | 0.28 |
| | | Co-60 | 84 ± 4 pCi/liter | 84 ± 4 pCi/l (A) | -0.14 |
| QA 96-08A | Water | I-131 | 43.4 ± 0.6 pCi/liter<br>39.9 ± 2.6 pCi/liter<br>42.1 ± 2.7 pCi/liter | 45 ± 2 pCi/liter (A) | -0.87 |
| QA 96-09A | Milk | I-131 | 10.0 ± 3.0 pCi/liter<br>10.2 ± 2.5 pCi/liter | 15 ± 1 pCi/liter (A) | -1.18 |
| QA 96-09A | Milk | GSA: Ce-141 | 320 ± 10<br>323 ± 15<br>312 ± 14 | 318 ± 6 | 0.0 |
| | | Cr-51 | 579 ± 45<br>557 ± 41<br>489 ± 63 | 486 ± 24 | 2.00 |

TABLE 20

INTERLABORATORY COMPARISON PROGRAM RESULTS (continued)

| SAMPLE ID | SAMPLE TYPE | ANALYSIS | SITE LABORATORY RESULT[1] | REFERENCE LAB. RESULT[1] | NDKV[2] |
|---|---|---|---|---|---|
| QA 96-09A (continued) | Milk | Cs-134 | 200 ± 5<br>217 ± 7<br>217 ± 5 | 222 ± 11 | -0.86 |
| | | Cs-137 | 152 ± 6<br>152 ± 7<br>170 ± 6 | 169 ± 8 | -1.13 |
| | | Co-58 | 129 ± 9<br>129 ± 6<br>136 ± 6 | 131 ± 7 | 0.0 |
| | | Mn-54 | 194 ± 7<br>185 ± 8<br>182 ± 6 | 180 ± 9 | 0.67 |
| | | Fe-59 | 34 ± 8<br>51 ± 14<br>34 ± 8 | 37 ± 2 | 0.52 |
| | | Zn-65 | 90 ± 10<br>67 ± 8<br>76 ± 9 | 70 ± 4 | 1.39 |
| | | Co-60 | 106 ± 6<br>117 ± 5<br>118 ± 4 | 114 ± 6 | 0.0 |
| QA 96-10A | Air Filter | GSA: Ce-141 | 301 ± 17 pCi/filter<br>314 ± 18 pCi/filter<br>293 ± 17 pCi/filter | 287 ± 14 pCi/filter (A) | 0.60 |
| | | Cr-51 | 429 ± 86 pCi/filter<br>346 ± 99 pCi/filter<br>460 ± 77 pCi/filter | 438 ± 22 pCi/filter (A) | -1.03 |
| | | Cs-134 | 177 ± 9 pCi/filter<br>170 ± 11 pCi/filter<br>185 ± 9 pCi/filter | 200 ± 10 pCi/filter (A) | -1.82 |
| | | Cs-137 | 174 ± 12 pCi/filter<br>168 ± 14 pCi/filter<br>157 ± 12 pCi/filter | 118 ± 6 pCi/filter (A) | 1.60 |

## TABLE 20

## INTERLABORATORY COMPARISON PROGRAM RESULTS (continued)

| SAMPLE ID | SAMPLE TYPE | ANALYSIS | SITE LABORATORY RESULT[1] | REFERENCE LAB. RESULT[1] | NDKV[2] |
|---|---|---|---|---|---|
| QA 96-10A (continued) | Air Filter | Mn-54 | 208 ± 14 pCi/filter<br>185 ± 15 pCi/filter<br>183 ± 13 pCi/filter | 162 ± 8 pCi/filter (A) | 0.59 |
| | | Fe-59 | 27 ± 15 pCi/filter<br>39.5 ± 23.7 pCi/filter | 34 ± 2 pCi/filter (A) | 2.57 |
| | | Zn-65 | 71.6 ± 16.2 pCi/filter<br>75.9 ± 21.3 pCi/filter<br>91.0 ± 16.8 pCi/filter | 63 ± 3 pCi/filter (A) | 2.77 |
| | | Co-60 | 106 ± 9 pCi/filter<br>110 ± 11 pCi/filter<br>108 ± 9 pCi/filter | 103 ± 5 pCi/filter (A) | 0.84 |
| QA 96-11A | Air | I-131 | 55.2 ± 6.5 pCi/cc<br>61.4 ± 6.6 pCi/cc<br>63.8 ± 17 pCi/cc | 60 ± 3 pCi/cc (A) | -1.15 |
| QA 96-12A | Air | Gross Beta | 77.7 ± 15 pCi/filter<br>74.5 ± 15 pCi/filter<br>75.0 ± 15 pCi/filter | 77.0 ± 3.85 pCi/filter (A) | -0.26 |
| QA 96-13A | Water | GSA: I-131 | 42.5 ± 4.1 pCi/liter<br>42.1 ± 5.9 pCi/liter<br>30.3 ± 4.4 pCi/liter | 39 ± 2 pCi/liter (A) | -0.29 |
| | | Ce-141 | 283 ± 6 pCi/liter<br>248 ± 8 pCi/liter<br>277 ± 6 pCi/liter | 272 ± 14 pCi/liter (A) | 0.57 |
| | | Cr-51 | 218 ± 23 pCi/liter<br>182 ± 31 pCi/liter<br>191 ± 26 pCi/liter | 209 ± 10 pCi/liter (A) | -0.99 |
| | | Cs-134 | 166 ± 3 pCi/liter<br>162 ± 4 pCi/liter<br>163 ± 3 pCi/liter | 172 ± 9 pCi/liter (A) | -0.81 |

## TABLE 20

## INTERLABORATORY COMPARISON PROGRAM RESULTS (continued)

| SAMPLE ID | SAMPLE TYPE | ANALYSIS | SITE LABORATORY RESULT[1] | REFERENCE LAB. RESULT[1] | NDKV[2] |
|---|---|---|---|---|---|
| QA 96-13A (continued) | Water | Cs-137 | 186 ± 5 pCi/liter<br>185 ± 6 pCi/liter<br>177 ± 5 pCi/liter | 191 ± 10 pCi/liter (A) | -0.73 |
| | | Co-58 | 114 ± 4 pCi/liter<br>117 ± 5 pCi/liter<br>123 ± 4 pCi/liter | 119 ± 6 pCi/liter (A) | -0.15 |
| | | Mn-54 | 220 ± 5 pCi/liter<br>221 ± 6 pCi/liter<br>216 ± 5 pCi/liter | 202 ± 10 pCi/liter (A) | 1.46 |
| | | Fe-59 | 57.7 ± 4.9 pCi/liter<br>60.5 ± 6.4 pCi/liter<br>56.4 ± 5.3 pCi/liter | 48 ± 2 pCi/liter (A) | 1.73 |
| | | Zn-65 | 96.0 ± 5.9 pCi/liter<br>88.4 ± 7.7 pCi/liter<br>89.0 ± 6.4 pCi/liter | 91 ± 5 pCi/liter (A) | 0.0 |
| | | Co-60 | 114 ± 3 pCi/liter<br>112 ± 4 pCi/liter<br>111 ± 3 pCi/liter | 108 ± 5 pCi/liter (A) | 0.64 |

## TABLE 20

## INTERLABORATORY COMPARISON PROGRAM RESULTS (continued)

| SAMPLE ID | SAMPLE TYPE | ANALYSIS | SITE LABORATORY RESULT[1] | REFERENCE LAB. RESULT[1] | REFERENCE RATIO[3] |
|---|---|---|---|---|---|
| QA 96-01E | Soil | GSA: Cs-137 | 2021 ± 28 Bq/kg | 1550 ± 22 Bq/kg (EML) | 1.30 |
| | | Co-60 | 3.75 ± 0.75 Bq/kg | 2.92 ± 0.21 Bq/kg (EML) | 1.28 |
| QA 96-02E | Air Filter | Gross Beta | 0.56 ± 0.03 Bq/filter<br>0.56 ± 0.03 Bq/filter<br>0.53 ± 0.03 Bq/filter | 0.050 ± 0.05 Bq/filter (EML) | 1.10 |
| QA 96-03E | Air Filter | GSA: Mn-54 | 6.0 ± 0.4 Bq/filter<br>5.8 ± 0.4 Bq/filter<br>6.2 ± 0.4 Bq/filter<br>5.9 ± 0.4 Bq/filter<br>5.3 ± 0.4 Bq/filter | 6.35 ± 0.27 Bq/filter (EML) | 0.92 |
| | | Co-57 | 12.7 ± 0.6 Bq/filter<br>12.5 ± 0.6 Bq/filter<br>13.7 ± 0.6 Bq/filter<br>12.4 ± 0.6 Bq/filter<br>12.5 ± 0.6 Bq/filter | 14.8 ± 0.8 Bq/filter (EML) | 0.86 |
| | | Co-60 | 7.5 ± 0.3 Bq/filter<br>8.4 ± 0.3 Bq/filter<br>7.8 ± 0.3 Bq/filter<br>7.7 ± 0.3 Bq/filter<br>7.8 ± 0.6 Bq/filter | 8.64 ± 0.43 Bq/filter (EML) | 0.91 |
| | | Ru-106 | 9.0 ± 1.4 Bq/filter<br>9.1 ± 1.4 Bq/filter<br>11.4 ± 1.4 Bq/filter<br>11.1 ± 1.4 Bq/filter<br>8.4 ± 1.4 Bq/filter | 10.8 ± 1.1 Bq/filter (EML) | 0.91 |
| | | Sb-125 | 9.8 ± 0.3 Bq/filter<br>9.2 ± 0.3 Bq/filter<br>9.7 ± 0.3 Bq/filter<br>9.5 ± 0.3 Bq/filter<br>9.1 ± 0.3 Bq/filter | 10.8 ± 0.5 Bq/filter (EML) | 0.88 |

## TABLE 20

## INTERLABORATORY COMPARISON PROGRAM RESULTS (continued)

| SAMPLE ID | SAMPLE TYPE | ANALYSIS | SITE LABORATORY RESULT[1] | REFERENCE LAB. RESULT[1] | REFERENCE RATIO[3] |
|---|---|---|---|---|---|
| QA 96-03E (continued) | Air Filter | GSA: Cs-134 | 9.3 ± 0.5 Bq/filter<br>9.8 ± 0.5 Bq/filter<br>9.7 ± 0.5 Bq/filter<br>9.7 ± 0.5 Bq/filter<br>9.8 ± 0.5 Bq/filter<br>8.8 ± 0.5 Bq/filter | 10.8 ± 0.4 Bq/filter (EML) | 0.86 |
| | | Cs-137 | 7.0 ± 0.2 Bq/filter<br>6.9 ± 0.2 Bq/filter<br>7.4 ± 0.2 Bq/filter<br>7.1 ± 0.2 Bq/filter<br>6.8 ± 0.2 Bq/filter | 8.52 ± 0.37 Bq/filter (EML) | 0.83 |
| QA 96-04E | Vegetation | GSA: Cs-137<br>Co-60 | 267 ± 5 Bq/kg<br>14.6 ± 0.7 Bq/kg | 190 ± 7.0 Bq/kg (EML)<br>10.9 ± 0.7 Bq/kg (EML) | 1.41<br>1.34 |
| QA 96-05E | Water | H-3 | 603 ± 4 Bq/liter<br>610 ± 4 Bq/liter<br>611 ± 4 Bq/liter | 587 ± 58 Bq/liter (EML) | 1.04 |
| QA 96-06E | Water | Gross Beta | 522 ± 16 Bq/liter<br>492 ± 16 Bq/liter<br>481 ± 16 Bq/liter | 540 ± 54 Bq/liter (EML) | 0.92 |

## TABLE 20

## INTERLABORATORY COMPARISON PROGRAM RESULTS (continued)

| SAMPLE ID | SAMPLE TYPE | ANALYSIS | SITE LABORATORY RESULT(1) | REFERENCE LAB. RESULT(1) | REFERENCE RATIO (3) |
|---|---|---|---|---|---|
| QA 96-07E | Water | GSA: Cs-137 | 82.5 ± 7.7 Bq/liter<br>9.02 ± 7.7 Bq/liter<br>104.3 ± 7.7 Bq/liter | 89.5 ± 1.36 Bq/liter (EML) | 1.03 |
| | | Mn-54 | 61.1 ± 5.0 Bq/liter<br>53.3 ± 5.0 Bq/liter<br>65.1 ± 5.0 Bq/liter | 60.5 ± 0.6 Bq/liter (EML) | 0.99 |
| | | Co-60 | 63.2 ± 4.5 Bq/liter<br>59.2 ± 4.5 Bq/liter<br>63.6 ± 4.5 Bq/liter | 61.1 ± 0.7 Bq/liter (EML) | 1.01 |

NOTES: (1) = Results reported as activity ± 1 sigma error.
(2) = NDKV - Normalized Deviation from a Known Value
(3) = Reference Ratio = Reported Value/Known Value
A = Reference sample provided by Analytics, Inc.
EML = Reference sample provided by Environmental Measurements Lab, Department of Energy

## TABLE 21

## HISTORICAL ENVIRONMENTAL SAMPLE DATA
## SHORELINE SEDIMENT (CONTROL) [(1)]

| | Cs-137 | | | Co-60 | | |
|---|---|---|---|---|---|---|
| YEAR | MIN. | MAX. | MEAN | MIN. | MAX. | MEAN |
| 1979 (2) | 0.22 | 0.22 | 0.22 | LLD | LLD | LLD |
| 1980 | 0.07 | 0.09 | 0.08 | LLD | LLD | LLD |
| 1981 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1982 | 0.05 | 0.05 | 0.05 | LLD | LLD | LLD |
| 1983 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1984 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1985 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1986 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1987 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1988 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1989 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1990 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1991 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1992 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1993 | 0.03 | 0.03 | 0.03 | LLD | LLD | LLD |
| 1994 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1995 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1996 | LLD | LLD | LLD | LLD | LLD | LLD |

Results in pCi/g (dry)

(1) Control location was at an area beyond the influence of the site (westerly direction).
(2) Sampling was initiated in 1979. Sampling was not required prior to 1979.

## TABLE 22

## HISTORICAL ENVIRONMENTAL SAMPLE DATA SHORELINE SEDIMENT (INDICATOR) (1)

| | Cs-137 | | | Co-60 | | |
|---|---|---|---|---|---|---|
| YEAR | MIN. | MAX. | MEAN | MIN. | MAX. | MEAN |
| 1979 | (2) | (2) | (2) | (2) | (2) | (2) |
| 1980 | (2) | (2) | (2) | (2) | (2) | (2) |
| 1981 | (2) | (2) | (2) | (2) | (2) | (2) |
| 1982 | (2) | (2) | (2) | (2) | (2) | (2) |
| 1983 | (2) | (2) | (2) | (2) | (2) | (2) |
| 1984 | (2) | (2) | (2) | (2) | (2) | (2) |
| 1985 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1986 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1987 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1988 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1989 | 0.25 | 0.34 | 0.30 | LLD | LLD | LLD |
| 1990 | 0.28 | 0.28 | 0.28 | LLD | LLD | LLD |
| 1991 | 0.11 | 0.16 | 0.14 | LLD | LLD | LLD |
| 1992 | 0.10 | 0.16 | 0.13 | LLD | LLD | LLD |
| 1993 | 0.17 | 0.49 | 0.33 | LLD | LLD | LLD |
| 1994 | 0.08 | 0.39 | 0.24 | LLD | LLD | LLD |
| 1995 | 0.16 | 0.17 | 0.16 | LLD | LLD | LLD |
| 1996 | 0.13 | 0.18 | 0.16 | LLD | LLD | LLD |

Results in pCi/g (dry)

(1) Location was off-site at Sunset Beach (closest location with recreational value).
(2) Sampling initiated in 1985 as required by the new Technical Specifications.

**TABLE 23**

**HISTORICAL ENVIRONMENTAL SAMPLE DATA**
**FISH (CONTROL) (1)**

| | Cs-137 | | |
|---|---|---|---|
| YEAR | MIN. | MAX. | MEAN |
| 1976 | 1.2 | 1.2 | 1.2 |
| 1977 | 0.13 | 0.13 | 0.13 |
| 1978 | 0.04 | 0.20 | 0.09 |
| 1979 | 0.03 | 0.06 | 0.04 |
| 1980 | 0.03 | 0.11 | 0.06 |
| 1981 | 0.028 | 0.062 | 0.043 |
| 1982 | 0.027 | 0.055 | 0.046 |
| 1983 | 0.041 | 0.057 | 0.049 |
| 1984 | 0.015 | 0.038 | 0.032 |
| 1985 | 0.026 | 0.047 | 0.034 |
| 1986 | 0.021 | 0.032 | 0.025 |
| 1987 | 0.017 | 0.040 | 0.031 |
| 1988 | 0.023 | 0.053 | 0.033 |
| 1989 | 0.020 | 0.033 | 0.029 |
| 1990 | 0.025 | 0.079 | 0.043 |
| 1991 | 0.016 | 0.045 | 0.030 |
| 1992 | 0.019 | 0.024 | 0.022 |
| 1993 | 0.023 | 0.041 | 0.032 |
| 1994 | 0.012 | 0.035 | 0.024 |
| 1995 | 0.014 | 0.020 | 0.016 |
| 1996 | 0.014 | 0.018 | 0.016 |

Results in pCi/g (wet)

(1) Control location was at an area beyond the influence of the site (westerly direction).

## TABLE 24

## HISTORICAL ENVIRONMENTAL SAMPLE DATA
## FISH (INDICATOR) (1)

| | Cs-137 | | |
|---|---|---|---|
| YEAR | MIN. | MAX. | MEAN |
| 1976 | 0.5 | 3.9 | 1.4 |
| 1977 | 0.13 | 0.79 | 0.29 |
| 1978 | 0.03 | 0.10 | 0.08 |
| 1979 | 0.02 | 0.55 | 0.10 |
| 1980 | 0.03 | 0.10 | 0.06 |
| 1981 | 0.03 | 0.10 | 0.06 |
| 1982 | 0.034 | 0.064 | 0.048 |
| 1983 | 0.033 | 0.056 | 0.045 |
| 1984 | 0.033 | 0.061 | 0.043 |
| 1985 | 0.018 | 0.044 | 0.030 |
| 1986 | 0.009 | 0.051 | 0.028 |
| 1987 | 0.024 | 0.063 | 0.033 |
| 1988 | 0.020 | 0.074 | 0.034 |
| 1989 | 0.020 | 0.043 | 0.035 |
| 1990 | 0.024 | 0.115 | 0.044 |
| 1991 | 0.021 | 0.035 | 0.027 |
| 1992 | 0.013 | 0.034 | 0.026 |
| 1993 | 0.021 | 0.038 | 0.030 |
| 1994 | 0.011 | 0.028 | 0.020 |
| 1995 | 0.016 | 0.019 | 0.018 |
| 1996 | 0.014 | 0.016 | 0.015 |

Results in pCi/g (wet)

(1) Indicator locations are in the general area of the NMP-1 and J. A. FitzPatrick cooling water discharge structures.

## TABLE 25

## HISTORICAL ENVIRONMENTAL SAMPLE DATA
## SURFACE WATER (CONTROL) (3)

| | Cs-137 | | | Co-60 | | |
|---|---|---|---|---|---|---|
| YEAR | MIN. | MAX. | MEAN | MIN. | MAX. | MEAN |
| 1976 | (1) | (1) | (1) | (1) | (1) | (1) |
| 1977 | (2) | (2) | (2) | (2) | (2) | (2) |
| 1978 | LLD | LLD | LLD | (2) | (2) | (2) |
| 1979 | 2.5 | 2.5 | 2.5 | LLD | LLD | LLD |
| 1980 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1981 | LLD | LLD | LLD | 1.4 | 1.4 | 1.4 |
| 1982 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1983 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1984 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1985 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1986 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1987 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1988 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1989 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1990 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1991 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1992 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1993 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1994 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1995 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1996 | LLD | LLD | LLD | LLD | LLD | LLD |

Results in pCi/liter

(1) No gamma analyses performed (not required).
(2) Data showed instrument background results.
(3) Location was the City of Oswego Water Supply for 1976 - 1984 and the Oswego Steam Station inlet canal for 1985 - 1996.

## TABLE 26

## HISTORICAL ENVIRONMENTAL SAMPLE DATA
## SURFACE WATER (INDICATOR) (3)

| | Cs-137 | | | Co-60 | | |
|---|---|---|---|---|---|---|
| YEAR | MIN. | MAX. | MEAN | MIN. | MAX. | MEAN |
| 1976 | (1) | (1) | (1) | (1) | (1) | (1) |
| 1977 | (2) | (2) | (2) | (2) | (2) | (2) |
| 1978 | LLD | LLD | LLD | (2) | (2) | (2) |
| 1979 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1980 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1981 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1982 | 0.43 | 0.43 | 0.43 | 1.6 | 2.4 | 1.9 |
| 1983 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1984 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1985 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1986 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1987 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1988 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1989 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1990 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1991 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1992 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1993 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1994 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1995 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1996 | LLD | LLD | LLD | LLD | LLD | LLD |

Results in pCi/liter

(1) No gamma analyses performed (not required).
(2) Data showed instrument background results.
(3) Location was the J. A. FitzPatrick inlet canal.

## TABLE 27

## HISTORICAL ENVIRONMENTAL SAMPLE DATA SURFACE WATER TRITIUM (CONTROL) (1)

| | TRITIUM | | |
|---|---|---|---|
| YEAR | MIN. | MAX. | MEAN |
| 1976 | 440 | 929 | 652 |
| 1977 | 300 | 530 | 408 |
| 1978 | 215 | 490 | 304 |
| 1979 | 174 | 308 | 259 |
| 1980 | 211 | 290 | 257 |
| 1981 | 211 | 328 | 276 |
| 1982 | 112 | 307 | 165 |
| 1983 | 230 | 280 | 250 |
| 1984 | 190 | 220 | 205 |
| 1985 | 230 | 370 | 278 |
| 1986 | 250 | 550 | 373 |
| 1987 | 140 | 270 | 210 |
| 1988 | 240 | 460 | 320 |
| 1989 | 180 | 660 | 373 |
| 1990 | 260 | 320 | 290 |
| 1991 | 180 | 200 | 190 |
| 1992 | 190 | 310 | 242 |
| 1993 | 160 | 230 | 188 |
| 1994 | 250 | 250 | 250 |
| 1995 | 230 | 230 | 230 |
| 1996 | LLD | LLD | LLD |

Results in pCi/liter

(1) Control location is the City of Oswego drinking water for 1976 - 1984 and the Oswego Steam Station inlet canal for 1985 - 1996.

## TABLE 28

## HISTORICAL ENVIRONMENTAL SAMPLE DATA
## SURFACE WATER TRITIUM (INDICATOR) (1)

| | TRITIUM | | |
|---|---|---|---|
| YEAR | MIN. | MAX. | MEAN |
| 1976 | 365 | 889 | 627 |
| 1977 | 380 | 530 | 455 |
| 1978 | 377 | 560 | 476 |
| 1979 | 176 | 276 | 228 |
| 1980 | 150 | 306 | 227 |
| 1981 | 212 | 388 | 285 |
| 1982 | 194 | 311 | 266 |
| 1983 | 249 | 560 | 347 |
| 1984 | 110 | 370 | 280 |
| 1985 | 250 | 1200 (2) | 530 |
| 1986 | 260 | 500 | 380 |
| 1987 | 160 | 410 | 322 |
| 1988 | 430 | 480 | 460 |
| 1989 | 210 | 350 | 280 |
| 1990 | 220 | 290 | 250 |
| 1991 | 250 | 390 | 310 |
| 1992 | 240 | 300 | 273 |
| 1993 | 200 | 280 | 242 |
| 1994 | 180 | 260 | 220 |
| 1995 | 320 | 320 | 320 |
| 1996 | LLD | LLD | LLD |

Results in pCi/liter

(1) Indicator location is the FitzPatrick inlet canal.
(2) Suspect sample contamination. Recollected samples showed normal levels of tritium.

## TABLE 29
## HISTORICAL ENVIRONMENTAL SAMPLE DATA
## ENVIRONMENTAL TLD (CONTROL) (2)

| | DOSE (mrem) | | |
|---|---|---|---|
| YEAR | MIN. | MAX. | MEAN |
| Preop | (1) | (1) | (1) |
| 1970 | 6.0 | 7.3 | 6.7 |
| 1971 | 2.0 | 6.7 | 4.3 |
| 1972 | 2.2 | 6.2 | 4.4 |
| 1973 | 2.2 | 6.9 | 4.7 |
| 1974 | 2.7 | 8.9 | 5.6 |
| 1975 | 4.8 | 6.0 | 5.5 |
| 1976 | 3.2 | 7.2 | 5.4 |
| 1977 | 4.0 | 8.0 | 5.3 |
| 1978 | 3.3 | 4.7 | 4.3 |
| 1979 | 3.3 | 5.7 | 4.7 |
| 1980 | 3.8 | 5.8 | 4.9 |
| 1981 | 3.5 | 5.9 | 4.8 |
| 1982 | 3.8 | 6.1 | 5.1 |
| 1983 | 4.9 | 7.2 | 5.8 |
| 1984 | 4.7 | 8.2 | 6.2 |
| 1985 | 4.5 (4.4)* | 7.6 (6.8)* | 5.6 (5.4)* |
| 1986 | 5.3 (5.5)* | 7.5 (7.2)* | 6.3 (6.3)* |
| 1987 | 4.6 (4.6)* | 6.6 (5.8)* | 5.4 (5.2)* |
| 1988 | 4.4 (4.8)* | 6.8 (6.8)* | 5.6 (5.4)* |
| 1989 | 2.9 (2.9)* | 6.4 (5.6)* | 4.7 (4.6)* |
| 1990 | 3.7 (3.7)* | 6.0 (5.9)* | 4.7 (4.6)* |
| 1991 | 3.8 (3.8)* | 5.4 (5.3)* | 4.5 (4.3)* |
| 1992 | 2.6 (2.6)* | 5.0 (4.7)* | 4.1 (3.9)* |
| 1993 | 3.4 (3.4)* | 5.6 (5.2)* | 4.4 (4.3)* |
| 1994 | 3.1 (3.1)* | 5.0 (4.6)* | 4.1 (3.9)* |
| 1995 | 3.4 (3.4)* | 5.7 (4.9)* | 4.4 (4.2)* |
| 1996 | 3.4 (3.4)* | 5.6 (5.6)* | 4.3 (4.2)* |

Results in mrem per standard month

(1) Data not available.
(2) TLD #8, 14, 49, 111 and 113 where applicable.
( )* TLD result based on the Technical Specification required locations (TLD #14 and 49).

TABLE 30A
HISTORICAL ENVIRONMENTAL SAMPLE DATA
ENVIRONMENTAL TLD (SITE BOUNDARY) (2)

| | DOSE (mrem) | | |
|---|---|---|---|
| LOCATION: SITE BOUNDARY (2) | | | |
| YEAR | MIN. | MAX. | MEAN |
| Preop | (1) | (1) | (1) |
| 1970 | (1) | (1) | (1) |
| 1971 | (1) | (1) | (1) |
| 1972 | (1) | (1) | (1) |
| 1973 | (1) | (1) | (1) |
| 1974 | (1) | (1) | (1) |
| 1975 | (1) | (1) | (1) |
| 1976 | (1) | (1) | (1) |
| 1977 | (1) | (1) | (1) |
| 1978 | (1) | (1) | (1) |
| 1979 | (1) | (1) | (1) |
| 1980 | (1) | (1) | (1) |
| 1981 | (1) | (1) | (1) |
| 1982 | (1) | (1) | (1) |
| 1983 | (1) | (1) | (1) |
| 1984 | (1) | (1) | (1) |
| 1985 | 4.1 | 12.6 | 6.2 |
| 1986 | 4.4 | 18.7 | 7.0 |
| 1987 | 4.4 | 14.3 | 6.1 |
| 1988 | 3.4 | 17.9 | 6.4 |
| 1989 | 2.8 | 15.4 | 5.9 |
| 1990 | 3.6 | 14.8 | 5.8 |
| 1991 | 3.2 | 16.7 | 5.7 |
| 1992 | 3.2 | 10.4 | 4.8 |
| 1993 | 3.3 | 11.6 | 5.3 |
| 1994 | 2.8 | 12.4 | 5.2 |
| 1995 | 3.5 | 9.6 | 5.4 |
| 1996 | 3.2 | 9.1 | 5.2 |

Results in mrem per standard month

(1) No data available (not required prior to 1985).
(2) TLD locations initiated in 1985 as required by the new Technical Specifications. Includes TLD numbers 75, 76, 77, 23, 78, 79, 80, 81, 82, 83, 84, 7, 18, 85, 86, and 87.

## TABLE 30B
## HISTORICAL ENVIRONMENTAL SAMPLE DATA
## ENVIRONMENTAL TLD

| | DOSE (mrem) | | |
|---|---|---|---|
| LOCATION: OFF-SITE SECTORS [2] | | | |
| YEAR | MIN. | MAX. | MEAN |
| Preop | (1) | (1) | (1) |
| 1970 | (1) | (1) | (1) |
| 1971 | (1) | (1) | (1) |
| 1972 | (1) | (1) | (1) |
| 1973 | (1) | (1) | (1) |
| 1974 | (1) | (1) | (1) |
| 1975 | (1) | (1) | (1) |
| 1976 | (1) | (1) | (1) |
| 1977 | (1) | (1) | (1) |
| 1978 | (1) | (1) | (1) |
| 1979 | (1) | (1) | (1) |
| 1980 | (1) | (1) | (1) |
| 1981 | (1) | (1) | (1) |
| 1982 | (1) | (1) | (1) |
| 1983 | (1) | (1) | (1) |
| 1984 | (1) | (1) | (1) |
| 1985 | 4.0 | 7.1 | 5.0 |
| 1986 | 4.6 | 8.6 | 6.0 |
| 1987 | 4.3 | 6.0 | 5.2 |
| 1988 | 3.8 | 7.0 | 5.3 |
| 1989 | 2.5 | 6.8 | 4.9 |
| 1990 | 3.6 | 6.3 | 4.7 |
| 1991 | 3.6 | 5.6 | 4.5 |
| 1992 | 2.9 | 5.0 | 4.1 |
| 1993 | 3.4 | 6.3 | 4.5 |
| 1994 | 3.0 | 5.1 | 4.0 |
| 1995 | 3.2 | 5.2 | 4.2 |
| 1996 | 3.2 | 5.3 | 4.2 |

Results in mrem per standard month

(1) No data available (not required prior to 1985).
(2) TLD locations initiated in 1985 as required by the new Technical Specifications. Includes TLD numbers 88, 89, 90, 91, 92, 93, 94, and 95.

TABLE 30C
HISTORICAL ENVIRONMENTAL SAMPLE DATA
ENVIRONMENTAL TLD

| | DOSE (mrem) | | |
|---|---|---|---|
| | LOCATION: SPECIAL INTEREST [2] [3] | | |
| YEAR | MIN. | MAX. | MEAN |
| Preop | (1) | (1) | (1) |
| 1970 | (1) | (1) | (1) |
| 1971 | (1) | (1) | (1) |
| 1972 | (1) | (1) | (1) |
| 1973 | (1) | (1) | (1) |
| 1974 | (1) | (1) | (1) |
| 1975 | (1) | (1) | (1) |
| 1976 | (1) | (1) | (1) |
| 1977 | (1) | (1) | (1) |
| 1978 | (1) | (1) | (1) |
| 1979 | (1) | (1) | (1) |
| 1980 | (1) | (1) | (1) |
| 1981 | (1) | (1) | (1) |
| 1982 | (1) | (1) | (1) |
| 1983 | (1) | (1) | (1) |
| 1984 | (1) | (1) | (1) |
| 1985 | 3.9 | 6.8 | 5.3 |
| 1986 | 4.8 | 8.2 | 6.1 |
| 1987 | 3.5 | 6.0 | 5.1 |
| 1988 | 3.9 | 6.6 | 5.3 |
| 1989 | 2.1 | 7.0 | 4.8 |
| 1990 | 3.2 | 6.3 | 4.7 |
| 1991 | 2.9 | 5.6 | 4.4 |
| 1992 | 3.0 | 4.8 | 4.1 |
| 1993 | 3.2 | 5.8 | 4.5 |
| 1994 | 2.9 | 4.8 | 4.0 |
| 1995 | 3.4 | 4.9 | 4.3 |
| 1996 | 3.2 | 5.3 | 4.2 |

Results in mrem per standard month

(1) No data available (not required prior to 1985).
(2) TLD locations initiated in 1985 as required by the new Technical Specifications. TLD's included are numbers 96, 58, 97, 56, 15, and 98.
(3) TLD locations include critical residences and populated areas near the site.

## TABLE 30D
## HISTORICAL ENVIRONMENTAL SAMPLE DATA
## ENVIRONMENTAL TLD

| | DOSE (mrem) | | |
|---|---|---|---|
| | LOCATION: ON-SITE INDICATOR (2) | | |
| YEAR | MIN. | MAX. | MEAN |
| Preop | (1) | (1) | (1) |
| 1970 | 4.7 | 9.0 | 6.0 |
| 1971 | 1.5 | 7.7 | 4.7 |
| 1972 | 2.3 | 8.2 | 4.9 |
| 1973 | 3.0 | 24.4 | 6.6 |
| 1974 | 3.1 | 10.6 | 5.7 |
| 1975 | 4.6 | 16.0 | 7.3 |
| 1976 | 3.7 | 18.8 | 6.9 |
| 1977 | 3.0 | 15.3 | 5.7 |
| 1978 | 3.0 | 9.0 | 4.3 |
| 1979 | 2.7 | 8.3 | 4.3 |
| 1980 | 3.9 | 12.0 | 5.3 |
| 1981 | 4.1 | 11.8 | 5.8 |
| 1982 | 3.9 | 13.0 | 6.3 |
| 1983 | 5.0 | 16.5 | 6.9 |
| 1984 | 4.6 | 13.2 | 7.0 |
| 1985 | 4.7 | 15.9 | 6.3 |
| 1986 | 4.7 | 16.1 | 7.0 |
| 1987 | 4.0 | 11.4 | 5.8 |
| 1988 | 4.4 | 11.9 | 6.0 |
| 1989 | 2.7 | 14.5 | 6.0 |
| 1990 | 3.6 | 12.9 | 5.5 |
| 1991 | 3.2 | 11.6 | 5.1 |
| 1992 | 3.2 | 5.6 | 4.3 |
| 1993 | 3.1 | 13.6 | 5.2 |
| 1994 | 2.8 | 14.3 | 5.1 |
| 1995 | 3.5 | 28.6 | 6.2 |
| 1996 | 3.1 | 32.6 | 6.4 |

Results in mrem per standard month

(1) No data available.
(2) Includes TLD numbers 3, 4, 5, 6, and 7 (1970 - 1973). Includes TLD numbers 3, 4, 5, 6, 7, 23, 24, 25, and 26 (1974 - 1996). Locations are existing or previous on-site environmental air monitoring locations.

**TABLE 30E**
**HISTORICAL ENVIRONMENTAL SAMPLE DATA**
**ENVIRONMENTAL TLD**

| | DOSE (mrem) | | |
|---|---|---|---|
| LOCATION: OFF-SITE INDICATOR [2] | | | |
| YEAR | MIN. | MAX. | MEAN |
| Preop | (1) | (1) | (1) |
| 1970 | 5.0 | 8.0 | 6.7 |
| 1971 | 1.1 | 7.7 | 4.5 |
| 1972 | 1.8 | 6.6 | 4.4 |
| 1973 | 2.2 | 6.9 | 4.1 |
| 1974 | 2.4 | 8.9 | 5.3 |
| 1975 | 4.5 | 7.1 | 5.5 |
| 1976 | 3.4 | 7.2 | 5.2 |
| 1977 | 3.7 | 8.0 | 5.3 |
| 1978 | 2.7 | 4.7 | 3.7 |
| 1979 | 3.0 | 5.7 | 4.0 |
| 1980 | 3.1 | 5.8 | 4.6 |
| 1981 | 3.6 | 5.9 | 4.7 |
| 1982 | 4.0 | 6.2 | 5.2 |
| 1983 | 4.6 | 7.2 | 5.6 |
| 1984 | 4.6 | 8.2 | 6.1 |
| 1985 | 4.6 | 7.7 | 5.5 |
| 1986 | 5.0 | 7.6 | 6.1 |
| 1987 | 4.4 | 6.6 | 5.2 |
| 1988 | 4.2 | 6.6 | 5.4 |
| 1989 | 2.8 | 6.4 | 4.6 |
| 1990 | 3.8 | 6.0 | 4.8 |
| 1991 | 3.4 | 5.4 | 4.3 |
| 1992 | 3.1 | 5.2 | 4.1 |
| 1993 | 3.2 | 5.6 | 4.3 |
| 1994 | 3.0 | 5.0 | 4.0 |
| 1995 | 3.9 | 5.7 | 4.4 |
| 1996 | 3.3 | 5.5 | 4.1 |

Results in mrem per standard month

(1) No data available.
(2) Includes TLD numbers 8, 9, 10, 11, 12 and 13 (off-site environmental air monitoring locations).

TABLE 31

## HISTORICAL ENVIRONMENTAL SAMPLE DATA
## AIR PARTICULATE GROSS BETA (CONTROL) (1)

| | GROSS BETA | | |
|---|---|---|---|
| YEAR | MIN. | MAX. | MEAN |
| 1977 | 0.001 | 0.484 | 0.125 |
| 1978 | 0.01 | 0.66 | 0.16 |
| 1979 | 0.010 | 0.703 | 0.077 |
| 1980 | 0.009 | 0.291 | 0.056 |
| 1981 | 0.016 | 0.549 | 0.165 |
| 1982 | 0.011 | 0.078 | 0.033 |
| 1983 | 0.007 | 0.085 | 0.024 |
| 1984 | 0.013 | 0.051 | 0.026 |
| 1985 | 0.013 | 0.043 | 0.024 |
| 1986 | 0.008 | 0.272 | 0.039 |
| 1987 | 0.009 | 0.037 | 0.021 |
| 1988 | 0.008 | 0.039 | 0.018 |
| 1989 | 0.007 | 0.039 | 0.017 |
| 1990 | 0.003 | 0.027 | 0.013 |
| 1991 | 0.006 | 0.028 | 0.014 |
| 1992 | 0.006 | 0.020 | 0.012 |
| 1993 | 0.007 | 0.022 | 0.013 |
| 1994 | 0.008 | 0.025 | 0.014 |
| 1995 | 0.006 | 0.023 | 0.014 |
| 1996 | 0.009 | 0.023 | 0.014 |

Results in $pCi/m^3$

(1) Locations used for 1977 - 1984 were C off-site, D1 off-site, D2 off-site, E off-site, F off-site, and G off-site. Control location R-5 off-site was used for 1985 - 1996 (formerly C off-site location).

## TABLE 32

## HISTORICAL ENVIRONMENTAL SAMPLE DATA
## AIR PARTICULATE GROSS BETA (INDICATOR) (1)

| | GROSS BETA | | |
|---|---|---|---|
| YEAR | MIN. | MAX. | MEAN |
| 1977 | 0.002 | 0.326 | 0.106 |
| 1978 | 0.01 | 0.34 | 0.11 |
| 1979 | 0.001 | 0.271 | 0.058 |
| 1980 | 0.002 | 0.207 | 0.044 |
| 1981 | 0.004 | 0.528 | 0.151 |
| 1982 | 0.001 | 0.113 | 0.031 |
| 1983 | 0.002 | 0.062 | 0.023 |
| 1984 | 0.002 | 0.058 | 0.025 |
| 1985 | 0.010 | 0.044 | 0.023 |
| 1986 | 0.007 | 0.289 | 0.039 |
| 1987 | 0.009 | 0.040 | 0.021 |
| 1988 | 0.007 | 0.040 | 0.018 |
| 1989 | 0.007 | 0.041 | 0.017 |
| 1990 | 0.005 | 0.023 | 0.014 |
| 1991 | 0.007 | 0.033 | 0.015 |
| 1992 | 0.005 | 0.024 | 0.012 |
| 1993 | 0.005 | 0.025 | 0.014 |
| 1994 | 0.006 | 0.025 | 0.015 |
| 1995 | 0.004 | 0.031 | 0.014 |
| 1996 | 0.006 | 0.025 | 0.013 |

Results in $pCi/m^3$

(1) Locations used for 1977 - 1984 were D1 on-site, D2 on-site, E on-site, F on-site, G on-site, H on-site, I on-site, J on-site, and K on-site as applicable. 1985 - 1996 locations were R-1 off-site, R-2 off-site, R-3 off-site, and R-4 off-site.

## TABLE 33

## HISTORICAL ENVIRONMENTAL SAMPLE DATA
## AIR PARTICULATES (CONTROL) (1)

| | Cs-137 | | | Co-60 | | |
|---|---|---|---|---|---|---|
| YEAR | MIN. | MAX. | MEAN | MIN. | MAX. | MEAN |
| 1977 | 0.0002 | 0.0112 | 0.0034 | 0.0034 | 0.0347 | 0.0172 |
| 1978 | 0.0008 | 0.0042 | 0.0018 | 0.0003 | 0.0056 | 0.0020 |
| 1979 | 0.0008 | 0.0047 | 0.0016 | 0.0005 | 0.0014 | 0.0009 |
| 1980 | 0.0015 | 0.0018 | 0.0016 | LLD | LLD | LLD |
| 1981 | 0.0003 | 0.0042 | 0.0017 | 0.0003 | 0.0012 | 0.0008 |
| 1982 | 0.0002 | 0.0009 | 0.0004 | 0.0004 | 0.0007 | 0.0006 |
| 1983 | 0.0002 | 0.0002 | 0.0002 | 0.0007 | 0.0007 | 0.0007 |
| 1984 | LLD | LLD | LLD | 0.0004 | 0.0012 | 0.0008 |
| 1985 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1986 | 0.0075 | 0.0311 | 0.0193 | LLD | LLD | LLD |
| 1987 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1988 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1989 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1990 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1991 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1992 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1993 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1994 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1995 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1996 | LLD | LLD | LLD | LLD | LLD | LLD |

Results in pCi/m$^3$

(1) Locations included composites of C, D1, E, F, and G off-site air monitoring locations for 1977 - 1984. Sample location included only R-5 air monitoring location for 1985 - 1996.

## TABLE 34

## HISTORICAL ENVIRONMENTAL SAMPLE DATA
## AIR PARTICULATES (INDICATOR) (1)

| | Cs-137 | | | Co-60 | | |
|---|---|---|---|---|---|---|
| YEAR | MIN. | MAX. | MEAN | MIN. | MAX. | MEAN |
| 1977 | 0.0001 | 0.0105 | 0.0043 | 0.0003 | 0.0711 | 0.0179 |
| 1978 | 0.0003 | 0.0026 | 0.0016 | 0.0003 | 0.0153 | 0.0023 |
| 1979 | 0.0003 | 0.0020 | 0.0010 | 0.0003 | 0.0007 | 0.0005 |
| 1980 | 0.0005 | 0.0019 | 0.0011 | 0.0016 | 0.0016 | 0.0016 |
| 1981 | 0.0002 | 0.0045 | 0.0014 | 0.0002 | 0.0017 | 0.0006 |
| 1982 | 0.0001 | 0.0006 | 0.0004 | 0.0003 | 0.0010 | 0.0005 |
| 1983 | 0.0002 | 0.0003 | 0.0002 | 0.0003 | 0.0017 | 0.0007 |
| 1984 | LLD | LLD | LLD | 0.0007 | 0.0017 | 0.0012 |
| 1985 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1986 | 0.0069 | 0.0364 | 0.0183 | LLD | LLD | LLD |
| 1987 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1988 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1989 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1990 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1991 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1992 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1993 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1994 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1995 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1996 | LLD | LLD | LLD | LLD | LLD | LLD |

Results in pCi/$m^3$

(1) Locations included composites of D1, D2, E, F, G, H, I, J, and K on-site air monitoring locations for 1977 - 1984. Locations included R-1 through R-4 air monitoring locations for 1985 - 1996.

## TABLE 35

## HISTORICAL ENVIRONMENTAL SAMPLE DATA
## AIR RADIOIODINE (CONTROL) (1)

| | IODINE-131 | | |
|---|---|---|---|
| YEAR | MIN. | MAX. | MEAN |
| 1976 | 0.01 | 5.88 | 0.60 |
| 1977 | 0.02 | 0.82 | 0.32 |
| 1978 | 0.03 | 0.04 | 0.03 |
| 1979 | LLD | LLD | LLD |
| 1980 | LLD | LLD | LLD |
| 1981 | LLD | LLD | LLD |
| 1982 | 0.039 | 0.039 | 0.039 |
| 1983 | LLD | LLD | LLD |
| 1984 | LLD | LLD | LLD |
| 1985 | LLD | LLD | LLD |
| 1986 | 0.041 | 0.332 | 0.151 |
| 1987 | LLD | LLD | LLD |
| 1988 | LLD | LLD | LLD |
| 1989 | LLD | LLD | LLD |
| 1990 | LLD | LLD | LLD |
| 1991 | LLD | LLD | LLD |
| 1992 | LLD | LLD | LLD |
| 1993 | LLD | LLD | LLD |
| 1994 | LLD | LLD | LLD |
| 1995 | LLD | LLD | LLD |
| 1996 | LLD | LLD | LLD |

Results in pCi/m$^3$

(1) Locations D1 off-site, D2 off-site, E off-site, F off-site, and G off-site used for 1976 - 1984. Location R-5 off-site used for 1985 - 1996.

## TABLE 36

## HISTORICAL ENVIRONMENTAL SAMPLE DATA
## AIR RADIOIODINE (INDICATOR) (1)

| | IODINE-131 | | |
|---|---|---|---|
| YEAR | MIN. | MAX. | MEAN |
| 1976 | 0.01 | 2.09 | 0.33 |
| 1977 | 0.02 | 0.73 | 0.31 |
| 1978 | 0.02 | 0.07 | 0.04 |
| 1979 | LLD | LLD | LLD |
| 1980 | 0.013 | 0.013 | 0.013 |
| 1981 | 0.016 | 0.042 | 0.029 |
| 1982 | 0.002 | 0.042 | 0.016 |
| 1983 | 0.022 | 0.035 | 0.028 |
| 1984 | LLD | LLD | LLD |
| 1985 | LLD | LLD | LLD |
| 1986 | 0.023 | 0.360 | 0.119 |
| 1987 | 0.011 | 0.018 | 0.014 |
| 1988 | LLD | LLD | LLD |
| 1989 | LLD | LLD | LLD |
| 1990 | LLD | LLD | LLD |
| 1991 | LLD | LLD | LLD |
| 1992 | LLD | LLD | LLD |
| 1993 | LLD | LLD | LLD |
| 1994 | LLD | LLD | LLD |
| 1995 | LLD | LLD | LLD |
| 1996 | LLD | LLD | LLD |

Results in $pCi/m^3$

(1) Locations used for 1976 - 1984 were D1 on-site, D2 on-site, E on-site, F on-site, G on-site, H on-site, I on-site, J on-site, and K on-site, as applicable. Locations used for 1985 - 1996 were R1 off-site, R-2 off-site, R-3 off-site, and R-4 off-site.

TABLE 37

HISTORICAL ENVIRONMENTAL SAMPLE DATA
MILK (CONTROL) (2)

| | Cs-137 | | | I-131 | | |
|---|---|---|---|---|---|---|
| YEAR | MIN. | MAX. | MEAN | MIN. | MAX. | MEAN |
| 1976 | (1) | (1) | (1) | (1) | (1) | (1) |
| 1977 | (1) | (1) | (1) | (1) | (1) | (1) |
| 1978 | 2.4 | 7.8 | 5.8 | LLD | LLD | LLD |
| 1979 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1980 | 3.6 | 5.6 | 4.5 | 1.4 | 1.4 | 1.4 |
| 1981 | 3.9 | 3.9 | 3.9 | LLD | LLD | LLD |
| 1982 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1983 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1984 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1985 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1986 | 5.3 | 12.4 | 8.4 | 0.8 | 29.0 | 13.6 |
| 1987 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1988 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1989 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1990 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1991 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1992 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1993 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1994 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1995 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1996 | LLD | LLD | LLD | LLD | LLD | LLD |

Results in pCi/liter

(1) No data available (samples not required).
(2) Location used was an available milk sample location in a least prevalent wind direction greater than ten miles from the site.

## TABLE 38

## HISTORICAL ENVIRONMENTAL SAMPLE DATA
## MILK (INDICATOR) (1)

| | Cs-137 | | | I-131 | | |
|---|---|---|---|---|---|---|
| YEAR | MIN. | MAX. | MEAN | MIN. | MAX. | MEAN |
| 1976 | 4.0 | 15.0 | 9.3 | 0.02 | 45.00 | 3.20 |
| 1977 | 11.0 | 22.0 | 17.1 | 0.01 | 49.00 | 6.88 |
| 1978 | 3.4 | 33.0 | 9.9 | 0.19 | 0.19 | 0.19 |
| 1979 | 3.2 | 53.0 | 9.4 | LLD | LLD | LLD |
| 1980 | 3.2 | 21.0 | 8.1 | 0.3 | 8.8 | 3.8 |
| 1981 | 3.5 | 29.0 | 8.6 | LLD | LLD | LLD |
| 1982 | 3.5 | 14.0 | 5.7 | LLD | LLD | LLD |
| 1983 | 3.3 | 10.9 | 7.2 | LLD | LLD | LLD |
| 1984 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1985 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1986 | 6.1 | 11.1 | 8.6 | 0.3 | 30.0 | 5.2 |
| 1987 | 5.5 | 8.1 | 6.8 | LLD | LLD | LLD |
| 1988 | 10.0 | 10.0 | 10.0 | LLD | LLD | LLD |
| 1989 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1990 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1991 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1992 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1993 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1994 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1995 | LLD | LLD | LLD | LLD | LLD | LLD |
| 1996 | LLD | LLD | LLD | LLD | LLD | LLD |

Results in pCi/liter

(1) Locations sampled were available downwind locations within ten miles with high radionuclide deposition potential.

## TABLE 39

## HISTORICAL ENVIRONMENTAL SAMPLE DATA
## FOOD PRODUCTS (CONTROL) (2)

| | Cs-137 | | |
|---|---|---|---|
| YEAR | MIN. | MAX. | MEAN |
| 1976 | (1) | (1) | (1) |
| 1977 | (1) | (1) | (1) |
| 1978 | (1) | (1) | (1) |
| 1979 | (1) | (1) | (1) |
| 1980 (3) | 0.02 | 0.02 | 0.02 |
| 1981 | LLD | LLD | LLD |
| 1982 | LLD | LLD | LLD |
| 1983 | LLD | LLD | LLD |
| 1984 | LLD | LLD | LLD |
| 1985 (4) | LLD | LLD | LLD |
| 1986 | LLD | LLD | LLD |
| 1987 | LLD | LLD | LLD |
| 1988 | LLD | LLD | LLD |
| 1989 | LLD | LLD | LLD |
| 1990 | LLD | LLD | LLD |
| 1991 | LLD | LLD | LLD |
| 1992 | LLD | LLD | LLD |
| 1993 | 0.007 | 0.007 | 0.007 |
| 1994 | LLD | LLD | LLD |
| 1995 | LLD | LLD | LLD |
| 1996 | LLD | LLD | LLD |

Results in pCi/g (wet)

(1) No data available (control samples not required).
(2) Location was an available food product sample location in a least prevalent wind direction greater than ten miles from the site.
(3) Data comprised of broadleaf and non-broadleaf vegetation (1980 - 1984).
(4) Data comprised of broadleaf vegetation only (1985 - 1996).

## TABLE 40

## HISTORICAL ENVIRONMENTAL SAMPLE DATA
## FOOD PRODUCTS (INDICATOR) (1)

| | Cs-137 | | |
|---|---|---|---|
| YEAR | MIN. | MAX. | MEAN |
| 1976 (2) | LLD | LLD | LLD |
| 1977 | LLD | LLD | LLD |
| 1978 | LLD | LLD | LLD |
| 1979 | 0.004 | 0.004 | 0.004 |
| 1980 | 0.004 | 0.060 | 0.036 |
| 1981 | LLD | LLD | LLD |
| 1982 | LLD | LLD | LLD |
| 1983 | LLD | LLD | LLD |
| 1984 | LLD | LLD | LLD |
| 1985 (3) | 0.047 | 0.047 | 0.047 |
| 1986 | LLD | LLD | LLD |
| 1987 | LLD | LLD | LLD |
| 1988 | 0.008 | 0.008 | 0.008 |
| 1989 | 0.009 | 0.009 | 0.009 |
| 1990 | LLD | LLD | LLD |
| 1991 | 0.040 | 0.040 | 0.040 |
| 1992 | LLD | LLD | LLD |
| 1993 | LLD | LLD | LLD |
| 1994 | 0.004 | 0.011 | 0.008 |
| 1995 | 0.010 | 0.012 | 0.011 |
| 1996 | LLD | LLD | LLD |

Results in pCi/g (wet)

(1) Indicator locations were available downwind locations within ten miles of the site and with high radionuclide deposition potential.
(2) Data comprised of broadleaf and non-broadleaf vegetation (1976 - 1984).
(3) Data comprised of broadleaf vegetation only (1985 - 1996).

# 11.0 FIGURES

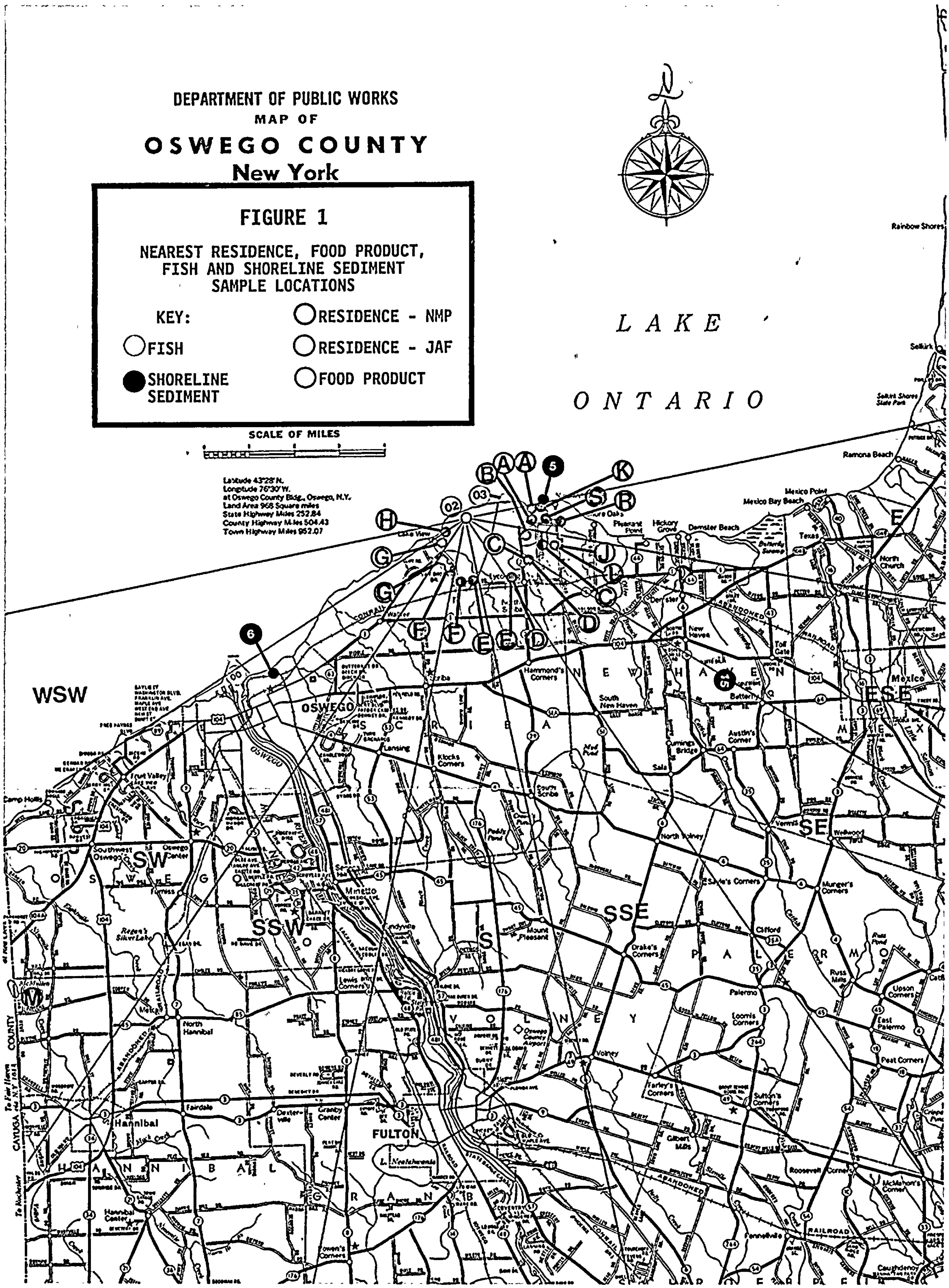
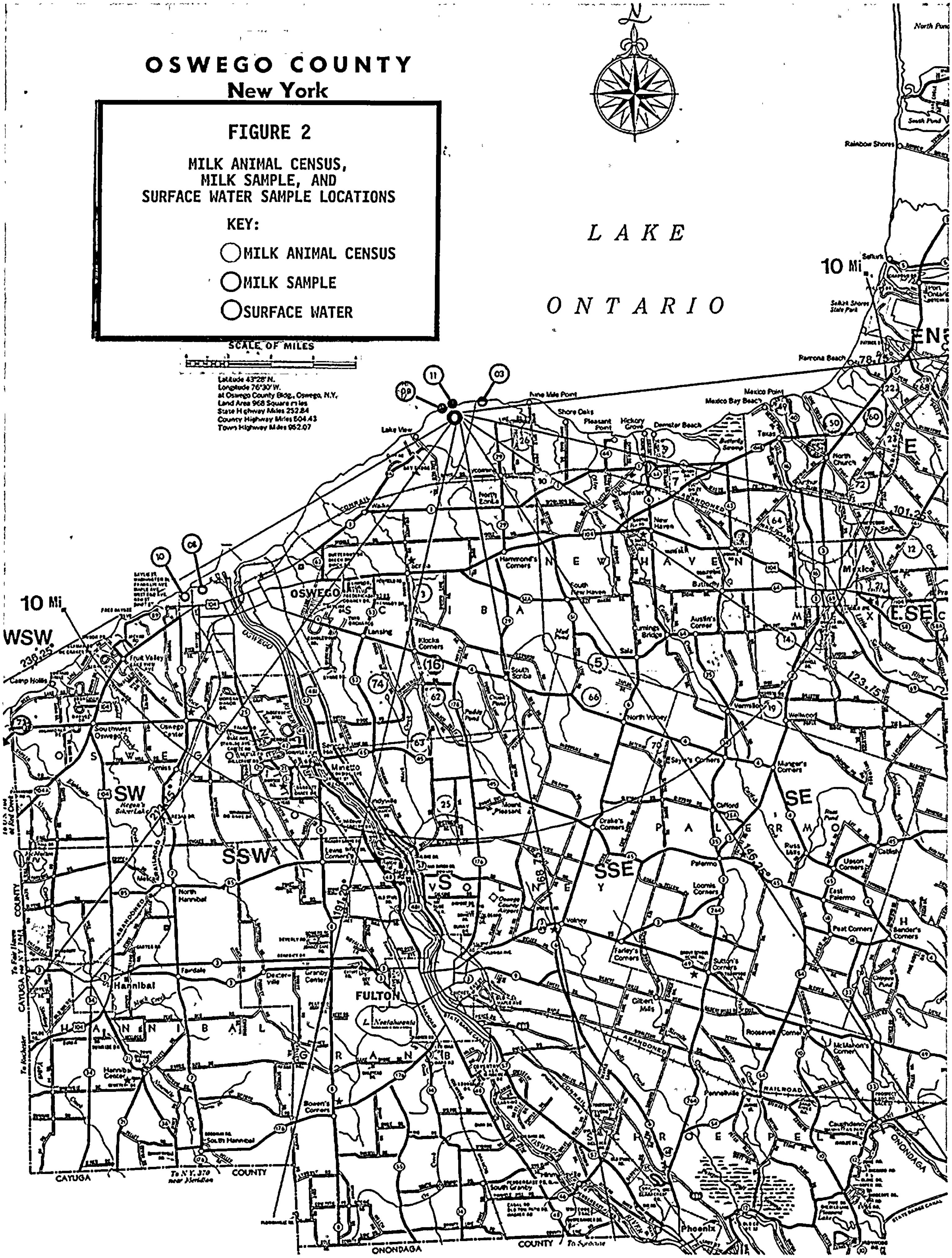



FIGURE 1

NEAREST RESIDENCE, FOOD PRODUCT, FISH AND SHORELINE SEDIMENT SAMPLE LOCATIONS


OSWEGO COUNTY
New York
FIGURE 2
MILK ANIMAL CENSUS,
MILK SAMPLE, AND
SURFACE WATER SAMPLE LOCATIONS
KEY:
MILK ANIMAL CENSUS
MILK SAMPLE
SURFACE WATER
SCALE OF MILES
LAKE
ONTARIO
10 Mi
WSW
236.25°
10 Mi
SW
SSW
SSE
SE
E.SE
E
ENE
101.25°
123.75°
146.25°
168.75°
191.25°
213.75°
OSWEGO
FULTON
Phoenix
Mexico
Hannibal
Nine Mile Point
Lake View
Minetto
Volney
Palermo
CAYUGA
COUNTY
ONONDAGA
COUNTY

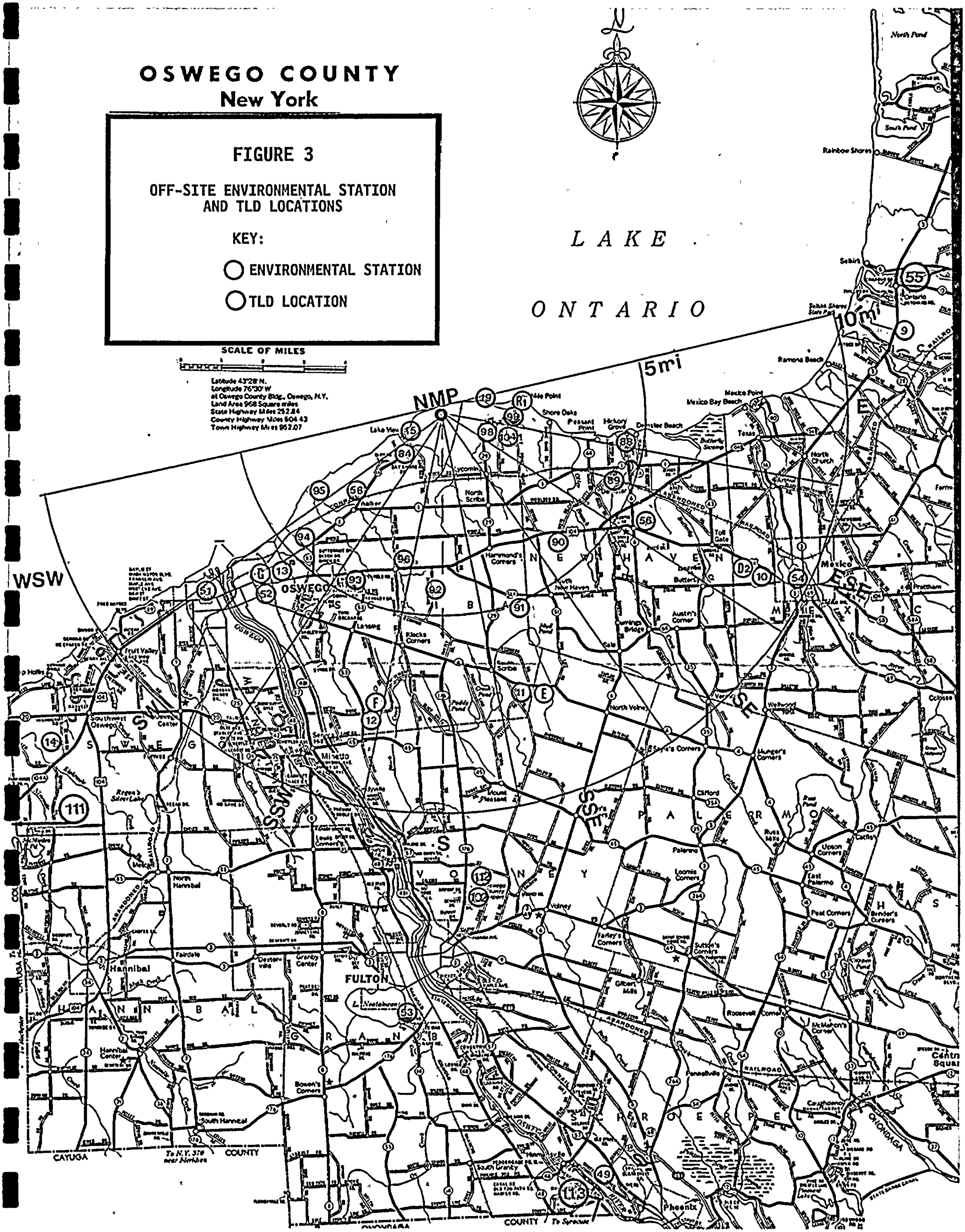


FIGURE 3

OFF-SITE ENVIRONMENTAL STATION AND TLD LOCATIONS

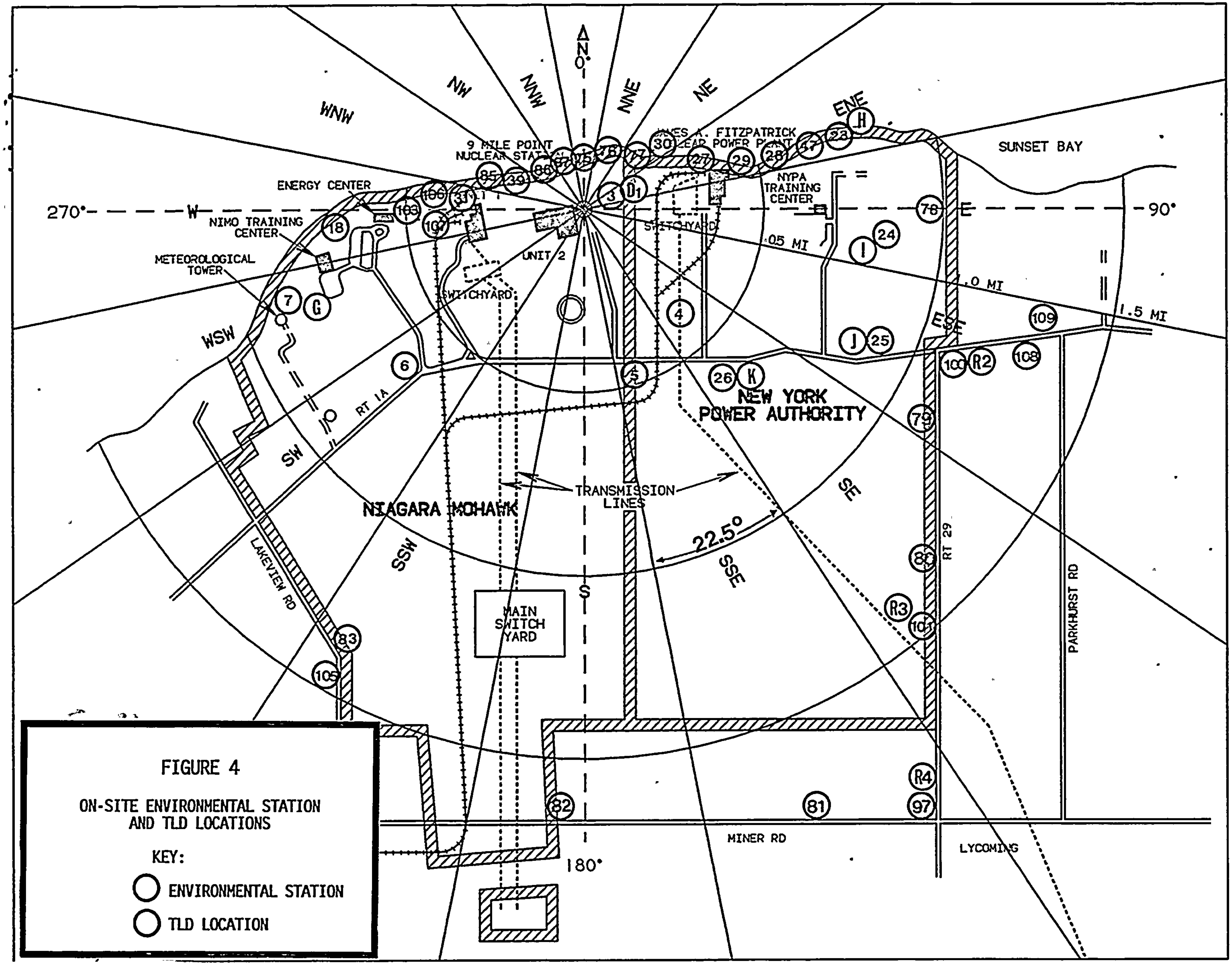



FIGURE 4

ON-SITE ENVIRONMENTAL STATION AND TLD LOCATIONS

FIGURE 5

NEW YORK STATE MAP