Robert McKeon
Assistant Vice President
and Manager, Operations

Fermi 2
6400 North Dixie Hwy
Newport, Michigan 48166
(313) 586-5249

Detroit Edison

Nuclear Operations

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Subject: Annual Radiological Environmental Operating/Monitoring Report

Pursuant to Section 6.9.1.7 of the Technical Specifications, please find attached the 1994 Annual Radiological Environmental Monitoring Report for Fermi 2.

If you have any questions regarding this report, please contact Lynda Craine at (313) 586-1388.

Sincerely,

Robert McKeon

Attachment

cc: T. G. Colburn
J. B. Martin
M. P. Phillips
T. Vegel (w/enclosure)
Region III (w/enclosure)

JE25

Fermi 2
1994 Annual Radiological Environmental Operating/Monitoring Report

Detroit Edison

Table of Contents — *Page*

Table of Contents (cont.) — *Page*

List of Figures — *Page*

List of Tables — *Page*

1. Executive Summary

This Annual Radiological Environmental Monitoring Report is a detailed report on the Radiological Environmental Monitoring Program (REMP) conducted at Detroit Edison's Fermi 2 nuclear power plant from January 1 through December 31, 1994.

During 1994, Fermi 2 was non-operational. On December 25, 1993, the reactor automatically shut down following a turbine-generator failure. The turbine suffered mechanical damage, the exciter and generator incurred mechanical and fire damage, and the condenser had some internal damage. The fire was contained in the turbine building, and there was no release of radioactive contaminants during the event. The reactor and its' associated components were not damaged during this event.

Major repairs to the turbine-generator have been completed. However, Fermi 2 will operate without the large seventh and eighth stage low pressure turbine blades, which is expected to reduce the power output to a range of about 800 to 900 megawatts. During the lower output period, new turbine shafts and blades will be manufactured for the plant's three low-pressure turbines. These major components will be installed during the next refueling outage in 1996.

In 1994, with extensive oversight by the Nuclear Regulator Commission (NRC), there were 3 liquid releases from the Condensate Storage Tank resulting from the turbine-generator incident. Since the excess water from the turbine-generator incident submerged the normal liquid release processing and monitoring equipment, the normal release pathway was not available. Also, disposal of this large volume of water was more efficiently accomplished by larger (~500,000 gallons) Condensate Storage Tank batches than by smaller (~20,000 gallons) batches from tanks in the Radwaste Building basement. The three Condensate Storage Tank batches were thoroughly demineralized and filtered using portable equipment in order to ensure the activity released to the environment was As Low As Reasonably Achievable (ALARA). The Condensate Storage Tank release pathway and associated monitoring equipment were designed to be as similar as possible to the normal release configuration. A new radiation monitor was purchased and installed in the discharge path. The entire discharge path was hard-piped, and the release was routed to the circulating water decant line and monitored by the circulating water decant line radiation monitor, as with a normal release.

The three liquid releases contained 2.4E+0 curies of tritium and 1.1E-2 curies of other radioactive material. While the amount of tritium released is more than from previous years, this is simply because a larger volume of water was released. The tritium concentration in plant water is essentially constant, and it cannot be removed. However, the dose impact of tritium is relatively low. Due to the demineralization process, the amount of other radioactive material is fairly low compared with previous years, despite the large volume released. After the initial three liquid releases, Fermi 2 remained a zero discharge plant for 1994. During 1994, no environmental samples detected activity that was associated with the three liquid releases.

The calculated 1994 liquid effluent radiation dose to the maximally exposed individual due to I-131, I-133, tritium, and particulates with half lives greater than 8 days, was 0.064 mrem to the total body and 0.085 mrem to the maximally exposed organ. (These values are 2.2% and 0.85% of federal limits, respectively.)

In 1994 , the amount of radioiodines and particulate radionuclides with half lives greater than 8 days in gaseous releases was 0.00027 curies. The amount of noble gases released in 1994 was 0.49 curies. Dose to the maximally exposed organ of the maximally exposed individual due to I-131, I-133, tritium, and particulates with half lives greater than 8 days, was 0.0028 mrem. This dose is 0.019% of the federal limit. These quantities are considerably less than those seen in previous years due to the fact that the plant did not operate above low power levels in 1994.

Samples collected as part of the REMP program are analyzed by Teledyne/Brown Engineering Environmental Services. Radioactivity measurements for these samples are reported in terms of sample concentration. Standard units of measure for reporting radioactivity are the Curie (Ci) for the amount of activity, and the Roentgen (R) for the amount of radiation exposure in free air. The unit of radioactivity used in this report is the picocurie (pCi). A picocurie is one-one trillionth of a curie. The unit of direct radiation used in this report is milliroentgen (mR). A milliroentgen is one-one thousandth of a roentgen. All radioactivity measurements for samples found to contain radioactivity are reported with the 2 sigma counting error. This means that, at a 95% confidence level, the true concentration of the sample lies somewhere between the measured concentration and plus or minus the counting error.

The Radiological Environmental Monitoring Program is divided into four major parts. These four parts are direct radiation monitoring, atmospheric monitoring, terrestrial monitoring, and aquatic monitoring. In 1994, more than 900 environmental samples were collected and approximately 1200 laboratory analyses were performed for the REMP. The results showed that environmental radioactivity levels have not increased from background radioactivity levels detected prior to the operation of Fermi 2.

Direct radiation measurements were taken at 67 locations using thermoluminescent dosimeters. The average quarterly exposure was 14.0 mR/standard quarter for indicating locations. This average exposure is equivalent to the ambient radiation levels measured prior to the operation of Fermi 2.

Atmospheric monitoring results for 1994 showed only naturally occurring radioactivity and were consistent with levels measured prior to the operation of Fermi 2. No radioactivity attributable to activities at Fermi 2 was detected in any atmospheric samples during 1994.

Terrestrial monitoring results for 1994 of milk, grass, and leafy garden vegetable samples, showed only naturally occurring radioactivity, radioactivity associated with fallout from past atmospheric nuclear weapons testing, and the nuclear accident at Chernobyl (USSR). The radioactivity levels detected were consistent with levels measured prior to the operation of Fermi 2. No radioactivity attributable to activities at Fermi 2 was detected in any terrestrial samples during 1994.

Aquatic monitoring results for 1994 of water, sediment, and fish, showed only naturally occurring radioactivity and radioactivity associated with fallout from past atmospheric nuclear weapons testing and were consistent with levels measured prior to the operation of Fermi 2. No radioactivity attributable to activities at Fermi 2 was detected in any aquatic samples during 1994.

The maintenance activities and low power operation of Fermi 2 caused no measurable radioactivity in the environment and no adverse effect on the quality of the environment in 1994. Comparisons of 1994 environmental data, past operational data, and preoperational data, show no long-term trends in environmental radiation levels attributable to Fermi 2. In conclusion, the operation of Fermi 2 continues to have no significant radiological impact upon the environment.

2. Radiological Environmental Monitoring Program

2.1 Introduction

The purpose of the Radiological Environmental Monitoring Program (REMP) is to assess the environmental impact of operating Fermi 2 and is designed to measure radiation exposure to the public. This program also provides the verification of the effluent monitoring program during routine operation of the plant and serves as an in place sampling network in the event of an accidental release. Monitoring stations are placed at pre-determined locations which measure any effects from operating the plant, and at control locations which are beyond the influence of the plant.

Exposure to the public can occur through direct pathways such as inhalation or immersion, or indirectly through the food chain. These exposure pathways are monitored by the use of thermoluminescent dosimeters (TLDs), and by the collection of air, milk, grass, garden produce, water, fish, and sediment samples.

Direct exposure by inhalation or immersion is measured both by TLDs and by collection of air samples. TLDs continuously monitor the radiation environment and provide a direct measurement of ambient gamma radiation levels. The locations of both the TLD and air sampling sites were chosen with respect to the meteorology and population distribution around Fermi 2. Air samples are collected through a particulate filter and an activated charcoal filter in tandem using continuously running air samplers. The particulate filters are analyzed individually for gross beta activity and composited for gamma spectrum analysis. The charcoal filters are analyzed for iodine-131.

Indirect exposure can result due to radionuclides entering the food chain through atmospheric or liquid discharges from the plant. Radionuclides released to the atmosphere, such as I-131, may be deposited on agricultural land and then ingested by dairy cows or goats, becoming concentrated in the animals' milk. Radionuclides can also become incorporated in garden produce such as green leafy vegetables.

Monitoring for radionuclides due to liquid discharges includes collection of surface and drinking water, fish and sediment samples. These samples are collected upstream of the plant discharge, as a control location, and at the discharge and downstream of the discharge, as an indicator location.

Fish are sampled semiannually and the species collected correspond to those that may be consumed by the local population. Fish are good indicators because they tend to concentrate radionuclides by ingestion and provide an effective mechanism for integrating the variable concentrations of radionuclides in the water over extended periods.

Sediment samples are also collected semiannually. Sediment, in the vicinity of the liquid radwaste discharge, represents the most likely site for accumulation of radionuclides in the aquatic environment and, with long-lived radionuclides, a gradual increase in radioactivity concentration is expected over time if discharges occur. Sediments, therefore, provide a long-term indication of change that may appear in other sample media (i.e., water and fish samples).

2.2 Preoperational Program

All nuclear power plants are required by the Nuclear Regulatory Commission (NRC) to conduct radiological environmental monitoring before construction of a facility. This preoperational program at Fermi 2 was aimed at collecting data needed to identify critical pathways, and determine the existing levels of radiation and radioactive products occurring naturally and from man-made sources in the vicinity of the plant.

Fermi 2 began its preoperational program seven years (1978) before the reactor began operating in 1985. The data accumulated during those years established a baseline with which to compare operational data. The program consisted of monitoring air, drinking water, surface water, lake sediments, milk, vegetables, fish, and direct radiation in the environment in the vicinity of Fermi 2. The elements that made up the preoperational monitoring program are still in effect today in the operational program.

2.3 Operational Program

The preoperational program became the operational program in June of 1985 when initial criticality was achieved for the Fermi 2 reactor. The sampling and analysis program in the operational phase continuously monitors direct radiation, radioactivity in the air, lake water and sediments, drinking water, groundwater, cow and goat milk, and local garden vegetables.

2.4 Quality Assurance

An important part of the environmental monitoring program at Fermi 2 is Quality Assurance (QA). QA is a program that provides a method to check the adequacy and validity of the monitoring program. The QA program accomplishes this by independent annual audits by qualified personnel, strict adherence to written procedures, and good record keeping practices. The QA program is designed to identify possible deficiencies in the REMP so that corrective actions can be initiated promptly.

The QA program at Fermi 2 is conducted in accordance with the guidelines specified in NRC Regulatory Guide 4.15, "Quality Assurance for Radiological Monitoring Programs".

Detroit Edison requires its contract analytical laboratory to participate in the United States Environmental Protection Agency's (EPA) Interlaboratory Comparison program. In the EPA Interlaboratory Comparison program, participant laboratories receive from the EPA blind spiked environmental samples of known activity concentration for analysis. After the samples have been analyzed by the laboratory, the EPA reports the known activity concentration of the samples to the laboratory. The laboratory compares their results to the EPA reported concentrations to determine any significant deviations, investigates such deviations if found, and initiates corrective action as necessary. Participation in this program provides assurance that the contract laboratory is capable of meeting accepted criteria for radioactivity analysis. The results of the 1994 EPA Interlaboratory Comparison for Teledyne/Brown Engineering, the Fermi 2 contracted analysis laboratory, are tabulated in Appendix A.

3. Direct Radiation Monitoring

3.1 Environmental Thermoluminescent Dosimetry

Radiation is a normal component of the environment resulting primarily from natural sources, such as cosmic radiation and naturally occurring radionuclides; and to a lesser extent, from manmade sources such as fallout from past nuclear weapons testing. The earth is constantly bombarded by cosmic radiation in the form of high energy gamma rays and particulates. The earth's crust also contains natural radioactivity material, such as uranium and potassium-40, which contributes to the background radiation. Direct radiation monitoring primarily measures ionizing radiation from cosmic and terrestrial sources.

Detroit Edison uses thermoluminescent dosimeters (TLDs) to measure direct gamma radiation in the environs of Fermi 2. Environmental TLDs supplied by Teledyne/Brown Engineering are presently being used to measure direct radiation. These TLDs are 25% by weight Calcium Sulfate encased in Teflon. The TLDs are thoroughly tested to comply with NRC Regulatory Guide 4.13 and American National Standards Institute's (ANSI) publication N545-1975, which assure accurate measurements under varying environmental conditions before being placed in the field. Indicator TLDs are located within an approximate ten mile radius of the plant and control TLDs are generally located greater than ten miles. While in the field, these TLDs are exposed to background radiation and, if measurable, gaseous effluents and direct radiation from Fermi 2. Environmental TLDs are exchanged and processed on a quarterly basis. The TLDs' data are reported in terms of milliroentgen per standard quarter (mR/std qtr), a standard quarter being 91.3 days. Regardless of the duration of TLD exposure in the field, the data have been normalized to a standard quarter to allow convenient intercomparisons with the net value.

The average exposure for indicator and control TLDs during the preoperational program was 17.3 mR/std qtr and 17.6 mR/std qtr, respectively. The annual average exposure for indicator TLDs ranged from 13.6 mR/std qtr to 21.0 mR/std qtr. The annual average exposure for control TLDs ranged from 15.5 mR/std qtr to 21.9 mR/std qtr.

From 1985 to 1993, the average exposure for indicator and control TLDs was 15.6 mR/std qtr and 16.1 mR/std qtr, respectively. The annual average exposure for indicator TLDs ranged from 13.6 mR/std qtr to 20.3 mR/std qtr. The annual average exposure for control TLDs ranged from 13.4 mR/std qtr to 22.2 mR/std qtr. As Figure 3-1 and Figure 3-2 illustrate, the operational period from 1985 to 1993 was consistent with the preoperational program

In 1994, the TLD monitoring program included sixty-seven (67) TLDs. The indicator TLDs had an average exposure of 14.0 mR/std qtr and ranged from 9.1 to 22.6 mR/std qtr. The control TLDs had an average exposure of 14.6 mR/std qtr and ranged from 11.5 to 17.7 mR/std qtr. As Figure 3-1 and Figure 3-2 illustrate, the average exposure for indicator and control TLDs is consistent with previous years, including preoperational years and show no impact from direct radiation on the environment.

Fermi 2 TLD Gamma Exposure
Historical Averages and Ranges

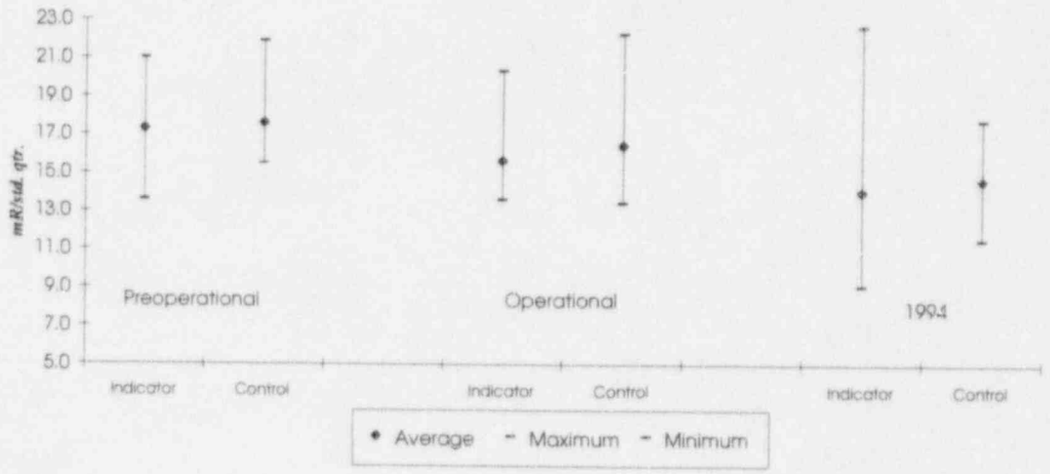

Figure 3-1

FERMI 2 ANNUAL TLD GAMMA DOSE

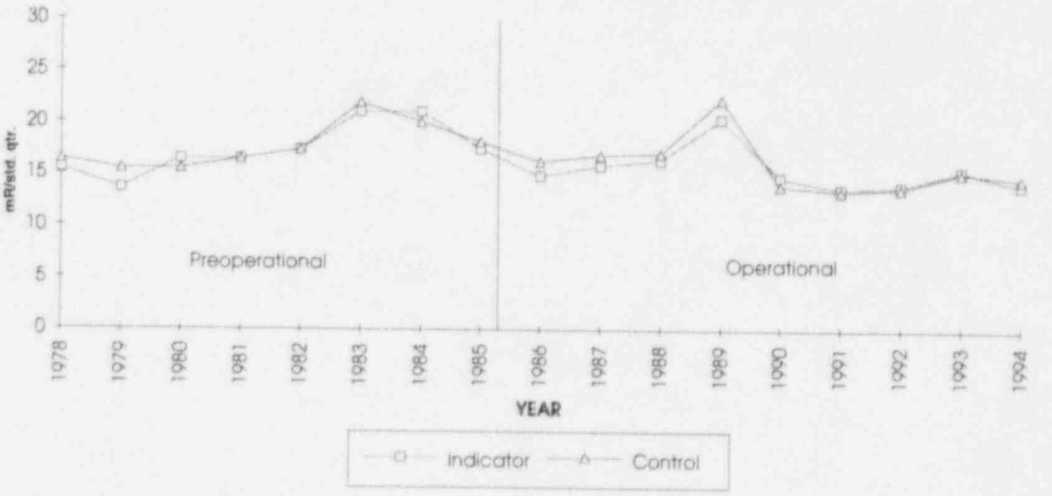

Figure 3-2

Table 3-1 shows the average 1994 TLD exposure for each meteorological sector at specified distances from the Fermi 2 reactor. On average, the indicating TLDs had a lower exposure than control TLDs. The blank cells in Table 3-1 represent areas that are over Lake Erie, or areas that are least likely to be affected by the operation of the plant.

1994 Average TLD Exposure by Meteological Sector and Distance From Fermi 2 Reactor (mR/std qtr)

Table 3-1

Sector	< 2mi.	2 to 5 mi.	5 to 10 mi.	> 10 mi.
N	12.1	15.7	13.9	
NNE	14.5	13.5		
NE	13.3			
ENE	11.5			
E	10.8			
ESE	11.1			
SE	13.0			
SSE	13.9			
S	12.3			
SSW	14.7			
SW	12.6		15.1	14.1
WSW	17.7	15.0	13.6	15.0
W	15.8	15.2		15.0
WNW	13.5	15.5		13.6
NW	14.0	14.3	13.4	
NNW	14.3	15.2	12.8	
Average	13.4	14.9	13.8	14.4

For 1994, the TLD data is consistent with preoperational and prior operational data.

4. Atmospheric Monitoring

4.1 Introduction

A potential exposure pathway to humans is inhalation of airborne radioactive materials. Detroit Edison continuously samples the ambient air surrounding Fermi 2 for radioactivity. Air sampling began in 1979, during the preoperational program. At each sampling location, a mechanical air sampler is used to draw a continuous volume of air through two filters designed to collect particulates and radioiodines. Air samples are collected weekly and analyzed for gross beta and iodine-131 activities. The particulate filters for each sampling location are combined on a quarterly basis to form a "composite sample" and are analyzed for strontium-89/90 and gamma emitting isotopes. There are four indicator sampling locations which were selected based on an evaluation of the predominant wind directions. A fifth sampling location is approximately 14 miles west of the plant and is considered to be a control location unaffected by the operation of the plant.

4.2 Air Sampling

During the preoperational program, excluding the year 1981, the average gross beta for indicator air samples was 2.6E-2 pCi/cubic meter and ranged from 2.0E-2 to 4.0E-2 pCi/cubic meter. The average gross beta for the control samples was 2.5E-2 pCi/cubic meter and ranged from 1.9E-2 to 3.5E-2 pCi/cubic meter.

In late 1980, the Peoples Republic of China conducted an atmospheric nuclear weapon test. The fallout from this test was detected in Fermi 2 environmental air samples in 1981 (see Figure 4-2). The average gross beta for 1981 was 1.6E-1 pCi/cubic meter for indicator samples and 2.4E-1 pCi/cubic meter for control samples. Gamma spectroscopic analyses of the particulate filters revealed cesium-137, cerium-141, cerium-144, ruthenium-103, ruthenium-106, zirconium-95, niobium-95, manganese-54, and antimony-125 in the atmosphere as a result of this test.

From 1985 to 1993 the average gross beta for indicator samples was 2.2E-2 pCi/cubic meter and ranged from 2.0E-2 pCi/cubic meter to 3.4E-2 pCi/cubic meter. The average gross beta for the control samples was 2.2E-2 pCi/cubic meter and ranged from 2.0E-2 pCi/cubic meter to 3.3E-2 pCi/cubic meter. In 1986, as shown in Figure 4-2, there was a slight increase in gross beta activity and a 2.7E-1 pCi/cubic meter "spike" in the iodine-131 activity. These elevated activity levels have been attributed to the nuclear accident at Chernobyl (U.S.S.R.) on April 26, 1986. For the operational period from 1985 to 1993, excluding 1986, the air sampling data is consistent with preoperational data. Figure 4-1 shows a graphical comparison between preoperational and operational gross beta activity.

During 1994, two hundred and sixty (260) particulate air filters were collected and analyzed for gross beta activity and two hundred and sixty (260) charcoal filters were collected and analyzed for iodine-131. The average gross beta for indicator samples was 2.3E-2 pCi/cubic meter and ranged from 8.8E-3 to 4.6E-2 pCi/cubic meter. The average gross beta for control samples was also 2.3E-2 pCi/cubic meter and ranged from 1.2E-2 to 4.2E-2 pCi/cubic meter. The following table contains the annual average gross beta results of all five sample locations for 1994.

1994 Average Gross Beta Concentrations in Air Particulates (pCi/m^3)

Station	Description (sector/distance)	Average +/- 2 std. dev.
API-1 (I)	Estral Beach (NE/1.4 mi.)	2.3E-2 +/- 1.5E-2
API-2 (I)	Site Boundary (NNW/0.6 mi.)	2.3E-2 +/- 1.4E-2
API-3 (I)	Site Boundary (NW/0.6 mi.)	2.3E-2 +/- 1.4E-2
API-4 (C)	North Custer Rd. (W/14 mi.)	2.3E-2 +/- 1.5E-2
API-5 (I)	Erie St. (S/1.2 mi.)	2.4E-2 +/- 1.5E-2

Table 4-1

(I) = Indicator Station (C) = Control Station

The air particulate gross beta activity for each sampling period is shown in Figure 4-3. As the graph indicates, gross beta activity varies throughout the year. This variation is a common yearly trend and is primarily an effect of seasonal precipitation. However, wind patterns, dust loading and pollen can affect the gross beta activity. None of the charcoal filters collected showed detectable levels of iodine-131. Twenty (20) quarterly particulate filter composites were prepared and analyzed for strontium-89/90 and gamma emitting isotopes. Only naturally occurring potassium-40 and beryllium-7 were detected in these samples. For 1994, the air sampling data is consistent with prior operational data and preoperational data. Figure 4-1 shows a graphical comparison of preoperational, prior operational, and 1994 average gross beta activity. The broader range for 1994 is due to seasonal variations, while the ranges for the preoperational and prior operational data are based on annual averages.

Air Particulate Gross Beta
Historical Averages and Ranges

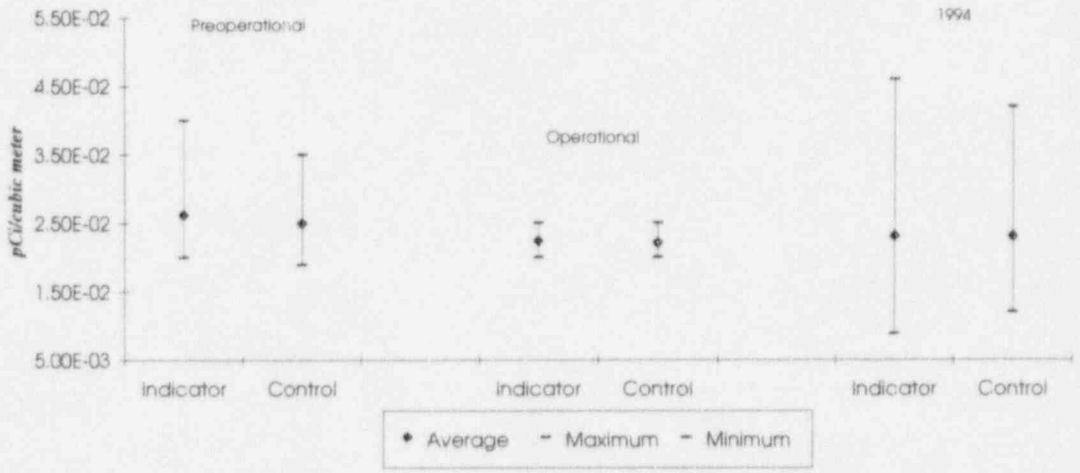

Figure 4-1

Historical Gross Beta and I-131 Concentrations
in Air Samples

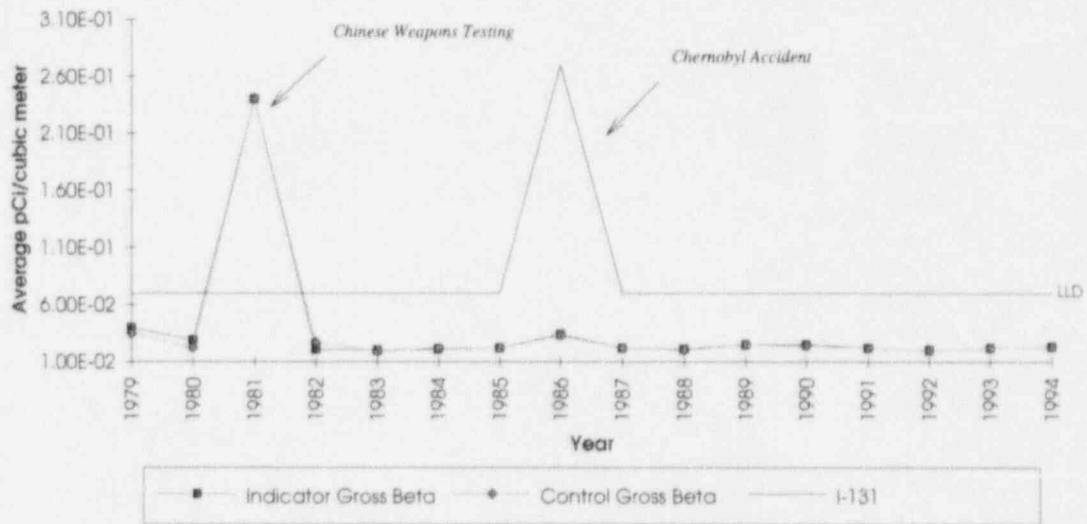

Figure 4-2

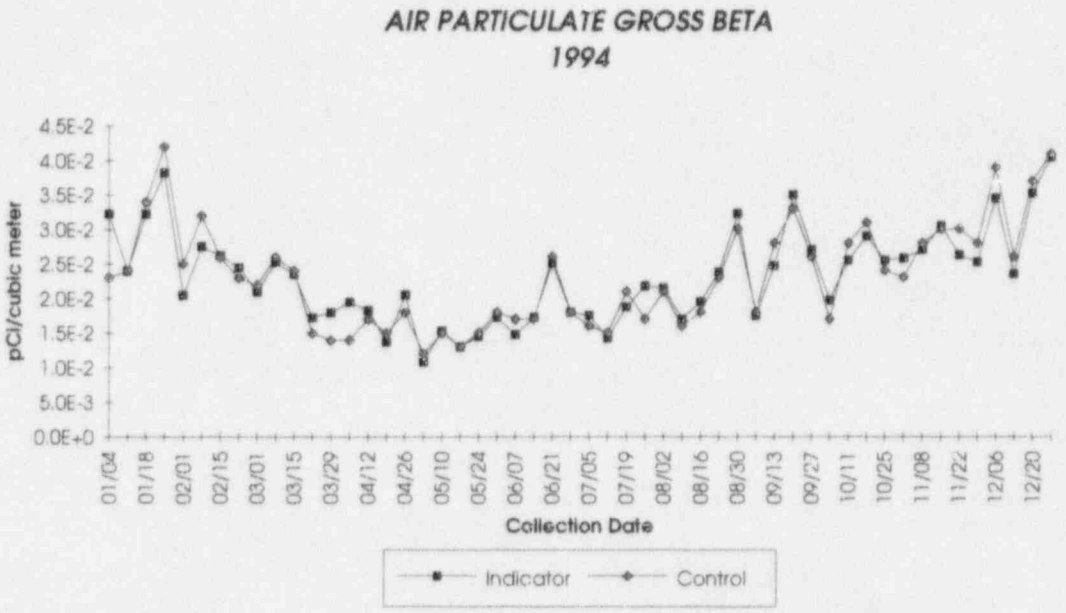

Figure 4-3

Figures 4-2 and 4-3 show that there have been no impacts on the environment from airborne beta and iodine-131.

5. Terrestrial Monitoring

5.1 Introduction

Radionuclides released to the atmosphere deposit on soil and vegetation, and therefore, may eventually be incorporated into milk, meat, fruits, vegetables, or other food products. To assess the impact of Fermi 2 operations to humans from the ingestion pathway, primary food product samples such as milk, grass and green leafy vegetables are collected and analyzed for radioactivity. The following sections discuss the type and frequency of terrestrial sampling, analyses performed, and a comparison of 1994 data to previous operational and preoperational data.

5.2 Milk Sampling

The milk sampling portion of the REMP is perhaps the most important aspect of the program. This is because a major radiation exposure pathway to the public can be the consumption of milk from local grazing animals (dairy cows or goats). Milk is collected from one indicator location and one control location semimonthly when animals are in the pasture, and monthly at other times. The milk is analyzed for iodine-131, gamma emitting isotopes, and strontium-89/90.

Milk sampling began in 1979 during the preoperational program. During this time period, milk samples were only analyzed for iodine-131 and gamma emitting isotopes. From 1979 to 1984, cesium-137 and naturally occurring potassium-40 were the only isotopes detected in milk samples. The cesium-137 concentration averaged 3.6E+0 pCi/liter and is due to past atmospheric nuclear weapons testing.

During the operational period between 1985 and 1987, milk samples were only analyzed for iodine-131 and gamma emitting isotopes. In 1986, after the nuclear accident at Chernobyl (USSR) iodine-131 and cesium-137 were detected in both indicator and control milk samples. The average concentration for iodine-131 was 3.7E+0 pCi/liter and 6.6E+0 pCi/liter for cesium-137 in 1986. The analysis for strontium-89/90 began in 1988, and strontium-90 is routinely detected in both indicator and control milk samples because of past atmospheric nuclear weapons testing. Since 1988, the average concentration for strontium-90 has been 2.2E+0 pCi/liter. Naturally occurring potassium-40 was also detected in milk samples during this operational period. For the operational period from 1985 to 1993, excluding 1986, the milk sample data is consistent with the preoperational data.

During the 1994 Land Use Census, a new milk sampling location was identified and added to the program. This new indicator location was designated as M-9 and measures radioactivity levels in goat milk. Thirty six (36) cow milk samples and four (4) goat milk samples were collected and analyzed for iodine-131, gamma emitting isotopes, and strontium-89/90. No iodine-131 was detected in any of the samples. Strontium-90 was also detected in both indicator and control milk samples and is due to fallout from past atmospheric weapons testing. The indicator samples had an average strontium-90 concentration of 1.7E+0 pCi/l and ranged from 1.1E+0 pCi/l to 4.9E+0 pCi/l. The control samples had an average strontium-90 concentration of 1.3E+0 pCi/l and ranged from 5.7E-1 pCi/l to 2.3E+0 pCi/l. Naturally occurring potassium-40 was detected in both indicator and control samples. For 1994, the milk sampling data is consistent with prior operational data and preoperational data.

Historical Strontium-90 Concentrations in Milk Samples

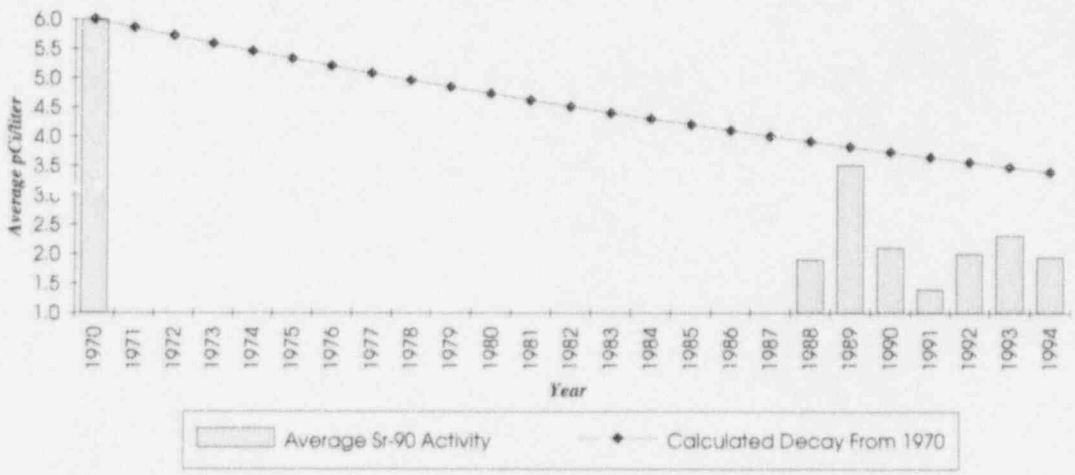

Figure 5-1

In 1970, the concentration of strontium-90 in local milk was 6 pCi/liter according to the Michigan Department of Health's "Milk Surveillance", Radiation Data and Reports, Vol. 11-15, 1970-1974. Figure 5-1 shows the calculated decay curve for the 1970 concentration of strontium-90 and the average concentrations since 1988. Figure 5-1 illustrates that the inventory of strontium-90 in the local environment is decreasing with time and closely follows the calculated decay curve. This supports the rationale that the inventory of strontium-90 in the environment is due to fallout from past atmospheric nuclear weapons testing.

5.3 Grass Sampling

At times when milk samples are not available, grass samples are collected at both the control milk sample location and the location where milk is not available. This has occurred in the past when the owners of a dairy animal have declined to participate in the REMP program or when an animal temporarily stops producing milk, as the case for this year. Grass samples are analyzed for iodine-131 and gamma emitting isotopes.

Grass sampling began in 1985 in the operational program. In 1986, after the nuclear accident at Chernobyl (USSR), iodine-131, cesium-134, and cesium-137 were detected in both indicator and control grass samples. Also during the operational period between 1985 and 1991, naturally occurring potassium-40 and beryllium-7 was detected in both indicator and control samples. Cesium-137 was also detected in both indicator and control samples at an average concentration of 5.5 pCi/kg during the operational program. This cesium activity is attributed to fallout from past atmospheric weapons testing and to the nuclear accident at Chernobyl.

During 1994, two (2) grass samples were collected and analyzed for iodine-131 and gamma emitting isotopes. Only naturally occurring potassium-40 and beryllium-7 were detected in these grass samples. For 1994, the grass sample data are consistent with previous years.

5.4 Garden Sampling

Fermi 2 collects samples of broad leaf vegetables from indicator locations identified by the Annual Land Use Census. Samples are also collected at a control location that is at a distance and direction which is considered to be unaffected by plant operations. Samples are collected once a month during the growing season (June through September) and are analyzed for iodine-131 and gamma emitting isotopes.

Vegetable sampling started in 1982. During the preoperational program, only naturally occurring potassium-40 was detected in both indicator and control vegetable samples.

During the operational period from 1985 to 1990, only naturally occurring potassium-40 was detected in both indicator and control vegetable samples. However, in 1991, 1992, and 1993 cesium-137 was detected in one indicator sample each year and had an average concentration of 1.2E+1 pCi/kg. With the exception of the cesium-137 activity, the operational period from 1985 to 1993 was consistent the preoperational program.

Cesium-137 may become incorporated into plants by either uptake from the soil or direct deposition on foliar surfaces. Since cesium-137 has never been detected in any gaseous effluent sample from Fermi 2, and there has been no recent atmospheric weapons testing or nuclear accidents, the incorporation of cesium-137 by direct deposition is highly unlikely. The most probable source of cesium-137 in vegetable samples is the uptake of previously deposited cesium-137, which has leached into the soil. This cesium activity is attributed to fallout from past atmospheric weapons testing and to the nuclear accident at Chernobyl (USSR).

During 1994, thirteen (13) vegetable samples were collected and analyzed for iodine-131 and gamma emitting isotopes. No iodine-131 was detected in vegetable samples during 1994. Naturally occurring potassium-40 and beryllium-7 were detected in both indicator and control vegetable samples. For 1994, the vegetable sample data is consistent with prior operational data and preoperational data.

6. Aquatic Monitoring

6.1 Introduction

Lake Erie, on which Fermi 2 borders, is used as a source for drinking water, as well as for recreational activities such as fishing, swimming, sunbathing, and boating. For this reason, Lake Erie and its tributaries are extensively monitored for radioactivity.

The aquatic monitoring portion of the REMP consists of sampling raw municipal drinking water, surface water, groundwater lake sediments, and fish for the presence of radioactivity due to the operation of Fermi 2. The following sections discuss the type and frequency of aquatic sampling, analyses performed, and a comparison of 1994 data to previous operational and preoperational data.

6.2 Drinking Water Sampling

Detroit Edison continuously monitors drinking water at one control location and two indicator locations using automatic compositing samplers. Indicator water samples are obtained at the Monroe water intake located approximately 1.1 miles south of the plant and at the Fermi 1 potable water plant located approximately 0.3 miles south southeast of the plant. Detroit municipal water is used for the control samples and is obtained at the Allen Park water intake located approximately 18.6 miles north of the plant. The automatic samplers collect sample aliquots at time intervals that are very short (hourly) relative to the compositing period (monthly) in order to assure obtaining a representative sample. Drinking water samples are collected on a monthly basis and analyzed for gross beta, strontium-89/90, and gamma emitting isotopes. The monthly samples for each location are combined on a quarterly basis to form a composite sample which is then analyzed for tritium activity.

Drinking water sampling was initiated in 1979, and samples were analyzed for gross beta, gamma emitting isotopes, and tritium as part of the preoperational program. The average annual gross beta for indicator drinking water samples, excluding 1981, was 3.4E+0 pCi/liter and ranged from 2.1E+0 to 4.3E+0 pCi/liter. The average annual gross beta for control drinking water samples during this time period was 3.5E+0 pCi/liter and ranged from 2.9E+0 to 4.5E+0 pCi/liter. In 1980 and 1983, cesium-137 was detected in drinking water samples at levels ranging from 5.4E+0 pCi/liter to 1.9E+1 pCi/liter. Tritium was also detected during the preoperational program and had an annual average of 3.2E+2 pCi/liter and ranged from 2.6E+2 to 4.5E+2 pCi/liter. The presence of cesium-137 and detectable levels of tritium in these water samples is due to fallout from past atmospheric nuclear weapons testing and naturally occurring tritium.

In 1981, as shown in Figure 6-2, the average gross beta was 9.8E+0 pCi/liter for indicator water samples. This anomalous gross beta activity is a direct result of an atmospheric nuclear weapon test conducted by the Peoples Republic of China in late 1980. Figure 6-2 also shows that, except for the Chinese weapons testing, the historic drinking water sample data is below the lower limit of detection (4 pCi/liter) required by US Environmental Protection Agency's National Interim Primary Drinking Water regulations. Even during the Chinese weapons testing, the drinking water samples did not exceed the USEPA's maximum allowable criteria of 5.0E+1 pCi/liter gross beta.

From 1985 to 1993, the average annual gross beta activity for indicator drinking water samples was 3.0E+0 pCi/liter and ranged from 2.4E+0 to 3.9E+0 pCi/liter. The average annual gross beta for control drinking water samples was 2.6E+0 pCi/liter and ranged from 1.9E+0 to 3.3E+0 pCi/liter. Figure 6-1 compares the average gross beta concentrations and ranges for the preoperational and operational programs.

The analysis for strontium-89/90 began in 1988 and strontium-90 has been detected in both indicator and control samples. The average annual strontium-90 activity for indicator samples was 7.3E-1 pCi/liter and ranged from 4.8E-1 to 1.2E+0 pCi/liter. The average annual strontium-90 activity for control samples was 7.6E-1 pCi/liter and ranged from 7.1E-1 to 8.0E-1 pCi/liter. Tritium was also detected in both indicator and control drinking water samples during this time period. The average annual tritium activity for indicator samples was 2.8E+2 pCi/liter and ranged from 2.2E+2 to 3.9E+2 pCi/liter. The average annual tritium activity for control samples was 3.0E+2 pCi/liter and ranged from 2.7E+2 to 3.4E+2 pCi/liter. The presence of strontium-90 and detectable levels of tritium in these water samples is due to fallout from past atmospheric nuclear weapons testing and naturally occurring tritium. For the operational period from 1985 to 1993, the drinking water sample data is consistent with the preoperational data.

In 1994, thirty-seven (37) drinking water samples were collected and analyzed for gross beta, gamma emitting isotopes, strontium-89/90, and tritium. The average annual gross beta for indicator samples was 3.5E+0 and ranged from 2.2E+0 to 4.9E+0 pCi/liter. The average annual gross beta for control samples was 2.8E+0 pCi/liter and ranged from 1.7E+0 to 4.5E+0 pCi/liter. Figure 6-1 graphically compares the average gross beta concentrations and ranges for the preoperational, operational and 1994 data. No gamma emitting isotopes or strontium-89/90 activity was detected in drinking water samples during 1994. Twelve (12) quarterly composite drinking water samples were prepared and analyzed for tritium. No tritium activity was detected in drinking water samples for 1994. For 1994, the drinking water sample data is consistent with prior operational data and preoperational data.

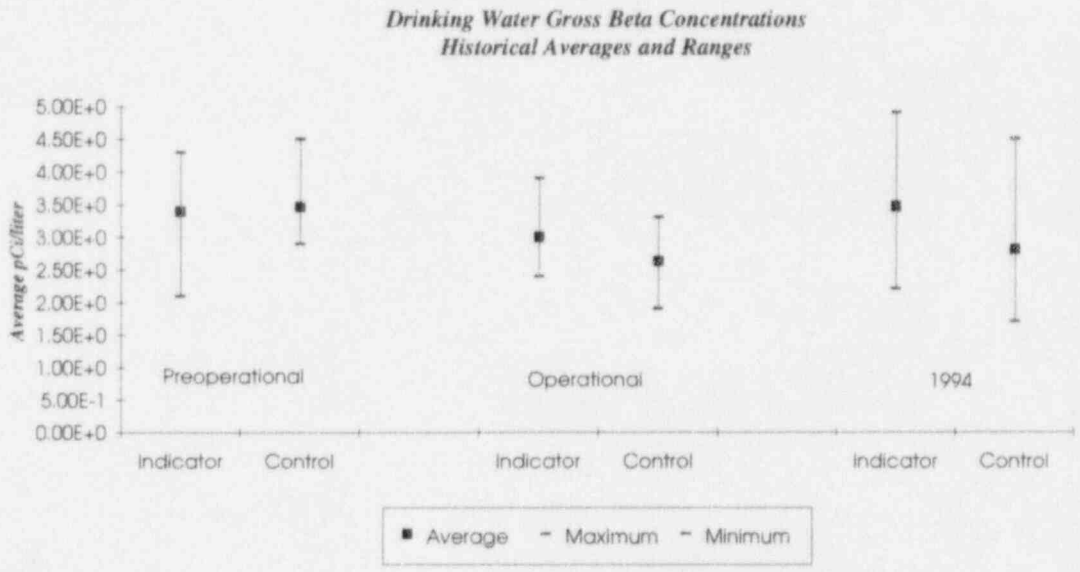

Figure 6-1

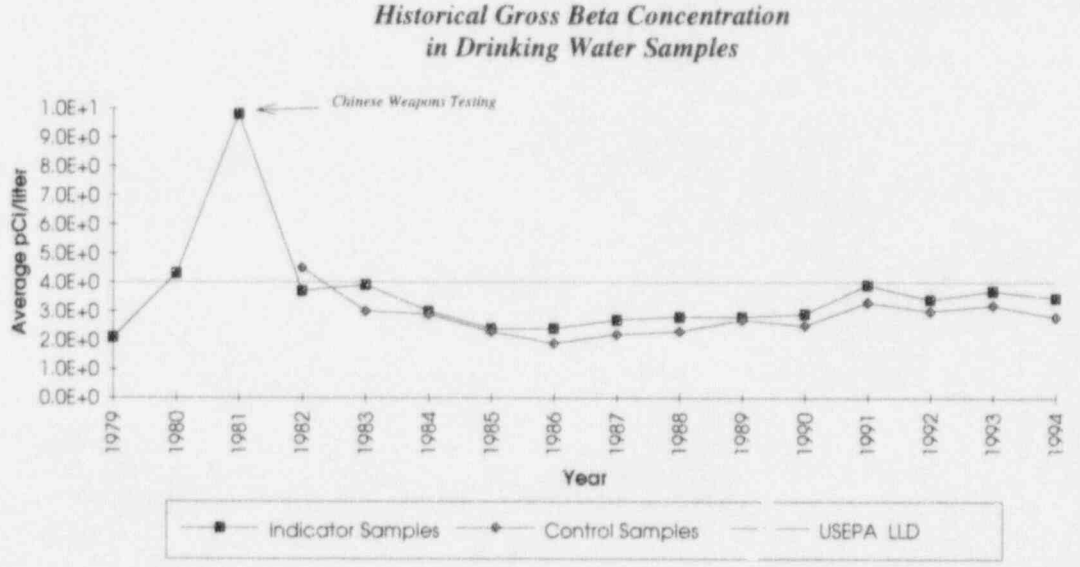

Figure 6-2

6.3 Surface Water Sampling

Detroit Edison continuously monitors surface water at two locations using automatic composite samplers. As with drinking water, surface water aliquots are collected at time intervals that are very short (hourly) relative to the compositing period (monthly) in order to assure obtaining a representative sample. Indicator surface water samples are obtained at the Fermi 2 General Service Water building, located approximately 0.3 miles south southeast from Fermi 2. The control surface water samples are obtained from Trenton Channel Power Plant's cooling water intake on the Detroit River which is approximately 11.7 miles north north east of Fermi 2. Surface water samples are collected on a monthly basis and analyzed for strontium-89/90 and gamma emitting isotopes. The monthly samples for each location are combined on a quarterly basis to form a quarterly composite sample and are analyzed for tritium.

Surface water sampling began in 1979 and the samples were analyzed for gamma emitting isotopes, and tritium. During this preoperational program no gamma emitting isotopes, except for naturally occurring potassium-40, were detected. Tritium was detected in both indicator and control samples during this time period and had an annual average of 3.2E+2 pCi/liter and ranged from 2.2E+2 to 4.1E+2 pCi/liter. This tritium activity represents the background concentration due to naturally occurring tritium and tritium produced during past thermonuclear weapons testing.

From 1985 to 1993, as part of the operational program, surface water samples were analyzed for gamma emitting isotopes and tritium. The analysis for strontium did not begin until 1988, and strontium-90 was detected in both indicator and control samples. The average strontium-90 concentration for this time period was 1.1E+0 pCi/liter and ranged from 5.3E-1 to 2.4E+0 pCi/liter. In 1990, two indicator samples showed detectable activity for cesium-137 at an average concentration of 1.2E+1 pCi/liter and ranged from 9.7E+0 to 1.5E+1 pCi/liter. The presence of cesium-137 and strontium-90 in these water samples is due to fallout from past atmospheric nuclear weapons testing. Tritium was also detected in surface water samples during this time period at a concentration of 2.3E+2 pCi/liter and ranged from 1.6E+2 to 3.1E+3 pCi/liter. This tritium activity is consistent with background levels measured during the preoperational program.

In 1994, twenty-five (25) surface water samples were collected and analyzed for gamma emitting isotopes and strontium-89/90. From the twenty-five monthly samples, eight (8) quarterly composite samples were prepared and analyzed for tritium. No activity was detected in any surface water sample for this monitoring period. For 1994, the surface water sampling data is consistent with prior operational data and preoperational data.

6.4 Groundwater Sampling

All municipal water supplies within 25 miles of Fermi 2 are from streams or lakes. In areas not served by municipal water systems, water supplies for domestic use are generally obtained from private wells. These wells penetrate aquifers composed of glacial drift deposits or soluble limestone and dolomite formations. The water is highly mineralized and contains significant amounts of sulfate and hydrogen sulfide. The network of private wells presently in use forms the source of water for domestic and livestock purposes in farms and homes west and north of the site. However, with the construction of new water plants and distribution systems, the water use trend in the area is from groundwater to surface water.

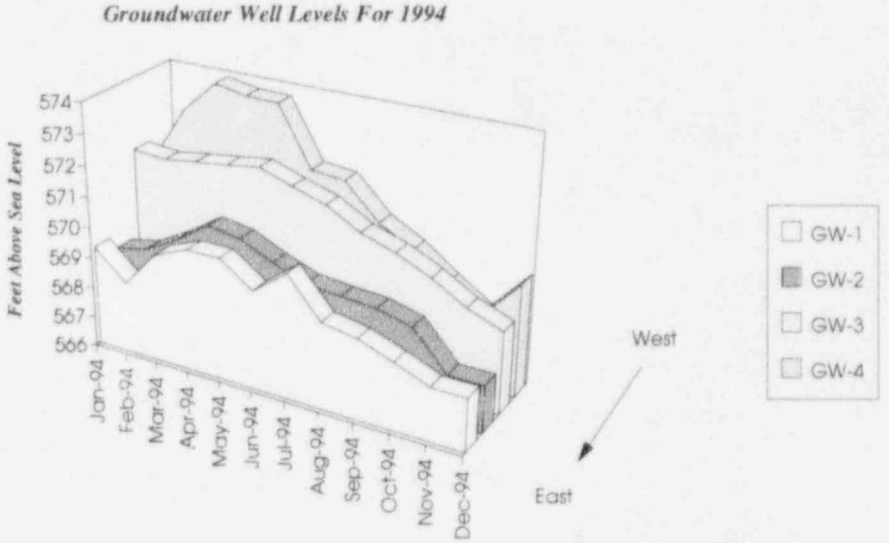

Figure 6-3

The subsurface hydrology of the local area is such that the groundwater gradient is to the east toward Lake Erie. To verify that a reversal of the groundwater gradient has not occurred, the water level of each well is measured once a month. For 1994, this data is plotted in Figure 6-3 and shows the west to east gradient and the seasonal variances of the local groundwater.

Groundwater is collected on a quarterly basis from four wells surrounding Fermi 2. The groundwater is analyzed for gamma emitting isotopes and tritium. Sampling location GW-4 which is located approximately 0.6 miles west north west is designated as the control location because it is up-gradient and is least likely to be affected by the operation of the plant. The other three sampling locations are down-gradient from Fermi 2 and designated as indicator locations.

Groundwater sampling began in 1987, during the operational period of the REMP program. From 1987 to 1989 no radioactivity was detected in groundwater samples. In 1990, one control sample had an activity of 7.71E+0 pCi/liter for cesium-137 and one indicator sample had a tritium activity of 9.9E+1 pCi/liter. The presence of cesium-137 in the 1990 control water sample is due to fallout from past atmospheric nuclear weapons testing leaching into the soil and becoming incorporated into the groundwater. The tritium activity in the 1990 indicator sample is consistent with background surface water levels measured during the surface water preoperational program. Comparing past surface water sampling to groundwater samples is plausible, since surface water recharges groundwater. From 1991 to 1993, only naturally occurring potassium-40 was detected in groundwater samples.

In 1994, sixteen (16) groundwater samples were collected and analyzed for gamma emitting isotopes and tritium. Only naturally occurring potassium-40 was detected in groundwater samples during this period. For 1994, the groundwater sample data is consistent with past operational data.

6.5 Sediment Sampling

Sediments often act as a sink (temporary or permanent) for radionuclides, but they may also become a source, as when they are resuspended during periods of increased turbulence or are dredged and deposited elsewhere. Sediment, in the vicinity of the liquid discharge point, represents the most likely site for accumulation of radionuclides in the aquatic environment and, with long-lived radionuclides, a gradual increase in radioactivity concentration would be expected over time if discharges occur. Sediment, therefore, provides a long-term indication of change that may appear in other sample media (i.e., water and fish samples).

Lake Erie shoreline and bottom sediments from five locations are collected on a semiannual basis and are analyzed for gamma emitting isotopes and strontium-89/90. There is one control location and four indicator locations. The control sample is collected near the Trenton Channel Power Plant's cooling water intake. The indicator samples are collected at Estral Beach, near the Fermi 2 liquid discharge area, the shoreline at the end of Pointe Aux Peaux, and Indian Trails Community Beach.

During the preoperational program there was not a control location, and indicator samples were analyzed for gamma emitting isotopes. During the preoperational program, except for naturally occurring isotopes, only cesium-137 was detected in sediment samples. For this time period the average cesium-137 concentration was 3.3E+2 pCi/kg and ranged from 5.0E+1 to 6.6E+2 pCi/kg. The presence of cesium-137 in these sediment samples is due to fallout from past atmospheric nuclear weapons testing.

From 1985 to 1993, cesium-137, strontium-90, and naturally occurring isotopes were detected in sediment samples. The average cesium-137 concentration for indicator samples was 1.6E+2 pCi/kg and ranged from 2.6E+1 to 3.6E+2 pCi/kg. The control sample had an average cesium-137 concentration of 1.4E+2 pCi/kg for this time period and ranged from 1.0E+2 to 1.8E+2 pCi/kg.

The analysis for strontium-89/90 began in 1988, and strontium-90 has been routinely detected at similar concentrations in both indicator and control samples. The average strontium-90 activity for indicator samples was 9.6E+1 pCi/kg and ranged from 2.8E+1 to 1.6E+2 pCi/kg. The average strontium-90 activity for control samples was 2.5E+2 pCi/kg and ranged from 1.4E+2 to 3.1E+2 pCi/kg. The presence of cesium-137 and strontium-90 in these sediment samples is due to fallout from past atmospheric nuclear weapons testing.

In 1990 and 1991, the Spring samples taken at the Fermi 2 liquid discharge line (Location S-2) showed activity for plant related isotopes (manganese-54, cobalt-58, cobalt-60, and zinc-65) and was determined to be a result of liquid effluent from Fermi 2. The sample results were well below any regulatory reporting limits and were consistent with the activity released from the plant in liquid effluents and the dose impact was negligible.

In 1994, ten (10) sediment samples were collected and analyzed for gamma emitting isotopes and strontium 89/90. Strontium-90 was detected in two indicator sediment samples with an average concentration of 8.4E+1 pCi/kg. Cesium-137 was detected in one control sample at a concentration of 1.1E+2 pCi/kg. The presence of cesium-137 and strontium-90 in sediment samples is due to fallout from past atmospheric nuclear weapons testing. Naturally occurring isotopes of potassium, beryllium, radium, and thorium were also detected in both indicator and control sediment samples for this sampling period. For 1994, the sediment sample data is consistent with prior operational data and preoperational data.

Figure 6-4 shows the historical concentration of cesium-137 in sediment samples from 1978 to 1994. Using the data from these years, and the statistical method of least squares, an exponential curve can be calculated that represents the cesium-137 concentration in sediment. This curve has a negative slope which indicates the overall concentration of cesium-137 in the environment is decreasing with time. This supports the rationale that the inventory of cesium-137 in the environment is due to fallout from past atmospheric nuclear weapons testing and not from the operation of Fermi 2.

Historical Cesium-137 Concentrations in Sediment Samples

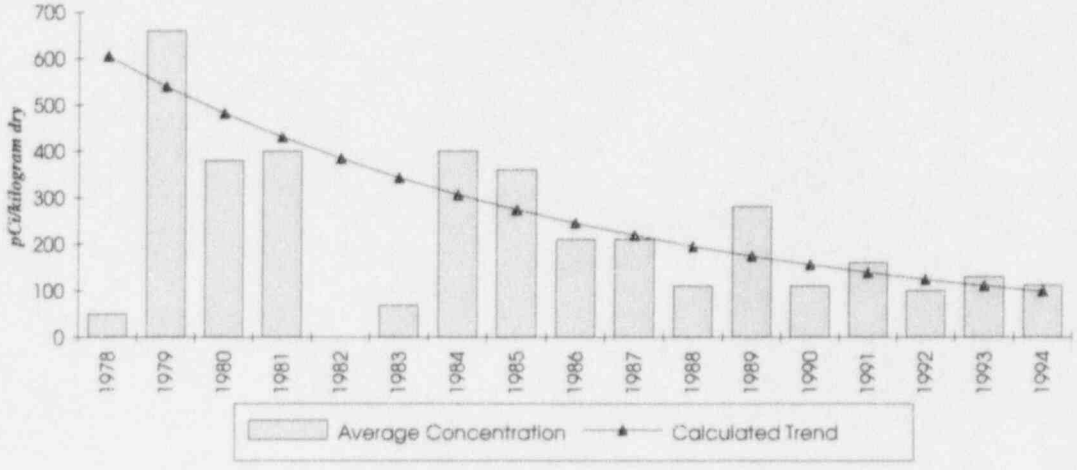

Figure 6-4

6.6 Fish Sampling

Samples of fish are collected from Lake Erie at three locations on a semiannual basis. There are two control locations and one indicator location. The two control locations are offshore of Celeron Island and Brest Bay. The indicator location is approximately 1200 feet offshore of the Fermi 2 liquid effluent discharge. Edible portions of the fish are analyzed for gamma emitting isotopes and strontium-89/90.

During the preoperational program fish samples were only analyzed for gamma emitting isotopes. Only cesium-137 and naturally occurring potassium-40 was detected during this time period. The average concentration of cesium-137 for indicator samples was 3.5E+1 pCi/kg and 4.2E+1 pCi/kg for control samples. The presence of cesium-137 in these fish samples is due to fallout from past atmospheric nuclear weapons testing.

From 1985 to 1993, cesium-137 and naturally occurring potassium-40 were detected in fish samples. The average cesium-137 concentration for indicator samples was 5.2E+1 pCi/kg and ranged from 2.0E+1 to 7.2E+1 pCi/kg. The average cesium-137 concentration for control samples was 5.5E+1 pCi/kg and ranged from 2.5E+1 to 9.7E+1 pCi/kg. Figure 6-5 shows a graphical representation of cesium-137 comparing preoperational and operational average concentrations and ranges.

The analysis for strontium-89/90 began in 1990, and strontium-90 has been routinely detected at similar concentrations in both indicator and control samples. The average strontium-90 concentration for indicator samples was 5.6E+1 pCi/kg and ranged from 2.0E+1 to 1.3E+2 pCi/kg. The average strontium-90 concentration for control samples was 4.5E+1 pCi/kg and ranged from 1.2E+1 to 7.7E+1 pCi/kg.

The presence of cesium-137 and strontium-90 in these fish samples is due to fallout from past atmospheric nuclear weapons testing. For this operational period, the fish sample data is consistent with prior preoperational data.

In 1994, twenty-two (22) fish samples were collected and analyzed for gamma emitting isotopes and strontium-89/90. Cesium-137, strontium-90 and naturally occurring potassium-40 was detected in both indicator and control fish samples. The average cesium-137 concentration for indicator samples was 3.8E+1 pCi/kg and ranged from 2.0E+1 to 5.5E+1 pCi/kg. The average cesium-137 concentration for control samples was 3.3E+1 pCi/kg and ranged from 2.4E+1 to 4.3E+1 pCi/kg. Figure 6-5 shows a graphical comparison of cesium-137 average concentrations and ranges between preoperational, operational, and 1994 data.

Strontium-90 was detected at similar concentrations in both indicator and control fish samples in 1994. The average concentration of strontium-90 for indicator samples was 1.7E+1 pCi/kg and ranged from 6.0E+0 to 4.5E+1 pCi/kg. The average concentration of strontium-90 for control samples was 2.1E+1 pCi/kg and ranged from 7.3E+0 to 5.3E+1 pCi/kg.

The presence of cesium-137 and strontium-90 in the 1994 fish samples is due to fallout from past atmospheric nuclear weapons testing. For 1994, the fish sample data is consistent with prior operational data and preoperational data.

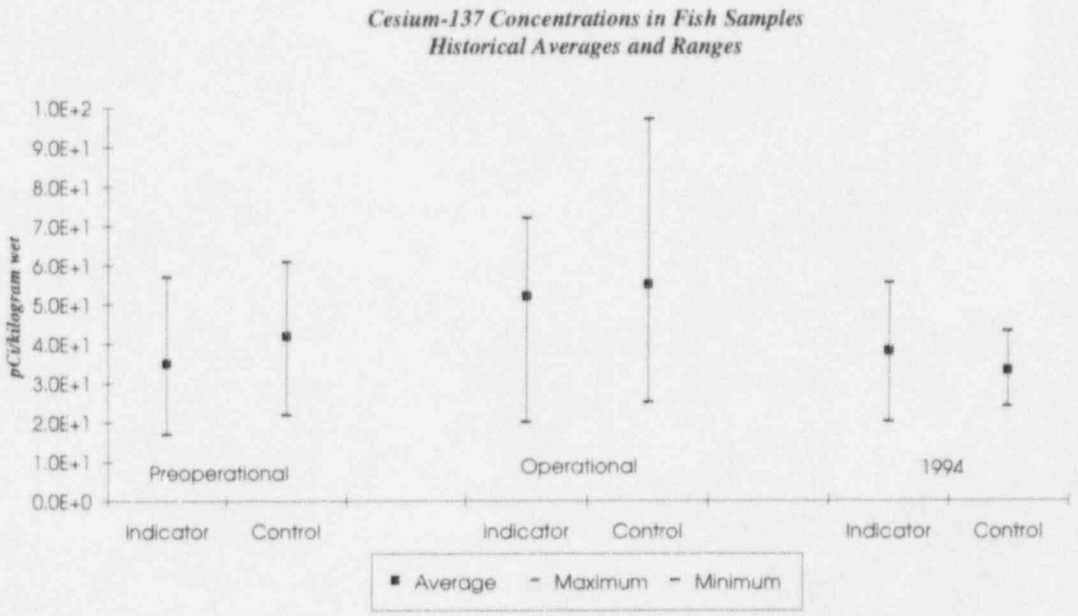
Cesium-137 Concentrations in Fish Samples
Historical Averages and Ranges
pCi/kilogram wet
1.0E+2
9.0E+1
8.0E+1
7.0E+1
6.0E+1
5.0E+1
4.0E+1
3.0E+1
2.0E+1
1.0E+1
0.0E+0
Preoperational
Operational
1994
Indicator
Control
Indicator
Control
Indicator
Control
Average
Maximum
Minimum

Figure 6-5

7. Land Use Census

7.1 Introduction

An annual Land Use Census is conducted in accordance with the Fermi 2 Offsite Dose Calculation Manual (ODCM), control 3.12.2, and satisfies the requirements of Section IV.B.3 of Appendix I to 10 CFR Part 50. This census identifies changes in the use of unrestricted areas to permit modifications to monitoring programs for evaluating doses to individuals from principal pathways of exposure.

The annual Land Use Census is conducted during the growing season and is used to identify, within a radius of 5 miles, the location of the nearest residences, milk animals, meat animals, and gardens (greater than 50 square meters and containing broad leaf vegetation) in each of 16 meteorological sectors surrounding Fermi 2. Gardens greater than 50 square meters are the minimum size required to produce the quantity (26 kg/year) of leafy vegetables assumed in Regulatory Guide 1.109 for consumption by a child. To determine this minimum garden size, the following assumptions were made: (1) 20% of the garden is used for growing broad leaf vegetation (i.e., lettuce and cabbage); and (2) a vegetation yield of 2 kg/square meter.

7.2 1994 Land Use Census Results

The 1994 Land Use Census was performed during the month of August. The 1994 data was compared to the 1993 data to determine any significant changes in the use of the land. No changes were found in the category of the nearest residences. Two new milk animal (goats) locations were identified, one in the north sector and one in the west sector. The owner of the goats in the north sector agreed to participate in the REMP program. This new indicator milk location, designated as M-9, was added to the program and is located at 6658 Labo Road. Numerous meat animals were identified during this census, but are not part of the REMP sampling program and are used for informational purposes only. Eight new garden locations were identified during this census. The garden located at 6200 Langton (1993 critical receptor) was not identified in this census due to a dry growing season. However, this garden has the potential to produce enough vegetation to qualify as the nearest garden and was used to calculate the "critical receptor". The "critical receptor" is the individual living offsite who could receive the highest dose due to iodine-131, iodine-133, tritium and particulates with half lives greater than eight days in gaseous effluents.

To determine the location of the "critical receptor", all age groups and all relevant pathways for each of the meteorological sectors were evaluated. The evaluation was designed to qualify the "critical receptor" and not quantify the annual dose to the "critical receptor". The potential dose for each location was calculated using Equation 7-14, of Section 7.8.1 of the ODCM. The effluent data from 1993 was used to perform the

calculations due to the fact the plant was not operating in 1994. The calculations showed that the "critical receptor" is located at 6200 Langton for 1994. The potential exposure pathways are inhalation, ingestion (vegetation), and ground plane with the maximum organ being the thyroid. This is the same "critical receptor" as was determined by the 1993 Land Use Census. For this reason, no changes to the REMP were required with the exception of adding the new milk sample location. The information gathered during the 1994 Land Use Census is tabulated and presented in Tables 7-1 through 7-4.

1994 LAND USE CENSUS

Closest Residences

Table 7-1

Year	Sector	Address	Distance (mi)	Change (mi)
1993	NE	6760 Lakeshore	1.13	
1994	NE	6760 Lakeshore	1.13	NC
1993	NNE	6460 Brancheau	1.07	
1994	NNE	6460 Brancheau	1.07	NC
1993	N	6362 Brancheau	1.09	
1994	N	6362 Brancheau	1.09	NC
1993	NNW	5701 Post	1.09	
1994	NNW	5701 Post	1.09	NC
1993	NW	6577 Leroux	1.04	
1994	NW	6577 Leroux	1.04	NC
1993	WNW	6200 Langton	0.66	
1994 #	WNW	6200 Langton	0.66	NC
1993	W	6001 Toll	1.11	
1994	W	6001 Toll	1.11	NC
1993	WSW	4981 Pte Aux Peaux	1.39	
1994	WSW	4981 Pte Aux Peaux	1.39	NC
1993	SW	5194 Pte Aux Peaux	1.27	
1994	SW	5194 Pte Aux Peaux	1.27	NC
1993	SSW	5820 Pte Aux Peaux	1.12	
1994	SSW	5820 Pte Aux Peaux	1.12	NC
1993	S	4834 Long	1.03	
1994	S	4834 Long	1.03	NC
	ESE-SSE	Lake Erie		

NC = No Change
# = 1994 Critical Receptor

1994 LAND USE CENSUS

Closest Gardens

Table 7-2

Year	Sector	Address	Distance (mi)	Change (mi)
1993	NE	7491 Sovey	1.96	
1994	NE	12197 Sovey	2.31	+ 0.35
1993*	NNE	6441 Brancheaux	1.09	
1994	NNE	7195 Lakeview	1.91	+ 0.82
1993*	NNE	9501 U.S. Turnpike	3.83	
1994*	NNE	9501 U.S. Turnpike	3.83	NC
1993	N	6080 Trombly	1.64	
1994	N	6080 Trombly	1.64	NC
1993	NNW	7025 Melvina	1.30	
1994	NNW	7025 Melvina	1.30	NC
1993	NW	6511 Leroux	1.05	
1994	NW	7175 Forest	1.61	+ 0.56
1993* #	WNW	6200 Langton	0.66	
1994	WNW	6594 N.Dixie Hwy	1.74	+ 1.08
1993*	WNW	8200 Gierman	14.6	
1994*	WNW	8200 Gierman	14.6	NC
1993	W	5681 Toll	1.55	
1994	W	5681 Toll	1.55	NC
1993	WSW	4420 Pte Aux Peaux	1.98	
1994	WSW	4611 Pte Aux Peaux	1.77	- 0.21
1993	SW	4998 Elm	1.41	
1994	SW	4971 Elm	1.46	+ 0.05
1993	SSW	4375 Fifth	1.47	
1994	SSW	4384 Ave C	1.53	+ 0.06
1993	S	6151 Goddard	1.18	
1994	S	6139 Goddard	1.19	+ 0.01
	ESE - SSE	Lake Erie		

NC = No Change
* = Participants in REMP program
# = 1994 Critical Receptor

1994 LAND USE CENSUS

Milk Locations

Table 7-3

Year	Sector	Address	Distance (mi)	Findings
1993	NE	No Identified Locations		
1994	NE	No Identified Locations		
1993	NNE	No Identified Locations		
1994	NNE	No Identified Locations		
1993	N	No Identified Locations		
1994*	N	6658 Labo	4.15	Goats
1993	NNW	No Identified Locations		
1994	NNW	No Identified Locations		
1993	NW	No Identified Locations		
1994	NW	No Identified Locations		
1993*	NW	2705 Labo	5.41	Cows
1994*	NW	2705 Labo	5.41	Cows
1993	WNW	No Identified Locations		
1994	WNW	No Identified Locations		
1993	W	No Identified Locations		
1994	W	6248 Williams	2.70	Goats
1993	WSW	No Identified Locations		
1994	WSW	No Identified Locations		
1993	SW	No Identified Locations		
1994	SW	No Identified Locations		
1993	SSW	No Identified Locations		
1994	SSW	No Identified Locations		
1993	S	No Identified Locations		
1994	S	No Identified Locations		
	ESE - SSE	Lake Erie		

* = Participants in REMP sampling program

1994 LAND USE CENSUS

Meat Locations

Table 7-4

Year	Sector	Address	Distance (mi)	Findings
1993	NE	None		None
1994	NE	None		None
1993	NNE	7136 Reaume	3.26	Pork Products
1993	NNE	7500 Reaume	3.39	Beef Cows
1993	NNE	9501 U.S. Turnpike	3.83	Beef Cows
1994	NNE	7250 Reaume	3.30	Beef Cows
1994	NNE	9501 U.S. Turnpike	3.83	Beef Cows/Chickens
1993	N	6344 Trombly	1.83	Beef Cows
1993	N	10409 N. Dixie Hwy	4.52	Sheep
1994	N	6344 Trombly	1.83	Beef Cows
1994	N	10409 N. Dixie Hwy	4.52	Sheep
1993	NNW	3740 Labo	4.81	Beef Cows
1994	NNW	4856 Anteau@	2.93	Chickens
1994	NW	8288 Swan Creek	3.05	Beef Cows/Sheep
1994	NW	3239 Newport	4.28	Beef Cows
1994	NW	6994 N. Dixie Hwy	1.89	Chickens
1994	NW	8288 Swan Creek	3.05	Beef Cows/Sheep
1994	NW	3239 Newport	4.28	Chickens
1993	WNW	4262 Post	2.06	Beef Cows/Sheep
1993	WNW	4167 Post	2.25	Pork Products
1993	WNW	3674 Post	2.76	Sheep
1994	WNW	6200 Langton	0.66	Chickens
1994	WNW	4262 Post	2.06	Beef Cows/Sheep
1994	WNW	4167 Post	2.25	Pork Products
1994	WNW	3403 Post	2.99	Beef Cows
1993	W	6651 N. Stony Creek	4.74	Sheep
1994	W	None		None
1993	WSW	3979 N. Dixie Hwy	2.88	Beef Cows
1994	WSW	3979 N. Dixie Hwy	2.88	Beef Cows

1994 LAND USE CENSUS

Meat Locations (cont.)

Year	Sector	Address	Distance (mi)	Findings
1993	SW	5194 Pte Aux Peaux	1.27	Beef Cows
1994	SW	5194 Pte Aux Peaux	1.27	Beef Cows
1993	SSW	None		None
1994	SSW	None		None
1993	S	None		None
1994	S	None		None
	ESE - SSE	Lake Erie		

@ = Residence address next to identified meat location

8. Program Execution

8.1 Introduction

In 1994, the major deviations from scheduled REMP activities were the loss of TLDs due to vandalism, and the loss of electrical power to air sampling and water sampling equipment. The following sections list all deviations, changes and corrective actions from the normal sampling schedule for 1994. These deviations did not have a significant impact on the execution of the REMP.

8.2 Direct Radiation Monitoring

All TLDs are placed in the field in inconspicuous locations to minimize the loss of TLDs due to vandalism. During 1994, two hundred sixty eight (268) TLDs were placed in the field for the REMP program and one (1) emergency and four (4) REMP TLDs were found missing. Section 8.2.1 lists all deviations and changes to the Direct Radiation Monitoring program.

8.2.1 Environmental TLDs

On May 5, TLDs T-20, T20E, and T49 were found missing during the mid-second quarter inspection. T-20 was immediately replaced with spare TLD #3 and T-49E ("E" represents the emergency TLD) was used for the quarterly read.

On June 30, T-7 was moved to a new location. T-7 is now located on Detroit Edison utility pole #8235-9056, on the north side of North Custer Road, past Doty Road adjacent to Michigan Gas Utility's pumping station. The TLD was moved from the original location at the request of the land owner.

On June 30, during the second quarter TLD exchange, T-30 and T-32 were found missing. The TLDs were replaced with the third quarter TLDs and T-30E and T-32E were used for the second quarter reads. Location T-20 (spare TLD #3) was only in the field for fifty-seven (57) days, however, the exposure was normalized to a standard quarter (91.3 days).

8.3 Atmospheric Monitoring

In the Atmospheric Monitoring program, two hundred and sixty (260) particulate and charcoal cartridges were scheduled to be collected in 1994. All samples were collected as scheduled, however, three (3) samples had reduced sample volumes due to electrical power outage or equipment malfunction. Section 8.3.1 lists all deviations and changes to the Atmospheric Monitoring program.

8.3.1 Air Sampling

On January 4, air sampler API-1 was found not operating due to a blown fuse in the fuse box that feeds power to the sampler. This fuse box is maintained by Detroit Edison's lines division. The Wayne/Monroe lines division was contacted and the fuse was replaced. The sampler only ran sixty (60) hours during the sampling period. For this reason the weekly sample and the first quarter composite sample are considered to be less than representative.

On May 3, the sample head for sampler API-3 was found not seated correctly in the quick-disconnect connector. This caused an air flow restriction which resulted in a low volume for the sampling period. The quick-disconnect was tightened to ensure proper seating of the sample head. For this reason the weekly sample and the second quarter sample are considered to be less than representative.

On June 28, air sampler API-4 was moved to a new location. API-4 is now located on Detroit Edison utility pole #8235-9056, on the north side of North Custer Road, past Doty Road adjacent to Michigan Gas Utility's pumping station. The air sampler was moved from the original location at the request of the land owner.

On November 22, the air sample for API-5 had a slightly reduced volume. After an investigation, it was determined that the air sampler was down for approximately four (4) hours due to a power outage. For this reason the weekly sample and the fourth quarter composite sample are considered to be less than representative.

8.4 Terrestrial Monitoring

During 1994, forty (40) milk samples were scheduled to be collected. Two (2) samples were not collected due to the fact that one animal stopped producing milk. To compensate for the lack of milk, four (4) grass samples were added to the schedule. However, due to seasonal availability, only two (2) grass samples were obtained. Sections 8.4.1 through 8.4.3 list all deviations and changes to the Terrestrial Monitoring program.

8.4.1 Milk Sampling

On September 8, a new indicator milk location, designated as M-9, was added to the program and is located at 6658 Labo Road. This location was identified during the annual Land Use Census.

During the months of November and December no milk samples were collected at location M-9 because the animal stopped producing milk.

8.4.2 Grass Sampling

For the month of December, grass samples were not collected at M-9 and M-8 (control sample) due to seasonal availability.

8.4.3 Garden Sampling

All scheduled garden samples were collected in 1994.

8.5 Aquatic Monitoring

During 1994, thirty-six (36) drinking water, twenty-four (24) surface water, sixteen (16) groundwater, and ten (10) sediment samples were scheduled to be collected. In addition, twenty-two (22) fish samples were to be collected for the Aquatic Monitoring program. Due to loss of electrical power, two (2) grab samples were collected; one drinking water and one surface water sample. Sections 8.5.1 through 8.5.5 list all deviations to the Aquatic Monitoring program.

8.5.1 Drinking Water Sampling

On August 15, drinking water sampler DW-1 was found not operating due to loss of electrical power. This loss of power was due to severe storms that passed through the area on August 13 and 14, 1994. A grab sample was taken and the sampler was reset and put back into service. For this reason the monthly sample for August and the third quarter composite sample are considered less than representative.

8.5.2 Surface Water Sampling

On August 15, surface water sampler SW-3 was found not operating due to loss of electrical power. This loss of power was due to maintenance on the K-10 breaker which provides power to the General Service Water (GSW) pump house. A grab sample was taken and the sampler was reset and put back into service. For this reason the monthly sample for August and the third quarter composite sample are considered less than representative.

8.5.3 Groundwater Sampling

All scheduled groundwater samples were collected in 1994.

8.5.4 Sediment Sampling

All scheduled sediment samples were collected in 1994.

8.5.5 Fish Sampling

All scheduled fish samples were collected in 1994.

9. Program Summary

Table 9-1 Radiological Environmental Monitoring Program Summary

Name of Facility: Enrico Fermi Unit 2 Docket No.: 50-341 Reporting Period: January - December 1994
Location of Facility: 30 miles southeast of Detroit, Michigan (Frenchtown Township)

Sample Type (Units)	Type and Number of Analysis	LLD	Indicator Locations Mean and Range	Location with Highest Annual Mean		Control Locations Mean and Range	Number of Non-routine Results
				Location	Mean and Range		
Gamma (TLD) Background (mR/std qtr)	Gamma Radiation 266	1.0E+0	14.0 (250/252) 9.1 to 22.6	T-25 (Indicator)	18.2 (4/4) 14.4 to 22.6	14.6 (16/16) 11.5 to 17.7	None
Airborne Particulates (pCi/cu.m.)	GB 260	1.0E-2	2.3E-2 (208/208) 8.8E-3 to 4.6E-2	API-5 (Indicator)	2.4E-2 (52/52) 1.3E-2 to 3.9E-2	2.3E-2 (52/52) 1.2E-2 to 4.2E-2	None
	GS 20						
	BE-7	N/A	1.4E-1 (16/16) 1.2E-1 to 1.7E-1	API-3 (Indicator)	1.5E-1 (4/4) 1.3E-1 to 1.7E-1	1.4E-1 (4/4) 1.3E-1 to 1.7E-1	None
	K-40	N/A	1.2E-2 (5/16) 5.8E-3 to 2.5E-2	API-5 (Indicator)	2.5E-2 (1/4) 2.5E-2 to 2.5E-2	8.9E-3 (1/4) 8.9E-3 to 8.9E-3	None
	MN-54	N/A	<MDA			<MDA	None
	CO-58	N/A	<MDA			<MDA	None
	FE-59	N/A	<MDA			<MDA	None
	CO-60	N/A	<MDA			<MDA	None
	ZN-65	N/A	<MDA			<MDA	None
	ZR/NB-95	N/A	<MDA			<MDA	None
	RU-103	N/A	<MDA			<MDA	None
	RU-106	N/A	<MDA			<MDA	None
	CS-134	5.0E-2	<MDA			<MDA	None
	CS-137	6.0E-2	<MDA			<MDA	None
	BA/LA-140	N/A	<MDA			<MDA	None
	CE-141	N/A	<MDA			<MDA	None
	CE-144	N/A	<MDA			<MDA	None
	RA-226	N/A	<MDA			<MDA	None
	TH-228	N/A	<MDA			<MDA	None
	SR-89 20	N/A	<MDA			<MDA	None
	SR-90	N/A	<MDA			<MDA	None
Airborne Iodine (pCi/cu.m.)	I-131 260	7.0E-2	<MDA			<MDA	None

Table 9-1 Radiological Environmental Monitoring Program Summary (cont.)

Name of Facility: Enrico Fermi Unit 2 Docket No.: 50-341 Reporting Period: January - December 1994
Location of Facility: 30 miles southeast of Detroit, Michigan (Frenchtown Township)

Sample Type (Units)	Type and Number of Analysis	LLD	Indicator Locations Mean and Range	Location with Highest Annual Mean		Control Locations Mean and Range	Number of Non-routine Results
				Location	Mean and Range		
Milk (pCi/l)	I-131 40	1.0E+0	<MDA			<MDA	None
	SR-89 40	N/A	<MDA			<MDA	None
	SR-90	N/A	1.7E+0 (22/22) 1.1E+0 to 4.9E+0	M-9 (Indicator) (goat milk)	3.1E+0 (4/4) 1.7E+0 to 4.9E+0	1.3E+0 (18/18) 5.7E-1 to 2.3E+0	None
	GS 40						
	BE-7	N/A	<MDA			<MDA	None
	K-40	N/A	1.5E+3 (22/22) 1.3E+3 to 2.1E+3	M-9 (Indicator) (goat milk)	2.0E+3 (4/4) 1.8E+3 to 2.1E+3	1.3E+3 (18/18) 1.2E+3 to 1.6E+3	None
	MN-54	N/A	<MDA			<MDA	None
	CO-58	N/A	<MDA			<MDA	None
	FE-59	N/A	<MDA			<MDA	None
	CO-60	N/A	<MDA			<MDA	None
	ZN-65	N/A	<MDA			<MDA	None
	ZR/NB-95	N/A	<MDA			<MDA	None
	RU-103	N/A	<MDA			<MDA	None
	RU-106	N/A	<MDA			<MDA	None
	CS-134	1.5E+1	<MDA			<MDA	None
	CS-137	1.8E+1	<MDA			<MDA	None
	BA/LA-140	1.5E+1	<MDA			<MDA	None
	CE-141	N/A	<MDA			<MDA	None
	CE-144	N/A	<MDA			<MDA	None
	RA-226	N/A	<MDA			<MDA	None
	TH-228	N/A	<MDA			<MDA	None
Grass (pCi/kg wet)	I-131 2	6.0E+1	<MDA			<MDA	None
	GS 2						
	BE-7	N/A	5.9E+3 (1/1) 5.9E+3 to 5.9E+3	M-9 (Indicator)	5.9E+3 (1/1) 5.9E+3 to 5.9E+3	4.9E+3 (1/1) 4.9E+3 to 4.9E+3	None
	K-40	N/A	7.3E+3 (1/1) 7.3E+3 to 7.3E+3	M-8 (Control)	7.4E+3 (1/1) 7.4E+3 to 7.4E+3	7.4E+3 (1/1) 7.4E+3 to 7.4E+3	None
	MN-54	N/A	<MDA			<MDA	None

Table 9-1 Radiological Environmental Monitoring Program Summary (cont.)

Name of Facility: Enrico Fermi Unit 2 Docket No.: 50-341 Reporting Period: January - December 1994
Location of Facility: 30 miles southeast of Detroit, Michigan (Frenchtown Township)

Sample Type (Units)	Type and Number of Analysis	LLD	Indicator Locations Mean and Range	Location with Highest Annual Mean		Control Locations Mean and Range	Number of Non-routine Results
				Location	Mean and Range		
Grass (cont.) (pCi/kg wet)	CO-58	N/A	<MDA			<MDA	None
	FE-59	N/A	<MDA			<MDA	None
	CO-60	N/A	<MDA			<MDA	None
	ZN-65	N/A	<MDA			<MDA	None
	ZR/NB-95	N/A	<MDA			<MDA	None
	RU-103	N/A	<MDA			<MDA	None
	RU-106	N/A	<MDA			<MDA	None
	CS-134	6.0E+1	<MDA			<MDA	None
	CS-137	8.0E+1	<MDA			<MDA	None
	BA/LA-140	N/A	<MDA			<MDA	None
	CE-141	N/A	<MDA			<MDA	None
	CE-144	N/A	<MDA			<MDA	None
	RA-226	N/A	<MDA			<MDA	None
	TH-228	N/A	<MDA			<MDA	None
Vegetables (pCi/kg wet)	I-131 13	6.0E+1	<MDA			<MDA	None
	GS 13						None
	BE-7	N/A	2.8E+2 (6/11) 1.3E+2 to 4.4E+2	FP-1 (Indicator)	3.5E+2 (3/6) 1.9E+2 to 4.4E+2	1.7E+2 (1/2) 1.7E+2 to 1.7E+2	None
	K-40	N/A	3.1E+3 (11/11) 8.9E+2 to 5.8E+3	FP-1 (Indicator)	4.0E+3 (6/6) 2.2E+3 to 5.8E+3	2.8E+3 (2/2) 2.7E+3 to 3.0E+3	None
	MN-54	N/A	<MDA			<MDA	None
	CO-58	N/A	<MDA			<MDA	None
	FE-59	N/A	<MDA			<MDA	None
	CO-60	N/A	<MDA			<MDA	None
	ZN-65	N/A	<MDA			<MDA	None
	ZR/NB-95	N/A	<MDA			<MDA	None
	RU-103	N/A	<MDA			<MDA	None
	RU-106	N/A	<MDA			<MDA	None
	CS-134	6.0E+1	<MDA			<MDA	None
	CS-137	8.0E+1	<MDA			<MDA	None

Table 9-1 Radiological Environmental Monitoring Program Summary (cont.)

Name of Facility: Enrico Fermi Unit 2 Docket No.: 50-341 Reporting Period: January - December 1994
Location of Facility: 30 miles southeast of Detroit, Michigan (Frenchtown Township)

Sample Type (Units)	Type and Number of Analysis	LLD	Indicator Locations Mean and Range	Location with Highest Annual Mean		Control Locations Mean and Range	Number of Non-routine Results
				Location	Mean and Range		
Vegetables (cont.) (pCi/kg wet)	BA/LA-140	N/A	<MDA			<MDA	None
	CE-141	N/A	<MDA			<MDA	None
	CE-144	N/A	<MDA			<MDA	None
	RA-226	N/A	<MDA			<MDA	None
	TH-228	N/A	<MDA			<MDA	None
Drinking Water (pCi/l)	GB 37	4.0E+0	3.5E+0 (25/25) 2.2E+0 to 4.9E+0	DW-1 (Indicator)	3.6E+0 (13/13) 2.2E+0 to 4.9E+0	2.8E+0 (12/12) 1.7E+0 to 4.5E+0	None None
	GS 37						
	BE-7	N/A	<MDA			<MDA	None
	K-40	N/A	<MDA			<MDA	None
	CR-51	N/A	<MDA			<MDA	None
	MN-54	1.5E+1	<MDA			<MDA	None
	CO-58	1.5E+1	<MDA			<MDA	None
	FE-59	3.0E+1	<MDA			<MDA	None
	CO-60	1.5E+1	<MDA			<MDA	None
	ZN-65	3.0E+1	<MDA			<MDA	None
	ZR/NB-95	1.5E+1	<MDA			<MDA	None
	RU-103	N/A	<MDA			<MDA	None
	RU-106	N/A	<MDA			<MDA	None
	CS-134	1.5E+1	<MDA			<MDA	None
	CS-137	1.8E+1	<MDA			<MDA	None
	BA/LA-140	1.5E+1	<MDA			<MDA	None
	CE-141	N/A	<MDA			<MDA	None
	CE-144	N/A	<MDA			<MDA	None
	RA-226	N/A	<MDA			<MDA	None
	TH-228	N/A	<MDA			<MDA	None
	H-3 12	2.0E+3	<MDA			<MDA	None
	SR-89 37	N/A	<MDA			<MDA	None
	SR-90	N/A	<MDA			<MDA	None

Table 9-1 Radiological Environmental Monitoring Program Summary (cont.)

Name of Facility: Enrico Fermi Unit 2 Docket No.: 50-341 Reporting Period: January - December 1994
Location of Facility: 30 miles southeast of Detroit, Michigan (Frenchtown Township)

Sample Type (Units)	Type and Number of Analysis	LLD	Indicator Locations Mean and Range	Location with Highest Annual Mean		Control Locations Mean and Range	Number of Non-routine Results
				Location	Mean and Range		
Surface Water (pCi/l)	GS 25						
	BE-7	N/A	<MDA			<MDA	None
	K-40	N/A	<MDA			<MDA	None
	CR-51	N/A	<MDA			<MDA	None
	MN-54	1.5E+1	<MDA			<MDA	None
	CO-58	1.5E+1	<MDA			<MDA	None
	FE-59	3.0E+1	<MDA			<MDA	None
	CO-60	1.5E+1	<MDA			<MDA	None
	ZN-65	3.0E+1	<MDA			<MDA	None
	ZR/NB-95	1.5E+1	<MDA			<MDA	None
	RU-103	N/A	<MDA			<MDA	None
	RU-106	N/A	<MDA			<MDA	None
	CS-134	1.5E+1	<MDA			<MDA	None
	CS-137	1.8E+1	<MDA			<MDA	None
	BA/LA-140	1.5E+1	<MDA			<MDA	None
	CE-141	N/A	<MDA			<MDA	None
	CE-144	N/A	<MDA			<MDA	None
	RA-226	N/A	<MDA			<MDA	None
	TH-228	N/A	<MDA			<MDA	None
	H-3 8	2.0E+3	<MDA			<MDA	None
	SR-89 25	N/A	<MDA			<MDA	None
	SR-90	N/A	<MDA			<MDA	None
Groundwater (pCi/l)	GS 16						
	BE-7	N/A	<MDA			<MDA	None
	K-40	N/A	<MDA	GW-4 (Control)	2.1E+2 (1/4) 2.1E+2 to 2.1E+2	2.1E+2 (1/4) 2.1E+2 to 2.1E+2	None
	CR-51	N/A	<MDA			<MDA	None
	MN-54	1.5E+1	<MDA			<MDA	None
	CO-58	1.5E+1	<MDA			<MDA	None
	FE-59	3.0E+1	<MDA			<MDA	None
	CO-60	1.5E+1	<MDA			<MDA	None

Table 9-1 Radiological Environmental Monitoring Program Summary (cont.)

Name of Facility: Enrico Fermi Unit 2 Docket No.: 50-341 Reporting Period: January - December 1994
Location of Facility: 30 miles southeast of Detroit, Michigan (Frenchtown Township)

Sample Type (Units)	Type and Number of Analysis	LLD	Indicator Locations Mean and Range	Location with Highest Annual Mean		Control Locations Mean and Range	Number of Non-routine Results
				Location	Mean and Range		
Groundwater (cont.) (pCi/l)	ZN-65	3.0E+1	<MDA			<MDA	None
	ZR/NB-95	1.5E+1	<MDA			<MDA	None
	RU-103	N/A	<MDA			<MDA	None
	RU-106	N/A	<MDA			<MDA	None
	CS-134	1.5E+1	<MDA			<MDA	None
	CS-137	1.8E+1	<MDA			<MDA	None
	BA/LA-140	1.5E+1	<MDA			<MDA	None
	CE-141	N/A	<MDA			<MDA	None
	CE-144	N/A	<MDA			<MDA	None
	RA-226	N/A	<MDA			<MDA	None
	TH-228	N/A	<MDA			<MDA	None
	H-3 16	2.0E+3	<MDA			<MDA	None
Sediment (pCi/kg dry)	GS 10						
	BE-7	N/A	<MDA	S-5 (Control)	4.1E+2 (1/2) 4.1E+2 to 4.1E+2	4.1E+2 (1/2) 4.1E+2 to 4.1E+2	None
	K-40	N/A	1.1E+4 (8/8) 8.7E+3 to 1.3E+4	S-3 (Indicator)	1.2E+4 (2/2) 1.1E+4 to 1.3E+4	1.1E+4 (2/2) 1.0E+4 to 1.2E+4	None
	MN-54	N/A	<MDA			<MDA	None
	CO-58	N/A	<MDA			<MDA	None
	FE-59	N/A	<MDA			<MDA	None
	CO-60	N/A	<MDA			<MDA	None
	ZN-65	N/A	<MDA			<MDA	None
	ZR/NB-95	N/A	<MDA			<MDA	None
	RU-103	N/A	<MDA			<MDA	None
	RU-106	N/A	<MDA			<MDA	None
	CS-134	1.5E+2	<MDA			<MDA	None
	CS-137	1.8E+2	<MDA	S-5 (Control)	1.1E+2 (1/2) 1.1E+2 to 1.1E+2	1.1E+2 (1/2) 1.1E+2 to 1.1E+2	None
	BA/LA-140	N/A	<MDA			<MDA	None
	CE-141	N/A	<MDA			<MDA	None
	CE-144	N/A	<MDA			<MDA	None

Table 9-1 Radiological Environmental Monitoring Program Summary (cont.)

Name of Facility: Enrico Fermi Unit 2 Docket No.: 50-341 Reporting Period: January - December 1994
Location of Facility: 30 miles southeast of Detroit, Michigan (Frenchtown Township)

Sample Type (Units)	Type and Number of Analysis	LLD	Indicator Locations Mean and Range	Location with Highest Annual Mean		Control Locations Mean and Range	Number of Non-routine Results
				Location	Mean and Range		
Sediment (cont.) (pCi/kg dry)	RA-226	N/A	9.2E+2 (6/8) 6.8E+2 to 1.2E+3	S-2 (Indicator)	1.1E+3 (2/2) 9.8E+2 to 1.2E+3	1.1E+3 (2/2) 9.7E+2 to 1.2E+3	None
	TH-228	N/A	2.5E+2 (8/8) 1.6E+2 to 3.7E+2	S-5 (Control)	3.9E+2 (2/2) 3.7E+2 to 4.0E+2	3.9E+2 (2/2) 3.7E+2 to 4.0E+2	None
	SR-89 10	N/A	<MDA			<MDA	None
	SR-90	N/A	8.5E+1 (2/8) 7.1E+1 to 9.8E+1	S-2 (Indicator)	8.5E+1 (2/8) 7.1E+1 to 9.8E+1	<MDA	None
Fish (pCi/kg wet)	GS 22						
	BE-7	N/A	<MDA			<MDA	None
	K-40	N/A	3.1E+3 (10/10) 2.6E+3 to 3.9E+3	F-1 (Control)	4.4E+3 (5/5) 2.3E+3 to 9.5E+3	3.9E+3 (12/12) 2.3E+3 to 9.5E+3	None
	MN-54	1.3E+2	<MDA			<MDA	None
	CO-58	1.3E+2	<MDA			<MDA	None
	FE-59	2.6E+2	<MDA			<MDA	None
	CO-60	1.3E+2	<MDA			<MDA	None
	ZN-65	2.6E+2	<MDA			<MDA	None
	ZR/NB-95	N/A	<MDA			<MDA	None
	RU-103	N/A	<MDA			<MDA	None
	RU-106	N/A	<MDA			<MDA	None
	CS-134	1.3E+2	<MDA			<MDA	None
	CS-137	1.5E+2	3.8E+1 (2/10) 2.0E+1 to 5.5E+1	F-3 (Control)	4.3E+1 (1/7) 4.3E+1 to 4.3E+1	3.3E+1 (3/12) 2.4E+1 to 4.3E+1	None
	BA/LA-140	N/A	<MDA			<MDA	None
	CE-141	N/A	<MDA			<MDA	None
	CE-144	N/A	<MDA			<MDA	None
	RA-226	N/A	<MDA			<MDA	None
	TH-228	N/A	<MDA			<MDA	None
	SR-89 22	N/A	<MDA			<MDA	None
	SR-90	N/A	1.7E+1 (5/10) 6.4E+0 to 4.5E+1	F-2 (Indicator)	1.7E+1 (5/10) 6.4E+0 to 4.5E+1	2.1E+1 (4/12) 7.3E+0 to 5.3E+1	None

Table 9-1 Radiological Environmental Monitoring Program Summary (cont.)

Name of Facility: Enrico Fermi Unit 2 Docket No.: 50-341 Reporting Period: January - December 1994
Location of Facility: 30 miles southeast of Detroit, Michigan (Frenchtown Township)

GB = gross beta; GS = gamma scan
LLD = Fermi 2 Technical Specifications LLD: nominal lower limit of detection based on 4.66 sigma error for background sample.
<MDA = Less than the lab's minimum detectable activity which is less than the LLD.
Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parentheses (F).
Locations are specified by Fermi 2 code and are described in section 8.0 Sampling Locations.
Non-routine results are those which are reportable according to Fermi 2 Technical Specifications.

Note: Other nuclides were considered in analysis results, but only those identifiable were reported in addition to Tech Spec listed nuclides.

10. Sample Locations

10.1 Direct Radiation Sample Locations

Table 10-1

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx)	Description	Collection Frequency	Type
T1	NE/38°	1.3 mi	Estral Beach, Pole on Lakeshore 23 Poles S of Lakeview (Special Area)	Q	I
T2	NNE/22°	1.2 mi	East of termination of Brancheau St. on post (Special Area)	Q	I
T3	N/9°	1.1 mi	Pole, NW corner of Swan Boat Club fence (Special Area)	Q	I
T4	NNW/337°	0.6 mi	Site boundary and Toll Rd. on Site fence by API #2	Q	I
T5	NW/313°	0.6 mi	Site boundary and Toll Rd. on Site fence by API #3	Q	I
T6	WNW/293°	0.6 mi	Pole, NE corner of Bridge ovet Toll Rd.	Q	I
T7	W/270°	14.0 mi	Pole, at Michigan Gas substation on N. Custer Rd., 0.66 miles west of Doty Rd.	Q	C
T8	NW/305°	1.9 mi	Pole on Post Rd. near NE corner of Dixie Hwy and Post Rd.	Q	I
T9	NNW/334°	1.5 mi	Pole, NW corner of Trombley and Swan View Rd.	Q	I
T10	N/6°	2.1 mi	Pole, S side of Massarant-2 poles W of Chinavare.	Q	I

I = Indicator *C = Control* *Q = Quarterly*

Direct Radiation Sample Locations (Table 10-1 continued)

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx)	Description	Collection Frequency	Type
T11	NNE/23°	6.2 mi	Pole, NE corner of Milliman and Jefferson	Q	I
T12	NNE/29°	6.3 mi	Pointe Mouille Game Area Field Office, Pole near tree, N area of parking lot	Q	I
T13	N/356°	4.1 mi	Labo and Dixie Hwy Pole on SW corner with light	Q	I
T14	NNW/337°	4.4 mi	Labo and Brandon Pole on SE corner near RR	Q	I
T15	NW/315°	3.9 mi	Pole, behind Newport Post Office.	Q	I
T16	WNW/283°	4.9 mi	Pole, SE corner of War and Post Rds.	Q	I
T17	W/271°	4.9 mi	Pole, NE corner of Nadeau and Laprad near mobile home park.	Q	I
T18	WSW/247°	4.8 mi	Pole, NE corner of Mentel and Hurd Rds.	Q	I
T19	SW/236°	5.2 mi	1st pole E of Fermi siren on Waterworks Rd NE corner of intersection - Sterling State Park Rd Entrance Drive/Waterworks (in Sterling State Park)	Q	I
T20	WSW/257°	2.7 mi	Pole, S side of Williams Rd, 8 poles W of Dixie Hwy. (Special Area)	Q	I
T21	WSW/239°	2.7 mi	Pole, N side of Pearl at Parkview Woodland Beach (Special Area)	Q	I

I = Indicator *C = Control* *Q = Quarterly*

Direct Radiation Sample Locations (Table 10-1 continued)

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx)	Description	Collection Frequency	Type
T22	S/172°	1.2 mi	Pole, N side of Pointe Aux Peaux 2 poles W of Long - Site Boundry	Q	I
T23	SSW/195°	1.1 mi	Pole, S side of Pointe Aux Peaux 1 pole W of Huron next to Vent Pipe - Site Boundry	Q	I
T24	SW/225°	1.2 mi	Fermi Gate along Pointe Aux Peaux Rd. on fence wire W of gate Site Boundry	Q	I
T25	WSW/251°	1.5 mi	Pole, Toll Rd.- 13 poles S of Fermi Drive	Q	I
T26	WSW/259°	1.1 mi	Pole, Toll Rd. - 6 poles S of Fermi Drive	Q	I
T27	SW/225°	6.8 mi	Pole, NE corner of McMillan and East Front St. (Special Area)	Q	I
T28	SW/229°	10.7 mi	Pole, SE corner of Mortar Creek and I aPlaisance.	Q	C
T29	WSW/237°	10.3 mi	Pole, E side of S Dixie, 1 pole S of Albain.	Q	C
T30	WSW/247°	7.8 mi	Pole, St. Mary's Park corner of Elm and Monroe St, S side of parking lot next to river (Special Area)	Q	I
T31	WSW/255°	9.6 mi	1st pole W of entrance drive Milton "Pat" Munson Recreational Reserve on North Custer Rd.	Q	C

I = Indicator *C = Control* *Q = Quarterly*

Direct Rediation Sample Locations (Table 10-1 continued)

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx)	Description	Collection Frequency	Type
T32	WNW/295°	10.3 mi	Pole, corner of Stony Creek and Finzel Rds.	Q	I
T33	NW/317°	9.2 mi	Pole, W side of Grafton Rd. 1 pole N of Ash and Grafton intersection.	Q	I
T34	NNW/338°	9.7 mi	Pole, W side of Port Creek, 1 pole S of Will-Carleton Rd.	Q	I
T35	N/359°	6.9 mi	Pole, S Side of S Huron River Dr. across from Race St. (Special Area)	Q	I
T36	N/358°	9.1 mi	Pole, NE corner of Gibraltar and Cahill Rds.	Q	I
T37	NNE/21°	9.8 mi	Pole, S corner of Adams and Gibraltar across from Humbug Marina.	Q	I
T38	WNW/294°	1.7 mi	Residence - 6594 N. Dixie Hwy	Q	I
T39	S/176°	0.3 mi	SE corner of Protected Area Fence (PAF).	Q	I
T40	S/170°	0.3 mi	Midway along OBA - (PAF)	Q	I
T41	SSE/161°	0.2 mi	Midway between OBA and Shield Wall on PAF.	Q	I
T42	SSE/149°	0.2 mi	Midway along Shield Wall on PAF.	Q	I
T43	SE/131°	0.1 mi	Midway between Shield Wall and Aux Boilers on PAF.	Q	I
T44	ESE/109°	0.1 mi	Opposite OSSF door on PAF.	Q	I

I = Indicator *C = Control* *Q = Quarterly*

Direct Radiation Sample Locations (Table 10-1 continued)

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx)	Description	Collection Frequency	Type
T45	E/86°	0.1 mi	NE Corner of PAF.	Q	I
T46	ENE/67°	0.2 mi	NE side of barge slip on fence.	Q	I
T47	S/185°	0.1 mi	South of Turbine Bldg. rollup door on PAF.	Q	I
T48	SW/235°	0.2 mi	30 ft. from corner of AAP on PAF.	Q	I
T49	WSW/251°	1.1 mi	Corner of Site Boundary fence north of NOC along Critical Path Rd.	Q	I
T50	W/270°	0.9 mi	Site Boundary fence near main gate by the south Bullit Street sign.	Q	I
T51	N/3°	0.4 mi	Site Boundary fence north of north Cooling Tower.	Q	I
T52	NNE/20°	0.4 mi	Site Boundary fence at the corner of Arson and Tower.	Q	I
T53	NE/55°	0.2 mi	Site Boundary fence east of South Cooling Tower.	Q	I
T54	S/189°	0.3 mi	Pole next to Fermi 2 Visitors Center.	Q	I
T55	WSW/251°	3.3 mi	Pole, north side of Nadeau Rd across from Sodt Elementary School Marquee	Q	I
T56	WSW/255°	4.9 mi	Pole, entrance to Jefferson Middle School on Stony CreekRd.	Q	I

I = Indicator *C = Control* *Q = Quarterly*

Direct Radiation Sample Locations (Table 10-1 continued)

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx)	Description	Collection Frequency	Type
T57	W/260°	2.7 mi	Pole, north side of Williams Rd across from Jefferson High School entrance.	Q	I
T58	WSW/249°	4.9 mi	Pole west of Hurd Elementary School Marquee	Q	I
T59	NW/325°	2.6 mi	Pole north of St. Charles Church entrance on Dixie Hwy.	Q	I
T60	NNW/341°	2.5 mi	1st pole north of North Elementary School entrance on Dixie Hwy.	Q	I
T61	W/268°	10.1 mi	Pole, SW corner of Stewart and Raisinville Rds.	Q	I
T62	SW/232°	9.7 mi	Pole, NE corner of Albain and Hull Rds.	Q	I
T63	WSW/245°	9.6 mi	Pole, NE corner of Dunbar and Telegraph Rds.	Q	I
T64	WNW/286°	0.2 mi	West of switchgear yard on PAF	Q	I
T65	NW/322°	0.1 mi	PAF switchgear yard area NW of RHR complex.	Q	I
T66	NE/50°	0.1 mi	Behind Bldg 42 on PAF	Q	I
T67	NNW/338°	0.2 mi	Site Boundary fence West of South Cooling Tower.	Q	I

I = Indicator *C = Control* *Q = Quarterly*

10.2 Air Particulate and Air Iodine Sample Locations

Table 10-2

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx)	Description	Collection Frequency	Type
API-1	NE/39°	1.4 mi	Estral Beach Pole on Lakeshore, 18 Poles S of Lakeview (Nearest Community with highest X/Q)	W	I
API-2	NNW/337°	0.6 mi	Site Boundary and Toll Road, on Site Fence by T-4	W	I
API-3	NW/313°	0.6 mi	Site Boundary and Toll Road, on Site Fence by T-5	W	I
API-4	W/270°	14.0 mi	Pole, at Michigan Gas substation on N. Custer Rd., 0.66 miles west of Doty Rd.	W	C
API-5	S/191°	1.2 mi	One pole south of Pointe Aux Peaux Rd on Erie St.	W	I

I = Indicator *C = Control* *W = Weekly*

10.3 Milk Sample Locations

Table 10-3

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx)	Description	Collection Frequency	Type
M-2	NW/319°	5.4 mi	Reaume Farm - 2705 E Labo	M-SM	I
M-8	WNW/289°	9.9 mi	Calder Dairy - 9334 Finzel Rd	M-SM	C
M-9	N/6°	4.2 mi	Bourasso Farm - 6658 Labo Rd.	M-SM	I

I = Indicator *C = Control* *M = Monthly* *SM = Semimonthly*

10.4 Garden Sample Locations

Table 10-4

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx)	Description	Collection Frequency	Type
FP-1	NNE/21°	3.8 mi	9501 Turnpike Highway	M	I
FP-3	NNE/12°	1.1 mi	6441 Brancheau	M	I
FP-6	WNW/290°	14.6 mi	8200 Geirman	M	C
FP-7	WNW/302°	0.7 mi	6200 Langton	M	I

I = Indicator *C = Control* *M = Monthly (when available)*

10.5 Drinking Water Sample Locations

Table 10-5

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx)	Description	Collection Frequency	Type
DW-1	S/174°	1.1 mi	Monroe Water Station N Side of Pointe Aux Peaux 1/2 Block W of Long Rd	M	I
DW-2	N/8°	18.6 mi	Detroit Water Station 14700 Moran Rd, Allen Park	M	C
DW-3	SSE/160°	0.3 mi	Fermi 1 Raw Lake Water Intake Structure	M	I

I = Indicator *C = Control* *M = Monthly*

10.6 Surface Water Sample Locations

Table 10-6

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx)	Description	Collection Frequency	Type
SW-2	NNE/20°	11.7 mi	DECo's Trenton Channel Power Plant Intake Structure (Screenhouse #1)	M	C
SW-3	SSE/160°	0.2 mi	DECO's Fermi 2 General Service Water Intake Structure	M	I

I = Indicator *C = Control* *M = Monthly*

10.7 Groundwater Sample Locations

Table 10-7

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx)	Description	Collection Frequency	Type
GW-1	S/175°	0.4 mi	Approx 100 ft W of Lake Erie, EF-1 Parking lot near gas fired peakers	Q	I
GW-2	SSW/208°	1.0 mi	4 ft S of Pointe Aux Peaux (PAP) Rd Fence 427 ft W of where PAP crosses over Stoney Point's Western Dike	Q	I
GW-3	SW/226°	1.0 mi	143 ft W of PAP Rd Gate, 62 ft N of PAP Rd Fence	Q	I
GW-4	WNW/299°	0.6 mi	42 ft S of Langton Rd, 8 ft E of Toll Rd Fence	Q	C

I = Indicator *C = Control* *Q = Quarterly*

10.8 Sediment Sample Locations

Table 10-8

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx)	Description	Collection Frequency	Type
S-1	SSE/165°	0.9 mi	Pointe Aux Peaux, Shoreline to 500 ft offshore sighting directly to Land Base Water Tower	SA	I
S-2	E/81°	0.2 mi	Fermi 2 Discharge, approx 200 ft offshore	SA	I
S-3	NE/39°	1.1 mi	Estral Beach, approx 200 ft offshore, off North shoreline where Swan Creek and Lake Erie meet	SA	I
S-4	WSW/241°	3.0 mi	Indian Trails Community Beach	SA	I
S-5	NNE/20°	11.7 mi	DECo's Trenton Channel Power Plant intake area.	SA	C

I = Indicator *C = Control* *SA = Semiannually*

10.9 Fish Sample Locations

Table 10-9

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx)	Description	Collection Frequency	Type
F-1	NNE/31°	9.5 mi	Celeron Island	SA	C
F-2	E/86°	0.4 mi	Fermi 2 Discharge (approx 1200 ft offshore)	SA	I
F-3	WSW/238°	4.8 mi	Brest Bay Marina Area	SA	C

I = Indicator *C = Control* *SA = Semiannually*

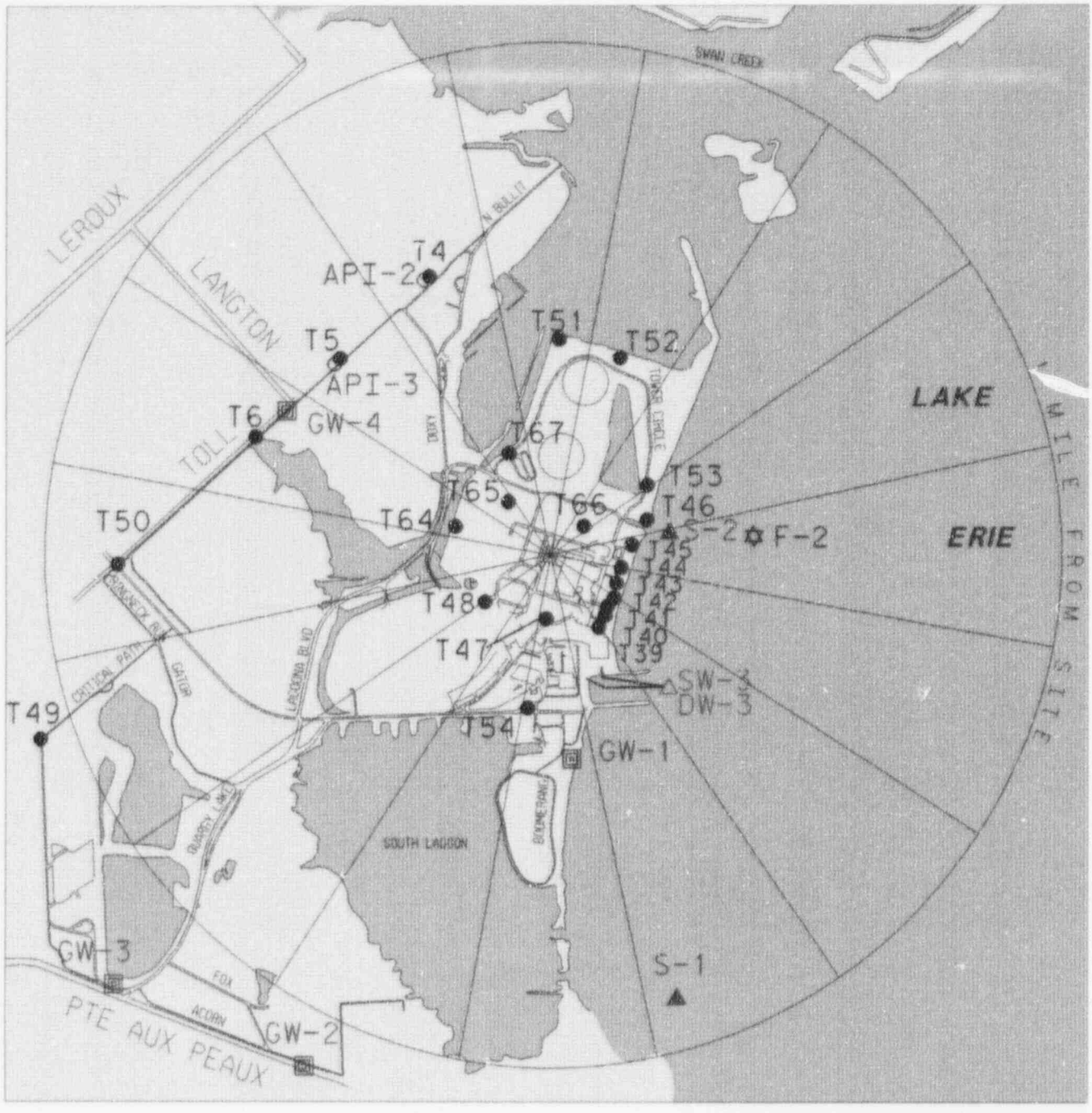

FIGURE 10-1
SAMPLING LOCATIONS
BY STATION NUMBER
WITHIN 1 MILE

LEGEND

- ● T- DIRECT RADIATION
- ○ API- AIR PARTICULATES/AIR IODINE
- ▲ S- SEDIMENTS
- △ DW/SW- DRINKING WATER/SURFACE WATER
- ▣ GW- GROUND WATER
- □ M- MILK
- ⊠ FP- FOOD PRODUCTS
- ✡ F- FISH

N

0 0.5

SCALE IN MILES

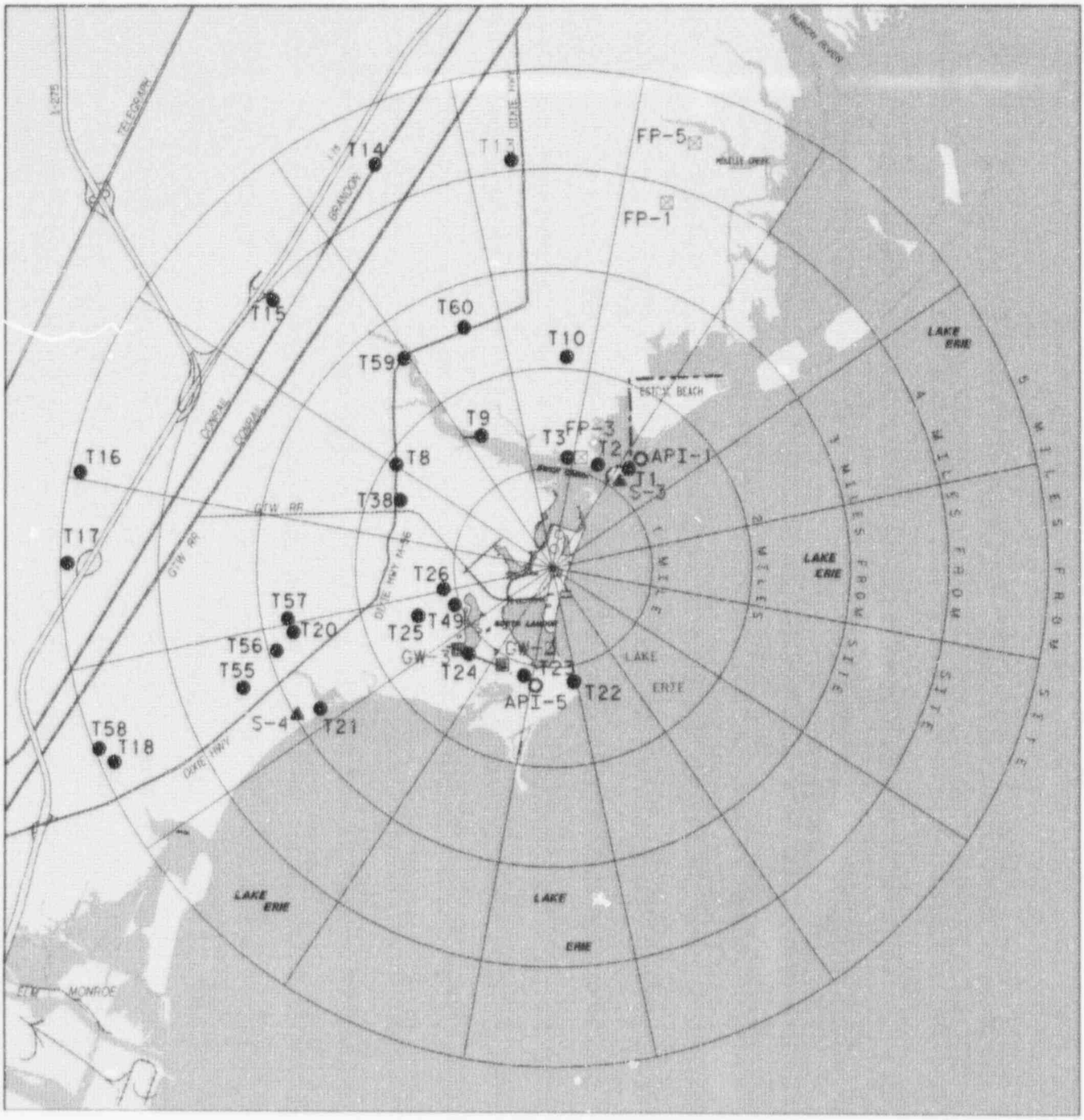

FIGURE 10-2
SAMPLING LOCATIONS
BY STATION NUMBER
(1 To 5 MILES)

LEGEND

- T- DIRECT RADIATION
- API- AIR PARTICULATES/AIR IODINE
- S- SEDIMENTS
- DW/SW- DRINKING WATER/SURFACE WATER
- GW- GROUND WATER
- M- MILK
- FP- FOOD PRODUCTS
- F- FISH

N

0 1
SCALE IN MILES

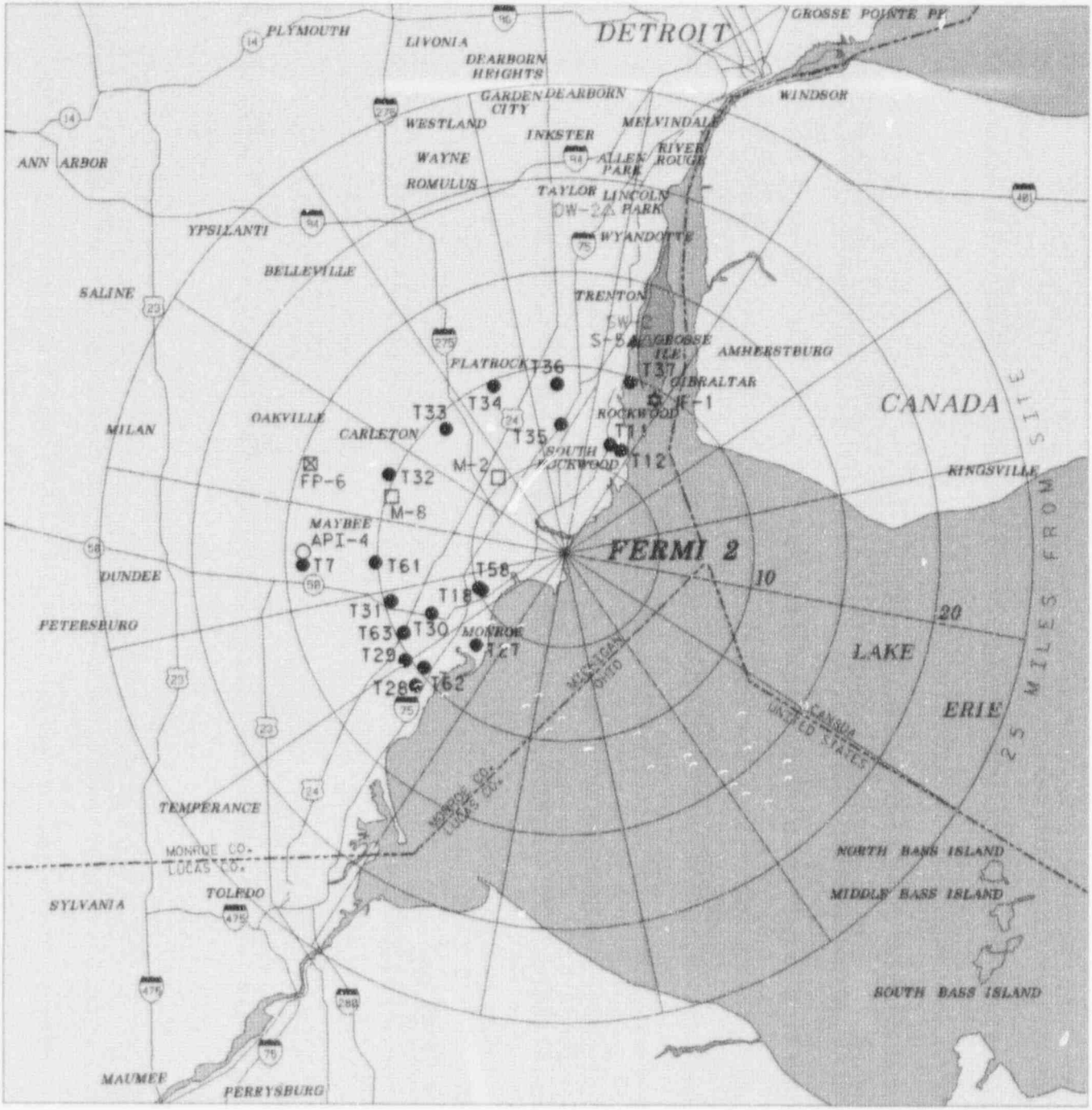

FIGURE 10-3
SAMPLING LOCATIONS
BY STATION NUMBER
(GREATER THAN 5 MILES)

LEGEND

- ● T- DIRECT RADIATION
- ○ API- AIR PARTICULATES OR AIR IODINE
- ▲ S- SEDIMENTS
- △ DW/SW- DRINKING WATER/SURFACE WATER
- ▨ GW- GROUND WATER
- ▨ M- MILK
- ▨ FP- FOOD PRODUCTS
- ✡ F- FISH

N

5 0 5 10

SCALE IN MILES

11. Data Tables

FERMI 2
TLD ANALYSIS
(mR/Std Qtr)

STATION NUMBER	FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
T-1	13.2 +/- 0.2	15.9 +/- 0.6	11.5 +/- 0.5	13.5 +/- 0.5
T-2	15.8 +/- 0.4	19.0 +/- 0.5	13.8 +/- 0.4	15.6 +/- 0.8
T-3	11.6 +/- 0.4	15.7 +/- 0.5	10.3 +/- 0.3	11.7 +/- 0.3
T-4	14.0 +/- 0.3	17.1 +/- 0.8	12.7 +/- 0.5	15.3 +/- 0.6
T-5	14.3 +/- 0.9	17.3 +/- 0.8	12.7 +/- 0.3	14.4 +/- 0.1
T-6	13.2 +/- 0.6	16.0 +/- 0.5	11.9 +/- 0.5	13.6 +/- 0.2
T-7 (a)	15.4 +/- 0.6	17.7 +/- 0.5	12.0 +/- 0.6	14.2 +/- 0.5
T-8	14.7 +/- 0.2	17.0 +/- 0.6	13.2 +/- 0.8	14.2 +/- 0.2
T-9	13.8 +/- 0.2	16.9 +/- 0.8	12.9 +/- 0.6	14.7 +/- 1.2
T-10	15.4 +/- 0.3	18.5 +/- 0.7	13.6 +/- 0.3	16.1 +/- 0.7
T-11	14.0 +/- 0.5	15.8 +/- 0.6	11.6 +/- 0.0	13.5 +/- 0.1
T-12	12.6 +/- 0.4	15.4 +/- 0.6	11.0 +/- 0.2	12.8 +/- 1.1
T-13	14.3 +/- 0.4	18.5 +/- 0.8	13.7 +/- 0.4	15.7 +/- 0.4
T-14	15.4 +/- 0.8	17.5 +/- 0.8	13.6 +/- 0.5	15.1 +/- 0.3
T-15	14.0 +/- 0.5	17.7 +/- 1.0	12.8 +/- 0.5	14.0 +/- 0.3
T-16	15.4 +/- 0.6	17.9 +/- 1.0	13.5 +/- 0.4	15.3 +/- 0.3
T-17	12.9 +/- 0.2	15.7 +/- 0.9	11.7 +/- 0.4	13.9 +/- 0.6
T-18	13.7 +/- 0.4	17.8 +/- 0.3	12.4 +/- 0.3	13.7 +/- 0.4
T-19	15.5 +/- 0.5	18.5 +/- 0.9	14.0 +/- 0.6	16.6 +/- 0.2
T-20 (b)	15.0 +/- 0.	18.2 +/- 1.3	15.2 +/- 0.5	17.1 +/- 0.4
T-21	13.2 +/- 0.3	16.7 +/- 0.9	11.9 +/- 0.2	13.5 +/- 0.2
T-22	14.1 +/- 0.4	15.6 +/- 0.7	12.2 +/- 0.3	15.1 +/- 0.4
T-23	15.0 +/- 0.5	16.4 +/- 0.7	12.5 +/- 0.6	14.9 +/- 0.3
T-24	13.2 +/- 0.4	15.1 +/- 0.6	11.5 +/- 0.5	14.1 +/- 0.6
T-25	16.6 +/- 0.5	22.6 +/- 1.6	14.4 +/- 0.5	19.1 +/- 0.7
T-26	15.9 +/- 0.3	19.6 +/- 0.5	14.8 +/- 0.6	17.5 +/- 0.4
T-27	12.0 +/- 0.9	16.0 +/- 1.7	10.6 +/- 0.3	13.5 +/- 0.9
T-28	13.6 +/- 0.4	16.1 +/- 0.4	11.5 +/- 0.2	15.3 +/- 0.5
T-29	14.3 +/- 0.2	16.8 +/- 0.4	12.5 +/- 0.3	16.3 +/- 0.1
T-30 (c)	12.5 +/- 0.2	N/D +/- N/D	10.3 +/- 0.3	13.3 +/- 0.3
T-31	14.4 +/- 0.3	17.0 +/- 0.7	12.5 +/- 0.4	14.0 +/- 0.2
T-32 (c)	14.2 +/- 0.7	N/D +/- N/D	12.5 +/- 0.4	14.0 +/- 0.1
T-33	13.1 +/- 0.3	15.8 +/- 0.4	11.9 +/- 0.3	13.0 +/- 0.2
T-34	13.0 +/- 0.3	15.1 +/- 0.3	11.0 +/- 0.5	12.2 +/- 0.4
T-35	12.9 +/- 0.5	15.7 +/- 0.8	11.3 +/- 0.3	12.6 +/- 0.2
T-36	14.3 +/- 0.2	17.6 +/- 1.5	12.9 +/- 0.4	13.7 +/- 0.4
T-37	14.0 +/- 0.6	16.0 +/- 0.5	12.0 +/- 0.3	13.4 +/- 0.2

FERMI 2
TLD ANALYSIS (cont.)
(mR/Std Qtr)

STATION NUMBER	FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
T-38	14.7 +/- 0.3	17.5 +/- 0.6	13.3 +/- 0.2	14.2 +/- 0.3
T-39	11.2 +/- 0.5	13.4 +/- 1.3	9.3 +/- 0.2	10.4 +/- 0.2
T-40	12.1 +/- 0.2	14.0 +/- 0.5	10.1 +/- 0.1	10.5 +/- 0.3
T-41	12.5 +/- 0.3	15.3 +/- 0.4	10.6 +/- 0.3	10.9 +/- 0.4
T-42	15.8 +/- 0.2	20.0 +/- 0.4	13.4 +/- 0.3	12.8 +/- 0.3
T-43	13.3 +/- 0.2	18.0 +/- 0.5	9.7 +/- 0.3	11.0 +/- 0.2
T-44	11.2 +/- 0.3	14.1 +/- 1.0	9.3 +/- 0.2	9.6 +/- 0.3
T-45	11.0 +/- 0.1	13.4 +/- 0.7	9.1 +/- 0.4	9.8 +/- 0.1
T-46	12.3 +/- 0.3	12.7 +/- 0.6	10.2 +/- 0.9	11.0 +/- 0.1
T-47	12.6 +/- 0.1	14.5 +/- 0.5	10.4 +/- 0.4	11.3 +/- 0.5
T-48	12.2 +/- 0.2	13.2 +/- 0.3	10.3 +/- 0.3	10.9 +/- 0.2
T-49 (d)	17.7 +/- 0.5	21.7 +/- 1.4	15.6 +/- 0.5	17.5 +/- 0.3
T-50	14.7 +/- 0.2	20.7 +/- 1.1	13.6 +/- 0.2	13.9 +/- 0.6
T-51	11.8 +/- 0.2	13.9 +/- 0.3	10.3 +/- 0.4	11.5 +/- 0.2
T-52	12.6 +/- 0.9	16.2 +/- 0.8	11.1 +/- 0.5	12.3 +/- 0.3
T-53	12.9 +/- 0.4	16.2 +/- 0.4	12.0 +/- 0.9	12.4 +/- 0.2
T-54	11.8 +/- 0.1	14.6 +/- 0.4	10.9 +/- 0.3	11.8 +/- 0.1
T-55	15.0 +/- 0.3	20.7 +/- 0.8	13.8 +/- 0.3	15.4 +/- 0.2
T-56	14.1 +/- 0.2	17.5 +/- 0.6	13.3 +/- 0.1	13.8 +/- 0.2
T-57	16.0 +/- 0.4	19.4 +/- 0.9	15.4 +/- 0.8	16.6 +/- 0.3
T-58	13.9 +/- 0.2	16.8 +/- 0.5	12.6 +/- 0.6	13.6 +/- 0.1
T-59	12.9 +/- 0.2	17.4 +/- 1.1	11.8 +/- 0.3	13.5 +/- 0.2
T-60	14.9 +/- 0.5	16.8 +/- 0.6	13.8 +/- 0.4	14.5 +/- 0.3
T-61	14.5 +/- 0.4	17.7 +/- 0.7	13.7 +/- 1.9	14.8 +/- 0.2
T-62	14.8 +/- 0.4	18.7 +/- 1.1	14.9 +/- 0.7	15.5 +/- 0.3
T-63	13.5 +/- 0.4	15.5 +/- 0.5	12.5 +/- 0.4	13.7 +/- 0.4
T-64	11.6 +/- 0.9	14.3 +/- 0.7	10.0 +/- 0.8	12.1 +/- 0.3
T-65	13.1 +/- 0.6	14.5 +/- 0.6	10.2 +/- 0.7	12.1 +/- 0.3
T-66	13.0 +/- 0.1	16.0 +/- 0.9	11.7 +/- 1.4	12.8 +/- 0.2
T-67	14.3 +/- 0.1	15.3 +/- 0.5	11.8 +/- 0.6	13.4 +/- 0.4

a = TLD location moved (see section 8.2.1)
b = TLD found missing at mid-quarter inspection (see section 8.2.1)
c = TLDs found missing at end of quarter (see section 8.2.1)
d = TLD 49E was read for second quarter (see section 8.2.1)

FERMI 2
AIR PARTICULATE ANALYSIS

FIRST QUARTER
Gross Beta (pCi/cubic meter)

Date Collected	API-1 (a)	API-2	API-3	API-4	API-5
01/04 (a)	4.6E-2 +/- 7.0E-3	2.5E-2 +/- 3.0E-3	3.0E-2 +/- 3.0E-3	2.3E-2 +/- 3.0E-3	2.8E-2 +/- 3.0E-3
01/11	2.5E-2 +/- 3.0E-3	2.2E-2 +/- 3.0E-3	2.5E-2 +/- 3.0E-3	2.4E-2 +/- 3.0E-3	2.4E-2 +/- 3.0E-3
01/18	3.3E-2 +/- 4.0E-3	3.0E-2 +/- 4.0E-3	2.8E-2 +/- 4.0E-3	3.4E-2 +/- 4.0E-3	3.8E-2 +/- 4.0E-3
01/25	3.4E-2 +/- 4.0E-3	3.9E-2 +/- 4.0E-3	4.2E-2 +/- 4.0E-3	4.2E-2 +/- 4.0E-3	3.8E-2 +/- 4.0E-3
02/01	2.0E-2 +/- 3.0E-3	1.9E-2 +/- 3.0E-3	2.1E-2 +/- 3.0E-3	2.5E-2 +/- 3.0E-3	2.2E-2 +/- 3.0E-3
02/08	2.4E-2 +/- 3.0E-3	3.0E-2 +/- 4.0E-3	3.0E-2 +/- 4.0E-3	3.2E-2 +/- 4.0E-3	2.6E-2 +/- 3.0E-3
02/15	2.6E-2 +/- 3.0E-3	2.6E-2 +/- 3.0E-3	2.6E-2 +/- 3.0E-3	2.6E-2 +/- 3.0E-3	2.7E-2 +/- 3.0E-3
02/22	2.4E-2 +/- 3.0E-3	2.7E-2 +/- 3.0E-3	2.3E-2 +/- 3.0E-3	2.3E-2 +/- 3.0E-3	2.4E-2 +/- 3.0E-3
03/01	2.0E-2 +/- 3.0E-3	2.1E-2 +/- 3.0E-3	2.0E-2 +/- 3.0E-3	2.2E-2 +/- 3.0E-3	2.3E-2 +/- 3.0E-3
03/08	2.3E-2 +/- 3.0E-3	2.3E-2 +/- 3.0E-3	2.5E-2 +/- 3.0E-3	2.6E-2 +/- 3.0E-3	3.0E-2 +/- 4.0E-3
03/15	2.3E-2 +/- 3.0E-3	2.2E-2 +/- 3.0E-3	2.3E-2 +/- 3.0E-3	2.4E-2 +/- 3.0E-3	2.6E-2 +/- 3.0E-3
03/22	1.6E-2 +/- 3.0E-3	1.8E-2 +/- 3.0E-3	1.8E-2 +/- 3.0E-3	1.5E-2 +/- 3.0E-3	1.7E-2 +/- 3.0E-3
03/29	1.3E-2 +/- 3.0E-3	2.1E-2 +/- 4.0E-3	2.4E-2 +/- 4.0E-3	1.4E-2 +/- 3.0E-3	1.4E-2 +/- 3.0E-3

SECOND QUARTER
Gross Beta (pCi/cubic meter)

Date Collected	API-1	API-2	API-3 (a)	API-4 (b)	API-5
04/05	1.8E-2 +/- 3.0E-3	1.9E-2 +/- 3.0E-3	2.2E-2 +/- 3.0E-3	1.4E-2 +/- 3.0E-3	1.9E-2 +/- 3.0E-3
04/12	2.0E-2 +/- 3.0E-3	1.5E-2 +/- 3.0E-3	1.9E-2 +/- 3.0E-3	1.7E-2 +/- 3.0E-3	1.9E-2 +/- 3.0E-3
04/19	1.4E-2 +/- 3.0E-3	1.3E-2 +/- 3.0E-3	1.4E-2 +/- 3.0E-3	1.5E-2 +/- 3.0E-3	1.4E-2 +/- 3.0E-3
04/26	2.0E-2 +/- 3.0E-3	2.3E-2 +/- 3.0E-3	2.0E-2 +/- 3.0E-3	1.8E-2 +/- 3.0E-3	1.9E-2 +/- 3.0E-3
05/03 (a)	8.8E-3 +/- 2.7E-3	9.7E-3 +/- 2.8E-3	1.2E-2 +/- 4.0E-3	1.2E-2 +/- 3.0E-3	1.3E-2 +/- 3.0E-3
05/10	1.4E-2 +/- 3.0E-3	1.8E-2 +/- 3.0E-3	1.4E-2 +/- 3.0E-3	1.5E-2 +/- 3.0E-3	1.5E-2 +/- 3.0E-3
05/17	1.2E-2 +/- 2.0E-3	1.4E-2 +/- 2.0E-3	1.3E-2 +/- 2.0E-3	1.3E-2 +/- 2.0E-3	1.3E-2 +/- 2.0E-3
05/24	1.3E-2 +/- 3.0E-3	1.4E-2 +/- 3.0E-3	1.4E-2 +/- 3.0E-3	1.5E-2 +/- 3.0E-3	1.7E-2 +/- 3.0E-3
05/31	1.6E-2 +/- 3.0E-3	1.8E-2 +/- 3.0E-3	1.6E-2 +/- 3.0E-3	1.8E-2 +/- 3.0E-3	1.9E-2 +/- 3.0E-3
06/07	1.5E-2 +/- 3.0E-3	1.6E-2 +/- 3.0E-3	1.4E-2 +/- 3.0E-3	1.7E-2 +/- 3.0E-3	1.4E-2 +/- 3.0E-3
06/14	1.7E-2 +/- 3.0E-3	1.8E-2 +/- 3.0E-3	1.7E-2 +/- 3.0E-3	1.7E-2 +/- 3.0E-3	1.7E-2 +/- 3.0E-3
06/21	2.5E-2 +/- 3.0E-3	2.5E-2 +/- 3.0E-3	2.3E-2 +/- 3.0E-3	2.6E-2 +/- 3.0E-3	2.7E-2 +/- 3.0E-3
06/28 (b)	1.9E-2 +/- 3.0E-3	1.7E-2 +/- 3.0E-3	1.7E-2 +/- 3.0E-3	1.8E-2 +/- 3.0E-3	1.9E-2 +/- 3.0E-3

a = sample less than representative (see section 8.3.1)
b = sampler moved to new location (see section 8.3.1)

FERMI 2
AIR PARTICULATE ANALYSIS

THIRD QUARTER
Gross Beta (pCi/cubic meter)

Date Collected	API-1	API-2	API-3	API-4	API-5
07/05	1.7E-2 +/- 2.0E-3	1.8E-2 +/- 3.0E-3	1.6E-2 +/- 2.0E-3	1.6E-2 +/- 2.0E-3	1.9E-2 +/- 3.0E-3
07/12	1.3E-2 +/- 2.0E-3	1.5E-2 +/- 3.0E-3	1.4E-2 +/- 3.0E-3	1.5E-2 +/- 2.0E-3	1.5E-2 +/- 3.0E-3
07/19	2.0E-2 +/- 3.0E-3	1.7E-2 +/- 3.0E-3	1.8E-2 +/- 3.0E-3	2.1E-2 +/- 3.0E-3	2.0E-2 +/- 3.0E-3
07/26	2.1E-2 +/- 3.0E-3	2.2E-2 +/- 3.0E-3	2.1E-2 +/- 3.0E-3	1.7E-2 +/- 2.0E-3	2.3E-2 +/- 3.0E-3
08/02	2.2E-2 +/- 3.0E-3	2.3E-2 +/- 3.0E-3	1.9E-2 +/- 3.0E-3	2.1E-2 +/- 3.0E-3	2.2E-2 +/- 3.0E-3
08/09	1.7E-2 +/- 3.0E-3	1.9E-2 +/- 3.0E-3	1.6E-2 +/- 3.0E-3	1.6E-2 +/- 3.0E-3	1.6E-2 +/- 3.0E-3
08/16	1.7E-2 +/- 3.0E-3	1.9E-2 +/- 3.0E-3	2.1E-2 +/- 3.0E-3	1.8E-2 +/- 3.0E-3	2.1E-2 +/- 3.0E-3
08/23	2.5E-2 +/- 3.0E-3	2.5E-2 +/- 3.0E-3	2.2E-2 +/- 3.0E-3	2.3E-2 +/- 3.0E-3	2.3E-2 +/- 3.0E-3
08/30	3.3E-2 +/- 3.0E-3	3.3E-2 +/- 4.0E-3	3.1E-2 +/- 3.0E-3	3.0E-2 +/- 3.0E-3	3.2E-2 +/- 3.0E-3
09/06	1.6E-2 +/- 2.0E-3	1.7E-2 +/- 2.0E-3	2.0E-2 +/- 3.0E-3	1.8E-2 +/- 3.0E-3	1.7E-2 +/- 2.0E-3
09/13	2.4E-2 +/- 3.0E-3	2.3E-2 +/- 3.0E-3	2.5E-2 +/- 3.0E-3	2.8E-2 +/- 3.0E-3	2.7E-2 +/- 3.0E-3
09/20	3.2E-2 +/- 3.0E-3	3.5E-2 +/- 3.0E-3	3.4E-2 +/- 3.0E-3	3.3E-2 +/- 3.0E-3	3.9E-2 +/- 4.0E-3
09/27	2.9E-2 +/- 3.0E-3	2.6E-2 +/- 3.0E-3	2.4E-2 +/- 3.0E-3	2.6E-2 +/- 3.0E-3	2.9E-2 +/- 3.0E-3

FOURTH QUARTER
Gross Beta (pCi/cubic meter)

Date Collected	API-1	API-2	API-3	API-4	API-5 (c)
10/04	2.3E-2 +/- 3.0E-3	2.0E-2 +/- 3.0E-3	1.9E-2 +/- 3.0E-3	1.7E-2 +/- 3.0E-3	1.7E-2 +/- 3.0E-3
10/11	2.3E-2 +/- 3.0E-3	2.6E-2 +/- 3.0E-3	2.4E-2 +/- 3.0E-3	2.8E-2 +/- 3.0E-3	2.9E-2 +/- 3.0E-3
10/18	2.8E-2 +/- 3.0E-3	2.6E-2 +/- 3.0E-3	3.0E-2 +/- 3.0E-3	3.1E-2 +/- 3.0E-3	3.2E-2 +/- 3.0E-3
10/25	2.6E-2 +/- 3.0E-3	2.5E-2 +/- 3.0E-3	2.6E-2 +/- 3.0E-3	2.4E-2 +/- 3.0E-3	2.5E-2 +/- 3.0E-3
11/01	2.6E-2 +/- 3.0E-3	2.4E-2 +/- 3.0E-3	2.6E-2 +/- 3.0E-3	2.3E-2 +/- 3.0E-3	2.7E-2 +/- 3.0E-3
11/08	2.9E-2 +/- 3.0E-3	2.6E-2 +/- 3.0E-3	2.5E-2 +/- 3.0E-3	2.8E-2 +/- 3.0E-3	2.8E-2 +/- 3.0E-3
11/15	3.0E-2 +/- 3.0E-3	3.2E-2 +/- 3.0E-3	2.9E-2 +/- 3.0E-3	3.0E-2 +/- 3.0E-3	3.1E-2 +/- 3.0E-3
11/22 (c)	2.7E-2 +/- 3.0E-3	2.6E-2 +/- 3.0E-3	2.5E-2 +/- 3.0E-3	3.0E-2 +/- 3.0E-3	2.7E-2 +/- 3.0E-3
11/29	2.5E-2 +/- 3.0E-3	2.5E-2 +/- 3.0E-3	2.5E-2 +/- 3.0E-3	2.8E-2 +/- 3.0E-3	2.6E-2 +/- 3.0E-3
12/06	3.2E-2 +/- 3.0E-3	3.7E-2 +/- 4.0E-3	3.6E-2 +/- 4.0E-3	3.9E-2 +/- 4.0E-3	3.3E-2 +/- 4.0E-3
12/13	2.3E-2 +/- 3.0E-3	2.4E-2 +/- 3.0E-3	2.3E-2 +/- 3.0E-3	2.6E-2 +/- 3.0E-3	2.4E-2 +/- 3.0E-3
12/20	3.3E-2 +/- 4.0E-3	3.4E-2 +/- 4.0E-3	3.5E-2 +/- 4.0E-3	3.7E-2 +/- 4.0E-3	3.9E-2 +/- 4.0E-3
12/27	4.2E-2 +/- 4.0E-3	4.1E-2 +/- 4.0E-3	4.0E-2 +/- 4.0E-3	4.1E-2 +/- 4.0E-3	3.9E-2 +/- 4.0E-3

c = sample less than representative (see section 8.3.1)

FERMI 2
AIR IODINE ANALYSIS

FIRST QUARTER
I-131 (pCi/cubic meter)

Date Collected	API-1 (a)	API-2	API-3	API-4	API-5
01/04 (a)	< 6.0E-2	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 1.0E-2
01/11	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 2.0E-2
01/18	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 1.0E-2
01/25	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 2.0E-2
02/01	< 4.0E-2	< 4.0E-2	< 4.0E-2	< 4.0E-2	< 2.0E-2
02/08	< 4.0E-2	< 4.0E-2	< 4.0E-2	< 4.0E-2	< 2.0E-2
02/15	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 1.0E-2
02/22	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 1.0E-2
03/01	< 2.0E-2	< 2.0E-2	< 3.0E-2	< 2.0E-2	< 1.0E-2
03/08	< 4.0E-2	< 4.0E-2	< 4.0E-2	< 4.0E-2	< 2.0E-2
03/15	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 1.0E-2
03/22	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 3.0E-2
03/29	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 1.0E-2

SECOND QUARTER
I-131 (pCi/cubic meter)

Date Collected	API-1	API-2	API-3 (a)	API-4 (b)	API-5
04/05	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 1.0E-2
04/12	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 1.0E-2
04/19	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 1.0E-2
04/26	< 1.0E-2	< 1.0E-2	< 1.0E-2	< 1.0E-2	< 9.0E-3
05/03 (a)	< 5.0E-2	< 5.0E-2	< 4.0E-2	< 5.0E-2	< 3.0E-2
05/10	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 1.0E-2
05/17	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 2.0E-2
05/24	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 2.0E-2
05/31	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 1.0E-2
06/07	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 1.0E-2
06/14	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 1.0E-2
06/21	< 4.0E-2	< 4.0E-2	< 4.0E-2	< 4.0E-2	< 2.0E-2
06/28 (b)	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 1.0E-2

a = sample less than representative (see section 8.3.1)
b = sampler moved to new location (see section 8.3.1)

FERMI 2
AIR IODINE ANALYSIS

THIRD QUARTER
I-131 (pCi/cubic meter)

Date Collected	API-1	API-2	API-3	API-4	API-5
07/05	< 1.0E-2	< 1.0E-2	< 1.0E-2	< 1.0E-2	< 1.0E-2
07/12	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 2.0E-2
07/19	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 1.0E-2
07/26	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 1.0E-2
08/02	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 2.0E-2
08/09	< 1.0E-2	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 1.0E-2
08/16	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 1.0E-2
08/23	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 1.0E-2
08/30	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 2.0E-2
09/06	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 2.0E-2
09/13	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 1.0E-2
09/20	< 1.0E-2	< 2.0E-2	< 1.0E-2	< 1.0E-2	< 1.0E-2
09/27	< 4.0E-2	< 4.0E-2	< 4.0E-2	< 4.0E-2	< 2.0E-2

FOURTH QUARTER
I-131 (pCi/cubic meter)

Date Collected	API-1	API-2	API-3	API-4	API-5 (c)
10/04	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 2.0E-2
10/11	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 2.0E-2
10/18	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 1.0E-2
10/25	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 2.0E-2
11/01	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 1.0E-2
11/08	< 4.0E-2	< 4.0E-2	< 4.0E-2	< 4.0E-2	< 2.0E-2
11/15	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 2.0E-2	< 1.0E-2
11/22 (c)	< 4.0E-2	< 4.0E-2	< 4.0E-2	< 4.0E-2	< 2.0E-2
11/29	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 2.0E-2
12/06	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 2.0E-2
12/13	< 2.0E-2	< 3.0E-2	< 2.0E-2	< 2.0E-2	< 2.0E-2
12/20	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 2.0E-2
12/27	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 3.0E-2	< 1.0E-2

c = sample less than representative (see section 8.3.1)

FERMI 2
AIR PARTICULATE QUARTERLY COMPOSITE ANALYSIS

API-1 (Indicator)
(pCi/cubic meter)

Nuclide	First Quarter (a)	Second Quarter	Third Quarter	Fourth Quater
Sr-89	< 9.00E-4	< 6.00E-4	< 1.00E-3	< 3.00E-3
Sr-90	< 2.00E-4	< 9.00E-5	< 2.00E-4	< 4.00E-4
Be-7	1.63E-1 +/- 1.60E-2	1.43E-1 +/- 1.40E-2	1.32E-1 +/- 1.30E-2	1.26E-1 +/- 1.30E-2
K-40	< 1.00E-2	< 9.00E-3	< 8.00E-3	1.20E-2 +/- 3.20E-3
Mn-54	< 5.00E-4	< 5.00E-4	< 6.00E-4	< 4.00E-4
Co-58	< 8.00E-4	< 9.00E-4	< 7.00E-4	< 6.00E-4
Fe-59	< 2.00E-3	< 2.00E-3	< 2.00E-3	< 2.00E-3
Co-60	< 5.00E-4	< 6.00E-4	< 5.00E-4	< 4.00E-4
Zn-65	< 1.00E-3	< 1.00E-3	< 1.00E-3	< 1.00E-3
Zr/Nb-95	< 9.00E-4	< 9.00E-4	< 8.00E-4	< 7.00E-4
Ru-103	< 1.00E-3	< 1.00E-3	< 1.00E-3	< 1.00E-3
Ru-106	< 4.00E-3	< 5.00E-3	< 5.00E-3	< 4.00E-3
Cs-134	< 5.00E-4	< 5.00E-4	< 5.00E-4	< 4.00E-4
Cs-137	< 5.00E-4	< 6.00E-4	< 5.00E-4	< 4.00E-4
Ba/La-140	< 2.00E-2	< 2.00E-2	< 1.00E-2	< 1.00E-2
Ce-141	< 3.00E-3	< 2.00E-3	< 2.00E-3	< 2.00E-3
Ce-144	< 4.00E-3	< 3.00E-3	< 3.00E-3	< 2.00E-3
Ra-226	< 1.00E-2	< 9.00E-3	< 9.00E-3	< 7.00E-3
Th-228	< 9.00E-4	< 9.00E-4	< 8.00E-4	< 6.00E-4

API-2 (Indicator)
(pCi/cubic meter)

Nuclide	First Quarter	Second Quarter	Third Quarter	Fourth Quater
Sr-89	< 1.00E-3	< 6.00E-4	< 1.00E-3	< 3.00E-3
Sr-90	< 2.00E-4	< 8.00E-5	< 2.00E-4	< 5.00E-4
Be-7	1.26E-1 +/- 1.30E-2	1.54E-1 +/- 1.50E-2	1.27E-1 +/- 1.30E-2	1.33E-1 +/- 1.30E-2
K-40	5.76E-3 +/- 2.77E-3	< 1.00E-2	6.59E-3 +/- 3.32E-3	< 2.00E-2
Mn-54	< 4.00E-4	< 6.00E-4	< 5.00E-4	< 7.00E-4
Co-58	< 7.00E-4	< 8.00E-4	< 9.00E-4	< 1.00E-3
Fe-59	< 2.00E-3	< 2.00E-3	< 2.00E-3	< 3.00E-3
Co-60	< 5.00E-4	< 6.00E-4	< 5.00E-4	< 6.00E-4
Zn-65	< 1.00E-3	< 1.00E-3	< 1.00E-3	< 2.00E-3
Zr/Nb-95	< 8.00E-4	< 9.00E-4	< 8.00E-4	< 1.00E-3
Ru-103	< 1.00E-3	< 2.00E-3	< 1.00E-3	< 2.00E-3
Ru-106	< 3.00E-3	< 5.00E-3	< 5.00E-3	< 6.00E-3
Cs-134	< 4.00E-4	< 5.00E-4	< 5.00E-4	< 6.00E-4
Cs-137	< 4.00E-4	< 5.00E-4	< 5.00E-4	< 6.00E-4
Ba/La-140	< 2.00E-2	< 2.00E-2	< 1.00E-2	< 2.00E-2
Ce-141	< 2.00E-3	< 2.00E-3	< 2.00E-3	< 4.00E-3
Ce-144	< 3.00E-3	< 2.00E-3	< 2.00E-3	< 5.00E-3
Ra-226	< 8.00E-3	< 6.00E-3	< 6.00E-3	< 1.00E-2
Th-228	< 7.00E-4	< 6.00E-4	< 6.00E-4	< 1.00E-3

a = sample less than representative (see section 8.3.1)

FERMI 2
AIR PARTICULATE QUARTERLY COMPOSITE ANALYSIS

API-3 (Indicator)
(pCi/cubic meter)

Nuclide	First Quarter	Second Quarter (a)	Third Quarter	Fourth Quater
Sr-89	< 8.00E-4	< 6.00E-4	< 1.00E-3	< 2.00E-3
Sr-90	< 1.00E-4	< 1.00E-4	< 1.00E-4	< 2.00E-4
Be-7	1.73E-1 +/- 1.70E-2	1.48E-1 +/- 1.50E-2	1.25E-1 +/- 1.20E-2	1.35E-1 +/- 1.40E-2
K-40	< 1.00E-2	< 2.00E-2	9.70E-3 +/- 4.70E-3	< 1.00E-2
Mn-54	< 6.00E-4	< 6.00E-4	< 6.00E-4	< 5.00E-4
Co-58	< 8.00E-4	< 1.00E-3	< 9.00E-4	< 8.00E-4
Fe-59	< 2.00E-3	< 3.00E-3	< 3.00E-3	< 2.00E-3
Co-60	< 5.00E-4	< 6.00E-4	< 6.00E-4	< 5.00E-4
Zn-65	< 2.00E-3	< 2.00E-3	< 2.00E-3	< 1.00E-3
Zr/Nb-95	< 1.00E-3	< 1.00E-3	< 1.00E-3	< 7.00E-4
Ru-103	< 2.00E-3	< 1.00E-3	< 1.00E-3	< 1.00E-3
Ru-106	< 6.00E-3	< 6.00E-3	< 5.00E-3	< 5.00E-3
Cs-134	< 5.00E-4	< 7.00E-4	< 7.00E-4	< 5.00E-4
Cs-137	< 6.00E-4	< 6.00E-4	< 6.00E-4	< 5.00E-4
Ba/La-140	< 2.00E-2	< 2.00E-2	< 1.00E-2	< 2.00E-2
Ce-141	< 4.00E-3	< 2.00E-3	< 2.00E-3	< 2.00E-3
Ce-144	< 6.00E-3	< 3.00E-3	< 3.00E-3	< 3.00E-3
Ra-226	< 1.00E-2	< 9.00E-3	< 8.00E-3	< 9.00E-3
Th-228	< 1.00E-3	< 8.00E-4	< 8.00E-4	< 8.00E-4

API-4 (Indicator)
(pCi/cubic meter)

Nuclide	First Quarter	Second Quarter	Third Quarter	Fourth Quater
Sr-89	< 1.00E-3	< 7.00E-4	< 7.00E-4	< 3.00E-3
Sr-90	< 2.00E-4	< 1.00E-4	< 1.00E-4	< 3.00E-4
Be-7	1.34E-1 +/- 1.30E-2	1.69E-1 +/- 1.70E-2	1.32E-1 +/- 1.30E-2	1.30E-1 +/- 1.30E-2
K-40	8.89E-3 +/- 4.62E-3	< 7.00E-3	< 7.00E-3	< 1.00E-2
Mn-54	< 5.00E-4	< 4.00E-4	< 4.00E-4	< 5.00E-4
Co-58	< 9.00E-4	< 8.00E-4	< 6.00E-4	< 7.00E-4
Fe-59	< 2.00E-3	< 2.00E-3	< 2.00E-3	< 2.00E-3
Co-60	< 6.00E-4	< 5.00E-4	< 3.00E-4	< 6.00E-4
Zn-65	< 1.00E-3	< 1.00E-3	< 1.00E-3	< 1.00E-3
Zr/Nb-95	< 1.00E-3	< 9.00E-4	< 7.00E-4	< 9.00E-4
Ru-103	< 1.00E-3	< 1.00E-3	< 9.00E-4	< 1.00E-3
Ru-106	< 5.00E-3	< 5.00E-3	< 4.00E-3	< 5.00E-3
Cs-134	< 5.00E-4	< 6.00E-4	< 4.00E-4	< 5.00E-4
Cs-137	< 6.00E-4	< 4.00E-4	< 4.00E-4	< 5.00E-4
Ba/La-140	< 1.00E-2	< 2.00E-2	< 1.00E-2	< 2.00E-2
Ce-141	< 2.00E-3	< 2.00E-3	< 2.00E-3	< 2.00E-3
Ce-144	< 3.00E-3	< 3.00E-3	< 2.00E-3	< 3.00E-3
Ra-226	< 9.00E-3	< 9.00E-3	< 7.00E-3	< 9.00E-3
Th-228	< 8.00E-4	< 9.00E-4	< 7.00E-4	< 9.00E-4

a = sample less than representative (see section 8.3.1)

FERMI 2
AIR PARTICULATE QUARTERLY COMPOSITE ANALYSIS

API-5 (Indicator)
(pCi/cubic meter)

Nuclide	First Quarter	Second Quarter	Third Quarter	Fourth Quater (a)
Sr-89	< 7.00E-4	< 9.00E-4	< 9.00E-4	< 2.00E-3
Sr-90	< 1.00E-4	< 1.00E-4	< 2.00E-4	< 3.00E-4
Be-7	1.42E-1 +/- 1.40E-2	1.38E-1 +/- 1.40E-2	1.21E-1 +/- 1.20E-2	1.17E-1 +/- 1.20E-2
K-40	< 8.00E-3	< 1.00E-2	2.51E-2 +/- 4.10E-3	< 1.00E-2
Mn-54	< 5.00E-4	< 4.00E-4	< 4.00E-4	< 6.00E-4
Co-58	< 7.00E-4	< 7.00E-4	< 7.00E-4	< 7.00E-4
Fe-59	< 2.00E-3	< 2.00E-3	< 2.00E-3	< 2.00E-3
Co-60	< 5.00E-4	< 4.00E-4	< 5.00E-4	< 5.00E-4
Zn-65	< 1.00E-3	< 1.00E-3	< 1.00E-3	< 1.00E-3
Zr/Nb-95	< 7.00E-4	< 8.00E-4	< 8.00E-4	< 8.00E-4
Ru-103	< 1.00E-3	< 1.00E-3	< 1.00E-3	< 1.00E-3
Ru-106	< 4.00E-3	< 4.00E-3	< 4.00E-3	< 4.00E-3
Cs-134	< 4.00E-4	< 4.00E-4	< 5.00E-4	< 5.00E-4
Cs-137	< 6.00E-4	< 4.00E-4	< 5.00E-4	< 4.00E-4
Ba/La-140	< 1.00E-2	< 2.00E-2	< 1.00E-2	< 2.00E-2
Ce-141	< 2.00E-3	< 2.00E-3	< 1.00E-3	< 2.00E-3
Ce-144	< 3.00E-3	< 2.00E-3	< 2.00E-3	< 2.00E-3
Ra-226	< 7.00E-3	< 6.00E-3	< 6.00E-3	< 6.00E-3
Th-228	< 7.00E-4	< 5.00E-4	< 6.00E-4	< 6.00E-4

a = sample less than representative (see section 8.3.1)

FERMI 2
AIR PARTICULATE QUARTERLY COMPOSITE ANALYSIS

API-5 (Indicator)
(pCi/cubic meter)

Nuclide	First Quarter	Second Quarter	Third Quarter	Fourth Quater (a)
Sr-89	< 7.00E-4	< 9.00E-4	< 9.00E-4	< 2.00E-3
Sr-90	< 1.00E-4	< 1.00E-4	< 2.00E-4	< 3.00E-4
Be-7	1.42E-1 +/- 1.40E-2	1.38E-1 +/- 1.40E-2	1.21E-1 +/- 1.20E-2	1.17E-1 +/- 1.20E-2
K-40	< 8.00E-3	< 1.00E-2	2.51E-2 +/- 4.10E-3	< 1.00E-2
Mn-54	< 5.00E-4	< 4.00E-4	< 4.00E-4	< 6.00E-4
Co-58	< 7.00E-4	< 7.00E-4	< 7.00E-4	< 7.00E-4
Fe-59	< 2.00E-3	< 2.00E-3	< 2.00E-3	< 2.00E-3
Co-60	< 5.00E-4	< 4.00E-4	< 5.00E-4	< 5.00E-4
Zn-65	< 1.00E-3	< 1.00E-3	< 1.00E-3	< 1.00E-3
Zr/Nb-95	< 7.00E-4	< 8.00E-4	< 8.00E-4	< 8.00E-4
Ru-103	< 1.00E-3	< 1.00E-3	< 1.00E-3	< 1.00E-3
Ru-106	< 4.00E-3	< 4.00E-3	< 4.00E-3	< 4.00E-3
Cs-134	< 4.00E-4	< 4.00E-4	< 5.00E-4	< 5.00E-4
Cs-137	< 6.00E-4	< 4.00E-4	< 5.00E-4	< 4.00E-4
Ba/La-140	< 1.00E-2	< 2.00E-2	< 1.00E-2	< 2.00E-2
Ce-141	< 2.00E-3	< 2.00E-3	< 1.00E-3	< 2.00E-3
Ce-144	< 3.00E-3	< 2.00E-3	< 2.00E-3	< 2.00E-3
Ra-226	< 7.00E-3	< 6.00E-3	< 6.00E-3	< 6.00E-3
Th-228	< 7.00E-4	< 5.00E-4	< 6.00E-4	< 6.00E-4

a = sample less than representative (see section 8.3.1)

FERMI 2
MILK ANALYSIS

M - 2 (Indicator)
(pCi/liter)

Nuclide	13-Jan	17-Feb	17-Mar	14-Apr
Sr-89	< 1.00E+0	< 2.00E+0	< 2.00E+0	< 2.00E+0
Sr-90	1.50E+0 +/- 2.00E-1	1.50E+0 +/- 2.00E-1	1.90E+0 +/- 2.00E-1	1.10E+0 +/- 2.00E-1
I-131	< 2.00E-1	< 2.00E-1	< 1.00E-1	< 1.00E-1
Be-7	< 3.00E+1	< 3.00E+1	< 4.00E+1	< 3.00E+1
K-40	1.27E+3 +/- 1.30E+2	1.37E+3 +/- 1.40E+2	1.38E+3 +/- 1.40E+2	1.38E+3 +/- 1.40E+2
Mn-54	< 4.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Co-58	< 3.00E+0	< 4.00E+0	< 3.00E+0	< 4.00E+0
Fe-59	< 8.00E+0	< 1.00E+1	< 9.00E+0	< 9.00E+0
Co-60	< 4.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Zn-65	< 9.00E+0	< 9.00E+0	< 9.00E+0	< 9.00E+0
Zr/Nb-95	< 3.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Ru-103	< 4.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Ru-106	< 3.00E+1	< 3.00E+1	< 4.00E+1	< 4.00E+0
Cs-134	< 4.00E+0	< 4.00E+0	< 5.00E+0	< 4.00E+0
Cs-137	< 4.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Ba/La-140	< 4.00E+0	< 6.00E+0	< 4.00E+0	< 5.00E+0
Ce-141	< 7.00E+0	< 8.00E+0	< 8.00E+0	< 8.00E+0
Ce-144	< 3.00E+1	< 3.00E+1	< 3.00E+0	< 3.00E+1
Ra-226	< 7.00E+1	< 9.00E+1	< 9.00E+1	< 9.00E+1
Th-228	< 7.00E+0	< 8.00E+0	< 8.00E+0	< 8.00E+0

M - 2 (Indicator)
(pCi/liter)

Nuclide	12-May	26-May	9-Jun	23-Jun
Sr-89	< 6.00E-1	< 3.00E+0	< 2.00E+0	< 1.00E+0
Sr-90	< 1.10E+0 +/- 2.00E-1	1.40E+0 +/- 2.00E-1	1.00E+0 +/- 2.00E-1	1.30E+0 +/- 2.00E-1
I-131	< 3.00E-1	< 2.00E-1	< 2.00E-1	< 3.00E-1
Be-7	< 3.00E+1	< 3.00E+1	< 4.00E+1	< 3.00E+1
K-40	1.33E+3 +/- 1.30E+2	1.44E+3 +/- 1.40E+2	1.39E+3 +/- 1.40E+2	1.27E+3 +/- 1.30E+2
Mn-54	< 3.00E+0	< 3.00E+0	< 4.00E+0	< 3.00E+0
Co-58	< 4.00E+0	< 3.00E+0	< 4.00E+0	< 4.00E+0
Fe-59	< 9.00E+0	< 7.00E+0	< 1.00E+1	< 9.00E+0
Co-60	< 4.00E+0	< 4.00E+0	< 5.00E+0	< 4.00E+0
Zn-65	< 9.00E+0	< 7.00E+0	< 1.00E+1	< 9.00E+0
Zr/Nb-95	< 4.00E+0	< 3.00E+0	< 5.00E+0	< 4.00E+0
Ru-103	< 4.00E+0	< 3.00E+0	< 5.00E+0	< 4.00E+0
Ru-106	< 3.00E+1	< 3.00E+1	< 4.00E+1	< 3.00E+1
Cs-134	< 4.00E+0	< 3.00E+0	< 5.00E+0	< 4.00E+0
Cs-137	< 4.00E+0	< 4.00E+0	< 5.00E+0	< 4.00E+0
Ba/La-140	< 5.00E+0	< 4.00E+0	< 6.00E+0	< 5.00E+0
Ce-141	< 6.00E+0	< 6.00E+0	< 9.00E+0	< 7.00E+0
Ce-144	< 2.00E+1	< 2.00E+1	< 4.00E+1	< 3.00E+1
Ra-226	< 7.00E+1	< 6.00E+1	< 1.00E+2	< 9.00E+1
Th-228	< 7.00E+0	< 6.00E+0	< 1.00E+1	< 7.00E+0

FERMI 2
MILK ANALYSIS

M - 2 (Indicator)
(pCi/liter)

Nuclide	7-Jul	21-Jul	4-Aug	18-Aug
Sr-89	< 1.00E+0	< 2.00E+0	< 2.00E+0	< 2.00E+0
Sr-90	1.30E+0 +/- 1.00E-1	2.10E+0 +/- 2.00E-1	1.80E+0 +/- 2.00E-1	1.10E+0 +/- 2.00E-1
I-131	< 2.00E-1	< 2.00E-1	< 2.00E-1	< 2.00E-1
Be-7	< 3.00E+1	< 3.00E+1	< 3.00E+1	< 3.00E+1
K-40	1.32E+3 +/- 1.30E+2	1.33E+3 +/- 1.30E+2	1.35E+3 +/- 1.30E+2	1.33E+3 +/- 1.30E+2
Mn-54	< 3.00E+0	< 4.00E+0	< 3.00E+0	< 3.00E+0
Co-58	< 4.00E+0	< 3.00E+0	< 3.00E+0	< 3.00E+0
Fe-59	< 8.00E+0	< 8.00E+0	< 7.00E+0	< 7.00E+0
Co-60	< 4.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Zn-65	< 9.00E+0	< 8.00E+0	< 7.00E+0	< 8.00E+0
Zr/Nb-95	< 4.00E+0	< 4.00E+0	< 3.00E+0	< 3.00E+0
Ru-103	< 4.00E+0	< 4.00E+0	< 3.00E+0	< 3.00E+0
Ru-106	< 3.00E+1	< 3.00E+1	< 3.00E+1	< 3.00E+1
Cs-134	< 4.00E+0	< 4.00E+0	< 3.00E+0	< 4.00E+0
Cs-137	< 4.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Ba/La-140	< 5.00E+0	< 5.00E+0	< 4.00E+0	< 4.00E+0
Ce-141	< 6.00E+0	< 8.00E+0	< 6.00E+0	< 6.00E+0
Ce-144	< 2.00E+1	< 3.00E+1	< 3.00E+1	< 3.00E+1
Ra-226	< 7.00E+1	< 9.00E+1	< 7.00E+1	< 7.00E+1
Th-228	< 6.00E+0	< 7.00E+0	< 6.00E+0	< 6.00E+0

M - 2 (Indicator)
(pCi/liter)

Nuclide	8-Sep	22-Sep	6-Oct	20-Oct
Sr-89	< 2.00E+0	< 2.00E+0	< 3.00E+0	< 2.00E+0
Sr-90	1.30E+0 +/- 2.00E-1	1.50E+0 +/- 2.00E-1	2.30E+0 +/- 2.00E-1	2.00E+0 +/- 2.00E-1
I-131	< 2.00E-1	< 1.00E-1	< 1.00E-1	< 2.00E-1
Be-7	< 3.00E+1	< 3.00E+1	< 3.00E+1	< 3.00E+1
K-40	1.39E+3 +/- 1.40E+2	1.31E+3 +/- 1.30E+2	1.34E+3 +/- 1.30E+2	1.37E+3 +/- 1.40E+2
Mn-54	< 3.00E+0	< 4.00E+0	< 3.00E+0	< 4.00E+0
Co-58	< 3.00E+0	< 3.00E+0	< 3.00E+0	< 4.00E+0
Fe-59	< 7.00E+0	< 8.00E+0	< 9.00E+0	< 9.00E+0
Co-60	< 4.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Zn-65	< 8.00E+0	< 9.00E+0	< 9.00E+0	< 9.00E+0
Zr/Nb-95	< 3.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Ru-103	< 3.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Ru-106	< 3.00E+1	< 3.00E+1	< 3.00E+1	< 4.00E+1
Cs-134	< 3.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Cs-137	< 5.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Ba/La-140	< 5.00E+0	< 4.00E+0	< 5.00E+0	< 5.00E+0
Ce-141	< 6.00E+0	< 7.00E+0	< 7.00E+0	< 6.00E+0
Ce-144	< 3.00E+1	< 3.00E+1	< 3.00E+1	< 3.00E+1
Ra-226	< 7.00E+1	< 9.00E+1	< 9.00E+1	< 7.00E+1
Th-228	< 6.00E+0	< 7.00E+0	< 7.00E+0	< 6.00E+0

FERMI 2
MILK ANALYSIS

M - 2 (Indicator)
(pCi/liter)

Nuclide	17-Nov	15-Dec
Sr-89	< 2.00E+0	< 2.00E+0
Sr-90	1.20E+0 +/- 2.00E-1	1.20E+0 +/- 1.00E-1
I-131	< 1.00E-1	< 2.00E-1
Be-7	< 3.00E+1	< 3.00E+1
K-40	1.30E+3 +/- 1.30E+2	1.43E+3 +/- 1.40E+2
Mn-54	< 4.00E+0	< 3.00E+0
Co-58	< 4.00E+0	< 3.00E+0
Fe-59	< 9.00E+0	< 7.00E+0
Co-60	< 4.00E+0	< 4.00E+0
Zn-65	< 8.00E+0	< 8.00E+0
Zr/Nb-95	< 4.00E+0	< 3.00E+0
Ru-103	< 4.00E+0	< 4.00E+0
Ru-106	< 3.00E+1	< 3.00E+1
Cs-134	< 4.00E+0	< 3.00E+0
Cs-137	< 4.00E+0	< 3.00E+0
Ba/La-140	< 5.00E+0	< 4.00E+0
Ce-141	< 6.00E+0	< 5.00E+0
Ce-144	< 2.00E+1	< 2.00E+1
Ra-226	< 7.00E+1	< 6.00E+1
Th-228	< 6.00E+0	< 6.00E+0

FERMI 2
MILK ANALYSIS

M - 8 (Control)
(pCi/liter)

Nuclide	13-Jan	17-Feb	17-Mar	14-Apr
Sr-89	< 2.00E+0	< 2.00E+0	< 3.00E+0	< 3.00E+0
Sr-90	1.70E+0 +/- 2.00E-1	1.30E+0 +/- 2.00E-1	1.20E+0 +/- 2.00E-1	1.20E+0 +/- 2.00E-1
I-131	< 2.00E-1	< 2.00E-1	< 1.00E-1	< 2.00E-1
Be-7	< 3.00E+1	< 4.00E+1	< 4.00E+1	< 4.00E+1
K-40	1.41E+3 +/- 1.40E+2	1.42E+3 +/- 1.40E+2	1.39E+3 +/- 1.40E+2	1.34E+3 +/- 1.30E+2
Mn-54	< 4.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Co-58	< 4.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Fe-59	< 9.00E+0	< 1.00E+1	< 1.00E+1	< 9.00E+0
Co-60	< 5.00E+0	< 5.00E+0	< 4.00E+0	< 4.00E+0
Zn-65	< 1.00E+1	< 1.00E+1	< 1.00E+1	< 1.00E+1
Zr/Nb-95	< 4.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Ru-103	< 5.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Ru-106	< 4.00E+1	< 4.00E+1	< 4.00E+1	< 3.00E+1
Cs-134	< 4.00E+0	< 4.00E+0	< 5.00E+0	< 4.00E+0
Cs-137	< 5.00E+0	< 5.00E+0	< 5.00E+0	< 5.00E+0
Ba/La-140	< 5.00E+0	< 6.00E+0	< 6.00E+0	< 6.00E+0
Ce-141	< 8.00E+0	< 9.00E+0	< 8.00E+0	< 9.00E+0
Ce-144	< 3.00E+1	< 4.00E+1	< 4.00E+1	< 4.00E+1
Ra-226	< 9.00E+1	< 1.00E+2	< 1.00E+2	< 1.00E+2
Th-228	< 7.00E+0	< 9.00E+0	< 9.00E+0	< 9.00E+0

M - 8 (Control)
(pCi/liter)

Nuclide	12-May	26-May	9-Jun	23-Jun
Sr-89	< 9.00E-1	< 2.00E+0	< 3.00E+0	< 2.00E+0
Sr-90	1.10E+0 +/- 2.00E-1	7.60E-1 +/- 1.50E-1	5.70E-1 +/- 2.30E-1	1.10E+0 +/- 2.00E-1
I-131	< 2.00E-1	< 2.00E-1	< 2.00E-1	< 2.00E-1
Be-7	< 3.00E+1	< 4.00E+1	< 3.00E+1	< 4.00E+1
K-40	1.33E+3 +/- 1.30E+2	1.28E+3 +/- 1.30E+2	1.45E+3 +/- 1.40E+2	1.28E+3 +/- 1.30E+2
Mn-54	< 4.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Co-58	< 3.00E+0	< 5.00E+0	< 4.00E+0	< 3.00E+0
Fe-59	< 9.00E+0	< 1.00E+1	< 9.00E+0	< 9.00E+0
Co-60	< 4.00E+0	< 5.00E+0	< 4.00E+0	< 4.00E+0
Zn-65	< 9.00E+0	< 1.00E+1	< 9.00E+0	< 1.00E+1
Zr/Nb-95	< 3.00E+0	< 5.00E+0	< 4.00E+0	< 4.00E+0
Ru-103	< 4.00E+0	< 5.00E+0	< 4.00E+0	< 4.00E+0
Ru-106	< 3.00E+1	< 4.00E+1	< 3.00E+1	< 3.00E+1
Cs-134	< 4.00E+0	< 5.00E+0	< 4.00E+0	< 4.00E+0
Cs-137	< 4.00E+0	< 5.00E+0	< 4.00E+0	< 5.00E+0
Ba/La-140	< 5.00E+0	< 6.00E+0	< 7.00E+0	< 5.00E+0
Ce-141	< 6.00E+0	< 8.00E+0	< 8.00E+0	< 9.00E+0
Ce-144	< 3.00E+1	< 3.00E+1	< 2.00E+1	< 4.00E+1
Ra-226	< 7.00E+1	< 9.00E+1	< 7.00E+1	< 1.00E+2
Th-228	< 6.00E+0	< 8.00E+0	< 6.00E+0	< 8.00E+0

FERMI 2
MILK ANALYSIS

M - 8 (Control)
(pCi/liter)

Nuclide	7-Jul	21-Jul	4-Aug	18-Aug
Sr-89	< 1.00E+0	< 2.00E+0	< 2.00E+0	< 7.00E-1
Sr-90	9.70E-1 +/- 1.20E-1	1.80E+0 +/- 2.00E-1	1.70E+0 +/- 2.00E-1	1.40E+0 +/- 2.00E-1
I-131	< 1.00E-1	< 2.00E-1	< 2.00E-1	< 1.00E-1
Be-7	< 3.00E+1	< 3.00E+1	< 3.00E+1	< 3.00E+1
K-40	1.38E+3 +/- 1.40E+2	1.27E+3 +/- 1.30E+2	1.31E+3 +/- 1.30E+2	1.41E+3 +/- 1.40E+2
Mn-54	< 4.00E+0	< 4.00E+0	< 3.00E+0	< 3.00E+0
Co-58	< 4.00E+0	< 4.00E+0	< 3.00E+0	< 3.00E+0
Fe-59	< 9.00E+0	< 9.00E+0	< 7.00E+0	< 6.00E+0
Co-60	< 4.00E+0	< 4.00E+0	< 4.00E+0	< 3.00E+0
Zn-65	< 9.00E+0	< 1.00E+1	< 7.00E+0	< 7.00E+0
Zr/Nb-95	< 4.00E+0	< 4.00E+0	< 3.00E+0	< 3.00E+0
Ru-103	< 4.00E+0	< 4.00E+0	< 3.00E+0	< 3.00E+0
Ru-106	< 4.00E+1	< 3.00E+1	< 3.00E+1	< 3.00E+1
Cs-134	< 4.00E+0	< 4.00E+0	< 3.00E+0	< 3.00E+0
Cs-137	< 4.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Ba/La-140	< 6.00E+0	< 6.00E+0	< 4.00E+0	< 4.00E+0
Ce-141	< 6.00E+0	< 9.00E+0	< 5.00E+0	< 6.00E+0
Ce-144	< 3.00E+1	< 4.00E+1	< 2.00E+1	< 2.00E+1
Ra-226	< 7.00E+1	< 1.00E+2	< 6.00E+1	< 7.00E+1
Th-228	< 6.00E+0	< 9.00E+0	< 5.00E+0	< 6.00E+0

M - 8 (Control)
(pCi/liter)

Nuclide	8-Sep	22-Sep	6-Oct	20-Oct
Sr-89	< 2.00E+0	< 2.00E+0	< 4.00E+0	< 2.00E+0
Sr-90	9.20E-1 +/- 1.40E-1	9.30E-1 +/- 1.90E-1	2.30E+0 +/- 2.00E-1	1.30E+0 +/- 2.00E-1
I-131	< 2.00E-1	< 1.00E-1	< 2.00E-1	< 2.00E-1
Be-7	< 3.00E+1	< 3.00E+1	< 4.00E+1	< 3.00E+1
K-40	1.40E+3 +/- 1.40E+2	1.18E+3 +/- 1.20E+2	1.36E+3 +/- 1.40E+2	1.52E+3 +/- 1.50E+2
Mn-54	< 3.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Co-58	< 3.00E+0	< 3.00E+0	< 3.00E+0	< 4.00E+0
Fe-59	< 7.00E+0	< 9.00E+0	< 9.00E+0	< 9.00E+0
Co-60	< 3.00E+0	< 4.00E+0	< 5.00E+0	< 5.00E+0
Zn-65	< 7.00E+0	< 9.00E+0	< 1.00E+1	< 1.00E+1
Zr/Nb-95	< 3.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Ru-103	< 3.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Ru-106	< 3.00E+1	< 3.00E+1	< 3.00E+1	< 4.00E+1
Cs-134	< 3.00E+0	< 4.00E+0	< 5.00E+0	< 4.00E+0
Cs-137	< 4.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Ba/La-140	< 4.00E+0	< 4.00E+0	< 4.00E+0	< 5.00E+0
Ce-141	< 6.00E+0	< 8.00E+0	< 9.00E+0	< 6.00E+0
Ce-144	< 2.00E+1	< 4.00E+1	< 4.00E+1	< 3.00E+1
Ra-226	< 6.00E+1	< 1.00E+2	< 1.00E+2	< 7.00E+1
Th-228	< 5.00E+0	< 8.00E+0	< 8.00E+0	< 6.00E+0

FERMI 2
MILK ANALYSIS

M - 8 (Control)
(pCi/liter)

Nuclide	17-Nov	15-Dec
Sr-89	< 2.00E+0	< 3.00E+0
Sr-90	1.60E+0 +/- 2.00E-1	1.20E+0 +/- 2.00E-1
I-131	< 1.00E-1	< 2.00E-1
Be-7	< 3.00E+1	< 4.00E+1
K-40	1.35E+3 +/- 1.40E+2	1.60E+3 +/- 1.60E+2
Mn-54	< 4.00E+0	< 4.00E+0
Co-58	< 4.00E+0	< 4.00E+0
Fe-59	< 9.00E+0	< 9.00E+0
Co-60	< 4.00E+0	< 5.00E+0
Zn-65	< 9.00E+0	< 1.00E+1
Zr/Nb-95	< 4.00E+0	< 4.00E+0
Ru-103	< 4.00E+0	< 4.00E+0
Ru-106	< 3.00E+1	< 4.00E+1
Cs-134	< 4.00E+0	< 4.00E+0
Cs-137	< 4.00E+0	< 5.00E+0
Ba/La-140	< 4.00E+0	< 6.00E+0
Ce-141	< 7.00E+0	< 7.00E+0
Ce-144	< 3.00E+1	< 3.00E+1
Ra-226	< 7.00E+1	< 8.00E+1
Th-228	< 7.00E+0	< 8.00E+0

FERMI 2
MILK ANALYSIS

M - 9 (Indicator)
(pCi/liter)

Nuclide	8-Sep	22-Sep	10-Oct	20-Oct
Sr-89	< 2.00E+0	< 3.00E+0	< 3.00E+0	< 3.00E+0
Sr-90	1.70E+0 +/- 2.00E-1	1.70E+0 +/- 2.00E-1	4.90E+0 +/- 2.20E+0	2.60E+0 +/- 3.00E-1
I-131	< 2.00E-1	< 1.00E-1	< 2.00E-1	< 2.00E-1
Be-7	< 3.00E+1	< 3.00E+1	< 3.00E+1	< 3.00E+1
K-40	1.92E+3 +/- 1.90E+2	2.10E+3 +/- 2.10E+2	1.84E+3 +/- 1.80E+2	2.08E+3 +/- 2.10E+2
Mn-54	< 3.00E+0	< 3.00E+0	< 4.00E+0	< 3.00E+0
Co-58	< 3.00E+0	< 3.00E+0	< 4.00E+0	< 3.00E+0
Fe-59	< 9.00E+0	< 8.00E+0	< 1.00E+1	< 8.00E+0
Co-60	< 4.00E+0	< 3.00E+0	< 4.00E+0	< 3.00E+0
Zn-65	< 1.00E+1	< 8.00E+0	< 1.00E+1	< 9.00E+0
Zr/Nb-95	< 4.00E+0	< 3.00E+0	< 4.00E+0	< 4.00E+0
Ru-103	< 4.00E+0	< 3.00E+0	< 4.00E+0	< 4.00E+0
Ru-106	< 3.00E+1	< 3.00E+1	< 4.00E+1	< 3.00E+1
Cs-134	< 4.00E+0	< 3.00E+0	< 4.00E+0	< 4.00E+0
Cs-137	< 4.00E+0	< 4.00E+0	< 5.00E+0	< 4.00E+0
Ba/La-140	< 5.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Ce-141	< 7.00E+0	< 6.00E+0	< 8.00E+0	< 5.00E+0
Ce-144	< 3.00E+1	< 2.00E+1	< 4.00E+1	< 2.00E+1
Ra-226	< 8.00E+1	< 6.00E+1	< 1.00E+2	< 7.00E+1
Th-228	< 7.00E+0	< 6.00E+0	< 9.00E+0	< 6.00E+0

FERMI 2
GRASS ANALYSIS

(pCi/liter)

Nuclide	M-8 22-NOV	M-9 22-NOV
I-131	< 5.00E+0	< 4.00E+0
Be-7	4.93E+3 +/- 4.90E+2	5.90E+3 +/- 5.90E+2
K-40	7.43E+3 +/- 7.40E+2	7.29E+3 +/- 7.30E+2
Mn-54	< 2.00E+1	< 3.00E+1
Co-58	< 2.00E+1	< 3.00E+1
Fe-59	< 4.00E+1	< 6.00E+1
Co-60	< 2.00E+1	< 3.00E+1
Zn-65	< 5.00E+1	< 6.00E+1
Zr/Nb-95	< 2.00E+1	< 3.00E+1
Ru-103	< 2.00E+1	< 3.00E+1
Ru-106	< 2.00E+2	< 3.00E+2
Cs-134	< 2.00E+1	< 3.00E+1
Cs-137	< 2.00E+1	< 3.00E+1
Ba/La-140	< 2.00E+1	< 4.00E+1
Ce-141	< 3.00E+1	< 5.00E+1
Ce-144	< 1.00E+2	< 2.00E+2
Ra-226	< 4.00E+2	< 6.00E+2
Th-228	< 3.00E+1	< 5.00E+1

Note: December samples not collected (see section 8.4.2)

FERMI 2
VEGETABLE ANALYSIS

FP - 1 (Indicator)
pCi/kg wet

Nuclide	LETTUCE 28-JUL	CABBAGE 28-JUL	SWISS CHARD 28-JUL	LETTUCE 31-AUG
I-131	< 4.00E+0	< 5.00E+0	< 4.00E+0	< 4.00E+0
Be-7	< 1.00E+2	< 8.00E+1	1.91E+2 +/- 8.70E+1	4.13E+2 +/- 1.26E+2
K-40	5.81E+3 +/- 5.80E+2	2.43E+3 +/- 2.40E+2	4.41E+3 +/- 4.40E+2	4.28E+3 +/- 4.30E+2
Mn-54	< 1.00E+1	< 8.00E+0	< 1.00E+1	< 1.00E+1
Co-58	< 1.00E+1	< 8.00E+0	< 1.00E+1	< 1.00E+1
Fe-59	< 3.00E+1	< 2.00E+1	< 3.00E+1	< 3.00E+1
Co-60	< 1.00E+1	< 9.00E+0	< 1.00E+1	< 2.00E+1
Zn-65	< 3.00E+1	< 2.00E+1	< 3.00E+1	< 3.00E+1
Zr/Nb-95	< 1.00E+1	< 9.00E+0	< 1.00E+1	< 1.00E+1
Ru-103	< 1.00E+1	< 9.00E+0	< 1.00E+1	< 2.00E+1
Ru-106	< 9.00E+1	< 8.00E+1	< 1.00E+2	< 1.00E+2
Cs-134	< 1.00E+1	< 9.00E+0	< 1.00E+1	< 2.00E+1
Cs-137	< 1.00E+1	< 9.00E+0	< 1.00E+1	< 2.00E+1
Ba/La-140	< 1.00E+1	< 1.00E+1	< 2.00E+1	< 2.00E+1
Ce-141	< 2.00E+1	< 1.00E+1	< 2.00E+1	< 3.00E+1
Ce-144	< 8.00E+1	< 6.00E+1	< 7.00E+1	< 1.00E+2
Ra-226	< 2.00E+2	< 1.00E+2	< 2.00E+2	< 3.00E+2
Th-228	< 2.00E+1	< 1.00E+1	< 2.00E+1	< 3.00E+1

FP - 1 (Indicator)
pCi/kg wet

Nuclide	CABBAGE 31-AUG	SWISS CHARD 31-AUG
I-131	< 4.00E+0	< 4.00E+0
Be-7	< 1.00E+2	4.42E+2 +/- 9.10E+1
K-40	2.24E+3 +/- 2.20E+2	4.95E+3 +/- 4.90E+2
Mn-54	< 1.00E+1	< 1.00E+1
Co-58	< 1.00E+1	< 1.00E+1
Fe-59	< 3.00E+1	< 3.00E+1
Co-60	< 1.00E+1	< 1.00E+1
Zn-65	< 3.00E+1	< 3.00E+1
Zr/Nb-95	< 1.00E+1	< 1.00E+1
Ru-103	< 1.00E+1	< 1.00E+1
Ru-106	< 1.00E+2	< 1.00E+2
Cs-134	< 1.00E+1	< 1.00E+1
Cs-137	< 1.00E+1	< 1.00E+1
Ba/La-140	< 2.00E+1	< 1.00E+1
Ce-141	< 2.00E+1	< 2.00E+1
Ce-144	< 8.00E+1	< 6.00E+1
Ra-226	< 2.00E+2	< 2.00E+2
Th-228	< 2.00E+1	< 2.00E+1

FERMI 2
VEGETABLE ANALYSIS

FP - 3 (Indicator)
pCi/kg wet

Nuclide	CABBAGE 28-JUL	CABBAGE 31-AUG
I-131	< 6.00E+0	< 3.00E+0
Be-7	< 6.00E+1	< 9.00E+1
K-40	8.90E+2 +/- 9.60E+1	1.38E+3 +/- 1.40E+2
Mn-54	< 7.00E+0	< 1.00E+1
Co-58	< 7.00E+0	< 1.00E+1
Fe-59	< 1.00E+1	< 2.00E+1
Co-60	< 7.00E+0	< 1.00E+1
Zn-65	< 2.00E+1	< 2.00E+1
Zr/Nb-95	< 7.00E+0	< 1.00E+1
Ru-103	< 7.00E+0	< 1.00E+1
Ru-106	< 6.00E+1	< 9.00E+1
Cs-134	< 8.00E+0	< 1.00E+1
Cs-137	< 7.00E+0	< 1.00E+1
Ba/La-140	< 1.00E+1	< 1.00E+1
Ce-141	< 1.00E+1	< 2.00E+1
Ce-144	< 4.00E+1	< 7.00E+1
Ra-226	< 1.00E+2	< 2.00E+2
Th-228	< 1.00E+1	< 2.00E+1

FERMI 2
VEGETABLE ANALYSIS

FP - 6 (Control)
pCi/kg wet

Nuclide	RHUBARB 28-JUL	RHUBARB 31-AUG
I-131	< 5.00E+0	< 6.00E+0
Be-7	1.74E+2 +/- 7.90E+1	< 1.00E+2
K-40	3.00E+3 +/- 3.00E+2	2.68E+3 +/- 2.70E+2
Mn-54	< 1.00E+1	< 1.00E+1
Co-58	< 1.00E+1	< 1.00E+1
Fe-59	< 3.00E+1	< 2.00E+1
Co-60	< 1.00E+1	< 1.00E+1
Zn-65	< 3.00E+1	< 2.00E+1
Zr/Nb-95	< 1.00E+1	< 1.00E+1
Ru-103	< 1.00E+1	< 1.00E+1
Ru-106	< 1.00E+2	< 9.00E+1
Cs-134	< 1.00E+1	< 1.00E+1
Cs-137	< 1.00E+1	< 1.00E+1
Ba/La-140	< 2.00E+1	< 1.00E+1
Ce-141	< 2.00E+1	< 2.00E+1
Ce-144	< 6.00E+1	< 6.00E+1
Ra-226	< 2.00E+2	< 2.00E+2
Th-228	< 2.00E+1	< 2.00E+1

FERMI 2
VEGETABLE ANALYSIS

FP - 7 (Indicator)
pCi/kg wet

Nuclide	SWISS CHARD 28-JUL	SWISS CHARD 31-AUG	CABBAGE 31-AUG
I-131	< 4.00E+0	< 3.00E+0	< 5.00E+0
Be-7	1.31E+2 +/- 6.60E+1	2.35E+2 +/- 6.60E+1	2.86E+2 +/- 8.50E+1
K-40	3.77E+3 +/- 3.80E+2	1.56E+3 +/- 1.60E+2	2.69E+3 +/- 2.70E+2
Mn-54	< 1.00E+1	< 8.00E+0	< 9.00E+0
Co-58	< 1.00E+1	< 8.00E+0	< 9.00E+0
Fe-59	< 2.00E+1	< 2.00E+1	< 2.00E+1
Co-60	< 1.00E+1	< 8.00E+0	< 1.00E+1
Zn-65	< 2.00E+1	< 2.00E+1	< 2.00E+1
Zr/Nb-95	< 1.00E+1	< 9.00E+0	< 1.00E+1
Ru-103	< 1.00E+1	< 9.00E+0	< 1.00E+1
Ru-106	< 9.00E+1	< 8.00E+1	< 9.00E+1
Cs-134	< 1.00E+1	< 9.00E+0	< 1.00E+1
Cs-137	< 1.00E+1	< 9.00E+0	< 1.00E+1
Ba/La-140	< 1.00E+1	< 1.00E+1	< 1.00E+1
Ce-141	< 1.00E+1	< 1.00E+1	< 2.00E+1
Ce-144	< 6.00E+1	< 5.00E+1	< 8.00E+1
Ra-226	< 2.00E+2	< 2.00E+2	< 2.00E+2
Th-228	< 2.00E+1	< 1.00E+1	< 2.00E+1

FERMI 2
DRINKING WATER ANALYSIS

DW - 1 (Indicator)
pCi/liter

Nuclide	31-Jan	28-Feb	29-Mar	25-Apr
Gross Beta	4.10E+0 +/- 1.30E+0	4.50E+0 +/- 1.30E+0	2.90E+0 +/- 1.00E+0	4.10E+0 +/- 1.10E+0
Sr-89	< 3.00E+0	< 2.00E+0	< 3.00E+0	< 2.00E+0
Sr-90	< 8.00E-1	< 4.00E-1	< 7.00E-1	< 7.00E-1
Be-7	< 4.00E+1	< 3.00E+1	< 3.00E+1	< 3.00E+1
K-40	< 5.00E+1	< 5.00E+1	< 6.00E+1	< 5.00E+1
Cr-51	< 4.00E+1	< 3.00E+1	< 4.00E+1	< 3.00E+1
Mn-54	< 3.00E+0	< 3.00E+0	< 3.00E+0	< 3.00E+0
Co-58	< 4.00E+0	< 3.00E+0	< 3.00E+0	< 3.00E+0
Fe-59	< 8.00E+0	< 7.00E+0	< 8.00E+0	< 7.00E+0
Co-60	< 4.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Zn-65	< 7.00E+0	< 6.00E+0	< 7.00E+0	< 7.00E+0
Zr/Nb-95	< 4.00E+0	< 3.00E+0	< 4.00E+0	< 3.00E+0
Ru-103	< 4.00E+0	< 3.00E+0	< 4.00E+0	< 4.00E+0
Ru-106	< 3.00E+1	< 3.00E+1	< 3.00E+1	< 3.00E+1
Cs-134	< 4.00E+0	< 4.00E+0	< 3.00E+0	< 4.00E+0
Cs-137	< 4.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Ba/La-140	< 8.00E+0	< 4.00E+0	< 6.00E+0	< 6.00E+0
Ce-141	< 7.00E+0	< 7.00E+0	< 8.00E+0	< 6.00E+0
Ce-144	< 2.00E+1	< 3.00E+1	< 3.00E+1	< 2.00E+1
Ra-226	< 7.00E+1	< 8.00E+1	< 9.00E+1	< 7.00E+1
Th-228	< 7.00E+0	< 7.00E+0	< 7.00E+0	< 7.00E+0

DW - 1 (Indicator)
pCi/liter

Nuclide	31-May	27-Jun	25-Jul	15-Aug (Grab)
Gross Beta	4.00E+0 +/- 1.00E+0	2.20E+0 +/- 9.00E-1	3.20E+0 +/- 1.20E+0	3.80E+0 +/- 1.10E+0
Sr-89	< 3.00E+0	< 2.00E+0	< 2.00E+0	< 2.00E+0
Sr-90	< 7.00E-1	< 6.00E-1	< 6.00E-1	< 8.00E-1
Be-7	< 3.00E+1	< 3.00E+1	< 3.00E+1	< 4.00E+1
K-40	< 4.00E+1	< 7.00E+1	< 5.00E+1	< 6.00E+1
Cr-51	< 3.00E+1	< 3.00E+1	< 3.00E+1	< 4.00E+1
Mn-54	< 3.00E+0	< 3.00E+0	< 3.00E+0	< 3.00E+0
Co-58	< 3.00E+0	< 3.00E+0	< 3.00E+0	< 3.00E+0
Fe-59	< 7.00E+0	< 6.00E+0	< 6.00E+0	< 8.00E+0
Co-60	< 3.00E+0	< 3.00E+0	< 3.00E+0	< 3.00E+0
Zn-65	< 6.00E+0	< 6.00E+0	< 6.00E+0	< 6.00E+0
Zr/Nb-95	< 3.00E+0	< 3.00E+0	< 3.00E+0	< 4.00E+0
Ru-103	< 3.00E+0	< 4.00E+0	< 4.00E+0	< 5.00E+0
Ru-106	< 2.00E+1	< 3.00E+1	< 3.00E+1	< 3.00E+1
Cs-134	< 3.00E+0	< 3.00E+0	< 3.00E+0	< 4.00E+0
Cs-137	< 3.00E+0	< 3.00E+0	< 4.00E+0	< 4.00E+0
Ba/La-140	< 6.00E+0	< 5.00E+0	< 6.00E+0	< 1.00E+1
Ce-141	< 5.00E+0	< 5.00E+0	< 7.00E+0	< 1.00E+1
Ce-144	< 2.00E+1	< 2.00E+1	< 3.00E+1	< 3.00E+1
Ra-226	< 5.00E+1	< 6.00E+1	< 8.00E+1	< 9.00E+1
Th-228	< 5.00E+0	< 6.00E+0	< 7.00E+0	< 7.00E+0

FERMI 2
DRINKING WATER ANALYSIS

DW - 1 (Indicator)
pCi/liter

Nuclide	29-Aug (a)	26-Sep	31-Oct	28-Nov
Gross Beta	2.80E+0 +/- 1.00E+0	3.50E+0 +/- 9.00E-1	3.60E+0 +/- 9.00E-1	4.90E+0 +/- 1.00E+0
Sr-89	< 4.00E+0	< 2.00E+0	< 3.00E+0	< 2.00E+0
Sr-90	< 1.00E+0	< 5.00E-1	< 6.00E-1	< 4.00E-1
Be-7	< 3.00E+1	< 3.00E+1	< 3.00E+1	< 3.00E+1
K-40	< 5.00E+1	< 5.00E+1	< 6.00E+1	< 5.00E+1
Cr-51	< 3.00E+1	< 3.00E+1	< 3.00E+1	< 2.00E+1
Mn-54	< 3.00E+0	< 3.00E+0	< 3.00E+0	< 3.00E+0
Co-58	< 3.00E+0	< 3.00E+0	< 3.00E+0	< 3.00E+0
Fe-59	< 7.00E+0	< 6.00E+0	< 8.00E+0	< 6.00E+0
Co-60	< 3.00E+0	< 3.00E+0	< 3.00E+0	< 3.00E+0
Zn-65	< 8.00E+0	< 6.00E+0	< 6.00E+0	< 6.00E+0
Zr/Nb-95	< 3.00E+0	< 3.00E+0	< 4.00E+0	< 3.00E+0
Ru-103	< 4.00E+0	< 3.00E+0	< 4.00E+0	< 3.00E+0
Ru-106	< 3.00E+1	< 3.00E+1	< 3.00E+1	< 3.00E+1
Cs-134	< 3.00E+0	< 3.00E+0	< 4.00E+0	< 3.00E+0
Cs-137	< 3.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Ba/La-140	< 6.00E+0	< 5.00E+0	< 6.00E+0	< 4.00E+0
Ce-141	< 7.00E+0	< 6.00E+0	< 8.00E+0	< 5.00E+0
Ce-144	< 3.00E+1	< 2.00E+1	< 3.00E+1	< 2.00E+1
Ra-226	< 7.00E+1	< 7.00E+1	< 9.00E+1	< 7.00E+1
Th-228	< 6.00E+0	< 6.00E+0	< 7.00E+0	< 6.00E+0

DW - 1 (indicator)
pCi/liter

Nuclide	27-Dec
Gross Beta	2.70E+0 +/ 1.00E+0
Sr-89	< 2.00E+0
Sr-90	< 6.00E-1
Be-7	< 4.00E+1
K-40	< 1.00E+2
Cr-51	< 4.00E+1
Mn-54	< 4.00E+0
Co-58	< 4.00E+0
Fe-59	< 8.00E+0
Co-60	< 4.00E+0
Zn-65	< 8.00E+0
Zr/Nb-95	< 4.00E+0
Ru-103	< 4.00E+0
Ru-106	< 4.00E+1
Cs-134	< 4.00E+0
Cs-137	< 4.00E+0
Ba/La-140	< 5.00E+0
Ce-141	< 7.00E+0
Ce-144	< 3.00E+1
Ra-226	< 9.00E+1
Th-228	< 8.00E+0

a = sample less than representative (see section 8.5.1)

FERMI 2
DRINKING WATER ANALYSIS

DW - 2 (Control)
pCi/liter

Nuclide	31-Jan	28-Feb	29-Mar	25-Apr
Gross Beta	2.80E+0 +/- 1.10E+0	2.10E+0 +/- 1.00E+0	2.70E+0 +/- 9.00E-1	2.60E+0 +/- 9.00E-1
Sr-89	< 3.00E+0	< 2.00E+0	< 2.00E+0	< 2.00E+0
Sr-90	< 8.00E-1	< 5.00E-1	< 6.00E-1	< 8.00E-1
Be-7	< 4.00E+1	< 3.00E+1	< 3.00E+1	< 3.00E+1
K-40	< 1.00E+2	< 7.00E+1	< 7.00E+1	< 5.00E+1
Cr-51	< 4.00E+1	< 3.00E+1	< 4.00E+1	< 3.00E+1
Mn-54	< 4.00E+0	< 3.00E+0	< 3.00E+0	< 3.00E+0
Co-58	< 4.00E+0	< 3.00E+0	< 3.00E+0	< 3.00E+0
Fe-59	< 9.00E+0	< 7.00E+0	< 8.00E+0	< 7.00E+0
Co-60	< 3.00E+0	< 4.00E+0	< 4.00E+0	< 3.00E+0
Zn-65	< 8.00E+0	< 7.00E+0	< 8.00E+0	< 7.00E+0
Zr/Nb-95	< 4.00E+0	< 3.00E+0	< 4.00E+0	< 3.00E+0
Ru-103	< 5.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Ru-106	< 3.00E+1	< 3.00E+1	< 3.00E+1	< 3.00E+1
Cs-134	< 4.00E+0	< 4.00E+0	< 4.00E+0	< 3.00E+0
Cs-137	< 4.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Ba/La-140	< 9.00E+0	< 5.00E+0	< 8.00E+0	< 5.00E+0
Ce-141	< 7.00E+0	< 8.00E+0	< 9.00E+0	< 7.00E+0
Ce-144	< 2.00E+1	< 3.00E+1	< 4.00E+1	< 3.00E+1
Ra-226	< 7.00E+1	< 1.00E+2	< 1.00E+2	< 7.00E+1
Th-228	< 7.00E+0	< 8.00E+0	< 9.00E+0	< 6.00E+0

DW - 2 (Control)
pCi/liter

Nuclide	31-May	27-Jun	25-Jul	29-Aug
Gross Beta	3.10E+0 +/- 9.00E-1	2.70E+0 +/- 1.00E+0	1.70E+0 +/- 1.00E+0	4.50E+0 +/- 1.00E+0
Sr-89	< 3.00E+0	< 2.00E+0	< 3.00E+0	< 2.00E+0
Sr-90	< 6.00E-1	< 6.00E-1	< 7.00E-1	< 6.00E-1
Be-7	< 2.00E+1	< 3.00E+1	< 3.00E+1	< 4.00E+1
K-40	< 4.00E+1	< 6.00E+1	< 6.00E+1	< 6.00E+1
Cr-51	< 2.00E+1	< 3.00E+1	< 3.00E+1	< 4.00E+1
Mn-54	< 2.00E+0	< 3.00E+0	< 3.00E+0	< 3.00E+0
Co-58	< 2.00E+0	< 3.00E+0	< 3.00E+0	< 3.00E+0
Fe-59	< 5.00E+0	< 6.00E+0	< 6.00E+0	< 7.00E+0
Co-60	< 2.00E+0	< 3.00E+0	< 3.00E+0	< 4.00E+0
Zn-65	< 4.00E+0	< 6.00E+0	< 7.00E+0	< 8.00E+0
Zr/Nb-95	< 2.00E+0	< 3.00E+0	< 4.00E+0	< 4.00E+0
Ru-103	< 3.00E+0	< 4.00E+0	< 4.00E+0	< 5.00E+0
Ru-106	< 2.00E+1	< 3.00E+1	< 3.00E+1	< 4.00E+1
Cs-134	< 2.00E+0	< 3.00E+0	< 4.00E+0	< 4.00E+0
Cs-137	< 2.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Ba/La-140	< 4.00E+0	< 5.00E+0	< 7.00E+0	< 7.00E+0
Ce-141	< 5.00E+0	< 7.00E+0	< 9.00E+0	< 7.00E+0
Ce-144	< 2.00E+1	< 3.00E+1	< 3.00E+1	< 3.00E+1
Ra-226	< 5.00E+1	< 7.00E+1	< 1.00E+2	< 8.00E+1
Th-228	< 5.00E+0	< 6.00E+0	< 8.00E+0	< 7.00E+0

FERMI 2
DRINKING WATER ANALYSIS

DW - 2 (Control)
pCi/liter

Nuclide	26-Sep	31-Oct	28-Nov	27-Dec
Gross Beta	3.10E+0 +/- 9.00E-1	3.20E+0 +/- 9.00E-1	2.80E+0 +/- 1.00E+0	2.30E+0 +/- 9.00E-1
Sr-89	< 2.00E+0	< 3.00E+0	< 2.00E+0	< 2.00E+0
Sr-90	< 4.00E-1	< 7.00E-1	< 5.00E-1	< 6.00E-1
Be-7	< 3.00E+1	< 3.00E+1	< 2.00E+1	< 3.00E+1
K-40	< 5.00E+1	< 7.00E+1	< 5.00E+1	< 5.00E+1
Cr-51	< 3.00E+1	< 4.00E+1	< 2.00E+1	< 3.00E+1
Mn-54	< 3.00E+0	< 3.00E+0	< 3.00E+0	< 3.00E+0
Co-58	< 3.00E+0	< 3.00E+0	< 2.00E+0	< 3.00E+0
Fe-59	< 6.00E+0	< 7.00E+0	< 5.00E+0	< 6.00E+0
Co-60	< 3.00E+0	< 4.00E+0	< 2.00E+0	< 3.00E+0
Zn-65	< 6.00E+0	< 7.00E+0	< 6.00E+0	< 6.00E+0
Zr/Nb-95	< 3.00E+0	< 4.00E+0	< 3.00E+0	< 3.00E+0
Ru-103	< 3.00E+0	< 4.00E+0	< 3.00E+0	< 3.00E+0
Ru-106	< 2.00E+1	< 3.00E+1	< 2.00E+1	< 3.00E+1
Cs-134	< 3.00E+0	< 4.00E+0	< 3.00E+0	< 3.00E+0
Cs-137	< 4.00E+0	< 4.00E+0	< 4.00E+0	< 3.00E+0
Ba/La-140	< 4.00E+0	< 6.00E+0	< 3.00E+0	< 4.00E+0
Ce-141	< 6.00E+0	< 9.00E+0	< 5.00E+0	< 6.00E+0
Ce-144	< 2.00E+1	< 3.00E+1	< 2.00E+1	< 2.00E+1
Ra-226	< 6.00E+1	< 1.00E+2	< 6.00E+1	< 7.00E+1
Th-228	< 5.00E+0	< 9.00E+0	< 5.00E+0	< 6.00E+0

FERMI 2
DRINKING WATER ANALYSIS

DW - 3 (Indicator)
pCi/liter

Nuclide	31-Jan	28-Feb	29-Mar	25-Apr
Gross Beta	4.20E+0 +/- 1.20E+0	2.40E+0 +/- 1.10E+0	3.30E+0 +/- 1.00E+0	3.20E+0 +/- 1.00E+0
Sr-89	< 3.00E+0	< 2.00E+0	< 2.00E+0	< 7.00E-1
Sr-90	< 4.00E-1	< 4.00E-1	< 8.00E-1	< 5.00E-1
Be-7	< 4.00E+1	< 3.00E+1	< 3.00E+1	< 4.00E+1
K-40	< 5.00E+1	< 1.00E+2	< 9.00E+1	< 6.00E+1
Cr-51	< 4.00E+1	< 3.00E+1	< 3.00E+1	< 3.00E+1
Mn-54	< 3.00E+0	< 3.00E+0	< 3.00E+0	< 4.00E+0
Co-58	< 4.00E+0	< 4.00E+0	< 3.00E+0	< 3.00E+0
Fe-59	< 6.00E+0	< 8.00E+0	< 7.00E+0	< 8.00E+0
Co-60	< 4.00E+0	< 3.00E+0	< 3.00E+0	< 4.00E+0
Zn-65	< 8.00E+0	< 8.00E+0	< 7.00E+0	< 8.00E+0
Zr/Nb-95	< 3.00E+0	< 4.00E+0	< 3.00E+0	< 4.00E+0
Ru-103	< 5.00E+0	< 4.00E+0	< 3.00E+0	< 5.00E+0
Ru-106	< 3.00E+1	< 3.00E+1	< 3.00E+1	< 3.00E+1
Cs-134	< 3.00E+0	< 4.00E+0	< 3.00E+0	< 4.00E+0
Cs-137	< 3.00E+0	< 4.00E+0	< 3.00E+0	< 4.00E+0
Ba/La-140	< 9.00E+0	< 4.00E+0	< 5.00E+0	< 6.00E+0
Ce-141	< 9.00E+0	< 5.00E+0	< 5.00E+0	< 8.00E+0
Ce-144	< 3.00E+1	< 2.00E+1	< 2.00E+1	< 3.00E+1
Ra-226	< 8.00E+1	< 8.00E+1	< 6.00E+1	< 8.00E+1
Th-228	< 7.00E+0	< 7.00E+0	< 5.00E+0	< 7.00E+0

DW - 3 (Indicator)
pCi/liter

Nuclide	31-May	27-Jun	25-Jul	29-Aug
Gross Beta	3.90E+0 +/- 1.00E+0	2.40E+0 +/- 1.00E+0	4.50E+0 +/- 1.30E+0	2.40E+0 +/- 9.00E-1
Sr-89	< 3.00E+0	< 2.00E+0	< 2.00E+0	< 2.00E+0
Sr-90	< 7.00E-1	< 5.00E-1	< 6.00E-1	< 5.00E-1
Be-7	< 3.00E+1	< 3.00E+1	< 3.00E+1	< 3.00E+1
K-40	< 8.00E+1	< 7.00E+1	< 1.00E+2	< 5.00E+1
Cr-51	< 3.00E+1	< 3.00E+1	< 3.00E+1	< 4.00E+1
Mn-54	< 3.00E+0	< 3.00E+0	< 3.00E+0	< 3.00E+0
Co-58	< 3.00E+0	< 3.00E+0	< 4.00E+0	< 3.00E+0
Fe-59	< 7.00E+0	< 7.00E+0	< 8.00E+0	< 7.00E+0
Co-60	< 3.00E+0	< 3.00E+0	< 4.00E+0	< 3.00E+0
Zn-65	< 7.00E+0	< 6.00E+0	< 8.00E+0	< 6.00E+0
Zr/Nb-95	< 3.00E+0	< 3.00E+0	< 4.00E+0	< 3.00E+0
Ru-103	< 4.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Ru-106	< 3.00E+1	< 3.00E+1	< 3.00E+1	< 3.00E+1
Cs-134	< 3.00E+0	< 3.00E+0	< 4.00E+0	< 3.00E+0
Cs-137	< 3.00E+0	< 3.00E+0	< 4.00E+0	< 4.00E+0
Ba/La-140	< 6.00E+0	< 5.00E+0	< 5.00E+0	< 5.00E+0
Ce-141	< 5.00E+0	< 5.00E+0	< 6.00E+0	< 7.00E+0
Ce-144	< 2.00E+1	< 2.00E+1	< 2.00E+1	< 3.00E+1
Ra-226	< 6.00E+1	< 6.00E+1	< 7.00E+1	< 8.00E+1
Th-228	< 6.00E+0	< 5.00E+0	< 6.00E+0	< 7.00E+0

FERMI 2
DRINKING WATER ANALYSIS

DW - 3 (Indicator)
pCi/liter

Nuclide	26-Sep	31-Oct	28-Nov	27-Dec
Gross Beta	3.00E+0 +/- 9.00E-1	4.60E+0 +/- 1.00E+0	2.90E+0 +/- 1.10E+0	3.40E+0 +/- 1.10E+0
Sr-89	< 2.00E+0	< 2.00E+0	< 2.00E+0	< 2.00E+0
Sr-90	< 6.00E-1	< 5.00E-1	< 4.00E-1	< 8.00E-1
Be-7	< 3.00E+1	< 4.00E+1	< 4.00E+1	< 3.00E+1
K-40	< 5.00E+1	< 1.00E+2	< 1.00E+2	< 7.00E+1
Cr-51	< 3.00E+1	< 3.00E+1	< 4.00E+1	< 3.00E+1
Mn-54	< 3.00E+0	< 4.00E+0	< 4.00E+0	< 3.00E+0
Co-58	< 2.00E+0	< 4.00E+0	< 4.00E+0	< 3.00E+0
Fe-59	< 6.00E+0	< 9.00E+0	< 9.00E+0	< 7.00E+0
Co-60	< 3.00E+0	< 4.00E+0	< 5.00E+0	< 3.00E+0
Zn-65	< 5.00E+0	< 9.00E+0	< 1.00E+1	< 7.00E+0
Zr/Nb-95	< 3.00E+0	< 4.00E+0	< 5.00E+0	< 3.00E+0
Ru-103	< 3.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Ru-106	< 2.00E+1	< 3.00E+1	< 4.00E+1	< 3.00E+1
Cs-134	< 3.00E+0	< 4.00E+0	< 5.00E+0	< 4.00E+0
Cs-137	< 3.00E+0	< 4.00E+0	< 5.00E+0	< 4.00E+0
Ba/La-140	< 4.00E+0	< 6.00E+0	< 4.00E+0	< 4.00E+0
Ce-141	< 6.00E+0	< 6.00E+0	< 7.00E+0	< 7.00E+0
Ce-144	< 2.00E+1	< 2.00E+1	< 3.00E+1	< 3.00E+1
Ra-226	< 6.00E+1	< 7.00E+1	< 8.00E+1	< 8.00E+1
Th-228	< 6.00E+0	< 7.00E+0	< 8.00E+0	< 6.00E+0

FERMI 2
SURFACE WATER ANALYSIS

SW - 2 (Control)
pCi/liter

Nuclide	31-Jan	28-Feb	29-Mar	25-Apr
Sr-89	< 3.00E+0	< 2.00E+0	< 2.00E+0	< 8.00E-1
Sr-90	< 5.00E-1	< 5.00E-1	< 5.00E-1	< 5.00E-1
Be-7	< 3.00E+1	< 2.00E+1	< 3.00E+1	< 3.00E+1
K-40	< 6.00E+1	< 5.00E+1	< 5.00E+1	< 5.00E+1
Cr-51	< 3.00E+1	< 2.00E+1	< 3.00E+1	< 2.00E+1
Mn-54	< 3.00E+0	< 3.00E+0	< 3.00E+0	< 3.00E+0
Co-58	< 3.00E+0	< 3.00E+0	< 3.00E+0	< 3.00E+0
Fe-59	< 7.00E+0	< 5.00E+0	< 6.00E+0	< 6.00E+0
Co-60	< 3.00E+0	< 3.00E+0	< 3.00E+0	< 3.00E+0
Zn-65	< 6.00E+0	< 6.00E+0	< 6.00E+0	< 6.00E+0
Zr/Nb-95	< 3.00E+0	< 3.00E+0	< 3.00E+0	< 3.00E+0
Ru-103	< 4.00E+0	< 3.00E+0	< 3.00E+0	< 3.00E+0
Ru-106	< 3.00E+1	< 3.00E+1	< 3.00E+1	< 3.00E+1
Cs-134	< 3.00E+0	< 3.00E+0	< 3.00E+0	< 3.00E+0
Cs-137	< 3.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Ba/La-140	< 7.00E+0	< 3.00E+0	< 5.00E+0	< 4.00E+0
Ce-141	< 6.00E+0	< 5.00E+0	< 6.00E+0	< 6.00E+0
Ce-144	< 2.00E+1	< 2.00E+1	< 2.00E+1	< 2.00E+1
Ra-226	< 6.00E+1	< 6.00E+1	< 6.00E+1	< 6.00E+1
Th-228	< 6.00E+0	< 5.00E+0	< 5.00E+0	< 5.00E+0

SW - 2 (Control)
pCi/liter

Nuclide	31-May	27-Jun	25-Jul	29-Aug
Sr-89	< 2.00E+0	< 2.00E+0	< 2.00E+0	< 2.00E+0
Sr-90	< 7.00E-1	< 6.00E-1	< 5.00E-1	< 8.00E-1
Be-7	< 2.00E+1	< 3.00E+1	< 4.00E+1	< 4.00E+1
K-40	< 5.00E+1	< 6.00E+1	< 9.00E+1	< 6.00E+1
Cr-51	< 3.00E+1	< 4.00E+1	< 3.00E+1	< 4.00E+1
Mn-54	< 2.00E+0	< 3.00E+0	< 4.00E+0	< 4.00E+0
Co-58	< 2.00E+0	< 3.00E+0	< 4.00E+0	< 4.00E+0
Fe-59	< 5.00E+0	< 7.00E+0	< 8.00E+0	< 8.00E+0
Co-60	< 3.00E+0	< 4.00E+0	< 4.00E+0	< 5.00E+0
Zn-65	< 5.00E+0	< 7.00E+0	< 8.00E+0	< 8.00E+0
Zr/Nb-95	< 2.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Ru-103	< 3.00E+0	< 4.00E+0	< 4.00E+0	< 5.00E+0
Ru-106	< 2.00E+1	< 3.00E+1	< 4.00E+1	< 4.00E+1
Cs-134	< 3.00E+0	< 4.00E+0	< 4.00E+0	< 5.00E+0
Cs-137	< 2.00E+0	< 4.00E+0	< 4.00E+0	< 5.00E+0
Ba/La-140	< 5.00E+0	< 7.00E+0	< 6.00E+0	< 9.00E+0
Ce-141	< 6.00E+0	< 9.00E+0	< 7.00E+0	< 1.00E+1
Ce-144	< 2.00E+1	< 3.00E+1	< 3.00E+1	< 4.00E+1
Ra-226	< 6.00E+1	< 1.00E+2	< 7.00E+1	< 1.00E+2
Th-228	< 5.00E+0	< 8.00E+0	< 6.00E+0	< 1.00E+1

FERMI 2
SURFACE WATER ANALYSIS

SW - 2 (Control)
pCi/liter

Nuclide	26-Sep	31-Oct	28-Nov	27-Dec
Sr-89	< 2.00E+0	< 4.00E+0	< 2.00E+0	< 3.00E+0
Sr-90	< 4.00E-1	< 1.00E+0	< 6.00E-1	< 4.00E-1
Be-7	< 3.00E+1	< 3.00E+1	< 3.00E+1	< 2.00E+1
K-40	< 5.00E+1	< 5.00E+1	< 6.00E+1	< 5.00E+1
Cr-51	< 3.00E+1	< 3.00E+1	< 3.00E+1	< 2.00E+1
Mn-54	< 3.00E+0	< 3.00E+0	< 3.00E+0	< 2.00E+0
Co-58	< 3.00E+0	< 3.00E+0	< 3.00E+0	< 2.00E+0
Fe-59	< 7.00E+0	< 5.00E+0	< 6.00E+0	< 5.00E+0
Co-60	< 4.00E+0	< 3.00E+0	< 3.00E+0	< 2.00E+0
Zn-65	< 7.00E+0	< 6.00E+0	< 7.00E+0	< 6.00E+0
Zr/Nb-95	< 3.00E+0	< 3.00E+0	< 3.00E+0	< 2.00E+0
Ru-103	< 4.00E+0	< 3.00E+0	< 3.00E+0	< 3.00E+0
Ru-106	< 3.00E+1	< 3.00E+1	< 3.00E+1	< 2.00E+1
Cs-134	< 3.00E+0	< 3.00E+0	< 3.00E+0	< 3.00E+0
Cs-137	< 4.00E+0	< 4.00E+0	< 4.00E+0	< 3.00E+0
Ba/La-140	< 6.00E+0	< 4.00E+0	< 4.00E+0	< 3.00E+0
Ce-141	< 8.00E+0	< 6.00E+0	< 6.00E+0	< 5.00E+0
Ce-144	< 3.00E+1	< 2.00E+1	< 3.00E+1	< 2.00E+1
Ra-226	< 8.00E+1	< 6.00E+1	< 7.00E+1	< 6.00E+1
Th-228	< 7.00E+0	< 5.00E+0	< 6.00E+0	< 5.00E+0

FERMI 2
SURFACE WATER ANALYSIS

SW - 3 (Indicator)
pCi/liter

Nuclide	31-Jan	28-Feb	29-Mar	25-Apr
Sr-89	< 3.00E+0	< 3.00E+0	< 2.00E+0	< 3.00E+0
Sr-90	< 9.00E-1	< 7.00E-1	< 5.00E-1	< 7.00E-1
Be-7	< 4.00E+1	< 4.00E+1	< 3.00E+1	< 3.00E+1
K-40	< 6.00E+1	< 1.00E+2	< 9.00E+1	< 6.00E+1
Cr-51	< 5.00E+1	< 3.00E+1	< 3.00E+1	< 3.00E+1
Mn-54	< 4.00E+0	< 4.00E+0	< 3.00E+0	< 3.00E+0
Co-58	< 4.00E+0	< 4.00E+0	< 3.00E+0	< 3.00E+0
Fe-59	< 8.00E+0	< 1.00E+1	< 7.00E+0	< 7.00E+0
Co-60	< 4.00E+0	< 5.00E+0	< 3.00E+0	< 3.00E+0
Zn-65	< 8.00E+0	< 9.00E+0	< 7.00E+0	< 7.00E+0
Zr/Nb-95	< 4.00E+0	< 4.00E+0	< 3.00E+0	< 3.00E+0
Ru-103	< 5.00E+0	< 5.00E+0	< 4.00E+0	< 4.00E+0
Ru-106	< 3.00E+1	< 4.00E+1	< 3.00E+1	< 3.00E+1
Cs-134	< 4.00E+0	< 5.00E+0	< 3.00E+0	< 3.00E+0
Cs-137	< 4.00E+0	< 5.00E+0	< 4.00E+0	< 3.00E+0
Ba/La-140	< 9.00E+0	< 5.00E+0	< 5.00E+0	< 5.00E+0
Ce-141	< 9.00E+0	< 7.00E+0	< 6.00E+0	< 7.00E+0
Ce-144	< 3.00E+1	< 3.00E+1	< 2.00E+1	< 3.00E+1
Ra-226	< 8.00E+1	< 8.00E+1	< 7.00E+1	< 8.00E+1
Th-228	< 7.00E+0	< 8.00E+0	< 6.00E+0	< 7.00E+0

SW - 3 (Indicator)
pCi/liter

Nuclide	31-May	27-Jun	25-Jul	15-Aug (Grab)
Sr-89	< 2.00E+0	< 2.00E+0	< 2.00E+0	< 1.00E+0
Sr-90	< 6.00E-1	< 5.00E-1	< 5.00E-1	< 5.00E-1
Be-7	< 3.00E+1	< 3.00E+1	< 4.00E+1	< 4.00E+1
K-40	< 9.00E+1	< 1.00E+2	< 1.00E+2	< 6.00E+1
Cr-51	< 3.00E+1	< 3.00E+1	< 4.00E+1	< 5.00E+1
Mn-54	< 3.00E+0	< 4.00E+0	< 4.00E+0	< 3.00E+0
Co-58	< 3.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Fe-59	< 8.00E+0	< 8.00E+0	< 1.00E+1	< 9.00E+0
Co-60	< 3.00E+0	< 4.00E+0	< 4.00E+0	< 3.00E+0
Zn-65	< 7.00E+0	< 8.00E+0	< 1.00E+1	< 8.00E+0
Zr/Nb-95	< 4.00E+0	< 4.00E+0	< 5.00E+0	< 4.00E+0
Ru-103	< 4.00E+0	< 4.00E+0	< 5.00E+0	< 5.00E+0
Ru-106	< 3.00E+1	< 3.00E+1	< 4.00E+1	< 3.00E+1
Cs-134	< 3.00E+0	< 4.00E+0	< 5.00E+0	< 4.00E+0
Cs-137	< 4.00E+0	< 4.00E+0	< 5.00E+0	< 4.00E+0
Ba/La-140	< 6.00E+0	< 6.00E+0	< 7.00E+0	< 1.00E+1
Ce-141	< 6.00E+0	< 6.00E+0	< 7.00E+0	< 1.00E+1
Ce-144	< 2.00E+1	< 2.00E+1	< 3.00E+1	< 3.00E+1
Ra-226	< 6.00E+1	< 7.00E+1	< 8.00E+1	< 1.00E+2
Th-228	< 6.00E+0	< 6.00E+0	< 7.00E+0	< 8.00E+0

FERMI 2
SURFACE WATER ANALYSIS

SW - 3 (Indicator)
pCi/liter

Nuclide	29-Aug (a)	26-Sep	31-Oct	28-Nov
Sr-89	< 2.00E+0	< 3.00E+0	< 2.00E+0	< 2.00E+0
Sr-90	< 7.00E-1	< 7.00E-1	< 6.00E-1	< 6.00E-1
Be-7	< 3.00E+1	< 3.00E+1	< 4.00E+1	< 3.00E+1
K-40	< 5.00E+1	< 6.00E+1	< 1.00E+2	< 7.00E+1
Cr-51	< 3.00E+1	< 4.00E+1	< 4.00E+1	< 2.00E+1
Mn-54	< 2.00E+0	< 3.00E+0	< 4.00E+0	< 3.00E+0
Co-58	< 3.00E+0	< 3.00E+0	< 4.00E+0	< 3.00E+0
Fe-59	< 5.00E+0	< 6.00E+0	< 1.00E+1	< 6.00E+0
Co-60	< 3.00E+0	< 3.00E+0	< 5.00E+0	< 3.00E+0
Zn-65	< 5.00E+0	< 7.00E+0	< 1.00E+1	< 7.00E+0
Zr/Nb-95	< 3.00E+0	< 4.00E+0	< 5.00E+0	< 3.00E+0
Ru-103	< 3.00E+0	< 4.00E+0	< 5.00E+0	< 3.00E+0
Ru-106	< 2.00E+1	< 3.00E+1	< 4.00E+1	< 3.00E+1
Cs-134	< 3.00E+0	< 4.00E+0	< 5.00E+0	< 3.00E+0
Cs-137	< 3.00E+0	< 4.00E+0	< 5.00E+0	< 3.00E+0
Ba/La-140	< 5.00E+0	< 6.00E+0	< 7.00E+0	< 3.00E+0
Ce-141	< 6.00E+0	< 9.00E+0	< 8.00E+0	< 5.00E+0
Ce-144	< 2.00E+1	< 3.00E+1	< 3.00E+1	< 2.00E+1
Ra-226	< 7.00E+1	< 1.00E+2	< 9.00E+1	< 6.00E+1
Th-228	< 6.00E+0	< 8.00E+0	< 8.00E+0	< 5.00E+0

SW - 3 (Indicator)
pCi/liter

Nuclide	27-Dec
Sr-89	< 2.00E+0
Sr-90	< 1.00E+0
Be-7	< 3.00E+1
K-40	< 1.00E+2
Cr-51	< 3.00E+1
Mn-54	< 3.00E+0
Co-58	< 3.00E+0
Fe-59	< 7.00E+0
Co-60	< 4.00E+0
Zn-65	< 8.00E+0
Zr/Nb-95	< 4.00E+0
Ru-103	< 4.00E+0
Ru-106	< 3.00E+1
Cs-134	< 4.00E+0
Cs-137	< 4.00E+0
Ba/La-140	< 4.00E+0
Ce-141	< 5.00E+0
Ce-144	< 2.00E+1
Ra-226	< 6.00E+1
Th-228	< 6.00E+0

a = sample less than representative (see section 8.5.2)

FERMI 2
DRINKING AND SURFACE WATER
QUARTERLY COMPOSITE SAMPLES

Tritium (pCi/liter)

Station	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
DW-1 (a)	< 2.00E+2	< 4.00E+2	< 5.00E+2	< 2.00E+2
DW-2	< 2.00E+2	< 4.00E+2	< 5.00E+2	< 2.00E+2
DW-3	< 2.00E+2	< 4.00E+2	< 5.00E+2	< 2.00E+2
SW-2	< 2.00E+2	< 4.00E+2	< 4.00E+2	< 2.00E+2
SW-3 (b)	< 2.00E+2	< 4.00E+2	< 4.00E+2	< 2.00E+2

a = DW-1 third quarter composite less than representative (see section 8.5.1)
b = SW-3 third quarter composite less than representative (see section 8.5.2)

FERMI 2
GROUNDWATER ANALYSIS

GW-1 (Indicator)
pCi/liter

Nuclide	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
H-3	< 5.00E+2	< 2.00E+2	< 5.00E+2	< 2.00E+2
Be-7	< 3.00E+1	< 4.00E+1	< 3.00E+1	< 3.00E+1
K-40	< 5.00E+1	< 1.00E+2	< 4.00E+1	< 8.00E+1
Cr-51	< 3.00E+1	< 4.00E+1	< 3.00E+1	< 3.00E+1
Mn-54	< 3.00E+0	< 4.00E+0	< 3.00E+0	< 3.00E+0
Co-58	< 3.00E+0	< 4.00E+0	< 2.00E+0	< 3.00E+0
Fe-59	< 5.00E+0	< 9.00E+0	< 6.00E+0	< 7.00E+0
Co-60	< 3.00E+0	< 4.00E+0	< 3.00E+0	< 3.00E+0
Zn-65	< 6.00E+0	< 9.00E+0	< 6.00E+0	< 7.00E+0
Zr/Nb-95	< 3.00E+0	< 4.00E+0	< 3.00E+0	< 3.00E+0
Ru-103	< 3.00E+0	< 5.00E+0	< 3.00E+0	< 4.00E+0
Ru-106	< 3.00E+1	< 4.00E+1	< 2.00E+1	< 3.00E+1
Cs-134	< 3.00E+0	< 5.00E+0	< 3.00E+0	< 3.00E+0
Cs-137	< 3.00E+0	< 5.00E+0	< 3.00E+0	< 3.00E+0
Ba/La-140	< 5.00E+0	< 7.00E+0	< 5.00E+0	< 5.00E+0
Ce-141	< 6.00E+0	< 7.00E+0	< 6.00E+0	< 5.00E+0
Ce-144	< 2.00E+1	< 3.00E+1	< 3.00E+1	< 2.00E+1
Ra-226	< 7.00E+1	< 8.00E+1	< 7.00E+1	< 6.00E+1
Th-228	< 6.00E+0	< 7.00E+0	< 6.00E+0	< 5.00E+0

GW - 2 (Indicator)
pCi/liter

Nuclide	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
H-3	< 5.00E+2	< 2.00E+2	< 5.00E+2	< 2.00E+2
Be-7	< 3.00E+1	< 2.00E+1	< 3.00E+1	< 3.00E+1
K-40	< 5.00E+1	< 4.00E+1	< 6.00E+1	< 5.00E+1
Cr-51	< 3.00E+1	< 2.00E+1	< 3.00E+1	< 3.00E+1
Mn-54	< 3.00E+0	< 2.00E+0	< 3.00E+0	< 3.00E+0
Co-58	< 3.00E+0	< 2.00E+0	< 3.00E+0	< 3.00E+0
Fe-59	< 6.00E+0	< 5.00E+0	< 6.00E+0	< 8.00E+0
Co-60	< 3.00E+0	< 2.00E+0	< 3.00E+0	< 4.00E+0
Zn-65	< 6.00E+0	< 5.00E+0	< 5.00E+0	< 8.00E+0
Zr/Nb-95	< 3.00E+0	< 2.00E+0	< 3.00E+0	< 4.00E+0
Ru-103	< 3.00E+0	< 3.00E+0	< 3.00E+0	< 4.00E+0
Ru-106	< 3.00E+1	< 2.00E+1	< 3.00E+1	< 3.00E+1
Cs-134	< 3.00E+0	< 2.00E+0	< 3.00E+0	< 3.00E+0
Cs-137	< 3.00E+0	< 3.00E+0	< 3.00E+0	< 3.00E+0
Ba/La-140	< 6.00E+0	< 4.00E+0	< 5.00E+0	< 5.00E+0
Ce-141	< 7.00E+0	< 5.00E+0	< 7.00E+0	< 5.00E+0
Ce-144	< 3.00E+1	< 2.00E+1	< 3.00E+1	< 2.00E+1
Ra-226	< 7.00E+1	< 5.00E+1	< 8.00E+1	< 6.00E+1
Th-228	< 6.00E+0	< 5.00E+0	< 7.00E+0	< 6.00E+0

FERMI 2
GROUNDWATER WATER ANALYSIS

GW - 3 (Indicator)
pCi/liter

Nuclide	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
H-3	< 5.00E+2	< 2.00E+2	< 5.00E+2	< 2.00E+2
Be-7	< 3.00E+1	< 3.00E+1	< 2.00E+1	< 3.00E+1
K-40	< 6.00E+1	< 1.00E+2	< 4.00E+1	< 1.00E+2
Cr-51	< 3.00E+1	< 4.00E+1	< 2.00E+1	< 3.00E+1
Mn-54	< 2.00E+0	< 4.00E+0	< 2.00E+0	< 4.00E+0
Co-58	< 3.00E+0	< 4.00E+0	< 2.00E+0	< 4.00E+0
Fe-59	< 7.00E+0	< 9.00E+0	< 5.00E+0	< 8.00E+0
Co-60	< 3.00E+0	< 4.00E+0	< 3.00E+0	< 4.00E+0
Zn-65	< 6.00E+0	< 9.00E+0	< 5.00E+0	< 8.00E+0
Zr/Nb-95	< 3.00E+0	< 4.00E+0	< 3.00E+0	< 4.00E+0
Ru-103	< 4.00E+0	< 5.00E+0	< 3.00E+0	< 4.00E+0
Ru-106	< 3.00E+1	< 4.00E+1	< 2.00E+1	< 3.00E+1
Cs-134	< 3.00E+0	< 4.00E+0	< 3.00E+0	< 4.00E+0
Cs-137	< 3.00E+0	< 4.00E+0	< 4.00E+0	< 4.00E+0
Ba/La-140	< 6.00E+0	< 6.00E+0	< 4.00E+0	< 5.00E+0
Ce-141	< 8.00E+0	< 7.00E+0	< 5.00E+0	< 6.00E+0
Ce-144	< 3.00E+1	< 3.00E+1	< 2.00E+1	< 2.00E+1
Ra-226	< 8.00E+1	< 7.00E+1	< 6.00E+1	< 7.00E+1
Th-228	< 7.00E+0	< 7.00E+0	< 5.00E+0	< 6.00E+0

GW - 4 (Control)
pCi/liter

Nuclide	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
H-3	< 5.00E+2	< 2.00E+2	< 5.00E+2	< 2.00E+2
Be-7	< 3.00E+1	< 4.00E+1	< 2.00E+1	< 3.00E+1
K-40	< 8.00E+1	< 1.00E+2	< 4.00E+1	2.13E+2 +/- 2.80E+1
Cr-51	< 3.00E+1	< 5.00E+1	< 2.00E+1	< 3.00E+1
Mn-54	< 3.00E+0	< 4.00E+0	< 2.00E+0	< 3.00E+0
Co-58	< 3.00E+0	< 5.00E+0	< 2.00E+0	< 3.00E+0
Fe-59	< 7.00E+0	< 1.00E+1	< 5.00E+0	< 7.00E+0
Co-60	< 3.00E+0	< 5.00E+0	< 2.00E+0	< 4.00E+0
Zn-65	< 7.00E+0	< 1.00E+1	< 5.00E+0	< 7.00E+0
Zr/Nb-95	< 3.00E+0	< 5.00E+0	< 2.00E+0	< 4.00E+0
Ru-103	< 4.00E+0	< 6.00E+0	< 3.00E+0	< 4.00E+0
Ru-106	< 3.00E+1	< 4.00E+1	< 2.00E+1	< 3.00E+1
Cs-134	< 3.00E+0	< 5.00E+0	< 2.00E+0	< 3.00E+0
Cs-137	< 4.00E+0	< 5.00E+0	< 3.00E+0	< 4.00E+0
Ba/La-140	< 5.00E+0	< 9.00E+0	< 4.00E+0	< 5.00E+0
Ce-141	< 5.00E+0	< 9.00E+0	< 5.00E+0	< 6.00E+0
Ce-144	< 2.00E+1	< 3.00E+1	< 2.00E+1	< 2.00E+1
Ra-226	< 6.00E+1	< 9.00E+1	< 5.00E+1	< 7.00E+1
Th-228	< 6.00E+0	< 8.00E+0	< 4.00E+0	< 7.00E+0

FERMI 2
SEDIMENT ANALYSIS

S - 1 (Indicator)
pCi/kg dry

Nuclide	4-May	12-Oct
Sr-89	< 7.00E+1	< 7.00E+1
Sr-90	< 2.00E+1	< 2.00E+1
Be-7	< 3.00E+2	< 3.00E+2
K 40	1.19E+2 +/- 1.20E+3	1.08E+4 +/- 1.10E+3
Mn-54	< 2.00E+1	< 3.00E+1
Co-58	< 3.00E+1	< 3.00E+1
Fe-59	< 9.00E+1	< 7.00E+1
Co-60	< 3.00E+1	< 3.00E+1
Zn-65	< 7.00E+1	< 7.00E+1
Zr/Nb-95	< 3.00E+1	< 3.00E+1
Ru-103	< 3.00E+1	< 3.00E+1
Ru-106	< 2.00E+2	< 2.00E+2
Cs-134	< 3.00E+1	< 3.00E+1
Cs-137	< 2.00E+1	< 3.00E+1
Ba/La-140	< 1.00E+2	< 8.00E+1
Ce-141	< 6.00E+1	< 6.00E+1
Ce-144	< 2.00E+2	< 2.00E+2
Ra-226	< 4.00E+2	6.79E+2 +/- 3.44E+2
Th-228	1.84E+2 +/- 2.80E+1	3.77E+2 +/- 3.80E+1

S - 2 (Indicator)
pCi/kg dry

Nuclide	4-May	12-Oct
Sr-89	< 2.00E+2	< 1.00E+2
Sr-90	7.10E+1 +/- 3.70E+1	9.80E+1 +/- 2.60E+1
Be-7	< 3.00E+2	< 3.00E+2
K-40	8.73E+3 +/- 8.70E+2	1.05E+4 +/- 1.10E+3
Mn-54	< 3.00E+1	< 3.00E+1
Co-58	< 3.00E+1	< 4.00E+1
Fe-59	< 7.00E+1	< 8.00E+1
Co-60	< 3.00E+1	< 3.00E+1
Zn-65	< 7.00E+1	< 8.00E+1
Zr/Nb-95	< 4.00E+1	< 4.00E+1
Ru-103	< 4.00E+1	< 4.00E+1
Ru-106	< 2.00E+2	< 3.00E+2
Cs-134	< 3.00E+1	< 3.00E+1
Cs-137	< 3.00E+1	< 3.00E+1
Ba/La-140	< 9.00E+1	< 8.00E+1
Ce-141	< 6.00E+1	< 8.00E+1
Ce-144	< 2.00E+2	< 3.00E+2
Ra-226	9.77E+2 +/- 3.87E+2	1.16E+3 +/- 5.80E+2
Th-228	3.10E+2 +/- 3.20E+1	2.66E+2 +/- 4.00E+1

FERMI 2
SEDIMENT ANALYSIS

S - 3 (Indicator)
pCi/kg dry

Nuclide	4-May	12-Oct
Sr-89	< 7.00E+1	< 6.00E+1
Sr-90	< 2.00E+1	< 2.00E+1
Be-7	< 3.00E+2	< 2.00E+2
K-40	1.12E+4 +/- 1.10E+3	1.34E+4 +/- 1.30E+3
Mn-54	< 2.00E+1	< 3.00E+1
Co-58	< 3.00E+1	< 3.00E+1
Fe-59	< 7.00E+1	< 7.00E+1
Co-60	< 3.00E+1	< 2.00E+1
Zn-65	< 5.00E+1	< 6.00E+1
Zr/Nb-95	< 3.00E+1	< 3.00E+1
Ru-103	< 3.00E+1	< 3.00E+1
Ru-106	< 2.00E+2	< 2.00E+2
Cs-134	< 3.00E+1	< 3.00E+1
Cs-137	< 3.00E+1	< 2.00E+1
Ba/La-140	< 1.00E+2	< 5.00E+1
Ce-141	< 5.00E+1	< 4.00E+1
Ce-144	< 1.00E+2	< 1.00E+2
Ra-226	7.93E+2 +/- 3.00E+2	< 4.00E+2
Th-228	3.38E+2 +/- 3.40E+1	1.87E+2 +/- 3.30E+1

S - 4 (Indicator)
pCi/kg dry

Nuclide	6-May	19-Oct
Sr-89	< 9.00E+1	< 1.00E+2
Sr-90	< 3.00E+1	< 4.00E+1
Be-7	< 2.00E+2	< 2.00E+2
K-40	1.30E+4 +/- 1.30E+3	1.06E+4 +/- 1.10E+3
Mn-54	< 2.00E+1	< 2.00E+1
Co-58	< 2.00E+1	< 2.00E+1
Fe-59	< 7.00E+1	< 5.00E+1
Co-60	< 2.00E+1	< 2.00E+1
Zn-65	< 6.00E+1	< 6.00E+1
Zr/Nb-95	< 3.00E+1	< 3.00E+1
Ru-103	< 3.00E+1	< 2.00E+1
Ru-106	< 2.00E+2	< 2.00E+2
Cs-134	< 2.00E+1	< 2.00E+1
Cs-137	< 2.00E+1	< 3.00E+1
Ba/La-140	< 8.00E+1	< 4.00E+1
Ce-141	< 5.00E+1	< 4.00E+1
Ce-144	< 1.00E+2	< 1.00E+2
Ra-226	1.05E+3 +/- 2.90E+2	8.41E+2 +/- 3.15E+2
Th-228	1.58E+2 +/- 2.20E+1	2.01E+2 +/- 2.40E+1

FERMI 2
SEDIMENT ANALYSIS

S - 5 (Control)
pCi/kg dry

Nuclide	5-May	19-Oct
Sr-89	< 1.00E+2	< 7.00E+1
Sr-90	< 5.00E+1	< 3.00E+1
Be-7	< 3.00E+2	4.08E+2 +/- 1.69E+2
K-40	1.03E+4 +/- 1.00E+3	1.15E+4 +/- 1.10E+3
Mn-54	< 2.00E+1	< 2.00E+1
Co-58	< 3.00E+1	< 2.00E+1
Fe-59	< 9.00E+1	< 5.00E+1
Co-60	< 3.00E+1	< 2.00E+1
Zn-65	< 8.00E+1	< 6.00E+1
Zr/Nb-95	< 4.00E+1	< 3.00E+1
Ru-103	< 4.00E+1	< 3.00E+1
Ru-106	< 2.00E+2	< 2.00E+2
Cs-134	< 3.00E+1	< 2.00E+1
Cs-137	< 4.00E+1	1.12E+2 +/- 1.90E+1
Ba/La-140	< 1.00E+2	< 4.00E+1
Ce-141	< 7.00E+1	< 5.00E+1
Ce-144	< 2.00E+2	< 2.00E+2
Ra-226	1.16E+3 +/- 3.80E+2	9.71E+2 +/- 3.76E+2
Th-228	3.67E+2 +/- 3.70E+1	4.03E+2 +/- 4.00E+1

FERMI 2
FISH ANALYSIS

F - 1 (Control)
pCi/kg wet

Nuclide	WALLEYE 5-MAY	CRAPPIE 5-MAY	WALLEYE 19-OCT	CRAPPIE 19-OCT
Sr-89	< 1.00E+1	< 1.00E+1	< 9.00E+0	< 3.00E+1
Sr-90	< 3.00E+0	< 3.00E+0	1.30E+1 +/- 3.00E+0	5.30E+1 +/- 1.00E+1
Be-7	< 2.00E+2	< 2.00E+2	< 1.00E+2	< 1.00E+2
K-40	3.57E+3 +/- 3.60E+2	9.47E+3 +/- 9.70E+2	2.49E+3 +/- 2.50E+2	4.02E+3 +/- 4.00E+2
Mn-54	< 2.00E+1	< 2.00E+1	< 1.00E+1	< 1.00E+1
Co-58	< 2.00E+1	< 2.00E+1	< 1.00E+1	< 2.00E+1
Fe-59	< 5.00E+1	< 5.00E+1	< 3.00E+1	< 4.00E+1
Co-60	< 2.00E+1	< 2.00E+1	< 1.00E+1	< 2.00E+1
Zn-65	< 5.00E+1	< 5.00E+1	< 3.00E+1	< 3.00E+1
Zr/Nb-95	< 2.00E+1	< 2.00E+1	< 1.00E+1	< 2.00E+1
Ru-103	< 2.00E+1	< 3.00E+1	< 1.00E+1	< 2.00E+1
Ru-106	< 2.00E+2	< 2.00E+2	< 1.00E+2	< 1.00E+2
Cs-134	< 2.00E+1	< 2.00E+1	< 1.00E+1	< 2.00E+1
Cs-137	< 3.00E+1	< 3.00E+1	2.[illegible]0E+1 +/- 9.60E+0	3.19E+1 +/- 1.41E+1
Ba/La-140	< 3.00E+1	< 3.00E+1	< 1.00E+1	< 3.00E+1
Ce-141	< 4.00E+1	< 4.00E+1	< 2.00E+1	< 4.00E+1
Ce-144	< 1.00E+2	< 1.00E+2	< 8.00E+1	< 1.00E+2
Ra-226	< 5.00E+2	< 4.00E+2	< 2.00E+2	< 4.00E+2
Th-228	< 4.00E+1	< 3.00E+1	< 2.00E+1	< 4.00E+1

F - 1 (Control)
pCi/kg wet

Nuclide	CARP 19-OCT
Sr-89	< 1.00E+1
Sr-90	1.00E+1 +/- 4.00E+0
Be-7	< 1.00E+2
K-40	2.32E+3 +/- 2.30E+2
Mn-54	< 1.00E+1
Co-58	< 2.00E+1
Fe-59	< 4.00E+1
Co-60	< 2.00E+1
Zn-65	< 3.00E+1
Zr/Nb-95	< 2.00E+1
Ru-103	< 2.00E+1
Ru-106	< 1.00E+2
Cs-134	< 2.00E+1
Cs-137	< 2.00E+1
Ba/La-140	< 2.00E+1
Ce-141	< 2.00E+1
Ce-144	< 8.00E+1
Ra-226	< 3.00E+2
Th-228	< 2.00E+1

FERMI 2
FISH ANALYSIS

F - 2 (Indicator)
pCi/kg wet

Nuclide	WALLEYE 3-MAY	SILVER BASS 3-MAY	DRUM 3-MAY	SUCKER 3-MAY
Sr-89	< 1.00E+1	< 1.00E+1	< 9.00E+0	< 1.00E+1
Sr-90	< 3.00E+0	< 3.00E+0	< 2.00E+0	< 4.00E+0
Be-7	< 2.00E+2	< 2.00E+2	< 2.00E+2	< 2.00E+2
K-40	3.87E+3 +/- 3.90E+2	2.73E+3 +/- 2.80E+2	2.69E+3 +/- 2.70E+2	3.68E+3 +/- 3.70E+2
Mn-54	< 1.00E+1	< 2.00E+1	< 2.00E+1	< 2.00E+1
Co-58	< 2.00E+1	< 2.00E+1	< 2.00E+1	< 2.00E+1
Fe-59	< 4.00E+1	< 5.00E+1	< 4.00E+1	< 4.00E+1
Co-60	< 1.00E+1	< 2.00E+1	< 2.00E+1	< 2.00E+1
Zn-65	< 3.00E+1	< 4.00E+1	< 4.00E+1	< 3.00E+1
Zr/Nb-95	< 2.00E+1	< 2.00E+1	< 2.00E+1	< 2.00E+1
Ru-103	< 2.00E+1	< 3.00E+1	< 2.00E+1	< 2.00E+1
Ru-106	< 1.00E+2	< 2.00E+2	< 1.00E+2	< 2.00E+2
Cs-134	< 1.00E+1	< 2.00E+1	< 2.00E+1	< 2.00E+1
Cs-137	2.01E+1 +/- 1.04E+1	< 2.00E+1	< 2.00E+1	< 2.00E+1
Ba/La-140	< 5.00E+1	< 6.00E+1	< 4.00E+1	< 5.00E+1
Ce-141	< 3.00E+1	< 5.00E+1	< 4.00E+1	< 3.00E+1
Ce-144	< 8.00E+1	< 1.00E+2	< 1.00E+2	< 9.00E+1
Ra-226	< 3.00E+2	< 4.00E+2	< 4.00E+2	< 3.00E+2
Th-228	< 2.00E+1	< 3.00E+1	< 3.00E+1	< 2.00E+1

F - 2 (Indicator)
pCi/kg wet

Nuclide	CRAPPIE 14-OCT	BULLHEAD 14-OCT	SUCKER 14-OCT	CARP 12-OCT
Sr-89	< 2.00E+1	< 1.00E+1	< 6.00E+0	< 1.00E+1
Sr-90	4.50E+1 +/- 5.00E+0	< 4.00E+0	9.90E+0 +/- 2.00E+0	1.50E+1 +/- 4.00E+0
Be-7	< 1.00E+2	< 1.00E+2	< 2.00E+2	< 1.00E+2
K-40	2.94E+3 +/- 2.90E+2	2.98E+3 +/- 3.00E+2	3.27E+3 +/- 3.30E+2	2.81E+3 +/- 2.80E+2
Mn-54	< 1.00E+1	< 1.00E+1	< 1.00E+1	< 1.00E+1
Co-58	< 1.00E+1	< 1.00E+1	< 2.00E+1	< 1.00E+1
Fe-59	< 3.00E+1	< 3.00E+1	< 4.00E+1	< 3.00E+1
Co-60	< 2.00E+1	< 1.00E+1	< 2.00E+1	< 1.00E+1
Zn-65	< 3.00E+1	< 3.00E+1	< 4.00E+1	< 2.00E+1
Zr/Nb-95	< 2.00E+1	< 1.00E+1	< 2.00E+1	< 1.00E+1
Ru-103	< 2.00E+1	< 1.00E+1	< 2.00E+1	< 1.00E+1
Ru-106	< 1.00E+2	< 1.00E+2	< 1.00E+2	< 1.00E+2
Cs-134	< 1.00E+1	< 1.00E+1	< 2.00E+1	< 1.00E+1
Cs-137	< 2.00E+1	< 2.00E+1	< 2.00E+1	< 1.00E+1
Ba/La-140	< 4.00E+1	< 3.00E+1	< 3.00E+1	< 3.00E+1
Ce-141	< 3.00E+1	< 2.00E+1	< 3.00E+1	< 2.00E+1
Ce-144	< 1.00E+2	< 6.00E+1	< 9.00E+1	< 6.00E+1
Ra-226	< 3.00E+2	< 2.00E+2	< 3.00E+2	< 2.00E+2
Th-228	< 3.00E+1	< 2.00E+1	< 3.00E+1	< 2.00E+1

FERMI 2
FISH ANALYSIS

F - 2 (Indicator)
pCi/kg wet

Nuclide	WALLEYE 14-OCT	DRUM 14-OCT
Sr-89	< 1.00E+1	< 1.00E+1
Sr-90	9.30E+0 +/- 2.70E+0	6.40E+0 +/- 2.90E+0
Be-7	< 2.00E+2	< 1.00E+2
K-40	3.68E+3 +/- 3.70E+2	2.64E+3 +/- 2.60E+2
Mn-54	< 1.00E+1	< 1.00E+1
Co-58	< 2.00E+1	< 1.00E+1
Fe-59	< 4.00E+1	< 4.00E+1
Co-60	< 1.00E+1	< 2.00E+1
Zn-65	< 3.00E+1	< 3.00E+1
Zr/Nb-95	< 2.00E+1	< 1.00E+1
Ru-103	< 2.00E+1	< 2.00E+1
Ru-106	< 1.00E+2	< 1.00E+2
Cs-134	< 2.00E+1	< 1.00E+1
Cs-137	5.54E+1 +/- 1.53E+1	< 1.00E+1
Ba/La-140	< 4.00E+1	< 3.00E+1
Ce-141	< 3.00E+1	< 2.00E+1
Ce-144	< 1.00E+2	< 6.00E+1
Ra-226	< 3.00E+2	< 2.00E+2
Th-228	< 3.00E+1	< 2.00E+1

FERMI 2
FISH ANALYSIS

F - 3 (Control)
pCi/kg wet

Nuclide	WALLEYE 5-MAY	SILVER BASS 5-MAY	CARP 5-MAY	YELLOW PERCH 5-MAY
Sr-89	< 1.00E+1	< 2.00E+1	< 2.00E+1	< 1.00E+1
Sr-90	< 2.00E+0	< 4.00E+0	< 5.00E+0	< 2.00E+0
Be-7	< 2.00E+2	< 1.00E+2	< 1.00E+2	< 2.00E+2
K-40	4.01E+3 +/- 4.00E+2	2.95E+3 +/- 2.90E+2	3.17E+3 +/- 3.20E+2	3.22E+3 +/- 3.20E+2
Mn-54	< 2.00E+1	< 2.00E+1	< 1.00E+1	< 2.00E+1
Co-58	< 2.00E+1	< 2.00E+1	< 1.00E+1	< 2.00E+1
Fe-59	< 5.00E+1	< 4.00E+1	< 3.00E+1	< 5.00E+1
Co-60	< 2.00E+1	< 2.00E+1	< 1.00E+1	< 2.00E+1
Zn-65	< 4.00E+1	< 3.00E+1	< 2.00E+1	< 4.00E+1
Zr/Nb-95	< 2.00E+1	< 2.00E+1	< 1.00E+1	< 2.00E+1
Ru-103	< 3.00E+1	< 2.00E+1	< 1.00E+1	< 2.00E+1
Ru-106	< 2.00E+2	< 1.00E+2	< 9.00E+1	< 2.00E+2
Cs-134	< 2.00E+1	< 2.00E+1	< 1.00E+1	< 2.00E+1
Cs-137	4.30E+1 +/- 1.82E+1	< 2.00E+1	< 1.00E+1	< 2.00E+1
Ba/La-140	< 6.00E+1	< 4.00E+1	< 3.00E+1	< 6.00E+1
Ce-141	< 4.00E+1	< 2.00E+1	< 3.00E+1	< 3.00E+1
Ce-144	< 1.00E+2	< 7.00E+1	< 8.00E+1	< 1.00E+2
Ra-226	< 4.00E+2	< 2.00E+2	< 2.00E+2	< 3.00E+2
Th-228	< 4.00E+1	< 2.00E+1	< 2.00E+1	< 3.00E+1

F - 3 (Control)
pCi/kg wet

Nuclide	CATFISH 18-OCT	SUCKER 18-OCT	WALLEYE 18-OCT
Sr-89	< 1.00E+1	< 2.00E+1	< 8.00E+0
Sr-90	< 6.00E+0	< 6.00E+0	< 7.30E+0 +/- 1.90E+0
Be-7	< 3.00E+2	< 3.00E+2	< 1.00E+2
K-40	4.31E+3 +/- 4.30E+2	4.36E+3 +/- 4.40E+2	3.44E+3 +/- 3.40E+2
Mn-54	< 2.00E+1	< 3.00E+1	< 2.00E+1
Co-58	< 3.00E+1	< 3.00E+1	< 1.00E+1
Fe-59	< 6.00E+1	< 7.00E+1	< 3.00E+1
Co-60	< 3.00E+1	< 3.00E+1	< 1.00E+1
Zn-65	< 6.00E+1	< 6.00E+1	< 4.00E+1
Zr/Nb-95	< 3.00E+1	< 3.00E+1	< 2.00E+1
Ru-103	< 3.00E+1	< 4.00E+1	< 2.00E+1
Ru-106	< 2.00E+2	< 3.00E+2	< 1.00E+2
Cs-134	< 3.00E+1	< 3.00E+1	< 2.00E+1
Cs-137	< 3.00E+1	< 3.00E+1	< 2.00E+1
Ba/La-140	< 6.00E+1	< 6.00E+1	< 3.00E+1
Ce-141	< 6.00E+1	< 5.00E+1	< 2.00E+1
Ce-144	< 2.00E+2	< 2.00E+2	< 8.00E+1
Ra-226	< 6.00E+2	< 5.00E+2	< 3.00E+2
Th-228	< 5.00E+1	< 5.00E+1	< 2.00E+1

Appendix A

US EPA Interlaboratory Comparison Program for 1994

US EPA Interlaboratory Comparison Program for 1994

Starting in 1991, Detroit Edison contracted Teledyne/Brown Engineering Environmental Services to provide analytical results of REMP environmental samples. Teledyne/Brown Engineering participates in the Environmental Protection Agency's (EPA) Interlaboratory Comparison program.

In the EPA Interlaboratory Comparison program, participant laboratories receive from the EPA environmental samples of known activity concentration for analysis. After the samples have been analyzed by the laboratory, the EPA reports the known activity concentration of the samples to the laboratory. The laboratory compares its results to the EPA reported concentrations to determine any significant deviations, investigates such deviations if found, and initiates corrective action if necessary. Participation in this program provides assurance that the contract laboratory is capable of meeting accepted criteria for radioactivity analysis.

In 1994, Teledyne/Brown Engineering performed fifty-nine (59) analyses of environmental samples for the EPA Interlaboratory Comparison program. Ninety percent (90%) of the samples results were within ± 3 sigma control limits. The results are shown in the following tables and all deviations, investigations and corrective actions taken by Teledyn/Brown Engineering are described in the foot notes.

EPA INTERLABORATORY COMPARISON PROGRAM 1994

Collection Date	Media	Nuclide	EPA Result(a)	Teledyne Brown Engineering Result(b)	Deviation(c)	
01/14/94	Water	Sr-89	25.0 ± 5.0	24.00 ± 1.00	-0.35	
		Sr-90	15.0 ± 5.0	15.67 ± 1.53	0.23	
01/28/94	Water	Gr-Alpha	15.0 ± 5.0	21.67 ± 0.58	2.31	(d)
		Gr-Beta	62.0 ± 10.0	72.33 ± 3.79	1.79	
02/04/94	Water	I-131	119.0 ± 12.0	110.33 ± 0.00	-1.30	
02/11/94	Water	Ra-226	19.9 ± 3.0	21.00 ± 1.00	0.64	
		Ra-228	14.7 ± 3.7	15.67 ± 1.53	0.45	
03/04/94	Water	H-3	4936.0 ± 494.0	4833.33 ± 152.75	-0.36	
04/19/94	Water	Gr-Beta	117.0 ± 18.0	102.67 ± 6.43	-1.38	
		Sr-89	20.0 ± 5.0	19.00 ± 1.00	-0.35	
		Sr-90	14.0 ± 5.0	13.00 ± 0.00	-0.35	
		Co-60	20.0 ± 5.0	23.67 ± 3.21	1.27	
		Cs-134	34.0 ± 5.0	34.00 ± 1.73	0.00	
		Cs-137	29.0 ± 5.0	34.00 ± 2.65	1.73	
		Gr-Alpha	86.0 ± 22.0	78.00 ± 3.00	-0.63	
		Ra-226	20.0 ± 3.0	15.67 ± 1.53	-2.50	(e)
		Ra-228	20.1 ± 5.0	15.33 ± 0.58	-1.65	
06/10/94	Water	Co-60	50.0 ± 5.0	43.00 ± 2.00	-2.42	(f)
		Zn-65	134.0 ± 13.0	13.33 ± 0.58	-16.08	(g)
		Ru-106	252.0 ± 25.0	201.33 ± 9.29	-3.51	(h)
		Cs-134	40.0 ± 5.0	29.33 ± 3.79	-3.70	(i)
		Cs-137	49.0 ± 5.0	49.67 ± 1.53	0.23	
		Ba-133	98.0 ± 10.0	85.00 ± 3.00	-2.25	(j)
06/17/94	Water	Ra-226	15.0 ± 2.3	15.33 ± 0.58	0.25	
		Ra-228	15.4 ± 3.9	16.33 ± 1.53	0.41	
07/15/94	Water	Sr-89	30.0 ± 5.0	26.00 ± 1.73	-1.39	
		Sr-90	20.0 ± 5.0	19.00 ± 0.00	-0.35	
07/22/94	Water	Gr-Alpha	32.0 ± 8.0	25.33 ± 2.89	-1.44	
		Gr-Beta	10.0 ± 5.0	16.00 ± 0.00	2.08	(k)
08/05/94	Water	H-3	9951.0 ± 995.0	9700.00 ± 100.04	-0.44	
08/26/94	Air Filter	Gr-Alpha	35.0 ± 9.0	31.33 ± 2.08	-0.71	
		Gr-Beta	56.0 ± 10.0	59.33 ± 3.21	0.58	
		Sr-90	20.0 ± 5.0	18.00 ± 1.00	-0.69	
		Cs-137	15.0 ± 5.0	17.00 ± 1.73	0.69	

EPA INTERLABORATORY COMPARISON PROGRAM 1994

Collection Date	Media	Nuclide	EPA Result(a)	Teledyne Brown Engineering Result(b)	Deviation(c)	
09/16/94	Water	U	35.0 ± 3.0	38.67 ± 0.58	2.12	(l)
		Ra-226	10.0 ± 1.5	10.67 ± 0.58	0.77	
		Ra-228	10.2 ± 2.6	9.70 ± 0.52	-0.33	
09/30/94	Milk	Sr-89	25.0 ± 5.0	24.33 ± 2.52	-0.23	
		Sr-90	15.00 ± 5.0	17.67 ± 1.53	0.92	
		I-131	75.0 ± 8.0	81.67 ± 5.86	1.44	
		Cs-137	59.0 ± 5.0	70.33 ± 4.62	3.93	(m)
		K	1715.0 ± 86.0	1740.00 ± 153.95	0.50	
10/07/94	Water	I-131	79.0 ± 8.0	71.00 ± 3.00	-1.73	
10/18/94	Water	Gr-Beta	142.0 ± 21.0	120.00 ± 0.00	-1.81	
		Sr-89	25.0 ± 5.0	24.67 ± 2.08	-0.12	
		Sr-90	15.0 ± 5.0	14.33 ± 1.15	-0.23	
		Co-60	40.0 ± 5.0	41.00 ± 1.00	0.35	
		Cs-134	20.0 ± 5.0	21.67 ± 1.53	0.58	
		Cs-137	39.0 ± 5.0	41.67 ± 2.31	0.92	
		Gr-Alpha	57.0 ± 14.0	51.33 ± 1.53	-0.70	
		Ra-226	9.9 ± 1.5	11.33 ± 0.58	1.66	
		Ra-228	10.1 ± 2.5	9.33 ± 0.58	-0.53	
10/28/94	Water	Gr-Alpha	57.0 ± 14.0	47.00 ± 3.00	-1.24	
	Gr-Beta	23.0 ± 5.0	25.33 ± 1.53	0.81		
11/04/94	Water	Co-60	59.0 ± 5.0	52.00 ± 0.00	-2.42	(n)
		Zn-65	100.0 ± 10.0	81.33 ± 7.02	-3.23	(n)
		Cs-134	24.0 ± 5.0	19.67 ± 2.52	-1.50	
		Cs-137	49.0 ± 5.0	54.33 ± 2.31	1.85	
		Ba-133	73.0 ± 7.0	58.33 ± 2.89	-3.63	(n)

Footnotes:

(a) EPA Results-Expected laboratory precision (1 sigma). Units are pCi/liter for water and milk except K is in mg/liter. Units are total pCi for air particulate filters.

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

(c) Normalized deviation from the known.

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

EPA INTERLABORATORY COMPARISON PROGRAM 1994

(e) No specific or apparent reason found. Data sheets verified and detector efficiencies calibrated. Will exert extra care in making dilutions and using correct sample type on concentration of acids. Will check future samples to see if a pattern develops.

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

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

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

(i) The first aliquot, prepared according to EPA dilution instructions was counted on four detectors in the 1 liter Marinelli geometry with Cs-134 results (based on the 796 KeV peak) in pCi/l of 32.0, 25.1, 31.7, and 30.8. The 31.7 result was not reported. Had that been reported instead of 25.1, the average would have been 31.5 and the normalized deviation would have been -2.94 instead of -3.70. A second aliquot was prepared and a single measurement was made with the result of 31.1 pCi/l. An undiluted aliquot was measured in a 150 ml geometry with the result of 33.5 pCi/l. That result is comparable with the Marinelli results. Thus none of : sample preparation (dilution, volume determination, maintaining correct pH, etc.), sample geometry, or detector efficiency seem to be the cause of the low results.

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

(k) EPA results for gross beta in water were corrected for 20% crosstalk into the beta channel from the Th-230 alpha spike. Recent measurements show that the crosstalk can be much higher (37% for Tennelec counter #3 and 54% for gamma products counter #1). The normalized deviation from the grand average was only 0.38. Future results will be corrected with specific crosstalk values determined by counting Th-230 standards.

(l) Possible aliquoting error. The instrument calibration, spike, and blank results all appear normal. No procedural changes are planned. Previous results were well within one normalized deviation. Future measurements will be reviewed to determine if a trend in results above the two sigma warning limit is occurring.

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

EPA INTERLABORATORY COMPARISON PROGRAM 1994

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

Co-60	60.6	+0.55
Zn-65	100.	+0.00
Cs-134	22.9	-0.38
Cs-137	58.5	+3.29
Ba-133	69.8	-0.79

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