

Detroit
Edison

Stanley G. Catola
Vice President
Nuclear Engineering and Services

Fermi 2
6400 North Dixie Highway
Newport, Michigan 48166
(313) 586-4000



April 30, 1991
NRC-91-0051

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

Reference: Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43

Subject: Annual Radiological Environmental Operating
Report

Pursuant to section 6.9.1.7 of the Technical Specifications,
please find attached the 1990 Annual Radiological
Environmental Operating Report for Fermi 2.

If you should have any questions or comments regarding this
report, please contact Joseph Pendergast, Compliance
Engineer, at (313) 586-1682.

Sincerely,

S. Catola

cc: A. B. Davis
R. W. DeFayette
W. G. Rogers (w/encl.)
J. F. Stang (w/encl.)
Region III (w/encl.)

9105030330 901231
PDR ADOCK 05000341
R PDR

IE25
11

FERMI 2

1990 ANNUAL
RADIOLOGICAL ENVIRONMENTAL
MONITORING REPORT

Detroit
Edison
Company

TABLE OF CONTENTS

Section	Page
List of Tables	iv
List of Figures	v
1.0 Introduction	1
2.0 Radiological Environmental Monitoring Program	4
2.1 Regulations	
2.2 Pre-operational Program	
2.3 Operational Program	
2.4 Quality Control	
3.0 Terrestrial Monitoring Program	6
3.1 Introduction	
3.2 Direct Radiation	
3.3 Air Sampling	
3.4 Milk and Grass Sampling	
3.5 Garden Sampling Program	
4.0 Aquatic Monitoring Program	11
4.1 Introduction	
4.2 Drinking Water Sampling	
4.3 Surface Water Sampling	
4.4 Ground Water Sampling	
4.5 Sediment Sampling	
4.6 Fish Sampling	
5.0 Land Use Census	15
5.1 1990 Land Use Census	
5.2 Results	
6.0 Program Execution	20
6.1 Thermoluminescent Dosimetry	
6.2 Air Sampling	
6.3 Milk and Grass Sampling	
6.4 Water Sampling	
6.5 Laboratory Deviations	
7.0 Program Summary	24

TABLE OF CONTENTS (cont.)

Section	Page
8.0 Sampling Locations	31
9.0 Data Tables	48
10.0 Appendices	56
Appendix A Interlaboratory Comparison Results	
Appendix B Summary of Higher Than Expected I-131 in Environmental Milk Samples	

List of Tables

	Page
Table 5.0-1 Residences	17
Table 5.0-2 Gardens	18
Table 5.0-3 Milk Locations	19
Table 7.0-1 Radiological Environmental Monitoring Program Summary	25
Table 8.0-1 Direct Radiation	32
Table 8.0-2 Fish and Sediment Locations	38
Table 8.0-3 Milk/Grass Sample Locations	39
Table 8.0-4 Water Sample Locations	40
Table 8.0-5 Air Particulate/Air Iodine Sample Locations	41
Table 8.0-6 Food Products Sample Locations	42
Table 8.0-7 Land Use Census	43

List of Figures

		Page
Figure 1	Sampling Locations By Station Number (Site Area)	44
Figure 2	Sampling Locations By Station Number (Greater Than 10 Miles)	45
Figure 3	Sampling Locations By Station Number (Less Than 10 Miles)	46
Figure 4	Sampling Locations By Station Number (Site Area - Lake Erie)	47

1.0 Introduction

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

1.0 INTRODUCTION

This report was prepared by the Detroit Edison Company in compliance with the requirements of the U.S. Nuclear Regulatory Commission (NRC). This is a partial report, because of incomplete sample results.

In 1990, Detroit Edison had a contract with a vendor laboratory perform analytical analysis of the environmental samples for the Radiological Environmental Monitoring Program (REMP). To date, approximately 75% of all samples collected have been analyzed and reported by the vendor. All thermoluminescent dosimeter (TLD) results are included in this report. Upon the completion of the sample analyses by the vendor, a supplemental report will be submitted to the NRC.

The Fermi 2 REMP was established by Detroit Edison in 1978. Until the time that Fermi 2 was operational in 1985, the program provided for acquiring environmental data in order to establish a pre-operational baseline.

Since Fermi 2 is in operation, the REMP has been modified to focus on acquiring environmental data from monitoring and sampling locations most likely to indicate if there were any measurable effects to the environment from operating Fermi 2. These monitoring and sampling locations are called indicator locations.

Detroit Edison also collects data from environmental monitoring and sampling locations which are distant from Fermi 2. These locations are considered to be outside the area which might be affected by Fermi 2 operations. These distant monitoring and sampling locations are called control locations.

In 1990, Detroit Edison collected more than 900 environmental indicator and control samples and contracted more than 1200 analyses as part of the REMP. This report contains the tabulated summaries of those sampling and analysis results reported by the lab to date.

Throughout the year, the Detroit Edison Radiological Environmental staff at Fermi 2 collects and compares the environmental indicator data with the control data. This comparison is used to determine if there have been any measurable effects in the environment which are related to operating Fermi 2. Any significant differences between the indicator data and the control data are reported to the NRC.

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

In 1990, there were no significant differences found between indicator and control environmental monitoring data related to operating Fermi 2. The low levels of radioactive material which were detected in samples have been attributed mainly to naturally-occurring radioactivity or fallout from past nuclear weapons testing, although low levels of radioactivity detected in some sediment samples could be the result of operating Fermi 2.

2.0 Radiological Environmental Monitoring Program

2.0 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

2.1 REGULATIONS

Title 10 of the Code of Federal Regulations (CFR) Part 50, Appendix I, Section IV.B requires that Detroit Edison establish an appropriate surveillance and monitoring program to assure that radioactive products released to the environment are kept at extremely low levels. Section 20.201 of 10 CFR Part 20 further requires that a licensee conduct surveys of levels of radiation or concentrations of radioactive products as necessary to show compliance with Commission regulations.

2.2 PRE-OPERATIONAL PROGRAM

The pre-operational environmental monitoring program was established seven years before operating the Fermi 2 reactor. This pre-operational program determined the existing levels of radiation and radioactive products occurring naturally and from man-made sources in the environment around the Fermi 2 site. The program included continuous monitoring of direct radiation, radioactivity in air, lake sands and water, drinking water, cow and goat milk, and local garden vegetables.

2.3 OPERATIONAL PROGRAM

The elements that made up the pre-operational monitoring program are still in effect today. The pre-operational 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 still continuously monitors direct radiation, radioactivity in air, lake sands and water, drinking water, cow and goat milk, and local garden vegetables.

2.4 QUALITY CONTROL

Detroit Edison participates in a Nuclear Regulatory Commission (NRC) approved interlaboratory comparison program. In this program, simulated environmental samples are prepared by the Quality Assurance Branch of the Environmental Protection Agency (EPA) and sent to the Fermi 2 REMP laboratory. The laboratory performs the required analysis and returns the results to the EPA. The EPA performs a statistical analysis and comparison to known values and returns the results to the laboratory. If the results do not fall within allowable limits, the laboratory's methods and techniques are re-evaluated. The results of this program are reviewed by Detroit Edison and are reported to the NRC. The interlaboratory comparison program results for 1990 are provided in Appendix A.

3.0 Terrestrial Monitoring Program

3.0 TERRESTRIAL MONITORING PROGRAM

3.1 INTRODUCTION

The terrestrial monitoring program provides continuous monitoring for radioactivity in the land environment. The results of the monitoring program provide for a direct comparison of the effects of Fermi 2 on a short term basis (i.e. weekly), and a review of long term trends over the course of operation for Fermi 2. The following sections discuss the type of sample, analysis performed, a review of short and long term trends, and a comparison to previous years' data including pre-operational samples.

3.2 DIRECT RADIATION

The most widely used continuous monitoring device in the environmental program is the thermoluminescent dosimeter (TLD). The TLDs are subjected to strict testing requirements of the Nuclear Regulatory Commission (NRC) before they are used in the field. The environmental TLDs are located around Fermi 2 to monitor radiation due to gaseous radioactivity and direct radiation resulting from operating Fermi 2.

In 1990, the TLD monitoring program included forty-six (46) TLDs for the first three quarters, and sixty-three (63) TLDs in the fourth quarter.

In the fourth quarter, an additional seventeen (17) TLDs were placed in the field to enhance the direct radiation monitoring program. Eight (8) TLDs were placed around the site boundary, six (6) were placed at schools within five miles of the plant and three (3) additional TLDs were placed at the ten mile radius.

The TLDs were collected once each calendar quarter and sent to the environmental laboratory for analysis. The results of the analyses were sent to Fermi 2 for comparison and trending.

In 1990, the TLDs nearest the plant indicated a mean value of 14.7 millirem per quarter. The TLDs considered not to be affected by operating Fermi 2, (i.e., control TLDs) indicated a mean value of 13.9 millirem per quarter. The indicating TLDs ranged from 6.7 to 36.8 millirem per quarter and the control TLDs ranged from 9.5 to 18.2 millirem per quarter.

In the period 1983 through 1989 (two years before operating Fermi 2 through five years after) the annual radiation mean for all indicating TLDs was 18.1 millirem per quarter. For this period, the indicating TLDs ranged from 8.7 to 36.6 millirem per quarter. The control locations covering the same period had an annual mean exposure of 18.9 millirem per quarter. The control TLDs varied from 9.2 to 35.5 millirem

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

per quarter for the same period. The ranges of the 1990 TLDs are consistent with the ranges of previous years.

3.3 AIR SAMPLING

Detroit Edison continuously monitors the air near Fermi 2 for radioactivity. The atmospheric monitoring program developed for Fermi 2 has continuously sampled the air since 1979. Four (4) of the five (5) air sampling sites selected for monitoring were based on the evaluation of predominant wind directions. A fifth location was selected approximately 14 miles west of the plant and is considered to be unaffected by operating Fermi 2.

During 1990, two hundred and fifty-nine (259) air samples were collected and one hundred ninety-four (194) were counted for gross beta radioactivity. The average gross beta radioactivity was 0.022 pCi per cubic meter of air sampled for all indicating air sample locations. The average gross beta radioactivity for the controlling location in 1990 was 0.022 pCi per cubic meter of air sampled. The range of the indicating locations in 1990 was 0.010 to 0.042 pCi per cubic meter of air sampled. The range of the controlling location was 0.012 to 0.036 pCi per cubic meter of air sampled, which is equivalent to the range of the indicating locations.

From 1983, (two years before operating Fermi 2) through 1990, the annual average gross beta radioactivity for indicating locations near the plant was 0.023 pCi per cubic meter of air sampled. The annual mean gross beta radioactivity for the control location for the same eight (8) year period was 0.023 pCi per cubic meter of air sampled. The range of the annual average gross beta radioactivity for sample locations near the plant was from 0.004 to 0.089 pCi per cubic meter of air sampled. The annual average gross beta radioactivity for the control location ranged from 0.005 to 0.089 pCi per cubic meter of air sampled.

During 1990, two hundred and fifty-nine (259) charcoal containers were collected and one hundred ninety-four (194) were counted to determine the presence of radioiodine in the atmosphere. None of the containers showed detectable levels of radioiodine. The Fermi 2 Technical Specification (Tech Spec) Lower Limit of Detection (LLD) is 0.07 pCi per cubic meter of air sampled.

Ten (10) composite samples for each individual atmospheric sampling station were counted. One control sample showed detectable activity for Sr-89 and one indicator sample showed detectable activity for Cs-137 just above the lab's LLD but below Fermi 2 Tech Spec LLD. This activity is most likely due to statistical variation or residual fallout from weapons testing. All other gamma or beta emitting radioactivity that was detected was due to naturally occurring isotopes.

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

3.4 MILK AND GRASS SAMPLING

During 1990, fifty-two (52) milk samples were collected from farms participating in the Fermi 2 environmental program. To date, forty (40) samples have been analyzed and reported by the lab. In May and June, six (6) samples, including the Quality Control sample, at all control and indicating locations were reported as having I-131 activity greater than the Fermi 2 Tech Spec LLD of 1.0 pCi/l. The range of these samples was 1.09 to 17.80 pCi/l. After a detailed investigation, it was determined that the I-131 concentrations in milk for May and June were not due to operating Fermi 2. A summary of this evaluation is included in Appendix B. Additionally, the control sample for July showed detectable activity for I-131 which is believed to be related to the May and June activities. This sample is not discussed in the summary due to the sample not being reported at the time of the investigation. The remaining samples showed no detectable I-131 activity.

One sample showed a detectable activity of 5.55 pCi/l for Co-58. The range for the lab's LLDs was 3.5 to 11 pCi/l. This activity falls within this range and is most likely due to statistical variation or fallout from weapons testing.

Two samples showed detectable activity for Co-60. One sample was 14.7 pCi/l and the other was 10.2 pCi/l. The range for the lab's LLDs was 6.0 to 17.0 pCi/l. This activity falls within this range and is also most likely due to statistical variation or fallout from weapons testing.

Analyses of Sr-90 and Cs-137 showed activity in both control and indicator locations. Fermi 2 started sampling for Sr-90 in 1988 and the levels of activity reported for 1990 are consistent with previous years and are most likely due to residual fallout from weapons testing. Four (4) samples were reported having detectable activity for Cs-137. The range of these samples was 3.52 to 7.06 pCi/l. The range for the lab's LLDs was 4.3 to 13.0 pCi/l. The sample results were within or below this range and are mostly likely due to statistical variation or fallout from weapons testing.

During March 1990, the milk sampling control location at 7512 N. Custer Rd. (Doty Farm) sold their dairy cattle, and subsequently dropped out of our program. A new control location was identified in April at 9334 Pinzel Rd. (Calder Farm). The Calder Farm location is 15.74 km distant from the reactor and at 287 degrees WNW, is in approximately the sector with the least prevalent wind direction as determined by 1989 ten and sixty meter annual wind roses. The Calder Farm was sampled for the first time in May for milk and grass.

During 1990, thirty-six (36) grass samples were taken with milk samples. Grass samples were taken in addition to milk each sampling period from the control milk location and also in lieu of milk from the

calculated critical receptor location since this residence declines to participate in our program. All indicator location samples showed no detectable activity. One sample from the control location showed 42 pCi/kg for Cs-137 which was just above the lab's LLD but below Fermi 2 Tech Spec LLD. The range of the lab's LLD for Cs-137 was 14 to 85 pCi/kg. This activity falls within this range and is most likely due to statistical variation or fallout from weapons testing.

In 1983, Cesium-137 was detected in both milk and grass samples which was attributed to weapons testing. Also, in 1986 and 1987 Cesium-137 and Iodine-131 were detected in various concentrations. This activity was attributed to the Chernobyl accident.

3.5 GARDEN SAMPLING PROGRAM

During 1990, twenty-three (23) vegetable samples were collected. One indicator sample showed 36.8 pCi/kg Co-60 which was just above the lab's LLD. The range of the lab's LLD for Co-60 was 24 to 59 pCi/kg. This activity falls within this range and is most likely due to statistical variance in sample counting. All other sample results showed no detectable activity.

In years 1983 through 1989, no activity has been detected in vegetable samples due to operating Fermi 2.

4.0 Aquatic Monitoring Program

4.0 AQUATIC MONITORING PROGRAM

4.1 INTRODUCTION

The aquatic monitoring program provides continuous monitoring of the aquatic environment of Fermi 2. At Fermi 2, the dominant feature of the aquatic environment is Lake Erie, on which the plant site borders. The aquatic environment also includes other surface waters, such as the Detroit River, groundwater (i.e. wells) near the plant, fish, and lake sediments.

4.2 DRINKING WATER SAMPLING

During 1990 twenty-four (24) drinking water samples were collected from the drinking water supplies of Detroit and Monroe. To date, eighteen (18) samples have been analyzed and reported. Water samples obtained at the Monroe water intake are considered indicator locations. The Detroit city water intake located in Allen Park, Michigan is considered not to be affected by liquid discharges from Fermi 2. Therefore, Detroit Edison considers the Detroit city water intake to be the control location for the aquatic monitoring program.

In all the samples examined by gamma spectroscopy, two samples were reported by the lab as having detectable activity for Co-60. One sample was 6.38 and the other was 5.79 pCi/l. The reported range of the lab's lower limit of detection (LLD) for Co-60, however, was 8.3 to 15.0 pCi/l. Since the reported activity falls below this range, it is most likely due to statistical variance in counting due to the random nature of radioactivity decay.

The gross beta radioactivity analysis performed on these same samples indicated a mean concentration of 3.1 pCi per liter of water sampled for the Monroe water intake. The gross beta ranged from a low of 2.2 to a high of 4.4 pCi per liter of water sampled. Although slightly higher than the samples collected at the control station these activity levels are not significantly different from those observed during the previous sampling years. The samples collected at the control station (the Detroit water intake) indicated a mean of 2.6 pCi per liter of water sampled and ranged from a low of 1.9 to a high of 3.0 pCi.

Sampling data for 1983 through 1990 show an annual mean gross beta radioactivity of 3.0 pCi per liter for the indicating location. The gross beta radioactivity measured in these years ranged from a low of 1.6 to a high of 6.9 pCi per liter of water sampled. The annual mean gross beta radioactivity for the control station for the same period is 2.6 pCi per liter of water sampled. The gross beta radioactivity range for these years is a low of 1.4 to a high of 6.3 pCi per liter of water sampled. Those samples analyzed in 1990 were within the ranges of the previous years.

Fermi 2 1990 Annual Radiological Environmental Monitoring Report

In 1990, no tritium activity was detected in the indicating or control location samples. The Fermi 2 Technical Specification lower limit of detection for tritium in water is 2000 pCi per liter. In samples collected at these same locations before operating Fermi 2, the average tritium concentration of the indicator and control locations were below the LLD.

4.3 SURFACE WATER SAMPLING

During 1990 twenty-three (23) surface water samples were collected at the Fermi 1 intake and the Trenton Channel Power Plant. To date, seventeen (17) samples have been analyzed and reported by the lab. In 1990, as in previous sampling years 1983 to 1989, no gamma emitting isotopes greater than the Fermi 2 Technical Specification lower limits of detection were detected at the indicating surface water location (Fermi 1 intake). The first quarter composite sample showed an activity of 16.3 pCi/l for tritium. The lab's reported LLD for tritium in composite water samples is 200 pCi/l. This activity is below the reported lab LLD and is most likely due to statistical variance in counting due to the random nature of radioactivity decay.

4.4 GROUND WATER SAMPLING

Samples were collected once each calendar quarter of 1990 from the four (4) monitoring wells on the Fermi 2 site. The samples were collected and placed on the gamma spectroscopy system and showed no detectable gamma radioactivity. When analyzed for tritium, three (3) samples ranging from 63 to 116 pCi/l were reported as detectable quantities by the laboratory. The Fermi 2 Tech Spec LLD for tritium is 2000 pCi/l. The data for 1990 is consistent with the results from previous years.

4.5 SEDIMENT SAMPLING

In 1990, ten (10) lake sediment samples were obtained from five (5) separate locations. One sample taken at the Fermi 2 discharge line showed detectable activity for Mn-56, Co-60, and Zn-65 at just above the lab's LLD. Four (4) samples, which included the control sample, showed detectable activity for Cs-137 at just above the lab's LLD but below Fermi 2 Tech Spec LLD. Also, one sample 3.0 miles down stream showed detectable activity for Mn-54 just above the lab's LLD. The activity of Mn-54, Co-60, and Zn-65 found in these samples could be the result of liquid effluent releases or the result of statistical variance in counting. Additionally, the detected levels of Cesium-137 could be attributable to residual fallout of nuclear weapons testing. As of this date, the second half of 1990 sediment samples have not been reported by the lab. Even if the detectable activity is due to the

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

operation of Fermi 2, no impact to the environment would be anticipated in view of these extremely low levels.

4.6 FISH SAMPLING

A total of twenty four (24) fish samples from three (3) locations (two indicating and a control location) were collected in 1990. To date, eleven (11) samples have been analyzed and reported by the lab. From these fish samples, representative edible portions (fillet) of each fish species were processed and analyzed. Of these samples, none showed detectable levels of radioactivity except Sr-89, Sr-90 and Cs-137 in both indicator and control samples which is attributed to residual fallout from weapons testing.

In years 1983 through 1988, various concentrations of Cs-137, Sr-89, and Sr-90 have been detected in fish at both the indicating and control locations. The values for the 1990 sampling year are consistent with previous sampling years including pre-operational data.

5.0 Land Use Census

5.0 LAND USE CENSUS

5.1 1990 LAND USE CENSUS

As required by the U.S. Nuclear Regulatory Commission, Detroit Edison performs an Annual Land Use Census. The land use census is a formal, documented evaluation of the changes in the location of the nearest resident, dairy animals (goats and cows), and gardens. Locations were identified through Detroit Edison's continuing contact with neighbors of the Fermi 2 plant as company personnel performed routine environmental sampling and observation. Using cartography and meteorology, each identified location was evaluated.

5.2 RESULTS

No changes were made to the sampling locations as a result of the 1990 land use census.

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

TABLE 5.0-1 RESIDENCES

	Sector	Address	Distance (Mi)	Change (Mi)
1990	NE	6760 Lakeshore	1.1	NC
1989	NE	6760 Lakeshore	1.1	
1990	NNE	6500 Brancheau	1.0	NC
1989	NNE	6500 Brancheau	1.0	
1990	N	6200 Blanchett	1.1	NC
1989	N	6200 Blanchett	1.1	
1990	NNW	5701 Post	1.1	NC
1989	NNW	5701 Post	1.1	
1990	NW	6577 Leroux	1.1	NC
1989	NW	6577 Leroux	1.1	
1990	WNW	6200 Langton	0.7	NC
1989	WNW	6200 Langton	0.7	
1990	W	6001 Toll	1.1	NC
1989	W	6001 Toll	1.1	
1990	WSW	4771 Pte. Aux Peaux	1.6	0.1
1989	WSW	4771 Pte. Aux Peaux	1.5	
1990	SW	4981 Pte. Aux Peaux	1.1	0.1
1989	SW	4981 Pte. Aux Peaux	1.2	
1990	SSW	5820 Pte. Aux Peaux	1.0	0.1
1989	SSW	5820 Pte. Aux Peaux	1.1	
1990	S	4834 Long	1.0	0.1
1989	S	4834 Long	0.9	
ESE ~ SSE		Lake Erie		

NC - No Change

Note: Differences in distance due to recalculation by DECo Cartography.

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

TABLE 5.0-2 GARDENS

	Sector	Address	Distance (Mi)	Change (Mi)	
1990	NE	6940 Lakeshore	1.2	NC	
1989	NE	6940 Lakeshore	1.1		
1990*	NNE	6441 Brancheau	1.1	NC	
1989*	NNE	6441 Brancheau	1.1		
1990*	NNE	7806 Labo	0.4	NC	
1989*	NNE	7806 Labo	0.4		
1990*	NNE	9501 Turnpike Hwy.	4.0	NC	
1989*	NNE	9501 Turnpike Hwy.	4.0		
1990	N	6244 Brancheau	1.2	0.3	
1989	N	6366 Trombley	1.5		
1990	NNW	5701 Post	1.1	0.5	
1989	NNW	5283 Trombley	1.6		
1990	NW	5131 Post	1.5	0.4	
1989	NW	6577 Leroux	1.1		
1990	WNW	6834 Dixie Hwy	1.7	0.1	
1989	WNW	6834 Dixie Hwy	1.8		
1990 *	WNW	8200 Geirman	14.6	NC	Control
1989 *	WNW	8200 Geirman	14.6		
1990	W	5909 Leroux	1.6	0.2	
1989	W	5900 Leroux	1.4		
1990	WSW	5053 Spaulding	2.4	0.4	
1989	WSW	3121 Lakeview	2.8		
1990	SW	4998 Elm	1.4	NC	
1989	SW	4995 Elm	1.4		
1990	SSW	4326 C Street	1.6	0.2	
1989	SSW	4375 5th	1.4		
1990	S	6233 Highland	1.2	0.1	
1989	S	6255 Highland	1.1		
ESE - SSE		Lake Erie			

NC - No Change

* Participants in REMP sampling program. Note: Differences in distance due to recalculation by DECo Cartography.

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

TABLE 5.0-3 MILK LOCATIONS

	Sector	Address	Distance (Mi)	Findings
1990	NE	No Identified Locations		No Milk Animals
1989	NE	No Identified Locations		No Milk Animals
1990	NNE	No Identified Locations		No Milk Animals
1989	NNE	No Identified Locations		No Milk Animals
1990	N	No Identified Locations		No Milk Animals
1989	N	No Identified Locations		No Milk Animals
1990	NNW	No Identified Locations		No Milk Animals
1989	NNW	No Identified Locations		No Milk Animals
1990*	NW	3239 Newport Rd	4.3	Cows
1989*	NW	3239 Newport Rd	4.3	Cows
1990*	NW	2705 Labo	5.7	Cows
1989*	NW	2705 Labo	5.7	Cows
1990#	WNW	4262 Post	2.2	Goats
1989#	WNW	4262 Post	2.2	Goats
1990	W	5904 Nadeau	4.5	Goats
1990	W	6551 N. Stonycreek	4.7	Goats
1990	W	1972 Nadeau	3.3	Goats
1990	WSW	3979 Dixie Hwy	2.8	Cows
1989	WSW	No Identified Locations		No Milk Animals
1990	SW	No Identified Locations		No Milk Animals
1989	SW	No Identified Locations		No Milk Animals
1990	SSW	No Identified Locations		No Milk Animals
1989	SSW	No Identified Locations		No Milk Animals
1990	S	No Identified Locations		No Milk Animals
1989	S	No Identified Locations		No Milk Animals

- Calculated critical receptor

* - Participated in Fermi 2 REMP

6.0 Program Execution

6.0 PROGRAM EXECUTION

All phases of the terrestrial and aquatic monitoring were conducted in accordance with the Technical Specifications as implemented in the sampling schedule. If samples could not be obtained from a specific location, other samples were substituted where appropriate. The following includes the details of deviations and corrective actions from the normal sampling schedule for 1990.

6.1 THERMOLUMINESCENT DOSIMETRY

No TLDs were available for the following locations:

2nd Quarter:

At location T-17 the TLD was missing during the mid-quarter inspection and was replaced on 05/17/90.

3rd Quarter:

At location T-11 the TLD was missing during the mid-quarter inspection and was replaced on 07/24/90. Also, T-15 and T-20 were missing at the end of the quarter during TLD exchange.

4th Quarter:

Seventeen (17) new locations were added to the program during the quarterly exchange. These locations are T-47 through T-63.

All TLDs are placed in the field in inconspicuous locations and as far from the ground as possible to minimize the loss of TLDs due to vandalism.

6.2 AIR SAMPLING

On 01/02/90, samples for API-5 were not available due to sampler being inadvertently left off during the previous exchange. The technician responsible was counseled.

Air particulate filters for API-4 and API-5 were mislabeled as API-1 on 07/17/90. The lab was contacted and instructed to report the highest gross beta for these samples. The technician responsible was counseled.

The week of 12/05/90, all air samplers ran for eight days due to schedule change.

6.3 MILK AND GRASS SAMPLING

The following grass samples were not collected due to seasonal unavailability:

M-7 on 01/17/90; M-7 on 02/14/90; M-1 and M-7 on 03/13/90; M-1 and M-7 on 04/11/90.

On 03/13/90, milk sample for M-1 was not collected due to all milk producing animals being sold. M-1 was dropped from the program and M-8 was added.

6.4 WATER SAMPLING

DRINKING WATER

On 01/25/90, 02/27/90, and 03/26/90 a grab sample was taken at DW-2 due to Detroit Water Company performing maintenance on equipment. This was a planned one-time major maintenance project and should not recur.

On 07/25/90 a grab sample was taken at DW-1 due to sample equipment malfunction. The equipment was immediately repaired.

From 08/16/90 to 10/31/90 the City of Detroit was injecting carbon into the water plant systems to remove residual organics. This was a special maintenance project that should not recur in the near future. This carbon affected the performance of the sampling equipment. For this time period weekly grab samples were taken and composited for the following monthly DW-2 samples: 08/27/90, 09/24/90, 10/31/90

SURFACE WATER

On 07/25/90 SW-2 was not collected due to equipment failure. The equipment was immediately repaired. Also, on 12/27/90 SW-2 was a partial sample due to ice in sample lines. This is a seasonal problem that has been evaluated and is unavoidable at very low temperatures.

6.5 LABORATORY DEVIATIONS

The laboratory has been contacted regarding the following problems. As of 01/01/91, all REMP samples are being sent to a different laboratory, which should alleviate these problems.

Iodine air samples collected on 07/31/90 did not meet Tech Spec LLD due to elapsed time between collection and counting.

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

Air particulate filters collected on 10/09/90 were contaminated by a leaking water sample at the lab.

Milk samples M-2, M-3, and M-8 collected on 08/23/90 were prepared using an expired I-131 standard.

Drinking water sample DW-2 collected on 09/14/90 did not meet Tech Spec LLDs for Fe-59, Co-58, Zr/Nb-95, and Ba/La-140 due to elapsed time between collection and counting.

Drinking water sample DW-1 collected on 08/27/90 did not meet Tech Spec LLDs for Fe-59, Co-58, Zr/Nb-95, and Ba/La-140 due to elapsed time between collection and counting.

Milk samples M-2 and M-3 collected on 05/09/90 did not meet Tech Spec LLD for I-131 due to elapsed time between collection and counting.

Milk samples M-2, M-3 and M-8 collected on 05/23/90 and 05/24/90 did not meet Tech Spec LLD for I-131 due to elapsed time between collection and counting.

Milk samples M-1 collected on 07/12/90 did not meet Tech Spec LLD for I-131 due to elapsed time between collection and counting.

Grass sample M-7 collected on 05/23/90 did not meet Tech Spec LLD for I-131, Cs-134, and Cs-137 due to insufficient sample size.

Grass sample M-8 collected on 05/23/90 did not meet Tech Spec LLD for I-131 due to insufficient sample size.

Grass sample M-8 collected on 07/26/90 did not meet Tech Spec LLD for I-131 due to insufficient sample size.

7.0 Program Summary

Table 7.0-1 Radiological Environmental Monitoring Program Summary

Name of Facility: Enrico Fermi Unit 2 Docket No.: 50-361 Reporting Period: January - December 1990
Location of Facility: 30 miles southeast of Detroit, Michigan (Frenchtown Township)

Sample Type (Units)	Type and Number of Analysis	LLD	Indicator Locations Mean Range	Location with Highest Annual Mean		Control Locations Mean Range	Number of Non-routine Results
				Location	Mean Range		
Airborne Particulates (pCi/cu. m.)	GB-194	1.0E-2	2.24E-2 (155/155)	A91-1	2.31E-2 (39/39)	2.15E-2 (39/39)	None
			(7.03E-2 to 4.21E-2)	Estrel Beach 1.4 mi.	1.08E-2 to 3.63E-2	(1.20E-2 to 3.64E-2)	
	GS-10						
	Cs-134	5.0E-2	< LLD			< LLD	None
	Cs-137	6.0E-2	< LLD			< LLD	None
	Other Gamma		NA			< LLD	None
	Sr-89	5.0E-3	< LLD			< LLD	None
	Sr-90	1.0E-3	< LLD			< LLD	None
	Bz-7		< LLD			< LLD	None
Airborne Iodine (pCi/cu. m.)	I-131 194	7.0E-2	< LLD ^a			< LLD ^a	None
Gamma (TLDs) Background (mR/dtr.)	Gamma Radiation 199	1.0E+0	14.7 (183/183)	T-43, 0.1 DE	24.1 (4/4)	13.9 (16/16)	None
			6.7 to 36.8		12.0 to 36.8	9.5 to 18.2	
Surface Water (pCi/l)	G/S 17						
	Mn-54	1.5E+1	< LLD			< LLD	None
	Fe-59	3.0E+1	< LLD			< LLD	None
	Co-58	1.5E+1	< LLD			< LLD	None

Table 7.0-1 Radiological Environmental Monitoring Program Summary (cont.)

Name of Facility: Enrico Fermi Unit 2 Docket No.: 50-361
Location of Facility: 30 miles southeast of Detroit, Michigan (Frenchtown Township)

Reporting Period: January - December 1990

Sample Type (Units)	Type and Number of Analysis	LLD	Indicator Locations		Location with Highest Annual Mean		Control Locations		Number of Non-routine Results
			Mean Range	Location	Mean Range	Location	Mean Range	Location	
Surface Water (pCi/l) cont.	Co-60	1.5E+1	< LLD				< LLD		None
	Zn-65	3.0E+1	< LLD				< LLD		None
	Zr/Nb-95	1.5E+1	< LLD				< LLD		None
	Cs-134	1.5E+1	< LLD				< LLD		None
	Cs-137	1.0E+1	< LLD				< LLD		None
	Ba/La-140	1.5E+1	< LLD				< LLD		None
	Sr-89	1.0E+1	< LLD				< LLD		None
	Sr-90	2.0E+0	< LLD				< LLD		None
	H-3	2.0E+3	< LLD				< LLD		None
	Drinking Water (pCi/l)	GB-18	4.0E+0	3.1E+0 (9/9)	DW-1 (Monroe Water)	3.1E+0 (9/9)	2.6E+0		None
			(2.2E+0-4.4E+0)		(2.2E+0-4.4E+0)	1.9E+0-3.0E+0			
GS-18									
Mn-54		1.5E+1	< LLD			< LLD		None	
Fe-59		3.0E+1	< LLD			< LLD		None	
Co-58		1.5E+1	< LLD ^B	DW-1		< LLD		None	
Co-60		1.5E+1	< LLD			< LLD		None	
Zn-65		3.0E+1	< LLD			< LLD		None	
Zr/Nb-95		1.5E+1	< LLD			< LLD		None	
Cs-134		1.5E+1	< LLD			< LLD		None	
Cs-137		1.0E+1	< LLD			< LLD		None	
Ba/La-140		1.5E+1	< LLD	DW-2		< LLD ^B		None	
Sr-89		1.0E+1	< LLD			< LLD		None	
Sr-90		2.0E+0	< LLD	DW-2	2.1E+0 (1/9)	2.1E+0 (1/9)		None	
H-3		2.0E+3	< LLD			< LLD		None	

Table 7.0-1 Radiological Environmental Monitoring Program Summary (cont.)

Name of Facility: Enrico Fermi Unit 2		Socket No.: 50-341		Reporting Period : January - December 1990				
Location of Facility: 30 miles southeast of Detroit, Michigan (Frenchtown Township)								
Sample Type (Units)	Type and Number of Analysis	LLD	Indicator Locations Mean Range	Location with Highest Annual Mean		Control Locations Mean Range	Number of Non-routine Results	
				Location	Mean Range			
Milk (pCi/l)	I-131	1.0E+0	1.0E+0 (17/28) 1.0E-1 to 1.8E+1	M-3 (Yoss Farm) 4.2 mi NW	3.2E+0 (8/14) 5.0E-3 to 1.8E+1	9.0E-1 (8/10) 7.0E-3 to 2.9E+0	None	
	GS 40							
	Cs-134	1.5E+1	< LLD			< LLD	None	
	Cs-137	1.8E+1	< LLD			< LLD	None	
	Co-58		5.6E+0 (1/28)	M-2 (Reessame) 5.7 mi NW	5.6E+0 (1/28)	< LLD	None	
	Co-60		1.5E+1 (1/28)	M-2	1.5E+1 (1/28)	< LLD	None	
	Ba/La-140	1.5E+1	< LLD			< LLD	None	
	K-40	5.0E+2	1.5E+3 (28/28)	M-3 (Yoss Farm) 4.2 mi NW	1.6E+3 (14/14) 1.4E+3 to 1.8E+3	1.5E+3 (12/12) 1.3E+3 to 1.8E+3	None	
	Sr-89	37	1.0E+1	< LLD			< LLD	None
	Sr-90	38	2.0E+0	2.4E+0 (25/27) 4.0E-1 to 6.5E+0	M-2 (Reessame) 5.7 mi NW	2.7E+0 (12/14) 4.0E-1 to 5.1E+0	1.8E+0 (10/11) 5.0E-1 to 4.3E+0	None
Grass (pCi/kg wet)	I-131	21	< LLD ^a	M-7		< LLD ^a	None	
	GS	21						
	Cs-134		< LLD			< LLD	None	
	Cs-137		< LLD			< LLD	None	
	Ba/La-140		< LLD			< LLD	None	

Table 7.0-1 Radiological Environmental Monitoring Program Summary (cont.)

Reporting Period : January - December 1990

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

Sample Type (Unit)	Type and Number of Analysis	LLD	Indicator Locations Mean Range	Location with Highest Annual Mean		Control Locations Mean Range	Number of Non-routine Results
				Location	Mean Range		
Food Products (pCi/kg wet)	I-131 23	6.0E+1	< LLD			< LLD	None
	GS 23	6.0E+1	< LLD			< LLD	None
	Cs-134	8.0E+1	< LLD			< LLD	None
	Cs-137	5.0E+2	3.8E+3 (17/17)	FP-1	4.9E+3 (5/5)	2.9E+3 (6/6)	None
	K-40		1.5E+3 > 7.1E+3	9501 US Turnpike	3.3E+3 > 7.1E+3	1.2E+3 > 4.2E+3	None
	Co-60		3.7E+1 (1/17)	3.9 mi NNE	3.7E+1 (1/17)	< LLD	None
Fish (pCi/kg wet)	GS 11	1.3E+2	< LLD			< LLD	None
	Mn-54	2.6E+2	< LLD ^a			< LLD ^a	None
	Fe-59	1.3E+2	< LLD	F-3		< LLD	None
	Co-58	1.3E+2	< LLD			< LLD	None
	Co-60	2.6E+2	< LLD			< LLD	None
	Zn-65	1.3E+2	< LLD			< LLD	None
	Cs-134	1.5E+2	< LLD			< LLD	None
	Cs-137		2.7E+2 (1/16)	F-2 (Fermi 2 discharge area)	2.7E+2 (1/16)	1.1E+2 (2/5)	None
	Sr-89			0.4 mi E		1.0E+2 > 1.2E+2	None
			4.8E+2 (6/6)	F-3 (Sisseton Bay)	7.2E+2 (5/5)	5.1E+2 (5/5)	None
			1.4E+2 > 9.9E+2	4.8 mi WSW	1.6E+2 > 1.0E+3	1.3E+2 > 1.0E+3	None

Table 7.0-1 Radiological Environmental Monitoring Program Summary (cont.)

Name of Facility: Enrico Fermi Unit 2 Docket No.: 50-361
Location of Facility: 30 miles southeast of Detroit, Michigan (Frenchtown Township)

Reporting Period: January - December 1990

Sample Type (Units)	Type and Number of Analysis	LLD	Indicator Locations Mean Range	Location with Highest Annual Mean	Conc'd Locations Mean Range	Number of Non-routine Results
Sediment (pCi/kg dry)	GS 5					
	Mn-54		2.7E-3 (1/4)	S-2 (Fermi discharge area) 0.2 mi E	< LLD	None
	Co-60		2.3E-2 (1/4)	S-2	< LLD	None
	Zn-65		2.0E-2 (1/4)	S-2	< LLD	None
	Cs-134	1.5E+2	< LLD		< LLD	None
	Cs-137	1.0E+2	< LLD		< LLD	None
	Sr-89		< LLD		< LLD	None
	Sr-90		< LLD		< LLD	None
Ground Water (pCi/l)	GS 12					
	Mn-54	1.5E+1	< LLD		< LLD	None
	Fe-59	3.0E+1	< LLD ^B	GW-4	< LLD ^B	None
	Co-58	1.5E+1	< LLD ^B	GW-2	< LLD ^B	None
	Co-60	1.5E+1	< LLD		< LLD	None
	Zn-65	1.5E+1	< LLD		< LLD	None
	Zr/Mo-95	1.5E+1	< LLD ^B	GW-1, GW-2, GW-3	< LLD ^B	None
	Cs-134	1.5E+1	< LLD		< LLD	None
	Cs-137	1.0E+1	< LLD		< LLD	None
	Ba/La-140	1.5E+1	< LLD ^B	GW-1, GW-2, GW-3	< LLD ^B	None
	H-3	2.0E+3	< LLD		< LLD	None

Table 7.0-1 Radiological Environmental Monitoring Program Summary (cont.)

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

Reporting Period: January - December 1990

GB = gross beta; GS = gamma scan

LLD = nominal lower limit of detection based on 4.66 sigma error for background sample.

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, location description, distance and direction from the Fermi 2 reactor.

Non-routine results are those which are reportable according to Fermi 2 Technical Specifications.

LLDⁿ = Lab did not meet Fermi 2 Tech Spec LLD due to elapsed time between collection and counting of sample.

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

8.0 Sampling Locations

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

Table 8.0-1 Direct Radiation

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx)	Description
T1	NE/38	1.3 mi	Pole on Lakeshore in Estral Beach. Twenty three poles S of Lakeview. (Special Area)
T2	NNE/22	1.2 mi	Tree at the termination of Branch St. (Special Area)
T3	N/9	1.1 mi	Pole on NW corner of Swan Boat Club's fence. (Special Area)
T4	NNW/337	0.6 mi	On Site Boundary Fence by API #2 on Toll Rd.
T5	NW/313	0.6 mi	On Site Boundary Fence by API #3 on Toll Rd.
T6	WNW/293	0.5 mi	Pole on NE corner of Bridge over Toll Rd.
T7	W/270	14.2 mi	Pole behind Doty Farm at 7512 N Custer Rd. (Control)
T8	NW/305	1.9 mi	Pole on NE corner of Dixie Hwy. and Post Rd.
T9	NNW/334	1.5 mi	Pole on NW corner of Trombley and Swan View Rd.
T10	N/6	2.1 mi	Pole on S side of Massarant two poles W of Chinavarre.
T11	NNE/23	6.3 mi	Pole on SE corner of bridge over Silver Creek on US Turnpike S of Campau Rd.
T12	NNE/29	6.3 mi	Pole near tree in the N area of parking lot at Pointe Mouillee Game Area Field Office.

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

Table 8.C-1 Direct Radiation (cont.)

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx)	Description
T13	N/356	4.1 mi	Pole on SW corner of Labo and Dixie Hwy.
T14	NNW/337	4.4 mi	Pole on SE corner of Labo and Brandon near RR tracks.
T15	NW/315	3.9 mi	On pole behind Newport Post Office.
T16	WNW/283	4.9 mi	Pole on SE corner of War and Post Rds.
T17	W/271	4.9 mi	Pole on NE corner of Nadeau and Laprad near mobile home park.
T18	WSW/247	4.8 mi	Pole on SE corner of Mentel and Hurd Rds.
T19	SW/236	5.2 mi	First pole E of Fermi siren on Waterworks Rd at the NE corner of Sterling State Park Rd and Waterworks (in Sterling State Park).
T20	WSW/257	2.7 mi	Pole on S side of Williams Rd, eight poles W of Dixie Hwy. (Special Area)
T21	WSW/239	2.8 mi	Pole on N side of Pearl at Parkview in Woodland Beach. (Special Area)
T22	S/172	1.2 mi	Pole on N side of Pointe Aux Peaux two poles W of Long. (Site Boundary)
T23	SSW/195	1.1 mi	Pole on S side of Pointe Aux Peaux, one pole W of Huron next to vent pipe. (Site Boundary)

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

Table 8.0-1 Direct Radiation (cont.)

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx)	Description
T24	SW/225	1.2 mi	On fence post W of Fermi Gate along Pointe Aux Peaux Rd. (Site Boundary)
T25	WSW/251	1.5 mi	Pole on Toll Rd., thirteen poles S of Fermi Dr.
T26	WSW/259	1.1 mi	Pole on Toll Rd, six poles S of Fermi Dr.
T27	SW/225	6.8 mi	Pole on NE corner of McMillan and East Front St. (Special Area)
T28	SW/229	10.7 mi	Pole on SE corner of Mortar Creek and LaPlaisance. (Control)
T29	WSW/237	10.3 mi	Pole on E side of S Dixie, one pole S of Albain. (Control)
T30	WSW/247	7.8 mi	Pole on north side of St. Mary's Park parking lot at Elm and Monroe St. (Special Area)
T31	WSW/255	9.6 mi	1st Pole W of entrance to Milton "Pat" Munson Recreational Reserve on North Custer Rd. (Control)
T32	WNW/295	10.3 mi	Pole on corner of Stony Creek and Finzel Rds.
T33	NW/317	9.2 mi	Pole on W Side of Grafton Rd. First Pole N of Ash and Grafton intersection.
T34	NNW/338	9.7 mi	Pole on E Side of Port Creek. First pole S of Will-Carleton Rd.

Table 8.0-1 Direct Radiation (cont.)

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx)	Description
T35	N/359	6.9 mi	Pole on S Side of S Huron River Dr. across from Race St. (Special Area)
T36	N/358	9.1 mi	Pole on NE corner of Gibraltar and Cahill Rde.
T37	NNE/21	9.8 mi	Pole on S corner of Adams and Gibraltar across from Humbug Marina.
T38	WNW/294	1.7 mi	On pole at the residence on 6594 N. Dixie Hwy.
T39	S/176	0.3 mi	SE corner of Protected Area Fence (PAF).
T40	S/170	0.3 mi	Midway along OBA on PAF.
T41	SSE/161	0.2 mi	Midway between OBA and Shield Wall on PAF.
T42	SSE/149	0.2 mi	Midway along Shield Wall on PAF.
T43	SE/131	0.1 mi	Midway between Shield Wall and Aux Boilers on PAF.
T44	ESE/109	0.1 mi	Opposite OSSF door on PAF.
T45	E/86	0.1 mi	NE Corner of PAF.
T46	ENE/67	0.2 mi	NE side of barge slip on fence.
T47	S/185	.1 mi	South of Turbine Bldg. rollup door on PAF.
T48	SW/235	.2 mi	30 ft. from corner of AAP on PAF.

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

Table 8.0-1 Direct Radiation (cont.)

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx)	Description
T49	WSW/251	1.1 mi	Corner of Site Boundary fence north of NOC along Critical Path Rd.
T50	W/270	.9 mi	Site Boundary fence near main gate by the south Bullit Street sign.
T51	N/3	.4 mi	Site Boundary fence north of north Cooling Tower.
T52	NNE/20	.4 mi	Site Boundary fence at the corner of Arson and Tower.
T53	NE/55	.2 mi	Site Boundary fence east of South Cooling Tower.
T54	S/189	.3 mi	Pole next to Fermi 2 Visitors Center.
T55	WSW/251	3.3 mi	Pole on south side of Nadeau east of Sott Elementary School. (Special Area)
T56	WSW/255	4.9 mi	Pole at entrance to Jefferson Middle School on Stony Creek Rd. (Special Area)
T57	W/260	2.7 mi	Pole on north side of William Rd. across from Jefferson High School entrance. (Special Area)
T58	WSW/249	4.9 mi	Pole west of Hurd Elementary School sign. (Special Area)
T59	NW/325	2.6 mi	Pole north of St. Charles Church entrance on Dixie Hwy. (Special Area)

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

Table 8.0-1 Direct Radiation (cont.)

Station Number	Meteorological Sector/Azimuth (Degrees)	Distance from Reactor (Approx)	Description
T60	NNW/341	2.5 mi	1st pole north of North Elementary School's entrance on Dixie Hwy. (Special Area)
T61	W/268	10.1 mi	Pole at SW corner of Stewart and Raisville Rds.
T62	SW/232	9.7 mi	Pole at NE corner of Albain and Hull Rds.
T63	WSW/245	9.6 mi	Pole at NE corner of Dunbar and Telegraph Rds.

Table 8.0-2 Fish and Sediment Locations

Station Number	Meteorological Sector/Azimuth Degrees	Distance from Reactor (Approx)	Description	Media	Frequency
SEDIMENTS					
S-1	SSE/165	0.9 mi	Pointe Aux Peaux, Shoreline to 500 ft offshore sighting directly to Land Base Water Tower	Sediment	SA
S-2	E/81	0.2 mi	Fermi 2 Discharge, approx 200 ft offshore	Sediment	SA
S-3	NE/39	1.1 mi	Estral Beach, approx 200 ft offshore, off North shoreline where Swan Creek and Lake Erie meet	Sediment	SA
S-4	WSW/241	3.0 mi	Indian Trails Community Beach	Sediment	SA
S-5	NNE/20	11.7 mi	DECo's Trenton Channel Power Plant Intake area (Control)	Sediment	SA
FISH					
F-1	NNE/31	9.5 mi	Celeron Island (Control)	Fish	SA
F-2	E/86	0.4 mi	Fermi 2 Discharge (approx 1200 ft offshore)	Fish	SA
F-3	WSW/238	4.8 mi	Brest Bay Marina Area (Control)	Fish	SA

Table 8.0-3 Milk/Grass Sample Locations

Station Number	Meteorological Sector/Azimuth Degrees	Distance from Reactor (Approx)	Description	Media	Frequency
M-1	W/270	14.2 mi	Doty Farm - 7512 N Custer Rd (Control)	Milk/Grass	M-SM
M-2	NW/319	5.4 mi	Reaume Farm - 2705 E Labo	Milk	M-SM
M-3	NW/317	4.2 mi	Yoes Farm - 3239 Newport Rd	Milk	M-SM
M-7	WNW/301	2.1 mi	Webb Farm - 4362 Post Rd	Milk/Grass	M-SM
M-8	WNW/289	9.9 mi	Calder Dairy - 9334 Finzel Rd (New Control)	Milk/Grass	M-SM

Table 8.0-4 Water Sample Locations

Station Number	Meteorological Sector/Azimuth Degrees	Distance from Reactor (Approx)	Description	Media	Frequency
DRINKING WATER					
DW-1	S/174	1.1 mi	Monroe Water Station N Side of Pointe Aux Peaux 1/2 Block W of Long Rd	Drinking Water	M
DW-2	N/B	18.6 mi	Detroit Water Station 14700 Moran Rd, Allen Park (Control)	Drinking Water	M
SURFACE WATER					
SW-1	SSE/160	0.3 mi	Fermi 1 Raw Lake Water Intake Structure	Surface Water	M
SW-2	NNE/20	11.7 mi	DECo's Trenton Channel Power Plant Intake Structure (Screenhouse #1) (Control)	Surface Water	M
SITE WELLS					
GW-1	S/175	0.4 mi	Approx 100 ft W of Lake Erie, EF-1 Parking lot near gas fired peakers	Groundwater	Q
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	Groundwater	Q
GW-3	SW/226	1.0 mi	143 ft W of PAP Rd Gate, 62 ft N of PAP Rd Fence	Groundwater	Q
GW-4	WNW/299	0.6 mi	42 ft S of Langton Rd, 8 ft E of Toll Rd Fence	Groundwater	Q

Table B.0-5 Air Particulate/Air Iodine Sample Locations

Station Number	Meteorological Sector/Azimuth Degrees	Distance from Reactor (Approx)	Description	Media	Frequency
API-1	NE/39	1.4 mi	Estral Beach Pole on Lakeshore, 18 Poles S of Lakeview (Nearest Community with highest X/Q)	Radiiodine Particulates	W W
API-2	NNW/337	0.6 mi	Site Boundry and Toll Road, on Site Fence by T-4	Radiiodine Particulates	W W
API-3	NW/313	0.6 mi	Site Boundry and Toll Road, on Site Fence by T-5	Radiiodine Particulates	W W
API-4	W/270	14.1 mi	Pole, behind Doty Farm - 7512 N Custer Road (Control)	Radiiodine Particulates	W W
API-5	S/191	1.2 mi	Corner of Erie St and Pointe Aux Peaux Rds	Radiiodine Particulates	W W

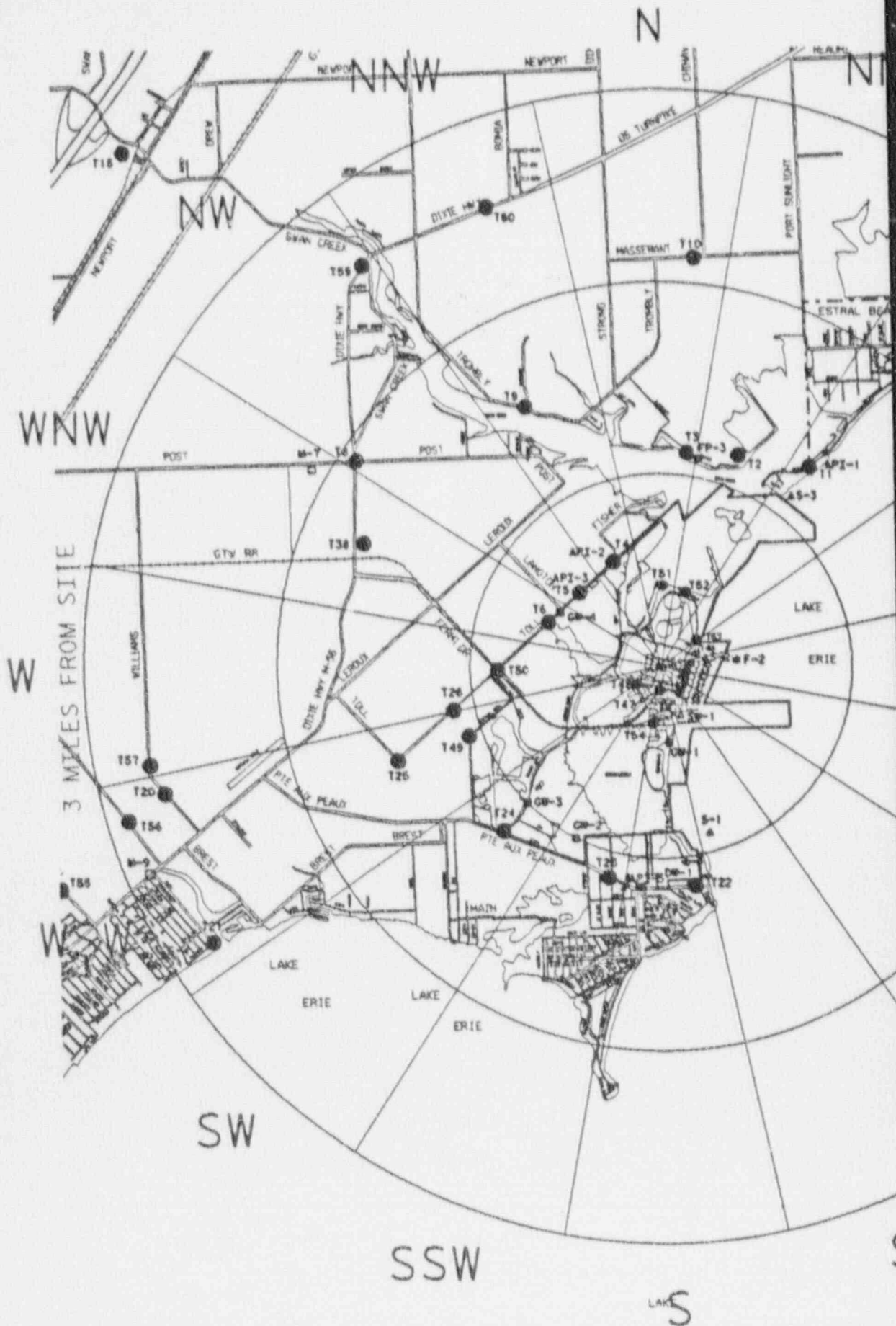
Table B.0-6 Food Product Sample Locations

Station Number	Meteorological Sector/Azimuth Degree	Distance from Reactor (Approx)	Description	Media	Frequency
FP-1	NNE/21	3.9 mi	9501 Turnpike Highway	Food Products	M (when available)
FP-3	NNE/12	1.1 mi	6441 Brancheau	Food Products	M (when available)
FP-5	NNE/19	4.5 mi	7806 Labo	Food Products	M (when available)
FP-6	UNU/290	14.5 mi	8200 Geilman (Control)	Food Products	M (when available)

Table 8.0-7 Land Use Census

Meteorological Sector	Distance from Reactor (Approx)	Description
NE	1.1 mi	6760 Lakeshore
NNE	1.0 mi	6500 Brando
N	1.1 mi	6200 Blanchett
NNW	1.1 mi	5701 Post
NW	1.1 mi	6577 Leroux
WNW	0.7 mi	6200 Langton
W	1.1 mi	6001 Toll
WSW	1.5 mi	4771 Pointe Aux Peaux
SW	1.2 mi	4981 Pointe Aux Peaux
SSW	1.1 mi	5820 Pointe Aux Peaux
S	0.9 mi	4834 Long
ESE-SSE		Lake Erie

NOTE: These locations have been identified as the closest residences in the 1990 Land Use Census.



FERMI 2 1990 ANNUAL RADIOLOGICAL
ENVIRONMENTAL MONITORING REPORT



SI
APERTURE
CARD

Also Available On
Aperture Card

0 1
SCALE IN MILES

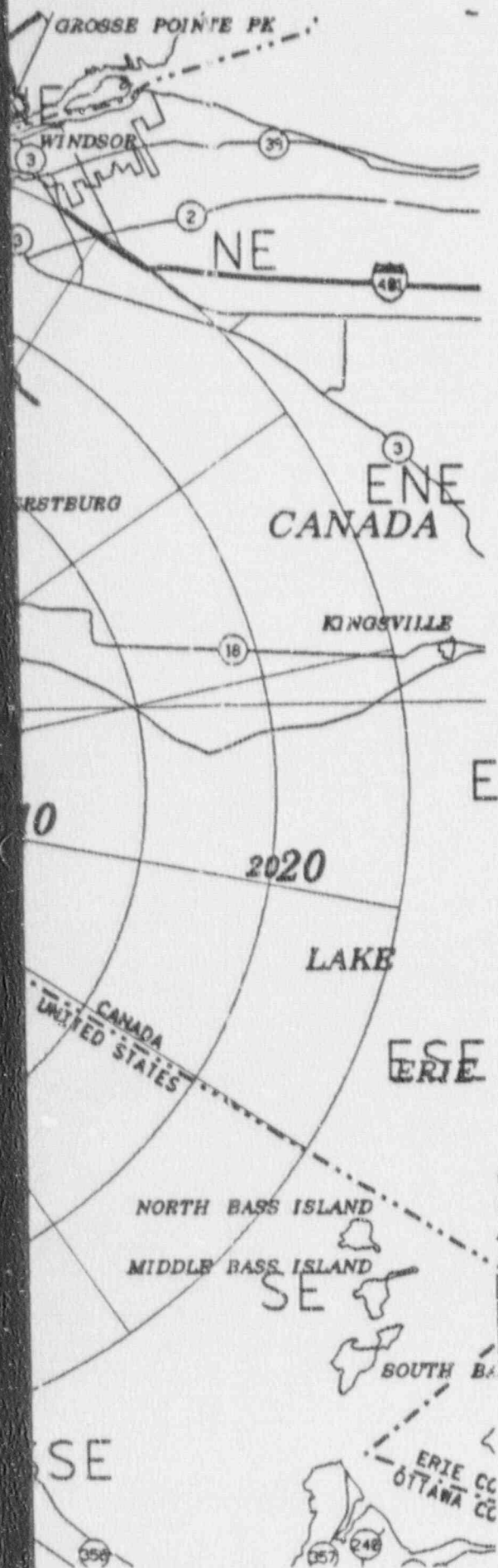
9105030330 - 01
LEGEND

- 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

FIGURE 1
SAMPLING LOCATIONS
BY STATION NUMBER
(SITE AREA)



FERMI 2 1990 ANNUAL RADIOLOGICAL
ENVIRONMENTAL MONITORING REPORT



SI
APERTURE
CARD

Also Available On
Aperture Card

5 0 5 10

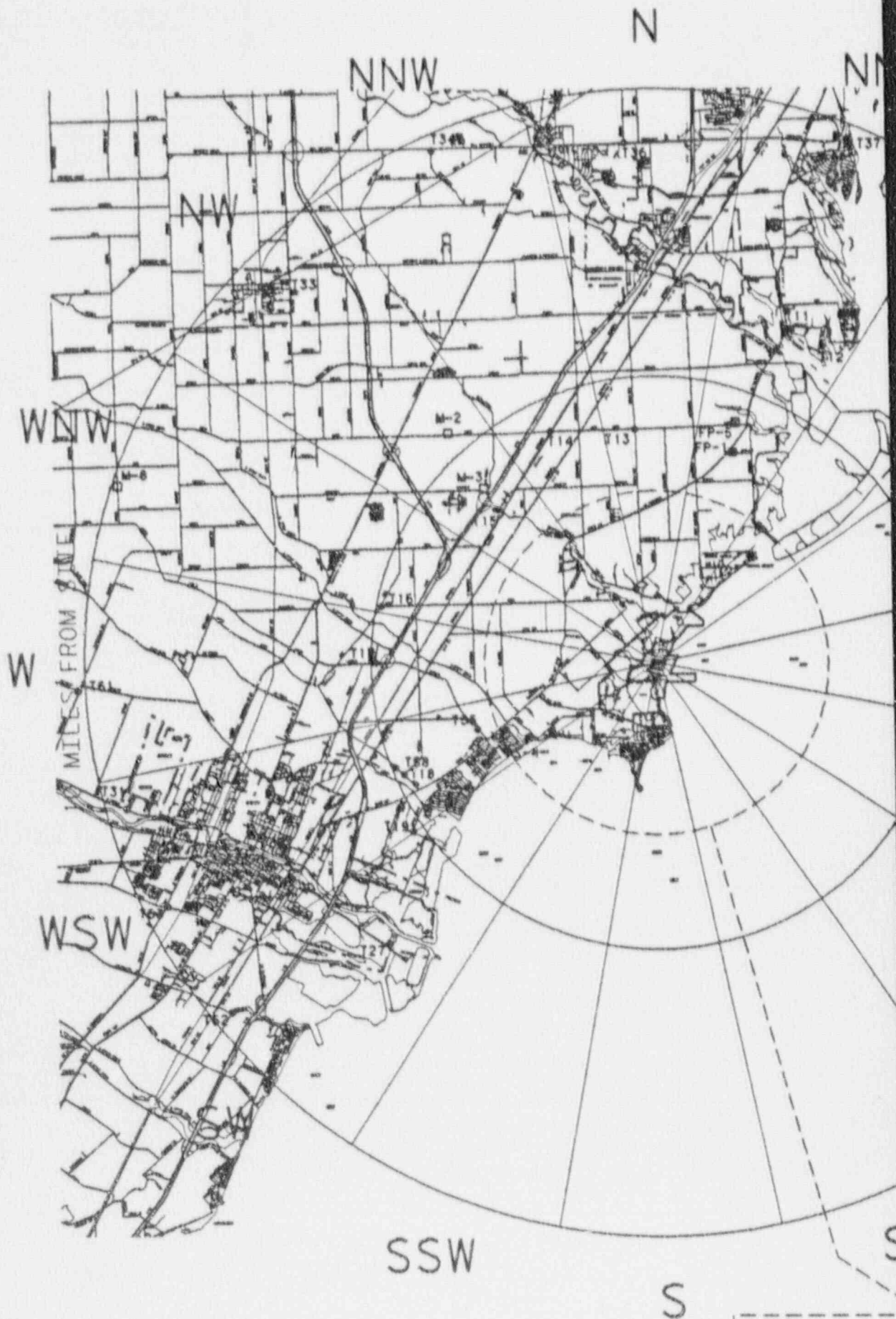
SCALE IN MILES

9105030330-02

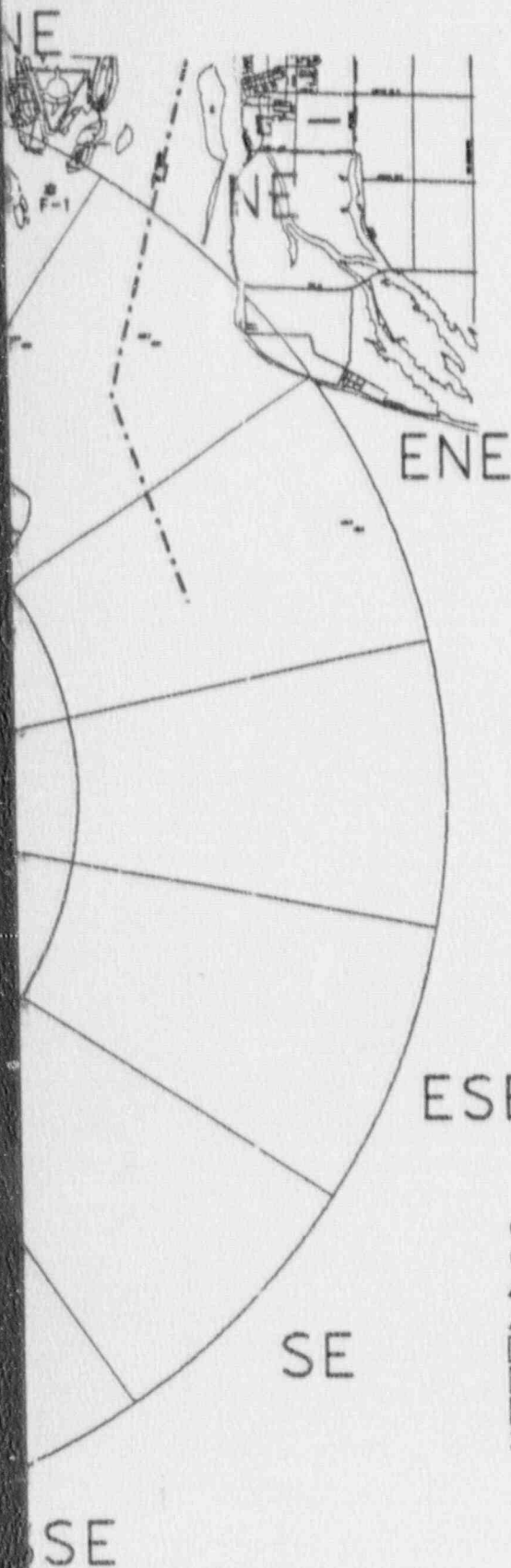
LEGEND

- -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

FIGURE 2
SAMPLING LOCATIONS
BY STATION NUMBER
(GREATER THAN 10 MILES)



FERMI 2 1990 ANNUAL RADIOLOGICAL
ENVIRONMENTAL MONITORING REPORT



SI
APERTURE
CARD

Also Available On
Aperture Card

1 0 1 2 3



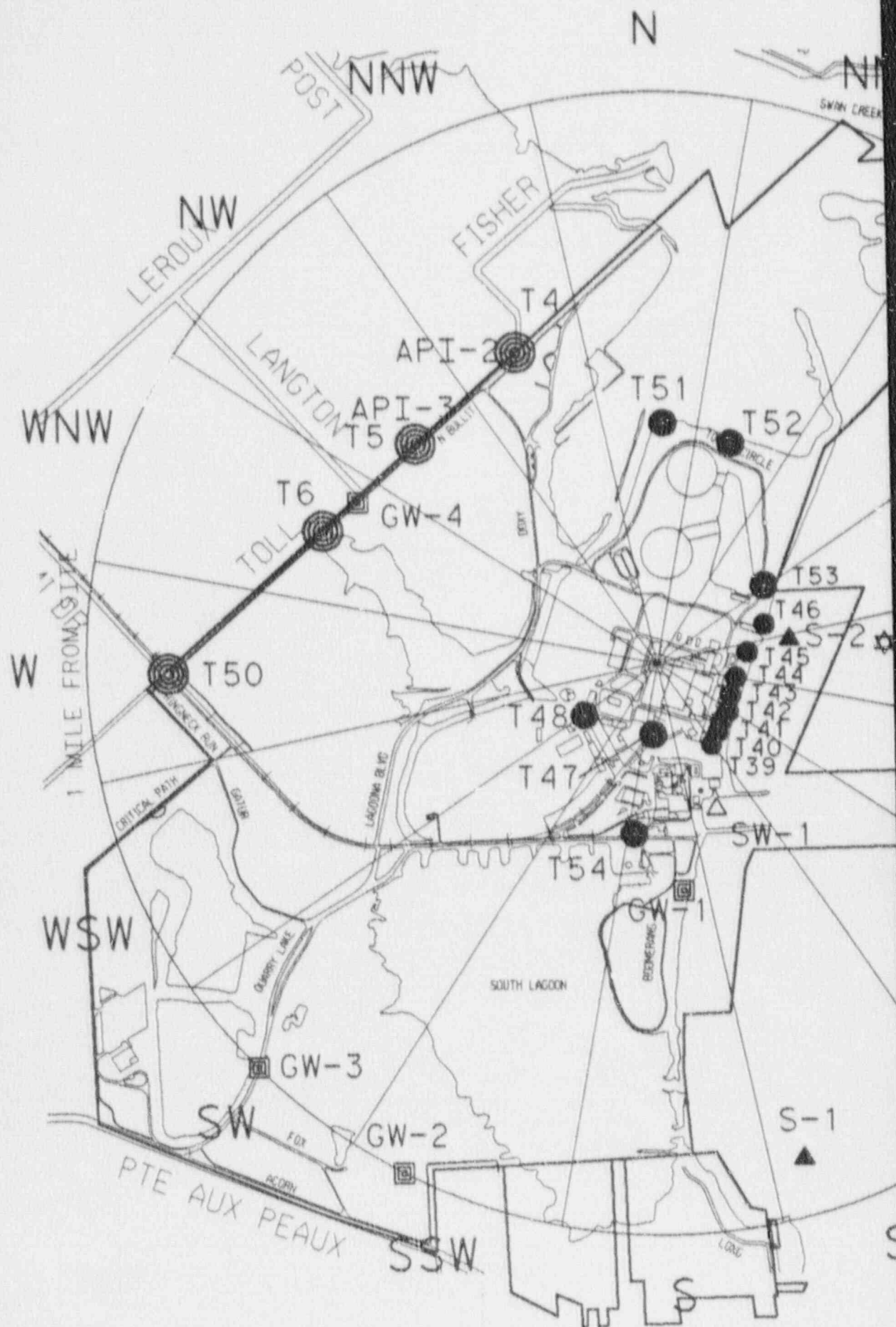
SCALE IN MILES

9105030330-03
LEGEND

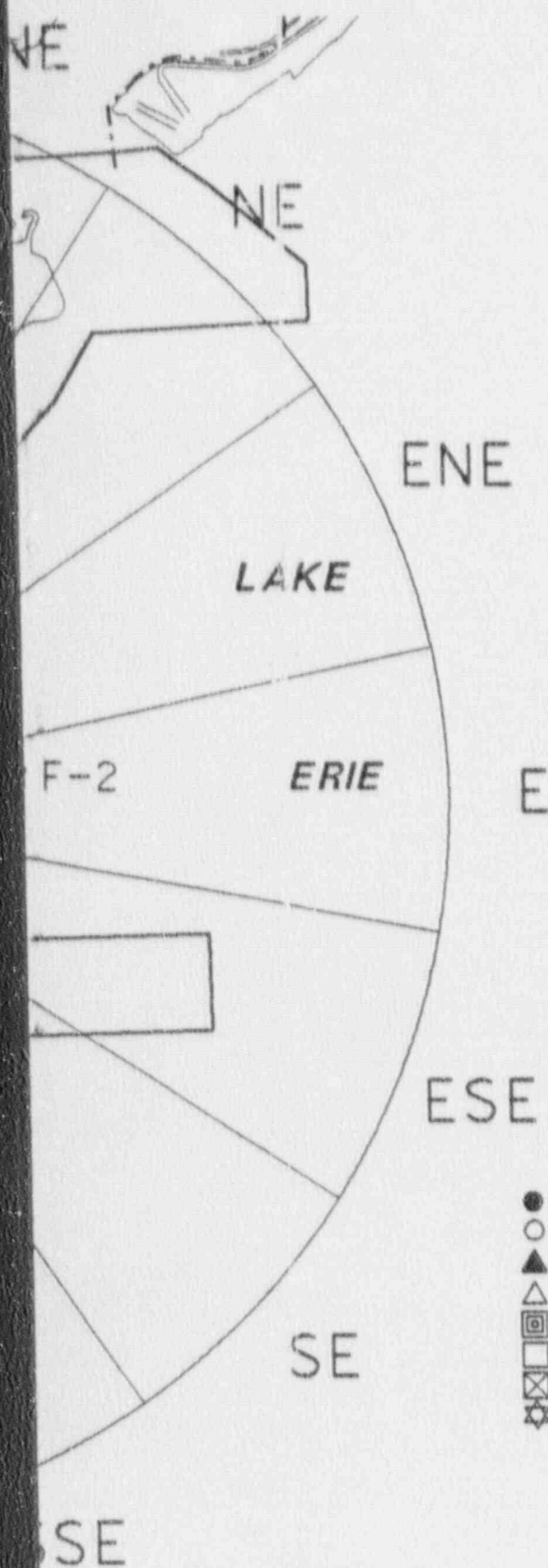
- T- DIRECT RADIATION
- API- AIR PARTICULATES/AIR IODINE
- ▲-S- SEDIMENTS
- △-DW/SW- DRINKING WATER/SURFACE WATER
- ◻-GW- GROUND WATER
- ◻-M- MILK
- ⊗-FP- FOOD PRODUCTS
- ☆-F- FISH

FIGURE 3
SAMPLING LOCATIONS
BY STATION NUMBER
(LESS THAN 10 MILES)

SEE FIG.1.
HAN 5 MILES, SEE FIG.2.
10 MILES, SEE FIG.3.



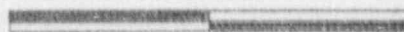
FERMI 2 1990 ANNUAL RADIOLOGICAL
ENVIRONMENTAL MONITORING REPORT



SI
APERTURE
CARD

Also Available On
Aperture Card

0 0.5



SCALE IN MILES

9105030330-04
LEGEND

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

FIGURE 4
SAMPLING LOCATIONS
BY STATION NUMBER
SITE AREA-LAKE ERIE

9.0 Data Tables

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

FERMI 2

TLD ANALYSIS

Station	mR/Std. Qtr.				Mean
	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	
T-1	12.9	10.4	11.1	8.8	10.8
T-2	17.3	11.7	11.7	9.4	12.5
T-3	17.0	9.3	11.0	7.3	11.2
T-4	17.4	10.8	13.8	9.0	12.8
T-5	19.9	12.9	15.0	8.8	14.2
T-6	16.0	13.2	16.8	9.4	13.9
T-7	16.5	14.6	15.4	10.4	14.2
T-8	16.0	14.6	15.9	11.6	14.5
T-9	16.6	12.4	16.6	10.8	14.1
T-10	20.1	16.1	18.1	11.1	16.4
T-11	19.4	9.9	9.7	9.5**	12.1
T-12	15.5	11.1	13.7	9.1	12.4
T-13	24.4	14.5	18.5	12.3	17.4
T-14	22.2	12.2	15.2	11.5	15.3
T-15	18.0	9.7	*	11.3	13.0
T-16	19.1	22.6	13.8	10.9	16.6
T-17	17.1	13.7**	11.2	10.2	13.1
T-18	16.1	15.3	13.1	10.2	13.7
T-19	20.9	16.5	18.0	12.4	17.0
T-20	17.7**	21.2	*	13.3	17.4
T-21	16.5	11.8	14.0	9.9	13.1
T-22	18.1	15.6	16.9	10.6	15.3
T-23	17.2	15.8	17.8	11.5	15.6
T-24	16.1	14.5	14.1	7.0	12.9
T-25	23.4	17.8	17.7	13.1	18.0
T-26	21.1	21.8	15.0	13.3	17.8
T-27	12.7	11.4	11.8	8.6	11.1
T-28	16.4	12.4	14.3	9.7	13.2
T-29	18.2	17.4	9.5	10.2	13.8
T-30	16.1	10.5	9.8	9.6	11.5
T-31	16.5	16.1	13.4	10.6	14.2
T-32	16.4	16.7	13.5	12.4	14.8
T-33	18.5	14.2	13.8	9.9	14.1
T-34	16.7	15.4	13.9	10.2	14.1
T-35	16.5	12.6	10.6	10.3	12.5
T-36	19.1	16.2	14.6	11.6	15.4
T-37	16.7	13.2	14.0	10.4	13.6
T-38	19.2	19.4	15.3	12.0	16.5
T-39	19.5	20.5	18.1	9.2	16.8
T-40	18.6	25.2	17.1	11.1	18.0
T-41	26.5	24.9	15.7	11.6	19.7

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

FERMI 2

TLD ANALYSIS

Station	mR/Std. Qtr.				Mean
	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	
T-42	34.0	24.2	19.6	10.7	22.1
T-43	36.8	28.8	18.7	12.0	24.1
T-44	35.0	20.3	19.9	10.7	21.5
T-45	23.2	22.6	15.8	9.0	17.7
T-46	18.3	16.2	15.8	9.4	14.9
T-47				10.1	10.1
T-48				9.0	9.0
T-49				11.6	11.6
T-50				8.7	8.7
T-51				7.1	7.1
T-52				8.1	8.1
T-53				8.7	8.7
T-54				6.7	6.7
T-55				10.4	10.4
T-56				8.7	8.7
T-57				9.7	9.7
T-58				8.3	8.3
T-59				9.0	9.0
T-60				14.5	14.5
T-61				9.9	9.9
T-62				12.9	12.9
T-63				9.5	9.5

* TLD lost in the field

** T-20 was replaced on 05/18/90. T-17 was replaced on 02/27/90. T-11 was replaced on 07/24/90

Note: T-47 through T-63 were placed in the field at the beginning of the fourth quarter.

FIELD DATES

	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.
Deployed	01/03/90	04/02/90	07/02/90	10/03/90
Collected	04/02/90	07/02/90	10/03/90	01/03/91
Total Days	90	91	93	92

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

TLD ANALYSIS
BY METEOROLOGICAL SECTORS

Sector	mR/Std. Qtr.				Mean	Stations
	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.		
N	19.4	13.7	14.6	10.0	14.4	T-3, T-10 T-13, T-35 T-36, T-51
NNE	17.2	11.5	12.3	9.3	12.6	T-2, T-11, T-12, T-37 T-52
NE	12.9	10.4	11.1	8.8	10.8	T-1, T-53
ENE	18.3	16.2	15.8	9.4	14.9	T-46
E	23.2	22.6	15.8	9.0	17.7	T-45
ESE	35.0	20.3	19.9	10.7	21.5	T-44
SE	36.8	28.8	18.7	12.0	24.1	T-43
SSE	30.3	24.6	17.7	11.2	21.0	T-41, T-42
S	18.7	20.4	17.4	9.5	16.5	T-22, T-39 T-40, T-47 T-54
SSW	17.2	15.8	17.8	11.5	15.6	T-23
SW	16.5	13.7	14.5	9.9	13.7	T-19, T-24 T-27, T-28 T-48, T-62
W	16.8	14.2	13.3	9.8	13.5	T-7, T-17 T-50, T-57 T-61
WSW	18.2	16.5	13.2	10.7	14.7	T-18, T-20 T-21, T-25 T-26, T-29 T-30, T-31 T-49, T-55 T-56, T-58 T-63

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

TLD ANALYSIS
BY METEOROLOGICAL SECTORS

Sector	mR/Std. Qtr.				Mean	Stations
	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.		
WNW	17.7	18.0	14.9	11.2	15.5	T-6, T-16 T-32, T-38
NW	18.1	12.9	14.9	10.1	14.0	T-5, T-8 T-15, T-33 T-59
NNW	18.2	12.7	14.9	11.2	14.3	T-4, T-9 T-14, T-34 T-60

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

TLD ANALYSIS
BY DISTANCE FROM FERMI 2

Distance Miles	mR/Std. Qtr.				Mean	Stations
	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.		
< 2	20.9	17.4	15.9	9.9	16.0	T-1,T-2,T-3 T-4,T-5,T-6 T-8,T-9,T-22 T-23,T-24 T-25,T-26 T-38,T-39 T-40,T-41 T-42,T-43 T-44,T-45 T-46,T-47 T-48,T-49 T-50,T-51 T-52,T-53 T-54
2 - 5	19.0	15.2	14.8	10.8	15.0	T-10,T-13 T-14,T-15 T-16,T-17 T-18,T-20 T-21,T-55 T-56,T-57 T-58,T-59 T-60
> 5	17.1	13.4	13.0	10.5	13.5	T-11,T-12 T-19,T-27 T-30,T-32 T-33,T-34 T-35,T-36 T-37,T-61 T-62,T-63
Control TLDs	16.9	15.1	13.2	10.2	13.9	T-7,T-28 T-29,T-31

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

FERMI 2

AIR PARTICULATE ANALYSIS

FIRST QUARTER

Date Collected	Gross Beta (pCi/cu.m.)				
	API-1	API-2	API-3	API-4	API-5
01/02/90	3.02E-2	2.54E-2	2.89E-2	2.54E-2	**
01/09/90	3.63E-2	3.69E-2	3.32E-2	3.64E-2	4.21E-2
01/16/90	2.23E-2	2.70E-2	2.40E-2	2.27E-2	2.56E-2
01/23/90	2.39E-2	2.39E-2	2.40E-2	2.47E-2	2.49E-2
01/30/90	*4.14E-2	2.18E-2	1.89E-2	2.14E-2	2.16E-2
02/06/90	2.39E-2	2.42E-2	2.32E-2	2.14E-2	2.41E-2
02/13/90	2.57E-2	2.53E-2	2.06E-2	2.48E-2	2.55E-2
02/20/90	2.79E-2	3.06E-2	2.54E-2	2.50E-2	2.75E-2
02/27/90	2.79E-2	2.33E-2	2.72E-2	2.54E-2	2.80E-2
03/06/90	2.97E-2	2.62E-2	2.87E-2	2.95E-2	2.72E-2
03/13/90	2.23E-2	2.41E-2	2.23E-2	2.28E-2	2.21E-2
03/20/90	1.95E-2	2.09E-2	2.03E-2	1.61E-2	2.30E-2
03/27/90	2.58E-2	2.55E-2	2.66E-2	1.90E-2	1.90E-2
Quarterly Mean	2.74E-2	2.58E-2	2.49E-2	2.42E-2	2.59E-2

* Low sample volume due to equipment failure.

** No sample due to equipment failure.

Iodine 131 concentrations are <0.7 pCi/cu.m. unless noted.

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

FERMI 2

AIR PARTICULATE ANALYSIS

SECOND QUARTER

Date Collected	Gross Beta (pCi/cu.m.)				
	API-1	API-2	API-3	API-4	API-5
04/03/90	2.53E-2	1.98E-2	1.75E-2	1.63E-2	1.55E-2
04/10/90	2.32E-2	2.09E-2	2.33E-2	2.09E-2	2.26E-2
04/17/90	2.44E-2	2.66E-2	2.13E-2	2.21E-2	2.75E-2
04/24/90	2.91E-2	2.52E-2	2.61E-2	2.63E-2	2.55E-2
05/01/90	2.22E-2	2.36E-2	2.52E-2	2.20E-2	2.49E-2
05/08/90	2.23E-2	2.38E-2	2.32E-2	2.27E-2	2.20E-2
05/15/90	1.84E-2	1.83E-2	1.77E-2	1.84E-2	1.86E-2
05/22/90	1.08E-2	1.03E-2	1.29E-2	1.20E-2	1.26E-2
05/29/90	1.47E-2	1.66E-2	2.17E-2	1.88E-2	1.43E-2
06/05/90	1.48E-2	1.58E-2	1.32E-2	1.48E-2	1.64E-2
06/12/90	1.54E-2	1.93E-2	1.59E-2	1.75E-2	1.76E-2
06/19/90	1.91E-2	1.86E-2	1.96E-2	1.96E-2	2.14E-2
06/26/90	1.33E-2	1.31E-2	1.40E-2	1.30E-2	1.46E-2
Quarterly Mean	1.95E-2	1.94E-2	1.93E-2	1.88E-2	1.95E-2

Iodine 131 concentrations are <0.7 pCi/cu.m. unless noted.

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

FERMI 2

AIR PARTICULATE ANALYSIS

THIRD QUARTER

Date Collected	Gross Beta (pCi/cu.m.)				
	API-1	API-2	API-3	API-4	API-5
07/03/90	1.98E-2	1.71E-2	1.81E-2	1.75E-2	1.77E-2
07/10/90	2.15E-2	2.11E-2	2.10E-2	1.83E-2	1.81E-2
07/17/90 *	1.99E-2	1.64E-2	1.95E-2	1.83E-2	1.83E-2
07/24/90	2.25E-2	2.48E-2	2.23E-2	2.01E-2	2.03E-2
07/31/90	2.29E-2 ^a	2.34E-2 ^a	2.28E-2 ^a	2.25E-2 ^a	2.30E-2 ^a
08/07/90	1.78E-2	1.88E-2	1.76E-2	1.87E-2	1.80E-2
08/14/90	2.12E-2	2.66E-2	2.35E-2	2.65E-2	2.41E-2
08/21/90	2.75E-2	2.49E-2	2.49E-2	2.31E-2	2.50E-2
08/28/90	2.35E-2	2.17E-2	2.22E-2	2.52E-2	2.21E-2
09/04/90	2.83E-2	2.77E-2	2.95E-2	2.83E-2	3.04E-2
09/11/90	3.05E-2	2.37E-2	2.75E-2	2.50E-2	2.50E-2
09/18/90	2.09E-2	2.10E-2	1.93E-2	1.95E-2	2.24E-2
09/25/90	1.64E-2	1.86E-2	1.78E-2	1.83E-2	1.74E-2
Quarterly Mean	2.25E-2	2.20E-2	2.20E-2	2.16E-2	2.17E-2

* Particulate filters 4 & 5 were inadvertently marked API-1

^a LLD not met for I-131 due to untimely processing.

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

FERMI 2

AIR PARTICULATE ANALYSIS

FOURTH QUARTER

Date Collected	Gross Beta (pCi/cu.m.)				
	API-1	API-2	API-3	API-4	API-5
10/02/90	*	*	*	*	*
10/09/90	*	*	*	*	*
10/16/90	*	*	*	*	*
10/23/90	*	*	*	*	*
10/30/90	*	*	*	*	*
11/06/90	*	*	*	*	*
11/13/90	*	*	*	*	*
11/20/90	*	*	*	*	*
11/27/90	*	*	*	*	*
12/05/90	*	*	*	*	*
12/12/90	*	*	*	*	*
12/19/90	*	*	*	*	*
12/26/90	*	*	*	*	*

* No data available from the Lab at this time.

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

FERMI 2

AIR PARTICULATE ANALYSIS

MONTHLY MEANS

Month	Gross Beta (pCi/cu.m.)				
	API-1	API-2	API-3	API-4	API-5
January	3.08E-2	2.70E-2	2.58E-2	2.61E-2	2.86E-2
February	2.64E-2	2.59E-2	2.41E-2	2.42E-2	2.63E-2
March	2.43E-2	2.42E-2	2.45E-2	2.19E-2	2.28E-2
April	2.55E-2	2.31E-2	2.18E-2	2.14E-2	2.28E-2
May	1.77E-2	1.85E-2	2.01E-2	1.88E-2	1.85E-2
June	1.57E-2	1.67E-2	1.57E-2	1.62E-2	1.75E-2
July	2.13E-2	2.06E-2	2.07E-2	1.99E-2	1.95E-2
August	2.25E-2	2.30E-2	2.21E-2	2.34E-2	2.23E-2
September	2.40E-2	2.28E-2	2.35E-2	2.28E-2	2.38E-2
October	*	*	*	*	*
November	*	*	*	*	*
December	*	*	*	*	*
Annual Mean	2.31E-2	2.24E-2	2.20E-2	2.16E-2	2.25E-2

* No data available from the Lab at this time.

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

FERMI 2

AIR PARTICULATE ANALYSIS

Quarterly Composite of Particulate Filters

Station	Sr-89	Sr-90	(pCi/cu.m.)		Cs-137	Other
			Be-7	Cs-134		
<u>1st Qtr.</u>						
API-1	<1.0E-3	<1.0E-3	1.1E-1	<6.3E-4	<1.1E-3	NA
API-2	<5.0E-3	<1.0E-3	1.3E-1	<1.2E-3	<1.1E-3	NA
API-3	<5.0E-3	<1.0E-3	<1.3E-1	<9.9E-4	<1.2E-3	NA
API-4	1.3E-2	<1.0E-3	<1.0E-1	<7.1E-4	<6.6E-4	NA
API-5	<5.0E-3	<1.0E-3	<1.1E-1	<6.8E-4	1.2E-3	NA
<u>2nd Qtr.</u>						
API-1	<2.0E-2	<2.0E-4	<2.0E-1	<8.0E-4	<7.0E-4	NA
API-2	<2.0E-2	<2.0E-4	<3.0E-1	<1.0E-3	<8.0E-4	NA
API-3	<2.0E-2	<1.0E-4	<2.0E-1	<1.0E-3	<9.0E-4	NA
API-4	<2.0E-2	<1.0E-4	<2.0E-1	<1.0E-3	<8.0E-4	NA
API-5	<2.0E-2	<1.0E-4	<3.0E-1	<1.0E-3	<9.0E-4	NA
<u>3rd Qtr.</u>						
API-1	*	*	*	*	*	*
API-2	*	*	*	*	*	*
API-3	*	*	*	*	*	*
API-4	*	*	*	*	*	*
API-5	*	*	*	*	*	*
<u>4th Qtr.</u>						
API-1	*	*	*	*	*	*
API-2	*	*	*	*	*	*
API-3	*	*	*	*	*	*
API-4	*	*	*	*	*	*
API-5	*	*	*	*	*	*

* No data available from the Lab at this time.

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

FERMI 2

SURF. WATER ANALYSIS

Station SW-1 (pCi/l)

Date Collected	01/25/90	02/27/90	03/26/90	04/25/90	05/25/90
Sr-89	<1.0E+1	<1.0E+1	9.44E-1	<1.0E+1	<1.0E+1
Sr-90	5.64E-1	3.14E-1	2.23E-1	1.07E+0	7.33E-1
Mn-54	<4.7E+0	<1.0E+1	<8.2E+0	<5.0E+0	<7.2E+0
Fe-59	<1.0E+1	<1.7E+1	<1.8E+1	<1.0E+1	<1.4E+1
Co-58	<4.6E+0	<9.9E+0	<7.1E+0	<5.2E+0	<7.5E+0
Co-60	<8.5E+0	<1.4E+1	<1.0E+1	<5.2E+0	<1.4E+1
Zn-65	<9.6E+0	<2.1E+1	<2.1E+1	<1.1E+1	<1.7E+1
Zr/Nb-95	<4.7E+0	<1.0E+1	<6.8E+0	<5.3E+0	<7.5E+0
Cs-134	<4.5E+0	<8.2E+0	<8.3E+0	<5.3E+0	<6.9E+0
Cs-137	<4.8E+0	<9.8E+0	<9.8E+0	<6.0E+0	<9.7E+0
Ba/La-140	<6.5E+0	<1.5E+1	<1.0E+1	<8.8E+0	<1.4E+1

Station SW-1 (pCi/l)

Date Collected	05/22/90	07/25/90	08/27/90	09/24/90	10/31/90
Sr-89	<1.0E+1	4.76E-1	1.02E-1	1.90E+0	n
Sr-90	9.22E-1	<2.0E+0	9.10E-1	2.50E-1	n
Mn-54	<7.2E+0	<8.5E+0	<8.4E+0	<5.4E+0	n
Fe-59	<1.6E+1	<1.6E+1	<1.4E+1	<1.1E+1	n
Co-58	<8.0E+0	<6.9E+0	<6.4E+0	<3.8E+0	n
Co-60	<7.8E+0	<1.0E+1	<1.0E+1	<6.7E+0	n
Zn-65	<1.7E+1	<1.4E+1	<1.6E+1	<9.0E+0	n
Zr/Nb-95	<8.5E+0	<7.3E+0	<7.9E+0	<4.8E+0	n
Cs-134	<7.9E+0	<5.3E+0	<7.3E+0	<4.7E+0	n
Cs-137	<7.3E+0	<8.9E+0	<7.7E+0	9.65E+0	n
Ba/La-140	<1.1E+1	<1.1E+1	<1.2E+1	<8.0E+0	n

n No data available from lab at this time.

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

FERMI 2

SURFACE WATER ANALYSIS

Station SW-1 (pCi/l)

Date Collected	11/26/90	12/27/90
Sr-89	n	n
Sr-90	n	n
Mn-54	n	n
Fe-59	n	n
Co-58	n	n
Co-60	n	n
Zn-65	n	n
Zr/Nb-95	n	n
Cs-134	n	n
Cs-137	n	n
Ba/La-140	n	n

n No data available from lab at this time.

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

FERMI 2

SURFACE WATER ANALYSIS

Station SW-2 (pCi/l)

Date Collected	01/25/90	02/27/90	03/26/90	04/25/90	05/25/90
Sr-89	8.11E-1	<1.0E+1	9.77E-1	<1.0E+1	<1.0E+1
Sr-90	1.42E-1	5.41E-1	1.61E-1	1.04E+0	5.50E-1
Mn-54	<4.5E+0	<6.8E+0	<7.7E+0	<5.1E+0	<7.7E+0
Fe-59	<8.8E+0	<1.3E+1	<1.4E+0	<8.4E+0	<1.6E+0
Co-58	<5.4E+0	<6.2E+0	<7.5E+0	<4.4E+0	<6.2E+0
Co-60	<9.6E+0	<9.8E+0	<1.2E+1	<6.4E+0	<8.6E+0
Zn-65	<8.8E+0	<1.8E+1	<1.5E+1	<1.1E+1	<1.4E+1
Zr/Nb-95	<5.8E+0	<6.9E+0	<8.1E+0	<4.8E+0	<9.0E+0
Cs-134	<4.9E+0	<5.9E+0	<8.3E+0	<4.2E+0	<6.0E+0
Cs-137	<5.3E+0	<7.4E+0	<9.6E+0	<5.5E+0	<7.9E+0
Ba/La-140	<6.0E+0	<1.1E+1	<5.7E+0	<7.6E+0	<1.3E+1

Station SW-2 (pCi/l)

Date Collected	06/22/90	07/25/90	08/27/90	09/24/90	10/31/90
		NS			
Sr-89	<1.0E+1		1.41E-1	<1.0E+1	n
Sr-90	7.18E-1		4.87E-1	4.10E-1	n
Mn-54	<3.9E+0		<1.2E+1	<5.8E+0	n
Fe-59	<1.1E+1		<2.0E+1	<1.3E+1	n
Co-58	<4.9E+0		<8.3E+0	<6.3E+0	n
Co-60	<6.3E+0		<1.5E+1	<7.4E+0	n
Zn-65	<1.1E+1		<2.6E+1	<1.5E+1	n
Zr/Nb-95	<5.1E+0		<1.0E+1	<9.0E+0	n
Cs-134	<4.6E+0		<8.2E+0	<5.1E+0	n
Cs-137	<6.1E+0		<1.2E+1	<6.8E+0	n
Ba/La-140	<6.1E+0		<9.8E+1	<8.4E+0	n

NS no sample collected due to equipment failure.
n No data available from lab at this time.

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

FERMI 2

SURFACE WATER ANALYSIS
Station SW-2 (pCi/l)

Date Collected	11/26/90	12/27/90
		*
Sr-89	n	n
Sr-90	n	n
Mn-54	n	n
Fe-59	n	n
Co-58	n	n
Co-60	n	n
Zn-65	n	n
Zr/Nb-95	n	n
Cs-134	n	n
Cs-137	n	n
Ba/La-140	n	n

n No data available from the Lab at this time.

* Partial sample due to ice in sample line.

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

FERMI 2

DRINKING WATER ANALYSIS

Station DW-1 (pCi/l)

Date Collected	01/25/90	02/27/90	03/26/90	04/25/90	05/25/90
Sr-89	9.10E-1	<1.0E+1	9.50E-1	<1.0E+1	<1.0E+1
Sr-90	1.36E-1	2.67E-1	1.33E-1	8.13E-1	5.87E-1
Mn-54	<5.5E+0	<9.1E+0	<8.0E+0	<4.1E+0	<1.1E+1
Fe-59	<1.1E+1	<1.9E+1	<1.1E+1	<1.1E+1	<2.3E+1
Co-58	<4.1E+0	<8.5E+0	<7.7E+0	<5.6E+0	<7.5E+0
Co-60	<8.3E+0	<9.4E+0	<1.2E+1	<7.8E+0	<1.2E+1
Zn-65	<1.1E+1	<2.1E+1	<1.5E+1	<1.0E+1	<1.8E+1
Zr/Nb-95	<4.2E+0	<8.7E+0	<8.9E+0	<5.4E+0	<5.2E+0
Cs-134	<4.2E+0	<6.0E+0	<6.8E+0	<5.1E+0	<8.2E+0
Cs-137	<5.8E+0	<8.9E+0	<6.9E+0	<6.4E+0	<9.0E+0
Ba/La-140	<3.9E+0	<1.1E+1	<9.3E+0	<8.1E+0	<9.9E+0
Gross Beta	2.77E+0	2.18E+0	3.30E+0	4.48E+0	3.04E+0

Station DW-1 (pCi/l)

Date Collected	06/22/90	07/25/90	08/27/90	09/24/90	10/31/90
		*			
Sr-89	<1.0E+1	2.21E+0	<1.0E+1	3.80E-1	n
Sr-90	7.07E-1	<2.0E+0	<2.0E+0	4.80E-1	n
Mn-54	<5.7E+0	<1.2E+1	<9.9E+0	<5.3E+0	n
Fe-59	<1.1E+1	<2.4E+1	<1.4E+2	<9.8E+0	n
Co-58	<4.7E+0	<8.8E+0	<2.3E+1 ^a	<5.6E+0	n
Co-60	6.38E+0	<1.5E+1	<1.3E+1	5.79E+0	n
Zn-65	<1.3E+1	<2.7E+1	<1.5E+1	<1.2E+1	n
Zr/Nb-95	<5.3E+0	<1.1E+1	<6.3E+1 ^a	<5.1E+0	n
Cs-134	<5.4E+0	<9.3E+0	<5.0E+0	<4.1E+0	n
Cs-137	<5.9E+0	<1.2E+1	<5.5E+0	4.36E+0	n
Ba/La-140	<6.1E+0	<1.2E+1	^b	<7.6E+0	n
Gross Beta	2.19E+0	3.76E+0	3.29E+0	2.68E+0	n

n No data available from lab at this time.

^a LLD not met due to untimely processing

^b Not analyzed; half-life too short

* Grab sample

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

FERMI 2

DRINKING WATER ANALYSIS

Station DW-1 (pCi/l)

Date Collected	11/26/90	12/27/90
Sr-89	n	n
Sr-90	n	n
Mn-54	n	n
Fe-59	n	n
Co-58	n	n
Co-60	n	n
Zn-65	n	n
Zr/Nb-95	n	n
Cs-134	n	n
Cs-137	n	n
Ba/La-140	n	n
Gross Beta	n	n

n No data available from Lab at this time

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

FERMI 2

DRINKING WATER ANALYSIS

Station DW-2 (pCi/l)

Date Collected	01/25/90	02/27/90	03/26/90	04/25/90	05/25/90
	*	*	*		
Sr-89	<1.0E+1	<1.0E+1	1.06E+0	<1.0E+1	<1.0E+1
Sr-90	6.26E-1	2.24E-1	3.17E-1	2.18E+0	7.55E-1
Mn-54	<7.5E+0	<5.8E+0	<6.4E+0	<5.7E+0	<9.0E+0
Fe-59	<1.7E+1	<1.3E+1	<2.1E+1	<1.1E+1	<2.0E+1
Co-58	<1.1E+1	<5.1E+0	<5.3E+0	<4.8E+0	<9.3E+0
Co-60	<1.2E+1	<8.4E+0	<7.8E+0	<9.1E+0	<1.4E+1
Zn-65	<2.4E+1	<1.0E+1	<1.3E+1	<1.1E+1	<1.9E+1
Zr/Nb-95	<8.4E+0	<6.1E+0	<6.9E+0	<5.4E+0	<9.0E+0
Cs-134	<9.7E+0	<5.9E+0	<7.3E+0	<5.1E+0	<8.4E+0
Cs-137	<8.4E+0	<5.9E+0	<9.6E+0	<5.9E+0	<1.3E+1
Ba/La-140	<9.6E+0	<7.4E+0	<8.3E+0	<1.1E+1	<1.3E+1
Gross Beta	2.63E+0	2.91E+0	2.49E+0	3.06E+0	2.27E+0

* Grab sample

Station DW-2 (pCi/l)

Date Collected	06/22/90	07/25/90	08/27/90	09/24/90	10/31/90
	*	*	*	*	
Sr-89	<1.0E+1	7.09E-1	<1.0E+1	<1.0E+1	n
Sr-90	8.68E-1	3.77E-1	6.20E-1	5.40E-1	n
Mn-54	<8.3E+0	<6.3E+0	<1.2E+1	<5.5E+0	n
Fe-59	<1.8E+1	<1.3E+1	<2.2E+1	<1.0E+1	n
Co-58	<7.4E+0	<4.4E+0	<1.1E+1	<4.5E+0	n
Co-60	<1.1E+1	<9.5E+0	<1.5E+1	<6.6E+0	n
Zn-65	<2.0E+1	<1.4E+1	<2.5E+1	<1.1E+1	n
Zr/Nb-95	<1.0E+1	<5.6E+0	<1.1E+1	<4.9E+0	n
Cs-134	<7.4E+0	<6.8E+0	<8.5E+0	<4.8E+0	n
Cs-137	<9.2E+0	<7.8E+0	<1.2E+1	1.27E+1	n
Ba/La-140	<1.0E+1	<7.3E+0	<1.8E+1 ^a	<7.8E+0	n
Gross Beta	2.26E+0	1.87E+0	2.90E+0	3.01E+0	n

* Grab sample

^a Did not meet LLD due to untimely processing.

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

n No data available from Lab at this time.

FERMI 2

DRINKING WATER ANALYSIS

Station DW-2 (pCi/l)

Date Collected	11/26/90	12/27/90
Sr-89	n	n
Sr-90	n	n
Mn-54	n	n
Fe-59	n	n
Co-58	n	n
Co-60	n	n
Zn-65	n	n
Zr/Nb-95	n	n
Cs-134	n	n
Cs-137	n	n
Ba/La-140	n	n
Gross Beta	n	n

n No data available from Lab at this time.

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

FERMI 2

SURFACE AND DRINKING WATER ANALYSIS

Quarterly Composite of Monthly Samples

Station	Quarter	H-3 (pCi/l)
SW-1	1st Quarter	1.63E+1
	2nd Quarter	n
	3rd Quarter	n
	4th Quarter	n
SW-2	1st Quarter	<2.0E+3
	2nd Quarter	n
	3rd Quarter	n
	4th Quarter	n
DW-1	1st Quarter	<2.0E+3
	2nd Quarter	n
	3rd Quarter	n
	4th Quarter	n
DW-2	1st Quarter	<2.0E+3
	2nd Quarter	n
	3rd Quarter	n
	4th Quarter	n

n No data available from Lab at this time.

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

FERMI 2

QUARTERLY GROUND WATER ANALYSIS

Station: GW-1 (pCi/l)

Date Collected	03/16/90	06/15/90	09/14/90	12/14/90
Mn-54	<7.3E+0	<8.0E+0	<5.0E+0	*
Fe-59	<1.4E+1	<1.6E+1	<7.0E+1 ^a	*
Co-58	<8.6E+0	<7.4E+0	<1.0E+1	*
Co-60	<1.1E+1	<9.5E+0	<4.0E+0	*
Zn-65	<2.2E+1	<1.3E+1	<9.0E+0	*
Zr/Nb-95	<7.5E+0	<7.7E+0	<2.0E+1 ^a	*
Cs-134	<9.3E+0	<6.7E+0	<4.0E+0	*
Cs-137	<9.8E+0	<7.6E+0	<4.0E+0	*
Ba/La-140	<9.8E+0	<9.2E+0	<3.0E+4 ^a	*
H-3	<2.0E+3	9.9E+1	<6.0E+2	*

Station GW-2 (pCi/l)

Date Collected	03/16/90	06/15/90	09/14/90	12/14/90
Mn-54	<8.9E+0	<6.1E+0	<4.0E+0	*
Fe-59	<2.1E+1	<1.0E+1	<9.0E+1 ^a	*
Co-58	<8.2E+0	<6.0E+0	<2.0E+1 ^a	*
Co-60	<1.1E+1	<8.0E+0	<4.0E+0	*
Zn-65	<1.8E+1	<1.1E+1	<1.0E+1	*
Zr/Nb-95	<9.1E+0	<4.7E+0	<2.0E+1 ^a	*
Cs-134	<6.9E+0	<5.3E+0	<5.0E+0	*
Cs-137	<9.0E+0	<7.8E+0	<1.0E+0	*
Ba/La-140	<1.5E+1	<7.3E+0	<2.0E+4 ^a	*
H-3	<2.0E+3	<2.0E+3	<6.0E+2	*

* No data available from the Lab at this time.

^a LLD not met due to untimely processing.

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

FERMI 2

QUARTERLY GROUND WATER ANALYSIS

Station GW-3 (pCi/l)

Date Collected	03/16/90	06/15/90	09/14/90	12/14/90
Mn-54	<7.9E+0	<6.9E+0	<4.0E+0	*
Fe-59	<1.7E+1	<1.6E+1	<8.0E+1 ^a	*
Co-58	<8.9E+0	<6.5E+0	<1.0E+1	*
Co-60	<1.3E+1	<7.1E+0	<4.0E+0	*
Zn-65	<1.8E+1	<1.4E+1	<1.0E+1	*
Zr/Nb-95	<8.2E+0	<7.7E+0	<2.0E+1 ^a	*
Cs-134	<6.5E+0	<6.3E+0	<4.0E+0	*
Cs-137	<1.1E+1	<8.0E+0	<5.0E+0	*
Ba/La-140	<1.1E+1	<9.1E+0	<3.0E+4 ^a	*
H-3	<2.0E+3	<2.0E+3	<6.0E+2	*

Station GW-4 (pCi/l)

Date Collected	03/16/90	06/15/90	09/14/90	12/14/90
Mn-54	<7.9E+0	<6.8E+0	<6.0E+0	*
Fe-59	<1.7E+1	<1.4E+1	<1.0E+2 ^a	*
Co-58	<9.2E+0	<6.4E+0	<2.0E+1	*
Co-60	<9.9E+0	<8.6E+0	<4.0E+0 ^a	*
Zn-65	<1.3E+1	<1.4E+1	<1.0E+1	*
Zr/Nb-95	<8.4E+0	<6.6E+0	<2.0E+1 ^a	*
Cs-134	<7.9E+0	<4.8E+0	<5.0E+0	*
Cs-137	<1.1E+1	7.71E+0	<5.0E+0	*
Ba/La-140	<1.1E+1	<9.6E+0	<3.0E+4 ^a	*
H-3	6.30E+1	1.16E+2	<6.0E+2	*

* No data available from the Lab at this time.

^a LLD not met due to untimely processing.

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

FERMI 2

LAKE ERIE SEDIMENTS ANALYSIS

Station S-1 (pCi/kg dry)

Date Collected	05/01/90	10/11/90
Mn-54	<9.0E-3	*
Fe-59	<5.8E-2	*
Co-58	<1.6E-2	*
Co-60	<1.0E-2	*
Zn-65	<2.3E-2	*
Zr/Nb-95	<3.1E-2	*
Cs-134	<6.3E-3	*
Cs-137	6.88E-3	*
Ba/La-140	<6.2E-1	*
Sr-89	<LLD	*
Sr-90	<LLD	*

Station S-2 (pCi/kg dry)

Date Collected	05/01/90	10/11/90
Mn-54	2.67E-3	*
Fe-59	<5.4E-2	*
Co-58	<1.3E-2	*
Co-60	2.33E-2	*
Zn-65	2.00E-2	*
Zr/Nb-95	<2.8E-2	*
Cs-134	<4.6E-3	*
Cs-137	6.85E-3	*
Ba/La-140	<6.6E-1	*
Sr-89	<LLD	*
Sr-90	<LLD	*

* No data available from the Lab at this time.

FERMI 2

LAKE ERIE SEDIMENTS ANALYSIS

Station S-3 (pCi/kg dry)

Date Collected	05/01/90	10/11/90
Mn-54	<1.3E-2	*
Fe-59	<8.5E-2	*
Co-58	<2.3E-2	*
Co-60	<1.6E-2	*
Zn-65	<3.3E-2	*
Zr/Nb-95	<4.4E-2	*
Cs-134	<8.5E-3	*
Cs-137	<1.1E-2	*
Ba/La-140	<1.2E+0	*
Sr-89	<LLD	*
Sr-90	<LLD	*

Station S-4 (pCi/kg dry)

Date Collected	05/02/90	10/18/90
Mn-54	9.68E-3	*
Fe-59	<8.4E-2	*
Co-58	<2.0E-2	*
Co-60	<1.4E-2	*
Zn-65	<3.0E-2	*
Zr/Nb-95	<3.7E-2	*
Cs-134	<7.5E-3	*
Cs-137	1.28E-2	*
Ba/La-140	<9.2E-1	*
Sr-89	<LLD	*
Sr-90	<LLD	*

* No data available from the Lab at this time.

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

FERMI 2

LAKE ERIE SEDIMENTS ANALYSIS

Station S-5 (pCi/kg dry)

Date Collected	05/22/90	10/24/90
Mn-54	<2.1E-2	*
Fe-59	<1.0E-1	*
Co-58	<3.2E-2	*
Co-60	<3.0E-2	*
Zn-65	<4.9E-2	*
Zr/Nb-95	<6.4E-2	*
Ce-134	<1.7E-2	*
Ce-137	6.37E-2	*
Ba/La-140	<7.8E-1	*
Sr-89	<LLD	*
Sr-90	<LLD	*

* No data available from the Lab at this time.

FERMI 2

MILK SAMPLE ANALYSIS

Station M-1

Collection Date	I-131	Cs-134	Cs-137	Ba/La-140	Co-58 (pCi/Liter)	Co-60	Sr-89	Sr-90	K-40
01/07/90	<1.0E+0	<5.0E+0	<6.7E+0	<5.3E+0	<4.9E+0	<7.4E+0	<1.0E+1	2.11E+0	1.29E+3
02/14/90	<1.0E+0	<6.4E+0	<9.2E+0	<1.1E+1	<9.0E+0	<1.1E+1	<1.0E+1	2.37E+0	1.49E+3
03/13/90*									
04/11/90*									

* No sample available

FERMI 2

MILK SAMPLE ANALYSIS

Station M-2

Collection Date	I-131	Cs-134	Cs-137	Ba/La-140 (pCi/liter)	Co-58	Co-60	Sr-89	Sr-90	K-40
01/17/90	<1.0E+0	<4.9E+0	<6.4E+0	<2.0E+0	<5.5E+0	<1.0E+1	3.18E-1	9.69E-1	1.59E+3
02/14/90	<1.0E+0	<6.5E+0	<7.5E+0	<6.1E+0	<6.0E+0	<1.1E+1	2.04E-1	<1.0E+1	1.42E+3
03/13/90	<1.0E+0	<7.3E+0	<8.2E+0	<1.0E+0	<8.2E+0	<1.1E+1	7.98E-2	1.44E+0	1.47E+3
04/11/90	<1.0E+0	<6.5E+0	<8.0E+0	<9.3E+0	<7.5E+0	<1.0E+1	<1.0E+1	2.23E+0	1.72E+3
05/09/90	1.98E+0	<7.2E+0	<9.7E+0	<1.0E+1	<8.0E+0	<1.2E+1	<1.0E+1	4.27E+0	1.44E+3
05/23/90	1.09E+0	<5.7E+0	<7.9E+0	<1.1E+1	<5.9E+0	<1.0E+1	<1.0E+1	3.02E+0	1.48E+3
06/14/90	<1.0E+0	<7.1E+0	<8.6E+0	<1.1E+1	<8.3E+0	<9.7E+0	<1.0E+1	5.15E+0	1.28E+3
06/28/90	<1.0E+0	<1.0E+1	<1.3E+1	<1.4E+1	<1.1E+1	<1.3E+1	<1.0E+1	2.35E+0	1.27E+3
07/12/90	<1.0E+0	<7.1E+0	<8.6E+0	<9.9E+0	<7.7E+0	<1.1E+1	<1.0E+1	2.33E+0	1.51E+3
07/26/90	<1.0E+0	<5.7E+0	6.08E+0	<6.9E+0	5.55E+0	<1.1E+1	<1.0E+1	2.87E+0	1.41E+3
08/09/90	<1.0E+0	<5.8E+0	7.06E+0	<7.5E+0	<8.2E+0	1.47E+1	<1.0E+1	<1.0E+1	1.66E+3
08/23/90	*	<4.0E+0	<5.0E+0	<5.5E+0	<4.5E+0	<6.9E+0	+	1.63E+0	1.40E+3
09/13/90	*	<3.6E+0	<4.3E+0	<4.4E+0	<3.7E+0	<6.0E+0	9.50E-1	2.21E+0	1.37E+3
09/27/90	<1.0E+0	<5.5E+0	<7.9E+0	<8.7E+0	<7.7E+0	<1.1E+1	<1.0E+1	4.23E-1	1.52E+3
10/11/90	n	n	n	n	n	n	n	n	n
10/25/90	n	n	n	n	n	n	n	n	n
11/08/90	n	n	n	n	n	n	n	n	n
12/06/90	n	n	n	n	n	n	n	n	n

* Sample was improperly prepped with all sample used.
n No data available from the Lab at this time.

FERMI 2

MILK SAMPLE ANALYSIS

Station #3

Collection Date	I-131	Cs-134	Cs-137	Ba/La-140	Co-58	Co-60	Sr-89	Sr-90	K-40
						(pCi/liter)			
01/17/90	<1.0E+0	<5.1E+0	<5.5E+0	<8.3E+0	<4.6E+0	<7.4E+0	8.30E-1	2.24E+0	1.51E+3
02/14/90	<1.0E+0	<6.8E+0	<8.9E+0	<9.1E+0	<7.0E+0	<1.3E+1	5.10E-1	3.12E+0	1.69E+3
03/13/90	<1.0E+0	<5.2E+0	<6.3E+0	<6.0E+0	<6.0E+0	<9.0E+0	<1.0E+1	2.52E+0	1.72E+3
04/11/90	<1.0E+0	<6.7E+0	<6.8E+0	<6.9E+0	<5.8E+0	1.02E+1	1.95E-1	1.06E+0	1.68E+3
05/09/90	1.78E+1	<5.7E+0	<6.4E+0	<8.6E+0	<7.0E+0	<1.2E+1	<1.0E+1	6.50E+0	1.44E+3
05/23/90	6.22E+0	<4.9E+0	<8.1E+0	<1.0E+1	<6.3E+0	<8.2E+0	<1.0E+1	3.09E+0	1.59E+3
06/14/90	<1.0E+0	<8.5E+0	<1.0E+1	<1.4E+1	<1.0E+1	<1.1E+1	<1.0E+1	2.62E+0	1.55E+3
06/28/90	<1.0E+0	<7.9E+0	<1.2E+1	<1.5E+1	<9.7E+0	<1.5E+1	<1.0E+1	1.91E+0	1.66E+3
07/12/90	<1.0E+0	<6.5E+0	<7.8E+0	<9.4E+0	<7.8E+0	<1.2E+1	<1.0E+1	3.70E+0	1.64E+3
07/26/90	<1.0E+0	<7.0E+0	<9.9E+0	<1.1E+1	<8.0E+0	<1.4E+1	2.41E-1	1.38E+0	1.68E+3
08/09/90	<1.0E+0	<5.9E+0	<8.3E+0	<1.1E+1	<8.2E+0	<1.1E+1	<1.0E+1	1.09E+0	1.55E+3
08/23/90	<1.0E+0	<4.2E+0	<5.0E+0	<5.6E+0	<4.9E+0	<6.1E+0	#	#	1.36E+3
09/13/90	<1.0E+0	<4.6E+0	<5.8E+0	<6.7E+0	<4.5E+0	<6.7E+0	7.07E+0	6.82E-1	1.76E+3
09/27/90	<1.0E+0	<5.0E+0	<7.2E+0	<8.3E+0	<5.5E+0	<8.6E+0	<1.0E+1	1.95E+0	1.53E+3
10/11/90	n	n	n	n	n	n	n	n	n
10/25/90	n	n	n	n	n	n	n	n	n
11/08/90	n	n	n	n	n	n	n	n	n
12/06/90	n	n	n	n	n	n	n	n	n

Sample was improperly prepped with all sample used.

n No data available from the Lab at this time.

FERMI 2

MILK SAMPLE ANALYSIS

Station W-8

Collection Date	I-131	Cs-134	Cs-137	Ba/La-140	Co-58 (pCi/liter)	Co-60	Sr-89	Sr-90	K-40
05/10/90	<1.0E+0	<7.5E+0	<1.2E+1	<1.3E+1	<9.0E+0	<1.4E+1	<1.0E+1	<2.0E+0	1.70E+3
05/24/90	2.93E+0	<6.7E+0	<8.3E+0	<1.4E+1	<8.0E+0	<1.0E+1	<1.0E+1	4.31E+0	1.47E+3
06/14/90	<1.0E+0	<5.9E+0	<8.0E+0	<1.3E+1	<8.9E+0	<9.9E+0	<1.0E+1	1.75E+0	1.78E+3
06/28/90	<1.0E+0	<1.0E+1	<1.2E+1	<1.2E+1	<1.2E+0	<1.7E+1	<1.0E+1	9.85E-1	1.31E+3
07/12/90	2.17E+0	<7.0E+0	<8.1E+0	<1.1E+1	<7.9E+0	<9.7E+0	<1.0E+1	1.19E+0	1.76E+3
07/26/90	<1.0E+0	<5.9E+0	<7.3E+0	<8.3E+0	<6.9E+0	<9.8E+0	<1.0E+1	2.11E+0	1.54E+3
08/09/90	<1.0E+0	<7.4E+0	<9.7E+0	<1.2E+1	<8.9E+0	<1.4E+1	1.82E+0	1.39E+0	1.70E+3
08/23/90	#	<.9E+0	<7.0E+0	<7.5E+0	<5.7E+0	<8.3E+0	#	#	1.53E+3
09/13/90	#	<4.9E+0	3.52E+0	<5.7E+0	<5.9E+0	<7.8E+0	3.96E-1	5.42E-1	1.51E+3
09/27/90	3.76E-1	<5.5E+0	6.04E+0	<7.8E+0	<6.8E+0	<1.1E+1	1.02E+0	7.56E-1	1.31E+3
10/11/90	n	n	n	n	n	n	n	n	n
10/25/90	n	n	n	n	n	n	n	n	n
11/08/90	n	n	n	n	n	n	n	n	n
12/06/90	n	n	n	n	n	n	n	n	n

Sample was improperly prepped with oil sample used.

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

FERMI 2

GRASS SAMPLE ANALYSIS

Station M-7

Collection Date	I-131	Cs-134 (pCi/kg wet)	Cs-137	Ba/La-140
01/17/90	NS	NS	NS	NS
02/14/90	NS	NS	NS	NS
03/13/90	NS	NS	NS	NS
04/11/90	NS	NS	NS	NS
05/09/90	<3.3E+1	<2.9E+1	<2.9E+1	<3.6E+1
05/23/90	<1.2E+2 ^a	<6.1E+1 ^a	<8.5E+1 ^a	<1.4E+2
06/14/90	<4.1E+1	<3.2E+1	<3.3E+1	<5.7E+1
06/28/90	<3.9E+1	<3.5E+1	<4.6E+1	<4.2E+1
07/12/90	<4.8E+1	<4.7E+1	<4.8E+1	<6.7E+1
07/26/90	<3.4E+1	<2.5E+1	<3.2E+1	<4.2E+1
08/09/90	<3.0E+1	<3.5E+1	<4.1E+1	<3.9E+1
08/23/90	<5.7E+1	<4.5E+1	<5.3E+1	<7.5E+1
09/13/90	*	*	*	*
09/27/90	<2.1E+1	<1.9E+1	<2.0E+1	<2.8E+1
10/11/90	*	*	*	*
10/25/90	*	*	*	*
11/08/90	*	*	*	*
12/06/90	*	*	*	*

^a Insufficient sample size to meet LLD

* No data available from the Lab at this time.

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

FERMI 2

GRASS SAMPLE ANALYSIS

Station M-8

Collection Date	I-131	Cs-134 (pCi/kg wet)	Cs-137	Ba/La-140
01/17/90	NA	NA	NA	NA
02/14/90	NA	NA	NA	NA
03/13/90	NA	NA	NA	NA
04/11/90	NA	NA	NA	NA
05/09/90	<3.7E+1	<3.3E+1	<4.0E+1	<4.3E+1
05/23/90	<8.1E+1 ^a	<4.7E+1	<4.8E+1	<7.0E+1
06/14/90	<4.4E+1	<2.9E+1	<4.4E+1	<3.8E+1
06/28/90	<3.2E+1	<3.5E+1	<5.8E+1	<5.7E+1
07/12/90	<4.7E+1	<5.1E+1	<6.8E+1	<7.1E+1
07/26/90	<6.7E+1 ^a	<3.8E+1	<4.1E+1	<1.4E+2
08/09/90	<5.3E+1	<5.7E+1	<8.0E+1	<5.6E+1
08/23/90	<4.2E+1	<3.2E+1	4.20E+1	<5.9E+1
09/13/90	<1.1E+1	<1.1E+1	<1.4E+1	<1.1E+1
09/27/90	<2.3E+1	<2.0E+1	<2.5E+1	<2.6E+1
10/11/90	*	*	*	*
10/25/90	*	*	*	*
11/08/90	*	*	*	*
12/06/90	*	*	*	*

^a Insufficient sample size to meet LLD

NA No samples taken at this station until 05/09/90

* No data available from the Lab at this time.

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

FERMI 2

GRASS SAMPLE ANALYSIS

Station M-9

Collection Date	I-131	Cs-134 (pCi/kg wet)	Cs-137	Ba/La-140
09/13/90	<1.5E+1	<1.8E+1	<2.3E+1	<2.2E+1
09/27/90	<2.1E+1	<1.7E+1	<2.3E+1	<2.0E+1

FERMI-2
FOOD PRODUCTS ANALYSIS

Station FP-1

Location	Date Collected	Sample Type	(pCi/kg wet)				K-40	Co-60
			I-131	Cs-134	Cs-137			
Indicator FP-1	07/30/90	Broccoli	<2.3E+1	<1.1E+1	<1.7E+1		3.26E+3	3.68E+1
	07/30/90	Cabbage	<3.3E+1	<1.8E+1	<2.1E+1		3.55E+3	<2.4E+1
	08/16/90	Cabbage	<3.4E+1	<2.5E+1	<3.0E+1		3.78E+3	<4.6E+1
	08/16/90	Swiss Chard	<4.3E+1	<2.3E+1	<3.6E+1		7.00E+3	<4.3E+1
	08/16/90	Lettuce	<3.1E+1	<2.8E+1	<4.2E+1		7.12E+3	<5.8E+1

Station FP-3

Location	Date Collected	Sample Type	(pCi/kg wet)				K-40	Co-60
			I-131	Cs-134	Cs-137			
Indicator FP-3	07/30/90	Lettuce	<5.0E+1	<2.5E+1	<3.4E+1		1.55E+3	<5.7E+1
	07/30/90	Swiss Chard	<4.0E+1	<1.9E+1	<2.8E+1		3.12E+3	<3.5E+1
	07/30/90	Cabbage	<4.0E+1	<2.2E+1	<3.3E+1		2.00E+3	<5.1E+1
	08/16/90	Cabbage	<3.9E+1	<2.6E+1	<3.6E+1		1.50E+3	<4.1E+1
	08/16/90	Swiss Chard	<2.5E+1	<2.5E+1	<3.5E+1		3.41E+3	<4.8E+1
	08/16/90	Lettuce	<2.6E+1	<3.0E+1	<4.1E+1		2.60E+3	<4.4E+1

FERMI-2

FOOD PRODUCTS ANALYSIS

Station FP-5

Location	Date Collected	Sample Type	(pCi/kg wet)				
			I-131	Cs-134	Cs-137	K-40	Co-60
Indicator							
FP-5							
	07/30/90	Broccoli	<3.3E+1	<1.4E+1	<1.8E+1	3.71E+3	<3.2E+1
	07/30/90	Swiss Chard	<4.3E+1	<2.4E+1	<3.2E+1	3.83E+3	<4.6E+1
	07/30/90	Lettuce	<5.5E+1	<2.8E+1	<3.4E+1	4.40E+3	<5.8E+1
	08/16/90	Broccoli	<2.8E+1	<2.5E+1	<2.3E+1	4.43E+3	<4.3E+1
	08/16/90	Swiss Chard	<2.3E+1	<2.4E+1	<3.8E+1	3.90E+3	<4.7E+1
	08/16/90	Lettuce	<4.0E+1	<3.2E+1	<4.4E+1	5.33E+3	<4.5E+1

Station FP-6

Location	Date Collected	Sample Type	(pCi/kg wet)				
			I-131	Cs-134	Cs-137	K-40	Co-60
Control FP-6							
	07/30/90	Broccoli	<4.0E+1	<1.9E+1	<3.2E+1	3.17E+3	<3.8E+1
	07/30/90	Cabbage	<5.9E+1	<3.2E+1	<4.0E+1	2.52E+3	<6.6E+1
	07/30/90	Lettuce	<4.5E+1	<1.8E+1	<2.9E+1	3.17E+3	<3.0E+1
	08/16/90	Cauliflower	<3.6E+1	<3.9E+1	<4.1E+1	3.46E+3	<5.9E+1
	08/16/90	Broccoli	<3.2E+1	<2.6E+1	<2.5E+1	4.21E+3	<4.1E+1
	08/16/90	Cabbage	<2.5E+1	<1.7E+1	<2.2E+1	1.20E+3	<2.7E+1

FERMI 2

FISH SAMPLES ANALYSIS

Station F-1

Collection Date	Fish Type	(pCi/kg wet)										
		Sr-89	Sr-90	Mn-54	Fe-59	Co-58	Co-60	Zn-65	Zr/Nb-95	Ba/La-140	Cs-134	Cs-137
05/22/90	Perch	1.20E+2	1.32E+2	<3.8+1	<1.5E+2	<7.1E+1	<4.3E+1	<8.3E+1	<9.6E+1	<1.5E+3	<2.1E+1	<4.7E+1
05/22/90	Walleye	<1.0E+1	2.28E+2	<1.5E+1	<8.4E+1	<2.9E+1	<2.5E+1	<5.0E+1	<4.4E+1	<5.6E+2	<1.5E+1	5.49E+1
10/24/90	Walleye	*	*	*	*	*	*	*	*	*	*	*
10/24/90	Crappie	*	*	*	*	*	*	*	*	*	*	*
10/24/90	Carp	*	*	*	*	*	*	*	*	*	*	*
10/24/90	Sucker	*	*	*	*	*	*	*	*	*	*	*

* No data available from the Lab at this time.

FERMI 2

FISH SAMPLES ANALYSIS

Station F-2

Collection Date	Fish Type	(pCi/kg wet)										
		Sr-89	Sr-90	Mn-54	Fe-59	Co-58	Co-60	Zn-65	Zr/Nb-95	Ba/La-140	Cs-134	Cs-137
05/08/90	Perch	2.72E+2	9.91E+2	<2.2E+1	<1.7E+2	<5.7E+1	<4.6E+1	<6.1E+1	<1.0E+1	<1.5E+3	<2.3E+1	<3.8E+1
05/08/90	Sucker	<1.0E+1	3.30E+2	<1.6E+1	<2.3E+2	<6.2E+1	<3.4E+1	<6.6E+1	<9.5E+1	<8.5E+2	<2.8E+1	<3.1E+1
05/08/90	Walleye	<1.0E+1	3.52E+2	<2.6E+1	<1.5E+2	<4.4E+1	<2.8E+1	<7.8E+1	<8.1E+1	<2.0E+3	<2.0E+1	5.07E+1
05/08/90	Catfish	<1.0E+1	3.02E+2	<2.6E+1	<1.4E+2	<4.3E+1	<3.2E+1	<4.6E+1	<9.5E+1	<2.1E+3	<2.0E+1	<3.3E+1
05/08/90	Carp	<1.0E+1	7.94E+2	<1.7E+1	<1.2E+2	<2.3E+1	<2.4E+1	<3.2E+1	<5.4E+1	<1.5E+3	<1.2E+1	<1.5E+1
05/08/90	White Bass	<1.0E+1	1.44E+2	<4.5E+1	<2.9E+2	<8.8E+1	<5.8E+1	<1.2E+2	<1.7E+2	<3.1E+3	<3.3E+1	7.32E+1
10/12/90	Walleye	*	*	*	*	*	*	*	*	*	*	*
10/12/90	Yellow Perch	*	*	*	*	*	*	*	*	*	*	*
10/12/90	White Perch	*	*	*	*	*	*	*	*	*	*	*
10/12/90	Carp	*	*	*	*	*	*	*	*	*	*	*
10/12/90	Silver Bass	*	*	*	*	*	*	*	*	*	*	*

* No data available from the Lab at this time.

FERMI 2

FISH SAMPLES ANALYSIS

Station F-3

Collection Date	Fish Type	(pCi/kg wet)										
		Sr-89	Sr-90	Mn-54	Fe-59	Co-58	Co-60	Zn-65	Zr/Nb-95	Ba/La-140	Cs-134	Cs-137
05/01/90	Catfish	1.01E+2	9.95E+1	<5.0E+1	<3.3E+2	<6.9E+1	<6.1E+1	<1.1E+2	<1.6E+2	<5.3E+3	<3.6E+1	3.35E+1
05/01/90	Walleye	<1.0E+1	1.03E+3	<2.6E+1	<2.0E+2	<5.3E+1	<3.6E+1	<5.3E+1	<7.1E+1	<3.0E+3	<2.2E+1	3.11E+1
05/01/90	White Bass	<1.0E+1	1.59E+2	<3.5E+1	<1.2E+2	<7.0E+1	<2.9E+1	<9.5E+1	<1.0E+2	<4.9E+3	<2.7E+1	<3.9E+1
10/16/90	Crappie	*	*	*	*	*	*	*	*	*	*	*
10/16/90	Walleye	*	*	*	*	*	*	*	*	*	*	*
10/16/90	Carp	*	*	*	*	*	*	*	*	*	*	*
10/16/90	Sucker	*	*	*	*	*	*	*	*	*	*	*

* No data available from the Lab at this time

10.0 Appendices

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

Appendix A

Interlaboratory Comparison Program Results

International Technology Corporation participates in the Environmental Protection Agency (EPA) interlaboratory comparison (crosscheck) program to provide an independent check on the laboratory's analytical procedures.

Participant laboratories measure the concentrations of specified radionuclides and report them to the issuing agency. Several months later, the agency reports the known values to the participant laboratories and specifies control limits.

The results in Appendix A were obtained through participation in the environmental sample crosscheck program for air filters, milk, and water during the period January through September, 1990. The analysis results for 1990 that were not within the allowable limits as required by the EPA are noted in the table.

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

INTERNATIONAL TECHNOLOGY CORPORATION
EPA INTERLABORATORY COMPARISON

All results pCi/l except K-40 (mg/l)
and Air Filter samples (pCi/filter)

Analysis Type	Date	ITC Result	EPA Result	Normalized Deviation
<u>Air Filter</u>				
GB-	03/30/90	31.00	31.00	0.00
	08/31/90	65.00	62.00	1.04
Sr-90	03/30/90	13.33	10.00	3.85 ^a
	08/31/90	21.00	20.00	0.35
Cs-137	03/30/90	10.00	10.00	0.00
	08/31/90	21.67	20.00	0.58
<u>Milk</u>				
Sr-89	09/28/90	16.00	16.00	0.00
Sr-90	09/28/90	16.30	20.00	-1.27
I-131	09/28/90	52.00	58.00	-1.73
Cs-137	09/28/90	23.00	20.00	1.04
<u>Water</u>				
GA	01/26/90	15.33	12.00	1.15
	05/11/90	20.33	22.00	-0.48
	09/21/90	6.67	10.00	-1.15
GB-	01/26/90	11.00	12.00	-0.35
	05/11/90	7.33	15.00	-2.66
Co-60	02/09/90	17.00	15.00	0.69
	06/08/90	27.67	24.00	1.27
Zn-65	02/09/90	140.00	139.00	0.12
	06/08/90	149.67	148.00	0.19
Ru-106	02/09/90	129.33	139.00	-1.20
	06/08/90	207.00	209.00	-0.25
Cs-134	02/09/90	15.67	18.00	-0.81
	06/08/90	22.67	24.00	-0.46
Cs-137	02/09/90	20.33	18.00	0.81
	06/08/90	26.00	25.00	0.35
Ba-133	02/09/90	71.33	74.00	-0.66
	06/08/90	96.33	99.00	-0.46
I-131	08/10/90	43.00	39.00	1.15
Pu-239	08/24/90	7.67	9.10	-2.76
Ra-226	07/13/90	14.80	10.30	2.60
Ra-228	07/13/90	10.3	5.1	6.88

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

INTERNATIONAL TECHNOLOGY CORPORATION
EPA INTERLABORATORY COMPARISON

All results pCi/l except K-40 (mg/l)
and Air Filter samples (pCi/filter)

Analysis Type	Date	ITC Result	EPA Result	Normalized Deviation
<u>Water (cont)</u>				
Sr-89	01/12/90	19.00	25.00	-2.08
	05/04/90	6.00	7.00	-0.35
	09/14/90	9.67	10.00	-0.12
Sr-90	01/12/90	16.67	20.00	-3.85 ^b
	05/04/90	8.83	7.00	0.46
	09/14/90	8.67	9.00	-0.12
H-3	02/23/90	5144.67	4976.00	0.59
	06/22/90	2553.33	2933.00	-1.84

GB- = Gross Beta, GA = Gross Alpha

a Normalized Deviation above Upper Control Limit (UCL)

b Normalized Deviation below Lower Control Limit (LCL)

Note: ITC was contacted regarding corrective action on cross-checks
outside control limits.

Fermi 2 1990 Annual Radiological
Environmental Monitoring Report

Appendix B

Summary of Higher Than Expected I-131
in Environmental Milk Samples

Detroit Edison Fermi 2 Summary of Higher Than Expected I-131 in Environmental Milk Samples Evaluation

On October 29, 1990, while reviewing the latest environmental data results, elevated levels of Iodine (I-131) were noticed in the May milk sample results:

Location	April Dates	I-131 pCi/l	May Dates	I-131 pCi/l	June Dates	I-131 pCi/l
M-2	4/11/90	0.00	5/9/90	1.98	6/14/90	0.00
			5/23/90	1.09	6/28/90	0.88
M-3	4/11/90	0.00	5/9/90	17.80	6/14/90	0.20
			5/23/90	6.22	6/28/90	0.00
M-3 (QC)	4/11/90	0.05	5/9/90	1.24	6/14/90	0.05
			5/23/90	0.47	6/28/90	0.00
M-8	None		5/10/90	0.78	6/14/90	0.00
			5/24/90	2.93	6/28/90	0.00

Notes: Location M-2 is at 2705 E. Labo, M-3 is at 3239 Newport Rd, and M-8 (control location) is at 9344 Finzel Rd. The M-3 (QC) samples are duplicate quality control samples taken from the same allotment of milk.

The Fermi 2 Technical Specification Lower Limit of Detection (LLD) for I-131 is 1.0 pCi/l. Anything equal to or above that is considered a detectable quantity. A detected quantity of from 1 to 3 pCi/l seen occasionally would not be unusual due to the counting statistics at that low level.

Two factors triggered the evaluation: two sample results that were well above the statistical variation limits, and the frequency of the detectable results; six samples above LLD in one month.

The first step was to determine reportability with one key point in mind; were the elevated results due to plant effluents? A preliminary problem solving session was held on October 29. It was agreed in this session to explore all possibilities of I-131 sources. A reactor scram on April 10, 1990 appeared to be the most likely source of an I-131 release of sufficient magnitude to result in the concentrations seen in the May milk samples. Subsequently appropriate data was acquired to perform an evaluation, focusing on the 4/10/90 scram time period.

Data acquired and evaluated included:

- Meteorological data for 4/10/90
- Reactor coolant chemistry data
- Effluent data for the Reactor Building

- All 1990 milk sample data
- Reactor and Turbine Building noble gas monito. data
- Vendor analysis sheets for the samples in question
- Vendor quality control data
- I-131 sources received on site in April and May 1990
- 1990 TLD and air sample results

TLD Results

TLD	Location	mRem		
		Qtr 1	Qtr 2	Qtr 3
T-5	NW/0.6 mi	19.9	12.9	15.0
T-6	WNW/0.6 mi	16.0	13.2	16.8
T-8	NW/1.9 mi	16.0	14.6	15.9
T-15	NW/3.9 mi	18.0	9.7	Missing
T-16	WNW/4.9 mi	19.1	22.6	13.8
T-32	WNW/10.3 mi	16.4	16.7	13.5
T-33	NW/9.2 mi	18.5	14.2	13.8
T-38	WNW/1.7 mi	19.2	19.4	15.3
Controls				
T-7	W/14.2 mi	16.5	14.6	15.4
T-28	SW/10.7 mi	16.4	12.4	14.3
T-29	WSW/10.3 mi	18.2	17.4	9.5

Air Iodine Results

Date Collected	API3 I-131 pCi/m ³	API4 I-131 pCi/m ³
4/3/90	<0.018	<0.022
4/10/90	<0.032	<0.020
4/17/90	<0.011	<0.015
4/24/90	<0.030	<0.029
5/1/90	<0.019	<0.016
5/8/90	<0.023	<0.020
5/15/90	<0.020	<0.015
5/22/90	<0.022	<0.021
5/29/90	<0.023	<0.016
6/5/90	<0.032	<0.025
6/12/90	<0.017	<0.023
6/19/90	<0.035	<0.028
6/26/90	<0.016	<0.018

Notes: API3 is located NW 0.6 mi on the site fence; API4 (control) is located W 14.2 mi at 7412 N. Custer Rd. Detectable quantities are those equal to or greater than the Tech Spec LLD of 0.07 pCi/m³ for iodine in air.

Additionally, calculations were performed to determine the amount of I-131 that would have to have been released in order to see the levels reported in the milk samples, and the concentration in cows' milk following a deposition on grass.

Based on an evaluation of the above information, it is concluded that the I-131 did not come from Fermi 2 plant effluents. There is no conclusive evidence pointing to where it did come from. At this time, the best assumption is that either:

1. The milk samples were cross contaminated at the vendor laboratory
2. The instrumentation used at the laboratory was out of tolerance "high", which would provide false positive results.

As discussed earlier in this report, a new vendor laboratory has been contracted to perform REMP sample analysis.