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April 29, 1989

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Subject: Annual Radiological Environmental Operating Report
R.E. Ginna Nuclear Power Plant
Docket No. 50-244

Dear Sirs:

The enclosed information is being submitted in accordance with the requirement of Technical Specification Section 6.9.1.3.

This information is a summary of all analyses performed as part of the Radiological Environment Monitoring requirements of Section 3.16 of the R.E. Ginna Technical Specifications. Trend plots of gross beta data for air and selected water samples and gamma measurements from TLD's surrounding the R.E. Ginna site are included for the year 1988 and the years of 1968 to 1988.

From the data collected, there does not appear to be any measurable effect to the environment from the operation of the R.E. Ginna plant.

Very truly yours,

Robert C. Mecredy

Robert C. Mecredy

IE25
1/1

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RADIOLOGICAL ENVIRONMENTAL SURVEY

January - December 1988

SUMMARY

The environment surrounding the Ginna Nuclear Plant is routinely monitored to determine the influence of plant operation on the levels of man-made radioactivity. Samples are collected on-site where concentrations would be expected to be highest if a release from the plant should occur and compared to samples which have been collected simultaneously at points where the concentration of the plant effluents is calculated to be less than 1% of those at the closer locations. The reference samples provide a running background which makes it possible to distinguish between significant radioactivity introduced to the environment from the operation of the plant and that introduced by nuclear detonations or other sources.

During the year of 1988, 1787 samples were obtained and analyzed. 437 of these samples were analyzed by a gamma scan. In addition, 16 EPA Interlaboratory Comparison Studies samples were analyzed and reported. The samples included air, water, fallout, fish, vegetation, milk and direct radiation. There was no significant difference between on-site and off-site samples and no positive results were found that were due to plant operations. The concentrations of radioactive material in the environment resulting from plant releases were calculated from the measured release rates and dilution factors. These calculated concentrations could not have been detected because of the magnitude and fluctuations of the background or because they were below the sensitivity of the analytic procedures. The calculated concentrations would give a dose commitment well below the design objectives specified in Appendix I, 10 CFR 50.

ANALYTICAL RESULTS

The values listed on the following tables include the uncertainties stated as 2 standard deviations (95% confidence level).

JE25
1/1

Key Definitions

Curie (Ci): The quantity of any radionuclide in which the number of disintegrations per second is 37 billion.

Picocurie (pCi): One millionth of a millionth of a curie or 0.037 disintegrations per second.

Cubic Meter (M^3): Approximately 35.3 cubic feet.

Liter (L): Approximately 1.06 quarts.

Lower Limit of Detection

The Nuclear Regulatory Commission has requested that reported values be compared to the Lower Limit of Detection (LLD) for each piece of equipment. Table XII is a listing of the LLD values for gamma isotopes using our Ge(Li) multichannel pulse height detector system. These values are before the correction for decay. An explanation of the calculation of the LLD is included following Table XII. Gross detection limits are as follows:

Beta:

Air 0.003 pCi/M^3 Gross beta for 400M^3 sample.

Water 1.2 pCi/L Gross beta for 1 liter sample.

Milk 0.24 pCi/L Iodine 131 for 4 liter sample.

Fallout 1.1 pCi/m^2/day for 0.092 M^2 collection area.

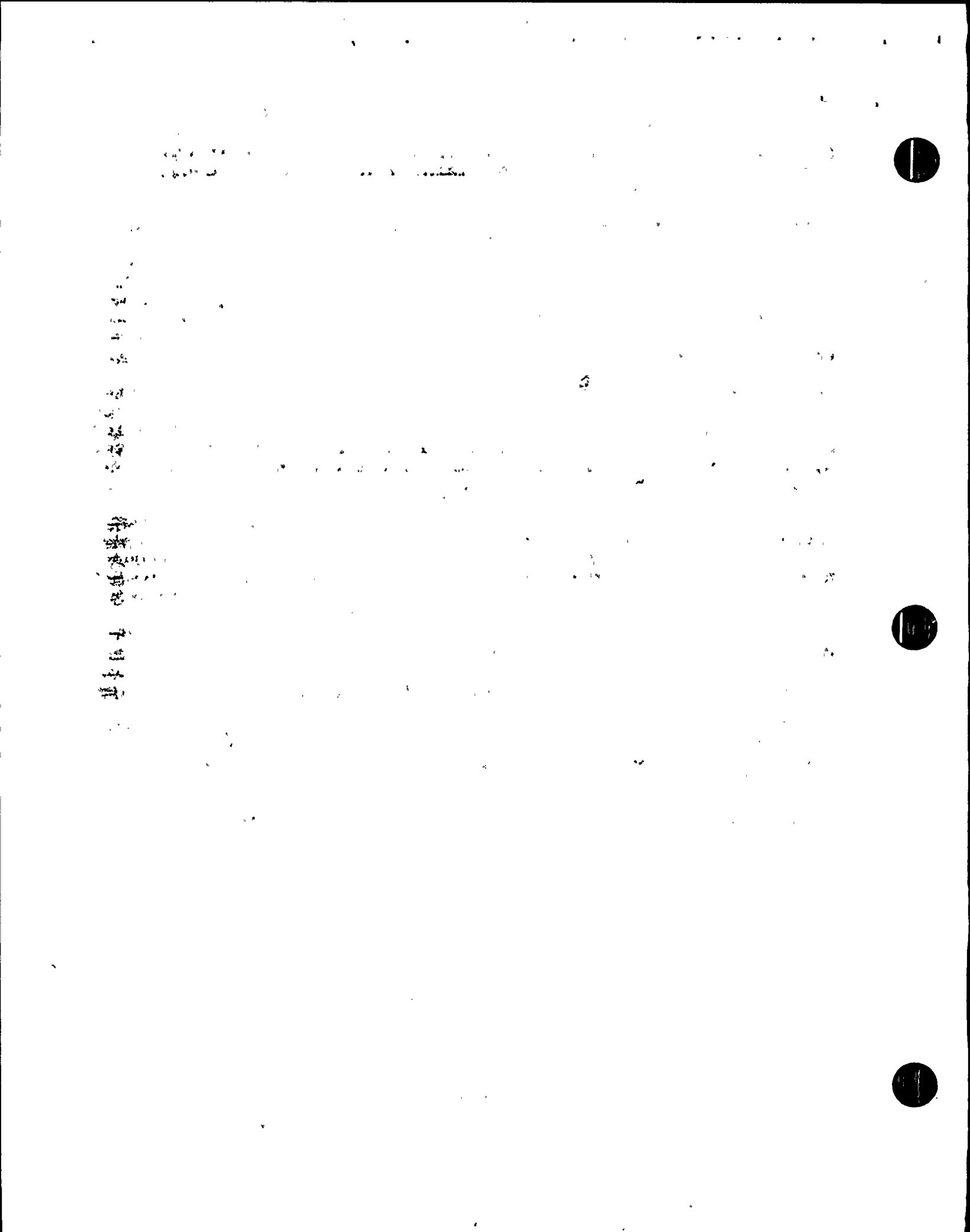
Gamma:

Air 0.03 pCi/m^3 Iodine 131 on charcoal cartridge for 400M^3 sample.

Radiation 5 millirem/ quarter for one quarter exposure (TLD).

AIR PARTICULATES

Radioactive particles in air are collected by drawing an air sample through a two inch diameter particulate filter at a rate of approximately 1 cfm. The volume of air sampled is measured by a dry gas meter and corrected for the pressure drop across the filter. The filters are changed weekly and allowed to decay for three days prior to counting to eliminate most of the natural radioactivity such as the short half-life daughter products of radon and thoron. The decay period is used to give a more sensitive measurement of long-lived man-made radioactivity.



There is a ring of 6 sampling stations on the plant site located from 150 to 300 meters from the reactor at the point calculated to be indicative of maximum annual average ground level concentrations for normal plant releases. In addition, there is a ring of 5 sampling stations located approximately 7 to 10 miles from the site that serve as background stations.

Based on weekly comparisons, there was no statistical difference between the on-site and the background radioactive particulate concentrations. The average concentrations for both the on-site and background samples were 0.018 pCi/M^3 for the period of January to December, 1988. Maximum weekly concentrations for each station were less than 0.039 pCi/m^3.

The average calculated concentration of particulate at the site boundary due to measureable plant particulate releases would be 6.97 E-8 pCi/M^3 or 0.00027% of the average release concentration of 2.58 E-2 pCi/m^3. The environmental sampling program can not detect such concentrations against the magnitude of the background of 0.014 pCi/m^3.

Table IA is a list of values for the on-site samplers during January through June, Table IIA is a list for the on-site locations during July through December. Table IB is a list of values for the off-site samplers during January through June, Table IIB is a list for the off-site locations during July through December.

The particulate filters from each sampling location were saved and a 13 week composite was made. A gamma isotopic analysis was done for each sampling location and corrected for decay. The results of this analysis are listed in Tables IIIA and B.

Iodine cartridges are placed at four locations. These cartridges are changed and counted each week. A list of values for these cartridges is given in Table IV.

A trend plot of the 1968 to 1988 Air Filter data is included. Preoprational data in 1968 and 1969 were approximately an order of magnitude higher than current values due to atmospheric bomb testing during those years.

WATER

Composite samples are collected weekly from Lake Ontario, upstream (Russell Station) and downstream (Ontario Water Plant), and analyzed for gross beta activity. There was no significant difference between the upstream and downstream sample concentrations. The yearly averages were 2.24 and 2.35 pCi/liter for the upstream and downstream samples respectively. Results are listed in Table VA for January through June and Table VB for July through December. A trend plot of the upstream and downstream samples from 1968 to 1988 is included. Preoperational data in 1968 and 1969 were approximately a factor of 2 higher than current values due to fallout from bomb testing during those years.

Weekly composite samples are taken from the plant circulating water intake and discharge canal. The yearly averages were 2.19 and 2.07 pCi/liter for the intake and discharge canal respectively. These are essentially the same as the upstream and downstream values of 2.24 and 2.35 pCi/liter as they fall within the error band of $\pm$ 2 sigma and range of the measurement.

For all batch releases, the calculated average concentration in the discharge canal from the identified activity was 0.058 pCi/liter. The normal 2 sigma variation in the activity calculation of composite samples is 0.84 pCi/liter or 15 times the average concentration added by releases from the plant.

Samples of tap water, the nearest well, and the creek which crosses the site were collected and analyzed monthly. The results show no indication of plant influence. These results are listed in Tables VA and VB.

Gamma isotopic analysis was done on each monthly sample and biweekly or monthly composites of weekly samples. These are listed in Table VII and separated by source of sample.

FALLOUT

Fallout is a term used to denote radioactive material settling from the atmosphere to the ground. At the sampling stations, the fallout settles as dust or is collected with rainfall by a funnel and bottle. There are two on-site sampling stations and three off-site. Fallout generally increases in the spring months due to transfer of fission products from the upper to the lower atmosphere in conjunction with increased rainfall. There was no significant difference between on-site and off-site samples for the period of January through December, 1988. Table VIII lists the values for fallout samples.

EXTERNAL PENETRATING RADIATION

A thermoluminescent dosimeter (TLD) with a sensitivity of 1 millirem is issued as part of the environmental monitoring. Thirty-nine TLD badges are currently placed in four rings around the plant. These rings range from less than 1000 feet to 15 miles and have been dispersed so as to give indications in each of the nine land based sectors around the plant potential population exposures should an excessive release occur from the plant. Badges are changed and read after approximately 3 months exposure.

TLD location #7 is influenced by its close proximity to the Contaminated Equipment Storage Area established in 1983 and will normally read 40-60 mRem/quarter. For the year of 1988, omitting location 7, on-site exposure ranged between 11.0 and 18.3 mrem/quarter, with an average exposure of 14.2 mrem/quarter and off-site 10.0 to 18.5 mrem/quarter with an average exposure of 12.9 mrem/quarter. Table IX gives TLD readings for each quarter. A trend plot of the quarterly average dose rate by TLD location is included comparing 1987 and 1988.

During early 1987, adjustments were made to the TLD system which may have resulted in increased accuracy for low dose measurements. This may explain the apparent difference between the 1987 and 1988 average environmental exposures. Environmental factors could also have caused this difference.

The NRC also does TLD measurements around the plant. Comparing the data for the second and third quarter of 1988 using the data from NUREG-0837 Vol. 8, No. 2&3. Results in mRem/quarter.

	Ginna		NRC	
	Second	Third	Second	Third
Less than 2 miles	13.9	13.9	14.7	15.8
2 - 5 miles	13.6	13.3	14.1	15.1
Greater than 5 miles	11.8	11.9	14.1	14.5

MILK

Milk samples are collected monthly during November through May from one of the three dairy herds located three to five miles from the plant. During the period starting in June through October, a sample is collected from each farm biweekly (once every two weeks). A control farm sample is taken for each monthly sample and once during each biweekly period. The milk is analyzed for Iodine-131 and also gamma scanned for major fission products. The method involves chemical separation of iodine and gross beta counting. Interference from other radioactive isotopes has made the results suspect in that they are biased high. The counting procedure is not specific for Iodine-131 and other isotopes may add to the count rate. Attempts to determine the half-life of the activity in the sample is difficult because of the low counting rates involved.

During 1988, no samples indicated positive activity that exceeded the LLD for the analysis.

The annual dose to the thyroid of an infant which could result from the measured plant release rate, was calculated by the method described in the Offsite Dose Calculation Manual. The maximum resultant annual thyroid dose for 1988 would be 0.007 mrem using the cow-milk-infant pathway. The annual average plant release rate during the grazing season would give a concentration of < 0.005 pCi/liter of Iodine-131 in milk, which is below the LLD for this analysis.

LAKE ONTARIO FISH

Fish caught near the discharge canal outfall were filleted, and counted for gamma emitting isotopes. A comparison to data for fish caught 15 miles and more away from the plant shows no indication of plant influence since neither cobalt-60 or cesium-134 were detected. Some samples of both indicator and background fish had detectable amounts of cesium-137.

Isotopic Gamma Concentrations (pCi/wet kilogram) are listed in Table XI.

A sample of algae (cladophora) and of the sand was obtained from the lake bottom in the discharge plume area. Results of the gamma scans are included in Table XI. Cesium-137 was detected in lake bottom sample, but the absence of cesium-134 and cobalt-60 indicates the cesium-137 is probably due to fallout. The lake bottom is mainly rock with very infrequent small quantities of sand. This makes lake bottom sampling extremely difficult.

OTHER SAMPLES

Additional samples representing vegetation and fruit were taken and analyzed for gamma emitting isotopes. The results for these samples are listed in Table XIB.

LAND USE CENSUS

A land use census was done to determine changes in the use of the land within 5 miles of the plant. There were no major changes in the use of the land with most remaining agricultural. There were several private homes constructed, but no new housing developments or large business construction projects. The three dairy operations continued with an average of 40 to 70 milking cows. There were no goats used for milk on a regular basis within the 5 mile radius. There was an increase in cattle raised for beef.

EPA INTERLABORATORY COMPARISON STUDY

An indication of the laboratory's ability to analyze samples and achieve results consistent with other laboratories is the aim of the EPA Interlaboratory Comparison. Selected unknowns are received and analyzed by our procedures and the results are sent to the EPA Environmental Monitoring Systems Laboratory. A report is returned from them indicating the concentrations with which the samples were spiked and how we compared to other laboratories analyzing the same samples. Table XIII is a tabulation of the samples analyzed during 1988.

DEVIATIONS TO THE SAMPLING PROGRAM

Deviations to the sampling program are permitted when samples are not obtainable due to hazardous conditions, seasonal availability or to malfunctioning of automatic sampling equipment. Samples that were not available due to malfunctioning of automatic sampling or not available for a specific reason are noted on data table pages.

RESULTS NOT MEETING THE MAXIMUM LLD

The maximum LLD values as defined by Tech Specs are:

Analysis	Water (pCi/l)	Airborne Particulate or Gas (pCi/m^3)	Fish (pCi/kg, wet)	Milk (pCi/l)	Food Particulate (pCi/kg, wet)
gross beta	4[a]	1×10^{-2}			
^{3}H	2000(1000[a])				
^{54}Mn	15		130		
^{59}Fe	30		260		
$^{58,60}Co$	15		130		
^{65}Zn	30		260		
^{95}Zr-Nb	15[b]				
^{131}I	1	7×10^{-2}		1	60
$^{134,137}Cs$	15(10[a]),18	1×10^{-2}	130	15	60
^{140}Ba-La	15[b]			15[b]	

a. LLD for drinking water

b. Total for parent and daughter

The following samples exceeded the maximum LLD for iodine as specified in Tech Specs and are reported here as required.

Sample:	Reason
Water	
August Circ Out	Small chemical yield of 19% gave a value higher than the required LLD.
Milk	
October 11 Farm B	Small chemical yield of 18% gave a value higher than the required LLD.

ROCHESTER GAS AND ELECTRIC CORPORATION
ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY
R.E. GINNA NUCLEAR POWER PLANT DOCKET NO. 50-244
WAYNE, NEW YORK REPORTING PERIOD 1988

PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPE AND TOTAL NUMBER OF ANALYSES	LLD	INDICATOR LOCATIONS MEAN (1) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN NAME DISTANCE AND DIRECTION	MEAN (1) RANGE	CONTROL LOCATIONS MEAN (1) RANGE
AIR: PARTICULATE (pCi/Cu.M.)	GROSS BETA 610	0.003	0.018 (354/354) 0.002 - 0.040	ONSITE LOCATION #13 690 M 194	0.018 (52/52) 0.005 - 0.040	0.014 (257/257) 0.002 - 0.039
	GAMMA SCAN 48	(2)	< LLD (28/28)	———	———	< LLD (20/20)
IODINE	GAMMA SCAN 208	0.02-0.28	<LLD (104/104)	———	———	< LLD (104/104)
DIRECT RADIATION: (3) TLD (mR/QUARTER)	GAMMA 156	0.08	14.2 (68/68) 11.0 - 18.3	ONSITE LOCATION #5 200 M 185	16.1 14.4 - 18.3	12.9 (84/84) 10.0 - 18.5
WATER: DRINKING (pCi/LITER)	GROSS BETA 76	1.2	2.72 (76/76) 1.23 - 4.57	WELL "B" 640 M 150	3.45 (12/12) 1.91 - 4.57	———
	GAMMA SCAN 49	(2)	Ra-226 24 (1/49) 14 - 34	WELL "B" 640 M 150	25 (12/12) 14 - 34	———
	IODINE 36	0.24	< LLD (36/36)	———	———	———
SURFACE (pCi/LITER)	GROSS BETA 165	1.2	2.15 (114/114) 1.25 - 6.88	DEER CREEK 200 M 135	2.88 (12/12) 1.76 - 5.16	2.32 (51/51) 1.35 - 5.62
	GAMMA SCAN 43	(2)	———	———	———	< LLD (12/12)
	IODINE 45	0.24	< LLD (33/33)	———	———	< LLD (12/12)
RAINFALL (pCi/sq.M/day)	GROSS BETA 60	1.2	4.91 (24/24) 1.54 - 9.95	STATION #5 200 M 185	5.12 (12/12) 1.54 - 8.71	5.43 (36/36) 1.37 - 19.03
MILK: (pCi/LITER)	IODINE 56	0.24	<LLD (38/38)	———	———	<LLD (18/18)
	GAMMA SCAN 58	(2)	< LLD (38/38)	———	———	< LLD (18/18)
FISH: (pCi/Kg)	GAMMA SCAN 16	(2)	Cs-137 41 (6/8) 22 - 110	DISCHARGE PLUME	———	40 (5/8) 30 - 66
VEGETATION: (pCi/Kg)	GAMMA SCAN 7	(2)	<LLD (5/5)	———	———	< LLD (2/2)

(1) Mean and range based on detectable measurements only. Fraction of detectable measurements at specified locations in parentheses.
(2) Table of LLD values attached for gamma scan measurements.
(3) One direct radiation location has been deleted from this summary since it was affected by the contaminated equipment storage location 50 meters away. The average reading at this location is 35 mR/Quarter.

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	Number of Samples and Sample Locations	Sampling and Collection Frequency	Type and Frequency of Analysis
1. AIRBORNE			
a. Radioiodine	2 indicator 2 control	Continuous operation of sampler with sample collection at least once per 10 days.	Radioiodine canister. Analyze within 7 days of collection of I-131.
b. Particulates	7 indicator 5 control	Same as above.	Particulate sampler. Analyze for gross beta radioactivity $\geq$ 24 hours following filter change. Perform gamma isotopic analysis on each sample for which gross beta activity is > 10 times the mean of offsite samples. Perform gamma isotopic analysis on composite (by location) sample at least once per 92 days.
2. DIRECT RADIATION	18 indicator 10 control 11 placed greater than 5 miles from plant site	TLDs at least quarterly.	Gamma dose quarterly.

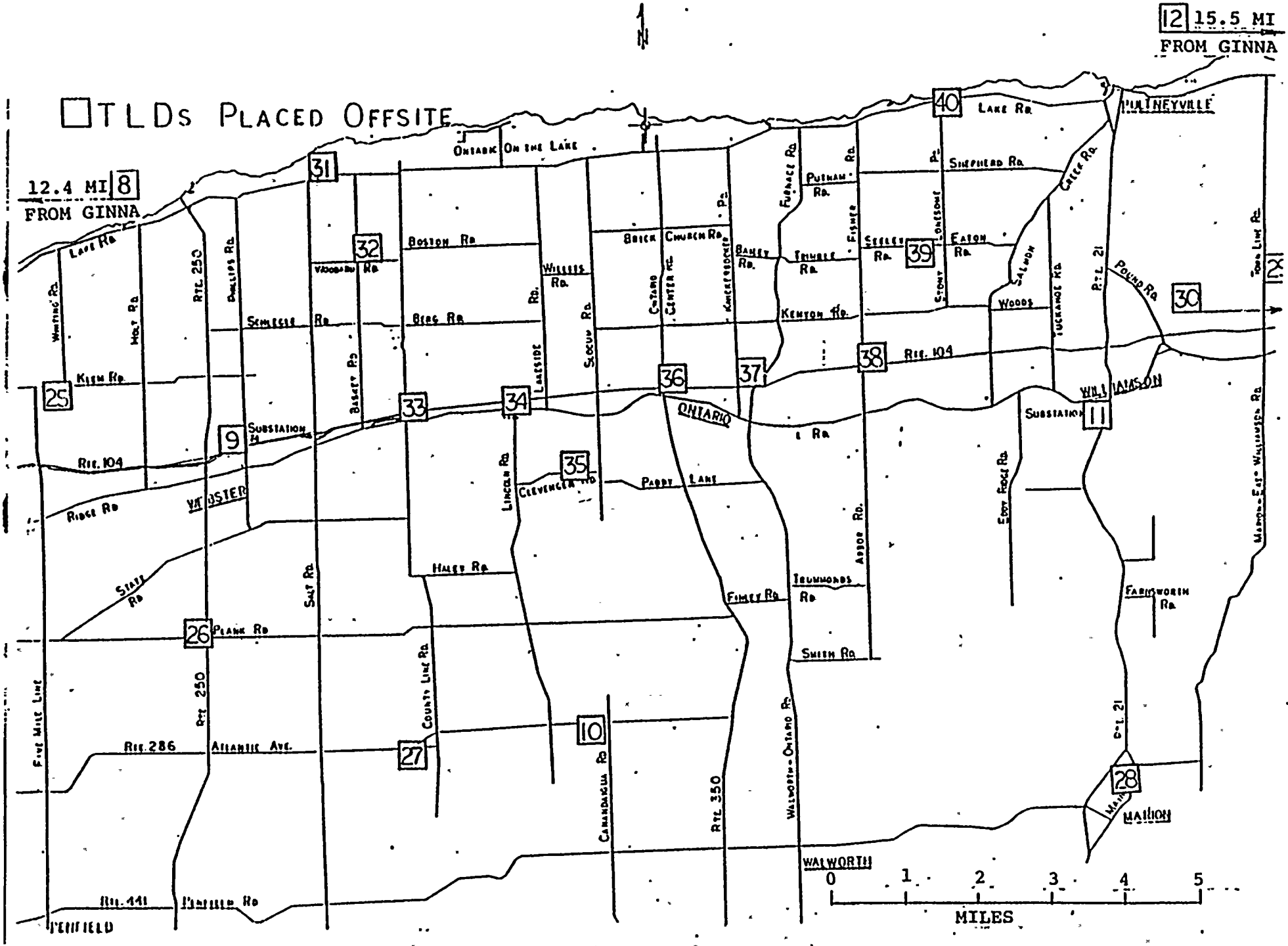
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	Number of Samples and Sample Locations	Sampling and Collection Frequency	Type and Frequency of Analysis
3. WATERBORNE			
a. Surface	1 control (Russell Station) 1 indicator (Condenser Water Discharge)	Composite* sample collected over a period of ≤ 31 days.	Gross beta and gamma isotopic analysis of each composite sample. Tritium analysis of one composite sample at least once per 92 days.
b. Drinking	1 indicator (Ontario Water District Intake)	Same as above.	Same as above.

*Composite sample to be collected by collecting an aliquot at intervals not exceeding 2 hours.

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	Number of Samples and Sample Locations	Sampling and Collection Frequency	Type and Frequency of Analysis
4. INGESTION			
a. Milk	1 control 3 indicator June thru October each of 3 farms	At least once per 15 days.	Gamma isotopic and I-131 analysis of each sample.
	1 control 1 indicator, November thru May one of the farms	At least once per 31 days.	Gamma isotopic and I-131 analysis of each sample.
b. Fish	4 control 4 indicator (Off shore at Ginna)	Twice during fishing season including at least four species.	Gamma isotopic analysis on edible portions of each sample.
c. Food Products	1 control 2 indicator (On site)	Annual at time of harvest. Sample from two of the following: 1. apples 2. cherries	Gamma isotopic analysis on edible portion of sample.
	1 control 2 indicator (On site garden or nearest offsite garden within 5 miles in the highest D/Q meteorological sector)	At time of harvest. One sample of: 1. broad leaf vegetation 2. other vegetable	Gamma isotopic analysis on edible portions of each sample.


TLDs PLACED OFFSITE
12.4 MI 8
FROM GINNA
12 15.5 MI
FROM GINNA
ONTARIO ON THE LAKE
LAKE RD
PUTNEYVILLE
SHEPHERD RD
PUTNAM RD
FURNACE RD
BRICK CHURCH RD
BOSTON RD
BIRGE RD
SCHEELE RD
KENTON RD
SEELEY RD
EATON RD
STONY POINT
SALMON CREEK
WOODS
TUCKAHOE RD
POUND RD
TOWN LINE RD
RTE. 21
RTE. 250
WHITNEY RD
HOLT RD
PHILLIPS RD
VICTOR RD
WILLETS RD
BARKEY RD
LAKESIDE
SLOCUM RD
CHURCH RD
BAILEY RD
TRUBEE RD
FISHER RD
STONY POINT
KLEIN RD
RTE. 104
SUBSTATION 9
SUBSTATION 11
WILLIAMSON
ONTARIO
LINCOLN RD
CREVENGER RD
PADDY LANE
ABBOTT RD
EAST ROCK RD
RIDGE RD
WEBSTER
HALEY RD
FISHER RD
TRUMBULL RD
FARNSWORTH RD
STATE RD
SALT RD
PLANK RD
SMITH RD
COUNTY LINE RD
FIVE MILE LINE
RTE. 286
ATLANTIC AVE.
CANANDAIGUA RD
RTE. 350
WALWORTH-ONTARIO RD
MAIN
MACEDON-EAST WILLIAMSON RD
PENFIELD
RTE. 441
PENFIELD RD
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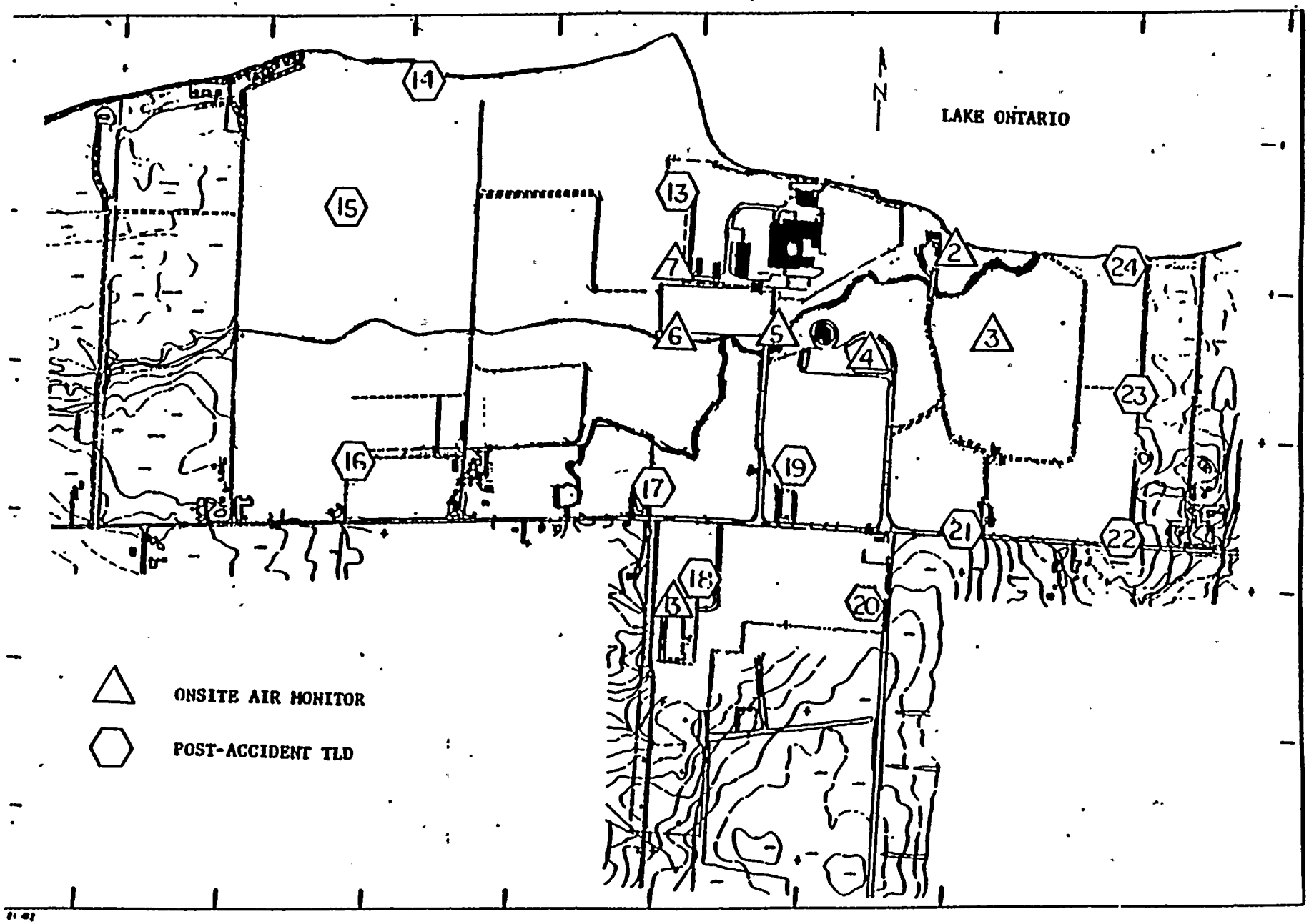
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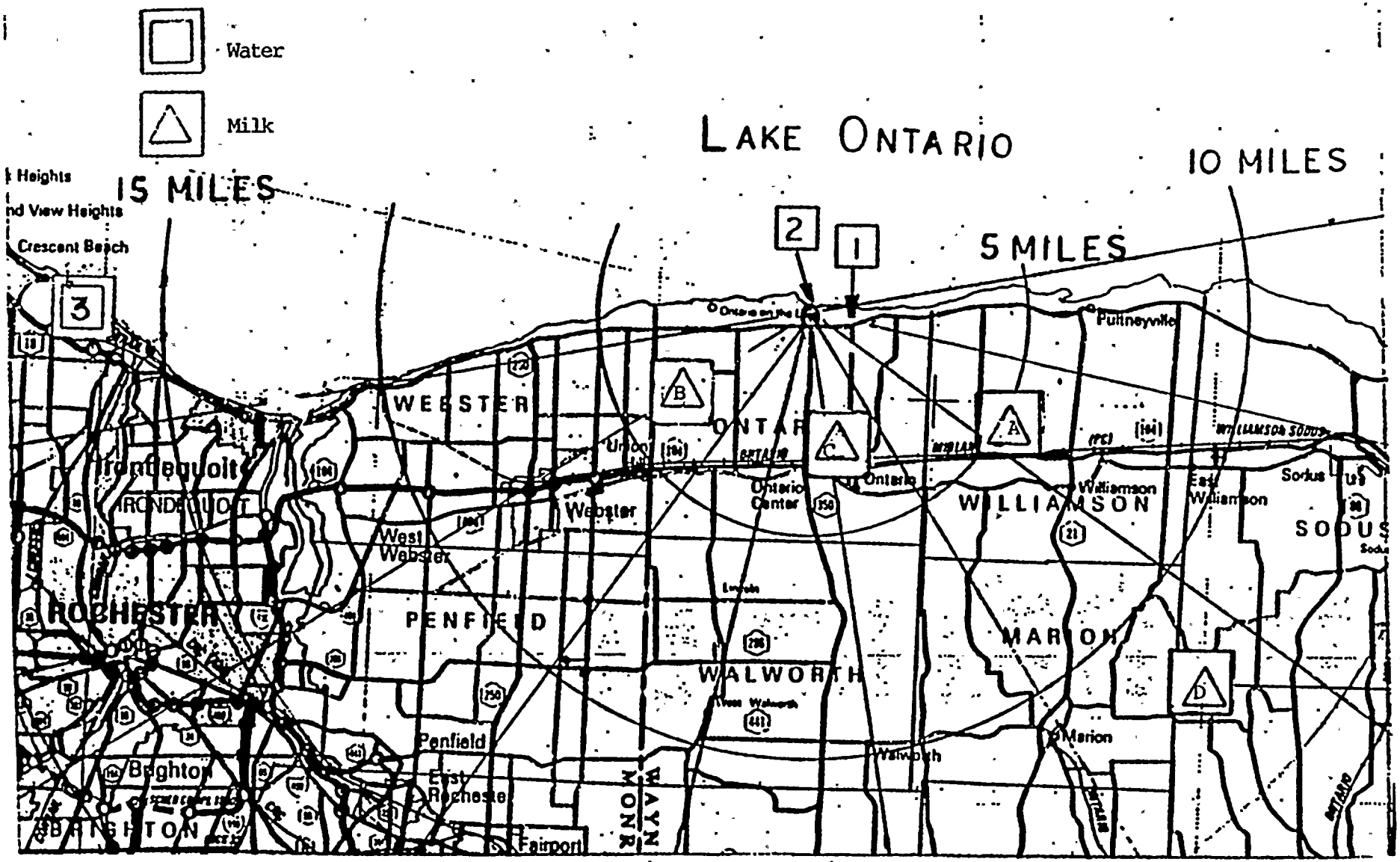
ONSITE AIR MONITOR
POST-ACCIDENT TLD


Water
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10 MILES
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Heights
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C
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WEBSTER
IRONDEQUOIT
ROCHESTER
PENFIELD
WALWORTH
MARION
WILLIAMSON
SODUS
Webster
West Webster
Penfield
Brighton
East Rochester
Fairport
Ontario
Ontario Center
Williamson
East Williamson
Sodus
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Walworth
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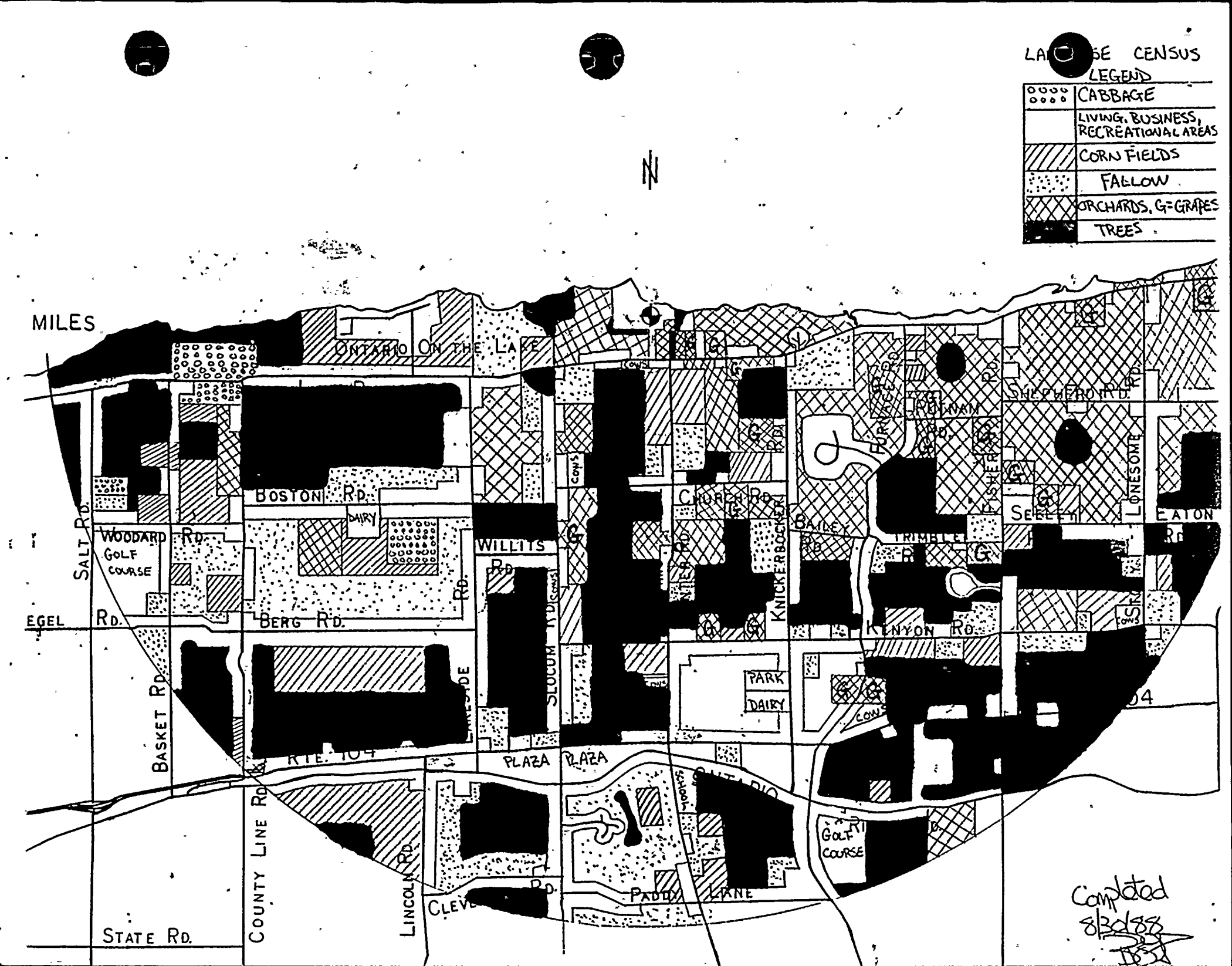

LAND USE CENSUS
LEGEND
CABBAGE
LIVING, BUSINESS, RECREATIONAL AREAS
CORN FIELDS
FALLOW
ORCHARDS, G=GRAPES
TREES
N
MILES
ONTARIO ON THE LAKE
BOSTON RD.
WOODARD GOLF COURSE
SALT RD.
EGEL RD.
BERG RD.
BASKET RD.
WILLITS RD.
CHURCH RD.
KENYON RD.
PARK DAIRY
RTE. 104
PLAZA
PLAZA
COUNTY LINE RD.
LINCOLN RD.
PADDY LANE
STATE RD.
SHERWOOD RD.
PUTNAM
LONESOME
GOLF COURSE
Completed
8/30/88

TABLE I

Sector	Distance to Nearest Residence	Distance to Nearest Garden >500 ft²	Distance to Milk Producing Animals
E	1190 meters	1200 meters	
ESE	930 "	900 "	
SE	570 "	570 "	8200 meters
SSE	600 "	600 "	5450 "
S	450 "	450 "	
SSW	600 "	600 "	
SW	750 "	750 "	4950 meters
WSW	1000 "	1000 "	
W	1500 "	1500 "	

Changes from previous year:
Additional homes built along roadways in area.

Milk animal locations:
No new milk locations

Land Use Census Completed By: _____ **Date:** 8/30/88
_____ 8/31/88

TABLE

1988 ONSITE AIR MONITORS GROSS BETA ANALYSES
RESULTS IN pCi/CU. M.

WEEK OF	STATION 2	STATION 3	STATION 4	STATION 5	STATION 6	STATION 7	STATION 13	AVE.
JAN. 1 - JAN. 8	0.019±0.002	0.020±0.002	0.019±0.001	0.019±0.001	0.019±0.002	0.021±0.002	0.021±0.002	0.020
JAN. 8 - JAN. 15	0.029±0.003	0.028±0.002	0.027±0.002	0.028±0.002	0.028±0.002	0.028±0.002	0.033±0.002	0.029
JAN. 15 - JAN. 22	0.017±0.003	0.016±0.002	0.018±0.002	0.016±0.002	0.013±0.002	0.015±0.002	0.020±0.002	0.016
JAN. 22 - JAN. 29	0.017±0.003	(a)	0.018±0.002	0.021±0.002	0.019±0.002	0.019±0.002	0.023±0.002	0.020
JAN. 29 - FEB. 5	0.018±0.003	0.018±0.002	0.017±0.002	0.018±0.002	0.019±0.002	0.019±0.002	0.021±0.002	0.019
FEB. 5 - FEB. 12	0.023±0.003	0.020±0.002	0.024±0.002	0.022±0.003	0.022±0.002	0.023±0.002	0.029±0.003	0.023
FEB. 12 - FEB. 19	0.017±0.003	0.020±0.002	0.019±0.002	0.020±0.002	0.020±0.002	0.020±0.002	0.024±0.002	0.020
FEB. 19 - FEB. 26	0.016±0.003	0.016±0.002	0.013±0.001	0.014±0.001	0.014±0.002	0.015±0.002	0.010±0.001	0.014
FEB. 26 - MARCH 4	0.019±0.003	0.015±0.002	0.014±0.002	0.014±0.001	0.010±0.001	0.014±0.002	0.018±0.002	0.015
MARCH 4 - MARCH 11	0.016±0.003	0.015±0.002	0.014±0.002	0.014±0.002	0.015±0.002	0.015±0.002	0.019±0.002	0.015
MARCH 11 - MARCH 18	0.011±0.003	0.012±0.002	0.011±0.001	0.010±0.001	0.011±0.002	0.010±0.002	0.010±0.002	0.011
MARCH 18 - MARCH 25	0.018±0.003	0.023±0.002	0.017±0.002	0.018±0.002	0.017±0.002	0.016±0.002	0.018±0.002	0.017
MARCH 25 - APRIL 1	0.012±0.003	0.011±0.002	0.012±0.003	0.010±0.002	0.013±0.002	0.011±0.003	0.016±0.002	0.012
APRIL 1 - APRIL 8	0.010±0.003	0.014±0.002	0.012±0.001	0.012±0.001	0.013±0.002	0.014±0.002	0.014±0.002	0.013
APRIL 8 - APRIL 15	0.013±0.003	0.012±0.002	0.013±0.002	0.010±0.001	0.012±0.002	0.010±0.002	0.009±0.002	0.011
APRIL 15 - APRIL 22	0.013±0.003	0.012±0.002	0.013±0.002	0.010±0.001	0.012±0.002	0.012±0.002	0.018±0.002	0.013
APRIL 22 - APRIL 29	0.014±0.003	0.012±0.002	0.011±0.002	0.010±0.001	0.012±0.002	0.012±0.002	0.010±0.001	0.012
APRIL 29 - MAY 6	0.010±0.003	0.009±0.002	0.010±0.001	0.009±0.001	0.002±0.002	0.009±0.002	0.013±0.002	0.010
MAY 6 - MAY 13	0.014±0.003	0.014±0.002	0.013±0.002	0.013±0.002	0.015±0.002	0.014±0.002	0.019±0.002	0.015
MAY 13 - MAY 20	0.007±0.002	0.008±0.002	0.007±0.001	0.009±0.001	0.007±0.002	0.008±0.002	0.012±0.002	0.008
MAY 20 - MAY 27	0.015±0.003	0.013±0.002	0.011±0.002	0.012±0.002	0.012±0.002	0.012±0.002	0.014±0.002	0.013
MAY 27 - JUNE 3	0.021±0.002	0.026±0.003	0.025±0.002	0.018±0.002	0.037±0.003	0.028±0.003	0.030±0.002	0.026
JUNE 3 - JUNE 10	0.014±0.003	0.013±0.002	0.010±0.002	0.014±0.002	0.013±0.002	0.010±0.002	0.040±0.005	0.012
JUNE 10 - JUNE 17	0.022±0.004	0.016±0.002	0.018±0.002	0.019±0.002	0.017±0.002	0.020±0.002	0.015±0.001	0.018
JUNE 17 - JUNE 24	0.029±0.004	0.025±0.003	0.024±0.002	0.024±0.002	0.026±0.002	0.024±0.002	0.021±0.002	0.025
JUNE 24 - JULY 1	0.007±0.003	0.009±0.001	0.008±0.001	0.008±0.001	0.009±0.002	0.012±0.002	0.005±0.001	0.008
MAXIMUM.	0.029±0.003	0.028±0.002	0.027±0.002	0.028±0.002	0.037±0.003	0.028±0.002	0.040±0.005	
AVERAGE	0.016	0.016	0.015	0.015	0.016	0.016	0.019	
MINIMUM	0.007±0.002	0.008±0.002	0.007±0.001	0.008±0.001	0.002±0.002	0.008±0.002	0.005±0.001	

(a) UNIT OUT OF SERVICE
(b) FILTER TORN OR OFF CENTERED

TABLE II A

1988 ONSITE AIR MONITORS GROSS BETA ANALYSES
RESULTS IN pCi/CU. M.

WEEK OF	STATION 2	STATION 3	STATION 4	STATION 5	STATION 6	STATION 7	STATION 13	AVE.
JULY 1 - JULY 8	0.023±0.004	0.022±0.003	0.020±0.002	0.028±0.003	0.019±0.002	0.019±0.002	0.018±0.002	0.021
JULY 8 - JULY 15	0.031±0.004	0.033±0.003	0.028±0.002	0.027±0.002	0.031±0.003	0.030±0.002	0.024±0.002	0.029
JULY 15 - JULY 22	0.025±0.004	0.021±0.002	0.020±0.002	0.020±0.002	0.021±0.002	0.028±0.006	0.016±0.002	0.022
JULY 22 - JULY 29	0.020±0.004	0.022±0.002	0.020±0.002	0.021±0.002	0.021±0.002	0.021±0.002	0.019±0.002	0.021
JULY 29 - AUG. 5	0.030±0.005	0.027±0.003	0.028±0.002	0.026±0.002	0.026±0.003	0.019±0.003	0.027±0.002	0.028
AUG. 5 - AUG. 12	0.031±0.005	0.031±0.003	0.024±0.002	0.025±0.002	0.025±0.003	0.025±0.002	0.020±0.002	0.026
AUG. 12 - AUG. 19	0.031±0.005	0.025±0.003	0.025±0.002	0.023±0.002	0.027±0.003	0.025±0.002	0.021±0.002	0.025
AUG. 19 - AUG. 26	0.012±0.004	0.016±0.002	0.013±0.002	0.014±0.002	0.012±0.002	0.011±0.002	0.013±0.002	0.013
AUG. 26 - SEPT. 2	0.019±0.005	0.017±0.002	0.015±0.002	0.016±0.002	0.017±0.002	0.016±0.003	0.011±0.002	0.016
SEPT. 2 - SEPT. 9	0.020±0.005	0.019±0.003	0.019±0.002	0.018±0.002	0.018±0.002	0.016±0.002	0.015±0.002	0.018
SEPT. 9 - SEPT. 16	0.012±0.004	0.016±0.002	0.019±0.002	0.014±0.002	0.019±0.002	0.017±0.002	0.017±0.002	0.016
SEPT. 16 - SEPT. 23	0.003±0.003	0.009±0.002	0.012±0.001	0.022±0.002	0.028±0.003	0.016±0.002	0.018±0.002	0.019
SEPT. 23 - SEPT. 30	0.014±0.005	0.015±0.002	0.015±0.002	0.015±0.002	0.014±0.002	0.014±0.002	0.015±0.002	0.015
SEPT. 30 - OCT. 7	0.020±0.005	0.019±0.003	0.017±0.002	0.017±0.002	0.017±0.002	0.016±0.003	0.014±0.002	0.017
OCT. 7 - OCT. 14	0.014±0.005	0.013±0.002	0.014±0.002	0.009±0.002	0.013±0.002	0.015±0.002	0.013±0.002	0.013
OCT. 14 - OCT. 21	0.024±0.005	0.024±0.003	0.023±0.002	0.022±0.002	0.022±0.002	0.021±0.002	0.018±0.002	0.022
OCT. 21 - OCT. 28	0.015±0.005	0.010±0.002	0.013±0.002	0.012±0.002	0.013±0.002	0.013±0.002	0.011±0.001	0.012
OCT. 28 - NOV. 4	0.017±0.005	0.020±0.003	0.022±0.002	0.017±0.002	0.018±0.002	0.015±0.003	0.015±0.002	0.018
NOV. 4 - NOV. 11	(a)	0.014±0.002	0.015±0.002	0.014±0.002	0.014±0.002	0.015±0.002	0.010±0.001	0.014
NOV. 11 - NOV. 18	(a)	0.014±0.003	0.019±0.002	0.016±0.002	0.018±0.002	0.015±0.002	0.016±0.002	0.016
NOV. 18 - NOV. 25	(a)	0.005±0.002	0.011±0.002	0.010±0.002	0.009±0.002	0.009±0.002	0.009±0.002	0.009
NOV. 25 - DEC. 2	0.017±0.004	0.026±0.003	0.023±0.002	0.022±0.002	0.024±0.002	0.022±0.002	0.022±0.002	0.022
DEC. 2 - DEC. 9	0.023±0.002	0.026±0.003	0.025±0.002	0.025±0.002	0.022±0.002	0.025±0.002	0.023±0.002	0.024
DEC. 9 - DEC. 16	0.024±0.002	0.027±0.003	0.029±0.002	0.025±0.002	0.026±0.002	0.023±0.002	0.022±0.002	0.025
DEC. 16 - DEC. 23	0.022±0.002	0.023±0.003	0.024±0.002	0.018±0.002	0.021±0.002	0.020±0.002	0.022±0.002	0.021
DEC. 23 - DEC. 30	0.022±0.002	0.026±0.003	0.023±0.002	0.023±0.002	0.023±0.002	0.021±0.002	0.019±0.002	0.022
MAXIMUM	0.031±0.004	0.033±0.003	0.029±0.002	0.028±0.003	0.031±0.003	0.030±0.002	0.027±0.002	
AVERAGE	0.020	0.020	0.020	0.019	0.020	0.019	0.017	
MINIMUM	0.003±0.003	0.005±0.002	0.011±0.002	0.009±0.002	0.009±0.002	0.009±0.002	0.009±0.002	

(a) UNIT OUT OF SERVICE
(b) FILTER TORN OR OFF CENTERED

TABLE I B

1988 OFFSITE AIR MONITORS GROSS BETA ANALYSES
RESULTS IN $pCi/CU.$ M.

WEEK OF	STATION 8	STATION 9	STATION 10	STATION 11	STATION 12	AVE.
JAN. 1 - JAN. 8	0.018±0.001	0.019±0.002	0.021±0.002	0.019±0.002	0.019±0.001	0.019
JAN. 8 - JAN. 15	0.023±0.002	0.026±0.002	0.033±0.003	0.028±0.003	0.027±0.002	0.027
JAN. 15 - JAN. 22	(b)	0.017±0.002	0.017±0.003	0.014±0.003	0.010±0.002	0.013
JAN. 22 - JAN. 29	0.017±0.002	0.019±0.002	0.020±0.003	0.019±0.003	0.019±0.003	0.019
JAN. 29 - FEB. 5	0.015±0.002	0.016±0.002	0.016±0.003	0.018±0.003	0.018±0.002	0.017
FEB. 5 - FEB. 12	0.021±0.002	0.023±0.002	0.025±0.003	0.024±0.003	0.024±0.002	0.023
FEB. 12 - FEB. 19	0.016±0.001	0.018±0.002	0.022±0.003	0.016±0.002	0.019±0.002	0.018
FEB. 19 - FEB. 26	0.014±0.002	0.015±0.002	0.015±0.003	0.013±0.003	0.012±0.001	0.014
FEB. 26 - MARCH 4	0.014±0.002	0.013±0.002	0.015±0.003	0.015±0.003	0.015±0.002	0.014
MARCH 4 - MARCH 11	0.017±0.002	0.015±0.002	0.016±0.002	0.014±0.003	0.015±0.002	0.015
MARCH 11 - MARCH 18	0.010±0.001	0.011±0.002	0.008±0.002	0.012±0.003	0.010±0.001	0.010
MARCH 18 - MARCH 25	0.017±0.002	0.017±0.002	0.014±0.003	0.014±0.003	0.015±0.002	0.015
MARCH 25 - APRIL 1	0.014±0.002	(b)	0.015±0.003	0.013±0.003	0.013±0.002	0.014
APRIL 1 - APRIL 8	0.019±0.002	0.015±0.002	0.015±0.003	0.013±0.012	0.002±0.015	0.000
APRIL 8 - APRIL 15	0.009±0.001	0.010±0.002	0.009±0.003	0.006±0.003	0.008±0.001	0.008
APRIL 15 - APRIL 22	0.014±0.002	0.013±0.002	0.013±0.003	0.011±0.003	0.013±0.002	0.013
APRIL 22 - APRIL 29	0.012±0.002	0.012±0.002	0.013±0.003	0.012±0.003	0.012±0.002	0.012
APRIL 29 - MAY 6	0.012±0.002	0.013±0.002	0.015±0.003	0.014±0.003	0.011±0.002	0.013
MAY 6 - MAY 13	0.016±0.002	0.018±0.002	0.026±0.004	0.017±0.003	0.017±0.002	0.018
MAY 13 - MAY 20	(a)	0.006±0.001	0.014±0.003	0.026±0.004	0.014±0.002	0.015
MAY 20 - MAY 27	0.012±0.002	0.013±0.002	0.013±0.003	0.016±0.003	0.007±0.002	0.012
MAY 27 - JUNE 3	0.026±0.002	0.026±0.002	0.031±0.003	0.013±0.002	0.026±0.002	0.027
JUNE 3 - JUNE 10	0.011±0.002	0.012±0.002	0.011±0.003	0.015±0.004	0.012±0.002	0.012
JUNE 10 - JUNE 17	0.020±0.002	0.020±0.002	0.021±0.003	0.021±0.004	0.017±0.002	0.020
JUNE 17 - JUNE 24	0.022±0.002	0.025±0.002	0.021±0.003	0.026±0.004	0.022±0.002	0.024
JUNE 24 - JULY 1	0.013±0.002	0.010±0.002	0.015±0.003	0.012±0.003	0.009±0.002	0.012
MAXIMUM	0.026±0.002	0.026±0.002	0.033±0.003	0.028±0.003	0.027±0.002	
AVERAGE	0.016	0.016	0.017	0.016	0.015	
MINIMUM	0.009±0.001	0.006±0.001	0.008±0.002	0.006±0.003	0.002±0.015	

(a) UNIT OUT OF SERVICE
(b) FILTER TORN OR OFF CENTERED

TABLE II B

1988 OFFSITE AIR MONITORS GROSS BETA ANALYSES
RESULTS IN pCi/CU. M.

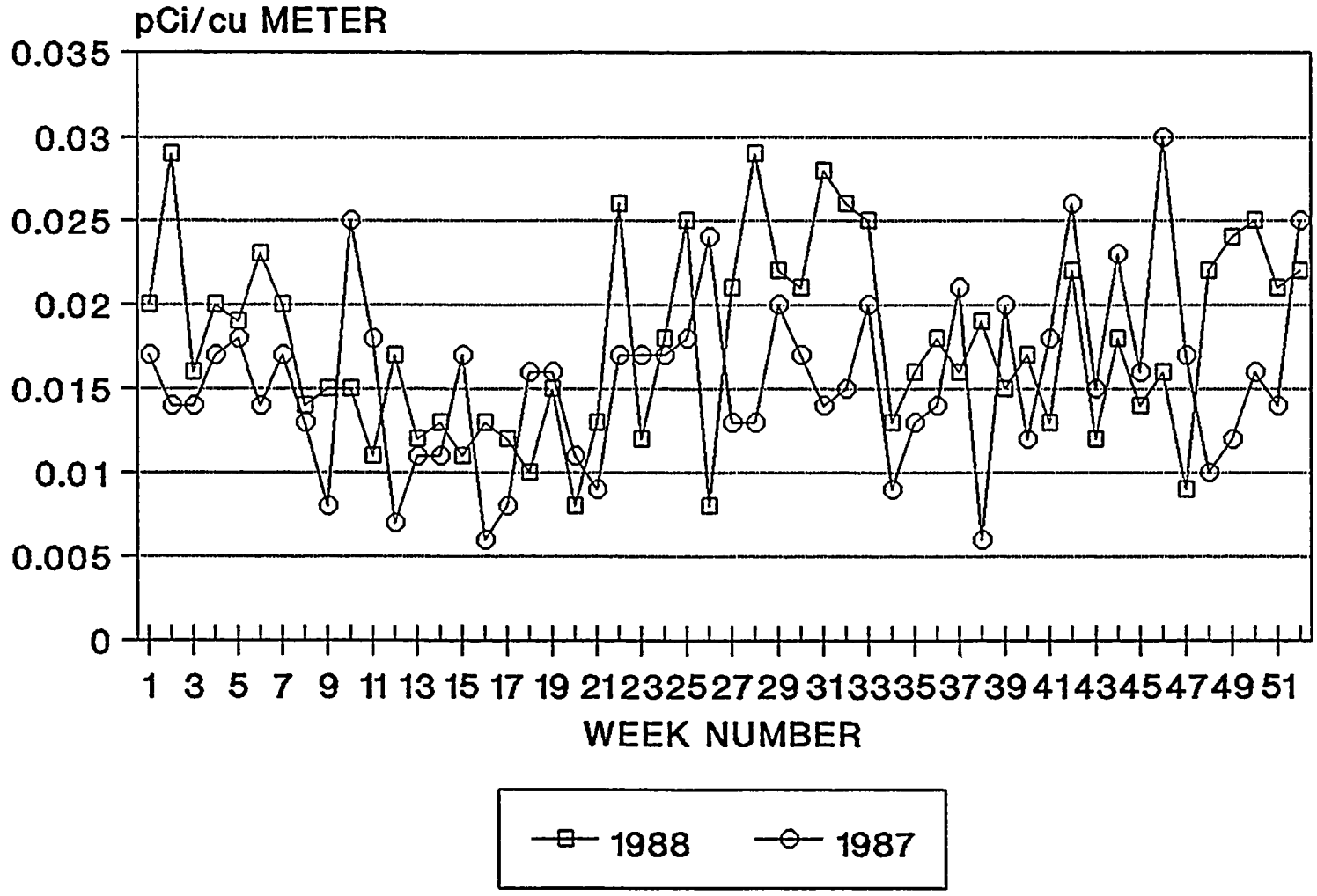
WEEK OF	STATION 8	STATION 9	STATION 10	STATION 11	STATION 12	AVE.
JULY 1 - JULY 8	0.021±0.002	0.021±0.002	0.022±0.003	0.021±0.004	0.019±0.002	0.021
JULY 8 - JULY 15	0.025±0.002	0.029±0.002	0.030±0.003	0.031±0.004	0.026±0.002	0.028
JULY 15 - JULY 22	0.017±0.002	0.016±0.002	0.017±0.003	0.018±0.004	0.018±0.003	0.017
JULY 22 - JULY 29	0.020±0.002	0.021±0.002	0.025±0.003	0.028±0.004	0.022±0.002	0.023
JULY 29 - AUG. 5	0.031±0.002	0.025±0.002	0.034±0.003	0.039±0.005	0.030±0.002	0.032
AUG. 5 - AUG. 12	0.022±0.002	0.024±0.002	0.024±0.003	0.025±0.005	0.022±0.002	0.023
AUG. 12 - AUG. 19	0.025±0.002	0.024±0.002	0.029±0.003	0.030±0.005	0.022±0.002	0.025
AUG. 19 - AUG. 26	(a)	0.014±0.002	0.018±0.003	0.017±0.005	0.012±0.002	0.015
AUG. 26 - SEPT. 2	0.013±0.002	0.012±0.002	0.018±0.003	0.014±0.005	0.014±0.002	0.014
SEPT. 2 - SEPT. 9	0.015±0.002	0.016±0.003	0.015±0.003	0.016±0.005	0.016±0.002	0.016
SEPT. 9 - SEPT. 16	0.017±0.002	0.018±0.002	0.019±0.003	0.015±0.005	0.016±0.002	0.017
SEPT. 16 - SEPT. 23	0.019±0.002	0.019±0.002	0.021±0.003	0.021±0.005	0.021±0.002	0.020
SEPT. 23 - SEPT. 30	0.017±0.002	0.014±0.002	0.017±0.003	0.017±0.005	0.017±0.002	0.016
SEPT. 30 - OCT. 7	0.016±0.002	0.016±0.002	0.018±0.003	0.012±0.005	0.017±0.002	0.016
OCT. 7 - OCT. 14	0.013±0.002	0.016±0.002	0.017±0.003	0.015±0.005	0.014±0.002	0.015
OCT. 14 - OCT. 21	0.025±0.002	0.023±0.003	0.023±0.003	0.020±0.005	0.022±0.002	0.023
OCT. 21 - OCT. 28	0.012±0.002	0.013±0.002	0.013±0.003	0.014±0.005	0.013±0.002	0.013
OCT. 28 - NOV. 4	0.018±0.002	0.020±0.002	0.019±0.003	0.020±0.006	0.017±0.002	0.019
NOV. 4 - NOV. 11	0.012±0.002	0.012±0.002	0.012±0.003	0.011±0.005	0.012±0.002	0.012
NOV. 11 - NOV. 18	0.018±0.002	0.019±0.002	0.020±0.003	0.020±0.007	0.018±0.002	0.019
NOV. 18 - NOV. 25	0.011±0.002	0.012±0.002	0.010±0.003	0.006±0.006	0.011±0.002	0.010
NOV. 25 - DEC. 2	0.024±0.002	0.028±0.002	0.026±0.003	0.020±0.006	0.025±0.002	0.025
DEC. 2 - DEC. 9	0.026±0.002	0.029±0.003	0.027±0.002	0.018±0.006	0.025±0.002	0.025
DEC. 9 - DEC. 16	0.031±0.002	0.025±0.002	0.027±0.002	0.025±0.006	0.027±0.002	0.027
DEC. 16 - DEC. 23	0.025±0.002	0.027±0.002	0.024±0.002	0.029±0.006	0.023±0.002	0.025
DEC. 23 - DEC. 30	0.021±0.002	0.021±0.002	0.022±0.002	0.019±0.004	0.037±0.003	0.021
MAXIMUM	0.031±0.002	0.029±0.002	0.034±0.003	0.039±0.005	0.037±0.003	
AVERAGE	0.020	0.020	0.021	0.020	0.020	
MINIMUM	0.011±0.002	0.012±0.002	0.010±0.003	0.006±0.006	0.011±0.002	

(a) UNIT OUT OF SERVICE
(b) FILTER TORN OR OFF CENTERED

ONSITE AIR MONITORS

GROSS BETA ANALYSIS

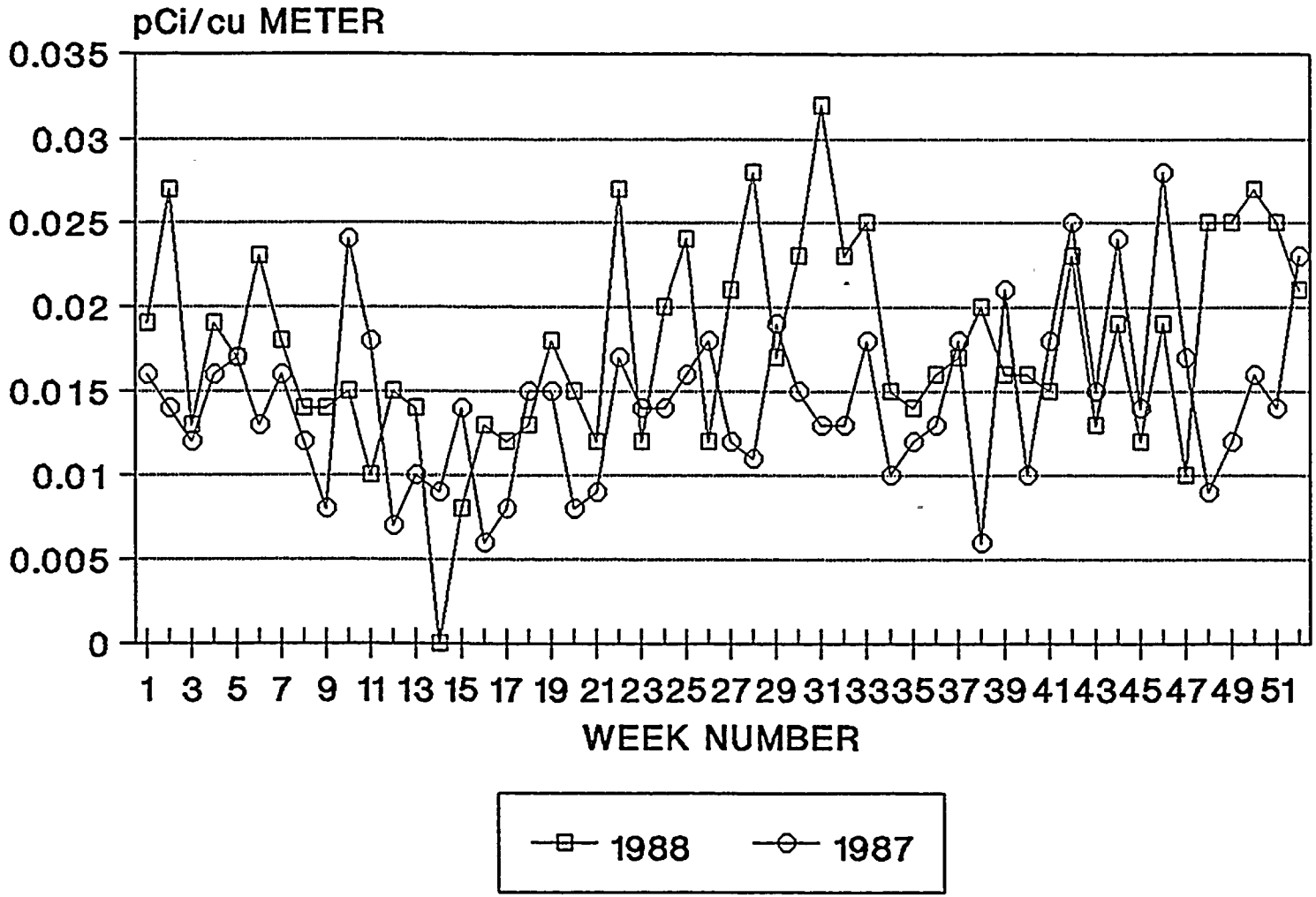
R. E. GINNA POWER STATION



OFFSITE AIR MONITORS

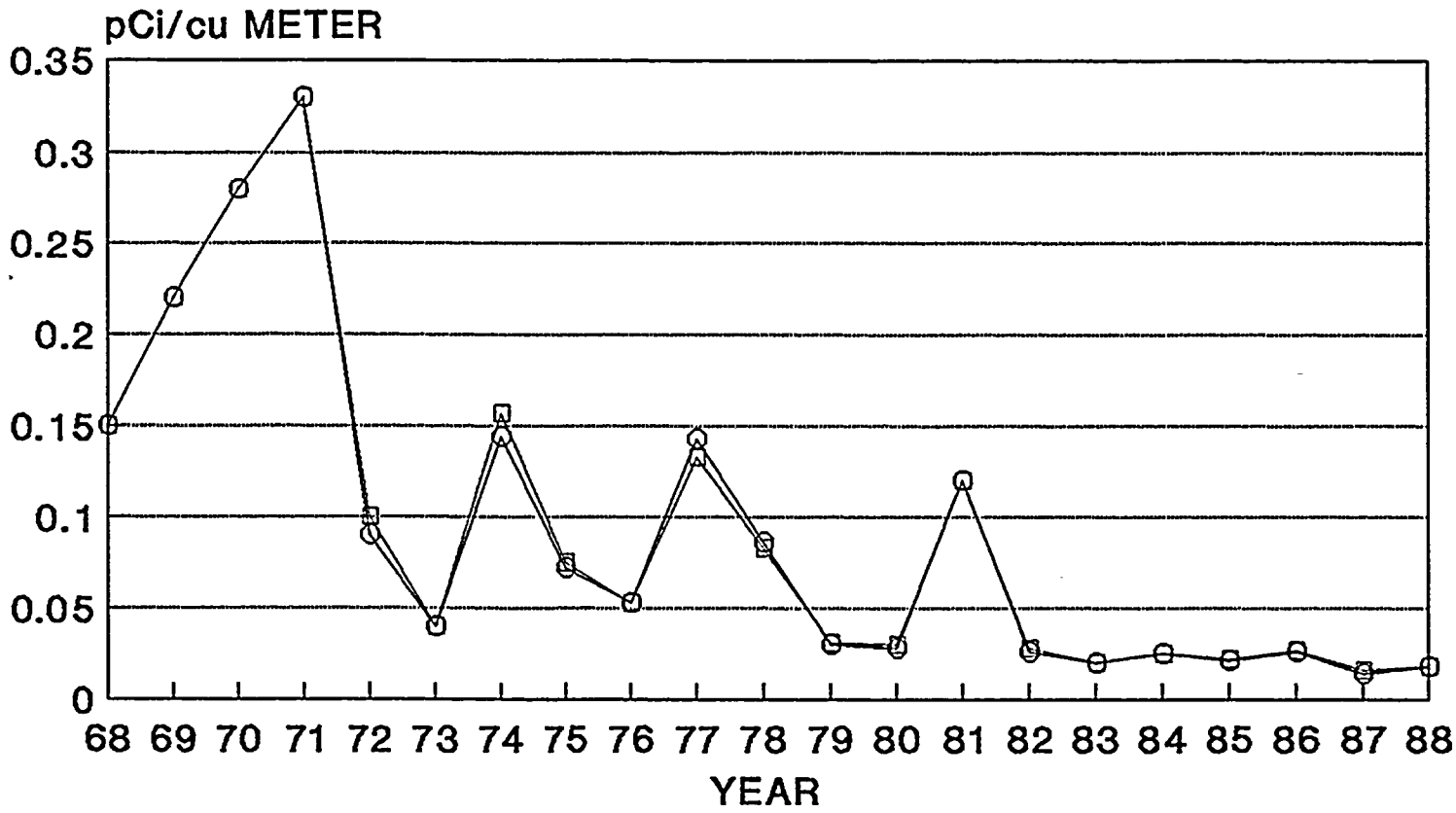
GROSS BETA ANALYSIS

R. E. GINNA POWER STATION



ANNUAL TRENDING OF AIR ACTIVITY

GROSS BETA ANALYSIS FOR 1968 - 1988
R. E. GINNA POWER STATION



PEAKS ARE INDICATIVE OF NUCLEAR
DETONATIONS IN THE ATMOSPHERE.

TABLE IIIA
13 Week Composite Air Filter Gamma Isotopic Analysis
Results in pCi/m³

LOCATION	7 BE	40 K	51 CR	54 MN	59 FE	58 CO	60 CO	65 ZN	95 ZR	95 NB	103 RU	106 RU	134 CS	137 CS	140 BA	141 CE	144 CE
FIRST QUARTER																	
AIR FILTER STATION # 2	140±22	<0.008	<0.072	<0.002	<0.008	<0.003	<0.003	<0.005	<0.006	<0.006	<0.005	<0.018	<0.002	<0.002	<0.180	<0.009	<0.012
AIR FILTER STATION # 3	125±16	<0.006	<0.055	<0.002	<0.007	<0.002	<0.002	<0.003	<0.005	<0.004	<0.004	<0.013	<0.001	<0.002	<0.150	<0.007	<0.009
AIR FILTER STATION # 4	145±12	<0.004	<0.040	<0.001	<0.005	<0.002	<0.002	<0.002	<0.003	<0.003	<0.003	<0.009	<0.001	<0.001	<0.110	<0.005	<0.006
AIR FILTER STATION # 5	145±11	<0.004	<0.040	<0.001	<0.005	<0.002	<0.002	<0.002	<0.003	<0.003	<0.003	<0.009	<0.001	<0.001	<0.115	<0.005	<0.006
AIR FILTER STATION # 6	122±15	<0.006	<0.060	<0.001	<0.007	<0.002	<0.002	<0.003	<0.004	<0.005	<0.004	<0.012	<0.001	<0.002	<0.175	<0.007	<0.009
AIR FILTER STATION # 7	115±16	<0.004	<0.049	<0.001	<0.005	<0.002	<0.003	<0.002	<0.003	<0.004	<0.003	<0.009	<0.001	<0.001	<0.175	<0.006	<0.006
AIR FILTER STATION # 8	150±12	<0.004	<0.049	<0.001	<0.005	<0.002	<0.003	<0.002	<0.003	<0.004	<0.003	<0.009	<0.001	<0.001	<0.175	<0.006	<0.006
AIR FILTER STATION # 9	145±16	<0.004	<0.057	<0.001	<0.006	<0.002	<0.001	<0.003	<0.004	<0.004	<0.004	<0.010	<0.001	<0.001	<0.205	<0.007	<0.007
AIR FILTER STATION #10	120±24	<0.007	<0.090	<0.002	<0.009	<0.003	<0.002	<0.004	<0.007	<0.007	<0.006	<0.016	<0.002	<0.003	<0.335	<0.011	<0.011
AIR FILTER STATION #11	95±25	<0.008	<0.110	<0.002	<0.010	<0.004	<0.003	<0.005	<0.007	<0.007	<0.007	<0.018	<0.002	<0.002	<0.445	<0.013	<0.012
AIR FILTER STATION #12	92±14	<0.004	<0.060	<0.001	<0.006	<0.002	<0.001	<0.003	<0.004	<0.005	<0.004	<0.009	<0.001	<0.001	<0.250	<0.007	<0.007
AIR FILTER STATION #13	95±15	<0.005	<0.070	<0.001	<0.007	<0.002	<0.002	<0.005	<0.005	<0.005	<0.004	<0.012	<0.001	<0.002	<0.295	<0.008	<0.008

LOCATION	7 BE	40 K	51 CR	54 MN	59 FE	58 CO	60 CO	65 ZN	95 ZR	95 NB	103 RU	106 RU	134 CS	137 CS	140 BA	141 CE	144 CE
SECOND QUARTER																	
AIR FILTER STATION # 2	124±16	<0.009	<0.065	<0.002	<0.009	<0.003	<0.005	<0.006	<0.006	<0.006	<0.005	<0.019	<0.002	<0.002	<0.125	<0.008	<0.013
AIR FILTER STATION # 3	142±15	<0.005	<0.041	<0.001	<0.005	<0.002	<0.002	<0.003	<0.004	<0.004	<0.003	<0.012	<0.001	<0.001	<0.080	<0.005	<0.008
AIR FILTER STATION # 4	110±12	<0.004	<0.033	<0.001	<0.004	<0.001	<0.001	<0.002	<0.003	<0.003	<0.002	<0.009	<0.001	<0.001	<0.080	<0.004	<0.006
AIR FILTER STATION # 5	111±12	<0.003	<0.039	<0.001	<0.004	<0.002	<0.003	<0.002	<0.003	<0.003	<0.003	<0.008	<0.001	<0.001	<0.120	<0.005	<0.005
AIR FILTER STATION # 6	125±18	<0.006	<0.055	<0.001	<0.006	<0.002	<0.002	<0.003	<0.005	<0.005	<0.004	<0.013	<0.001	<0.001	<0.155	<0.007	<0.009
AIR FILTER STATION # 7	102±15	<0.005	<0.051	<0.001	<0.006	<0.002	<0.002	<0.003	<0.004	<0.004	<0.004	<0.012	<0.001	<0.001	<0.155	<0.006	<0.008
AIR FILTER STATION # 8	111±17	<0.004	<0.038	<0.001	<0.004	<0.002	<0.001	<0.002	<0.003	<0.003	<0.003	<0.009	<0.001	<0.001	<0.120	<0.005	<0.006
AIR FILTER STATION # 9	135±15	<0.004	<0.043	<0.001	<0.005	<0.002	<0.003	<0.002	<0.004	<0.004	<0.003	<0.010	<0.001	<0.001	<0.140	<0.005	<0.006
AIR FILTER STATION #10	135±30	<0.007	<0.082	<0.002	<0.010	<0.003	<0.002	<0.004	<0.006	<0.007	<0.005	<0.016	<0.002	<0.002	<0.275	<0.010	<0.011
AIR FILTER STATION #11	142±23	<0.008	<0.095	<0.002	<0.004	<0.004	<0.003	<0.004	<0.007	<0.008	<0.006	<0.018	<0.002	<0.002	<0.330	<0.011	<0.012
AIR FILTER STATION #12	107±15	<0.004	<0.049	<0.001	<0.005	<0.002	<0.001	<0.002	<0.004	<0.004	<0.003	<0.009	<0.001	<0.001	<0.180	<0.006	<0.006
AIR FILTER STATION #13	150±10	<0.004	<0.055	<0.001	<0.006	<0.002	<0.001	<0.003	<0.004	<0.004	<0.004	<0.010	<0.001	<0.001	<0.200	<0.006	<0.007

TABLE IIIB

13 Week Composite Air Filter Gamma Isotopic Analysis
Results in pCi/m³

LOCATION	7 BE	40 K	51 CR	54 MN	59 FE	58 CO	60 CO	65 ZN	95 ZR	95 NB	103 RU	106 RU	134 CS	137 CS	140 BA	141 CE	144 CE
THIRD QUARTER																	
AIR FILTER STATION # 2	72±21	<0.010	<0.074	<0.002	<0.010	<0.004	<0.002	<0.006	<0.007	<0.007	<0.006	<0.023	<0.002	<0.002	<0.170	<0.010	<0.015
AIR FILTER STATION # 3	112±15	<0.005	<0.044	<0.001	<0.005	<0.002	<0.003	<0.003	<0.004	<0.004	<0.003	<0.012	<0.001	<0.001	<0.120	<0.006	<0.008
AIR FILTER STATION # 4	93±11	<0.003	<0.028	<0.001	<0.004	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.007	<0.001	<0.001	<0.082	<0.004	<0.005
AIR FILTER STATION # 5	92± 9	<0.003	<0.034	<0.001	<0.004	<0.001	<0.001	<0.002	<0.003	<0.003	<0.002	<0.007	<0.001	<0.001	<0.105	<0.004	<0.005
AIR FILTER STATION # 6	87±12	<0.004	<0.047	<0.001	<0.005	<0.002	<0.003	<0.003	<0.004	<0.004	<0.003	<0.011	<0.001	<0.001	<0.155	<0.006	<0.007
AIR FILTER STATION # 7	91±15	<0.005	<0.058	<0.001	<0.006	<0.002	<0.001	<0.003	<0.005	<0.005	<0.004	<0.013	<0.001	<0.001	<0.200	<0.007	<0.008
AIR FILTER STATION # 8	89±12	<0.003	<0.037	<0.001	<0.004	<0.002	<0.001	<0.002	<0.003	<0.003	<0.002	<0.008	<0.001	<0.001	<0.125	<0.005	<0.005
AIR FILTER STATION # 9	114±13	<0.003	<0.035	<0.001	<0.004	<0.001	<0.001	<0.002	<0.003	<0.003	<0.003	<0.008	<0.001	<0.001	<0.120	<0.005	<0.005
AIR FILTER STATION #10	98±17	<0.006	<0.068	<0.002	<0.008	<0.003	<0.002	<0.004	<0.005	<0.005	<0.005	<0.013	<0.001	<0.002	<0.240	<0.009	<0.010
AIR FILTER STATION #11	104±29	<0.011	<0.130	<0.003	<0.014	<0.005	<0.003	<0.006	<0.009	<0.010	<0.009	<0.025	<0.002	<0.003	<0.600	<0.017	<0.016
AIR FILTER STATION #12	95±12	<0.003	<0.051	<0.001	<0.005	<0.002	<0.001	<0.002	<0.003	<0.004	<0.003	<0.008	<0.001	<0.001	<0.255	<0.006	<0.005
AIR FILTER STATION #13	93±12	<0.002	<0.041	<0.001	<0.004	<0.001	<0.001	<0.002	<0.003	<0.003	<0.003	<0.007	<0.001	<0.001	<0.205	<0.005	<0.004

LOCATION	7 BE	40 K	51 CR	54 MN	59 FE	58 CO	60 CO	65 ZN	95 ZR	95 NB	103 RU	106 RU	134 CS	137 CS	140 BA	141 CE	144 CE
FOURTH QUARTER																	
AIR FILTER STATION # 2	47±15	<0.007	<0.048	<0.002	<0.007	<0.003	<0.002	<0.004	<0.005	<0.005	<0.004	<0.016	<0.002	<0.002	<0.100	<0.007	<0.011
AIR FILTER STATION # 3	69±11	<0.004	<0.034	<0.001	<0.005	<0.002	<0.002	<0.003	<0.003	<0.003	<0.003	<0.011	<0.001	<0.001	<0.074	<0.005	<0.007
AIR FILTER STATION # 4	74± 8	<0.002	<0.019	<0.001	<0.003	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.006	<0.001	<0.001	<0.040	<0.003	<0.004
AIR FILTER STATION # 5	80±10	<0.003	<0.023	<0.001	<0.003	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.007	<0.001	<0.001	<0.047	<0.003	<0.005
AIR FILTER STATION # 6	83± 9	<0.003	<0.026	<0.001	<0.003	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.007	<0.001	<0.001	<0.063	<0.004	<0.005
AIR FILTER STATION # 7	73±10	<0.004	<0.030	<0.001	<0.004	<0.001	<0.001	<0.002	<0.003	<0.003	<0.002	<0.009	<0.001	<0.001	<0.076	<0.004	<0.006
AIR FILTER STATION # 8	91±12	<0.002	<0.022	<0.001	<0.003	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.007	<0.001	<0.001	<0.047	<0.003	<0.004
AIR FILTER STATION # 9	125±15	<0.004	<0.028	<0.001	<0.004	<0.001	<0.003	<0.002	<0.003	<0.002	<0.002	<0.009	<0.001	<0.001	<0.063	<0.004	<0.006
AIR FILTER STATION #10	130±19	<0.004	<0.038	<0.001	<0.005	<0.002	<0.001	<0.003	<0.003	<0.003	<0.003	<0.011	<0.001	<0.001	<0.094	<0.005	<0.007
AIR FILTER STATION #11	71±12	<0.012	<0.100	<0.003	<0.013	<0.005	<0.004	<0.007	<0.010	<0.009	<0.008	<0.028	<0.003	<0.003	<0.255	<0.014	<0.018
AIR FILTER STATION #12	83±88	<0.003	<0.028	<0.001	<0.004	<0.001	<0.001	<0.002	<0.003	<0.002	<0.002	<0.008	<0.001	<0.001	<0.073	<0.004	<0.005
AIR FILTER STATION #13	62± 8	<0.002	<0.024	<0.001	<0.003	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.007	<0.001	<0.001	<0.064	<0.003	<0.004

TABLE IV

CHARCOAL CARTRIDGES GAMMA ANALYSES FOR IODINE
RESULTS IN pCi/CU. M.

WEEK OF	STA. # 4	STA. # 7	STA. # 9	STA. #11	WEEK OF	STA. # 4	STA. # 7	STA. # 9	STA. #11
JAN. 1 - JAN. 8	<0.02	<0.04	<0.03	<0.05	JULY 4 - JULY 11.	<0.05	<0.07	<0.06	<0.14
JAN. 8 - JAN. 15	<0.02	<0.03	<0.02	<0.04	JULY 11 - JULY 18	<0.05	<0.06	<0.05	<0.12
JAN. 15 - JAN. 22	<0.02	<0.03	<0.03	<0.04	JULY 18 - JULY 25	<0.05	<0.29	<0.05	<0.13
JAN. 22 - JAN. 29	<0.02	<0.03	<0.02	<0.04	JULY 25 - AUG. 1	<0.05	<0.08	<0.06	<0.16
JAN. 29 - FEB. 5	<0.02	<0.03	<0.02	<0.04	AUG. 1 - AUG. 8	<0.05	<0.07	<0.05	<0.15
FEB. 5 - FEB. 12	<0.02	<0.03	<0.03	<0.05	AUG. 8 - AUG. 15	<0.05	<0.07	<0.06	<0.15
FEB. 12 - FEB. 19	<0.03	<0.05	<0.03	<0.06	AUG. 15 - AUG. 22	<0.05	<0.07	<0.06	<0.15
FEB. 19 - FEB. 26	<0.03	<0.05	<0.03	<0.04	AUG. 22 - AUG. 29	<0.06	<0.08	<0.05	<0.17
FEB. 26 - MARCH 4	<0.06	<0.08	<0.06	<0.12	AUG. 29 - SEPT. 5	<0.05	<0.08	<0.05	<0.18
MARCH 4 - MARCH 11	<0.05	<0.08	<0.06	<0.11	SEPT. 5 - SEPT. 12	<0.06	<0.08	<0.07	<0.18
MARCH 11 - MARCH 18	<0.05	<0.09	<0.06	<0.13	SEPT. 12 - SEPT. 19	<0.05	<0.08	<0.05	<0.18
MARCH 18 - MARCH 25	<0.06	<0.09	<0.06	<0.13	SEPT. 19 - SEPT. 26	<0.04	<0.06	<0.07	<0.23
MARCH 25 - APRIL 1	<0.06	<0.09	<0.07	<0.12	SEPT. 26 - OCT. 3	<0.05	<0.08	<0.07	<0.20
APRIL 1 - APRIL 8	<0.04	<0.06	<0.05	<0.09	OCT. 3 - OCT. 10	<0.05	<0.11	<0.07	<0.22
APRIL 8 - APRIL 15	<0.05	<0.07	<0.05	<0.11	OCT. 10 - OCT. 17	<0.05	<0.09	<0.07	<0.22
APRIL 15 - APRIL 22	<0.05	<0.09	<0.06	<0.11	OCT. 17 - OCT. 24	<0.06	<0.08	<0.07	<0.22
APRIL 22 - APRIL 29	<0.05	<0.07	<0.05	<0.10	OCT. 24 - OCT. 31	<0.06	<0.08	<0.07	<0.21
APRIL 29 - MAY 6	<0.05	<0.07	<0.06	<0.10	OCT. 31 - NOV. 7	<0.06	<0.09	<0.07	<0.23
MAY 6 - MAY 13	<0.05	<0.06	<0.06	<0.11	NOV. 7 - NOV. 14	<0.06	<0.06	<0.07	<0.22
MAY 13 - MAY 20	<0.04	<0.07	<0.05	<0.13	NOV. 14 - NOV. 21	<0.05	<0.06	<0.08	<0.25
MAY 20 - MAY 27	<0.05	<0.07	<0.05	<0.11	NOV. 21 - NOV. 26	<0.06	<0.07	<0.07	<0.28
MAY 27 - JUNE 3	<0.05	<0.06	<0.05	<0.12	NOV. 26 - DEC. 3	<0.05	<0.05	<0.06	<0.20
JUNE 3 - JUNE 10	<0.05	<0.08	<0.05	<0.12	DEC. 3 - DEC. 10	<0.05	<0.06	<0.07	<0.22
JUNE 10 - JUNE 17	<0.06	<0.09	<0.06	<0.13	DEC. 10 - DEC. 17	<0.05	<0.06	<0.07	<0.21
JUNE 17 - JUNE 24	<0.05	<0.07	<0.05	<0.12	DEC. 17 - DEC. 24	<0.06	<0.06	<0.07	<0.25
JUNE 24 - JULY 1	<0.05	<0.06	<0.05	<0.13	DEC. 24 - DEC. 31	<0.05	<0.08	<0.08	<0.19

ALL VALUES GIVEN AS < ARE LESS THAN THE LLD CORRECTED FOR DECAY.

TABLE V A

1988 ENVIRONMENTAL WATER SAMPLES GROSS BETA ANALYSES
RESULTS IN pCi/L

WEEK OF	RUSSELL	O.V.D.	CIRC. IN	CIRC. OUT	DEER CREEK	TAP	WELL 'D'
JAN. 3 - JAN. 9	1.85±0.76	2.08±0.79	2.12±0.75	2.29±0.75			
JAN. 10 - JAN. 16	1.45±0.79	1.96±0.81	1.88±0.81	1.96±0.79	3.13±0.91		
JAN. 17 - JAN. 23	1.42±0.79	1.90±0.77	1.40±0.73	1.98±0.76		< 1.20	3.69±0.92
JAN. 24 - JAN. 30	2.28±0.82	3.24±0.78	3.27±0.77	2.37±0.71			
JAN. 31 - FEB. 6	1.68±0.76	1.96±0.82	1.68±0.78	1.63±0.79			
FEB. 7 - FEB. 13	2.47±0.87	1.76±0.76	2.07±0.86	< 1.20			
FEB. 14 - FEB. 20	1.28±0.74	2.16±0.83	2.18±0.83	2.13±0.81	2.66±0.95	< 1.20	1.91±0.93
FEB. 21 - FEB. 27	3.86±0.87	2.46±0.77	< 1.20	2.47±0.78			
FEB. 28 - MARCH 5	1.43±0.68	2.47±0.77	2.82±0.79	3.14±0.79			
MARCH 6 - MARCH 12	1.76±0.71	2.28±0.76	1.95±0.74				
MARCH 13 - MARCH 19	2.09±0.89	1.23±0.75	1.44±0.77	1.94±0.73			
MARCH 20 - MARCH 26	2.60±0.93	2.10±0.90	2.07±0.88	1.36±0.81	2.93±0.97	3.03±0.86	3.78±1.01
MARCH 27 - APRIL 2	4.48±0.97	2.83±0.91	2.84±0.86	1.55±0.83			
APRIL 3 - APRIL 9	2.82±0.94	2.40±0.82	2.43±0.83	1.79±0.77			
APRIL 10 - APRIL 16	2.38±0.87	2.36±0.90	2.73±0.88	2.04±0.85			
APRIL 17 - APRIL 23	< 1.20	2.84±0.92	2.27±0.86	2.81±0.88			
APRIL 24 - APRIL 30	2.66±0.84	2.32±0.84	2.39±0.80	2.37±0.80	1.74±0.92	2.31±0.85	3.42±1.02
MAY 1 - MAY 7	2.08±0.86	1.55±0.84	2.19±0.89	2.37±0.85			
MAY 8 - MAY 14	1.71±0.80	1.79±0.90	1.68±0.87	1.84±0.88			
MAY 15 - MAY 21	2.35±0.81	2.45±0.84	2.18±0.84	1.71±0.79	2.75±1.00	2.22±1.02	3.20±1.09
MAY 22 - MAY 28	1.65±0.87	2.96±0.86	2.71±0.84	3.62±0.91			
MAY 29 - JUNE 4	2.14±0.93	1.30±0.84	< 1.20	1.62±0.85			
JUNE 5 - JUNE 11	< 1.20	1.57±0.87	< 1.20	1.99±0.90			
JUNE 12 - JUNE 18	2.14±0.84	< 1.20	1.47±0.87	1.30±0.89	2.68±1.07	< 1.20	2.11±1.08
JUNE 19 - JUNE 25	1.80±0.86	2.12±0.85	2.81±0.87	1.62±0.79			
JUNE 26 - JULY 2	1.77±0.81	2.03±0.83		1.49±0.79			
MAXIMUM	4.48±0.97	3.24±0.78	3.27±0.77	3.62±0.91	3.13±0.91	3.03±0.86	3.78±1.01
AVERAGE	2.17	2.16	2.16	2.06	2.65	2.52	3.02
MINIMUM	1.28±0.74	1.23±0.75	1.20±0.65	1.30±0.89	1.74±0.92	2.22±1.02	1.91±0.93

ALL VALUES GIVEN AS < ARE LESS THAN THE LLD CORRECTED FOR DECAY.

TABLE V B

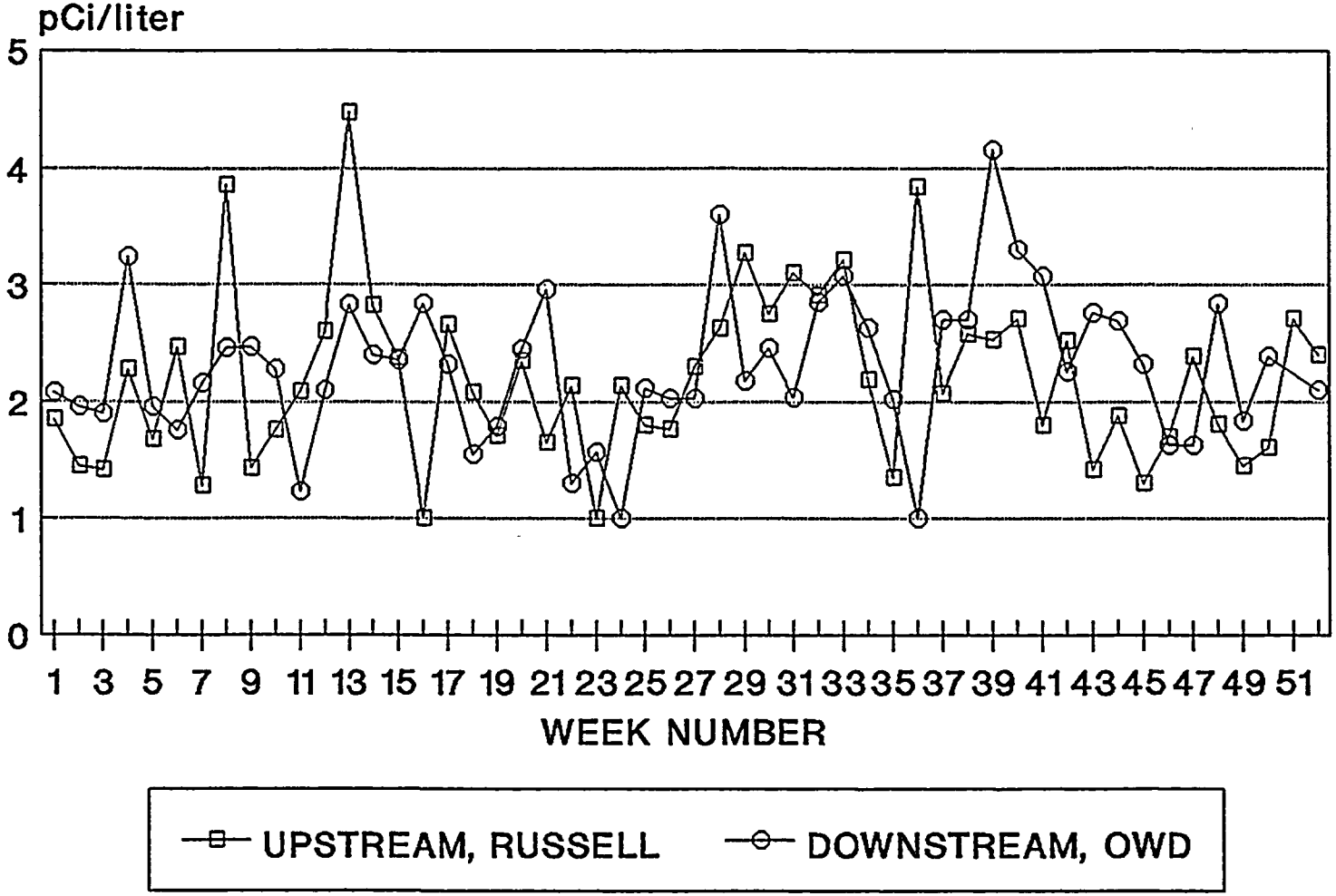
1988 ENVIRONMENTAL WATER SAMPLES GROSS BETA ANALYSES
RESULTS IN pCi/L

WEEK OF	RUSSELL	O.W.D.	CIRC. IN	CIRC. OUT	DEER CREEK	TAP	WELL 'B'
JULY 3 - JULY 9	2.30±0.94	2.03±0.83		1.49±0.79			
JULY 10 - JULY 16	2.63±0.78	3.60±0.84	1.99±0.83	2.30±0.77		1.47±0.80	3.83±1.08
JULY 17 - JULY 23	3.27±0.96	2.18±0.82	1.64±0.85	1.91±0.78			
JULY 24 - JULY 30	2.75±0.97	2.46±0.79	2.33±0.79	1.42±0.76			
JULY 31 - AUG. 6	3.10±0.92	2.04±0.88	1.48±0.86	1.65±0.88			
AUG. 7 - AUG. 13	2.91±0.92	2.85±0.93	2.23±0.91	2.22±0.92			
AUG. 14 - AUG. 20	3.21±0.99	3.07±1.00	1.86±0.93	1.61±0.95		2.65±0.85	4.55±1.13
AUG. 21 - AUG. 27	2.19±0.85	2.63±0.82	2.49±0.81	2.28±0.81			
AUG. 28 - SEPT. 3	1.35±0.78	2.02±0.84	1.96±0.85	1.49±0.80			
SEPT. 4 - SEPT. 10	3.84±0.92	< 1.20	1.88±0.81	1.45±0.78			
SEPT. 11 - SEPT. 17	2.07±0.84	2.70±0.90	2.49±0.85	3.07±0.90		2.15±0.82	2.43±1.03
SEPT. 18 - SEPT. 24	2.58±0.83	2.70±0.90	1.91±0.82	1.50±0.75			
SEPT. 25 - OCT. 1	2.53±0.81	4.16±0.93	3.52±0.87	3.29±0.88			
OCT. 2 - OCT. 8	2.71±0.86	3.30±0.88	3.58±0.88	2.49±0.80			
OCT. 9 - OCT. 15	1.80±0.83	3.07±0.90	2.39±0.89	2.11±0.81		2.69±0.86	4.57±1.08
OCT. 16 - OCT. 22	2.52±0.83	2.26±0.82	1.86±0.79	2.84±0.05	3.13±1.06		
OCT. 23 - OCT. 29	1.42±0.77	2.76±0.91	2.50±0.88	2.07±0.84			
OCT. 30 - NOV. 5	1.88±0.83	2.69±0.88		2.28±0.83			
NOV. 6 - NOV. 12	1.30±0.77	2.32±0.81	2.09±0.78	1.47±0.74			
NOV. 13 - NOV. 19	1.70±0.78	1.63±0.87	1.62±0.78	2.08±0.83	3.24±0.95	2.82±0.82	4.55±1.01
NOV. 20 - NOV. 26	2.39±0.82	1.63±0.79	< 1.20	1.87±0.84			
NOV. 27 - DEC. 3	1.81±0.75	2.84±0.85	1.67±0.78	2.47±0.83			
DEC. 4 - DEC. 10	1.45±0.85	1.84±0.77	3.16±0.92	2.46±0.76			
DEC. 11 - DEC. 17	1.61±0.70	2.39±0.80	2.51±0.76	2.18±0.76	4.01±0.96	1.68±0.74	3.33±0.92
DEC. 18 - DEC. 24	2.71±0.85		1.62±0.76	1.77±0.71			
DEC. 25 - DEC. 31	2.40±0.85	2.10±0.82	2.56±0.81	1.85±0.79			
MAXIMUM	3.84±0.92	4.16±0.93	3.58±0.88	3.29±0.88	4.01±0.96	2.82±0.82	4.57±1.08
AVERAGE	2.32	2.55	2.23	2.07	3.46	2.24	3.88
MINIMUM	1.30±0.77	1.63±0.87	1.48±0.86	1.42±0.76	3.13±1.06	1.47±0.80	2.43±1.03

ALL VALUES GIVEN AS < ARE LESS THAN THE LLD CORRECTED FOR DECAY.

ENVIRONMENTAL WATER SAMPLES

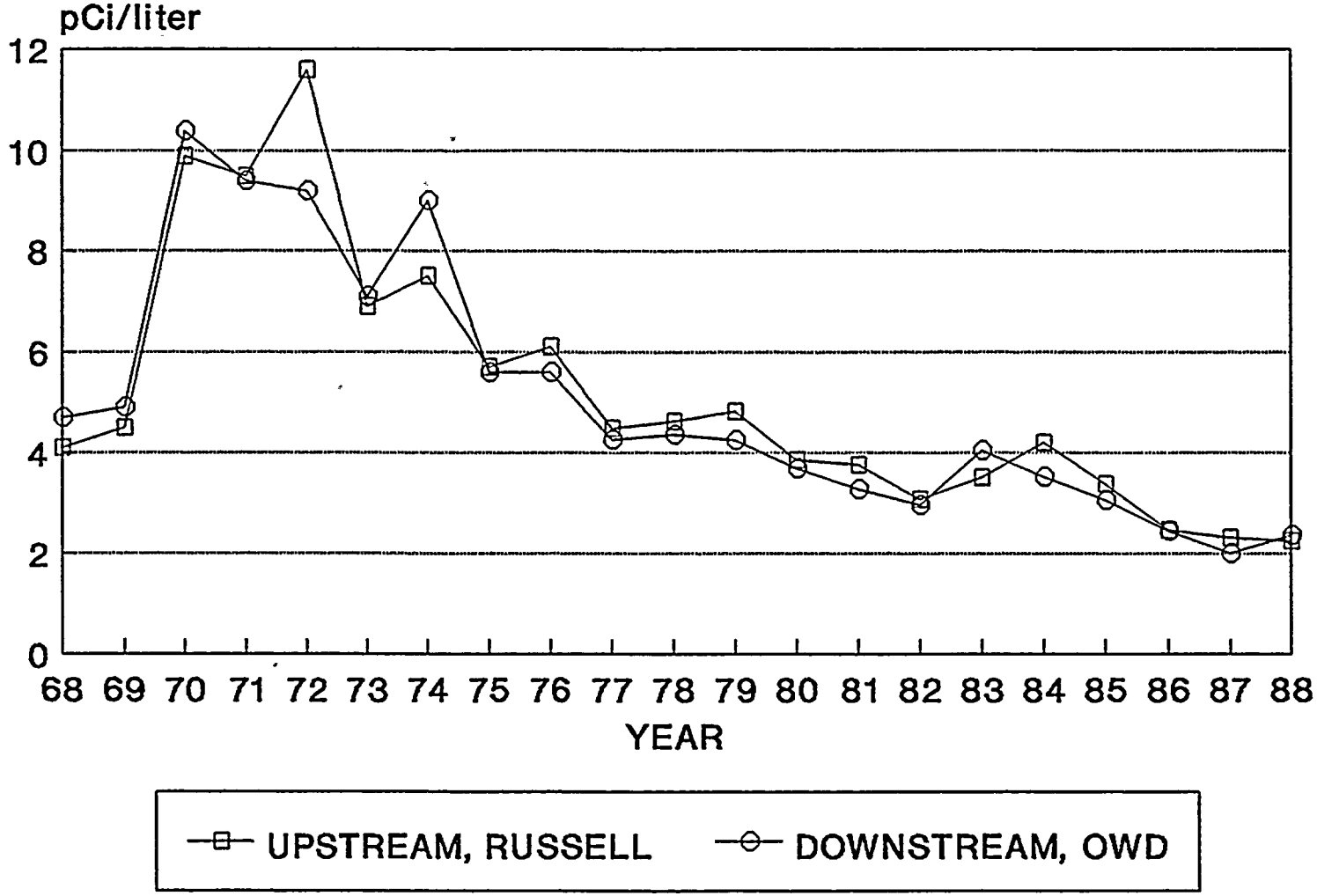
GROSS BETA ANALYSIS FOR 1988
R. E. GINNA POWER STATION



ALL VALUES PLOTTED AT 1.00 pCi/L
ARE LLD VALUES.

ANNUAL TRENDING OF ENVIRONMENTAL WATERS

GROSS BETA ANALYSIS
R. E. GINNA POWER STATION



YEARS 1968 - 1988

TABLE VI A

ENVIRONMENTAL WATER SAMPLES TRITIUM ANALYSIS
RESULTS IN pCi/L

MONTH OF	RUSSELL	O.W.D.	CIRC. IN	CIRC. OUT	DEER CREEK	TAP	WELL 'B'
JANUARY	< 595	< 595	< 595	< 595	< 595	< 595	700±360
FEBRUARY	< 615	< 615	< 615	< 615	< 610	< 610	< 610
MARCH	< 700	< 700	< 700	< 700	720±410	< 650	800±390
APRIL	< 690	< 690	< 690	< 690	830±440	< 690	< 690
MAY	< 550	< 550	< 550	< 550	< 690	740±430	< 690
JUNE	770±380	< 625	< 625	< 625	< 560	< 560	< 560
JULY	< 570	< 570	< 570	< 570	(a)	(a)	(a)
AUGUST	< 570	< 570	< 570	< 570	(a)	< 630	< 630
SEPTEMBER	< 580	< 580	< 580	< 580	(a)	< 580	< 580
OCTOBER	< 570	< 570	< 570	< 570	< 570	< 570	< 570
NOVEMBER	< 520	< 520	< 520	< 520	550±330	< 520	890±330
DECEMBER	< 640	< 640	< 640	< 640	< 715	745±450	< 715

ALL VALUES GIVEN AS < ARE LESS THAN THE LLD CORRECTED FOR DECAY.

(a) No Sample Taken for Tritium.

TABLE VI B

FALLOUT TRITIUM ANALYSIS
RESULTS IN pCi/L

MONTH OF	STATION 3	STATION 5	STATION 8	STATION 10	STATION 12
JANUARY	< 595	< 595	< 595	< 595	< 595
FEBRUARY	< 615	< 615	< 615	< 615	< 615
MARCH	< 700	< 700	< 700	< 700	< 700
APRIL	< 690	< 690	< 690	< 690	< 690
MAY	< 600	< 600	< 600	< 600	< 600
JUNE	< 625	< 625	< 625	< 625	< 625
JULY	< 570	< 570	< 570	< 570	< 570
AUGUST	< 570	< 570	< 570	< 570	< 570
SEPTEMBER	< 580	< 580	< 580	< 580	< 580
OCTOBER	< 570	< 570	< 570	< 570	< 570
NOVEMBER	< 520	< 520	< 520	< 520	< 520
DECEMBER		< 640	< 640	< 640	< 640

ALL VALUES GIVEN AS < ARE LESS THAN THE LLD CORRECTED FOR DECAY.

TABLE VI C

IODINE IN WATER
RESULTS IN pCi/L

MONTH OF	RUSSELL	O.W.D.	CIRC. IN	CIRC. OUT	DEER CREEK	TAP	WELL "D"
JANUARY	<0.37	<0.29	<0.58	<0.26	<0.26	<0.32	<0.77
FEBRUARY	<0.32	<0.35	<0.49	<0.35	<0.30	<0.35	<0.33
MARCH	<0.36	<0.50	<0.53	<0.38	<0.24	<0.32	<0.29
APRIL	<0.35	<0.35	<0.48	<0.31	<0.36	<0.35	<0.35
MAY	<0.36	<0.39	<0.43	<0.31	<0.39	<0.34	<0.30
JUNE	<0.34	<0.35	<0.38	<0.31	<0.38	<0.38	<0.37
JULY	<0.45	<0.32	<0.56	<0.39	(a)	<0.33	<0.38
AUGUST	<0.39	<0.47	<0.59	<1.14	(a)	<0.40	<0.38
SEPTEMBER	<0.50	<0.32	<0.51	<0.28	(a)	<0.35	<0.38
OCTOBER	<0.49	<0.26	<0.30	<0.40	<0.30	<0.40	<0.35
NOVEMBER	<0.50	<0.52	<0.50	<0.48	<0.41	<0.28	<0.31
DECEMBER	<0.40	<0.58	<0.30	<0.23	<0.38	<0.33	<0.43

ALL VALUES GIVEN AS < ARE LESS THAN THE LLD CORRECTED FOR DECAY.

(a) No Sample Taken.

TABLE VII A

RUSSELL STATION WATER GAMMA ISOTOPIC ANALYSES
RESULTS IN pCi/LITER

BETWEEN DATES OF	7 BE	51 CR	54 MN	59 FE	58 CO	60 CO	65 ZN	95 ZR	95 NB
JAN. 1 - JAN. 31	< 29	< 36	< 3	< 6	< 3	< 4	< 5	< 5	< 3
FEB. 1 - FEB. 29	< 46	< 48	< 5	< 8	< 5	< 6	< 10	< 8	< 5
MARCH 1 - MARCH 31	< 51	< 57	< 5	< 9	< 5	< 6	< 10	< 9	< 5
APRIL 1 - APRIL 30	< 45	< 49	< 5	< 8	< 5	< 6	< 9	< 8	< 5
MAY 1 - MAY 31		Sample Lost							
JUNE 1 - JUNE 30	< 46	< 57	< 5	< 9	< 5	< 6	< 10	< 9	< 5
JULY 1 - JULY 31	< 45	< 58	< 5	< 9	< 5	< 6	< 9	< 9	< 5
AUG. 1 - AUG. 31	< 51	< 55	< 6	< 10	< 6	< 7	< 11	< 9	< 6
SEPT. 1 - SEPT. 30	< 48	< 52	< 5	< 9	< 5	< 6	< 10	< 9	< 5
OCT. 1 - OCT. 31	< 50	< 54	< 5	< 9	< 5	< 6	< 10	< 9	< 5
NOV. 1 - NOV. 30	< 51	< 54	< 5	< 10	< 5	< 6	< 11	< 9	< 5
DEC. 1 - DEC. 31	< 47	< 51	< 5	< 9	< 5	< 6	< 9	< 9	< 5

BETWEEN DATES OF	103 RU	106 RU	134 CS	137 CS	140 BA	141 CE	144 CE	226 RA
JAN. 1 - JAN. 31	< 4	< 27	< 3	< 3	< 17	< 8	< 34	< 6
FEB. 1 - FEB. 29	< 5	< 46	< 5	< 6	< 20	< 12	< 52	< 11
MARCH 1 - MARCH 31	< 6	< 48	< 5	< 6	< 27	< 13	< 54	< 10
APRIL 1 - APRIL 30	< 5	< 48	< 5	< 6	< 19	< 11	< 52	< 10
MAY 1 - MAY 31								
JUNE 1 - JUNE 30	< 5	< 47	< 5	< 6	< 20	< 12	< 56	< 11
JULY 1 - JULY 31	< 6	< 46	< 5	< 6	< 23	< 13	< 57	< 10
AUG. 1 - AUG. 31	< 6	< 53	< 6	< 6	< 23	< 14	< 66	< 12
SEPT. 1 - SEPT. 30	< 6	< 50	< 5	< 6	< 22	< 13	< 61	< 11
OCT. 1 - OCT. 31	< 6	< 50	< 5	< 6	< 23	< 14	< 62	< 11
NOV. 1 - NOV. 30	< 6	< 48	< 5	< 6	< 22	< 14	< 64	< 11
DEC. 1 - DEC. 31	< 5	< 47	< 5	< 6	< 21	< 13	< 60	< 11

ALL VALUES GIVEN AS < ARE LESS THAN THE LLD CORRECTED FOR DECAY.

TABLE VII B

ONTARIO WATER DISTRICT WATER GAMMA ISOTOPIC ANALYSES
RESULTS IN pCi/LITER

BETWEEN DATES OF	7 BE	51 CR	54 MN	59 FE	58 CO	60 CO	65 ZN	95 ZR	95 NB	103 RU	106 RU	134 CS	137 CS	140 BA	141 CE	144 CE	226 RA
7 - JAN. 21	< 28	< 30	< 3	< 5	< 3	< 4	< 5	< 5	< 3	< 3	< 28	< 3	< 3	< 10	< 8	< 34	< 6
21 - FEB. 4	< 25	< 27	< 3	< 5	< 3	< 3	< 5	< 5	< 3	< 3	< 28	< 3	< 3	< 11	< 7	< 33	< 6
4 - FEB. 18	< 45	< 46	< 5	< 9	< 5	< 6	< 10	< 8	< 5	< 5	< 44	< 5	< 6	< 18	< 11	< 51	< 10
18 - MARCH 3	< 43	< 46	< 4	< 8	< 4	< 5	< 9	< 8	< 5	< 5	< 46	< 5	< 6	< 18	< 11	< 52	< 10
3 - MARCH 17	< 44	< 47	< 5	< 9	< 4	< 6	< 10	< 8	< 5	< 5	< 44	< 5	< 6	< 18	< 11	< 52	< 10
17 - MARCH 31	< 46	< 47	< 5	< 9	< 5	< 6	< 9	< 9	< 5	< 6	< 46	< 5	< 6	< 19	< 11	< 53	< 11
31 - APRIL 14	< 47	< 58	< 5	< 9	< 5	< 6	< 9	< 9	< 5	< 6	< 48	< 5	< 6	< 28	< 13	< 53	< 10
14 - APRIL 28	< 48	< 57	< 5	< 10	< 5	< 6	< 10	< 9	< 5	< 6	< 48	< 5	< 6	< 27	< 13	< 53	< 10
28 - MAY 12	< 52	< 61	< 5	< 9	< 5	< 6	< 11	< 10	< 6	< 6	< 51	< 5	< 6	< 32	< 14	< 54	< 10
12 - MAY 26	< 50	< 62	< 5	< 10	< 5	< 6	< 9	< 9	< 6	< 6	< 48	< 5	< 6	< 32	< 14	< 55	< 11
26 - JUNE 9	< 45	< 53	< 5	< 9	< 5	< 6	< 9	< 9	< 5	< 5	< 46	< 5	< 6	< 18	< 12	< 55	< 10
9 - JUNE 23	< 47	< 53	< 5	< 8	< 5	< 7	< 10	< 9	< 5	< 6	< 48	< 5	< 6	< 21	< 12	< 55	< 11
23 - JULY 7	< 46	< 57	< 5	< 9	< 5	< 6	< 11	< 9	< 5	< 6	< 48	< 5	< 6	< 21	< 13	< 58	< 10
7 - JULY 21	< 45	< 54	< 5	< 8	< 5	< 6	< 10	< 8	< 5	< 5	< 46	< 5	< 6	< 17	< 12	< 55	< 10
21 - AUG. 4	< 52	< 71	< 5	< 10	< 5	< 6	< 10	< 10	< 6	< 6	< 47	< 5	< 6	< 34	< 15	< 58	< 11
4 - AUG. 18	< 52	< 56	< 6	< 9	< 6	< 6	< 11	< 10	< 6	< 6	< 55	< 5	< 7	< 22	< 14	< 64	< 12
18 - SEPT. 1	< 56	< 66	< 5	< 11	< 6	< 7	< 12	< 10	< 6	< 7	< 55	< 5	< 6	< 31	< 16	< 65	< 12
1 - SEPT. 15	< 54	< 64	< 6	< 10	< 6	< 7	< 11	< 10	< 6	< 7	< 53	< 6	< 6	< 31	< 16	< 65	< 12
15 - SEPT. 29	< 51	< 63	< 5	< 10	< 5	< 6	< 10	< 9	< 6	< 6	< 50	< 5	< 6	< 29	< 15	< 63	< 11
29 - OCT. 13	< 50	< 54	< 5	< 10	< 5	< 6	< 10	< 10	< 5	< 6	< 50	< 5	< 6	< 22	< 14	< 61	< 11
13 - OCT. 27	< 54	< 66	< 5	< 10	< 5	< 6	< 10	< 10	< 6	< 7	< 53	< 5	< 6	< 32	< 16	< 62	< 11
27 - NOV. 10	< 52	< 61	< 5	< 10	< 5	< 6	< 10	< 9	< 6	< 6	< 51	< 5	< 6	< 29	< 15	< 61	< 11
10 - NOV. 24	< 48	< 49	< 5	< 9	< 5	< 6	< 10	< 8	< 5	< 6	< 48	< 5	< 6	< 20	< 13	< 61	< 11
24 - DEC. 8	< 54	< 65	< 5	< 11	< 6	< 6	< 10	< 10	< 6	< 7	< 51	< 5	< 6	< 32	< 15	< 64	< 11
8 - DEC. 22	< 54	< 63	< 5	< 11	< 5	< 6	< 11	< 10	< 6	< 7	< 51	< 5	< 6	< 31	< 16	< 63	< 11
22 - JAN. 5	< 52	< 61	< 5	< 10	< 5	< 6	< 10	< 10	< 6	< 6	< 50	< 5	< 5	< 31	< 15	< 60	< 11

ALL VALUES GIVEN AS < ARE LESS THAN THE LLD CORRECTED FOR DECAY.

TABLE VII C

CIRC. OUT WATER GAMMA ISOTOPIC ANALYSES
RESULTS IN pCi/LITER

BETWEEN DATES OF	7 BE	51 CR	54 MN	59 FE	58 CO	60 CO	65 ZN	95 ZR	95 NB	103 RU	106 RU	134 CS	137 CS	140 BA	141 CE	144 CE	226 RA
JAN. 6 - JAN. 20	< 28	< 30	< 3	< 5	< 3	< 3	< 5	< 5	< 3	< 3	< 29	< 3	< 3	< 12	< 8	< 34	< 7
JAN. 20 - FEB. 3	< 29	< 35	< 3	< 5	< 3	< 4	< 5	< 5	< 3	< 4	< 28	< 3	< 4	< 15	< 8	< 33	< 6
FEB. 3 - FEB. 17	< 44	< 48	< 5	< 9	< 5	< 5	< 9	< 8	< 5	< 5	< 47	< 4	< 5	< 20	< 11	< 52	< 10
FEB. 17 - MARCH 2	< 46	< 54	< 5	< 9	< 5	< 5	< 9	< 9	< 5	< 6	< 46	< 5	< 6	< 25	< 12	< 51	< 10
MARCH 2 - MARCH 16	< 43	< 46	< 5	< 8	< 4	< 5	< 9	< 8	< 5	< 5	< 45	< 5	< 6	< 19	< 11	< 52	< 10
MARCH 16 - MARCH 30	Data Lost																
MARCH 30 - APRIL 13	< 44	< 48	< 5	< 9	< 5	< 6	< 9	< 8	< 5	< 5	< 46	< 5	< 6	< 19	< 12	< 53	< 10
APRIL 13 - APRIL 27	< 46	< 48	< 5	< 9	< 5	< 6	< 10	< 9	< 4	< 5	< 48	< 5	< 5	< 18	< 12	< 55	< 11
APRIL 27 - MAY 11	< 50	< 59	< 5	< 9	< 5	< 6	< 9	< 9	< 5	< 6	< 47	< 5	< 6	< 28	< 13	< 54	< 10
MAY 11 - MAY 25	< 50	< 62	< 5	< 10	< 5	< 6	< 9	< 9	< 6	< 6	< 48	< 5	< 6	< 32	< 14	< 55	< 11
MAY 25 - JUNE 8	< 44	< 54	< 5	< 9	< 5	< 6	< 9	< 9	< 5	< 5	< 48	< 5	< 6	< 17	< 12	< 56	< 10
JUNE 8 - JUNE 22	< 48	< 51	< 5	< 9	< 5	< 7	< 9	< 9	< 5	< 6	< 49	< 5	< 6	< 20	< 12	< 54	< 11
JUNE 22 - JULY 6	Data Lost																
JULY 6 - JULY 20	< 48	< 61	< 5	< 10	< 5	< 6	< 10	< 9	< 6	< 6	< 48	< 5	< 6	< 26	< 14	< 57	< 11
JULY 20 - AUG. 3	< 53	< 72	< 5	< 11	< 5	< 6	< 10	< 10	< 6	< 6	< 47	< 5	< 6	< 35	< 16	< 61	< 10
AUG. 3 - AUG. 17	< 54	< 64	< 5	< 10	< 6	< 6	< 10	< 10	< 6	< 7	< 50	< 6	< 6	< 31	< 16	< 64	< 12
AUG. 17 - AUG. 31	< 56	< 64	< 6	< 11	< 5	< 7	< 11	< 10	< 6	< 7	< 51	< 6	< 6	< 32	< 16	< 66	< 12
AUG. 31 SEPT. 14	< 56	< 62	< 5	< 11	< 6	< 7	< 10	< 10	< 6	< 7	< 52	< 6	< 7	< 29	< 16	< 64	< 12
SEPT. 14 - SEPT. 28	< 51	< 62	< 5	< 10	< 5	< 6	< 10	< 10	< 6	< 7	< 50	< 5	< 6	< 28	< 15	< 61	< 11
SEPT. 28 - OCT. 12	Data Lost																
OCT. 12 - OCT. 26	< 51	< 61	< 5	< 10	< 5	< 6	< 11	< 10	< 6	< 6	< 51	< 5	< 6	< 28	< 15	< 62	< 11
OCT. 26 - NOV. 9	< 52	< 62	< 5	< 10	< 5	< 6	< 11	< 9	< 6	< 7	< 50	< 5	< 6	< 29	< 15	< 63	< 11
NOV. 9 - NOV. 23	< 47	< 49	< 5	< 9	< 5	< 6	< 10	< 9	< 5	< 6	< 51	< 5	< 6	< 19	< 13	< 60	< 11
NOV. 23 - DEC. 7	< 52	< 62	< 5	< 11	< 5	< 6	< 11	< 10	< 6	< 6	< 51	< 5	< 6	< 33	< 16	< 63	< 11
DEC. 7 - DEC. 21	< 52	< 59	< 5	< 10	< 5	< 6	< 10	< 10	< 6	< 6	< 49	< 5	< 6	< 27	< 14	< 60	< 11
DEC. 21 - JAN. 4	< 52	< 61	< 5	< 10	< 5	< 6	< 10	< 9	< 6	< 6	< 49	< 5	< 6	< 30	< 15	< 60	< 11

ALL VALUES GIVEN AS < ARE LESS THAN THE LLD CORRECTED FOR DECAY.

TABLE VII D

DEER CREEK WATER GAMMA ISOTOPIC ANALYSES
RESULTS IN pCi/LITER

BETWEEN DATES OF	7 BE	51 CR	54 MN	59 FE	58 CO	60 CO	65 ZN	95 ZR	95 NB
JAN. 1 - JAN. 31	< 50	< 33	< 7	< 11	< 7	< 6	< 12	< 12	< 6
FEB. 1 - FEB. 29	< 43	< 46	< 5	< 8	< 5	< 5	< 10	< 8	< 5
MARCH 1 - MARCH 31	< 47	< 51	< 5	< 8	< 5	< 6	< 11	< 9	< 5
APRIL 1 - APRIL 30	< 45	< 47	< 5	< 9	< 5	< 6	< 10	< 8	< 5
MAY 1 - MAY 31	< 46	< 49	< 5	< 8	< 5	< 6	< 10	< 8	< 5
JUNE 1 - JUNE 30	< 45	< 55	< 5	< 8	< 5	< 6	< 11	< 9	< 5
JULY 1 - JULY 31	No Flow in Creek								
AUG. 1 - AUG. 31	No Flow in Creek								
SEPT. 1 - SEPT. 30	No Flow in Creek								
OCT. 1 - OCT. 31	< 49	< 51	< 5	< 9	< 5	< 6	< 11	< 9	< 5
NOV. 1 - NOV. 30	< 48	< 52	< 5	< 10	< 5	< 6	< 11	< 8	< 5
DEC. 1 - DEC. 31	< 49	< 55	< 5	< 9	< 5	< 6	< 11	< 9	< 5

BETWEEN DATES OF	103 RU	106 RU	134 CS	137 CS	140 BA	141 CE	144 CE	226 RA
JAN. 1 - JAN. 31	< 6	< 60	< 6	< 7	< 22	< 5	< 22	< 13
FEB. 1 - FEB. 29	< 5	< 44	< 5	< 5	< 18	< 11	< 51	< 12
MARCH 1 - MARCH 31	< 6	< 47	< 6	< 6	< 21	< 12	< 55	< 12
APRIL 1 - APRIL 30	< 5	< 46	< 5	< 6	< 19	< 12	< 53	< 11
MAY 1 - MAY 31	< 5	< 46	< 5	< 6	< 20	< 12	< 53	< 11
JUNE 1 - JUNE 30	< 5	< 47	< 5	< 6	< 18	< 12	< 58	< 11
JULY 1 - JULY 31								
AUG. 1 - AUG. 31								
SEPT. 1 - SEPT. 30								
OCT. 1 - OCT. 31	< 6	< 51	< 6	< 6	< 20	< 13	< 63	< 12
NOV. 1 - NOV. 30	< 6	< 50	< 6	< 6	< 20	< 13	< 61	< 12
DEC. 1 - DEC. 31	< 6	< 51	< 6	< 6	< 23	< 14	< 63	< 12

ALL VALUES GIVEN AS < ARE LESS THAN THE LLD CORRECTED FOR DECAY.

TABLE VII E

TAP WATER GAMMA ISOTOPIC ANALYSES
RESULTS IN pCi/LITER

BETWEEN DATES OF	7 BE	51 CR	54 MN	59 FE	58 CO	60 CO	65 ZN	95 ZR	95 ND
JAN. 1 - JAN. 31	< 27	< 29	< 3	< 5	< 3	< 4	< 6	< 5	< 3
FEB. 1 - FEB. 29	< 43	< 45	< 4	< 8	< 4	< 5	< 9	< 8	< 5
MARCH 1 - MARCH 31	Sample Not Taken								
APRIL 1 - APRIL 30	< 45	< 49	< 5	< 8	< 5	< 5	< 9	< 9	< 5
MAY 1 - MAY 31	< 44	< 49	< 5	< 8	< 5	< 5	< 9	< 8	< 5
JUNE 1 - JUNE 30	< 46	< 55	< 5	< 9	< 5	< 7	< 11	< 8	< 5
JULY 1 - JULY 31	< 45	< 53	< 5	< 9	< 5	< 6	< 9	< 9	< 5
AUG. 1 - AUG. 31	< 44	< 51	< 5	< 8	< 5	< 6	< 10	< 9	< 5
SEPT. 1 - SEPT. 30	< 51	< 54	< 5	< 8	< 5	< 6	< 10	< 10	< 5
OCT. 1 - OCT. 31	< 47	< 50	< 5	< 8	< 5	< 6	< 10	< 8	< 5
NOV. 1 - NOV. 30	< 49	< 51	< 5	< 10	< 5	< 6	< 10	< 9	< 5
DEC. 1 - DEC. 31	< 49	< 50	< 5	< 9	< 5	< 6	< 10	< 9	< 5

BETWEEN DATES OF	103 RU	106 RU	134 CS	137 CS	140 BA	141 CE	144 CE	226 RA
JAN. 1 - JAN. 31	< 3	< 20	< 3	< 4	< 12	< 7	< 33	< 7
FEB. 1 - FEB. 29	< 5	< 42	< 5	< 4	< 18	< 11	< 49	< 10
MARCH 1 - MARCH 31								
APRIL 1 - APRIL 30	< 5	< 46	< 5	< 6	< 19	< 11	< 52	< 11
MAY 1 - MAY 31	< 5	< 44	< 5	< 6	< 19	< 12	< 54	< 10
JUNE 1 - JUNE 30	< 5	< 49	< 5	< 6	< 18	< 12	< 57	< 11
JULY 1 - JULY 31	< 5	< 48	< 5	< 6	< 17	< 12	< 56	< 11
AUG. 1 - AUG. 31	< 5	< 48	< 5	< 6	< 17	< 12	< 56	< 10
SEPT. 1 - SEPT. 30	< 6	< 55	< 6	< 6	< 21	< 13	< 64	< 12
OCT. 1 - OCT. 31	< 6	< 50	< 5	< 6	< 20	< 13	< 59	< 10
NOV. 1 - NOV. 30	< 6	< 49	< 5	< 6	< 20	< 13	< 62	< 11
DEC. 1 - DEC. 31	< 6	< 49	< 5	< 6	< 19	< 13	< 60	< 11

ALL VALUES GIVEN AS < ARE LESS THAN THE LLD CORRECTED FOR DECAY.

WELL 'B' WATER GAMMA ISOTOPIC ANALYSES
RESULTS IN pCi/LITER

BETWEEN DATES OF	7 BE	51 CR	54 MN	59 FE	58 CO	60 CO	65 ZN	95 ZR	95 NB
JAN. 1 - JAN. 31	< 28	< 33	< 3	< 5	< 3	< 4	< 5	< 5	< 3
FEB. 1 - FEB. 29	< 43	< 48	< 5	< 8	< 4	< 6	< 11	< 8	< 5
MARCH 1 - MARCH 31	< 47	< 51	< 5	< 9	< 5	< 6	< 11	< 9	< 5
APRIL 1 - APRIL 30	< 48	< 51	< 5	< 9	< 5	< 6	< 11	< 8	< 5
MAY 1 - MAY 31	< 46	< 50	< 5	< 9	< 5	< 6	< 10	< 8	< 5
JUNE 1 - JUNE 30	< 46	< 54	< 5	< 9	< 5	< 7	< 11	< 9	< 5
JULY 1 - JULY 31	< 45	< 54	< 5	< 9	< 5	< 6	< 11	< 9	< 5
AUG. 1 - AUG. 31	< 45	< 55	< 5	< 9	< 5	< 7	< 11	< 8	< 5
SEPT. 1 - SEPT. 30	< 52	< 55	< 6	< 10	< 6	< 8	< 12	< 10	< 6
OCT. 1 - OCT. 31	< 48	< 52	< 5	< 9	< 5	< 6	< 11	< 9	< 5
NOV. 1 - NOV. 30	< 48	< 53	< 5	< 10	< 5	< 6	< 12	< 9	< 5
DEC. 1 - DEC. 31	< 48	< 51	< 5	< 9	< 9	< 6	< 11	< 9	< 5

BETWEEN DATES OF	103 RU	106 RU	134 CS	137 CS	140 BA	141 CE	144 CE	226 RA
JAN. 1 - JAN. 31	< 3	< 27	< 3	< 4	< 12	< 8	< 36	24±6
FEB. 1 - FEB. 29	< 5	< 47	< 6	< 6	< 18	< 11	< 52	< 13
MARCH 1 - MARCH 31	< 6	< 48	< 6	< 6	< 19	< 12	< 56	< 14
APRIL 1 - APRIL 30	< 5	< 47	< 5	< 6	< 19	< 12	< 56	< 14
MAY 1 - MAY 31	< 5	< 45	< 5	< 5	< 19	< 12	< 54	< 13
JUNE 1 - JUNE 30	< 5	< 47	< 6	< 6	< 17	< 12	< 58	< 14
JULY 1 - JULY 31	< 5	< 48	< 5	< 6	< 19	< 12	< 58	< 12
AUG. 1 - AUG. 31	< 5	< 47	< 6	< 6	< 18	< 13	< 60	< 13
SEPT. 1 - SEPT. 30	< 6	< 55	< 6	< 6	< 21	< 14	< 65	< 14
OCT. 1 - OCT. 31	< 6	< 51	< 6	< 6	< 20	< 13	< 60	< 13
NOV. 1 - NOV. 30	< 6	< 50	< 6	< 7	< 20	< 13	< 63	< 13
DEC. 1 - DEC. 31	< 6	< 53	< 6	< 6	< 20	< 13	< 62	< 13

ALL VALUES GIVEN AS < ARE LESS THAN THE LLD CORRECTED FOR DECAY.

TABLE VIII

FALLOUT GROSS BETA ANALYSES
RESULTS IN $pCi/M^2/DAY$

MONTH OF	STATION 3	STATION 5	STATION 8	STATION 10	STATION 12
JANUARY	3.16±0.43	1.54±0.25	2.32±0.30	6.10±0.57	3.01±0.44
FEBRUARY	3.61±0.78	5.94±0.83	4.22±0.96	3.36±0.74	3.84±0.88
MARCH	5.76±0.89	5.47±0.90	3.44±0.75	3.42±0.74	3.98±0.64
APRIL	5.27±1.51	4.26±1.43	4.38±1.05	12.05±1.55	7.00±1.05
MAY	8.95±1.14	8.71±1.19	3.31±0.97	15.05±1.41	4.96±1.01
JUNE	4.42±0.86	4.53±0.98	1.37±0.73	7.33±2.08	6.35±0.71
JULY	2.00±1.45	5.65±1.70	8.56±2.36	4.12±1.66	4.93±1.86
AUGUST	3.90±1.67	6.17±1.78	2.92±1.63	19.03±2.28	4.58±1.72
SEPTEMBER	7.59±1.57	5.97±1.48	6.63±1.62	3.93±1.18	3.81±1.26
OCTOBER	7.03±2.38	5.09±2.17	3.83±1.66	2.26±1.90	8.44±2.41
NOVEMBER	1.88±0.57	4.54±0.97	2.24±0.72	5.45±1.01	8.59±1.39
DECEMBER	2.84±0.56	3.63±0.72	3.30±0.59	3.94±0.65	3.37±1.02
MAXIMUM	8.95±1.14	8.71±1.19	8.56±2.36	19.03±2.28	8.59±1.39
AVERAGE	4.70	5.12	3.88	7.17	5.24
MINIMUM	1.88±0.57	1.54±0.25	1.37±0.73	2.26±1.90	3.01±0.44

TABLE IX
EXTERNAL PENETRATING RADIATION
THERMOLUMINESCENT DOSIMETERY 1988

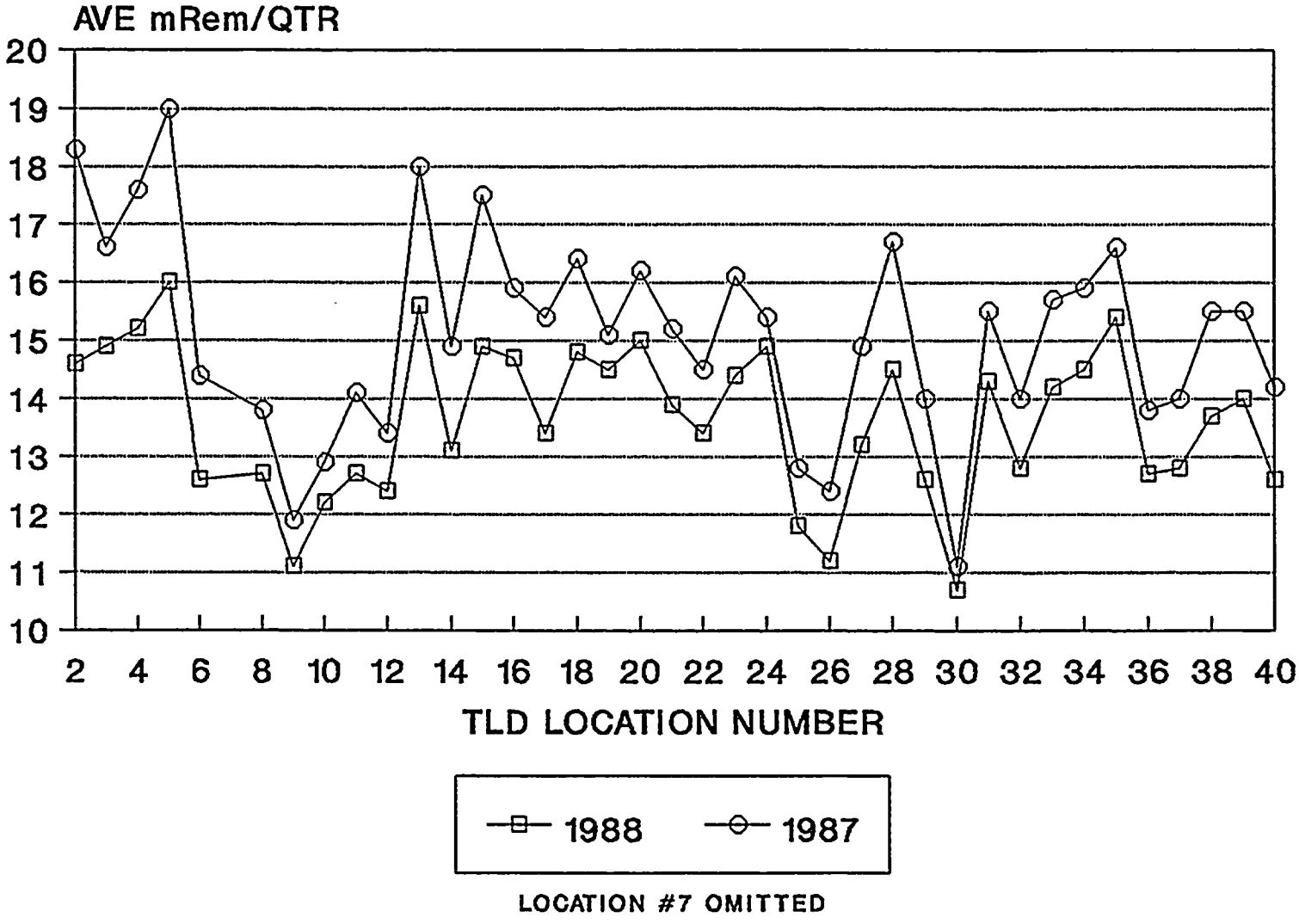
Units = Mr/91 day Qtr.

	LOCATION	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
#2 - #7 plus #13 are on-site near the line of highest annual average ground level concentration.	2	15.3 +/- 3.8	13.9 +/- 3.5	14.4 +/- 3.6	14.7 +/- 3.7
	3	15.7 +/- 4.0	14.6 +/- 3.7	14.0 +/- 3.5	15.2 +/- 3.8
	4	15.7 +/- 4.0	14.9 +/- 3.8	14.5 +/- 3.7	15.6 +/- 3.9
	5	18.3 +/- 4.6	14.4 +/- 3.6	15.9 +/- 4.0	15.5 +/- 3.9
	6	12.6 +/- 3.2	12.4 +/- 3.1	11.0 +/- 2.8	14.3 +/- 3.6
	7	40.3 +/- 6.5	34.5 +/- 8.7	29.5 +/- 7.4	37.1 +/- 5.9
	8	11.8 +/- 3.0	12.5 +/- 3.1	12.4 +/- 3.1	13.9 +/- 3.5
#8 - #12 are offsite at a distance of 8 to 15 miles.	9	10.3 +/- 2.6	10.8 +/- 2.7	11.5 +/- 2.9	11.8 +/- 3.0
	10	12.3 +/- 3.1	12.1 +/- 3.0	11.8 +/- 3.0	12.5 +/- 3.2
	11	12.9 +/- 3.3	12.5 +/- 3.2	10.9 +/- 2.7	14.4 +/- 3.6
	12	12.8 +/- 3.2	11.8 +/- 3.0	12.1 +/- 3.1	12.7 +/- 3.2
	13	16.9 +/- 4.3	14.8 +/- 3.7	15.2 +/- 3.8	15.6 +/- 3.9
	14	13.4 +/- 3.4	12.6 +/- 3.2	12.9 +/- 3.2	13.3 +/- 3.4
	15	15.2 +/- 3.8	14.4 +/- 3.6	15.1 +/- 3.8	15.0 +/- 3.8
#14 - #16 are located along a line 3000 ft. west of the plant.	16	13.9 +/- 3.5	13.5 +/- 3.4	14.3 +/- 3.6	17.0 +/- 4.3
	17	14.4 +/- 3.6	13.4 +/- 3.4	12.2 +/- 3.1	13.6 +/- 3.4
	18	15.3 +/- 3.9	14.2 +/- 3.6	14.2 +/- 3.6	15.6 +/- 3.9
#17 - #21 are located along Lake Road.	19	14.7 +/- 3.7	14.2 +/- 3.6	13.7 +/- 3.5	15.2 +/- 3.8
	20	14.9 +/- 3.8	14.8 +/- 3.7	13.8 +/- 3.5	16.5 +/- 4.2
	21	14.0 +/- 3.5	12.9 +/- 3.3	14.2 +/- 3.6	14.4 +/- 3.6
	22	13.5 +/- 3.4	13.7 +/- 3.4	12.7 +/- 3.2	13.5 +/- 3.4
	23	15.4 +/- 3.9	13.8 +/- 3.5	13.6 +/- 3.4	14.9 +/- 3.8
#22 - #24 are located along the east site boundary line.	24	16.1 +/- 4.0	13.8 +/- 3.5	14.8 +/- 3.7	14.8 +/- 3.7
	25	13.1 +/- 3.3	11.5 +/- 2.9	10.5 +/- 2.7	12.2 +/- 3.1
	26	11.3 +/- 2.8	11.0 +/- 2.8	10.8 +/- 2.7	11.6 +/- 2.9
#25 - #30 are offsite at a distance of 8 to 15 miles.	27	13.8 +/- 3.5	12.5 +/- 3.2	13.2 +/- 3.3	13.4 +/- 3.4
	28	15.1 +/- 3.8	13.8 +/- 3.5	15.0 +/- 3.8	14.2 +/- 3.6
	29	12.6 +/- 3.2	11.5 +/- 2.9	12.7 +/- 3.2	13.5 +/- 3.4
	30	10.2 +/- 2.6	10.0 +/- 2.5	10.3 +/- 2.6	12.3 +/- 3.1
	31	15.1 +/- 3.8	14.5 +/- 3.7	13.3 +/- 3.3	14.1 +/- 3.6
	32	12.9 +/- 3.3	13.1 +/- 3.3	12.3 +/- 3.1	12.8 +/- 3.2
#31 through #40 are located in an arc at a distance of 4-5 miles.	33	14.6 +/- 3.7	13.8 +/- 3.5	14.1 +/- 3.6	14.4 +/- 3.6
	34	14.4 +/- 3.6	14.7 +/- 3.7	14.1 +/- 3.6	14.7 +/- 3.7
	35	18.5 +/- 4.7	14.8 +/- 3.7	13.9 +/- 3.5	14.3 +/- 3.6
	36	14.6 +/- 3.7	12.2 +/- 3.1	11.7 +/- 3.0	12.3 +/- 3.1
	37	13.8 +/- 3.5	13.3 +/- 3.4	12.1 +/- 3.0	12.1 +/- 3.0
	38	14.5 +/- 3.7	12.9 +/- 3.3	14.3 +/- 3.6	12.9 +/- 3.3
	39	13.8 +/- 3.5	13.9 +/- 3.5	14.2 +/- 3.6	13.9 +/- 3.5
	40	12.8 +/- 3.2	12.3 +/- 3.1	12.6 +/- 3.2	12.7 +/- 3.2

EXTERNAL PENETRATING RADIATION

THERMOLUMINESCENT DOSIMETRY

R. E. GINNA POWER STATION



LOCATION #7 OMITTED

TABLE X

MILK
RESULTS IN pCi/LITER

FARM	DATE	I-131	CS-137	BA-140	K-40
A	JAN. 12	< 0.37	< 7	<24	1620±110
D	JAN. 14	< 0.30	< 7	<23	1620±110
C	FEB. 9	< 0.38	< 7	<22	1470±130
D	FEB. 11	< 0.38	< 7	<23	1480±130
B	MARCH 8	< 0.33	< 6	<18	1660±110
D	MARCH 9	< 0.36	< 6	<19	1630±100
A	APRIL 12	< 0.34	< 6	<21	1620±110
D	APRIL 14	< 0.39	< 6	<20	1640±110
C	MAY 9	< 0.36	< 8	<20	1750±110
D	MAY 12	< 0.38	< 6	<20	1580±100
B	JUNE 6	< 0.39	< 8	<25	1960±140
D	JUNE 9	< 0.38	< 6	<18	1450±110
A	JUNE 14	< 0.39	< 6	<20	1590±110
C	JUNE 16	< 0.33	< 6	<19	1680±120
B	JUNE 21	< 0.36	< 6	<21	1650±120
D	JUNE 23	< 0.40	< 6	<19	1530±110
A	JUNE 28	< 0.48	< 7	<20	1640±110
C	JUNE 30	< 0.40	< 6	<19	1500±110
B	JULY 5	< 0.56	< 6	<19	1560±110
D	JULY 7	< 0.33	< 6	<19	1710±110
A	JULY 12	< 0.36	< 7	<20	1590±110
C	JULY 14	< 0.34	< 6	<20	1690±120
B	JULY 19	< 0.37	< 6	<19	1570±120
D	JULY 21	< 0.33	< 7	<20	1670±110
A	JULY 26	< 0.42	< 6	<19	1650±110
C	JULY 27	< 0.44	< 6	<20	1620±120
B	AUG. 2	< 0.40	< 6	<20	1670±110
D	AUG. 4	< 0.35	< 6	<20	1580±120
A	AUG. 9	< 0.47	< 8	<25	1590±110
C	AUG. 10	< 0.39	< 7	<20	1740±110
B	AUG. 16	< 0.37	< 6	<19	1620±120
D	AUG. 18	< 0.37	< 7	<22	1610±110
A	AUG. 23	< 0.42	< 8	<25	1590±110
C	AUG. 25	< 0.36	< 7	<23	1640±110
B	AUG. 30	< 0.40	< 7	<23	1640±100
D	SEPT. 1	< 0.43	< 7	<23	1580±110
A	SEPT. 6	< 0.37	< 7	<27	1550±100
C	SEPT. 8	< 0.42	< 7	<22	1660±120
B	SEPT. 13	< 0.36	< 7	<22	1560±110
D	SEPT. 15	< 0.41	< 7	<22	1570±110
A	SEPT. 20	< 0.38	< 7	<24	1270±150
C	SEPT. 22	< 0.50	< 7	<22	1330±130
B	SEPT. 27	< 0.34	< 7	<22	1340±170
D	SEPT. 29	< 0.30	< 7	<22	1360±170
A	OCT. 4	< 0.39	< 7	<22	1490±140
C	OCT. 6	< 0.38	< 6	<21	1450±140
B	OCT. 11	< 1.11	< 6	<21	1540±110
D	OCT. 13	< 0.38	< 7	<21	1610±100
A	OCT. 18	< 0.38	< 7	<21	1350±160
C	OCT. 20	< 0.42	< 6	<22	1350±170
B	OCT. 25	< 0.46	< 7	<21	1490±160
D	OCT. 27	< 0.43	< 7	<21	1320± 90
A	NOV. 15	< 0.46	< 6	<22	1550±110
D	NOV. 17	< 0.33	< 7	<22	1590±110
C	DEC. 12	< 0.65	< 7	<22	1360±160
D	DEC. 16	< 0.36	< 7	<22	1530±110

ALL VALUES GIVEN AS < ARE LESS THAN THE LLD CORRECTED FOR DECAY.

TABLE XI

Fish Samples
Results in pCi/kgm Wet

DESCRIPTION		40 K	51 CR	54 MN	59 FE	58 CO	60 CO	65 ZN	95 ZR	95 NB	103 RU	106 RU	131 I	134 CS	137 CS	140 BA	141 CE	144 CE	226 RA
FIRST HALF 1988																			
BROWN TROUT	5/27	3200±70	< 67	< 7	< 15	< 7	< 9	< 16	< 12	< 7	< 8	< 66	< 11	< 7	30±4	< 30	< 16	< 67	< 14
LAKE TROUT	5/27	4730±150	<345	< 17	< 54	< 21	< 22	< 39	< 37	< 32	< 28	<160	<280	< 16	< 21	<310	< 68	<175	< 33
WHITE PERCH	5/27	2380±70	< 72	< 7	< 15	< 7	< 9	< 15	< 13	< 7	< 8	< 66	< 13	< 7	25±4	< 34	< 16	< 68	< 14
YELLOW PERCH	5/27	3760±160	<200	< 16	< 37	< 16	< 18	< 37	< 32	< 20	< 20	<155	< 52	< 16	110±15	<110	< 43	<160	< 34
SECOND HALF 1988																			
CHINOOK SALMON	8/ 9	3750± 90		< 13	<240	< 44	< 11	< 34	<230	< 92	<170	<110	--	< 10	36±6	--	<680	<135	< 18
BROWN TROUT	11/ 4	3770±110	<195	< 10	< 34	< 13	< 11	< 25	< 21	< 18	< 18	< 95	<170	< 10	22±6	<200	< 42	<110	< 20
NORTHERN PIKE	11/ 4	4310±140	<245	< 15	< 44	< 19	< 19	< 34	< 31	< 23	< 23	<140	<140	< 15	< 18	<210	< 54	<160	< 29
LAKE TROUT	12/ 2	3160± 80	<250	< 8	< 36	< 12	< 9	< 20	< 20	< 24	< 19	< 76	--	< 7	26±5	< 49	< 51	< 87	< 15
BACKGROUND FISH																			
FIRST HALF 1988																			
ROCK BASS	4/12	3590±190	<170	< 37	< 94	<170	< 32	< 94	<355	<150	<820	<330	--	< 31	< 31	--	<140	<420	< 53
BULLHEAD	6/ 8	4130±110	<310	< 11	< 39	< 14	< 13	< 25	< 29	< 25	< 21	<100	<700	< 10	< 12	<450	< 58	<110	< 20
RAINBOW TROUT	6/ 8	5530±180	<125	< 20	<100	< 37	< 24	< 48	< 66	< 67	< 62	<200	--	< 18	66±15	<160	<170	<215	< 37
SMALLMOUTH BASS	6/ 8	4660±140	<570	< 15	< 69	< 23	< 17	< 34	< 42	< 42	< 37	<135	<130	< 13	28±8	<170	<100	<150	< 26
SECOND HALF 1988																			
ROCK BASS	9/15	2890±100	<150	< 15	<115	< 30	< 14	< 34	< 62	< 80	< 75	<140	--	< 13	< 15	--	<240	<160	< 24
YELLOW PERCH	11/ 1	3600±110	<110	< 14	<100	< 27	< 14	< 32	< 53	< 75	< 63	<130	--	< 12	32±7	<160	<190	<150	< 24
CHINOOK SALMON	11/ 1	2710± 80	<670	< 9	< 63	< 17	< 9	< 23	< 36	< 47	< 39	< 86	--	< 8	42±5	--	<120	< 99	< 15
BROWN TROUT	11/ 9	4970±130	<130	< 12	< 28	< 14	< 15	< 31	< 22	< 11	< 14	<115	<255	< 12	30±6	< 67	< 32	<130	< 25

ALL VALUES GIVEN AS < ARE LESS THAN THE LLD CORRECTED FOR DECAY.

TABLE XI C

LAKE SAMPLES
RESULTS IN pCi/KGM

DESCRIPTION	40 K	51 CR	54 MN	59 FE	58 CO	60 CO	65 ZN	95 ZR	95 NB
CLADOPHORA 8/ 1	2755 ± 70	< 63	< 6	< 13	< 6	< 8	< 14	< 11	< 6
LAKE BOTTOM 8/ 1	8560 ± 80	< 72	< 6	< 14	< 6	< 7	< 16	< 11	< 7

DESCRIPTION	103 RU	106 RU	131 I	134 CS	137 CS	140 BA	141 CE	144 CE	226 RA
CLADOPHORA 8/ 1	< 6	< 58	< 8	< 6	< 7	< 22	< 14	< 65	< 12
LAKE BOTTOM 8/ 1	< 7	< 55	---	< 7	398 ± 7	< 30	< 17	< 71	

ALL VALUES GIVEN AS < ARE LESS THAN THE LLD CORRECTED FOR DECAY.

TABLE XI D

VEGETATION SAMPLES
RESULTS IN pCi/KGM WET

DESCRIPTION		40 K	51 CR	54 MN	59 FE	58 CO	60 CO	65 ZN	95 ZR	95 NB
LETTUCE	7/18	10340±380	<400	< 39	< 74	< 39	< 53	< 83	< 68	< 40
CHERRIES	7/20	1880± 60	< 58	< 6	< 12	< 5	< 7	< 13	< 10	< 5
APPLES	9/ 9	1180± 60	< 65	< 7	< 13	< 7	< 9	< 14	< 12	< 7
ZUCCINI	10/ 5	2072± 90	< 94	< 10	< 20	< 10	< 13	< 23	< 17	< 10
GRAPES	10/10	1230± 50	< 63	< 7	< 13	< 6	< 8	< 14	< 12	< 7
CONTROL VEGETATION SAMPLES										
APPLES	9/26	710±100	< 64	< 6	< 13	< 7	< 10	< 14	< 12	< 7
SWISS CHARD	10/ 4	2920±140	<160	< 17	< 31	< 16	< 20	< 36	< 29	< 16

DESCRIPTION		103 RU	106 RU	131 I	134 CS	137 CS	140 BA	141 CE	144 CE	226 RA
LETTUCE	7/18	< 39	<385	< 47	< 38	< 47	<140	< 84	<385	< 85
CHERRIES	7/20	< 5	< 50	< 7	< 5	< 6	< 20	< 13	< 59	< 11
APPLES	9/ 9	< 8	< 67	< 8	< 7	< 9	< 26	< 17	< 79	< 15
ZUCCINI	10/ 5	< 11	< 95	< 12	< 10	< 12	< 39	< 24	<110	< 22
GRAPES	10/10	< 7	< 63	< 8	< 7	< 8	< 24	< 16	< 75	< 14
CONTROL VEGETATION SAMPLES										
APPLES	9/26	< 7	< 67	< 8	< 7	< 8	< 25	< 16	< 77	< 14
SWISS CHARD	10/ 4	< 17	<150	< 20	< 16	< 20	< 64	< 39	<180	< 35

ALL VALUES GIVEN AS < ARE LESS THAN THE LLD CORRECTED FOR DECAY.

Table XII

LOWER LIMIT OF DETECTION (LLD)

	Air Filters(a) pCi/M^3 (minimium sple. 3500 M^3/Qt.)	Water pCi/liter (sample of 3.5 liters)		Milk pCi/liter (sample of 3.5 liters)	Fish pCi/kg (ave. sple. 2 kg)	Vegetation(a) pCi/kg (ave. sple. 2 kg)
Ave Decay(c)	55 days	0.5 d	8 days	0.5 d	6 days	0.5 days
Be-7	0.025	43	48			
K-40	0.012					
Cr-51	0.035	46	58		220	95
Mn-54	0.002	5	5		10	10
Fe-59	0.005	9	9		30	20
Co-58	0.002	5	5		10	10
Co-60	0.002	6	6	6	10	13
Zn-65	0.004	9	10		25	22
Zr-95	0.005	9	9		24	17
Nb-95	0.004	5	6		18	10
Ru-103	0.004	5	6		18	12
Ru-106	0.014	45	45		95	100
I-131	0.03 (b)	6 Gamma 0.24 Beta		10 Gamma 0.24 Beta	15	12
Cs-134	0.002	5	6		10	10
Cs-137	0.002	6	6	7	11	12
BaLa-140	0.064	4	29	4	12	10
Ce-141	0.05	12	14		40	25
Ce-144	0.09	56	56		100	110
Ra-226		12	12		20	20
Beta	0.004	1.2 (1 liter)				

(a) LLD value will vary due to different sample sizes. Data based on 1988 background sample spectra.
(b) Charcoal Cartridge
(c) Ave. decay normal period from midpoint of sampling period to counting time.

Table XII (Continued)

TABLE NOTATION

The LLD is the smallest concentration of radioactive material in a sample that will yield a net count (above system background) that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system (which may include radiochemical separation):

$$LLD = \frac{4.66\ Sb}{E \cdot V \cdot 2.22 \cdot Y \cdot \exp[(-\Delta t)\lambda]}$$

where

LLD is the lower limit of detection as defined above (as pCi per unit mass or volume)

Sb is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate (as counts per minute).

E is the counting efficiency (as counts per disintegration)

V is the sample size (in units of mass or volume)

2.22 is the number of disintegrations per minute per picocurie

Y is the fractional radiochemical yield (when applicable)

λ is the radioactive decay constant for the particular radionuclide

Δt is the elapsed time between sample collection and counting

The value of Sb used in the calculation of the LLD for a particular measurement system shall be based on the actual observed variance of the background counting rate or of the counting rate of the blank samples (as appropriate) rather than on an unverified theoretically predicted variance. In calculating the LLD for a radionuclide determined by gamma-ray spectrometry, the background shall include the typical contributions of other radionuclides normally present in the samples (e.g., potassium-40 in milk samples).

TABLE XIII

EPA INTERLABORATORY COMPARISON PROGRAM - 1988

Description	Date	Sample Analysis	Experimental Data	EPA Value ±1σ
Alpha/Beta in Water (Results in pCi/l)	03/18/88	Alpha	3 3 2	6 ± 5
		Beta	9 10 9	13 ± 5
	07/22/88	Alpha	10 9 11	15 ± 5
		Beta	10 11 11	4 ± 5
	11/25/88	Alpha	8 7 6	9 ± 5
		Beta	9 10 7	9 ± 5
Gamma in Water (Results in pCi/l)	02/05/88	Co-60	67 67 65	69 ± 5
		Zn-65	91 83 85	94 ± 9.4
		Ru-106	93 93 89	105 ± 10.5
		Cs-134	63 69 53	64 ± 5
		Cs-137	85 85 81	94 ± 5
	06/03/88	Cr-51	303 363 339	302 ± 30
		Co-60*	33 34 32	15 ± 5
		Zn-65	117 111 115	101 ± 10
		Ru-106	198 199 204	195 ± 20
		Cs-134	26 25 22	20 ± 5
		Cs-137*	34 39 38	25 ± 5
	10/07/88	Cr-51	210 200 280	251 ± 25
		Co-60	35 34 33	25 ± 5
		Zn-65	162 159 164	151 ± 15
		Ru-106	130 124 121	152 ± 15
		Cs-134	25 24 25	25 ± 5
		Cs-137	22 25 24	15 ± 5
Iodine-131 in Water (Results in pCi/l)	04/08/88	I-131*	Sample lost by leakage in shipment	7.5 ± 0.75
	08/05/88	I-131*	94 100 96	76 ± 8
	12/09/88	I-131	116 117 115	115 ± 12

* Average of results reported exceeding ± 2 sigma, see attached notes.

TABLE XIII (Cont'd)

EPA INTERLABORATORY COMPARISON PROGRAM - 1988

Description	Date	Sample Analysis	Experimental Data			EPA Value ±1σ
Air Filters (Results in pCi/filter)	03/25/88	Alpha	24	22	21	20 ± 5
		Beta	59	58	57	50 ± 5
		Cs-137	16	21	28	16 ± 5
	08/26/88	Alpha	9	9	9	8 ± 5
		Beta	27	27	28	29 ± 5
		Cs-137	13	17	11	12 ± 5
Milk (Results in pCi/l)	02/26/88	I-131*	2	4	2	4 ± 0.4
	06/24/88	I-131	107	87	130	94 ± 9
		Cs-137	59	62	59	51 ± 5
		K-40	1600	1590	1580	1600 ± 80
	10/28/88	I-131	87	93	87	91 ± 9
		Cs-137	54	53	52	50 ± 5
		K-40	1630	1700	1750	1600 ± 80
Tritium in Water (Results in pCi/l)	02/12/88	H-3	3130	2960	2690	3327 ± 362
	06/10/88	H-3*	4380	3740	4405	5565 ± 557
	10/14/88	H-3*	2800	3260	3190	2316 ± 350

* Average of results reported exceeding ± 2 sigma, see attached notes.

TABLE XIII

NOTES:

Gamma in Water	6/03/88	Cs-134 and Cs-137 were greater than +2 sigma from the known value. A plastic counting marinelli used for previous EPA samples was used and no background for contamination was subtracted. After subtraction of background contamination the results would still be high but within +2 sigma.
Iodine-131 in Water	8/05/88	No apparent reason why the gamma scan for I-131 showed a result greater than +2 sigma. A recheck of the calibration showed no appreciable change in the efficiency for the I-131 peak energy or area as determined by the computer program.
Iodine-131 in Milk	2/26/88	The replication of results was poor with one value equalling the known and two being low. No specific cause could be determined.
Tritium in Water	6/10/88 10/14/88	The low counting rates mean a small variation in background can change the calculation by large percentages. The wrong background value may have been used for the calculation causing the calculated value to be either low or high.