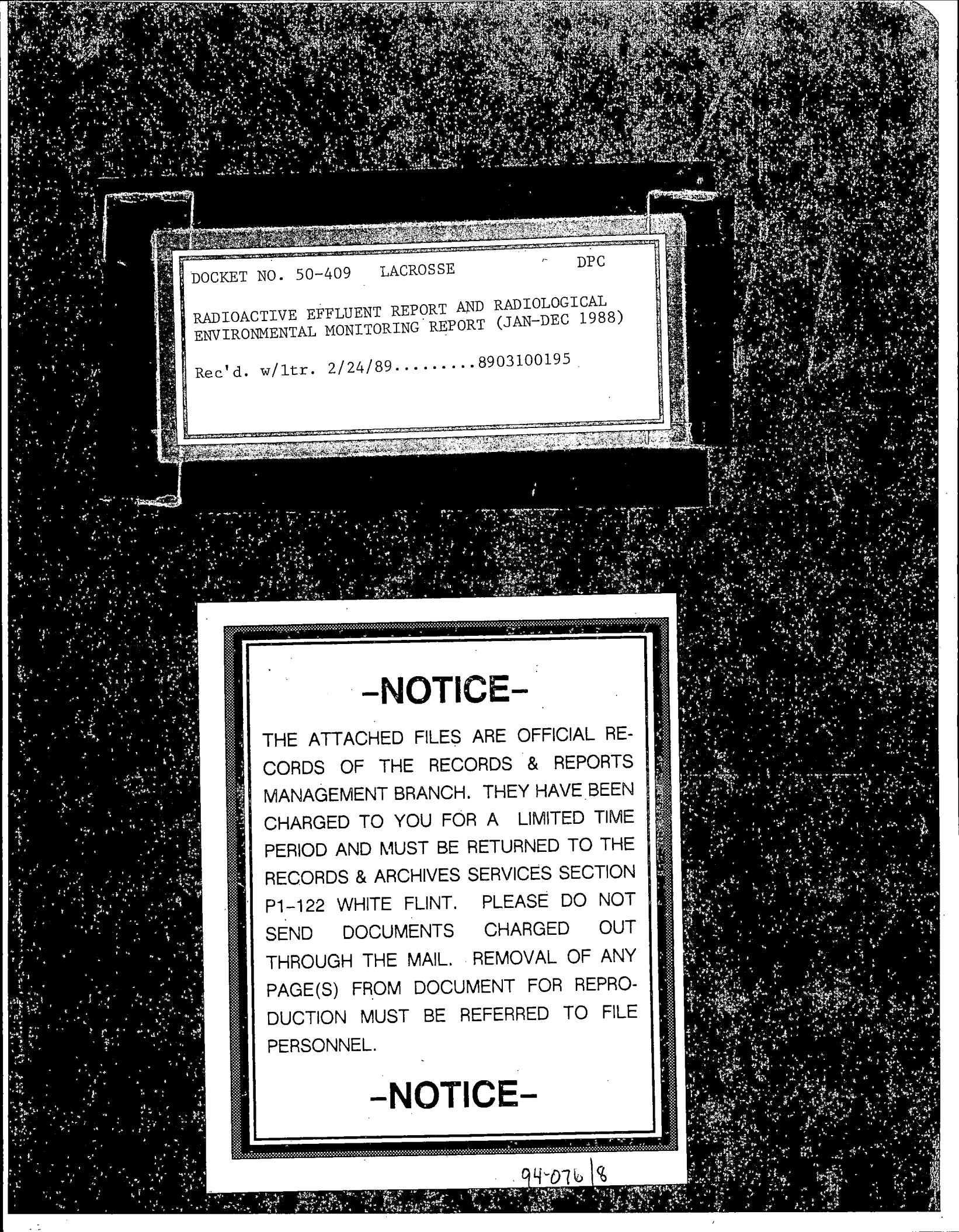
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RADIOACTIVE EFFLUENT REPORT

AND

RADIOLOGICAL ENVIRONMENTAL MONITORING REPORT

FOR THE

LA CROSSE BOILING WATER REACTOR

(JANUARY 1, 1988 TO DECEMBER 31, 1988)

DAIRYLAND POWER COOPERATIVE

Docket No. 50-409

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RADIOACTIVE EFFLUENT

REPORT

INTRODUCTION:

The La Crosse Boiling Water Reactor (LACBWR), also known as Genoa Station No. 2, is located on the east bank of the Mississippi River near Genoa, Vernon County, Wisconsin. The plant was designed and constructed by the Allis-Chalmers Manufacturing Company. It was completed in 1967 and had a generation capacity of 50 MW (165 $MW_{(th)}$). The reactor is owned by Dairyland Power Cooperative (DPC).

The reactor went critical in July 1967 and first contributed electricity to DPC's system in April 1968. After completing full power tests in August 1969, the plant has been operating between 60% and 100% full power, with the exception of plant shutdowns for maintenance and repair.

In April of 1987 plant operation was ceased. The reactor is presently defueled and work is progressing to place the plant into a SAFSTOR mode. In August of 1987 a possession-only license was received.

In accordance with LACBWR Technical Specifications 6.9.3.a & 6.9.3.b and in compliance with 10 CFR 50.36a(a)(2), this document is the Radioactive Effluent Report for the period January 1 through December 31, 1988.

EFFLUENT AND WASTE DISPOSAL REPORT
(Supplemental Information)

FACILITY LaCrosse Boiling Water Reactor LICENSEE DAIRYLAND POWER COOPERATIVE
DOCKET NO. 50-409

1. REGULATORY LIMITS

a. Gaseous Effluent Release Limits:

LACBWR's Technical Specifications for gaseous effluent releases of radioactive material limit the release rates of the sum of the individual radionuclides, in Curies per second, so that the dose rates to members of the public beyond the Effluent Release Boundary do not exceed 500 mRem/year to the whole body, 3000 mRem/year to the skin from noble gases, and 1500 mRem/year to a critical organ from H-3, I-131/133 and particulates with half-lives greater than 8 days.

Also, in accordance with 10 CFR 50, Appendix I, the Technical Specifications for gaseous effluent radioactive material limit the air dose to a member of the public from noble gases in areas beyond the Effluent Release Boundary to less than 5 mRad gamma and 10 mRad beta per calendar quarter, and less than 10 mRad gamma and 20 mRad beta per calendar year. The dose limits from H-3, I-131/133 and particulates with half lives greater than 8 days are less than 7.5 mRem per calendar quarter, and less than 15 mRem per calendar year to any organ.

Cumulative dose contributions from gaseous effluent releases are determined in accordance with the LACBWR Offsite Dose Calculations Manual.

b. Liquid Effluent Release Limits:

LACBWR's Technical Specifications limits for liquid effluent releases are limited to those concentrations of individual radionuclides such that the diluted discharge does not exceed 1 MPC in a 168-hour week averaged over the calendar year. For dissolved or entrained noble gases, the concentration is limited to a total activity concentration of 2×10^{-4} μCi/ml. For alpha emitting radionuclides, the concentration is limited to a total activity concentration of 4.9×10^{-9} μCi/ml, based upon an actual alpha emitting radionuclide analysis performed on a representative water sample. The values reported in tables 2A and 2B, Liquid Effluents, are based on dilution with the combination of LACBWR and Genoa Station No. 3 condenser cooling water flow prior to discharge to the Mississippi River. No credit is taken for further dilution in the mixing zone of the Mississippi River.

Also, in accordance with 10 CFR 50, Appendix I, the dose commitment to a member of the public from radioactive materials released in liquid effluents to areas beyond the Effluent Release Boundary are limited to less than 1.5 mRem whole body and 5.0 mRem organ dose per calendar quarter, and less than 3.0 mRem whole body and 10 mRem organ dose per calendar year via the critical ingestion pathway.

Cumulative quarterly and annual dose contributions from liquid effluent releases are determined for the adult fish ingestion pathway in accordance with the LACBWR Offsite Dose Calculation Manual.

c. Solid Radioactive Waste

All solid radioactive wastes are handled in accordance with a Process Control Program as defined by LACBWR procedures in order to assure that all applicable transportation and burial site disposal requirements are met.

2. MAXIMUM PERMISSIBLE CONCENTRATION (MPC)

The MPC used to calculate permissible release rates are obtained from 10 CFR 20, Appendix B, Tables I and II. In addition, the following values are used:

Tritium in Water = 3×10^{-3} µCi/ml.

Tritium in Air = 2×10^{-7} µCi/cc.

3. AVERAGE ENERGY

The release rate limits for LACBWR are not based on average energy.

4. ANALYTICAL METHODS

a. Liquid Effluents

Liquid effluent measurements for gross radioactivity are performed by Ge-Li gamma isotopic analysis of a representative sample from each tank discharged. A composite sample is created by collecting representative aliquots of each sample from each tank batch discharged, and is analyzed monthly for Tritium, and quarterly for Iron-55 and Strontium 89 & 90. The iron and radiostrontiums are analyzed by a contractor. In addition, each batch discharged tank is analyzed for alpha activity concentration.

b. Airborne Particulates

Airborne particulate releases are determined by Ge-Li gamma isotopic analysis. This analysis is performed by analyzing a glass fiber filter paper taken from the stack monitor (Eberline SPING) which continuously isokinetically samples and monitors the stack effluent. This filter is changed and analyzed on an approximate weekly basis and analyzed within 7 days after removal. This filter is also analyzed for alpha activity. A quarterly composite of these filters is sent to a contractor for Sr 89 and 90 analysis.

c. Radioiodines

Radioiodine releases are determined by Ge-Li gamma analysis of a TEDA impregnated activated charcoal cartridge taken from the stack monitor which continuously isokinetically samples and monitors the stack effluent. This charcoal cartridge is changed approximately weekly and analyzed within 48 hours after removal. Since the plant shutdown in April 1987, the I-131/I-133 have decayed completely to stable elements.

d. Fission and Activation Gases

The gaseous releases converted into concentration (μCi/cc) are continuously sampled from the stack release flow by two stack monitors, which are inline monitors. These gas concentrations (μCi/cc) are averaged by the monitors microprocessor and flowrate/pressure compensated to obtain the daily gaseous release of the plant. Since the plant shutdown in April 1987, gaseous releases have been immeasurable. All fission gases except Kr-85 have decayed completely to stable elements.

e. Tritium

Tritium releases are determined by taking a grab sample of the stack atmosphere at the effluent of the stack monitor. Tritium, as tritiated water, is removed from the sample stream by condensation, using a cold trap containing an organic compound and dry ice. The condensed water vapor is then distilled and the distillate is analyzed for H-3 concentration, μCi/cc, by internal liquid scintillation spectrophotometry and the results are expressed in terms of tritium release rates. The tritium grab samples are obtained on at least a once/month basis unless the upper reactor cavity is flooded, at which time the sampling frequency is increased to at least once per 7 days.

5. BATCH RELEASES

a. Airborne

All airborne effluent releases at LACBWR are from a single Continuous-Elevated Release Point.

b. Liquid

All liquid effluent releases at LACBWR are batch releases. This is summarized as follows:

(1) Number of Batch Releases: 68

(2) Total Time Period for Batch Releases: 510.37 hours

(3) Maximum Time Period for a Batch Release: 16.1 hours

(4) Average Time Period for Batch Releases: 7.50 hours

(5) Minimum Time Period for a Batch Release: 0.05 hours

(6) Average Stream Flow Rate During Periods of Release of Effluent into a Flowing Stream: 20,496 ft^3/sec

6. ABNORMAL RELEASES

There were no abnormal releases of radioactivity in plant effluents as summarized as follows:

a. Liquid

(1) Number of Releases: None

(2) Total Activity Released: N/A

b. Gaseous

(1) Number of Releases: None

(2) Total Activity Released: N/A

7. ESTIMATED TOTAL ANALYTICAL ERROR

The reported analytical results contain the following estimated errors:

Counting Error ± 1 Standard Deviation

Sampling Volume Error ± 5%.

The lower limits of detection (LLD) are expressed in terms of a 4.66 σ as defined in Technical Specifications.

TABLE 1A

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT - 1988

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

	UNIT	QTR	QTR	QTR	QTR	TOTAL
A. FISSION & ACTIVATION GASES						
1. TOTAL RELEASE	Ci	--	--	--	--	0.00
2. AVERAGE RELEASE RATE FOR PERIOD	µCi/Sec	--	--	--	--	
B. IODINE I-131						
1. TOTAL IODINE-131	Ci	--	--	--	--	0.00
2. AVERAGE RELEASE RATE FOR PERIOD	µCi/Sec	--	--	--	--	
C. PARTICULATES						
1. PARTICULATES W/HALF-LIVES > 8 DAYS	Ci	4.86E-6	1.47E-6	4.27E-6	5.15E-7	1.11E-5
2. AVERAGE RELEASE RATE FOR PERIOD	µCi/Sec	1.94E-6	5.50E-7	5.39E-7	6.48E-8	
3. GROSS ALPHA RADIOACTIVITY	Ci	8.48E-8	2.56E-6	1.65E-8	--	
D. TRITIUM						
1. TOTAL RELEASE	Ci	5.20E-1	4.03E-1	1.63E-1	1.98E-1	1.28E0
2. AVERAGE RELEASE RATE FOR PERIOD	µCi/Sec	2.07E-1	1.50E-1	2.05E-2	2.49E-2	

E. PERCENTAGE OF (APPENDIX I) TECHNICAL SPECIFICATION LIMITS

1. NOBLE GAS RELEASE

		QTR	QTR	QTR	QTR	YEARLY
GAMMA	%	0	0	0	0	0
BETA	%	0	0	0	0	0

2. I-131, I-133, H-3, AND ALL RADIONUCLIDES IN PARTICULATE FORM WITH HALF-LIVES GREATER THAN 8 DAYS

		QTR	QTR	QTR	QTR	YEARLY
HIGHEST ORGAN	%	0.12	0.04	0.08	0.02	0.13

TABLE 1B

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT - 1988

GASEOUS EFFLUENTS - ELEVATED RELEASE

CONTINUOUS MODE

NUCLIDES RELEASED	UNIT	QTR	QTR	QTR	QTR	TOTAL
1. FISSION GASES						
KRYPTON-85	Ci	--	--	--	--	--
KRYPTON-85M	Ci	--	--	--	--	--
KRYPTON-87	Ci	--	--	--	--	--
KRYPTON-88	Ci	--	--	--	--	--
XENON-133	Ci	--	--	--	--	--
XENON-135	Ci	--	--	--	--	--
XENON-135M	Ci	--	--	--	--	--
XENON-138	Ci	--	--	--	--	--
KR-89	Ci	--	--	--	--	--
XE-133M	Ci	--	--	--	--	--
XE-131M	Ci	--	--	--	--	--
XE-137	Ci	--	--	--	--	--
AR-41	Ci	--	--	--	--	--
	Ci					
	Ci					
TOTAL FOR PERIOD	Ci	0.00	0.00	0.00	0.00	0.00
2. IODINES						
IODINE-131	Ci	--	--	--	--	--
IODINE-133	Ci	--	--	--	--	--
IODINE-135	Ci	--	--	--	--	--
TOTAL FOR PERIOD	Ci	0.00	0.00	0.00	0.00	0.00

3. (SEE FOLLOWING PAGE FOR PARTICULATES.)

TABLE 1B - EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT - 1988
GASEOUS EFFLUENTS - ELEVATED RELEASE - (cont'd)

CONTINUOUS MODE

NUCLIDES RELEASED	UNIT	QTR	QTR	QTR	QTR	TOTAL
3. PARTICULATES						
STRONTIUM-89	Ci	--	--	--	2.63E-7	2.63E-7
STRONTIUM-90	Ci	--	--	--	--	--
CESIUM-134	Ci	--	--	--	--	--
CESIUM-137	Ci	1.72E-6	5.14E-7	1.01E-6	1.26E-7	3.37E-6
BARIUM-LANTHANUM-140	Ci	--	--	--	--	--
CO-57	Ci	4.98E-8	--	3.10E-8	--	8.08E-8
CO-58	Ci	8.00E-8	--	6.10E-8	--	1.41E-7
CO-60	Ci	2.38E-6	--	1.10E-6	--	3.48E-6
CE-144	Ci	--	5.88E-7	1.45E-7	--	7.33E-7
CE-141	Ci	--	--	--	--	--
CR-51	Ci	--	--	8.48E-7	--	--
MN-54	Ci	--	1.50E-7	2.32E-7	1.26E-7	5.08E-7
FE-59	Ci	--	--	--	--	--
ZN-65	Ci	5.22E-7	2.20E-7	3.13E-7	--	1.06E-6
ZR-95	Ci	--	--	--	--	--
NB-95	Ci	1.04E-7	--	2.64E-7	--	3.68E-7
RU-RH-106	Ci	--	--	2.70E-7	--	2.70E-7
RU-103	Ci	--	--	--	--	--
	Ci					
	Ci					
	Ci					
	Ci					
	Ci					

TABLE 2A

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT - 1988

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	UNIT	QTR	QTR	QTR	QTR	TOTAL
A. FISSION & ACTIVATION PRODUCTS						
1. TOTAL RELEASE (NOT INCL TRITIUM, GASES, ALPHA)	Ci	1.80E-1	8.17E-2	1.01E-1	8.39E-2	4.47E-1
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	Ci/ml	6.32E-8	2.69E-8	2.04E-8	4.01E-8	
B. TRITIUM						
1. TOTAL RELEASE	Ci	1.95E0	1.05E0	9.56E-1	6.45E-1	4.60E0
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	Ci/ml	7.31E-7	3.26E-7	1.97E-7	3.09E-7	
C. DISSOLVED AND ENTRAINED GASES						
1. TOTAL RELEASE	Ci	--	--	--	--	0.00
2. AVERAGE DILUTED CONCENTRATION DURING PERIOD	Ci/ml	--	--	--	--	
D. GROSS ALPHA RADIOACTIVITY						
1. TOTAL RELEASE	Ci	1.89E-4	6.58E-5	9.94E-5	2.26E-4	5.80E-4
E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION)	Liters	2.83E5	1.71E5	2.21E5	1.72E5	8.47E5
F. VOLUME OF DILUTION WATER USED DURING PERIOD	Liters	2.76E9	3.04E9	4.95E9	2.09E9	1.28E10

G. PERCENTAGE OF (APPENDIX I) TECHNICAL SPECIFICATION LIMITS FOR LIQUID RELEASES

		QTR	QTR	QTR	QTR	YEARLY
HIGHEST ORGAN	%	3.44	1.56	3.88	15.60	12.24
WHOLE BODY	%	7.67	3.48	8.53	34.33	27.01

TABLE 2B

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT - 1988

LIQUID EFFLUENTS

NUCLIDES RELEASED	UNIT	QUARTER	QUARTER	QUARTER	QUARTER
STRONTIUM-89	Ci	1.45E-4	1.23E-4	1.04E-5	1.51E-4
STRONTIUM-90	Ci	8.79E-4	3.56E-4	1.94E-6	3.30E-4
CESIUM-134	Ci	2.48E-4	8.04E-4	8.08E-5	4.02E-4
CESIUM-137	Ci	1.57E-2	1.19E-2	1.23E-2	2.83E-2
IODINE-131	Ci	--	--	--	--
COBALT-58	Ci	5.95E-5	--	--	--
COBALT-60	Ci	9.49E-2	3.31E-2	8.35E-2	3.33E-2
IRON-59	Ci	--	--	--	--
ZINC-65	Ci	3.47E-4	2.85E-5	2.56E-5	5.75E-4
MANGANESE-54	Ci	1.23E-2	3.85E-3	4.63E-3	2.95E-3
CHROMIUM-51	Ci	--	--	--	--
ZIRCONIUM-NIOBIUM-95	Ci	1.51E-5	--	--	5.80E-5
MOLYBDENUM-99	Ci	--	--	--	--
TECHNETIUM-99M	Ci	--	--	--	--
BARIUM-LANTHANUM-140	Ci	--	--	--	--
CERIUM-141	Ci	--	--	--	--
CE-144	Ci	--	--	2.49E-5	1.00E-4
CO-57	Ci	3.16E-6	3.79E-6	1.57E-5	2.63E-5
I-133	Ci	--	--	--	--
I-135	Ci	--	--	--	--
NP-239	Ci	--	--	--	--
RU-103	Ci	--	--	--	--
RU-RH-105	Ci	--	--	--	--
RU-RH-106	Ci	--	--	--	--
SR-91	Ci	--	--	--	--
SR-92	Ci	--	--	--	--
AG-110M	Ci	2.30E-4	4.37E-5	--	2.89E-4
FE-55	Ci	5.53E-2	3.15E-2	3.05E-4	1.74E-2
	Ci				
	Ci				
	Ci				
	Ci				
TOTAL FOR PERIOD (ABOVE)	Ci	1.80E-1	8.17E-2	1.01E-1	8.39E-2
XENON-133	Ci	--	--	--	--
XENON-135	Ci	--	--	--	--
XE-131M	Ci	--	--	--	--
XE-133M	Ci	--	--	--	--
KR-85M	Ci	--	--	--	--
KR-87	Ci	--	--	--	--
	Ci				
	Ci				

TABLE 3

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT - 1988
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (NOT IRRADIATED FUEL)

1. TYPE OF WASTE	UNIT	6-MONTH PERIOD	6-MONTH PERIOD	TOTAL
a. SPENT RESINS, FILTER SLUDGES,	m^3	4.62	0	4.62
EVAPORATOR BOTTOMS, ETC.	Ci	7.03E1	0	7.03E1
b. DRY COMPRESSIBLE WASTE,	m^3	1.90	0	1.90
CONTAMINATED EQUIPMENT, ETC.	Ci	1.93E-2	0	1.93E-2
c. IRRADIATED COMPONENTS,	m^3	0	0	0
CONTROL RODS, ETC.	Ci	0	0	0
d. OTHER (DESCRIBE)	m^3			
	Ci			

2. ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)		PERCENT	6-MONTH PERIOD	6-MONTH PERIOD
a.	Mn-54	7.50	5.27	--
	Co-60	55.8	3.92E1	--
	Cs-137	5.82	4.09	--
	H-3	5.25E-3	3.69E-3	--
	C-14	1.29E-3	9.0 E-4	--
	Fe-55	24.9	1.75E1	--
	Ni-59	5.64E-2	3.96E-2	--
	Ni-63	4.95	3.48	--
	Sr-90	5.82E-1	4.09E-1	--
	Tc-99	5.96E-5	4.19E-5	--
	I-129	2.90E-3	2.04E-3	--
	U-235	2.42E-6	1.70E-6	--
	U-238	2.05E-6	1.44E-6	--
	Pu-239/240	4.44E-3	3.12E-3	--
	Am-241	3.19E-3	2.24E-3	--
	Cm-243/244	1.40E-3	9.80E-4	--
	Pu-238	7.87E-3	5.53E-3	--
	Pu-241	3.53E-1	2.48E-1	--
	Cm-242	1.78E-2	1.25E-2	--
b.	Co-60	63.7	1.23E-2	--
	Cs-137	2.0	3.80E-4	--
	Mn-54	1.0	2.00E-4	--
	Fe-55	1.4	2.60E-4	--
	Ni-63	32.0	6.17E-3	--

3. SOLID WASTED DISPOSITION

NO. OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
1	Sole Use	Barnwell, S.C.

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

NO. OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION

8. OFFSITE DOSE CALCULATIONS SUMMARY AND CONCLUSIONS:

a. Gaseous Effluent Releases

The maximum quarterly offsite gamma dose due to noble gases was 0.00 mRad. The cumulative 1988 annual offsite gamma dose due to noble gases was 0.00 mRad.

The maximum quarterly offsite beta dose due to noble gases was 0.00 mRad. The cumulative 1988 annual offsite beta dose due to noble gases was 0.00 mRad.

The maximum quarterly offsite dose to any organ from the release of I-131, I-133, H-3 and all radionuclides in particulate form with half-lives greater than 8 days was approximately 9.0E-3 mRem. The cumulative 1988 annual maximum organ dose from these radionuclides was approximately 1.97E-2 mRem.

The highest historical monthly and annual average X/Q's for the period 1985-1987 for the worst case offsite receptor location, in accordance with the ODCM, were used to calculate these offsite dose values.

b. Liquid Effluent Releases

The maximum quarterly organ dose from liquid releases was approximately 0.78 mRem. The maximum cumulative 1988 annual organ dose was approximately 1.22 mRem. The maximum quarterly whole body dose for liquid releases was approximately 0.52 mRem, and the cumulative 1988 annual whole body dose was approximately 0.81 mRem.

c. Conclusion

All calculated offsite doses were below Technical Specification limits.

SECTION B

ANNUAL

RADIOLOGICAL

ENVIRONMENTAL MONITORING REPORT

INTRODUCTION:

The Radiological Environmental Monitoring (REM) Program is conducted to comply with the requirements of Technical Specifications and in accordance with 10 CFR 50 Appendix I. The REM Program provides measurements of radiation and of radioactive materials in those exposure pathways and for those radionuclides which could potentially lead to radiation doses to Members of the Public resulting from plant effluents. Environmental samples are taken within the surrounding areas of the plant and in selected control or background locations.

The monitoring program at the LACBWR facility includes monitoring of liquid and gaseous releases from the plant, as well as environmental samples of surface air, river water, river sediment, milk, fish, and penetrating radiation.

The REM program theory supplements the Radioactive Effluent analyses by verifying that the measurable concentrations of radioactive materials and levels of radiation are not higher than expected on the basis of the effluent measurements and modeling of the environmental exposure pathways using the methodology of the Offsite Dose Calculation Manual (ODCM).

An Interlaboratory Comparison Program is provided to ensure that independent checks on the precision and accuracy of the measurements of radioactive material in environmental samples are performed to demonstrate that the results are reasonably valid.

This monitoring report includes the period from January 1, 1988, to December 31, 1988. The report includes a description of the environmental samples collected, analytical methods, statistical inferences, and the results from these analyses.

A series of maps of the general vicinity surrounding LACBWR are provided for the reader so that he/she may determine the spatial relationship of the plant to the surrounding area. Figure 1 is a map that includes the plant boundary, roads, other generating plants, relation of the plant site to the nearest local community.

Figure 2 is a map that pinpoints the location of the environmental sampling stations for surface air, and milk. This map when used with Table 6 will allow the reader to determine the spatial relationship of the plant to the surrounding sampling stations.

Environmental direct radiation monitor (TLD) locations for 1988 can be found by referring to Figure 3 and 4 and Table 7.

1.0 SAMPLE COLLECTION

The sampling frequency of the various environmental samples and the analyses performed on these samples are shown in Table 5. The number of various samples collected and analyzed during 1988 in Table 8.

The environmental penetrating radiation dose is measured by thermo-luminescent dosimeters consisting of four lithium fluoride (LiF) chips. The

TLD's are located in the vicinity of the plant on poles, trees or adjacent to air sample locations. The TLD's are collected, shipped and then analyzed by a contractor.

Air samples are collected continuously at seven sites, six of which are within three miles of the plant and the seventh used as a control, located eighteen miles north of the plant in La Crosse, Wisconsin. Particulate air samples are collected at the rate of approximately 30-60 lpm with Gelman Air Samples. The air filter consists of a glass fiber filter with an associated pore size of approximately 0.45 μm and a CESCO type activated charcoal cartridge for iodine collection. The particulate filters are analyzed for gross beta activity with an internal proportional counter, and the monthly particulate composites are gamma analyzed for individual isotopic concentration. The activated charcoal cartridges are analyzed for I-131 after collection.

River water is collected monthly. River water samples above, at and below the plant site are collected and are gamma analyzed for isotopic concentration.

A one-liter milk sample is collected from three farms in the vicinity of the plant on a biweekly basis during the grazing season. The milk samples are gamma-scanned for I-131 and any other isotope with at least an eight-day half life.

Fish samples are collected on a quarterly basis from Pool #8 above the plant or Pool #9 below the plant. Samples of the edible portions of the fish are gamma isotopically analyzed.

River sediment (silt) samples are collected twice per year at, above and below the Genoa-3 condenser cooling water discharge point in Pool #9. These samples are gamma isotopically analyzed.

Vegetation was collected from the local gardens at the time of harvest. These samples are gamma isotopically analyzed.

2.0 RESULTS OF THE 1988 RADIO-ENVIRONMENTAL MONITORING SURVEYS

During 1988, activity levels in the local environment were normal, indicating no significant plant attributed radioactivity.

2.1 PENETRATING RADIATION

The environmental TLD's are changed on a quarterly basis and are sent to an outside contractor for reading. The results of this survey program are shown on Table 9. These badges have been divided into three categories:

A) Control badges - greater than 5 miles from the plant (13 badges)

B) Offsite badges - from owner-controlled fence to 5 miles from the plant (25 badges)

C) Onsite badges - within owner-controlled fence (3 badges)

The control badge results are averaged for each quarter to determine a background dose reading for the environment. This reading can then be subtracted from each onsite or offsite badge reading to

determine the potential dose contribution from LACBWR. The following is a listing of the highest quarter location and also the quarterly averages.

HIGHEST TLD READING

(minus control badge average value)

	1ST QTR	2ND QTR	3RD QTR	4TH QTR
Onsite (mrem/qtr)	0.4 ± 0.2	4.1 ± 1.7	3.6 ± 1.8	0.0 ± 0.0
Onsite location *	20	20	7	--
Offsite (mrem/qtr)	4.0 ± 2.1	3.7 ± 6.4	3.0 ± 4.4	6.9 ± 1.5
Offsite location *	6	14	4	14

* See table 7.

AVERAGE TLD READING

(minus control badge average value)

	1ST QTR	2ND QTR	3RD QTR	4TH QTR
Onsite (mrem/qtr)	0	0.2 ± 0.9	1.5 ± 0.4	0
Offsite (mrem/qtr)	0	0	0.5 ± 0.4	1.1 ± 0.5
Control badge (mrem/qtr)	23.6 ± 4.5	28.7 ± 7.5	21.4 ± 3.2	28.1 ± 7.7

2.2 AIR PARTICULATE

The gross beta-gamma activity concentrations from air particulate filters are shown in Table 10. Composite air particulate isotopic analyses are found in Table 11. Comparison between the control station

at La Crosse and the six stations near LACBWR indicate that there was no significant plant attributable airborne particulate.

2.3 RIVER WATER

The river water gamma isotopic analyses are shown in Table 12. The results indicate that there is insignificant plant attributable radionuclides in river water. The river water samples taken above, at and below the plant discharge point generally exhibited similar activity patterns during 1988.

2.4 SEDIMENT SAMPLES

Sediment samples were collected above, at, and below the plant outfall. These samples were gamma analyzed and these results appear on Table 13. They indicated that small amounts of plant attributed radionuclides have been accumulating in river sediments near the outfall and downstream in Pool #9. There is continued indication of a small buildup of sediment deposited radionuclides at the outfall. This buildup is very localized and shows a slight decrease over the previous year's data.

2.5 MILK SAMPLES

Milk samples were collected on a biweekly basis during the grazing season (May through September) from three dairy farms in the vicinity of LACBWR and gamma analyzed for I-131. These samples are listed in Table 14.

2.6 ACTIVATED CHARCOAL CARTRIDGES

The analysis of the activated charcoal cartridges for I-131 was performed by gamma analyzing each cartridge collected during a 1-week period. Weekly I-131 concentrations for the seven measurement locations are shown in Table 15. No significant plant attributed I-131 in air samples was evident.

2.7 FISH

Fish samples were collected quarterly above and below the plant discharge. The results of gamma spectral analysis of edible portions of fish samples appear in Table 16. There has been no significant accumulation of plant attributed radionuclides in fish in the vicinity of LACBWR.

2.8 VEGETATION

Vegetation samples were collected from local gardens at the time of harvest. The results of the gamma spectral analysis of the vegetation samples appear on Table 17. There has been no significant accumulation of plant attributed radionuclides in the vegetation.

3.0 CONCLUSIONS

All environmental samples collected and analyzed during 1988 exhibited no significant contribution from LACBWR.

4.0 INTERLABORATORY COMPARISON PROGRAM RESULTS

During 1988, interlaboratory comparison samples were obtained from an outside contractor. The equipment used to analyze the environmental samples was tested against the contractors results. The following is the result of this comparison.

Analysis	LACBWR Results (μCi/cc)	Contractor Results (μCi/cc)
Gross Beta	9.04 E-4	1.09 E-3
Tritium	1.19 E-3	1.23 E-3
Gamma Isotopes:		
Cs-137	4.07 E-3	4.48 E-3
Mn-54	4.95 E-3	5.37 E-3
Zn-65	9.17 E-3	9.59 E-3
Co-60	6.25 E-3	7.01 E-3

All DPC results were found to be in agreement with the contractor results.

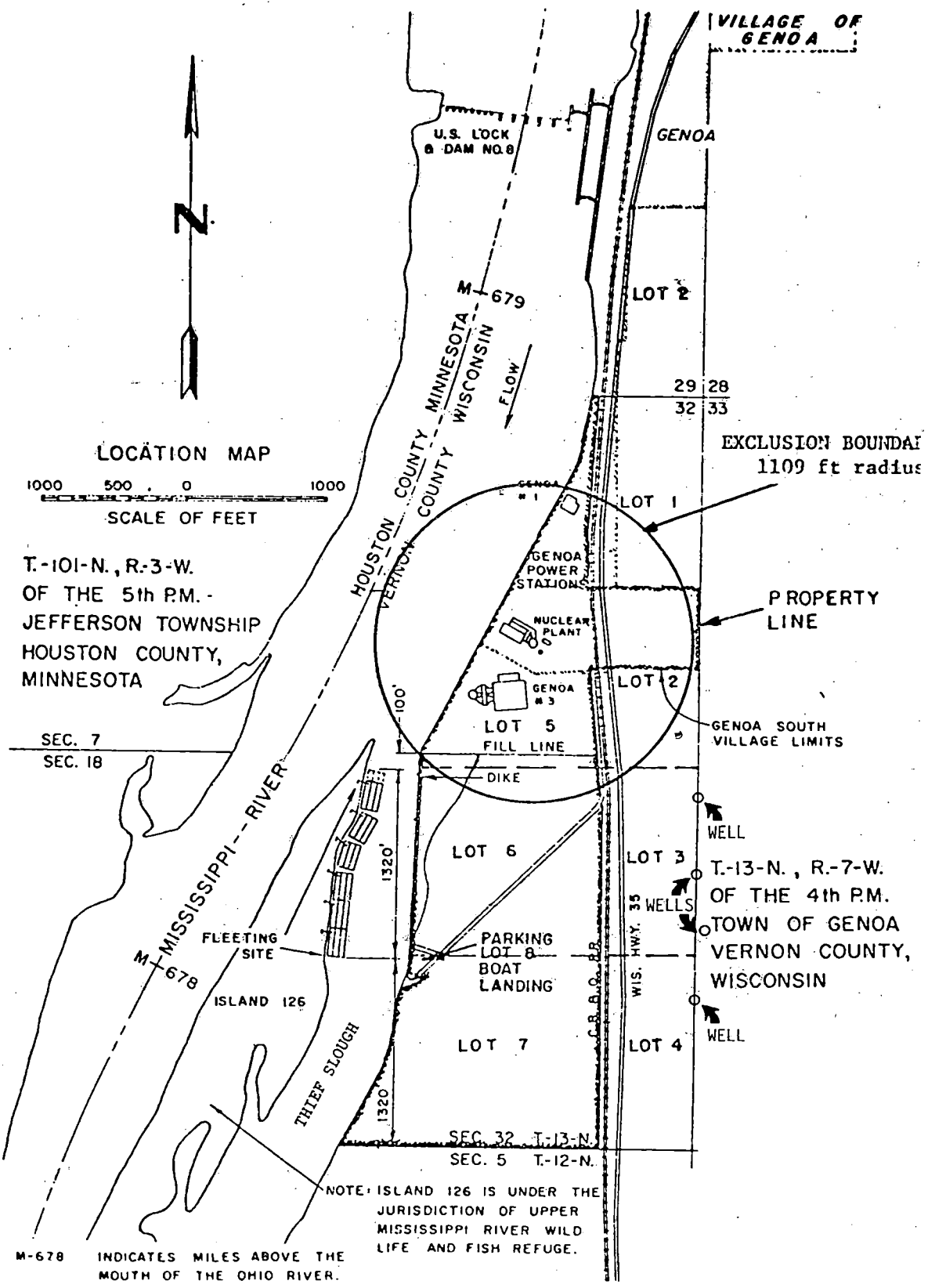

FIGURE 1 - LACBWR PROPERTY MAP

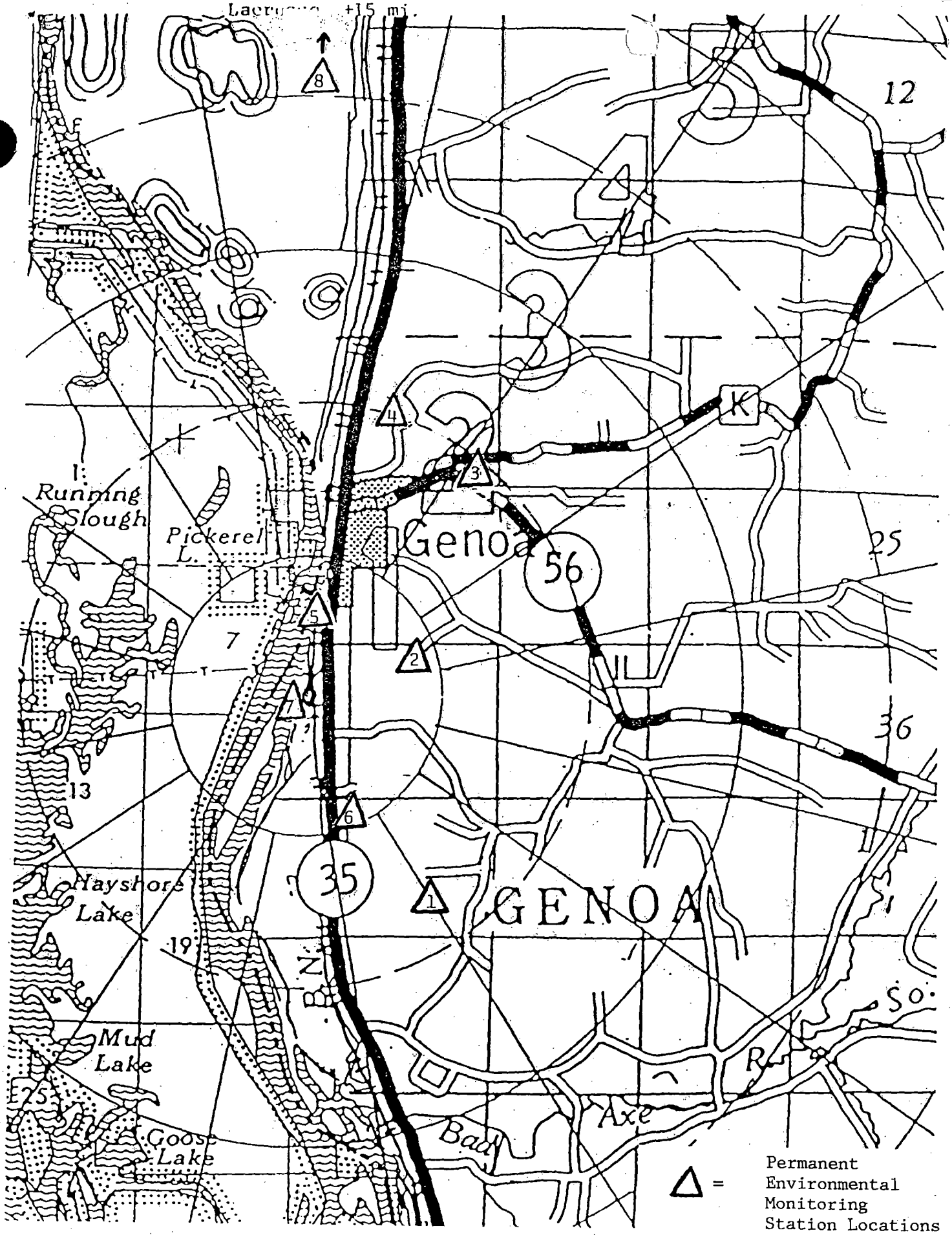

FIGURE 2 - PERMANENT ENVIRONMENTAL MONITORING STATION LOCATIONS
(Refer to Table 6)

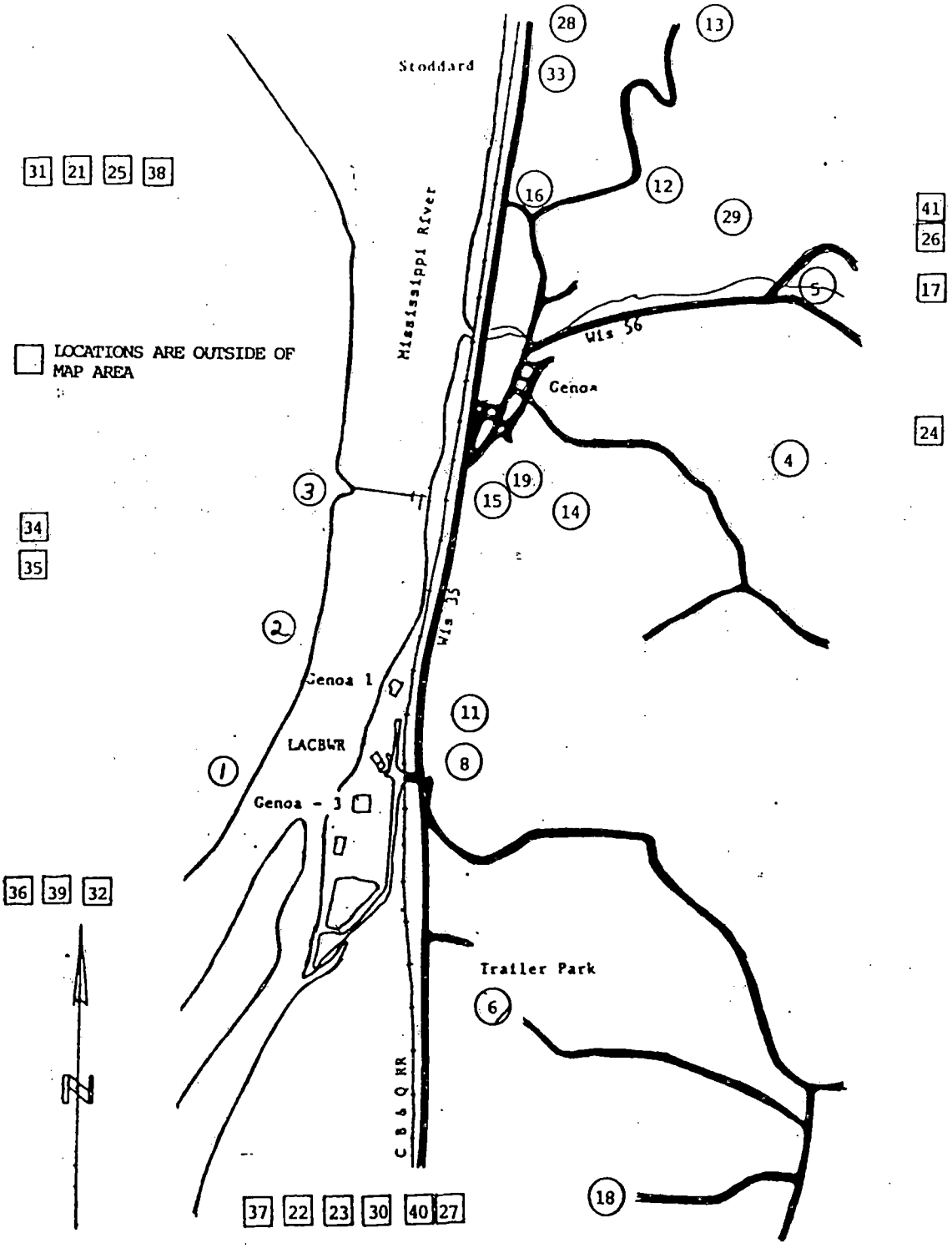

FIGURE 3 - LACBWR ENVIRONMENTAL DOSE ASSESSMENT LOCATIONS

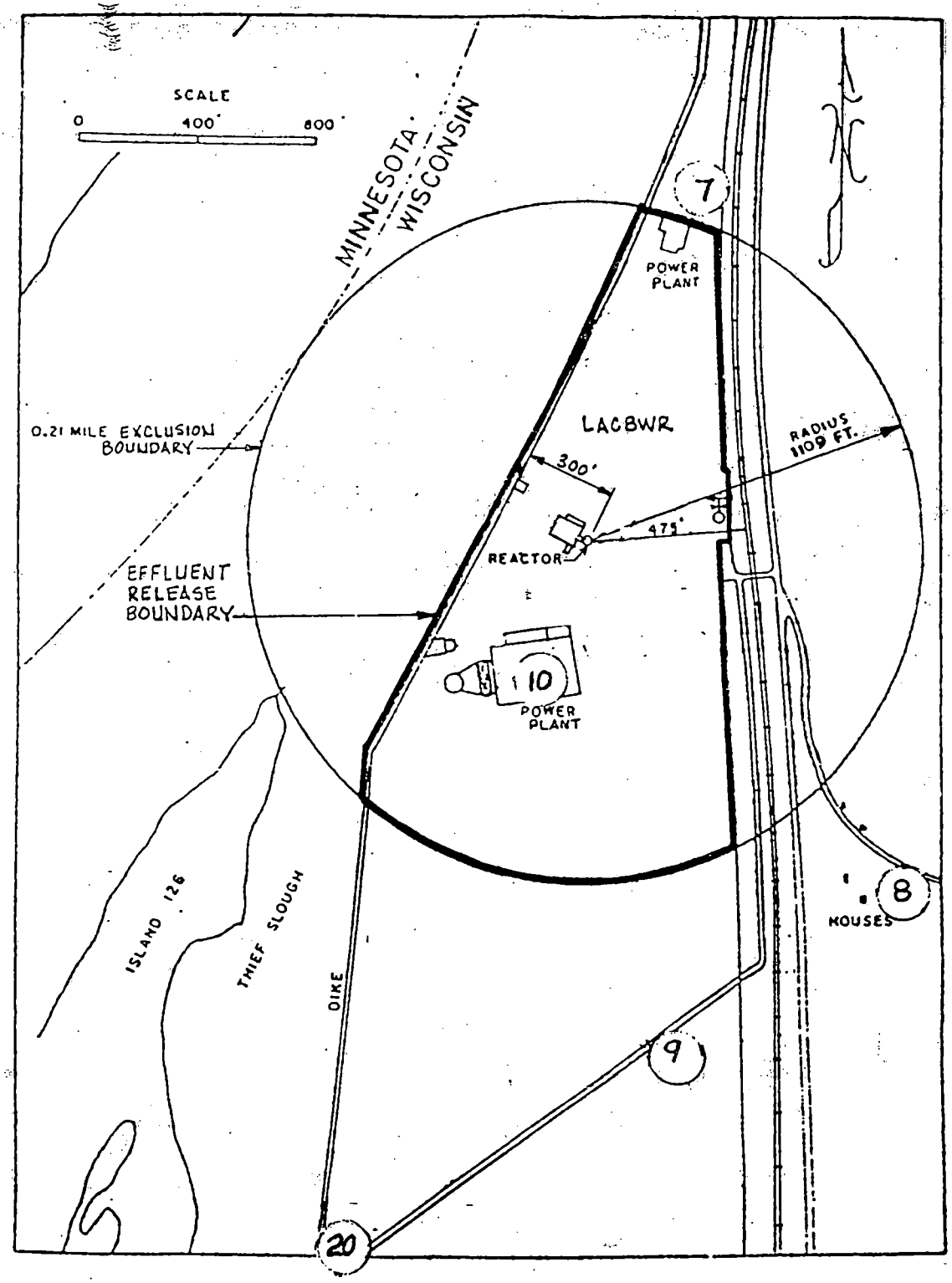

FIGURE 4 - LACBWR ENVIRONMENTAL DOSE ASSESSMENT LOCATIONS

TABLE 5

SAMPLE FREQUENCY AND ANALYSIS OF RADIO-ENVIRONMENTAL SAMPLES

SAMPLE	FREQUENCY	ANALYSIS PERFORMED
TLD (LiF) Dosimeters	Quarterly	Dose in mrem
Particulate Air Glass Fiber Filters	Weekly	Gross Beta and Gamma Spectroscopy of Composites Monthly (HPGe-MCA)
Activated Charcoal Cartridges	Weekly	Gamma Spectroscopy for I-131
Milk	Biweekly during grazing season	Gamma Spectroscopy
Sediment	Twice per year	Gamma Spectroscopy
Fish	Quarterly	Gamma Spectroscopy
River	Monthly	Gamma isotopic analysis and tritium (Internal Liquid Scintillation Spectrometer)
Vegetation	At time of harvest	Gamma Spectroscopy

TABLE 6

PERMANENT

ENVIRONMENTAL MONITORING STATION LOCATIONS

(Refer to Figure 2)

LOCATION NO.	LOCATION	AIR SAMPLE	MILK
1	Pedretti Farm	x	x
2	P. Malin Farm	x	x
3	A. Malin Farm		x
4	Gianoli Farm	x	
5	Dam No. 8	x	
6	Trailer Court	x	
7	Crib House	x	
8	Main Office	x	

TABLE 7

ENVIRONMENTAL TLD LOCATIONS

LOCATION NO.	LOCATION
1	ACROSS RIVER .5 MI W
2	ACROSS RIVER ACROSS FROM G-1, .5 MI WNW
3	ACROSS RIVER W END OF DAM #8, 1 MI NW
4	BERRA RIDGE ROAD AND BEYER HILL ROAD, 3 MI SE
5	MOUND RIDGE ROAD & HWY 56, 2 MI E
6	AT TRAILER COURT, .5 MI SSW
7	ON FENCE ACROSS FROM FUEL TANK N OF G-1, .2 MI N
8	S OF PEDRETTI ROAD, E OF SITE, .3 MI SW
9	E SIDE OF FISHERMAN'S ROAD, .3 MI S
10	G-3 CONTROL ROOM, .1 MI SSW
11	TOP OF BLUFF, .5 MI E
12	COUNTY ROAD K AND HICKORY RIDGE ROAD, 3 MI ENE
13	COUNTY ROAD K AND COUNTY ROAD O, 5.2 MI NNE
14	NW FROM KELSEY FARM, 1.2 MI ENE
15	DAM #8, 1 MI N
16	GIANOLI, 2 MI NNE
17	HWY 56 AT ROMANCE, 4.5 MI ESE
18	PEDRETTI, 1.8 MI SE
19	ROAD ABOVE GENOA LEGION, 1.2 MI NNE
20	SW GATEPOST AT END OF G-3 DIKE, .4 MI SSW
21	QUONSET HUT NEAR DPC MAIN OFFICE, 19 MI N
22	MUNDSACK ROAD, 3 MI SE
23	S BAD AXE ROAD, 3.8 MI SSE
24	S BAD AXE ROAD AND WORMAN AND KUEHN ROAD, 5 MI SE
25	STODDARD, 8 MI N
26	HARMONY, 10 MI E
27	DE SOTO, OLD HWY 35, 9 MI SSE
28	4 MI N
29	3.5 MI ENE
30	VICTORY, 4.5 MI S
31	RENO, 3.5 MI NW
32	NEW ALBIN, 9 MI SSW
33	ACROSS ROAD FROM BECK'S FISH MARKET, 3 MI N
34	APPROX. .7 MILE N OF JUNCTION ON HWY 26 & 14
35	APPROX. 3 MI N OF NEW ALBIN ON HWY 26, 3 MI SW, MILLSTONE RECREATION AREA
36	NEW ALBIN, 5.5 MI SW, HWY 26 N OF NEW ALBIN (IA)
37	FISH HATCHERY, 2.8 MI SSE
38	CALEDONIA, 13 MI NW (MN)
39	APPROX. 3.5 MI S OF NEW ALBIN ON HWY 26, 7.5 MI SSW
40	RED MOUND, 7.5 MI SE
41	VIROQUA, 19 MI E

TABLE 8

RADIO-ENVIRONMENTAL SAMPLES COLLECTED

JANUARY-DECEMBER 1988

TYPE OF SAMPLE	NUMBER OF SAMPLES
Penetrating Radiation (TLD's)	154
Air Particulate	369
River Water	36
Sediment	6
Milk	48
Charcoal Cartridge	369
Fish	8
Effluent Split w/St. of Wisc.	12
Vegetation	1

TABLE 9

QUARTERLY THERMOLUMINESCENT DOSIMETER DOSE MEASUREMENTS
IN THE LACBWR VICINITY

JANUARY-DECEMBER 1988

STATION NO.	1st QUARTER mRem	2nd QUARTER mRem	3rd QUARTER mRem	4th QUARTER mRem
1 (offsite)	23.6 ± 3.1	24.6 ± 8.6	20.8 ± 1.7	25.2 ± 6.5
2 (offsite)	22.2 ± 5.7	24.8 ± 9.3	--	24.2 ± 4.3
3 (offsite)	19.4 ± 3.9	23.8 ± 9.9	18.5 ± 2.0	24.0 ± 6.0
4 (offsite)	23.8 ± 2.6	29.6 ± 5.8	24.4 ± 7.6	28.2 ± 7.7
5 (offsite)	22.0 ± 4.0	30.2 ± 1.7	23.2 ± 4.8	27.2 ± 7.9
6 (offsite)	27.6 ± 6.6	30.0 ± 11.0	23.8 ± 4.1	34.0 ± 9.7
7 (onsite)	--	31.8 ± 7.1	25.0 ± 1.4	--
8 (offsite)	27.6 ± 9.0	26.6 ± 8.1	23.0 ± 5.7	31.2 ± 12.3
9 (offsite)	23.0 ± 4.7	27.6 ± 6.6	20.0 ± 5.5	27.4 ± 4.1
10 (onsite)	19.2 ± 2.6	22.2 ± 8.8	18.8 ± 1.7	21.8 ± 2.6
11 (offsite)	22.0 ± 2.8	25.6 ± 7.6	22.6 ± 5.8	29.8 ± 4.8
12 (offsite)	21.0 ± 2.0	30.8 ± 5.9	23.0 ± 3.7	29.3 ± 5.5
13 (control)	22.8 ± 3.6	--	24.6 ± 6.1	30.0 ± 6.8
14 (offsite)	25.0 ± 7.3	32.4 ± 1.1	24.2 ± 4.1	35.0 ± 6.3
15 (offsite)	24.8 ± 4.8	27.6 ± 5.4	23.4 ± 2.7	30.0 ± 6.8
16 (offsite)	23.0 ± 3.7	28.2 ± 6.5	24.0 ± 3.7	29.8 ± 8.3
17 (offsite)	24.0 ± 2.8	28.8 ± 7.8	20.2 ± 3.6	25.0 ± 8.0
18 (offsite)	26.4 ± 10.1	29.2 ± 10.2	21.8 ± 4.6	32.0 ± 11.6
19 (offsite)	22.6 ± 4.6	26.0 ± 9.1	21.6 ± 2.3	33.4 ± 7.6
20 (onsite)	24.0 ± 4.7	32.8 ± 9.2	24.8 ± 5.2	26.4 ± 5.6
21 (control)	19.4 ± 6.9	27.2 ± 3.3	18.2 ± 3.6	26.8 ± 7.8

All TLD's greater than 5 miles from the plant are considered control TLD's.

TABLE 9 - (cont'd)

QUARTERLY THERMOLUMINESCENT DOSIMETER DOSE MEASUREMENTS
IN THE LACBWR VICINITY

JANUARY-DECEMBER 1988

STATION NO.	1st QUARTER mRem	2nd QUARTER mRem	3rd QUARTER mRem	4th QUARTER mRem
22 (offsite)	--	--	20.4 ± 3.3	34.0 ± 14.2
23 (offsite)	23.2 ± 4.8	26.5 ± 4.2	22.4 ± 2.3	30.0 ± 8.6
24 (offsite)	22.0 ± 2.4	26.6 ± 9.0	20.4 ± 5.9	26.2 ± 2.6
25 (control)	22.0 ± 3.2	28.2 ± 7.7	21.2 ± 2.6	24.8 ± 12.8
26 (control)	24.0 ± 8.0	32.6 ± 4.8	23.6 ± 3.3	28.8 ± 2.6
27 (control)	22.8 ± 3.8	24.4 ± 6.4	22.6 ± 2.3	27.8 ± 5.5
28 (control)	22.8 ± 4.1	27.0 ± 9.3	19.4 ± 3.3	22.6 ± 6.1
29 (offsite)	23.8 ± 3.8	29.4 ± 10.4	22.0 ± 2.0	29.4 ± 5.2
30 (control)	42.8 ± 7.1	33.4 ± 9.7	29.0 ± 4.7	40.0 ± 7.9
31 (offsite)	23.6 ± 3.0	28.8 ± 6.5	21.8 ± 1.7	28.6 ± 1.8
32 (control)	17.6 ± 1.8	23.4 ± 8.6	18.2 ± 3.0	22.6 ± 1.8
33 (offsite)	19.0 ± 4.7	27.8 ± 3.3	18.4 ± 3.3	24.2 ± 7.1
34 (offsite)	24.8 ± 5.4	31.4 ± 10.9	24.0 ± 3.7	29.6 ± 2.3
35 (offsite)	--	30.6 ± 6.4	22.6 ± 3.3	32.2 ± 8.0
36 (control)	21.4 ± 3.6	30.0 ± 8.1	--	27.0 ± 8.2
37 (offsite)	22.0 ± 3.2	24.6 ± 5.4	19.0 ± 0	31.0 ± 12.4
38 (control)	21.6 ± 3.0	25.0 ± 9.3	17.0 ± 1.4	27.2 ± 15.8
39 (control)	23.2 ± 5.7	25.0 ± 8.9	18.8 ± 1.7	25.2 ± 5.0
40 (control)	23.2 ± 3.6	29.6 ± 3.3	22.4 ± 3.6	28.8 ± 8.9
41 (control)	--	38.2 ± 10.4	--	33.8 ± 11.1

All TLD's greater than 5 miles from the plant are considered control TLD's.

TABLE 10

WEEKLY GROSS BETA AIR PARTICULATES IN THE LACBWR VICINITY
(Reporting Level = 10 times Control Value)

COLLECTION DATE	LACBWR PLANT $\rho Ci/m^3$	TRAILER COURT $\rho Ci/m^3$	DAM #8 $\rho Ci/m^3$	GIANOLI FARM $\rho Ci/m^3$	MALIN FARM $\rho Ci/m^3$	PEDRETTI FARM $\rho Ci/m^3$	LA CROSSE CONTROL
1/7/88	.025 ± .002	.029 ± .002	.032 ± .002	.028 ± .002	.026 ± .002	.023 ± .002	.030 ± .002
1/12/88	.021 ± .003	.038 ± .003	.039 ± .003	.041 ± .004	.034 ± .003	.024 ± .002	.041 ± .003
1/19/88	.020 ± .002	.020 ± .002	.016 ± .002	.027 ± .002	.021 ± .002	.021 ± .002	.029 ± .003
1/26/88	.017 ± .002	.022 ± .002	.024 ± .002	.022 ± .003	.024 ± .002	.022 ± .002	.026 ± .002
2/2/88	.020 ± .002	.024 ± .002	.027 ± .002	.028 ± .003	.027 ± .002	.024 ± .002	.031 ± .002
2/9/88	.019 ± .002	.025 ± .002	.029 ± .002	.017 ± .002	.024 ± .002	.026 ± .002	.032 ± .002
2/16/88	.027 ± .003	.026 ± .002	.029 ± .002	.007 ± .002	.027 ± .002	.027 ± .002	.028 ± .002
2/23/88	.017 ± .002	.016 ± .002	.020 ± .002	.023 ± .003	.019 ± .002	.016 ± .001	.024 ± .002
3/1/88	.016 ± .002	.020 ± .001	.023 ± .002	.024 ± .003	.019 ± .002	.018 ± .002	.024 ± .002
3/8/88	.017 ± .002	.015 ± .002	.024 ± .002	.022 ± .003	.018 ± .002	.020 ± .002	.023 ± .002
3/15/88	.008 ± .002	.010 ± .002	.013 ± .002	.013 ± .002	.014 ± .002	.011 ± .001	.015 ± .002
3/22/88	.014 ± .002	.012 ± .002	.016 ± .002	.020 ± .002	.016 ± .002	.014 ± .002	.020 ± .002
3/29/88	.015 ± .002	.014 ± .001	.020 ± .002	.021 ± .002	.018 ± .002	.016 ± .002	.020 ± .002
4/5/88	.016 ± .002	.018 ± .002	.024 ± .003	.024 ± .003	.019 ± .002	.017 ± .002	.021 ± .002
4/12/88	.014 ± .002	.017 ± .002	.017 ± .002	.020 ± .003	.016 ± .002	.013 ± .002	.021 ± .002
4/19/88	.014 ± .002	.020 ± .002	.022 ± .002	.021 ± .003	.018 ± .002	0.16 ± .002	.021 ± .002

TABLE 10

WEEKLY GROSS BETA AIR PARTICULATES IN THE LACBWR VICINITY
(Reporting Level = 10 times Control Value)

COLLECTION DATE	LACBWR PLANT $\rho Ci/m^3$	TRAILER COURT $\rho Ci/m^3$	DAM #8 $\rho Ci/m^3$	GIANOLI FARM $\rho Ci/m^3$	MALIN FARM $\rho Ci/m^3$	PEDRETTI FARM $\rho Ci/m^3$	LA CROSSE CONTROL
4/26/88	.016 ± .002	.015 ± .002	.017 ± .002	.021 ± .003	.014 ± .002	.016 ± .002	.019 ± .002
5/3/88	.024 ± .002	.024 ± .002	.025 ± .002	.029 ± .003	.022 ± .002	.021 ± .002	.030 ± .002
5/10/88	.016 ± .002	.018 ± .003	.021 ± .002	.022 ± .003	.021 ± .002	.018 ± .002	.023 ± .002
5/17/88	.010 ± .002	.011 ± .002	.014 ± .002	.022 ± .003	.017 ± .002	.010 ± .002	.019 ± .002
5/24/88	.017 ± .002	.018 ± .002	.020 ± .002	.025 ± .003	.007 ± .002	.013 ± .002	.021 ± .002
6/1/88	.039 ± .003	.035 ± .002	.039 ± .003	.041 ± .003	.034 ± .002	.028 ± .002	.037 ± .003
6/7/88	.025 ± .003	.026 ± .002	.030 ± .003	.031 ± .003	.027 ± .003	.023 ± .002	.031 ± .003
6/15/88	.033 ± .003	.035 ± .002	.038 ± .003	.044 ± .003	.039 ± .003	.035 ± .002	.039 ± .003
6/21/88	.028 ± .003	.024 ± .002	.028 ± .002	.026 ± .003	.027 ± .003	.024 ± .002	.029 ± .002
6/28/88	.024 ± .003	.020 ± .002	.026 ± .002	.029 ± .003	.025 ± .002	.022 ± .002	.026 ± .002
7/5/88	.026 ± .002	.026 ± .002	.026 ± .002	.024 ± .003	.020 ± .002	.018 ± .002	.030 ± .002
7/12/88	.022 ± .003	.023 ± .002	.029 ± .002	.035 ± .003	.025 ± .002	.022 ± .002	.030 ± .003
7/19/88	.020 ± .002	.027 ± .002	.030 ± .002	.032 ± .003	.027 ± .002	.025 ± .002	Pump Failure NO SAMPLE
7/26/88	.019 ± .002	.024 ± .002	.024 ± .002	.031 ± .002	.023 ± .002	.019 ± .002	.029 ± .002
8/2/88	.016 ± .002	.028 ± .002	.029 ± .002	.034 ± .003	.026 ± .002	.024 ± .002	.030 ± .002
8/9/88	.011 ± .002	.020 ± .002	.023 ± .002	.030 ± .003	.026 ± .002	.019 ± .002	.031 ± .003

TABLE 10

WEEKLY GROSS BETA AIR PARTICULATES IN THE LACBWR VICINITY
(Reporting Level = 10 times Control Value)

COLLECTION DATE	LACBWR PLANT $\rho Ci/m^3$	TRAILER COURT $\rho Ci/m^3$	DAM #8 $\rho Ci/m^3$	GIANOLI FARM $\rho Ci/m^3$	MALIN FARM $\rho Ci/m^3$	PEDRETTI FARM $\rho Ci/m^3$	LA CROSSE CONTROL
8/16/88	.015 ± .003	.026 ± .002	.033 ± .002	.030 ± .004	.029 ± .003	.025 ± .002	.039 ± .003
8/23/88	.020 ± .002	.020 ± .002	.024 ± .002	.032 ± .004	.021 ± .002	.018 ± .002	.027 ± .002
8/30/88	.025 ± .003	.032 ± .002	.033 ± .003	.030 ± .003	.021 ± .002	.020 ± .002	.034 ± .003
9/6/88	.025 ± .003	.026 ± .002	.030 ± .002	.031 ± .003	.027 ± .002	.025 ± .002	.035 ± .003
9/13/88	.012 ± .002	.023 ± .002	.042 ± .003	.028 ± .002	.026 ± .002	.024 ± .002	.037 ± .003
9/20/88	.023 ± .003	.022 ± .002	.024 ± .002	.025 ± .003	.020 ± .002	.018 ± .002	.035 ± .003
9/27/88	.024 ± .003	.023 ± .002	.026 ± .002	.026 ± .003	.022 ± .002	.020 ± .002	.038 ± .003
10/4/88	.014 ± .002	.026 ± .002	.028 ± .002	.028 ± .003	.022 ± .002	.022 ± .002	.032 ± .003
10/11/88	.033 ± .003	.014 ± .002	.034 ± .003	.031 ± .003	.027 ± .003	.029 ± .003	.042 ± .003
10/18/88	.024 ± .003	.026 ± .002	.033 ± .003	.028 ± .002	.010 ± .001	.026 ± .002	.048 ± .004
10/25/88	.020 ± .003	.025 ± .002	.022 ± .002	.026 ± .003	.018 ± .002	.018 ± .002	.029 ± .002
11/27/88	.025 ± .002	.024 ± .002	.026 ± .002	.029 ± .003	.021 ± .002	.024 ± .002	.039 ± .003
11/8/88	.022 ± .003	.030 ± .002	.031 ± .003	.031 ± .003	.024 ± .002	.026 ± .002	.056 ± .005
11/15/88	.023 ± .003	.030 ± .003	.032 ± .003	.029 ± .003	.026 ± .002	.024 ± .002	.041 ± .003
11/22/88	.027 ± .003	.033 ± .003	.037 ± .003	.036 ± .003	.027 ± .002	.031 ± .002	.046 ± .008
11/29/88	.034 ± .003	.046 ± .004	.039 ± .003	.040 ± .003	.031 ± .002	.035 ± .003	.131 ± .012

TABLE 10

WEEKLY GROSS BETA AIR PARTICULATES IN THE LACBWR VICINITY
(Reporting Level = 10 times Control Value)

COLLECTION DATE	LACBWR PLANT $\rho Ci/m^3$	TRAILER COURT $\rho Ci/m^3$	DAM #8 $\rho Ci/m^3$	GIANOLI FARM $\rho Ci/m^3$	MALIN FARM $\rho Ci/m^3$	PEDRETTI FARM $\rho Ci/m^3$	LA CROSSE CONTROL
12/5/88	.039 ± .004	.029 ± .004	.053 ± .004	.050 ± .004	.032 ± .003	.051 ± .003	.063 ± .004
12/13/88	.041 ± .003	.040 ± .003	.049 ± .003	.052 ± .004	.026 ± .002	.051 ± .003	Pump seized NO SAMPLE
12/19/88	.027 ± .003	.041 ± .004	.033 ± .003	.036 ± .004	.057 ± .003	.030 ± .003	.047 ± .005
12/27/88	.028 ± .003	.049 ± .004	.041 ± .003	.045 ± .004	.033 ± .002	.037 ± .002	.059 ± .004
1/3/89	.059 ± .004	.065 ± .004	.078 ± .004	.081 ± .005	.061 ± .003	.067 ± .004	.061 ± .003

TABLE 11

AIR PARTICULATE COMPOSITE RESULTS
(Report Concentrations in $\rho Ci/m^3$)

LOCATION: START DATE: END DATE:	GIANOLI 12/29/87 2/2/88	P. MALIN 12/29/87 2/2/88	PEDRETTI 12/29/87 2/2/88	LACBWR 12/29/87 2/2/88	TRAILER CRT 12/29/87 2/2/88	DAM NO. 8 12/29/87 2/2/88	LA CROSSE 12/29/87 2/2/88
ISOTOPES/RL*							
I-131/0.9	<4.82 E-3	<3.36 E-3	<3.19 E-3	<5.00 E-3	<4.00 E-3	<3.51 E-3	<4.53 E-3
Cs-134/10	<1.08 E-3	<6.54 E-4	<5.29 E-4	<7.63 E-4	<8.12 E-4	<4.96 E-4	<7.86 E-4
Cs-137/20	<7.71 E-4	<6.76 E-4	<5.32 E-4	<8.94 E-4	<6.50 E-4	<4.92 E-4	<7.79 E-4
Zn-65		5.39 E-3 ± 1.09 E-3					

* RL - REPORTING LEVEL

TABLE 11

AIR PARTICULATE COMPOSITE RESULTS
(Report Concentrations in $\rho Ci/m^3$)

LOCATION: START DATE: END DATE:	GIANOLI 2/2/88 3/1/88	P. MALIN 2/2/88 3/1/88	PEDRETTI 2/2/88 3/1/88	LACBWR 2/2/88 3/1/88	TRAILER CRT 2/2/88 3/1/88	DAM NO. 8 2/2/88 3/1/88	LA CROSSE 2/2/88 3/1/88
ISOTOPES/RL*							
I-131/0.9	<5.83 E-3	<3.62 E-3	<3.50 E-3	<4.79 E-3	<4.48 E-3	<4.89 E-3	<4.69 E-3
Cs-134/10	<1.10 E-3	<8.02 E-4	<7.09 E-4	<1.41 E-3	<9.42 E-4	<7.45 E-4	<8.44 E-4
Cs-137/20	<1.25 E-3	<8.06 E-4	<7.96 E-4	<1.13 E-3	<8.77 E-4	<8.52 E-4	<1.10 E-3

* RL - REPORTING LEVEL

TABLE 11

AIR PARTICULATE COMPOSITE RESULTS
(Report Concentrations in $\rho Ci/m^3$)

LOCATION: START DATE: END DATE:	GIANOLI 3/1/88 3/29/88	P. MALIN 3/1/88 3/29/88	PEDRETTI 3/1/88 3/29/88	LACBWR 3/1/88 3/29/88	TRAILER CRT 3/1/88 3/29/88	DAM NO. 8 3/1/88 3/29/88	LA CROSSE 3/1/88 3/29/88
ISOTOPES/RL*							
I-131/0.9	<5.03 E-3	<3.32 E-3	<2.86 E-3	<4.51 E-3	<3.52 E-3	<3.62 E-3	<3.43 E-3
Cs-134/10	<1.21 E-3	<7.27 E-4	<7.17 E-4	<1.28 E-3	<1.12 E-3	<7.86 E-4	<8.44 E-3
Cs-137/20	<1.19 E-3	<9.79 E-4	<7.60 E-4	<1.23 E-3	<1.03 E-3	<7.96 E-4	<1.02 E-3

* RL - REPORTING LEVEL

TABLE 11

AIR PARTICULATE COMPOSITE RESULTS
(Report Concentrations in $\rho Ci/m^3$)

LOCATION: START DATE: END DATE:	GIANOLI 3/29/88 5/3/88	P. MALIN 3/29/88 5/3/88	PEDRETTI 3/29/88 5/3/88	LACBWR 3/29/88 5/3/88	TRAILER CRT 3/29/88 5/3/88	DAM NO. 8 3/29/88 5/3/88	LA CROSSE 3/29/88 5/3/88
ISOTOPES/RL*							
I-131/0.9	<4.89 E-3	<3.05 E-3	<3.06 E-3	<4.72 E-3	<4.78 E-3	<3.62 E-3	<4.15 E-3
Cs-134/10	<1.06 E-3	<6.23 E-4	<5.68 E-4	<9.30 E-4	<8.48 E-4	<6.54 E-4	<7.58 E-4
Cs-137/20	<1.06 E-3	<7.34 E-4	<5.91 E-4	<7.47 E-4	<7.13 E-4	<5.61 E-4	<7.03 E-4

* RL - REPORTING LEVEL

TABLE 11

AIR PARTICULATE COMPOSITE RESULTS
(Report Concentrations in $\rho Ci/m^3$)

LOCATION: START DATE: END DATE:	GIANOLI 5/3/88 6/1/88	P. MALIN 5/3/88 6/1/88	PEDRETTI 5/3/88 6/1/88	LACBWR 5/3/88 6/1/88	TRAILER CRT 5/3/88 6/1/88	DAM NO. 8 5/3/88 6/1/88	LA CROSSE 5/3/88 6/1/88
ISOTOPES/RL*							
I-131/0.9	<4.36 E-3	<3.07 E-3	<3.01 E-3	<3.96 E-3	<3.74 E-3	<2.92 E-3	<3.10 E-3
Cs-134/10	<1.51 E-3	<7.83 E-4	<6.98 E-4	<1.25 E-3	<8.88 E-4	<7.32 E-4	<9.26 E-4
Cs-137/20	<1.34 E-3	<8.39 E-4	<7.66 E-4	<1.18 E-3	<9.75 E-4	<8.16 E-4	<8.05 E-4

* RL - REPORTING LEVEL

TABLE 11

AIR PARTICULATE COMPOSITE RESULTS
(Report Concentrations in $\rho Ci/m^3$)

LOCATION: START DATE: END DATE:	GIANOLI 6/1/88 7/5/88	P. MALIN 6/1/88 7/5/88	PEDRETTI 6/1/88 7/5/88	LACBWR 6/1/88 7/5/88	TRAILER CRT 6/1/88 7/5/88	DAM NO. 8 6/1/88 7/5/88	LA CROSSE 6/1/88 7/5/88
ISOTOPES/RL*							
I-131/0.9	<5.20 E-3	<4.22 E-3	<3.80 E-3	<6.43 E-3	<4.07 E-3	<3.90 E-3	<4.14 E-3
Cs-134/10	<8.16 E-4	<9.31 E-4	<7.04 E-4	<1.34 E-3	<6.36 E-4	<9.11 E-4	<7.57 E-4
Cs-137/20	<1.11 E-3	<6.33 E-4	<5.76 E-4	<8.96 E-4	<5.93 E-4	<6.95 E-4	<8.11 E-4

* RL - REPORTING LEVEL

TABLE 11

AIR PARTICULATE COMPOSITE RESULTS
(Report Concentrations in $\rho Ci/m^3$)

LOCATION: START DATE: END DATE:	GIANOLI 7/5/88 8/2/88	P. MALIN 7/5/87 8/2/88	PEDRETTI 7/5/88 8/2/88	LACBWR 7/5/88 8/2/88	TRAILER CRT 7/5/88 8/2/88	DAM NO. 8 7/5/88 8/2/88	LA CROSSE 7/5/88 8/2/88
ISOTOPES/RL*							
I-131/0.9	<4.93 E-3	<3.66 E-3	<3.16 E-3	<4.31 E-3	<3.19 E-3	<3.99 E-3	<5.62 E-3
Cs-134/10	<1.02 E-3	<8.67 E-4	<8.42 E-4	<1.42 E-3	<8.91 E-4	<9.09 E-4	<1.35 E-3
Cs-137/20	<3.36 E-3	<8.73 E-4	<7.20 E-4	<1.22 E-3	<8.53 E-4	<7.98 E-4	<1.34 E-3

* RL - REPORTING LEVEL

TABLE 11

AIR PARTICULATE COMPOSITE RESULTS
(Report Concentrations in $\rho Ci/m^3$)

LOCATION: START DATE: END DATE:	GIANOLI 8/2/88 8/30/88	P. MALIN 8/2/88 8/30/88	PEDRETTI 8/2/88 8/30/88	LACBWR 8/2/88 8/30/88	TRAILER CRT 8/2/88 8/30/88	DAM NO. 8 8/2/88 8/30/88	LA CROSSE 8/2/88 8/30/88
ISOTOPES/RL*							
I-131/0.9	<5.22 E-3	<4.01 E-3	<2.51 E-3	<5.57 E-3	<2.64 E-3	<3.02 E-3	<3.41 E-3
Cs-134/10	<1.17 E-3	<1.03 E-3	<7.06 E-4	<1.22 E-3	<8.11 E-4	<8.92 E-4	<1.04 E-3
Cs-137/20	<1.63 E-3	<1.01 E-3	<6.72 E-4	<1.26 E-3	<7.88 E-4	<3.11 E-3	<9.86 E-4
Zn-65	--	4.54 E-3 ± 1.55 E-3	--	--	--	--	--

* RL - REPORTING LEVEL

TABLE 11

AIR PARTICULATE COMPOSITE RESULTS
(Report Concentrations in $\rho Ci/m^3$)

LOCATION: START DATE: END DATE:	GIANOLI 8/30/88 10/4/88	P. MALIN 8/30/88 10/4/88	PEDRETTI 8/30/88 10/4/88	LACBWR 8/30/88 10/4/88	TRAILER CRT 8/30/88 10/4/88	DAM NO. 8 8/30/88 10/4/88	LA CROSSE 8/30/88 10/4/88
ISOTOPES/RL*							
I-131/0.9	<5.46 E-3	<3.62 E-3	<1.45 E-2	<5.62 E-3	<4.09 E-3	<1.83 E-2	<4.19 E-3
Cs-134/10	<1.02 E-3	<6.18 E-4	<3.25 E-3	<1.30 E-3	<6.25 E-4	<4.37 E-3	<9.74 E-4
Cs-137/20	2.93 E-3 ± 5.94 E-4	<6.28E-4	5.92 E-3 ± 1.87 E-3	<1.05 E-3	<5.58 E-4	<3.78 E-3	<9.61 E-4
Ce-144	--	--	2.04 E-2 ± 8.06 E-3	--	--	--	--

* RL - REPORTING LEVEL

TABLE 11

AIR PARTICULATE COMPOSITE RESULTS
(Report Concentrations in $\rho Ci/m^3$)

LOCATION: START DATE: END DATE:	GIANOLI 10/4/88 11/1/88	P. MALIN 10/4/88 11/1/88	PEDRETTI 10/4/88 11/1/88	LACBWR 10/4/88 11/1/88	TRAILER CRT 10/4/88 11/1/88	DAM NO. 8 10/4/88 11/1/88	LA CROSSE 10/4/88 11/1/88
ISOTOPES/RL*							
I-131/0.9	<5.56 E-3	<3.33 E-3	<2.85 E-3	<6.00 E-3	<3.74 E-3	<3.88 E-3	<4.57 E-3
Cs-134/10	<8.21 E-4	<8.30 E-4	<8.92 E-4	<1.31 E-3	<8.75 E-4	<8.30 E-4	<1.01 E-3
Cs-137/20	<9.42 E-4	<7.33 E-4	<6.47 E-4	<1.22 E-3	<6.79 E-4	<6.59 E-4	<1.84 E-4
Ru-106	--	--	--	2.45 E-2	--	--	--

* RL - REPORTING LEVEL

TABLE 11

AIR PARTICULATE COMPOSITE RESULTS
(Report Concentrations in $\rho Ci/m^3$)

LOCATION: START DATE: END DATE:	GIANOLI 11/1/88 11/29/88	P. MALIN 11/1/88 11/29/88	PEDRETTI 11/1/88 11/29/88	LACBWR 11/1/88 11/29/88	TRAILER CRT 11/1/88 11/29/88	DAM NO. 8 11/1/88 11/29/88	LA CROSSE 11/1/88 11/29/88
ISOTOPES/RL*							
I-131/0.9	<6.30 E-3	<5.11 E-3	<5.72 E-3	<7.11 E-3	<5.62 E-3	<6.01 E-3	<1.21 E-2
Cs-134/10	<1.44 E-3	<9.02 E-4	<8.06 E-4	<1.19 E-3	<8.98 E-4	<1.03 E-4	<2.51 E-3
Cs-137/20	2.47 E-3 ± 9.14 E-4	<8.43 E-4	<7.96 E-4	2.10 E-3 ± 9.43 E-4	<9.83 E-4	<9.64 E-4	<2.29 E-3
Ce-144	--	--	5.99 E-3 ± 2.46 E-3	--	--	--	--
Co-60	--	--	1.95 E-3 ± 1.68 E-3	--	--	--	--

* RL - REPORTING LEVEL

TABLE 11

AIR PARTICULATE COMPOSITE RESULTS
(Report Concentrations in $\rho Ci/m^3$)

LOCATION: START DATE: END DATE:	GIANOLI 11/29/88 1/3/89	P. MALIN 11/29/88 1/3/89	PEDRETTI 11/29/88 1/3/89	LACBWR 11/29/88 1/3/89	TRAILER CRT 11/29/88 1/3/89	DAM NO. 8 11/29/88 1/3/89	LA CROSSE 12/9/87 1/3/89
ISOTOPES/RL*							
I-131/0.9	<8.86 E-4	<4.62 E-4	<9.19 E-4	<1.43 E-3	<1.86 E-3	<1.06 E-3	<1.34 E-3
Cs-134/10	<1.01 E-3	<5.35 E-4	<1.33 E-3	<2.10 E-3	<2.12 E-3	<1.48 E-3	<1.91 E-3
Cs-137/20	<1.20 E-3	<6.42 E-4	<1.42 E-3	<2.09 E-3	<2.20 E-3	<1.57 E-3	<1.96 E-3

* RL - REPORTING LEVEL

TABLE 12

RESULTS OF ANALYSIS OF MISSISSIPPI RIVER WATER IN THE VICINITY OF LACBWR
(Report Concentrations in ρCi/Liter)

COLLECTION DATE: SAMPLE LOCATION:	SAMPLE #1 1/7/88 DAM #8	SAMPLE #2 1/7/88 OUTFALL	SAMPLE #3 1/7/88 VICTORY	SAMPLE #1 2/2/88 VICTORY	SAMPLE #2 2/2/88 OUTFALL	SAMPLE #3 2/2/88 DAM #8
ISOTOPES/RL*						
H-3	< 1532	< 1532	< 1532	< 1495	< 1495	< 1495
Mn-54/1000	< 4.76	< 4.00	< 4.24	< 4.42	< 4.31	< 4.52
Fe-59/400	<10.78	< 9.36	< 9.41	< 7.80	< 7.22	<10.68
Co-58/1000	< 3.66	< 4.69	< 4.71	< 4.01	< 2.63	< 4.02
Co-60/300	<11.07	<11.15	<11.15	<10.45	<11.20	<10.84
Zn-65/300	<10.37	<12.23	< 9.80	< 8.73	< 8.73	<10.84
Zr-95/400	< 6.86	< 8.66	< 7.30	< 8.74	< 6.41	< 8.95
Nb-95/400	< 4.53	< 4.22	< 5.26	< 3.26	< 4.41	< 4.05
I-131/5	< 6.08	< 6.33	< 7.05	< 4.21	< 4.22	< 4.34
Cs-134/30	< 4.82	< 4.18	< 6.10	< 4.56	< 5.15	< 3.58
Cs-137/50	< 5.12	< 5.28	< 4.62	< 4.70	< 4.44	< 5.48
Ba-140/200	<23.79	<21.20	<20.04	<19.03	<17.11	<17.95
La-140/200	<15.02	<26.50	<19.07	< 4.92	< 4.06	< 5.65

* RL - REPORTING LEVEL

TABLE 12

RESULTS OF ANALYSIS OF MISSISSIPPI RIVER WATER IN THE VICINITY OF LACBWR
(Report Concentrations in ρCi/Liter)

COLLECTION DATE: SAMPLE LOCATION:	SAMPLE #1 3/1/88 DAM #8	SAMPLE #2 3/1/88 OUTFALL	SAMPLE #3 3/1/88 VICTORY	SAMPLE #1 4/5/88 DAM #8	SAMPLE #2 4/5/88 OUTFALL	SAMPLE #3 4/5/88 VICTORY
ISOTOPES/RL*						
H-3	< 1506	< 1506	< 1506	< 1764	< 1764	< 1764
Mn-54/1000	< 4.20	< 3.73	< 3.05	< 4.31	< 4.41	< 4.72
Fe-59/400	< 8.84	< 8.82	< 9.75	< 7.22	< 6.57	< 7.21
Co-58/1000	< 4.72	< 3.89	< 4.22	< 4.11	< 4.32	< 4.22
Co-60/300	<10.22	< 9.89	<10.61	< 9.81	< 9.38	<10.45
Zn-65/300	< 8.73	< 9.98	<11.85	< 9.98	<38.67	< 8.38
Zr-95/400	< 6.20	< 7.33	< 8.16	< 7.34	< 6.59	< 6.98
Nb-95/400	< 4.93	8.11 ± 5.38	< 4.49	< 3.93	< 4.49	< 4.58
I-131/5	< 3.62	< 4.20	< 4.48	< 4.41	< 4.20	< 3.94
Cs-134/30	< 5.48	< 4.30	< 5.37	< 5.15	< 4.16	< 5.15
Cs-137/50	< 5.20	< 4.70	< 4.79	< 4.25	< 5.20	< 5.28
Ba-140/200	<18.82	<19.21	<17.52	<19.93	<18.07	<17.86
La-140/200	< 4.04	< 3.27	< 3.83	< 4.05	< 3.26	< 3.90

* RL - REPORTING LEVEL

TABLE 12

RESULTS OF ANALYSIS OF MISSISSIPPI RIVER WATER IN THE VICINITY OF LACBWR
(Report Concentrations in ρCi/Liter)

COLLECTION DATE: SAMPLE LOCATION:	SAMPLE #1 5/3/88 DAM #8	SAMPLE #2 5/3/88 OUTFALL	SAMPLE #3 5/3/88 VICTORY	SAMPLE #1 6/7/88 DAM #8	SAMPLE #2 6/7/88 OUTFALL	SAMPLE #3 6/7/88 VICTORY
ISOTOPES/RL*						
H-3	< 1486	< 1486	< 1486	< 1600	2064	< 1600
Mn-54/1000	< 4.31	< 3.97	< 4.20	< 3.74	< 4.20	< 4.62
Fe-59/400	<11.83	< 7.24	<11.90	< 8.40	<12.50	< 8.87
Co-58/1000	< 3.79	< 4.01	< 4.02	< 3.42	< 3.66	< 4.01
Co-60/300	< 9.03	< 9.47	<10.20	< 9.64	< 9.89	< 9.21
Zn-65/300	< 8.03	<10.83	<10.60	<10.84	< 7.65	< 8.03
Zr-95/400	< 6.01	< 7.36	< 6.83	< 7.72	< 5.99	< 6.42
Nb-95/400	< 3.62	< 3.00	< 4.64	< 5.38	< 4.13	< 3.73
I-131/5	< 4.82	< 4.25	< 4.92	< 4.28	< 4.01	< 5.07
Cs-134/30	< 3.72	< 4.81	< 4.56	< 3.88	< 5.26	< 5.27
Cs-137/50	< 4.88	< 4.88	< 4.34	< 5.04	< 4.25	< 5.20
Ba-140/200	<15.59	<18.13	<17.20	< 2.16	<18.23	< 2.04
La-140/200	< 7.49	< 4.89	< 6.61	< 7.05	< 4.50	< 5.38

* RL - REPORTING LEVEL

TABLE 12

RESULTS OF ANALYSIS OF MISSISSIPPI RIVER WATER IN THE VICINITY OF LACBWR
(Report Concentrations in ρCi/Liter)

COLLECTION DATE: SAMPLE LOCATION:	SAMPLE #1 7/5/88 OUTFALL	SAMPLE #2 7/5/88 DAM #8	SAMPLE #3 7/5/88 VICTORY	SAMPLE #1 8/2/88 VICTORY	SAMPLE #2 8/2/88 DAM #8	SAMPLE #3 8/2/88 OUTFALL
ISOTOPES/RL*						
H-3	< 1636	< 1636	< 1636	< 1481	< 1481	< 1481
Mn-54/1000	< 3.73	< 3.34	< 4.31	< 4.52	< 4.42	< 5.09
Fe-59/400	<10.16	<11.83	< 7.26	<11.10	< 8.88	< 8.87
Co-58/1000	< 3.39	< 3.90	< 3.67	< 4.53	< 4.73	< 4.01
Co-60/300	< 6.99	< 7.77	< 7.56	< 8.37	< 9.12	< 8.66
Zn-65/300	< 8.02	<10.83	<10.84	<11.60	< 8.39	< 6.85
Zr-95/400	< 5.98	< 7.70	< 7.54	< 8.49	< 7.18	< 7.53
Nb-95/400	< 3.69	< 4.52	< 4.25	< 3.50	< 3.73	< 4.34
I-131/5	< 4.20	< 4.54	< 4.44	< 4.33	< 4.60	< 3.92
Cs-134/30	< 4.80	< 4.43	< 5.48	< 4.81	< 5.15	< 4.16
Cs-137/50	< 4.44	<10.05	< 4.70	< 4.15	< 4.44	< 5.28
Ba-140/200	<19.36	<16.91	<17.68	<21.20	<18.20	<16.60
La-140/200	< 3.60	< 4.96	<12.56	< 4.89	< 4.57	< 3.84

* RL - REPORTING LEVEL

TABLE 12

RESULTS OF ANALYSIS OF MISSISSIPPI RIVER WATER IN THE VICINITY OF LACBWR
(Report Concentrations in ρCi/Liter)

COLLECTION DATE: SAMPLE LOCATION:	SAMPLE #1 9/6/88 DAM #8	SAMPLE #2 9/6/88 OUTFALL	SAMPLE #3 9/6/88 VICTORY	SAMPLE #1 10/6/88 DAM #8	SAMPLE #2 10/6/88 OUTFALL	SAMPLE #3 10/6/88 VICTORY
ISOTOPES/RL*						
H-3	< 1512	< 1512	< 1512	< 1445	< 1445	< 1445
Mn-54/1000	< 3.48	< 3.48	< 4.91	< 3.62	< 3.61	< 5.11
Fe-59/400	<10.30	< 9.88	< 9.34	< 9.06	< 9.00	< 8.97
Co-58/1000	< 4.14	< 3.68	< 4.33	< 3.32	< 4.27	< 3.57
Co-60/300	< 8.27	< 8.08	< 7.22	< 9.21	< 9.12	< 8.76
Zn-65/300	< 9.39	< 9.40	<11.36	< 8.77	< 6.43	< 8.05
Zr-95/400	< 6.24	< 6.04	< 6.61	< 6.52	< 7.78	< 6.67
Nb-95/400	< 4.07	< 3.54	< 4.69	< 4.65	< 4.23	< 4.11
I-131/5	< 4.83	< 4.83	< 4.28	< 4.88	< 4.59	< 4.64
Cs-134/30	< 4.43	< 3.88	< 4.81	< 3.73	< 4.93	< 4.30
Cs-137/50	< 4.88	< 4.70	< 5.27	< 4.88	< 4.62	< 4.71
Ba-140/200	<15.85	<21.04	<20.38	<19.55	<19.14	<17.62
La-140/200	< 5.11	< 4.78	< 2.17	< 8.69	< 6.61	< 6.07

* RL - REPORTING LEVEL

TABLE 12

RESULTS OF ANALYSIS OF MISSISSIPPI RIVER WATER IN THE VICINITY OF LACBWR
(Report Concentrations in ρCi/Liter)

COLLECTION DATE: SAMPLE LOCATION:	SAMPLE #1 11/1/88 VICTORY	SAMPLE #2 11/1/88 DAM #8	SAMPLE #3 11/1/88 OUTFALL	SAMPLE #1 12/5/88 VICTORY	SAMPLE #2 12/5/88 DAM #8	SAMPLE #3 12/5/88 OUTFALL
ISOTOPES/RL*						
H-3	< 1502	< 1502	< 1502	< 1496	< 1496	< 1496
Mn-54/1000	< 4.20	< 4.42	< 3.20	< 3.34	< 4.52	12.86 ± 3.37
Fe-59/400	< 9.88	< 8.45	< 9.95	< 6.58	< 8.35	< 6.59
Co-58/1000	< 4.03	< 3.80	< 4.05	< 4.99	< 3.90	< 3.78
Co-60/300	< 9.75	< 8.38	< 8.57	< 8.37	< 9.56	< 8.18
Zn-65/300	< 8.40	< 1.14	< 6.43	<10.55	< 9.69	< 9.68
Zr-95/400	< 6.66	< 7.23	< 7.78	< 7.50	< 7.35	< 7.85
Nb-95/400	< 4.19	< 1.35	< 4.42	< 5.00	< 4.61	< 4.51
I-131/5	< 4.77	< 4.24	< 5.40	< 4.45	< 4.07	< 5.43
Cs-134/30	< 4.93	< 5.16	< 5.27	< 4.43	< 4.56	< 4.30
Cs-137/50	< 4.70	< 4.96	< 3.51	< 4.62	< 4.79	< 4.62
Ba-140/200	< 1.93	< 1.57	< 1.88	<17.54	<16.18	<20.78
La-140/200	< 8.60	< 6.51	< 4.67	< 6.42	< 5.68	< 5.46

* RL - REPORTING LEVEL

TABLE 13

RESULTS OF ANALYSIS OF MISSISSIPPI RIVER SEDIMENT IN THE VICINITY OF LACBWR
(Report Concentration in ρCi/Kg)

COLLECTION DATE: SAMPLE LOCATION:	SAMPLE #1 6/15/88 UPSTREAM	SAMPLE #2 6/15/88 DOWNSTREAM	SAMPLE #3 6/15/88 OUTFALL	SAMPLE #1 9/15/88 OUTFALL	SAMPLE #2 9/15/88 DOWNSTREAM	SAMPLE #3 9/15/88 UPSTREAM
ISOTOPES						
Cs-134	< 5.76	< 11.45	8.15E1±1.58E1	8.34E1±1.47E1	< 1.13 E1	< 7.36
Cs-137	< 6.01	< 10.80	3.29E3±3.96E1	2.97E3±3.55E1	7.5E1 ± 9.33	< 7.57
Mn-54	--	--	1.43E2±1.53E1	8.86E1±1.32E1	--	2.61E1 ± 6.52
Co-60	--	--	--	2.99E3±4.28E1	4.36E1±1.57E1	--

TABLE 14

RESULTS OF ANALYSIS OF MILK SAMPLES IN THE VICINITY OF LACBWR
(Report Concentrations in ρCi/Liter)

SAMPLE LOCATION	COLLECTION ρDATE	ISOTOPES/REPORTING LEVEL				
		I-131/6	Cs-134/60	Cs-137/60	Ba-140/300	La-140/300
P. MALIN	1/12/88	< 3.54	< 4.30	< 4.88	< 18.75	< 3.51
PEDRETTI	2/09/88	< 4.74	< 5.89	< 5.20	< 17.10	< 5.88
A. MALIN	3/08/88	< 4.26	< 4.56	< 4.62	< 19.37	< 6.34
A. MALIN	4/13/88	< 3.97	< 5.98	< 4.70	< 21.30	< 3.88
P. MALIN	4/12/88	< 4.69	< 4.81	< 20.05	< 17.90	< 4.86
PEDRETTI	4/12/88	< 4.48	< 4.80	< 5.12	< 17.45	< 4.16
A. MALIN	4/27/88	< 5.38	< 5.49	< 4.79	< 22.74	< 13.22
P. MALIN	4/27/88	< 4.48	< 5.38	< 6.14	< 17.30	< 7.99
PEDRETTI	4/27/88	< 5.34	< 4.30	< 4.44	< 22.70	< 8.92
A. MALIN	5/11/88	< 4.57	< 5.48	< 5.58	< 17.90	< 4.95
P. MALIN	5/11/88	< 4.38	< 4.43	< 4.96	< 18.44	< 3.37
PEDRETTI	5/10/88	< 4.71	< 5.15	< 17.96	< 18.43	< 4.89
A. MALIN	5/25/88 *	< 10.57	< 12.25	< 21.48	< 43.24	< 37.28
P. MALIN	5/25/88 *	< 9.67	< 11.37	< 21.65	< 40.10	< 26.41
PEDRETTI	5/25/88 *	< 9.51	< 12.86	< 22.01	< 38.90	< 18.37
A. MALIN	6/16/88	< 5.51	< 4.93	< 4.87	< 21.80	< 16.90
P. MALIN	6/16/88	< 3.83	< 4.42	< 5.20	< 18.90	< 1.88
PEDRETTI	6/15/88	< 4.03	< 5.37	< 4.25	< 19.84	< 6.14
A. MALIN	6/29/88	< 4.30	< 4.93	< 5.65	< 18.87	< 5.68
P. MALIN	6/29/88	< 5.22	< 4.69	< 4.34	< 19.59	< 2.45
PEDRETTI	6/29/88	< 4.78	< 5.27	< 4.96	< 19.38	< 9.62
A. MALIN	7/12/88	< 4.48	< 4.81	< 5.12	< 20.70	< 6.04
P. MALIN	7/12/88	< 3.80	< 5.98	< 4.62	< 17.46	< 6.41
PEDRETTI	7/12/88	< 4.13	< 5.37	< 6.21	< 18.56	< 5.66
A. MALIN	7/26/88	< 4.52	< 5.04	< 4.88	< 17.74	< 5.24
P. MALIN	7/26/88	< 4.44	< 4.93	< 4.25	< 21.53	< 2.47
PEDRETTI	7/26/88	< 4.29	< 4.69	< 5.94	< 19.42	< 5.61

* SAMPLES COUNTED ON HOTLAB GELI, ENV GELI OOC AT TIME OF COUNTING

TABLE 14

RESULTS OF ANALYSIS OF MILK SAMPLES IN THE VICINITY OF LACBWR
(Report Concentrations in ρCi/Liter)

SAMPLE LOCATION	COLLECTION ρDATE	ISOTOPES/REPORTING LEVEL I-131/6	Cs-134/60	Cs-137/60	Ba-140/300	La-140/300	
A. MALIN	8/09/88	< 4.85	< 4.69	< 5.43	< 17.11	< 5.93	
P. MALIN	8/09/88	< 6.80	< 4.82	< 4.62	< 23.13	< 24.44	
PEDRETTI	8/09/88	< 6.10	< 5.17	< 36.57	< 19.36	< 20.72	Zn-65 =
A. MALIN	8/23/88	< 5.41	< 5.17	< 5.04	< 21.24	< 12.65	20.49±7.01
							Ce-144 = 49.90±20.43
P. MALIN	8/23/88	< 4.85	< 6.54	< 16.34	< 21.68	< 6.50	
PEDRETTI	8/23/88	< 4.18	< 4.68	< 6.21	< 17.33	< 3.49	
A. MALIN	9/14/88	< 4.32	< 5.37	< 5.04	< 18.29	< 4.08	
P. MALIN	9/13/88	< 4.29	< 4.56	< 5.37	< 20.00	< 4.27	
PEDRETTI	9/13/88	< 4.41	< 5.58	< 6.14	< 19.10	< 2.00	
A. MALIN	9/28/88	< 4.12	< 5.15	< 5.87	< 16.37	< 1.73	
P. MALIN	9/27/88	< 4.40	< 4.30	< 4.53	< 19.63	< 6.00	
PEDRETTI	9/27/88	< 3.70	< 4.02	< 4.53	< 21.00	< 5.01	
A. MALIN	10/10/88	< 5.23	< 4.69	< 4.96	< 22.70	< 9.07	
P. MALIN	10/11/88	< 4.47	< 4.69	< 4.79	< 19.26	< 8.81	
PEDRETTI	10/11/88	< 5.39	< 4.93	< 4.15	< 23.07	< 7.24	
A. MALIN	10/26/88	< 4.34	< 5.68	< 5.28	< 18.89	< 4.54	
P. MALIN	10/25/88	< 12.34	< 4.93	< 4.79	< 21.18	< 7.89	
PEDRETTI	10/26/88	< 4.38	< 5.04	< 4.79	< 18.74	< 3.92	
PEDRETTI	11/08/88	< 4.63	< 4.02	< 4.96	< 1.90 E1	< 2.76	
A. MALIN	12/13/88	< 6.35	< 7.30	< 8.23	< 29.3	< 8.60	

TABLE 15

WEEKLY AIR CHARCOALS IN THE LACBWR VICINITY FOR AIRBORNE I-131
(Reporting Level = 0.9 $\rho Ci/m^3$)

COLLECTION DATE	LACBWR PLANT $\rho Ci/m^3$	TRAILER COURT $\rho Ci/m^3$	DAM #8 $\rho Ci/m^3$	GIANOLI FARM $\rho Ci/m^3$	MALIN FARM $\rho Ci/m^3$	PEDRETTI FARM $\rho Ci/m^3$	LA CROSSE CONTROL
1/7/88	< 1.99 E-3	< 1.72 E-3	< 1.26 E-3	< 1.81 E-3	< 1.22 E-3	< 1.24 E-3	< 1.59 E-3
1/12/88	< 3.54 E-3	< 2.44 E-3	< 1.90 E-3	< 3.22 E-3	< 2.10 E-3	< 2.03 E-3	< 2.01 E-3
1/19/88	< 2.02 E-3	< 1.67 E-3	< 1.34 E-3	< 2.26 E-3	< 1.49 E-3	< 1.46 E-3	< 1.94 E-3
1/28/88	< 4.89 E-3	< 1.61 E-3	< 1.26 E-3	< 2.10 E-3	< 1.43 E-3	< 1.30 E-3	< 1.59 E-3
2/2/88	< 2.34 E-3	< 1.72 E-3	< 1.75 E-3	< 2.53 E-3	< 1.73 E-3	< 1.36 E-3	< 1.96 E-3
2/9/88	< 2.19 E-3	< 1.79 E-3	< 1.71 E-3	< 2.14 E-3	< 1.73 E-3	< 1.51 E-3	< 1.97 E-3
2/16/88	< 1.88 E-3	< 1.54 E-3	< 1.37 E-3	< 2.27 E-3	< 1.52 E-3	< 1.38 E-3	< 1.68 E-3
2/23/88	< 1.97 E-3	< 1.60 E-3	< 1.35 E-3	< 2.21 E-3	< 1.51 E-3	< 1.34 E-3	< 1.75 E-3
3/1/88	< 2.40 E-3	< 1.76 E-3	< 1.54 E-3	< 2.50 E-3	< 1.59 E-3	< 1.46 E-3	< 1.74 E-3
3/8/88	< 2.15 E-3	< 2.08 E-3	< 1.98 E-3	< 2.28 E-3	< 1.64 E-3	< 1.60 E-3	< 2.09 E-3
3/15/88	< 2.26 E-3	< 1.51 E-3	< 1.54 E-3	< 2.31 E-3	< 1.54 E-3	< 1.30 E-3	< 1.81 E-3
3/22/88	< 1.84 E-3	< 1.80 E-3	< 1.42 E-3	< 1.99 E-3	< 1.46 E-3	< 1.31 E-3	< 1.77 E-3
3/29/88	< 1.79 E-3	< 1.47 E-3	< 1.73 E-3	< 2.43 E-3	< 1.52 E-3	< 1.12 E-3	< 1.79 E-3
4/5/88	< 2.07 E-3	< 1.77 E-3	< 1.52 E-3	< 2.49 E-3	< 1.55 E-3	< 1.38 E-3	< 1.99 E-3
4/12/88	< 1.91 E-3	< 2.30 E-3	< 1.87 E-3	< 2.64 E-3	< 1.72 E-3	< 1.53 E-3	< 1.87 E-3
4/19/88	< 1.94 E-3	< 1.70 E-3	< 1.44 E-3	< 2.36 E-3	< 1.66 E-3	< 1.51 E-3	< 1.69 E-3

TABLE 15

WEEKLY AIR CHARCOALS IN THE LACBWR VICINITY FOR AIRBORNE I-131
(Reporting Level = 0.9 $\rho Ci/m^3$)

COLLECTION DATE	LACBWR PLANT $\rho Ci/m^3$	TRAILER COURT $\rho Ci/m^3$	DAM #8 $\rho Ci/m^3$	GIANOLI FARM $\rho Ci/m^3$	MALIN FARM $\rho Ci/m^3$	PEDRETTI FARM $\rho Ci/m^3$	LA CROSSE CONTROL
4/26/88	< 1.81 E-3	< 1.79 E-3	< 1.60 E-3	< 2.85 E-3	< 1.55 E-3	< 1.37 E-3	< 1.56 E-3
5/3/88	< 2.23 E-3	< 1.89 E-3	< 1.55 E-3	< 2.70 E-3	< 1.55 E-3	< 1.51 E-3	< 1.76 E-3
5/10/88	< 2.14 E-3	< 2.79 E-3	< 1.60 E-3	< 2.66 E-3	< 2.09 E-3	< 1.33 E-3	< 1.76 E-3
5/17/88	< 2.18 E-3	< 2.03 E-3	< 1.82 E-3	< 2.31 E-3	< 1.66 E-3	< 1.45 E-3	< 1.66 E-3
5/24/88	< 2.08 E-3	< 1.19 E-3	< 2.08 E-3	< 2.39 E-3	< 1.36 E-3	< 1.47 E-3	< 1.50 E-3
6/1/88	< 3.51 E-3	< 2.32 E-3	< 2.26 E-3	< 3.15 E-3	< 2.23 E-3	< 1.84 E-3	< 2.41 E-3
6/7/88	< 2.45 E-3	< 2.15 E-3	< 2.14 E-3	< 2.46 E-3	< 2.40 E-3	< 1.80 E-3	< 2.29 E-3
6/15/88	< 2.09 E-3	< 1.49 E-3	< 1.61 E-3	< 2.23 E-3	< 2.07 E-3	< 1.47 E-3	< 1.97 E-3
6/21/88	< 2.95 E-3	< 1.88 E-3	< 1.69 E-3	< 2.66 E-3	< 1.94 E-3	< 1.89 E-3	< 2.02 E-3
6/28/88	< 2.49 E-3	< 1.37 E-3	< 1.66 E-3	< 2.67 E-3	< 1.56 E-3	< 1.64 E-3	< 1.95 E-3
7/5/88	< 1.66 E-3	< 1.46 E-3	< 1.70 E-3	< 2.56 E-3	< 1.88 E-3	< 1.38 E-3	< 1.51 E-3
7/12/88	< 2.62 E-3	< 1.75 E-3	< 1.78 E-3	< 2.99 E-3	< 2.01 E-3	< 1.74 E-3	< 1.69 E-3
7/19/88	< 2.29 E-3	< 1.44 E-3	< 1.40 E-3	< 1.97 E-3	< 1.39 E-3	< 1.29 E-3	No Sample due Location Change
7/28/88	< 1.93 E-3	< 1.37 E-3	< 1.65 E-3	< 2.54 E-3	< 1.83 E-3	< 1.40 E-3	< 1.70 E-3
8/2/88	< 2.44 E-3	< 1.46 E-3	< 2.10 E-3	< 2.48 E-3	< 1.63 E-3	< 1.44 E-3	< 1.80 E-3
8/9/88	< 2.61 E-3	< 1.46 E-3	< 1.80 E-3	< 2.79 E-3	< 1.57 E-3	< 1.38 E-3	< 2.29 E-3

TABLE 15

WEEKLY AIR CHARCOALS IN THE LACBWR VICINITY FOR AIRBORNE I-131
(Reporting Level = 0.9 $\rho Ci/m^3$)

COLLECTION DATE	LACBWR PLANT $\rho Ci/m^3$	TRAILER COURT $\rho Ci/m^3$	DAM #8 $\rho Ci/m^3$	GIANOLI FARM $\rho Ci/m^3$	MALIN FARM $\rho Ci/m^3$	PEDRETTI FARM $\rho Ci/m^3$	LA CROSSE CONTROL
8/16/88	< 2.93 E-3	< 1.37 E-3	< 1.59 E-3	< 3.33 E-3	< 1.64 E-3	< 1.20 E-3	< 1.52 E-3
8/23/88	< 3.04 E-3	< 1.50 E-3	< 2.10 E-3	< 3.35 E-3	< 1.72 E-3	< 1.57 E-3	< 1.55 E-3
8/30/88	< 2.17 E-3	< 1.48 E-3	< 1.45 E-3	< 2.37 E-3	< 2.63 E-3	< 1.53 E-3	< 1.78 E-3
9/6/88	< 2.27 E-3	< 1.73 E-3	< 1.78 E-3	< 2.14 E-3	< 1.93 E-3	< 1.51 E-3	< 1.73 E-3
9/13/88	< 2.11 E-3	< 1.44 E-3	< 1.56 E-3	< 2.22 E-3	< 1.41 E-3	< 1.39 E-3	< 4.27 E-3
9/20/88	< 1.86 E-3	< 1.45 E-3	< 1.47 E-3	< 2.14 E-3	< 1.25 E-3	< 1.56 E-3	< 1.85 E-3
9/27/88	< 2.26 E-3	< 2.43 E-3	< 1.99 E-3	< 2.17 E-3	< 1.62 E-3	< 1.51 E-3	< 2.24 E-3
10/4/88	< 2.58 E-3	< 1.40 E-3	< 1.77 E-3	< 2.22 E-3	< 1.62 E-3	< 1.61 E-3	< 1.93 E-3
10/11/88	< 2.94 E-3	< 1.71 E-3	< 2.41 E-3	< 2.14 E-3	< 1.66 E-3	< 1.54 E-3	< 2.00 E-3
10/18/88	< 2.25 E-3	< 1.23 E-3	< 1.63 E-3	< 1.94 E-3	< 1.26 E-3	< 1.49 E-3	< 1.95 E-3
10/25/88	< 2.10 E-3	< 1.70 E-3	< 1.48 E-3	< 2.37 E-3	< 1.41 E-3	< 1.48 E-3	< 1.93 E-3
11/1/88	< 2.51 E-3	< 1.38 E-3	< 1.49 E-3	< 2.25 E-3	< 1.36 E-3	< 1.39 E-3	< 3.01 E-3
11/8/88	< 2.42 E-3	< 1.96 E-3	< 1.67 E-3	< 3.23 E-3	< 1.82 E-3	< 1.90 E-3	< 4.27 E-3
11/15/88	< 2.18 E-3	< 1.71 E-3	< 1.80 E-3	< 2.11 E-3	< 1.42 E-3	< 1.64 E-3	< 2.33 E-3
11/22/88	< 2.22 E-3	< 1.81 E-3	< 1.58 E-3	< 2.12 E-3	< 1.57 E-3	< 1.65 E-3	< 7.37 E-3
11/27/88	< 2.46 E-3	< 2.44 E-3	< 1.87 E-3	< 1.76 E-3	< 1.46 E-3	< 1.59 E-3	< 8.31 E-3

TABLE 15

WEEKLY AIR CHARCOALS IN THE LACBWR VICINITY FOR AIRBORNE I-131
(Reporting Level = 0.9 $\rho Ci/m^3$)

COLLECTION DATE	LACBWR PLANT $\rho Ci/m^3$	TRAILER COURT $\rho Ci/m^3$	DAM #8 $\rho Ci/m^3$	GIANOLI FARM $\rho Ci/m^3$	MALIN FARM $\rho Ci/m^3$	PEDRETTI FARM $\rho Ci/m^3$	LA CROSSE CONTROL
12/5/88	< 2.71 E-3	< 4.11 E-3	< 2.25 E-3	< 3.22 E-3	< 1.90 E-3	< 2.32 E-3	< 2.80 E-3
12/13/88	< 3.40 E-3	< 3.00 E-3	< 2.05 E-3	< 3.95 E-3	< 2.02 E-3	< 2.38 E-3	PUMP SEIZED NO SAMPLE TAKEN
12/19/88	< 4.81 E-3	< 5.05 E-3	< 3.17 E-3	< 4.47 E-3	< 2.99 E-3	< 3.62 E-3	< 5.04 E-3
12/27/88	< 3.07 E-3	< 4.28 E-3	< 2.21 E-3	< 3.85 E-3	< 2.09 E-3	< 2.46 E-3	< 3.17 E-3
1/3/89	< 3.64 E-3	< 2.79 E-3	< 3.13 E-3	< 4.39 E-3	< 2.29 E-3	< 2.49 E-3	< 1.98 E-3

TABLE 16

FISH SAMPLE ACTIVITY IN THE VICINITY OF LACBWR
(Report Concentrations in ρCi/Kg)

COLLECTION DATE: FISH SPECIES:	SAMPLE #1 4/4/88 BUFFALO	SAMPLE #2 4/4/88 CARP	SAMPLE #1 6/15/88 WALLEYE	SAMPLE #2 6/15/88 CARP	SAMPLE #1 9/15/88 WALLEYE	SAMPLE #2 9/15/88 CARP
ISOTOPES/RL*						
Mn-54/3E4	<17.67	< 6.95	< 6.27	< 7.38	< 9.83	< 9.19
Fe-59/1E4	<17.73	<13.69	<17.46	< 2.57	<23.70	<28.17
Co-58/3E4	< 6.21	< 5.58	< 5.18	< 5.82	< 8.09	< 7.71
Co-60/1E4	<13.98	<13.64	<12.22	<16.47	<18.22	<19.81
Zn-65/2E4	<16.03	<14.92	<18.97	<22.91	<25.07	<23.92
Cs-134/1E3	< 5.63	< 6.97	< 7.61	< 9.09	< 9.86	< 8.44
Cs-137/2E3	< 7.38	< 6.36	< 6.23	< 7.18	< 8.74	< 9.57

* RL - REPORTING LEVEL

TABLE 16

FISH SAMPLE ACTIVITY IN THE VICINITY OF LACBWR
(Report Concentrations in ρCi/Kg)

COLLECTION DATE: FISH SPECIES:	SAMPLE #1 11/1/88 CARP	SAMPLE #2 11/1/88 WALLEYE	SAMPLE #___ _____ _____	SAMPLE #___ _____ _____	SAMPLE #___ _____ _____	SAMPLE #___ _____ _____
ISOTOPES/RL*						
Mn-54/3E4	< 5.63	< 6.18				
Fe-59/1E4	<13.42	<15.77				
Co-58/3E4	< 4.46	< 4.84				
Co-60/1E4	<12.35	<11.36				
Zn-65/2E4	<16.02	<16.31				
Cs-134/1E3	< 5.32	< 6.49				
Cs-137/2E3	<30.92	< 6.36				

* RL - REPORTING LEVEL

TABLE 17

VEGETATION SAMPLE ACTIVITY IN THE VICINITY OF LACBWR
(Report Concentrations in pCi/Kg)

COLLECTION DATE:	SAMPLE #1 7/1/88 SCHROEDER	SAMPLE #2 7/1/88 PEDRETTI	SAMPLE #___	SAMPLE #___	SAMPLE #___	SAMPLE #___
ISOTOPES/RL*						
	NO	NO				
	ACTIVITY	ACTIVITY				
	ABOVE	ABOVE				
	MDA	MDA				
	FOUND	FOUND				

* RL - REPORTING LEVEL