GEORGIA POWER COMPANY
EDWIN I. HATCH NUCLEAR PLANT
ANNUAL RADIOLOGICAL ENVIRONMENTAL SURVEILLANCE REPORT
CALENDAR YEAR 1988

EDWIN I. HATCH NUCLEAR PLANT
RADIOLOGICAL ENVIRONMENTAL SURVEILLANCE REPORT

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ACRONYMS

CL	Central Laboratory
EPA	Environmental Protection Agency
GE	Greater Than or Equal to
GPC	Georgia Power Company
HNP	Edwin I. Hatch Nuclear Plant
LLD	Lower Limit of Detection
LT	Less Than
MDA	Minimum Detectable Activity
MDD	Minimum Detectable Difference
NA	Not Applicable
NDM	No Detectable Measurement(s)
NRC	Nuclear Regulatory Commission
NS	Not Sampled
ODCM	Offsite Dose Calculation Manual
REMP	Radiological Environmental Monitoring Program
RL	Reporting Level
s	Standard Deviation
TLD	Thermoluminescent Dosimeter
TS	Technical Specifications

EDWIN I. HATCH NUCLEAR PLANT
RADIOLOGICAL ENVIRONMENTAL SURVEILLANCE REPORT

1.0 INTRODUCTION

The objectives of the Radiological Environmental Monitoring Program (REMP) are to ascertain the levels of radiation and concentrations of radioactivity in the environs of the Edwin I. Hatch Nuclear Plant (HNP) and to evaluate any radiological impact to the environment due to plant operations. Reported herein are the program's activities for calendar year 1988.

The specifications for the REMP are provided by Section 3/4.16 of the Technical Specifications (TS) for Unit 1 and by Section 3/4.12 of the TS for Unit 2. The Unit 2 TS simply reference the Unit 1 TS. A single program serves both units.

A summary description of the program is provided in Section 2. This includes maps showing the sampling locations; the maps are keyed to a table indicating the distance and direction of each sampling location from the main stack.

An annual summary of the main laboratory analysis results obtained from the samples utilized for environmental monitoring is presented in Section 3. A discussion of the results including assessments of any radiological impacts upon the environment is provided in Section 4.

The results of the Interlaboratory Comparison Program are presented in Section 5. The chief conclusions are stated in Section 6.

2.0 SUMMARY DESCRIPTION

A summary description of the REMP is provided in Table 2-1. This table portrays the program in the manner by which it is being regularly carried out; Table 2-1 is essentially a copy of Table 3.16.1-1 of the TS which delineates the program's requirements. Sampling locations required by Table 2-1 are described in Table 2-2 and are shown on maps in Figures 2-1 through 2-3. This description of the sample locations closely follows that found in the table and figures of Section 3.0 of the Offsite Dose Calculation Manual (ODCM).

It is stated in Section 3.16.1.a of the TS that deviations are permitted from the required sampling schedule which is delineated in Table 2-1 herein, if samples are unobtainable due to hazardous conditions, unavailability, inclement weather, malfunction of equipment, or other just reasons. Any deviations are stated in the discussions for each particular sample type in Section 4.

During 1988, all the laboratory analyses except for the reading of the thermoluminescent dosimeters (TLDs) were performed by Georgia Power Company's (GPC's) Central Laboratory (CL) in Smyrna, Georgia. The reading of the TLDs was provided by Teledyne Isotopes Midwest Laboratory in Northbrook, Illinois.

TABLE 2-1 (SHEET 1 OF 3)

SUMMARY DESCRIPTION OF RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	Approximate Number of Sample Locations	Sampling and Collection Frequency	Type of Analysis and Frequency
1. Airborne Radionuclides and Particulates	6	Continuous operation of sampler with sample collection weekly	Radioiodine canister: I-131 analysis weekly.
			Particulate sampler: analyze for gross beta radioactivity not less than 24 hours following filter change weekly; perform gamma isotopic analysis on affected sample when gross beta activity is 10 times the yearly mean of control samples; and composite (by location) for gamma isotopic analysis quarterly.
2. Direct Radiation	36	Quarterly	Gamma dose quarterly.
3. Ingestion			
Milk (a)	3	Biweekly	Gamma isotopic and I-131 analyses biweekly
Fish or Clams (b)	2	Semiannually	Gamma isotopic analysis on edible portions semiannually.
Grass or Leafy Vegetation	3	Monthly during growing season.	Gamma isotopic analysis monthly (c)

TABLE 2-1 (SHEET 2 OF 3)

SUMMARY DESCRIPTION OF RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	Approximate Number of Sample Locations	Sampling and Collection Frequency	Type of Analysis and Frequency
4. Waterborne			
Surface	2	Composite sample collected monthly (d).	Gamma isotopic analysis monthly. Composite (by location) for tritium analysis quarterly.
Sediment	2	Yearly	Gamma isotopic analysis yearly.
Drinking Water (e) (f)	One sample of river water near the intake and one sample of finished water from each of one to three of the nearest water supplies which could be affected by HNP discharges.	River water collected near the intake will be a composite sample; the finished water will be a grab sample. These samples will be collected monthly unless the calculated dose due to consumption of the water is greater than 1 mrem/year; then the collection will be biweekly. The collections may revert to monthly should the calculated doses become less than 1 mrem/year.	I-131 analysis on each sample when biweekly collections are required. Gross beta and gamma isotopic analyses on each sample; composite (by location) for tritium.

TABLE 2-1 (SHEET 3 OF 3)

SUMMARY DESCRIPTION OF
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

NOTES

a. Up to three sampling locations within 5 miles and in different sectors will be used as available. In addition, one or more control locations beyond 10 miles will be used.

b. Commercially or recreationally important fish may be sampled. Clams may be sampled if difficulties are encountered in obtaining sufficient fish samples.

c. If gamma isotopic analysis is not sensitive enough to meet the Lower Limit of Detection (LLD), a separate analysis for I-131 may be performed.

d. Composite samples shall be collected by collecting an aliquot at intervals not exceeding a few hours.

e. If it is found that river water downstream of HNP is used for drinking, water samples will be collected and analyzed as specified herein.

f. A survey shall be conducted annually at least 50 river miles downstream of HNP to identify those who use Altamaha River water for drinking.

TABLE 2-2 (SHEET 1 OF 2)

RADIOLOGICAL ENVIRONMENTAL SAMPLING LOCATIONS

Station Number	Station Type (a)	Descriptive Location	Direction(b)	Distance(b) (miles)	Sample Type(c)
064	O	Roadside Park	WNW	0.8	D
101	I	Inner Ring	N	1.9	D
102	I	Inner Ring	NNE	2.5	D
103	I	Inner Ring	NE	1.8	AD
104	I	Inner Ring	ENE	1.6	D
105	I	Inner Ring	E	3.7	D
106	I	Inner Ring	ESE	1.1	DV
107	I	Inner Ring	SE	1.2	AD
108	I	Inner Ring	SSE	1.6	D
109	I	Inner Ring	S	0.9	D
110	I	Inner Ring	SSW	1.0	D
111	I	Inner Ring	SW	0.9	D
112	I	Inner Ring	WSW	1.0	ADV
113	I	Inner Ring	W	1.1	D
114	I	Inner Ring	WNW	1.2	D
115	I	Inner Ring	NW	1.1	D
116	I	Inner Ring	NNW	1.6	AD
170	C	Upriver	WNW	(d)	R
172	I	Downriver	E	(d)	R
201	O	Outer Ring	N	5.0	D
202	O	Outer Ring	NNE	4.9	D
203	O	Outer Ring	NE	5.0	D
204	O	Outer Ring	ENE	5.0	D
205	O	Outer Ring	E	7.2	D
206	O	Outer Ring	ESE	4.8	D
207	O	Outer Ring	SE	4.3	D
208	O	Outer Ring	SSE	4.8	D
209	O	Outer Ring	S	4.4	D
210	O	Outer Ring	SSW	4.3	D
211	O	Outer Ring	SW	4.7	D
212	O	Outer Ring	WSW	4.4	D
213	O	Outer Ring	W	4.3	D
214	O	Outer Ring	WNW	5.4	D
215	O	Outer Ring	NW	4.4	D
216	O	Outer Ring	NNW	4.8	D
216	I	Clarks Farm	NNW	4.8	M
301	O	Toombs Central	N	8.0	D
304	C	State Prison	ENE	11.2	AD
304	C	State Prison	ENE	10.8	M
309	C	Baxley Substation	S	10.0	ADV
316	C	Thompson's Dairy	NNW	13.2	M

TABLE 2-2 (SHEET 2 OF 2)

RADIOLOGICAL ENVIRONMENTAL SAMPLING LOCATIONS

NOTES

a. Station types:

C - Control
I - Indicator
O - Other

b. Direction and distance are reckoned from the main stack.

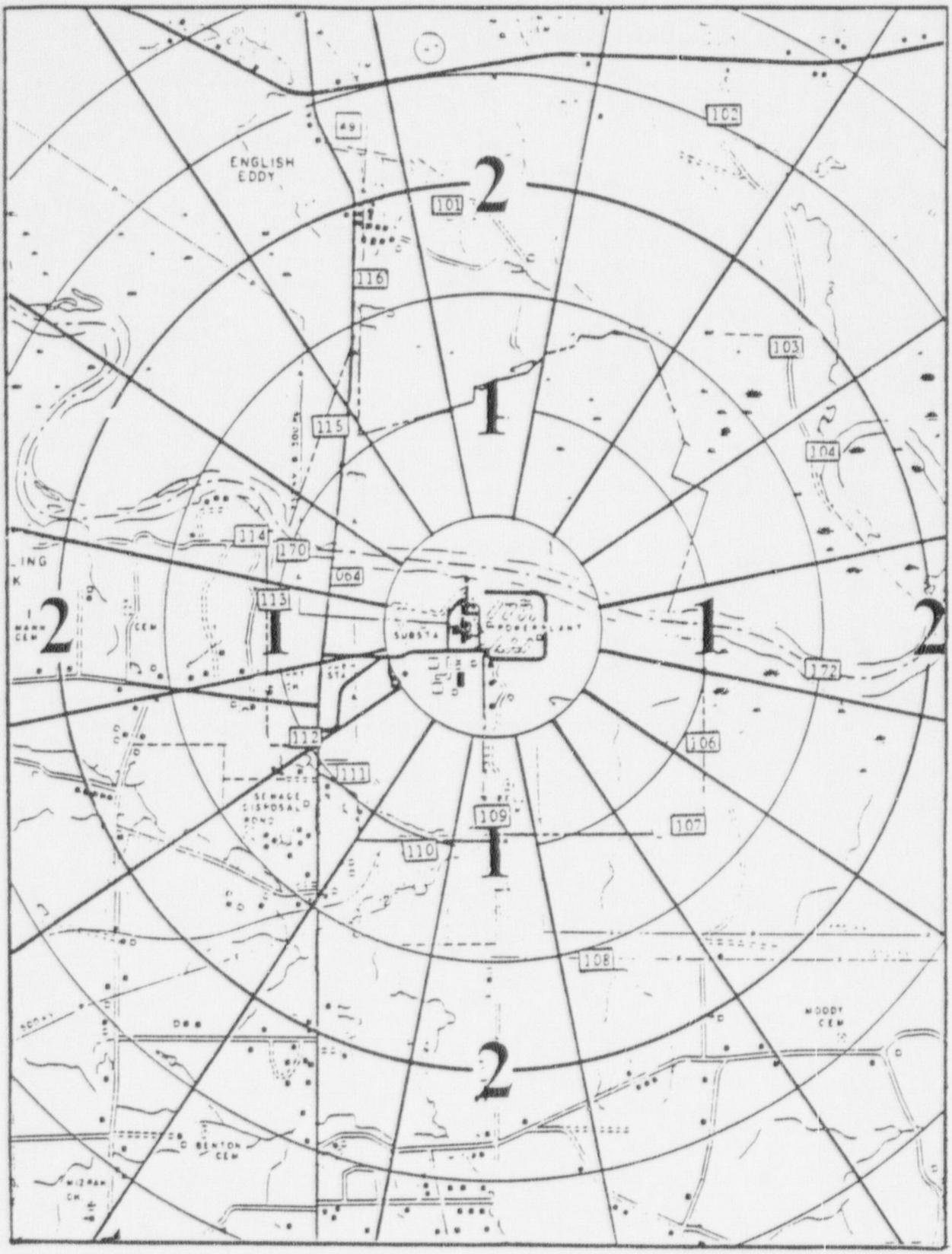
c. Sample types:

A - Airborne Radioactivity
D - Direct Radiation
M - Milk
R - River (fish or clams, shoreline sediment, and surface water)
V - Vegetation

d. Station 170 is located approximately 0.6 river miles upstream of the intake structure for river water, 1.1 river miles for sediment and clams, and 1.5 river miles for fish.

Station 172 is located approximately 3.0 river miles downstream of the discharge structure for river water, sediment and clams, and 1.7 river miles for fish.

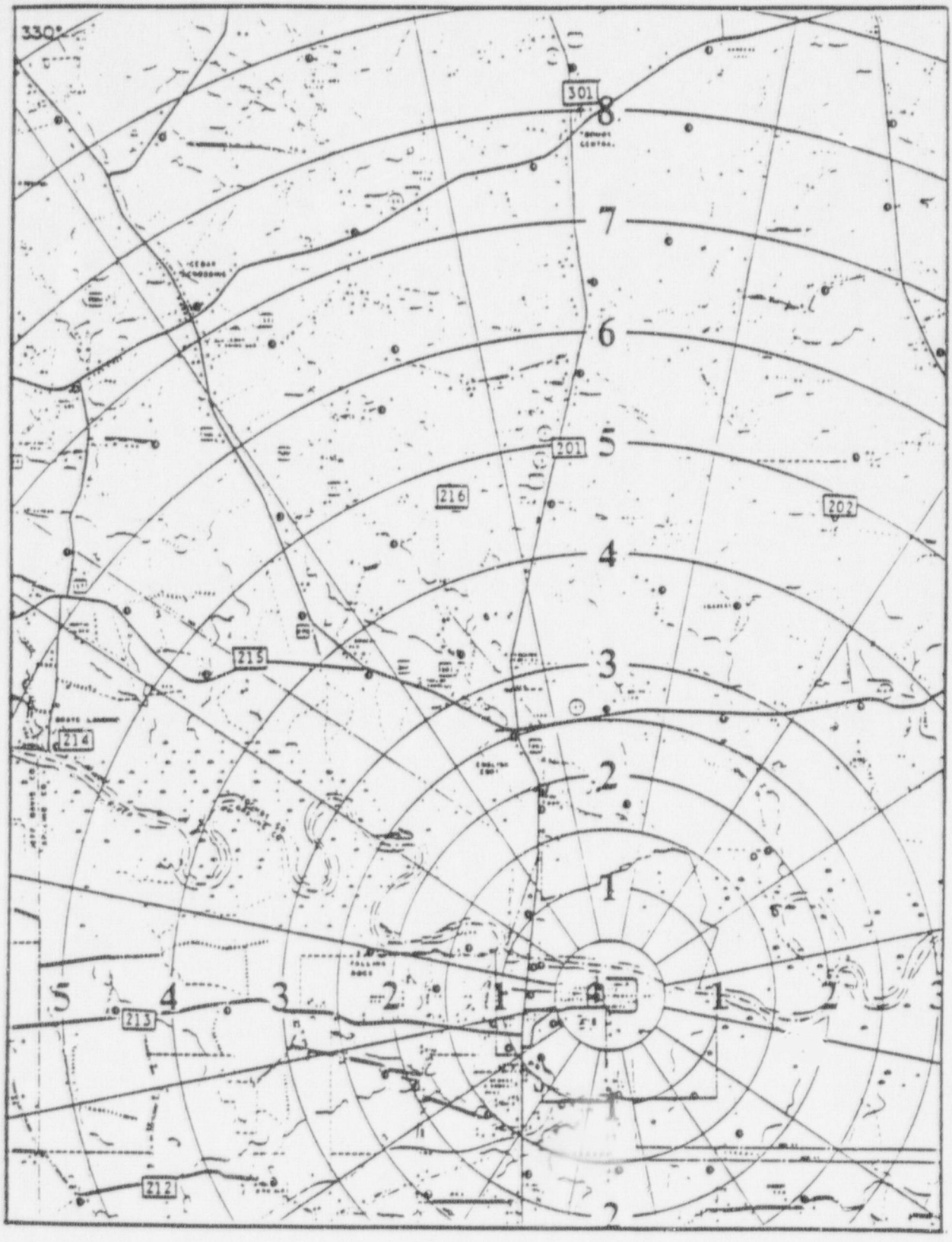
The location from which river water and sediment may be taken can be rather precisely defined. Often, the sampling locations for clams have to be extended over a wide area to obtain a sufficient quantity. High water adds to the difficulty in obtaining clam samples; high water might also make an otherwise suitable location for sediment sampling unavailable. A stretch of the river on the order of a few miles or so is generally needed to obtain adequate fish samples. The mile locations given above represent approximations of the locations where the samples are collected.



EDWIN I. HATCH NUCLEAR PLANT

RADIOLOGICAL ENVIRONMENTAL SAMPLING LOCATIONS ON SITE PERIPHERY

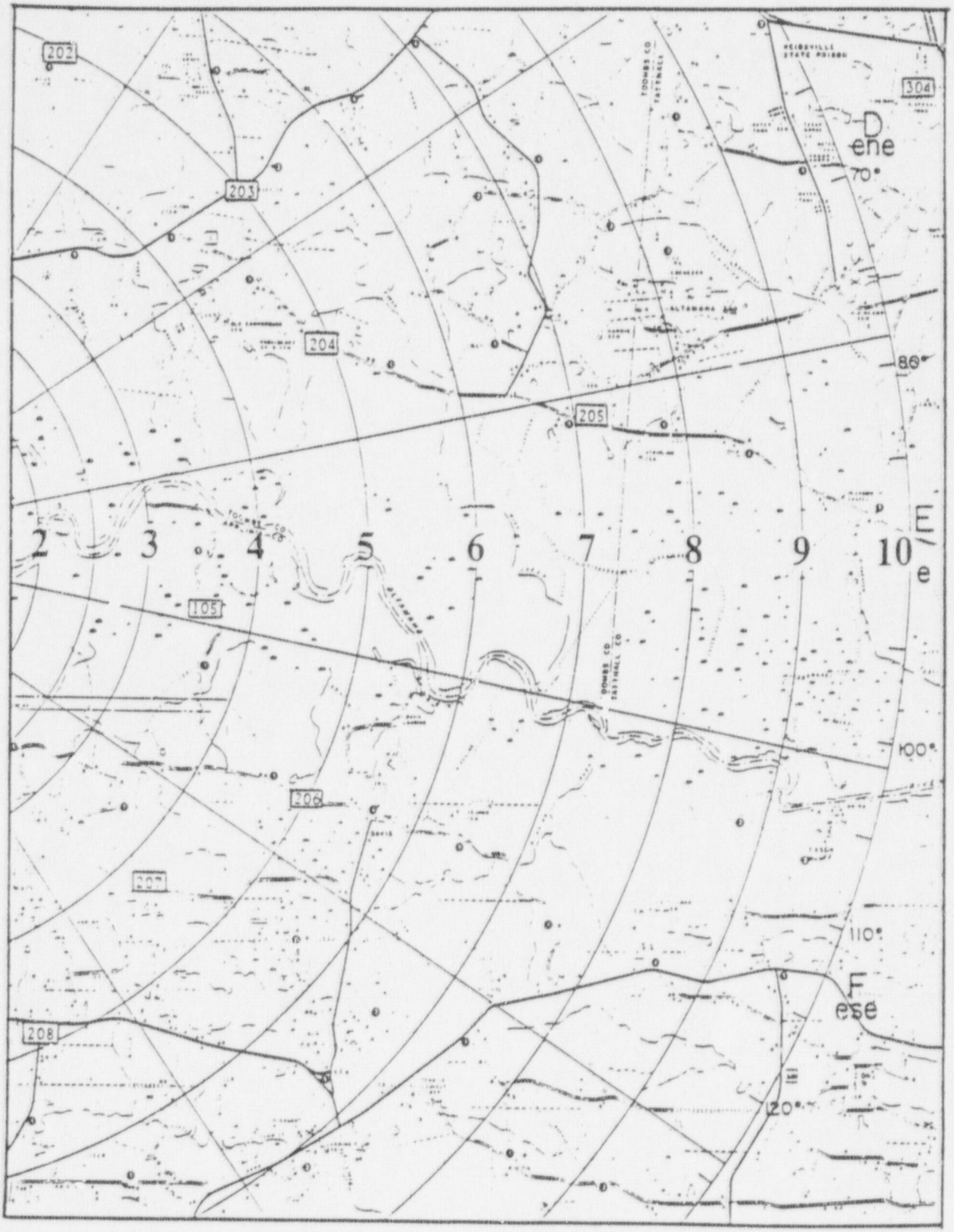
FIGURE 2-1



EDWIN I. HATCH NUCLEAR PLANT

RADIOLOGICAL ENVIRONMENTAL SAMPLING LOCATIONS BEYOND SITE PERIPHERY

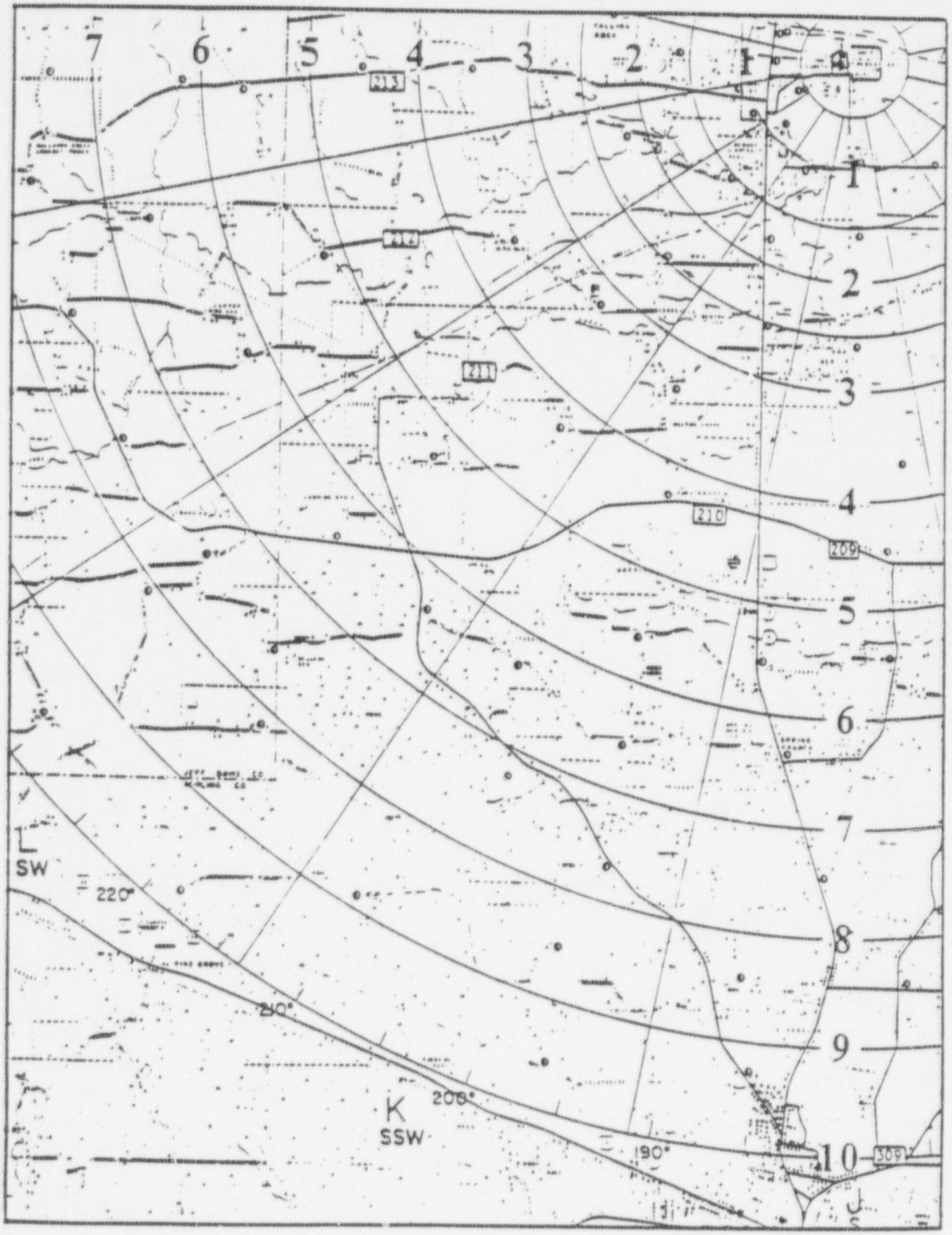
FIGURE 2-2 (SHEET 1 of 3)



EDWIN I. HATCH NUCLEAR PLANT

RADIOLOGICAL ENVIRONMENTAL SAMPLING
LOCATIONS BEYOND SITE PERIPHERY

FIGURE 2-2 (SHEET 2 of 3)



EDWIN I. HATCH NUCLEAR PLANT

RADIOLOGICAL ENVIRONMENTAL SAMPLING
LOCATIONS BEYOND SITE PERIPHERY

FIGURE 2-2 (SHEET 3 of 3)

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LOCATION OF ADDITIONAL CONTROL STATION FOR MILK

FIGURE 2-3

3.0 RESULTS SUMMARY

In accordance with Section 6.9.1.7 of the TS, summarized and tabulated results for all of the regular samples collected for the year at the designated indicator and control stations are presented in Table 3-1 in the format of Table 6.9.1.7-1 of the TS. Only manmade radionuclides are reported. Results for samples collected at locations other than indicator or control stations or in addition to those stipulated by Table 2-1 are included in Section 4, the discussion of results section, for the type sample.

TABLE 3-1 (SHEET 1 OF 5)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY
Edwin I. Hatch Nuclear Plant, Docket No. 50-321, 50-366
Appling County, Georgia, Report Period 1988

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection (a) (LLD)	All Indicator Locations Mean (b) Range (Fraction)	Location with Highest Annual Mean Name Distance & Direction	Mean (b) Range (Fraction)	Control Locations Mean (b) Range (Fraction)	Number of Reportable Occurrences
Airborne Particulates (fCi/m^3)	Gross Beta 311	10	22.6 9-39 (207/207)	No. 116 Inner Ring 1.6 miles NNW	23.2 13-34 (52/52)	21.7 10-34 (104/104)	0
	Gamma Isotopic 24						
	Cs-134	50	NDM (c)		NDM	NDM	0
	Cs-137	60	NDM		NDM	NDM	0
Airborne Radioiodine (fCi/m^3)	I-131 312	70	NDM		NDM	NDM	0
Direct Radiation (mR/91 days)	Gamma Dose 71	NA (d)	15.0 9.9-19.3 (63/64)	No. 104 Inner Ring 1.6 miles ENE	18.0 15.8-19.1 (3/4)	14.7 11.5-18.4 (8/8)	0
Milk (pCi/l)	Gamma Isotopic 64						
	Cs-134	20	NDM		NDM	NDM	0
	Cs-137	20	10.9 9.6-12 (3/12)	No. 216 Clark's 4.8 miles NNW	10.9 9.6-12 (3/12)	NDM	0
	Ba-140	60	NDM		NDM	NDM	0
	La-140	20	NDM		NDM	NDM	0

TABLE 3-1 (SHEET 2 OF 5)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY
Edwin I. Hatch Nuclear Plant, Docket No. 50-321, 50-366
Appling County, Georgia, Report Period 1988

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection (a) (LLD)	All Indicator Locations Mean (b) Range (Fraction)	Location with Highest Annual Mean Name Distance & Direction	Mean (b) Range (Fraction)	Control Locations Mean (b) Range (Fraction)	Number of Reportable Occurrences
	I-131 64	1	NDM	No. 316 Thompson's 13.2 miles NNW	0.32 0.3-0.3 (1/26)	0.32 0.3-0.3 (1/52)	0
Grass (pCi/kg wet)	Gamma Isotopic 34						
	I-131	60	NDM		NDM	NDM	0
	Cs-134	60	NDM		NDM	NDM	0
	Cs-137	80	40.1 24-78 (5/22)	No. 309 Baxley Sub 10 miles S	228.8 69-480 (12/12)	228.8 69-480 (12/12)	0
River Water (pCi/l)	Gamma Isotopics 24						
	Mn-54	20	NDM		NDM	NDM	0
	Fe-59	30	NDM		NDM	NDM	0
	Co-58	20	NDM		NDM	NDM	0
	Co-60	20	NDM		NDM	NDM	0
	Zn-65	30	NDM		NDM	NDM	0
	Zr-95	30	NDM		NDM	NDM	0
	Nb-95	20	NDM		NDM	NDM	0

TABLE 3-1 (SHEET 3 OF 5)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY
Edwin I. Hatch Nuclear Plant, Docket No. 50-321, 50-366
Appling County, Georgia, Report Period 1988

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection (a) (LLD)	All Indicator Locations Mean (b) Range (Fraction)	Location with Highest Annual Mean Name Distance & Direction	Location with Highest Annual Mean Mean (b) Range (Fraction)	Control Locations Mean (b) Range (Fraction)	Number of Reportable Occurrences
	I-131	20 (e)	NDM		NDM	NDM	0
	Cs-134	20	NDM		NDM	NDM	0
	Cs-137	20	NDM	No. 170 Upriver 0.6 miles	6.8 7-7 (1/12)	6.8 7-7 (1/12)	0
	Ba-140	60	NDM		NDM	NDM	0
	La-140	20	NDM		NDM	NDM	0
	Tritium 8	3000 (f)	220 220-220 (1/4)	No. 172 Downriver 3.0 miles	220 220-220 (1/4)	NDM	0
Fish (pCi/kg wet)	Gamma Isotopic 7						
	Mn-54	100	NDM		NDM	NDM	0
	Fe-59	300	NDM		NDM	NDM	0
	Co-58	100	NDM		NDM	NDM	0
	Co-60	100	NDM		NDM	NDM	0
	Zn-65	300	NDM		NDM	NDM	0

TABLE 3-1 (SHEET 4 OF 5)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY
Edwin I. Hatch Nuclear Plant, Docket No. 50-321, 50-366
Appling County, Georgia, Report Period 1988

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection (a) (LLD)	All Indicator Locations Mean (b) Range (Fraction)	Location with Highest Annual Mean Name Distance & Direction	Mean (b) Range (Fraction)	Control Locations Mean (b) Range (Fraction)	Number of Reportable Occurrences
	Cs-134	100	21.7 19-24 (3/4)	No. 172 Downriver 1.7 miles	21.7 19-24 (3/4)	6.9 7-7 (1/3)	0
	Cs-137	200	77.8 36-150 (4/4)	No. 172 Downriver 1.7 miles	77.8 36-150 (4/4)	33.3 22-50 (3/3)	0
Sediment (pCi/kg dry)	Gamma Isotopic 2						
	Co-60	40 (g)	67.8 68-68 (1/1)	No. 172 Downriver 3.0 miles	67.8 68-68 (1/1)	NDM	0
	Zn-65	90 (g)	136 136-136 (1/1)	No. 172 Downriver 3.0 miles	136 136-136 (1/1)	NDM	0
	Cs-134	200	505 505-505 (1/1)	No. 172 Downriver 3.0 miles	505 505-505 (1/1)	NDM	0
	Cs-137	200	903 903-903 (1/1)	No. 172 Downriver 3.0 miles	903 903-903 (1/1)	114 114-114 (1/1)	0

TABLE 3-1 (SHEET 5 OF 5)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY
Edwin I. Hatch Nuclear Plant, Docket No. 50-321, 50-366
Appling County, Georgia, Report Period 1988

a. The LLD is defined in table notation a of Table 4.16.1-1 of the TS. Except as noted otherwise, the values listed in the column are those found in that table.

b. Mean and range are based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis.

c. No Detectable Measurement(s).

d. Not Applicable

e. Since no drinking water pathway exists, the LLD from the gamma isotopic analysis may be used (see notation c of Table 4.16.1-1 of the TS). The value listed is the objective LLD.

f. If a drinking water pathway existed, an LLD of 2000 pCi/l would have been used (see notation d of Table 4.16-1 of the TS).

g. The CL has determined that this value may be routinely attained. No value was provided in Table 4.16-1 of the TS.

4.0 DISCUSSION OF RESULTS

An interpretation and evaluation, as appropriate, of the laboratory results for each type sample are included in this section. Relevant comparisons are made between the difference in average values for indicator and control stations and the calculated Minimum Detectable Difference (MDD) between these two groups at the 99-percent confidence level. The MDD is determined using the standard Student's t-test. A difference in the average values which is less than the MDD is considered to be statistically indiscernable. Pertinent results are also compared with past results including preoperations. To provide perspective, a result might also be compared with its LLD or Reporting Level (RL) which is provided by Table 3.16.1-2 of the TS. Attempts are made to explain any RLs or other high radiological levels found in the samples. During the year there were no failures in the laboratory analyses for each of the samples in attaining the LLDs required by Table 4.16.1-2 of the TS.

The annual land use survey was conducted on October 25. The location of the nearest permanent resident in each of the 16 meteorological sectors within a distance of 5 miles is tabulated in Table 4-1. The results of the annual milk animal survey are presented in Subsection 4.4. The results of the annual survey conducted downstream of the plant to determine whether water from the Altamaha River is being used for drinking purposes are presented in Subsection 4.6.

TABLE 4-1

LOCATION OF THE NEAREST
PERMANENT RESIDENCE IN EACH SECTOR

SECTOR	DISTANCE (miles)
N	2.0
NNE	2.9
NE	3.2
ENE	4.2
E	*
ESE	3.7
SE	1.8
SSE	2.0
S	1.0
SSW	1.3
SW	1.1
WSW	1.1
W	1.1
WNW	1.1
NW	3.6
NNW	1.8

* None within 5 miles.

4.1 Airborne Particulates

As indicated by Table 2-2, airborne particulates and airborne radioiodine are collected at 4 indicator stations (Nos. 103, 107, 112, and 116) which encircle the site boundary and at 2 control stations (Nos. 304 and 309) which are at least 10 miles from the plant. At these locations air is continuously drawn through a Gelman Type A/E glass fiber filter and a SAI CP-200 charcoal canister in sequence to retain airborne particulates and airborne radioiodine, respectively. The filters and canisters are collected weekly.

There was a failure in obtaining a sample at Station 103 on October 24 because the particulate filter had been inadvertently mounted off-center. To prevent a recurrence, those who install the filters were reinstructed in the steps to be followed in the installation process.

Each of the air particulate filters is counted for gross beta activity. As seen in Table 3-1, the annual average weekly reading for the indicator stations is 0.9 fCi/m^3 greater than that for the control stations. However, this difference is not discernable since it is less than the MDD which was calculated as 1.5 fCi/m^3. During the past six years, the absolute value of the difference between the average weekly readings for the indicator and control stations has been either 1 or 2 fCi/m^3. The average reading for the control stations has been greater than that for the indicator stations on three occasions and vice versa. Although the differences have fluctuated randomly, the average reading for the control stations has been about 0.3 fCi/m^3 greater than that for the indicator stations overall.

The average activity for all stations during 1988 was 22 fCi/m^3. It has been up to an order of magnitude higher than that now found. For example: it was 140, 242 and 195 fCi/m^3 during preoperations, 1977 and 1981, respectively. Those high values were shown to be the result of fallout from numerous nuclear weapons tests conducted on mainland China in the early seventies and from 1976 through 1980. With the termination of the weapons tests, the gross beta levels in recent years has become much lower. The annual average was 33 fCi/m^3 for 1982 and this steadily decreased to 22 fCi/m^3 for 1985. However, during 1986 as a consequence to the Chernobyl incident, the average activity jumped to 37 fCi/m^3; nevertheless, by excluding the few week period of the Chernobyl impact, the average activity for 1986 was 24 fCi/m^3. The annual average for 1987 was 23 fCi/m^3.

During preoperations and during each year of operations through 1986, some manmade radionuclides had been detected in the gamma isotopic analyses of the quarterly composites of air particulate filters. However, during calendar year 1987 no manmade radionuclides were detected. Again in 1988 none was found. In the past, numerous

fission products (some at fairly significant levels) and some activation products were detected. These were generally attributed to the nuclear weapons tests. In recent years with the cessation of the tests, the number of radionuclides detected became scant and their levels became low. The positive results found during 1986 were shown to be due to the Chernobyl incident.

4.2 Airborne Radioiodine

The charcoal canisters used for adsorbing iodine from the atmosphere are analyzed for I-131 by gamma spectroscopy. I-131 was not detected in any of the samples during the year. The maximum allowed LLD is 70 fCi/m^3; however, the LLD usually attained was about a third of this value. There were no failures in obtaining samples during the year.

Positive results for airborne radioiodine are not normally obtained. However, during 1976, 1977 and 1978, levels of I-131 which were generally on the order of the maximum allowed LLD (that is, 70 fCi/m^3) were found in nearly all of the samples collected for a period of a few weeks after the arrival of the cloud from each of the Chinese nuclear weapons tests conducted at that time. In 1986 the same phenomenon occurred, only the positive levels were attributed to the Chernobyl incident. The highest airborne I-131 level ever found was 217 fCi/m^3 in 1977. The RL called for by Table 3.16.1-2 of the TS is 900 fCi/m^3.

4.3 Direct Radiation

Direct (external) radiation is measured by thermoluminescent dosimeters (TLDs). Two TLD badges are placed at each station; each badge contains 4 calcium sulfate cards.

Two TLD stations are established in each of the 16 meteorological sectors about the plant. The inner ring of stations (Nos. 101 through 116) is located near the site boundary, while the outer ring (Nos. 201 through 216) is located at a distance of about 4 to 5 miles. These rings were installed at the beginning of 1980 to meet the requirements of Revision 1 to the Technical Position of the Radiological Assessment Branch of the NRC, dated November 1979. However, each of the stations in the east sector is at a radius which is a few miles greater than the other stations in its ring; flood plains in this sector prevent easy access on a year-round basis to the site boundary and to the 4 to 5 mile annulus. The 16 stations forming the inner ring are designated as the indicator stations. The 2 control stations (Nos. 304 and 309) are at least 10 miles from the plant. Stations 064 and 301 accommodate special interest areas. Station 064 is located in an onsite roadside park while Station 301 is located adjacent to Toombs Central School. Station 210 in the outer ring is located adjacent to the Altamaha School, the only other nearby school.

As may be seen from Table 3-1, the average quarterly dose acquired at the indicator stations (inner ring) over the year was 0.3 mR greater than that acquired at the control stations; this difference was not discernable, however, since it was less than the MDD of 1.8 mR. In previous years the absolute value of the difference between the annual average quarterly doses acquired at these two station groups has varied from 0 to 1 mR; the average dose was greater at the indicator control stations for four of the past eight years; the average dose at the indicator stations was 0.14 mR greater than that at the control stations during this 8 year period. No trends in the data for these station groups were recognized.

The quarterly doses acquired at outer ring stations ranged from 11.0 to 23.5 mR with an average of 15.2 mR for the year which is 0.2 mR greater than that found for the inner ring. There was no discernable difference between the averages of the inner and outer rings since this difference was less than the MDD of 1.0 mR. Since the installation of the two rings at the beginning of 1980 through Calendar year 1986, the average quarterly dose for the inner ring stations had always been greater than that for the outer ring stations by amounts ranging from 0.2 to 1.0 mR; the average difference had been 0.6 mR. Then in 1987, the average quarterly dose for the outer ring became greater than that for the inner ring by 0.4 mR.

The quarterly doses in units of mR acquired at the roadside park and at Toombs Central School were respectively:

Average	Minimum	Maximum
14.9	13.3	17.1
15.3	13.4	16.5

The doses acquired at the special interest stations are seen to be within the range of those acquired at the other stations and are about the same as those found during the past few years.

Not infrequently, TLDs are lost due to theft and damaged due to vandalism. At monthly intervals, the TLD stations are checked for missing or damaged badges; replacement badges are provided as needed. When both badges are missing at the end of the quarter, there are no means by which to assess the dose at that location for the quarter. Both badges were missing at station 104 at the end of the first quarter. A total of 7 badges from 2 different stations was found to be missing during the year. This is a big improvement over the previous year when a total of 16 badges was found to be missing from 8 different stations. Since 5 of the missing badges were from Station 104, the two badges here were moved about 10 yards deeper into the woods to a less conspicuous setting.

4.4 Milk

Milk samples from cows were obtained biweekly throughout the year at Station 304 (the state prison dairy) and at Station 316, (Thompson's dairy). Both of these locations are control stations. Goat milk samples were also obtained biweekly from April 18 through September 19 at Station 216 (Clark's farm) which is an indicator station. Gamma isotopic and I-131 analyses were performed on each sample.

During the third quarter of 1987, the Clarks let all of their goats go dry because some of them had contracted sore eye. They expected that goat milk would be available again in six months or so. In April of 1988 the goats began producing milk again. At the end of the third quarter the goats went dry again. It was again anticipated that goat milk would be available in about 6 months. Collections at the Clark's began in 1987; all other milk samples, current and past, have been from cows.

The annual land use survey to identify the location of the nearest milk animal in each of the 16 meteorological sectors within a distance of 5 miles and the location of all milk animals within a distance of 3 miles was conducted on October 25. No milk animals were found. A milk animal is a cow or goat producing milk for human consumption.

As may be seen from Table 3-1, positive results for Cs-137 ranging from 9.6 to 12 pCi/l were found in a quarter of the samples collected at the Clark's farm. No other manmade radionuclides were found from the gamma isotopic analyses. These low levels are typical of those found in recent years. Except for last year (1987), positive levels of Cs-137 had been found in some of the samples since 1978 when gamma isotopic analysis of milk samples became a requirement. The average positive levels for the indicator station since 1978 have ranged from 9.1 to 12.5 pCi/l; the average level of 10.9 pCi/l for 1988 is near the middle of this range. To provide perspective, it should be noted the LLD and RL for milk are respectively, 20 and 70 pCi/l.

An I-131 level of 0.32 pCi/l with an uncertainty of $\pm$ 0.18 pCi/l at the 95% confidence level was found in one of the samples, while its minimum detectable activity (MDA) was 0.30 pCi/l; this single result is listed in Table 3-1. All other readings were less than their MDA. The TS calls for an LLD and a RL of 1 and 2 pCi/l, respectively.

It is believed that air was inadvertently drawn into the counting apparatus and the 352 kev decay gamma from Pb-214 in the decay chain of Radon is being mistaken for the 364 kev decay gamma from I-131. The reading for I-131 reported in Table 3-1 is suspect. To eliminate any suspect readings in the future, the CL is planning a procedure change whereby a recount will be made without delay whenever an I-131 reading greater than its MDA is determined.

During preoperations, all readings for I-131 were less than 2pCi/l which was the allowed LLD at that time. Positive results were found during each year of the first five years of operations (1974 through 1978): these results ranged from 0.95 to 88 pCi/l. Then in 1980, positive results ranging from 0.7 to 1.8 pCi/l were found; again in 1986, positive results ranging from 0.6 to 20 pCi/l were found.

All of the positive readings for Cs-137 and for I-131 have been generally attributed to fallout from the nuclear weapons tests. However, the positive levels in 1986 were largely attributed to the Chernobyl incident.

4.5 Grass

The TS call for the gamma isotopic analysis of grass samples collected monthly at 3 locations. Two indicator stations (Nos. 106 and 112) and a single control station (No. 309) have been designated for these collections. Gamma isotopic analyses have been performed on grass samples since 1978.

Adequate samples were not available at Station 106 during February and March. In February of 1987 and in January and February of 1986 (the first winter during which Station 106 was operated) there were also failures in obtaining an adequate sample at this station. The failures are attributed to slow winter growth and the lack of green forage for the deer and rabbits elsewhere in the woods this time of year.

The results presented in Table 3-1 are typical of those usually encountered. The only manmade radionuclide detected was Cs-137. The levels for the control station overshadow those for the indicator stations. Positive results were obtained from each sample collected at the control station, whereas positive results were obtained at only one of the indicator stations (No. 106) and from only half of the samples collected there.

The mean for the indicator stations, 40.1 pCi/kg wet, is the lowest found since grass collections began; it is less than half that found during the past six years, while the mean for the control station, 228.8 pCi/kg wet, is near the average of the means during this six year period. From 1982 through 1987, the means have randomly varied between 60 and 149 pCi/kg wet for the indicator stations and between 99 and 428 pCi/kg wet for the control station. The mean for the indicator stations has been greater than that for the control station in only one (namely, 1981) of the 11 years during which grass was sampled. For 1988, the mean value for the control station is seen to be 188.7 pCi/kg wet greater than the mean for the indicator stations. This difference is discernable since the MDD was calculated to be 103.9 pCi/kg wet. It was also discernable last year for the first time since 1979.

It was decided to replace the current control station, as the persistently higher Cs-137 levels there are believed not to be representative of the background levels prevailing in the environs. On September 12, in an effort to find a more suitable control station, grass samples were collected at two additional locations which are more than 10 miles from the plant. These locations were the GPC Operating Headquarters in Baxley, which is 10.4 miles S of the plant and the GPC Emergency News Center in Vidalia, which is 21 miles NNW of the plant.

The sample collected at the Baxley Operating Headquarters showed a reading of 3830 pCi/kg wet. The reading was confirmed by a recount. To rule out the possibility that the high reading was due to a contaminated

marinelli, the recount was made in a different marinelli that had been acid washed. Subsequently, some follow-up samples of grass and soil were collected at this same spot (Point A) and a few other spots (Points B through D) about the front lawn of the Baxley Operating Headquarters.

The only manmade radionuclide found was Cs-137 except for the grass sample collected at Point A on September 26 where a Cs-134 reading of 21.8 pCi/kg wet was found. The Cs-137 readings in units of pCi/kg wet in the grass samples were as follows:

Date	Point A	Point B	Point C	Point D
9/12	3826	NS	NS	NS
9/26	1780	863	NS	NS
10/03	1060	NS	1030	136

The readings at Point A show a steady decline, while the readings at the other locations are significantly lower. The LLD and the RL for Cs-137 is 80 and 2000 pCi/kg wet, respectively. The acronym, NS, in the above tabulation means not sampled.

The highest Cs-137 level previously found in a grass sample was 2330 pCi/kg wet. The sample was collected in June of 1980 at Station 309 which is about a half mile from the Baxley Operating Headquarters. The collection was made near the end of a four year period within which six weapons tests were conducted at intervals ranging from 2 to 22 months. Cs-137 has been found in about 75% of the samples since the grass collections began.

Positive levels of Cs-134 have previously been found in only four grass samples or in about 1.3% of those collected. The levels ranged from 12 to 49 pCi/kg wet; the average level was 23 pCi/kg wet. The LLD and the RL for Cs-134 in grass are 60 and 1000 pCi/kg wet, respectively. All of these previous results were from the indicator stations.

The Cs-137 readings in units of pCi/kg dry in the soil samples were as follows:

Date	Point A	Point B	Point C	Point D
9/26	636	227	NS	NS
10/03	595	NS	127	254

The readings for Point A are seen to be substantially greater than those for the other points. In 1977, soil samples collected at the present Stations 112 and 309 showed Cs-137 readings of approximately 300 and 200 pCi/kg dry, respectively (see page 2-21 of Supplement 1 of the Annual Radiological Environmental Surveillance Report for 1977).

The State of Georgia was informed of these elevated readings. The grass samples collected at Point A on September 12 and 26 were split with them for confirmation. Their readings were within 5 and 25% of ours for the September 12 and 26 collections, respectively.

A plausible explanation for the high readings of the grass samples (and also of the soil samples) collected at Point A is the past weapons tests and also the Chernobyl incident but to a lesser extent.

Grass samples were collected on November 14 and December 12 at the Emergency News Center in Vidalia, in addition to the September 12 collection. No positive readings for manmade radionuclide were found in any of these samples. It was decided to phase out Station 309 at the end of 1988. A new control station for grass is to be established at the Emergency News Center in Vidalia at the beginning of 1989. The new station is to be designated as Station 416.

4.6 River Water

Surface water is composited from the Altamaha River at an upstream location (Station 170) and at a downstream location (Station 172) using ISCO automatic samplers. Small quantities are collected at intervals not exceeding a few hours. River water collected by these machines is picked up monthly; quarterly composites are composed of the monthly collections.

A gamma isotopic analysis is made on each monthly collection. The occurrence of positive results for a manmade radionuclide has been seldom. However, in June, Cs-137 was detected at a level of 6.8 pCi/l at Station 170, the control station. The Cs-137 activity in the other samples collected during the year ranged from less than 3.6 to less than 9.6 pCi/l. The TS allows an LLD of 20 pCi/l; the RL is 50 pCi/l.

The only manmade radionuclides detected previously (by gamma isotopic analysis) were as follows:

Year	Quarter	Station	Radionuclide	Level (pCi/l)
1975	4th	172	Ce-141	78.2
1986	2nd	170	La-140	18
1986	2nd	172	Cs-137	12

The positive results for 1986 were attributed to the Chernobyl incident.

Not listed in Table 3-1 is a positive value of 9.8 pCi/l for I-131 from the February collection at Station 172. This result is believed to be an artifact of the computer program used in the analysis of the spectral display. Phantom peaks are mathematically possible albeit with low probability. Practical considerations preclude any significant reading due to plant releases of I-131 (which has a half life of 8.05 days) for samples collected at the indicator station 3 miles downriver of the discharge, as the average concentration of I-131 upon release to the river during the first quarter was 4.5 pCi/l; it can be expected that mixing with the river water would reduce this concentration by about two orders of magnitude by the time it reached Station 172. This sample was also split with the State of Georgia; they did not detect positive levels of I-131.

Tritium analyses are performed on the quarterly composites. Positive results were obtained only for one of the samples. A level of 220 pCi/l was found at Station 172 for the first quarter. This level is typical of those generally found. In past years, positive results had generally been obtained in a greater fraction of the samples.

On September 26, the annual survey of the Altamaha River was conducted downstream of the plant for at least 50 river miles to identify anyore who may use river water for drinking purposes. As in all previous

surveys, no intakes for drinking water were observed. This was corroborated by information obtained on September 29 from the State of Georgia that no surface water permits on the Altamaha River downstream of HNP had been issued. If river water should become used for drinking, the TS requirements for its sampling and analysis will be implemented.

4.7 Fish

Gamma spectral analyses were performed on the edible portion of the fish samples collected at the river stations on April 12 and October 18. Largemouth bass was collected at both stations each time. In October eels were also collected at each station and channel catfish was collected at the indicator station (Station 172).

As shown in Table 3-1, Cs-134 and Cs-137 were, as usual, the only manmade radionuclides detected. While Cs-137 was found in each sample, Cs-134 was found in 4 of the 7 samples. These readings and the frequencies of occurrence are generally typical of those experienced during the past five years. Cs-134 was not found in fish samples until 1983 when its highest readings were obtained - the average was 102 pCi/kg wet; the levels have generally declined since then. The average reading for Cs-137 has not fluctuated greatly in over 14 years of operations and the few years of preoperations.

The LLDs required by the TS are 100 and 200 pCi/kg wet for Cs-134 and Cs-137, respectively. The RL for each is 10 times its LLD. No reading exceeded its required LLD. The average values at the indicator station are higher than those at the control station as has generally been the case for the past several years. The average values for Cs-137 at the indicator station is seen to be 44.5 pCi/kg wet greater than that at the control station. However, this difference is not discernable since it is less than the MDD of 104.3 pCi/kg wet.

4.8 Sediment

The annual collection of sediment took place on May 23 at the river stations. A gamma isotopic analysis was performed on each sample. As shown in Table 3-1, positive results were obtained for Cs-137 at both stations and for Co-60, Zn-65 and Cs-134 at the indicator (downriver) station only. The downriver readings for the cesiums were slightly elevated.

Positive readings for Cs-137 have been found in every sample since 1980 and in over 90% of all samples (including those collected during preoperations). For 1988, the reading at the control (upstream) station (114 pCi/kg dry) was only about half the average for the past 7 years. The reading at the indicator station (903 pCi/kg dry) was about 3.5 times the average for the past 7 years. This is the highest reading yet found at the indicator station; in 1975, a reading of 1570 pCi/kg dry was found at the control station. The LLD for Cs-137 is 200 pCi/kg dry.

Only four positive readings for Cs-134 have been found at the indicator stations in the past. The highest reading (280 pCi/kg dry) collected in 1981 was attributed to the weapons tests, while the lowest reading (132 pCi/kg dry) collected in 1986 was attributed to the Chernobyl incident. The two samples collected in 1984 at the indicator station had readings of 150 and 220 pCi/kg dry. The two samples collected at the control station in 1984 had readings of 30 and 50 pCi/kg dry. A sample collected at the control station during preoperations also had a positive reading of 40 pCi/kg dry. The LLD for Cs-134 is also 200 pCi/kg dry.

The first and only previous positive readings for both Co-60 and Zn-65 in sediment samples was in 1986 and these were then attributed to the Chernobyl incident. The positive reading for Zn-65 in 1986 was 175 pCi/kg dry at the indicator station. The positive readings for Co-60 in 1986 was 33 and 108 pCi/kg dry at the control and indicator stations, respectively. It might be noticed from Table 3-1 that the 1988 positive readings of 136 and 68 pCi/kg dry for Zn-65 and Co-60, respectively, are each roughly 50% greater than their LLDs and 20 to 40% less than the readings found in 1986 at this station.

To substantiate or investigate the slightly elevated and infrequently occurring readings at the indicator station, additional samples were collected on June 20 at Stations 170 and 172 (the control and indicator stations, respectively) and at six other downriver locations (three between the discharge and Station 172 and three downriver of Station 172). These additional stations labeled RS-1 through RS-6 are shown in Figure 4-1. Three replicate samples were collected at Station 172.

The positive readings are delineated in Table 4-1. The readings for the cesiums were much less (by more than an order of magnitude). The readings for Zn-65 and Co-60 were also lower. Low levels of Mn-54 which

has an LLD of 40 pCi/kg dry were also found in some of the samples. Positive results for Mn-54 at slightly higher levels were also found in 1975 at Station 172 and in 1986 at both Stations 170 and 172.

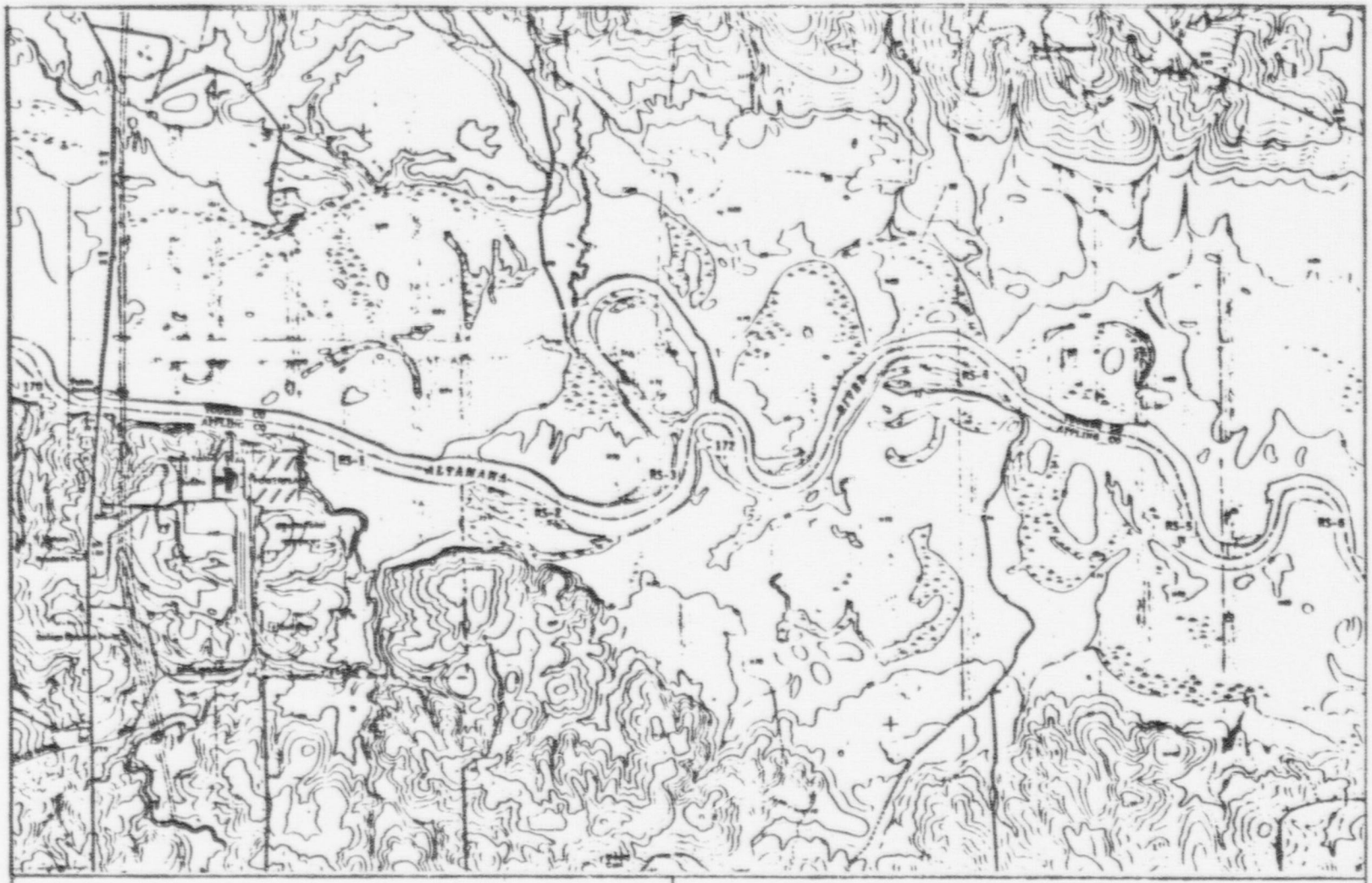
All five of the radionuclides listed in Table 4-1 are among the plant's liquid effluents. A satisfactory explanation for their appearance at downstream locations attributed to other sources has not been found.

The radiological impact due to these slightly elevated readings in the shoreline sediment was assessed by calculating the whole body dose by direct radiation (from the sediment) to an individual using the methodology and parameters of Regulatory Guide 1.109, Rev. 1 and comparing this dose with that permitted by Section 3.15.1.2.b of the TS (3 mrem per year). The dose above background was determined to be 0.0145 mrem per year or 0.48% of the TS limit.

TABLE 4-1
(pCi/kg dry)

POSITIVE READINGS OF MANMADE RADIONUCLIDES
FOUND IN ADDITIONAL SEDIMENT SAMPLES

Stations	Mn-54	Co-60	Zn-65	Cs-134	Cs-137
170					7.97
RS-1	24	32.2		72	133
RS-2	12.6	65.7	133	63	122
RS-3					
172A		21.5	40.8	20	48.6
172B	9.93	20.2	36.2	18	35.8
172C	12.8	44.5	82.8	40.7	74
RS-4		16.9	28.1	16.6	36.6
RS-5	14	31.9	74.6	39	86.8
RS-6		12.1		11.6	29.0



EDWIN I. HATCH NUCLEAR PLANT

LOCATIONS FOR ADDITIONAL SEDIMENT SAMPLES

FIGURE 4-1

5.0 Interlaboratory Comparison Program

Section 3.16.3 of the TS requires that analyses shall be performed on radioactive materials supplied as part of an Interlaboratory Comparison Program that has been approved by the Nuclear Regulatory Commission (NRC). The Environmental Protection Agency's (EPA's) Environmental Radioactivity Laboratory Intercomparison Studies (Crosscheck) Program conducted by the Environmental Monitoring and Support Laboratory in Las Vegas, Nevada provides such a program and the CL participates in the program. Analyses are performed only where the type analysis and sample in the EPA Crosscheck Program are the same as that delineated in Table 2-1. Reported herein, as required by Section 4.16.3 of the TS, are the results of participation in the EPA Crosscheck Program by the CL.

Any results for which disagreement is established using the NRC's "Criteria for Comparing Analytical Measurements" as described in Attachment 1 to this section requires an investigation to determine the cause of the disagreement and corrective actions to prevent a recurrence. The results of any such investigations and corrective actions would be reported in this section. None of the comparisons showed a disagreement.

The results of the gross beta and Cs-137 analyses of air filters are given in Table 5-1. Listed in Table 5-2 are the results of the I-131 and gamma analyses of milk samples. Table 5-3 presents the results of the gamma and tritium analyses of water.

Since all of the results reported herein are presented in the same tabular format, an explanation of the column headings is provided. "Date" means the collection date given by the EPA. "Known" refers to the EPA known value $\pm$ one standard deviation, s. "Result" is the average value measured by the laboratory $\pm$ experimental s. "Resolution" is determined by dividing the known value by its s value. "Ratio" equals the "result" (value determined by the laboratory) divided by the "known" (value determined by EPA). An explanation would have been provided if any of the comparisons had shown "Disagreement." It should be noted that whenever the EPA known value is zero or the laboratory- determined result is a less than (LT) value, or the calculated resolution value is less than 3, a comparison by the NRC criteria cannot be made.

TABLE 5-1

CROSSCHECK PROGRAM RESULTS FOR AIR FILTERS
(pCi/filter)

Date	Known	Result	Resolution	Ratio
		Gross Beta		
3/25/88	50 ± 5	47.0 ± 0.0	10.0	0.94
8/26/88	29 ± 5	26.3 ± 1.2	5.8	0.91
		Cs-137		
3/25/88	16 ± 5	20.3 ± 2.5	3.2	1.27
8/26/88	12 ± 5	13.0 ± 1.0	2.4	1.08

TABLE 5-2

CROSSCHECK PROGRAM RESULTS FOR MILK SAMPLES
(pCi/l)

Date	Known	Result	Resolution	Ratio
		I-131		
2/26/88	4.0 ± 0.4	4.0 ± 1.0	10.0	1.00
6/24/88	94.0 ± 9.0	96.7 ± 7.4	10.4	1.03
10/28/88	91.0 ± 9.0	85.3 ± 4.0	10.1	0.94
		Cs-137		
6/24/88	51.0 ± 5.0	50.0 ± 5.3	10.2	0.98
10/28/88	50.0 ± 5.0	48.0 ± 5.0	10.0	0.96

TABLE 5-3

CROSSCHECK PROGRAM RESULTS FOR WATER SAMPLES
(pCi/l)

Date	Known	Result	Resolution	Ratio
		Cr-51		
6/03/88	302.0 ± 30.0	339.3 ± 11.9	10.1	1.12
10/07/88	251.0 ± 25.0	268.0 ± 12.5	10.0	1.07
		Co-60		
2/05/88	69.0 ± 5.0	66.0 ± 2.0	13.8	0.96
6/03/88	15.0 ± 5.0	15.3 ± 1.5	3.0	1.02
10/07/87	25.0 ± 5.0	23.7 ± 2.5	5.0	0.95
		Zn-65		
2/05/88	94.0 ± 9.4	86.7 ± 4.0	10.0	0.92
6/03/88	101.0 ± 10.0	106.0 ± 9.9	10.1	1.05
10/07/88	151.0 ± 15.0	140.7 ± 5.8	10.1	0.93
		Ru-106		
2/05/88	105.0 ± 10.5	109.0 ± 13.5	10.0	1.04
6/03/88	195.0 ± 20.0	214.0 ± 20.8	9.8	1.10
10/07/88	152.0 ± 15.0	135.7 ± 19.9	10.1	.89
		Cs-134		
2/05/88	64.0 ± 5.0	54.0 ± 1.7	12.8	0.84
6/05/88	20.0 ± 5.0	20.0 ± 5.3	4.0	1.10
10/09/88	25.0 ± 5.0	25.7 ± 1.2	5.0	1.03
		Cs-137		
2/05/88	94.0 ± 5.0	90.0 ± 6.6	18.8	0.96
6/03/88	25.0 ± 5.0	22.0 ± 5.0	5.0	0.88
10/07/88	15.0 ± 5.0	13.7 ± 3.5	3.0	0.91
		H-3		
2/12/88	3327.0 ± 362.0	3636.0 ± 74.4	9.2	1.09
6/10/88	5565.0 ± 557.0	5353.0 ± 110.0	10.0	0.96
10/14/88	2316.0 ± 350.0	2286.7 ± 47.3	6.6	0.99

ATTACHMENT 1

Criteria for Comparing Analytical Measurements

This attachment provides criteria for comparing results of capability tests and verification measurements. The criteria are based on an empirical relationship which combines prior experience and the accuracy needs of this program.

In these criteria, the judgment limits are variable in relation to the comparison of the Reference Laboratory's value to its associated one sigma uncertainty. As this comparison, referred to as "Resolution", increases, the acceptability of a licensee's measurement should be more selective. Conversely, poorer agreement should be considered acceptable as the resolution decreases. The values in the ratio criteria may be rounded to fewer significant figures to maintain statistical consistency with the number of significant figures reported by the Reference Laboratory, unless such rounding will result in a narrowed category of acceptance. The acceptance category reported will be the narrowest into which the ratio fits for the resolution being used.

RESOLUTION	RATIO = LICENSEE VALUE/REFERENCE VALUE		
	Agreement	Possible Agreement "A"	Possible Agreement "B"
LT 3	No Comparison	No Comparison	No Comparison
GE* 3 and LT 4	0.4 - 2.5	0.3 - 3.0	No Comparison
GE 4 and LT 8	0.5 - 2.0	0.4 - 2.5	0.3 - 3.0
GE 8 and LT 16	0.6 - 1.6	0.5 - 2.0	0.4 - 2.5
GE 16 and LT 51	0.75 - 1.33	0.6 - 1.67	0.5 - 2.0
GE 51 and LT 200	0.80 - 1.25	0.75 - 1.33	0.6 - 1.6
GE 200	0.85 - 1.18	0.80 - 1.25	0.75 - 1.33

* GE means greater than or equal to

"A" criteria are applied to the following analyses:

Gamma spectrometry where principal gamma energy used for identification is greater than 250 kev.

Tritium analyses of liquid samples.

"B" criteria are applied to the following analyses:

Gamma spectrometry where principal gamma energy used for identification is less than 250 kev.

Sr-89 and Sr-90 determination.

Gross beta where samples are counted on the same date using the same reference nuclide.

6.0 CONCLUSIONS

This report has shown the licensee's conformance with Section 3/4.16 of the TS during the year. It has shown that all data were carefully examined. A summary and a discussion of the results of the laboratory analyses for each type sample collected were presented.

No measurable radiological impact upon the environment as a consequence of plant discharges to the atmosphere was established. Some manmade radionuclides appeared in sediment samples collected along the river bank downstream of the plant; a satisfactory explanation for their source other than plant effluents was not found. The dose to a member of the public was estimated to be less than 0.5% of that permitted for liquid effluents.

The relevant comparisons of the analytical measurements made by the CL with those made by the EPA in the Crosscheck Program showed no disagreements.

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HL-455
0088V
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April 21, 1989

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

PLANT HATCH - UNITS 1, 2
NRC DOCKETS 50-321, 50-366
OPERATING LICENSES DPR-57, NPF-5
ANNUAL RADIOLOGICAL ENVIRONMENTAL SURVEILLANCE REPORT

Gentlemen:

In accordance with Plant Hatch Units 1 and 2 Technical Specifications Sections 6.9.1.6 and 6.9.1.7, Georgia Power Company is submitting the enclosed Annual Radiological Environmental Surveillance Report for 1988.

If you have any questions in this regard, please contact this office at any time.

Sincerely,

W. G. Hairston, III

CLT/eb

Enclosure: Annual Radiological Environmental Surveillance Report

c: (See next page.)

IE A8
1/1

c: Georgia Power Company
Mr. H. C. Nix, General Manager - Hatch
Mr. L. T. Gucwa, Manager Engineering and Licensing - Hatch
GO-NORMS

U.S. Nuclear Regulatory Commission, Washington, D.C.
Mr. L. P. Crocker, Licensing Project Manager - Hatch

U.S. Nuclear Regulatory Commission, Region II
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Mr. J. E. Menning, Senior Resident Inspector - Hatch

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