

# Florida Power

CORPORATION  
Crystal River Unit 3  
Docket No. 50-302

May 14, 1996  
3F0596-09

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

Subject: 1995 Annual Radiological Environmental Operating Report

Dear Sir:

Florida Power Corporation hereby submits the 1995 Annual Radiological Environmental Operating Report in compliance with Crystal River Unit 3 Technical Specifications, Section 5.7.1.1b. The report contains the data obtained from the radiological environmental surveillance program conducted for the Crystal River site for 1995.

Sincerely,

G. L. Boldt  
Vice President  
Nuclear Production

Attachment

GLB/ff

xc: NRR Project Manager  
Regional Administrator, Region II  
Senior Resident Inspector

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FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3

ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

1995

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5/14/96

# TABLE OF CONTENTS

I.	Summary Description of Radiological Environmental Monitoring Program . . . . .	1
II.	Land Use Census . . . . .	10
III.	EPA Interlaboratory Comparison Program . . . . .	11
IV.	Analytical Results . . . . .	13
A.	Airborne Pathway . . . . .	13
	Statistical Summary. . . . .	14
B.	Direct Radiation . . . . .	23
	Statistical Summary. . . . .	24
C.	Waterborne Pathway . . . . .	27
1.	Seawater . . . . .	27
	Statistical Summary . . . . .	28
2.	Groundwater. . . . .	27
	Statistical Summary. . . . .	32
3.	Drinking Water . . . . .	27
	Statistical Summary. . . . .	35
4.	Shoreline Sediment . . . . .	27
	Statistical Summary. . . . .	38
D.	Ingestion Pathway . . . . .	41
1.	Carnivorous Fish . . . . .	41
	Statistical Summary. . . . .	42
2.	Oysters . . . . .	41
	Statistical Summary. . . . .	45
3.	Broad Leaf Vegetation . . . . .	41
	Statistical Summary . . . . .	48
4.	Watermelon and Citrus . . . . .	41
	Statistical Summary. . . . .	52

## INTRODUCTION

This report is submitted as required by Technical Specification 5.7.1.1b to Crystal River Facility Operating License No. DPR-72, and Section 6.6 of the Offsite Dose Calculation Manual. The following information is included in this report:

- Data Summaries.
- Interpretations.
- Unachievable LLDs.
- An analysis of trends.
- An assessment of any observed impact of plant operation on the environment.

NOTE: If harmful effects or evidence of irreversible damage are detected by the monitoring, the Report shall provide an analysis of the problem and a planned course of action to correct it.

- Summarized and tabulated results of all radiological environmental samples taken during the report period, in the format of Radiological Assessment Branch Technical Position, Revision 1, November, 1979.

NOTE: If some results are not available for inclusion, the report shall note and explain the reason for the missing results. The missing results shall be submitted as soon as possible in a supplementary report.

- A summary description of the REMP.
- A map of all sampling locations keyed to a table giving distances and directions from the reactor.
- The results of land-use censuses.
- Results of Interlaboratory Comparison Program.



## I. SUMMARY DESCRIPTION OF RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

The analytical results of the Crystal River Unit 3 (CR-3) operational Radiological Environmental Monitoring Program (REMP) for 1995 are contained in this report. The operational program began on January 1, 1977 just prior to initial criticality, which was achieved on January 14, 1977.

Sampling of the facility environs is performed by the State of Florida Department of Health and Rehabilitative Services (FDHRS), Office of Radiation Control. The State also performs the required analyses, participates in the Environmental Protection Agency's (EPA's) Interlaboratory Comparison Program, and performs the annual land-use census.

Sample station locations are given in Table I-1 and Figures I-2, -3, and -4. Sample frequency and analysis type may be determined from Table I-2. Figure I-1 illustrates the relevant exposure pathways.

Except for air sample gross beta results and direct radiation measurements, most of the analytical results are below the lower limit of detection (LLD) of the sample. Sample LLDs are generally much lower than the required "a priori" LLD. When measurable results are reported, the values are also usually less than the required "a priori" LLD.

The results of the 1995 REMP have been compared to previous years' results. This comparison, in part illustrated by the trend graphs<sup>1</sup> of Section IV, shows no evidence of long-term radionuclide buildup in any of the sample media. Additionally, these results verify the effectiveness of in-plant measures for controlling radioactive releases.

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<sup>1</sup>Trend graphs illustrate the mean measured concentration of a particular radionuclide for the year. When measurable results are not obtained, the highest sample LLD is plotted.

TABLE I-1

FLORIDA POWER CORP. - CR3 - 1995

SAMPLE STATION LOCATIONS

SAMPLE MEDIA	STATION ID	DIRECTION	DISTANCE
TLD	C60	N	4400 FT.
	C61	NNE	4400
	C62	NE	5300
	C63	ENE	4400
	C64	E	4400
	C65	ESE	1740
	C66	SE	1600
	C67	SSE	1480
	C68	S	1500
	C69	SSW	1780
	C41	SW	2100
	C70	WSW	4400
	C71	WNW	3600
	C72	NW	2400
	C73	NNW	2000
	C27	W	3400
	C18	N	5.2 MI.
	C03	NNE	5.3
	C04	NE	6.3
	C74	ENE	5.5
	C75	E	4.2
	C76	ESE	5.4
	C08	SE	3.5
	C77	SSE	3.2
	C09	S	3.2
	C78	WSW	4.1
	C14G	W	2.8
	C01	NW	4.9
	C79	NNW	5.0
	C47-Control	ESE	80

TABLE I-1 (CONT'D)  
FLORIDA POWER CORP. - CR3 - 1995

SAMPLE STATION LOCATIONS

SAMPLE MEDIA	STATION ID	DIRECTION	DISTANCE
AIR	C07	ESE	7.5 MI.
	C18	N	5.2
	C40	E	3.5
	C41	SW	0.4
	C46	N	0.4
	C47-Control	ESE	80
WATER			
SEAWATER	C14H	NW	0.1
	C14G	W	2.8
	C13-Control	WSW	3.4
GROUND WATER	C40-Control	E	3.5
DRINKING WATER	C07-Control	ESE	7.5
	C10-Control	ESE	5.9
	C18-Control	N	5.2
SHORELINE SEDIMENT	C09-Control	S	3.2
	C14H	NW	0.1
	C14M	W	1.2
	C14G	W	2.8
FISH & OYSTERS	C29	E	2.0
	C30-Control	WSW	3.6
VEGETATION	C48A	N	0.8
	C48B	NNE	0.8
	C47-Control	ESE	80
WATERMELON	C04	ENE	6.3
CITRUS	C19	ENE	8.5

TABLE I-2

FLORIDA POWER CORP. - CR3 - 1995

SAMPLING AND ANALYSIS PROGRAM

SAMPLE MEDIA	# OF STATIONS	FREQUENCY	ANALYSIS	LLD <sup>1</sup>
TLD	30	Quarterly	$\gamma$ Dose	---
Air Iodine	6	Weekly	I-131	0.07 pCi/m <sup>3</sup>
Air Particulate	6	Weekly	Gross $\beta$	0.01
		Quarterly	$\gamma$ Spec :	
Seawater	3	Monthly		Cs-134 0.05
				Cs-137 0.06
		Monthly	Tritium	3000 pCi/L
		Monthly	$\gamma$ Spec :	
				Mn-54 15
				Fe-59 30
				Co-58 15
				Co-60 15
				Zn-65 30
				Zr-Nb-95 15
				I-131 1
				Cs-134 15
				Cs-137 18
				Ba-La-140 15
Ground Water	1	Semiannual	Tritium	2000 pCi/L
		Semiannual	$\gamma$ Spec :	
Drinking Water	3	Quarterly		2 2
			Tritium	
		Quarterly	$\gamma$ Spec :	
				2 2
Shoreline Sediment	4	Semiannual	$\gamma$ Spec :	
				Cs-134 150 pCi/kg
				Cs-137 180

TABLE I-2 (Cont'd)  
 FLORIDA POWER CORP. - CR3 - 1995  
SAMPLING AND ANALYSIS PROGRAM

SAMPLE MEDIA	# OF STATIONS	FREQUENCY	ANALYSIS	LLD <sup>1</sup>
Carnivorous Fish and Oysters	2	Quarterly	γ Spec :	
			Mn-54	130 pCi/kg
			Fe-59	260
			Co-58	130
			Co-60	130
			Zn-65	260
			Cs-134	130
			Cs-137	150
Broad Leaf Vegetation	3	Monthly <sup>3</sup>	γ Spec :	
			I-131	60 pCi/kg
			Cs-134	60
			Cs-137	80
Citrus	1	Annual <sup>4</sup>	γ Spec :	
			6	6
Watermelon	1	Annual <sup>4</sup>	γ Spec :	
			6	6

<sup>1</sup>The maximum "a priori" LLD

<sup>2</sup>Same as Seawater γ Spec

<sup>3</sup>When available

<sup>4</sup>During harvest

<sup>5</sup>Same as broad leaf vegetation

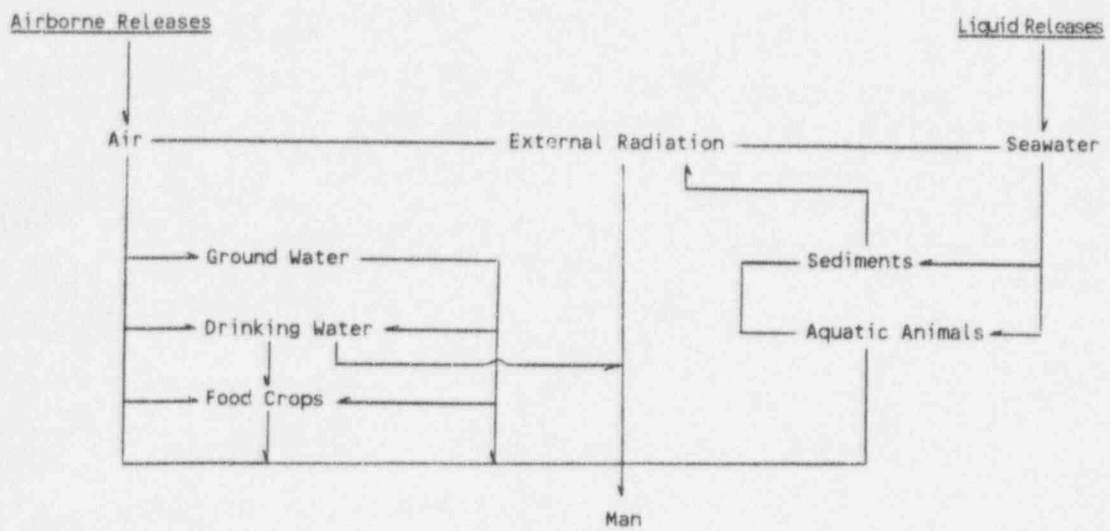


FIGURE I-1: Environmental Media and Exposure Pathways

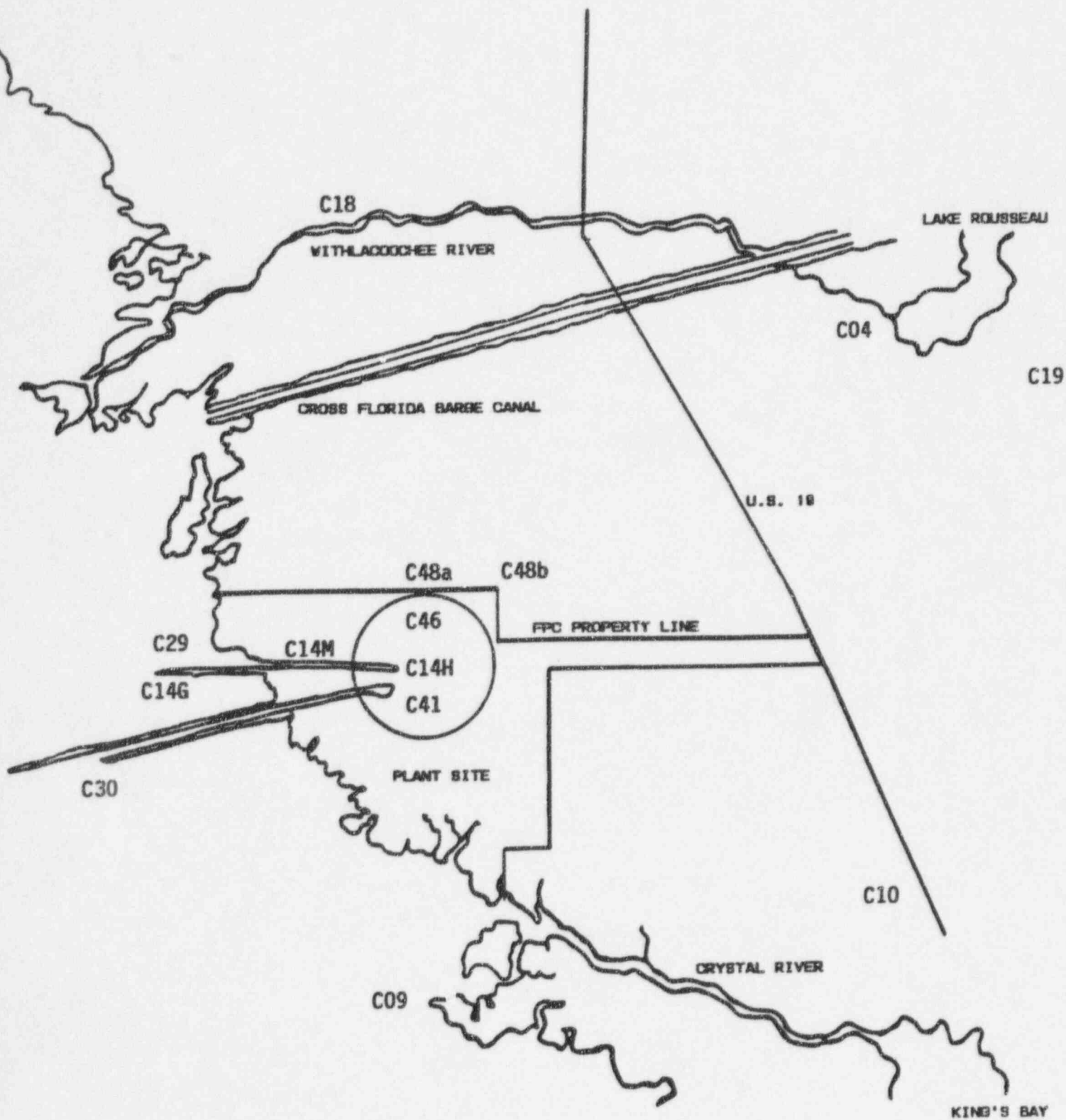


FIGURE 1-2: Environmental Monitoring Sample Station Locations

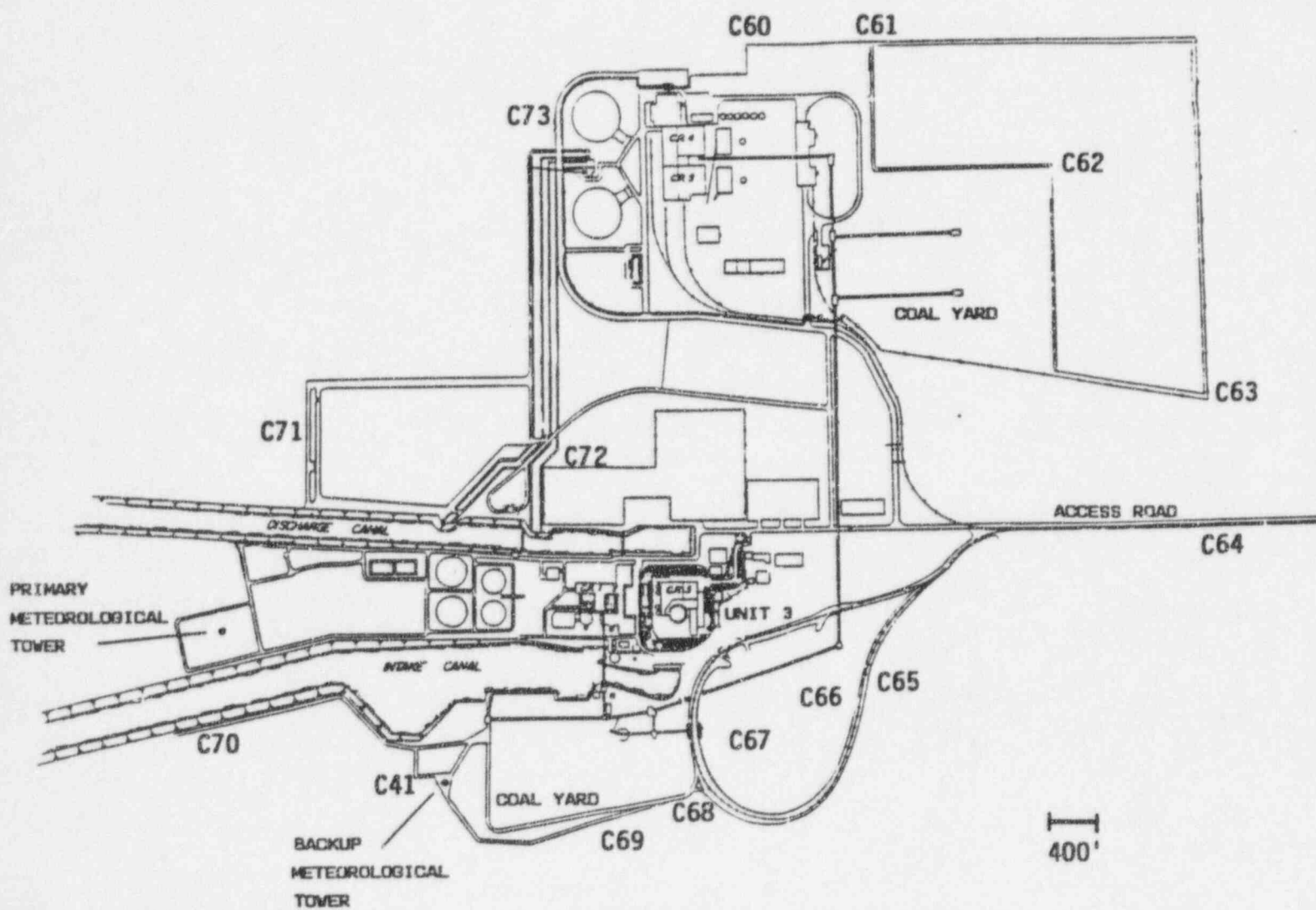


FIGURE 1-3: Environmental Monitoring TLD Locations (Site Boundary)



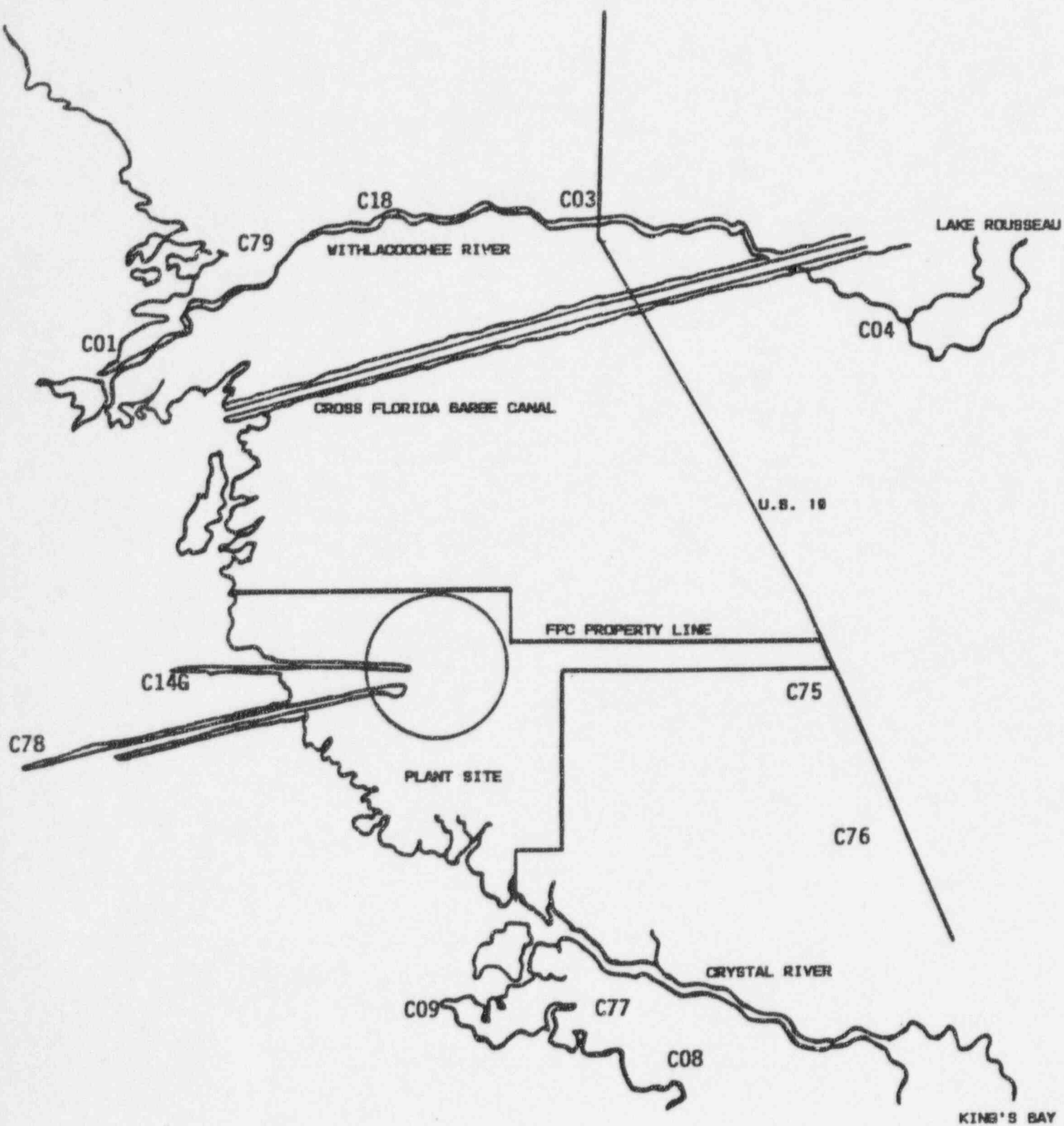


FIGURE I-4: Environmental Monitoring TLD Locations (5 Miles)

## II. LAND-USE CENSUS

A land-use census to identify the nearest residences, vegetable gardens, and potential milk-producing animals within a five mile radius of the nuclear plant was conducted in May. The distance in miles and bearing in degrees for each receptor type in each of the sixteen sectors is summarized below.

SECTOR	NEAREST RESIDENCE	NEAREST GARDEN	NEAREST MILK ANIMAL
N	4.4 @ 2°	4.7 @ 5°	**
NNE	3.8 @ 15°	4.5 @ 13°	**
NE	3.8 @ 55°	4.1 @ 47°	**
ENE	3.4 @ 60°	4.4 @ 57°	**
E	3.5 @ 97°	4.1 @ 93°	**
ESE	4.2 @ 101°	4.2 @ 101°	**
SE	4.7 @ 133°	*	**
SSE	3.4 @ 150°	*	*
S	*	*	*
SSW	*	*	*
SW	*	*	*
WSW	*	*	*
W	*	*	*
WNW	*	*	*
NW	4.6 @ 319°	*	*
NNW	4.5 @ 338°	4.5 @ 339°	**

\* None

\*\* All sectors around the plant which are not exclusively water or marshland might occasionally have milk-producing animals at the plant boundary. Most of the land adjacent to the plant site is woodland; however, much of the land in the immediate area is pastureland for cattle and a few horses. Stray cattle are often seen in the wooded areas adjacent to the plant site. These cattle are raised for beef or veal. At times there may be fresh females in these herds, but these animals roam freely and are not milked. A few goats have also been located at residences within the survey area. None of these cows or goats are known to be providing milk for human use, and the owners are not willing to make samples of milk available.

FLORIDA DEPARTMENT OF HRS - EPA INTERLABORATORY CROSS-CHECK PROGRAM DATA

Media	Nuclide	Collection			EPA Known	Units	Normal Range	Mean of Analysis	N.D.K.	Action Level
		Mon	Day	Yr						
WATER	Alpha	01	27	95	5	pCi/L	0.236	5.00	0.00	
WATER	Beta	01	27	95	5	pCi/L	0.236	7.33	0.81	
WATER	Co-60	06	09	95	40	pCi/L	0.236	39.00	-0.35	
WATER	Zn-65	06	09	95	76	pCi/L	0.517	82.67	1.44	
WATER	Ba-133	06	09	95	79	pCi/L	0.148	74.33	-1.01	
WATER	Cs-134	06	09	95	50	pCi/L	0.000	47.00	-1.04	
WATER	Cs-137	06	09	95	35	pCi/L	0.354	37.67	0.92	
WATER	H-3	03	10	95	7435	pCi/L	0.193	7355.00	-0.19	
WATER	I-131	02	03	95	100	pCi/L	0.118	97.00	-0.52	
WATER	Sr-89	01	13	95	20	pCi/L	0.354	14.33	-1.96	
WATER	Sr-90	01	13	95	15	pCi/L	0.236	10.33	-1.62	
FILTER	Alpha	08	25	95	25	pCi/F	0.141	28.30	0.91	
FILTER	Beta	08	25	95	86.6	pCi/F	0.396	79.57	-1.22	
FILTER	Cs-137	08	25	95	25	pCi/F	0.000	28.00	1.04	
FILTER	Sr-90	08	25	95	30	pCi/F	0.709	21.33	-3.00	1
MILK	I-131	09	29	95	99	pCi/L	0.295	98.67	-0.06	
MILK	Cs-137	09	29	95	50	pCi/L	0.000	53.00	1.04	
MILK	K	09	29	95	1654	mg/L	0.306	1687.33	0.70	
MILK	Sr-89	09	29	95	20	pCi/L	0.945	12.00	-2.77	
MILK	Sr-90	09	29	95	15	pCi/L	0.945	16.00	0.35	
WATER	Alpha	07	21	95	27.5	pCi/L	0.231	23.33	-1.05	
WATER	Alpha	10	27	95	51.2	pCi/L	0.120	24.90	-3.56	2
WATER	Beta	07	21	95	19.4	pCi/L	0.567	23.60	1.45	
WATER	Beta	10	27	95	24.8	pCi/L	1.413	32.97	2.83	
WATER	Co-60	11	03	95	60	pCi/L	0.236	60.33	0.12	
WATER	Zn-65	11	03	95	125	pCi/L	0.409	134.67	1.29	
WATER	Ba-133	11	03	95	99	pCi/L	0.059	92.67	-1.10	
WATER	Cs-134	11	03	95	40	pCi/L	0.118	37.33	-0.92	
WATER	Cs-137	11	03	95	49	pCi/L	0.354	54.00	1.73	
WATER	H-3	08	04	95	4872	pCi/L			NDP	
WATER	I-131	10	06	95	148	pCi/L	0.039	148.67	0.08	
WATER	Sr-89	07	14	95	20	pCi/L	0.591	8.00	-4.16	3
WATER	Sr-90	07	14	95	8	pCi/L	0.118	9.33	0.46	

FLORIDA DEPARTMENT OF HRS - EPA INTERLABORATORY CROSS-CHECK PROGRAM DATA

(Cont'd)

NOTES:

NORMAL: Normalized Range. As defined in "Environmental Radioactivity Laboratory Intercomparison Studies Program Fiscal Year 1981 - 1982", Environmental Monitoring Systems Laboratory, U. S. Environmental Protection Agency, P. O. Box 93478, Las Vegas, Nevada, 89193-3478. EPA-600/4-81-004, February, 1981.

N.D.K. Normalized deviation of the mean from the known value, as defined in EPA-600/4-81-004.

NDP: No data provided. No data was provided to EPA for inclusion in their report.

NA: Not available. Report containing this data has not yet been received from EPA, Las Vegas.

ACTION LEVEL:

- (1) Cause: Chemical recoveries too low and inconsistent.  
Corrective Action: Try to improve recovery and consistency.
- (2) Cause: Please see attached note from EPA.  
Corrective Action: Try EPA's suggestions.
- (3) Cause: Insufficient number of counts on sample.  
Corrective Action: Count samples more time.

#### IV-A. AIRBORNE PATHWAY

Air samples are taken at five locations in the vicinity of the plant. The control location is 80 miles ESE of the plant, at the State Office of Radiation Control in Orlando.

Table IV-A.1 provides a statistical summary of the analytical results for 307 gross beta samples and 307 Iodine samples.

Of 307 particulate samples analyzed for gross beta activity, 306 had measurable activity. The average indicator concentration was 18 pCi/1,000 m<sup>3</sup> with a range of 3 to 31 pCi/1,000 m<sup>3</sup>. The average indicator concentration for each year from 1989 through 1994 was 19 pCi/1,000 m<sup>3</sup>. An increase in 1993 to 31 pCi/1,000 m<sup>3</sup> is attributed to a shortening of the time between collection and counting, resulting in a greater fraction of the activity being due to short-lived naturally occurring daughter products.

Three hundred and seven samples were analyzed for Iodine activity, with none having measurable activity.

Tables IV-A.2 and IV-A.3 provide the results for each weekly air sample.

Quarterly composite data are summarized in Table IV-A.4. Measurable quantities of cesium were not identified. The highest Cesium LLD was 1.1 pCi/1,000 m<sup>3</sup>.

The gross beta LLD of 0.01 pCi/m<sup>3</sup> was not attained for the following air samples as sample duration was shortened due to power outages:

Station C40 on 3-20-95

Station C40 on 8-28-95

Power outages during the entire weekly sample period prevented the following samples from being obtained:

Station C40 on 9-05-95

Station C46 on 5-22-95

Station C46 on 5-30-95

TABLE IV-A.1

## RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

CRYSTAL RIVER UNIT 3

DOCKET NO. 5-302

CITRUS COUNTY, FLORIDA

JANUARY 1 TO DECEMBER 31, 1995

MEDIUM OR PATHWAY SAMPLED (UNITS)	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	LOWER LIMIT OF DETECTION (LLD) <sup>1</sup>	ALL INDICATOR LOCATIONS	LOCATION WITH HIGHEST MEAN		CONTROL LOCATION MEAN RANGE	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
			MEAN RANGE	NAME DISTANCE & BEARING	MEAN RANGE		
AIRBORNE IODINE (pCi/m <sup>3</sup> )	γ Spec 307 I-131	0.024	<LLD	-	-	<LLD	0
AIRBORNE PARTICULATES (pCi/1000m <sup>3</sup> for Gross B, pCi/1000m <sup>3</sup> for γ Spec)	Gross B 307 γ Spec 24 Cs-134 Cs-137	2.5 6.9 6.6	18 (256/256) (3 - 31) <LLD <LLD	C40 3.5 @ 90° - -	15 (51/51) (5 - 27) - -	15 (52/52) (4 - 27) <LLD <LLD	0 0 0 0

<sup>1</sup>The "a priori" LLD which meets or exceeds the requirements of Table 2-9 of the CR-3 ODCM.

TABLE IV-A.2

FLORIDA POWER CORP. - CR3 - 1995

pCi/m<sup>3</sup> IODINE - 131 IN AIR

COLLECTION DATE	C07	C18	C40	C41	C46	C47
01-03	<.01	<.01	<.01	<.01	<.01	<.01
01-09	<.01	<.01	<.01	<.01	<.01	<.01
01-17	<.01	<.01	<.01	<.01	<.01	<.01
01-23	<.01	<.01	<.01	<.01	<.01	<.01
01-31	<.02	<.02	<.02	<.02	<.02	<.02
02-07	<.02	<.02	<.02	<.02	<.02	<.02
02-13	<.03	<.03	<.03	<.03	<.03	<.03
02-21	<.02	<.02	<.02	<.02	<.02	<.02
02-27	<.02	<.02	<.02	<.02	<.02	<.02
03-06	<.01	<.01	<.01	<.01	<.01	<.01
03-13	<.02	<.01	<.01	<.02	<.02	<.01
03-20	<.01	<.01	<.02	<.01	<.01	<.01
03-28	<.01	<.01	<.02	<.01	<.01	<.01
04-04	<.02	<.02	<.02	<.02	<.02	<.02
04-10	<.03	<.03	<.03	<.03	<.03	<.03
04-18	<.02	<.01	<.02	<.02	<.01	<.01
04-24	<.02	<.02	<.02	<.02	<.02	<.02

TABLE IV-A.2 (Cont'd)  
FLORIDA POWER CORP. - CR3 - 1995  
pCi/m<sup>3</sup> IODINE - 131 IN AIR

COLLECTION DATE	C07	C18	C40	C41	C46	C47
05-01	<.02	<.02	<.02	<.02	<.02	<.02
05-08	<.01	<.01	<.01	<.01	<.01	<.01
05-15	<.01	<.02	<.02	<.02	<.02	<.02
05-22	<.01	<.01	<.01	<.01	--	<.01
05-30	<.01	<.01	<.01	<.01	--	<.02
06-05	<.01	<.01	<.01	<.01	<.01	<.01
06-12	<.02	<.02	<.02	<.02	<.02	<.02
06-19	<.02	<.02	<.02	<.02	<.02	<.02
06-26	<.02	<.02	<.02	<.02	<.02	<.02
07-03	<.02	<.02	<.02	<.01	<.02	<.02
07-10	<.02	<.02	<.02	<.02	<.02	<.02
07-17	<.01	<.01	<.01	<.01	<.01	<.01
07-24	<.02	<.02	<.02	<.02	<.02	<.02
07-31	<.02	<.02	<.02	<.02	<.02	<.02
08-07	<.01	<.01	<.01	<.01	<.01	<.01
08-14	<.01	<.01	<.01	<.01	<.01	<.01
08-21	<.02	<.02	<.02	<.02	<.02	<.02
08-28	<.01	<.01	<.02	<.01	<.01	<.01



TABLE IV-A.2 (Cont'd)  
FLORIDA POWER CORP. - CR3 - 1995  
pCi/m<sup>3</sup> IODINE - 131 IN AIR

COLLECTION DATE	C07	C18	C40	C41	C46	C47
09-05	<.02	<.02	--	<.02	<.02	<.02
09-11	<.01	<.01	<.01	<.01	<.01	<.01
09-18	<.01	<.01	<.01	<.01	<.01	<.01
09-25	<.01	<.01	<.01	<.01	<.01	<.01
10-02	<.02	<.02	<.02	<.02	<.02	<.02
10-09	<.01	<.01	<.01	<.01	<.01	<.01
10-16	<.02	<.02	<.02	<.02	<.02	<.02
10-23	<.02	<.02	<.02	<.02	<.02	<.02
10-30	<.03	<.03	<.03	<.03	<.03	<.03
11-06	<.02	<.02	<.02	<.02	<.02	<.02
11-13	<.02	<.02	<.02	<.02	<.02	<.02
11-20	<.03	<.03	<.03	<.03	<.03	<.03
11-27	<.02	<.02	<.02	<.02	<.02	<.02
12-04	<.02	<.02	<.02	<.02	<.02	<.02
12-11	<.01	<.01	<.01	<.01	<.01	<.01
12-18	<.02	<.02	<.02	<.02	<.02	<.02
12-26	<.01	<.01	<.01	<.01	<.01	<.01

TABLE IV-A.3

FLORIDA POWER CORP. - CR3 - 1995

pCi/1000m<sup>3</sup> GROSS B IN AIR

COLLECTION DATE	C07	C18	C40	C41	C46	C47
01-03	10	13	15	11	15	8
01-09	7	18	23	21	15	17
01-17	6	20	12	15	16	17
01-23	12	16	14	11	13	11
01-31	22	16	18	19	14	25
02-07	18	26	27	13	25	27
02-13	9	14	15	15	16	13
02-20	9	12	10	8	10	12
02-27	13	16	17	14	6	10
03-06	14	13	15	9	8	16
03-13	20	19	19	19	18	18
03-20	5	9	9	10	6	11
03-28	18	16	23	17	16	19
04-04	12	22	20	18	12	18
04-10	10	10	6	9	13	10
04-18	16	16	19	13	15	20
04-24	17	21	17	17	22	20

TABLE IV-A.3 (Cont'd)  
 FLORIDA POWER CORP. - CR3 - 1995  
 pCi/1000m<sup>3</sup> GROSS B IN AIR

COLLECTION DATE	C07	C18	C40	C41	C46	C47
05-01	14	17	13	17	14	13
05-08	17	18	20	18	20	17
05-15	14	17	12	9	14	14
05-22	11	13	19	15	--	19
05-30	15	14	12	14	--	12
06-05	5	10	8	9	11	10
06-12	6	19	15	13	16	18
06-19	9	13	12	13	13	12
06-26	8	10	11	5	7	6
07-03	12	18	17	16	9	13
07-10	18	25	20	22	18	25
07-17	11	12	11	13	12	11
07-24	11	14	12	12	15	7
07-31	11	9	8	8	3	7
08-07	16	16	16	17	16	13
08-14	17	17	13	11	16	11
08-21	28	23	26	21	28	22
08-28	8	6	9	10	8	13

TABLE IV-A.3 (Cont'd)  
 FLORIDA POWER CORP. - CR3 - 1995  
 pCi/1000m<sup>3</sup> GROSS B IN AIR

COLLECTION DATE	C07	C18	C40	C41	C46	C47
09-05	13	19	--	12	8	11
09-11	7	9	9	10	8	11
09-18	6	9	5	6	10	7
09-25	12	13	15	13	14	18
10-02	8	12	8	9	7	8
10-09	<5	6	5	6	7	4
10-16	5	7	8	4	3	5
10-23	17	18	15	16	18	13
10-30	15	13	15	15	16	20
11-06	20	14	16	19	17	22
11-13	15	15	14	19	21	18
11-20	12	22	22	23	23	19
11-27	24	28	25	21	27	22
12-04	21	17	13	20	26	20
12-11	21	31	21	23	27	19
12-18	20	19	21	16	18	14
12-26	16	13	17	17	14	11

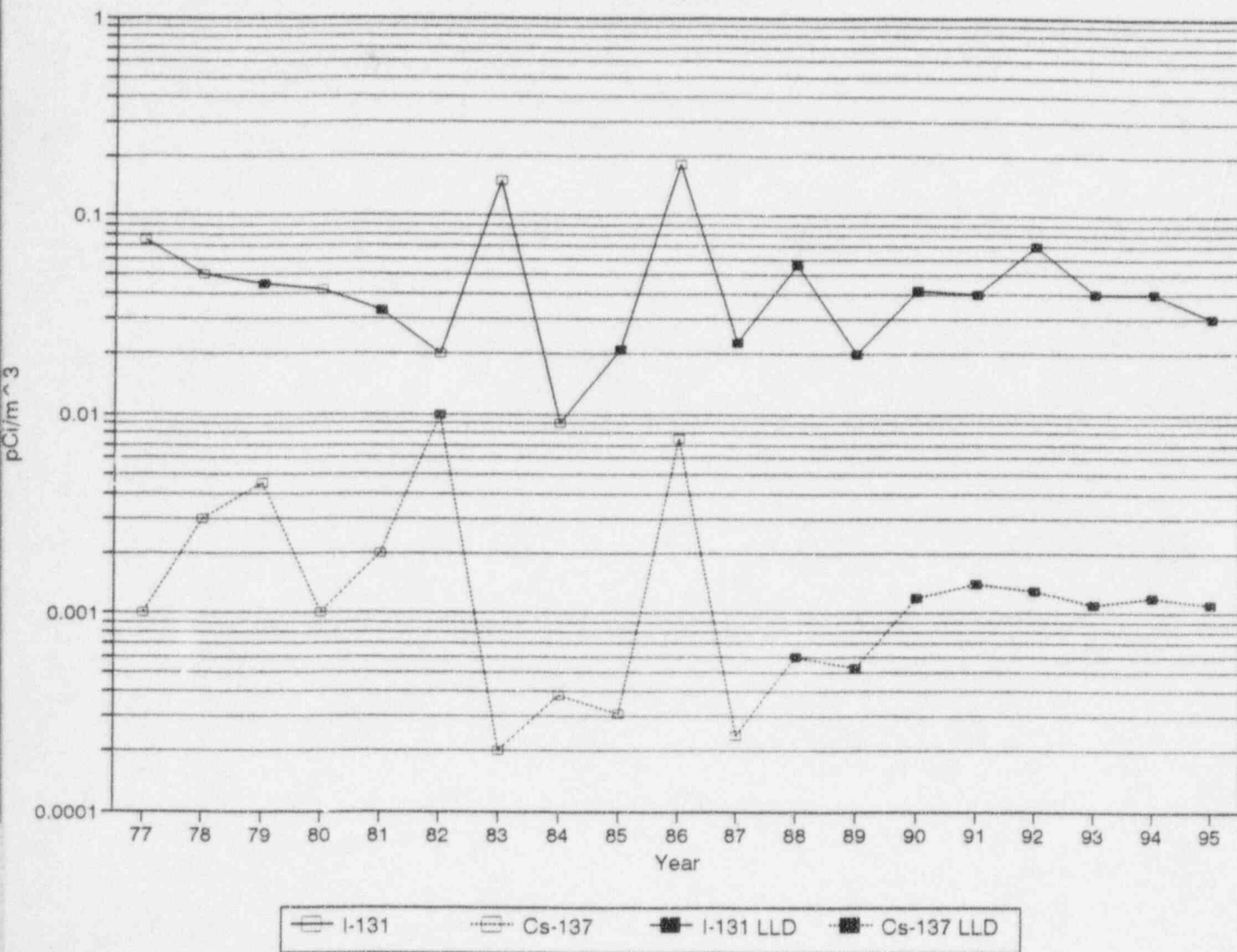
TABLE IV-A.4

FLORIDA POWER CORP. - CR3 - 1995

pCi/1000m<sup>3</sup>  $\gamma$  EMITTERS IN QUARTERLY COMPOSITES OF AIR PARTICULATES

STATION	NUCLIDE	FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
C07	Be-7	117	109	105	127
	K-40	<18	18	<15	<19
	Cs-134	<0.9	<0.8	<0.8	<0.8
	Cs-137	<0.9	<0.8	<1.0	<0.9
C18	Be-7	152	115	105	122
	K-40	<16	<20	<18	<18
	Cs-134	<0.9	<0.8	<0.5	<0.7
	Cs-137	<0.9	<1.1	<0.7	<0.9
C40	Be-7	129	137	89	108
	K-40	<21	<22	<20	<21
	Cs-134	<0.9	<0.7	<1.1	<0.8
	Cs-137	<0.8	<0.5	<1.0	<0.8
C41	Be-7	128	135	106	139
	K-40	<16	<17	<17	<18
	Cs-134	<1.0	<0.7	<0.6	<1.0
	Cs-137	<0.8	<0.7	<0.8	<0.7
C46	Be-7	118	122	81	133
	K-40	<18	<19	<20	<19
	Cs-134	<0.6	<1.0	<1.1	<0.8
	Cs-137	<0.7	<0.8	<0.7	<0.8
C47	Be-7	139	134	92	131
	K-40	<19	18	<16	20
	Cs-134	<0.8	<1.2	<0.9	<0.7
	Cs-137	<0.9	<0.6	<0.8	<0.6

# Air Samples



#### IV-B. DIRECT RADIATION

Direct radiation measurements (using TLDs) were taken at sixteen locations within one mile of the plant, at thirteen locations ranging from 2.8 to 6.3 miles from the plant, and at one control location 80 miles from the site. The highest on-site dose was 107 mrem/yr at station C71 (NW at 2400 feet). The increase at C71 of approximately 30 mrem/yr since 1992 is attributed to the TLD being moved (due to construction). The new location is closer to a storage pond for Units 4 & 5 fly ash. The highest off-site dose was 55 mrem/yr at station C14G (west at 2.8 miles). The control station (C47) dose was 44 mrem/yr. The average for all stations was 49 mrem/yr. With the exception of C71, direct radiation results are similar to previous years and show no change of significance.

TABLE IV-B

## RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

CRYSTAL RIVER UNIT 3

DOCKET NO. 5-302

CITRUS COUNTY, FLORIDA

JANUARY 1 TO DECEMBER 31, 1995

MEDIUM OR PATHWAY SAMPLED (UNITS)	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	LOWER LIMIT OF DETECTION (LLD)	<u>ALL INDICATOR LOCATIONS</u>		<u>LOCATION WITH HIGHEST MEAN</u>		CONTROL LOCATION MEAN RANGE	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
			MEAN RANGE	NAME DISTANCE & BEARING	MEAN RANGE			
DIRECT RADIATION (mrem/yr)	7 DOSE 127	15	49 (123/123) (37 - 112)	C71 0.5 @ 280°	107 (4/4) (105 - 112)	44 (4/4) (43 - 44)	0	

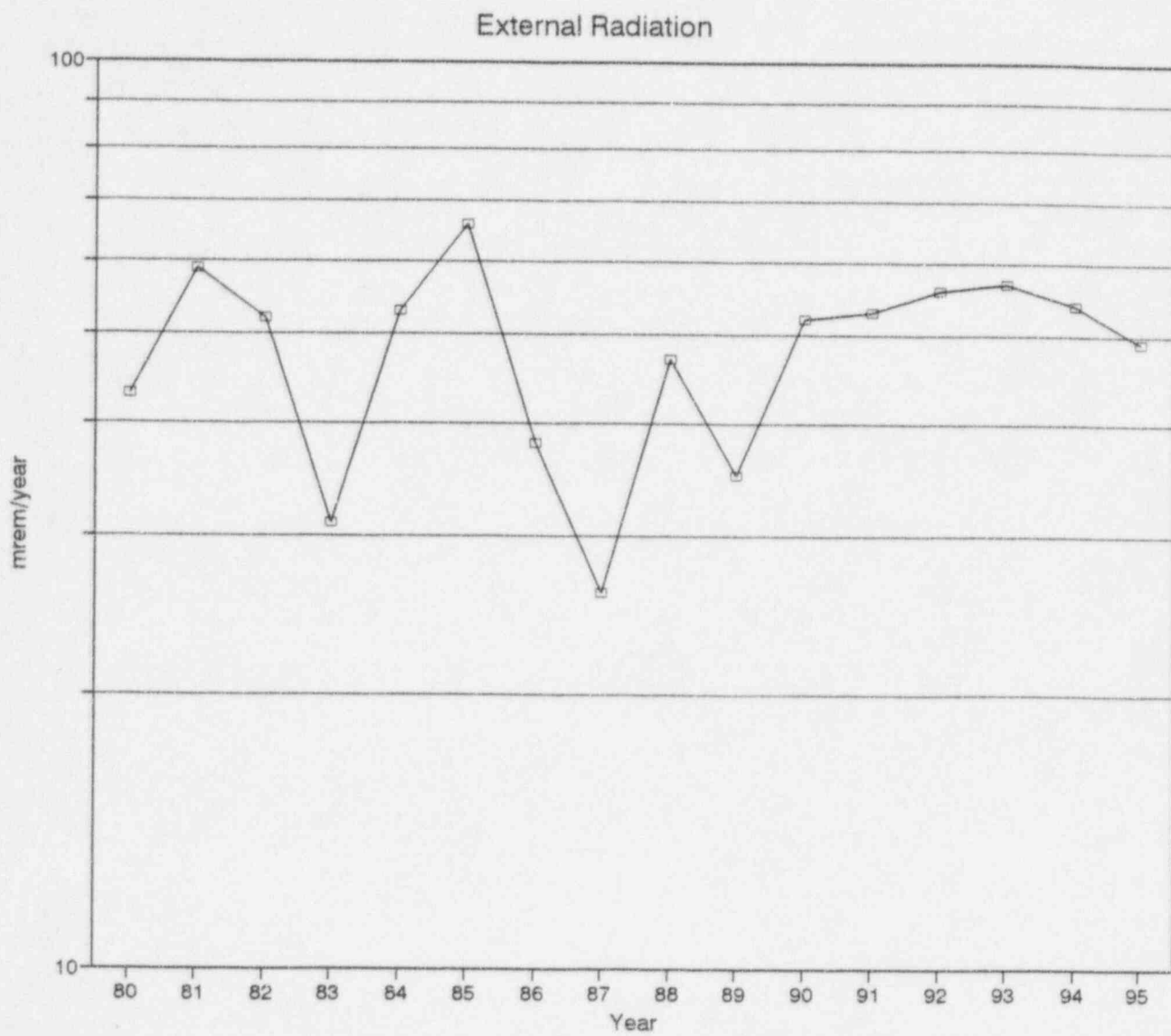


TABLE IV-B.1

FLORIDA POWER CORP. - CR-3 - 1995

mrem/yr  $\gamma$  Dose

TLD STATION	Quarter	1	2	3	4
C01		44	40	43	42
C03		45	45	45	44
C04		44	40	43	43
C07		41	40	41	42
C08		41	41	40	40
C09		--	41	40	40
C14G		54	56	54	55
C18		45	43	48	44
C27		65	60	64	61
C40		54	55	56	53
C41		61	56	55	57
C46		52	52	53	52
C47 (CONTROL)		44	44	44	43
C60		50	51	54	51
C61		55	54	55	53
C62		59	60	63	60
C63		57	56	54	56
C64		53	54	53	53
C65		53	52	52	50
C66		56	53	54	53
C67		63	59	59	59
C68		57	58	56	55
C69		60	60	58	59
C70		62	59	60	60
C71		107	106	112	105
C72		57	55	59	57
C73		51	51	51	52
C74		--	39	41	41
C75		52	50	49	50
C76		44	46	43	46
C77		40	39	39	37
C78		46	46	45	45
C79		46	43	49	49



#### IV-C. WATERBORNE PATHWAY

To evaluate the waterborne pathway, seawater, groundwater, drinking water, and shoreline sediment samples are taken.

1. Monthly seawater grab samples are taken at two locations in the discharge canal and at one control location near the mouth of the intake canal. Of twenty-four indicator samples, ten had a measurable amount of Tritium at an average level of 167 pCi/L. Five samples taken at the control location, C13, indicated measurable amounts of Tritium at an average level of 165 pCi/L.  
  
Gamma spectral analysis was performed on thirty-six samples, none of which showed measurable amounts of the gamma emitters of interest.
2. Semiannual groundwater samples are taken at one location, station C40. Gamma spectral and Tritium analyses are performed on both samples. All results were less than the LLD. Since plant startup, all results, except for the results of one 1985 Tritium analysis, have been less than LLD. The required sensitivity for measuring tritium in groundwater is 2000 pCi/L. Analysis of groundwater in the vicinity of CR-3 is done at a sensitivity of approximately 200 pCi/L for tritium and 10 pCi/L for select gamma emitters.
3. Quarterly drinking water samples are drawn from three locations: the Crystal River Public Water Plant (C07), the Indian Waters Public Water Supply (C10), and the Yankeetown City Well (C18). All samples were collected and analyzed for gamma emitters and Tritium. None of the samples yielded measurable activities for Tritium or the required gamma emitters.
4. Semiannual shoreline sediment samples are taken at three indicator locations in the discharge canal (C14H, C14M, C14G) and one control location (C09) at Fort Island Gulf Beach. Of the eight samples analyzed, six had measurable amounts of cobalt and three had measurable amounts of cesium. The Cesium-137 concentration at Fort Gulf Island Beach was <14 pCi/L as compared to an average of 63 pCi/L for the indicator locations in the discharge canal. None of the samples taken at Fort Island Gulf Beach had measurable amounts of cobalt. These results are similar to previous years.

TABLE IV-C.1

## RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

CRYSTAL RIVER UNIT 3

DOCKET NO. 5-302

CITRUS COUNTY, FLORIDA

JANUARY 1 TO DECEMBER 31, 1995

MEDIUM OR PATHWAY SAMPLED  (UNITS)	ANALYSIS AND	LOWER LIMIT OF DETECTION (LLD) <sup>1</sup>	ALL INDICATOR LOCATIONS	LOCATION WITH HIGHEST MEAN		CONTROL LOCATION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
	TOTAL NUMBER OF ANALYSES PERFORMED		MEAN RANGE	NAME  DISTANCE & BEARING	MEAN RANGE	MEAN RANGE	
SEA WATER (pCi/L)	Tritium 36	230	167 (10/24) (92 - 310)	C14H 0.1 @ 315°	189 (3/12) (105 - 310)	165 (6/12) (113 - 235)	0
	γ Spec 36						
	Mn-54	4	<LLD	-	-	<LLD	0
	Fe-59	8	<LLD	-	-	<LLD	0
	Co-58	4	<LLD	-	-	<LLD	0
	Co-60	4	<LLD	-	-	<LLD	0
	Zn-65	8	<LLD	-	-	<LLD	0
	Zr-Nb-95	7	<LLD	-	-	<LLD	0
	I-131	5	<LLD	-	-	<LLD	0
	Cs-134	5	<LLD	-	-	<LLD	0
	Cs-137	4	<LLD	-	-	<LLD	0
	Ba-La-140	11	<LLD	-	-	<LLD	0

<sup>1</sup>The "a priori" LLD which meets or exceeds the requirements of Table 2-9 of the CR-3 ODCM.

TABLE IV-C.1.a

FLORIDA POWER CORP. - CR3 - 1995

pCi/L  $\gamma$  EMITTERS AND TRITIUM IN SEAWATER

STATION	MONTH	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-Nb-95	I-131	Cs-134	Cs-137	Ba-La-140
C13	JAN	169 $\pm$ 43	246 $\pm$ 33	<3	<4	<9	<5	<7	<7	<7	<4	<4	<6
	FEB	115 $\pm$ 43	202 $\pm$ 30	<3	<3	<9	<4	<7	<7	<8	<4	<5	<6
	MAR	<138	171 $\pm$ 25	<4	<3	<7	<4	<9	<7	<5	<4	<4	<3
	APR	<142	242 $\pm$ 27	<3	<3	<8	<5	<7	<7	<8	<4	<4	<6
	MAY	<157	281 $\pm$ 31	<3	<3	<5	<5	<8	<8	<4	<4	<4	<9
	JUN	<140	236 $\pm$ 32	<3	<3	<7	<4	<8	<7	<5	<4	<4	<7
	JUL	189 $\pm$ 48	248 $\pm$ 34	<4	<3	<8	<5	<8	<6	<7	<3	<4	<5
	AUG	113 $\pm$ 46	213 $\pm$ 30	<3	<3	<8	<4	<9	<7	<5	<4	<4	<6
	SEP	167 $\pm$ 47	248 $\pm$ 28	<4	<3	<8	<4	<7	<7	<6	<3	<4	<5
	OCT	235 $\pm$ 47	281 $\pm$ 31	<4	<4	<8	<5	<7	<4	<4	<3	<5	<6
	NOV	<146	292 $\pm$ 31	<4	<4	<8	<5	<8	<7	<6	<4	<4	<6
	DEC	<149	254 $\pm$ 30	<4	<3	<7	<4	<8	<6	<4	<5	<4	<8
C14G	JAN	137 $\pm$ 42	214 $\pm$ 30	<4	<4	<8	<4	<8	<7	<8	<4	<4	<6
	FEB	97 $\pm$ 43	290 $\pm$ 30	<3	<4	<9	<5	<7	<6	<7	<4	<5	<7
	MAR	<138	217 $\pm$ 29	<3	<4	<10	<3	<6	<6	<5	<3	<4	<7
	APR	<131	249 $\pm$ 33	<3	<4	<6	<5	<8	<7	<8	<4	<4	<5
	MAY	92 $\pm$ 43	215 $\pm$ 32	<3	<4	<7	<4	<7	<5	<4	<4	<4	<10
	JUN	<140	255 $\pm$ 36	<4	<4	<7	<4	<8	<7	<4	<3	<4	<7
	JUL	162 $\pm$ 48	245 $\pm$ 31	<3	<4	<8	<4	<9	<5	<7	<4	<5	<4
	AUG	<147	217 $\pm$ 32	<4	<3	<5	<4	<7	<7	<6	<4	<5	<4
	SEP	200 $\pm$ 47	246 $\pm$ 34	<4	<4	<8	<4	<9	<6	<6	<4	<3	<6
	OCT	290 $\pm$ 46	212 $\pm$ 32	<4	<3	<8	<4	<7	<6	<5	<3	<4	<6
	NOV	127 $\pm$ 47	213 $\pm$ 34	<3	<4	<5	<4	<8	<7	<7	<5	<4	<6
	DEC	<149	179 $\pm$ 32	<3	<3	<8	<5	<8	<7	<5	<5	<4	<6

TABLE IV-C.1a (CONT'D)

FLORIDA POWER CORP. - CR3 - 1995

pCi/L  $\gamma$  EMITTERS AND TRITIUM IN SEAWATER

STATION	MONTH	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-Nb-95	I-131	Cs-134	Cs-137	Ba-La-140
C14H	JAN	<130	282 $\pm$ 33	<3	<4	<9	<4	<8	<8	<7	<4	<5	<6
	FEB	105 $\pm$ 43	193 $\pm$ 28	<3	<4	<8	<4	<7	<6	<7	<4	<4	<7
	MAR	<138	185 $\pm$ 31	<3	<3	<8	<4	<7	<6	<6	<4	<4	<5
	APR	<131	270 $\pm$ 31	<3	<4	<7	<4	<9	<6	<7	<4	<4	<4
	MAY	<137	202 $\pm$ 28	<4	<3	<7	<4	<9	<7	<4	<4	<4	<7
	JUN	<140	254 $\pm$ 30	<4	<5	<5	<5	<7	<8	<4	<4	<3	<5
	JUL	151 $\pm$ 48	236 $\pm$ 26	<3	<3	<7	<4	<7	<6	<7	<4	<5	<4
	AUG	<147	276 $\pm$ 33	<4	<3	<8	<4	<8	<6	<7	<4	<4	<3
	SEP	<144	239 $\pm$ 31	<3	<4	<9	<3	<8	<7	<6	<4	<3	<5
	OCT	310 $\pm$ 49	324 $\pm$ 32	<4	<4	<7	<4	<8	<6	<4	<4	<4	<8
	NOV	<146	236 $\pm$ 32	<3	<4	<9	<4	<8	<7	<8	<4	<4	<5
	DEC	<149	243 $\pm$ 15	<2	<1	<3	<2	<4	<3	<2	<2	<2	<4

# Seawater

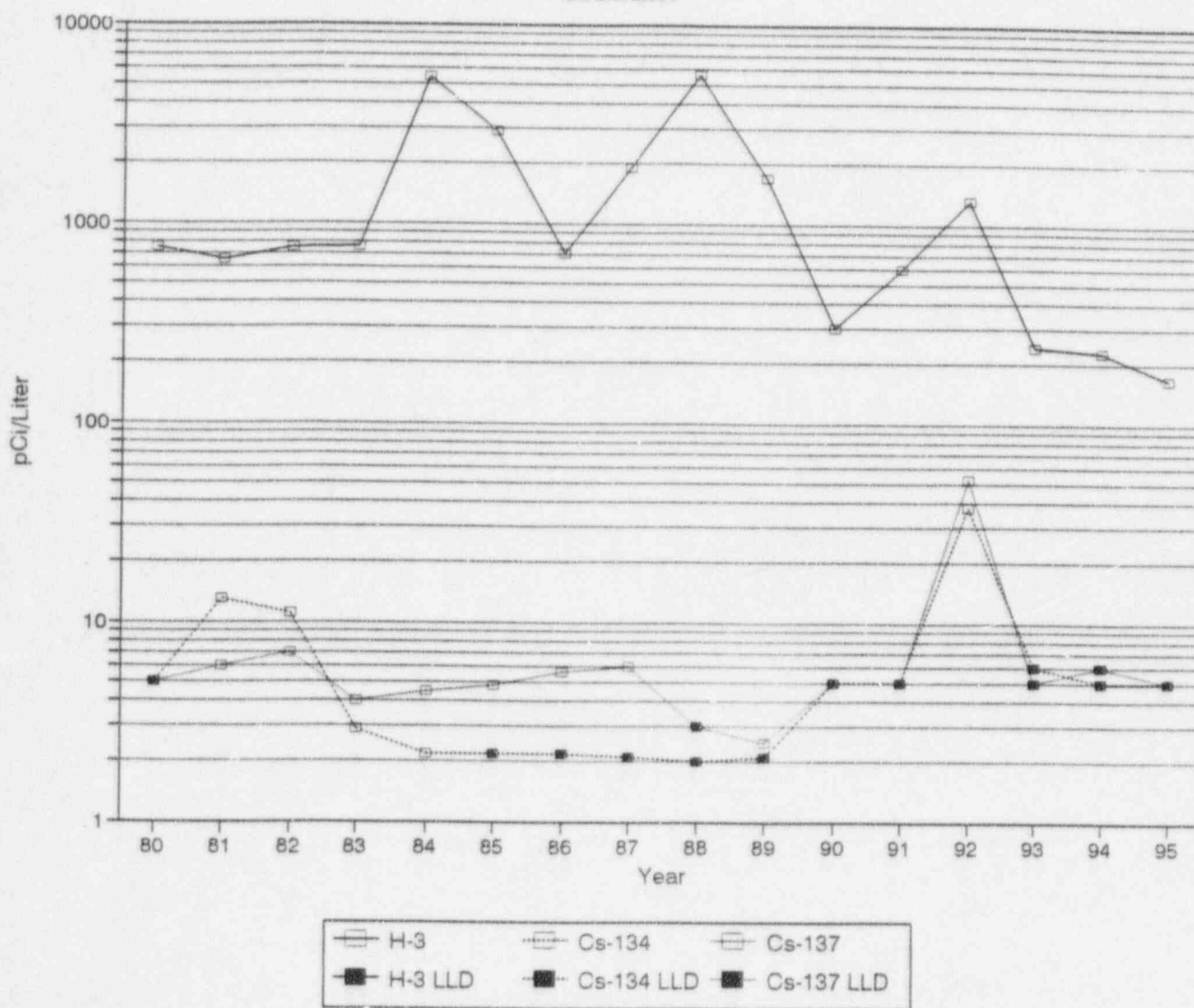


TABLE IV-C.2

## RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

CRYSTAL RIVER UNIT 3

DOCKET NO. 5-302

CITRUS COUNTY, FLORIDA

JANUARY 1 TO DECEMBER 31, 1995

MEDIUM OR PATHWAY SAMPLED (UNITS)	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	LOWER LIMIT OF DETECTION (LLD) <sup>1</sup>	<u>ALL INDICATOR LOCATIONS</u>	<u>LOCATION WITH HIGHEST MEAN</u>		CONTROL LOCATION MEAN RANGE	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
			MEAN RANGE	NAME DISTANCE & BEARING	MEAN RANGE		
GROUND WATER (pCi/L)	Tritium 2	230	None	-	-	<LLD	0
	γ Spec 2						
	Mn-54	4	None	-	-	<LLD	0
	Fe-59	8	None	-	-	<LLD	0
	Co-58	4	None	-	-	<LLD	0
	Co-60	4	None	-	-	<LLD	0
	Zn-65	8	None	-	-	<LLD	0
	Zr-Nb-95	7	None	-	-	<LLD	0
	I-131	5	None	-	-	<LLD	0
	Cs-134	5	None	-	-	<LLD	0
	Cs-137	4	None	-	-	<LLD	0
	Ba-La-140	11	None	-	-	<LLD	0

<sup>1</sup>The "a priori" LLD which meets or exceeds the requirements of Table 2-9 of the CR-3 ODCM.



TABLE IV-C.2.a

FLORIDA POWER CORP. - CR3 - 1995

pCi/L  $\gamma$  EMITTERS AND TRITIUM IN GROUND WATER

STATION	NUCLIDE	FIRST HALF	SECOND HALF
C40	H-3	<135	<147
	Mn-54	<3	<3
	Fe-59	<9	<6
	Co-58	<3	<3
	Co-60	<4	<4
	Zn-65	<8	<7
	Zr-Nb-90	<6	<7
	I-131	<8	<6
	Cs-134	<4	<3
	Cs-137	<4	<4
	Ba-La-140	<7	<5
	K-40	<63	<48

# Groundwater

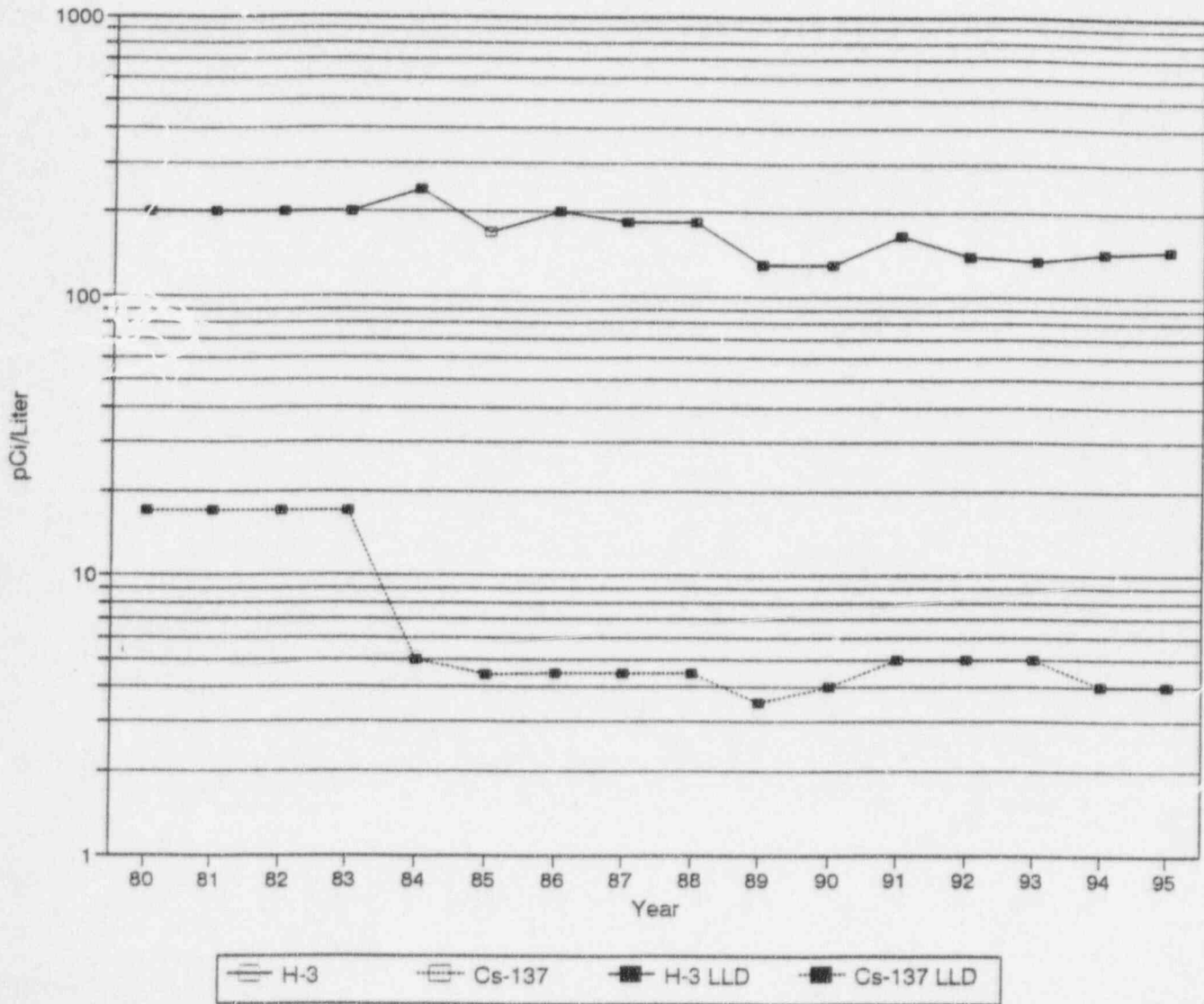


TABLE IV-C.3

## RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

CRYSTAL RIVER UNIT 3

DOCKET NO. 5-302

CITRUS COUNTY, FLORIDA

JANUARY 1 TO DECEMBER 31, 1995

MEDIUM OR PATHWAY SAMPLED (UNITS)	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	LOWER LIMIT OF DETECTION (LLD) <sup>1</sup>	ALL INDICATOR LOCATIONS	LOCATION WITH HIGHEST MEAN		CONTROL LOCATION MEAN RANGE	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
			MEAN RANGE	NAME DISTANCE & BEARING	MEAN RANGE		
DRINKING WATER (pCi/L)	Tritium 12	230	None	-	-	<LLD	0
	γ Spec 12						
	Mn-54	4	None	-	-	<LLD	0
	Fe-59	8	None	-	-	<LLD	0
	Co-58	4	None	-	-	<LLD	0
	Co-60	4	None	-	-	<LLD	0
	Zn-65	8	None	-	-	<LLD	0
	Zr-Nb-95	7	None	-	-	<LLD	0
	I-131	5	None	-	-	<LLD	0
	Cs-134	5	None	-	-	<LLD	0
	Cs-137	4	None	-	-	<LLD	0
	Ba-La-140	11	None	-	-	<LLD	0

<sup>1</sup>The "a priori" LLD which meets or exceeds the requirements of Table 2-9 of the CR-3 ODCM.

TABLE IV-C.3.a

FLORIDA POWER CORP. - CR3 - 1995

pCi/L  $\gamma$  EMITTERS AND TRITIUM IN DRINKING WATER

STATION	DATE	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zn-Nb-95	I-131	Cs-134	Cs-137	Ba-La-140
C07	01-09	<130	<58	<4	<3	<6	<3	<8	<5	<5	<4	<5	<4
	04-05	<131	59 $\pm$ 14	<3	<3	<7	<4	<6	<7	<7	<3	<4	<5
	07-10	<147	<60	<4	<4	<7	<3	<7	<7	<4	<4	<4	<6
	10-02	<148	<51	<3	<3	<7	<3	<8	<7	<5	<3	<5	<6
C10	01-09	<149	<64	<4	<4	<8	<4	<9	<7	<6	<5	<4	<6
	04-04	<131	<54	<3	<3	<10	<4	<7	<6	<9	<4	<4	<6
	07-10	<147	<54	<3	<4	<8	<3	<8	<7	<5	<4	<4	<4
	10-02	<140	<62	<4	<3	<6	<6	<9	<8	<5	<4	<5	<8
C18	01-09	<135	<61	<3	<3	<7	<4	<8	<6	<4	<4	<4	<5
	04-04	<131	<58	<3	<4	<7	<4	<7	<6	<9	<4	<4	<6
	07-10	<152	<51	<3	<4	<4	<3	<9	<5	<5	<4	<4	<5
	10-02	<156	<54	<4	<3	<7	<4	<7	<7	<4	<4	<4	<9

# Drinking Water

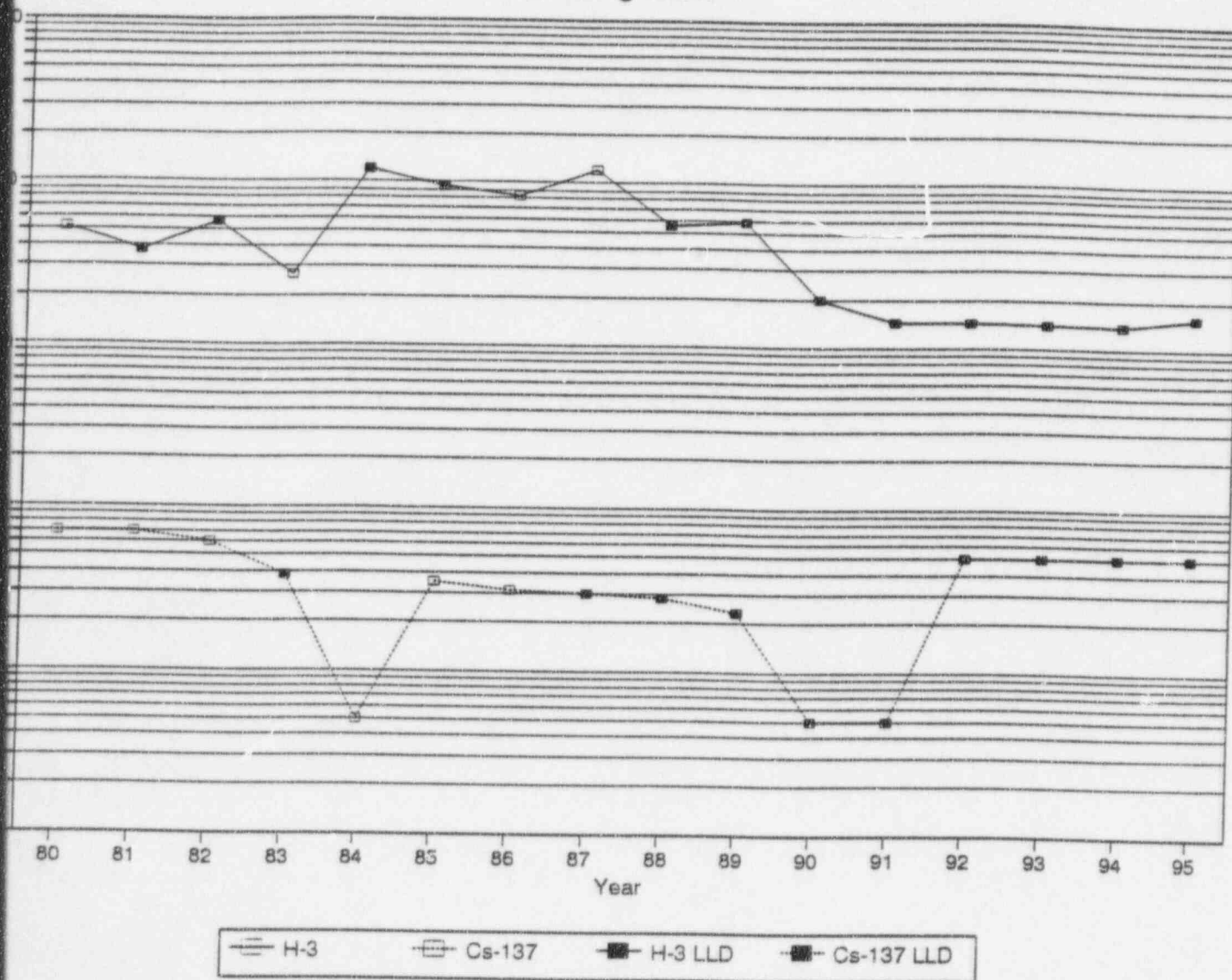


TABLE IV-C.4

## RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

CRYSTAL RIVER UNIT 3

DOCKET NO. 5-302

CITRUS COUNTY, FLORIDA

JANUARY 1 TO DECEMBER 31, 1995

MEDIUM OR PATHWAY SAMPLED (UNITS)	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	LOWER LIMIT OF DETECTION (LLD) <sup>1</sup>	<u>ALL INDICATOR LOCATIONS</u>	<u>LOCATION WITH HIGHEST MEAN</u>		CONTROL LOCATION MEAN RANGE	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
			MEAN RANGE	NAME DISTANCE & BEARING	MEAN RANGE		
SHORELINE SEDIMENT (pCi/kg)	$\gamma$ Spec 8						
	Cs-134	14	<LLD	-	-	<LLD	0
	Cs-137	12	63 (3/6) (18 - 92)	C14H 0.1 @ 315°	91 (2/2) (90 - 92)	<LLD	0

<sup>1</sup>The "a priori" LLD which meets or exceeds the requirements of Table 2-9 of the CR-3 ODCM.

TABLE IV-C.4.a

FLORIDA POWER CORP. - CR3 - 1995

pCi/g  $\gamma$  EMITTERS IN SHORELINE SEDIMENT

STATION	PERIOD	Cs-134	Cs-137	Co-58	Co-60	K-40	Ra-226
C09 <sup>1</sup>	First Half	<12	<12	<10	<9	462 $\pm$ 52	392 $\pm$ 12
	Second Half	<14	<13	<10	<12	889 $\pm$ 77	694 $\pm$ 18
C14H <sup>2</sup>	First Half	<23	92 $\pm$ 10	33 $\pm$ 8	447 $\pm$ 12	2443 $\pm$ 126	1309 $\pm$ 23
	Second Half	<26	90 $\pm$ 11	<20	304 $\pm$ 12	2624 $\pm$ 150	1600 $\pm$ 29
C14M	First Half	<15	<14	36 $\pm$ 6	118 $\pm$ 6	376 $\pm$ 57	556 $\pm$ 16
	Second Half	<10	<12	<12	34 $\pm$ 4	307 $\pm$ 60	624 $\pm$ 15
C14G	First Half	<12	<14	<13	26 $\pm$ 4	263 $\pm$ 64	936 $\pm$ 17
	Second Half	<16	18 $\pm$ 5	<15	62 $\pm$ 6	436 $\pm$ 97	1323 $\pm$ 24

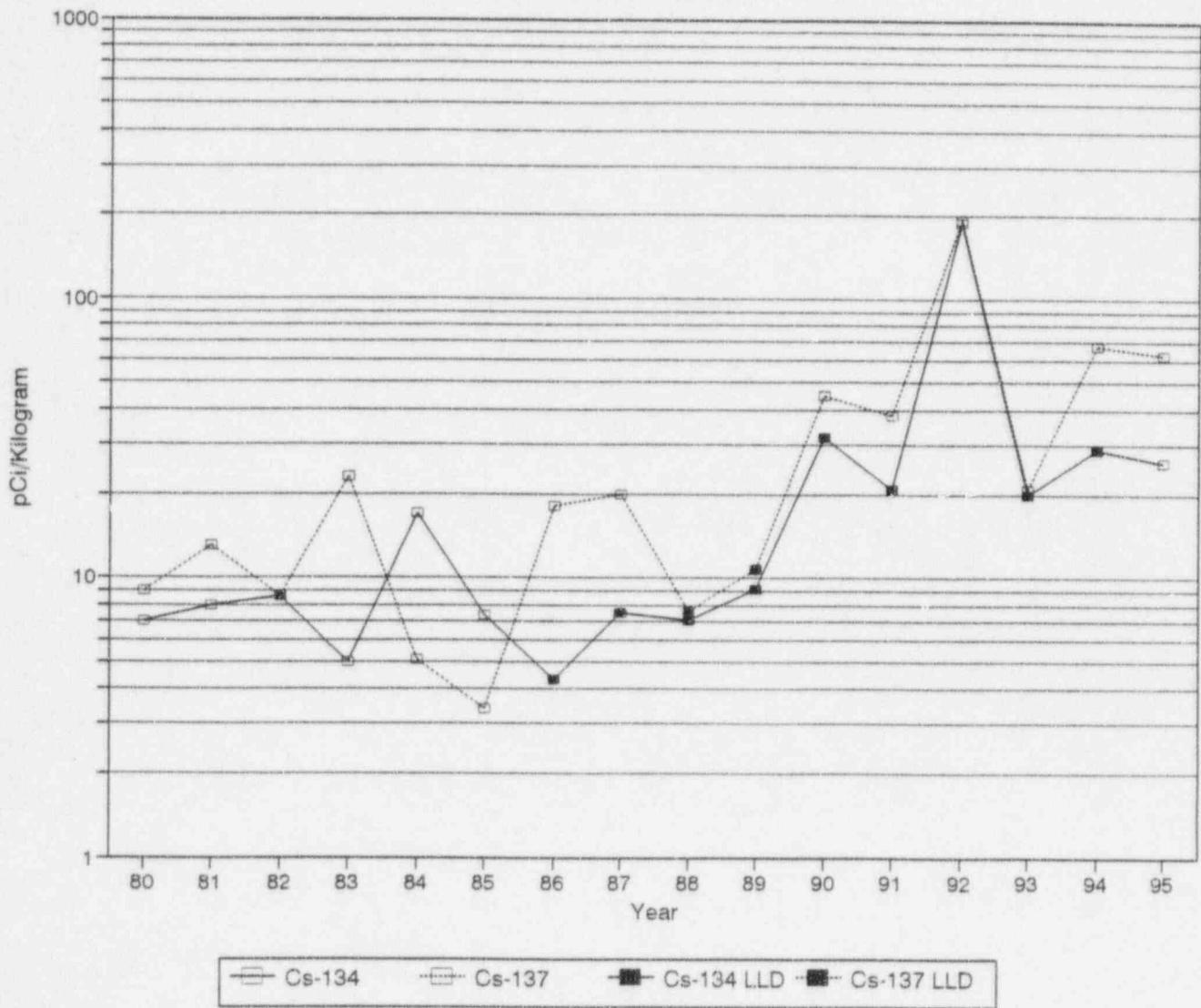
<sup>1</sup>C09 is the control station at Ft. Gulf Island Beach. C14H, M, & G are discharge canal stations.

<sup>2</sup>Mn-54 was identified at a concentration of 25  $\pm$  8 pCi/kg at station C14H. The sample was taken on 2-14-95.

First half samples taken 2-14-95.

Second half samples taken 8-01-95.

# Shoreline Sediment





#### IV-D. INGESTION PATHWAY

To evaluate the ingestion pathway, fish, oysters, citrus, and watermelon samples are taken.

1. Quarterly carnivorous fish samples were taken at two locations: C29 at the end of the discharge canal, and C30, the control location near the mouth of the intake canal. None of the required radionuclides were found in measurable quantities. The highest Cs-137 LLD for station C29 is 22 pCi/kg.
2. Quarterly oyster samples were taken at the same locations as fish samples, C29 and C30. Of the isotopes required to be evaluated for, none were found in measurable quantities, although Ag-110m was identified in each of the quarterly samples at an average concentration of 609 pCi/kg.
3. Monthly broadleaf vegetation samples were taken at two indicator locations, C48a and C48b, and one control location, C47. Six of twenty-four indicator samples had measurable amounts of Cs-137 with an average concentration of 38 pCi/kg and a range of 24 to 65 pCi/kg. Nine of the twelve control station samples had measurable amounts of Cs-137 with an average of 90 pCi/kg and a range of 12 to 305 pCi/kg.
4. Annual watermelon and citrus (oranges) samples are taken at stations C04 and C19, respectively. Cesium-137 was measured in the citrus sample at a level of 4 pCi/kg, and at a level of 75 pCi/kg in the watermelon sample.

TABLE IV-D.1

## RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

CRYSTAL RIVER UNIT 3

DOCKET NO. 5-302

CITRUS COUNTY, FLORIDA

JANUARY 1 TO DECEMBER 31, 1995

MEDIUM OR PATHWAY SAMPLED (UNITS)	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	LOWER LIMIT OF DETECTION (LLD) <sup>1</sup>	ALL INDICATOR LOCATIONS	LOCATION WITH HIGHEST MEAN		CONTROL LOCATION MEAN RANGE	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
			MEAN RANGE	NAME	MEAN RANGE		
CARNIVOROUS FISH (pCi/kg)	7 Spec 8						
	Mn-54	9	<LLD	-	-	<LLD	0
	Fe-59	16	<LLD	-	-	<LLD	0
	Co-58	9	<LLD	-	-	<LLD	0
	Co-60	10	<LLD	-	-	<LLD	0
	Zn-65	17	<LLD	-	-	<LLD	0
	Cs-134	9	<LLD	-	-	<LLD	0
	Cs-137	9	<LLD	-	-	<LLD	0

<sup>1</sup>The "a priori" LLD which meets or exceeds the requirements of Table 2-9 of the CR-3 ODCM.

TABLE IV-D.1.a  
 FLORIDA POWER CORP. - CR3 - 1995  
 pCi/kg  $\gamma$  EMITTERS IN CARNIVOROUS FISH

STATION	QUARTER	Mn-54	Co-58	Co-60	Fe-59	Zn-65	Cs-134	Cs-137	K-40
C29	1	<23	<24	<25	<39	<45	<18	<16	1964 $\pm$ 194
	2	<17	<18	<20	<35	<47	<21	<21	2005 $\pm$ 213
	3	<16	<17	<27	<38	<48	<21	<22	2021 $\pm$ 186
	4	<22	<20	<18	<41	<30	<20	<20	1467 $\pm$ 209
C30	1	<18	<19	<24	<47	<45	<21	<20	2199 $\pm$ 181
	2	<20	<16	<27	<37	<45	<20	<19	2328 $\pm$ 213
	3	<20	<16	<17	<42	<44	<20	<20	2257 $\pm$ 204
	4	<20	<19	<28	<38	<47	<17	<19	2428 $\pm$ 199

# Carnivorous Fish

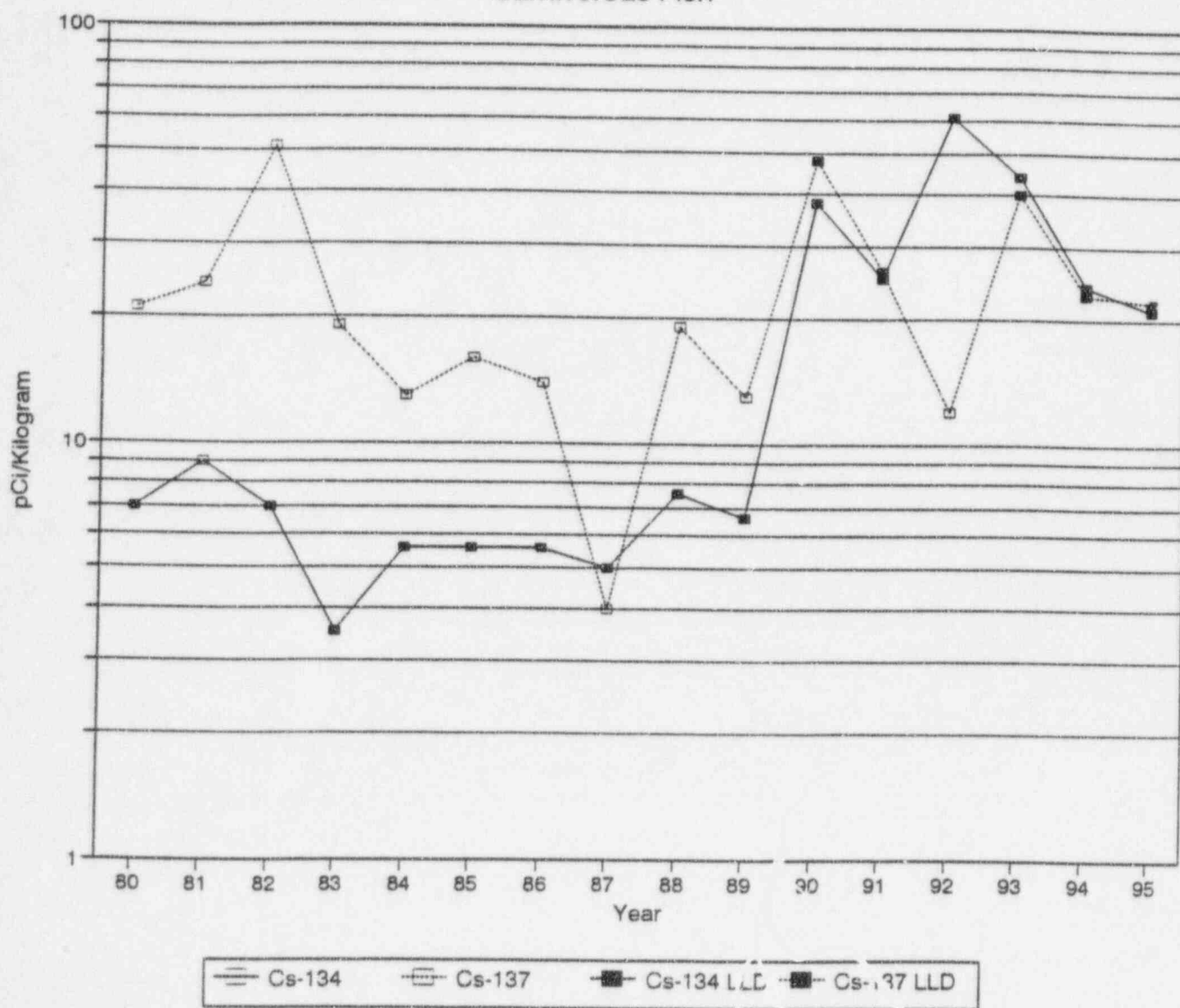


TABLE IV-D.2

## RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

CRYSTAL RIVER UNIT 3

DOCKET NO. 5-302

CITRUS COUNTY, FLORIDA

JANUARY 1 TO DECEMBER 31, 1995

MEDIUM OR PATHWAY SAMPLED (UNITS)	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	LOWER LIMIT OF DETECTION (LLD) <sup>1</sup>	<u>ALL INDICATOR LOCATIONS</u>	<u>LOCATION WITH HIGHEST MEAN</u>	CONTROL LOCATION MEAN RANGE	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
			MEAN RANGE	NAME DISTANCE & BEARING MEAN RANGE		
OYSTERS (pCi/kg)	γ Spec 8					
	Mn-54	9	<LLD	-	<LLD	0
	Fe-59	16	<LLD	-	<LLD	0
	Co-58	9	<LLD	-	<LLD	0
	Co-60	10	<LLD	-	<LLD	0
	Zn-65	17	<LLD	-	<LLD	0
	Cs-134	9	<LLD	-	<LLD	0
	Cs-137	9	<LLD	-	<LLD	0

<sup>1</sup>The "a priori" LLD which meets or exceeds the requirements of Table 2-9 of the CR-3 ODCM.

TABLE IV-D.2.a  
FLORIDA POWER CORP. - CR3 - 1995  
pCi/kg  $\gamma$  EMITTERS IN OYSTERS

STATION	QUARTER	Mn-54	Co-58	Co-60	Fe-59	Zn-65	Cs-134	Cs-137	K-40
C29	1	<33	<37	<49	<77	<86	<33	<49	1312 $\pm$ 239
	2	<23	<36	<40	<56	<67	<30	<35	1345 $\pm$ 263
	3	<15	<16	<17	<31	<36	<17	<17	912 $\pm$ 126
	4	<12	<12	<15	<23	<27	<14	<14	792 $\pm$ 99
C30	1	<19	<21	<21	<47	<49	<25	<25	1672 $\pm$ 246
	2	<14	<21	<25	<40	<47	<20	<22	1369 $\pm$ 205
	3	<19	<17	<17	<34	<49	<21	<19	1839 $\pm$ 185
	4	<16	<13	<21	<33	<42	<16	<19	1630 $\pm$ 144

Ag-110m was quantified in four samples taken at station C29. Concentration of 2-15-95 sample was 1293 pCi/kg, 5-18-95 sample was 446 pCi/kg, 8-29-95 sample was 473 pCi/kg, and the 11-18-95 sample 224 pCi/kg.

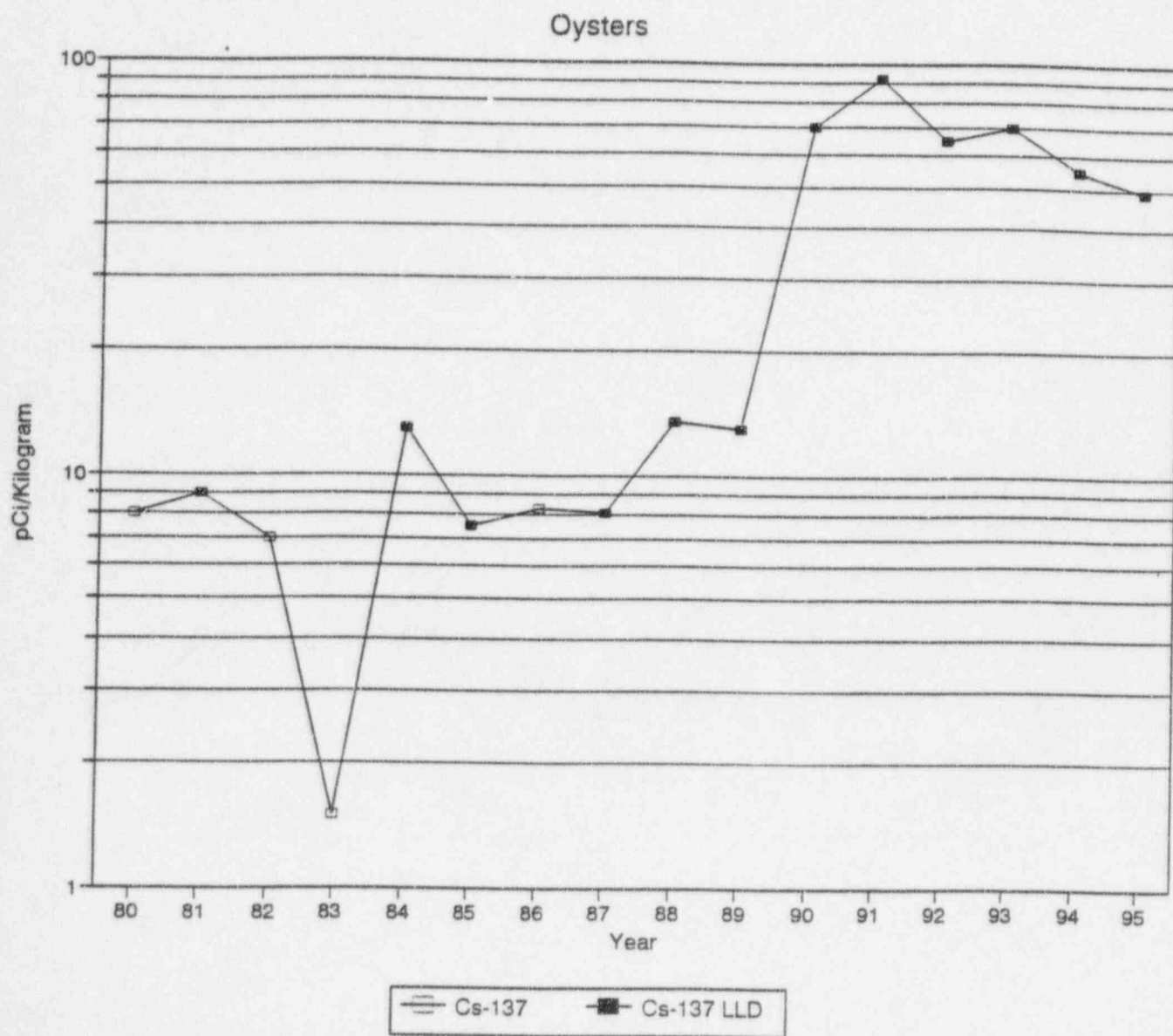


TABLE IV-D.3

## RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

CRYSTAL RIVER UNIT 3

DOCKET NO. 5-302

CITRUS COUNTY, FLORIDA

JANUARY 1 TO DECEMBER 31, 1995

MEDIUM OR PATHWAY SAMPLED (UNITS)	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	LOWER LIMIT OF DETECTION (LLD) <sup>1</sup>	ALL INDICATOR LOCATIONS	LOCATION WITH HIGHEST MEAN		CONTROL LOCATION MEAN RANGE	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
			MEAN RANGE	NAME DISTANCE & BEARING	MEAN RANGE		
VEGETATION (pCi/kg)	γ Spec 36						
	I-131	9	<LLD	-	-	<LLD	0
	Cs-134	8	<LLD	-	-	<LLD	0
	Cs-137	8	38 (6/24) (24 - 65)	C48A 0.8 @ 30°	41 (4/12) (27 - 65)	90 (9/12) (12 - 305)	0

<sup>1</sup>The "a priori" LLD which meets or exceeds the requirements of Table 2-9 of the CR-3 ODCM.



TABLE IV-D.3.a

FLORIDA POWER CORP. - CR3 - 1995

pCi/kg OF  $\gamma$  EMITTERS IN BROAD LEAF VEGETATION

STATION	MONTH	I-131	Cs-134	Cs-137	K-40
C47	JAN	<15	<11	305 $\pm$ 13	2613 $\pm$ 131
	FEB	<14	<14	45 $\pm$ 8	3282 $\pm$ 187
	MAR	<11	<11	12 $\pm$ 4	3262 $\pm$ 147
	APR	<14	<9	59 $\pm$ 7	3256 $\pm$ 137
	MAY	<14	<15	61 $\pm$ 11	3444 $\pm$ 165
	JUN	<10	<12	123 $\pm$ 8	3784 $\pm$ 139
	JUL	<16	<15	86 $\pm$ 10	3826 $\pm$ 181
	AUG	<15	<14	55 $\pm$ 8	4049 $\pm$ 184
	SEP	<13	<13	<18	3984 $\pm$ 190
	OCT	<10	<13	<12	2708 $\pm$ 126
	NOV	<15	<16	68 $\pm$ 9	2417 $\pm$ 156
	DEC	<15	<18	<16	4200 $\pm$ 186
C48A	JAN	<15	<8	65 $\pm$ 8	2086 $\pm$ 105
	FEB	<14	<12	37 $\pm$ 11	2512 $\pm$ 149
	MAR	<16	<16	<22	3191 $\pm$ 182
	APR	<17	<11	<13	3070 $\pm$ 132
	MAY	<10	<8	35 $\pm$ 6	2473 $\pm$ 117
	JUN	<11	<10	<12	2110 $\pm$ 127
	JUL	<15	<11	27 $\pm$ 6	1949 $\pm$ 125
	AUG	<15	<9	<12	2387 $\pm$ 131
	SEP	<16	<16	<16	2972 $\pm$ 196
	OCT	<14	<16	<19	3747 $\pm$ 188
	NOV	<16	<11	<12	3826 $\pm$ 149
	DEC	<16	<14	<19	2667 $\pm$ 173

TABLE IV-D.3.a (CONT'D)

FLORIDA POWER CORP. - CR3 - 1995

pCi/kg OF  $\gamma$  EMITTERS IN BROAD LEAF VEGETATION

STATION	MONTH	I-131	Cs-134	Cs-137	K-40
C48B	JAN	<12	<13	<15	4939 $\pm$ 176
	FEB	<5	<5	<5	4701 $\pm$ 76
	MAR	<17	<16	24 $\pm$ 7	7069 $\pm$ 262
	APR	<14	<8	<11	1399 $\pm$ 96
	MAY	<11	<11	<14	6455 $\pm$ 192
	JUN	<13	<15	<13	5810 $\pm$ 198
	JUL	<15	<14	<15	3698 $\pm$ 148
	AUG	<16	<15	<14	4268 $\pm$ 179
	SEP	<18	<20	<20	3349 $\pm$ 192
	OCT	<14	<16	<17	2191 $\pm$ 149
	NOV	<13	<15	<18	3402 $\pm$ 161
	DEC	<17	<19	37 $\pm$ 13	4666 $\pm$ 212

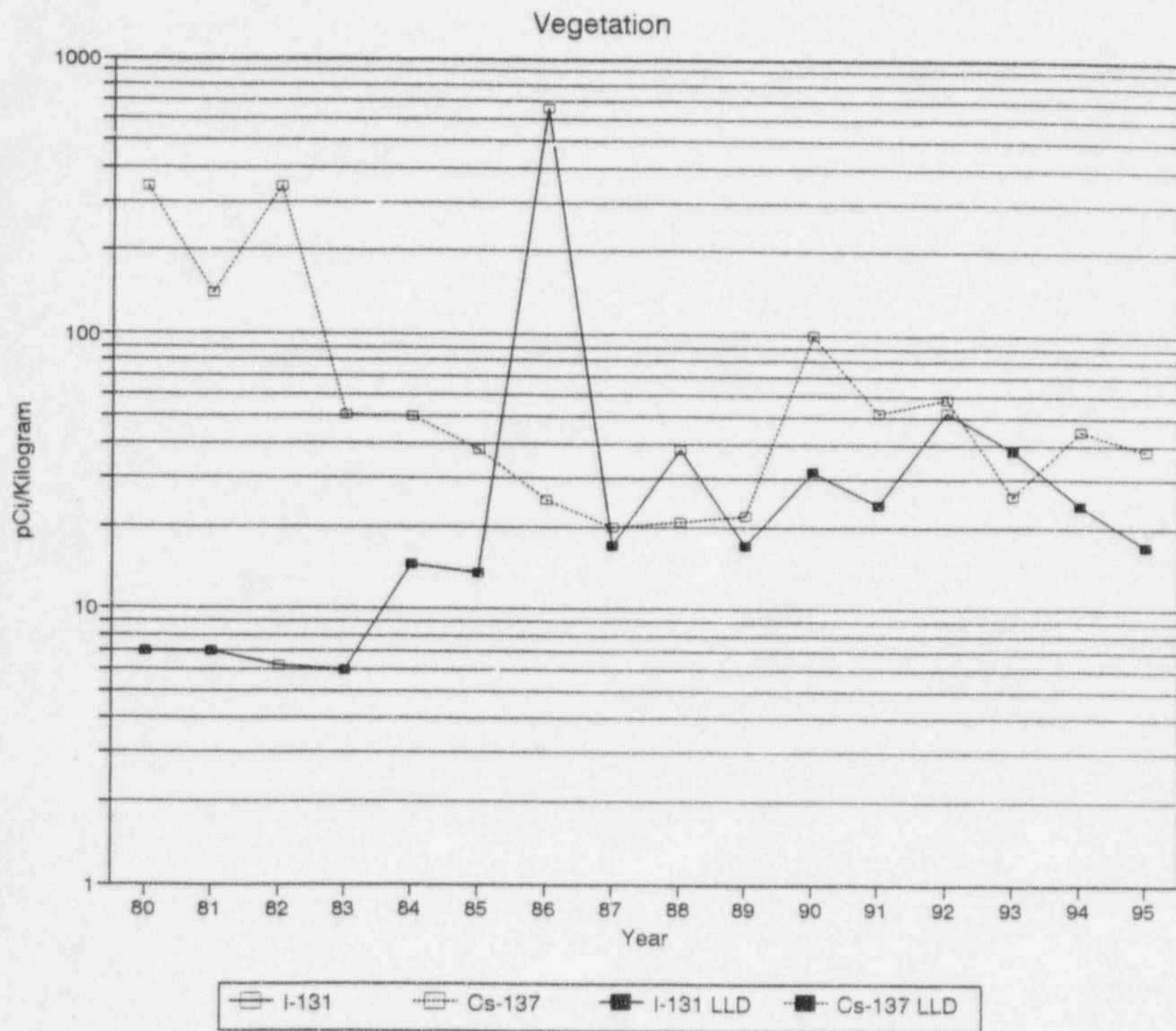


TABLE IV-D.4

## RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

CRYSTAL RIVER UNIT 3

DOCKET NO. 5-302

CITRUS COUNTY, FLORIDA

JANUARY 1 TO DECEMBER 31, 1995

MEDIUM OR PATHWAY SAMPLED (UNITS)	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	LOWER LIMIT OF DETECTION (LLD) <sup>1</sup>	ALL INDICATOR LOCATIONS	LOCATION WITH HIGHEST MEAN		CONTROL LOCATION MEAN RANGE	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
			MEAN RANGE	NAME DISTANCE & BEARING	MEAN RANGE		
WATERMELON (pCi/kg)	$\gamma$ Spec 1						
	I-131	9	<LLD	-	-	None	0
	Cs-134	8	<LLD	-	-	None	0
	Cs-137	8	75 (1/1)	C04 6.3 @ 45°	75 (1/1)	None	0
CITRUS (pCi/kg)	$\gamma$ Spec 1						
	I-131	9	<LLD	-	-	None	0
	Cs-134	8	<LLD	-	-	None	0
	Cs-137	8	4 (1/1)	C19 8.5 @ 60°	4 (1/1)	None	0

<sup>1</sup>The "a priori" LLD which meets or exceeds the requirements of Table 2-9 of the CR-3 ODCM.

TABLE IV-D.4.a

FLORIDA POWER CORP. - CR3 - 1995

pCi/kg OF  $\gamma$  EMITTERS IN WATERMELON AND CITRUS

STATION	MONTH	I-131	Cs-134	Cs-137	K-40
C04 - Watermelon	May	<5	<5	75 $\pm$ 5	941 $\pm$ 59
C19 - Citrus	January	<2	<2	4 $\pm$ 1	1734 $\pm$ 30