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U.S. Nuclear Regulatory Commission
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River Bend Station
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Ladies and Gentlemen:

Enclosed is the River Bend Station (RBS) Annual Radiological Environmental Operating Report for the period January 1, 2002 through December 31, 2002. This report is submitted in accordance with the RBS Technical Specifications, Section 5.6.2.

Should you have any questions regarding the enclosed information, please contact Mr. Bill Fountain of my staff at (225) 381-4625.

Sincerely,

A handwritten signature in black ink, appearing to read "Rick J. King".

RJK/WJF
enclosure

IE25

Radiological Environmental Operating Report for 2002
RBG-46111
Page 2 of 2

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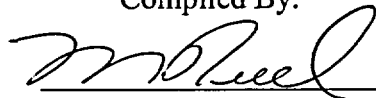
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RIVER BEND STATION

**ANNUAL RADIOLOGICAL ENVIRONMENTAL
OPERATING REPORT FOR 2002**

Complied By:



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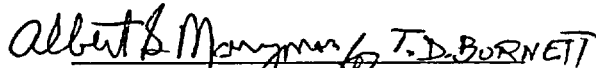
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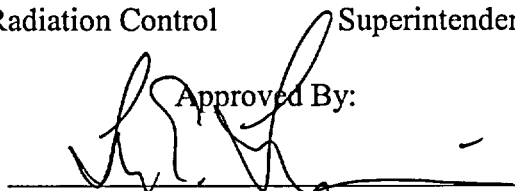
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Summary

The Annual Radiological Environmental Operating Report presents data obtained through analyses of environmental samples collected for the River Bend Station (RBS) Radiological Environmental Monitoring Program (REMP) for the period January 1, 2002 through December 31, 2002. This report fulfills a requirement specified in RBS Technical Requirements Manual (TRM) 5.6.2 as required by Technical Specification 5.6.2 of Appendix A to RBS License Number NPF-47. During 2002, REMP results remained at background levels, as has been the case in previous years.

All required lower limit of detection (LLD) capabilities were achieved in all sample analyses during 2002. No measurable levels of radiation above baseline levels were detected in the vicinity of River Bend Station. The 2002 Radiological Environmental Monitoring Program thus substantiated the adequacy of source control and effluent monitoring at River Bend Station with no observed impact of plant operations on the environment.

Radiological Environmental Monitoring Program

RBS established the REMP prior to the station's becoming operational (1985) to provide data on background radiation and radioactivity normally present in the area. RBS has continued to monitor the environment by sampling air, water, sediment, fish and food products, as well as measuring direct radiation. RBS also samples milk if milk-producing animals used for human consumption are present within five miles (8 km) of the plant.

The REMP includes sampling indicator and control locations within an approximately 20-mile radius of the plant. The REMP utilizes indicator locations near the site to show any increases or buildup of radioactivity that might occur due to station operation, and control locations farther away from the site to indicate the presence of only naturally occurring radioactivity. RBS personnel compare indicator results with control and preoperational results to assess any impact RBS operation might have had on the surrounding environment.

In 2002, environmental samples were collected for radiological analysis. The results of indicator locations were compared with control locations and previous studies. It was concluded that overall, no significant relationship exists between RBS operation and effect on the area around the plant. The review of 2002 data, in many cases, showed radioactivity levels in the environment were undetectable in many locations and near background levels in significant pathways.

Harmful Effects or Irreversible Damage

The REMP monitoring did not detect any harmful effects or evidence of irreversible damage in 2002. Therefore, no analysis or planned course of action to alleviate problems was necessary.

Reporting Levels

RBS's review indicates that no samples equaled or exceeded reporting levels for radioactivity concentration in environmental samples, as outlined in RBS Technical Requirements Manual Table 3.12.1-2, when averaged over any calendar quarter. Therefore, 2002 results did not trigger any Radiological Monitoring Program Special Reports.

Radioactivity Not Attributable to RBS

The RBS REMP detected no radioactivity attributable to other sources during year 2002. Following the radioactive plume release due to reactor core degradation at the Chernobyl Nuclear Power Plant in 1986, RBS REMP detected I-131 in water, vegetation, and air samples. I-131 was also detected during 1998 in the wastewater treatment plant effluent. This was attributed to the medical treatment of a RBS employee.

Comparison to Federal and State Programs

RBS personnel compared REMP data to federal and state monitoring programs as results became available. Historically, the programs used for comparison have included the U.S. Nuclear Regulatory Commission (NRC) TLD Direct Radiation Monitoring Network and the Environmental Radiological Laboratory – Department of Environmental Quality Laboratory Services Division (ERL-DEQLSD).

The NRC TLD Network Program was discontinued in 1998. Historically these results have compared to those from the RBS REMP. RBS TLD results continue to remain similar to the historical average and continue to verify that plant operation is not affecting the ambient radiation levels in the environment.

The (ERL-DEQLSD) and the RBS REMP entail similar radiological environmental monitoring program requirements. These programs include collocated air samples and splitting or sharing sample media such as water, fish and food products. Both programs have obtained similar results over previous years.

Sample Deviations

♦ Milk

The REMP did not include milk sampling within five miles (8 km) of RBS in 2002 due to unavailability of milk-producing animals used for human consumption. RBS's Technical Requirements Manual requires collection of milk samples if available commercially within 8 km (5 miles) of the plant. RBS personnel collected vegetation samples to monitor the ingestion pathway, as specified in RBS Technical Requirements Manual Table 3.12.1-1, because of milk unavailability.

♦ **Required Lower Limit of Detection (LLD) Values**

All LLDs during this reporting period were less than the acceptable limits required by the RBS Technical Requirement Manual (TRM).

♦ **Air Samples**

Listed below are sample/sampling deviations that occurred during 2002. These deviations did not result in a missed sample and no LLD values were exceeded. As described in footnote (a) to RBS Technical Requirements Manual Table 3.12.1-1, deviations are permitted from the required sampling schedule due to malfunction of equipment or other legitimate reasons.

Station	Sampling Period	Problem Description	Comment
AP1	4/1/02 – 4/15/02	Calibration Due Date	Air sampler in service past calibration due date of 3/31/02. Incorrect due date recorded on sample data sheet. Sampler replaced 4/15/02. "As found data" indicated sampler within calibration criteria.
AN1	4/1/02 – 4/15/02	Power Outage	Loss of 101 hours or 30% of sample volume. Required LLD achieved
AP1 & AN1	7/8/02 – 7/22/02	Power Outage	Weather related outage with loss of 1.9 hours (0.6%) at AP1 and 1.7 hours (0.5%) at AN1 location.

♦ **Missed Samples**

No missed samples occurred during the 2002 sampling period.

♦ **Unavailable Results**

There were no unavailable results during the year 2002.

Program Modifications

RBS made no modifications to the REMP during the year 2002.

Attachments

Attachment 1 contains results of air, TLD, water, sediment, fish, food products and special samples collected in 2002. TLDs were analyzed by Waterford-3 Dosimetry. All remaining samples were analyzed by RBS Environmental Laboratory. Attachment 1 also contains RBS' participation in the interlaboratory comparison program during the year 2002.

1.0 Introduction

1.1 Radiological Environmental Monitoring Program

RBS established the REMP to ensure that plant operating controls properly function to minimize any associated radiation endangerment to human health or the environment. The REMP is designed for:

- Analyzing important pathways for anticipated types and quantities of radionuclides released into the environment.
- Considering the possibility of a buildup of long-lived radionuclides in the environment and identifying physical and biological accumulations that may contribute to human exposures.
- Considering the potential radiation exposure to plant and animal life in the environment surrounding RBS.
- Correlating levels of radiation and radioactivity in the environment with radioactive releases from station operation.

1.2 Pathways Monitored

The airborne, direct radiation, waterborne and ingestion pathways, as seen in Figure 1-1, are monitored as required by the RBS Technical Requirements Manual 3.12.1. A description of the RBS REMP sample locations utilized to monitor exposure pathways are described in Table 1.1 and shown in Figures 1-2 and 1-3. RBS may occasionally supplement this program with additional sampling in order to provide a comprehensive and well-balanced program.

Section 2.0 of this report provides a discussion of 2002 sampling results with Section 3.0 providing a summary of results for the monitored exposure pathways.

1.3 Land Use Census

RBS personnel conduct a land use census biannually, as required by RBS Technical Requirements Manual 3.12.2. The land use census was performed in 2002. The purpose of this census is to identify changes in uses of land within five miles of RBS that would require modifications to the REMP or the Technical Requirements Manual. The most important criteria during this census is to determine location in each sector of the nearest:

- 1) Residence
- 2) Animal milked for human consumption
- 3) Garden of greater than 50 m² (500 ft²) producing broadleaf vegetation *

The method used by RBS personnel for conducting this land use census is as follows:

- RBS personnel conduct door-to-door field surveys and/or aerial surveys in each meteorological sector out to five miles in order to locate the nearest resident and milk animal.
 - Consultation with local agricultural authorities is used in instances when personal contact cannot be made.
 - As a result of these surveys, the following information is obtained in each meteorological sector:
 - 1) Nearest permanent residence
 - 2) Nearest milking animal
 - RBS personnel identify locations on the map, measure distances to RBS and record results.
 - Locations, if any, are identified which yield a calculated dose or dose commitments greater than those currently calculated in the Technical Requirements Manual.
 - RBS personnel compare results to previous census.
- * RBS personnel do not perform a garden census since Technical Requirements Manual 3.12.2 allows the routine sampling of broadleaf vegetation in the highest D/Q sector near the site boundary in lieu of the garden census.

Table 1.1

Radiological Environmental Sampling Program

Exposure Pathway	Requirement	Sample Point Description, Distance and Direction	Sampling and Collection Frequency	Type and Frequency Of Analyses
Airborne	<u>Radiiodine and Particulates</u> 2 samples from close to the 2 SITE BOUNDARY locations, in different sectors, of the highest calculated annual average groundlevel D/Q.	AN1 (0.9 km W) - RBS site Hwy 965; 0.4 km south of Activity Center. AP1 (0.9 km WNW) – Behind River Bend Station Activity Center.	Continuous sampler operation with sample collection every two weeks, or more frequently if required by dust loading.	Radioiodine Cannisters – I-131 analysis every two weeks. Air Particulate – Gross beta radioactivity analysis following filter change.
	<u>Radioiodine and Particulates</u> 1 sample from the vicinity of a community having the highest calculated annual average groundlevel D/Q.	AQS2 (5.8 km NW) - St. Francis Substation on US Hwy. (Bus.) 61 in St. Francisville.		
	<u>Radioiodine and Particulates</u> 1 sample from a control location, as for example 15 - 30 km distance and in the least prevalent wind direction.	AGC (17.0 km SE) – Entergy Service Center compound in Zachary. (Control)		
Direct Radiation	<u>TLDs</u> One ring of stations, one in each meteorological sector in the general area of the SITE BOUNDARY.	TA1 (1.7 km N) - River Bend Training Center. TB1 (0.5 km NNE) - Utility pole near River Bend Station cooling tower yard area. TC1 (1.7 km NE) - Stub pole at Jct. US Hwy. 61 and Old Highway 61.	Quarterly	mR exposure quarterly.

Table 1.1

Radiological Environmental Sampling Program

Exposure Pathway	Requirement	Sample Point Description, Distance and Direction	Sampling and Collection Frequency	Type and Frequency Of Analyses
Direct Radiation	<p><u>TLDs</u> One ring of stations, one in each meteorological sector in the general area of the SITE BOUNDARY.</p>	<p>TD1 (1.6 km ENE) – Stub pole along WF7, 150m S of Jct. WF7 and US Hwy. 61.</p> <p>TE1 (1.3 km E) – Stub pole along WF7, 1 km S of Jct. WF7 and US Hwy. 61.</p> <p>TF1 (1.3 km ESE) – Stub pole along WF7, 1.6 km S of Jct. WF7 and US Hwy. 61.</p> <p>TG1 (1.6 km SE) – Stub pole along WF7, 2 km S of Jct. WF7 and US Hwy. 61.</p> <p>TH1 (1.7 km SSE) – Stub pole at power line crossing of WF7 (near Grants Bayou).</p> <p>TJ1 (1.5 km S) – Stub pole near River Bend Station Gate #23 on Powell Station Road (LA Hwy. 965).</p> <p>TK1 (0.9 km SSW) – Utility pole on Powell Station Road (LA Hwy. 965), 20 m S of River Bend Station River Access Road.</p> <p>TL1 (1.0 km SW) – First utility pole on Powell Station Road (LA Hwy. 965) S of former Illinois Central Gulf RR crossing.</p>	Quarterly	mR exposure quarterly.

Table 1.1

Radiological Environmental Sampling Program

Exposure Pathway	Requirement	Sample Point Description, Distance and Direction	Sampling and Collection Frequency	Type and Frequency Of Analyses
Direct Radiation	<u>TLDs</u> One ring of stations, one in each meteorological sector in the general area of the SITE BOUNDARY.	TM1 (0.9 km WSW) - Third utility pole on Powell Station Road (LA Hwy. 965) N of former Illinois Central Gulf RR crossing. TN1 (0.9 km W) – Utility pole along Powell Station Road (LA Hwy. 965), near garden and AN1 air sampler location. TP1 (0.9 km WNW) - Behind River Bend Station Activity Center at AP1 air sampler location. TQ1 (0.6 km NW) – Access from MA-1 on RBS North Access Road. TR1 (0.8 km NNW) – River Bend Station North Access Road across from Main Plant entrance.	Quarterly	mR exposure quarterly.
	<u>TLDs</u> The balance of the stations (8) to be placed in special interest areas such as population centers, nearby residences, schools, and in 1 or 2 areas to serve as control locations.	TAC (15.8 km N) – Utility pole at Jct. of US Hwy. 61 and LA Hwy. 421, 7.9 km north of Bains. (Control) TCS (12.3 km NE) – Utility pole at gate to East Louisiana State Hospital in Jackson. (Special) TEC (16.0 km E) – Stub pole at jct. of Hwy. 955 and Midway Road, 4.8 km North of Jct. of Hwys 955 and 964. (Control)		

Table 1.1

Radiological Environmental Sampling Program

Exposure Pathway	Requirement	Sample Point Description, Distance and Direction	Sampling and Collection Frequency	Type and Frequency Of Analyses
Direct Radiation	<p><u>TLDs</u> The balance of the stations (8) to be placed in special interest areas such as population centers, nearby residences, schools, and in 1 or 2 areas to serve as control locations.</p>	<p>TGS (17.0 km SE) – Entergy Service Center compound in Zachary. (Special)</p> <p>TNS (6.0 km W) – Utility pole with electrical meter at west bank ferry landing (LA Hwy. 10). (Special)</p> <p>TQS1 (4.0 km NW) – Utility pole front of Pentecostal church (opposite West Feliciana Parish Hospital) near Jct. US Hwy. 61 and Ferdinand Street. (Special)</p> <p>TQS2 (5.8 km NW) – St. Francis Substation on business US Hwy. 61 in St. Francisville. (Special)</p> <p>TRS (9.2 km NNW) - Stub pole at Jct. of US Hwy. 61 and WF2 near Bains (West Feliciana High School). (Special)</p>	Quarterly	mR exposure quarterly.
Waterborne	<p><u>Surface Water</u> 1 sample upstream and 1 sample downstream.</p>	<p>SWU (5.0 km W) - Mississippi River about 4 km upstream from the plant liquid discharge outfall, near LA Hwy. 10 ferry crossing.</p> <p>SWD (7.75 km S) - Mississippi River about 4 km downstream from plant liquid discharge outfall, near paper mill.</p>	Grab samples quarterly	Gamma isotopic analysis quarterly, tritium analysis quarterly.

Table 1.1

Radiological Environmental Sampling Program

Exposure Pathway	Requirement	Sample Point Description, Distance and Direction	Sampling and Collection Frequency	Type and Frequency Of Analyses
Waterborne	<u>Groundwater</u> Samples from 1 or 2 sources only if likely to be affected.	WU (~470 m NNE) - Upland Terrace Aquifer well upgradient from plant. WD (~470 m SW) – Upland Terrace Aquifer well downgradient from plant.	Semiannually	Gamma isotopic and tritium analysis semiannually.
	<u>Sediment From Shoreline</u> 1 sample from downstream area with existing or potential recreational value.	SEDD (7.75 km S) – Mississippi River about 4 km downstream from plant liquid discharge outfall, near paper mill.	Annually	Gamma isotopic analysis annually.
Ingestion	<u>Milk</u> If commercially available, 1 sample from milking animals within 8 km distant where doses are calculated to be greater than 1 mrem per year. 1 sample from milking animals at a control location 15 – 30 km distant when an indicator location exists.	Currently, no available milking animals within 8 km of RBS.	Quarterly when animals are on pasture.	Gamma isotopic and I-131 analysis quarterly when animals are on pasture.
	<u>Fish and Invertebrates</u> 1 sample of a commercially and/or recreationally important species in vicinity of plant discharge area. 1 sample of similar species in area not influenced by plant discharge.	FD (7.75 km S) - One sample of a commercially and/or recreationally important species from downstream area influenced by plant discharge. FU (4.0 km WSW) - One sample of a commercially and/or recreationally important species from upstream area not influenced by plant discharge.	Annually	Gamma isotopic analysis on edible portions annually

Table 1.1

Radiological Environmental Sampling Program

Exposure Pathway	Requirement	Sample Point Description, Distance and Direction	Sampling and Collection Frequency	Type and Frequency Of Analyses
Ingestion	<p><u>Food Products</u> 1 sample of one type of broadleaf vegetation grown near the SITE BOUNDARY location of highest predicted annual average groundlevel D/Q if milk sampling is not performed.</p> <p>1 sample of similar broadleaf vegetation grown 15 – 30 km distant, if milk sampling is not performed.</p>	<p>GN1 (0.9 km W) – Sampling will be performed in accordance with Table 3.12.1-1 Section 4.a of the Technical Requirements Manual.</p> <p>GQC (32.0 km NW) - One sample of similar vegetables from LA State Penitentiary at Angola. (Control)</p>	Quarterly during the growing season.	Gamma isotopic and I-131 analysis quarterly.

LIQUID EFFLUENTS

GASEOUS EFFLUENTS

Direct Irradiation

Transport of Fuel and Waste

Shoreline Irradiation (fishing, picnic)

Immersion (Boating, Swimming)

Ingestion

Air Inhalation

Air Submersion

Deposition

Consumption

Consumption (fish and clams)

Consumption (milk)

Ingestion

FIGURE 1-2
SAMPLE COLLECTION SITES - NEAR FIELD

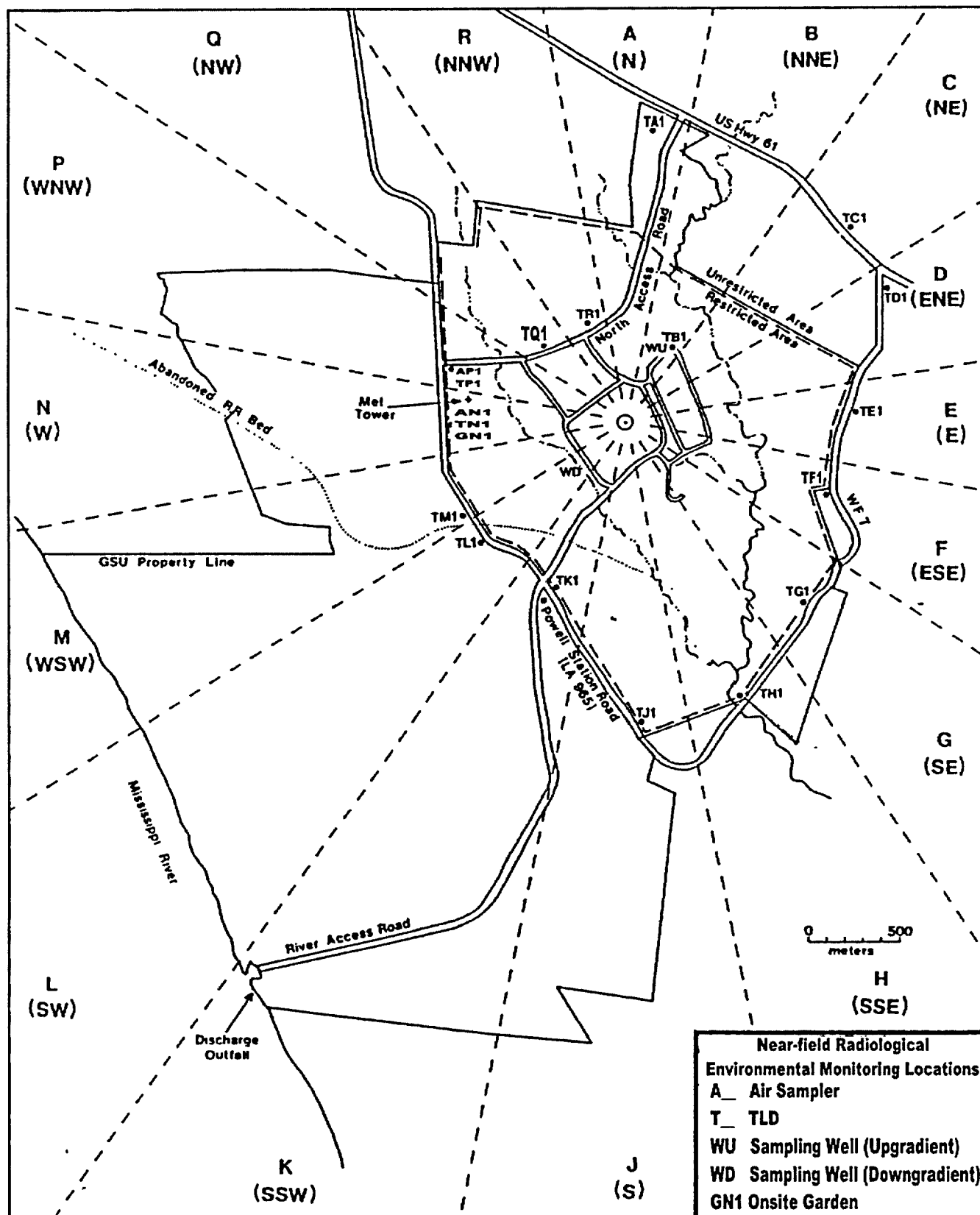
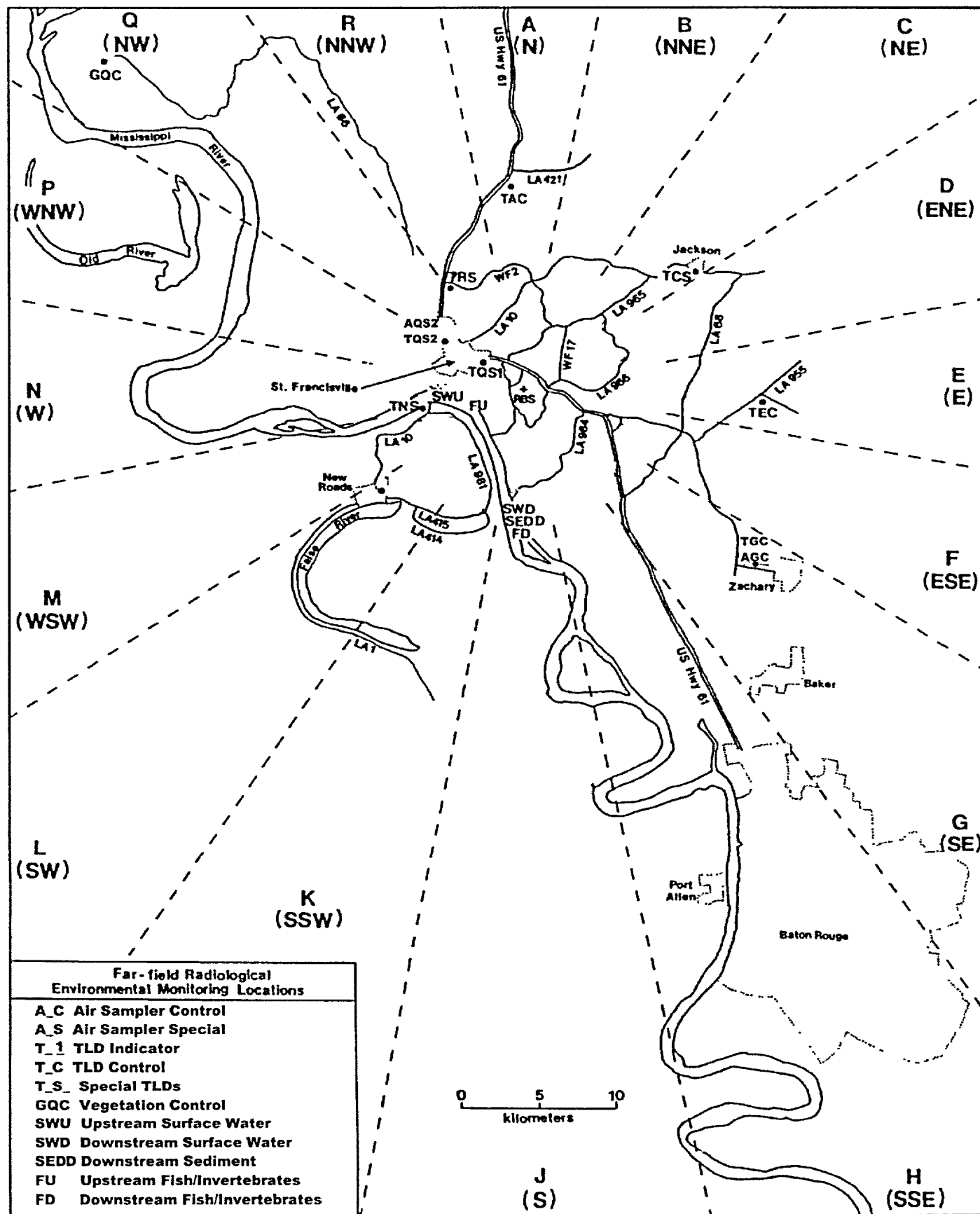


FIGURE 1-3
SAMPLE COLLECTION SITES - FAR FIELD



2.0 Interpretation and Trends of Results

2.1 Air Particulate and Radioiodine Sample Results

Iodine-131 was not detected in the radioiodine cartridges during 2002, as has been the case in previous years. Indicator gross beta air particulate results for 2002 were similar to preoperational and operational levels as seen below. Results are reported as annual average pCi/m³.

<u>Monitoring Period</u>	<u>Result</u>
Preoperational	0.03
2001	0.021
2002	0.020

Table 3.1 provides a comparison of the indicator and control location mean values, which further emphasizes that the airborne pathway continues to remain at background levels. Figure 2-2 also shows a comparison of indicator results versus control location data from 1996 to 2001. All indicator results are below the upper control three-standard-deviation limit.

2.2 Thermoluminescent Dosimetry Sample Results

Gamma radiation dose in the reporting period compares to previous years and remains below preoperational levels. Figure 2-1 compares quarterly indicator results for 2002 with control location data from 1996 to 2001. All indicator results are below the upper control three-standard-deviation limit.

RBS normalizes measured doses to 90 days and relies on comparison of the indicator locations to the control as a measure of plant impact. RBS's comparison of the inner ring and special interest area TLD results to the controls, as seen in Table 3.1, indicates that the ambient radiation levels are unaffected by plant operations. Therefore, levels continue to remain at or near background.

2.3 Water Sample Results

Analytical results for 2002 surface water and groundwater samples were similar to those reported in previous years.

Surface water samples were collected from two locations (indicator and control) and analyzed for gamma radionuclides and tritium. Gamma radionuclides were below detectable limits at the indicator and control locations. Tritium was also below detectable limits at all locations. Listed below is a comparison of 2002 results from the indicator location as compared to the preoperational and operational years. Results are reported as annual average pCi/l.

<u>Radionuclide</u>	<u>2002</u>	<u>1996 – 2001</u>	<u>Preoperational</u>
Gammas	<LLD	<LLD	<LLD
Tritium	<LLD	258	<LLD

Groundwater samples were collected from two locations (indicator and control) and analyzed for gamma radionuclides and tritium. Gamma radionuclides and Tritium were below detectable limits at the indicator and control locations. Listed below is a comparison of 2002 results from the indicator location as compared to the preoperational and operational years. Results are reported as annual average pCi/l.

<u>Radionuclide</u>	<u>2002</u>	<u>1996 – 2001</u>	<u>Preoperational</u>
Gammas	<LLD	<LLD	<LLD
Tritium	<LLD	290	<LLD

Based on these comparisons, the operation of RBS had no impact on this pathway during 2002, and levels of radionuclides monitored for this pathway continue to remain similar to those obtained in operational and preoperational years.

RBS personnel also collected special effluent wastewater samples from the sewage treatment plant during 2002 to supplement the REMP. RBS did not detect any gamma radionuclides in these samples.

2.4 Sediment Sample Results

Sediment samples were collected from the indicator location in 2002 and analyzed for gamma radionuclides. In 2002, gamma radionuclides were below detectable limits, which is consistent with the preoperational and operational monitoring periods. Therefore, based on these measurements, RBS operations had no significant radiological impact upon the environment or public by this pathway.

RBS personnel also collected special sediment samples from East Creek and West Creek during 2002 to supplement the REMP. RBS did not detect any gamma radionuclides in these samples.

2.5 Milk Sample Results

Milk samples were not collected during 2002 due to the unavailability of indicator locations within 5 miles (8 km) of RBS. Since there are no dairies within five miles of the RBS site, it is concluded RBS's operation had no impact on this pathway in 2002.

2.6 Fish and Invertebrate Sample Results

Fish samples were collected from two locations (indicator and control) and analyzed for gamma radionuclides. In 2002, gamma radionuclides were below detectable limits, which is consistent with the preoperational and operational monitoring periods. Therefore, based on these measurements, RBS operations had no significant radiological impact upon the environment or public by this pathway.

2.7 Food Product Sample Results

Food product samples were collected when available from two locations (indicator and control) in 2002 and analyzed for Iodine-131 and gamma radionuclides. The 2002 levels remained undetectable, which is consistent with previous operational years. Therefore, since levels continue to remain at background, it can be concluded that plant operations is not impacting this pathway.

2.8 Land Use Census Results

The land use census was conducted during the 2002 growing season in accordance with RBS Technical Requirements Manual 3.12.2. Although there were some minor changes between the 2000 and 2002 census as seen in Table 2.1, the land use census did not identify any location(s) that yields a calculated dose or dose commitment greater than the values currently being calculated in requirement TSR 3.11.2.3.1. In addition, no dairy animals were found within 8 km of RBS during the 2002 census.

RBS personnel did not perform a garden census since Technical Requirements Manual 3.12.2 allows the routine sampling of broadleaf vegetation in the highest D/Q sector near the site boundary in lieu of the garden census.

2.9 Interlaboratory Comparison Results

RBS' Environmental Laboratory analyzed interlaboratory comparison samples to fulfill the requirements of Technical Requirements Manual 3.12.3. Attachment 1, 2002 Radiological Environmental Monitoring Report, contains these results. RBS's review of interlaboratory comparison results indicated that 98% of the sample results for accuracy were within the acceptable control limits of the three normalized deviations. For those sample results outside the acceptable control limits, RBS's review indicated no impact on previously reported data. Attachment 1 also provides additional discussion regarding sample results outside the acceptable control limits.

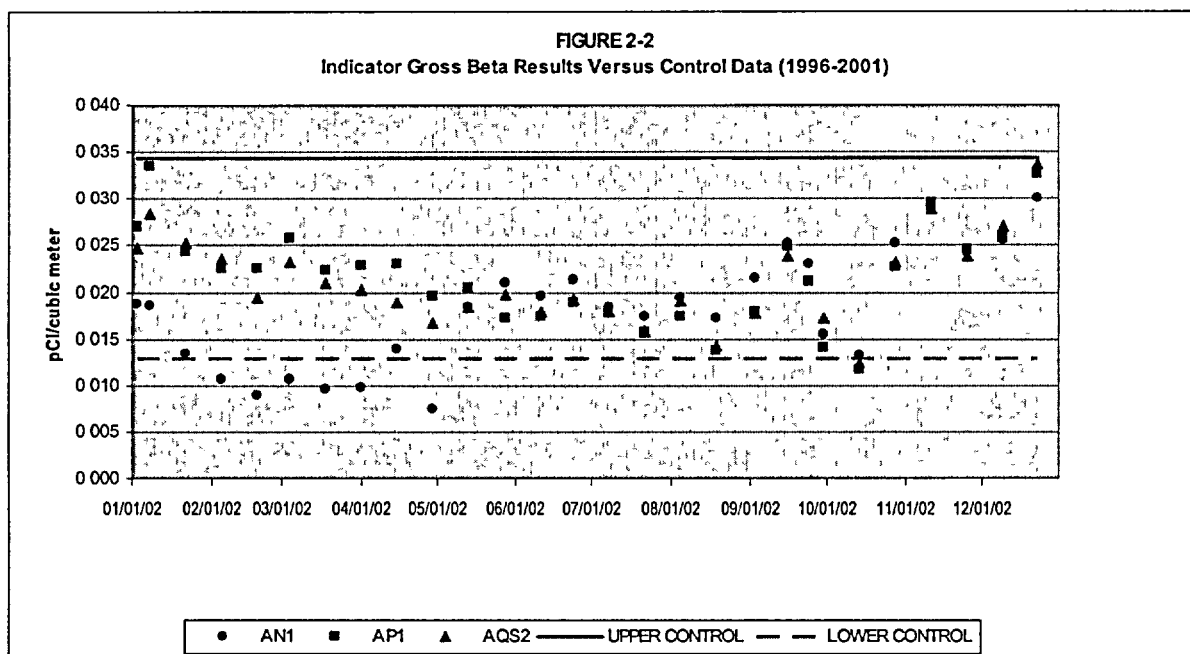
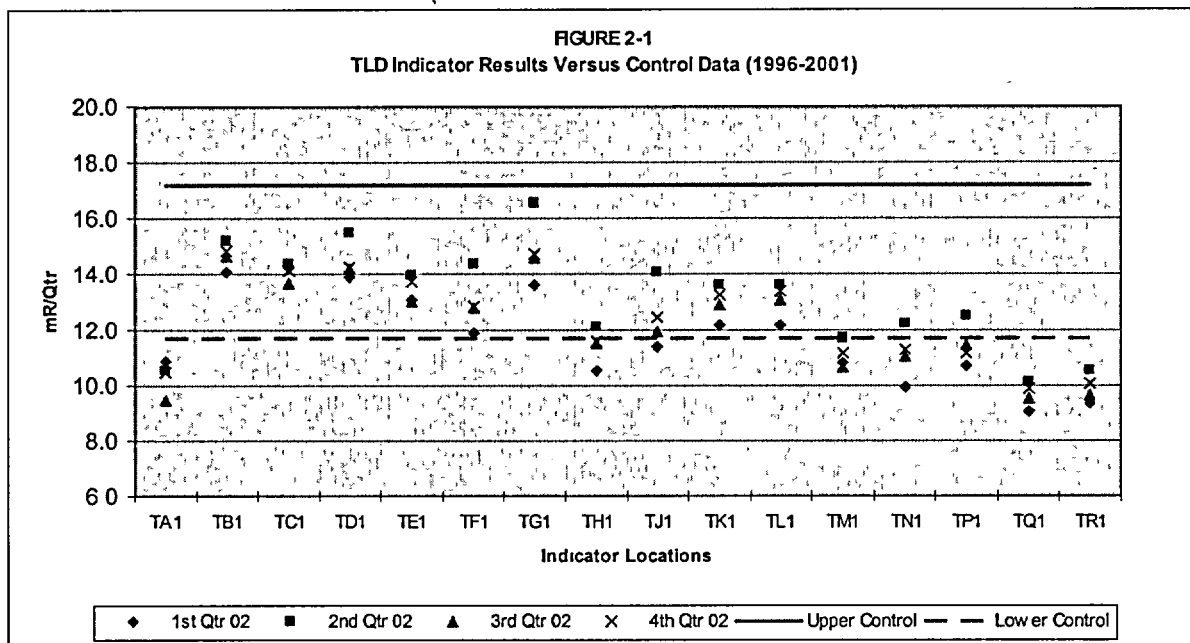
Table 2-1
Land Use Census Results

Item	Sector	Direction	Nearest Residence	Range (km)	Nearest Milk Animal	Range (km)
1	A	N	Havard ¹	1.8	-	-
2	B	NNE	Dreher	1.6	-	-
3	C	NE	Bickham, J.	1.4	-	-
4	D	ENE	Goulette	1.4	-	-
5	E	E	Bickham, S.	2.2	-	-
6	F	ESE	Letoureau ²	2.8	-	-
7	G	SE	Burton ³	3.9	-	-
8	H	SSE	Hubbard	1.7	-	-
9	J	S	Knecht	1.8	-	-
10	K	SSW	Guillory	7.4	-	-
11	L	SW	Fountain	7.9	-	-
12	M	WSW	-	-	-	-
13	N	W	Lacost	6.1	-	-
14	P	WNW	Hermann	3.4	-	-
15	Q	NW	Stokes	1.3	-	-
16	R	NNW	Young	1.7	-	-

¹ New resident at the same range in sector A.

² New resident at a range of 2.8 km., compared to 2.9 km. in 2000 census, in sector F.

³ New resident at a range of 3.9 km., compared to 6.6 km. in 2000 census, in sector G.



3.0 Radiological Environmental Monitoring Program Summary

3.1 2002 Program Results Summary

Table 3.1 summarizes the 2002 REMP results. RBS personnel did not use values reported as less than the lower limit of detection (<LLD) when determining ranges and means for indicator and control locations.

TABLE 3.1

Radiological Environmental Monitoring Program SummaryName of Facility: **River Bend Station** Docket No: **50-458**Location of Facility: **West Feliciana Parish, Louisiana** Reporting Period: **January - December 2002**

Sample Type (Units)	Type & Number of Analyses ^a	LLD ^b	Indicator Locations Mean (F) ^c [Range]	Location with Highest Annual Mean		Control Locations Mean (F) ^c [Range]	Number of Nonroutine Results ^e
				Location ^d	Mean (F) ^c [Range]		
Air Particulates (pCi/m ³)	Gross Beta 110	0.01	0.020 (83 / 83) [0.007 - 0.034]	AP1 (0.9 km WNW)	0.022 (28 / 28) [0.012 - 0.033]	0.022 (27 / 27) [0.011 - 0.032]	0
Airborne Iodine (pCi/m ³)	I-131 110	0.07	<LLD	N/A	N/A	<LLD	0
Indicators TLDs (mR/Qtr)	Gamma 64	(f)	12.37 (64 / 64) [9.04 – 16.56]	TG1 (1.6 km SE)	14.87 (4 / 4) [13.59 – 16.56]	N/A	0
Special Interest TLDs (mR/Qtr)	Gamma 20	(f)	12.62 (20 / 20) [10.69 – 14.97]	TRS (9.2 km NNW)	13.89 (4 / 4) [13.11 – 14.78]	N/A	0
Control TLDs (mR/Qtr)	Gamma 12	(f)	N/A	N/A	N/A	14.76 (12 / 12) [13.50 – 15.82]	0

TABLE 3.1

Radiological Environmental Monitoring Program SummaryName of Facility: River Bend Station Docket No: 50-458Location of Facility: West Feliciana Parish, Louisiana Reporting Period: January - December 2002

Sample Type (Units)	Type & Number of Analyses ^a	LLD ^b	Indicator Location Mean (F) ^c [Range]	Location with Highest Annual Mean		Control Locations Mean (F) ^c [Range]	Number of Nonroutine Results ^e
				Location ^d	Mean (F) ^c [Range]		
Surface Water (pCi/l)	H-3 8	3000	<LLD	N/A	N/A	<LLD	0
	Gamma 8						
	Mn-54	15	<LLD	N/A	N/A	<LLD	0
	Co-58	15	<LLD	N/A	N/A	<LLD	0
	Fe-59	30	<LLD	N/A	N/A	<LLD	0
	Co-60	15	<LLD	N/A	N/A	<LLD	0
	Zn-65	30	<LLD	N/A	N/A	<LLD	0
	Zr-95	30	<LLD	N/A	N/A	<LLD	0
	Nb-95	15	<LLD	N/A	N/A	<LLD	0
	I-131	15	<LLD	N/A	N/A	<LLD	0
	Cs-134	15	<LLD	N/A	N/A	<LLD	0
	Cs-137	18	<LLD	N/A	N/A	<LLD	0
	Ba-140	60	<LLD	N/A	N/A	<LLD	0
	La-140	15	<LLD	N/A	N/A	<LLD	0

TABLE 3.1

Radiological Environmental Monitoring Program SummaryName of Facility: River Bend Station Docket No: 50-458Location of Facility: West Feliciana Parish, Louisiana Reporting Period: January - December 2002

Sample Type (Units)	Type & Number of Analyses ^a	LLD ^b	Indicator Locations Mean (F) ^c [Range]	Location with Highest Annual Mean		Control Locations Mean (F) ^c [Range]	Number of Nonroutine Results ^e
				Location ^d	Mean (F) ^c [Range]		
Groundwater (pCi/l)	H-3 4	3000	<LLD	N/A	N/A	<LLD	0
	Gamma 4						
	Mn-54	15	<LLD	N/A	N/A	<LLD	0
	Co-58	15	<LLD	N/A	N/A	<LLD	0
	Fe-59	30	<LLD	N/A	N/A	<LLD	0
	Co-60	15	<LLD	N/A	N/A	<LLD	0
	Zn-65	30	<LLD	N/A	N/A	<LLD	0
	Zr-95	30	<LLD	N/A	N/A	<LLD	0
	Nb-95	15	<LLD	N/A	N/A	<LLD	0
	I-131	15	<LLD	N/A	N/A	<LLD	0
	Cs-134	15	<LLD	N/A	N/A	<LLD	0
	Cs-137	18	<LLD	N/A	N/A	<LLD	0
	Ba-140	60	<LLD	N/A	N/A	<LLD	0
	La-140	15	<LLD	N/A	N/A	<LLD	0
Shoreline Sediment (pCi/kg)	Gamma 1						
	Cs-134	150	<LLD	N/A	N/A	<LLD*	0
	Cs-137	180	<LLD	N/A	N/A	<LLD	0

TABLE 3.1

Radiological Environmental Monitoring Program SummaryName of Facility: River Bend Station Docket No: 50-458Location of Facility: West Feliciana Parish, Louisiana Reporting Period: January - December 2002

Sample Type (Units)	Type & Number of Analyses ^a	LLD ^b	Indicator Location Mean (F) ^c [Range]	Location with Highest Annual Mean		Control Locations Mean (F) ^c [Range]	Number of Nonroutine Results ^e
				Location ^d	Mean (F) ^c [Range]		
Fish (pCi/kg)	Gamma 2						
	Mn-54	130	<LLD	N/A	N/A	<LLD	0
	Fe-59	260	<LLD	N/A	N/A	<LLD	0
	Co-58	130	<LLD	N/A	N/A	<LLD	0
	Co-60	130	<LLD	N/A	N/A	<LLD	0
	Zn-65	260	<LLD	N/A	N/A	<LLD	0
	Cs-134	130	<LLD	N/A	N/A	<LLD	0
	Cs-137	150	<LLD	N/A	N/A	<LLD	0
Food Products (pCi/kg)	I-131 8	60	<LLD	N/A	N/A	<LLD	0
	Gamma 8						
	Cs-134	60	<LLD	N/A	N/A	<LLD	0
	Cs-137	80	<LLD	N/A	N/A	<LLD	0
Special Sediment (East & West Creek) (pCi/kg)	Gamma 8						
	Cs-134	150	<LLD	N/A	N/A	N/A	0
	Cs-137	180	<LLD	N/A	N/A	N/A	0

TABLE 3.1

Radiological Environmental Monitoring Program SummaryName of Facility: River Bend Station Docket No: 50-458Location of Facility: West Feliciana Parish, Louisiana Reporting Period: January - December 2002

Sample Type (Units)	Type & Number of Analyses ^a	LLD ^b	Indicator Location Mean (F) ^c [Range]	Location with Highest Annual Mean		Control Locations Mean (F) ^c [Range]	Number of Nonroutine Results ^e
				Location ^d	Mean (F) ^c [Range]		
Special Water (Wastewater Plant Effluent) (pCi/l)	Gamma 12						
	Mn-54	15	<LLD	N/A	N/A	N/A	0
	Fe-59	30	<LLD	N/A	N/A	N/A	0
	Co-58	15	<LLD	N/A	N/A	N/A	0
	Co-60	15	<LLD	N/A	N/A	N/A	0
	Zn-65	30	<LLD	N/A	N/A	N/A	0
	Zr-95	30	<LLD	N/A	N/A	N/A	0
	Nb-95	15	<LLD	N/A	N/A	N/A	0
	I-131	15	<LLD	N/A	N/A	N/A	0
	Cs-134	15	<LLD	N/A	N/A	N/A	0
	Cs-137	18	<LLD	N/A	N/A	N/A	0
	Ba-140	60	<LLD	N/A	N/A	N/A	0
	La-140	15	<LLD	N/A	N/A	N/A	0

^a I-131 = Iodine-131; H-3 = Tritium^b LLD = Required lower limit of detection based on RBS Technical Requirements Manual Table 3.12.1-3.^c Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis (F).^d Locations are specified (1) by name and (2) direction and distance relative to reactor site.^e Non-routine results are those which exceed ten times the control station value. If no control station value is available, the result is considered non-routine if it exceeds ten times the preoperational value for the location.^f LLD is not defined in RBS Technical Requirements Manual Table 3.12.1-3.^g Control location for sediment is upstream surface water sample.

Attachment 1

2002 Radiological Monitoring Report

Summary of Monitoring Results

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Table 1.1

Sample Type: Air Particulate and Charcoal Cartridge – Indicator Location AN1

Analysis: Gross Beta and Iodine

Units: pCi/m³

LLD (pCi/m ³)			0.07	0.01
LAB ID	START DATE	END DATE	I-131	GROSS BETA
20020002	12/20/2001	1/3/2002	< 0.007	0.019 +/-0.001
20020015	1/3/2002	1/8/2002	< 0.014	0.019 +/-0.002
20020052	1/8/2002	1/22/2002	< 0.009	0.013 +/-0.001
20020094	1/22/2002	2/5/2002	< 0.007	0.011 +/-0.001
20020120	2/5/2002	2/19/2002	< 0.007	0.009 +/-0.001
20020153	2/19/2002	3/4/2002	< 0.009	0.011 +/-0.001
20020188	3/4/2002	3/18/2002	< 0.009	0.010 +/-0.001
20020238	3/18/2002	4/1/2002	< 0.006	0.010 +/-0.001
20020293	4/1/2002	4/15/2002	< 0.016	0.014 +/-0.001
20020324	4/15/2002	4/29/2002	< 0.009	0.007 +/-0.001
20020374	4/29/2002	5/13/2002	< 0.009	0.018 +/-0.001
20020405	5/13/2002	5/28/2002	< 0.009	0.021 +/-0.001
20020438	5/28/2002	6/11/2002	< 0.008	0.020 +/-0.001
20020480	6/11/2002	6/24/2002	< 0.009	0.021 +/-0.001
20020521	6/24/2002	7/8/2002	< 0.012	0.018 +/-0.001
20020576	7/8/2002	7/22/2002	< 0.008	0.017 +/-0.001
20020606	7/22/2002	8/5/2002	< 0.007	0.019 +/-0.001
20020637	8/5/2002	8/19/2002	< 0.009	0.017 +/-0.001
20020661	8/19/2002	9/3/2002	< 0.007	0.021 +/-0.001
20020691	9/3/2002	9/16/2002	< 0.007	0.025 +/-0.001
20020735	9/16/2002	9/24/2002	< 0.012	0.023 +/-0.002
20020752	9/24/2002	9/30/2002	< 0.013	0.015 +/-0.002
20020793	9/30/2002	10/14/2002	< 0.008	0.013 +/-0.001
20020838	10/14/2002	10/28/2002	< 0.008	0.025 +/-0.001
20020889	10/28/2002	11/11/2002	< 0.006	0.029 +/-0.001
20020944	11/11/2002	11/25/2002	< 0.006	0.024 +/-0.001
20020995	11/25/2002	12/9/2002	< 0.008	0.026 +/-0.001
20021050	12/9/2002	12/23/2002	< 0.009	0.030 +/-0.001

Average: 0.018

Maximum: 0.030

Minimum: 0.007

Table 1.2

Sample Type: Air Particulate and Charcoal Cartridge – Indicator Location AP1
 Analysis: Gross Beta and Iodine
 Units: pCi/m³

LLD (pCi/m ³)			0.07	0.01
LAB ID	START DATE	END DATE	I-131	GROSS BETA
20020001	12/20/2001	1/3/2002	< 0.005	0.027 +/-0.001
20020014	1/3/2002	1/8/2002	< 0.019	0.033 +/-0.003
20020051	1/8/2002	1/22/2002	< 0.008	0.024 +/-0.001
20020093	1/22/2002	2/5/2002	< 0.006	0.023 +/-0.001
20020119	2/5/2002	2/19/2002	< 0.008	0.023 +/-0.001
20020152	2/19/2002	3/4/2002	< 0.008	0.026 +/-0.001
20020187	3/4/2002	3/18/2002	< 0.008	0.022 +/-0.001
20020237	3/18/2002	4/1/2002	< 0.008	0.023 +/-0.001
20020292	4/1/2002	4/15/2002	< 0.008	0.023 +/-0.001
20020323	4/15/2002	4/29/2002	< 0.008	0.020 +/-0.001
20020373	4/29/2002	5/13/2002	< 0.009	0.021 +/-0.001
20020404	5/13/2002	5/28/2002	< 0.009	0.017 +/-0.001
20020437	5/28/2002	6/11/2002	< 0.009	0.017 +/-0.001
20020479	6/11/2002	6/24/2002	< 0.009	0.019 +/-0.001
20020520	6/24/2002	7/8/2002	< 0.009	0.018 +/-0.001
20020575	7/8/2002	7/22/2002	< 0.007	0.016 +/-0.001
20020605	7/22/2002	8/5/2002	< 0.008	0.017 +/-0.001
20020636	8/5/2002	8/19/2002	< 0.011	0.014 +/-0.001
20020660	8/19/2002	9/3/2002	< 0.007	0.018 +/-0.001
20020690	9/3/2002	9/16/2002	< 0.007	0.025 +/-0.001
20020734	9/16/2002	9/24/2002	< 0.011	0.021 +/-0.002
20020751	9/24/2002	9/30/2002	< 0.015	0.014 +/-0.002
20020792	9/30/2002	10/14/2002	< 0.010	0.012 +/-0.001
20020837	10/14/2002	10/28/2002	< 0.008	0.023 +/-0.001
20020888	10/28/2002	11/11/2002	< 0.008	0.030 +/-0.001
20020943	11/11/2002	11/25/2002	< 0.007	0.025 +/-0.001
20020994	11/25/2002	12/9/2002	< 0.006	0.026 +/-0.001
20021049	12/9/2002	12/23/2002	< 0.008	0.033 +/-0.001
Average:				0.022
Maximum:				0.033
Minimum:				0.012

Table 1.3

Sample Type:

Air Particulate and Charcoal Cartridge – Indicator Location AQS2

Analysis:

Gross Beta and Iodine

Units:

pCi/m³

LLD (pCi/m ³)			0.07	0.01
LAB ID	START DATE	END DATE	I-131	GROSS BETA
20020003	12/20/2001	1/3/2002	< 0.007	0.025 +/-0.001
20020016	1/3/2002	1/8/2002	< 0.017	0.028 +/-0.003
20020053	1/8/2002	1/22/2002	< 0.007	0.025 +/-0.001
20020095	1/22/2002	2/5/2002	< 0.006	0.024 +/-0.001
20020121	2/5/2002	2/19/2002	< 0.006	0.019 +/-0.001
20020154	2/19/2002	3/4/2002	< 0.007	0.023 +/-0.001
20020189	3/4/2002	3/18/2002	< 0.008	0.021 +/-0.001
20020239	3/18/2002	4/1/2002	< 0.009	0.020 +/-0.001
20020294	4/1/2002	4/15/2002	< 0.009	0.019 +/-0.001
20020325	4/15/2002	4/29/2002	< 0.007	0.017 +/-0.001
20020375	4/29/2002	5/13/2002	< 0.009	0.018 +/-0.001
20020406	5/13/2002	5/28/2002	< 0.010	0.020 +/-0.001
20020439	5/28/2002	6/11/2002	< 0.008	0.018 +/-0.001
20020481	6/11/2002	6/24/2002	< 0.008	0.019 +/-0.001
20020522	6/24/2002	7/8/2002	< 0.008	0.018 +/-0.001
20020577	7/8/2002	7/22/2002	< 0.009	0.016 +/-0.001
20020607	7/22/2002	8/5/2002	< 0.009	0.019 +/-0.001
20020638	8/5/2002	8/19/2002	< 0.008	0.014 +/-0.001
20020662	8/19/2002	9/3/2002	< 0.008	0.018 +/-0.001
20020692	9/3/2002	9/16/2002	< 0.007	0.024 +/-0.001
20020753	9/16/2002	9/30/2002	< 0.009	0.017 +/-0.001
20020794	9/30/2002	10/14/2002	< 0.007	0.012 +/-0.001
20020839	10/14/2002	10/28/2002	< 0.006	0.023 +/-0.001
20020890	10/28/2002	11/11/2002	< 0.009	0.029 +/-0.001
20020945	11/11/2002	11/25/2002	< 0.008	0.024 +/-0.001
20020996	11/25/2002	12/9/2002	< 0.007	0.027 +/-0.001
20021051	12/9/2002	12/23/2002	< 0.007	0.034 +/-0.002
Average:				0.021
Maximum:				0.034
Minimum:				0.012

Table 1.4

Sample Type: Air Particulate and Charcoal Cartridge – Control Location AGC
 Analysis: Gross Beta and Iodine
 Units: pCi/m³

LLD (pCi/m ³)			0.07	0.01
LAB ID	START DATE	END DATE	I-131	GROSS BETA
20020004	12/20/2001	1/3/2002	< 0.007	0.024 +/- 0.001
20020017	1/3/2002	1/8/2002	< 0.013	0.031 +/- 0.003
20020054	1/8/2002	1/22/2002	< 0.007	0.025 +/- 0.001
20020096	1/22/2002	2/5/2002	< 0.007	0.020 +/- 0.001
20020122	2/5/2002	2/19/2002	< 0.007	0.021 +/- 0.001
20020155	2/19/2002	3/4/2002	< 0.007	0.026 +/- 0.001
20020190	3/4/2002	3/18/2002	< 0.006	0.023 +/- 0.001
20020240	3/18/2002	4/1/2002	< 0.007	0.019 +/- 0.001
20020295	4/1/2002	4/15/2002	< 0.007	0.019 +/- 0.001
20020326	4/15/2002	4/29/2002	< 0.010	0.018 +/- 0.001
20020376	4/29/2002	5/13/2002	< 0.007	0.017 +/- 0.001
20020407	5/13/2002	5/28/2002	< 0.007	0.021 +/- 0.001
20020440	5/28/2002	6/11/2002	< 0.006	0.019 +/- 0.001
20020482	6/11/2002	6/24/2002	< 0.008	0.022 +/- 0.001
20020523	6/24/2002	7/8/2002	< 0.007	0.020 +/- 0.001
20020578	7/8/2002	7/22/2002	< 0.007	0.018 +/- 0.001
20020608	7/22/2002	8/5/2002	< 0.008	0.019 +/- 0.001
20020639	8/5/2002	8/19/2002	< 0.007	0.016 +/- 0.001
20020663	8/19/2002	9/3/2002	< 0.008	0.020 +/- 0.001
20020693	9/3/2002	9/16/2002	< 0.008	0.028 +/- 0.001
20020754	9/16/2002	9/30/2002	< 0.007	0.016 +/- 0.001
20020795	9/30/2002	10/14/2002	< 0.006	0.011 +/- 0.001
20020840	10/14/2002	10/28/2002	< 0.005	0.022 +/- 0.001
20020891	10/28/2002	11/11/2002	< 0.006	0.029 +/- 0.001
20020946	11/11/2002	11/25/2002	< 0.006	0.022 +/- 0.001
20020997	11/25/2002	12/9/2002	< 0.007	0.024 +/- 0.001
20021052	12/9/2002	12/23/2002	< 0.006	0.032 +/- 0.001
Average:				0.022
Maximum:				0.032
Minimum:				0.011

Table 2.1
Sample Type: Thermoluminescent Dosimeters
Analysis: mR Exposure
Units: mrem/Qtr

Normalized Gamma-Ray Exposure Summary (mR)
Quarterly Environmental Thermoluminescence Dosimeter Results for Year 2002

<u>INDICATORS</u>	<u>1ST QTR</u>	<u>2ND QTR</u>	<u>3RD QTR</u>	<u>4TH QTR</u>	<u>MEAN</u>
TA1	10.88	10.52	9.44	10.45	10.32
TB1	14.07	15.17	14.68	14.85	14.70
TC1	14.27	14.38	13.69	14.15	14.12
TD1	13.88	15.47	14.19	14.25	14.45
TE1	13.11	13.98	13.00	13.75	13.46
TF1	11.85	14.38	12.80	12.85	12.97
TG1	13.59	16.56	14.58	14.75	14.87
TH1	10.49	12.11	11.52	11.55	11.42
TJ1	11.36	14.08	11.91	12.45	12.45
TK1	12.14	13.59	12.90	13.25	12.97
TL1	12.14	13.59	13.10	13.35	13.04
TM1	10.78	11.71	10.63	11.15	11.07
TN1	9.91	12.20	11.02	11.25	11.10
TP1	10.69	12.50	11.42	11.15	11.44
TQ1	9.04	10.13	9.54	9.85	9.64
TR1	9.33	10.52	9.64	10.05	9.89
MAX	14.27	16.56	14.68	14.85	14.87
AVG	11.72	13.18	12.13	12.45	12.37
MIN	9.04	10.13	9.44	9.85	9.64

<u>SPECIAL INTEREST</u>	<u>1ST QTR</u>	<u>2ND QTR</u>	<u>3RD QTR</u>	<u>4TH QTR</u>	<u>MEAN</u>
TCS	12.53	12.60	11.02	12.05	12.05
TNS	10.69	11.12	11.91	12.20	11.48
TQS1	12.24	12.80	13.59	14.37	13.25
TQS2	10.98	14.97	11.62	12.20	12.44
TRS	13.11	14.78	13.50	14.18	13.89
MAX	13.11	14.97	13.59	14.37	13.89
AVG	11.91	13.25	12.33	13.00	12.62
MIN	10.69	11.12	11.02	12.05	11.48

<u>CONTROLS</u>	<u>1ST QTR</u>	<u>2ND QTR</u>	<u>3RD QTR</u>	<u>4TH QTR</u>	<u>MEAN</u>
TAC	15.82	14.87	14.58	14.67	14.99
TEC	15.24	14.68	13.50	13.75	14.29
TGS	14.56	15.76	14.88	14.85	15.01
MAX	15.82	15.76	14.88	14.85	15.01
AVG	15.20	15.11	14.32	14.42	14.76
MIN	14.56	14.68	13.50	13.75	14.29

	<u>INDICATOR</u>	<u>CONTROL</u>	<u>SPECIAL</u>
MAX	16.56	15.82	14.97
AVG	12.37	14.76	12.62
MIN	9.04	13.50	10.69

Table 3.1

Sample Type: Surface Water

Analysis: Gamma Isotopic and Tritium

Units: pCi/l

LLD (pCi/l)			15	15	30	15	30	15	30	15	15	18	60	15
LAB ID	LOCATION	DATE	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
20020048	SWU	1/22/2002	< 4.36	< 4.72	< 10.60	< 4.98	< 7.81	< 5.07	< 9.50	< 4.47	< 5.20	< 4.90	< 20.60	< 4.76
20020049	SWD	1/22/2002	< 5.80	< 5.44	< 8.08	< 4.81	< 11.10	< 5.34	< 10.50	< 5.82	< 4.63	< 6.09	< 20.00	< 5.54
20020290	SWD	4/11/2002	< 5.51	< 4.29	< 11.23	< 5.53	< 6.06	< 3.79	< 8.98	< 5.18	< 4.71	< 5.93	< 17.80	< 3.69
20020291	SWU	4/11/2002	< 3.96	< 3.96	< 7.30	< 6.05	< 9.72	< 4.47	< 7.64	< 5.79	< 5.41	< 3.60	< 16.00	< 7.73
20020524	SWU	7/8/2002	< 4.94	< 4.21	< 8.31	< 6.94	< 9.09	< 4.80	< 9.93	< 5.61	< 5.88	< 5.62	< 21.60	< 6.04
20020526	SWD	7/8/2002	< 4.08	< 3.91	< 7.63	< 4.29	< 10.80	< 5.74	< 6.69	< 6.15	< 5.79	< 5.23	< 21.30	< 6.99
20020760	SWU	10/8/2002	< 4.58	< 5.60	< 8.71	< 3.79	< 10.70	< 6.44	< 7.01	< 6.02	< 5.00	< 5.59	< 18.40	< 3.22
20020761	SWD	10/8/2002	< 5.11	< 3.94	< 9.57	< 4.02	< 11.60	< 4.71	< 7.35	< 5.03	< 6.10	< 4.40	< 16.20	< 6.33

LLD (pCi/l)			3000	
LAB ID	LOCATION	DATE	TRITIUM	
20020048	SWU	1/22/2002	< 545.00	
20020049	SWD	1/22/2002	< 545.00	
20020290	SWD	4/11/2002	< 571.00	
20020291	SWU	4/11/2002	< 561.00	
20020525	SWU	7/8/2002	< 573.00	
20020527	SWD	7/8/2002	< 571.00	
20020760	SWU	10/8/2002	< 614.00	
20020761	SWD	10/8/2002	< 605.00	

Table 4.1

Sample Type: Groundwater

Analysis: Gamma Isotopic and Tritium

Units: pCi/l

LLD (pCi/l)			15	15	30	15	30	15	30	15	15	18	60	15
LAB ID	LOCATION	DATE	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
20020466	WD	6/19/2002	< 4.27	< 4.04	< 10.80	< 4.70	< 12.30	< 6.34	< 6.42	< 5.44	< 3.97	< 4.12	< 16.80	< 5.37
20020467	WU	6/19/2002	< 7.87	< 5.50	< 10.30	< 8.28	< 14.30	< 8.31	< 13.00	< 7.56	< 6.36	< 7.23	< 24.30	< 8.88
20021036	WU	12/18/2002	< 5.15	< 6.89	< 13.10	< 6.31	< 12.20	< 5.90	< 11.30	< 8.54	< 7.35	< 7.58	< 22.70	< 7.29
20021037	WD	12/18/2002	< 3.73	< 3.80	< 9.71	< 5.58	< 6.20	< 5.58	< 9.07	< 4.62	< 5.02	< 3.82	< 17.50	< 7.03

LLD(pCi/l)			3000	
LAB ID	LOCATION	DATE	TRITIUM	
20020466	WD	6/19/2002	< 572.00	
20020467	WU	6/19/2002	< 573.00	
20021036	WU	12/18/2002	< 603.00	
20021037	WD	12/18/2002	< 607.00	

Table 5.1

Sample Type: Shoreline Sediment

Analysis: Gamma Isotopic

Units: pCi/kg, dry

LLD (pCi/kg)		150	180
LAB ID	DATE	CS-134	CS-137
20021014	12/17/2002	< 19.50	< 19.60

Table 6.1

Sample Type: Food Products

Analysis: Gamma Isotopic

Units: pCi/kg, wet

LLD (pCi/kg, wet)			60	60	80
LAB ID	LOCATION	DATE	I-131	CS-134	CS-137
20020050	GN1	1/22/2002	< 45.50	< 57.70	< 51.00
20020128	GQC	2/19/2002	< 39.30	< 27.30	< 21.00
20020321	GN1	4/24/2002	< 36.60	< 36.40	< 20.70
20020386	GQC	5/21/2002	< 34.40	< 36.50	< 40.30
20020582	GN1	7/25/2002	< 41.40	< 45.80	< 54.80
20020641	GQC	8/21/2002	< 37.00	< 38.60	< 31.40
20020827	GN1	10/22/2002	< 43.80	< 58.40	< 38.70
20020917	GQC	11/19/2002	< 30.90	< 36.30	< 34.60

Table 7.1

Sample Type: Fish

Analysis: Gamma Isotopic

Units: pCi/kg, wet

LLD(pCi/kg)			130	130	260	130	260	130	150
LAB ID	DATE	LOCATION	MN-54	CO-58	FE-59	CO-60	ZN-65	CS-134	CS-137
20020992	12/7/2002	FU	< 14.40	< 11.80	< 48.80	< 14.10	< 46.50	< 13.00	< 18.50
20020993	12/7/2002	FD	< 21.30	< 21.10	< 55.10	< 33.70	< 63.50	< 23.80	< 27.60

Table 8.1

Sample Type: Sediments (Special)

Analysis: Gamma Isotopic

Units: pCi/kg, dry

LLD (pCi/kg, dry)			150	180
LAB ID	DATE	LOCATION	CS-134	CS-137
20020304	3/27/2002	WEST CREEK	< 30.10	< 34.50
20020305	3/27/2002	EAST CREEK	< 37.00	< 33.20
20020445	6/12/2002	WEST CREEK	< 14.20	< 13.80
20020446	6/12/2002	EAST CREEK	< 11.90	< 12.90
20020703	9/16/2002	EAST CREEK	< 13.10	< 14.70
20020704	9/16/2002	WEST CREEK	< 17.90	< 21.10
20021015	12/17/2002	WEST CREEK	< 13.40	< 14.70
20021016	12/17/2002	EAST CREEK	< 12.00	< 13.10

Table 9.1

Sample Type: Wastewater Treatment Plant Effluent (Special)

Analysis: Gamma Isotopic

Units: pCi/l

LLD (pCi/l)		15	15	30	15	30	15	30	15	15	18	60	15
LAB ID	DATE	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
20020071	1/30/2002	< 3.74	< 4.58	< 5.97	< 4.86	< 7.85	< 3.45	< 6.15	< 4.11	< 3.67	< 4.61	< 11.60	< 3.90
20020146	2/28/2002	< 5.58	< 5.90	< 8.89	< 3.60	< 10.40	< 4.15	< 6.07	< 4.45	< 4.44	< 4.48	< 12.90	< 6.87
20020231	3/27/2002	< 3.83	< 4.65	< 5.42	< 4.93	< 8.62	< 4.28	< 7.26	< 5.02	< 4.91	< 4.21	< 11.90	< 4.81
20020322	4/24/2002	< 3.86	< 2.84	< 7.34	< 4.15	< 5.55	< 4.41	< 6.86	< 4.57	< 3.32	< 4.23	< 15.60	< 4.86
20020412	5/30/2002	< 4.47	< 4.23	< 8.74	< 3.76	< 9.39	< 3.16	< 6.46	< 4.05	< 3.82	< 4.50	< 14.80	< 5.11
20020497	6/26/2002	< 3.68	< 2.95	< 6.14	< 3.76	< 8.13	< 4.47	< 7.30	< 3.97	< 4.99	< 3.08	< 12.70	< 6.33
20020594	8/1/2002	< 5.23	< 5.47	< 13.00	< 6.00	< 10.70	< 3.92	< 8.95	< 4.78	< 5.69	< 6.10	< 20.50	< 1.81
20020654	8/28/2002	< 3.15	< 5.73	< 10.90	< 6.90	< 9.63	< 6.08	< 8.78	< 5.12	< 4.92	< 5.11	< 17.50	< 4.60
20020741	9/26/2002	< 4.40	< 5.12	< 8.05	< 4.46	< 7.12	< 3.02	< 8.63	< 6.71	< 4.02	< 4.69	< 18.30	< 6.76
20020854	10/30/2002	< 4.70	< 2.00	< 7.91	< 3.56	< 8.85	< 4.08	< 4.64	< 4.78	< 3.79	< 4.42	< 17.40	< 5.11
20020953	11/27/2002	< 4.07	< 3.30	< 6.83	< 3.53	< 9.46	< 4.43	< 5.80	< 4.66	< 3.73	< 4.44	< 14.10	< 6.72
20021078	12/31/2002	< 5.40	< 4.50	< 11.40	< 4.65	< 11.90	< 5.59	< 7.50	< 6.70	< 4.86	< 5.56	< 21.70	< 9.36

Table 10.1

Sample Type: **Interlaboratory Comparison**

Analysis: Gross Beta, Iodine-131, Tritium, and Gamma Isotopic

Sample Type (units)	Study	Date	Analysis	"Known" Value ^a	RBS Value	RBS N- DEV ^b	RBS N-RANGE ^c
Charcoal Cartridge (pCi/cartridge)	E3236-125	6/13/02	I-131	94.0 ± 16.28	93.4	-0.12	0.358
Water (pCi/liter)	E3049-125	3/14/02	BETA	130 ± 22.5	137	0.98	0.273
	E3047-125	3/14/02	CR-51	198 ± 34.3	209	0.96	0.776
			MN-54	166 ± 28.7	177	1.11	0.605
			FE-59	86.0 ± 14.9	97.8	2.37	0.103
			CO-60	117 ± 20.3	116	-0.10	0.252
			ZN-65	164 ± 28.4	176	1.27	0.432
			I-131	61.0 ± 10.6	58.7	-0.65	0.271
			CS-134	91.0 ± 15.8	89.8	-0.23	0.032
			CS-137	197 ± 34.1	196	-0.06	0.120
			CE-141	242 ± 41.9	241	-0.05	0.024
	E3048-125 (Duplicate)	3/14/02	CR-51	198 ± 34.3	204	0.52	0.955
			MN-54	166 ± 28.7	179	1.36	0.320
			FE-59	86.0 ± 14.9	96.4	2.09	1.264
			CO-60	117 ± 20.3	113	-0.64	0.404
			ZN-65	164 ± 28.4	176	1.30	0.864
			I-131	61.0 ± 10.6	62.7	0.47	0.504
			CS-134	91.0 ± 15.8	89.0	-0.37	0.435
			CS-137	197 ± 34.1	202	0.41	0.420
			CE-141	242 ± 41.9	243	0.05	0.073
	E3235-125	6/13/02	H-3	6970 ± 1207	7298	0.82	0.217
Air Filter (pCi/filter)	E3323-125	9/12/02	BETA	69.0 ± 11.95	73.4	1.11	0.094
	E3382-125	9/12/02	CR-51	171 ± 29.6	178	0.68	1.105
			MN-54	115 ± 19.9	132	2.61	0.308
			CO-58	73.0 ± 12.6	77.2	1.00	0.372
			FE-59	67.0 ± 11.6	80.8	3.57 ^d	0.062
			CO-60	112 ± 19.4	124	1.86	0.422
			ZN-65	141 ± 24.4	156	1.84	0.628
			CS-134	99.0 ± 17.2	99.4	0.08	0.024
			CS-137	95.0 ± 16.5	103	1.46	0.249
			CE-141	120 ± 20.8	133	1.83	0.148

Table 10.1

Sample Type: Interlaboratory ComparisonAnalysis: Gamma Isotopic

Error! Bookmark not defined. Sample Type (units)	Study	Date	Analysis	"Known" Value ^a	RBS Value	RBS N-DEV ^b	RBS N-RANGE ^c
Sediment (pCi/gram)	E3383-125	9/12/02	CR-51	0 354 ± 0.061	0.366	0 603	0 818
			MN-54	0.238 ± 0 041	0.266	2.038	0 347
			CO-58	0.151 ± 0.026	0.159	0.956	0.196
			FE-59	0.138 ± 0 024	0.150	1 464	0 300
			CO-60	0 232 ± 0 040	0.243	0.846	0 229
			ZN-65	0 293 ± 0 051	0 330	2.207	0 403
			CS-134	0 205 ± 0 036	0 204	-0.056	0 288
			CS-137	0 282 ± 0.049	0 323	2.539	0.105
			CE-141	0 249 ± 0 043	0 272	1.577	0.735

NOTES:

- (a) The "known" values are listed with a range reflecting control (3 sigma) limits
- (b) The normalized deviation from the "known" value is computed from the deviation and the standard error of the mean ± 2.000 is the warning limit and ± 3.000 is the control limit This is a measure of accuracy of the analytical methods
- (c) The normalized range is computed from the mean range, the control limit, and the standard error of the range; $+2.000$ is the warning limit and $+3.000$ is the control limit This is a measure of precision of the analytical methods
- (d) The results reported were out of the control limits

Exceptions:

There was one result outside the control limits for accuracy in the 2002 cross check program participation studies. This result was in a gamma isotopic analysis of an air particulate filter sample.

The study result outside the control limits for accuracy was in the analysis of the nuclide Fe-59 in sample study 3382-125 of 9/12/2002. RBS normalized-deviation for the analysis was +3.57 with control limits of ± 3.00 . This high-bias result is considered conservative and is considered as having no impact on past results of the program. The bias high result for Fe-59 is contributed to coincidence summing effects. A coincidence summing correction was employed in the past, but was discontinued due to the production of non-conservative low-bias results. Fe-59 results were all within control limits in other cross check samples for the year 2002.