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GNRO-2009/00025

April 29, 2009

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

Subject: Grand Gulf Nuclear Station (GGNS) 2008 Annual Radiological Environmental Operating Report (AREOR)

Grand Gulf Nuclear Station, Unit 1
Docket No. 50-416
License No. NPF-29

Dear Sir or Madam:

In accordance with the Grand Gulf Nuclear Station Unit 1 Technical Specification 5.6.2, attached is the Annual Radiological Environmental Operating Report for the period January 1, 2008 through December 31, 2008.

This letter does not contain any commitments.

If you have questions or require additional information concerning these reports, please contact Mr. Richard Scarbrough (601) 437-6316 or Michael Larson at (601) 437-6685.

Sincerely,

CLP/MJL

Attachment: 2008 Annual Radiological Environmental Operating Report

cc: (See Next Page)

cc:

NRC Senior Resident Inspector Grand Gulf Nuclear Station Port Gibson, MS 39150
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ENTERGY OPERATIONS, INC.
GRAND GULF NUCLEAR STATION

ANNUAL
RADIOLOGICAL ENVIRONMENTAL
OPERATING REPORT

January 1, 2008-December 31, 2008

_____, 4-28-09

Prepared By

_____, 4-28-09

Reviewed By

_____, 4-28-09

Approved By

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Summary

The Annual Radiological Environmental Operating Report presents data obtained through analyses of environmental samples collected for Grand Gulf Nuclear Station's (GGNS) Radiological Environmental Monitoring Program (REMP) for the period January 1, 2008 through December 31, 2008. This report fulfills the requirements of GGNS Technical Specification 5.6.2.

To supplement the REMP, GGNS personnel collected duplicate surface water, ground water, vegetation, sediment and fish samples during the reporting period. Special samples collected during the reporting period included vegetation and surface water. GGNS did not detect any plant-related radionuclides in these samples.

Radiological Environmental Monitoring Program

GGNS established the REMP in 1978 prior to the station becoming operational (1985) to provide data on background radiation and radioactivity normally present in the area. GGNS has continued to monitor the environment by sampling air, water, sediment, fish and food products, as well as measuring radiation directly. GGNS also samples milk if commercial milk production is occurring within five miles of the plant.

The REMP includes sampling indicator and control locations within an 18-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. GGNS personnel compare indicator results with control and preoperational results to assess any impact GGNS operation might have had on the surrounding environment.

In the current year, GGNS personnel collected environmental samples for radiological analysis. They compared results of indicator locations with control locations and previous studies, and concluded that overall no significant relationship exists between GGNS operation and effect on the plant environs. Their review of current year data, in many cases, showed undetectable radiation levels in the environment and near background level in significant pathways associated with GGNS.

Harmful Effects or Irreversible Damage

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

Reporting Levels

GGNS' review indicates that no samples equaled or exceeded reporting levels for radioactivity concentration in environmental samples, as outlined in ODCM Specifications Table 6.12.1-2 when averaged over any calendar quarter, due to GGNS effluents. Therefore, results did not trigger any Radiological Monitoring Program Special Reports.

Radioactivity Not Attributable to GGNS

In previous years, the GGNS REMP detected radioactivity attributable to other sources twice. These include the 25th Chinese nuclear test explosion in 1980, and the radioactivity plume release due to reactor core degradation at the Chernobyl Nuclear Power Plant in 1986.

Comparison to Federal and State Programs

GGNS 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 Mississippi State Department of Health (MSDH), Division of Radiological Health.

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

The MSDH and the GGNS REMP entail similar radiological environmental monitoring program requirements. These programs include concurrent air sampling and splitting or sharing sample media such as water, sediment, fish and food products. Both programs have obtained similar results over previous years. The results of MSDH's monitoring program for the reporting period compared favorably with the GGNS REMP and did not indicate elevated levels of radiation or radioactivity build-up attributed to plant operations.

Sample Deviations

- **Milk**

  The REMP did not include milk sampling within five miles (8 km) of GGNS in the current year due to unavailability. ODCM Specifications require collection of milk samples if available commercially within 8 km (5 miles) of the plant. GGNS personnel collected vegetation samples to monitor the ingestion pathway, as specified in ODCM Specifications Table 6.12.1-1, because of milk unavailability.

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

  LLDs during this reporting period were within the acceptable limits required by the ODCM specifications.

♦ Air Samples

The following air sample locations had reduced run times due to weather-related outages or mechanical problems. As described in footnote (a) to ODCM Specification Table 6.12.1-1, deviations from the required sampling schedule are permitted due to malfunction of sampling equipment and other legitimate reasons.

Sample Location	Date In	Date Out	RunTime hours	Out-of-service hours	Comments
AS-3 61VA	01/29/08	02/05/08	121.93	49.33	Sampling Equipment Failure
AS-1 PG	02/12/08	02/19/08	132.90	36.85	Power Outage
AS-7 UH	02/12/08	02/19/08	165.63	6.47	Power Outage
AS-7 UH	02/26/08	03/04/08	163.03	0.57	Power Outage
AS-7 UH	03/18/08	03/25/08	164.87	1.77	Power Outage
AS-7 UH	04/01/08	04/08/08	163.08	3.62	Power Outage
AS-7 UH	05/06/08	05/13/08	169.20	2.0	Power Outage
AS-3 61VA	05/13/08	05/20/08	167.06	1.05	Power Outage
AS-3 61VA	05/20/08	05/27/08	30.25	140.40	Sampling Equipment Failure
AS-7 UH	05/20/08	05/27/08	166.50	0.67	Power Outage
AS-3 61VA	05/27/08	06/03/08	83.04	87.45	Sampling Equipment Failure
AS-7 UH	06/10/08	06/17/08	158.90	0.37	Power Outage
AS-7 UH	06/17/08	06/24/08	105.93	67.72	Sampling Equipment Failure
AS-7 UH	06/24/08	07/01/08	161.33	1.47	Power Outage
AS-7 UH	07/15/08	07/22/08	164.93	3.32	Power Outage
AS-7 UH	07/29/08	08/05/08	159.46	8.87	Power Outage
AS-7 UH	08/05/08	08/12/08	172.10	3.07	Power Outage
AS-1 PG	08/26/08	09/02/08	152.07	15.98	Power Outage
AS-7 UH	08/26/08	09/02/08	152.34	14.77	Power Outage
AS-1 PG	09/02/08	09/09/08	160.62	4.00	Power Outage
AS-7 UH	09/02/08	09/09/08	156.88	10.67	Power Outage
AS-3 61VA	09/02/08	09/09/08	93.35	70.57	Sampling Equipment Failure
AS-3 61VA	09/09/08	09/16/08	137.34	30.83	Sampling Equipment Failure
AS-7 UH	11/25/08	12/02/08	168.77	2.35	Power Outage

Based on the sample collection period reductions, air samples were collected the following percentages of the available time:

AS-1 PG	99%
AS-3 61VA	96%
AS-7 UH	99%

♦ Missed Samples

TLDs M-23 and M-25 were inaccessible due to high water level [M-23:1st & 2nd Quarters; M-25: 1st, 2nd, & 3rd Quarters]. Similarly located TLDs were reviewed and found consistent with previous years data, near background.

- **Unavailable Results**

  GGNS received analytical results in adequate time for inclusion in this report. In addition, GGNS' review identified no missing results.

Program Modifications

No program modifications took place during this sampling period.

Attachments

Attachment 1 contains results of TLD, air, water, sediment, fish, food products and special samples collected. TLDs were analyzed by AREVA NP Inc.. All remaining samples were analyzed by River Bend Station's (RBS) Environmental Laboratory. Attachment 1 also contains RBS' results from participation in the interlaboratory comparison program.

1.0 Introduction

1.1 Radiological Environmental Monitoring Program

GGNS 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 GGNS.
- 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 GGNS ODCM Table 6.12.1-1. A description of the GGNS REMP utilized to monitor the exposure pathways is provided in Table 1.1 and shown in Figures 1-2 and 1-3. GGNS may 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 sampling results with Section 3.0 providing a summary of results for the monitored exposure pathways.

1.3 Land Use Census

GGNS personnel conduct a land use census biannually, as required by ODCM Specification 6.12.2. Data for the most recent land use census is included. The purpose of this census is to identify changes in uses of land within five miles of GGNS that would require modifications to the REMP or the ODCM The most important criteria during this census are to determine location in each sector of the nearest:

1) Residence
2) Animal milked for human consumption
3) Garden of greater than 50 m^2 (500 ft^2) producing broadleaf vegetation.

When performed, GGNS personnel conduct the land use census by:

- Field surveys in each meteorological sector out to five miles in order to confirm:
  - Nearest permanent residence
  - Nearest unoccupied residence
  - Nearest garden and approximate size
  - Nearest milking animal.
- Identifying locations on maps, measuring distances to GGNS and recording results on surveillance data sheets.
- Comparing current land use census results to previous results.
- Contacting the Claiborne County Agent for verification of nearest dairy animals.

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	**Radioiodine and Particulates** 1 sample close to the SITE BOUNDARY having the highest calculated annual average groundlevel D/Q.	**AS-7 UH (Sector H, Radius 0.5 Miles)** – South-southeast of GGNS at the IBEW Union Hall.	Continuous sampler operation with sample collection per 7 days or as required by dust loading, whichever is more frequent	Radioiodine Cannister – I-131; 7 days Particulate Sampler – Gross beta radioactivity following filter change, composite (by location) for gamma isotopic; 92 days
	Radioiodine and Particulates 1 sample from the vicinity of a community having the highest calculated annual average groundlevel D/Q.	**AS-1 PG (Sector G, Radius 5.5 Miles)** – Southeast of GGNS at the Port Gibson City Barn.		
	Radioiodine and Particulates 1 sample from a control location 15 - 30 km (10 - 20 miles) distance.	**AS-3 61VA (Sector B, Radius 18 Miles)** – North-northeast of GGNS on Hwy 61, North of the Vicksburg Airport.		
Direct Radiation	**TLDs** An inner ring of stations in the general areas of the SITE BOUNDARY.	**M-16 (Sector A, Radius 0.9 Miles)** – Meteorological Tower. **M-17 (Sector C, Radius 0.5 Miles)** – South Side, Grand Gulf Road. **M-19 (Sector E, Radius 0.5 Miles)** – Eastern SITE BOUNDARY Property line, North-northeast of HWSA.	92 days	Gamma dose; 92 days

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	**TLDs** An inner ring of stations in the general areas of the SITE BOUNDARY.	**M-21 (Sector J, Radius 0.4 Miles)** – Near Former Training Center Building on Bald Hill Road. **M-22 (Sector G, Radius 0.5 Miles)** – Former RR Entrance Crossing On Bald Hill Road. **M-23 (Sector Q, Radius 0.5 Miles)** – Gin Lake Road 50 Yards North of Heavy Haul Road on Power Pole. **M-25 (Sector N, Radius 1.6 Miles)** – Radial Well Number 1. **M-28 (Sector L, Radius 0.9 Miles)** – Former Glodjo Residence. **M-94 (Sector R, Radius 0.8 Miles)** – Sector R Near Meteorological Tower.	92 days	Gamma dose; 92 days

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	**TLDs** An inner ring of stations in the general areas of the SITE BOUNDARY.	**M-95 (Sector F, Radius 0.5 mi)** – Spoils Area, fence of old storage area, near entrance gate **M-96 (Sector B, Radius 0.7 mi.)** – North Gate Fence **M-97 (Sector D, Radius 0.8 mi.)** – Grand Gulf Road entrance gate to spoils area **M-98 (Sector H, Radius 0.5 mi.)** – Bald Hill Road, across form Union Hall in curve **M-99 (Sector K, Radius 0.4 mi.)** – North Fence of old Ball Field near utility pole **M-100 (Sector C, Radius 0.6 mi.)** – Grand Gulf Road, across from L. Frazier	92 days	Gamma dose; 92 days
	TLDs An outer ring approximately 3 to 5 miles from the site.	**M-36 (Sector P, Radius 5.0 Miles)** – Curve on HW 608, Point Nearest GGNS at Power Pole. **M-40 (Sector M, Radius 2.3 Miles)** – Headly Drive, Near River Port Entrance.		

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> An outer ring approximately 3 to 5 miles from the site.	**M-48 (Sector K, Radius 4.8 Miles)** – 0.4 Miles South on Mont Gomer Road on West Side. **M-49 (Sector H, Radius 4.5 Miles)** – Fork in Bessie Weathers Road/Shaifer Road. **M-50 (Sector B, Radius 5.3 Miles)** – Panola Hunting Club Entrance. **M-55 (Sector D, Radius 5.0 Miles)** – Near Ingelside Karnac Ferry Road/Ashland Road Intersection. **M-57 (Sector F, Radius 4.5 Miles)** – Hwy 61, Behind the Welcome to Port Gibson Sign at Glensdale Subdivision.	92 days	Gamma dose; 92 days
	<u>TLDs</u> 8 stations in special interest areas such as population centers, nearby residences, schools, and in 1 or 2 areas to serve as control stations.	**M-01 (Sector E, Radius 3.5 Miles)** – Across the road from Lake Claiborne Entry Gate. (Special Interest) **M-07 (Sector G, Radius 5.5 Miles)** – AS-1 PG, Port Gibson City Barn. (Special Interest) **M-09 (Sector D, Radius 3.5 Miles)** – Warner Tully Y-Camp. (Special Interest) **M-10 (Sector A, Radius 1.5 Miles)** – Grand Gulf Military Park. (Special Interest)		

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> 8 stations in special interest areas such as population centers, nearby residences, schools, and in 1 or 2 areas to serve as control stations	**M-14 (Sector B, Radius 18.0 Miles)** – AS-3-61VA, Hwy 61, North of Vicksburg Airport. (Control) **M-33 (Sector P, Radius 12.5 Miles)** – Newellton, Louisiana Water Tower. (Special Interest) **M-38 (Sector M, Radius 9.5 Miles)** – Lake Bruin State Park, Entrance Road. (Special Interest) **M-39 (Sector M, Radius 13.0 Miles)** – St. Joseph, Louisiana, Auxiliary Water Tank. (Special Interest)	92 days	Gamma dose; 92 days

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>Surface Water</u> 1 sample upstream.	**MRUP (Sector R, Radius 1.8 Miles)** - At least 4500 ft upstream of the GGNS discharge point into the Mississippi River to allow adequate mixing of the Mississippi and Big Black Rivers.	92 days	Gamma isotopic and tritium analyses; 92 days
	1 sample downstream.	**MRDOWN (Sector N, Radius 1.6 Miles)** - At least 5000 ft downstream of the GGNS discharge point into the Mississippi River near Radial Well No. 1.		
	1 sample downstream during a Liquid Radwaste Discharge.	**MRDOWN (Sector P, Radius 1.3 Miles)** – Downstream of the GGNS discharge point into the Mississippi River near Radial Well No. 5.	366 days	Gamma isotopic and tritium analyses; 366 days
	1 sample from Outfall 007	**OUTFALL 007 (Sector N, Radius 0.2 Miles)** – Storm Drain System	31 days	Tritium; 31 days

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	**Groundwater** Samples from 2 sources.	**PGWELL (Sector G, Radius 5.0 Miles)** - Port Gibson Wells – Take from distribution system or one of the five wells. **CONSTWELL (Sector Q, Radius 0.4 Miles)** – GGNS Construction Water Well – Taken from distribution system or the well.	366 days	Gamma isotopic and tritium analyses; 366 days
	Sediment From Shoreline 1 sample from downstream area. 1 sample from upstream area.	**SEDHAM (Sector N, Radius 1.6 Miles)** – Downstream of the GGNS discharge point in the Mississippi River near Hamilton Lake outlet. **SEDCONT (Minimum of 100 yds)** – Upstream of the GGNS discharge point in the Mississippi River.	366 days	Gamma isotopic; 366 days
Ingestion	**Milk** 1 sample from milking animals within 8 km if milk is available commercially. 1 control sample (only if indicator exists) >8 km if milk is available.	Currently, no available milking animals within 8 km of GGNS. **ALCONT (Sector K, Radius 10.5 Miles)** - Located South-southwest of GGNS at Alcorn State University.	92 days when required	Gamma isotopic and I-131; 92 days

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	**Fish** 1 sample in vicinity of GGNS discharge point. 1 sample uninfluenced by GGNS discharge.	**FISHDOWN** – Downstream of the GGNS discharge point into the Mississippi River **FISHUP** – Upstream of the GGNS discharge point in the Mississippi River uninfluenced by plant operations.	366 days	Gamma isotopic on edible portion; 366 days
	Food Products 1 sample of broadleaf vegetation grown in one of two different offsite locations with highest anticipated annual average ground level D/Q if milk sampling is not performed. 1 sample of similar vegetation grown 15 – 30 km distant if milk sampling is not performed.	**VEG-J (Sector J, Radius 0.4 Miles)** – South of GGNS near former Training Center on Bald Hill Road. **VEG-CONT (Sector K, Radius 10.5 Miles)** – Alcorn State University south-southwest of GGNS when available, otherwise a location 15-30 km distant.	92 days when available	Gamma isotopic and I-131; 92 days

FIGURE 1-1

Exposure Pathways

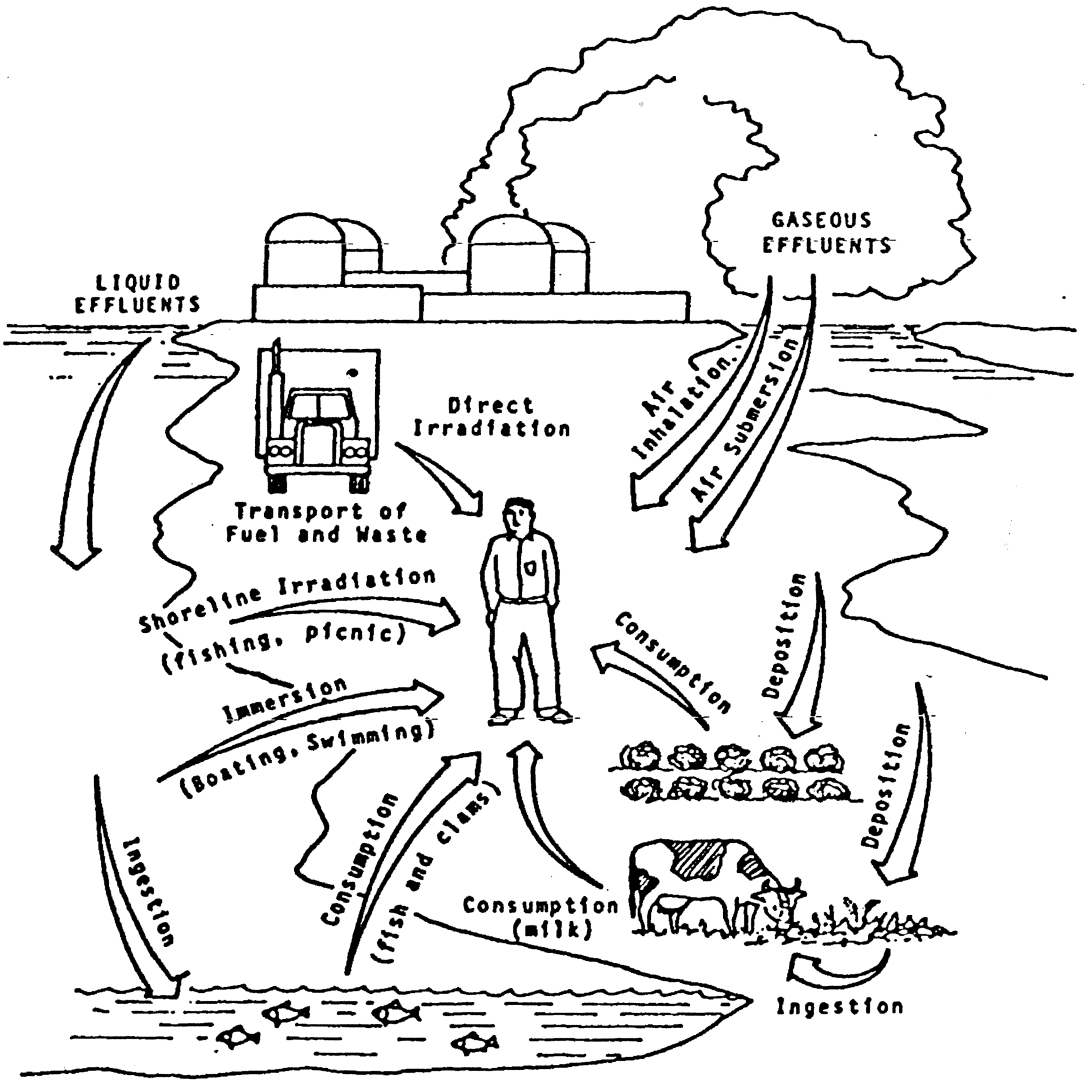


FIGURE 1-2

SAMPLE COLLECTION SITES – NEAR FIELD

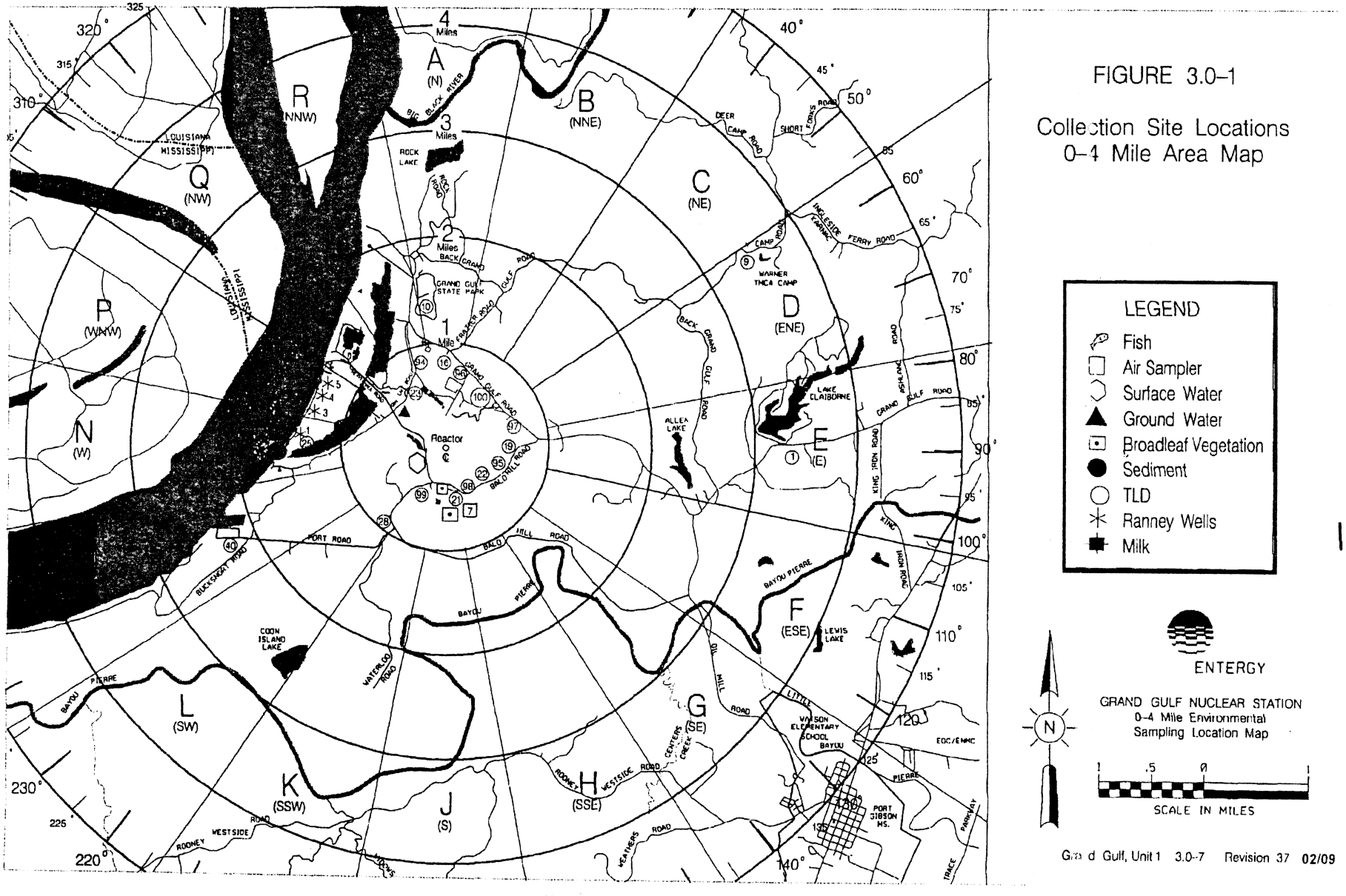
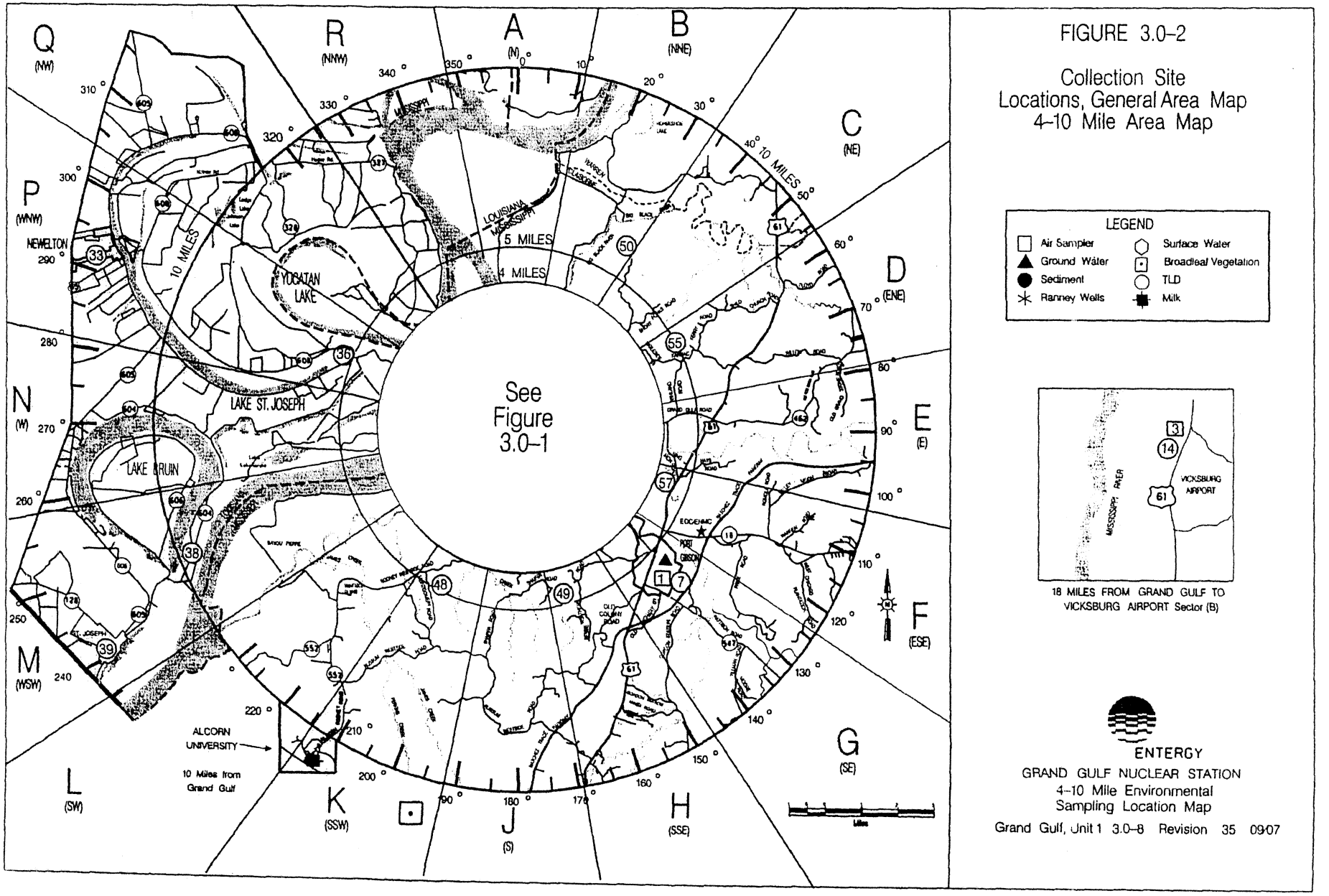


FIGURE 1-3

SAMPLE COLLECTION SITES – FAR FIELD



2.0 Interpretation and Trends of Results

2.1 Air Particulate and Radioiodine Sample Results

GGNS did not detect any plant related gamma emitting radionuclides in the quarterly air particulate composites or Iodine-131 in the radioiodine cartridges during the reporting period, as has been the case in previous years. The REMP detected radioactivity in this pathway attributable to other sources twice. These include the 25th Chinese nuclear test explosion in 1980, and the radioactive plume release due to reactor core degradation at Chernobyl Nuclear Power Plant in 1986. Therefore, the airborne exposure pathway has been unaffected by the operation of GGNS and airborne concentrations continue to be at background levels.

Table 3.1, which includes gross beta concentrations, provides a comparison of the indicator and control means and ranges, further emphasizes that the airborne pathway continues to remain at background levels. In the absence of plant-related gamma radionuclides, gross beta activity is attributed to naturally occurring radionuclides. Consistent trends are present for control and indicator locations. This further supports the presence of naturally occurring activity.

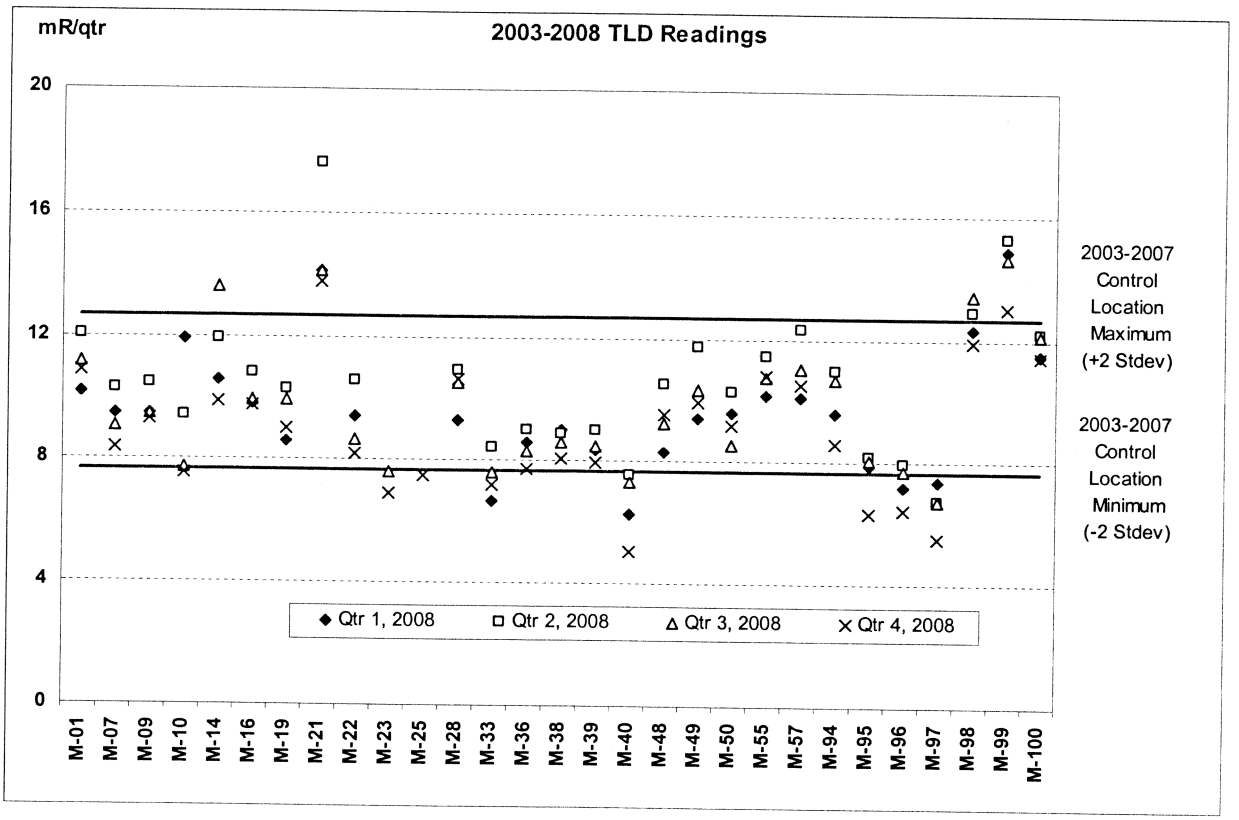
2.2 Thermoluminescent Dosimetry Sample Results

GGNS calculates dose by subtracting shield readings from control and indicator location readings and reports measured dose as net exposure normalized to 92 days. GGNS relies on comparison of the indicator locations to the control location as a measure of plant impact. Gamma radiation dose in the reporting period is compared to control location readings for previous years as shown in Figure 2-1.

GGNS' comparison of the indicator results to the control and to previous indicator results, as seen in Figure 2-1 and Table 3.1, indicates that plant operations had no significant impact on ambient radiation levels during the reporting period.

With the exception of TLD locations M-21 (Sector J, 0.4 miles), M-98 (Sector H 0.5 miles and M-99 (Sector K, 0.4 miles) direct radiation levels continue to remain at or near background. The dose rate at these locations is a result of increased Nitrogen-16 levels associated with hydrogen injection. Hydrogen injection into the feedwater system provides protection against Intergranular Stress Corrosion of plant components. Dose rates at locations M-21 [3.4 millirem per quarter], M-98 [1.2 millirem per quarter] and M-99 [3.0 millirem per quarter] above Control location M-14 (sector B, 18.0 miles) remain well below the limitations of 10 CFR 20.1301(a)(2) and 10CFR 20.1302(b)(2)(ii).

Figure 2-1


mR/qtr
2003-2008 TLD Readings
20
16
12
8
4
0
2003-2007 Control Location Maximum (+2 Stdev)
2003-2007 Control Location Minimum (-2 Stdev)
Qtr 1, 2008
Qtr 2, 2008
Qtr 3, 2008
Qtr 4, 2008
M-01
M-07
M-09
M-10
M-14
M-16
M-19
M-21
M-22
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M-96
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M-98
M-99
M-100

2.3 Water Sample Results

Surface water samples were collected from three indicator locations (Outfall 007, MRDOWN, and MRDOWN During Discharge) and one control location (MRUP) and analyzed for gamma emitting radionuclides and tritium. Plant related gamma emitting radionuclides and tritium remained undetectable in the upstream and downstream Mississippi River locations, which is consistent with preoperational and previous operational years. Storm waters contribute to Outfall 007 and can include tritium as a result of washout and entrainment of routine, previously monitored gaseous effluents. As a result, tritium levels below the minimum detection level requirement (3000 pCi/L) are occasionally observed. When detected, Tritium was measured at an average concentration of 545 ± 253 pCi/L in the Outfall 007 (indicator) location.

In addition to the tritium samples required by the REMP, four special surface water samples for gamma were collected at the Outfall 007 location. Plant related gamma emitting radionuclides remained undetectable in these samples.

Based on review of results and historical data, GGNS concluded that plant operations had no significant impact on this pathway during the reporting period.

Groundwater samples were collected from two locations (indicator and control) and analyzed for gamma emitting radionuclides and tritium. GGNS did not detect any plant related gamma emitting radionuclides or tritium in groundwater samples during the reporting period.

Based on review of results and historical data, GGNS concluded that plant operations had no significant impact on this pathway during the reporting period.

2.4 Sediment Sample Results

Sediment samples were collected from two ODCM Specification locations (indicator and control) and analyzed for gamma emitting radionuclides. In this reporting period, plant related gamma emitting radionuclides were below detectable concentrations in the upstream (control) and downstream (indicator) locations.

Based on review of results and historical data, GGNS concluded that plant operations had no significant impact on this pathway during the reporting period.

2.5 Milk Sample Results

GGNS personnel did not collect milk samples within five miles of the site in the reporting period due to the absence of milking animals. Since there are no dairies within five miles of GGNS, it is concluded GGNS' operation had no impact on this pathway.

2.6 Fish Sample Results

Fish samples were collected from two locations (indicator and control) and analyzed for gamma emitting radionuclides. GGNS did not detect any plant related gamma emitting radionuclides in fish samples during the reporting period, as has been the case in preoperational and previous operational years. These results indicate that this pathway has not been affected by plant operations.

2.7 Food Product (Vegetation) Sample Results

Food product samples were collected from control and indicator locations when available and analyzed for gamma emitting radionuclides. GGNS did not detect any plant related gamma emitting radionuclides in vegetation samples during the reporting period. Nuclides detected previously at the control and indicator locations are attributed to the Chernobyl release and atmospheric weapons testing. These results indicate that this pathway has not been affected by plant operations.

One sample of vegetation was collected at an onsite location to supplement the REMP. GGNS did not detect any plant related gamma emitting radionuclides in this vegetation sample during the reporting period.

2.8 Land Use Census Results

Results from the Land Use Census performed April 9-14, 2008 are included in this report. Methods utilized include: visual surveys, door to door surveys, telephone interviews, GPS, Aerial Photography, and consultation with the local county agent concerning dairy production in Claiborne County.

During the survey the following questions were asked:

1). Name of occupant
2). Address
3). Number of people residing at residence
4). Age group of occupants
5). Any farm animal raised for human consumption
6). Any dairy production
7). Maintain a garden

Changes from the previous Land Use Census were evaluated in accordance with GGNS surveillance 06-EN-S000-0-0002. The differences were compared to the locations and assumptions used in calculations for compliance with the Offsite Dose Calculation Manual (ODCM), LCO 6.11.6. It was determined that the locations and assumptions currently used in ODCM are more conservative than any of the changes. Determinations from the most recent Land Use Census results are:

- The child age group with the highest dose commitment is in Sector A (North) at 1.78 miles, GGNS ODCM calculations currently uses the maximum calculated dose from either Sector L (Southwest) at 0.89 miles or Sector C (Northeast) at 0.67 miles. Doses calculated at Sector A would be lower.

- One location recorded as unoccupied in the previous land use census is now occupied, sector E (East) at 0.83 miles, which becomes the nearest occupied residence. Because of downwind location and/or distance from the site, in no case will the occupancy of an existing unoccupied residence cause any ODCM critical receptor calculation results to be less conservative.

- No additional sampling locations are required as the onsite garden/vegetation sampling location (Sector J, 0.4 miles) is more conservative than changes identified in the land use census.

- Cattle are raised for human consumption (most notably Sector H, J, and K). GGNS uses the Grass/Cow/Meat pathway.

- The milk pathway does not need to be activated, no commercial dairy production is occurring within 5 miles. Individual in Sector F occasionally milks one of her cows for consumption if the cow is producing too much milk for the calf. This is not commercial dairy production as referenced by ODCM Table 6.12.1-1; therefore, the milk pathway does not need to be activated.

- Sectors M, N, P, and Q are remote areas in which the primary use is hunting. Area was surveyed by vehicle and aerial photographs. Also, all areas in Louisiana within 5 miles belong to a private hunting club. From the previous census, personnel at entrance gate were interviewed and responded, "No permanent residence or gardens, the area is posted".

- Gardens, regardless of size, were included in the census data.

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Table 2.1
Land Use Census Results

Parameter		Sector A	Sector B*	Sector C	Sector D
I. Nearest Occupied Residence	a. Distance (mile) b. Number of Occupants c. Degrees from true north	0.98 2 354.0	0.83 2 15.1	0.67 2 42.1	2.57 6 60.5
II. Nearest Unoccupied Residence (closer than occupied residence)	a. Distance (mile)	0.94	None	None	None
III. Nearest Milk Animal	a. Distance	None	None	None	None
IV. Nearest Broadleaf Garden	a. Distance (mile) b. Garden size (ft^2) c. Degrees from true north	1.78 ≈ 1200 352.2	1.52 ≈ 4050 21.9	0.67 ≈ 1250 42.1	2.86 ≈ 500 59.7
V. Census Comparison	a. Is nearest occupied residence in same location as last census? b. Is nearest milk animal in same location as last census? c. Is nearest broadleaf garden in same location as last census?	Yes N/A Yes	Yes N/A Yes	Yes N/A Yes	Yes N/A Yes

* Change from last census, see attached table of Land Use Census Changes

Table 2.1
Land Use Census Results

Parameter		Sector E *	Sector F *	Sector G	Sector H
I. Nearest Occupied Residence	a. Distance (mile) b. Number of Occupants c. Degrees from true north	0.83 1 95.1	2.25 1 101.5	2.10 3 129.7	1.11 6 152.5
II. Nearest Unoccupied Residence (closer than occupied residence)	a. Distance (mile)	None	None	1.93	1.08
III. Nearest Milk Animal	a. Distance	None	None	None	None
IV. Nearest Broadleaf Garden	a. Distance (mile) b. Garden size (ft^2) c. Degrees from true north	0.89 ≈1000 86.9	4.05 ≈50 114.3	3.81 ≈1600 129.1	1.11 ≈ 500 152.5
V. Census Comparison	a. Is nearest occupied residence in same location as last census? b. Is nearest milk animal in same location as last census? c. Is nearest broadleaf garden in same location as last census?	No N/A Yes	Yes N/A Yes	Yes N/A Yes	Yes N/A Yes

* Change from last census, see attached table of Land Use Census Changes

Table 2.1
Land Use Census Results

Parameter		Sector J	Sector K	Sector L	Sector M
I. Nearest Occupied Residence	a. Distance (mile) b. Number of Occupants c. Degrees from true north	3.16 2 174.3	2.23 1 196.9	0.89 2 219.7	None
II. Nearest UnoccupiedResidence (closer than occupied residence)	a. Distance (mile)	None	None	None	None
III. Nearest Milk Animal	a. Distance	None	None	None	None
IV. Nearest Broadleaf Garden	a. Distance (mile) b. Garden size (ft^2) c. Degrees from true north	3.16 ≈ 500 174.3	2.23 ≈ 2500 196.9	0.89 ≈ 300 219.7	None
V. Census Comparison	a. Is nearest occupied residence in same location as last census? b. Is nearest milk animal in same location as last census? c. Is nearest broadleaf garden in same location as last census?	Yes N/A Yes	Yes N/A Yes	Yes N/A Yes	N/A N/A N/A

* Change from last census, see attached table of Land Use Census Changes

Table 2.1
Land Use Census Results

Parameter		Sector N	Sector P	Sector Q	Sector R
I. Nearest Occupied Residence	a. Distance (mile) b. Number of Occupants c. Degrees from true north	None	None	None	1.11 2 346.1
II. Nearest UnoccupiedResidence (closer than occupied residence)	a. Distance (mile)	1.61	4.83	3.5	None
III. Nearest Milk Animal	a. Distance	None	None	None	None
IV. Nearest Broadleaf Garden	a. Distance (mile) b. Garden size (ft^2) c. Degrees from true north	None	None	None	1.46 ≈ 4000 342.9
V. Census Comparison	a. Is nearest occupied residence in same location as last census? b. Is nearest milk animal in same location as last census? c. Is nearest broadleaf garden in same location as last census?	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	Yes N/A Yes

* Change from last census, see attached table of Land Use Census Changes

Land Use Census Changes

SECTOR	PARAMETER	Reason for Change
B	Nearest Broadleaf Garden	Clarification of address
E	Nearest Occupied Residence	Residence is now occupied
E	Nearest Unoccupied Residence	Residence is now occupied by different individual. No house is unoccupied closer than occupied residence in this sector.
F	Nearest Occupied Residence	Residence is now occupied by different individual

2.9 Interlaboratory Comparison Results

River Bend Station (RBS) Environmental Laboratory analyzed interlaboratory comparison samples to fulfill the requirements of the ODCM Specifications 6.12.1. Attachment 1, Radiological Environmental Monitoring Report, contains these results in Table 9.1. GGNS' review of RBS' interlaboratory comparison indicated that 100% of results were within control limits for accuracy, and 100% of results were within control limits for precision.

3.0 Radiological Environmental Monitoring Program Summary

3.1 Program Results Summary

Table 3.1 summarizes the REMP results. GGNS 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 Summary

Name of Facility: Grand Gulf Nuclear Station Docket No: 50-416
Location of Facility: Claiborne County, Mississippi Reporting Period: January - December 2008

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)	GB 161	0.01	0.028 (106 / 106) [0.014 - 0.061]	AS-1 PG (Sector G, 5.5 mi)	0.028 (53 / 53) [0.014 - 0.058]	0.027 (55 / 55) [0.006 - 0.056]	0
	GS 12						
	Cs-134	0.05	<LLD	N/A	N/A	<LLD	0
	Cs-137	0.06	<LLD	N/A	N/A	<LLD	0
Airborne Iodine (pCi/m^3)	I-131 161	0.07	<LLD	N/A	N/A	<LLD	0
Inner Ring TLDs (mR/Qtr)	Gamma 51	(f)	10.2 (51 /51) [5.5-17.6]	M-21 (Sector K, 0.4 mi.)	14.9 (4 / 4) [13.8-17.6]	N/A	0
Outer Ring TLDs (mR/Qtr)	Gamma 28	(f)	9.4 (28 / 28) [5.1 – 12.3]	M-57 (Sector F, 4.5 mi.)	11.0 (4 / 4) [10.1-12.3]	N/A	0
Special Interest TLDs (mR/Qtr)	Gamma 28	(f)	9.2 (28 / 28) [7.2 – 12.0]	M-01 (Sector E, 3.5 mi.)	11.1 (4 / 4) [10.2-12.0]	N/A	0
Control TLDs (mR/Qtr)	Gamma 4	(f)	N/A	N/A	N/A	11.5 (4 / 4) [9.9-13.6]	0

TABLE 3.1

Radiological Environmental Monitoring Program Summary

Name of Facility: Grand Gulf Nuclear Station Docket No: 50-416
Location of Facility: Claiborne County, Mississippi Reporting Period: January - December 2008

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 24	3000	545 (3 / 19) [242 - 902]	Outfall 007 (Sector N, Radius 0.2 mi.)	545 (3 / 12) [242 - 902]	<LLD	0
	GS 10						
	I-131	15	<LLD	N/A	N/A	<LLD	0
	Mn-54	15	<LLD	N/A	N/A	<LLD	0
	Fe-59	30	<LLD	N/A	N/A	<LLD	0
	Co-58	15	<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
	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 Summary

Name of Facility: Grand Gulf Nuclear Station Docket No: 50-416
Location of Facility: Claiborne County, Mississippi Reporting Period: January - December 2008

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/1)	H-3 2	2000	<LLD	N/A	N/A	<LLD	0
	I-131 2	1	<LLD	N/A	N/A	<LLD	0
	GS 4						
	Mn-54	15	<LLD	N/A	N/A	<LLD	0
	Fe-59	30	<LLD	N/A	N/A	<LLD	0
	Co-58	15	<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
	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
Sediment (pCi/kg)	GS 4						
	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 Summary

Name of Facility: Grand Gulf Nuclear Station Docket No: 50-416
Location of Facility: Claiborne County, Mississippi Reporting Period: January - December 2008

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)	GS 3						
	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 9	60	<LLD	N/A	N/A	<LLD	0
	GS 9						
	Cs-134	60	<LLD	N/A	N/A	<LLD	0
	Cs-137	80	<LLD	N/A	N/A	<LLD	0
Vegetation (Special) pCi/Kg	I-131 1	60	<LLD	N/A	N/A	<LLD	0
	GS 1						
	Cs-134	60	<LLD	N/A	N/A	<LLD	0
	Cs-137	80	<LLD	N/A	N/A	<LLD	0

TABLE 3.1

Radiological Environmental Monitoring Program Summary

Name of Facility: Grand Gulf Nuclear Station Docket No: 50-416
Location of Facility: Claiborne County, Mississippi Reporting Period: January - December 2008

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 (Special) (pCi/l)	GS 4						
	I-131	15	<LLD	N/A	N/A	<LLD	0
	Mn-54	15	<LLD	N/A	N/A	<LLD	0
	Fe-59	30	<LLD	N/A	N/A	<LLD	0
	Co-58	15	<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
	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

a GB = Gross beta; I-131 = Iodine-131; H-3 = Tritium; GS = Gamma scan.

b LLD = Required lower limit of detection based on GGNS ODCM Table 6.12.1-3.

c Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parenthesis (F).

d Where applicable, locations are specified by name, distance from reactor site and meteorological sector.

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 GGNS ODCM Table 6.12.1-3.

Attachment 1

Radiological Monitoring Report

Summary of Monitoring Results

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Table 1.1
Sample Type: Air Particulate Filter and Radioiodine Cartridge
Analysis: Gross Beta and I-131
Units: pCi/m^3

AIR SAMPLE AS-1 PG - GGNS Nearest Community

LLD (pCi/m^3)	AS-1 PG		0.07	0.01
LAB ID	START DATE	END DATE	I-131	GROSS BETA
20080005	12/26/2007	1/2/2008	<0.016	0.030+/- 0.0011
20080063	1/2/2008	1/8/2008	<0.017	0.030+/- 0.0012
20080120	1/8/2008	1/15/2008	<0.017	0.029+/- 0.0012
20080175	1/15/2008	1/22/2008	<0.012	0.030+/- 0.0011
20080212	1/22/2008	1/29/2008	<0.017	0.035+/- 0.0012
20080238	1/29/2008	2/5/2008	<0.018	0.027+/- 0.0010
20080299	2/5/2008	2/12/2008	<0.021	0.029+/- 0.0010
20080314	2/12/2008	2/19/2008	<0.027	0.024+/- 0.0011
20080334	2/19/2008	2/26/2008	<0.024	0.023+/- 0.0009
20080349	2/26/2008	3/4/2008	<0.022	0.022+/- 0.0009
20080380	3/4/2008	3/11/2008	<0.027	0.025+/- 0.0010
20080389	3/11/2008	3/18/2008	<0.018	0.026+/- 0.0010
20080413	3/18/2008	3/25/2008	<0.026	0.021+/- 0.0010
20080421	3/25/2008	4/1/2008	<0.019	0.030+/- 0.0011
20080442	4/1/2008	4/8/2008	<0.017	0.020+/- 0.0009
20080494	4/8/2008	4/15/2008	<0.015	0.019+/- 0.0009
20080535	4/15/2008	4/22/2008	<0.020	0.024+/- 0.0010
20080546	4/22/2008	4/29/2008	<0.027	0.022+/- 0.0010

LLD (pCi/m^3)	AS-1 PG			0.07	0.01
LAB ID		**START DATE**	**END DATE**	**I-131**	**GROSS BETA**
20080591		4/29/2008	5/6/2008	<0.024	0.027+/- 0.0011
20080596		5/6/2008	5/13/2008	<0.024	0.022+/- 0.0011
20080616		5/13/2008	5/20/2008	<0.029	0.024+/- 0.0010
20080619		5/20/2008	5/27/2008	<0.022	0.023+/- 0.0010
20080657		5/27/2008	6/3/2008	<0.023	0.026+/- 0.0010
20080670		6/3/2008	6/10/2008	<0.023	0.014+/- 0.0008
20080706		6/10/2008	6/17/2008	<0.026	0.015+/- 0.0009
20080735		6/17/2008	6/24/2008	<0.020	0.033+/- 0.0012
20080797		6/24/2008	7/1/2008	<0.026	0.019+/- 0.0010
20080820		7/1/2008	7/8/2008	<0.024	0.028+/- 0.0011
20080844		7/8/2008	7/15/2008	<0.027	0.024+/- 0.0010
20080856		7/15/2008	7/22/2008	<0.020	0.042+/- 0.0013
20080894		7/22/2008	7/29/2008	<0.018	0.031+/- 0.0011
20080919		7/29/2008	8/5/2008	<0.019	0.024+/- 0.0011
20080941		8/5/2008	8/12/2008	<0.017	0.027+/- 0.0011
20080947		8/12/2008	8/19/2008	<0.016	0.032+/- 0.0012
20081032		8/19/2008	8/26/2008	<0.033	0.016+/- 0.0009
20081018		8/26/2008	9/2/2008	<0.043	0.058+/- 0.0024
20081050		9/2/2008	9/9/2008	<0.046	0.036+/- 0.0013
20081081		9/9/2008	9/16/2008	<0.032	0.018+/- 0.0006

LLD (pCi/m^3)	AS-1 PG		0.07	0.01
LAB ID	**START DATE**	**END DATE**	**I-131**	**GROSS BETA**
20081094	9/16/2008	9/23/2008	<0.022	0.034+/- 0.0008
20081119	9/23/2008	9/30/2008	<0.016	0.044+/- 0.0012
20081166	9/30/2008	10/7/2008	<0.016	0.042+/- 0.0012
20081191	10/7/2008	10/14/2008	<0.022	0.021+/- 0.0009
20081218	10/14/2008	10/21/2008	<0.016	0.033+/- 0.0011
20081235	10/21/2008	10/28/2008	<0.018	0.030+/- 0.0011
20081264	10/28/2008	11/4/2008	<0.013	0.041+/- 0.0012
20081284	11/4/2008	11/12/2008	<0.018	0.028+/- 0.0009
20081353	11/12/2008	11/18/2008	<0.025	0.025+/- 0.0010
20081388	11/18/2008	11/25/2008	<0.023	0.033+/- 0.0011
20081414	11/25/2008	12/2/2008	<0.028	0.039+/- 0.0012
20081419	12/2/2008	12/9/2008	<0.019	0.025+/- 0.0010
20081450	12/9/2008	12/16/2008	<0.017	0.019+/- 0.0008
20081470	12/16/2008	12/23/2008	<0.030	0.028+/- 0.0012
20081485	12/23/2008	12/30/2008	<0.022	0.027+/- 0.0010

Average:	0.028
Maximum:	0.058
Minimum:	0.014

Table 1.1
Sample Type: **Air Particulate Filter and Radioiodine Cartridge**
Analysis: Gross Beta and I-131
Units: pCi/m^3

AIR SAMPLE AS-3 61VA - GGNS - Control

LLD (pCi/m^3)	AS-3		0.07	0.01
LAB ID	**START DATE**	**END DATE**	**I-131**	**GROSS BETA**
20080006	12/26/2007	1/2/2008	<0.020	0.030+/- 0.0011
20080064	1/2/2008	1/8/2008	<0.022	0.027+/- 0.0011
20080121	1/8/2008	1/15/2008	<0.021	0.026+/- 0.0011
20080176	1/15/2008	1/22/2008	<0.013	0.032+/- 0.0012
20080213	1/22/2008	1/29/2008	<0.017	0.034+/- 0.0011
20080239	1/29/2008	2/5/2008	<0.055	0.056+/- 0.0026
20080300	2/5/2008	2/12/2008	<0.018	0.030+/- 0.0011
20080315	2/12/2008	2/19/2008	<0.016	0.023+/- 0.0009
20080335	2/19/2008	2/26/2008	<0.024	0.023+/- 0.0010
20080350	2/26/2008	3/4/2008	<0.026	0.022+/- 0.0009
20080381	3/4/2008	3/11/2008	<0.016	0.025+/- 0.0010
20080390	3/11/2008	3/18/2008	<0.025	0.024+/- 0.0010
20080414	3/18/2008	3/25/2008	<0.024	0.021+/- 0.0010
20080422	3/25/2008	4/1/2008	<0.019	0.024+/- 0.0010
20080443	4/1/2008	4/8/2008	<0.017	0.018+/- 0.0009
20080495	4/8/2008	4/15/2008	<0.026	0.021+/- 0.0010
20080536	4/15/2008	4/22/2008	<0.024	0.023+/- 0.0010
20080547	4/22/2008	4/29/2008	<0.029	0.023+/- 0.0010

LLD (pCi/m^3) AS-3			0.07	0.01
LAB ID	START DATE	END DATE	I-131	GROSS BETA
20080592	4/29/2008	5/6/2008	<0.027	0.025+/- 0.0011
20080597	5/6/2008	5/13/2008	<0.025	0.021+/- 0.0011
20080617	5/13/2008	5/20/2008	<0.031	0.023+/- 0.0010
20080620	5/20/2008	5/27/2008	<0.070	0.006+/- 0.0007
20080658	5/27/2008	6/3/2008	<0.055	0.052+/- 0.0033
20080671	6/3/2008	6/10/2008	<0.024	0.012+/- 0.0008
20080707	6/10/2008	6/17/2008	<0.029	0.017+/- 0.0009
20080736	6/17/2008	6/24/2008	<0.020	0.032+/- 0.0011
20080798	6/24/2008	7/1/2008	<0.024	0.022+/- 0.0010
20080821	7/1/2008	7/8/2008	<0.024	0.029+/- 0.0011
20080845	7/8/2008	7/15/2008	<0.020	0.023+/- 0.0010
20080857	7/15/2008	7/22/2008	<0.016	0.040+/- 0.0013
20080895	7/22/2008	7/29/2008	<0.020	0.030+/- 0.0011
20080920	7/29/2008	8/5/2008	<0.017	0.021+/- 0.0011
20080942	8/5/2008	8/12/2008	<0.017	0.027+/- 0.0011
20080948	8/12/2008	8/19/2008	<0.014	0.038+/- 0.0013
20081019	8/26/2008	9/2/2008	<0.025	0.029+/- 0.0011
20081033	8/19/2008	8/26/2008	<0.037	0.017+/- 0.0009
20081051	9/2/2008	9/9/2008	<0.068	0.028+/- 0.0018
20081082	9/9/2008	9/11/2008	<0.069	0.024+/- 0.0023

LLD (pCi/m^3)	AS-3			0.07	0.01
LAB ID		START DATE	END DATE	I-131	GROSS BETA
20081084		9/12/2008	9/16/2008	<0.044	0.021+/- 0.0010
20081085		9/10/2008	9/16/2008	<0.034	0.018+/- 0.0007
20081095		9/16/2008	9/23/2008	<0.025	0.035+/- 0.0008
20081120		9/23/2008	9/30/2008	<0.016	0.044+/- 0.0012
20081167		9/30/2008	10/7/2008	<0.019	0.043+/- 0.0012
20081192		10/7/2008	10/14/2008	<0.017	0.022+/- 0.0009
20081219		10/14/2008	10/21/2008	<0.016	0.032+/- 0.0011
20081236		10/21/2008	10/28/2008	<0.016	0.027+/- 0.0010
20081265		10/28/2008	11/4/2008	<0.020	0.041+/- 0.0012
20081285		11/4/2008	11/12/2008	<0.019	0.025+/- 0.0010
20081354		11/11/2008	11/18/2008	<0.022	0.026+/- 0.0010
20081389		11/18/2008	11/25/2008	<0.024	0.034+/- 0.0011
20081415		11/25/2008	12/2/2008	<0.021	0.041+/- 0.0012
20081420		12/2/2008	12/9/2008	<0.020	0.027+/- 0.0010
20081451		12/9/2008	12/16/2008	<0.017	0.021+/- 0.0009
20081471		12/16/2008	12/22/2008	<0.032	0.025+/- 0.0012
20081486		12/22/2008	12/30/2008	<0.021	0.030+/- 0.0010
Average:					0.027
Maximum:					0.056
Minimum:					0.006

Table 1.1
Sample Type: **Air Particulate Filter and Radioiodine Cartridge**
Analysis: Gross Beta and I-131
Units: pCi/m^3

AIR SAMPLE AS-7 - GGNS - Indicator

LLD (pCi/m^3)	AS-7UH			0.07	0.01
LAB ID		**START DATE**	**END DATE**	**I-131**	**GROSS BETA**
20080007		12/26/2007	1/2/2008	<0.017	0.031+/- 0.0011
20080065		1/2/2008	1/8/2008	<0.022	0.029+/- 0.0011
20080122		1/8/2008	1/15/2008	<0.022	0.025+/- 0.0011
20080177		1/15/2008	1/22/2008	<0.018	0.028+/- 0.0011
20080214		1/22/2008	1/29/2008	<0.017	0.037+/- 0.0012
20080240		1/29/2008	2/5/2008	<0.020	0.024+/- 0.0010
20080301		2/5/2008	2/12/2008	<0.018	0.031+/- 0.0011
20080316		2/12/2008	2/19/2008	<0.019	0.030+/- 0.0011
20080336		2/19/2008	2/26/2008	<0.028	0.021+/- 0.0009
20080351		2/26/2008	3/4/2008	<0.030	0.024+/- 0.0010
20080382		3/4/2008	3/11/2008	<0.022	0.025+/- 0.0010
20080391		3/11/2008	3/18/2008	<0.017	0.026+/- 0.0010
20080415		3/18/2008	3/25/2008	<0.023	0.021+/- 0.0010
20080423		3/25/2008	4/1/2008	<0.017	0.027+/- 0.0010
20080444		4/1/2008	4/8/2008	<0.013	0.020+/- 0.0010
20080496		4/8/2008	4/15/2008	<0.024	0.020+/- 0.0009
20080537		4/15/2008	4/22/2008	<0.023	0.024+/- 0.0010
20080548		4/22/2008	4/29/2008	<0.024	0.023+/- 0.0010

LLD (pCi/m^3)	AS-7UH			0.07	0.01
LAB ID		START DATE	END DATE	I-131	GROSS BETA
20080593		4/29/2008	5/6/2008	<0.025	0.025+/- 0.0011
20080598		5/6/2008	5/13/2008	<0.019	0.021+/- 0.0011
20080618		5/13/2008	5/20/2008	<0.024	0.023+/- 0.0010
20080621		5/20/2008	5/27/2008	<0.020	0.023+/- 0.0010
20080659		5/27/2008	6/3/2008	<0.025	0.022+/- 0.0010
20080672		6/3/2008	6/10/2008	<0.024	0.014+/- 0.0008
20080708		6/10/2008	6/17/2008	<0.028	0.016+/- 0.0009
20080737		6/17/2008	6/24/2008	<0.061	0.061+/- 0.0030
20080799		6/24/2008	7/1/2008	<0.022	0.018+/- 0.0009
20080822		7/1/2008	7/8/2008	<0.023	0.027+/- 0.0011
20080846		7/8/2008	7/15/2008	<0.022	0.023+/- 0.0010
20080858		7/15/2008	7/22/2008	<0.014	0.043+/- 0.0013
20080896		7/22/2008	7/29/2008	<0.018	0.032+/- 0.0012
20080921		7/29/2008	8/5/2008	<0.017	0.022+/- 0.0011
20080943		8/5/2008	8/12/2008	<0.012	0.031+/- 0.0011
20080949		8/12/2008	8/19/2008	<0.017	0.032+/- 0.0013
20081020		8/26/2008	9/2/2008	<0.028	0.030+/- 0.0012
20081034		8/19/2008	8/26/2008	<0.031	0.017+/- 0.0009
20081052		9/2/2008	9/9/2008	<0.029	0.019+/- 0.0007
20081083		9/9/2008	9/16/2008	<0.026	0.018+/- 0.0006

LLD (pCi/m^3)	AS-7UH			0.07	0.01
LAB ID		START DATE	END DATE	I-131	GROSS BETA
20081096		9/16/2008	9/23/2008	<0.025	0.032+/- 0.0008
20081121		9/23/2008	9/30/2008	<0.019	0.049+/- 0.0013
20081168		9/30/2008	10/7/2008	<0.016	0.045+/- 0.0012
20081193		10/7/2008	10/14/2008	<0.021	0.021+/- 0.0009
20081220		10/14/2008	10/21/2008	<0.019	0.033+/- 0.0011
20081237		10/21/2008	10/28/2008	<0.016	0.028+/- 0.0010
20081266		10/28/2008	11/4/2008	<0.018	0.043+/- 0.0012
20081286		11/4/2008	11/12/2008	<0.020	0.025+/- 0.0010
20081355		11/11/2008	11/18/2008	<0.022	0.024+/- 0.0009
20081390		11/18/2008	11/25/2008	<0.025	0.034+/- 0.0011
20081416		11/25/2008	12/2/2008	<0.027	0.039+/- 0.0012
20081421		12/2/2008	12/9/2008	<0.017	0.023+/- 0.0010
20081452		12/9/2008	12/16/2008	<0.015	0.019+/- 0.0008
20081472		12/16/2008	12/23/2008	<0.024	0.026+/- 0.0011
20081487		12/23/2008	12/30/2008	<0.025	0.029+/- 0.0010
Average:					0.027
Maximum:					0.061
Minimum:					0.014

Table 1.2
Sample Type: **Air Particulate Filter**
Analysis: Gamma Isotopic
Units: pCi/m^3

AIR PARTICULATE FILTER QUARTERLY COMPOSITES (GAMMA) - GGNS

LLD (pCi/m^3)			**0.05**	**0.06**
LAB ID	**LOCATION**	**DATE**	**CS-134**	**CS-137**
20080452	AS-1 PG	2/9/2008	< 0.004	< 0.003
20080453	AS-3 61VA	2/9/2008	< 0.005	< 0.004
20080454	AS-7 UH	2/9/2008	< 0.004	< 0.004
20080807	AS-1 PG	5/13/2008	< 0.004	< 0.003
20080808	AS-3 61VA	5/13/2008	< 0.005	< 0.004
20080809	AS-7 UH	5/13/2008	< 0.005	< 0.004
20081149	AS-1 PG	8/15/2008	< 0.006	< 0.005
20081150	AS-3 61VA	8/16/2008	< 0.005	< 0.004
20081151	AS-7 UH	8/15/2008	< 0.004	< 0.003
20081493	AS-1 PG	11/14/2008	< 0.002	< 0.001
20081494	AS-3 61VA	11/15/2008	< 0.005	< 0.003
20081495	AS-7 UH	11/14/2008	< 0.004	< 0.004

Table 2.1
Sample Type: **Thermoluminescent Dosimeters**
Analysis: Gamma Dose
Units: mrem/Qtr

Inner Ring - Within General Area of Site Boundary (ODCM Specifications)					
Station	**1st Qtr**	**2nd Qtr**	**3rd Qtr**	**4th Qtr**	**Annual Mean**
M-16	9.8	10.8	10.0	9.8	10.1
M-19	8.6	10.3	9.9	9.0	9.5
M-21 *	14.1	17.6	14.1	13.8	14.9
M-22	9.4	10.6	8.7	8.2	9.2
M-23	**	**	7.6	6.9	7.3
M-25	**	**	**	7.5	7.5
M-28	9.3	10.9	10.5	10.6	10.3
M-94	9.6	11.0	10.7	8.6	10.0
M-95	7.9	8.2	8.1	6.3	7.6
M-96	7.2	7.9	7.7	6.5	7.3
M-97	7.4	6.8	6.7	5.5	6.6
M-98	12.3	12.9	13.4	11.9	12.7
M-99	14.9	15.3	14.7	13.0	14.5
M-100	11.5	12.2	12.2	11.5	11.8

**No Data
*Location with highest annual mean

Outer Ring – Approximately Three (3) to Five (5) Miles from the Site (ODCM Specifications)					
Station	**1st Qtr**	**2nd Qtr**	**3rd Qtr**	**4th Qtr**	**Annual Mean**
M-36	8.6	9.0	8.3	7.7	8.4
M-40	6.3	7.5	7.3	5.1	6.6
M-48	8.3	10.5	9.3	9.6	9.4
M-49	9.4	11.8	10.3	10.0	10.4
M-50	9.6	10.3	8.5	9.2	9.4
M-55	10.2	11.5	10.8	10.8	10.8
M-57 *	10.1	12.3	11.1	10.5	11.0

*** Location with highest annual mean.**

Table 2.2
Sample Type: **Thermoluminescent Dosimeters**
Analysis: Gamma Dose
Units: mrem/Qtr

Special Interest Areas – Population Centers & Schools (ODCM Specifications)					
Station	**1st Qtr**	**2nd Qtr**	**3rd Qtr**	**4th Qtr**	**Annual Mean**
M-01*	10.2	12.0	11.2	10.9	11.1
M-07	9.5	10.3	9.1	8.4	9.3
M-09	9.5	10.5	9.5	9.3	9.7
M-10	11.9	9.4	7.7	7.5	9.1
M-33	8.2	8.4	7.6	7.2	7.9
M-38	9.0	8.9	8.6	8.1	8.6
M-39	8.4	9.0	8.5	8.0	8.5

*** Location with highest annual mean.**

Table 2.3
Sample Type: **Thermoluminescent Dosimeters**
Analysis: Gamma Dose
Units: mrem/Qtr

Special Interest Areas – Control (ODCM Specifications)					
Station	**1st Qtr**	**2nd Qtr**	**3rd Qtr**	**4th Qtr**	**Annual Mean**
M-14	10.6	11.9	13.6	9.9	11.5

Table 3.1
Sample Type: **Surface Water**
Analysis: Gamma Isotopic
Units: pCi/l

SURFACE WATER SAMPLES (GAMMA) - GGNS

LLD (pCi/l)			15	15	30	15	30	15	30	15	15	18	60	15
LAB ID	**LOCATION**	**DATE**	**MN-54**	**C0-58**	**FE-59**	**CO-60**	**ZN-65**	**NB-95**	**ZR-95**	**I-131**	**CS-134**	**CS-137**	**BA-140**	**LA-140**
20080158	MR DOWN	1/15/2008	< 12.21	< 11.32	< 18.80	< 11.90	< 26.92	< 11.46	< 18.12	< 14.12	< 13.04	< 11.92	< 33.36	< 12.22
20080160	MRUP	1/15/2008	< 5.31	< 9.10	< 19.00	< 8.77	< 21.27	< 11.66	< 21.01	< 12.68	< 10.01	< 8.50	< 45.41	< 13.11
20080460	MR DOWN	4/8/2008	< 9.18	< 7.85	< 15.46	< 6.63	< 18.15	< 9.31	< 12.03	< 12.92	< 7.73	< 8.00	< 36.17	< 11.80
20080462	MRUP	4/8/2008	< 7.84	< 5.84	< 12.14	< 6.22	< 19.20	< 8.51	< 13.44	< 11.94	< 8.57	< 6.97	< 27.50	< 12.85
20080815	MR DOWN	7/8/2008	< 13.53	< 11.03	< 18.09	< 10.66	< 21.45	< 13.38	< 19.16	< 13.41	< 8.95	< 11.03	< 42.41	< 11.37
20080817	MRUP	7/8/2008	< 7.96	< 6.15	< 19.00	< 8.77	< 23.36	< 10.27	< 17.74	< 13.83	< 8.55	< 10.25	< 49.18	< 10.27
20081214	MR DOWN	10/21/2008	< 6.62	< 7.50	< 13.34	< 9.34	< 15.62	< 10.10	< 14.12	< 7.72	< 10.12	< 9.38	< 31.86	< 12.00
20081216	MRUP	10/21/2008	< 8.11	< 6.57	< 11.32	< 7.62	< 24.14	< 10.36	< 16.59	< 11.61	< 9.85	< 6.01	< 33.20	< 11.05
20081374	Annual SW during DC	11/19/2008	< 6.80	< 6.86	< 13.48	< 7.67	< 17.18	< 7.31	< 15.44	< 14.55	< 7.83	< 6.70	< 28.96	< 11.67
20081376	Annual SW * during DC GG	11/19/2008	< 6.75	< 7.91	< 14.07	< 7.42	< 12.87	< 9.89	< 10.55	< 14.19	< 8.72	< 7.53	< 34.36	< 9.79

"GG" – indicates duplicate sample.* Annual Sample collected during liquid discharge

Table 3.2
Sample Type: **Surface Water**
Analysis: Tritium
Units: pCi/l

SURFACE WATER SAMPLES (TRITIUM) - GGNS

LLD (pCi/l)	SURFACE WATER H-3		3000
LAB ID	**LOCATION**	**DATE**	**TRITIUM**
20080159	MR DOWN	1/15/2008	< 579
20080161	MRUP	1/15/2008	< 583
20080162	MRDOWN GG	1/15/2008	< 575
20080163	MRUP GG	1/15/2008	< 583
20080461	MR DOWN	4/8/2008	< 616
20080463	MRUP	4/8/2008	< 614
20080816	MR DOWN	7/8/2008	< 577
20080818	MRUP	7/8/2008	< 595
20081215	MR DOWN	10/21/2008	< 572
20081217	MRUP	10/21/2008	< 558
20081375	MR DOWN*	11/19/2008	< 580
20081381	MR DOWN* GG	11/19/2008	< 580
20080062	OUTFALL 007	1/7/2008	< 570
20080282	OUTFALL 007	2/7/2008	< 574
20080364	OUTFALL 007	3/6/2008	< 568
20080446	OUTFALL 007	4/4/2008	< 579
20080590	OUTFALL 007	5/6/2008	< 575
20080662	OUTFALL 007	6/4/2008	242+/- 240.50
20080819	OUTFALL 007	7/8/2008	< 576
20080922	OUTFALL 007	8/4/2008	490-/+ 255.38
20081035	OUTFALL 007	9/9/2008	< 576
20081154	OUTFALL 007	10/6/2008	< 564
20081287	OUTFALL 007	11/10/2008	< 558
20081445	OUTFALL 007	12/11/2008	902+/- 262.66

* Annual Sample collected during liquid discharge

"GG" – indicates duplicate sample.

Table 4.1
Sample Type: **Groundwater**
Analysis: Gamma Isotopic
Units: pCi/l

GROUND WATER SAMPLES (GAMMA) - GGNS

LLD (pCi/l)			15	15	30	15	30	15	30	15	15	18	60	15
LAB ID	**LOCATION**	**DATE**	**MN-54**	**C0-58**	**FE-59**	**CO-60**	**ZN-65**	**NB-95**	**ZR-95**	**I-131**	**CS-134**	**CS-137**	**BA-140**	**LA-140**
20081473	PGWELLGG	12/15/2008	<4.97	<5.30	<11.96	<4.04	<10.06	<6.18	<8.70	<14.99	<5.30	<5.66	<34.81	<13.24
20081475	PGWELL	12/15/2008	<4.68	<4.43	<11.11	<5.16	<8.05	<6.50	<9.01	<13.65	<4.72	<4.57	<32.22	<11.83
20081477	CONSTWELL3 GG	12/16/2008	<4.47	<3.97	<9.54	<4.13	<9.86	<5.69	<8.67	<14.99	<4.80	<4.36	<28.85	<8.70
20081479	CONSTWELL3	12/16/2008	<4.39	<4.85	<9.66	<3.61	<8.79	<6.36	<8.01	<13.52	<4.21	<4.23	<28.82	<10.76

"GG" – indicates duplicate sample.

Table 4.2
Sample Type: **Groundwater**
Analysis: Tritium
Units: pCi/l

GROUND WATER SAMPLES (TRITIUM) - GGNS

LLD (pCi/l)			2000
LAB ID	**LOCATION**	**DATE**	**TRITIUM**
20081476	PGWELL	12/15/2008	<565.77
20081480	CONSTWELL3	12/16/2008	<568.07

Table 4.3
Sample Type: **Groundwater**
Analysis: Iodine
Units: pCi/l

GROUND WATER SAMPLES (Iodine-131) - GGNS

LLD(pCi/l)			1.0
LAB ID	**LOCATION**	**DATE**	**I-131**
20081476	PGWELL	12/15/2008	0.898
20081480	CONSTWELL3	12/16/2008	0.858

Table 5.1
Sample Type: **Sediment**
Analysis: Gamma Isotopic
Units: pCi/kg

SEDIMENT SAMPLES (GAMMA) - GGNS

LLD (pCi/KG)			150	180
LAB ID	**LOCATION**	**DATE**	**CS-134**	**CS-137**
20081377	SEDHAM	11/19/2008	<30.16	<36.36
20081378	SEDHAM GG	11/19/2008	<23.07	<31.56
20081379	SEDCONT	11/19/2008	<20.00	<20.63
20081380	SEDBAR	11/19/2008	<36.37	<41.13

"GG" – indicates duplicate sample.

Table 6.1
Sample Type: **Fish**
Analysis: Gamma Isotopic
Units: pCi/kg

FISH SAMPLES (GAMMA) - GGNS

LLD (pCi/kg)			130	130	260	130	260	130	150
LAB ID	**LOCATION**	**DATE**	**MN-54**	**C0-58**	**FE-59**	**CO-60**	**ZN-65**	**CS-134**	**CS-137**
20081100	FISHUP	9/17/2008	<23.19	<27.75	<75.84	<30.46	<81.27	<24.79	<27.27
20081101	FISHDOWN	9/17/2008	<23.68	<21.09	<52.99	<32.50	<62.92	<18.01	<17.21
20081102	FISHUP GG	9/17/2008	<23.68	<22.54	<56.83	<28.56	<47.27	<19.69	<20.89

Table 7.1
Sample Type: **Food Products**
Analysis: Iodine-131 and Gamma Isotopic
Units: pCi/kg

VEGETATION SAMPLES (GAMMA) - GGNS

LLD (pCi/kg)			60	60	80
LAB ID	**LOCATION**	**DATE**	**I-131**	**CS-134**	**CS-137**
20080134	VEG-CONT	1/15/2008	<59.89	<53.95	<45.81
20080135	VEG-J	1/15/2008	<47.55	<39.62	<43.92
20080136	VEG-J GG	1/15/2008	<55.31	<43.96	<49.11
20080464	VEG-CONT	4/8/2008	<44.48	<38.77	<31.78
20080465	VEG-J	4/8/2008	<50.34	<32.29	<26.60
20080849	VEG-CONT	7/23/2008	<58.98	<54.99	<47.29
20080850	VEG-J	7/23/2008	<54.98	<59.67	<41.74
20081267	VEG-CONT	10/31/2008	<55.59	<33.38	<43.57
20081268	VEG-J	11/4/2008	<57.08	<59.68	<65.56

"GG" – indicates duplicate sample.

Table 8.1
Sample Type: **Special Samples**
Analysis: Gamma Isotopic
Units: pCi/kg

SPECIAL VEGETATION SAMPLES (GAMMA) – GGNS

LLD (pCi/kg)			60	60	80
LAB ID	**LOCATION**	**DATE**	**I-131**	**CS-134**	**CS-137**
20081043	VEG-J	9/10/2008	<55.83	<32.46	<42.14

SPECIAL SURFACE WATER SAMPLES (GAMMA) – GGNS

LLD (pCi/l)			15	15	30	15	30	15	30	15	15	18	60	15
LAB ID	**LOCATION**	**DATE**	**MN-54**	**C0-58**	**FE-59**	**CO-60**	**ZN-65**	**NB-95**	**ZR-95**	**I-131**	**CS-134**	**CS-137**	**BA-140**	**LA-140**
20080665	OUTFALL 007	6/6/2008	<6.68	<8.82	<20.19	<7.91	<20.77	<6.69	<17.69	<14.51	<8.45	< 11.13	<33.07	<6.24
20080742	OUTFALL 007	6/24/2008	<8.43	<7.63	<13.25	<8.29	<12.14	<8.07	<15.34	<13.81	<8.54	< 6.77	<34.18	<12.31
20081036	OUTFALL 007	9/9/2008	<8.30	<7.85	<22.85	<8.22	<23.14	<11.09	<14.55	<10.73	<9.73	< 9.98	<35.52	<11.92
20081288	OUTFALL 007	11/10/2008	<9.58	<7.22	<13.09	<8.62	< 20.07	<8.51	<15.13	<10.54	<9.67	< 10.42	<28.57	<12.56

Table 9.1
Sample Type: **Interlaboratory Comparison**
Analysis: Gross Beta, Tritium, Iodine-131 and Gamma Isotopic

RIVER BEND STATION

ENVIRONMENTAL (CROSS-CHECK) PROGRAM PARTICIPATION RESULTS

Sample Type (units)	Analytics #	Date	Analysis	Known value (a)	RBS Value	RBS N-DEV (b)	RBS N-RANGE (c)
Face Loaded F&J Charcoal Cartridge	E5943-125	6/19/2008	I-131	8.45E+01	8.23E+01	-0.60	0.22
Gross Beta in 1 Liter Water	E5942-125	6/19/2008	BETA	1.49E+02	1.55E+02	0.45	0.25
(pCi/liter) Gamma in Water Sample	E5941-125	6/19/2008	Cr-51	1.88E+02	1.70E+02	-2.22	2.16
			Mn-54	1.84E+02	2.04E+02	2.50	0.21
			Co-58	8.42E+01	8.55E+01	0.34	0.42
			Fe-59	1.25E+02	1.40E+02	2.69	0.71
			Co-60	1.42E+02	1.47E+02	0.77	0.19
			Zn-65	1.72E+02	1.76E+02	0.60	0.49
			I-131	4.53E+01	4.86E+01	1.68	1.87
			Cs-134	1.04E+02	1.04E+02	-0.08	0.30
			Cs-137	1.58E+02	1.63E+02	0.77	0.41
			Ce-141	2.37E+02	2.36E+02	-0.14	0.24
Tritium in Water	E6263-125	9/18/2008	H-3	1.14E+04	1.18E+04	0.49	0.09
Gross Beta on 47mm Air Particulate Filter	E6264-125	9/18/2008	BETA	9.51E+01	8.52E+01	-1.39	0.01
Gamma Emitters on 47 mm (pCi/filter)	E6265-125	9/18/08	Cr-51	2.49E+02	2.50E+02	0.07	0.79
			Mn-54	9.84E+01	1.07E+02	2.11	0.23
			Co-58	1.06E+02	1.05E+02	-0.12	0.28
			Fe-59	8.56E+01	9.52E+01	2.59	0.44
			Co-60	1.39E+02	1.40E+02	0.16	0.19
			Zn-65	1.89E+02	1.90E+02	0.14	0.44
			Cs-134	1.37E+02	1.33E+02	-0.76	0.16
			Cs-137	9.60E+01	9.66E+01	0.14	0.38
			Ce-141	9.55E+01	9.77E+01	0.54	0.25
Gamma Emitters in 1 Liter Soil (pCi/gram)	E6266-125	9/18/2008	Cr-51	8.33E-01	8.66E-01	0.95	0.42
			Mn-54	3.29E-01	3.69E-01	2.92	0.17
			Co-58	3.53E-01	3.66E-01	0.88	0.25
			Fe-59	2.86E-01	3.15E-01	2.40	0.47
			Co-60	4.64E-01	4.78E-01	0.75	0.21
			Zn-65	6.32E-01	6.79E-01	1.78	0.16
			Cs-134	4.59E-01	4.61E-01	0.09	0.14
			Cs-137	4.16E-01	4.47E-01	1.82	0.21
			Ce-141	3.19E-01	3.43E-01	1.81	0.18

RIVER BEND STATION							
ENVIRONMENTAL (CROSS-CHECK) PROGRAM PARTICIPATION RESULTS							
Sample Type (units)	Analytics #	Date	Analysis	Known Value (a)	RBS Value	RBS N-DEV (b)	RBS N-RANGE (c)
Gamma Emitters in Milk (pCi/liter)	E5944-125	6/19/2008	Cr-51	1.38E+02	1.42E+02	0.61	2.74
			Mn-54	1.35E+02	1.49E+02	2.45	0.31
			Co-58	6.19E+01	6.21E+01	0.09	0.84
			Fe-59	9.17E+01	9.87E+01	1.75	0.67
			Co-60	1.04E+02	1.07E+02	0.68	0.46
			Zn-65	1.27E+02	1.34E+02	1.30	0.34
			I-131	7.14E+01	7.12E+01	-0.07	0.58
			Cs-134	7.67E+01	7.80E+01	0.40	0.45
			Cs-137	1.16E+02	1.19E+02	0.67	0.21
			Ce-141	1.74E+02	1.77E+02	0.34	0.41

NOTES:

(a) The known value as determined by Analytics.

(b) The normalized deviation from the "known" value is computed from the deviation and the standard error of the mean; ±2.00 is the warning limit and ±3.00 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.

100% of interlaboratory crosscheck results were within control limits for accuracy and 100% were within control limits for precision.