VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

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United States Nuclear Regulatory Commission
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VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)
NORTH ANNA POWER STATION UNIT NOS. 1 AND 2
INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI)
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

In accordance with North Anna Units 1 and 2 Technical Specification 5.6.2 and the North Anna Independent Spent Fuel Storage Installation Technical Specification 5.5.2b, enclosed is the 2009 Annual Radiological Environmental Operating Report. The Radiological Environmental Operating Report provides the details associated with the Radiological Environmental Monitoring Program.

If you have any questions or require additional information, please contact Page Kemp at (540) 894-2295.

Very truly yours,

N. Larry Lane
Site Vice President

Enclosure

Commitments made in this letter: None

IE25
NMSS01

NRR
NMSS

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Director, Nuclear Material Safety and Safeguards
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

NRC Senior Resident Inspector
North Anna Power Station

Dominion

North Anna Power Station

Radiological Environmental Monitoring Program

January 1, 2009 to December 31, 2009

Prepared by

Dominion, North Anna Power Station

Annual Radiological Environmental Operating Report

North Anna Power Station

January 1, 2009 to December 31, 2009

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1. EXECUTIVE SUMMARY

This document is a detailed report of the 2009 North Anna Nuclear Power Station Radiological Environmental Monitoring Program (REMP). It is submitted in accordance with North Anna Unit 1 and 2 Technical Specification 5.6.2 and North Anna Independent Spent Fuel Storage Installation (ISFSI) Technical Specification 5.5.2b. Radioactivity levels from January 1 through December 31, 2009, in water, silt, shoreline sediment, milk, aquatic biota, food products, vegetation, and direct exposure pathways have been analyzed, evaluated and summarized. The REMP is designed to confirm that radiological effluent releases are As Low As is Reasonably Achievable (ALARA), no undue environmental effects occur and the health and safety of the public are protected. The program also detects any unexpected environmental processes that could allow radiation accumulations in the environment or food pathway chains.

Radiation and radioactivity in the environment is monitored within a 25-mile radius of the station. North Anna Power Station personnel collect a variety of samples within this area. A number of sampling locations for each medium are selected using available meteorological, land use, and water use data. Two types of samples are obtained. Control samples are collected from areas that are beyond the measurable influence of North Anna Power Station or any other nuclear facility. These samples are used as reference data. Normal background radiation levels, or radiation present due to causes other than North Anna Power Station, can be compared to the environment surrounding the station. Indicator samples are the second sample type obtained. These samples show how much radiation is contributed to the environment by the station. Indicator samples are taken from areas close to the station where any station contribution will be at the highest concentration.

Prior to station operation, samples were collected and analyzed to determine the amount of radioactivity present in the area. The resulting values are used as a "pre-operational baseline." Analysis results from the indicator samples are compared to both current control sample values and the pre-operational baseline to determine if changes in radioactivity levels are attributable to station operations, or causes such as the Chernobyl accident or natural variation.

Global Dosimetry Solutions provided thermoluminescent dosimetry (TLD) services and Teledyne Brown Engineering Environmental Services provided radioanalytical services. Participation in an Interlaboratory Comparison Program provides an independent check of sample measurement precision and accuracy. Typically, radioactivity levels in the environment are so low that analysis values frequently fall below the minimum detection limits of state-of-the-art measurement methods. Because of this, the Nuclear Regulatory Commission (NRC) requires that

equipment used for radiological environmental monitoring must be able to detect specified minimum Lower Limits of Detection (LLDs). This ensures that analyses are as accurate as possible. The NRC also mandates a reporting level for certain radionuclides. Licensed nuclear facilities must report the radionuclide activities in those environmental samples that are equal to or greater than the specified reporting level. Environmental radiation levels are sometimes referred to as a percent of the reporting level.

Analytical results are reported for all possible radiation exposure pathways to man. These pathways include airborne, water, aquatic, terrestrial, and direct radiation exposure. The airborne exposure pathway includes radioactive airborne iodine and particulates, and precipitation. The 2009 airborne results were similar to previous years. Cs-134 was reported in two samples. In neither sample is the result considered a true positive. The reported Cs-134 was not identified by the peak search software, but the forced activity calculation of the software reported a result greater than both the MDC and the 2-σ error. This is not considered a true positive result. Fallout or natural radioactivity levels remained at levels consistent with past years' results.

Water and aquatic exposure pathway samples include surface, river and well water, silt and shoreline sediments, and fish. The average tritium activity in surface water for 2009 was 3260 pCi/liter. Two plant related isotopes were reported above the Minimum Detectable Concentration in surface water. These were Co-60, detected in one sample and Ba-140 activity reported in another sample from the indicator location. Neither is considered to be a true positive. The Co-60 was detected at a concentration of 0.838 pCi/L with a 2-σ error of 108%. Ba-140 was reported at a concentration of 9.09 pCi/L. As described previously, it was not identified by the peak search software, but the forced activity calculation of the software reported a result greater than both the MDC and the 2-σ error. Nb-95 was reported at a concentration of 1.88 pCi/L in one sample from the control location. However, this is not considered a true positive, since it was a forced activity calculation as described above, and the peak was not identified. River water collected from the North Anna River, 5.8 miles downstream of the site had an average tritium level of 3810 pCi/liter. No plant related isotopes were reported in river water. Well water samples did not indicate the presence of plant related isotopes. This trend is consistent throughout the environmental operational monitoring program. Both silt samples indicated the presence of naturally occurring potassium-40 and thorium and uranium decay daughters at levels consistent with the natural background. One silt sample indicated the presence of Sr-90 at a specific activity of 92.5 pCi/kg. This level is slightly lower than levels of Sr-90 seen periodically during the pre-operational program, about 110 pCi/kg. This indicates the source is likely fallout from past bomb tests and not related to plant operations. No Sr-89/90 was detected in liquid effluents from

the plant. Shoreline soil, which may provide a direct exposure pathway, indicated the presence of potassium-40 and thorium and uranium decay daughters also at levels consistent with natural levels. No plant related isotopes were detected in shoreline soil. The terrestrial exposure pathway includes milk and food/vegetation products. Iodine-131 was not detected in any 2009 milk samples and has not been detected in milk prior to or since the 1986 Chernobyl accident. No plant related radioisotopes were detected in any milk samples. Naturally occurring beryllium-7, potassium-40 and radionuclides associated with the uranium and thorium series were detected at environmental levels consistent with historical data. Cs-137 was reported in one vegetation sample at the control location as a result of the software's forced activity calculation at 8.84 pCi/kg, which was greater than both the MDC and the 2-σ error. This is not considered a true positive. One sample from an indicator location detected Cs-137 at a level of 26.1 pCi/kg. No other plant related isotopes were detected in any other vegetation samples. Low levels of Cs-137 have been detected intermittently in past years. The direct exposure pathway measures environmental radiation doses by use of thermoluminescent dosimeters (TLDs). TLD results have remained essentially constant over the years.

During 2009, as in previous years, operation of the North Anna Power Station and the Independent Spent Fuel Storage Installation (ISFSI) created no adverse environmental effects or health hazards. The maximum dose calculated for a hypothetical individual at the station site boundary due to liquid and gaseous effluents released from the station during 2009 was 0.29 millirem. For reference, this dose may be compared to the 360 millirem average annual exposure to every person in the United States from natural and man-made sources. Natural sources in the environment provide approximately 82% of radiation exposure to man, while nuclear power contributes less than 0.1%. These results demonstrate not only compliance with federal and state regulations but also demonstrate the adequacy of radioactive effluent control at North Anna Power Station.

2. PROGRAM DESCRIPTION

2.1 Introduction

This report documents the 2009 North Anna Power Station operational Radiological Environmental Monitoring Program (REMP).

The North Anna Power Station of Dominion Virginia Power Company is located on Lake Anna in Mineral, Virginia, approximately 35 miles southwest of Fredericksburg, Virginia. The site consists of two units, each with a pressurized water reactor (PWR) nuclear steam supply system and turbine generator furnished by Westinghouse Electric Corporation. Each unit was designed with a gross electrical output of 979 megawatts electric (MWe). Unit 1 achieved commercial operation on June 6, 1978 and Unit 2 on December 14, 1980. An independent spent fuel storage facility was licensed for dry cask storage of spent fuel in 1998.

The United States Nuclear Regulatory Commission (USNRC) regulations require that nuclear power plants be designed, constructed, and operated to keep levels of radioactive material in effluents to unrestricted areas as low as is reasonably achievable (ALARA). To ensure these criteria are met, the operating license for North Anna Power Station includes Technical Specifications, which address the release of radioactive effluents. In-plant monitoring is used to ensure release limits are not exceeded. As a precaution against unexpected or undefined environmental processes which might allow undue accumulation of radioactivity in the environment, a program for monitoring the plant environs is also included in North Anna Power Station Offsite Dose Calculation Manual (ODCM).

North Anna Power Station is responsible for collecting the various indicator and control environmental samples. Global Dosimetry Solutions is responsible for processing the TLDs. Teledyne Brown Engineering Environmental Services (TBE) is responsible for sample analyses. The results of the analyses are used to determine if changes in radioactivity levels may be attributable to station operations. Measured values are compared with control levels, which vary with time due to external events, such as cosmic ray bombardment, nuclear weapons test fallout and seasonal variations of naturally occurring radioisotopes. Data collected prior to station operation is used to indicate the degree of natural variation to be expected. This pre-operational data is compared with data collected during the operational phase to assist in evaluating any radiological impact of station operation.

Occasional samples of environment media show the presence of man-made isotopes. As a method of referencing the measured radionuclide concentrations in the sample media to a dose consequence to man, the data is compared to the

reporting level concentrations listed in the USNRC Regulatory Guide 4.8 and North Anna's ODCM. These concentrations are based upon the annual dose commitment recommended by 10CFR50, Appendix I, to meet the criterion of "As Low As Is Reasonably Achievable".

This report documents the results of the Radiological Environmental Monitoring Program for 2009 and satisfies the following objectives of the program:

- To provide measurements of radiation and of radioactive materials in those exposure pathways and for those radionuclides that lead to the highest potential radiation exposure of the maximum exposed member of the public resulting from station operations.

- To supplement the radiological effluent monitoring program by verifying that radioactive effluents are within allowable limits.

- To identify changes in radioactivity in the environment.

- To verify that station operations have no detrimental effect on the health and safety of the public.

2.2 Sampling and Analysis Program

Table 2-1 summarizes the 2009 sampling program for North Anna Power Station. All samples listed in Table 2-1 are taken at indicator locations except those labeled "control." The North Anna Radiological Monitoring Locations maps denote sample locations for North Anna Power Station. The locations are color coded to designate sample types. Table 2-2 summarizes the analysis program conducted by TBE for North Anna Power Station during the year 2009.

TABLE 2-1

North Anna Power Station – 2009
RADIOLOGICAL SAMPLING STATION
DISTANCE AND DIRECTION FROM UNIT NO. 1

Sample Media	Location	Station	Distance	Direction	Degrees	Collection Frequency	Remarks
Environmental	NAPS Sewage Treatment Plant	01	0.20	NE	42°	Quarterly & Annually	
Thermoluminescent	Fredericks Hall	02	5.30	SSW	203°	Quarterly & Annually	
Dosimetry (TLD)	Mineral, Va	03	7.10	WSW	243°	Quarterly & Annually	
	Wares Crossroads	04	5.10	WNW	287°	Quarterly & Annually	
	Route 752	05	4.20	NNE	20°	Quarterly & Annually	
	Sturgeon's Creek Marina	05A	2.04	N	11°	Quarterly & Annually	
	Levy, VA	06	4.70	ESE	115°	Quarterly & Annually	
	Bumpass, VA	07	7.30	SSE	167°	Quarterly & Annually	
	End of Route 685	21	1.00	WNW	301°	Quarterly & Annually	
	Route 700	22	1.00	WSW	242°	Quarterly & Annually	
	"Aspen Hills"	23	0.93	SSE	158°	Quarterly & Annually	
	Orange, VA	24	22.00	NW	325°	Quarterly & Annually	Control
	Bearing Cooling Tower	N-1/33	0.06	N	10°	Quarterly	
	Sturgeon's Creek Marina	N-2/34	2.04	N	11°	Quarterly	
	Parking Lot "C" (on-site)	NNE-3/35	0.24	NNE	32°	Quarterly	
	Good Hope Church	NNE-4/36	3.77	NNE	25°	Quarterly	
	Parking Lot "B"	NE-5/37	0.20	NE	42°	Quarterly	
	Lake Anna Marina (Bogg's Dr)	NE-6/38	1.46	NE	34°	Quarterly	
	Weather Tower Fence	ENE-7/39	0.36	ENE	74°	Quarterly	
	Route 689	ENE-8/40	2.43	ENE	65°	Quarterly	
	Near Training Facility	E-9/41	0.30	E	91°	Quarterly	
	"Morning Glory Hill"	E-10/42	2.85	E	93°	Quarterly	
	Island Dike	ESE-11/43	0.12	ESE	103°	Quarterly	
	Route 622	ESE-12/44	4.70	ESE	115°	Quarterly	
	DVP Biology Lab	SE-13/45	0.64	SE	138°	Quarterly	
	Route 701 (Dam Entrance)	SE-14/46	5.88	SE	137°	Quarterly	
	"Aspen Hills"	SSE-15/47	0.93	SSE	158°	Quarterly	
	Elk Creek	SSE-16/48	2.33	SSE	165°	Quarterly	

* In October 1991 the Surface Water Sample location at station 09 was moved to 09A.
** Shoreline soil was changed from station 09 to 08 effective with the August 1996 sample.
*** Air Sample Station at 01A was added in October 2007.
**** Station at 14a was added in October 2008 and Station 14 was deleted.
***** The dairy at Station 13 sold its dairy herd and ceased milking operations in September 2009.

TABLE 2-1

North Anna Power Station – 2009
RADIOLOGICAL SAMPLING STATION
DISTANCE AND DIRECTION FROM UNIT NO. 1

Sample Media	Location	Station	Distance	Direction	Degrees	Collection Frequency	Remarks
	NAPS Access Rd.	S-17/49	0.47	S	173°	Quarterly	
Environmental	Elk Creek Church	S-18/50	1.55	S	178°	Quarterly	
Thermoluminescent	NAPS Access Rd.	SSW-19/51	0.42	SSW	197°	Quarterly	
Dosimetry (TLD)	Route 618	SSW-20/52	5.30	SSW	205°	Quarterly	
	500kv Tower	SW-21/53	0.6	SW	218°	Quarterly	
	Route 700	SW-22/54	3.96	SW	232°	Quarterly	
	NAPS Radio Tower	WSW-23/55	0.38	WSW	237°	Quarterly	
	Route 700 (Exclusion Boundary)	WSW-24/56	1.00	WSW	242°	Quarterly	
	South Gate Switchyard	W-25/57	0.32	W	279°	Quarterly	
	Route 685	W-26/58	1.55	W	274°	Quarterly	
	End of Route 685	WNW-27/59	1.00	WNW	301°	Quarterly	
	Route 685	WNW-28/60	1.40	WNW	303°	Quarterly	
	North Gate - Construction Side Laydown Area	NW-29/61	0.45	NW	321°	Quarterly	
	Lake Anna Campground	NW-30/62	2.54	NW	319°	Quarterly	
	#1/#2 Intake	NNW-31/63	0.07	NNW	349°	Quarterly	
	Route 208	NNW-32/64	2.21	NNW	344°	Quarterly	
	Bumpass Post Office	C-1/2	7.30	SSE	167°	Quarterly	
	Orange, VA	C-3/4	22.00	NW	325°	Quarterly	Control
	Mineral, VA	C-5/6	7.10	WSW	243°	Quarterly	
	Louisa, VA	C-7/8	11.54	WSW	257°	Quarterly	Control
Airborne Particulate	NAPS Sewage Treatment Plant	01	0.20	NE	42°	Weekly	
and Radioiodine	Biology Lab***	01A	0.64	SE	138°	Weekly	
	Mineral, VA	03	7.10	WSW	243°	Weekly	
	Wares Crossroads	04	5.10	WNW	287°	Weekly	
	Route 752	05	4.20	NNE	20°	Weekly	
	Sturgeon's Creek Marina	05A	2.04	N	11°	Weekly	

* In October 1991 the Surface Water Sample location at station 09 was moved to 09A.
** Shoreline soil was changed from station 09 to 08 effective with the August 1996 sample.
*** Air Sample Station at 01A was added in October 2007.
**** Station at 14a was added in October 2008 and Station 14 was deleted.
***** The dairy at Station 13 sold its dairy herd and ceased milking operations in September 2009.

TABLE 2-1

North Anna Power Station – 2009

RADIOLOGICAL SAMPLING STATION

DISTANCE AND DIRECTION FROM UNIT NO. 1

Sample Media	Location	Station	Distance	Direction	Degrees	Collection Frequency	Remarks
	Levy, VA	06	4.70	ESE	115°	Weekly	
	Bumpass, VA	07	7.30	SSE	167°	Weekly	
Airborne Particulate	End of Route 685	21	1.00	WNW	301°	Weekly	
and Radioiodine	Route 700	22	1.00	WSW	242°	Weekly	
	"Aspen Hills"	23	0.93	SSE	158°	Weekly	
	Orange, VA	24	22.00	NW	325°	Weekly	Control
Surface Water	Waste Heat Treatment Facility (Second Cooling Lagoon)	08	3.37	SSE	148°	Monthly	
	*Lake Anna (upstream) (Route 669 Bridge)	09A	12.90	WNW	295°	Monthly	Control
River Water	North Anna River (downstream)	11	5.80	SE	128°	Monthly	
Ground Water (Well Water)	Biology Lab	01A	0.64	SE	138°	Quarterly	
Precipitation	Biology Lab	01A	0.64	SE	138°	Monthly	
Aquatic Sediment	Waste Heat Treatment Facility (Second Cooling Lagoon)	08	3.37	SSE	148°	Semi-Annually	
	Lake Anna (upstream) (Route 669 Bridge)	09A	12.90	WNW	295°	Semi-Annually	Control
	North Anna River (downstream)	11	5.80	SE	128°	Semi-Annually	
Shoreline Soil	Waste Heat Treatment Facility (Second Cooling Lagoon)	08 **	3.37	SSE	148°	Semi-Annually	
Soil	NAPS Sewage Treatment Plant	01	0.20	NE	42°	Once/3 years	

* In October 1991 the Surface Water Sample location at station 09 was moved to 09A.
** Shoreline soil was changed from station 09 to 08 effective with the August 1996 sample.
*** Air Sample Station at 01A was added in October 2007.
**** Station at 14a was added in October 2008 and Station 14 was deleted.
***** The dairy at Station 13 sold its dairy herd and ceased milking operations in September 2009.

TABLE 2-1

North Anna Power Station – 2009
RADIOLOGICAL SAMPLING STATION
DISTANCE AND DIRECTION FROM UNIT NO. 1

Sample Media	Location	Station	Distance	Direction	Degrees	Collection Frequency	Remarks
	Fredericks Hall	02	5.30	SSW	203°	Once/3 years	
	Mineral, VA	03	7.10	WSW	243°	Once/3 years	
	Wares Crossroads	04	5.10	WNW	287°	Once/3 years	
Soil	Route 752	05	4.20	NNE	20°	Once/3 years	
	Sturgeon's Creek Marina	05A	2.04	N	11°	Once/3 years	
	Levy, VA	06	4.70	ESE	115°	Once/3 years	
	Bumpass, VA	07	7.30	SSE	167°	Once/3 years	
	End of Route 685	21	1.00	WNW	301°	Once/3 years	
	Route 700 (Exclusion Boundary)	22	1.00	WSW	242°	Once/3 years	
	"Aspen Hills"	23	0.93	SSE	158°	Once/3 years	
	Orange, VA	24	22.00	NW	325°	Once/3 years	Control
Milk	Holladay Dairy (R.C. Goodwin)	12	8.30	NW	310°	Monthly	
	Terrell's Dairy (Fredericks Hall)	13*****	5.60	SSW	205°	Monthly	
Fish	Waste Heat Treatment Facility (Second Cooling Lagoon)	08	3.37	SSE	148°	Semi-Annually	
	Lake Orange	25	16.5	NW	312°	Semi-Annually	Control
Food Products	Moody Lane***	14a	1.70	ESE	103°	Monthly if available or at harvest	
Vegetation)	Route 614	15	1.37	SE	133°	Monthly if available or at harvest	
	Route 629/522	16	12.60	NW	314°	Monthly if available or at harvest	Control
	Aspen Hills	23	0.93	SSE	158°	Monthly if available or at harvest	
	"Historic Lane"	26	1.15	S	172 °	Monthly if available or at harvest	

* In October 1991 the Surface Water Sample location at station 09 was moved to 09A.
** Shoreline soil was changed from station 09 to 08 effective with the August 1996 sample.
*** Air Sample Station at 01A was added in October 2007.
**** Station at 14a was added in October 2008 and Station 14 was deleted.
***** The dairy at Station 13 sold its dairy herd and ceased milking operations in September 2009.

TABLE 2-2

North Anna Power Station

SAMPLE ANALYSIS PROGRAM

SAMPLE MEDIA	FREQUENCY	ANALYSIS	LLD	REPORT UNITS
Thermoluminescent Dosimetry (TLD)				
(84 TLDs)	Quarterly	Gamma Dose	2 mR±2mR	mR/std. Month
(12 TLDs)	Annually	Gamma Dose	2 mR±2mR	mR/std. Month
Airborne Radioiodine	Weekly	I-131	0.07	pCi/m^3
Airborne Particulate	Weekly	Gross Beta	0.01	pCi/m^3
	Quarterly (a)	Gamma Isotopic		pCi/m^3
		Cs-134	0.05	
		Cs-137	0.06	
	2^{nd} Quarter	Sr-89	(b)	pCi/m^3
	Composite	Sr-90	(b)	
Surface Water	Monthly	I-131	1(c)	pCi/L
		Gamma Isotopic		pCi/L
		Mn-54	15	
		Fe-59	30	
		Co-58	15	
		Co-60	15	
		Zn-65	30	
		Zr-95	30	
		Nb-95	15	
		Cs-134	15	
		Cs-137	18	
		Ba-140	60	
		La-140	15	
	Quarterly(a)	Tritium (H-3)	2000	pCi/L
	2^{nd} Quarter	Sr-89	(b)	pCi/L
	Composite	Sr-90	(b)	
River Water	Monthly	I-131	1(c)	pCi/L
		Gamma Isotopic		pCi/L
		Mn-54	15	
		Fe-59	30	
		Co-58	15	
		Co-60	15	
		Zn-65	30	
		Zr-95	30	
		Nb-95	15	
		Cs-134	15	
		Cs-137	18	
		Ba-140	60	
		La-140	15	

*LLDs indicate those levels to which environmental samples are required to be analyzed. Actual analysis of samples may be lower than the listed values.

(a) Quarterly composite of each location's samples are used for the required analysis

(b) There are no required LLDs for Sr-89/90

(c) LLD for non-drinking water is 10 pCi/liter.

TABLE 2-2
North Anna Power Station
SAMPLE ANALYSIS PROGRAM

SAMPLE MEDIA	FREQUENCY	ANALYSIS	LLD	REPORT UNITS
River Water	Quarterly(a)	Tritium (H-3)	2000	pCi/L
	2nd Quarter	Sr-89	(b)	pCi/L
	Composite	Sr-90	(b)	
Ground Water	Quarterly	Gamma Isotopic		pCi/L
(Well Water)		Mn-54	15	
		Fe-59	30	
		Co-58	15	
		Co-60	15	
		Zn-65	30	
		Zr-95	30	
		Nb-95	15	
		I-131	10(c)	
		Cs-134	15	
		Cs-137	18	
		Ba-140	60	
		La-140	15	
	Quarterly(a)	Tritium (H-3)	2000	pCi/L
	2nd Quarter	Sr-89	(b)	pCi/L
		Sr-90	(b)	
Aquatic Sediment	Semi-Annually	Gamma Isotopic		pCi/kg (dry)
		Cs-134	150	
		Cs-137	180	
	Annually	Sr-89	(b)	pCi/kg (dry)
		Sr-90	(b)	
Precipitation	Monthly	Gross Beta	4	pCi/L
	Semi-Annual	Gamma Isotopic		pCi/L
	Composite	Mn-54	15	
		Fe-59	30	
		Co-58	15	
		Co-60	15	
		Zn-65	30	
		Zr-95	30	
		Nb-95	15	
		I-131	10(c)	
		Cs-134	15	
		Cs-137	18	
		Ba-140	60	
		La-140	15	
Shoreline Soil	Semi-Annually	Gamma Isotopic		pCi/kg (dry)
		Cs-134	150	
		Cs-137	180	
	Annually	Sr-89	(b)	pCi/kg (dry)
		Sr-90	(b)	

*LLDs indicate those levels to which environmental samples are required to be analyzed. Actual analysis of samples may be lower than the listed values.

(a) Quarterly composite of each location's samples are used for the required analysis

(b) There are no required LLDs for Sr-89/90

(c) LLD for non-drinking water is 10 pCi/liter.

TABLE 2-2

North Anna Power Station

SAMPLE ANALYSIS PROGRAM

SAMPLE MEDIA	FREQUENCY	ANALYSIS	LLD	REPORT UNITS
Soil	Once per 3 years	Gamma Isotopic		pCi/kg (dry)
		Cs-134	150	
		Cs-137	180	
		Sr-89	(b)	pCi/kg (dry)
		Sr-90	(b)	
Milk	Monthly	I-131	1	pCi/L
	Monthly	Gamma Isotopic		
		Cs-134	15	
		Cs-137	18	
		Ba-140	60	
		La-140	15	
	Quarterly	Sr-89	(b)	pCi/L
		Sr-90	(b)	
Fish	Semi-Annually	Gamma Isotopic		pCi/kg (wet)
		Mn-54	130	
		Fe-59	260	
		Co-58	130	
		Co-60	130	
		Zn-65	260	
		Cs-134	130	
		Cs-137	150	
Food Products (Broadleaf Vegetation)	Monthly, if available, or at harvest	Gamma Isotopic		pCi/kg (wet)
		Cs-134	60	
		Cs-137	80	
		I-131	60	

*LLDs indicate those levels to which environmental samples are required to be analyzed. Actual analysis of samples may be lower than the listed values.

(a) Quarterly composite of each location's samples are used for the required analysis

(b) There are no required LLDs for Sr-89/90

(c) LLD for non-drinking water is 10 pCi/liter.

Legend For The North Anna Power Station
Environmental Monitoring Stations Overview Maps

Map Designation	Environmental Station Identification	Map Designation	Environmental Station Identification
1 (a)	01,NE-5/37	27	27-Milk
1A	01A,SE-13/45	7/8	C-7/8
2 (a)	02,SSW-20/52	1/33	N-1/33
3 (a)	03,C-5/6	31/63	NNW-31/63
4 (a)	04	29/61	NW-29/61
5 (a)	05	3/35	NNE-3/35
5A (a)	05A,N-2/34	7/39	ENE-7/39
6 (a)	06,ESE-12/44	9/41	E-9/41
7 (a)	07, C-1/2	11/43	ESE-11/43
8	08-Water, Fish, Sediment,	17/49	S-17/49
	Shoreline Soil	19/51	SSW-19/51
9A	09A-Water sample, Sediment	21/53	SW-21/53
11	11-River Water, Sediment	23/55	WSW-23/55
12	12-Milk	25/57	W-25/57
13 (e)	13-Milk	16/48	SSE-16/48
14a (d)	14a-Vegetation	14/46	SE-14/46
15	15-Vegetation	22/54	SW-22/54
16	16-Vegetation	26/58	W-26/58
21 (a)	21,WNW-27/59	28/60	WNW-28/60
22 (a)	22,WSW-24/56	32/64	NNW-32/64
23 (a)	23-SSE-15/47	8/40	ENE-8/40
24 (a)(b)	24,C-3/4	4/36	NNE-4/36
25 (c)	25-Fish	10/42	E-10/42
26	26-Vegetation		

(a) Indicates air sample station, annual and quarterly TLD, Triennial soil.
(b) In Orange
(c) In Lake Orange
(d) Station 14a replaced 14 in October 2008
(e) Dairy at Station 13 ceased milking in September 2009.

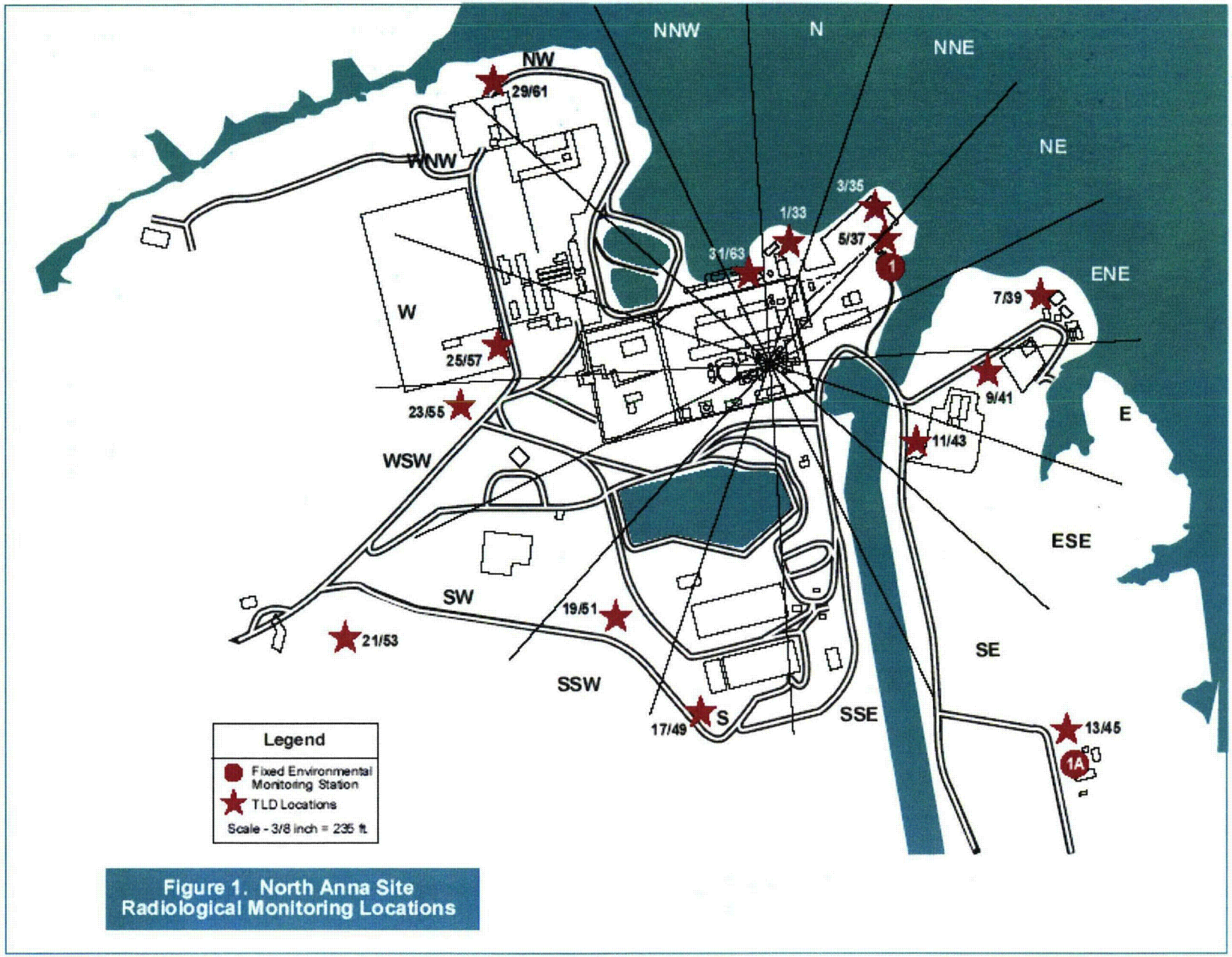
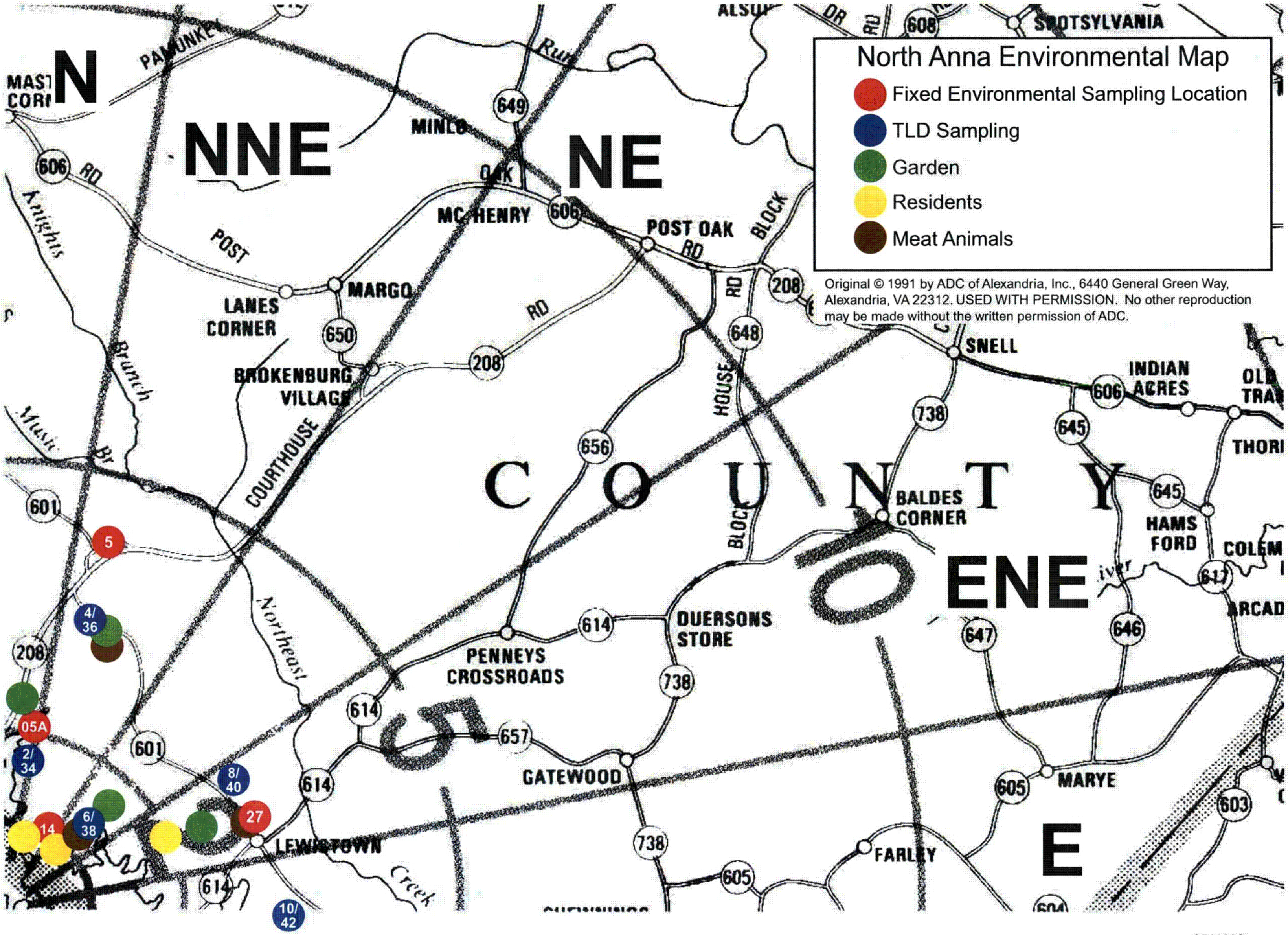


Figure 1. North Anna Site Radiological Monitoring Locations


North Anna Environmental Map
Fixed Environmental Sampling Location
TLD Sampling
Garden
Residents
Meat Animals
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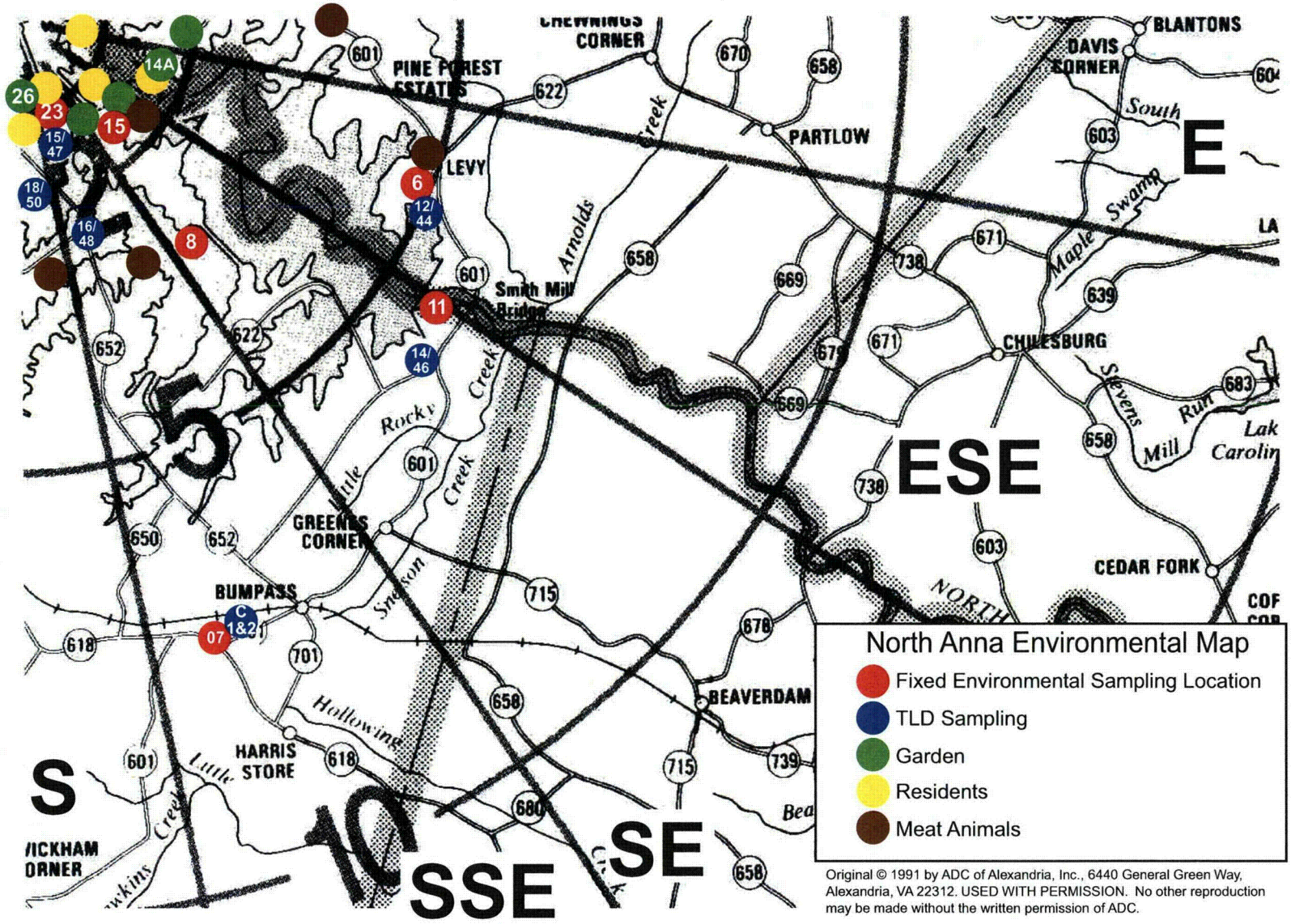
N
NNE
NE
ENE
E
C O U N T Y
SPOTSYLVANIA
MINLO
OAK
MC HENRY
POST OAK RD
MARGO
LANES CORNER
BROKENBURG VILLAGE
COURTHOUSE
SNELL
INDIAN ACRES
THORI
BALDES CORNER
HAMS FORD
DUERSONS STORE
PENNEYS CROSSROADS
GATEWOOD
MARYE
FARLEY
LEWISTOWN
5
4/36
05A
2/34
14
6/38
8/40
27
10/42

CB3280C


North Anna Environmental Map
Fixed Environmental Sampling Location
TLD Sampling
Garden
Residents
Meat Animals
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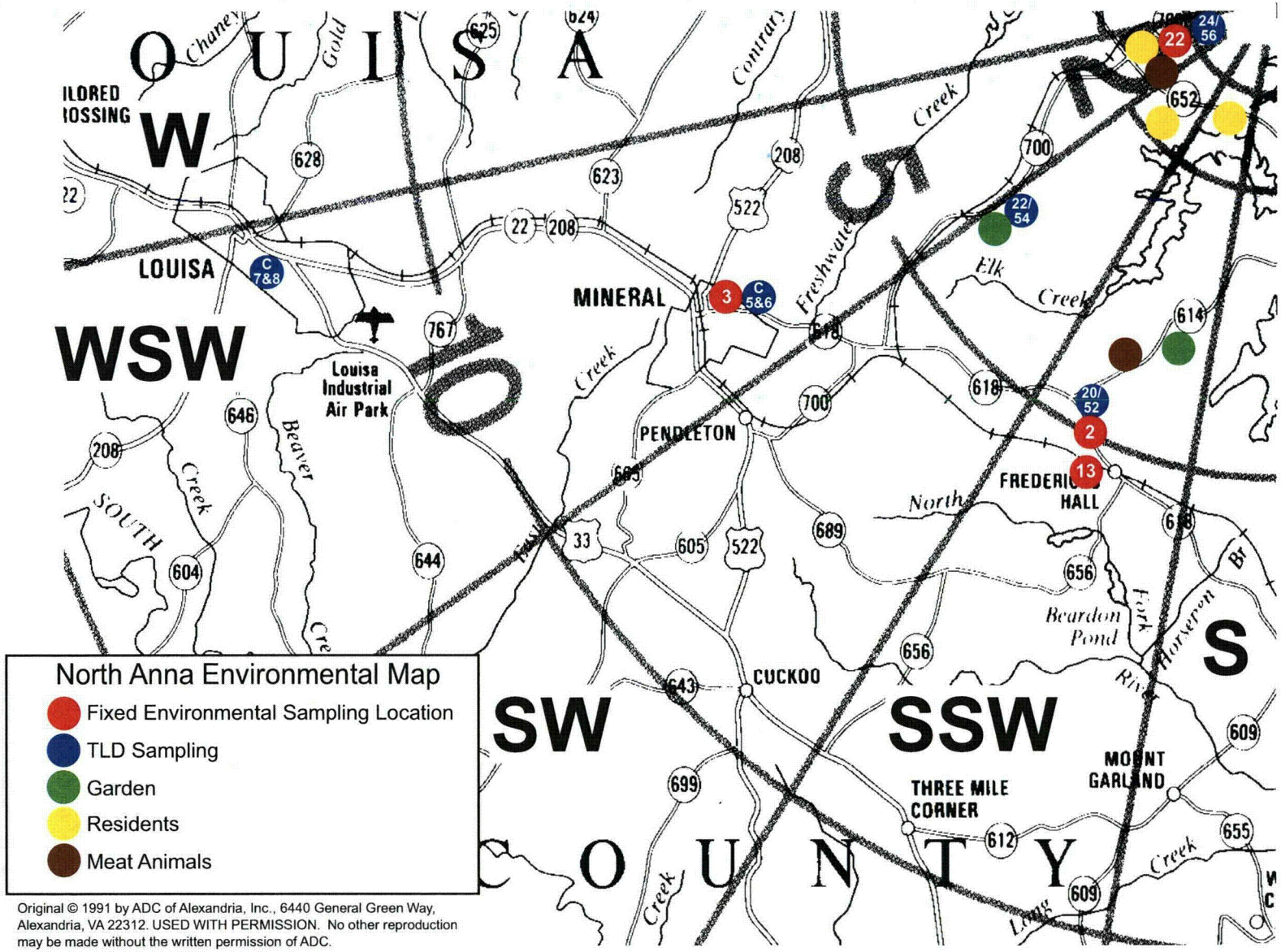
CB3282E
PINE FOREST ESTATES
CHEWINGS CORNER
LEVY
PARTLOW
DAVIS CORNER
BLANTONS
CHILESBURG
GREENES CORNER
BUMPASS
HARRIS STORE
BEAVERDAM
CEDAR FORK
Smith Mill Bridge
Arnolds Creek
Rocky Creek
Little Creek
Hollowing
Maple Swamp
Stevens Mill Run
Snelson
NORTH
S
SSE
SE
ESE
E
14A
26
23
15
15/47
18/50
16/48
8
6
12/44
11
14/46
07
C 1&2
5
10


North Anna Environmental Map
Fixed Environmental Sampling Location
TLD Sampling
Garden
Residents
Meat Animals
LOUISA
MINERAL
PENDLETON
CUCKOO
THREE MILE CORNER
MOUNT GARLAND
FREDERICKSHALL
Louisa Industrial Air Park
WSW
SW
SSW
S
COUNTY
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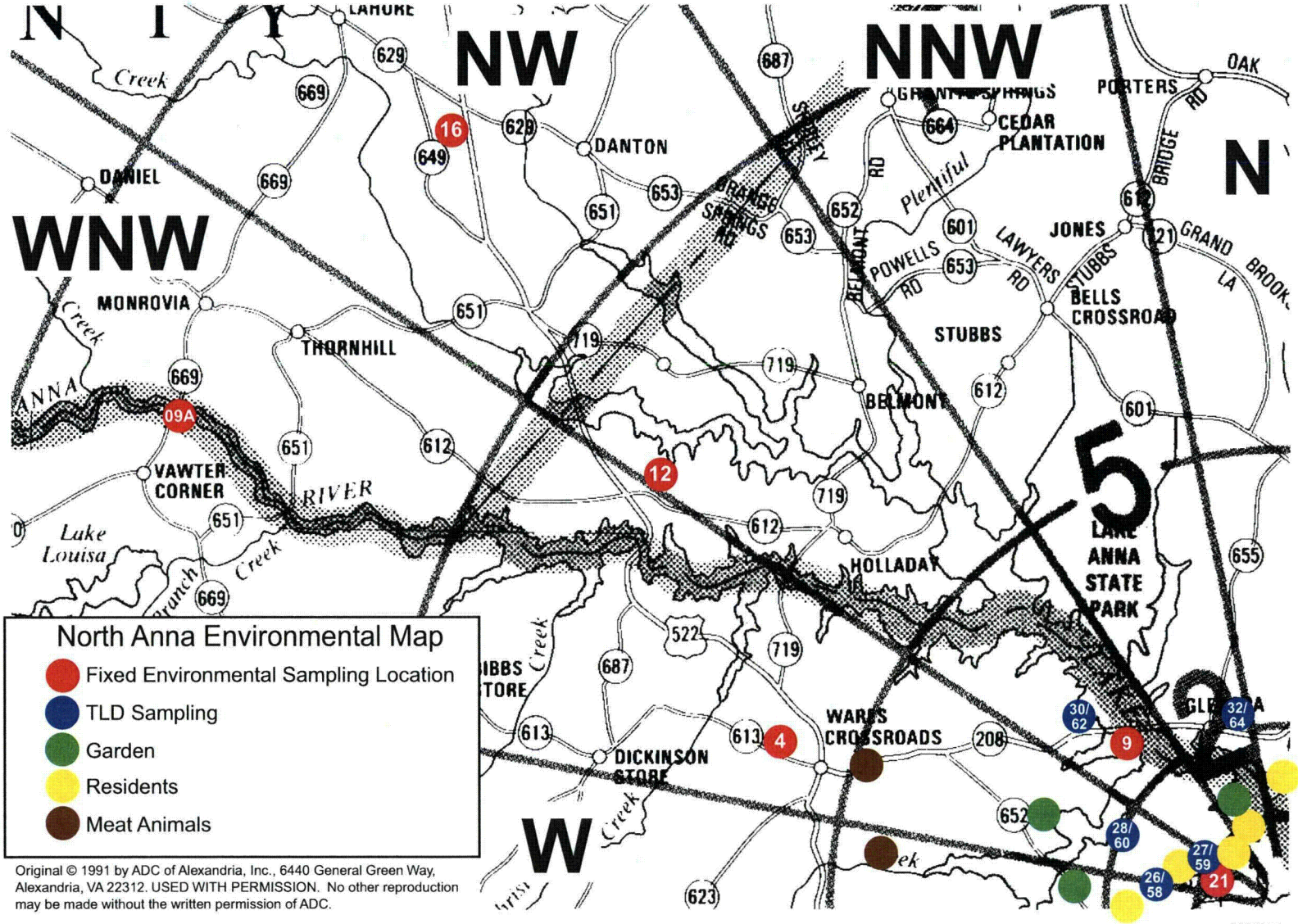
CB3283D



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CB3281D

3. ANALYTICAL RESULTS

3.1 Summary of Results

In accordance with the North Anna Offsite Dose Calculation Manual (ODCM), a summary table of the analytical results has been prepared and is presented in Table 3-1. This data is presented in accordance with the format of the USNRC Branch Technical Position, "Acceptable Radiological Environmental Monitoring Program", Rev. 1, November 1979. The LLD listed value is taken from the ODCM. For radioanalytic analyses, the values listed in the columns indicated as "Mean/Range" include any results above the Minimum Detectable Concentration, MDC. Results are considered true positives when the measured value exceeds both the MDC and the 2σ error. For TLDs the mean and range include all values.

A more detailed analysis of the data is given in Section 4 where a discussion of the variations in the data explains many aspects that are not evident in the Summary Table because of the basic limitation of data summaries.

Table 3-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

North Anna Nuclear Power Station, Louisa County, Virginia – 2009

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Medium or Pathway Sampled (Unit)	Analysis Type	Analysis Total No.	LLD[1] (pCi/unit)	All Indicator Locations Mean Range	Indicator Location with Highest Mean Name	Indicator Location with Highest Mean Distance Direction	Indicator Location with Highest Mean Mean Range	Control Location Mean Range	Non-routine Reported Measure-ments
Direct Radiation (mR/std. Month) (Sector TLDs)	Gamma Dose	256	2	5.0(256/256) (0.2-54.5)	19/51[2]	0.42 mi. SSW	31.5(8/8) (10.0-54.5)	3.2(16/16)* (2.5-4.2)	0
Direct Radiation (mR/std. Month) (Pre-operational TLDs)	Gamma Dose	32	2	2.6(16/16) (1.2-4.3)	C-1/2	7.3 mi. SSE	3.1 (8/8) (2.3-4.3)	3.2(16/16)* (2.5-4.2)	0
Direct Radiation (mR/std. Month) (Emergency Sector TLDs)	Gamma Dose	40	2	5.1(40/40) (2.8-8.3)	EPSP-09/10	0.37 mi. ENE	7.6(8/8) (6.7-8.3)	3.2(16/16)* (2.5-4.2)	0
Direct Radiation (mR/std. month) (Environmental TLDs)	Gamma Dose	48	2	3.4(44/44) (1.5-6.1)	23	0.93 mi. SSE	4.9(4/4) (4.1-6.1)	3.0(4/4) (2.8-3.4)	0
Direct Radiation (mR/std. Month) (Annual TLDs)	Gamma Dose	12	2	2.9(11/11) (1.9-4.7)	06	4.70 mi. ESE	4.7(1/1) (4.7)	2.6(1/1) (2.6)	0
Airborne Particulates (1E-03 pCi/m^3)	Gross Beta	676	0.01	15.9(623/624) (5.80- 32.9)	02	5.30 mi. SSW	17.2(52/52) (9.34-31.1)	16.5(52/52) (7.65-36.3)	0
Air Iodine (pCi/m^3)	I-131	676	0.07	(0/624)	N/A	N/A	N/A	(0/52)	0
Airborne Particulates (1E-03 pCi/m^3)	Gamma	52							
	Be-7	52	-	152(45/48) (101-267)	22	1.00 mi. WSW	179(2/4) (114-267)	152(4/4) (139-171)	0
	Cs-134	52	0.05	2.59(2/48) (1.83-3.34)	07	7.30 mi. SSE	3.34 (1/4) (3.34)	(0/4)	0

(1) mR/std month for TLDs
(2) 19/51 located onsite near ISFSI.
* C-3/4, -7/8 used as control locations

Table 3-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

North Anna Nuclear Power Station, Louisa County, Virginia – 2009

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Medium or Pathway Sampled (Unit)	Analysis Type	Analysis Total No.	LLD (pCi/unit)	All Indicator Locations Mean Range	Indicator Location with Highest Mean Name	Indicator Location with Highest Mean Distance Direction	Indicator Location with Highest Mean Mean Range	Control Location Mean Range	Non-routine Reported Measurements
Airborne Particulates (1E-03 pCi/m^3)	Cs-137	52	0.06	(0/48)	N/A	N/A	N/A	(0/4)	0
	Sr-89	13	-	(0/12)	N/A	N/A	N/A	(0/1)	0
	Sr-90	13	-	(0/12)	N/A	N/A	N/A	(0/1)	0
Soil (pCi/Kg) (dry)	Triennial Gamma	N/A							
	Be-7	N/A	-	N/A	N/A	N/A	N/A	N/A	0
	K-40	N/A	-	N/A	N/A	N/A	N/A	N/A	0
	Cs-134	N/A	150	N/A	N/A	N/A	N/A	N/A	0
	Cs-137	N/A	180	N/A	N/A	N/A	N/A	N/A	0
	Th-228	N/A	-	N/A	N/A	N/A	N/A	N/A	0
	Sr-89	N/A	-	N/A	N/A	N/A	N/A	N/A	0
	Sr-90	N/A	-	N/A	N/A	N/A	N/A	N/A	0
Precipitation (pCi/liter)	Monthly Gross Beta	12	4	9.11(9/12) (1.85-39.9)	01A	0.64 mi. SE	9.11(9/12) (1.85-39.9)	N/A	0
	Semiannual Gamma	2							
	Be-7	2	-	53.8(2/2) (53.7-53.9)	01A	0.64 mi. SE	53.8(2/2) (53.7-53.9)	N/A	0
	Mn-54	2	15	(0/2)	N/A	N/A	N/A	N/A	0
	Fe-59	2	30	(0/2)	N/A	N/A	N/A	N/A	0
	Co-58	2	15	(0/2)	N/A	N/A	N/A	N/A	0
	Co-60	2	15	(0/2)	N/A	N/A	N/A	N/A	0

Table 3-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

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Medium or Pathway Sampled (Unit)	Analysis Type	Analysis Total No.	LLD (pCi/unit)	All Indicator Locations Mean Range	Indicator Location with Highest Mean Name	Indicator Location with Highest Mean Distance Direction	Indicator Location with Highest Mean Mean Range	Control Location Mean Range	Non-routine Reported Measurements
Precipitation (pCi/liter)	Zn-65	2	30	(0/2)	N/A	N/A	N/A	N/A	0
	Zr-95	2	30	(0/2)	N/A	N/A	N/A	N/A	0
	Nb-95	2	15	(0/2)	N/A	N/A	N/A	N/A	0
	I-131	2	10	(0/2)	N/A	N/A	N/A	N/A	0
	Cs-134	2	15	(0/2)	N/A	N/A	N/A	N/A	0
	Cs-137	2	18	(0/2)	N/A	N/A	N/A	N/A	0
	Ba-140	2	60	(0/2)	N/A	N/A	N/A	N/A	0
	La-140	2	15	(0/2)	N/A	N/A	N/A	N/A	0
	Ac-228	2	-	12.1(1/2) (12.1)	01A	0.64 mi. SE	12.1(1/2) (12.1)	N/A	0
	Th-228	2	-	4.27(1/2) (4.27)	01A	0.64 mi. SE	4.27(1/2) (4.27)	N/A	0
	Th-232	2	-	4.08(1/2) (4.08)	01A	0.64 mi. SE	4.08(1/2) (4.08)	N/A	0
Milk (pCi/liter)	Gamma	21							
	K-40	21	-	1260(21/21) (983-1540)	12	8.3 mi. NW	1300(12/12) (1180-1500)	N/A	0
	I-131	21	1	(0/21)	N/A	N/A	N/A	N/A	0
	Cs-134	21	15	(0/21)	N/A	N/A	N/A	N/A	0
	Cs-137	21	18	(0/21)	N/A	N/A	N/A	N/A	0
	Ba-140	21	60	(0/21)	N/A	N/A	N/A	N/A	0

Table 3-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

North Anna Nuclear Power Station, Louisa County, Virginia – 2009

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Medium or Pathway Sampled (Unit)	Analysis Type	Analysis Total No.	LLD (pCi/unit)	All Indicator Locations Mean Range	Indicator Location with Highest Mean Name	Indicator Location with Highest Mean Distance Direction	Indicator Location with Highest Mean Mean Range	Control Location Mean Range	Non-routine Reported Measure-ments
Milk (pCi/liter)	La-140	21	15	(0/21)	N/A	N/A	N/A	N/A	0
	Sr-89 (Quarterly)	7	-	(0/7)	N/A	N/A	N/A	N/A	0
	Sr-90 (Quarterly)	7	-	(0/7)	N/A	N/A	N/A	N/A	0
Food Vegetation (pCi/kg) (wet)	Gamma	35							
	Be-7	35	-	1110(28/28) (208-2350)	15	varies SE	1420(7/7) (775-2240)	1430(7/7) (530-3450)	0
	K-40	35	-	5170(28/28) (2370-8960)	14a	varies ESE	5840(7/7) (3860-7720)	4460(7/7) (2080-8300)	0
	I-131	35	60	(0/28)	N/A	N/A	N/A	(0/7)	0
	Cs-134	35	60	(0/28)	N/A	N/A	N/A	(0/7)	0
	Cs-137	35	80	26.1(1/28)	23	varies SSE	26.1(1/7) (26.1)	8.84(1/7) (8.84)	0
Ground Well Water (pCi/liter)	Tritium	4	2000	(0/4)	01A	0.64 mi. SE	(0/4)	N/A	0
	Gamma	4							
	Mn-54	4	15	(0/4)	N/A	N/A	N/A	N/A	0
	Fe-59	4	30	(0/4)	N/A	N/A	N/A	N/A	0
	Co-58	4	15	(0/4)	N/A	N/A	N/A	N/A	0
	Co-60	4	15	(0/4)	N/A	N/A	N/A	N/A	0
	Zn-65	4	30	(0/4)	N/A	N/A	N/A	N/A	0

Table 3-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

North Anna Nuclear Power Station, Louisa County, Virginia – 2009

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Medium or Pathway Sampled (Unit)	Analysis		LLD (pCi/unit)	All Indicator Locations	Indicator Location with Highest Mean			Control Location	Non-routine
	Type	Total No.		Mean Range	Name	Distance Direction	Mean Range	Mean Range	Reported Measure-ments
Ground Well Water (pCi/liter)	Zr-95	4	30	(0/4)	N/A	N/A	N/A	N/A	0
	Nb-95	4	15	(0/4)	N/A	N/A	N/A	N/A	0
	I-131	4	10	(0/4)	N/A	N/A	N/A	N/A	0
	Cs-134	4	15	(0/4)	N/A	N/A	N/A	N/A	0
	Cs-137	4	18	(0/4)	N/A	N/A	N/A	N/A	0
	Ba-140	4	60	(0/4)	N/A	N/A	N/A	N/A	0
	La-140	4	15	(0/4)	N/A	N/A	N/A	N/A	0
	Sr-89	1	-	(0/1)	N/A	N/A	N/A	N/A	0
	Sr-90	1	-	(0/1)	N/A	N/A	N/A	N/A	0
River Water (pCi/liter)	Tritium	4	2000	3810(4/4) (2870-5030)	11	5.80 mi. SE	3810(4/4) (2870-5030)	(0/4)*	0
	Gamma	12							
	Mn-54	12	15	(0/12)	N/A	N/A	N/A	(0/12)*	0
	Fe-59	12	30	(0/12)	N/A	N/A	N/A	(0/12)*	0
	Co-58	12	15	(0/12)	N/A	N/A	N/A	(0/12)*	0
	Co-60	12	15	(0/12)	N/A	N/A	N/A	(0/12)*	0
	Zn-65	12	30	(0/12)	N/A	N/A	N/A	(0/12)*	0
	Zr-95	12	30	(0/12)	N/A	N/A	N/A	(0/12)*	0
	Nb-95	12	15	(0/12)	N/A	N/A	N/A	(0/12)*	0
	I-131	12	1	(0/12)	N/A	N/A	N/A	(0/12)*	0

Table 3-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

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Medium or Pathway Sampled (Unit)	Analysis Type	Analysis Total No.	LLD (pCi/unit)	All Indicator Locations Mean Range	Indicator Location with Highest Mean Name	Indicator Location with Highest Mean Distance Direction	Indicator Location with Highest Mean Mean Range	Control Location Mean Range	Non-routine Reported Measurements
River Water (pCi/liter)	Cs-134	12	15	(0/12)	N/A	N/A	N/A	(0/12)*	0
	Cs-137	12	18	(0/12)	N/A	N/A	N/A	(0/12)*	0
	Ba-140	12	60	(0/12)	N/A	N/A	N/A	(0/12)*	0
	La-140	12	15	(0/12)	N/A	N/A	N/A	(0/12)*	0
	Sr-89	1	-	(1/0)	N/A	N/A	N/A	(1/0)*	0
	Sr-90	1	-	(1/0)	N/A	N/A	N/A	(1/0)*	0
Surface Water (pCi/liter)	Tritium	8	2000	3260(4/4) (2600-3860)	08	3.37 mi. SSE	3260(4/4) (2600-3860)	(0/4)	0
	Gamma	24							
	Mn-54	24	15	(0/12)	N/A	N/A	N/A	(0/12)	0
	Fe-59	24	30	(0/12)	N/A	N/A	N/A	(0/12)	0
	Co-58	24	15	(0/12)	N/A	N/A	N/A	(0/12)	0
	Co-60	24	15	0.838 (1/12) (0.838)	08	3.37 mi. SSE	0.838(1/12) (0.838)	(0/12)	0
	Zn-65	24	30	(0/12)	N/A	N/A	N/A	(0/12)	0
	Zr-95	24	30	(0/12)	N/A	N/A	N/A	(0/12)	0
	Nb-95	24	15	(0/12)	N/A	N/A	N/A	1.88(1/12) (1.88)	0
	I-131	24	1	(0/12)	N/A	N/A	N/A	(0/12)	0
	Cs-134	24	15	(0/12)	N/A	N/A	N/A	(0/12)	0

Table 3-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

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Medium or Pathway Sampled (Unit)	Analysis Type	Analysis Total No.	LLD (pCi/unit)	All Indicator Locations Mean Range	Indicator Location with Highest Mean Name	Indicator Location with Highest Mean Distance Direction	Indicator Location with Highest Mean Mean Range	Control Location Mean Range	Non-routine Reported Measurements
Surface Water (pCi/liter)	Cs-137	24	18	(0/12)	N/A	N/A	N/A	(0/12)	0
	Ba-140	24	60	9.09(1/12) (9.09)	08	3.37 mi. SSE	9.09(1/12) (9.09)	(0/12)	0
	La-140	24	15	(0/12)	N/A	N/A	N/A	(0/12)	0
	Sr-89	1	-	(0/1)	N/A	N/A	N/A	(0/1)	0
	Sr-90	1	-	(0/1)	N/A	N/A	N/A	(0/1)	0
Sediment Silt (pCi/kg) (dry)	Gamma	6							
	K-40	6	-	18700 (4/4) (12100 - 32400)	11	5.80 mi. SSE	24500(2/2) (16500 - 32400)	12600(2/2) (11900-13300)	0
	Cs-134	6	150	(0/4)	N/A	N/A	(0/2)	(0/2)	0
	Cs-137	6	180	(0/4)	N/A	N/A	(0/2)	88.3(0/1) (46.5-130)	0
	Ra-226	6	-	2620(3/4) (1340-4680)	11	5.80 mi. SSE	3265(2/2) (1850-4680)	1720(2/2) (1230-2210)	0
	Th-228	6	-	1670(4/4) (1170-2910)	11	5.80 mi. SSE	2040(2/2) (1170-2910)	730(2/2) (661-798)	0
	Th-232	6	-	1670(4/4) (1170-2910)	11	5.80 mi. SSE	2040(2/2) (1170-2910)	578(2/2) (560-595)	0
	Sr-89 (Annually)	3	-	(0/2)	N/A	N/A	N/A	(0/1)	0
	Sr-90 (Annually)	3	-	92.5(1/2) (92.5)	08	3.37 mi. SSE	92.5(1/1) 92.5	(0/1)	0
Shoreline Soil (pCi/kg) (dry)	Gamma	2							
	K-40	2	-	2700(2/2) (2560-2700)	08	3.37 mi. SSE	2700(2/2) (2560-2700)	N/A	0

*Results of surface water taken at Location 09A used as control value for river water

Table 3-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

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Medium or Pathway Sampled (Unit)	Analysis Type	Analysis Total No.	LLD (pCi/unit)	All Indicator Locations Mean Range	Indicator Location with Highest Mean Name	Indicator Location with Highest Mean Distance Direction	Indicator Location with Highest Mean Mean Range	Control Location Mean Range	Non-routine Reported Measure-ments
Shoreline Soil (pCi/kg) (dry)	Cs-134	2	150	(0/2)	N/A	N/A	(0/2)	N/A	0
	Cs-137	2	180	N/A	N/A	N/A	(0/2)	N/A	0
	Ra-226	2	-	1220(2/2) (1090-1350)	08	3.37 mi. SSE	1220(2/2) (1090-1350)	N/A	0
	Th-228	2	-	593(2/2) (571-615)	08	3.37 mi. SSE	593(2/2) (571-615)	N/A	0
	Th-232	2	-	545(2/2) (503-586)	08	3.37 mi. SSE	545(2/2) (503-586)	N/A	0
	Sr-89 (Annually)	1	-	(0/1)	N/A	N/A	N/A	N/A	0
	Sr-90 (Annually)	1	-	(0/1)	N/A	N/A	N/A	N/A	0
Fish (pCi/kg) (wet)	Gamma	8							
	K-40	8	-	2370(4/4) (1630-2240)	08	3.37 mi. SSE	2370(4/4) (1630-2240)	2030(4/4) (1730-3410)	0
	Mn-54	8	130	(0/4)	N/A	N/A	N/A	(0/4)	0
	Fe-59	8	260	(0/4)	N/A	N/A	N/A	(0/4)	0
	Co-58	8	130	(0/4)	N/A	N/A	N/A	(0/4)	0
	Co-60	8	130	(0/4)	N/A	N/A	N/A	(0/4)	0
	Zn-65	8	260	(0/4)	N/A	N/A	N/A	(0/4)	0
	Cs-134	8	130	(0/4)	N/A	N/A	N/A	(0/4)	0

3.2 Analytical Results of 2009 REMP Samples

Radiological analyses of environmental media characteristically approach and frequently fall below the detection limits of state-of-the-art measurement methods. The data reported in the following tables are strictly counting statistics. The reported error is two times the standard deviation (2σ) of the net activity. Unless otherwise noted, the overall error (counting, sample size, chemistry, errors, etc.) is estimated to be 2 to 5 times that listed. Results are considered true positives when the measured value exceeds both the MDC and the 2σ error.

Because of counting statistics, negative values, zeros and numbers below the Minimum Detectable Level (MDL) are statistically valid pieces of data[1]. For clarity of this report only detectable results are presented. TBE's analytical methods meet the Lower Limit of Detection (LLD) requirements given in Table 2 of the USNRC Branch Technical Position, "An Acceptable Radiological Environmental Monitoring Program", (November 1979, Revision 1) and the North Anna ODCM.

Data are given according to sample type as indicated below.

1. Gamma Exposure Rate
2. Air Particulates, Gross Beta Radioactivity
3. Air Particulates, Weekly I-131
4. Air Particulates, Quantitative Gamma Spectra
5. Air Particulate Strontium
6. Soil
7. Precipitation
8. Cow Milk
9. Food Products and Vegetation
10. Well Water
11. River Water
12. Surface Water
13. Bottom Sediment/Silt
14. Shoreline Soil
15. Fish

[1] Analytical results are handled as recommended by HASL (*"Reporting of Analytical Results from HASL,"* letter by Leo B. Higginbotham) and NUREG/CR-4007 (Sept. 1984).

TABLE 3-2

DIRECT RADIATION MEASURMENTS - SECTOR QUARTERLY TLD RESULTS

mR/Std. Month (30.4 days) ± 2 Sigma

Station	First Quarter 01/01/2009 03/31/2009	Second Quarter 03/31/2009 06/30/2009	Third Quarter 06/30/2009 09/29/2009	Fourth Quarter 09/29/2009 12/29/2009	Quarterly* Average +/- 2 s.d.
N-1	4.1	3.8	4.3	6.1	4.3 +/- 2.3
N-33	2.5	3.5	4.0	5.7	
N-2	2.4	2.3	3.0	2.6	2.4 +/- 1.1
N-34	1.2	2.3	2.6	2.6	
NNE-3	8.1	5.9	6.3	7.6	6.5 +/- 2.1
NNE-35	5.4	5.6	5.9	7.5	
NNE-4	5.1	4.3	4.0	5.0	4.4 +/- 1.2
NNE 36	5.0	4.2	3.4	4.5	
NE-5	4.0	4.1	4.2	4.9	4.4 +/- 1.0
NE-37	4.4	3.8	4.5	5.4	
NE-6	4.0	3.6	2.5	3.8	3.5 +/- 1.1
NE-38	3.0	3.1	3.7	3.9	
ENE-7	5.8	4.4	4.7	6.4	5.2 +/- 1.4
ENE-39	5.2	4.9	4.7	5.8	
ENE-8	2.5	2.5	2.6	3.9	2.9 +/- 1.4
ENE-40	2.3	2.5	4.1	2.7	
E-9	4.9	3.6	4.0	5.5	4.9 +/- 1.7
E-41	5.5	4.6	6.1	5.1	
E-10	3.8	4.3	3.7	5.6	4.4 +/- 1.6
E-42	5.0	3.3	4.3	5.1	
ESE-11	4.3	4.1	3.7	4.8	3.9 +/- 1.0
ESE-43	3.4	4.0	3.9	3.2	
ESE-12	5.3	4.1	4.6	5.4	4.6 +/- 1.0
ESE-44	4.6	4.2	4.0	4.7	
SE-13	3.8	3.6	3.7	4.2	4.0 +/- 1.6
SE-45	5.6	3.0	3.6	4.4	
SE-14	6.1	5.2	7.4	7.5	6.4 +/- 1.7
SE-46	5.9	5.7	6.3	7.2	
SSE-15	5.7	3.5	4.2	5.2	4.7 +/- 2.1
SSE-47	6.2	3.2	4.7	5.0	
SSE-16	3.7	2.0	3.9	3.9	2.9 +/- 1.7
SSE-48	2.4	1.9	2.3	3.2	

*Average of collocated TLDs.

TABLE 3-2

DIRECT RADIATION MEASURMENTS - SECTOR QUARTERLY TLD RESULTS

mR/Std. Month (30.4 days) ± 2 Sigma

Station	First Quarter 01/01/2009 03/31/2009	Second Quarter 03/31/2009 06/30/2009	Third Quarter 06/30/2009 09/29/2009	Fourth Quarter 09/29/2009 12/29/2009	Quarterly* Average +/- 2 s.d.
S-17	6.6	7.1	7.3	8.1	7.4 +/- 1.5
S-49	8.4	6.3	7.1	8.0	
S-18	2.7	1.6	2.1	2.9	2.2 +/- 1.1
S-50	2.0	1.5	1.9	2.8	
SSW-19	54.5	23.8	21.1	39.0	31.5 +/- 31.6
SSW-51	48.8	37.0	10.0	17.4	
SSW-20	1.8	1.7	2.2	2.9	2.3 +/- 1.1
SSW-52	1.8	2.3	2.3	3.2	
SW-21	5.3	3.3	4.2	4.7	4.0 +/- 1.9
SW-53	3.8	3.9	2.2	4.6	
SW-22	5.1	3.7	3.9	5.0	4.5 +/- 1.2
SW-54	4.9	4.0	4.2	5.0	
WSW-23	5.1	4.4	5.1	6.2	4.7 +/- 2.2
WSW-55	4.9	4.3	4.9	2.3	
WSW-24	5.0	4.2	3.4	4.7	4.3 +/- 1.3
WSW-56	4.9	3.8	3.7	5.0	
W-25	6.4	7.0	7.5	8.0	7.2 +/- 1.3
W-57	7.7	7.1	6.1	7.5	
W-26	2.6	2.1	2.8	3.2	2.7 +/- 1.0
W-58	3.5	2.0	2.9	2.5	
WNW-27	3.3	3.0	2.8	3.6	2.9 +/- 1.0
WNW-59	2.3	2.2	2.8	3.4	
WNW-28	3.1	2.0	2.3	3.3	2.8 +/- 1.2
WNW-60	3.0	2.7	2.3	3.7	
NW-29	7.0	6.0	5.8	6.5	6.2 +/- 1.5
NW-61	7.6	5.4	5.7	5.8	
NW-30	0.2	1.3	2.5	2.6	1.8 +/- 1.6
NW-62	1.7	2.2	2.0	1.5	
NNW-31	1.9	2.6	2.6	4.7	2.9 +/- 1.7
NNW-63	2.8	2.6	2.8	3.4	
NNW-32	1.7	2.6	4.0	3.1	3.1 +/- 1.6
NNW-64	3.0	2.7	3.5	4.2	
Mean					5.0 +/- 5.7

*Average of collocated TLDs.

TABLE 3-2
DIRECT RADIATION MEASURMENTS – PRE-OPERATIONAL LOCATIONS
& EMERGENCY SECTOR
QUARTERLY TLD RESULTS
mR/Std. Month (30.4 days) ± 2 Sigma

Station	First Quarter 01/01/2009 03/31/2009	Second Quarter 03/31/2009 06/30/2009	Third Quarter 06/30/2009 09/29/2009	Fourth Quarter 09/29/2009 12/29/2009	Quarterly* Average +/- 2 s.d.
C-1	2.6	2.8	2.7	3.5	3.1 +/- 1.3
C-2	2.3	3.5	2.7	4.3	
C-3**	2.7	3.1	2.6	3.7	3.0 +/- 0.9
C-4**	2.5	2.6	3.0	3.5	
C-5	2.6	1.5	1.8	2.8	2.1 +/- 1.2
C-6	1.2	2.6	2.1	1.8	
C-7**	3.1	2.8	3.5	3.8	3.4 +/- 1.0
C-8**	2.9	3.1	3.7	4.2	
				Mean Indicator	2.6 +/- 0.8
				Control**	3.2 +/- 0.5
EPSA-01***	4.2	4.3	4.5	5.4	4.3 +/- 1.0
EPSA-02***	4.2	3.8	3.9	4.4	
EPSF-03***	4.6	4.2	4.4	4.9	4.6 +/- 0.8
EPSF-04***	5.3	4.4	4.2	5.1	
EPSR-05***	4.4	4.2	5.1	4.3	4.5 +/- 1.1
EPSR-06***	4.0	5.3	5.0	3.9	
EPSJ-07***	4.8	2.8	4.8	4.7	4.2 +/- 1.7
EPSJ-08***	4.5	3.1	5.2	4.0	
EPSP-09***	7.1	8.0	6.8	8.0	7.6 +/- 1.3
EPSP-10***	8.3	7.4	6.7	8.1	
Mean					5.1 +/- 1.4

*Average of collocated TLDs.
** Control Station
*** Emergency Plan TLDs.

TABLE 3-2
DIRECT RADIATION MEASURMENTS - ENVIRONMENTAL QUARTERLY TLD RESULTS
mR/Std. Month (30.4 days) ± 2 Sigma

Station	First Quarter 01/01/2009 03/31/2009	Second Quarter 03/31/2009 06/30/2009	Third Quarter 06/30/2009 09/29/2009	Fourth Quarter 09/29/2009 12/29/2009	Quarterly Average +/- 2 s.d.	Annual TLD
STA-01	4.8	3.7	4.1	4.9	4.4 +/- 1.1	4.0
STA-02	3.0	2.1	2.9	2.2	2.6 +/- 0.9	1.6
STA-03	2.0	1.6	1.9	1.9	1.9 +/- 0.3	1.8
STA-04	1.5	2.1	2.8	1.7	2.0 +/- 1.1	1.9
STA-05	2.8	3.0	2.8	3.8	3.1 +/- 1.0	2.5
STA-05A	3.6	2.3	2.5	3.1	2.9 +/- 1.2	2.4
STA-06	4.7	3.2	4.1	5.2	4.3 +/- 1.7	4.7
STA-07	3.7	2.4	3.0	3.5	3.2 +/- 1.2	3.3
STA-21	3.0	3.2	2.5	3.9	3.2 +/- 1.2	2.5
STA-22	5.2	3.9	4.9	5.0	4.8 +/- 1.2	3.5
STA-23	6.1	4.1	4.1	5.3	4.9 +/- 2.0	4.0
STA-24*	2.8	2.9	2.8	3.4	3.0 +/- 0.3	2.6
			Mean - Indicator Locations		3.4 +/- 1.2	2.9 +/- 2.1

*Control

Table 3-3
Air Particulate
Gross Beta Radioactivity
[10^{-3} pCi/m^3]

Period Ending	Station 01			Station 02			Station 03			Station 04			Station 05			Station 06			Station 07		
01/06/09	2.23E+01	+/-	3.18E+00	2.01E+01	+/-	3.10E+00	1.51E+01	+/-	2.82E+00	2.05E+01	+/-	3.11E+00	1.50E+01	+/-	2.82E+00	2.23E+01	+/-	3.20E+00	1.73E+01	+/-	2.96E+00
01/13/09	1.93E+01	+/-	2.99E+00	1.76E+01	+/-	2.95E+00	1.67E+01	+/-	2.83E+00	1.47E+01	+/-	2.75E+00	1.11E+01	+/-	2.57E+00	1.35E+01	+/-	2.72E+00	1.87E+01	+/-	3.00E+00
01/20/09	2.56E+01	+/-	3.29E+00	2.19E+01	+/-	3.12E+00	2.09E+01	+/-	3.06E+00	2.39E+01	+/-	3.23E+00	1.81E+01	+/-	2.94E+00	2.16E+01	+/-	3.13E+00	2.00E+01	+/-	3.02E+00
01/27/09	2.56E+01	+/-	3.30E+00	2.21E+01	+/-	3.14E+00	1.86E+01	+/-	2.97E+00	1.74E+01	+/-	2.92E+00	2.16E+01	+/-	3.12E+00	2.37E+01	+/-	3.22E+00	2.08E+01	+/-	3.08E+00
02/04/09	1.12E+01	+/-	2.33E+00	1.87E+01	+/-	2.72E+00	1.29E+01	+/-	2.43E+00	1.72E+01	+/-	2.65E+00	1.73E+01	+/-	2.65E+00	1.50E+01	+/-	2.54E+00	1.81E+01	+/-	2.69E+00
02/10/09	2.03E+01	+/-	3.49E+00	2.81E+01	+/-	3.86E+00	2.11E+01	+/-	3.54E+00	2.40E+01	+/-	3.67E+00	2.07E+01	+/-	3.51E+00	1.83E+01	+/-	3.39E+00	2.22E+01	+/-	3.58E+00
02/17/09	1.64E+01	+/-	2.93E+00	1.76E+01	+/-	2.98E+00	1.32E+01	+/-	2.75E+00	1.50E+01	+/-	2.87E+00	1.27E+01	+/-	2.73E+00	1.25E+01	+/-	2.72E+00	1.92E+01	+/-	3.06E+00
02/24/09	7.27E+00	+/-	2.30E+00	1.98E+01	+/-	3.01E+00	1.58E+01	+/-	2.81E+00	1.68E+01	+/-	2.83E+00	1.56E+01	+/-	2.80E+00	1.60E+01	+/-	2.81E+00	1.53E+01	+/-	2.78E+00
03/04/09	2.10E+01	+/-	2.81E+00	1.54E+01	+/-	2.55E+00	1.27E+01	+/-	2.57E+00	1.66E+01	+/-	2.60E+00	1.87E+01	+/-	2.70E+00	1.81E+01	+/-	2.67E+00	1.44E+01	+/-	2.49E+00
03/10/09	2.21E+01	+/-	3.61E+00	2.37E+01	+/-	3.68E+00		<	1.69E+00	2.19E+01	+/-	3.60E+00	2.26E+01	+/-	3.63E+00	2.29E+01	+/-	3.64E+00	2.17E+01	+/-	3.58E+00
03/17/09	1.06E+01	+/-	2.49E+00	1.39E+01	+/-	2.67E+00	1.54E+01	+/-	2.76E+00	1.27E+01	+/-	2.61E+00	1.28E+01	+/-	2.61E+00	1.41E+01	+/-	2.69E+00	1.33E+01	+/-	2.64E+00
03/24/09	1.70E+01	+/-	2.71E+00	1.78E+01	+/-	2.75E+00	1.72E+01	+/-	2.72E+00	2.22E+01	+/-	3.95E+00	1.98E+01	+/-	2.86E+00	1.78E+01	+/-	2.75E+00	1.64E+01	+/-	2.68E+00
03/31/09	1.31E+01	+/-	2.53E+00	1.07E+01	+/-	2.63E+00	1.09E+01	+/-	2.39E+00	7.39E+00	+/-	2.16E+00	8.25E+00	+/-	2.22E+00	7.51E+00	+/-	2.17E+00	9.58E+00	+/-	2.31E+00
04/07/09	1.16E+01	+/-	2.49E+00	1.40E+01	+/-	2.65E+00	1.07E+01	+/-	2.46E+00	1.50E+01	+/-	2.71E+00	1.12E+01	+/-	2.49E+00	1.05E+01	+/-	2.44E+00	1.04E+01	+/-	2.43E+00
04/14/09	1.71E+01	+/-	2.77E+00	2.03E+01	+/-	2.92E+00	1.56E+01	+/-	2.68E+00	1.55E+01	+/-	2.67E+00	1.27E+01	+/-	2.57E+00	1.31E+01	+/-	2.53E+00	1.66E+01	+/-	2.72E+00
04/21/09	1.79E+01	+/-	2.97E+00	1.60E+01	+/-	2.89E+00	1.31E+01	+/-	2.74E+00	9.83E+00	+/-	2.54E+00	1.24E+01	+/-	2.69E+00	1.60E+01	+/-	2.87E+00	1.49E+01	+/-	2.82E+00
04/28/09	2.53E+01	+/-	3.19E+00	2.04E+01	+/-	2.96E+00	2.24E+01	+/-	3.05E+00	1.39E+01	+/-	2.62E+00	1.56E+01	+/-	2.71E+00	1.93E+01	+/-	2.91E+00	1.82E+01	+/-	2.85E+00
05/05/09	1.40E+01	+/-	2.56E+00	1.36E+01	+/-	2.54E+00	8.63E+00	+/-	2.24E+00	1.00E+01	+/-	2.32E+00	1.11E+01	+/-	2.39E+00	1.11E+01	+/-	2.39E+00	1.15E+01	+/-	2.41E+00
05/12/09	1.15E+01	+/-	2.42E+00	1.12E+01	+/-	2.40E+00	6.74E+00	+/-	2.09E+01	8.25E+00	+/-	2.21E+00	6.56E+00	+/-	2.09E+00	1.01E+01	+/-	2.33E+00	1.00E+01	+/-	2.32E+00
05/19/09	1.29E+01	+/-	2.55E+00	1.20E+01	+/-	2.54E+00	8.58E+00	+/-	2.39E+00	1.23E+01	+/-	2.57E+00	9.82E+00	+/-	2.44E+00	1.18E+01	+/-	2.53E+00	1.12E+01	+/-	2.50E+00
05/26/09	1.06E+01	+/-	2.51E+00	9.34E+00	+/-	2.40E+00	1.02E+01	+/-	2.41E+00	8.95E+00	+/-	2.37E+00	7.61E+00	+/-	2.28E+00	1.00E+01	+/-	2.43E+00	1.20E+01	+/-	2.55E+00
06/02/09	9.06E+00	+/-	2.51E+00	1.06E+01	+/-	2.60E+00	6.01E+00	+/-	2.32E+00	8.30E+00	+/-	2.48E+00	9.48E+00	+/-	2.58E+00	9.60E+00	+/-	2.55E+00	9.01E+00	+/-	2.51E+00
06/09/09	1.41E+01	+/-	2.72E+00	1.38E+01	+/-	2.74E+00	1.06E+01	+/-	2.52E+00	1.14E+01	+/-	2.56E+00	3.07E+01	+/-	1.00E+01	7.40E+00	+/-	2.35E+00	9.94E+00	+/-	2.53E+00
06/16/09	1.14E+01	+/-	2.44E+00	1.37E+01	+/-	2.64E+00	1.07E+01	+/-	2.49E+00	1.44E+01	+/-	2.68E+00	1.33E+01	+/-	2.63E+00	1.20E+01	+/-	2.54E+00	1.42E+01	+/-	2.67E+00
06/23/09	1.16E+01	+/-	2.71E+00	1.09E+01	+/-	2.59E+00	9.22E+00	+/-	2.60E+00	1.03E+01	+/-	2.57E+00	8.19E+00	+/-	2.44E+00	1.03E+01	+/-	2.56E+00	1.03E+01	+/-	2.56E+00
06/30/09	1.30E+01	+/-	2.71E+00	2.66E+01	+/-	3.35E+00	2.49E+01	+/-	3.27E+00	1.01E+01	+/-	2.53E+00	1.30E+01	+/-	4.66E+00	1.47E+01	+/-	2.78E+00	1.41E+01	+/-	2.75E+00

Table 3-3

Air Particulate
Gross Beta Radioactivity
[10^{-3} pCi/m^3]

Period Ending	Station 21			Station 22			Station 23			Station 24*			Station 01A			Station 05A		
01/06/09	1.92E+01	+/-	3.03E+00	1.83E+01	+/-	2.99E+00	2.05E+01	+/-	3.12E+00	1.85E+01	+/-	2.99E+00	1.58E+01	+/-	2.86E+00	1.85E+01	+/-	3.01E+00
01/13/09	1.29E+01	+/-	2.67E+00	1.60E+01	+/-	2.83E+00	1.44E+01	+/-	2.78E+00	1.90E+01	+/-	2.98E+00	1.85E+01	+/-	2.95E+00	1.60E+01	+/-	2.84E+00
01/20/09	1.60E+01	+/-	2.83E+00	2.48E+01	+/-	3.27E+00	2.14E+01	+/-	3.05E+00	1.59E+01	+/-	2.81E+00	2.00E+01	+/-	3.01E+00	1.48E+01	+/-	2.77E+00
01/27/09	2.18E+01	+/-	3.13E+00	2.51E+01	+/-	3.28E+00	2.65E+01	+/-	3.40E+00	2.47E+01	+/-	3.26E+00	2.41E+01	+/-	3.24E+00	2.24E+01	+/-	3.16E+00
02/04/09	1.63E+01	+/-	2.62E+00	1.97E+01	+/-	2.76E+00	1.82E+01	+/-	2.71E+00	1.03E+01	+/-	2.28E+00	1.14E+01	+/-	2.34E+00	1.66E+01	+/-	2.62E+00
02/10/09	2.23E+01	+/-	3.59E+00	2.75E+01	+/-	3.83E+00	2.58E+01	+/-	3.75E+00	2.88E+01	+/-	3.90E+00	1.76E+01	+/-	3.50E+00	2.30E+01	+/-	3.62E+00
02/17/09	1.39E+01	+/-	2.79E+00	9.26E+00	+/-	2.54E+00	1.72E+01	+/-	2.96E+00	1.69E+01	+/-	2.94E+00	1.18E+01	+/-	2.69E+00	1.38E+01	+/-	2.78E+00
02/24/09	1.11E+01	+/-	2.57E+00	1.63E+01	+/-	2.82E+00	1.76E+01	+/-	2.95E+00	1.45E+01	+/-	2.74E+00	1.74E+01	+/-	2.88E+00	1.39E+01	+/-	2.71E+00
03/04/09	1.48E+01	+/-	2.51E+00	1.50E+01	+/-	2.52E+00	1.54E+01	+/-	2.55E+00	1.64E+01	+/-	2.59E+00	1.06E+01	+/-	2.29E+00	1.55E+01	+/-	2.54E+00
03/10/09	1.76E+01	+/-	3.38E+00	1.49E+01	+/-	3.24E+00	2.31E+01	+/-	3.65E+00	1.75E+01	+/-	3.37E+00	1.77E+01	+/-	3.39E-01	2.29E+01	+/-	3.64E+00
03/17/09	1.06E+01	+/-	2.49E+00	1.35E+01	+/-	2.65E+00	1.39E+01	+/-	2.65E+00	8.28E+00	+/-	2.53E+00	1.56E+01	+/-	2.77E+00	1.34E+01	+/-	2.64E+00
03/24/09	1.88E+01	+/-	2.80E+00	2.12E+01	+/-	2.93E+00	1.64E+01	+/-	2.73E+00	1.94E+01	+/-	2.83E+00	1.83E+01	+/-	2.78E+00	1.81E+01	+/-	2.77E+00
03/31/09	1.08E+01	+/-	2.37E+00	1.30E+01	+/-	2.50E+00	1.12E+01	+/-	2.40E+00	1.03E+01	+/-	2.35E+00	8.92E+00	+/-	2.27E+00	1.18E+01	+/-	2.45E+00
04/07/09	1.02E+01	+/-	2.42E+00	1.08E+01	+/-	2.46E+00	9.11E+00	+/-	2.36E+00	1.36E+01	+/-	2.64E+00	8.55E+00	+/-	2.34E+00	1.17E+01	+/-	2.52E+00
04/14/09	1.53E+01	+/-	2.67E+00	1.87E+01	+/-	2.85E+00	1.56E+01	+/-	2.68E+00	1.88E+01	+/-	2.84E+00	1.67E+01	+/-	2.75E+00	1.44E+01	+/-	2.65E+00
04/21/09	1.76E+01	+/-	2.96E+00	1.60E+01	+/-	2.82E+00	1.27E+01	+/-	2.70E+00	1.29E+01	+/-	2.72E+00	1.43E+01	+/-	2.79E+00	6.03E+00	+/-	2.31E+00
04/28/09	2.42E+01	+/-	3.06E+00	2.32E+01	+/-	3.15E+00	1.77E+01	+/-	2.82E+00	1.74E+01	+/-	2.80E+00	1.73E+01	+/-	2.80E+00	1.69E+01	+/-	2.79E+00
05/05/09	1.11E+01	+/-	2.39E+00	8.44E+00	+/-	2.22E+00	1.28E+01	+/-	2.50E+00	1.05E+01	+/-	2.36E+00	1.15E+01	+/-	2.42E+00	1.00E+01	+/-	2.32E+00
05/12/09	9.10E+00	+/-	2.27E+00	1.04E+01	+/-	2.35E+00	1.06E+01	+/-	2.37E+00	7.65E+00	+/-	2.16E+00	1.01E+01	+/-	2.33E+00	9.36E+00	+/-	2.28E+00
05/19/09	1.10E+01	+/-	2.45E+00	9.99E+00	+/-	2.39E+00	1.30E+01	+/-	2.58E+00	1.23E+01	+/-	2.52E+00	1.00E+01	+/-	2.39E+00	8.94E+00	+/-	2.37E+00
05/26/09	1.15E+01	+/-	2.55E+00	1.21E+01	+/-	2.59E+00	1.07E+01	+/-	2.50E+00	1.03E+01	+/-	2.42E+00	1.14E+01	+/-	2.55E+00	7.53E+00	+/-	2.88E+00
06/02/09	8.16E+00	+/-	2.46E+00	1.04E+01	+/-	2.59E+00	1.02E+01	+/-	2.58E+00	1.14E+01	+/-	2.65E+00	8.33E+00	+/-	2.47E+00	8.43E+00	+/-	2.52E+00
06/09/09	1.06E+01	+/-	2.55E+00	1.34E+01	+/-	2.68E+00	1.18E+01	+/-	2.63E+00	1.01E+01	+/-	2.48E+00	9.61E+00	+/-	2.46E+00	1.36E+01	+/-	2.68E+00
06/16/09	1.45E+01	+/-	2.63E+00	1.32E+01	+/-	2.55E+00	1.32E+01	+/-	2.56E+00	1.35E+01	+/-	2.36E+00	1.35E+01	+/-	2.56E+00	1.19E+01	+/-	2.54E+00
06/23/09	1.03E+01	+/-	2.62E+00	1.30E+01	+/-	2.78E+00	9.46E+00	+/-	2.56E+00	1.13E+01	+/-	2.62E+00	9.25E+00	+/-	2.57E+00	8.41E+00	+/-	2.45E+00
06/30/09	1.15E+01	+/-	2.62E+00	1.31E+01	+/-	2.70E+00	1.49E+01	+/-	2.80E+00	1.38E+01	+/-	2.73E+00	1.30E+01	+/-	2.70E+00	1.19E+01	+/-	2.63E+00

* Control Station

Table 3-3
Air Particulate
Gross Beta Radioactivity
[10^{-3} pCi/m^3]

Period Ending	Station 01			Station 02			Station 03			Station 04			Station 05			Station 06			Station 07		
07/08/09	1.33E+01	+/-	2.47E+00	1.31E+01	+/-	2.47E+00	1.22E+01	+/-	2.43E+00	1.07E+01	+/-	2.36E+00	1.12E+01	+/-	2.39E+00	1.06E+01	+/-	2.34E+00	1.25E+01	+/-	2.43E+00
07/14/09	1.09E+01	+/-	3.03E+00	1.17E+01	+/-	3.08E+00	5.80E+00	+/-	2.73E+00	1.26E+01	+/-	3.13E+00	1.17E+01	+/-	3.08E+00	8.14E+00	+/-	2.88E+00	9.22E+00	+/-	2.94E+00
07/21/09	2.32E+01	+/-	3.79E+00	1.75E+01	+/-	3.52E+00	1.58E+01	+/-	3.56E+00	1.79E+01	+/-	3.60E+00	1.80E+01	+/-	3.57E+00	1.32E+01	+/-	3.35E+00	2.02E+01	+/-	3.85E+00
07/28/09	2.16E+01	+/-	3.53E+00	1.97E+01	+/-	3.48E+00	1.33E+01	+/-	3.09E+00	1.92E+01	+/-	3.40E+00	1.76E+01	+/-	3.36E+00	1.45E+01	+/-	3.23E+00	2.64E+01	+/-	3.95E+00
08/04/09	1.89E+01	+/-	3.55E+00	1.29E+01	+/-	3.21E+00	1.29E+01	+/-	3.32E+00	1.47E+01	+/-	3.36E+00	1.46E+01	+/-	3.29E+00	1.39E+01	+/-	3.26E+00	1.77E+01	+/-	3.42E+00
08/11/09	1.74E+01	+/-	3.46E+00	2.74E+01	+/-	3.94E+00	1.63E+01	+/-	3.39E+00	1.92E+01	+/-	3.53E+00	2.69E+01	+/-	3.91E+00	1.97E+01	+/-	3.63E+00	2.47E+01	+/-	3.84E+00
08/18/09	1.38E+01	+/-	2.93E+00	1.93E+01	+/-	3.20E+00	1.32E+01	+/-	2.89E+00	1.42E+01	+/-	2.95E+00	1.93E+01	+/-	3.20E+00	1.24E+01	+/-	2.86E+00	1.18E+01	+/-	3.17E+00
08/25/09	1.14E+01	+/-	3.35E+00	1.19E+01	+/-	3.38E+00	1.03E+01	+/-	3.31E+00	1.34E+01	+/-	3.45E+00	1.11E+01	+/-	3.35E+00	1.58E+01	+/-	3.55E+00	1.38E+01	+/-	3.46E+00
09/01/09	2.35E+01	+/-	3.62E+00	2.50E+01	+/-	3.68E+00	1.38E+01	+/-	3.21E+00	1.86E+01	+/-	3.41E+00	2.71E+01	+/-	3.76E+00	2.38E+01	+/-	3.63E+00	2.13E+01	+/-	3.52E+00
09/08/09	2.02E+01	+/-	3.56E+00	1.94E+01	+/-	3.52E+00	1.33E+01	+/-	3.24E+00	1.71E+01	+/-	3.42E+00	2.14E+01	+/-	3.60E+00	1.96E+01	+/-	3.52E+00	2.29E+01	+/-	3.66E+00
09/15/09	1.39E+01	+/-	3.52E+00	2.07E+01	+/-	3.64E+00	1.02E+01	+/-	3.18E+00	2.03E+01	+/-	3.64E+00	1.40E+01	+/-	3.36E+00	1.95E+01	+/-	3.58E+00	8.16E+00	+/-	3.03E+00
09/22/09	2.51E+01	+/-	3.71E+00	1.82E+01	+/-	3.46E+00	2.01E+01	+/-	3.46E+00	2.04E+01	+/-	3.49E+00	2.18E+01	+/-	3.56E+00	2.09E+01	+/-	3.54E+00	2.26E+01	+/-	3.63E+00
09/29/09	1.63E+01	+/-	2.96E+00	1.16E+01	+/-	2.71E+00	1.35E+01	+/-	2.86E+00	1.27E+01	+/-	2.78E+00	1.39E+01	+/-	2.83E+00	1.59E+01	+/-	2.94E+00	1.31E+01	+/-	2.78E+00
10/06/09	2.37E+01	+/-	3.56E+00	1.61E+01	+/-	3.25E+00	1.97E+01	+/-	3.37E+00	2.28E+01	+/-	3.58E+00	2.32E+01	+/-	3.61E+00	2.05E+01	+/-	3.51E+00	1.67E+01	+/-	3.28E+00
10/13/09	1.74E+01	+/-	3.07E+00	1.47E+01	+/-	2.93E+00	1.47E+01	+/-	2.93E+00	1.48E+01	+/-	2.94E+00	1.68E+01	+/-	3.04E+00	1.05E+01	+/-	2.72E+00	1.44E+01	+/-	2.92E+00
10/21/09	1.57E+01	+/-	2.95E+00	1.19E+01	+/-	2.77E+00	1.51E+01	+/-	2.93E+00	1.57E+01	+/-	2.95E+00	1.26E+01	+/-	2.80E+00	1.30E+01	+/-	2.82E+00	1.13E+01	+/-	2.74E+00
10/27/09	2.21E+01	+/-	4.21E+00	1.76E+01	+/-	4.03E+00	1.62E+01	+/-	4.05E+00	1.61E+01	+/-	4.01E+00	1.70E+01	+/-	4.03E+00	1.68E+01	+/-	4.01E+00	1.64E+01	+/-	3.99E+00
11/03/09	1.13E+01	+/-	3.08E+00	1.27E+01	+/-	3.16E+00	1.24E+01	+/-	3.08E+00	1.05E+01	+/-	3.03E+00	1.35E+01	+/-	3.18E+00	1.12E+01	+/-	3.08E+00	1.43E+01	+/-	3.21E+00
11/10/09	3.29E+01	+/-	4.17E+00	2.75E+01	+/-	3.84E+00	2.38E+01	+/-	3.69E+00	2.14E+01	+/-	3.59E+00	2.60E+01	+/-	3.77E+00	2.89E+01	+/-	3.88E+00	2.37E+01	+/-	3.69E+00
11/17/09	1.78E+01	+/-	3.70E+00	1.44E+01	+/-	3.56E+00	1.56E+01	+/-	3.60E+00	1.29E+01	+/-	3.51E+00	1.62E+01	+/-	3.64E+00	1.23E+01	+/-	3.48E+00	1.59E+01	+/-	3.62E+00
11/24/09	1.58E+01	+/-	2.71E+00	1.94E+01	+/-	2.90E+00	1.95E+01	+/-	2.91E+00	1.53E+01	+/-	2.69E+00	1.89E+01	+/-	2.88E+00	1.83E+01	+/-	2.85E+00	1.78E+01	+/-	2.82E+00
12/01/09	1.61E+01	+/-	2.85E+00	1.62E+01	+/-	2.86E+00	1.34E+01	+/-	2.73E+00	1.54E+01	+/-	2.82E+00	1.61E+01	+/-	3.85E+00	1.28E+01	+/-	2.68E+00	1.32E+01	+/-	2.70E+00
12/08/09	1.70E+01	+/-	3.26E+00	1.38E+01	+/-	3.11E+00	1.50E+01	+/-	3.14E+00	1.78E+01	+/-	3.28E+00	1.93E+01	+/-	3.35E+00	1.65E+01	+/-	3.22E+00	1.46E+01	+/-	3.13E+00
12/15/09	2.01E+01	+/-	3.06E+00	1.75E+01	+/-	2.93E+00	1.94E+01	+/-	3.03E+00	1.68E+01	+/-	2.91E+00	1.90E+01	+/-	3.02E+00	1.55E+01	+/-	2.84E+00	1.59E+01	+/-	2.86E+00
12/22/09	2.16E+01	+/-	3.53E+00	2.69E+01	+/-	3.70E+00	1.96E+01	+/-	3.46E+00	2.76E+01	+/-	3.77E+00	2.54E+01	+/-	3.67E+00	2.08E+01	+/-	3.48E+00	2.18E+01	+/-	3.51E+00
12/29/09	1.62E+01	+/-	3.28E+00	1.50E+01	+/-	3.25E+00	1.65E+01	+/-	3.27E+00	1.84E+01	+/-	3.36E+00	1.59E+01	+/-	3.26E+00	1.37E+01	+/-	3.20E+00	1.55E+01	+/-	3.27E+00
MEAN	1.71E+01	+/-	3.07E+00	1.72E+01	+/-	3.08E+00	1.45E+01	+/-	3.27E+00	1.57E+01	+/-	3.01E+00	1.62E+01	+/-	3.20E+00	1.53E+01	+/-	2.98E+00	1.59E+01	+/-	3.02E+00

Table 3-3

Air Particulate
Gross Beta Radioactivity
[10^{-3} pCi/m^3]

Period Ending	Station 21			Station 22			Station 23			Station 24*			Station 01A			Station 05A		
07/08/09	1.20E+01	+/-	2.41E+00	1.42E+01	+/-	2.53E+00	1.22E+01	+/-	2.42E+00	8.73E+00	+/-	2.24E+00	1.16E+01	+/-	2.39E+00	1.50E+01	+/-	2.58E+00
07/14/09	1.05E+01	+/-	3.02E+00	9.06E+00	+/-	2.93E+00	8.28E+00	+/-	2.88E+00	9.88E+00	+/-	2.97E+00	1.20E+01	+/-	3.10E+00	1.40E+01	+/-	3.20E+00
07/21/09	1.61E+01	+/-	3.45E+00	1.85E+01	+/-	3.55E+00	1.95E+01	+/-	3.59E+00	1.61E+01	+/-	3.52E+00	1.81E+01	+/-	3.52E+00	1.94E+01	+/-	3.63E+00
07/28/09	1.67E+01	+/-	3.32E+00	2.35E+01	+/-	3.61E+00	1.64E+01	+/-	3.35E+00	2.42E+01	+/-	3.61E+00	2.20E+01	+/-	3.60E+00	3.27E+01	+/-	3.97E+00
08/04/09	1.30E+01	+/-	3.21E+00	1.47E+01	+/-	3.29E+00	1.51E+01	+/-	3.31E+00	2.09E+01	+/-	3.63E+00	1.68E+01	+/-	3.64E+00	2.60E+01	+/-	3.76E+00
08/11/09	2.27E+01	+/-	3.76E+00	3.07E+01	+/-	4.08E+00	2.56E+01	+/-	3.87E+00	2.50E+01	+/-	3.77E+00	2.58E+01	+/-	3.80E+00	2.71E+01	+/-	3.92E+00
08/18/09	1.52E+01	+/-	3.00E+00	1.90E+01	+/-	3.18E+00	1.41E+01	+/-	2.94E+00	1.65E+01	+/-	3.06E+00	1.22E+01	+/-	2.58E+00	1.99E+01	+/-	3.23E+00
08/25/09	1.23E+01	+/-	3.40E+00	1.41E+01	+/-	3.47E+00	1.36E+01	+/-	3.46E+00	1.25E+01	+/-	3.42E+00	1.20E+01	+/-	3.38E+00	1.83E+01	+/-	3.56E+00
09/01/09	1.44E+01	+/-	3.22E+00	2.43E+01	+/-	3.56E+00	2.33E+01	+/-	3.57E+00	2.56E+01	+/-	3.70E+00	2.03E+01	+/-	3.48E+00	1.80E+01	+/-	3.39E+00
09/08/09	1.99E+01	+/-	3.55E+00	1.70E+01	+/-	3.43E+00	1.59E+01	+/-	3.38E+00	1.97E+01	+/-	3.52E+00	1.90E+01	+/-	3.51E+00	1.94E+01	+/-	3.52E+00
09/15/09	1.26E+01	+/-	3.18E+00	1.98E+01	+/-	3.48E+00	1.41E+01	+/-	3.25E+00	1.61E+01	+/-	3.45E+00	1.70E+01	+/-	3.45E+00	2.02E+01	+/-	3.63E+00
09/22/09	2.40E+01	+/-	3.74E+00	2.15E+01	+/-	3.65E+00	1.76E+01	+/-	3.46E+00	2.35E+01	+/-	3.58E+00	2.46E+01	+/-	3.70E+00	2.41E+01	+/-	3.65E+00
09/29/09	1.07E+01	+/-	2.56E+00	1.49E+01	+/-	2.88E+00	1.51E+01	+/-	2.89E+00	1.71E+01	+/-	3.00E+00	1.33E+01	+/-	2.79E+00	1.31E+01	+/-	2.79E+00
10/06/09	1.77E+01	+/-	3.33E+00	2.16E+01	+/-	3.49E+00	1.89E+01	+/-	3.38E+00	1.95E+01	+/-	3.42E+00	2.28E+01	+/-	3.53E+00	1.77E+01	+/-	3.37E+00
10/13/09	1.53E+01	+/-	2.96E+00	1.69E+01	+/-	3.04E+00	1.37E+01	+/-	2.89E+00	1.59E+01	+/-	2.99E+00	1.61E+01	+/-	3.00E+00	1.47E+01	+/-	2.93E+00
10/21/09	1.53E+01	+/-	2.92E+00	1.75E+01	+/-	3.02E+00	1.60E+01	+/-	2.95E+00	1.23E+01	+/-	2.79E+00	1.34E+01	+/-	2.58E+00	1.53E+01	+/-	2.93E+00
10/27/09	1.84E+01	+/-	4.06E+00	1.78E+01	+/-	4.03E+00	1.92E+01	+/-	4.14E+00	1.97E+01	+/-	4.14E+00	1.61E+01	+/-	3.96E+00	1.32E+01	+/-	3.84E+00
11/03/09	8.27E+00	+/-	2.94E+00	1.08E+01	+/-	3.06E+00	1.23E+01	+/-	3.13E+00	8.37E+00	+/-	2.93E+00	9.87E+00	+/-	3.01E+00	1.14E+01	+/-	3.09E+00
11/10/09	2.58E+01	+/-	3.77E+00	3.11E+01	+/-	3.97E+00	3.15E+01	+/-	3.99E+00	3.63E+01	+/-	4.16E+00	2.48E+01	+/-	3.73E+00	2.58E+01	+/-	3.76E+00
11/17/09	1.25E+01	+/-	3.48E+00	1.38E+01	+/-	3.54E+00	1.52E+01	+/-	3.59E+00	1.75E+01	+/-	3.70E+00	1.54E+01	+/-	3.60E+00	9.96E+00	+/-	3.38E+00
11/24/09	1.85E+01	+/-	2.86E+00	2.00E+01	+/-	2.93E+00	1.87E+01	+/-	2.87E+00	1.53E+01	+/-	2.69E+00	1.86E+01	+/-	2.86E+00	1.83E+01	+/-	2.85E+00
12/01/09	1.22E+01	+/-	2.64E+00	1.46E+01	+/-	2.77E+00	1.26E+01	+/-	2.67E+00	1.35E+01	+/-	2.72E+00	9.83E+00	+/-	2.51E+00	1.23E+01	+/-	2.65E+00
12/08/09	1.48E+01	+/-	3.16E+00	1.27E+01	+/-	3.05E+00	1.36E+01	+/-	3.10E+00	2.18E+01	+/-	3.45E+00	1.28E+01	+/-	3.06E+00	1.73E+01	+/-	3.25E+00
12/15/09	1.24E+01	+/-	2.66E+00	1.98E+01	+/-	3.05E+00	1.80E+01	+/-	2.95E+00	1.90E+01	+/-	3.02E+00	1.49E+01	+/-	2.80E+00	1.89E+01	+/-	3.01E+00
12/22/09	1.77E+01	+/-	3.38E+00	1.93E+01	+/-	3.44E+00	1.63E+01	+/-	3.25E+00	2.42E+01	+/-	3.67E+00	1.83E+01	+/-	3.40E+00	2.16E+01	+/-	3.53E+00
12/29/09	8.27E+00	+/-	2.89E+00	1.78E+01	+/-	3.33E+00	1.53E+01	+/-	3.29E+00	1.62E+01	+/-	3.23E+00	1.52E+01	+/-	3.22E+00	1.68E+01	+/-	3.30E+00
MEAN	1.48E+01	+/-	2.95E+00	1.70E+01	+/-	3.05E+00	1.61E+01	+/-	3.02E+00	1.65E+01	+/-	3.02E+00	1.53E+01	+/-	2.91E+00	1.62E+01	+/-	3.02E+00
													Mean - All Indicator Locations			1.59E+01	+/-	3.05E+00

* Control Station

Table 3-4
Airborne Iodine
I-131
[10^{-3} pCi/m^3]

Period Ending	Station 01	Station 02	Station 03	Station 04	Station 05	Station 06	Station 07
01/06/09	< 1.31E+01	< 2.40E+01	< 2.38E+01	< 2.40E+01	< 2.38E+01	< 1.61E+01	< 2.03E+01
01/13/09	< 2.04E+01	< 3.78E+01	< 3.76E+01	< 3.70E+01	< 3.75E+01	< 2.99E+01	< 3.76E+01
01/20/09	< 1.28E+01	< 2.32E+01	< 2.32E+01	< 2.34E+01	< 2.33E+01	< 1.71E+01	< 2.12E+01
01/27/09	< 2.43E+01	< 1.46E+01	< 2.43E+01	< 2.43E+01	< 2.43E+01	< 1.39E+01	< 2.26E+01
02/04/09	< 9.53E+00	< 1.74E+01	< 1.73E+01	< 1.74E+01	< 1.74E+01	< 1.87E+01	< 1.87E+01
02/10/09	< 2.08E+01	< 3.77E+01	< 2.84E+01	< 3.77E+01	< 3.77E+01	< 3.77E+01	< 2.20E+01
02/17/09	< 1.50E+01	< 2.72E+01	< 2.72E+01	< 2.75E+01	< 2.72E+01	< 1.65E+01	< 3.86E+01
02/24/09	< 1.54E+01	< 1.54E+01	< 1.55E+01	< 8.38E+00	< 1.54E+01	< 1.62E+01	< 1.62E+01
03/04/09	< 9.77E+00	< 2.29E+01	< 2.52E+01	< 2.29E+01	< 2.29E+01	< 1.23E+01	< 2.00E+01
03/10/09	< 1.96E+01	< 1.95E+01	< 1.95E+01	< 1.95E+01	< 1.20E+01	< 1.66E+01	< 3.30E+01
03/17/09	< 1.38E+01	< 2.24E+01	< 2.25E+01	< 2.24E+01	< 2.24E+01	< 2.03E+01	< 2.71E+01
03/24/09	< 8.69E+00	< 1.60E+01	< 1.60E+01	< 2.47E+01	< 1.60E+01	< 1.43E+01	< 1.91E+01
03/31/09	< 1.67E+01	< 3.02E+01	< 3.05E+01	< 3.04E+01	< 3.03E+01	< 3.60E+01	< 3.61E+01
04/07/09	< 2.04E+01	< 4.11E+01	< 4.13E+01	< 4.13E+01	< 4.12E+01	< 2.67E+01	< 4.00E+01
04/14/09	< 1.58E+01	< 2.84E+01	< 2.85E+01	< 2.84E+01	< 2.93E+01	< 2.24E+01	< 2.81E+01
04/21/09	< 1.07E+01	< 1.96E+01	< 1.96E+01	< 1.95E+01	< 1.95E+01	< 1.94E+01	< 1.55E+01
04/28/09	< 3.36E+01	< 4.23E+01	< 4.22E+01	< 4.25E+01	< 4.25E+01	< 2.70E+01	< 6.34E+01
05/05/09	< 2.58E+01	< 4.76E+01	< 4.70E+01	< 4.67E+01	< 4.67E+01	< 5.09E+01	< 5.09E+01
05/12/09	< 2.01E+01	< 3.66E+01	< 3.63E+01	< 3.65E+01	< 3.65E+01	< 1.87E+01	< 3.45E+01
05/19/09	< 2.93E+01	< 5.46E+01	< 5.61E+01	< 5.47E+01	< 5.54E+01	< 4.21E+01	< 5.28E+01
05/26/09	< 3.42E+01	< 6.09E+01	< 5.95E+01	< 6.08E+01	< 6.08E+01	< 4.88E+01	< 6.12E+01
06/02/09	< 2.53E+01	< 6.41E+01	< 5.00E+01	< 5.06E+01	< 5.14E+01	< 3.46E+01	< 3.46E+01
06/09/09	< 1.71E+01	< 1.74E+01	< 1.70E+01	< 1.70E+01	< 6.85E+01	< 8.65E+00	< 8.76E+00
06/16/09	< 2.63E+01	< 2.73E+01	< 2.76E+01	< 2.73E+01	< 1.51E+01	< 2.72E+01	< 2.72E+01
06/23/09	< 2.20E+01	< 2.12E+01	< 1.23E+01	< 2.12E+01	< 2.12E+01	< 2.10E+01	< 2.10E+01
06/30/09	< 2.11E+01	< 2.10E+01	< 1.16E+01	< 2.09E+01	< 4.22E+01	< 3.57E+01	< 3.57E+01

Table 3-4
Airborne Iodine
I-131
[10^{-3} pCi/m^3]

Period Ending	Station 21	Station 22	Station 23	Station 24*	Station 01A	Station 05A
01/06/09	< 2.00E+01	< 2.00E+01	< 2.03E+01	< 3.02E+01	< 3.01E+01	< 3.04E+01
01/13/09	< 3.72E+01	< 3.72E+01	< 3.78E+01	< 6.20E+01	< 6.19E+01	< 6.27E+01
01/20/09	< 2.13E+01	< 2.13E+01	< 2.07E+01	< 3.27E+01	< 3.26E+01	< 3.30E+01
01/27/09	< 2.26E+01	< 2.26E+01	< 2.32E+01	< 2.37E+01	< 2.37E+01	< 2.37E+01
02/04/09	< 1.89E+01	< 1.87E+01	< 3.05E+01	< 3.03E+01	< 3.03E+01	< 3.04E+01
02/10/09	< 3.59E+01	< 3.59E+01	< 3.59E+01	< 3.60E+01	< 4.89E+01	< 4.89E+01
02/17/09	< 3.86E+01	< 3.88E+01	< 3.86E+01	< 2.50E+01	< 2.52E+01	< 2.50E+01
02/24/09	< 1.64E+01	< 1.61E+01	< 2.68E+01	< 2.61E+01	< 2.60E+01	< 2.61E+01
03/04/09	< 2.01E+01	< 2.01E+01	< 2.01E+01	< 1.99E+01	< 2.00E+01	< 1.99E+01
03/10/09	< 3.30E+01	< 3.30E+01	< 3.30E+01	< 4.00E+01	< 4.02E+01	< 4.01E+01
03/17/09	< 2.72E+01	< 2.72E+01	< 2.68E+01	< 3.61E+01	< 3.61E+01	< 3.60E+01
03/24/09	< 1.91E+01	< 1.91E+01	< 1.96E+01	< 2.78E+01	< 2.80E+01	< 2.79E+01
03/31/09	< 3.59E+01	< 3.59E+01	< 3.27E+01	< 3.29E+01	< 3.29E+01	< 3.29E+01
04/07/09	< 4.00E+01	< 4.70E+01	< 4.00E+01	< 4.99E+01	< 5.02E+01	< 4.97E+01
04/14/09	< 2.82E+01	< 2.82E+01	< 2.82E+01	< 3.25E+01	< 3.27E+01	< 3.32E+01
04/21/09	< 1.94E+01	< 1.88E+01	< 1.94E+01	< 2.92E+01	< 2.91E+01	< 2.92E+01
04/28/09	< 6.31E+01	< 6.50E+01	< 6.03E+01	< 6.44E+01	< 6.43E+01	< 6.48E+01
05/05/09	< 4.06E+01	< 5.10E+01	< 5.10E+01	< 5.12E+01	< 5.11E+01	< 5.10E+01
05/12/09	< 3.46E+01	< 3.46E+01	< 3.46E+01	< 3.69E+01	< 3.72E+01	< 3.70E+01
05/19/09	< 5.19E+01	< 5.17E+01	< 5.20E+01	< 4.72E+01	< 4.72E+01	< 4.87E+01
05/26/09	< 6.21E+01	< 6.22E+01	< 6.21E+01	< 5.31E+01	< 5.52E+01	< 5.41E+01
06/02/09	< 3.45E+01	< 3.45E+01	< 3.13E+01	< 5.69E+01	< 5.69E+01	< 5.81E+01
06/09/09	< 8.69E+00	< 9.38E+00	< 9.53E+00	< 9.31E+00	< 9.36E+00	< 3.97E+00
06/16/09	< 2.64E+01	< 1.58E+00	< 2.65E+01	< 3.44E+01	< 2.68E+01	< 2.79E+01
06/23/09	< 2.16E+01	< 3.36E+01	< 3.34E+01	< 3.26E+01	< 1.44E+01	< 3.26E+01
06/30/09	< 3.57E+01	< 2.41E+01	< 2.41E+01	< 2.40E+01	< 1.33E+01	< 2.41E+01

* Control Station

Table 3-4
Airborne Iodine
I-131
[10^{-3} pCi/m^3]

Period Ending	Station 01	Station 02	Station 03	Station 04	Station 05	Station 06	Station 07
07/08/09	< 2.44E+01	< 2.45E+01	< 2.46E+01	< 2.47E+01	< 1.36E+01	< 2.29E+01	< 2.29E+01
07/14/09	< 3.52E+01	< 3.52E+01	< 3.52E+01	< 3.52E+01	< 3.56E+01	< 3.58E+01	< 3.56E+01
07/21/09	< 5.26E+01	< 5.55E+01	< 5.77E+01	< 5.68E+01	< 5.51E+01	< 5.47E+01	< 3.23E+01
07/28/09	< 6.43E+01	< 6.52E+01	< 6.27E+01	< 6.36E+01	< 6.41E+01	< 6.43E+01	< 4.16E+01
08/04/09	< 1.82E+01	< 1.77E+01	< 1.11E+01	< 1.82E+01	< 1.77E+01	< 1.37E+01	< 1.37E+01
08/11/09	< 1.20E+01	< 6.78E+00	< 1.19E+01	< 1.20E+01	< 1.23E+01	< 1.58E+01	< 1.58E+01
08/18/09	< 8.68E+00	< 1.58E+01	< 1.57E+01	< 1.58E+01	< 1.58E+01	< 1.42E+01	< 1.42E+01
08/25/09	< 9.53E+00	< 9.57E+00	< 5.25E+00	< 9.55E+00	< 2.38E+01	< 2.83E+01	< 2.83E+01
09/01/09	< 1.93E+01	< 1.93E+01	< 1.94E+01	< 1.93E+01	< 1.37E+01	< 2.49E+01	< 2.49E+01
09/08/09	< 1.36E+01	< 1.36E+01	< 1.35E+01	< 5.76E+00	< 5.71E+01	< 5.71E+01	< 5.71E+01
09/15/09	< 1.74E+01	< 2.96E+01	< 2.96E+01	< 2.98E+01	< 2.97E+01	< 5.79E+01	< 5.70E+01
09/22/09	< 4.90E+01	< 4.96E+01	< 4.82E+01	< 4.84E+01	< 2.08E+01	< 4.48E+01	< 4.51E+01
09/29/09	< 1.55E+01	< 1.54E+01	< 8.70E+00	< 1.55E+01	< 1.54E+01	< 2.59E+01	< 2.57E+01
10/06/09	< 2.33E+01	< 2.35E+01	< 2.31E+01	< 1.01E+01	< 2.39E+01	< 1.50E+01	< 1.47E+01
10/13/09	< 1.89E+01	< 4.41E+01	< 4.42E+01	< 4.42E+01	< 4.42E+01	< 3.43E+01	< 3.43E+01
10/21/09	< 5.31E+01	< 5.30E+01	< 5.32E+01	< 5.30E+01	< 6.53E+01	< 6.53E+01	< 3.60E+01
10/27/09	< 6.39E+01	< 6.41E+01	< 2.80E+01	< 6.50E+01	< 6.43E+01	< 5.23E+01	< 5.23E+01
11/03/09	< 6.20E+01	< 3.81E+01	< 6.05E+01	< 6.15E+01	< 6.20E+01	< 5.59E+01	< 5.57E+01
11/10/09	< 5.80E+01	< 5.54E+01	< 5.54E+01	< 5.53E+01	< 4.18E+01	< 4.18E+01	< 4.20E+01
11/17/09	< 1.93E+01	< 3.14E+01	< 3.14E+01	< 3.15E+01	< 3.15E+01	< 3.12E+01	< 3.11E+01
11/24/09	< 2.81E+01	< 1.20E+01	< 2.81E+01	< 2.81E+01	< 2.81E+01	< 2.61E+01	< 2.61E+01
12/01/09	< 5.09E+01	< 5.09E+01	< 2.83E+01	< 5.09E+01	< 5.09E+01	< 6.63E+01	< 6.63E+01
12/08/09	< 1.53E+01	< 3.58E+01	< 3.54E+01	< 3.56E+01	< 3.56E+01	< 2.32E+01	< 2.32E+01
12/15/09	< 4.22E+01	< 3.51E+01	< 4.44E+01	< 4.45E+01	< 3.53E+01	< 3.53E+01	< 3.53E+01
12/22/09	< 6.03E+01	< 5.91E+01	< 6.05E+01	< 6.01E+01	< 5.48E+01	< 5.46E+01	< 5.44E+01
12/29/09	< 5.36E+01	< 5.40E+01	< 5.31E+01	< 5.31E+01	< 2.49E+01	< 2.53E+01	< 2.51E+01

Table 3-4
Airborne Iodine
I-131
[10^{-3} pCi/m^3]

Period Ending	Station 21	Station 22	Station 23	Station 24*	Station 01A	Station 05A
07/08/09	< 2.29E+01	< 2.29E+01	< 9.74E+00	< 1.13E+01	< 1.12E+01	< 1.13E+01
07/14/09	< 3.57E+01	< 2.53E+01	< 2.52E+01	< 2.52E+01	< 2.52E+01	< 1.39E+01
07/21/09	< 5.42E+01	< 5.42E+01	< 6.79E+01	< 6.97E+01	< 6.74E+01	< 6.90E+01
07/28/09	< 6.40E+01	< 6.40E+01	< 2.65E+01	< 2.57E+01	< 2.66E+01	< 2.60E+01
08/04/09	< 1.36E+01	< 1.36E+01	< 1.35E+01	< 1.39E+01	< 1.39E+01	< 1.35E+01
08/11/09	< 1.59E+01	< 1.59E+01	< 1.58E+01	< 1.53E+01	< 1.54E+01	< 1.57E+01
08/18/09	< 1.43E+01	< 1.43E+01	< 2.67E+01	< 2.67E+01	< 2.68E+01	< 2.68E+01
08/25/09	< 2.83E+01	< 1.20E+01	< 1.21E+01	< 5.14E+00	< 1.20E+01	< 1.20E+01
09/01/09	< 2.49E+01	< 2.49E+01	< 2.59E+01	< 2.59E+01	< 2.59E+01	< 2.59E+01
09/08/09	< 5.74E+01	< 1.04E+01	< 1.04E+01	< 1.04E+01	< 1.04E+01	< 1.04E+01
09/15/09	< 5.57E+01	< 5.55E+01	< 4.18E+01	< 4.36E+01	< 4.30E+01	< 4.37E+01
09/22/09	< 4.61E+01	< 4.62E+01	< 6.27E+01	< 5.98E+01	< 6.15E+01	< 6.07E+01
09/29/09	< 2.57E+01	< 2.57E+01	< 6.48E+01	< 6.52E+01	< 6.47E+01	< 6.51E+01
10/06/09	< 1.47E+01	< 1.47E+01	< 5.99E+01	< 6.02E+01	< 5.94E+01	< 6.08E+01
10/13/09	< 3.43E+01	< 3.43E+01	< 6.53E+01	< 6.51E+01	< 6.53E+01	< 6.52E+01
10/21/09	< 6.51E+01	< 6.54E+01	< 4.14E+01	< 4.16E+01	< 4.16E+01	< 4.16E+01
10/27/09	< 5.21E+01	< 5.20E+01	< 5.23E+01	< 5.20E+01	< 5.16E+01	< 5.19E+01
11/03/09	< 2.82E+01	< 5.59E+01	< 5.59E+01	< 6.13E+01	< 6.15E+01	< 6.15E+01
11/10/09	< 4.19E+01	< 2.72E+01	< 4.93E+01	< 4.93E+01	< 4.94E+01	< 4.92E+01
11/17/09	< 3.11E+01	< 3.11E+01	< 2.47E+01	< 2.48E+01	< 2.48E+01	< 2.48E+01
11/24/09	< 2.62E+01	< 2.61E+01	< 2.79E+01	< 2.79E+01	< 2.78E+01	< 2.79E+01
12/01/09	< 6.62E+01	< 6.62E+01	< 2.82E+01	< 6.84E+01	< 6.83E+01	< 6.84E+01
12/08/09	< 2.34E+01	< 2.34E+01	< 2.39E+01	< 2.38E+01	< 2.39E+01	< 2.38E+01
12/15/09	< 3.51E+01	< 3.89E+01	< 3.88E+01	< 3.90E+01	< 3.89E+01	< 3.90E+01
12/22/09	< 5.53E+01	< 6.02E+01	< 5.87E+01	< 6.07E+01	< 2.57E+01	< 5.99E+01
12/29/09	< 2.47E+01	< 3.46E+01	< 1.51E+01	< 3.41E+01	< 3.46E+01	< 3.47E+01

* Control Station

Table 3-5
Airborne Particulate
Gamma Spectra
[10^{-3} pCi/m^3]

Quarter 1

Sampling Location	Be-7			Cs-134**		Cs-137**					
01	1.80E+02	+/-	3.79E+01	<	1.78E+00	<	1.27E+00				
01A	1.31E+02	+/-	2.82E+01	<	1.15E+00	<	9.73E-01				
02	1.38E+02	+/-	4.45E+01	<	2.00E+00	<	1.85E+00				
03	1.55E+02	+/-	3.17E+01	<	1.73E+00	<	1.33E+00				
04	1.78E+02	+/-	3.81E+01	<	1.43E+00	<	1.28E+00				
05	1.44E+02	+/-	3.87E+01	<	2.06E+00	<	1.92E+00				
05A	1.80E+02	+/-	3.12E+01	<	9.97E-01	<	1.10E+00				
06	1.97E+02	+/-	3.88E+01	<	1.90E+00	<	1.69E+00				
07	1.66E+02	+/-	3.05E+01	<	1.35E+00	<	1.07E+00				
21	1.36E+02	+/-	4.53E+01	<	1.79E+00	<	1.57E+00				
22	1.56E+02	+/-	4.21E+01	<	1.32E+00	<	1.22E+00				
23	1.73E+02	+/-	4.11E+01	<	1.40E+00	<	1.09E+00				
24*	1.50E+02	+/-	3.02E+01	<	1.31E+00	<	1.08E+00				

Quarter 2

Sampling Location	Be-7			Cs-134**		Cs-137**		Sr-89		Sr-90	
01	1.55E+02	+/-	3.53E+01	<	1.71E+00	<	1.70E+00	<	9.05E+00	<	3.69E+00
01A	1.50E+02	+/-	3.63E+01	<	2.13E+00	<	1.92E+00	<	6.47E+00	<	3.99E+00
02	2.00E+02	+/-	3.92E+01	<	1.79E+00	<	1.92E+00	<	6.07E+00	<	3.62E+00
03	1.28E+02	+/-	4.09E+01	<	2.41E+00	<	1.81E+00	<	5.97E+00	<	3.60E+00
04	1.37E+02	+/-	3.38E+01	<	1.51E+00	<	2.00E+00	<	6.77E+00	<	3.58E+00
05	1.52E+02	+/-	4.05E+01	<	1.86E+00	<	1.43E+00	<	7.93E+00	<	5.63E+00
05A	1.04E+02	+/-	2.85E+01	<	2.00E+00	<	1.77E+00	<	4.87E+00	<	4.12E+00
06	1.95E+02	+/-	4.24E+01	<	1.98E+00	<	1.79E+00	<	6.10E+00	<	5.14E+00
07	1.79E+02	+/-	3.62E+01	<	1.90E+00	<	1.77E+00	<	5.72E-01	<	4.26E+00
21	1.44E+02	+/-	4.15E+01	<	2.08E+00	<	1.52E+00	<	5.83E+00	<	3.89E+00
22		<	8.92E+02	<	1.55E+00	<	1.78E+00	<	9.95E+00	<	4.35E-01
23		<	5.68E+02	<	1.87E+00	<	1.46E+00	<	8.33E+00	<	3.76E-01
24*	1.49E+02	+/-	4.55E+01	<	1.70E+00	<	1.76E+00	<	5.99E+00	<	3.76E+00

*Control Station ** LLD identified in ODCM

Table 3-5
Airborne Particulate Gamma Spectra
[10^{-3} pCi/m^3]

Quarter 3

Sampling Location	Be-7			Cs-134**			Cs-137**		
01	1.65E+02	+/-	3.41E+01	1.83E+00	+/-	1.04E+00	<	1.23E+00	
01A	1.89E+02	+/-	4.40E+01		<	2.03E+00	<	1.61E+00	
02	1.36E+02	+/-	3.64E+01		<	1.56E+00	<	1.14E+00	
03	1.15E+02	+/-	4.16E+01		<	2.24E+00	<	1.42E+00	
04	1.70E+02	+/-	3.34E+01		<	1.24E+00	<	1.33E+00	
05	1.48E+02	+/-	3.17E+01		<	1.56E+00	<	1.35E+00	
05A	2.06E+02	+/-	5.04E+01		<	2.25E+00	<	1.93E+00	
06	1.37E+02	+/-	3.99E+01		<	1.25E+00	<	9.31E-01	
07	1.86E+02	+/-	3.77E+01	3.34E+00	+/-	1.29E+00	<	2.01E+00	
21	1.41E+02	+/-	3.30E+01		<	1.14E+00	<	7.19E-01	
22	2.67E+02	+/-	1.28E+02		<	1.70E+00	<	1.33E+00	
23		<	2.57E+02		<	1.83E+00	<	1.45E+00	
24*	1.71E+02	+/-	3.17E+01		<	1.73E+00	<	1.26E+00	
MEAN				2.59E+00	+/-	1.17E+00			

Quarter 4

Sampling Location	Be-7			Cs-134**			Cs-137**			MEANS Be-7			MEANS Cs-134*		
01	1.54E+02	+/-	3.64E+01		<	2.29E+00	<	1.31E+00		1.64E+02	+/-	7.24E+01	1.83E+00	+/-	1.04E+00
01A	1.17E+02	+/-	3.00E+01		<	7.64E-01	<	8.70E-01		1.47E+02	+/-	7.23E+01		+/-	
02	1.40E+02	+/-	4.42E+01		<	1.03E+00	<	1.73E+00		1.54E+02	+/-	7.58E+01		+/-	
03	1.20E+02	+/-	3.35E+01		<	1.90E+00	<	1.11E+00		1.30E+02	+/-	7.92E+01		+/-	
04	1.27E+02	+/-	3.71E+01		<	2.50E+00	<	2.22E+00		1.53E+02	+/-	8.39E+01		+/-	
05	1.62E+02	+/-	3.69E+01		<	2.26E+00	<	1.91E+00		1.52E+02	+/-	9.00E+01		+/-	
05A	1.34E+02	+/-	2.93E+01		<	1.10E+00	<	1.03E+00		1.56E+02	+/-	9.75E+01		+/-	
06	1.25E+02	+/-	3.62E+01		<	1.59E+00	<	1.95E+00		1.64E+02	+/-	1.02E+02		+/-	
07	1.05E+02	+/-	3.23E+01		<	2.22E+00	<	1.92E+00		1.59E+02	+/-	1.07E+02	3.34E+00	+/-	1.29E+00
21	1.01E+02	+/-	3.39E+01		<	2.31E+00	<	1.96E+00		1.31E+02	+/-	1.15E+02		+/-	
22	1.14E+02	+/-	4.33E+01		<	2.49E+00	<	1.83E+00		1.79E+02	+/-	1.22E+02		+/-	
23	1.22E+02	+/-	3.45E+01		<	2.71E+00	<	2.01E+00		1.48E+02	+/-	7.81E+01		+/-	
24*	1.39E+02	+/-	3.06E+01		<	2.07E+00	<	2.03E+00		1.52E+02	+/-	3.64E+01		+/-	
Mean of All Indicator Location:										1.52E+02	+/-	8.71E+01	2.59E+00	+/-	1.75E+00

* Control Station ** LLD identified in ODCM

Table 3-6

Soil

[pCi/kg]

Station	Sr-89	Sr-90	Be-7	K-40	Cs-134*	Cs-137*	AcTh-228
01							
02							
03							
04							
05							
05A							
06							
07							
21							
22							
23							
24*							
Annual Mean							
Indicator Mean							

Soil samples collected triennially. Last collected 2007. Next samples due 2010.

*Control Station

Table 3-7
Precipitation
Gross Beta
[pCi/L]

Sampling Date	Gross Beta				Rainfall (inches)
01/27/09	9.95E+00	+/-	1.79E+00		1.82
02/24/09	3.99E+01	+/-	2.99E+00		1.07
03/31/09	1.30E+01	+/-	1.85E+00		3.06
04/28/09	3.11E+00	+/-	1.18E+00		2.60
05/26/09	5.84E+00	+/-	1.63E+00		4.66
06/30/09		<	1.56E+00		7.49
07/28/09	2.58E+00	+/-	1.34E+00		3.03
08/25/09		<	1.89E+00		3.93
09/29/09	1.85E+00	+/-	1.18E+00		2.39
10/27/09	3.57E+00	+/-	1.43E+00		1.81
11/24/09	2.21E+00	+/-	1.24E+00		8.53
12/29/09		<	1.86E+00		7.19
Mean	9.11E+00	+/-	1.66E+00	Total	47.58

* LLD identified in ODCM

Table 3-7
Precipitation
Gamma Spectra
[pCi/L]

Sampling Location	Be-7	Mn-54	Fe-59	Co-58	Co-60
01A					
06/30/09	5.39E+01 +/- 3.34E+01	< 1.05E+00	< 7.56E+00	< 2.11E+00	< 8.85E-01
12/29/09	5.37E+01 +/- 2.96E+01	< 1.85E+00	< 1.36E+01	< 3.75E+00	< 1.62E+00

	Zn-65	Zr-95	Nb-95	Cs-134	Cs-137
01A					
06/30/09	< 2.22E+00	< 4.27E+00	< 2.56E+00	< 9.66E-01	< 8.63E-01
12/29/09	< 3.91E+00	< 7.55E+00	< 4.86E+00	< 1.56E+00	< 1.51E+00

	Ba-140	La-140	Ac-228	Th-228	Th-232
01A					
06/30/09	< 8.80E+02	< 2.68E+02			4.08E+00 +/- 3.27E+00
12/29/09	< 1.59E+03	< 5.33E+02	1.21E+01 +/- 5.42E+00	4.27E+00 +/- 2.20E+00	< 0.00E+00

MEAN

Sampling Location	Be-7	Mn-54	Fe-59	Co-58	Co-60
01A	5.38E+01 +/- 3.15E+01				

	Zn-65	Zr-95	Nb-95	Cs-134	Cs-137
01A					

	Ba-140	La-140	Ac-228	Th-228	Th-232
01A			1.21E+01 +/- 2.71E+00	4.27E+00 +/- 1.10E+00	4.08E+00 +/- 1.64E+00

Table 3-8
Milk
Gamma Spectra & Strontium
[pCi/L]

Station 12

Sampling Date	K-40			Sr-89		Sr-90		I-131*		Cs-134*		Cs-137*		Ba-140*		La-140*	
01/20/09	1.32E+03	+/-	4.02E+01	[a]		[a]		< 7.65E-01		< 1.45E+00		< 1.67E+00		< 1.12E+01		< 3.00E+00	
02/17/09	1.21E+03	+/-	1.20E+02	[a]		[a]		< 6.08E-01		< 5.18E+00		< 6.23E+00		< 3.87E+01		< 1.29E+01	
03/17/09	1.42E+03	+/-	1.33E+02	<	2.07E+00	<	1.77E+00	< 7.32E-01		< 4.60E+00		< 5.16E+00		< 3.60E+01		< 1.48E+01	
04/21/09	1.18E+03	+/-	1.36E+02	[a]		[a]		< 7.06E-01		< 5.41E+00		< 6.28E+00		< 4.62E+01		< 1.19E+01	
05/19/09	1.18E+03	+/-	5.69E+01	[a]		[a]		< 7.99E-01		< 1.93E+00		< 2.31E+00		< 2.95E+01		< 8.76E+00	
06/16/09	1.50E+03	+/-	5.96E+01	<	2.84E+00	<	9.45E-01	< 8.62E+00		< 1.18E+00		< 1.43E+00		< 1.46E+01		< 4.20E+00	
07/22/09	1.12E+03	+/-	1.03E+02	[a]		[a]		< 8.52E-01		< 2.63E+00		< 2.86E+00		< 1.58E+01		< 4.36E+00	
08/18/09	1.32E+03	+/-	1.68E+02	[a]		[a]		< 4.94E-01		< 8.37E+00		< 8.41E+00		< 5.02E+01		< 1.47E+01	
09/15/09	1.33E+03	+/-	1.58E+02	<	3.99E+00	<	4.79E-01	< 7.48E-01		< 5.98E+00		< 6.76E+00		< 3.01E+01		< 1.16E+01	
10/21/09	1.35E+03	+/-	1.30E+02	[a]		[a]		< 2.78E-01		< 4.73E+00		< 6.27E+00		< 2.77E+01		< 7.64E+00	
11/17/09	1.42E+03	+/-	1.06E+02	[a]		[a]		< 7.79E-01		< 4.61E+00		< 4.67E+00		< 3.40E+01		< 9.71E+00	
12/17/09	1.27E+03	+/-	1.08E+02	<	9.46E-01	<	1.18E+00	< 6.94E-01		< 4.18E+00		< 4.11E+00		< 2.09E+01		< 4.70E+00	
Sta. Mean	1.30E+03	+/-	1.10E+02														

Station 13

Sampling Date	K-40			Sr-89		Sr-90		I-131*		Cs-134*		Cs-137*		Ba-140*		La-140*	
01/20/09	1.22E+03	+/-	4.80E+01	[a]		[a]		< 6.11E-01		< 1.62E+00		< 1.94E+00		< 1.30E+01		< 3.82E+00	
02/17/09	1.25E+03	+/-	1.25E+02	[a]		[a]		< 6.57E-01		< 4.92E+00		< 5.68E+00		< 3.30E+01		< 1.32E+01	
03/17/09	1.23E+03	+/-	1.26E+02	<	2.14E+00	<	1.79E+00	< 7.74E-01		< 4.89E+00		< 6.09E+00		< 4.30E+01		< 9.60E+00	
04/21/09	1.07E+03	+/-	1.47E+02	[a]		[a]		< 5.34E-01		< 5.32E+00		< 6.14E+00		< 3.98E+01		< 1.45E+01	
05/19/09	1.22E+03	+/-	4.33E+01	[a]		[a]		< 8.28E-01		< 1.66E+00		< 1.79E+00		< 2.47E+02		< 7.13E+00	
06/16/09	1.54E+03	+/-	5.04E+01	<	2.96E+00	<	1.14E+00	< 6.79E-01		< 1.67E+00		< 1.80E+00		< 1.91E+01		< 5.57E+00	
07/22/09	9.83E+02	+/-	1.24E+02	[a]		[a]		< 8.67E-01		< 3.98E+00		< 3.77E+00		< 2.24E+01		< 3.42E+00	
08/18/09	1.25E+03	+/-	1.52E+02	[a]		[a]		< 5.24E-01		< 6.00E+00		< 7.16E+00		< 3.39E+01		< 1.43E+01	
09/15/09	1.05E+03	+/-	1.32E+02	<	4.75E+00	<	7.62E-01	< 9.23E-01		< 5.54E+00		< 5.92E+00		< 2.89E+01		< 8.43E+00	
[b]																	
Sta. Mean	1.20E+03	+/-	1.05E+02														
Total Mean	1.26E+03	+/-	1.08E+02														

* LLD identified in ODCM

[a] Sr-89/90 analyses performed on the last monthly sample of each quarter.

[b] Dairy ceased milking operations

Table 3-9
Food and Vegetation
Gamma Spectra
[pCi/kg]

Sampling Location	Sampling Date	Be-7			K-40			I-131*		Cs-134*		Cs-137*	
14A	04/14/09	3.03E+02	+/-	5.92E+01	3.86E+03	+/-	1.73E+02	< 1.73E+01		< 4.79E+00		< 4.92E+00	
	05/12/09	7.05E+02	+/-	5.56E+01	4.69E+03	+/-	1.10E+02	< 3.43E+01		< 3.36E+00		< 3.92E+00	
	06/09/09	3.53E+02	+/-	5.35E+01	5.75E+03	+/-	1.52E+02	< 4.48E+01		< 4.68E+00		< 5.51E+00	
	07/14/09	1.31E+03	+/-	2.33E+02	6.47E+03	+/-	4.57E+02	< 4.23E+01		< 1.87E+01		< 1.99E+01	
	08/11/09	2.08E+02	+/-	6.30E+01	7.67E+03	+/-	2.24E+02	< 3.55E+01		< 6.97E+00		< 7.39E+00	
	09/08/09	8.66E+02	+/-	2.28E+02	4.70E+03	+/-	4.91E+02	< 3.28E+01		< 1.48E+01		< 1.57E+01	
	10/13/09	1.05E+03	+/-	1.21E+02	7.72E+03	+/-	2.86E+02	< 3.82E+01		< 1.09E+01		< 1.16E+01	
	Mean	6.85E+02	+/-	1.16E+02	5.84E+03	+/-	2.70E+02	+/-		+/-		+/-	

Sampling Location	Sampling Date	Be-7			K-40			I-131*		Cs-134*		Cs-137*	
15	04/14/09	1.21E+03	+/-	1.49E+02	4.47E+03	+/-	3.15E+02	< 3.33E+01		< 9.76E+00		< 1.16E+01	
	05/12/09	1.21E+03	+/-	7.20E+01	4.89E+03	+/-	1.30E+02	< 3.01E+01		< 3.05E+00		< 3.47E+00	
	06/09/09	1.01E+03	+/-	7.93E+01	3.49E+03	+/-	1.68E+02	< 4.67E+01		< 5.38E+00		< 5.94E+00	
	07/14/09	2.06E+03	+/-	2.08E+02	6.39E+03	+/-	4.48E+02	< 3.44E+01		< 1.80E+01		< 1.98E+01	
	08/11/09	1.45E+03	+/-	1.80E+02	3.23E+03	+/-	3.48E+02	< 4.55E+01		< 9.10E+00		< 9.90E+00	
	09/08/09	7.75E+02	+/-	1.41E+02	4.24E+03	+/-	2.53E+02	< 2.97E+01		< 1.07E+01		< 1.04E+01	
	10/13/09	2.24E+03	+/-	1.74E+02	5.95E+03	+/-	3.06E+02	< 4.37E+01		< 1.36E+01		< 1.47E+01	
	Mean	1.42E+03	+/-	1.43E+02	4.67E+03	+/-	2.81E+02	+/-		+/-		+/-	

Sampling Location	Sampling Date	Be-7			K-40			I-131*		Cs-134*		Cs-137*	
16**	04/14/09	5.30E+02	+/-	9.90E+01	4.25E+03	+/-	2.67E+02	< 2.63E+01		< 7.07E+00		< 1.00E+01	
** Control Station	05/12/09	6.37E+02	+/-	6.60E+01	2.08E+03	+/-	1.15E+02	< 2.80E+01		< 3.00E+00		< 3.43E+00	
	06/09/09	6.80E+02	+/-	6.95E+01	3.81E+03	+/-	1.42E+02	< 3.68E+01		< 4.64E+00	8.84E+00	+/-	3.24E+00
	07/14/09	2.59E+03	+/-	2.50E+02	8.30E+03	+/-	4.64E+02	< 2.90E+01		< 1.56E+01		< 1.73E+01	
	08/11/09	1.40E+03	+/-	1.25E+02	3.45E+03	+/-	1.99E+02	< 4.58E+01		< 9.41E+00		< 1.08E+01	
	09/08/09	7.06E+02	+/-	2.95E+02	3.79E+03	+/-	4.95E+02	< 2.92E+01		< 1.34E+01		< 1.84E+01	
	10/13/09	3.45E+03	+/-	2.33E+02	5.53E+03	+/-	3.28E+02	< 3.24E+01		< 1.42E+01		< 1.40E+01	
	Mean	1.43E+03	+/-	1.63E+02	4.46E+03	+/-	2.87E+02	+/-		+/-	8.84E+00	+/-	3.24E+00

* LLD identified in ODCM

Table 3-9
Food and Vegetation
Gamma Spectra
[pCi/kg]

Sampling Location	Sampling Date	Be-7			K-40			I-131*		Cs-134*		Cs-137*		
23	04/14/09	3.03E+02	+/-	5.92E+01	3.86E+03	+/-	1.73E+02	< 1.73E+01		< 4.79E+00			<	4.92E+00
	05/12/09	4.08E+02	+/-	5.00E+01	6.57E+03	+/-	1.62E+02	< 3.40E+01		< 4.90E+00			<	5.89E+00
	06/09/09	1.28E+03	+/-	1.07E+02	6.10E+03	+/-	2.25E+02	< 4.55E+01		< 5.64E+00			<	6.87E+00
	07/14/09	2.30E+03	+/-	2.34E+02	4.15E+03	+/-	4.02E+02	< 3.48E+01		< 1.69E+01	2.61E+01	+/-	1.42E+01	
	08/11/09	4.06E+02	+/-	1.06E+02	8.96E+03	+/-	3.07E+02	< 3.58E+01		< 9.15E+00			<	1.05E+01
	09/08/09	6.45E+02	+/-	2.28E+02	3.58E+03	+/-	3.65E+02	< 3.13E+01		< 1.37E+01			<	1.42E+01
	10/13/09	2.35E+03	+/-	1.67E+02	6.07E+03	+/-	2.85E+02	< 3.09E+01		< 1.31E+01			<	1.40E+01
	Mean	1.10E+03	+/-	1.36E+02	5.61E+03	+/-	2.74E+02	+/-		+/-	2.61E+01	+/-	1.42E+01	

Sampling Location	Sampling Date	Be-7			K-40			I-131*		Cs-134*		Cs-137*		
26	04/14/09	4.58E+02	+/-	7.35E+01	4.64E+03	+/-	1.97E+02	< 1.97E+01		< 5.72E+00			<	6.37E+00
	05/12/09	9.33E+02	+/-	6.12E+01	4.71E+03	+/-	1.23E+02	< 3.00E+01		< 3.47E+00			<	3.98E+00
	06/09/09	7.70E+02	+/-	9.62E+01	4.84E+03	+/-	2.00E+02	< 4.04E+01		< 8.20E+00			<	8.73E+00
	07/14/09	1.62E+03	+/-	2.37E+02	4.82E+03	+/-	4.12E+02	< 3.78E+01		< 1.66E+01			<	1.70E+01
	08/13/09	9.15E+02	+/-	1.19E+02	5.60E+03	+/-	2.35E+03	< 3.33E+01		< 8.86E+00			<	1.03E+01
	09/08/09	6.02E+02	+/-	1.40E+02	2.37E+03	+/-	2.41E+02	< 4.08E+01		< 1.03E+01			<	1.16E+01
	10/13/09	3.15E+02	+/-	7.93E+01	6.55E+03	+/-	2.25E+02	< 4.20E+01		< 7.41E+00			<	7.68E+00
	Mean	8.02E+02	+/-	1.15E+02	4.79E+03	+/-	5.35E+02	+/-		+/-			+/-	
Indicator locations		1.11E+03	+/-	1.33E+02	5.17E+03	+/-	3.41E+02	+/-		+/-	2.61E+01	+/-	1.42E+01	

* LLD identified in ODCM

Table 3-10

Well Water

Gamma Spectra, Strontium, and Tritium

[pCi/L]

Station 01A

Sampling Date	H-3	Sr-89	Sr-90	Mn-54	Fe-59	Co-58	Co-60	Zn-65
03/31/09	< 1.93E+02	[a]	[a]	< 7.81E-01	< 1.85E+00	< 8.94E-01	< 8.04E-01	< 1.99E+00
06/30/09	< 7.50E+00	< 8.17E-01	< 8.21E-01	< 1.09E+00	< 2.56E+00	< 1.17E+00	< 1.12E+00	< 2.16E+00
09/29/09	< 9.15E+02	[a]	[a]	< 1.46E+00	< 3.30E+00	< 1.67E+00	< 1.58E+00	< 3.07E+00
12/29/09	< 5.46E+02	[a]	[a]	< 2.43E+00	< 5.85E+00	< 2.33E+00	< 2.53E+00	< 5.65E+00
Mean								

Sampling Date	Zr-95	Nb-95	I-131	Cs-134	Cs-137	Ba-140	La-140
03/31/09	< 1.55E+00	< 8.73E-01	< 1.79E+00	< 7.81E-01	< 8.28E-01	< 4.68E+00	< 1.28E+00
06/30/09	< 2.07E+00	< 1.28E+00	< 3.42E+00	< 1.02E+00	< 1.18E+00	< 7.67E+00	< 2.39E+00
09/29/09	< 3.13E+00	< 1.91E+00	< 9.00E+00	< 1.48E+00	< 1.64E+00	< 1.56E+01	< 4.34E+00
12/29/09	< 4.80E+00	< 3.25E+00	< 9.33E+00	< 2.66E+00	< 2.65E+00	< 1.97E+01	< 6.65E+00
Mean							

[a] Sr-89/90 analyses performed on the second quarter sample.

Table 3-11
River Water
Gamma Spectra, Strontium, and Tritium
[pCi/L]

Station 11

Sampling Date	H-3*	Sr-89	Sr-90	Mn-54*	Fe-59*	Co-58*	Co-60*	Zn-65*
01/13/09	[a]	[b]	[b]	< 4.13E+00	< 7.97E+00	< 4.32E+00	< 3.67E+00	< 8.11E+00
02/17/09	[a]	[b]	[b]	< 5.04E+00	< 9.10E+00	< 5.11E+00	< 4.56E+00	< 9.54E+00
03/17/09	5.03E+03 +/- 5.77E+02	[b]	[b]	< 5.24E+00	< 1.31E+01	< 5.63E+00	< 4.39E+00	< 9.76E+00
04/14/09	[a]	[b]	[b]	< 1.04E+00	< 2.12E+00	< 9.03E-01	< 1.44E+00	< 2.20E+00
05/12/09	[a]	[b]	[b]	< 7.58E-01	< 2.03E+00	< 9.08E-01	< 7.47E-01	< 1.53E+00
06/16/09	3.76E+03 +/- 8.53E+02	< 4.45E+00	< 7.18E-01	< 1.25E+00	< 3.39E+00	< 1.47E+00	< 1.26E+00	< 2.55E+00
07/13/09	[a]	[b]	[b]	< 3.82E+00	< 1.17E+01	< 4.30E+00	< 4.15E+00	< 9.27E+00
08/11/09	[a]	[b]	[b]	< 2.46E+00	< 5.08E+00	< 2.78E+00	< 2.06E+00	< 4.29E+00
09/14/09	2.87E+03 +/- 6.86E+02	[b]	[b]	< 4.10E+00	< 1.19E+01	< 4.82E+00	< 4.05E+00	< 7.10E+00
10/13/09	[a]	[b]	[b]	< 4.63E+00	< 1.13E+01	< 5.28E+00	< 6.77E+00	< 9.70E+00
11/17/09	[a]	[b]	[b]	< 2.57E+00	< 5.92E+00	< 3.06E+00	< 2.40E+00	< 5.93E+00
12/17/09	3.59E+03 +/- 6.87E+02	[b]	[b]	< 3.00E+00	< 7.22E+00	< 3.80E+00	< 3.25E+00	< 6.53E+00
MEAN	3.81E+03 +/- 7.01E+02							

Sampling Date	Zr-95*	Nb-95*	I-131*	Cs-134*	Cs-137*	Ba-140*	La-140*
01/13/09	< 6.82E+00	< 4.64E+00	< 6.58E-01	< 3.84E+00	< 3.53E+00	< 2.48E+01	< 8.00E+00
02/17/09	< 8.22E+00	< 5.86E+00	< 5.54E-01	< 4.75E+00	< 5.17E+00	< 2.66E+01	< 1.07E+01
03/17/09	< 1.04E+01	< 6.53E+00	< 7.60E-01	< 4.40E+00	< 5.49E+00	< 4.41E+01	< 1.05E+01
04/14/09	< 1.75E+00	< 1.01E+00	< 9.44E-01	< 9.25E-01	< 1.19E+00	< 6.86E+00	< 2.41E+00
05/12/09	< 1.61E+00	< 9.92E-01	< 6.26E-01	< 7.76E-01	< 8.00E-01	< 1.11E+01	< 3.03E+00
06/16/09	< 2.84E+00	< 1.55E+00	< 5.75E-01	< 1.20E+00	< 1.29E+00	< 1.57E+01	< 5.00E+00
07/13/09	< 9.68E+00	< 5.04E+00	< 6.86E-01	< 3.18E+00	< 4.18E+00	< 4.02E+01	< 1.15E+01
08/11/09	< 4.00E+00	< 2.04E+00	< 4.74E-01	< 2.15E+00	< 2.57E+00	< 1.53E+01	< 5.61E+00
09/14/09	< 8.07E+00	< 4.99E+00	< 7.09E-01	< 5.03E+00	< 4.60E+00	< 2.14E+01	< 8.21E+00
10/13/09	< 9.71E+00	< 4.97E+00	< 4.37E-01	< 4.85E+00	< 4.44E+00	< 2.36E+01	< 7.60E+00
11/17/09	< 5.43E+00	< 3.01E+00	< 6.07E-01	< 2.61E+00	< 3.12E+00	< 2.13E+01	< 6.39E+00
12/17/09	< 6.03E+00	< 3.54E+00	< 5.17E-01	< 2.98E+00	< 3.25E+00	< 2.27E+01	< 6.43E+00
MEAN							

* LLD identified in ODCM

[a] Tritium analyses on quarterly composite.

[b] Sr-89/90 performed annually on 2nd quarter composite sample.

Table 3-12
Surface Water
Gamma Spectra, Strontium, Tritium
[pCi/L]

Sampling Date	H-3*	Sr-89	Sr-90	Mn-54*	Fe-59*	Co-58*	Co-60*	Station 08 Zn-65*
01/13/09	[a]	[b]	[b]	< 3.84E+00	< 8.68E+00	< 4.34E+00	< 3.85E+00	< 7.09E+00
02/17/09	[a]	[b]	[b]	< 6.35E+00	< 1.01E+01	< 6.89E+00	< 5.43E+00	< 1.08E+01
03/17/09	3.22E+03 +/- 3.72E+02	[b]	[b]	< 4.00E+00	< 1.10E+01	< 4.83E+00	< 5.29E+00	< 9.95E+00
04/14/09	[a]	[b]	[b]	< 1.34E+00	< 2.98E+00	< 1.41E+00	< 1.34E+00	< 2.61E+00
05/12/09		[b]	[b]	< 6.28E-01	< 1.30E+00	< 6.71E-01	< 5.38E-01	< 1.10E+00
06/16/09	3.86E+03 +/- 8.66E+02	< 3.93E+00	< 7.68E-01	< 6.34E-01	< 1.56E+00	< 7.63E-01	8.38E-01 +/- 9.03E-01	< 1.27E+00
07/13/09	[a]	[b]	[b]	< 4.93E+00	< 8.97E+00	< 5.31E+00	< 3.59E+00	< 8.72E+00
08/11/09	[a]	[b]	[b]	< 2.06E+00	< 5.87E+00	< 2.38E+00	< 2.77E+00	< 4.91E+00
09/14/09	2.60E+03 +/- 6.70E+02	[b]	[b]	< 6.08E+00	< 1.31E+01	< 7.20E+00	< 6.23E+00	< 1.09E+01
10/13/09	[a]	[b]	[b]	< 4.08E+00	< 9.75E+00	< 4.66E+00	< 4.48E+00	< 9.44E+00
11/17/09	[a]	[b]	[b]	< 1.88E+00	< 4.30E+00	< 1.95E+00	< 1.83E+00	< 3.93E+00
12/15/09	3.37E+03 +/- 6.66E+02	[b]	[b]	< 2.93E+00	< 5.49E+00	< 2.93E+00	< 3.06E+00	< 6.56E+00
Mean	3.26E+03 +/- 6.44E+02						8.38E-01 +/- 9.03E-01	

Sampling Date	Zr-95*	Nb-95*	I-131*	Cs-134*	Cs-137*	Ba-140*	La-140*
01/13/09	< 6.77E+00	< 4.10E+00	< 7.10E-01	< 3.52E+00	< 3.99E+00	< 2.29E+01	< 8.26E+00
02/17/09	< 1.05E+01	< 6.96E+00	< 5.63E-01	< 5.99E+00	< 6.08E+00	< 3.84E+01	< 1.11E+01
03/17/09	< 8.81E+00	< 4.96E+00	< 7.91E-01	< 4.45E+00	< 4.06E+00	< 3.64E+01	< 1.00E+01
04/14/09	< 2.59E+00	< 1.51E+00	< 9.85E-01	< 1.32E+00	< 1.43E+00	< 9.45E+00	< 2.80E+00
05/12/09	< 1.21E+00	< 7.01E-01	< 5.99E-01	< 6.13E-01	< 6.11E-01	9.09E+00 +/- 4.70E+00	< 1.79E+00
06/16/09	< 1.27E+00	< 7.62E-01	< 6.10E-01	< 6.05E-01	< 7.13E-01	< 8.04E+00	< 2.51E+00
07/13/09	< 8.75E+00	< 4.34E+00	< 7.09E-01	< 4.20E+00	< 5.19E+00	< 3.34E+01	< 1.24E+01
08/11/09	< 3.85E+00	< 2.76E+00	< 5.09E-01	< 2.28E+00	< 2.34E+00	< 2.04E+01	< 6.90E+00
09/14/09	< 8.68E+00	< 6.81E+00	< 6.74E-01	< 5.49E+00	< 6.99E+00	< 2.78E+01	< 1.30E+01
10/13/09	< 7.36E+00	< 4.38E+00	< 4.57E-01	< 3.63E+00	< 4.90E+00	< 2.15E+01	< 6.75E+00
11/17/09	< 3.31E+00	< 2.13E+00	< 6.30E-01	< 1.78E+00	< 1.91E+00	< 1.42E+01	< 4.24E+00
12/15/09	< 5.20E+00	< 2.60E+00	< 7.42E-01	< 3.08E+00	< 3.31E+00	< 1.80E+01	< 6.68E+00
Mean						9.09E+00 +/- 4.70E+00	

* LLD identified in ODCM

[a] Tritium analyses on quarterly composite.

[b] Sr-89/90 performed annually on 2nd quarter composite sample.

Table 3-12

Surface Water

Gamma Spectra, Strontium, Tritium

[pCi/L]

Station 09A

Sampling Date	H-3*	Sr-89	Sr-90	Mn-54*	Fe-59*	Co-58*	Co-60*	Zn-65*
01/13/09	[a]	[b]	[b]	< 3.89E+00	< 9.65E+00	< 4.38E+00	< 4.91E+00	< 7.55E+00
02/1709	[a]	[b]	[b]	< 4.68E+00	< 1.13E+01	< 5.60E+00	< 4.97E+00	< 9.86E+00
03/17/09	< 1.94E+02	[b]	[b]	< 5.67E+00	< 1.07E+01	< 5.51E+00	< 5.03E+00	< 1.04E+01
04/14/09	[a]	[b]	[b]	< 1.74E+00	< 4.62E+00	< 2.04E+00	< 1.95E+00	< 3.41E+00
05/12/09	[a]	[b]	[b]	< 1.34E+00	< 3.54E+00	< 1.54E+00	< 1.28E+00	< 2.59E+00
06/16/09	< 5.86E+02	< 4.50E+00	< 6.22E-01	< 9.04E-01	< 2.32E+00	< 1.04E+00	< 8.95E-01	< 1.80E+00
07/13/09	[a]	[b]	[b]	< 3.76E+00	< 8.89E+00	< 3.85E+00	< 2.96E+00	< 7.04E+00
08/11/09	[a]	[b]	[b]	< 2.78E+00	< 4.17E+00	< 2.61E+00	< 1.37E+00	< 4.35E+00
09/14/09	< 8.71E+02	[b]	[b]	< 6.29E+00	< 1.11E+01	< 5.53E+00	< 6.70E+00	< 1.12E+01
10/13/09	[a]	[b]	[b]	< 4.24E+00	< 8.35E+00	< 4.57E+00	< 4.80E+00	< 7.57E+00
11/17/09	[a]	[b]	[b]	< 2.63E+00	< 6.03E+00	< 2.90E+00	< 2.86E+00	< 5.34E+00
12/15/09	< 7.25E+02	[b]	[b]	< 1.94E+00	< 6.50E+00	< 3.31E+00	< 2.82E+00	< 5.24E+00
MEAN								

Sampling Date	Zr-95*	Nb-95*	I-131*	Cs-134*	Cs-137*	Ba-140*	La-140*
01/13/09	< 7.86E+00	< 4.28E+00	< 5.60E-01	< 4.43E+00	< 4.83E+00	< 2.73E+01	< 9.14E+00
02/1709	< 9.75E+00	< 5.68E+00	< 6.15E-01	< 5.66E+00	< 5.10E+00	< 3.50E+01	< 6.53E+00
03/17/09	< 1.11E+01	< 6.89E+00	< 8.62E-01	< 5.46E+00	< 5.63E+00	< 4.71E+01	< 1.13E+01
04/14/09	< 3.44E+00	< 2.01E+00	< 9.71E-01	< 1.67E+00	< 1.91E+00	< 1.26E+01	< 3.57E+00
05/12/09	< 2.74E+00	1.88E+00 +/- 9.67E-01	< 6.19E-01	< 1.25E+00	< 1.36E+00	< 1.75E+01	< 5.63E+00
06/16/09	< 1.89E+00	< 1.12E+00	< 6.12E-01	< 8.27E-01	< 9.00E-01	< 1.14E+01	< 3.41E+00
07/13/09	< 6.54E+00	< 5.07E+00	< 7.26E-01	< 3.46E+00	< 3.34E+00	< 3.54E+01	< 1.32E+01
08/11/09	< 4.06E+00	< 2.75E+00	< 4.97E-01	< 2.39E+00	< 2.13E+00	< 1.86E+01	< 5.59E+00
09/14/09	< 9.81E+00	< 5.35E+00	< 6.50E-01	< 5.41E+00	< 6.36E+00	< 3.23E+01	< 1.03E+01
10/13/09	< 8.52E+00	< 4.28E+00	< 4.49E-01	< 4.66E+00	< 4.75E+00	< 2.03E+01	< 5.77E+00
11/17/09	< 5.02E+00	< 2.95E+00	< 6.44E-01	< 2.68E+00	< 2.71E+00	< 2.03E+01	< 7.36E+00
12/15/09	< 3.74E+00	< 1.79E+00	< 4.99E-01	< 2.38E+00	< 2.42E+00	< 2.06E+01	< 4.09E+00
MEAN							

* LLD identified in ODCM

[a] Tritium analyses on quarterly composite.

[b] Sr-89/90 performed annually on 2nd quarter composite sample.

Table 3-13
Sediment Silt
Gamma Spectra, and Strontium
[pCi/Kg]

Sample Date	Sr-89	Sr-90	K-40	Cs-134*	Cs-137*
04/07/2009					
Station 08	[a]	[a]	1.21E+04 +/- 9.79E+02	< 5.03E+01	< 4.88E+01
Station 09A**	[a]	[a]	1.33E+04 +/- 1.24E+03	< 4.82E+01	1.30E+02 +/- 6.28E+01
Station 11	[a]	[a]	3.24E+04 +/- 1.69E+03	< 5.72E+01	< 6.72E+01

04/07/2009	Ra-226	Th-228	Th-232
Station 08	1.34E+03 +/- 9.96E+02	1.26E+03 +/- 8.70E+01	1.21E+03 +/- 1.39E+02
Station 09A**	2.21E+03 +/- 1.25E+03	7.98E+02 +/- 8.31E+01	5.95E+02 +/- 1.43E+02
Station 11	4.68E+03 +/- 1.26E+03	2.91E+03 +/- 1.36E+02	2.91E+03 +/- 1.99E+02

Sample Date	Sr-89	Sr-90	K-40	Cs-134*	Cs-137*
10/12/2009					
Station 08	< 8.36E+01	9.25E+01 +/- 2.17E+01	1.36E+04 +/- 1.50E+03	< 7.82E+01	< 9.18E+01
Station 09A**	< 7.74E+01	< 2.96E+01	1.19E+04 +/- 9.27E+02	< 3.62E+01	4.65E+01 +/- 2.75E+01
Station 11	< 8.22E+01	< 4.46E+01	1.65E+04 +/- 1.28E+03	< 5.12E+01	< 5.35E+01

10/12/2009	Ra-226	Th-228	Th-232
Station 08	< 1.88E+03	1.34E+03 +/- 1.28E+02	1.37E+03 +/- 2.15E+02
Station 09A**	1.23E+03 +/- 7.15E+02	6.61E+02 +/- 6.01E+01	5.60E+02 +/- 1.15E+02
Station 11	1.85E+03 +/- 1.04E+03	1.17E+03 +/- 8.54E+01	1.17E+03 +/- 1.21E+02

MEAN

	Sr-89	Sr-90	K-40	Cs-134*	Cs-137*
Indicator	+/-	9.25E+01 +/- 2.17E+01	1.87E+04 +/- 1.36E+03		
Control			1.26E+04 +/- 1.08E+03		8.83E+01 +/- 4.52E+01

	Ra-226	Th-228	Th-232
Indicator	2.62E+03 +/- 1.29E+03	1.67E+03 +/- 1.09E+02	1.67E+03 +/- 1.69E+02
Control	1.72E+03 +/- 9.83E+02	7.30E+02 +/- 7.16E+01	5.78E+02 +/- 1.29E+02

* LLD identified in ODCM

** Control Station

[a] Sr-89/90 analyses performed annually.

Table 3-14
Shoreline Soil
Gamma Spectra, and Strontium
[pCi/Kg]

Sample Date	Sr-89	Sr-90	K-40	Cs-134	Cs-137
04/07/2009					
Station 08	[a]	[a]	2.56E+03 +/- 5.50E+02	< 4.14E+01	< 5.01E+01

	Ra-226	Th-228	Th-232
	1.09E+03 +/- 1.02E+03	5.71E+02 +/- 7.18E+01	5.03E+02 +/- 1.12E+02

Sample Date	Sr-89	Sr-90	K-40	Cs-134	Cs-137
10/12/2009					
Station 08	< 8.65E+01	< 3.21E+01	2.70E+03 +/- 4.97E+02	< 4.39E+01	< 4.68E+01

	Ra-226	Th-228	Th-232
	1.35E+03 +/- 5.50E+02	6.15E+02 +/- 8.56E+01	5.86E+02 +/- 1.22E+02

	Sr-89	Sr-90	MEAN K-40	Cs-134	Cs-137
	+/-	+/-	2.63E+03 +/- 5.24E+02	+/-	+/-

	Ra-226	Th-228	Th-232
	1.22E+03 +/- 7.85E+02	5.93E+02 +/- 7.87E+01	5.45E+02 +/- 1.17E+02

* LLD identified in ODCM

[a] Sr-89/90 analyses performed annually.

Table 3-15
Fish
Gamma Spectra
[pCi/Kg]

Fish [a]

Sampling Date	K-40			Mn-54*	Fe-59*	Co-58*	Co-60*	Zn-65*	Cs-134*	Station 08 Cs-137*
04/08/09	3.41E+03	+/-	8.10E+02	< 4.78E+01	< 1.29E+02	< 5.56E+01	< 3.97E+01	< 9.47E+01	< 4.25E+01	< 4.94E+01
10/21/09	1.73E+03	+/-	7.42E+02	< 5.73E+01	< 1.42E+02	< 8.00E+01	< 5.27E+01	< 1.36E+02	< 6.14E+01	< 6.24E+01

Sampling Date	K-40			Mn-54*	Fe-59*	Co-58*	Co-60*	Zn-65*	Cs-134*	Station 25** Cs-137*
04/08/09	2.44E+03	+/-	4.99E+02	< 3.41E+01	< 6.23E+01	< 3.71E+01	< 4.26E+01	< 6.52E+01	< 2.88E+01	< 3.08E+01
10/13/09	2.24E+03	+/-	8.12E+02	< 7.56E+01	< 1.98E+02	< 9.48E+01	< 6.59E+01	< 1.53E+02	< 6.14E+01	< 6.70E+01

catfish [b]

Sampling Date	K-40			Mn-54*	Fe-59*	Co-58*	Co-60*	Zn-65*	Cs-134*	Station 08 Cs-137*
04/08/09	2.27E+03	+/-	7.44E+01	< 4.71E+01	< 1.11E+02	< 4.83E+01	< 5.38E+01	< 9.35E+01	< 4.06E+01	< 5.33E+01
10/21/09	2.07E+03	+/-	7.10E+02	< 4.75E+01	< 1.35E+02	< 5.71E+01	< 4.31E+01	< 1.07E+02	< 4.55E+01	< 5.31E+01

Sampling Date	K-40			Mn-54*	Fe-59*	Co-58*	Co-60*	Zn-65*	Cs-134*	Station 25** Cs-137*
04/08/09	1.82E+03	+/-	5.61E+02	< 3.39E+01	< 8.34E+01	< 3.86E+01	< 3.17E+01	< 5.48E+01	< 3.62E+01	< 3.93E+01
10/13/09	1.63E+03	+/-	6.50E+02	< 4.82E+01	< 1.18E+02	< 5.03E+01	< 4.06E+01	< 9.66E+01	< 4.43E+01	< 4.44E+01

Mean	2.20E+03	+/-	6.07E+02
Indicator	2.37E+03	+/-	5.84E+02
Control	2.03E+03	+/-	6.31E+02

* LLD identified in ODCM

** Control Station

[a] Non-bottom dwelling species of gamefish.

[b] Bottom dwelling species of fish.

4. DISCUSSION OF RESULTS

Data from the radiological analyses of environmental media collected during 2009 and tabulated in Section 3, are discussed below. Except for TLDs, TBE analyzed all samples throughout the year. The procedures and specifications followed for these analyses are as required in the TBEW quality assurance manuals and laboratory procedures. In addition to internal quality control measurements performed by each laboratory, they also participate in an Interlaboratory Comparison Program. Participation in this program ensures that independent checks on the precision and accuracy of the measurements of radioactive material in environmental samples are performed. The results of the Interlaboratory Comparison Programs are provided in Appendix B.

The predominant radioactivity detected throughout 2009 was that from external sources, such as fallout from nuclear weapons tests and naturally occurring radionuclides. Naturally occurring nuclides such as Be-7, K-40, and Th-228 were detected in numerous samples. Th-228 results were variable and are generally at levels higher than plant related radionuclides.

The following is a discussion and summary of the results of the environmental measurements taken during the 2009 reporting period.

4.1 Gamma Exposure Rate

A thermoluminescent dosimeter (TLD) is an inorganic crystal used to detect ambient radiation. TLDs are placed in two concentric rings around the station. The inner ring is located at the site boundary, and the outer ring is located at approximately five miles from the station. TLDs are also placed in special interest areas, such as population areas and nearby residences. Additional TLDs serve as controls. Ambient radiation comes from naturally occurring radioisotopes in the air and soil, radiation from cosmic origin, fallout from nuclear weapons testing, station effluents and direct radiation from the station.

The results of the analyses are presented in Table 3-2. Figure 4-1 shows the historical trend of TLD exposure rate measurements. Control and indicator averages indicate a steady relationship. Two dosimeters made of CaF and LiF sensitive elements are deployed at each sampling location. These TLDs replaced the previously used CaSO4:Dy in Teflon TLDs in January 2001. The dose with the replacement TLDs is lower than that of the previously used TLDs. This will continue to be monitored.

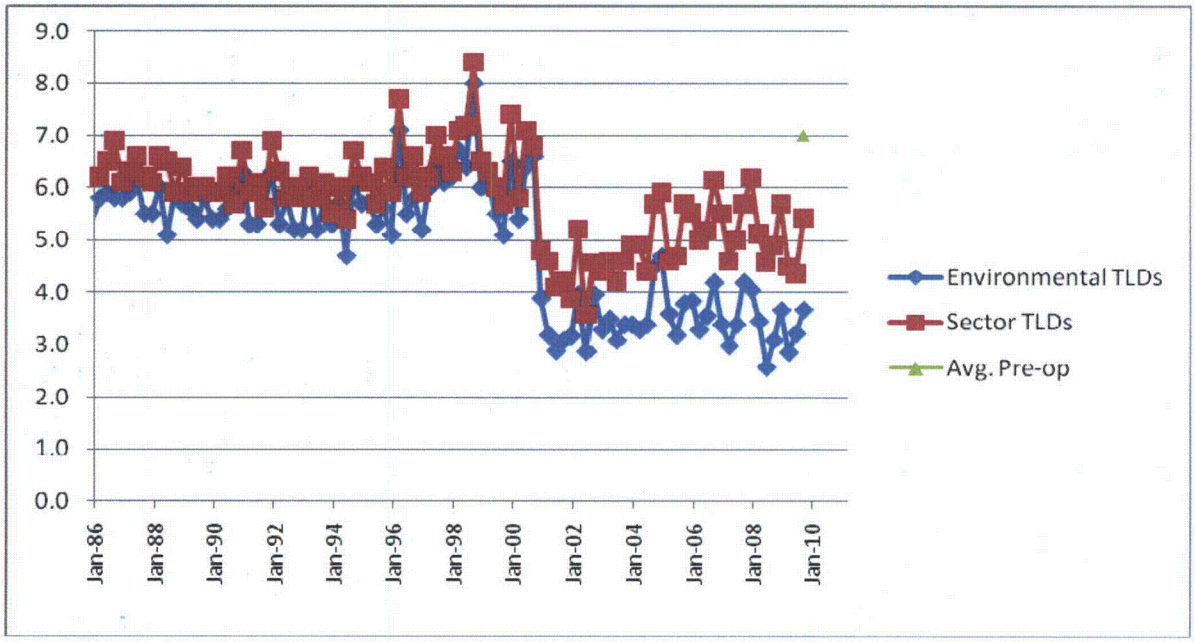

Figure 4-1 TLD (mrem/Standard Month)

Sector TLDs are deployed quarterly at thirty-two locations in the environs of the North Anna site. Two badges are placed at each location. The average level of the 32 locations (two badges at each location) was 5.0 mR/standard month with a range of 0.2 to 54.5 mR/standard month. The highest quarterly average reading for any single location was obtained at location SSW-19/51. This value was 31.5 mR/standard month. This location is on site directly across the access road from the Independent Spent Fuel Storage Facility. The higher values can thus be attributed to the spent fuel stored in the ISFSI. Quarterly and annual TLDs are also located at each of the twelve environmental air sampling stations. For the eleven indicator locations within 10 miles of the station the average quarterly reading was 3.4 mR/standard month with a range of 1.5 to 6.1 mR/standard month. The average annual reading for these locations was 2.9 mR/standard month with a range of from 1.6 to 4.7 mR/standard month. The control location showed a quarterly average of 3.0 mR/standard month with a range of 2.8 to 3.4 mR/standard month. Its annual reading was 2.6 mR/standard month. 10 emergency sector TLDs, which are all located onsite had a quarterly average of 5.1 mR/standard month with EPSP-9/10 having the highest quarterly average of 7.6 mR/standard month. Eight other TLDs, designated C-1 thru C-8, which were pre-operational controls, were collected quarterly from four locations. Stations C-3/4 and C-7/8 are designated controls. These had a quarterly average of 3.2, while Station C-1/2 and C-5/6 had a quarterly average of 2.6 mR/standard month with a range of 1.2 to 4.3 mR/standard month. During the pre-operational period (starting in 1977) the doses were measured between 4.3 and 8.8 mR/standard month.

4.2 Airborne Gross Beta

Results of the weekly gross beta analyses are presented in Table 3-3. A review of the historical plot in Figure 4-2, indicates gross beta activity levels have remained relatively unchanged. The drop indicated in 2009 may be a function a return to the vendor used from 1988 until 2001. This will be monitored in the future to see if this in fact the case. Inner and outer ring monitoring locations continue to show no significant variation in measured activities (see Figure 4-3). This indicates that any station contribution is not measurable.

Gross beta activity found during the pre-operational and early operating period of North Anna Power Station was higher because of nuclear weapons testing. During that time, nearly 740 nuclear weapons were tested worldwide. In 1985 weapons testing ceased, and with the exception of the Chernobyl accident in 1986, airborne gross beta results have remained steady. During the preoperational period of July 1, 1974 through March 31, 1978 gross beta activities ranged from a low of 0.005 pCi/m^3 to a high of 0.75 pCi/m^3.

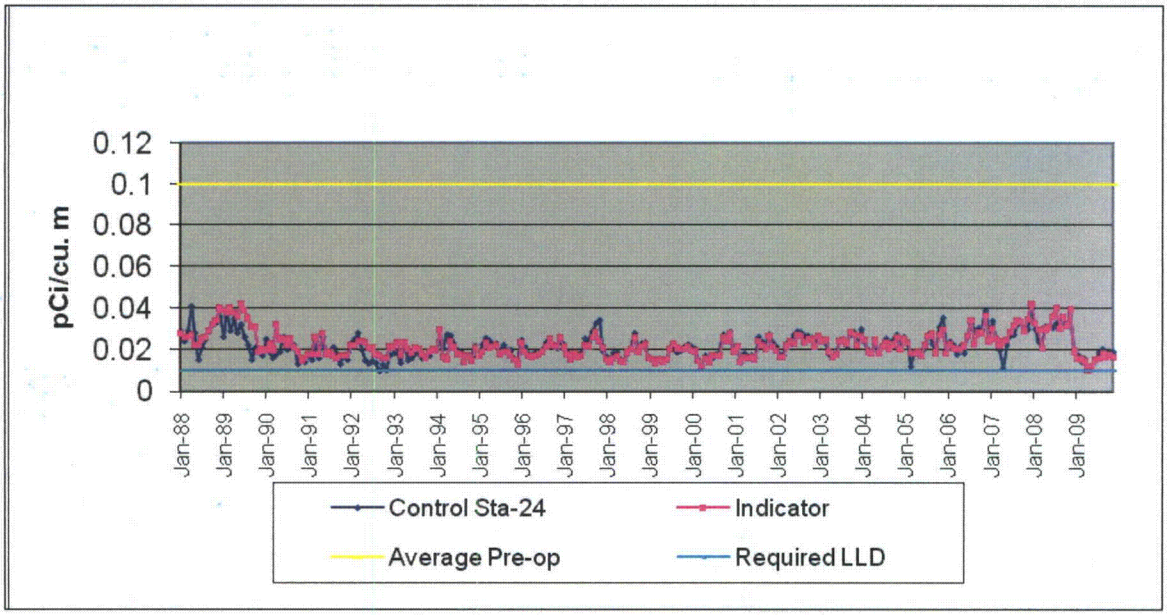

Figure 4-2 Historical Gross Beta in Air Particulates

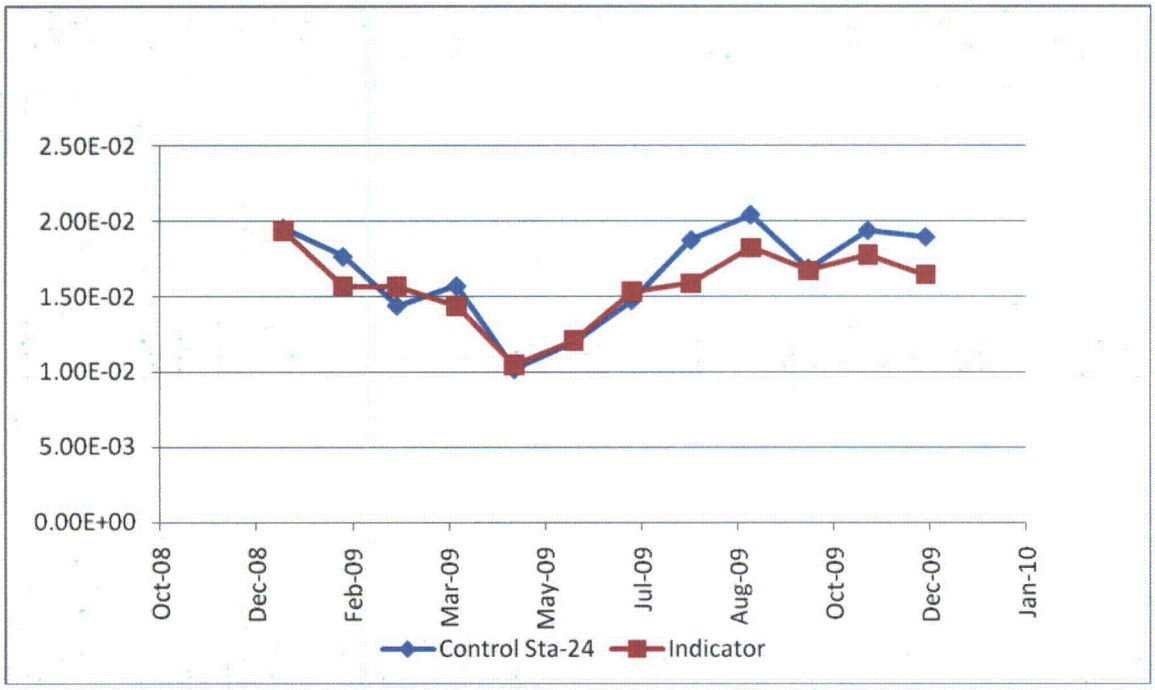

Figure 4-3 2009 Gross Beta in Air Particulates (pCi/m^3)

4.3 Airborne Radioiodine

Charcoal cartridges are used to collect airborne radioiodine. Once a week the samples are collected and analyzed. The results of the analyses are presented in Table 3-4. These results are similar to pre-operational data and the results of samples taken prior to and after the 1986 accident in the Soviet Union at Chernobyl.

4.4 Air Particulate Gamma

The air particulate filters that are utilized for the weekly gross beta analyses are composited by location and analyzed quarterly by gamma spectrometry. The results are listed in Table 3-5. The results indicate the presence of naturally occurring Be-7, which is produced by cosmic processes. Examination of pre-operational data indicates comparable measurements of Be-7, as would be expected. Cs-134 was reported in two samples. However, it was not identified by the peak search software, but the forced activity calculation of the software reported a result greater than both the MDC and the 2-σ error. This is not considered a true positive result. The results of these analyses indicate the lack of station effects on the environment.

4.5 Air Particulate Strontium

Strontium-89 and 90 analyses are performed on the second quarter composites of air particulate filters from all monitoring stations. There has been no detection of these fission products at any of the indicator or control stations in recent years.

4.6 Soil

Soil samples, which are collected every three years from twelve stations, were collected in 2007 and thus were not collected in 2009.

4.7 Precipitation

A sample of rain water was collected monthly at on-site station 01A and analyzed for gross beta activity. The results are presented in Table 3-7. 12 precipitation samples were obtained in 2009. Semi-annual composites are prepared and analyzed for gamma emitting isotopes in accordance with program requirements. No positive indications of plant related gamma emitting radioisotopes were observed in 2009. Naturally occurring gamma emitting radioisotopes were detected. During the pre-operational period gross beta activity in rain water was expressed in nCi per square meter of the collector surface, thus a direct comparison cannot be made to the 2009 period. During the pre-operational period, tritium was measured in over half of the few quarterly composites made. This tritium activity ranged from 100 to 330 pCi/liter.

4.8 Cow Milk

Analysis of milk samples is generally the most sensitive indicator of fission product existence in the terrestrial environment. This pathway also shows measurable amounts of nuclear weapons testing fallout. Therefore, this media needs to be evaluated very carefully when trying to determine if there is any plant effect.

Analysis results for cow milk are contained in Table 3-8. All results show no detectable I-131 above the LLD of 1 pCi/l. Results of gamma ray spectroscopy did not detect the presence of any plant related isotopes. In years past, Cs-137 has been detected sporadically. The occurrences were attributed to residual global fallout from past atmospheric weapons testing. Naturally occurring K-40 was detected in all samples.

Once each quarter a sample from each of the two collection stations is analyzed for strontium-89 and strontium-90. Neither Sr-89 nor Sr-90 was detected. Sr-90 has been observed in the past. Pre-operational levels of 2.2 to 5.4 pCi/liter were measured for Sr-90. There has been a long-term activity trend for Sr-90 showing a continuous decline. It should be noted that strontium-90 is not a part of station effluents. Its detection is the product of nuclear weapons testing fallout. This conclusion can be made based upon the fact that Sr-89 and Sr-90 have not been detected in gaseous effluents released from the station in many years, and the trend of consistent declining levels since the pre-operational period.

4.9 Food Products and Vegetation

Food/vegetation samples were collected from five locations and analyzed by gamma spectrometry. The results of the analyses are presented in Table 3-9. One sample from an indicator location detected Cs-137 at a level of 26.1 pCi/kg. Low levels of Cs-137, attributable to fallout, has been seen periodically in vegetation samples. Cs-137 was also reported in one vegetation sample at the control location as a result of the software's forced activity calculation at 8.84 pCi/kg, which was greater than both the MDC and the 2-σ error. This is not considered a true positive. As expected, naturally occurring potassium-40 and, cosmogenic beryllium-7 were detected in all samples, and thorium-228 and other natural products, including Bi-214, were detected in some samples.

4.10 Well Water

Water was sampled quarterly from the onsite well at the metrology laboratory. These samples were analyzed for gamma radiation and for tritium. The second quarter sample was analyzed for strontium-89 and strontium-90. The results of these analyses are presented in Table 3-10. No plant related isotopes were detected. No gamma emitting isotopes were detected during the pre-operational period.

4.11 River Water

A sample of water from the North Anna River was collected monthly. The analyses are presented in Table 3-11. All monthly samples are analyzed by gamma spectroscopy. The monthly samples were composited quarterly and analyzed for tritium. Additionally, the second quarter samples are analyzed for strontium-89 and strontium-90 in accordance with program requirements. There has been no detection of these fission products at any of the indicator or control stations in recent years.

No gamma emitting radioisotopes were detected in any of the samples. There

was no measured activity of strontium-89 or strontium-90. Tritium was measured in all four samples with an average annual concentration of 3810 pCi/liter and a range of 2870 to 5030 pCi/liter. These levels are comparable to those observed in previous years, see Figure 4-4. No river water samples were collected during the pre-operational period.

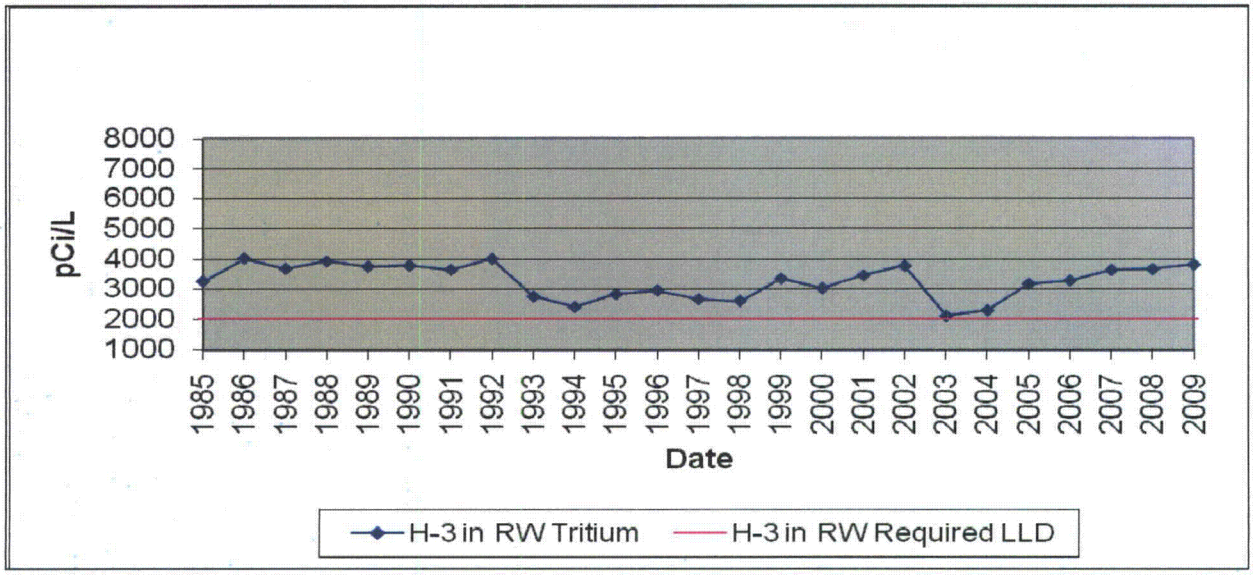

Figure 4-4Tritium in River water

4.12 Surface Water

Samples of surface water were collected monthly from two stations, an indicator station located at the discharge lagoon and a control station located 12.9 miles WNW. The samples were analyzed by gamma ray spectrometry and for iodine-131 by radiochemical separation. A quarterly composite from each station was prepared and analyzed for tritium. Additionally, the second quarter samples are analyzed for strontium-89 and strontium-90. There has been no positive indication of these fission products at any of the indicator or control stations in recent years. The results are presented in Table 3-12.

Co-60 was identified in one sample from the indicator location at a level of 0.838 pCi/L. However, this was less than the 2-sigma value and is not considered a true positive. Ba-140 was reported in one sample at the indicator location. However, this was due to a forced activity calculation. The nuclide was not identified during the peak search and is not considered a true positive. Similarly, Nb-95 was identified at the control location, but this was due to a forced activity

calculation and is not considered a true positive. No other gamma emitting radioisotopes, including iodine were detected in any of the samples. No tritium was detected at the control location. The average level of tritium activity at the indicator station was 3260 pCi/liter with a range of 2600 to 3860 pCi/liter. Levels of tritium have increased since 1978 when the average level was below 300 pCi/liter. Levels measured at the indicator location (Station 8) are comparable to those measured since 1986, see Figure 4-5. During the pre-operational period tritium was measured in several samples with concentrations between 90 and 250 pCi/liter.

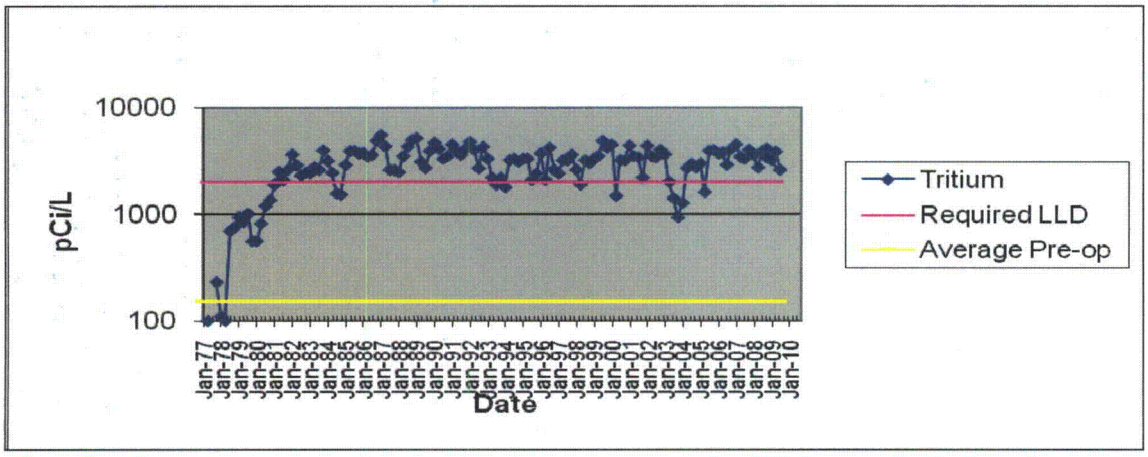

Figure 4.5Tritium in Surface Water

4.13 Bottom Sediment

Bottom sediment or silt is sampled to evaluate any buildup of radionuclides in the environment due to the operation of the station. Buildup of radionuclides in bottom sediment could indirectly lead to increasing radioactivity levels in fish.

Sediment samples were collected during March and October from each of three locations and were analyzed by gamma spectrometry. The October samples were analyzed for strontium-89 and strontium-90. The results are presented in Table 3-13. Figure 4-6 shows the historical trend of Cs-137 in sediments.

In 2009, two (2) sediment samples from the control location showed Cs-137 at an average level of 88.3 pCi/kg. No Cs-137 was detected at the indicator location in 2009. The detection of Cs-137 in bottom sediment is historically common with positive indications usually apparent in both indicator and control samples. The detection of Cs-137 is the result of accumulation and runoff into the lake of residual weapons testing fallout; its global presence has been well documented. During the pre-operational period sediment samples were also analyzed by gamma

ray spectroscopy.

Strontium-90 was detected in one (1) indicator sample of aquatic sediment/silt at a specific activity of 92.5 pCi/kg. This has also occurred occasionally in the past at both the indicator and control locations and is attributable to fallout from past bomb tests. A number of naturally occurring radioisotopes were detected in these samples at background levels.

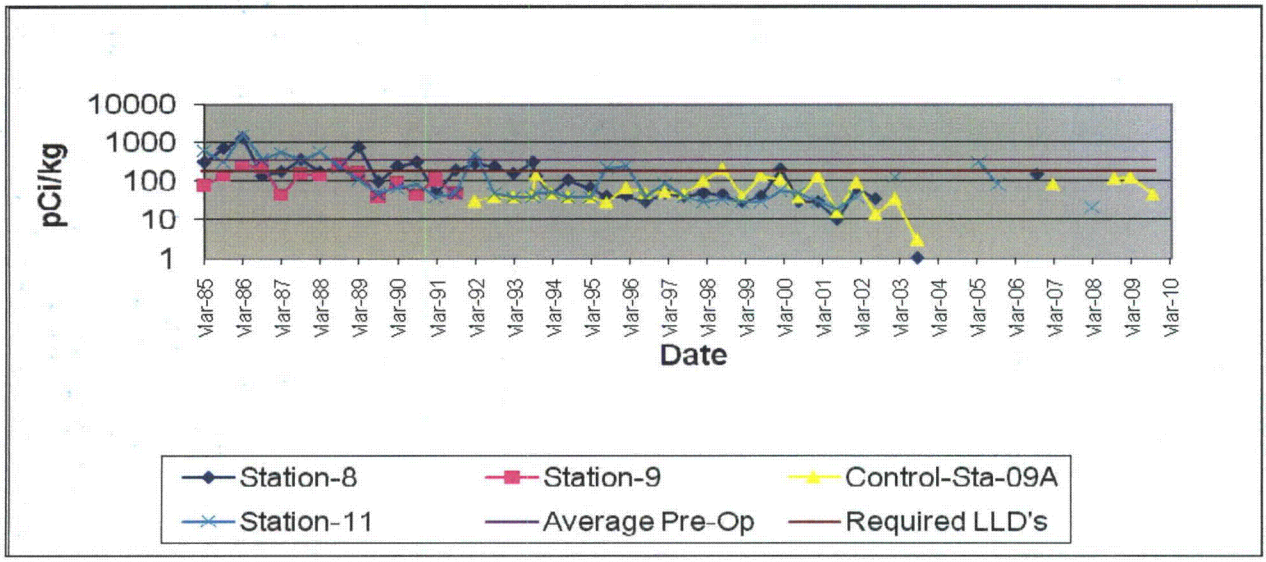

Figure 4-6 Cs-137 in Sediment/Silt

4.14 Shoreline Soil

Shoreline soil/sediment, unlike bottom sediment, may provide a direct dose to humans. Buildup of radioisotopes along the shoreline may provide a source of direct exposure for those using the area for commercial and recreational uses. Samples of shoreline soil were collected in March and October from indicator station 08. The samples were analyzed by gamma ray spectrometry. The October sample was analyzed for strontium-89 and strontium-90. The results are presented in Table 3-14.

Naturally occurring radioisotopes were detected at concentrations equivalent to normal background activities. No plant related isotopes were detected in the two samples analyzed. Strontium-90 is often detected in this media, however as discussed previously, the presence of Sr-90 and Cs-137 is attributed to accumulation of residual global fallout from past atmospheric weapons testing.

4.15 Fish

Four sample sets of fish, two from Lake Anna and two from the control station, Lake Orange, were collected during 2009 and analyzed by gamma spectroscopy. Each sample set consisted of a sample of game species and a sample of bottom-dwelling species, which were analyzed separately. The results are presented in Table 3-15. Naturally occurring K-40 was detected in all samples. No plant related isotopes were detected. Cs-137 was measured in pre-operational environmental fish samples.

5. PROGRAM EXCEPTIONS

REMP Exceptions for Scheduled Sampling and Analysis During 2009 – North Anna

Location	Description	Date of Sampling	Reason(s) for Loss/Exception
14A, 15, 16 23, 26	Vegetation	01-13-09	Seasonal Unavailability
14A, 15, 16 23, 26	Vegetation	02-10-09	Seasonal Unavailability
14A, 15, 16 23, 26	Vegetation	03-10-09	Seasonal Unavailability
03	Air Particulate	03-27-09	Patch not centered, volume collected on patch unknown
05	Air Particulate Charcoal	06-09-09	Breaker trip during storm. 11.2 hr run time
05	Air Particulate Charcoal	06-30-09	Breaker trip during storm. 84 hr run time
13	Milk	10-21-09	Sold cows. No longer milking.
14A, 15, 16 23, 26	Vegetation	11-10-09	Seasonal Unavailability
13	Milk	11-17-09	Sold cows. No longer milking.
14A, 15, 16 23, 26	Vegetation	12-08-09	Seasonal Unavailability
13	Milk	12-15-09	Sold cows. No longer milking.

REFERENCES

References

1. Dominion, North Anna Power Station Technical Specifications, Units 1 and 2.

2. Dominion, North Anna Power Station Independent Spent Fuel Storage Installation Technical Specifications.

3. Dominion, Station Administrative Procedure, VPAP-2103N, "Offsite Dose Calculation Manual".

4. Virginia Electric and Power Company, North Anna Technical Procedure, HP-3051.010, "Radiological Environmental Monitoring Program".

5. Title 10 Code of Federal Regulation, Part 50 (10CFR50), "Domestic Licensing of Production and Utilization Facilities".

6. United States Nuclear Regulatory Commission Regulatory Guide 1.109, Rev. 1, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10CFR50, Appendix I", October, 1977.

7. United States Nuclear Regulatory Commission, Regulatory Guide 4.8 "Environmental Technical Specifications for Nuclear Power Plants", December 1975.

8. USNRC Branch Technical Position, "Acceptable Radiological Environmental Monitoring Program", Rev. 1, November 1979.

9. NUREG 0472, "Radiological Effluent Technical Specifications for PWRs", Rev. 3, March 1982.

10. "Technical Specifications for North Anna Independent Spent Fuel Storage Installation (ISFSI)".

11. HASL-300, Environmental Measurements Laboratory, "EML Procedures Manual," 27th Edition, Volume 1, February 1992.

12. NUREG/CR-4007, "Lower Limit of Detection: Definition and Elaboration of a Proposed Position for Radiological Effluent and Environmental Measurements," September 1984.

APPENDICES

APPENDIX A: LAND USE CENSUS

Year 2009

LAND USE CENSUS

North Anna Power Station
North Anna County, Virginia

January 1 to December 31, 2009

Direction	Distance *(miles)*					
	Nearest Site Boundary	Nearest Resident	Nearest Garden (> 50m^2)	Nearest Meat Animal	Nearest Milch Cow	Nearest Milch Goat
N	0.9	1.5	1.9	*None*	*None*	*None*
NNE	0.9	0.9	3.1	1.5	*None*	*None*
NE	0.8	0.9	1.6	1.5	*None*	*None*
ENE	0.8	2.2	2.4	2.5	*None*	*None*
E	0.8	1.3	2.0	3.5	*None*	*None*
ESE	0.9	1.7	1.7	*None*	*None*	*None*
SE	0.9	1.4	1.4	1.5	*None*	*None*
SSE	0.9	1.0	1.0	2.8	*None*	*None*
S	0.9	1.0	1.0	*2.8*	*None*	*None*
SSW	1	1.3	3.7	1.9	*None*	*None*
SW	1.1	1.7	3.0	*None*	*None*	*None*
WSW	1.1	1.6	None	1.6	*None*	*None*
W	1.1	1.5	1.8	None	*None*	*None*
WNW	1	1.1	2.6	3.9	*None*	*None*
NW	1	1.0	None	*None*	*None*	*None*
NNW	0.9	1.0	2.2	*None*	*None*	*None*

2008 to 2009 Land Use Census Changes			
Nearest	**Direction**	**2008 Distance**	**2009 Distance**
Site Boundary	*None*		
Resident	*None*		
Garden			
	N	2.7	1.9
	E	1.3	2.0
	SSW	3.8	3.7
	W	3.3	1.8
	WNW	3.1	2.6
Meat Animal	*None*		
Milch Cow	*None*		
Milch Goat	*None*		

APPENDIX B: SUMMARY OF INTERLABORATORY COMPARISONS

YEAR 2009

INTRODUCTION

This appendix covers the Intercomparison Program of the Teledyne Brown Engineering – Environmental Services as required by technical specifications for the Radiological Environmental Monitoring Program (REMP). TBE uses QA/QC samples provided by Eckert & Zeigler Analytics, Inc, DOE's Mixed Analyte Performance Evaluation Program (MAPEP) and Environmental Resource Associates, (ERA) to monitor the quality of analytical processing associated with the REMP. The suite of samples is designed to be comparable with the pre-1996 US EPA Interlaboratory Cross-Check Program in terms of sample number, matrices, and nuclides. This includes:

E & Z Analytics:

- Milk for gamma emitters, Iodine-131, Fe-55, Sr-89 and Sr-90 analyses once per quarter.
- Air particulate for gamma emitters once per quarter
- Charcoal for I-131 once per quarter

DOE

- Water and soil for gamma, Iodine-131, U-233/234, U-238, transuranics, tritium, Fe-55, Ni-63, Sr-90 and Tc-99 analyses during the 1st quarter.
- Water for gross alpha and beta during the 1st and 3rd quarters
- Air particulates and vegetation for gamma, Iodine-131, U-233/234, U-238, transuranics, Sr-90 analyses during the 1st and 3rd quarters
- Air filter for gross alpha and beta analyses during the 1st and 3rd quarters.

ERA

- Water for tritium, gamma, Iodine-131, Sr-89, Sr-90, gross alpha and beta during the 2nd and 4th quarters.
- Water for natural uranium during the 2nd quarter

RESULTS

Interlaboratory comparison program results are evaluated using TBE#'s criterion. Any sample analysis result that does not pass the criteria is investigated by TBE. The following Nonconformance Reports were generated and corrective actions taken as a result of this program.

- NCR 09-09: Ni-63 failed high on MAPEP sample. Ni-63 value in soil was biased high due to recovery method. TBE does not currently perform Ni-63 in soil analyses. No action required
- NCR 09-10: Fe-55 in water failed high on MAPEP sample. Concentration in sample near detection limit. Added Fe-55 to analytics cross check samples.

- NCR 09-11: Pu-238, 239/240 in water failed low on MAPEP sample. Performance of Eichrom resin did not perform as previous lots. If another lot of resin is not usable, samples will be directly plated.
- NCR 09-12: Pu-238, 239/240 in air filter failed low on MAPEP sample. Performance of Eichrom resin did not perform as previous lots. If another lot of resin is not usable, samples will be directly plated.
- NCR 09-13: Co-57 in vegetation failed high on MAPEP sample. Due to geometry limitations, only 63.4% of sample could be used. Non-homogeneity of sample resulted in failure. In future, a minimum of 72% of sample will be utilized.
- NCR 09-14: Sr-89 in water on ERA sample failed high. Y-90 in-growth was not accounted for in sample. Recalculation assuming Y-90 in-growth was performed and results were in agreement. Y-90 in-growth assessment question added to calculation spreadsheet.
- NCR 09-23: Zn-65 on air particulate patch on Analytics failed high. Count was performed on another detector and was successful. Removed detector that failed from service for this geometry until it could be re-calibrated.

A summary of TBE's results is provided in the tables below for the required sample matrix types and isotopic distribution. Delineated in the table for each of the media/analysis combinations, are: the specific radionuclide; its result; analytical date; the known values supplied by the providers; pass or fail criteria.

ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
March 2009	E6533-396	Milk	Sr-89	pCi/L	102	97.7	1.04	A
			Sr-90	pCi/L	14.9	15.6	0.96	A
	E6534-396	Milk	I-131	pCi/L	66.7	79.3	0.84	A
			Ce-141	pCi/L	87.5	94.9	0.92	A
			Cr-51	pCi/L	275	305	0.90	A
			Cs-134	pCi/L	82.0	93.7	0.88	A
			Cs-137	pCi/L	111	111	1.00	A
			Co-58	pCi/L	114	119	0.96	A
			Mn-54	pCi/L	136	128	1.06	A
			Fe-59	pCi/L	112	99.9	1.12	A
			Zn-65	pCi/L	160	156	1.03	A
			Co-60	pCi/L	142	142	1.00	A
	E6536-396	AP	Ce-141	pCi	120	115	1.04	A
			Cr-51	pCi	385	371	1.04	A
			Cs-134	pCi	113	114	0.99	A
			Cs-137	pCi	149	135	1.10	A
			Co-58	pCi	153	145	1.06	A
			Mn-54	pCi	155	155	1.00	A
			Fe-59	pCi	118	121	0.98	A
			Zn-65	pCi	195	189	1.03	A
			Co-60	pCi	190	173	1.10	A
	E6535-396	Charcoal	I-131	pCi	82.8	79.4	1.04	A
June 2009	E6742-396	Milk	Sr-89	pCi/L	107	112	0.96	A
			Sr-90	pCi/L	19.0	16.7	1.14	A
	E6743-396	Milk	I-131	pCi/L	98.1	102.0	0.96	A
			Ce-141	pCi/L	260	284	0.92	A
			Cr-51	pCi/L	389	400	0.97	A
			Cs-134	pCi/L	144.0	166	0.87	A
			Cs-137	pCi/L	185	192	0.96	A
			Co-58	pCi/L	86.9	91.9	0.95	A
			Mn-54	pCi/L	133	137	0.97	A
			Fe-59	pCi/L	126	122	1.03	A
			Zn-65	pCi/L	173	175	0.99	A
			Co-60	pCi/L	298	312	0.96	A
	E6745-396	AP	Ce-141	pCi	186	163	1.14	A
			Cr-51	pCi	262	231	1.13	A
			Cs-134	pCi	101	95	1.06	A
			Cs-137	pCi	135	111	1.22	W
			Co-58	pCi	61	53	1.16	A
			Mn-54	pCi	83.1	79	1.05	A
			Fe-59	pCi	84	70	1.19	A
			Zn-65	pCi	137	101	1.36	N (1)
			Co-60	pCi	202	180	1.12	A
	E6744-396	Charcoal	I-131	pCi	92.2	95.8	0.96	A

ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
June 2009	E6745-396	Water	Fe-55	pCi	1780	1790	0.99	A
September 2009	E6897-396	Milk	Sr-89	pCi/L	113	107	1.06	A
			Sr-90	pCi/L	17.4	18.8	0.93	A
	E6898-396	Milk	I-131	pCi/L	89.2	98.6	0.90	A
			Ce-141	pCi/L	249	275	0.91	A
			Cr-51	pCi/L	213	221	0.96	A
			Cs-134	pCi/L	104.0	123	0.85	A
			Cs-137	pCi/L	172	185	0.93	A
			Co-58	pCi/L	96.3	99.4	0.97	A
			Mn-54	pCi/L	201	206	0.98	A
			Fe-59	pCi/L	154	147	1.05	A
			Zn-65	pCi/L	213	204	1.04	A
			Co-60	pCi/L	154	160	0.96	A
	E6900-396	AP	Ce-141	pCi	181	161	1.12	A
			Cr-51	pCi	145	130	1.12	A
			Cs-134	pCi	71.8	72	0.99	A
			Cs-137	pCi	115	109	1.06	A
			Co-58	pCi	62	58	1.06	A
			Mn-54	pCi	129	121	1.07	A
			Fe-59	pCi	97	98	0.98	A
			Zn-65	pCi	110	120	0.92	A
			Co-60	pCi	98.7	94.1	1.05	A
	E6899-396	Charcoal	I-131	pCi	89.5	92.3	0.97	A
	E6901-396	Water	Fe-55	pCi	1980	1980	1.00	A
December 2009	E6946-396	Milk	Sr-89	pCi/L	131	131	1.00	A
			Sr-90	pCi/L	19.3	17.9	1.08	A
	E6947-396	Milk	I-131	pCi/L	79.2	87.3	0.91	A
			Ce-141	pCi/L	193	202	0.96	A
			Cr-51	pCi/L	512	548	0.93	A
			Cs-134	pCi/L	222	253	0.88	A
			Cs-137	pCi/L	163	179	0.91	A
			Co-58	pCi/L	200	211	0.95	A
			Mn-54	pCi/L	178	178	1.00	A
			Fe-59	pCi/L	176	178	0.99	A
			Zn-65	pCi/L	326	345	0.94	A
			Co-60	pCi/L	240	256	0.94	A
	E6949-396	AP	Ce-141	pCi	103	103	1.00	A
			Cr-51	pCi	290	280	1.04	A
			Cs-134	pCi	116	129	0.90	A
			Cs-137	pCi	93.4	91.5	1.02	A
			Co-58	pCi	111	108	1.03	A
			Mn-54	pCi	81.0	90.8	0.89	A
			Fe-59	pCi	106	90.8	1.17	A
			Zn-65	pCi	155	176	0.88	A
			Co-60	pCi	135	131	1.03	A

ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
December 2009	E6948-396	Charcoal	I-131	pCi	93.3	93.9	0.99	A
	E6950-396	Water	Fe-55	pCi	1860	2500	0.74	W

(1) NCR 09-23 was initiated to investigate the failure.

(a) Teledyne Brown Engineering reported result.
(b) The Analytics known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or

volumetric measurements made during standard preparation.

(c) Ratio of Teledyne Brown Engineering to Analytics results.
(d) Analytics evaluation based on TBE internal QC limits: A= Acceptable. Reported result falls within ratio limits of 0.80-1.20.

W-Acceptable with warning. Reported result falls within 0.70-0.80 or 1.20-1.30. N = Not Acceptable. Reported result falls outside the ratio limits of < 0.70 and > 1.30.

DOE's MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)
TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Range	Evaluation (c)
March 2009	09-MaW20	Water	Am-241	Bq/L	NR			
			Cs-134	Bq/L	18.8	22.5	18.5 - 29.3	A
			Cs-137	Bq/L	0.0601		(1)	A
			Co-57	Bq/L	17.0	18.9	13.2 - 24.6	A
			Co-60	Bq/L	16.1	17.21	12.05 - 22.37	A
			Fe-55	Bq/L	69.92	48.20	33.7 - 62.7	N (2)
			H-3	Bq/L	332	330.9	231.6 - 430.2	A
			Mn-54	Bq/L	13.8	14.7	10.26 - 19.06	A
			Ni-63	Bq/L	50.7	53.50	37.45 - 69.55	A
			Pu-238	Bq/L	0.349	1.18	0.83 - 1.53	N (3)
			Pu-239/240	Bq/L	0.244	0.853	0.597 - 1.109	N (3)
			Sr-90	Bq/L	6.88	7.21	5.05- 9.37	A
			Tc-99	Bq/L	12.5	14.46	10.12 - 18.80	A
			U-234/233	Bq/L	2.61	2.77	1.94 - 3.60	A
			U-238	Bq/L	2.71	2.88	2.02 - 3.74	A
			Zn-65	Bq/L	13.2	13.6	9.5 - 17.7	A
	09-GrW20	Water	Gr-A	Bq/L	0.529	0.635	>0.0 - 1.270	A
			Gr-B	Bq/L	1.87	1.27	0.64 - 1.91	A
	09-MaS20	Soil	Am-241	Bq/kg	27.17	38.3	26.8 - 49.8	W
			Cs-134	Bq/kg	433	467	327 - 607	A
			Cs-137	Bq/kg	649	605	424 - 787	A
			Co-57	Bq/kg	-0.120		(1)	A
			Co-60	Bq/kg	3.91	4.113	(4)	A
			Mn-54	Bq/kg	339	307	215 - 399	A
			Ni-63	Bq/kg	241	514.9	360.4 - 669.4	N (5)
			Pu-238	Bq/kg	NR			
			Pu-239/240	Bq/kg	NR			
			K-40	Bq/kg	644	570	399 - 741	A
			Sr-90	Bq/kg	245	257	180 - 334	A
			Tc-99	Bq/kg	133	171	120 - 222	W
			U-234/233	Bq/kg	158.7	149	104 - 194	A
			U-238	Bq/kg	164.8	155	109 - 202	A
			Zn-65	Bq/kg	272	242	169 - 315	A
	09-RdF20	AP	Am-241	Bq/sample	NR			
			Cs-134	Bq/sample	2.77	2.93	2.05 - 3.81	A
			Cs-137	Bq/sample	1.41	1.52	1.06 - 1.98	A
			Co-57	Bq/sample	1.24	1.30	0.91 - 1.69	A
			Co-60	Bq/sample	1.33	1.22	0.85 - 1.59	A
			Mn-54	Bq/sample	2.42	2.2709	1.5898 - 2.9522	A
			Pu-238	Bq/sample	0.0965	0.1763	0.1234 - 0.2292	N (6)
			Pu-239/240	Bq/sample	0.084	0.157	0.110 - 0.204	N (6)
			Sr-90	Bq/sample	0.713	0.64	0.448 - 0.832	A
			U-234/233	Bq/sample	0.187	0.198	0.139 - 0.257	A
			U-238	Bq/sample	0.183	0.21	0.15 - 0.27	A
			Zn-65	Bq/sample	1.30	1.36	0.95 - 1.77	A
	09-GrF20	AP	Gr-A	Bq/sample	0.188	0.348	>0.0 - 0.696	A
			Gr-B	Bq/sample	0.313	0.279	0.140 - 0.419	A

DOE's MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)
TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Range	Evaluation (c)
March 2009	09-RdV20	Vegetation	Cs-134	Bq/sample	3.48	3.40	2.38 - 4.42	A
			Cs-137	Bq/sample	1.15	0.93	0.65 - 1.21	W
			Co-57	Bq/sample	3.12	2.36	1.65 - 3.07	N (7)
			Co-60	Bq/sample	-0.0105		(1)	A
			Mn-54	Bq/sample	2.98	2.3	1.61 - 2.99	W
			K-40	Bq/sample	64.1		(8)	
			Sr-90	Bq/sample	1.09	1.260	0.882 - 1.638	A
			Zn-65	Bq/sample	1.73	1.3540	0.948 - 1.760	W

(1) False positive test.

(2) Fe-55 activity is too close to our detection limit. Fe-55 in water will be done quarterly through Analytics from now on. NCR 09-10

(3) Resin problem caused failure. NCR 09-11

(4) Sensativity evaluation.

(5) Abnormally high concentration of native nickle in soil caused high recovery resulting in low activity. NCR 09-09

(6) Resin problem caused failure. NCR 09-12

(7) Homogeniety problem. MAPEP requires using entire sample but due to geometry limitations we can only use part of the sample. NCR 09-13

(8) Not evaluated by MAPEP.

(a) Teledyne Brown Engineering reported result.

(b) The MAPEP known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation.

(c) DOE/MAPEP evaluation: A=acceptable, W=acceptable with warning, N=not acceptable.

TELEDYNE QC SPIKE PROGRAM
TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Control Limits	Evaluation (c)
April 2009	RAD 77	Water	Sr-89	pCi/L	57.4	48.3	37.8 - 55.7	N (1)
			Sr-90	pCi/L	30.6	31.4	22.9 - 36.4	A
			Ba-133	pCi/L	55.2	52.7	43.4 - 58.3	A
			Cs-134	pCi/L	65.8	72.9	59.5 - 80.2	A
			Cs-137	pCi/L	157	168	151 - 187	A
			Co-60	pCi/L	86.4	88.9	80.0 - 100	A
			Zn-65	pCi/L	85.5	84.4	76.0 - 101	A
			Gr-A	pCi/L	47.7	54.2	28.3 - 67.7	A
			Gr-B	pCi/L	45.2	43.5	29.1 - 50.8	A
			I-131	pCi/L	25.2	26.1	21.7 - 30.8	A
			U-Nat	pCi/L	24.0	25.7	20.6 - 28.8	A
			H-3	pCi/L	19733	20300	17800 - 22300	A
October 2009	RAD 79	Water	Sr-89	pCi/L	64.75	62.2	50.2 - 70.1	A
			Sr-90	pCi/L	30.30	30.7	22.4 - 35.6	A
			Ba-133	pCi/L	97.9	92.9	78.3 - 102	A
			Cs-134	pCi/L	76.8	79.4	65.0 - 87.3	A
			Cs-137	pCi/L	59.9	54.6	49.1 - 62.9	A
			Co-60	pCi/L	121	117	105 - 131	A
			Zn-65	pCi/L	115	99.5	89.6 - 119	A
			Gr-A	pCi/L	19.6	23.2	11.6 - 31.1	A
			Gr-B	pCi/L	28.5	26.0	16.2 - 33.9	A
			I-131	pCi/L	22.1	22.2	18.4 - 26.5	A
			H-3	pCi/L	16133	16400	14300 - 18000	A

(1) Calculation did not allow for Y-90 ingrowth on the Sr-89 mount. NCR 09-14

(a) Teledyne Brown Engineering reported result.

(b) The ERA known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation.

(c) ERA evaluation: A=acceptable. Reported result falls within the Warning Limits. NA=not acceptable. Reported result falls outside of the Control Limits. CE=check for Error. Reported result falls within the Control Limits and outside of the Warning Limit.