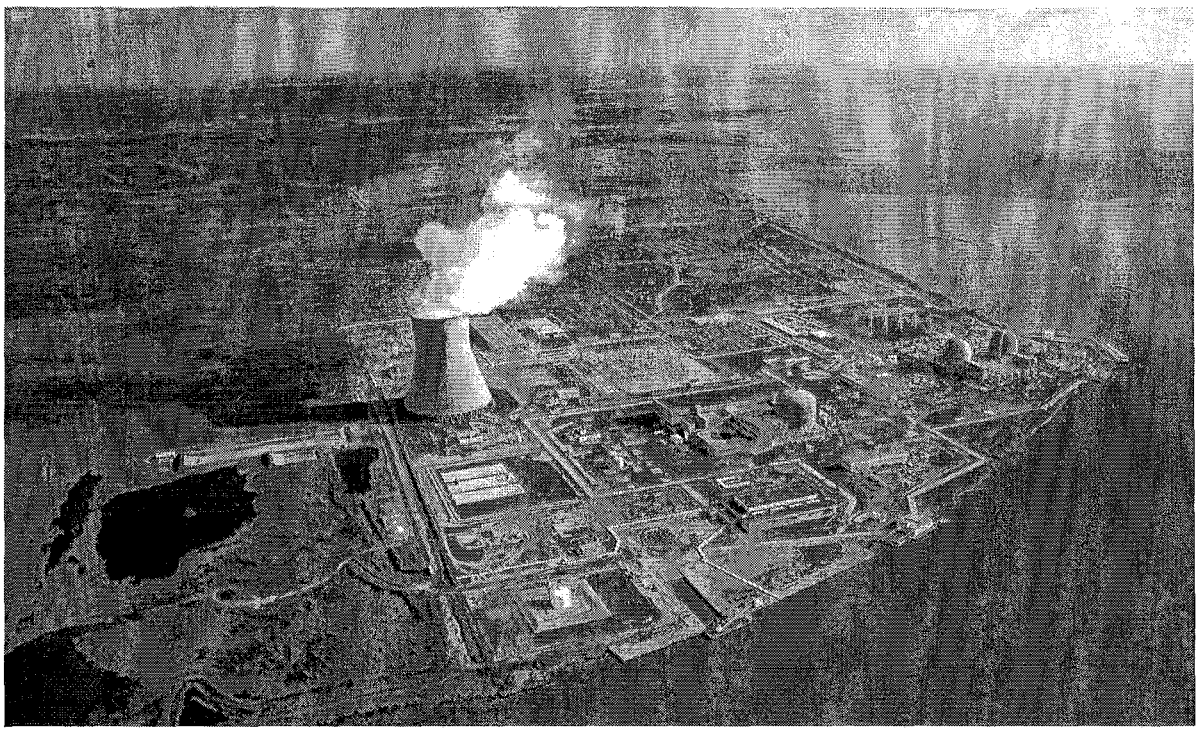
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM



PSEG Nuclear LLC, SALEM and HOPE CREEK GENERATING STATIONS

2014 ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

JANUARY 1 TO DECEMBER 31, 2014

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LIST OF ACRONYMS OR TERMS USED IN THIS TEXT (in alphabetical order)

AREOR	Annual Radiological Environmental Operating Report
%	Percent
A	Acceptable
a posteriori	*a posteriori* - The terms *a posteriori* ("from the later") and *a priori* ("from the earlier") are used to distinguish two types of knowledge, justification, or argument
a priori	*a priori* - The terms *a priori* ("from the earlier") and *a posteriori* ("from the later") are used to distinguish two types of knowledge, justification, or argument
AIO	Air Iodine
Analyte	The substance being identified and measured in a chemical analysis
APT	Air Particulates
BaLa-140	BariumLathanum-140
Be-7	Beryllium-7
Bq	Bequerels
C	Control
Co-57	Colbalt-57
Co-60	Colbalt-60
Cs-134	Cesium-134
Cs-137	Cesium-137
CVCS	Chemical Volume Control System
DOE	Department of Energy
dpm	Disintegrations per minute
ECH	Crabs
ERA	Environmental Resource Associates
ESF	Fish
ESS	Sediment
Eu-152	Europium-152
EZA	Eckert & Ziegler Analytics, Inc.
Fe-59	Iron-59
FPL	Broad Leafy Vegetation
FPV	Vegetables
GAM	Game
GEL	GEL Laboratories
Gr-A	Gross Alpha
Gr-B	Gross Beta
H-3	Tritium
HCGS	Hope Creek Generating Station
I-131	Iodine-131
IDM	Immersion Dose Monitor
ISFSI	Independent Spent Fuel Storage Installation
K-40	Potassium-40
kg	Kilogram
L	Liter

LLD	Lower Limit of Detection
LTS	Laboratory Testing Services
m^3	Cubic meter
MAPEP	Mixed Analyte Performance Evaluation Program
MDC	Minimum Detectable Concentration
mL	Milliliter
MLK	Milk
Mn-54	Manganese -54
mR	MilliRoentgen - a unit of radiation, used to measure the exposure of somebody or something to X-rays and gamma rays, defined in terms of the ionization effect on air.
mrem	Millirem - a unit for measuring amounts of radiation, equal to the effect that one roentgen of X-rays or gamma-rays would produce in a human being. It is used in radiation protection and monitoring.
MWe	Megawatt Electric
MWt	Megawatt Thermal
N	Not Acceptable
NCR	Nonconformance Report
NEI	Nuclear Energy Institute
NELAC	National Environmental Laboratory Conference
NRC	U.S. Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
pCi	Picocuries
PE	Performance Evaluation
PSEG	Public Service Enterprise Group
PT	Performance Testing
PWR	Potable (drinking) Water - Raw
PWT	Potable (drinking) Water
PWT	Potable (drinking) Water - Treated
QA	Quality Assurance
Ra-226	Radium – 226
REMP	Radiological Environmental Monitoring Program
RGPP	Radiological Groundwater Protection Program
SA	Salem
SAR	Safety Analysis Report
SGS	Salem Generating Station
SOL	Soil
SOP	Standard Operating Procedures
Sr-89	Strontium – 89
Sr-90	Strontium – 90
Standard Quarter	Standard Quarter = 92 days
SWA	Surface Water
TBE	Teledyne Brown Engineering
TEDA	Triethylene-diamine

Th-232	Thorium-232
TLD	Thermoluminescent Dosimeter - A TLD measures ionizing radiation exposure by measuring the intensity of visible light emitted from a crystal in the detector when the crystal is heated. The intensity of light emitted is dependent upon the radiation exposure.
TS	Technical Specifications
uCi	Microcuries
USEPA	United States Environmental Protection Agency
VGT	Fodder Crops
W	Warning
WWA	Ground (well) Water
Zn-65	Zinc-65
ZrNb-95	ZirconiumNiobium-95

I. Summary

During normal operations of a nuclear power generating station there are permitted releases of small amounts of radioactive material to the environment. To monitor and determine the effects of these releases, a Radiological Environmental Monitoring Program (REMP) has been established for the PSEG Nuclear LLC, Salem Generating Station (SGS) and Hope Creek Generating Station (HCGS). The results of the REMP are published annually, providing a summary and interpretation of the data collected.

Public Service Enterprise Group's (PSEG) Laboratory & Testing Services (LTS) performed the collection of environmental samples during 2014. TBE performed the analysis of environmental samples during 2014. Duplicate samples for laboratory quality assurance (QA) were sent to GEL Laboratories. Mirion Technologies provided the dosimetry services.

The REMP is based on NRC guidance as reflected in the SGS's and HCGS's Offsite Dose Calculation Manual (ODCM) with regards to sample media, sampling locations, sampling frequency and analytical sensitivity requirements. Indicator and control locations were established for comparison purposes to distinguish radioactivity of plant origin from natural or other "man-made" environmental radioactivity. The environmental monitoring program also verifies projected and anticipated radionuclide concentrations in the environment and related exposures from releases of radionuclides from SGS and HCGS. This program satisfies the requirements of Section IV.B.2 of Appendix I to 10 CFR 50 and provides surveillance of all appropriate critical exposure pathways to man.

The detection capabilities, required by SGS's and HCGS's ODCM, were achieved for the 2014 reporting period. Exceptions to the program are noted and the PSEG corrective action identifier was included in parenthesis. The

data that were collected in 2014 demonstrate that both SGS and HCGS were operated in compliance with each plant's respective Technical Specifications and ODCMs and the applicable Federal regulations. The REMP objectives were also met.

Most of the radioactive materials noted in this report are either naturally occurring in the environment such as potassium (K) 40 or beryllium (Be) 7, or a result of non-nuclear generating station activity, such as atmospheric nuclear weapons testing or medical wastes. Measurements made in the vicinity of SGS and HCGS were compared to background or control measurements and the preoperational REMP study performed before SGS Unit 1 became operational.

Samples of air particulates, air iodine, milk, surface water, ground (well) water, potable (drinking) water, vegetables, fodder crops, soil, fish, crabs and sediment were collected and analyzed. External radiation dose measurements were also made in the vicinity of SGS/HCGS using passive dosimeters.

The REMP complies with the following Safety Analysis Report (SAR) document sections:

Unit	Technical Specifications	ODCM
SGS U1	6.8.4.h	3/4. 12.1 6.9.1.7
SGS U2	6.8.4.h	3/4. 12.1 6.9.1.7
HCGS U1	6.8.4.h	3/4. 12.1 6.9.1.6

To demonstrate this, compliance samples obtained from various media were analyzed for one or more of the following: gamma emitting isotopes, tritium (H-3), iodine-131 (I-131), gross alpha, gross beta and immersion dose. The results of these analyses were used to assess the environmental impact of

SGS and HCGS operations, thereby demonstrating compliance with the respective SGS's and HCGS's Technical Specifications and ODCMs and the applicable Federal regulations.

There were a total of 1688 analyses on 1380 environmental samples during 2014. Of the total number of analyses and environmental samples, direct radiation dose measurements were made using 218 sets of direct reading dosimeters.

In addition to the naturally occurring isotopes (i.e. Be-7, K-40, Ra-226, and Th-232) cesium-137 was identified in one sediment sample at a concentration of 29 pCi/kg. Cesium-137 from atmospheric nuclear weapons testing is routinely found in sediment and soil samples.

Ambient radiation measurements are made with quarterly passive dosimeters at onsite and offsite locations around SGS/HCGS. The direct radiation component was determined by comparing badges on the site boundary (5S1, 10S1, 11S1, 15S1and 15S2) to the designated controls (3G1 and 14G1). The direct radiation dose is determined by subtracting the control data from the badge data. The range of the site boundary dosimeters, with an annual dose between 45 mR and 50 mR, were lower than the control locations of 59 mR and 62 mR. Therefore, there was no measurable direct radiation to a member of the public at the site boundary. The reason that the site badges are lower is that the surrounding waters lower the radon concentration and limit terrestrial radiation. The 2014 dose measurements were comparable to the levels prior to station operation that had an average of 55 mR per year for 1973 to 1976.

The ambient radiation levels as measured by the two site boundary locations 1S1 and 16S2 ranged from 34.7 mR/Standard Quarter to 38.8 mR/Standard Quarter. The doses at these two locations were influenced by the radiation shine from the dry cask storage located in the nearby Independent Spent Fuel Storage Installation (ISFSI). The Federal Regulations 40 CFR 190 and

10 CFR 72.104 both limit the dose to a real member of the public to 25 mrem to the total body. To demonstrate compliance to these regulations, the maximum dose that a hypothetical individual member of the public was calculated at 5.1 mrem, which was well below the Federal limits for exposure.

Following the guidance in Nuclear Energy Institute's (NEI) 07-07, the results of the annual report of the Radiological Groundwater Protection Program (RGPP), formerly reported in this report, have been moved to the Annual Radiological Effluent Release Report.

The concentration of radioactive material in the environment that could be attributable to SGS and HCGS operations was only a small fraction of the concentration of naturally occurring and man-made radioactivity. The data obtained from the 2014 REMP were comparable to the results obtained during the preoperational phase of the program. Combined with historical results collected since commercial operation, it can be concluded that the levels and fluctuations were as expected and therefore, we conclude that the operation of SGS and HCGS had no significant radiological impact on the environment.

II. The Radiological Environmental Monitoring Program

SGS and HCGS are located in Lower Alloways Creek Township, Salem County, New Jersey. SGS consists of two operating pressurized water nuclear power reactors. SGS Unit 1 has a net rating of 1180 megawatt electric (MWe) and SGS Unit 2 has a net rating of 1178 MWe. The licensed core power for both units is 3459 megawatt thermal (MWt). HCGS is a boiling water nuclear power reactor, which has a net rating of 1212 MWe. The licensed core power is 3840 MWt.

The Generating Stations are located on a man-made peninsula on the east bank of the Delaware River. The peninsula was created by the deposition of

hydraulic fill from dredging operations. The surrounding environment is characterized mainly by the Delaware River Estuary and Bay, extensive tidal marshlands, and low-lying meadowlands. These land types make up approximately 85% of the land area within five miles of the site, with most of the remaining land used for agriculture.

Since 1968, a Radiological Environmental Monitoring Program (REMP) has been conducted at SGS and HCGS. Starting in December 1972, a more extensive radiological monitoring program was initiated in preparation for the operation of SGS Unit 1. The operational REMP was initiated in December 1976 when SGS Unit 1 achieved criticality.

An overview of the 2014 REMP is provided in Table B-2, Salem and Hope Creek Generating Stations Radiological Environmental Monitoring Program. Radioanalytical data from samples collected under this program were compared with results from the preoperational phase and historical results during operations. Differences between these periods were examined statistically to determine the effects of station operations. This report presents the results from January 1 through December 31, 2014, for the SGS/HCGS REMP.

A. Objectives of the Operational REMP

1. To fulfill the requirements of the Radiological Surveillance sections of the SGS and HCGS ODCMs.

2. To determine whether any significant increase occurred in the concentration of radionuclides in critical pathways.

3. To verify the models used by SGS and HCGS to predict the radioactive inventory in the surrounding environment.

4. To detect any change in ambient gamma radiation levels.

5. To verify that SGS and HCGS operations do not have detrimental effects on the health and safety of the public or on the environment.

B. Implementation of the Objectives

1. Samples of various media were selected for monitoring due to the radiological dose impact to human and other organisms. The selection of samples was based on:

   (a) Established critical pathways for the transfer of radionuclides through the environment to man, and

   (b) Experience gained during the preoperational phase. Sampling locations were determined based on site meteorology, Delaware River Bay estuarine hydrology, local demography, and land uses.

2. Sampling locations are divided into two classes: indicator and control. Indicator stations are those which are expected to manifest station effects. Control samples are collected at locations which are believed to be unaffected by station operations, usually at 15 to 30 kilometers (9.3 to 18.6 miles) away from the generating stations. Fluctuations in the levels of radionuclides and direct radiation at indicator stations are evaluated with respect to analogous fluctuations at control stations. Indicator and control station data are also evaluated relative to preoperational data.

3. Appendix A, Radiological Environmental Monitoring Program Summary, describes the coding system which identifies sample type and location and describes and summarizes the analytical results in accordance with Section 6.9.1.7 of the SGS ODCM and Section 6.9.1.6 of the HCGS ODCM. Table A-1

summarizes average, minimum and maximum activities of the indicator locations, control locations and location with the highest mean using values above the LLD.

4. Appendix B, Sample Designation and Locations. Table B-1 Sampling Locations lists the station codes, locations, latitude, longitude and the types of samples collected at each station.

5. The sampling locations are indicated on Maps B-1, Salem and Hope Creek Generating Stations' Radiological Environmental Monitoring Program On-site Sampling Locations and B-2, Salem and Hope Creek Generating Stations' Radiological Environmental Monitoring Program Off-site Sampling Locations.

III. Program Description

A. Data Interpretation

Results of analyses are grouped according to sample type and presented in Appendix C, Data Tables. All results above the Lower Limit of Detection (LLD) are at a confidence level of ± 2 sigma. This represents the range of values into which 95% of repeated analyses of the same sample should fall. As defined in U.S. Nuclear Regulatory Commission NUREG-1301 and NUREG-1302, LLD is the smallest concentration of radioactive material in a sample that will yield a net count (above system background) that will be detected with 95% probability, with only 5% probability of falsely concluding that a blank observation represents a "real signal." The equation for determining LLD is:

$$LLD = \frac{4.66 \bullet S_b}{E \bullet V \bullet 2.22 \bullet Y \bullet \exp(-\lambda \Delta t)}$$

4.66 is the statistical factor from NUREG 1302

S_b is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate, as counts per minute,

E is the counting efficiency, as counts per disintegration,

V is the sample size in units of mass or volume,

2.22 is the number of disintegrations per minute per picocurie,

Y is the fractional radiochemical yield, when applicable,

λ is the radioactive decay constant for the particular radionuclide (sec-1), and

Δt for environmental samples is the elapsed time between sample collection, or end of the sample collection period, and time of counting (sec).

The LLD is an "*a priori*" number, which represents the capability of the measurement system (including instrumentation, procedure and sample type) and not as an after the fact criteria for the presence of activity. All analyses are designed to achieve the required SGS/HCGS detection limits for environmental sample analysis.

The Minimum Detectable Concentration (MDC) is defined as above with the exception that the measurement is an "*a posteriori*" (after the fact) estimate of the presence of activity. The MDC is generally lower than the LLD.

The grouped data were averaged and standard deviations calculated. The ± 2 sigma deviations of the averaged data represent sample and not analytical variability. For reporting and calculation of averages,

any positive result occurring at or below the LLD is considered to be at that level.

B. Program Exceptions

Gross Beta in air particulates LLD of 10E-3 pCi/m^3 was not met for the 1/20/14 to 1/27/14 sample at location 2F6 due to low sample volume. The low sample volume was associated with the unit only being in service for 26.3 hours due to planned maintenance in the facility that supplies power to the air sampler. A MDC of 21.6E-3 pCi/m^3 was achieved (80111508-op010).

When changing the 5S2 air sampler filter on 8/4/14, the sampler was observed to be out of service. The sampler should have operated for 169.9 hours. However, actual recorded run time was 92.1 hours for a total of 7700 cubic feet of air collected. The pump was replaced and sampler returned to service (70168294).

The LLD for Surface Water was not met on samples collected 8/5/14 for locations 11A1, 12C1, 1F2, 16F1, and 7E1. Samples were collected on 08/05/14 and were received on 09/17/14. Due to the age of the samples upon arrival at the laboratory, the LLD could not be met for BaLa-140 & I-131 (10400229).

REMP air station 16E1 lost approximately five hours of data the week of 09/01/14 to 09/08/14. There was a storm during the week that is suspected to have caused a loss of power, accounting for the five hours of missing data. No other problems were observed and the sample station was running as expected on 09/08/14 (70169066).

Air samplers 5S1 and 5S2 were out of service from 0239 10/07/14 until 1330 10/08/14 and again on 11/23/14 from 0949 to 1800 due to

electrical tagout for planned maintenance on the checkpoint emergency diesel generator (70170137, 80113172-op200).

C. Program Changes

There were no revisions of the SGS ODCM or of the HCGS ODCM during this reporting period.

Surface water gross beta analysis by TBE was discontinued in 2014. It is not an ODCM requirement and mainly served to indicate potassium-40 level which is measured directly by gamma analysis.

The types of sample media analyzed by duplicate samples were increased to improve the overall QA program. Duplicate samples are collected with one sample generally sent to TBE and the second sample to GEL. Table C-19 was added for positive results obtained by GEL. Results of less than detectable are not included since goal is to compare those positive results for agreement.

D. Quality Assurance Program

Teledyne Brown Engineering

The quality of the results obtained by TBE is ensured by the implementation of the Quality Assurance Program as described in the TBE Quality Assurance Manual and the TBE Procedure Manual.

E. Summary of Results: Inter-laboratory Comparison Program

TBE analyzed Performance Evaluation (PE) samples of air particulate, air iodine, milk, soil, vegetation and water matrices, as appropriate for 169 analyses (Appendix D, Tables D-1 through D-3). GEL analyzed Performance Evaluation (PE) samples of air particulate, air iodine,

milk, soil, vegetation and water matrices, as appropriate for 446 analyses (Appendix D, Tables D-4 through D-7).

The PE samples, supplied by Eckert & Ziegler Analytics, Inc (EZA), Environmental Resource Associates (ERA), and Department of Energy's (DOE) Mixed Analyte Performance Evaluation Program (MAPEP), were evaluated against the following acceptance criteria:

1. EZA Evaluation Criteria

   EZA's evaluation report provides a ratio of reported result and EZA's known value. Since flag values are not assigned by EZA, TBE evaluates the reported ratios based on internal QC requirements, which are based on the DOE MAPEP criteria.

2. ERA Evaluation Criteria

   ERA's evaluation report provides an acceptance range for control and warning limits with associated flag values. ERA's acceptance limits are established in accordance with the United States Environmental Protection Agency (USEPA), National Environmental Laboratory Conference (NELAC) performance testing (PT) program requirements, or ERA's standard operating procedure (SOP) for the Generation of Performance Acceptance Limits, as applicable. The acceptance limits are either determined by a regression equation specific to each analyte or a fixed percentage limit promulgated under the appropriate regulatory document.

3. DOE Evaluation Criteria

   MAPEP's evaluation report provides an acceptance range with associated flag values.

The MAPEP defines three levels of performance: Acceptable (flag = "A"), Acceptable with Warning (flag = "W"), and Not Acceptable (flag = "N"). Performance is considered acceptable when a mean result for the specified analyte is ± 20% of the reference value. Performance is acceptable with warning when a mean result falls in the range from ± 20% to ± 30% of the reference value (i.e., 20% < bias < 30%). If the bias is greater than 30%, the results are deemed not acceptable.

Teledyne Brown Engineering

In reviewing their environmental inter-laboratory crosscheck programs, TBE identified 1) duplication of efforts on some matrices and isotopes and 2) that TBE performed crosscheck samples on some matrices and isotopes that were not performed for clients. Since the DOE MAPEP is designed to evaluate the ability of analytical facilities to correctly analyze for radiological constituents representative of those at DOE sites, the needed changes were made to the analyses provided by the MAPEP. Therefore, the following isotopes were removed from the MAPEP:

Soil – gamma – will be provided by EZA twice per year, starting in 2015. For 2014, one soil gamma is provided by MAPEP, the 2nd soil gamma is provided by EZA.

Air Particulate – gamma – is currently provided by EZA.

Water – gamma, H-3, Sr-90, uranium, gross alpha and gross beta currently provided by EZA.

MAPEP evaluates non-reported (NR) analyses as failed if they were reported in the previous series.

For the TBE laboratory, 163 out of 169 analyses performed met the specified acceptance criteria. Six analyses (Ni-63, K-40 and I-131 in water, and two Sr-90s and one Gross Alpha in AP samples) did not meet the specified acceptance criteria for the following reasons:

1. TBE's MAPEP March 2014 Ni-63 in water result of 32.7 ± 1.69 Bq/L was overlooked when reporting the data but would have passed the acceptance range of 23.9 – 44.2 Bq/L (NCR 14-04).

2. TBE's MAPEP March 2014 K-40 in water result of 1.63 ± 2.49 Bq/L was overlooked when reporting the data but would have passed the false positive test (NCR 14-04).

3. TBE's ERA November 2014 I-131 in water result of 15.8 pCi/L was lower than the known value of 20.3 pCi/L, failing below the lower acceptance limit of 16.8. The result was evaluated as failed with a "found to known" ratio of 0.778. No cause could be found for the slightly low result. All ERA I-131 evaluations since 2004 have been acceptable (NCR 14-08).

4. TBE's MAPEP March 2014 Sr-90 in AP result of 0.822 Bq/sample was lower than the known value of 1.18 Bq/sample, failing below the lower acceptance limit of 0.83 Bq/sample. The reanalyzed result was still low, but fell within the lower acceptance range of 0.836. The reanalyzed result was statistically the same number as the original result. No cause could be found for the slightly low results (NCR 14-04).

5. TBE's MAPEP September 2014 Sr-90 in AP result of 0.310 Bq/sample was lower than the known value of 0.703 Bq/sample. The gravimetric yield of 117% was very high (we

normally see yields of 60% to 70 %) and could account for the low activity (NCR 14-09).

6. TBE's MAPEP September 2014 Gr-Alpha in AP result of 0.153 Bq/sample was lower than the known value of 0.53 Bq/sample. The AP sample was counted on the wrong side. The AP filter was flipped over and recounted with acceptable results (NCR 14-09).

GEL

For the GEL laboratory, 440 out of 446 analyses performed met the specified acceptance criteria. Six analyses (U-234/233 and U238 in soil, one U-235 in Vegetation, two Sr-89s and one Am-241 in water) did not meet the specified acceptance criteria for the following reasons:

1.&2. GEL's MAPEP June 2014 U-234/233 and U-238 in soil reported values were lower than the MAPEP known values. It was determined that the digestion method using hydrofluoric acid (HF) was insufficient to completely digest the soil. MAPEP posted on their website that the analytes had been fused into the soil at an extremely high temperature. Reanalysis using a sodium hydroxide (NAOH) fusion method prior to ion exchange separation chemistry gave results for U-234/233 and U-238 that fell within the acceptance criteria (Corrective Action CARR140605-879).

3. GEL's MAPEP June 2014 U-238 in vegetation reported value was higher than the MAPEP known value. The failure was due to a hand entry error when entering the result into the MAPEP website. The activity was incorrectly entered as 0.261

ug/sample instead of the correct result of 0.0261 ug/sample (Corrective Action CARR140605-879).

4.&5. Two of GEL's ERA August 2014 Sr-89 in water reported values were higher than the ERA known values. The associated QC samples and instrument calibrations were reviewed but a cause for the failures could not be determined. GEL assumes an unidentified random error caused the high bias for the batch associated with these samples (Corrective Action CARR140825-902).

6. GEL's ERA May 2014 Am-241 in water reported value was higher than the ERA known value. After a thorough review of all data, a definitive reason for the failure count not be determined. GEL assumes an unidentified random error caused the high bias for the batch associated with these samples (Corrective Action CARR140520-874).

F. Summary of Results: Duplicate Sample Comparison Program

Duplicate samples were obtained for some samples of air particulates, air iodine, milk, surface water, vegetables, game, fish, crabs and sediment. These samples were analyzed by GEL as comparison and validation of TBE results (Table C-19).

1. Air Particulates

Gross Beta had positive results on all 48 duplicate samples. GEL reports significantly higher Gross Beta results due to GEL and TBE using different calibration energy sources (80110821).

Be-7 had positive results on all four duplicate samples analyzed and were in agreement within analytical errors.

2. Air Iodine

All 48 duplicate samples were less than MDC so direct comparison was not possible.

3. Milk

Potassium-40 had positive results on all 11 duplicate samples and were in agreement within analytical errors.

4. Surface Water

Potassium-40 was positive on all four GEL results but on only one TBE result. Tritium was positive on one of the four samples. All were in agreement within analytical errors.

5. Vegetables

On the 18 duplicate samples analyzed, 22 isotopes were positive on the GEL results. The NRC ratio based on resolution was used for acceptance criteria and 20 of the 22 positive results passed. One result was detected by GEL but not detected by TBE which was also considered acceptable. One result was outside the acceptance criteria. Overall this is considered an acceptable duplicate sample comparison.

6. Game

Potassium-40 had positive results on both the duplicate samples and were in agreement within analytical errors.

7. Fish

Potassium-40 had positive results on both the duplicate samples and were in agreement within analytical errors.

8. Crab

Potassium-40 had positive results on the one duplicate sample and was in agreement within analytical errors.

9. Sediment

Potassium-40 was positive on all three samples and were in agreement within analytical errors. Ra-226 was positive on two GEL results but was less than MDC on TBE results. Be-7 was positive on one GEL result but was less than MDC on TBE result.

IV. Results and Discussion

The analytical results of the 2014 REMP samples are divided into categories based on exposure pathways: atmospheric, direct radiation, terrestrial, and aquatic. The analytical results for the 2014 REMP are summarized in Appendix A, Radiological Environmental Monitoring Program Summary. The data for individual samples are presented in Appendix C, Data Tables. The data are compared to the formal preoperational environmental monitoring program data (1973-1976) and to historical data during operations. The data collected demonstrates that the SGS's and HCGS's REMP was conducted in compliance with the Technical Specifications and SGS's and HCGS's ODCM.

The REMP for the SGS/HCGS Site has historically included samples and analyses not specifically required by the SGS's and HCGS's ODCM. These analyses are referenced throughout the report as Management Audit samples. LTS continues to collect these samples. The summary tables in this report include these additional samples and analyses.
These Management Audit Samples are samples that are taken to augment the radiological effluent monitoring program, but do not have a regulatory

basis nor do they fulfill any regulatory requirement. The following is a list and quantity of the Management audit samples collected in 2014:

Sample Type	Number of Samples
Food Crops	29
Well Water	12
Potable Water (raw and treated)	24
Fodder Crops	4
Beef and Game	3

A. Atmospheric

Air particulate (APT) samples were collected on Schleicher-Schuell No. 25 glass fiber filters with low-volume air samplers.

Iodine was collected from the air by adsorption on triethylene-diamine (TEDA) impregnated charcoal cartridge connected in series after the air particulate filters. Air sample volumes were measured with calibrated dry-gas meters. The displayed volumes were corrected to standard temperature and pressure.

1. Air Particulates

Air particulate (APT) samples were collected weekly at seven indicator locations (16E1, 15S2, 1F1, 2F6, 5D1, 5S1 and 7S1), one duplicate station (5S2) and one control location (14G1). The duplicate station sample was shipped to the QC laboratory GEL for analysis. Each weekly sample collected was analyzed for gross beta. Quarterly composites of the weekly samples from each station were analyzed for specific gamma emitters.

Gross Beta

Gross beta activity was detected in 362 of 364 of the indicator station samples at concentrations ranging from 4E-03 pCi/m^3 to 28E-03 pCi/m^3 with an average concentration of 13E-03 pCi/m^3, and in 52 of 52 of the control station samples at concentrations ranging from 7E-03 pCi/m^3 to 20E-03 pCi/m^3 with an average of 14E-03 pCi/m^3. The maximum preoperational level detected was 920E-03 pCi/m^3 with an average concentration of 74E-03 pCi/m^3 (Table C–2, Appendix C) [Figure 1 - Gross Beta Activity in Air Particulate 1990 through 2014 are plotted as quarterly averages, with an inset depicting the period 1973 to 2014].

Gamma Spectrometry

Gamma spectroscopy was performed on each of the 32 quarterly composite samples.

Beryllium-7, attributed to cosmic ray activity in the atmosphere, was detected in all 28 indicator station composites at concentrations ranging from 59E-03 pCi/m^3 to 139E-03 pCi/m^3 with an average concentration of 97E-03 pCi/m^3, and in the four control station composites ranging in concentration from 88E-03 pCi/m^3 to 114E-03 pCi/m^3 with an average concentration of 101E-03 pCi/m^3. The maximum preoperational level detected was 330E-03 pCi/m^3 with an average concentration of 109E-03 pCi/m^3. Naturally occurring potassium-40 was detected in one of 28 indicator station composites at a concentration of 56E-03 pCi/m^3. All other gamma emitters were less than the MDC (Table C–1, Appendix C).

2. Air Iodine

Filtered air iodine samples (AIO) were collected weekly at seven indicator locations (16E1, 15S2, 1F1, 2F6, 5D1, 5S1 and 7S1), one duplicate station (5S2) and one control location (14G1). The duplicate station sample was shipped to the QC laboratory GEL for analysis. Each sample was analyzed for I-131. Iodine-131 was not detected in any indicator or control samples. The maximum preoperational level detected was 42E-03 pCi/m^3 (Table C–3, Appendix C).

B. Direct Radiation

Ambient radiation levels in the environs were measured with a pair of thermoluminescent dosimeters (TLD) supplied and processed by Mirion Technologies. Packets containing these passive dosimeters were placed in the owner-controlled area and around the Site at various distances and in each land based meteorological sector and analyzed quarterly. Emphasis was placed on special interest areas such as population centers, nearby residences, and schools.

A total of 58 Immersion Dose Monitor (IDM) locations were established to monitor for direct radiation during 2014, including 20 on-site locations (1S1, 2S2, 2S4, 3S1, 4S1, 5S1, 6S2, 7S1, 8S1, 9S1, 10S1, 11S1, 12S1, 13S1, 14S1, 15S1, 15S2, 16S1, 16S2, and 16S3), 32 off-site locations within the 10 mile zone (1F1, 2E1, 2F2, 2F5, 2F6, 3E1, 3F2, 3F3, 4D2, 4F2, 5D1, 5F1, 6F1, 7F2, 8F1, 9F1, 10D1, 10F2, 11E2, 11F1, 12E1, 12F1, 13E1, 13F2, 13F3, 13F4, 14D1, 14F2, 15D1, 15F3, 16E1 and 16F2) and six control locations beyond 10 miles (1G3, 3G1, 3H1, 10G1, 14G1, and 16G1).

Each location has two TLDs, containing two thermoluminescent phosphors of calcium fluoride (CaF) and Lithium Fluoride (LiF) phosphors.

The average quarterly dose rate for the off-site dosimeters was 14.1 mR/Standard Quarter. Excluding locations 1S1 and 16S2, the onsite site boundary locations average quarterly dose rate was 13.0 mR/Standard Quarter. The control locations average quarterly dose rate was 14.0 mR/Standard Quarter. No significant differences were noted between the three groups (Table C–4, Appendix C).

The ambient radiation levels as measured by the two site boundary locations 1S1 and 16S2 ranged from 34.7 mR/Standard Quarter to 38.8 mR/Standard Quarter. The doses at these two locations were influenced by the radiation shine from the dry cask storage located in the nearby Independent Spent Fuel Storage Installation (ISFSI). Assuming a nominal background of 52 mR/year (13 mR/Standard Quarter) the maximum dose in these areas that could potentially affect a member of the population was calculated using the annual air exposure from location 16S2 of 92.7 mrem per year (155 mR/year – 52 mR/year * 0.9 mrem/mR).

40 CFR 190 and 10 CFR 72.104 both limit the dose to a real member of the public to 25 mrem to the total body. The nearest resident in the North sector is greater than five miles and 4.2 miles in the NNW sector, respectively from SGS/HCGS. To demonstrate compliance to these regulations, an individual member of the public is assumed to enter the site boundary area near the ISFSI for 20 days per year. The dose that this hypothetical individual would receive was calculated at 5.1 mrem/year (92.7 mrem/year * 20 days / 365 days) which is well below the federal limits for exposure.

The preoperational average for the quarterly TLD readings was 4.4 mR/Standard Month or 13.2 mR/Standard Quarter. The results of the direct radiation measurements for 2014 confirmed that the radiation levels in the vicinity of the SGS and HCGSs were similar to previous years.

C. Terrestrial

Terrestrial REMP sampling includes the collection of milk, well water, potable water, vegetation, fodder crops and soil samples.

Milk samples (MLK) were taken semi-monthly when cows were on pasture and monthly when cows were not grazing on open pasture from three indicator locations (13E3, 14F4, 2G3) and one control location (3G1). Animals are considered on pasture from April to November of each year. Samples were collected in new polyethylene containers, sodium bisulfite was added, then the samples were frozen and transported in ice chests to the analytical laboratory.

Well water samples (WWA) were collected monthly from one location (3E1). Separate raw (PWR) and treated potable water (PWT) samples were collected monthly from one location (2F3). Each monthly composite was prepared by daily compositing by the City of Salem Water and Sewer Department. All samples were collected in new polyethylene containers.

Locally grown vegetables (FPV) were collected at the time of harvest at 10 locations (1S1, 7S1, 10D1, 15S2, 16S1, 2F9, 3H5, 15F4, 1G1, and 2G2); fodder crops (VGT) were sampled at four locations (13E3, 14F4, 2G3 and 3G1); and broad leaf vegetation (FPL) was sampled at five locations (10D1, 15S2, 16S1, 1S1, and 7S2). The vegetables and fodder samples are additional samples (Management Audit) taken to enhance the radiological monitoring program. There is no dairy farm

within three miles of SGS and HCGS and there is only one dairy within five miles. Therefore, broadleaf vegetation is grown, maintained and harvested by LTS personnel in the late fall. All samples were weighed, packaged and shipped to TBE for analysis.

1. Milk

Milk samples were collected at four local dairy farms (two farms in New Jersey and two in Delaware). Each sample was analyzed for I-131 and gamma emitters.

Iodine-131

Iodine-131 was not detected above MDC in any of the 80 samples analyzed. The LLDs were met. The maximum preoperational level detected was 65 pCi/L, which occurred following a period of atmospheric nuclear weapons tests (Table C–5, Appendix C).

Gamma Spectrometry

Naturally occurring K-40 was detected in all 80 samples with concentrations for the 60 indicator station samples ranging from 1,151 pCi/L to 1,585 pCi/L with an average concentration of 1,353 pCi/L, and the 20 control station sample concentrations ranging from 1,061 pCi/L to 1,430 pCi/L, with an average concentration of 1,295 pCi/L. The maximum preoperational level detected was 2,000 pCi/L with an average concentration of 1,437 pCi/L. All other gamma emitters were less than the MDC (Table C–5, Appendix C).

2. Well Water (Ground Water)

Although offsite wells in the vicinity of SGS/HCGS are not directly affected by plant operations, well water samples were collected monthly from one farm (3E1). Samples from this well are considered Management Audit samples.

Gross Alpha

Gross alpha activity was not detected above the MDC in any of the well water samples. The maximum preoperational level detected was 9.6 pCi/L (Table C–6, Appendix C).

Gross Beta

Gross beta activity was not detected above the MDC in any of the well water samples. The preoperational results ranged from <2.1 pCi/L to 38 pCi/L, with an average value of 9 pCi/L (Table C–6, Appendix C).

Tritium

Tritium activity was not detected above the MDC in any of the well water samples. The maximum preoperational level detected was 380 pCi/L (Table C–6, Appendix C).

Gamma Spectrometry

Naturally occurring potassium-40 and radium-226 were not detected in any of the well water samples. The maximum preoperational level detected were 30 pCi/L and 2.0 pCi/L, respectively. All other gamma emitters were less than the MDC (Table C-7, Appendix C).

3. Potable Water (Drinking Water)

Both raw and treated potable water samples were collected and composited by The City of Salem Water and Sewer Department personnel. Each sample consisted of daily aliquots composited into a monthly sample. The raw water source for this plant is Laurel Lake and its adjacent wells. These are Management Audit samples as no liquid effluents discharged from SGS/HCGS directly affect this pathway.

Gross Alpha

No gross alpha activity was detected in any of the raw or treated water samples. The maximum preoperational level detected was 2.7 pCi/L (Table C–8, Appendix C).

Gross Beta

Gross beta activity was detected in 10 of the 12 raw water samples and in 12 of the 12 treated water samples. The concentrations for the raw samples ranged from 3.5 pCi/L to 6.9 pCi/L. Concentrations for the treated water ranged from 3.0 pCi/L to 8.1 pCi/L. The average concentration for both raw and treated water was 5.1 pCi/L. The maximum preoperational level detected was 9.0 pCi/L with an average concentration of 4.2 pCi/L (Table C–8, Appendix C).

Tritium

Tritium activity was not detected in any of the raw or treated water samples. The maximum preoperational level detected was 350 pCi/L with an average of 179 pCi/L (Table C–8, Appendix C).

Iodine-131

Iodine-131 measurements were performed to an LLD of 1.0 pCi/L. Iodine-131 activity was not detected in any of the raw or treated water samples. No preoperational data were available for comparison, since I-131 was not analyzed as a specific radionuclide analysis prior to 1989. Since that time all results have been below the MDC (Table C–9, Appendix C).

Gamma Spectrometry

Naturally occurring K-40 was not detected in any of the raw or treated water samples. No preoperational data were available for comparison. Naturally occurring Ra-226 was not detected in any raw or treated water samples. The maximum preoperational level detected was 1.4 pCi/L. All other gamma emitters were less than the MDC (Table C–9, Appendix C).

4. Vegetables

There are no farm products that are irrigated with water in which liquid plant effluents have been discharged.

A variety of food products are sampled from around the plant; however, the variety is dependent on the farmer's preference. These vegetables are collected as Management Audit samples. In addition, broadleaf vegetation was grown by LTS personnel and planted at four onsite locations and one offsite location in Delaware at 3.9 miles SSW. These broad leaf vegetable samples are collected since there are no milk farms operating within the five km radius of SGS/HCGS. The closest milk farm (13E3) is located in Odessa, DE at 5.0 miles (7.88 km). All samples (vegetable and broadleaf) were analyzed for

gamma emitters and included asparagus, cabbage, collards, sweet corn, peppers, and tomatoes. These samples were from eight indicator stations (62 samples) and three control stations (12 samples). The results for these samples are discussed below.

Gamma Spectrometry

Naturally occurring Be-7, attributed to cosmic ray activity in the atmosphere, was detected in 11 of the 62 indicator station samples, with concentrations ranging from 179 pCi/kg (wet) to 363 pCi/kg (wet), with an average concentration of 246 pCi/kg (wet). It was not detected in any of the control station samples. No preoperational data were available for comparison.

Naturally occurring K-40 was detected in all 62 indicator samples, with concentrations ranging from 1,655 pCi/kg (wet) to 6,784 pCi/kg (wet) with an average concentration of 3,775 pCi/kg (wet), and in all 12 control station samples at concentrations ranging from 1,626 pCi/kg (wet) to 3,267 pCi/kg (wet) with an average concentration of 2,353 pCi/kg (wet). The maximum preoperational level detected was 4,800 pCi/kg (wet) with an average concentration of 2,140 pCi/kg (wet) (Table C-10, Appendix C).

All other gamma emitters were less than the MDC.

5. Fodder Crops

Although not required by the SGS and HCGS ODCMs, four samples of silage normally used as cattle feed were collected from three indicator stations and one control station. It was

determined that these products could be an element in the food-chain pathway. These fodder crops are collected as Management Audit samples and analyzed for gamma emitters. All four locations from which samples were collected are milk sampling stations.

Gamma Spectrometry

Naturally occurring Be-7, attributed to cosmic ray activity in the atmosphere, was detected in two of the three indicator samples at concentrations ranging from 233 pCi/kg (wet) to 265 pCi/kg (wet) with an average concentration of 249 pCi/kg (wet), and in the control station sample at a concentration of 265 pCi/kg (wet). The maximum preoperational level detected for silage was 4,700 pCi/kg (wet) with an average concentration of 2,000 pCi/kg (wet).

Naturally occurring K-40 was detected in all three indicator samples at concentrations ranging from 3,036 pCi/kg (wet) to 4,532 pCi/kg (wet) with an average concentration of 3,790 pCi/kg (wet), and in the control station sample at a concentration of 4,532 pCi/kg (wet). Preoperational results averaged 7,000 pCi/kg (wet). All other gamma emitters were less than the MDC (Table C–11, Appendix C).

6. Soil

Soil is sampled every three years at nine locations and analyzed for gamma emitters. These Management Audit samples were collected in 2013 and will not be collected again until 2016 (Table C–12, Appendix C) [Figure 4 - Cesium-137 Activity in Soil 1974 through 2013, which is the most recent sample, are plotted as the triennial average].

7. Beef and Game

Although not required by the SGS or HCGS ODCMs, three muskrat samples were collected from two indicator stations. The game samples were collected as Management Audit samples and analyzed for gamma emitters.

Gamma Spectrometry

Naturally occurring K-40 was detected in all three samples at concentrations ranging from 2,811 to 3,274 pCi/kg (wet) with an average concentration of 2,973 pCi/kg (wet). No preoperational data were available for comparison. All other gamma emitters were less than the MDC (Table C–13, Appendix C).

D. Aquatic

Environmental Consulting Services, Inc. (ECSI) collected all aquatic samples (with the exception of the 6S2 shoreline sediment). This sample set includes edible fish, shoreline and riverbed sediment, surface water and crab.

Surface water samples were collected offshore. The technicians collected the samples in new polyethylene containers that were rinsed twice with the sample medium prior to collection. The surface water samples were transported to TBE for analysis.

Edible fish were taken by gill nets while crabs were caught in commercial traps. These samples were processed by separating the flesh from the bone and shell. The flesh was placed in sealed containers and frozen before being transported in ice chests to TBE for analysis.

Sediment samples collected by ECSI were taken with a bottom grab sampler and frozen in sealed polyethylene containers before being transported in ice chests to TBE. For the river bottom sediment, a marine GPS was used to locate the correct site and the sampling boat was maneuvered over the area until the correct amount of sample was obtained (grabbed) with the sediment dredge. Personnel from LTS collected and prepared the location 6S2 shoreline sediment sample (an onsite location). For this location, a square area, measuring one meter on each side was staked out and then divided into a grid of nine smaller boxes, three per side. A one inch deep scoop from the center of each of the small grids was taken. All the aliquots were combined and the total sample transported in the ice chest to TBE.

1. Surface Water

Surface water samples were collected monthly at four indicator stations and one control station in the Delaware River Bay Estuary. One location (11A1) is at the outfall area (which is the area where liquid radioactive effluents from SGS are discharged into the Delaware River), one is downstream from the outfall area (7E1), and one is directly west of the outfall area at the mouth of the Appoquinimink River (12C1). Two upstream locations are in the Delaware River (1F2) and at the mouth of the Chesapeake and Delaware Canal (16F1), the latter being sampled when the flow is from the Canal into the river.

Station 12C1, directly west, at the mouth of the Appoquinimink River, serves as the operational control. Location 12C1 was chosen as the control location because the physical

characteristics of this station more closely resemble those of the outfall area than do those at the farther upstream location (1F2). As discussed in the preoperational summary report, due to the tidal nature of this Delaware River Bay Estuary, there are flow rate and salinity variations in the River. These variations will account for differences in concentrations of K-40.

Tritium

Tritium activity was detected in one of 48 indicator samples with a concentration of 1760 pCi/L at location 11A which is located at the SGS plant discharge. Tritium was not detected in any of the control samples. On 03/05/14 the Salem Unit 2 #22 Chemical Volume Control System (CVCS) Monitor Tank and Hope Creek Circulating Water Dewatering Sump were being released under approved permits around the time of sampling. Reanalysis was performed and validated the initial measurement. The measured value was still far below the surface water limit of 30,000 pCi/L (80111508). The maximum preoperational level detected was 600 pCi/L, with an average concentration of 210 pCi/L (Table C-14, Appendix C) [Figure 2 – Tritium Activity in Surface Water 1990 through 2014; only the positive results are plotted and there is an inset graph depicting the period 1973 to 2014].

Gamma Spectrometry

Naturally occurring K-40 was detected in 18 of the 48 indicator station samples at concentrations ranging from 59 pCi/L to 150 pCi/L with an average concentration of 94 pCi/L, and in three of the 12 control station samples at concentrations ranging from 61 pCi/L to 113 pCi/L and an average of 87 pCi/L.

The maximum preoperational level detected for K-40 was 200 pCi/L with an average concentration of 48 pCi/L (Table C-15, Appendix C).

Iodine-131

Iodine-131 was not detected in any of the 48 indicator samples. It was not detected in any of the control station samples. All other gamma emitters were less than the MDC (Table C-15, Appendix C).

2. Fish

Edible species of fish were collected semi-annually at two indicator stations and one control station and analyzed for gamma emitters in edible flesh. Samples included channel catfish and striped bass.

Gamma Spectrometry

Naturally occurring K-40 was detected in all eight indicator station samples at concentrations ranging from 2,862 pCi/kg (wet) to 6,348 pCi/kg (wet) with an average concentration of 4,142 pCi/kg (wet), and all five control station samples at concentrations ranging from 3,077 pCi/kg (wet) to 4,306 pCi/kg (wet) with an average concentration of 3,857 pCi/kg (wet). The maximum preoperational level detected was 13,000 pCi/kg (wet) with an average concentration of 2,900 pCi/kg (wet). All other gamma emitters were less than the MDC (Table C--16, Appendix C).

3. Blue Crab

Blue crab samples were collected twice during the season at one indicator and one control station. The edible portions were analyzed for gamma emitters.

Gamma Spectroscopy

Naturally occurring K-40 was detected in both indicator station samples at concentrations of 2,916 pCi/kg (wet) and 3,952 pCi/kg (wet) with an average concentration of 3,434 pCi/kg (wet), and in both control station samples at concentrations of 3,024 pCi/kg (wet) and 3,044 pCi/kg (wet) with an average concentration of 3,034 pCi/kg (wet). The maximum preoperational level detected was 12,000 pCi/kg (wet) with an average concentration of 2,835 pCi/kg (wet). All other gamma emitters were less than the MDC (Table C–17, Appendix C).

4. Sediment

Sediment samples were collected semi-annually from six indicator stations and one control station. Location 6S2 is the only shoreline sediment sample location and is directly subject to tidal fluctuations.

Gamma Spectroscopy

Naturally occurring K-40 was detected in all 11 indicator station samples at concentrations ranging from 3,004 pCi/kg (dry) to 16,880 pCi/kg (dry), with an average concentration of 8,594 pCi/kg (dry), and at both control stations samples at concentrations of 14,480 pCi/kg (dry) and 15,780 pCi/kg (dry) with an average concentration of 15,130 pCi/kg (dry). The

maximum preoperational level detected was 21,000 pCi/kg (dry) with an average concentration of 15,000 pCi/kg (dry).

Cesium-137 was detected in one of the indicator samples at a concentration of 29 pCi/kg (dry). The maximum preoperational level detected was 400 pCi/kg (dry) with an average concentration of 150 pCi/kg (dry) (Table C–18, Appendix C) [Figure 3, Cesium-137 & Cobalt-60 Activity in Aquatic Sediment 1990 through 2014, plotted as semi-annual positive results, with an inset graph depicting the period 1977 to 2014].

Naturally occurring Ra-226 was detected in five of the 11 indicator station samples at concentrations ranging from 1,903 pCi/kg (dry) to 3,016 pCi/kg (dry) with an average concentration of 2,343 pCi/kg (dry). Naturally occurring Ra-226 was not detected in the two control station samples. The maximum preoperational level detected was 1,200 pCi/kg (dry) with an average concentration of 760 pCi/kg (dry).

Naturally occurring Th-232 was detected in all 11 indicator station samples at concentrations ranging from 236 pCi/kg (dry) to 996 pCi/kg (dry) with an average concentration of 648 pCi/kg (dry), and in both of the control station samples at concentrations of 908 pCi/kg (dry) and 936 pCi/kg (dry) with an average concentration of 922 pCi/kg (dry). The maximum preoperational level detected was 1,300 pCi/kg (dry) with an average concentration of 840 pCi/kg (dry). All other gamma emitters were less than the LLD (Table C–18, Appendix C).

E. Land Use Survey

SYNOPSIS OF 2014 LAND USE CENSUS

A land use census was conducted in each of the 16 meteorological sectors to identify, within a distance of 8 km (5 miles), the location of the nearest milk animal, the nearest residence and the nearest garden of greater than 50 m^2 (500 ft^2) producing broad leaf vegetation. In accordance with SGS and HCGS ODCMs, the census was performed using a visual survey, Google Earth and by consulting with local agricultural authorities.

A comparison of the identified locations from the 2014 table with the 2013 table shows that there was no change to the nearest milk animal, nearest resident, or nearest vegetable garden (>500 ft^2) with broadleaf vegetation identified. Therefore, no formal dose evaluation or changes to the SGS and HCGS ODCMs are required. The 2014 Land Use Census results are summarized below:

Meteorological Sector	**Milk Animal August, 2014 Km (miles)**	**Nearest Residence August, 2014 Km (miles)**	**Vegetable Garden August, 2014 Km (miles)**	**Meat Animal August, 2014 Km (miles)**
N	None	None	None	None
NNE	None	8.0 (5.0)	None	6.8 (4.2)
NE	None	6.2 (3.9)	None	None
ENE	None	6.2 (3.9)	None	None
E	None	None	None	None
ESE	None	None	None	None
SE	None	None	None	None
SSE	None	None	None	None
S	None	None	None	None
SSW	None	6.2 (3.9)	None	None
SW	None	6.9 (4.3)	7.3 (4.6)	7.3 (4.6)
WSW	None	7.1 (4.4)	None	None
W	7.8 (4.9)	6.5 (4.0)	None	None
WNW	None	5.5 (3.4)	None	None
NW	None	5.9 (3.7)	None	None
NNW	None	6.8 (4.2)	None	None

V. Annotations to Previous AREOR

Revision 1 to the 2013 Annual Radiological Environmental Operating Report was issued in the fourth quarter of 2014 and made corrections at that time.

VI. Hope Creek Technical Specification Limit for Primary Water Iodine Concentrations

The Hope Creek primary water chemistry results for 2014 were reviewed. The specific activity of the primary coolant did not exceed 0.2 microcuries per gram Dose Equivalent I-131 (DEI) so did not exceed the Technical Specifications limit specified in section 3.4.5.

VII. Conclusions

The Radiological Environmental Monitoring Program for SGS and HCGS was conducted during 2014 in accordance with the SGS and HCGS ODCMs. The LLD values required by the SGS and HCGS ODCMs were achieved with minor exceptions for this reporting period (See Appendix A and Appendix C). The objectives of the program were also met during this period. The data collected assist in demonstrating that SGS and HCGS were operated in compliance with the SGS and the HCGS ODCMs' requirements.

The concentration of radioactive material in the environment that could be attributable to SGS and HCGS operations was only a small fraction, when compared to the concentration of naturally occurring and man-made radioactivity in the environment. Since these results were comparable to the results obtained during the preoperational phase of the program, which ran from 1973 to 1976, and with historical results collected since commercial operation, PSEG Nuclear Personnel have concluded that the operation of the SGS and HCGS had no significant radiological impact on the environment.

From the results obtained, it can be concluded that the levels and fluctuations of radioactivity in environmental samples were as expected.

VIII. References

[1] Radiation Management Corporation. "Artificial Island Radiological Environmental Monitoring Program - Preoperation Summary - 1973 through 1976". RMC-TR-77-03, 1978.

[2] Public Service Enterprise Group. "Offsite Dose Calculation Manual"- Salem Generating Station. Revision 27.

[3] Public Service Enterprise Group. "Offsite Dose Calculation Manual"- Hope Creek Generating Station. Revision 27.

[4] U.S. Nuclear Regulatory Commission: NUREG-1301, "Offsite Dose Calculation Manual Guidance: Standard Radiological Effluent Controls for Pressurized Water Reactors", published April 1991.

[5] U.S. Nuclear Regulatory Commission: NUREG-1302, "Offsite Dose Calculation Manual Guidance: Standard Radiological Effluent Controls for Boiling Water Reactors", published April 1991.

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APPENDIX A

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

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SAMPLE DESIGNATION

The PSEG's Laboratory &Testing Services (LTS) identifies samples by a three part code. 1) The first two letters are the program identification code. Because of the proximity of the Salem and Hope Creek Stations a common environmental surveillance program is conducted. The identification code, "SA", has been applied to Salem and Hope Creek stations. 2) The next three letters identify the media sampled.

AIO	= Air Iodine	IDM	= Immersion Dose (TLD)
APT	= Air Particulate	MLK	= Milk
ECH	= Hard Shell Blue Crab	PWR	= Potable Water (Raw)
ESF	= Edible Fish	PWT	= Potable Water (Treated)
ESS	= Sediment	SOL	= Soil
FPL	= Green Leaf Vegetables	SWA	= Surface Water
FPV	= Vegetables (Various)	VGT	= Fodder Crops (Various)
GAM	= Game (Muskrat)	WWA	= Well Water

3) The last three or four symbols are a location code based on direction and distance from a standard reference point. The reference point is located at the midpoint between the center of the Salem Unit 1 and Salem Unit 2 containments. Of these, the first one or two represent each of the sixteen angular sectors of 22.5 degrees centered about the reactor site. Sector one is divided evenly by the north axis and other sectors are numbered in a clockwise direction as follows:

1 = N	5 = E	9 = S	13 = W
2 = NNE	6 = ESE	10 = SSW	14 = WNW
3 = NE	7 = SE	11 = SW	15 = NW
4 = ENE	8 = SSE	12 = WSW	16 = NNW

The next digit is a letter which represents the radial distance from the reference point:

S	= On-site location	E	= 4-5 miles off-site
A	= 0-1 miles off-site	F	= 5-10 miles off-site
B	= 1-2 miles off-site	G	= 10-20 miles off-site
C	= 2-3 miles off-site	H	= >20 miles off-site
D	= 3-4 miles off-site		

The last number is the station numerical designation within each sector and zone; e.g., 1,2,3,...etc. For example, the designation SA-WWA-3E1 would indicate a sample in the Salem and Hope Creek program (SA) consisting of well water (WWA) which had been collected in sector number 3, centered at 45 degrees (north east) with respect to the midpoint between Salem 1 and 2 containments at a radial distance of 4 to 5 miles off-site, (therefore, radial distance E). The number 1 indicates that this is sampling station number 1 in that particular sector.

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TABLE A-1 **RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY**

SALEM GENERATING STATION **DOCKET NO. 50-272/-311**
HOPE CREEK GENERATING STATION **DOCKET NO. 50-354**

SALEM COUNTY, NEW JERSEY **January 1, 2014 to December 31, 2014**

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	LOWER LIMIT OF DETECTION (LLD)*	ALL INDICATOR LOCATIONS MEAN (RANGE) **	LOCATION WITH HIGHEST MEAN NAME DISTANCE AND DIRECTION	MEAN (RANGE)	CONTROL LOCATION MEAN (RANGE)	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
I. AIRBORNE							
AIR PARTICULATE (E-3 pCi/m^3)	GR-B 416	10	13 (362/364) (4/28)	SA-APT-15S2 0.59 MILES NW	14 (52/52) (7/20)	14 (52/52) (7/20)	0
	GAMMA 32						
	BE-7	NA	97 (28/28) (59/139)	SA-APT-2F6 7.3 MILES NNE	108 (4/4) (94/122)	101 (4/4) (88/114)	0
	K-40	NA	32 (1/28)	SA-APT-16E1 4.1 MILES NNW	32 (1/4)	<LLD	0
	CS-134	50	<LLD		-	<LLD	0
	CS-137	60	<LLD		-	<LLD	0
AIR IODINE (E-3 pCi/m^3)	GAMMA 416						
	I-131	70	<LLD		-	<LLD	0
II. DIRECT							
DIRECT RADIATION (mR/standard quarter)	TLD-QUARTERLY 232	NA	14.6 (208/208) (9.1/42.4)	SA-IDM-16S2 0.6 MILES N OF SITE	38.8 (4/4) (36.0/42.4)	14.0 (24/24) (10.2/17.0)	0
III. TERRESTRIAL							
MILK (pCi/L)	I-131 80	1	<LLD		-	<LLD	0
	GAMMA 80						
	K-40	NA	1353 (60/60) (1151/1585)	SA-MLK-14F4 7.6 MILES WNW	1388 (20/20) (1269/1579)	1295 (20/20) (1061/1430)	0

TABLE A-1 **RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY**

SALEM GENERATING STATION **DOCKET NO. 50-272/-311**
HOPE CREEK GENERATING STATION **DOCKET NO. 50-354**

SALEM COUNTY, NEW JERSEY **January 1, 2014 to December 31, 2014**

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	LOWER LIMIT OF DETECTION (LLD)*	ALL INDICATOR LOCATIONS MEAN (RANGE) **	LOCATION WITH HIGHEST MEAN NAME DISTANCE AND DIRECTION	MEAN (RANGE)	CONTROL LOCATION MEAN (RANGE)	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
MILK (cont'd) (pCi/L)	CS-134	15	<LLD		-	<LLD	0
	CS-137	18	<LLD		-	<LLD	0
	BALA-140	15	<LLD		-	<LLD	0
	RA-226	NA	<LLD		-	<LLD	0
WELL WATER (pCi/L)	GR-A 12	3	<LLD		-	NA	0
	GR-B 12	4	<LLD		-	NA	0
	H-3 12	200	<LLD		-	NA	0
	GAMMA 12						
	K-40	NA	<LLD		-	NA	0
	MN-54	15	<LLD		-	NA	0
	CO-58	15	<LLD		-	NA	0
	FE-59	30	<LLD		-	NA	0

TABLE A-1 **RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY**

SALEM GENERATING STATION **DOCKET NO. 50-272/-311**
HOPE CREEK GENERATING STATION **DOCKET NO. 50-354**

SALEM COUNTY, NEW JERSEY **January 1, 2014 to December 31, 2014**

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	LOWER LIMIT OF DETECTION (LLD)*	ALL INDICATOR LOCATIONS MEAN (RANGE) **	LOCATION WITH HIGHEST MEAN NAME DISTANCE AND DIRECTION	MEAN (RANGE)	CONTROL LOCATION MEAN (RANGE)	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
WELL WATER (cont'd) (pCi/L)	CO-60	15	<LLD		-	NA	0
	ZN-65	30	<LLD		-	NA	0
	ZRNB-95	15	<LLD		-	NA	0
	I-131	1	<LLD		-	NA	0
	CS-134	15	<LLD		-	NA	0
	CS-137	18	<LLD		-	NA	0
	BALA-140	15	<LLD		-	NA	0
	RA-226	NA	<LLD		-	NA	0
POTABLE WATER (pCi/L)	GR-A 24	3	<LLD		-	NA	0
	GR-B 24	4	5.4 (22/24) (3.0/8.1)	SA-PWT-2F3 8.0 MILES NNE	5.5 (12/12) (3.0/8.1)	NA	0
	H-3 24	200	<LLD		-	NA	0

TABLE A-1 **RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY**

SALEM GENERATING STATION **DOCKET NO. 50-272/-311**
HOPE CREEK GENERATING STATION **DOCKET NO. 50-354**

SALEM COUNTY, NEW JERSEY **January 1, 2014 to December 31, 2014**

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	LOWER LIMIT OF DETECTION (LLD)*	ALL INDICATOR LOCATIONS MEAN (RANGE) **	LOCATION WITH HIGHEST MEAN NAME DISTANCE AND DIRECTION	MEAN (RANGE)	CONTROL LOCATION MEAN (RANGE)	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
POTABLE WATER (cont'd)	GAMMA 24						
(pCi/L)	K-40	NA	<LLD		-	NA	0
	MN-54	15	<LLD		-	NA	0
	CO-58	15	<LLD		-	NA	0
	FE-59	30	<LLD		-	NA	0
	CO-60	15	<LLD		-	NA	0
	ZN-65	30	<LLD		-	NA	0
	ZRNB-95	15	<LLD		-	NA	0
	I-131	1	<LLD		-	NA	0
	CS-134	15	<LLD		-	NA	0
	CS-137	18	<LLD		-	NA	0
	BALA-140	15	<LLD		-	NA	0

TABLE A-1 **RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY**

SALEM GENERATING STATION **DOCKET NO. 50-272/-311**
HOPE CREEK GENERATING STATION **DOCKET NO. 50-354**

SALEM COUNTY, NEW JERSEY **January 1, 2014 to December 31, 2014**

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	LOWER LIMIT OF DETECTION (LLD)*	ALL INDICATOR LOCATIONS MEAN (RANGE) **	LOCATION WITH HIGHEST MEAN NAME DISTANCE AND DIRECTION	MEAN (RANGE)	CONTROL LOCATION MEAN (RANGE)	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
POTABLE WATER (cont'd) (pCi/L)	RA-226	NA	<LLD		-	NA	0
VEGETATION (pCi/kg wet)	GAMMA 74						
	BE-7	NA	246 (11/62) (179/363)	SA-FPL-10D1 3.9 MILES SSW	286 (2/7) (209/363)	<LLD	0
	K-40	NA	3775 (62/62) (1655/6784)	SA-FPL-7S1	6189 (2/2) (5968/6410)	2353 (12/12) (1626/3267)	0
	I-131	60	<LLD		-	<LLD	0
	CS-134	60	<LLD		-	<LLD	0
	CS-137	80	<LLD		-	<LLD	0
	RA-226	NA	<LLD		-	<LLD	0
	TH-232	NA	<LLD		-	<LLD	0
FODDER CROPS (pCi/kg wet)	GAMMA 4						
	BE-7	NA	249 (2/3) (233/265)	SA-VGT-2G3 11.8 MILES NNE	265 (1/1)	<LLD	0
	K-40	NA	3790 (3/3) (3036/4532)	SA-VGT-2G3 11.8 MILES NNE	4532 (1/1)	1610 (1/1)	0
	I-131	60	<LLD		-	<LLD	0

TABLE A-1 **RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY**

SALEM GENERATING STATION **DOCKET NO. 50-272/-311**
HOPE CREEK GENERATING STATION **DOCKET NO. 50-354**

SALEM COUNTY, NEW JERSEY **January 1, 2014 to December 31, 2014**

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	LOWER LIMIT OF DETECTION (LLD)*	ALL INDICATOR LOCATIONS MEAN (RANGE) **	LOCATION WITH HIGHEST MEAN NAME DISTANCE AND DIRECTION	MEAN (RANGE)	CONTROL LOCATION MEAN (RANGE)	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
FODDER CROPS (cont'd) (pCi/kg wet)	CS-134	60	<LLD		-	<LLD	0
	CS-137	80	<LLD		-	<LLD	0
	RA-226	NA	<LLD		-	<LLD	0
	TH-232	NA	<LLD		-	<LLD	0
ANIMAL (pCi/kg wet)	GAMMA 3						
	BE-7	NA	<LLD		-	NA	0
	K-40	NA	2973 (3/3) (2811/3274)	SA-GAM-3E1	3274 (1/1)	NA	0
	I-131	60	<LLD		-	NA	0
	CS-134	60	<LLD		-	NA	0
	CS-137	80	<LLD		-	NA	0
IV. AQUATIC SURFACE WATER (pCi/L)	H-3 60	200	1760 (1/48)	SA-SWA-11A1 0.2 MILES SW	1760 (1/12)	<LLD	0

TABLE A-1 **RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY**

SALEM GENERATING STATION **DOCKET NO. 50-272/-311**
HOPE CREEK GENERATING STATION **DOCKET NO. 50-354**

SALEM COUNTY, NEW JERSEY **January 1, 2014 to December 31, 2014**

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	LOWER LIMIT OF DETECTION (LLD)*	ALL INDICATOR LOCATIONS MEAN (RANGE) **	LOCATION WITH HIGHEST MEAN NAME DISTANCE AND DIRECTION	MEAN (RANGE)	CONTROL LOCATION MEAN (RANGE)	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SURFACE WATER (cont'd)	GAMMA 60						
(pCi/L)	K-40	NA	12 (59/150)	SA-SWA-1F2 7.1 MILES N	109 (2/12) (68/150)	87 (3/12) (61/113)	0
	MN-54	15	<LLD		-	<LLD	0
	CO-58	15	<LLD		-	<LLD	0
	FE-59	30	<LLD		-	<LLD	0
	CO-60	15	<LLD		-	<LLD	0
	ZN-65	30	<LLD		-	<LLD	0
	ZRNB-95	15	<LLD		-	<LLD	0
	I-131	1	<LLD		-	<LLD	0
	CS-134	15	<LLD		-	<LLD	0
	CS-137	18	<LLD		-	<LLD	0
	BALA-140	15	<LLD		-	<LLD	0

TABLE A-1 **RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY**

SALEM GENERATING STATION **DOCKET NO. 50-272/-311**
HOPE CREEK GENERATING STATION **DOCKET NO. 50-354**

SALEM COUNTY, NEW JERSEY **January 1, 2014 to December 31, 2014**

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	LOWER LIMIT OF DETECTION (LLD)*	ALL INDICATOR LOCATIONS MEAN (RANGE) **	LOCATION WITH HIGHEST MEAN NAME DISTANCE AND DIRECTION	MEAN (RANGE)	CONTROL LOCATION MEAN (RANGE)	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SURFACE WATER (cont'd) (pCi/L)	I-131 60	1	<LLD		-	<LLD	0
FISH (pCi/kg wet)	GAMMA 13						
	K-40	NA	4142 (8/8) (2862/6348)	SA-ESF-7E1 4.5 MILES SE	4181 (4/4) (3106/6348)	3857 (5/5) (3077/4306)	0
	MN-54	130	<LLD		-	<LLD	0
	CO-58	130	<LLD		-	<LLD	0
	FE-59	260	<LLD		-	<LLD	0
	CO-60	130	<LLD		-	<LLD	0
	ZN-65	260	<LLD		-	<LLD	0
	CS-134	130	<LLD		-	<LLD	0
	CS-137	150	<LLD		-	<LLD	0
	RA-226	NA	<LLD		-	<LLD	0
BLUE CRABS (pCi/kg wet)	GAMMA 4						
	K-40	NA	3434 (2/2) (2916/3952)	SA-ECH-11A1 0.2 MILES SW	3434 (2/2) (2916/3952)	3034 (2/2) (3024/3044)	0

TABLE A-1 **RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY**

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SALEM COUNTY, NEW JERSEY **January 1, 2014 to December 31, 2014**

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	LOWER LIMIT OF DETECTION (LLD)*	ALL INDICATOR LOCATIONS MEAN (RANGE) **	LOCATION WITH HIGHEST MEAN NAME DISTANCE AND DIRECTION	MEAN (RANGE)	CONTROL LOCATION MEAN (RANGE)	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
BLUE CRABS (cont'd) (pCi/kg wet)	MN-54	130	<LLD		-	<LLD	0
	CO-58	130	<LLD		-	<LLD	0
	FE-59	260	<LLD		-	<LLD	0
	CO-60	130	<LLD		-	<LLD	0
	ZN-65	260	<LLD		-	<LLD	0
	CS-134	130	<LLD		-	<LLD	0
	CS-137	150	<LLD		-	<LLD	0
	RA-226	NA	<LLD		-	<LLD	0
SEDIMENT (pCi/kg dry)	GAMMA 13						
	BE-7	NA	<LLD		-	<LLD	0
	K-40	NA	8594 (11/11) (3004/16880)	SA-ESS-16F1 6.9 MILES NNW	16475 (2/2) (16070/16880)	15130 (2/2) (14480/15780)	0
	CS-134	150	<LLD		-	<LLD	0

TABLE A-1 **RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY**

SALEM GENERATING STATION **DOCKET NO. 50-272/-311**
HOPE CREEK GENERATING STATION **DOCKET NO. 50-354**

SALEM COUNTY, NEW JERSEY **January 1, 2014 to December 31, 2014**

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	ANALYSIS AND TOTAL NUMBER OF ANALYSES PERFORMED	LOWER LIMIT OF DETECTION (LLD)*	ALL INDICATOR LOCATIONS MEAN (RANGE) **	LOCATION WITH HIGHEST MEAN NAME DISTANCE AND DIRECTION	MEAN (RANGE)	CONTROL LOCATION MEAN (RANGE)	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SEDIMENT (cont'd) (pCi/kg dry)	CS-137	180	29 (1/11)	SA-ESS-11A1 0.2 MILES SW	29 (1/2)	<LLD	0
	RA-226	NA	2343 (5/11) (1903/3016)	SA-ESS-16A1 0.24 MILES NNW	2523 (2/2) (2030/3016)	<LLD	0
	TH-232	NA	648 (11/11) (236/996)	SA-ESS-12C1 C 2.5 MILES WSW	922 (2/2) (908/936)	922 (2/2) (908/936)	0

* LLD LISTED IS THE LOWER LIMIT OF DETECTION WHICH WE ENDEAVORED TO ACHIEVE DURING THIS REPORTING PERIOD.
** MEAN CALCULATED USING VALUES ABOVE LLD ONLY. FRACTION OF MEASUREMENTS ABOVE LLD ARE IN PARENTHESES.

APPENDIX B

SAMPLE DESIGNATION AND LOCATIONS

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TABLE B-1

SAMPLING LOCATIONS

Specific information about the individual sampling locations are given in Table B-1. Maps B-1 and B-2 show the locations of sampling stations with respect to the Site. A Portable Global Positioning System (GPS) was used to provide the coordinates of sampling locations.

All sample types are not required to be collected at all possible sites every year (see Table B-2 for sample locations this year).

STATION CODE	STATION LOCATION	LATITUDINAL DEG. MIN.	LONGITUDINAL DEG. MIN.	MEDIA SAMPLED
1S1	0.55 mi. N	39 – 28.260	75 – 32.222	IDM, FPL
2S2	0.40 mi. NNE; lamp pole 65 near HC switch yard	39 – 28.98	75 – 32.10	IDM
2S4	0.60 mi. NNE; in the equipment laydown area	39 – 28.110	75 – 31.992	IDM
3S1	0.58 mi. NE	39 – 28.140	75 – 31.678	IDM
4S1	0.60 mi. ENE; site access road near intersection to TB-02	39 – 28.023	75 – 31.544	IDM
5S1	0.86 mi. E; site access road	39 – 27.668	75 – 31.187	IDM, AIO, APT
5S2	0.86 mi. E; site access road, duplicate sample	39 – 27.668	75 – 31.187	AIO, APT
6S2	0.23mi. ESE; area around helicopter pad	39 – 27.719	75 – 31.912	IDM, ESS, SOL
7S1	0.12 mi. SE; station personnel gate	39 – 27.720	75 – 32.15	IDM, AIO, APT, FPL
8S1	0.12 mi. SSE; fuel oil storage	39 – 27.676	75 – 32.055	IDM
9S1	0.12 mi. S; fuel oil storage	39 – 27.636	75 – 32.091	IDM
10S1	0.14 mi. SSW; circulating water building	39 – 27.700	75 – 32.160	IDM
11S1	0.09 mi. SW; circulating water building	39 – 27.719	75 – 32.225	IDM
12S1	0.09 mi. WSW; outside security fence	39 – 27.756	75 – 32.236	IDM
13S1	0.09 mi. W; outside security fence	39 – 27.801	75 – 32.267	IDM
14S1	0.10 mi. NNW; outside security fence	39 – 27.893	75 – 32.280	IDM
15S1	0.57 mi. NW; near river and barge slip	39 – 28.161	75 – 32.525	IDM, FPV
15S2	0.59 mi. NW; near river	39 – 28.12	75 – 32.32	IDM, AIO, APT, FPL
16S1	0.57 mi. NNW; on road near fuel oil storage tank	39 – 28.215	75 – 32.432	IDM, FPL
16S2	0.60 mi. NNW; near security firing range	39 – 28.16	75 – 32.17	IDM, FPL
16S3	1.0 mi. NNW; consolidated spoils facility	39 – 28.350	75 – 32.550	IDM***
11A1	0.20 mi. SW; Salem outfall area	39 – 27.59	75 – 32.25	ESS, SWA, ECH, ESF
11A1A	0.15 mi. SE; Located in the plant barge slip area	39 – 27.41	75 – 32.02	Alternate SWA

TABLE B-1 (cont'd)
SAMPLING LOCATIONS

All sample types are not required to be collected at all possible sites every year (see Table B-2 for sample locations this year).

STATION CODE	STATION LOCATION	LATITUDINAL DEG. MIN.	LONGITUDINAL DEG. MIN.	MEDIA SAMPLED
15A1	0.65 mi. NW; Hope Creek outfall area	39 – 27.67	75 – 32.19	ESS
16A1	0.24 mi. NNW; South Storm Drain outfall	39 – 28.24	75 – 32.58	ESS
5C1	3.14 mi. ENE	39 – 28.250	75 – 28.430	GAM
12C1	2.5 mi. WSW; West bank of Delaware River	39 – 27.22	75 – 34.08	ESS, SWA, ECH, ESF
12C1A	3.7 mi. WSW; Located at the tip of Augustine Beach Boat Ramp	39 – 30.17	75 – 34.48	Alternate SWA
4D2	3.7 mi. ENE; Alloway Creek Neck Road	39 – 29.292	75 – 28.175	IDM
5D1	3.5 mi. E; local farm	39 – 28.396	75 – 28.334	IDM, AIO, APT
10D1	3.9 mi. SSW; Taylor's Bridge Spur	39 – 24.613	75 – 33.733	IDM, FPL, SOL
14D1	3.4 mi. WNW; Bay View, Delaware	39 – 29.26	75 – 35.521	IDM
15D1	3.8 mi NW; Route 9, Augustine Beach, DE	39 – 30.125	75 – 35.28	IDM
2E1	4.4 mi. NNE; local farm	39 – 31.380	75 – 30.428	IDM
3E1	4.2 mi. NE; local farm	39 – 30.098	75 – 28.646	IDM, WWA
7E1	4.5 mi. SE; River Bank 1.0 mi. W of Mad Horse Creek	39 – 25.08	75 – 28.64	ESS, SWA, ESF
7E1A	8.87 mi. SE; Located at the end of Bayside Road	39 – 22.57	75 – 24.24	Alternate SWA
11E2	5.0 mi. SW; Route 9	39 – 24.328	75 – 35.546	IDM
12E1	4.4 mi. WSW; Thomas Landing	39 – 26.862	75 – 36.968	IDM
13E1	4.2 mi. W; Diehl House Lab	39 – 27.989	75 – 36.735	IDM
13E3	5.0 mi. W; local farm	39 – 27.17	75 – 37.30	MLK, FPL, VGT, SOL
16E1	4.1 mi. NNW; Port Penn	39 – 30.762	75 – 34.580	IDM, AIO, APT, SOL
1F1	5.8 mi. N; Fort Elfsborg	39 – 32.693	75 – 31.124	IDM, AIO, APT,
1F2	7.1 mi. N; midpoint of Delaware R.	39 – 33.08	75 – 32.54	SWA
2F2	8.5 mi. NNE; Salem Substation	39 – 34.522	75 – 28.120	IDM
2F3	8.0 mi. NNE; City of Salem Water and Sewage Department	39 – 33.40	75 – 27.18	PWR, PWT
2F5	7.4 mi. NNE; Salem High School	39 – 33.448	75 – 28.514	IDM
2F6	7.3 mi. NNE; PSE&G Training Center, Salem NJ	39 – 33.713	75 – 28.819	IDM, AIO, APT
2F9	7.5 mi. NNE; Local Farm , Tilbury Rd, Salem	39 – 33.55	75 – 29.30	FPV, SOL

TABLE B-1 (cont'd)
SAMPLING LOCATIONS

All sample types are not required to be collected at all possible sites every year (see Table B-2 for sample locations this year).

STATION CODE	STATION LOCATION	LATITUDINAL DEG. MIN.	LONGITUDINAL DEG. MIN.	MEDIA SAMPLED
2F10	9.2 mi. NNE; Local Farm, South Broadway (Route 49) Pennsville	39 – 35.35	75 – 29.35	FPV, FPL
3F2	5.1 mi. NE; Hancocks Bridge, NJ Munc Bldg	39 – 30.410	75 – 27.578	IDM
3F3	8.6 mi. NE; Quinton Township Elem. School NJ	39 – 32.616	75 – 24.735	IDM
3F6	6.5 mi. NE; Local Farm, Salem/Hancocks Bridge Road	39 – 32.03	75 – 28.00	FPV
3F7	7.2 mi. NE; Local Farm, Beasley Neck Road, RD#3	39 – 32.07	75 – 25.46	FPV
3F8	9.3 mi. NE; Circle M Orchard	39 – 33.987	75 – 25.468	FPV
4F2	6.0 mi. ENE; Mays Lane, Harmersville, NJ	39 – 29.953	75 – 26.076	IDM
5F1	6.5 mi. E; Canton, NJ	39 – 28.360	75 – 25.031	IDM,SOL
6F1	6.4 mi. ESE; Stow Neck Road	39 – 26.396	75 – 25.148	IDM
7F2	9.1 mi. SE; Bayside, NJ	39 – 22.971	75 – 24.261	IDM
8F1	9.7 mi. SE; Woodland Beach, DE	39 – 19.933	75 – 28.463	IDM
9F1	5.3 mi. S; off Route #9, DE	39 – 23.042	75 – 32.95	IDM
10F2	5.8 mi. SSW; Route #9, DE	39 – 23.034	75 – 34.152	IDM
11F1	6.2 mi. SW; Taylor's Bridge, DE	39 – 24.766	75 – 37.632	IDM
12F1	9.4 mi. WSW; Townsend Elementary School, DE	39 – 23.778	75 – 41.311	IDM
13F2	6.5 mi W; Odessa, DE	39 – 27.297	75 – 39.372	IDM
13F3	9.3 mi. W; Redding Middle School, Middletown, Delaware	39 – 27.215	75 – 42.543	IDM
13F4	9.8 mi. W; Middletown, DE	39 – 26.857	75 – 43.111	IDM
14F2	6.7 mi. WNW; Route 13 and Boyds Corner Rd	39 – 29.979	75 – 39.042	IDM
14F4	7.6 mi. WNW; local farm	39 – 30.44	75 – 40.52	MLK, VGT, SOL
15F3	5.4 mi. NW	39 – 30.987	75 – 36.586	IDM
15F4	7.0 mi. NW; local farm; Port Penn Road; Delaware	39 – 31.21	75 – 38.31	FPV
16F1	6.9 mi. NNW; C&D Canal	39 – 33.55	75 – 34.25	ESS, SWA
16F1A	6.84 mi. NNW; Located at the C&D Canal Tip	39 – 33.34	75 – 33.56	Alternate SWA

TABLE B-1 (cont'd)
SAMPLING LOCATIONS

All sample types are not required to be collected at all possible sites every year (see Table B-2 for sample locations this year).

STATION CODE	STATION LOCATION	LATITUDINAL DEG. MIN.	LONGITUDINAL DEG. MIN.	MEDIA SAMPLED
16F2	8.1 mi. NNW; Delaware City Public School	39 – 34.314	75 – 35.429	IDM
1G1	10.9 mi. NNE; Route 49, South Broadway	39 – 37.113	75 – 30.178	FPV
1G3	19 mi. N; N. Church Street Wilmington, Del	39 – 44.287	75 – 32.512	IDM
2G2	13.5 mi. NNE; Local Farm; Pointers Auburn Road (Route 540), Salem, NJ 08079	39 – 38.19	75 – 26.10	FPV
2G3	11.8 mi. NNE; Local Milk Farm	39 – 36.21	75 – 24.53	MLK, VGT, SOL
2G4	11.3 mi. NNE; large family garden; Route 45 & Welchville Road, Mannington, NJ	39 – 36.02	75 – 25.21	FPV
3G1	17 mi. NE; local farm	39 – 35.913	75 – 16.804	IDM, MLK, VGT, SOL
9G1	10.3 mi. S; Local Farm, Woodland Beach Road., Smyrna, Delaware	39 – 18.47	75 – 33.50	FPV
9G2	10.7 mi. S; Local Farm, Woodland Beach Road, Smyrna, Delaware	39 – 18.39	75 – 34.11	FPV
10G1	12 mi. SSW; Smyrna, Delaware	39 – 18.223	75 – 36.095	IDM
14G1	11.8 mi. WNW; Route 286, Bethel Church Road., DE	39 – 31.290	75 – 46.495	AIO,APT,IDM
16G1	15 mi. NNW; Wilmington Airport	39 – 40.637	75 – 35.570	IDM
3H1	32 mi. NE; National Park, NJ	39 – 51.599	75 – 11.96	IDM
3H5	25 mi. NE; Farm Market, Route 77	39 – 41.040	75 – 12.380	FPV

NOTE: All station locations are referenced to the midpoint of the two Salem Units' Containments. The coordinates of this location are: Latitude N 39° - 27' – 46.5" and Longitude W 75° - 32' – 10.6".

All Vegetables (FPV & FPL) and Vegetation (VGT) are management audit samples. They are not required by the Salem & Hope Creek Stations' Technical Specifications nor listed in the Stations ODCMs. Vegetable samples are not always collected in consecutive years from the same farmer due to crop rotation.

TABLE B-2

SALEM AND HOPE CREEK GENERATING STATIONS' RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

(Program Overview)

EXPOSURE PATHWAY AND/OR SAMPLE	NUMBER OF REPRESENTATIVE SAMPLES AND SAMPLE LOCATIONS	SAMPLING AND COLLECTION FREQUENCY	TYPE/FREQUENCY* OF ANALYSIS
1. DIRECT RADIATION	Fifty-eight routine monitoring stations with two or more dosimeters placed as follows:	Quarterly	Gamma dose/ quarterly
Dosimeters	An inner ring of stations, at least one in meteorological sector in the general area of the site boundary.		
	An outer ring of stations, at least one in each meteorological sector in the 3.4 – 6.4 mile range from the site (1).		
	The balance of the stations placed in special interest areas such as population centers, nearby residences, and schools and in six areas beyond 10 miles to serve as control stations.		

TABLE B-2 (cont'd)

SALEM AND HOPE CREEK GENERATING STATIONS' RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE	NUMBER OF REPRESENTATIVE SAMPLES AND SAMPLE LOCATIONS	SAMPLING AND COLLECTION FREQUENCY	TYPE/FREQUENCY* OF ANALYSIS
2. ATMOSPHERIC			
a. Air Particulate	3 samples from close to the Site Boundary: 5S1, 7S1, 16S1. One duplicate sample from close to the site boundary: 5S2. 3 Samples in different land based sectors: 1F1, 2F6, 5D1.	Continuous sampler operation with sample collection weekly or more frequently if required by dust loading	Gross Beta / weekly Gamma isotopic analysis / quarterly composite
b. Air Iodine	1 Sample from the vicinity of a community: 16E1. 1 Sample from a control location; for example 15 - 30 km distant (9.3 - 18.6 miles) and in the least prevalent wind direction: 14G1.		Iodine-131 / weekly
3. TERRESTRIAL			
a. Milk	Samples from milking animals in 3 locations within 5 km distance (3.1 miles). If there are none, then 1 sample from milking animals in each of 3 areas between 5 - 8 km distant (3.1 - 5.0 miles): 13E3, 14F4, 2G3[(2)]. 1 Sample from milking animals at a control location 15 - 30 km distant (9.3 - 18.6 miles): 3G1.	Semi-monthly (when animals are on pasture) Monthly (when animals are on pasture)	Gamma scan / semi-monthly Iodine-131 / semi-monthly Gamma scan / monthly Iodine-131 / monthly

TABLE B-2 (cont'd)

SALEM AND HOPE CREEK GENERATING STATIONS' RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE	NUMBER OF REPRESENTATIVE SAMPLES AND SAMPLE LOCATIONS	SAMPLING AND COLLECTION FREQUENCY	TYPE/FREQUENCY* OF ANALYSIS
b. Well Water (Ground)	Samples from one or two sources only if likely to be affected (although wells in the vicinity of SGS/HCGS are not directly affected by plant operations, 3E1 farm's well, is sampled as management audit sample).	Monthly	Gamma scan / monthly Gross alpha / monthly Gross beta / monthly Tritium / monthly
c. Potable Water (Drinking Water)	One sample of the nearest water supply affected by its discharge (no potable water samples are required as liquid effluents discharged from SGS/HCGS do not directly affect this pathway). However, for management audit samples, one raw and one treated sample from a public water supply (City of Salem Water and Sewer Department) is collected: 2F3.	Monthly (composited daily)	Gross alpha / monthly Gross beta / monthly Tritium / monthly Gamma scan / monthly Iodine-131 / monthly
d. Vegetables	One sample of each principal class of food products from area that is irrigated by water in which liquid plant wastes have been discharged (the Delaware River at the location of SGS/HCGS is a brackish water source and is not used for irrigation of food products). Management audit samples are collected from various locations during harvest: 2F9, 1G1, 2G2 and 3H5. In addition, broad leaf vegetation (cabbage and collards) was collected from 10D1 and 1G1 as well as being planted & collected onsite (1S1, 7S1, 15S2, 16S1). This is in lieu of having a milk farm within 5 km (3.1 miles) of the Site[(2)].	Annually (at harvest)	Gamma scan / on collection

TABLE B-2 (cont'd)

SALEM AND HOPE CREEK GENERATING STATIONS' RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE	NUMBER OF REPRESENTATIVE SAMPLES AND SAMPLE LOCATIONS	SAMPLING AND COLLECTION FREQUENCY	TYPE/FREQUENCY* OF ANALYSIS
e. Fodder Crops	Although not required by SGS/HCGS ODCM, a sample of crops normally used as cattle feed (silage) were collected from our milk farms as management audit samples: 14F4, 3G1, 2G3, 13E3.	Annually (at harvest)	Gamma scan / on collection
f. Soil	Although not required by SGS/HCGS ODCM, samples of soil are collected as management audit samples: 6S2, 2F9, 5F1, 10D1, 16E1, 13E3, 14F4, 2G3, 3G1 (no samples collected in 2014).	Every 3 years (2010-2013-2016)	Gamma scan / on collection
4. AQUATIC ENVIRONMENT			
a. Surface Water	One sample upstream: 1F2. One sample downstream: 7E1. One sample outfall: 11A1. One sample cross-stream (mouth of Appoquinimink River): 12C1[(3)]. And an additional location in the Chesapeake & Delaware Canal: 16F1.	Monthly	Gamma scan / monthly Tritium / monthly**
b. Edible Fish	One sample of each commercially and recreationally important species in vicinity of plant discharge area: 11A1. One sample of same species in area not influenced by plant discharge: 12C1[(3)]. And an additional location downstream: 7E1.	Semi-annually	Gamma scan (flesh) / on collection

TABLE B-2 (cont'd)

SALEM AND HOPE CREEK GENERATING STATIONS' RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE	NUMBER OF REPRESENTATIVE SAMPLES AND SAMPLE LOCATIONS	SAMPLING AND COLLECTION FREQUENCY	TYPE/FREQUENCY* OF ANALYSIS
c. Blue Crabs	One sample of each commercially and recreationally important species in vicinity of plant discharge area 11A1. One sample of same species in area not influenced by plant discharge 12C1(3).	Semi-annually	Gamma scan (flesh) /on collection
d. Sediment	One sample from downstream area: 7E1. One sample from cross-stream area and control location: 12C1(3). One sample from outfall area: 11A1. One sample from upstream, the C & D Canal: 16F1. One sample from shoreline area: 6S2. One sample from Cooling Tower Blowdown discharge: 15A1. One sample south storm drain discharge line: 16A1.	Semi-annually	Gamma scan / on collection

* Except for Dosimeters, the quarterly analysis is performed on a composite of individual samples collected during the quarter.

** Technical Specifications and ODCM require quarterly analysis but due to the tritium leak at Salem, it was decided to analyze surface waters on a monthly basis for tritium.

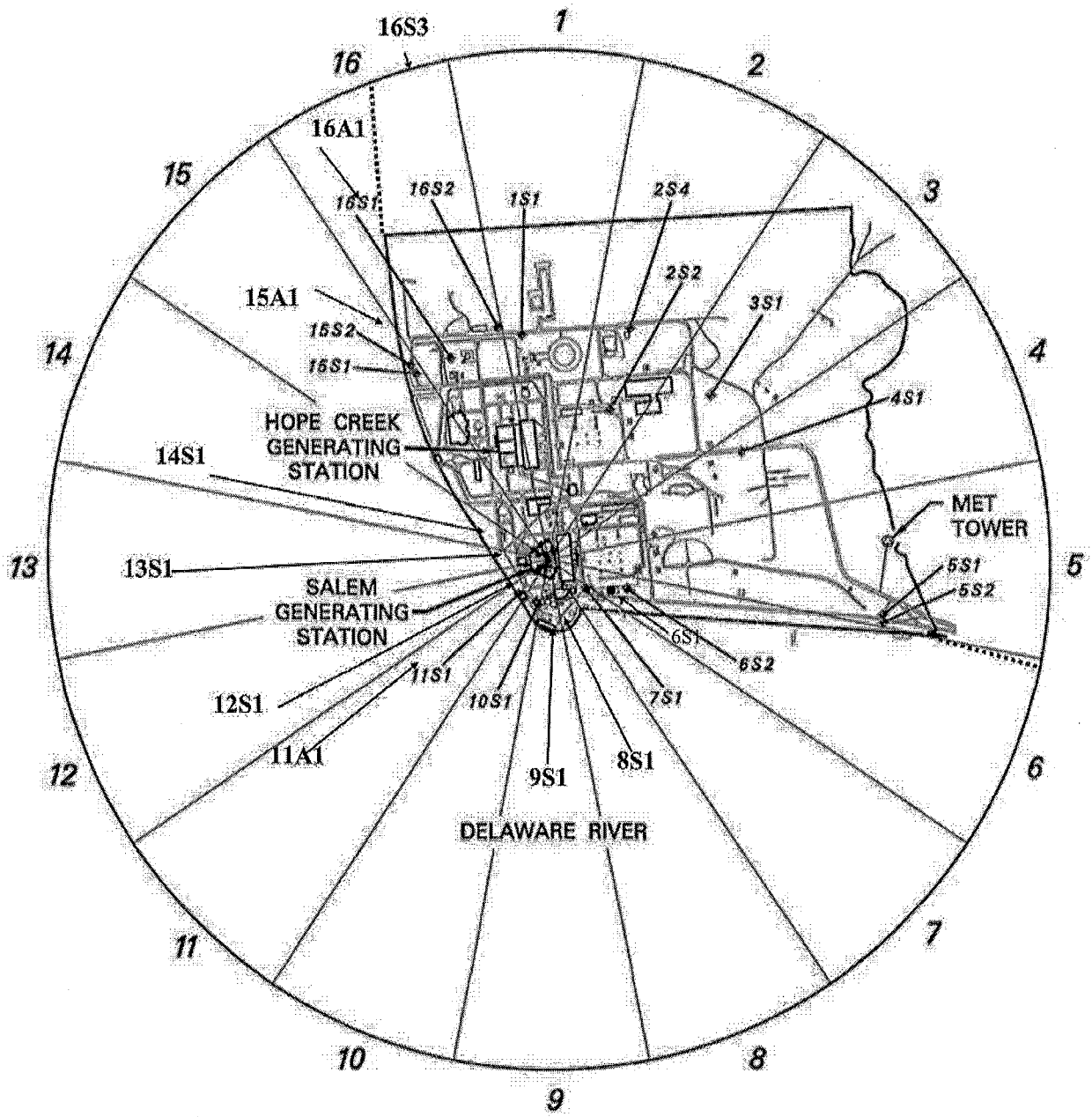
(1) Range of 3.4 – 6.4 miles based on ODCM Appendix E REMP Sample Locations Table and Figures (20686360).

(2) While these milk locations are not within the 5 km range, they are the closest farms in the Site vicinity.
Since broad leaf vegetation is acceptable in lieu of milk collections, LTS personnel planted and harvested cabbage at three locations on Site (1S1, 15S1, 16S1) and one in Delaware (10D1).

(3) Station 12C1 was made the operational control (1975) for aquatic samples since the physical characteristics of this station more closely resemble those of the outfall area than do those at the upstream location originally chosen. This is due to the distance from Liston Point, which is the boundary between the Delaware River and Delaware Bay. As discussed extensively in the SGS/HCGS Pre-operational reports, the sampling locations further upstream show significantly lower background levels due to estuarine tidal flow.

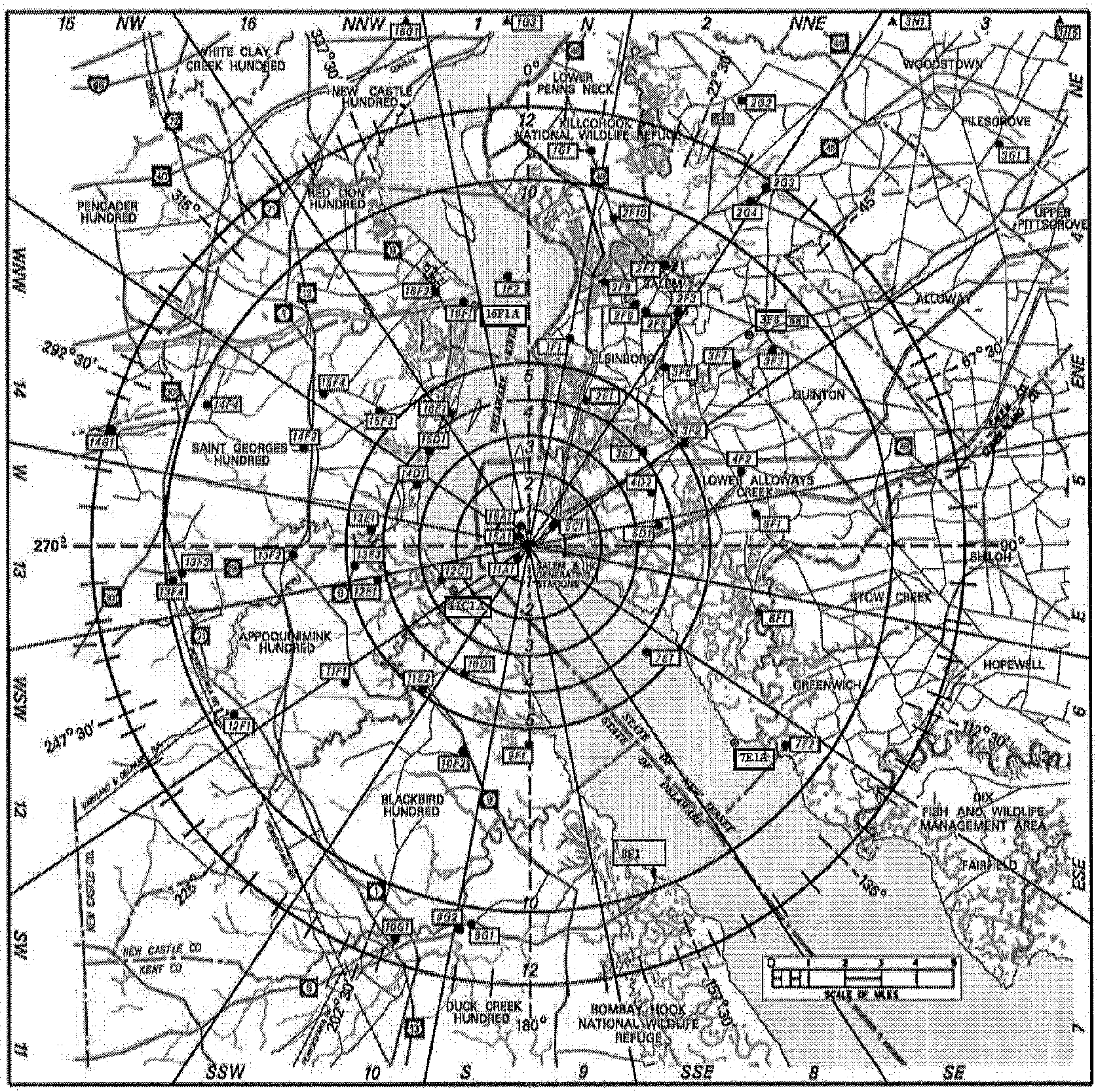
MAP B-1

SALEM AND HOPE CREEK GENERATING STATIONS' RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ON-SITE SAMPLING LOCATIONS



MAP B-2

SALEM AND HOPE CREEK GENERATING STATIONS' RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM OFF-SITE SAMPLING LOCATIONS



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APPENDIX C

DATA TABLES

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TABLE C-1 **CONCENTRATIONS OF GAMMA EMITTERS IN QUARTERLY COMPOSITES OF AIR PARTICULATES**

Results in Units of 1E-3 pCi/m^3 ± 2 Sigma

STATION ID	COLLECTION PERIOD START	STOP	Be-7	K-40	Cs-134	Cs-137
SA-APT-14G1 (C)	12/30/13 -	04/02/14	114 ± 24	< 28	< 2	< 1
	04/02/14 -	06/30/14	106 ± 23	< 29	< 2	< 2
	06/30/14 -	09/29/14	88 ± 21	< 29	< 2	< 2
	09/29/14 -	12/29/14	95 ± 26	< 25	< 2	< 2
		AVERAGE*	101 ± 22	-	-	-
SA-APT-15S2	12/30/13 -	04/02/14	91 ± 29	< 28	< 2	< 2
	04/02/14 -	06/30/14	139 ± 33	< 27	< 2	< 2
	06/30/14 -	09/29/14	82 ± 28	< 25	< 2	< 2
	09/29/14 -	12/29/14	67 ± 26	< 28	< 2	< 1
		AVERAGE*	95 ± 62	-	-	-
SA-APT-16E1	12/30/13 -	04/02/14	106 ± 30	< 12	< 1	< 1
	04/02/14 -	06/30/14	96 ± 28	< 35	< 2	< 1
	06/30/14 -	09/29/14	99 ± 29	32 ± 15	< 2	< 2
	09/29/14 -	12/29/14	84 ± 24	< 27	< 1	< 1
		AVERAGE*	96 ± 18	32 ± 0	-	-
SA-APT-1F1	12/30/13 -	04/02/14	90 ± 26	< 34	< 3	< 2
	04/02/14 -	06/30/14	92 ± 20	< 21	< 1	< 2
	06/30/14 -	09/29/14	103 ± 33	< 16	< 2	< 2
	09/29/14 -	12/29/14	74 ± 39	< 46	< 2	< 3
		AVERAGE*	90 ± 24	-	-	-
SA-APT-2F6	12/30/13 -	04/02/14	101 ± 26	< 24	< 2	< 1
	04/02/14 -	06/30/14	122 ± 28	< 31	< 2	< 2
	06/30/14 -	09/29/14	113 ± 34	< 30	< 2	< 2
	09/29/14 -	12/29/14	94 ± 27	< 26	< 2	< 1
		AVERAGE*	108 ± 25	-	-	
SA-APT-5D1	12/30/13 -	04/02/14	116 ± 22	< 12	< 1	< 1
	04/02/14 -	06/30/14	105 ± 31	< 15	< 2	< 2
	06/30/14 -	09/29/14	89 ± 39	< 14	< 2	< 2
	09/29/14 -	12/29/14	87 ± 36	< 34	< 2	< 2
		AVERAGE*	99 ± 28	-	-	-

* THE AVERAGE AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES
(C) CONTROL STATION

TABLE C-1 **CONCENTRATIONS OF GAMMA EMITTERS IN QUARTERLY COMPOSITES OF AIR PARTICULATES**

Results in Units of 1E-3 pCi/m^3 ± 2 Sigma

STATION ID	COLLECTION PERIOD START	STOP	Be-7	K-40	Cs-134	Cs-137
SA-APT-5S1	12/30/13 -	04/02/14	111 ± 36	< 31	< 2	< 2
	04/02/14 -	06/30/14	130 ± 31	< 35	< 2	< 2
	06/30/14 -	09/29/14	96 ± 23	< 26	< 2	< 1
	09/29/14 -	12/29/14	59 ± 28	< 13	< 2	< 2
		AVERAGE*	99 ± 60	-	-	-
SA-APT-7S1	12/30/13 -	04/02/14	91 ± 23	< 14	< 1	< 1
	04/02/14 -	06/30/14	105 ± 42	< 30	< 3	< 3
	06/30/14 -	09/29/14	103 ± 31	< 37	< 3	< 2
	09/29/14 -	12/29/14	76 ± 28	< 39	< 2	< 2
		AVERAGE*	94 ± 27	-	-	-

* THE AVERAGE AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

TABLE C-2 CONCENTRATIONS OF GROSS BETA EMITTERS IN AIR PARTICULATES

Results in Units of 1E-3 pCi/m^3 ± 2 Sigma

COLLECTION PERIOD		CONTROL	GROUP I				
START	STOP	SA-APT-14G1	SA-APT-1F1	SA-APT-2F6	SA-APT-5D1	SA-APT-5S1	SA-APT-7S1
12/30/13	01/06/14	11 ± 3	9 ± 3	13 ± 3	12 ± 3	13 ± 3	14 ± 3
01/06/14	01/13/14	17 ± 3	11 ± 3	16 ± 3	15 ± 3	15 ± 3	22 ± 4
01/13/14	01/20/14	17 ± 4	16 ± 3	16 ± 3	14 ± 3	14 ± 3	19 ± 4
01/20/14	01/27/14	14 ± 3	12 ± 3	< 22 (1)	15 ± 3	14 ± 3	13 ± 3
01/27/14	02/03/14	16 ± 3	17 ± 3	16 ± 3	15 ± 3	13 ± 3	17 ± 3
02/03/14	02/10/14	17 ± 3	17 ± 3	18 ± 3	20 ± 4	20 ± 3	17 ± 4
02/10/14	02/18/14	14 ± 3	14 ± 3	17 ± 3	20 ± 4	14 ± 3	13 ± 3
02/18/14	02/24/14	13 ± 3	13 ± 4	8 ± 3	12 ± 4	10 ± 3	15 ± 4
02/24/14	03/04/14	20 ± 3	16 ± 3	20 ± 3	21 ± 3	14 ± 3	19 ± 3
03/04/14	03/10/14	16 ± 3	15 ± 4	16 ± 4	18 ± 4	19 ± 4	16 ± 4
03/10/14	03/18/14	14 ± 3	9 ± 3	14 ± 3	10 ± 3	12 ± 3	15 ± 3
03/18/14	03/25/14	10 ± 3	8 ± 3	11 ± 3	11 ± 3	8 ± 3	13 ± 3
03/25/14	04/02/14	14 ± 3	14 ± 3	11 ± 3	12 ± 3	10 ± 3	12 ± 3
04/02/14	04/08/14	13 ± 4	11 ± 4	8 ± 4	12 ± 4	10 ± 3	13 ± 4
04/08/14	04/14/14	17 ± 4	13 ± 4	17 ± 4	16 ± 4	14 ± 3	20 ± 4
04/14/14	04/21/14	14 ± 3	13 ± 3	14 ± 3	15 ± 4	13 ± 3	16 ± 3
04/21/14	04/28/14	10 ± 3	9 ± 3	11 ± 3	12 ± 3	8 ± 3	12 ± 3
04/28/14	05/05/14	7 ± 3	4 ± 3	8 ± 3	8 ± 3	7 ± 2	7 ± 3
05/05/14	05/12/14	12 ± 3	10 ± 3	11 ± 3	13 ± 3	12 ± 3	11 ± 3
05/12/14	05/20/14	15 ± 3	12 ± 3	14 ± 3	16 ± 3	11 ± 3	16 ± 3
05/20/14	05/27/14	14 ± 3	12 ± 3	15 ± 3	12 ± 3	7 ± 2	18 ± 4
05/27/14	06/02/14	10 ± 3	7 ± 3	9 ± 3	9 ± 3	5 ± 3	11 ± 3
06/02/14	06/09/14	13 ± 3	10 ± 3	13 ± 3	12 ± 3	7 ± 2	12 ± 3
06/09/14	06/16/14	12 ± 3	11 ± 3	8 ± 3	10 ± 3	7 ± 3	7 ± 3
06/16/14	06/23/14	16 ± 3	17 ± 3	16 ± 3	13 ± 3	13 ± 3	15 ± 3
06/23/14	06/30/14	11 ± 3	13 ± 3	11 ± 3	9 ± 3	13 ± 3	8 ± 3
06/30/14	07/07/14	11 ± 3	12 ± 3	13 ± 3	12 ± 3	10 ± 3	13 ± 3
07/07/14	07/14/14	14 ± 3	17 ± 3	16 ± 3	15 ± 3	16 ± 3	15 ± 3
07/14/14	07/21/14	12 ± 3	14 ± 3	16 ± 3	10 ± 3	7 ± 2	15 ± 3
07/21/14	07/28/14	12 ± 3	14 ± 3	13 ± 3	8 ± 3	13 ± 3	10 ± 3
07/28/14	08/04/14	9 ± 3	10 ± 3	8 ± 3	11 ± 3	8 ± 3	7 ± 3
08/04/14	08/11/14	14 ± 3	13 ± 3	14 ± 3	14 ± 3	10 ± 3	14 ± 3
08/11/14	08/18/14	10 ± 3	13 ± 3	11 ± 3	10 ± 3	12 ± 3	11 ± 3
08/18/14	08/23/14	13 ± 4	< 4	14 ± 4	9 ± 4	10 ± 4	12 ± 4
08/23/14	09/02/14	10 ± 2	13 ± 2	9 ± 2	9 ± 2	7 ± 2	12 ± 2
09/02/14	09/08/14	16 ± 4	12 ± 3	14 ± 4	13 ± 4	10 ± 3	14 ± 4
09/08/14	09/15/14	11 ± 3	9 ± 3	11 ± 3	10 ± 3	11 ± 3	10 ± 3
09/15/14	09/23/14	17 ± 3	15 ± 3	17 ± 3	17 ± 3	15 ± 3	18 ± 3
09/23/14	09/29/14	14 ± 4	18 ± 4	12 ± 3	14 ± 4	12 ± 3	11 ± 3
09/29/14	10/06/14	17 ± 3	15 ± 3	16 ± 3	16 ± 3	14 ± 3	16 ± 3
10/06/14	10/14/14	15 ± 3	19 ± 3	18 ± 3	18 ± 3	20 ± 4	17 ± 3
10/14/14	10/20/14	11 ± 3	9 ± 3	10 ± 3	9 ± 3	9 ± 3	9 ± 3
10/20/14	10/27/14	14 ± 3	9 ± 3	15 ± 3	10 ± 3	12 ± 3	14 ± 3
10/27/14	11/03/14	14 ± 3	14 ± 3	13 ± 3	14 ± 3	16 ± 3	13 ± 3
11/03/14	11/10/14	18 ± 3	12 ± 3	16 ± 3	18 ± 3	15 ± 3	10 ± 3
11/10/14	11/17/14	13 ± 3	7 ± 3	14 ± 3	11 ± 3	10 ± 3	11 ± 3
11/17/14	11/24/14	16 ± 3	18 ± 3	18 ± 3	20 ± 3	18 ± 3	14 ± 3
11/24/14	12/01/14	13 ± 3	12 ± 3	11 ± 3	11 ± 3	10 ± 3	15 ± 3
12/01/14	12/08/14	15 ± 3	14 ± 3	18 ± 3	17 ± 3	17 ± 3	18 ± 3
12/08/14	12/15/14	18 ± 3	14 ± 3	15 ± 3	15 ± 3	17 ± 3	14 ± 3
12/15/14	12/22/14	14 ± 3	14 ± 3	14 ± 3	17 ± 3	15 ± 3	16 ± 3
12/22/14	12/29/14	14 ± 3	9 ± 3	11 ± 3	14 ± 3	10 ± 3	12 ± 3
AVAERAGE*		14 ± 5	13 ± 6	13 ± 6	13 ± 7	12 ± 7	13 ± 6

* THE AVERAGE AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES
(1) Low sample volume

TABLE C-2 CONCENTRATIONS OF GROSS BETA EMITTERS IN AIR PARTICULATES

Results In Units of 1E-3 pCi/m^3 ± 2 Sigma

COLLECTION PERIOD		GROUP I	
START	STOP	SA-APT-15S2	SA-APT-16E1
12/30/13	01/06/14	15 ± 3	14 ± 3
01/06/14	01/13/14	19 ± 3	16 ± 3
01/13/14	01/20/14	16 ± 5	10 ± 3
01/20/14	01/27/14	20 ± 3	28 ± 4
01/27/14	02/03/14	17 ± 3	20 ± 3
02/03/14	02/10/14	18 ± 3	24 ± 4
02/10/14	02/18/14	15 ± 3	18 ± 3
02/18/14	02/24/14	15 ± 4	11 ± 3
02/24/14	03/04/14	19 ± 3	20 ± 3
03/04/14	03/10/14	17 ± 4	17 ± 4
03/10/14	03/18/14	14 ± 3	11 ± 3
03/18/14	03/25/14	14 ± 3	9 ± 3
03/25/14	04/02/14	14 ± 3	17 ± 3
04/02/14	04/08/14	12 ± 3	10 ± 3
04/08/14	04/14/14	18 ± 4	16 ± 4
04/14/14	04/21/14	12 ± 3	15 ± 3
04/21/14	04/28/14	12 ± 3	12 ± 3
04/28/14	05/05/14	7 ± 3	9 ± 3
05/05/14	05/12/14	15 ± 3	15 ± 3
05/12/14	05/20/14	15 ± 3	12 ± 3
05/20/14	05/27/14	12 ± 3	13 ± 3
05/27/14	06/02/14	8 ± 3	11 ± 4
06/02/14	06/09/14	10 ± 3	10 ± 3
06/09/14	06/16/14	8 ± 3	10 ± 3
06/16/14	06/23/14	13 ± 3	11 ± 3
06/23/14	06/30/14	9 ± 3	9 ± 3
06/30/14	07/07/14	10 ± 3	9 ± 3
07/07/14	07/14/14	13 ± 3	13 ± 3
07/14/14	07/21/14	13 ± 3	12 ± 3
07/21/14	07/28/14	12 ± 3	12 ± 3
07/28/14	08/04/14	9 ± 3	7 ± 2
08/04/14	08/11/14	15 ± 3	14 ± 3
08/11/14	08/18/14	11 ± 3	11 ± 3
08/18/14	08/23/14	15 ± 4	9 ± 3
08/23/14	09/02/14	9 ± 2	10 ± 2
09/02/14	09/08/14	13 ± 4	12 ± 4
09/08/14	09/15/14	7 ± 3	11 ± 3
09/15/14	09/23/14	17 ± 3	16 ± 3
09/23/14	09/29/14	15 ± 4	15 ± 4
09/29/14	10/06/14	17 ± 3	13 ± 3
10/06/14	10/14/14	17 ± 3	19 ± 3
10/14/14	10/20/14	10 ± 3	12 ± 3
10/20/14	10/27/14	16 ± 3	12 ± 3
10/27/14	11/03/14	15 ± 3	12 ± 3
11/03/14	11/10/14	18 ± 3	12 ± 3
11/10/14	11/17/14	10 ± 3	12 ± 3
11/17/14	11/24/14	19 ± 3	19 ± 3
11/24/14	12/01/14	12 ± 3	12 ± 3
12/01/14	12/08/14	18 ± 3	18 ± 3
12/08/14	12/15/14	16 ± 3	17 ± 3
12/15/14	12/22/14	16 ± 3	17 ± 3
12/22/14	12/29/14	11 ± 3	12 ± 3
AVAERAGE*		14 ± 7	14 ± 8

* THE AVERAGE AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

TABLE C-3 CONCENTRATIONS OF IODINE-131* IN FILTERED AIR

Results in Units of 1E-3 pCi/m^3 ± 2 Sigma

COLLECTION PERIOD		CONTROL	GROUP I				
START	STOP	SA-AIO-14G1	SA-AIO-1F1	SA-AIO-2F6	SA-AIO-5D1	SA-AIO-5S1	SA-AIO-7S1
12/30/13	01/06/14	< 37	< 28	< 28	< 30	< 27	< 35
01/06/14	01/13/14	< 53	< 38	< 40	< 44	< 39	< 48
01/13/14	01/20/14	< 45	< 30	< 28	< 32	< 27	< 40
01/20/14	01/27/14	< 50	< 19	< 65	< 21	< 18	< 50
01/27/14	02/03/14	< 20	< 22	< 20	< 24	< 21	< 19
02/03/14	02/10/14	< 23	< 27	< 27	< 32	< 28	< 24
02/10/14	02/18/14	< 52	< 42	< 42	< 52	< 42	< 58
02/18/14	02/24/14	< 38	< 43	< 38	< 44	< 37	< 40
02/24/14	03/04/14	< 30	< 26	< 27	< 24	< 24	< 35
03/04/14	03/10/14	< 26	< 35	< 35	< 32	< 31	< 30
03/10/14	03/18/14	< 23	< 26	< 30	< 25	< 27	< 26
03/18/14	03/25/14	< 53	< 42	< 49	< 49	< 45	< 58
03/25/14	04/02/14	< 25	< 24	< 24	< 23	< 21	< 26
04/02/14	04/08/14	< 46	< 37	< 39	< 37	< 34	< 46
04/08/14	04/14/14	< 46	< 34	< 34	< 32	< 30	< 45
04/14/14	04/21/14	< 39	< 37	< 37	< 37	< 33	< 39
04/21/14	04/28/14	< 27	< 26	< 27	< 28	< 26	< 28
04/28/14	05/05/14	< 39	< 32	< 31	< 31	< 27	< 39
05/05/14	05/12/14	< 29	< 25	< 28	< 28	< 23	< 33
05/12/14	05/20/14	< 36	< 37	< 34	< 37	< 37	< 34
05/20/14	05/27/14	< 34	< 35	< 32	< 32	< 29	< 35
05/27/14	06/02/14	< 60	< 45	< 42	< 45	< 43	< 60
06/02/14	06/09/14	< 51	< 69	< 66	< 69	< 56	< 49
06/09/14	06/16/14	< 45	< 48	< 46	< 50	< 45	< 43
06/16/14	06/23/14	< 40	< 33	< 37	< 37	< 36	< 39
06/23/14	06/30/14	< 33	< 25	< 23	< 23	< 28	< 37
06/30/14	07/07/14	< 20	< 21	< 20	< 20	< 18	< 18
07/07/14	07/14/14	< 46	< 36	< 36	< 37	< 36	< 46
07/14/14	07/21/14	< 33	< 32	< 33	< 31	< 31	< 31
07/21/14	07/28/14	< 37	< 47	< 47	< 42	< 41	< 37
07/28/14	08/04/14	< 39	< 33	< 29	< 32	< 31	< 37
08/04/14	08/11/14	< 31	< 29	< 29	< 32	< 28	< 31
08/11/14	08/18/14	< 50	< 41	< 42	< 45	< 43	< 45
08/18/14	08/23/14	< 67	< 64	< 65	< 67	< 64	< 64
08/23/14	09/02/14	< 41	< 34	< 34	< 36	< 34	< 38
09/02/14	09/08/14	< 61	< 55	< 57	< 59	< 58	< 61
09/08/14	09/15/14	< 41	< 43	< 43	< 42	< 42	< 39
09/15/14	09/23/14	< 36	< 28	< 28	< 29	< 28	< 35
09/23/14	09/29/14	< 44	< 37	< 40	< 40	< 39	< 47
09/29/14	10/06/14	< 28	< 23	< 26	< 26	< 25	< 27
10/06/14	10/14/14	< 32	< 31	< 33	< 34	< 44	< 34
10/14/14	10/20/14	< 13	< 12	< 13	< 12	< 13	< 13
10/20/14	10/27/14	< 37	< 37	< 38	< 38	< 39	< 40
10/27/14	11/03/14	< 27	< 29	< 29	< 31	< 31	< 27
11/03/14	11/10/14	< 36	< 31	< 29	< 29	< 30	< 35
11/10/14	11/17/14	< 38	< 42	< 42	< 40	< 43	< 38
11/17/14	11/24/14	< 67	< 65	< 64	< 66	< 68	< 66
11/24/14	12/01/14	< 60	< 50	< 47	< 45	< 50	< 62
12/01/14	12/08/14	< 22	< 39	< 39	< 37	< 37	< 21
12/08/14	12/15/14	< 25	< 21	< 20	< 21	< 20	< 27
12/15/14	12/22/14	< 14	< 33	< 31	< 32	< 30	< 14
12/22/14	12/29/14	< 47	< 30	< 28	< 28	< 27	< 47
AVERAGE		-	-	-	-	-	

* IODINE-131 RESULTS ARE CORRECTED FOR DECAY TO STOP DATE OF COLLECTION PERIOD & ANALYZED TO AN LLD OF 70E-3 pCi/m^3

TABLE C-3 CONCENTRATIONS OF IODINE-131* IN FILTERED AIR

Results in Units of 1E-3 pCi/m^3 ± 2 Sigma

COLLECTION PERIOD		GROUP I	
START	STOP	SA-AIO-15S2	SA-AIO-16E1
12/30/13	01/06/14	< 35	< 33
01/06/14	01/13/14	< 48	< 46
01/13/14	01/20/14	< 62	< 36
01/20/14	01/27/14	< 44	< 43
01/27/14	02/03/14	< 17	< 17
02/03/14	02/10/14	< 22	< 24
02/10/14	02/18/14	< 58	< 49
02/18/14	02/24/14	< 40	< 37
02/24/14	03/04/14	< 32	< 32
03/04/14	03/10/14	< 28	< 27
03/10/14	03/18/14	< 24	< 22
03/18/14	03/25/14	< 54	< 50
03/25/14	04/02/14	< 24	< 27
04/02/14	04/08/14	< 42	< 2
04/08/14	04/14/14	< 41	< 40
04/14/14	04/21/14	< 37	< 37
04/21/14	04/28/14	< 26	< 26
04/28/14	05/05/14	< 37	< 38
05/05/14	05/12/14	< 31	< 31
05/12/14	05/20/14	< 34	< 34
05/20/14	05/27/14	< 36	< 34
05/27/14	06/02/14	< 63	< 62
06/02/14	06/09/14	< 51	< 53
06/09/14	06/16/14	< 45	< 47
06/16/14	06/23/14	< 40	< 39
06/23/14	06/30/14	< 38	< 36
06/30/14	07/07/14	< 18	< 19
07/07/14	07/14/14	< 46	< 45
07/14/14	07/21/14	< 31	< 34
07/21/14	07/28/14	< 38	< 36
07/28/14	08/04/14	< 37	< 35
08/04/14	08/11/14	< 32	< 30
08/11/14	08/18/14	< 47	< 48
08/18/14	08/23/14	< 69	< 60
08/23/14	09/02/14	< 42	< 37
09/02/14	09/08/14	< 61	< 57
09/08/14	09/15/14	< 42	< 40
09/15/14	09/23/14	< 33	< 35
09/23/14	09/29/14	< 48	< 43
09/29/14	10/06/14	< 28	< 27
10/06/14	10/14/14	< 34	< 31
10/14/14	10/20/14	< 13	< 12
10/20/14	10/27/14	< 40	< 36
10/27/14	11/03/14	< 28	< 27
11/03/14	11/10/14	< 34	< 37
11/10/14	11/17/14	< 36	< 39
11/17/14	11/24/14	< 61	< 70
11/24/14	12/01/14	< 59	< 62
12/01/14	12/08/14	< 21	< 23
12/08/14	12/15/14	< 27	< 26
12/15/14	12/22/14	< 19	< 14
12/22/14	12/29/14	< 47	< 45
AVERAGE		-	

* IODINE-131 RESULTS ARE CORRECTED FOR DECAY TO STOP DATE OF COLLECTION PERIOD & ANALYZED TO AN LLD OF 70E-3 pCi/m^3

TABLE C-4 DIRECT RADIATION MEASUREMENTS - QUARTERLY DOSIMITRY RESULTS*

Results in units of mR/standard quarter

STATION ID	ANNUAL DOSE	JAN - MAR	APR - JUN	JUL - SEP	OCT - DEC
SA-IDM-1S1**	138.6	40.4	33.2	32.7	32.3
SA-IDM-2S2	53.0	13.7	11.3	13.7	14.3
SA-IDM-2S4	64.8	18.7	15.1	15.7	15.3
SA-IDM-3S1	44.5	13.3	10.2	10.7	10.3
SA-IDM-4S1	49.8	13.3	12.4	12.7	11.4
SA-IDM-5S1	47.8	12.9	10.8	12.1	12.0
SA-IDM-6S2	65.8	18.7	14.0	16.7	16.4
SA-IDM-7S1	51.3	13.3	11.9	13.6	12.5
SA-IDM-8S1	40.9	11.7	9.1	9.1	11.0
SA-IDM-9S1	43.0	11.7	10.2	10.1	11.0
SA-IDM-10S1	46.2	11.7	11.9	11.1	11.5
SA-IDM-11S1	44.7	11.3	11.3	12.1	10.0
SA-IDM-12S1	54.1	14.6	11.9	14.1	13.5
SA-IDM-13S1	60.3	16.2	14.0	13.6	16.5
SA-IDM-14S1	66.6	18.3	16.2	14.6	17.5
SA-IDM-15S1	47.9	12.5	11.3	12.1	12.0
SA-IDM-15S2	50.1	14.2	10.8	12.1	13.0
SA-IDM-16S1	55.3	15.8	12.9	13.6	13.0
SA-IDM-16S2**	155.0	42.4	36.0	39.6	37.0
SA-IDM-16S3	48.5	13.7	10.2	12.1	12.5
SA-IDM-4D2	58.6	15.8	15.7	15.6	11.5
SA-IDM-5D1	53.6	14.6	12.4	13.6	13.0
SA-IDM-10D1	57.4	15.8	12.4	14.9	14.3
SA-IDM-14D1	51.2	14.2	10.8	11.9	14.3
SA-IDM-15D1	59.6	15.4	13.5	15.4	15.3
SA-IDM-2E1	51.6	14.2	11.3	13.0	13.1
SA-IDM-3E1	50.1	13.7	10.8	12.5	13.1
SA-IDM-11E2	61.5	18.3	13.5	14.9	14.8
SA-IDM-12E1	60.4	17.0	15.7	15.9	11.8
SA-IDM-13E1	49.8	12.9	10.2	12.4	14.3
SA-IDM-16E1	61.8	15.0	14.0	14.0	18.8
SA-IDM-1F1	66.5	20.7	16.2	17.1	12.5
SA-IDM-2F2	54.7	14.2	12.9	11.5	16.1
SA-IDM-2F5	54.9	15.4	12.9	14.5	12.1
SA-IDM-2F6	51.2	14.2	12.9	12.1	12.0
SA-IDM-3F2	52.0	14.6	11.3	13.5	12.6
SA-IDM-3F3	46.7	12.9	10.2	13.0	10.6
SA-IDM-4F2	51.6	13.3	10.8	13.5	14.0
SA-IDM-5F1	47.2	13.3	11.9	11.5	10.5
SA-IDM-6F1	45.7	12.5	10.2	10.0	13.0
SA-IDM-7F2	53.1	13.3	10.8	12.0	17.0
SA-IDM-8F1	61.8	16.6	14.0	14.9	16.3
SA-IDM-9F1	65.2	18.3	15.7	15.9	15.3
SA-IDM-10F2	56.6	15.0	12.4	13.9	15.3
SA-IDM-11F1	61.8	16.6	14.0	15.9	15.3
SA-IDM-12F1	58.6	15.4	13.5	14.9	14.8
SA-IDM-13F2	53.7	16.2	11.3	13.4	12.8
SA-IDM-13F3	58.8	16.2	12.9	14.9	14.8
SA-IDM-13F4	62.3	16.6	14.0	16.4	15.3
SA-IDM-14F2	66.0	17.8	14.0	16.4	17.8
SA-IDM-15F3	64.9	16.6	14.6	16.9	16.8
SA-IDM-16F2	52.5	15.0	11.3	13.4	12.8
SA-IDM-1G3 (C)	54.6	15.0	11.9	12.9	14.8
SA-IDM-3G1 (C)	59.0	15.4	14.0	15.1	14.5
SA-IDM-10G1 (C)	59.8	16.2	12.9	15.4	15.3
SA-IDM-14G1 (C)	61.7	17.0	15.7	14.5	14.5
SA-IDM-16G1 (C)	54.8	17.0	12.4	12.9	12.5
SA-IDM-3H1 (C)	45.6	12.9	10.2	11.0	11.5

* QUARTERLY ELEMENT TLD RESULTS BY MIRION
** SAMPLE RESULTS ARE AFFECTED BY THE ISFSI
(C) CONTROL STATION

TABLE C-5 CONCENTRATIONS OF IODINE-131* AND GAMMA EMITTERS IN MILK

Results in units of pCi/L ± 2 sigma

	COLLECTION PERIOD			<----------GAMMA EMITTERS---------->				
STATION ID	START	STOP	I-131	K-40	Cs-134	Cs-137	BaLa-140	Ra-226
SA-MLK-13E3	01/05/14 -	01/06/14	< 0.7	1251 ± 163	< 7	< 9	< 12	< 160
SA-MLK-14F4	01/05/14 -	01/06/14	< 1.0	1579 ± 194	< 6	< 9	< 13	< 193
SA-MLK-2G3	01/05/14 -	01/06/14	< 0.8	1230 ± 162	< 7	< 7	< 10	< 168
SA-MLK-3G1 (C)	01/05/14 -	01/06/14	< 0.9	1346 ± 195	< 6	< 9	< 13	< 201
SA-MLK-13E3	02/09/14 -	02/10/14	< 0.9	1429 ± 113	< 4	< 5	< 8	< 129
SA-MLK-14F4	02/09/14 -	02/10/14	< 0.9	1294 ± 113	< 5	< 7	< 10	< 139
SA-MLK-2G3	02/09/14 -	02/10/14	< 0.8	1194 ± 123	< 5	< 5	< 8	< 123
SA-MLK-3G1 (C)	02/09/14 -	02/10/14	< 0.9	1341 ± 142	< 5	< 5	< 10	< 112
SA-MLK-13E3	03/09/14 -	03/10/14	< 0.7	1299 ± 169	< 5	< 6	< 11	< 141
SA-MLK-14F4	03/09/14 -	03/10/14	< 0.7	1358 ± 150	< 6	< 6	< 12	< 139
SA-MLK-2G3	03/09/14 -	03/10/14	< 0.8	1259 ± 180	< 7	< 7	< 10	< 200
SA-MLK-3G1 (C)	03/09/14 -	03/10/14	< 0.7	1290 ± 142	< 6	< 7	< 7	< 179
SA-MLK-13E3	04/06/14 -	04/07/14	< 0.4	1382 ± 99	< 4	< 4	< 5	< 83
SA-MLK-14F4	04/06/14 -	04/07/14	< 0.5	1327 ± 93	< 4	< 4	< 5	< 93
SA-MLK-2G3	04/06/14 -	04/07/14	< 0.5	1323 ± 84	< 3	< 4	< 5	< 88
SA-MLK-3G1 (C)	04/06/14 -	04/07/14	< 0.4	1272 ± 108	< 3	< 4	< 6	< 78
SA-MLK-13E3	04/20/14 -	04/21/14	< 0.7	1252 ± 138	< 6	< 6	< 10	< 150
SA-MLK-14F4	04/20/14 -	04/21/14	< 0.7	1293 ± 168	< 6	< 7	< 11	< 135
SA-MLK-2G3	04/20/14 -	04/21/14	< 0.7	1160 ± 130	< 5	< 7	< 11	< 154
SA-MLK-3G1 (C)	04/20/14 -	04/21/14	< 0.6	1216 ± 123	< 6	< 6	< 7	< 155
SA-MLK-13E3	05/04/14 -	05/05/14	< 0.7	1233 ± 133	< 5	< 5	< 8	< 124
SA-MLK-14F4	05/04/14 -	05/05/14	< 0.7	1460 ± 150	< 6	< 6	< 12	< 165
SA-MLK-2G3	05/04/14 -	05/05/14	< 0.7	1267 ± 115	< 4	< 4	< 7	< 104
SA-MLK-3G1 (C)	05/04/14 -	05/05/14	< 0.7	1378 ± 128	< 7	< 8	< 12	< 207
SA-MLK-13E3	05/19/14 -	05/20/14	< 0.6	1333 ± 101	< 4	< 5	< 6	< 100
SA-MLK-14F4	05/19/14 -	05/20/14	< 0.7	1304 ± 110	< 4	< 5	< 7	< 115
SA-MLK-2G3	05/19/14 -	05/20/14	< 0.6	1305 ± 76	< 3	< 3	< 3	< 82
SA-MLK-3G1 (C)	05/19/14 -	05/20/14	< 0.7	1281 ± 105	< 4	< 4	< 6	< 113
SA-MLK-13E3	06/01/14 -	06/02/14	< 0.4	1415 ± 56	< 2	< 2	< 4	< 50
SA-MLK-14F4	06/01/14 -	06/02/14	< 0.4	1416 ± 57	< 2	< 3	< 5	< 64
SA-MLK-2G3	06/01/14 -	06/02/14	< 0.5	1295 ± 41	< 1	< 2	< 2	< 38
SA-MLK-3G1 (C)	06/01/14 -	06/02/14	< 0.4	1344 ± 44	< 2	< 2	< 3	< 46
SA-MLK-13E3	06/15/14 -	06/16/14	< 0.4	1256 ± 130	< 4	< 6	< 6	< 134
SA-MLK-14F4	06/15/14 -	06/16/14	< 0.4	1280 ± 113	< 6	< 7	< 7	< 142
SA-MLK-2G3	06/15/14 -	06/16/14	< 0.4	1302 ± 128	< 4	< 5	< 7	< 125
SA-MLK-3G1 (C)	06/15/14 -	06/16/14	< 0.4	1298 ± 118	< 5	< 6	< 8	< 115
SA-MLK-13E3	07/06/14 -	07/07/14	< 0.4	1505 ± 125	< 4	< 5	< 7	< 121
SA-MLK-14F4	07/06/14 -	07/07/14	< 0.4	1385 ± 97	< 4	< 4	< 6	< 105
SA-MLK-2G3	07/06/14 -	07/07/14	< 0.4	1185 ± 83	< 3	< 3	< 4	< 96
SA-MLK-3G1 (C)	07/06/14 -	07/07/14	< 0.4	1309 ± 96	< 5	< 6	< 7	< 137

* IODINE-131 RESULTS ARE CORRECTED FOR DECAY TO STOP DATE OF COLLECTION PERIOD & ANALYZED TO AN LLD OF 1.0 pCi/L

(C) CONTROL STATION

TABLE C-5 CONCENTRATIONS OF IODINE-131* AND GAMMA EMITTERS IN MILK

Results in units of pCi/L ± 2 sigma

	COLLECTION PERIOD			<----------GAMMA EMITTERS---------->				
STATION ID	START	STOP	I-131	K-40	Cs-134	Cs-137	BaLa-140	Ra-226
SA-MLK-13E3	07/20/14	07/21/14	< 0.4	1313 ± 134	< 6	< 7	< 10	< 155
SA-MLK-14F4	07/20/14	07/21/14	< 0.4	1413 ± 147	< 6	< 6	< 10	< 154
SA-MLK-2G3	07/20/14	07/21/14	< 0.4	1350 ± 143	< 6	< 6	< 8	< 160
SA-MLK-3G1 (C)	07/20/14	07/21/14	< 0.4	1139 ± 125	< 4	< 5	< 6	< 121
SA-MLK-13E3	08/03/14	08/04/14	< 0.3	1321 ± 151	< 6	< 7	< 13	< 166
SA-MLK-14F4	08/03/14	08/04/14	< 0.4	1308 ± 143	< 7	< 7	< 12	< 150
SA-MLK-2G3	08/03/14	08/04/14	< 0.3	1190 ± 125	< 4	< 6	< 8	< 127
SA-MLK-3G1 (C)	08/03/14	08/04/14	< 0.3	1367 ± 143	< 5	< 6	< 10	< 135
SA-MLK-13E3	08/17/14	08/18/14	< 0.7	1585 ± 179	< 7	< 7	< 10	< 187
SA-MLK-14F4	08/17/14	08/18/14	< 0.7	1525 ± 148	< 5	< 6	< 6	< 133
SA-MLK-2G3	08/17/14	08/18/14	< 0.7	1370 ± 118	< 4	< 4	< 5	< 123
SA-MLK-3G1 (C)	08/17/14	08/18/14	< 0.7	1364 ± 136	< 5	< 5	< 6	< 121
SA-MLK-13E3	09/01/14	09/02/14	< 0.7	1512 ± 141	< 5	< 6	< 11	< 155
SA-MLK-14F4	09/01/14	09/02/14	< 0.5	1476 ± 147	< 6	< 6	< 12	< 156
SA-MLK-2G3	09/01/14	09/02/14	< 0.6	1336 ± 184	< 7	< 8	< 14	< 208
SA-MLK-3G1 (C)	09/01/14	09/02/14	< 0.5	1371 ± 127	< 5	< 6	< 8	< 139
SA-MLK-13E3	09/22/14	09/23/14	< 0.6	1283 ± 186	< 6	< 7	< 15	< 172
SA-MLK-14F4	09/22/14	09/23/14	< 0.6	1269 ± 148	< 5	< 5	< 12	< 164
SA-MLK-2G3	09/22/14	09/23/14	< 0.7	1437 ± 169	< 7	< 6	< 15	< 183
SA-MLK-3G1 (C)	09/22/14	09/23/14	< 0.5	1217 ± 160	< 4	< 4	< 14	< 141
SA-MLK-13E3	10/05/14	10/06/14	< 0.3	1314 ± 197	< 7	< 10	< 11	< 242
SA-MLK-14F4	10/05/14	10/06/14	< 0.3	1449 ± 162	< 6	< 7	< 10	< 162
SA-MLK-2G3	10/05/14	10/06/14	< 0.3	1151 ± 136	< 5	< 6	< 10	< 125
SA-MLK-3G1 (C)	10/05/14	10/06/14	< 0.3	1294 ± 192	< 8	< 9	< 14	< 183
SA-MLK-13E3	10/19/14	10/20/14	< 0.8	1496 ± 159	< 6	< 6	< 13	< 139
SA-MLK-14F4	10/19/14	10/20/14	< 0.4	1317 ± 146	< 6	< 7	< 14	< 166
SA-MLK-2G3	10/19/14	10/20/14	< 0.5	1422 ± 144	< 5	< 6	< 15	< 137
SA-MLK-3G1 (C)	10/19/14	10/20/14	< 0.8	1061 ± 172	< 7	< 7	< 9	< 150
SA-MLK-13E3	11/09/14	11/10/14	< 0.4	1427 ± 63	< 4	< 4	< 5	< 79
SA-MLK-14F4	11/09/14	11/10/14	< 0.3	1517 ± 62	< 2	< 3	< 4	< 64
SA-MLK-2G3	11/09/14	11/10/14	< 0.3	1440 ± 72	< 3	< 3	< 4	< 73
SA-MLK-3G1 (C)	11/09/14	11/10/14	< 0.4	1430 ± 64	< 2	< 2	< 4	< 47
SA-MLK-13E3	11/16/14	11/17/14	< 0.8	1308 ± 111	< 5	< 5	< 12	< 103
SA-MLK-14F4	11/16/14	11/17/14	< 0.5	1402 ± 147	< 5	< 6	< 13	< 137
SA-MLK-2G3	11/16/14	11/17/14	< 0.8	1279 ± 115	< 4	< 5	< 14	< 116
SA-MLK-3G1 (C)	11/16/14	11/17/14	< 0.8	1302 ± 156	< 9	< 8	< 13	< 248
SA-MLK-13E3	12/07/14	12/08/14	< 0.4	1440 ± 102	< 4	< 5	< 9	< 120
SA-MLK-14F4	12/07/14	12/08/14	< 0.4	1387 ± 123	< 4	< 5	< 11	< 116
SA-MLK-2G3	12/07/14	12/08/14	< 0.4	1552 ± 142	< 6	< 6	< 11	< 165
SA-MLK-3G1 (C)	12/07/14	12/08/14	< 0.7	1281 ± 106	< 4	< 4	< 8	< 122
	ANNUAL AVERAGE		-	1338 ± 129	-	-	-	-

* IODINE-131 RESULTS ARE CORRECTED FOR DECAY TO STOP DATE OF COLLECTION PERIOD & ANALYZED TO AN LLD OF 1.0 pCi/L

(C) CONTROL STATION

TABLE C-6 CONCENTRATIONS OF GROSS ALPHA AND GROSS BETA EMITTERS AND TRITIUM IN WELL WATER*

Results in units of pCi/liter ± 2 sigma

STATION ID	COLLECTION PERIOD START	STOP	Gr-A	Gr-B	H-3
SA-WWA-3E1	01/27/14	01/27/14	< 0.6	< 1.9	< 177
	02/24/14	02/24/14	< 1.3	< 1.6	< 168
	03/18/14	03/18/14	< 1.5	< 1.7	< 173
	04/14/14	04/14/14	< 1.4	< 2.6	< 149
	05/27/14	05/27/14	< 2.1	< 2.9	< 194
	06/23/14	06/23/14	< 0.4	< 1.4	< 196
	07/28/14	07/28/14	< 1.8	< 2.5	< 169
	08/18/14	08/18/14	< 1.4	< 2.3	< 163
	09/23/14	09/23/14	< 3.0	< 2.5	< 180
	10/20/14	10/20/14	< 1.6	< 2.4	< 158
	11/17/14	11/17/14	< 1.6	< 2.4	< 177
	12/18/14	12/18/14	< 1.7	< 2.6	< 195
	AVERAGE**		-	-	-

* MANAGEMENT AUDIT SAMPLE: NOT REQUIRED BY ODCM

** THE AVERAGE AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

TABLE C-7 **CONCENTRATIONS OF GAMMA EMITTERS IN WELL WATER***

Results in units of pCi/L ± 2 sigma

	COLLECTION PERIOD		<——GAMMA EMITTERS——>										
STATION ID	START	STOP	I-131**	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	ZrNb-95	Cs-134	Cs-137	BaLa140	Ra-226
SA-WWA-3E1	01/27/14 -	01/27/14	< 0.7	< 52	< 6	< 6	< 14	< 7	< 13	< 6	< 5	< 7	< 10	< 120
	02/24/14 -	02/24/14	< 0.8	< 34	< 4	< 4	< 8	< 4	< 7	< 4	< 3	< 4	< 7	< 121
	03/18/14 -	03/18/14	< 0.5	< 76	< 7	< 9	< 15	< 8	< 18	< 8	< 7	< 6	< 15	< 161
	04/14/14 -	04/14/14	< 0.5	< 86	< 4	< 5	< 9	< 5	< 9	< 5	< 4	< 5	< 9	< 136
	05/27/14 -	05/27/14	< 1.0	< 35	< 4	< 5	< 10	< 4	< 9	< 4	< 4	< 4	< 6	< 122
	06/23/14 -	06/23/14	< 0.4	< 73	< 4	< 4	< 8	< 4	< 7	< 5	< 4	< 4	< 7	< 113
	07/28/14 -	07/28/14	< 0.5	< 99	< 5	< 5	< 11	< 5	< 12	< 6	< 5	< 5	< 10	< 132
	08/18/14 -	08/18/14	< 0.4	< 28	< 3	< 3	< 6	< 3	< 6	< 3	< 3	< 3	< 6	< 75
	09/23/14 -	09/23/14	< 0.6	< 35	< 3	< 3	< 5	< 3	< 6	< 3	< 3	< 3	< 5	< 95
	10/20/14 -	10/20/14	< 0.6	< 59	< 8	< 6	< 13	< 8	< 14	< 7	< 6	< 7	< 11	< 141
	11/17/14 -	11/17/14	< 0.7	< 24	< 1	< 2	< 3	< 2	< 3	< 2	< 1	< 2	< 4	< 42
	12/18/14 -	12/18/14	< 0.4	< 58	< 3	< 3	< 7	< 4	< 7	< 4	< 3	< 3	< 7	< 94
		AVERAGE**	-	-	-	-	-	-	-	-	-	-	-	-

* MANAGEMENT AUDIT SAMPLE: NOT REQUIRED BY ODCM

** THE AVERAGE AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

TABLE C-8 **CONCENTRATIONS OF GROSS ALPHA AND GROSS BETA EMITTERS AND TRITIUM IN RAW AND TREATED POTABLE WATER (2F3)**

Results in units of pCi/L ± 2 sigma

STATION ID	COLLECTION PERIOD START	STOP	GR-A	GR-B	H-3
RAW	01/01/14	01/31/14	< 2.1	5.0 ± 1.9	< 178
	02/01/14	02/28/14	< 2.0	6.8 ± 2.2	< 177
	03/01/14	03/31/14	< 1.7	< 3.0	< 168
	04/01/14	04/30/14	< 2.0	< 3.3	< 175
	05/05/14	06/02/14	< 2.3	5.1 ± 2.2	< 168
	06/01/14	06/30/14	< 2.1	3.5 ± 1.9	< 189
	07/01/14	07/31/14	< 2.3	5.6 ± 2.2	< 190
	08/01/14	09/02/14	< 2.6	6.9 ± 2.5	< 175
	09/02/14	09/30/14	< 1.8	6.1 ± 2.5	< 183
	09/30/14	11/03/14	< 0.9	5.3 ± 2.0	< 181
	11/03/14	12/01/14	< 3.0	3.9 ± 1.8	< 180
	12/01/14	12/29/14	< 0.9	4.3 ± 1.9	< 177
		AVERAGE*	-	5.2 ± 2.3	-
TREATED	01/01/14	01/31/14	< 2.8	4.1 ± 1.5	< 176
	02/01/14	02/28/14	< 1.1	5.8 ± 1.5	< 175
	03/01/14	03/31/14	< 1.5	4.5 ± 1.9	< 175
	04/01/14	04/30/14	< 1.5	3.0 ± 1.8	< 171
	05/05/14	06/02/14	< 2.2	5.6 ± 2.1	< 168
	06/01/14	06/30/14	< 2.0	4.9 ± 1.9	< 193
	07/01/14	07/31/14	< 2.2	8.1 ± 2.3	< 191
	08/01/14	09/02/14	< 2.4	7.7 ± 2.4	< 179
	09/02/14	09/30/14	< 1.8	7.9 ± 2.6	< 183
	09/30/14	11/03/14	< 0.9	5.7 ± 1.9	< 185
	11/03/14	12/01/14	< 2.9	5.4 ± 1.9	< 183
	12/01/14	12/29/14	< 0.9	3.5 ± 1.8	< 174
		AVERAGE*	-	5.5 ± 3.4	-

* THE AVERAGE AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

TABLE C-9 **CONCENTRATIONS OF IODINE-131* AND GAMMA EMITTERS IN RAW AND TREATED POTABLE WATER (2F3)**

Results in units of pCi/L ± 2 sigma

	COLLECTION PERIOD							<———GAMMA EMITTERS———>						
STATION ID	START	STOP	I-131	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	ZrNb-95	Cs-134	Cs-137	BaLa-140	Ra-226
SA-PWR-2F3	01/01/14	01/31/14	< 0.7	< 68	< 4	< 4	< 10	< 5	< 10	< 5	< 4	< 5	< 9	< 116
SA-PWT-2F3	01/01/14	01/31/14	< 0.8	< 33	< 4	< 4	< 10	< 3	< 8	< 4	< 4	< 4	< 8	< 113
SA-PWR-2F3	02/01/14	02/28/14	< 0.7	< 55	< 6	< 7	< 13	< 6	< 13	< 6	< 6	< 6	< 12	< 103
SA-PWT-2F3	02/01/14	02/28/14	< 0.4	< 89	< 5	< 5	< 12	< 5	< 8	< 5	< 4	< 5	< 8	< 137
SA-PWR-2F3	03/01/14	03/31/14	< 0.8	< 41	< 5	< 5	< 8	< 5	< 10	< 5	< 4	< 4	< 8	< 111
SA-PWT-2F3	03/01/14	03/31/14	< 0.7	< 99	< 4	< 5	< 8	< 4	< 9	< 5	< 5	< 5	< 8	< 127
SA-PWR-2F3	04/01/14	04/30/14	< 0.7	< 31	< 1	< 1	< 3	< 1	< 3	< 2	< 1	< 1	< 4	< 39
SA-PWT-2F3	04/01/14	04/30/14	< 0.7	< 11	< 1	< 1	< 3	< 1	< 2	< 1	< 1	< 1	< 3	< 31
SA-PWR-2F3	05/05/14	06/02/14	< 0.4	< 44	< 5	< 6	< 11	< 5	< 9	< 6	< 5	< 7	< 8	< 133
SA-PWT-2F3	05/05/14	06/02/14	< 0.3	< 56	< 6	< 7	< 15	< 8	< 11	< 7	< 6	< 7	< 10	< 176
SA-PWR-2F3	06/01/14	06/30/14	< 0.5	< 50	< 5	< 5	< 11	< 5	< 10	< 5	< 4	< 6	< 8	< 113
SA-PWT-2F3	06/01/14	06/30/14	< 0.5	< 94	< 4	< 5	< 9	< 5	< 8	< 5	< 4	< 6	< 8	< 114
SA-PWR-2F3	07/01/14	07/31/14	< 0.9	< 40	< 4	< 4	< 7	< 4	< 8	< 4	< 4	< 4	< 4	< 117
SA-PWT-2F3	07/01/14	07/31/14	< 0.4	< 44	< 5	< 5	< 9	< 5	< 11	< 5	< 6	< 6	< 7	< 151
SA-PWR-2F3	08/01/14	09/02/14	< 0.6	< 37	< 3	< 5	< 9	< 4	< 9	< 5	< 4	< 4	< 6	< 101
SA-PWT-2F3	08/01/14	09/02/14	< 0.7	< 40	< 5	< 4	< 11	< 4	< 10	< 4	< 5	< 5	< 7	< 101
SA-PWR-2F3	09/02/14	09/30/14	< 0.4	< 44	< 4	< 5	< 8	< 4	< 9	< 5	< 4	< 5	< 9	< 118
SA-PWT-2F3	09/02/14	09/30/14	< 0.4	< 51	< 5	< 6	< 10	< 6	< 10	< 6	< 4	< 5	< 8	< 119
SA-PWR-2F3	09/30/14	11/03/14	< 0.5	< 59	< 4	< 4	< 8	< 4	< 7	< 4	< 4	< 4	< 7	< 112
SA-PWT-2F3	09/30/14	11/03/14	< 0.5	< 40	< 4	< 4	< 10	< 5	< 10	< 4	< 4	< 5	< 8	< 121
SA-PWR-2F3	11/03/14	12/01/14	< 0.4	< 45	< 5	< 4	< 11	< 4	< 12	< 6	< 5	< 6	< 9	< 150
SA-PWT-2F3	11/03/14	12/01/14	< 0.4	< 58	< 5	< 6	< 11	< 6	< 10	< 7	< 6	< 6	< 13	< 189
SA-PWR-2F3	12/01/14	12/29/14	< 0.6	< 85	< 3	< 4	< 7	< 3	< 6	< 4	< 4	< 4	< 5	< 108
SA-PWT-2F3	12/01/14	12/29/14	< 0.6	< 29	< 4	< 4	< 7	< 4	< 7	< 4	< 4	< 4	< 7	< 80
		AVERAGE	-	-	-	-	-	-	-	-	-	-	-	-

* IODINE-131 RESULTS ARE CORRECTED FOR DECAY TO STOP DATE OF COLLECTION PERIOD & ANALYZED TO AN LLD OF 1.0 pCi/L.

TABLE C-10 **CONCENTRATIONS OF GAMMA EMITTERS IN VEGETABLES**

Results in units of pCi/kg (wet) ± 2 sigma

STATION ID	COLLECTION PERIOD	SAMPLE TYPE	<———GAMMA EMITTERS———> Be-7	K-40	I-131	Cs-134	Cs-137	Ra-226	Th-232
SA-FPV-2F9*	05/11/14	Asparagus	< 122	2531 ± 311	< 23	< 15	< 13	< 375	< 61
SA-FPV-1G1* (C)	05/19/14	Asparagus	< 69	2926 ± 162	< 25	< 6	< 7	< 174	< 29
SA-FPV-2G2* (C)	05/19/14	Asparagus	< 111	2016 ± 262	< 39	< 11	< 11	< 274	< 52
SA-FPV-3H5* (C)	05/19/14	Asparagus	< 70	3267 ± 159	< 27	< 7	< 8	< 166	< 29
	AVERAGE**			2685 ± 1076					
SA-FPL-10D1	06/30/14	Cabbage	< 87	3635 ± 211	< 21	< 10	< 12	< 232	< 43
SA-FPL-10D1	06/30/14	Collards	< 178	4977 ± 325	< 40	< 22	< 22	< 400	< 82
SA-FPL-15S2	06/30/14	Cabbage	< 58	4349 ± 172	< 16	< 6	< 7	< 146	< 25
SA-FPL-16S1	06/30/14	Cabbage	< 49	4607 ± 159	< 13	< 5	< 6	< 104	< 24
SA-FPL-16S1	06/30/14	Collards	< 62	6784 ± 210	< 17	< 7		< 138	< 28
SA-FPL-1S1	06/30/14	Cabbage	< 117	5342 ± 303	< 26	< 13	< 15	< 212	< 57
SA-FPL-1S1	06/30/14	Collards	< 103	5857 ± 253	< 24	< 11	< 13	< 260	< 43
SA-FPL-7S2	06/30/14	Cabbage	< 96	5968 ± 264	< 23	< 10	< 11	< 236	< 44
SA-FPL-7S2	06/30/14	Collards	< 53	6410 ± 168	< 15	< 5	< 6	< 151	< 25
	AVERAGE**			5325 ± 2055					
SA-FPV-2F9*	07/24/14	Corn	< 94	1655 ± 194	< 15	< 10	< 9	< 242	< 36
SA-FPV-2F9*	07/24/14	Tomatoes	< 90	1892 ± 244	< 16	< 9	< 10	< 277	< 44
SA-FPV-2F9	07/24/14	Peaches	< 110	2295 ± 280	< 22	< 11	< 14	< 304	< 48
SA-FPV-10D1*	07/30/14	Cabbage	< 286	4322 ± 512	< 52	< 25	< 30	< 649	< 116
SA-FPV-10D1*	07/30/14	Collards	256 ± 148	4213 ± 373	< 31	< 15	< 18	< 390	< 67
SA-FPV-15F4*	07/30/14	Corn	< 153	2250 ± 255	< 26	< 18	< 16	< 379	< 56
SA-FPV-15F4*	07/30/14	Peppers	< 136	2283 ± 234	< 28	< 16	< 15	< 367	< 50
SA-FPV-15F4*	07/30/14	Tomatoes	< 132	2320 ± 328	< 25	< 14	< 17	< 322	< 74
SA-FPV-15S2*	07/30/14	Cabbage	< 215	4913 ± 367	< 48	< 27	< 24	< 557	< 90
SA-FPV-16S1*	07/30/14	Cabbage	< 180	4453 ± 435	< 37	< 18	< 19	< 407	< 81
SA-FPV-16S1*	07/30/14	Collards	< 122	4952 ± 276	< 26	< 14	< 14	< 284	< 54
SA-FPV-1G1* (C)	07/30/14	Corn	< 264	1626 ± 452	< 51	< 31	< 29	< 742	< 115
SA-FPV-1G1* (C)	07/30/14	Collards	< 232	2262 ± 378	< 45	< 29	< 26	< 626	< 96
SA-FPV-1G1* (C)	07/30/14	Tomatoes	< 161	2692 ± 357	< 28	< 17	< 18	< 415	< 85
SA-FPV-1S1*	07/30/14	Cabbage	< 259	4563 ± 528	< 57	< 30	< 30	< 675	< 101
SA-FPV-1S1*	07/30/14	Collards	< 277	3943 ± 525	< 60	< 32	< 33	< 709	< 124

* MANAGEMENT AUDIT SAMPLE: NOT REQUIRED BY ODCM

** THE AVERAGE AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

(C) CONTROL STATION

TABLE C-10 **CONCENTRATIONS OF GAMMA EMITTERS IN VEGETABLES**

Results in units of pCi/kg (wet) ± 2 sigma

STATION ID	COLLECTION PERIOD	SAMPLE TYPE	<———GAMMA EMITTERS———> Be-7	K-40	I-131	Cs-134	Cs-137	Ra-226	Th-232
SA-FPV-2G2* (C)	07/30/14	Corn	< 139	1976 ± 299	< 30	< 16	< 15	< 422	< 66
SA-FPV-2G2* (C)	07/30/14	Peppers	< 241	3018 ± 374	< 51	< 29	< 27	< 657	< 101
SA-FPV-2G2* (C)	07/30/14	Tomatoes	< 170	2576 ± 335	< 34	< 19	< 19	< 486	< 73
SA-FPV-3H5* (C)	07/30/14	Corn	< 141	1940 ± 309	< 24	< 11	< 16	< 322	< 41
SA-FPV-3H5* (C)	07/30/14	Peppers	< 293	2299 ± 453	< 47	< 25	< 29	< 688	< 116
SA-FPV-3H5* (C)	07/30/14	Tomatoes	< 96	1639 ± 187	< 20	< 12	< 12	< 269	< 46
SA-FPL-7S2	07/30/14	Cabbage	< 245	4729 ± 511	< 48	< 21	< 26	< 466	< 118
SA-FPL-7S2	07/30/14	Collards	< 185	6457 ± 439	< 43	< 23	< 25	< 485	< 87
	AVERAGE**		256 ± 0	3136 ± 2732					
SA-FPV-3F8	08/08/14	Peaches	< 115	2449 ± 264	< 32	< 10	< 12	< 308	< 43
SA-FPV-2F9	08/10/14	Peaches	< 101	2594 ± 262	< 24	< 11	< 12	< 277	< 48
SA-FPL-10D1	08/21/14	Cabbage	< 223	2555 ± 425	< 35	< 23	< 29	< 554	< 102
SA-FPL-10D1	08/21/14	Collards	< 326	3971 ± 523	< 48	< 35	< 35	< 851	< 134
SA-FPL-15S2	08/21/14	Cabbage	< 187	3218 ± 467	< 31	< 20	< 21	< 514	< 87
SA-FPL-15S2	08/21/14	Collards	< 387	4148 ± 659	< 59	< 41	< 44	< 885	< 159
SA-FPL-16S1	08/21/14	Cabbage	< 160	2495 ± 411	< 27	< 18	< 23	< 404	< 79
SA-FPL-16S1	08/21/14	Collards	< 208	3808 ± 508	< 35	< 21	< 25	< 523	< 104
SA-FPL-1S1	08/21/14	Cabbage	< 228	2692 ± 372	< 35	< 26	< 25	< 600	< 91
SA-FPL-1S1	08/21/14	Collards	< 189	4033 ± 509	< 31	< 20	< 23	< 570	< 85
SA-FPL-7S2	08/21/14	Cabbage	< 199	2863 ± 444	< 35	< 23	< 25	< 523	< 106
SA-FPL-7S2	08/21/14	Collards	< 182	3127 ± 478	< 27	< 16	< 17	< 456	< 76
	AVERAGE**			3163 ± 1316					
SA-FPL-10D1	09/30/14	Collards	< 183	3356 ± 380	< 48	< 15	< 17	< 432	< 66
SA-FPL-15S2	09/30/14	Cabbage	< 190	4024 ± 386	< 47	< 17	< 19	< 433	< 73
SA-FPL-15S2	09/30/14	Collards	< 87	5146 ± 376	< 23	< 8	< 10	< 132	< 34
SA-FPL-16S1	09/30/14	Cabbage	< 149	3085 ± 353	< 55	< 14	< 17	< 394	< 61
SA-FPL-16S1	09/30/14	Collards	< 155	4681 ± 389	< 60	< 16	< 16	< 558	< 69
SA-FPL-1S1	09/30/14	Cabbage	< 151	2253 ± 282	< 47	< 12	< 12	< 325	< 42
SA-FPL-1S1	09/30/14	Collards	< 187	3878 ± 439	< 56	< 17	< 22	< 477	< 74
SA-FPL-7S2	09/30/14	Cabbage	< 152	2938 ± 412	< 37	< 14	< 16	< 328	< 66
SA-FPL-7S2	09/30/14	Collards	< 203	4912 ± 483	< 57	< 16	< 19	< 402	< 73
	AVERAGE**			3808 ± 1965					

* MANAGEMENT AUDIT SAMPLE: NOT REQUIRED BY ODCM

** THE AVERAGE AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

(C) CONTROL STATION

TABLE C-10 **CONCENTRATIONS OF GAMMA EMITTERS IN VEGETABLES**

Results in units of pCi/kg (wet) ± 2 sigma

STATION ID	COLLECTION PERIOD	SAMPLE TYPE	<————GAMMA EMITTERS————> Be-7	K-40	I-131	Cs-134	Cs-137	Ra-226	Th-232
SA-FPL-10D1	10/27/14	Collards	209 ± 74	3366 ± 210	< 27	< 8	< 9	< 212	< 33
SA-FPL-15S2	10/27/14	Cabbage	210 ± 101	2549 ± 214	< 27	< 8	< 10	< 166	< 33
SA-FPL-16S1	10/27/14	Cabbage	< 102	2340 ± 235	< 31	< 8	< 10	< 239	< 43
SA-FPL-16S1	10/27/14	Collards	< 70	3785 ± 224	< 26	< 7	< 7	< 219	< 34
SA-FPL-1S1	10/27/14	Cabbage	< 124	1970 ± 354	< 57	< 15	< 17	< 437	< 60
SA-FPL-1S1	10/27/14	Collards	270 ± 168	4299 ± 412	< 56	< 15	< 18	< 416	< 70
SA-FPL-7S2	10/27/14	Cabbage	324 ± 161	4485 ± 339	< 53	< 15	< 17	< 387	< 56
SA-FPL-7S2	10/27/14	Collards	< 223	4260 ± 373	< 60	< 19	< 20	< 475	< 82
	AVERAGE**		253 ± 110	3382 ± 1966					
SA-FPL-10D1	11/19/14	Collards	363 ± 86	4195 ± 222	< 41	< 9	< 9	< 261	< 37
SA-FPL-15S2	11/19/14	Cabbage	< 136	2607 ± 302	< 59	< 14	< 14	< 346	< 58
SA-FPL-16S1	11/19/14	Cabbage	179 ± 102	2751 ± 243	< 54	< 12	< 13	< 292	< 48
SA-FPL-16S1	11/19/14	Collards	201 ± 94	4064 ± 255	< 46	< 9	< 11	< 255	< 40
SA-FPL-1S1	11/19/14	Cabbage	279 ± 147	3572 ± 321	< 58	< 14	< 16	< 344	< 57
SA-FPL-1S1	11/19/14	Collards	195 ± 98	4335 ± 259	< 47	< 11	< 11	< 262	< 45
SA-FPL-7S2	11/19/14	Cabbage	< 123	2900 ± 283	< 54	< 14	< 14	< 249	< 55
SA-FPL-7S2	11/19/14	Collards	216 ± 97	4620 ± 297	< 38	< 10	< 11	< 208	< 46
	AVERAGE**		239 ± 140	3631 ± 1575					

* MANAGEMENT AUDIT SAMPLE: NOT REQUIRED BY ODCM

** THE AVERAGE AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

(C) CONTROL STATION

TABLE C-11 **CONCENTRATIONS OF GAMMA EMITTERS IN FODDER CROPS***

Results in units of pCi/kg (wet) ± 2 sigma

STATION ID	COLLECTION DATE	SAMPLE TYPE	<——GAMMA EMITTERS——> Be-7	K-40	I-131	Cs-134	Cs-137	Ra-226	Th-232
SA-VGT-13E3	12/11/14	Silage	233 ± 139	3036 ± 308	< 31	< 11	< 15	< 355	< 60
SA-VGT-14F4	12/11/14	Silage	< 184	3802 ± 361	< 33	< 14	< 16	< 375	< 70
SA-VGT-2G3	12/11/14	Silage	265 ± 144	4532 ± 465	< 42	< 18	< 18	< 450	< 76
SA-VGT-3G1 (C)	12/11/14	Silage	< 154	1610 ± 297	< 37	< 16	< 18	< 304	< 64
	AVERAGE**		249 ± 22	3245 ± 2499	-	-	-	-	-

* MANAGEMENT AUDIT SAMPLE: NOT REQUIRED BY ODCM

** THE AVERAGE AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

(C) CONTROL STATION

TABLE C-12 CONCENTRATIONS OF GAMMA EMITTERS IN SOIL

Soil is sampled every three years. Last collection date was in 2013.
Next collection date is due in 2016.

TABLE C-13 **CONCENTRATIONS OF GAMMA EMITTERS IN BEEF AND GAME***

Results in units of pCi/kg (wet) ± 2 sigma

STATION ID	COLLECTION DATE	SAMPLE TYPE	<————GAMMA EMITTERS————>				
			Be-7	I-131	K-40	Cs-134	Cs-137
SA-GAM-13E3	02/21/14	Muskrat	< 117	< 33	2834 ± 287	< 12	< 15
	03/02/14	Muskrat	< 84	< 27	2811 ± 252	< 10	< 10
	AVERAGE**		-	-	2823 ± 33	-	-
SA-GAM-3E1	03/01/14	Muskrat	< 111	< 31	3274 ± 286	< 11	< 12
	AVERAGE**		-	-	3274 ± 0	-	-

* MANAGEMENT AUDIT SAMPLE: NOT REQUIRED BY ODCM

** THE AVERAGE AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

TABLE C-14 CONCENTRATIONS OF TRITIUM IN SURFACE WATER

Results in Units of pCi/L ± 2 sigma

COLLECTION PERIOD			CONTROL			
START	STOP	SA-SWA-11A1	SA-SWA-12C1	SA-SWA-16F1	SA-SWA-1F2	SA-SWA-7E1
01/13/14	01/13/14	< 185	< 180	< 181	< 186	< 180
02/23/14	02/23/14	< 166	< 180	< 163	< 165	< 168
03/05/14	03/05/14	1760 ± 231	< 188	< 191	< 165	< 165
04/10/14	04/10/14	< 170	< 169	< 171	< 172	< 170
05/07/14	05/07/14	< 167	< 169	< 167	< 169	< 182
06/02/14	06/02/14	< 184	< 184	< 183	< 181	< 179
07/09/14	07/09/14	< 182	< 181	< 182	< 184	< 184
08/05/14	08/05/14	< 181	< 184	< 181	< 180	< 183
09/12/14	09/12/14	< 181	< 177	< 178	< 177	< 179
10/09/14	10/09/14	< 167	< 183	< 183	< 184	< 182
11/05/14	11/05/14	< 178	< 176	< 176	< 176	< 176
12/01/14	12/01/14	< 181	< 183	< 182	< 182	< 181
	AVERAGE*	1760 ± 0.0	-	-	-	-

* THE AVERAGE AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

TABLE C-15 **CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER**

Results in Units of pCi/L ± 2 Sigma

SITE	COLLECTION PERIOD	<———GAMMA EMITTERS———> I-131*	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	ZrNb-95	Cs-134	Cs-137	BaLa140
SA-SWA-11A1	01/13/14	< 0.9	< 69	< 3	< 3	< 7	< 3	< 7	< 4	< 3	< 3	< 10
	02/23/14	< 0.8	< 132	< 6	< 6	< 13	< 6	< 11	< 6	< 5	< 6	< 9
	03/05/14	< 0.7	< 27	< 3	< 3	< 7	< 4	< 6	< 3	< 3	< 3	< 6
	04/10/14	< 0.8	< 42	< 5	< 6	< 12	< 6	< 10	< 5	< 5	< 6	< 11
	05/07/14	< 0.8	< 15	< 2	< 2	< 4	< 2	< 3	< 2	< 2	< 2	< 5
	06/02/14	< 0.7	< 34	< 2	< 2	< 4	< 2	< 4	< 2	< 2	< 2	< 5
	07/09/14	< 0.9	97 ± 42	< 2	< 3	< 6	< 5	< 6	< 3	< 3	< 3	< 6
	08/05/14	< 1.8	77 ± 35	< 1	< 1	< 3	< 1	< 2	< 1	< 1	< 1	< 17
	09/12/14	< 0.6	< 37	< 4	< 4	< 8	< 4	< 8	< 5	< 4	< 4	< 7
	10/09/14	< 0.6	148 ± 33	< 2	< 2	< 5	< 2	< 4	< 2	< 2	< 2	< 6
	11/05/14	< 0.5	130 ± 40	< 3	< 3	< 7	< 3	< 6	< 3	< 3	< 3	< 7
	12/01/14	< 0.7	86 ± 40	< 3	< 3	< 6	< 3	< 6	< 4	< 3	< 3	< 5
	AVERAGE**		108 ± 61	-	-	-	-	-	-	-	-	-
SA-SWA-12C1 (C)	01/13/14	< 0.7	< 76	< 3	< 4	< 7	< 3	< 7	< 4	< 3	< 3	< 8
	02/23/14	< 1.0	< 49	< 5	< 6	< 13	< 5	< 13	< 7	< 5	< 6	< 9
	03/05/14	< 0.7	< 28	< 3	< 3	< 7	< 3	< 6	< 3	< 3	< 3	< 6
	04/10/14	< 0.8	< 48	< 4	< 5	< 11	< 5	< 12	< 5	< 5	< 5	< 13
	05/07/14	< 0.8	61 ± 30	< 2	< 2	< 5	< 2	< 4	< 3	< 2	< 2	< 6
	06/02/14	< 0.7	< 43	< 2	< 2	< 5	< 2	< 4	< 2	< 2	< 2	< 5
	07/09/14	< 0.7	< 44	< 4	< 5	< 10	< 5	< 7	< 5	< 4	< 4	< 11
	08/05/14	< 1.7	< 7	< 1	< 2	< 4	< 1	< 2	< 2	< 1	< 1	< 19
	09/12/14	< 0.6	< 54	< 5	< 4	< 11	< 4	< 10	< 6	< 4	< 5	< 11
	10/09/14	< 0.6	113 ± 23	< 2	< 2	< 4	< 2	< 3	< 2	< 2	< 2	< 5
	11/05/14	< 0.6	87 ± 47	< 4	< 4	< 8	< 4	< 7	< 4	< 3	< 3	< 8
	12/01/14	< 0.6	< 34	< 3	< 3	< 6	< 3	< 5	< 3	< 3	< 3	< 4
	AVERAGE**		87 ± 52	-	-	-	-	-	-	-	-	-

* IODINE-131 RESULTS ARE CORRECTED FOR DECAY TO STOP DATE OF COLLECTION AND ANALYZED TO AN LLD OF 1.0 pCi/L

** THE AVERAGE AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

(C) CONTROL STATION

TABLE C-15 **CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER**

Results in Units of pCi/L ± 2 Sigma

SITE	COLLECTION PERIOD	<———GAMMA EMITTERS———> I-131*	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	ZrNb-95	Cs-134	Cs-137	BaLa140
SA-SWA-16F1	01/13/14	< 0.7	< 33	< 3	< 4	< 8	< 3	< 6	< 4	< 3	< 4	< 6
	02/23/14	< 0.9	88 ± 55	< 6	< 5	< 13	< 6	< 11	< 5	< 6	< 6	< 8
	03/05/14	< 0.6	< 68	< 2	< 3	< 6	< 4	< 6	< 3	< 3	< 3	< 5
	04/10/14	< 0.8	< 104	< 6	< 6	< 15	< 6	< 13	< 6	< 5	< 6	< 13
	05/07/14	< 0.8	< 8	< 1	< 1	< 2	< 1	< 2	< 1	< 1	< 1	< 2
	06/02/14	< 0.7	< 48	< 2	< 2	< 5	< 2	< 4	< 2	< 2	< 2	< 5
	07/09/14	< 0.7	< 40	< 5	< 5	< 11	< 5	< 9	< 6	< 4	< 5	< 11
	08/05/14	< 1.7	< 8	< 1	< 1	< 3	< 1	< 2	< 1	< 1	< 1	< 13
	09/12/14	< 0.6	< 52	< 6	< 5	< 10	< 6	< 12	< 7	< 6	< 7	< 12
	10/09/14	< 0.7	79 ± 32	< 2	< 3	< 6	< 2	< 5	< 3	< 2	< 2	< 8
	11/05/14	< 0.4	< 31	< 4	< 4	< 8	< 4	< 7	< 4	< 3	< 4	< 8
	12/01/14	< 0.5	93 ± 53	< 4	< 4	< 10	< 5	< 9	< 5	< 4	< 4	< 8
	AVERAGE**		87 ± 14	-	-	-	-	-	-	-	-	-
SA-SWA-1F2	01/13/14	< 0.7	< 37	< 3	< 4	< 8	< 3	< 7	< 4	< 3	< 4	< 9
	02/23/14	< 0.9	< 65	< 5	< 5	< 14	< 6	< 11	< 7	< 5	< 7	< 10
	03/05/14	< 0.8	< 60	< 3	< 3	< 7	< 3	< 5	< 3	< 3	< 3	< 6
	04/10/14	< 0.8	< 41	< 4	< 5	< 10	< 6	< 9	< 5	< 4	< 5	< 8
	05/07/14	< 0.8	< 17	< 2	< 2	< 4	< 2	< 3	< 2	< 2	< 2	< 6
	06/02/14	< 0.6	< 47	< 2	< 3	< 6	< 3	< 6	< 3	< 2	< 2	< 6
	07/09/14	< 0.7	< 78	< 4	< 4	< 8	< 4	< 7	< 4	< 4	< 4	< 9
	08/05/14	< 1.3	< 9	< 1	< 2	< 4	< 1	< 2	< 2	< 1	< 1	< 22
	09/12/14	< 0.5	< 50	< 6	< 6	< 12	< 5	< 9	< 6	< 5	< 6	< 8
	10/09/14	< 0.6	< 16	< 2	< 2	< 4	< 2	< 4	< 2	< 1	< 2	< 6
	11/05/14	< 0.4	150 ± 50	< 3	< 4	< 9	< 3	< 6	< 4	< 3	< 4	< 7
	12/01/14	< 0.6	68 ± 43	< 4	< 4	< 8	< 3	< 7	< 4	< 4	< 4	< 7
	AVERAGE**		109 ± 116	-	-	-	-	-	-	-	-	-

* IODINE-131 RESULTS ARE CORRECTED FOR DECAY TO STOP DATE OF COLLECTION AND ANALYZED TO AN LLD OF 1.0 pCi/L

** THE AVERAGE AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

TABLE C-15 **CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER**

Results in Units of pCi/L ± 2 Sigma

SITE	COLLECTION PERIOD	<———GAMMA EMITTERS———> I-131*	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	ZrNb-95	Cs-134	Cs-137	BaLa140
SA-SWA-7E1	01/13/14	< 0.9	< 34	< 3	< 3	< 8	< 3	< 6	< 4	< 3	< 3	< 7
	02/23/14	< 0.9	< 58	< 5	< 5	< 12	< 5	< 13	< 4	< 4	< 6	< 9
	03/05/14	< 0.8	87 ± 36	< 3	< 3	< 6	< 3	< 6	< 3	< 3	< 3	< 6
	04/10/14	< 0.9	< 37	< 5	< 5	< 10	< 5	< 9	< 5	< 5	< 5	< 8
	05/07/14	< 0.8	61 ± 25	< 2	< 2	< 5	< 2	< 4	< 2	< 2	< 2	< 6
	06/02/14	< 0.7	59 ± 31	< 2	< 2	< 4	< 2	< 3	< 2	< 2	< 2	< 4
	07/09/14	< 0.7	87 ± 50	< 4	< 5	< 10	< 4	< 9	< 5	< 4	< 5	< 7
	08/05/14	< 1.6	70 ± 34	< 1	< 1	< 3	< 1	< 2	< 1	< 1	< 1	< 21
	09/12/14	< 0.5	< 53	< 6	< 7	< 14	< 5	< 12	< 5	< 6	< 6	< 10
	10/09/14	< 0.8	99 ± 30	< 1	< 2	< 3	< 1	< 3	< 2	< 1	< 1	< 5
	11/05/14	< 0.6	71 ± 47	< 3	< 3	< 6	< 3	< 6	< 3	< 3	< 3	< 6
	12/01/14	< 0.7	135 ± 56	< 4	< 4	< 9	< 4	< 8	< 4	< 4	< 4	< 7
	AVERAGE**		84 ± 49	-	-	-	-	-	-	-	-	-

* IODINE-131 RESULTS ARE CORRECTED FOR DECAY TO STOP DATE OF COLLECTION AND ANALYZED TO AN LLD OF 1.0 pCi/L

** THE AVERAGE AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

TABLE C-16 **CONCENTRATIONS OF GAMMA EMITTERS IN EDIBLE FISH**

Results in Units of pCi/kg (wet) ± 2 sigma

STATION ID	COLLECTION PERIOD	<———GAMMA EMITTERS———> K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	Ra-226
SA-ESF-11A1	05/07/14	2862 ± 757	< 60	< 57	< 104	< 56	< 118	< 54	< 67	< 1090
	09/23/14	4825 ± 920	< 58	< 95	< 242	< 51	< 128	< 63	< 53	< 1309
	10/22/14	3082 ± 1071	< 56	< 71	< 175	< 56	< 121	< 48	< 55	< 1035
	10/28/14	5641 ± 1281	< 74	< 73	< 180	< 65	< 132	< 65	< 44	< 1449
	AVERAGE*	4103 ± 2700	-	-	-	-	-	-	-	-
SA-ESF-12C1 (C)	05/07/14	3941 ± 829	< 42	< 46	< 84	< 51	< 87	< 53	< 42	< 785
	09/23/14	4306 ± 575	< 38	< 56	< 173	< 31	< 86	< 35	< 36	< 576
	09/23/14	3077 ± 951	< 67	< 89	< 253	< 55	< 115	< 59	< 55	< 1137
	10/27/14	3723 ± 461	< 26	< 25	< 72	< 25	< 53	< 25	< 24	< 502
	10/27/14	4238 ± 989	< 60	< 74	< 177	< 60	< 128	< 55	< 52	< 1212
	AVERAGE*	3857 ± 990	-	-	-	-	-	-	-	-
SA-ESF-7E1	05/07/14	3106 ± 665	< 29	< 35	< 77	< 35	< 78	< 30	< 35	< 606
	10/27/14	6348 ± 1343	< 89	< 102	< 219	< 86	< 214	< 90	< 108	< 1745
	11/10/14	3579 ± 1059	< 64	< 63	< 169	< 69	< 141	< 63	< 79	< 1500
	11/10/14	3689 ± 714	< 40	< 39	< 97	< 37	< 82	< 38	< 41	< 756
	AVERAGE*	4181 ± 2934	-	-	-	-	-	-	-	-

* THE AVERAGE AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES
(C) CONTROL STATION

TABLE C-17 **CONCENTRATIONS OF GAMMA EMITTERS IN CRABS**

Results in Units of pCi/kg (wet) ± 2 sigma

STATION ID	COLLECTION PERIOD	<————GAMMA EMITTERS————> K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	Ra-226
SA-ECH-11A1	07/23/14	2916 ± 1172	< 81	< 86	< 211	< 82	< 146	< 74	< 72	< 1623
	08/25/14	3952 ± 881	< 73	< 85	< 137	< 72	< 179	< 93	< 77	< 1677
	AVERAGE*	3434 ± 1465	-	-	-	-	-	-	-	-
SA-ECH-12C1 (C)	07/23/14	3024 ± 1190	< 90	< 91	< 209	< 75	< 196	< 90	< 88	< 2099
	08/25/14	3044 ± 1076	< 67	< 72	< 177	< 79	< 167	< 71	< 79	< 1574
	AVERAGE*	3034 ± 28	-	-	-	-	-	-	-	-

* THE AVERAGE AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES
(C) CONTROL STATION

TABLE C-18 **CONCENTRATIONS OF GAMMA EMITTERS IN SEDIMENT**

Results in Units of pCi/kg (dry) ± 2 Sigma

STATION ID	COLLECTION PERIOD	<———-GAMMA EMITTERS———> Be-7	K-40	Cs-134	Cs-137	Ra-226	Th-232
SA-ESS-11A1	06/27/14	< 354	3934 ± 635	< 33	< 37	< 908	344 ± 73
	11/28/14	< 290	3996 ± 607	< 28	29 ± 18	< 599	236 ± 91
	AVERAGE*	-	3965 ± 88	-	29 ± 0	-	290 ± 153
SA-ESS-12C1 (C)	06/27/14	< 651	15780 ± 1460	< 74	< 69	< 1786	936 ± 179
	11/28/14	< 950	14480 ± 1657	< 103	< 97	< 2245	908 ± 217
	AVERAGE*	-	15130 ± 1838	-	-	-	922 ± 40
SA-ESS-15A1	06/27/14	< 471	8644 ± 902	< 45	< 49	< 1351	800 ± 198
	11/28/14	< 452	5549 ± 916	< 47	< 50	< 1094	555 ± 138
	AVERAGE*	-	7097 ± 4377	-	-	-	678 ± 346
SA-ESS-16A1	06/27/14	< 505	5874 ± 917	< 56	< 62	2030 ± 1016	947 ± 174
	11/28/14	< 354	3714 ± 596	< 35	< 36	3016 ± 987	753 ± 104
	AVERAGE*	-	4794 ± 3055	-	-	2523 ± 1394	850 ± 274
SA-ESS-16F1	06/27/14	< 383	16070 ± 1429	< 48	< 64	1903 ± 1087	615 ± 189
	11/28/14	< 825	16880 ± 1633	< 84	< 80	< 1864	996 ± 235
	AVERAGE*	-	16475 ± 1146	-	-	1903 ± 0	806 ± 539
SA-ESS-6S2	12/03/14	< 392	3004 ± 530	< 36	< 38	< 869	242 ± 95
	AVERAGE*	-	3004 ± 0	-	-	-	242 ± 0
SA-ESS-7E1	06/27/14	< 476	13310 ± 1214	< 44	< 57	2058 ± 1155	695 ± 169
	11/28/14	< 620	13560 ± 1624	< 59	< 64	2709 ± 1394	948 ± 218
	AVERAGE*	-	13435 ± 354	-	-	2922 ± 1468	1031 ± 571

* THE AVERAGE AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES
(C) CONTROL STATION

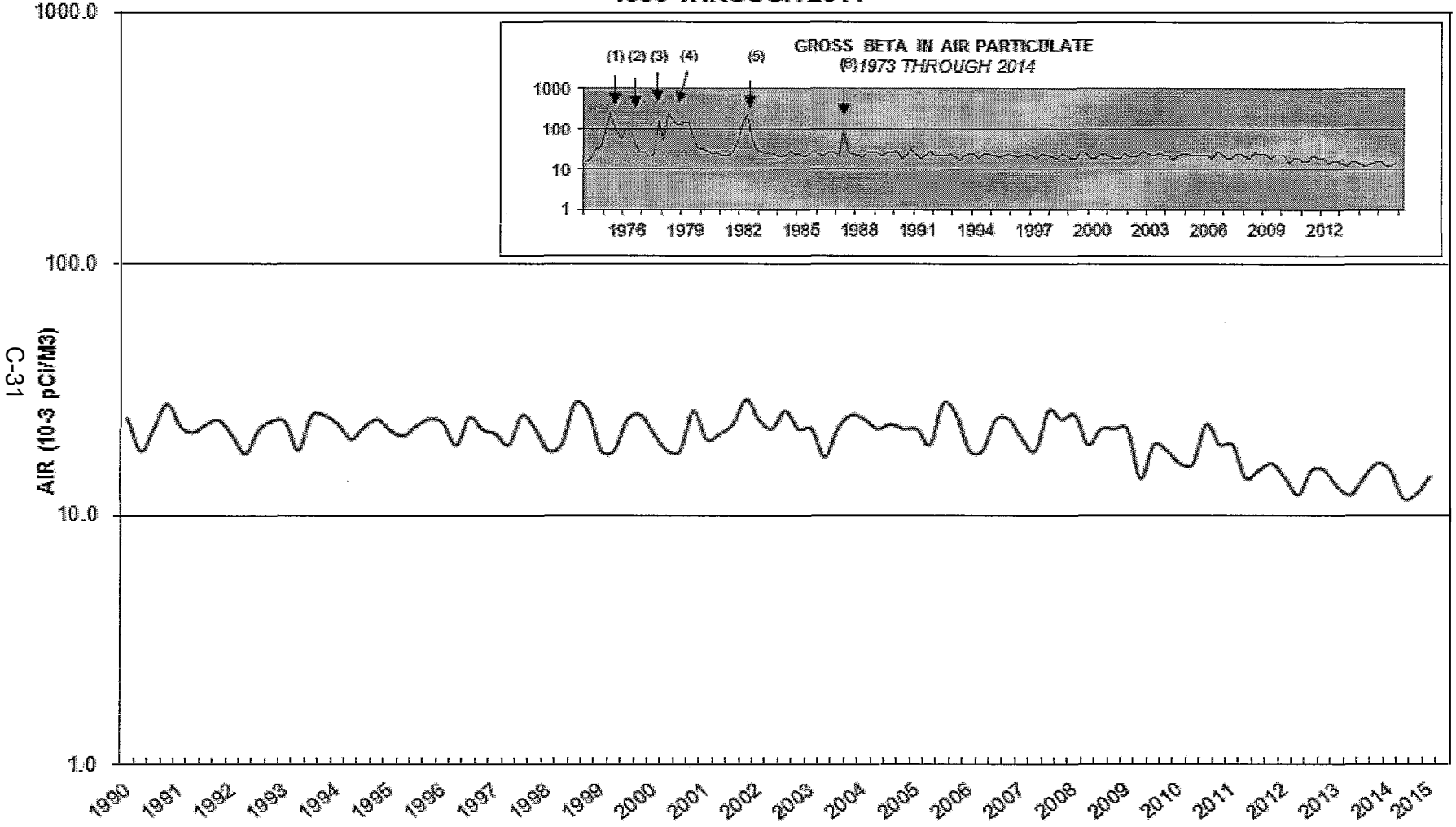
TABLE C-19 Concentrations of Tritium and Gamma Emitters in Duplicate Samples from GEL

Sample Name	Date Collected	Nuclide	Result		2 Sigma	Units	Type
SA-APT-5S2	14-Feb-14	Be-7	1.14E-01	+/-	2.16E-02	pCi/m3	
SA-APT-5S2	16-May-14	Be-7	9.91E-02	+/-	2.74E-02	pCi/m3	
SA-APT-5S2	14-Aug-14	Be-7	9.02E-02	+/-	2.18E-02	pCi/m3	
SA-APT-5S2	13-Nov-14	Be-7	8.91E-02	+/-	1.75E-02	pCi/m3	
SA-MLK-14F4	9-Feb-14	K-40	1.53E+03	+/-	2.07E+02	pCi/L	
SA-MLK-14F4	9-Mar-14	K-40	1.45E+03	+/-	1.81E+02	pCi/L	
SA-MLK-14F4	6-Apr-14	K-40	1.44E+03	+/-	1.98E+02	pCi/L	
SA-MLK-14F4	4-May-14	K-40	1.33E+03	+/-	1.85E+02	pCi/L	
SA-MLK-14F4	1-Jun-14	K-40	1.61E+03	+/-	1.98E+02	pCi/L	
SA-MLK-14F4	6-Jul-14	K-40	1.45E+03	+/-	1.62E+02	pCi/L	
SA-MLK-14F4	3-Aug-14	K-40	1.43E+03	+/-	1.39E+02	pCi/L	
SA-MLK-14F4	1-Sep-14	K-40	1.20E+03	+/-	1.56E+02	pCi/L	
SA-MLK-14F4	5-Oct-14	K-40	1.49E+03	+/-	1.86E+02	pCi/L	
SA-MLK-14F4	9-Nov-14	K-40	1.48E+03	+/-	1.56E+02	pCi/L	
SA-MLK-14F4	7-Dec-14	K-40	1.26E+03	+/-	1.94E+02	pCi/L	
SA-SWA-11A1	5-Mar-14	K-40	8.26E+01	+/-	3.39E+01	pCi/L	
SA-SWA-11A1	2-Jun-14	K-40	4.38E+01	+/-	1.58E+01	pCi/L	
SA-SWA-11A1	12-Sep-14	K-40	5.92E+01	+/-	3.08E+01	pCi/L	
SA-SWA-11A1	1-Dec-14	K-40	9.70E+01	+/-	3.09E+01	pCi/L	
SA-SWA-11A1	5-Mar-14	Tritium	1.78E+03	+/-	5.46E+02	pCi/L	
SA-FPL-15S2	27-Oct-14	Be-7	1.75E+02	+/-	5.33E+01	pCi/kg	Cabbage
SA-FPL-15S2	27-Oct-14	K-40	2.00E+03	+/-	2.33E+02	pCi/kg	Cabbage
SA-FPL-16S1	19-Nov-14	Be-7	3.06E+02	+/-	1.21E+02	pCi/kg	Collards
SA-FPL-16S1	30-Sep-14	K-40	2.23E+03	+/-	2.78E+02	pCi/kg	Cabbage
SA-FPL-16S1	27-Oct-14	K-40	1.88E+03	+/-	2.18E+02	pCi/kg	Cabbage
SA-FPL-16S1	19-Nov-14	K-40	3.61E+03	+/-	4.36E+02	pCi/kg	Collards
SA-FPL-1S1	19-Nov-14	Be-7	3.07E+02	+/-	8.58E+01	pCi/kg	Collards
SA-FPL-1S1	19-Nov-14	K-40	4.25E+03	+/-	4.60E+02	pCi/kg	Collards
SA-FPL-7S2	27-Oct-14	Be-7	1.36E+02	+/-	6.65E+01	pCi/kg	Collards
SA-FPL-7S2	27-Oct-14	K-40	4.30E+03	+/-	4.27E+02	pCi/kg	Collards

TABLE C-19 Concentrations of Tritium and Gamma Emitters in Duplicate Samples from GEL

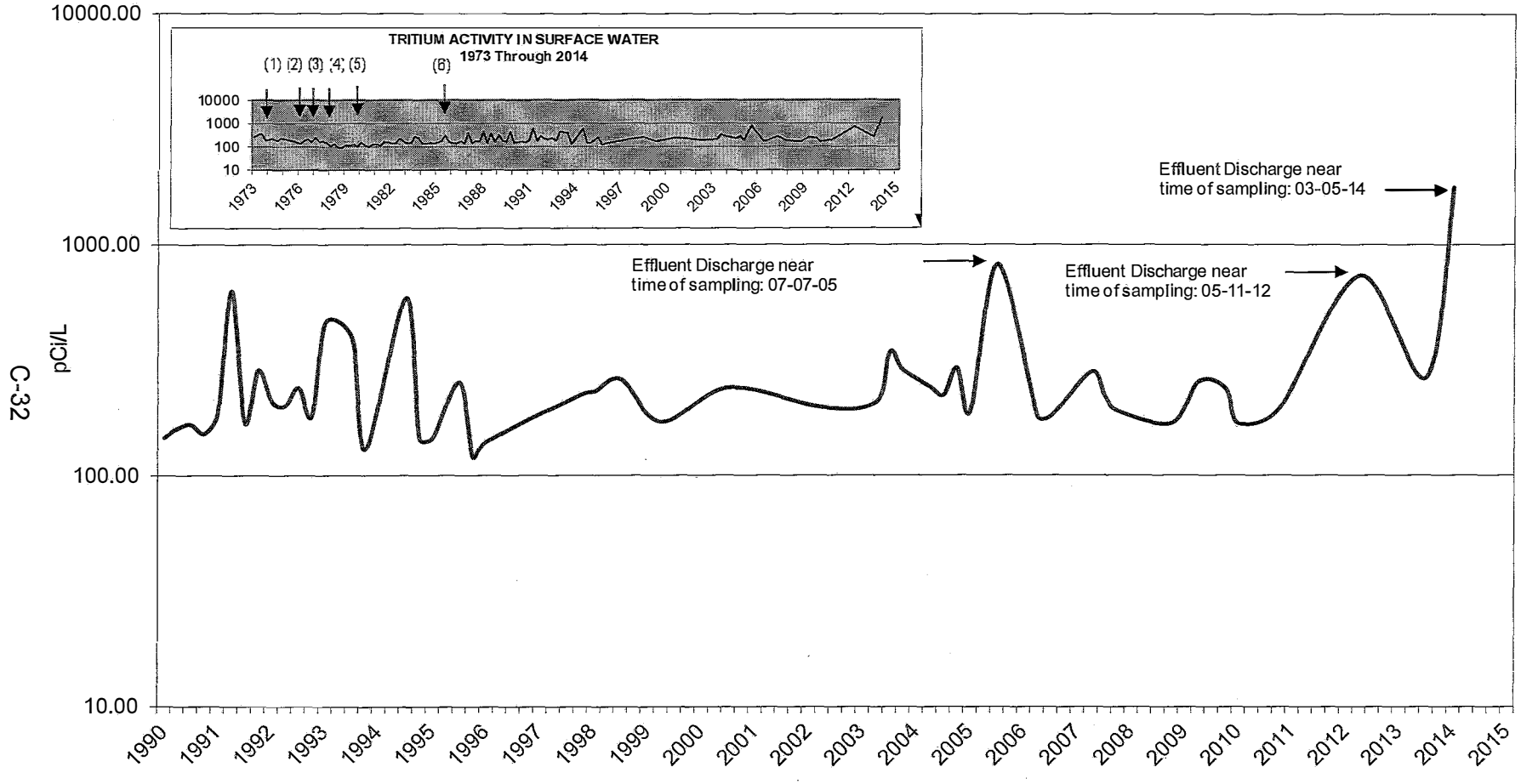
Sample Name	Date Collected	Nuclide	Result	2 Sigma	Units	Type
SA-FPV-15F4	30-Jul-14	K-40	2.08E+03	+/-	2.68E+02 pCi/kg	Tomatoes
SA-FPV-1G1	19-May-14	K-40	2.17E+03	+/-	2.36E+02 pCi/kg	Asparagus
SA-FPV-1G1	30-Jul-14	K-40	2.59E+03	+/-	3.29E+02 pCl/kg	Corn
SA-FPV-1G1	30-Jul-14	K-40	1.48E+03	+/-	2.56E+02 pCi/kg	Tomatoes
SA-FPV-2F9	11-May-14	K-40	2.28E+03	+/-	2.77E+02 pCi/kg	Asparagus
SA-FPV-2G2	19-May-14	K-40	1.72E+03	+/-	1.86E+02 pCi/kg	Asparagus
SA-FPV-2G2	30-Jul-14	K-40	2.20E+03	+/-	2.81E+02 pCi/kg	Corn
SA-FPV-2G2	30-Jul-14	K-40	1.63E+03	+/-	2.27E+02 pCi/kg	Peppers
SA-FPV-2G2	30-Jul-14	K-40	1.90E+03	+/-	2.36E+02 pCi/kg	Tomatoes
SA-FPV-3F8	8-Aug-14	K-40	1.68E+03	+/-	2.09E+02 pCi/kg	Peaches
SA-FPV-3H5	19-May-14	K-40	2.16E+03	+/-	2.36E+02 pCi/kg	Asparagus
SA-FPV-3H5	30-Jul-14	K-40	1.84E+03	+/-	2.62E+02 pCi/kg	Corn
SA-GAM-13F3	21-Feb-14	K-40	2.63E+03	+/-	2.56E+02 pCi/kg	Muskrat
SA-GAM-3F1	1-Mar-14	K-40	2.72E+03	+/-	3.62E+02 pCi/kg	Muskrat
SA-ESF-11A1	18-May-14	K-40	4.11E+03	+/-	4.91E+02 pCi/kg	
SA-ESF-11A1	28-Oct-14	K-40	3.86E+03	+/-	3.83E+02 pCi/kg	
SA-ECH-11A1	25-Jul-14	K-40	2.98E+03	+/-	2.92E+02 pCi/kg	
SA-ESS-11A1	27-Jun-14	K-40	3.67E+03	+/-	6.65E+02 pCi/kg	
SA-ESS-11A1	28-Nov-14	K-40	2.79E+03	+/-	6.55E+02 pCi/kg	
SA-ESS-11A1	27-Jun-14	Ra-226	3.19E+02	+/-	8.28E+01 pCi/kg	
SA-ESS-11A1	28-Nov-14	Ra-226	1.95E+02	+/-	9.22E+01 pCi/kg	
SA-ESS-6S2	3-Dec-14	Be-7	5.75E+02	+/-	2.77E+02 pCi/kg	
SA-ESS-6S2	3-Dec-14	K-40	2.16E+03	+/-	5.29E+02 pCi/kg	

FIGURE 1
GROSS BETA ACTIVITY IN AIR PARTICULATES - QUARTERLY AVERAGE
1990 THROUGH 2014



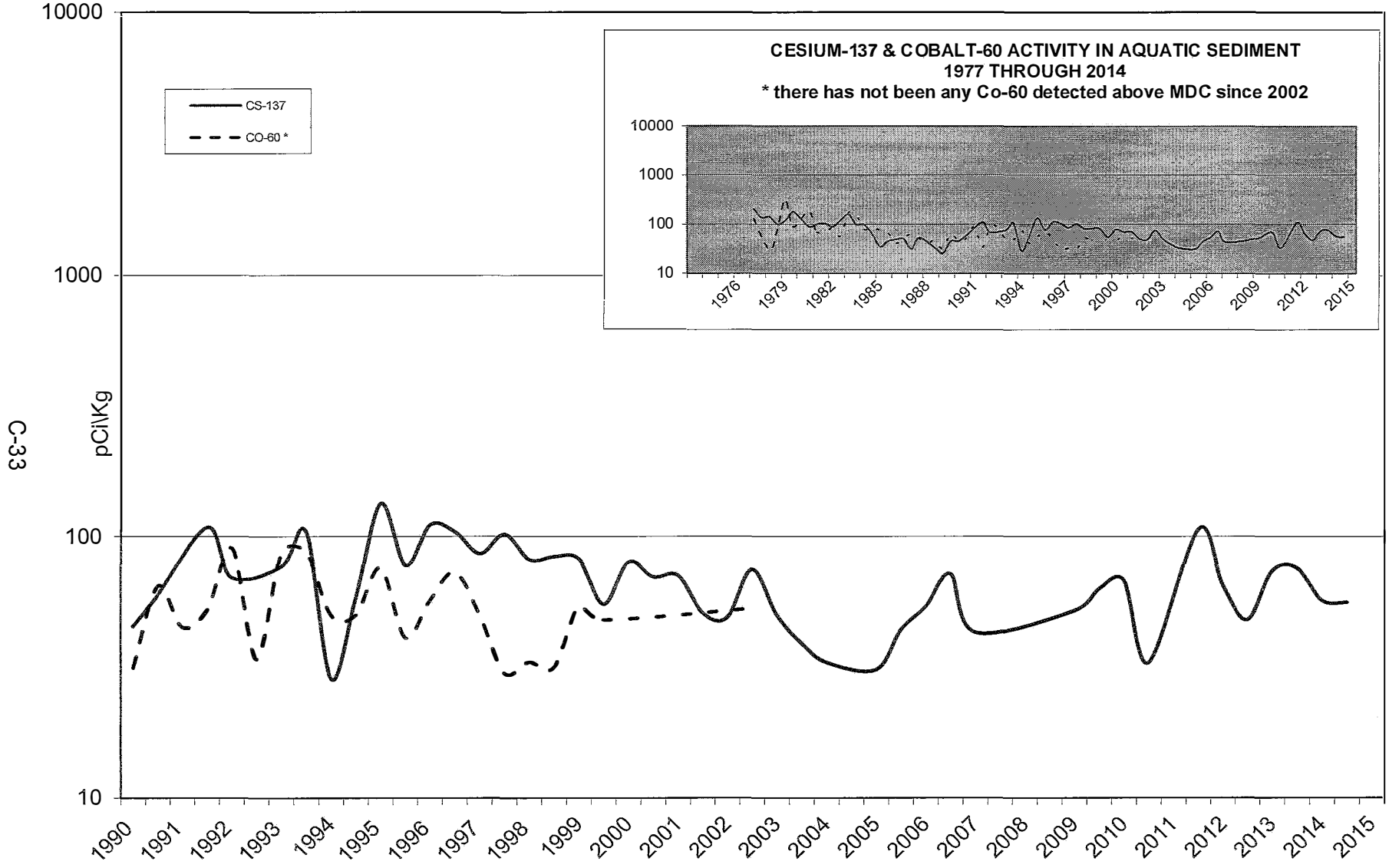
1-Weapons Test 1974 2-Weapons Test 1976 3-Weapons Test 1977 4-Weapons Test 1978 5-Weapons Test 1981 6-Chernobyl 1986
7-2013 data include temporary sampling locations - see Program Changes section.

FIGURE 2
TRITIUM ACTIVITY IN SURFACE WATER - QUARTERLY AVERAGE
1990 THROUGH 2014



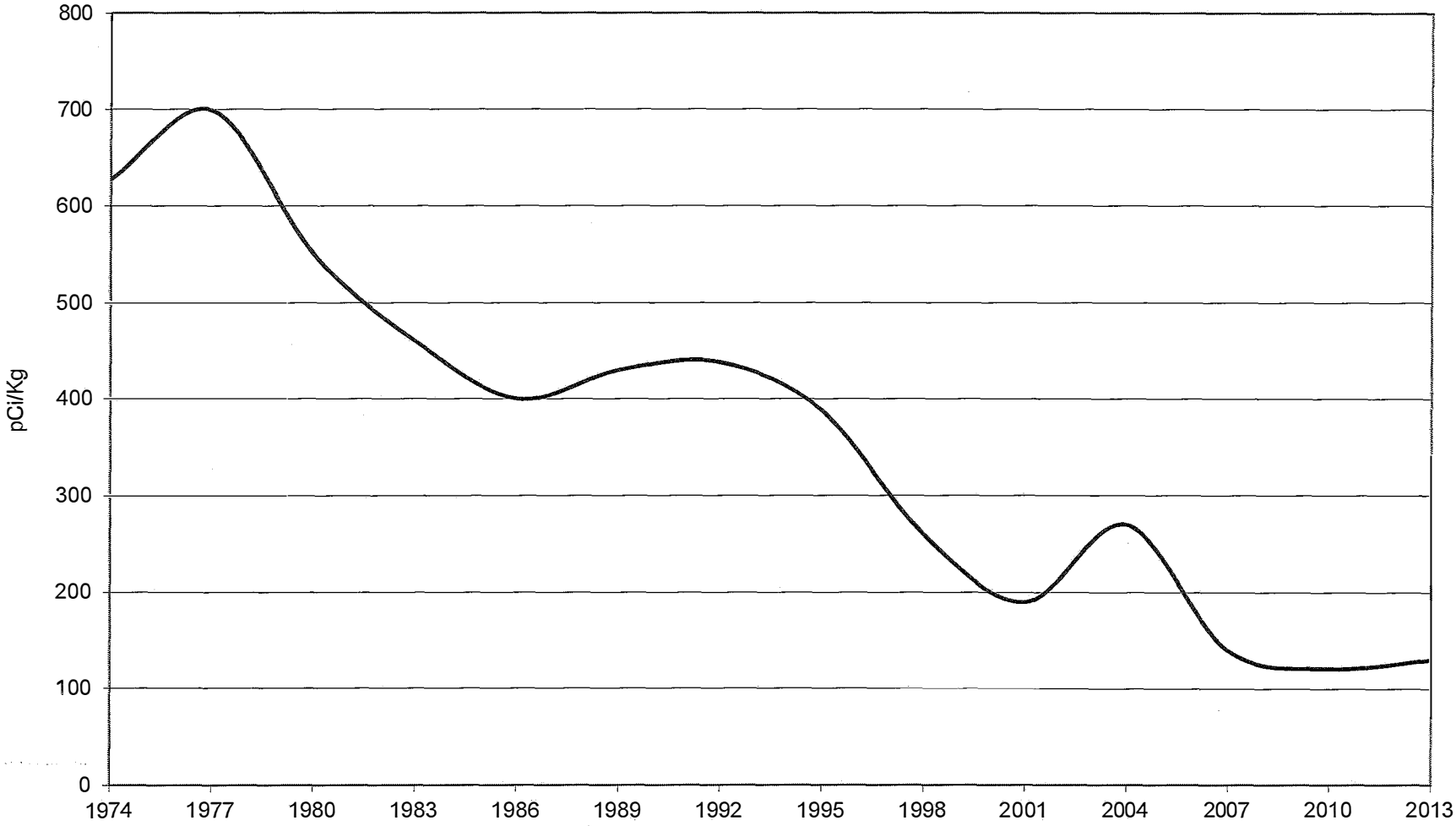
1-Weapons Test 1974 2-Weapons Test 1976 3-Weapons Test 1977 4-Weapons Test 1978 5-Weapons Test 1981 6-Chernobyl 1986
Tritium detected in only one sample in 2012 (05/11/12), 2013 (07/06/13) and 2014 (03/05/14)

FIGURE 3
CESIUM-137 & COBALT-60 ACTIVITY IN AQUATIC SEDIMENT - SEMI-ANNUAL AVERAGE
1990 THROUGH 2014



Data collection started in 1977.

FIGURE 4
CESIUM-137 ACTIVITY IN SOIL 1974 THROUGH 2013
(TRIENNIAL)



APPENDIX D

SUMMRY OF INTERLABORATORY COMPARISON PROGRAM RESULTS FROM ECKERT & ZIEGLER ANALYTICS (EZA), ENVIRONMENTAL RESOURCE ASSOICATES (ERA), AND DEPARTMENT OF ENERGY (DOE) MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)

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TABLE D-1 **EZA ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM**
TELEDYNE BROWN ENGINEERING
(PAGE 1 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
March 2014	E10854	Milk	Sr-89	pCi/L	95.1	91.7	1.04	A
			Sr-90	pCi/L	10.9	15.1	0.72	W
	E10855	Milk	I-131	pCi/L	96.6	98.5	0.98	A
			Ce-141	pCi/L	112	119	0.94	A
			Cr-51	pCi/L	449	491	0.91	A
			Cs-134	pCi/L	186	210	0.89	A
			Cs-137	pCi/L	250	253	0.99	A
			Co-58	pCi/L	248	268	0.93	A
			Mn-54	pCi/L	292	297	0.98	A
			Fe-59	pCi/L	230	219	1.05	A
			Zn-65	pCi/L	312	323	0.97	A
			Co-60	pCi/L	321	337	0.95	A
	E10857	AP	Ce-141	pCi	53.0	53.9	0.98	A
			Cr-51	pCi	232	223	1.04	A
			Cs-134	pCi	100	95.3	1.05	A
			Cs-137	pCi	122	115	1.06	A
			Co-58	pCi	122	121	1.01	A
			Mn-54	pCi	135	135	1.00	A
			Fe-59	pCi	111	99.3	1.12	A
			Zn-65	pCi	140	147	0.95	A
			Co-60	pCi	187	153	1.22	W
	E10856	Charcoal	I-131	pCi	74.1	76.4	0.97	A
	E10858	Water	Fe-55	pCi/L	2090	1760	1.19	A
June 2014	E10913	Milk	Sr-89	pCi/L	85.9	91.3	0.94	A
			Sr-90	pCi/L	13.8	14.5	0.95	A
	E10914	Milk	I-131	pCi/L	86.5	90.9	0.95	A
			Ce-141	pCi/L	111	124	0.90	A
			Cr-51	pCi/L	255	253	1.01	A
			Cs-134	pCi/L	147	162	0.91	A
			Cs-137	pCi/L	123	120	1.03	A
			Co-58	pCi/L	105	112	0.94	A
			Mn-54	pCi/L	155	156	0.99	A
			Fe-59	pCi/L	106	102	1.04	A
			Zn-65	pCi/L	251	252	1.00	A
			Co-60	pCi/L	218	224	0.97	A
	E10916	AP	Ce-141	pCi	95.1	92.6	1.03	A
			Cr-51	pCi	215	190	1.13	A
			Cs-134	pCi	122	122	1.00	A
			Cs-137	pCi	95.1	89.8	1.06	A
			Co-58	pCi	88.7	84.1	1.05	A
			Mn-54	pCi	115	116	0.99	A
			Fe-59	pCi	72.6	76.7	0.95	A
			Zn-65	pCi	193	189	1.02	A
			Co-60	pCi	179	168	1.07	A
	E10915	Charcoal	I-131	pCi	85.6	85.2	1.00	A

TABLE D-1 **EZA ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM**
TELEDYNE BROWN ENGINEERING
(PAGE 2 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
June 2014	E10917	Water	Fe-55	pCi/L	1680	1810	0.93	A
September 2014	E10946	Milk	Sr-89	pCi/L	90.7	96.9	0.94	A
			Sr-90	pCi/L	14.0	16.4	0.85	A
	E10947	Milk	I-131	pCi/L	92.0	97.6	0.94	A
			Ce-141	pCi/L	117	126	0.93	A
			Cr-51	pCi/L	281	288	0.98	A
			Cs-134	pCi/L	141	158	0.89	A
			Cs-137	pCi/L	186	193	0.96	A
			Co-58	pCi/L	137	143	0.96	A
			Mn-54	pCi/L	138	142	0.97	A
			Fe-59	pCi/L	162	158	1.03	A
			Zn-65	pCi/L	75.2	73.0	1.03	A
			Co-60	pCi/L	286	297	0.96	A
	E10949	AP	Ce-141	pCi	97.8	82.1	1.19	A
			Cr-51	pCi	212	188	1.13	A
			Cs-134	pCi	106	103	1.03	A
			Cs-137	pCi	131	126	1.04	A
			Co-58	pCi	85.7	93.0	0.92	A
			Mn-54	pCi	92.8	92.3	1.01	A
			Fe-59	pCi	113	103	1.10	A
			Zn-65	pCi	53.2	47.5	1.12	A
			Co-60	pCi	202	193	1.05	A
	E10948	Charcoal	I-131	pCi	83.9	89.8	0.93	A
	E10950	Water	Fe-55	pCi/L	2010	1720	1.17	A
	E10951	Soil	Ce-141	pCi/g	0.208	0.186	1.12	A
			Cr-51	pCi/g	0.398	0.425	0.94	A
			Cs-134	pCi/g	0.216	0.233	0.93	A
			Cs-137	pCi/g	0.398	0.365	1.09	A
			Co-58	pCi/g	0.197	0.211	0.93	A
			Mn-54	pCi/g	0.242	0.209	1.16	A
			Fe-59	pCi/g	0.238	0.233	1.02	A
			Zn-65	pCi/g	0.117	0.108	1.08	A
			Co-60	pCi/g	0.447	0.438	1.02	A
December 2014	E11078	Milk	Sr-89	pCi/L	85.7	95.7	0.90	A
			Sr-90	pCi/L	12.9	15.6	0.83	A
	E11079	Milk	I-131	pCi/L	85.9	95.1	0.90	A
			Ce-141	pCi/L	205	219	0.94	A
			Cr-51	pCi/L	402	406	0.99	A
			Cs-134	pCi/L	156	164	0.95	A
			Cs-137	pCi/L	194	198	0.98	A
			Co-58	pCi/L	122	130	0.94	A
			Mn-54	pCi/L	220	225	0.98	A
			Fe-59	pCi/L	183	175	1.05	A
			Zn-65	pCi/L	287	297	0.97	A
			Co-60	pCi/L	224	235	0.95	A

TABLE D-1 **EZA ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM**
TELEDYNE BROWN ENGINEERING
(PAGE 3 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
December 2014	E11081	AP	Ce-141	pCi	96.4	102	0.95	A
			Cr-51	pCi	171	190	0.90	A
			Cs-134	pCi	73.1	76.9	0.95	A
			Cs-137	pCi	99.0	92.6	1.07	A
			Co-58	pCi	57.5	60.8	0.95	A
			Mn-54	pCi	107	105	1.02	A
			Fe-59	pCi	74.2	81.6	0.91	A
			Zn-65	pCi	144	139	1.04	A
			Co-60	pCi	114	110	1.04	A
	E11080	Charcoal	I-131	pCi	93.5	98.2	0.95	A
	E11082	Water	Fe-55	pCi/L	1760	1970	0.89	A

(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.

TABLE D-2 **ERA ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM**
TELEDYNE BROWN ENGINEERING
(PAGE 1 OF 1)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Limits	Evaluation (c)
May 2014	RAD-97	Water	Sr-89	pCi/L	38.25	36.7	27.5 - 43.6	A
			Sr-90	pCi/L	24.65	26.5	19.2 - 30.9	A
			Ba-133	pCi/L	89.1	87.9	74.0 - 96.7	A
			Cs-134	pCi/L	45.55	44.3	35.5 - 48.7	A
			Cs-137	pCi/L	91.15	89.1	80.2 - 101	A
			Co-60	pCi/L	65.10	64.2	57.8 - 73.1	A
			Zn-65	pCi/L	244	235	212 - 275	A
			Gr-A	pCi/L	45.65	61.0	31.9 - 75.8	A
			Gr-B	pCi/L	27.95	33.0	21.4 - 40.7	A
			I-131	pCi/L	23.75	25.7	21.3 - 30.3	A
			U-Nat	pCi/L	9.61	10.2	7.95 - 11.8	A
			H-3	pCi/L	8435	8770	7610 - 9650	A
	MRAD-20	Filter	Gr-A	pCi/filter	28.0	46.0	15.4 - 71.4	A
November 2014	RAD-99	Water	Sr-89	pCi/L	30.4	31.4	22.8 - 38.1	A
			Sr-90	pCi/L	18.6	21.8	15.6 - 25.7	A
			Ba-133	pCi/L	46.8	49.1	40.3 - 54.5	A
			Cs-134	pCi/L	88.0	89.8	73.7 - 98.8	A
			Cs-137	pCi/L	99.0	98.8	88.9 - 111	A
			Co-60	pCi/L	92.5	92.1	82.9 - 104	A
			Zn-65	pCi/L	325	310	279 - 362	A
			Gr-A	pCi/L	29.9	37.6	19.4 - 48.1	A
			Gr-B	pCi/L	27.5	27.4	17.3 - 35.3	A
			I-131	pCi/L	15.8	20.3	16.8 - 24.4	N (1)
			U-Nat	pCi/L	5.74	5.80	4.34 - 6.96	A
			H-3	pCi/L	6255	6880	5940 - 7570	A
	MRAD-21	Filter	Gr-A	pCi/filter	27.3	36.9	12.4 - 57.3	A

*(1) The **Iodine-131** was evaluated as failed with a ratio of 0.778. No cause could be found for the slighly low activity. TBE would evaluate this as acceptablle with warning. A rerun was not possible due to I-131 decay. All previous ERA Iodine-131 evaluations since 2004 have been acceptable. NCR 14-08*

(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.

TABLE D-3 DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)
TELEDYNE BROWN ENGINEERING
(PAGE 1 OF 2)

Month/Year	Identification Number	Media	Nuclide*	Units	Reported Value (a)	Known Value (b)	Acceptance Range	Evaluation (c)
March 2014	14-MaW30	Water	Am-241	Bq/L	0.764	0.720	0.504 - 0.936	A
			Cs-134	Bq/L	20.7	23.1	16.2 - 30 0	A
			Cs-137	Bq/L	28.0	28.9	20.2 - 37.6	A
			Co-57	Bq/L	26.5	27.5	19.3 - 35.8	A
			Co-60	Bq/L	15.6	16.0	11.2 - 20.8	A
			H-3**	Bq/L	NR	321	225 - 417	N (3)
			Mn-54	Bq/L	13.5	13.9	9.7 - 18.1	A
			Ni-63	Bq/L	NR	34.0	23.8 - 44.2	N (3)
			Pu-238	Bq/L	0.911	0.828	0.580 - 1.076	
			Pu-239/240	Bq/L	0.751	0.676	0.473 - 0.879	
			K-40	Bq/L	NR		(1)	N (3)
			Sr-90**	Bq/L	NR	8.51	5.96 - 11.06	N (3)
			U-234/233**	Bq/L	NR	0.225	0.158 - 0.293	N (3)
			U-238**	Bq/L	NR	1.45	1.02 - 1.89	N (3)
			Zn-65	Bq/L	-0.201		(1)	A
	14-MaS30	Soil	Cs-134	Bq/kg	2.02		(1)	A
			Cs-137	Bq/kg	1300	1238	867 - 1609	A
			Co-57	Bq/kg	1069	966	676 - 1256	A
			Co-60	Bq/kg	1.32	1.22	(2)	A
			Mn-54	Bq/kg	1510	1430	1001 - 1859	A
			K-40	Bq/kg	669	622	435 - 809	A
			Sr-90	Bq/kg	4.14		(1)	A
			Zn-65	Bq/kg	763	695	487 - 904	A
	14-RdF30	AP	Cs-134**	Bq/sample	NR	1.91	1.34 - 2.48	N (3)
			Cs-137**	Bq/sample	NR	1.76	1.23 - 2.29	N (3)
			Co-57**	Bq/sample	NR		(1)	N (3)
			Co-60**	Bq/sample	NR	1.39	0.97 - 1.81	N (3)
			Mn-54**	Bq/sample	NR		(1)	N (3)
			Sr-90	Bq/sample	0.8220	1.18	0.83 - 1.53	N (3)
			Zn-65**	Bq/sample	NR		(1)	N (3)
	14-GrF30	AP	Gr-A	Bq/sample	0.606	1.77	0.53 - 3.01	A
			Gr-B	Bq/sample	0.7507	0.77	0.39 - 1.16	A
	14-RdV30	Vegetation	Cs-134	Bq/sample	5.96	6.04	4.23 - 7.85	A
			Cs-137	Bq/sample	5.06	4.74	3.32 - 6.16	A
			Co-57	Bq/sample	11.8	10.1	7.1 - 13.1	A
			Co-60	Bq/sample	7.34	6.93	4.85 - 9.01	A
			Mn-54	Bq/sample	8.95	8.62	6.03 - 11.21	A
			Sr-90	Bq/sample	1.23	1.46	1.02 - 1.90	A
			Zn-65	Bq/sample	8.91	7.86	5.50 - 10.22	A

TABLE D-3 DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)
TELEDYNE BROWN ENGINEERING
(PAGE 2 OF 2)

Month/Year	Identification Number	Media	Nuclide*	Units	Reported Value (a)	Known Value (b)	Acceptance Range	Evaluation (c)
September 2014	14-MaW31	Water	Am-241	Bq/L	0.705	0.88	0.62 - 1.14	A
			Cs-134***	Bq/L	NR		(1)	N (4)
			Cs-137***	Bq/L	NR	18.4	12.9 - 23.9	N (4)
			Co-57***	Bq/L	NR	24.7	17.3 - 32.1	N (4)
			Co-60***	Bq/L	NR	12.4	8.7 - 16.1	N (4)
			Mn-54***	Bq/L	NR	14.0	9.8 - 18.2	N (4)
			Ni-63	Bq/L	24.07	24.6	17.2 - 32.0	A
			Pu-238	Bq/L	0.591	0.618	0.433 - 0.803	A
			Pu-239/240	Bq/L	0.0153	0.0048	(2)	A
			K-40***	Bq/L	NR	161	113 - 209	N (4)
			Zn-65***	Bq/L	NR	10.9	7.6 - 14.2	N (4)
	14-MaS31	Soil	Cs-134***	Bq/kg	NR	622	435 - 809	N (4)
			Cs-137***	Bq/kg	NR		(1)	N (4)
			Co-57***	Bq/kg	NR	1116	781 - 1451	N (4)
			Co-60***	Bq/kg	NR	779	545 - 1013	N (4)
			Mn-54***	Bq/kg	NR	1009	706 - 1312	N (4)
			K-40***	Bq/kg	NR	824	577 - 1071	N (4)
			Sr-90	Bq/kg	694	858	601 - 1115	A
			Zn-65***	Bq/kg	NR	541	379 - 703	N (4)
	14-RdF31	AP	Sr-90	Bq/sample	0.310	0.703	0.492 - 0.914	N (4)
	14-GrF31	AP	Gr-A	Bq/sample	0.153	0.53	0.16 - 0.90	N (4)
			Gr-B	Bq/sample	0.977	1.06	0.53 - 1.59	A
September 2014	14-RdV31	Vegetation	Cs-134	Bq/sample	7.31	7.38	5.17 - 9.59	A
			Cs-137	Bq/sample	8.93	8.14	5.70 - 10.58	A
			Co-57	Bq/sample	10.8	9.2	6.4 - 12.0	A
			Co-60	Bq/sample	6.31	6.11	4.28 - 7.94	A
			Mn-54	Bq/sample	7.76	7.10	4.97 - 9.23	A
			Sr-90	Bq/sample	0.738	0.85	0.60 - 1.11	A
			Zn-65	Bq/sample	7.16	6.42	4.49 - 8.35	A

* The MAPEP cross check isotope list has been reduced due to duplication of effort or analysis not being performed for clients.

** Starting 2014, these nuclides will no longer be part of the TBE cross check program due to duplication of effort or analysis not being performed for clients. MAPEP evaluates non-reported analyses as failed if they were reported in the previous series.

*** All future gamma cross check samples for these isotopes will be provided by Analytics.

(1) False positive test.

(2) Sensitivity evaluation.

*(3) **Water, Ni-63** overlooked when reporting, but the result of 32.7 +- 1.69 would have passed the acceptance criteria. NCR 14-04*
***Water**, the non-detected **K-40** was overlooked when reporting, but would have passed the false positive test. NCR 14-04*
***AP, Sr-90** rerun was within the low range of the acceptqance criteria. The original and rerun results were statistically the same. No cause could be identified for the slightly low Sr-90 activity. NCR 14-04*
For non reported (NR) analyses, MAPEP evaluates as failed if they were reported in the previous series. NCR 14-04

*(4) **AP, Sr-90** gravimetric yield was very high at 117%. Could indicate larger than normal amounts of calcium in the AP. A second fuming HNO_3 separation would be required to remove the excess calcium. NCR 14-09*
***AP, Gr-Alpha** was counted on the wrong side. When flipped over and recounted the results were acceptable. NCR 14-09*
For non reported (NR) analyses, MAPEP evaluates as failed if they were reported in the previous series. NCR 14-09

(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.

TABLE D-4 EZA ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
GEL LABORATORIES
(PAGE 1 OF 2)

PT Provider	Quarter / Year	Report Date	Sample Number	Sample Media	Unit	Analyte / Nuclide	GEL Value	Known value	Acceptance Range/ Ratio	Evaluation
EZA	1st/2014	05/16/14	E10846	Cartridge	pCi	Iodine-131	7.83E+01	7.52E+01	1.04	A
EZA	1st/2014	05/16/14	E10847	Milk	pCi/L	Strontium-89	9.14E+01	9.17E+01	1	A
EZA	1st/2014	05/16/14	E10847	Milk	pCi/L	Strontium-90	1.27E+01	1.51E+01	0.84	A
EZA	1st/2014	05/16/14	E10848	Milk	pCi/L	Iodine-131	9.84E+01	9.85E+01	1	A
EZA	1st/2014	05/16/14	E10848	Milk	pCi/L	Cerium-141	1.21E+02	1.19E+02	1.02	A
EZA	1st/2014	05/16/14	E10848	Milk	pCi/L	Cr-51	5.19E+02	4.91E+02	1.06	A
EZA	1st/2014	05/16/14	E10848	Milk	pCi/L	Cesium-134	1.79E+02	2.10E+02	0.85	A
EZA	1st/2014	05/16/14	E10848	Milk	pCi/L	Cesium-137	2.55E+02	2.53E+02	1.01	A
EZA	1st/2014	05/16/14	E10848	Milk	pCi/L	Cobalt-58	2.58E+02	2.68E+02	0.96	A
EZA	1st/2014	05/16/14	E10848	Milk	pCi/L	Mn-54	3.01E+02	2.97E+02	1.01	A
EZA	1st/2014	05/16/14	E10848	Milk	pCi/L	Iron-59	2.24E+02	2.19E+02	1.02	A
EZA	1st/2014	05/16/14	E10848	Milk	pCi/L	Zinc-65	3.45E+02	3.23E+02	1.07	A
EZA	1st/2014	05/16/14	E10848	Milk	pCi/L	Cobalt-60	3.39E+02	3.37E+02	1.00	A
EZA	1st/2014	05/16/14	E10849	Water	pCi/L	Iodine-131	9.24E+01	8.99E+01	1.03	A
EZA	1st/2014	05/16/14	E10849	Water	pCi/L	Cerium-141	8.19E+01	7.71E+01	1.06	A
EZA	1st/2014	05/16/14	E10849	Water	pCi/L	Cr-51	3.32E+02	3.19E+02	1.04	A
EZA	1st/2014	05/16/14	E10849	Water	pCi/L	Cesium-134	1.27E+02	1.36E+02	0.93	A
EZA	1st/2014	05/16/14	E10849	Water	pCi/L	Cesium-137	1.69E+02	1.64E+02	1.03	A
EZA	1st/2014	05/16/14	E10849	Water	pCi/L	Cobalt-58	1.75E+02	1.74E+02	1.01	A
EZA	1st/2014	05/16/14	E10849	Water	pCi/L	Mn-54	2.08E+02	1.93E+02	1.08	A
EZA	1st/2014	05/16/14	E10849	Water	pCi/L	Iron-59	1.68E+02	1.42E+02	1.18	A
EZA	1st/2014	05/16/14	E10849	Water	pCi/L	Zinc-65	2.25E+02	2.10E+02	1.07	A
EZA	1st/2014	05/16/14	E10849	Water	pCi/L	Cobalt-60	2.31E+02	2.19E+02	1.02	A
EZA	2nd/2014	08/08/14	E10897	Cartridge	pCi	Iodine-131	8.73E+01	8.54E+01	1.02	A
EZA	2nd/2014	08/08/14	E10898	Milk	pCi/L	Strontium-89	9.84E+01	9.13E+01	1.08	A
EZA	2nd/2014	08/08/14	E10898	Milk	pCi/L	Strontium-90	1.44E+01	1.45E+01	0.99	A
EZA	2nd/2014	08/08/14	E10899	Milk	pCi/L	Iodine-131	9.89E+01	9.09E+01	1.09	A
EZA	2nd/2014	08/08/14	E10899	Milk	pCi/L	Cerium-141	1.38E+02	1.24E+02	1.12	A
EZA	2nd/2014	08/08/14	E10899	Milk	pCi/L	Chromium-51	2.68E+02	2.53E+02	1.06	A
EZA	2nd/2014	08/08/14	E10899	Milk	pCi/L	Cesium-134	1.58E+02	1.62E+02	0.97	A
EZA	2nd/2014	08/08/14	E10899	Milk	pCi/L	Cesium-137	1.27E+02	1.20E+02	1.06	A
EZA	2nd/2014	08/08/14	E10899	Milk	pCi/L	Cobalt-58	1.20E+02	1.12E+02	1.07	A
EZA	2nd/2014	08/08/14	E10899	Milk	pCi/L	Manganese-54	1.67E+02	1.56E+02	1.07	A
EZA	2nd/2014	08/08/14	E10899	Milk	pCi/L	Iron-59	1.02E+02	1.02E+02	1.00	A
EZA	2nd/2014	08/08/14	E10899	Milk	pCi/L	Zinc-65	2.68E+02	2.52E+02	1.06	A
EZA	2nd/2014	08/08/14	E10899	Milk	pCi/L	Cobalt-60	2.42E+02	2.24E+02	1.08	A
EZA	2nd/2014	08/08/14	E10900	Water	pCi/L	Iodine-131	1.13E+02	9.83E+01	1.15	A

TABLE D-4 EZA ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
GEL LABORATORIES
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PT Provider	Quarter / Year	Report Date	Sample Number	Sample Media	Unit	Analyte / Nuclide	GEL Value	Known value	Acceptance Range/ Ratio	Evaluation
EZA	2nd/2014	08/08/14	E10900	Water	pCi/L	Cerium-141	1.52E+02	1.43E+02	1.06	A
EZA	2nd/2014	08/08/14	E10900	Water	pCi/L	Chromium-51	3.62E+02	2.94E+02	1.23	A
EZA	2nd/2014	08/08/14	E10900	Water	pCi/L	Cesium-134	1.69E+02	1.88E+02	0.90	A
EZA	2nd/2014	08/08/14	E10900	Water	pCi/L	Cesium-137	1.48E+02	1.39E+02	1.06	A
EZA	2nd/2014	08/08/14	E10900	Water	pCi/L	Cobalt-58	1.34E+02	1.30E+02	1.03	A
EZA	2nd/2014	08/08/14	E10900	Water	pCi/L	Manganese-54	1.88E+02	1.80E+02	1.04	A
EZA	2nd/2014	08/08/14	E10900	Water	pCi/L	Iron-59	1.29E+02	1.19E+02	1.09	A
EZA	2nd/2014	08/08/14	E10900	Water	pCi/L	Zinc-65	3.29E+02	2.93E+02	1.12	A
EZA	2nd/2014	08/08/14	E10900	Water	pCi/L	Cobalt-60	2.74E+02	2.60E+02	1.05	A
EZA	3rd/2014	11/22/14	E10993	Cartridge	pCi	Iodine-131	9.47E+01	8.99E+01	1.05	A
EZA	3rd/2014	11/22/14	E10994	Milk	pCi/L	Strontium-89	9.73E+01	9.69E+01	1.00	A
EZA	3rd/2014	11/22/14	E10994	Milk	pCi/L	Strontium-90	1.31E+01	1.64E+01	0.80	A
EZA	3rd/2014	11/22/14	E10995	Milk	pCi/L	Iodine-131	1.04E+02	9.76E+01	1.07	A
EZA	3rd/2014	11/22/14	E10995	Milk	pCi/L	Cerium-141	1.28E+02	1.26E+02	1.01	A
EZA	3rd/2014	11/22/14	E10995	Milk	pCi/L	Chromium-51	3.12E+02	2.88E+02	1.08	A
EZA	3rd/2014	11/22/14	E10995	Milk	pCi/L	Cesium-134	1.51E+02	1.58E+02	0.96	A
EZA	3rd/2014	11/22/14	E10995	Milk	pCi/L	Cesium-137	2.03E+02	1.93E+02	1.05	A
EZA	3rd/2014	11/22/14	E10995	Milk	pCi/L	Cobalt-58	1.44E+02	1.43E+02	1.01	A
EZA	3rd/2014	11/22/14	E10995	Milk	pCi/L	Manganese-54	1.49E+02	1.42E+02	1.05	A
EZA	3rd/2014	11/22/14	E10995	Milk	pCi/L	Iron-59	1.82E+02	1.58E+02	1.15	A
EZA	3rd/2014	11/22/14	E10995	Milk	pCi/L	Zinc-65	7.41E+01	7.30E+01	1.01	A
EZA	3rd/2014	11/22/14	E10995	Milk	pCi/L	Cobalt-60	3.14E+02	2.94E+02	1.06	A
EZA	3rd/2014	11/22/14	E10996	Water	pCi/L	Iodine-131	1.02E+02	9.88E+01	103	A
EZA	3rd/2014	11/22/14	E10996	Water	pCi/L	Cerium-141	1.30E+02	1.25E+02	104	A
EZA	3rd/2014	11/22/14	E10996	Water	pCi/L	Chromium-51	2.75E+02	2.86E+02	0.96	A
EZA	3rd/2014	11/22/14	E10996	Water	pCi/L	Cesium-134	1.45E+02	1.56E+02	0.93	A
EZA	3rd/2014	11/22/14	E10996	Water	pCi/L	Cesium-137	1.94E+02	1.92E+02	1.01	A
EZA	3rd/2014	11/22/14	E10996	Water	pCi/L	Cobalt-58	1.43E+02	1.42E+02	1.01	A
EZA	3rd/2014	11/22/14	E10996	Water	pCi/L	Manganese-54	1.46E+02	1.41E+02	1.04	A
EZA	3rd/2014	11/22/14	E10996	Water	pCi/L	Iron-59	1.66E+02	1.57E+02	1.06	A
EZA	3rd/2014	11/22/14	E10996	Water	pCi/L	Zinc-65	7.55E+01	7.24E+01	1.04	A
EZA	3rd/2014	11/22/14	E10996	Water	pCi/L	Cobalt-60	3.09E+02	2.95E+02	1.05	A

TABLE D-5 DOE's MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)
GEL LABORATORIES
(PAGE 1 OF 5)

PT Provider	Quarter / Year	Report Date	Sample Number	Sample Media	Unit	Analyte / Nuclide	GEL Value	Known value	Acceptance Range/ Ratio	Evaluation
MAPEP	2nd/2014	06/05/14	MAPEP-14-GrF30	Filter	Bq/sample	Gross Alpha	1.980	1.77	0.53-3.01	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-GrF30	Filter	Bq/sample	Gross Beta	0.823	0.77	0.39-1.16	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaS30	Soil	Bq/kg	Americium-241	65	68	47.6-88.4	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaS30	Soil	Bq/kg	Cesium-134	5.44	0	False Positive Test	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaS30	Soil	Bq/kg	Cesium-137	1270	1238	867-1609	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaS30	Soil	Bq/kg	Cobalt-57	947	966	676-1256	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaS30	Soil	Bq/kg	Cobalt-60	0.581	1.220	Sens. Eval.	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaS30	Soil	Bq/kg	Iron-55	580	643	444-824	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaS30	Soil	Bq/kg	Manganese-54	1470	1430	1001-1859	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaS30	Soil	Bq/kg	Nickel-63	6.95	0	False Positive Test	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaS30	Soil	Bq/kg	Plutonium-238	89.7	96.0	67-125	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaS30	Soil	Bq/kg	Plutonium-239/240	69.80	76.8	53.8-99.8	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaS30	Soil	Bq/kg	Potassium-40	703	622	435-809	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaS30	Soil	Bq/kg	Strontium-90	1.48	0	False Positive Test	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaS30	Soil	Bq/kg	Technetium-99	37.1	0	False Positive Test	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaS30	Soil	Bq/kg	U-234/233	30.5	81.0	57-105	Not (1) Acceptable
1(1)MA	2nd/2014	06/05/14	MAPEP-14-MaS30	Soil	Bq/kg	Uranium-238	35	83	58-108	Not (1) Acceptable
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaS30	Soil	Bq/kg	Zinc-65	766	695	487-904	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaW30	Water	Bq/L	Am-241	0.759	0.720	0.504-0.936	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaW30	Water	Bq/L	Cesium-134	21.4	23.1	16.2-30.0	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaW30	Water	Bq/L	Cesium-137	29.70	28.9	20.2-37.6	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaW30	Water	Bq/L	Cobalt-57	28.0	27.5	19.3-35.8	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaW30	Water	Bq/L	Cobalt-60	16.6	16.0	11.2-20.8	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaW30	Water	Bq/L	Hydrogen-3	308	321	225-417	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaW30	Water	Bq/L	Iron-55	0.3	0.0	False Positive Test	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaW30	Water	Bq/L	Manganese-54	14.4	13.9	9.7-18.1	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaW30	Water	Bq/L	Nickel-63	31.4	34.0	23.8-44.2	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaW30	Water	Bq/L	Plutonium-238	0.764	0.828	0.580-1.076	A

TABLE D-5 DOE's MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)
GEL LABORATORIES
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PT Provider	Quarter / Year	Report Date	Sample Number	Sample Media	Unit	Analyte / Nuclide	GEL Value	Known value	Acceptance Range/ Ratio	Evaluation
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaW30	Water	Bq/L	Pu-239/240	0.6590	0.6760	0.473-0.879	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaW30	Water	Bq/L	Potassium-40	0.460	0	False Positive Test	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaW30	Water	Bq/L	Strontium-90	8.32	8.51	5.96-11.06	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaW30	Water	Bq/L	Technetium-99	9.5	10.3	7.2-13.4	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaW30	Water	Bq/L	U-234/233	0.210	0.225	0.158-0.293	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaW30	Water	Bq/L	Uranium-238	1.41	1.45	1.02-1.89	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaW30	Water	Bq/L	Zinc-65	-0.126	0.0	False Positive Test	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaW30	Water	Bq/L	Gross Alpha	0.96	0.85	0.255-1.443	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaW30	Water	Bq/L	Gross Beta	4.7	4.2	2.10-6.29	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-MaW30	Water	Bq/L	Iodine-129	0.0227	0.00	False Positive Test	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdF30	Filter	ug/sample	Uranium-235	0.018	0.020	0.014-0.026	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdF30	Filter	ug/sample	Uranium-238	8.77	10.4	7.3-13.5	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdF30	Filter	ug/sample	Uranium-Total	8.80	10.4	7.3-13.5	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdF30	Filter	ug/sample	Americium-241	0.086	0.090	0.063-0.117	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdF30	Filter	Bq/sample	Cesium-134	1.85	1.91	1.34-2.48	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdF30	Filter	Bq/sample	Ceslum-137	1.81	1.76	1.23-2.29	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdF30	Filter	Bq/sample	Cobalt-57	0.0757	0.00	False Positlve Test	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdF30	Filter	Bq/sample	Cobalt-60	1.490	1.39	0.97-1.81	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdF30	Filter	Bq/sample	Manganese-54	0.0138	0.00	False Positive Test	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdF30	Filter	Bq/sample	Plutonium-238	0.000819	0.00090	Sens. Eval.	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdF30	Filter	Bq/sample	Pu-239/240	0.071	0.7720	0.054-0.1004	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdF30	Filter	Bq/sample	Strontium-90	1.19	1.18	0.83-1.53	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdF30	Filter	Bq/sample	U-234/233	0.0159	0.0195	0.0137-0.0254	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdF30	Filter	Bq/sample	Uranium-238	0.118	0.129	0.090-0.168	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdF30	Filter	Bq/sample	Zinc-65	0.246	0.00	False Positive Test	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdF30	Filter	Bq/sample	Gross Alpha	1.980	1.77	0.53-3.01	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdF30	Filter	Bq/sample	Gross Beta	0.83	0.77	0.39-1.16	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdF30	Filter	Bq/sample	Americium-241	0.106	0.104	0.073-0.135	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdV30	Vegetation	ug/sample	Uranium-235	0.261	0.0268	0.0188-0.0348	Not (2) Acceptable
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdV30	Vegetation	ug/sample	Uranium-238	12.7	13.3	9.3-17.3	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdV30	Vegetation	ug/sample	Uranium-Total	12.7	13.3	9.3-17.3	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdV30	Vegetation	ug/sample	Americium-241	0.1100	0.108	0.076-0.140	A

TABLE D-5 DOE's MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)
GEL LABORATORIES
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PT Provider	Quarter / Year	Report Date	Sample Number	Sample Media	Unit	Analyte / Nuclide	GEL Value	Known value	Acceptance Range/ Ratio	Evaluation
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdV30	Vegetation	Bq/sample	Cesium-134	5.65	6.04	4.23-7.85	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdV30	Vegetation	Bq/sample	Cesium-137	4.98	4.74	3.32-6.16	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdV30	Vegetation	Bq/sample	Cobalt-57	11.1	10.1	7.1-13.1	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdV30	Vegetation	Bq/sample	Cobalt-60	7.21	6.93	4.85-9.01	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdV30	Vegetation	Bq/sample	Manganese-54	9.24	8.62	6.03-11.21	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdV30	Vegetation	Bq/sample	Plutonium-238	0.116	0.121	0.085-0.157	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdV30	Vegetation	Bq/sample	Pu-239/240	0.134	0.154	0.108-0.0200	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdV30	Vegetation	Bq/sample	Strontium-90	1.580	1.46	1.02-1.90	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdV30	Vegetation	Bq/sample	U-234/233	0.2640	0.2530	0.0177-0.0329	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdV30	Vegetation	Bq/sample	Uranium-238	0.174	0.165	0.116-0.215	A
MAPEP	2nd/2014	06/05/14	MAPEP-14-RdV30	Vegetation	Bq/sample	Zinc-65	8.87	7.00	4.38-8.13	A
MAPEP	4th /2014	01/09/15	MAPEP-14-GrF31	Filter	Bq/sample	Gross Alpha	0.433	0.530	0.16-0.09	A
MAPEP	4th /2014	01/09/15	MAPEP-14-GrF31	Filter	Bq/sample	Gross Beta	1.060	1.060	0.53-1.59	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaS31	Soil	Bq/Kg	Americium-241	88.4	85.5	59.9-111.2	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaS31	Soil	Bq/Kg	Cesium-134	588	622	435-809	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaS31	Soil	Bq/Kg	Cesium-137	1.67		False Positive Test	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaS31	Soil	Bq/Kg	Cobalt-57	1160	1116	781-1451	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaS31	Soil	Bq/Kg	Cobalt-60	821	779	545-1013	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaS31	Soil	Bq/Kg	Iron-55	796	680	476-884	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaS31	Soil	Bq/Kg	Manganese-54	1060	1009	706-1312	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaS31	Soil	Bq/Kg	Nickel-63	924	980	686-1274	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaS31	Soil	Bq/Kg	Plutonium-238	0.92	0.48	Sens. Eval.	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaS31	Soil	Bq/Kg	Plutonium-239/240	61.5	58.6	41.0-76.2	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaS31	Soil	Bq/Kg	Potassium-40	879	824	577-1071	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaS31	Soil	Bq/Kg	Strontium-90	891	858	601-1115	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaS31	Soil	Bq/Kg	Technetium-99	466	589	412-766	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaS31	Soil	Bq/Kg	U-234/233	905	89	62-116	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaS31	Soil	Bq/Kg	Uranium-238	257	259	181-337	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaS31	Soil	Bq/Kg	Zinc-65	605.0	541	379-703	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaW31	Water	Bq/L	Americium-241	0.915	0.880	0.62-1.14	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaW31	Water	Bq/L	Cesium-134	-0.06		False Positive Test	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaW31	Water	Bq/L	Cesium-137	18.4	18.4	12.9-23.9	A

TABLE D-5 DOE's MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)
GEL LABORATORIES
(PAGE 4 OF 5)

PT Provider	Quarter / Year	Report Date	Sample Number	Sample Media	Unit	Analyte / Nuclide	GEL Value	Known value	Acceptance Range/ Ratio	Evaluation
MAPEP	4th /2014	01/09/15	MAPEP-14-MaW31	Water	Bq/L	Cobalt-57	25	24.7	17.3-32.1	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaW31	Water	Bq/L	Cobalt-60	12.5	12.4	8.7-16.1	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaW31	Water	Bq/L	Hydrogen-3	216	208	146-270	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaW31	Water	Bq/L	Iron-55	34.0	31.5	22.1-41.0	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaW31	Water	Bq/L	Manganese-54	14.2	14.0	9.8-18.2	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaW31	Water	Bq/L	Nickel-63	23.6	24.6	17.2-32.0	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaW31	Water	Bq/L	Plutonium-238	0.547	0.618	0.433-0.803	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaW31	Water	Bq/L	Plutonium-239/240	0.015	0.005	Sens. Eval.	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaW31	Water	Bq/L	Potassium-40	174	161	113-209	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaW31	Water	Bq/L	Strontium-90	0.03		False Positive Test	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaW31	Water	Bq/L	Technetium-99	6.92	6.99	4.89-9.09	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaW31	Water	Bq/L	Uranium-234/233	0.206	0.205	0.144-0.267	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaW31	Water	Bq/L	Uranium-238	1.280	1.420	0.99-1.85	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaW31	Water	Bq/L	Zinc-65	11.900	10.90	7.6-14.2	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaW31	Water	Bq/L	Gross Alpha	0.793	0.701	0.201-1.192	A
MAPEP	4th /2014	01/09/15	MAPEP-14-MaW31	Water	Bq/L	Gross Beta	6.220	5.94	2.97-8.91	A
MAPEP	4th /2014	01/09/15	MAPEP-14-RdF31	Filter	ug/sample	Uranium-235	0.040	0.040	0.0278-0.0516	A
MAPEP	4th /2014	01/09/15	MAPEP-14-RdF31	Filter	ug/sample	Uranium-238	19.3	20.3	14.2-26.4	A
MAPEP	4th /2014	01/09/15	MAPEP-14-RdF31	Filter	ug/sample	Uranium-Total	19.00	20.4	14.3-26.5	A
MAPEP	4th /2014	01/09/15	MAPEP-14-RdF31	Filter	ug/sample	Americium-241	0.0561	0.067	0.0472-0.0876	A
MAPEP	4th /2014	01/09/15	MAPEP-14-RdF31	Filter	Bq/sample	Cesium-134	0.8640	0.96	0.67-1.25	A
MAPEP	4th /2014	01/09/15	MAPEP-14-RdF31	Filter	Bq/sample	Cesium-137	1.190	1.20	0.84-1.56	A
MAPEP	4th /2014	01/09/15	MAPEP-14-RdF31	Filter	Bq/sample	Cobalt-57	1.540	1.43	1.00-1.86	A
MAPEP	4th /2014	01/09/15	MAPEP-14-RdF31	Filter	Bq/sample	Cobalt-60	1.200	1.10	0.77-1.43	A
MAPEP	4th /2014	01/09/15	MAPEP-14-RdF31	Filter	Bq/sample	Manganese-54	0.808	0.75	0.53-0.98	A
MAPEP	4th /2014	01/09/15	MAPEP-14-RdF31	Filter	Bq/sample	Plutonium-238	0.115	0.107	0.075-0.139	A
MAPEP	4th /2014	01/09/15	MAPEP-14-RdF31	Filter	Bq/sample	Plutonium-239/240	0.048	0.0468	0.0328-0.0608	A
MAPEP	4th /2014	01/09/15	MAPEP-14-RdF31	Filter	Bq/sample	Strontium-90	0.762	0.70	0.492-0.914	A
MAPEP	4th /2014	01/09/15	MAPEP-14-RdF31	Filter	Bq/sample	Uranium-234/233	0.037	0.0358	0.0251-0.0465	A
MAPEP	4th /2014	01/09/15	MAPEP-14-RdF31	Filter	Bq/sample	Uranium-238	0.227	0.253	0.177-0.329	A
MAPEP	4th /2014	01/09/15	MAPEP-14-RdF31	Filter	Bq/sample	Zinc-65	0.779	0.76	0.53-0.99	A
MAPEP	4th /2014	01/09/15	MAPEP-14-RdV31	Vegetation	Bq/sample	Americium-241	0.226	0.19	0.135-0.251	A

TABLE D-5 DOE's MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)
GEL LABORATORIES
(PAGE 5 OF 5)

PT Provider	Quarter / Year	Report Date	Sample Number	Sample Media	Unit	Analyte / Nuclide	GEL Value	Known value	Acceptance Range/ Ratio	Evaluation
MAPEP	4th /2014	01/09/15	MAPEP-14-RdV31	Vegetation	Bq/sample	Cesium-134	4.750	5.20	3.64-6.67	A
MAPEP	4th /2014	01/09/15	MAPEP-14-RdV31	Vegetation	Bq/sample	Ceslum-137	6.910	6.60	4.62-8.58	A
MAPEP	4th /2014	01/09/15	MAPEP-14-RdV31	Vegetation	Bq/sample	Cobalt-57	-0.002	0.00	False Positive Test	A
MAPEP	4th /2014	01/09/15	MAPEP-14-RdV31	Vegetation	Bq/sample	Cobalt-60	0.008	0.00	False Positive Test	A
MAPEP	4th /2014	01/09/15	MAPEP-14-RdV31	Vegetation	Bq/sample	Manganese-54	7.980	7.88	5.52-10.24	A
MAPEP	4th /2014	01/09/15	MAPEP-14-RdV31	Vegetation	Bq/sample	Plutonium-238	0.001	0.001	Sens. Eval.	A
MAPEP	4th /2014	01/09/15	MAPEP-14-RdV31	Vegetation	Bq/sample	Plutonium-239/240	0.1510	0.171	0.120-0.222	A
MAPEP	4th /2014	01/09/15	MAPEP-14-RdV31	Vegetation	Bq/sample	Strontium-90	2.330	2.32	1.62-3.02	A
MAPEP	4th /2014	01/09/15	MAPEP-14-RdV31	Vegetation	Bq/sample	Uranium-234/233	0.046	0.047	0.0326-0.0606	A
MAPEP	4th /2014	01/09/15	MAPEP-14-RdV31	Vegetation	Bq/sample	Uranium-238	0.332	0.324	0.227-0.421	A
MAPEP	4th /2014	01/09/15	MAPEP-14-RdV31	Vegetation	Bq/sample	Zinc-65	2.850	2.63	1.84-3.42	A
MAPEP	4th /2014	01/09/15	MAPEP-14-SrF-31	Filter	Bq/sample	Strontium-89	3.62	3.79	2.65-4.93	A
MAPEP	4th /2014	01/09/15	MAPEP-14-SrF-31	Filter	Bq/sample	Strontium-90	3.62	3.79	2.65-4.93	A
MAPEP	4th /2014	01/09/15	MAPEP-14-XaW-31	Water	Bq/L	Iodine-129	4.56	4.55	3.19-5.92	A

(1) The uranium-234/233 and uranium-238 in soil reported values were lower than the MAPEP known values. It was determined that the digestion method using hydrofluoric acid (HF) was insufficient to completely digest the soil. MAPEP posted on their website that the analytes had been fused into the soil at an extremely high temperature. Reanalysis using a sodium hydroxide (NAOH) fusion method prior to ion exchange separation chemistry gave results for uranium-234/233 and uranium-238 that fell within the acceptance criteria (Corrective Action CARR140605-879).

(2) The uranium-235 in vegetation reported value was higher than the MAPEP known value. The failure was due to a hand entry error when entering the result into the MAPEP website. The activity was incorrectly entered as 0.261 ug/sample instead of the correct result of 0.0261 ug/sample (Corrective Action CARR140605-879).

TABLE D-6 **ERA ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM**
GEL LABORATORIES
(PAGE 1 OF 2)

PT Provider	Quarter / Year	Report Date	Sample Number	Sample Media	Unit	Analyte / Nuclide	GEL Value	Known value	Acceptance Range/ Ratio	Evaluation
ERA	1st / 2014	02/24/14	RAD - 96	Water	pCi/L	Barium-133	80.6	76.2	63.8-83.8	A
ERA	1st / 2014	02/24/14	RAD - 96	Water	pCi/L	Cesium-134	64.7	66.8	54.4-73.5	A
ERA	1st / 2014	02/24/14	RAD - 96	Water	pCi/L	Cesium-137	112.0	109	98.1-122	A
ERA	1st / 2014	02/24/14	RAD - 96	Water	pCi/L	Cobalt-60	95.0	88.7	79.8-99.9	A
ERA	1st / 2014	02/24/14	RAD - 96	Water	pCi/L	Zinc-65	200	185	166-218	A
ERA	1st / 2014	02/24/14	RAD - 96	Water	pCi/L	Gross Alpha	34.8	36.1	18.6-46.4	A
ERA	1st / 2014	02/24/14	RAD - 96	Water	pCi/L	Gross Beta	19.6	22.3	13.5-30.4	A
ERA	1st / 2014	02/24/14	RAD - 96	Water	pCi/L	Gross Alpha	34.6	36.1	18.6-46.4	A
ERA	1st / 2014	02/24/14	RAD - 96	Water	pCi/L	Radium-226	16.2	16.8	12.5-19.2	A
ERA	1st / 2014	02/24/14	RAD - 96	Water	pCi/L	Radium-228	4.62	5.04	3.01-6.67	A
ERA	1st / 2014	02/24/14	RAD - 96	Water	pCi/L	Uranium (Nat)	7.39	7.23	5.51-8.53	A
ERA	1st / 2014	02/24/14	RAD - 96	Water	ug/L	Uranium (Nat) mass	11.00	10.6	8.07-12.5	A
ERA	1st / 2014	02/24/14	RAD - 96	Water	pCi/L	Radium-226	15.10	16.8	12.5-19.2	A
ERA	1st / 2014	02/24/14	RAD - 96	Water	pCi/L	Radium-228	4.66	5.04	3.01-6.67	A
ERA	1st / 2014	02/24/14	RAD - 96	Water	pCi/L	Uranium (Nat)	7.47	7.23	5.51-8.53	A
ERA	1st / 2014	02/24/14	RAD - 96	Water	ug/L	Uranium (Nat)mass	11.4	10.6	8.07-12.5	A
ERA	1st / 2014	02/24/14	RAD - 96	Water	pCi/L	Tritium	3320	3580	3030-3950	A
ERA	1st / 2014	02/24/14	RAD - 96	Water	pCi/L	Strontium-89	44.1	44.4	34.4-51.6	A
ERA	1st / 2014	02/24/14	RAD - 96	Water	pCi/L	Strontium-90	34.2	30.3	22.1-35.2	A
ERA	1st / 2014	02/24/14	RAD - 96	Water	pCi/L	Strontium-89	38.9	44.4	34.4-51.6	A
ERA	1st / 2014	02/24/14	RAD - 96	Water	pCi/L	Strontium-90	27.1	30.3	22.1-35.2	A
ERA	1st / 2014	02/06/14	011014L	Water	pCi/L	Strontium-89	42.3	38.7	29.3-45.7	A
ERA	1st / 2014	02/06/14	011014L	Water	pCi/L	Strontium-89	42.2	38.7	29.3-45.7	A
ERA	1st / 2014	02/24/14	RAD - 96	Water	pCi/L	Iodine-131	25.2	24.4	20.2-28.9	A
ERA	1st / 2014	02/24/14	RAD - 96	Water	pCi/L	Iodine-131	22.4	24.4	20.2-28.9	A
ERA	3rd / 2014	08/25/14	RAD - 98	Water	pCi/L	Barium-133	67.8	68.7	57.3-75.6	A
ERA	3rd / 2014	08/25/14	RAD - 98	Water	pCi/L	Cesium-134	71	72.3	59.0-79.5	A
ERA	3rd / 2014	08/25/14	RAD - 98	Water	pCi/L	Cesium-137	161	163	147-181	A
ERA	3rd / 2014	08/25/14	RAD - 98	Water	pCi/L	Cobalt-60	76.7	75.5	68.0-85.5	A

TABLE D-6 **ERA ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM**
GEL LABORATORIES
(PAGE 2 OF 2)

PT Provider	Quarter / Year	Report Date	Sample Number	Sample Media	Unit	Analyte / Nuclide	GEL Value	Known value	Acceptance Range/ Ratio	Evaluation
ERA	3rd / 2014	08/25/14	RAD-98	Water	pCi/L	Gross Alpha	45.3	45.4	23.6-57.4	A
ERA	3rd / 2014	08/25/14	RAD-98	Water	pCi/L	Gross Alpha	45.3	45.4	23.6-57.4	A
ERA	3rd / 2014	08/25/14	RAD-98	Water	pCi/L	Gross Beta	32.3	33.4	21.7-41.1	A
ERA	3rd / 2014	08/25/14	RAD-98	Water	pCi/L	Gross Alpha	48.6	45.4	23.6-57.4	A
ERA	3rd / 2014	08/25/14	RAD-98	Water	pCi/L	Radium-226	8.26	9.06	6.80-10.6	A
ERA	3rd / 2014	08/25/14	RAD-98	Water	pCi/L	Radium-226	8.54	9.06	6.80-10.6	A
ERA	3rd / 2014	08/25/14	RAD-98	Water	pCi/L	Radium-226	9.7	9.06	6.80-10.6	A
ERA	3rd / 2014	08/25/14	RAD-98	Water	pCi/L	Radium-228	5.07	5.07	3.03-6.79	A
ERA	3rd / 2014	08/25/14	RAD-98	Water	pCi/L	Radium-228	5.74	5.07	3.03-6.79	A
ERA	3rd / 2014	08/25/14	RAD-98	Water	pCi/L	Uranium (Nat)	13.9	13.5	10.7-15.4	A
ERA	3rd / 2014	08/25/14	RAD-98	Water	ug/L	Uranium (Nat) mass	22.25	19.8	15.6-22.6	A
ERA	3rd / 2014	08/25/14	RAD-98	Water	pCi/L	Uranium (Nat)	13	13.5	10.7-15.4	A
ERA	3rd / 2014	08/25/14	RAD-98	Water	ug/L	Uranium (Nat) mass	20.7	19.8	15.6-22.6	A
ERA	3rd / 2014	08/25/14	RAD-98	Water	pCi/L	Tritium	10200	11200	9750-12300	A
ERA	3rd / 2014	08/25/14	RAD-98	Water	pCi/L	Tritium	10400	11200	9750-12300	A
ERA	3rd / 2014	08/25/14	RAD-98	Water	pCi/L	Strontium-89	56.3	42.7	32.9-49.8	Not (1) Acceptable
ERA	3rd / 2014	08/25/14	RAD-98	Water	pCi/L	Strontium-90	14.3	31.7	23.1-36.7	A
ERA	3rd / 2014	08/25/14	RAD-98	Water	pCi/L	Strontium-89	56.5	42.7	32.9-49.8	Not (1) Acceptable
ERA	3rd / 2014	08/25/14	RAD-98	Water	pCi/L	Strontium-90	26	31.7	23.1-36.7	A
ERA	3rd / 2014	08/25/14	RAD-98	Water	pCi/L	Iodine-131	28.6	26.1	21.7-30.8	A
ERA	3rd / 2014	08/25/14	RAD-98	Water	pCi/L	Iodine-131	22.3	26.1	21.7-30.8	A

(1) Two strontium-89 in water reported values were higher than the ERA known values. The associated QC samples and instrument calibrations were reviewed but a cause for the failures could not be determined. GEL assumes an unidentified random error caused the high bias for the batch associated with these samples (Corrective Action CARR140825-902).

TABLE D-7 **ERA MRAD ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM**
GEL LABORATORIES
(PAGE 1 OF 7)

PT Provider	Quarter / Year	Report Date	Sample Number	Sample Media	Unit	Analyte / Nuclide	GEL Value	Known value	Acceptance Range/ Ratio	Evaluation
ERA	2nd/2014	05/16/14	MRAD 20	Soil	pCi/kg	Actlnlum-228	1140	1240	795-1720	A
ERA	2nd/2014	05/16/14	MRAD 20	Soil	pCi/kg	Americium-241	418	399	233-518	A
ERA	2nd/2014	05/16/14	MRAD 20	Soil	pCi/kg	Bismuth-212	976	1240	330-1820	A
ERA	2nd/2014	05/16/14	MRAD 20	Soil	pCi/kg	Bismuth-214	2290	1960	1180-2820	A
ERA	2nd/2014	05/16/14	MRAD 20	Soil	pCi/kg	Cesium-134	3080	3390	2220-4070	A
ERA	2nd/2014	05/16/14	MRAD 20	Soil	pCi/kg	Cesium-137	8310	8490	6510-10900	A
ERA	2nd/2014	05/16/14	MRAD 20	Soil	pCi/kg	Cobalt-60	6570	6830	4620-9400	A
ERA	2nd/2014	05/16/14	MRAD 20	Soil	pCi/kg	Lead-212	1330	1240	812-1730	A
ERA	2nd/2014	05/16/14	MRAD 20	Soil	pCi/kg	Lead-214	2800	2070	1210-3090	A
ERA	2nd/2014	05/16/14	MRAD 20	Soil	pCi/kg	Manganese-54	<44.3	<1000	0-1000	A
ERA	2nd/2014	05/16/14	MRAD 20	Soil	pCi/kg	Plutonium-238	579	578	348-797	A
ERA	2nd/2014	05/16/14	MRAD 20	Soil	pCi/kg	Plutonium-239	488	471.00	308-651	A
ERA	2nd/2014	05/16/14	MRAD 20	Soil	pCi/kg	Potassium-40	10500	10500	7660-14100	A
ERA	2nd/2014	05/16/14	MRAD 20	Soil	pCi/kg	Strontium-90	2500	2780	1060-4390	A
ERA	2nd/2014	05/16/14	MRAD 20	Soil	pCi/kg	Thorium-234	3420	3360	1060-6320	A
ERA	2nd/2014	05/16/14	MRAD 20	Soil	pCi/kg	Zinc-65	5700	5400	4300-7180	A
ERA	2nd/2014	05/16/14	MRAD 20	Soil	pCi/kg	Strontium-90	6730	8530	3250-13500	A
ERA	2nd/2014	05/16/14	MRAD 20	Soil	pCi/kg	Uranium-234	2602	3390	2070-4350	A
ERA	2nd/2014	05/16/14	MRAD 20	Soil	pCi/kg	Uranium-238	2425	3360	2080-4260	A
ERA	2nd/2014	05/16/14	MRAD 20	Soil	pCi/kg	Uranium-Total	5027	6910	3750-9120	A
ERA	2nd/2014	05/16/14	MRAD 20	Soil	ug/kg	Uranium-Total(mass)	7110	10100	5570-12700	A
ERA	2nd/2014	05/16/14	MRAD 20	Soil	pCi/kg	Uranium-234	3440	3390	2070-4350	A
ERA	2nd/2014	05/16/14	MRAD 20	Soil	pCi/kg	Uranium-238	3680	3360	2080-4260	A
ERA	2nd/2014	05/16/14	MRAD 20	Soil	pCi/kg	Uranium-Total	7310	6910	3750-9120	A
ERA	2nd/2014	05/16/14	MRAD 20	Soil	ug/kg	Uranium-Total(mass)	11000	10100	5570-12700	A
ERA	2nd/2014	05/16/14	MRAD 20	Soil	pCi/kg	Uranium-234	3740	3390	2070-4350	A
ERA	2nd/2014	05/16/14	MRAD 20	Soil	pCi/kg	Uranium-238	3780	3360	2080-4260	A
ERA	2nd/2014	05/16/14	MRAD 20	Soil	pCi/kg	Uranium-Total	7683	6910	3750-9120	A
ERA	2nd/2014	05/16/14	MRAD 20	Soil	ug/kg	Uranium-Total(mass)	11300	10100	5570-12700	A

TABLE D-7 ERA MRAD ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
GEL LABORATORIES
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PT Provider	Quarter / Year	Report Date	Sample Number	Sample Media	Unit	Analyte / Nuclide	GEL Value	Known value	Acceptance Range/ Ratio	Evaluation
ERA	2nd/2014	05/16/14	MRAD -20	Soil	Ug/kg	Uranium-Total(mass)	11200	10100	5570-12700	A
ERA	2nd/2014	05/16/14	MRAD -20	Vegetation	pCi/kg	Am-241	1670	1490	911-1980	A
ERA	2nd/2014	05/16/14	MRAD -20	Vegetation	pCi/kg	Am-241	1670	1490	911-1980	A
ERA	2nd/2014	05/16/14	MRAD -20	Vegetation	pCi/kg	Cesium-134	657	646	415-839	A
ERA	2nd/2014	05/16/14	MRAD -20	Vegetation	pCi/kg	Cesium-137	861	880	638-1220	A
ERA	2nd/2014	05/16/14	MRAD -20	Vegetation	pCi/kg	Cobalt-60	997	926	639-1290	A
ERA	2nd/2014	05/16/14	MRAD -20	Vegetation	pCi/kg	Curium-244	514	516	253-804	A
ERA	2nd/2014	05/16/14	MRAD -20	Vegetation	pCi/kg	Manganese-54	<62.2	<300	0.00-300	A
ERA	2nd/2014	05/16/14	MRAD -20	Vegetation	pCi/kg	Plutonium-238	2230	2110	1260-2890	A
ERA	2nd/2014	05/16/14	MRAD -20	Vegetation	pCi/kg	Plutonium-239	3810	3740	2300-5150	A
ERA	2nd/2014	05/16/14	MRAD - 20	Vegetation	pCi/kg	Potassium-40	30800	31900	23000-44800	A
ERA	2nd/2014	05/16/14	MRAD -20	Vegetation	pCi/kg	Strontium-90	2330	2580	1470-3420	A
ERA	2nd/2014	05/16/14	MRAD -20	Vegetation	pCi/kg	Uranium-234	1920	1760	1160-2260	A
ERA	2nd/2014	05/16/14	MRAD -20	Vegetation	pCi/kg	Uranium-238	1970	1750	1170-2220	A
ERA	2nd/2014	05/16/14	MRAD -20	Vegetation	pCi/kg	Uranium-Total	4025	3580	2430-4460	A
ERA	2nd/2014	05/16/14	MRAD -20	Vegetation	ug/kg	Uranium-Total(mass)	5920	5240	3510-6650	A
ERA	2nd/2014	05/16/14	MRAD -20	Vegetation	pCi/kg	Zinc-65	1030	919	663-1290	A
ERA	2nd/2014	05/16/14	MRAD -20	Vegetation	pCi/kg	Uranium-234	1730	1760	1160-2260	A
ERA	2nd/2014	05/16/14	MRAD -20	Vegetation	pCi/kg	Uranium-238	2000	1750	1170-2220	A
ERA	2nd/2014	05/16/14	MRAD -20	Vegetation	pCi/kg	Uranium-Total	3817	3580	2430-4460	A
ERA	2nd/2014	05/16/14	MRAD -20	Vegetation	ug/kg	Uranium-Total(mass)	5990	5240	3510-6650	A
ERA	2nd/2014	05/16/14	MRAD -20	Vegetation	ug/kg	Uranium-Total(mass)	5620	5240	3510-6650	A
ERA	2nd/2014	05/16/14	MRAD -20	Filter	pCi/Filter	Americium-241	60.2	59.7	36.8-80.8	A
ERA	2nd/2014	05/16/14	MRAD -20	Filter	pCi/Filter	Cesium-134	920	1010	643-1250	A
ERA	2nd/2014	05/16/14	MRAD -20	Filter	pCi/Filter	Ceslum-137	816	828	622-1090	A
ERA	2nd/2014	05/16/14	MRAD -20	Filter	pCi/Filter	Cobalt-60	1130	1120	867-1400	A
ERA	2nd/2014	05/16/14	MRAD -20	Filter	pCi/Filter	Iron-55	254	240	74.4-469	A
ERA	2nd/2014	05/16/14	MRAD -20	Filter	pCi/Filter	Manganese-54	<6.64	<50.0	0-50.0	A
ERA	2nd/2014	05/16/14	MRAD -20	Filter	pCi/Filter	Plutonium-238	51.3	56.3	38.6-74.0	A
ERA	2nd/2014	05/16/14	MRAD -20	Filter	pCi/Filter	Plutonium-239	47.5	48.6	35.2-63.5	A
ERA	2nd/2014	05/16/14	MRAD -20	Filter	pCi/Filter	Strontium-90	76.7	78.9	38.6-118	A
ERA	2nd/2014	05/16/14	MRAD -20	Filter	pCi/Filter	Uranium-234	33.8	36.4	22.6-54	A
ERA	2nd/2014	05/16/14	MRAD-20	Filter	pCi/Filter	Uranium-238	34.5	36.1	23.3-49.9	A

TABLE D-7 **ERA PROGRAM (MRAD) PERFORMANCE EVALUATION RESULTS**
GEL LABORATORIES
(PAGE 3 OF 7)

PT Provider	Quarter / Year	Report Date	Sample Number	Sample Media	Unit	Analyte / Nuclide	GEL Value	Known value	Acceptance Range/ Ratio	Evaluation
ERA	2nd/2014	05/16/14	MRAD -20	Filter	pCi/Filter	Uranium-Total	70.3	74.3	41.1-113	A
ERA	2nd/2014	05/16/14	MRAD -20	Filter	ug/Filter	Uranium-Total(mass)	104	108	69.1-152	A
ERA	2nd/2014	05/16/14	MRAD -20	Filter	pCi/Filter	Zinc-65	737	667	478-921	A
ERA	2nd/2014	05/16/14	MRAD -20	Filter	pCi/Filter	Uranium-234	35.5	36.4	22.6-54	A
ERA	2nd/2014	05/16/14	MRAD -20	Filter	pCi/Filter	Uranium-238	35.3	36.1	23.3-49.9	A
ERA	2nd/2014	05/16/14	MRAD -20	Filter	pCi/Filter	Uranium-Total	72.4	74.3	41.1-113	A
ERA	2nd/2014	05/16/14	MRAD -20	Filter	ug/Filter	Uranium-Total(mass)	105	108	69.1-152	A
ERA	2nd/2014	05/16/14	MRAD -20	Filter	ug/Filter	Uranium-Total(mass)	100	108	69.1-152	A
ERA	2nd/2014	05/16/14	MRAD -20	Filter	pCi/Filter	Gross Alpha	60.9	46	15.4-71.4	A
ERA	2nd/2014	05/16/14	MRAD -20	Filter	pCi/Filter	Gross Beta	58.9	53.8	34.0-78.4	A
ERA	2nd/2014	05/16/14	MRAD -20	Water	pCi/L	Americium-241	186	114	76.8-153	Not (1) Acceptable
ERA	2nd/2014	05/16/14	MRAD -20	Water	pCi/L	Cesium-134	1540	1660	1220-1910	A
ERA	2nd/2014	05/16/14	MRAD -20	Water	pCi/L	Cesium-137	2760	2690	2280-3220	A
ERA	2nd/2014	05/16/14	MRAD -20	Water	pCi/L	Cobalt-60	1320	1270	1100-1490	A
ERA	2nd/2014	05/16/14	MRAD -20	Water	pCi/L	Iron-55	1230	1200	716-1630	A
ERA	2nd/2014	05/16/14	MRAD -20	Water	pCi/L	Manganese-54	<7.54	<100	0.00-100	A
ERA	2nd/2014	05/16/14	MRAD -20	Water	pCi/L	Plutonium-238	37	44	32.6-54.9	A
ERA	2nd/2014	05/16/14	MRAD -20	Water	pCi/L	Plutonium-239	124	160	124-202	A
ERA	2nd/2014	05/16/14	MRAD -20	Water	pCi/L	Strontium-90	95	890	580-1180	A
ERA	2nd/2014	05/16/14	MRAD -20	Water	pCi/L	Uranium-234	77.8	82.4	61.9-106	A
ERA	2nd/2014	05/16/14	MRAD -20	Water	pCi/L	Uranium-238	50.8	48.4	36.9-59.4	A
ERA	2nd/2014	05/16/14	MRAD -20	Water	pCi/L	Uranium-Total	156	168	123-217	A
ERA	2nd/2014	05/16/14	MRAD -20	Water	ug/L	Uranium-Total(mass)	233	245	195-296	A
ERA	2nd/2014	05/16/14	MRAD -20	Water	pCi/L	Zinc-65	2030	1800	1500-2270	A
ERA	2nd/2014	05/16/14	MRAD -20	Water	pCi/L	Uranium-234	82.1	82.4	61.9-106	A
ERA	2nd/2014	05/16/14	MRAD -20	Water	pCi/L	Uranium-238	84.6	48.4	36.9-59.4	A
ERA	2nd/2014	05/16/14	MRAD -20	Water	pCi/L	Uranium-Total	170	168	123-217	A
ERA	2nd/2014	05/16/14	MRAD -20	Water	ug/L	Uranium-Total(mass)	253	245	195-296	A
ERA	2nd/2014	05/16/14	MRAD -20	Water	pCi/L	Uranium-234	80.5	82.4	61.9-106	A
ERA	2nd/2014	05/16/14	MRAD -20	Water	pCi/L	Uranium-238	90.0	48.4	36.9-59.4	A
ERA	2nd/2014	05/16/14	MRAD -20	Water	pCi/L	Uranium-Total	175	168	123-217	A

TABLE D-7 **ERA PROGRAM (MRAD) PERFORMANCE EVALUATION RESULTS**
GEL LABORATORIES
(PAGE 4 OF 7)

PT Provider	Quarter / Year	Report Date	Sample Number	Sample Media	Unit	Analyte / Nuclide	GEL Value	Known value	Acceptance Range/ Ratio	Evaluation
ERA	2nd/2014	05/16/14	MRAD-20	Water	ug/L	Uranium-Total(mass)	269	245	195-296	A
ERA	2nd/2014	05/16/14	MRAD-20	Water	pCi/L	Uranium-234	77.8	82.4	61.9-106	A
ERA	2nd/2014	05/16/14	MRAD-20	Water	pCi/L	Uranium-238	78.3	48.4	36.9-59.4	A
ERA	2nd/2014	05/16/14	MRAD-20	Water	pCi/L	Uranium-Total	156	168	123-217	A
ERA	2nd/2014	05/16/14	MRAD-20	Water	ug/L	Uranium-Total(mass)	233	245	195-296	A
ERA	2nd/2014	05/16/14	MRAD-20	Water	ug/L	Uranium-Total(mass)	232	245	195-296	A
ERA	2nd/2014	05/16/14	MRAD-20	Water	pCi/L	Gross Alpha	141.0	133	47.2-206	A
ERA	2nd/2014	05/16/14	MRAD-20	Water	pCi/L	Gross Beta	172	174.0	99.6-258	A
ERA	2nd/2014	05/16/14	MRAD-20	Water	pCi/L	Tritium	5280	5580	3740-7960	A
ERA	3rd / 2014	11/25/14	MRAD-21	Soil	pCi/kg	Actinium-228	1280	1240	795-1720	A
ERA	3rd / 2014	11/25/14	MRAD-21	Soil	pCi/kg	Americium-241	825	763	431-956	A
ERA	3rd / 2014	11/25/14	MRAD-21	Soil	pCi/kg	Bismuth-212	1620	1240	330-1820	A
ERA	3rd / 2014	11/25/14	MRAD-21	Soil	pCi/kg	Bismuth-214	2900	2810	1690-4040	A
ERA	3rd / 2014	11/25/14	MRAD-21	Soil	pCi/kg	Cesium-134	1960	2140	1400-2570	A
ERA	3rd / 2014	11/25/14	MRAD-21	Soil	pCi/kg	Cesium-137	6760	6550	5020-8430	A
ERA	3rd / 2014	11/25/14	MRAD-21	Soil	pCi/kg	Cobalt-60	4480	4260	2880-5860	A
ERA	3rd / 2014	11/25/14	MRAD-21	Soil	pCi/kg	Lead-212	1260	1240	812-1730	A
ERA	3rd / 2014	11/25/14	MRAD-21	Soil	pCi/kg	Lead-214	3480	2750	1610-4100	A
ERA	3rd / 2014	11/25/14	MRAD-21	Soil	pCi/kg	Manganese-54	<30.0	<1000	0-1000	A
ERA	3rd / 2014	11/25/14	MRAD-21	Soil	pCi/kg	Plutonium-238	732	739	444-1020	A
ERA	3rd / 2014	11/25/14	MRAD-21	Soil	pCi/kg	Plutonium-239	281	309	202-427	A
ERA	3rd / 2014	11/25/14	MRAD-21	Soil	pCi/kg	Potassium-40	11500	10700	7810-14400	A
ERA	3rd / 2014	11/25/14	MRAD-21	Soil	pCi/kg	Strontium-90	8790	8420	3210-13300	A
ERA	3rd / 2014	11/25/14	MRAD-21	Soil	pCi/kg	Thorium-234	2000	2350	743-4420	A
ERA	3rd / 2014	11/25/14	MRAD-21	Soil	pCi/kg	Zinc-65	3910	3270	2600-4350	A
ERA	3rd / 2014	11/25/14	MRAD-21	Soil	pCi/kg	Uranium-234	2280	2370	1450-3040	A
ERA	3rd / 2014	11/25/14	MRAD-21	Soil	pCi/kg	Uranium-238	2340	2350	1450-2980	A
ERA	3rd / 2014	11/25/14	MRAD-21	Soil	pCi/kg	Uranium-Total	4762	4540	2360-6390	A
ERA	3rd / 2014	11/25/14	MRAD-21	Soil	ug/kg	Uranium-Total(mass)	7020	7050	3890-8870	A
ERA	3rd / 2014	11/25/14	MRAD-21	Vegetation	pCi/kg	Am-241	2260	2290	1400-3505	A
ERA	3rd / 2014	11/25/14	MRAD-21	Vegetation	pCi/kg	Cesium-134	837	849	545-1100	A
ERA	3rd / 2014	11/25/14	MRAD-21	Vegetation	pCi/kg	Cesium-137	729	644	467-896	A

TABLE D-7 **ERA PROGRAM (MRAD) PERFORMANCE EVALUATION RESULTS**
GEL LABORATORIES
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PT Provider	Quarter / Year	Report Date	Sample Number	Sample Media	Unit	Analyte / Nuclide	GEL Value	Known value	Acceptance Range/ Ratio	Evaluation
ERA	3rd / 2014	11/25/14	MRAD-21	Vegetation	pCi/kg	Cobalt-60	818	784	541-1100	A
ERA	3rd / 2014	11/25/14	MRAD-21	Vegetation	pCi/kg	Curium-244	361	367	180-572	A
ERA	3rd / 2014	11/25/14	MRAD-21	Vegetation	pCi/kg	Manganese-54	<25.3	<300	0-300	A
ERA	3rd / 2014	11/25/14	MRAD-21	Vegetation	pCi/kg	Plutonium-238	886	862	514-1180	A
ERA	3rd / 2014	11/25/14	MRAD-21	Vegetation	pCi/kg	Plutonium-239	675	701	430-965	A
ERA	3rd / 2014	11/25/14	MRAD-21	Vegetation	pCi/kg	Potassium-40	35300	30900	22300-43400	A
ERA	3rd / 2014	11/25/14	MRAD-21	Vegetation	pCi/kg	Strontium-90	1230	1710	975-2270	A
ERA	3rd / 2014	11/25/14	MRAD-21	Vegetation	pCi/kg	Uranium-234	1980	1780	1170-2290	A
ERA	3rd / 2014	11/25/14	MRAD-21	Vegetation	pCi/kg	Uranium-238	1970	1760	1170-2240	A
ERA	3rd / 2014	11/25/14	MRAD-21	Vegetation	pCi/kg	Uranium-Total	4038	3620	2450-4510	A
ERA	3rd / 2014	11/25/14	MRAD-21	Vegetation	ug/kg	Uranium-Total(mass)	5910	5280	3540-6710	A
ERA	3rd / 2014	11/25/14	MRAD-21	Vegetation	pCi/kg	Uranium-234	1670	1780	1170-2290	A
ERA	3rd / 2014	11/25/14	MRAD-21	Vegetation	pCi/kg	Uranium-238	1800	1760	1170-2240	A
ERA	3rd / 2014	11/25/14	MRAD-21	Vegetation	pCi/kg	Uranium-Total	3556	3620	2450-4510	A
ERA	3rd / 2014	11/25/14	MRAD-21	Vegetation	ug/kg	Uranium-Total(mass)	5390	5280	3540-6710	A
ERA	3rd / 2014	11/25/14	MRAD-21	Vegetation	ug/kg	Uranium-Total(mass)	5860	5280	3540-6710	A
ERA	3rd / 2014	11/25/14	MRAD-21	Vegetation	pCi/kg	Zinc-65	1930	1570	1130-2200	A
ERA	3rd / 2014	11/25/14	MRAD-21	Filter	pCi/Filter	Americium-241	41.4	38.6	23.8-52.2	A
ERA	3rd / 2014	11/25/14	MRAD-21	Filter	pCi/Filter	Cesium-134	742	765.0	487-949	A
ERA	3rd / 2014	11/25/14	MRAD-21	Filter	pCi/Filter	Cesium-137	677	647	486-850	A
ERA	3rd / 2014	11/25/14	MRAD-21	Filter	pCi/Filter	Cobalt-60	543	523	405-653	A
ERA	3rd / 2014	11/25/14	MRAD-21	Filter	pCi/Filter	Iron-55	117	120.0	37.2-234	A
ERA	3rd / 2014	11/25/14	MRAD-21	Filter	pCi/Filter	Manganese-54	<5.87	<50	0.00-50.0	A
ERA	3rd / 2014	11/25/14	MRAD-21	Filter	ug/Filter	Plutonium-238	32.9	35.7	24.5-46.9	A
ERA	3rd / 2014	11/25/14	MRAD-21	Filter	pCi/Filter	Plutonium-239	26.8	29.1	21.1-38.0	A
ERA	3rd / 2014	11/25/14	MRAD-21	Filter	pCi/Filter	Strontium-90	187	168	82.1-252	A
ERA	3rd / 2014	11/25/14	MRAD-21	Filter	pCi/Filter	Uranium-234	26	28	27.8-41.9	A
ERA	3rd / 2014	11/25/14	MRAD-21	Filter	pCi/Filter	Uranium-238	28	27.60	17.8-38.2	A
ERA	3rd / 2014	11/25/14	MRAD-21	Filter	pCi/Filter	Uranium-Total	56	57	31.4-86.3	A
ERA	3rd / 2014	11/25/14	MRAD-21	Filter	ug/Filter	Uranium-Total(mass)	82.6	82.7	52.9-116	A
ERA	3rd / 2014	11/25/14	MRAD-21	Filter	pCi/Filter	Zinc-65	629	547	392-755	A

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ERA PROGRAM (MRAD) PERFORMANCE EVALUATION RESULTS
GEL LABORATORIES
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PT Provider	Quarter / Year	Report Date	Sample Number	Sample Media	Unit	Analyte / Nuclide	GEL Value	Known value	Acceptance Range/ Ratio	Evaluation
ERA	3rd / 2014	11/25/14	MRAD-21	Filter	pCi/Filte	Uranlum-234	28	28	27.8-41.9	A
ERA	3rd / 2014	11/25/14	MRAD-21	Filter	pCi/Filte	Uranium-238	25	27.60	17.8-38.2	A
ERA	3rd / 2014	11/25/14	MRAD-21	Filter	pCi/Filte	Uranium-Total	55	57	31.4-86.3	A
ERA	3rd / 2014	11/25/14	MRAD-21	Filter	ug/Filter	Uranium-Total(mass)	75.1	82.7	52.9-116	A
ERA	3rd / 2014	11/25/14	MRAD-21	Filter	ug/Filter	Uranium-Total(mass)	90.7	82.7	52.9-116	A
ERA	3rd / 2014	11/25/14	MRAD-21	Filter	pCi/Filte	Gross Alpha	47.4	36.9	12.4-57.3	A
ERA	3rd / 2014	11/25/14	MRAD-21	Filter	pCi/Filte	Gross Beta	27.2	21.1	13.3-30.8	A
ERA	3rd / 2014	11/25/14	MRAD-21	Water	pCi/L	Americium-241	72.4	68.6	46.2-92.0	A
ERA	3rd / 2014	11/25/14	MRAD-21	Water	pCi/L	Cesium-134	816.0	850	624-977	A
ERA	3rd / 2014	11/25/14	MRAD-21	Water	pCi/L	Cesium-137	1310	1240	1060-1490	A
ERA	3rd / 2014	11/25/14	MRAD-21	Water	pCi/L	Cobalt-60	1130	1070	930-1250	A
ERA	3rd / 2014	11/25/14	MRAD-21	Water	pCi/L	Iron-55	130	134	79.9-182	A
ERA	3rd / 2014	11/25/14	MRAD-21	Water	pCi/L	Manganese-54	<6.34	<100	0.00-100	A
ERA	3rd / 2014	11/25/14	MRAD-21	Water	pCi/L	Plutonium-238	35	33	24.6-41.4	A
ERA	3rd / 2014	11/25/14	MRAD-21	Water	pCi/L	Plutonium-239	46.4	51	39.7-64.4	A
ERA	3rd / 2014	11/25/14	MRAD-21	Water	pCi/L	Strontium-90	300	254	165-336	A
ERA	3rd / 2014	11/25/14	MRAD-21	Water	pCi/L	Uranium-234	42	44	32.9-56.5	A
ERA	3rd / 2014	11/25/14	MRAD-21	Water	pCi/L	Uranium-238	50	43.50	33.2-53.4	A
ERA	3rd / 2014	11/25/14	MRAD-21	Water	pCi/L	Uranium-Total	92	89	65.5-115	A
ERA	3rd / 2014	11/25/14	MRAD-21	Water	ug/L	Uranium-Total(mass)	137	130	104-157	A
ERA	3rd / 2014	11/25/14	MRAD-21	Water	pCi/L	Zinc-65	1070	921	768-1160	A
ERA	3rd / 2014	11/25/14	MRAD-21	Water	pCi/L	Uranium-234	43	44	32.9-56.5	A
ERA	3rd / 2014	11/25/14	MRAD-21	Water	pCi/L	Uranium-238	45	43.50	33.2-53.4	A
ERA	3rd / 2014	11/25/14	MRAD-21	Water	pCi/L	Uranium-Total	90	89	65.5-115	A
ERA	3rd / 2014	11/25/14	MRAD-21	Water	ug/L	Uranium-Total(mass)	134	130	104-157	A
ERA	3rd / 2014	11/25/14	MRAD-21	Water	pCi/L	Uranium-234	49	44	32.9-56.5	A
ERA	3rd / 2014	11/25/14	MRAD-21	Water	pCi/L	Uranium-238	42	43.50	33.2-53.4	A
ERA	3rd / 2014	11/25/14	MRAD-21	Water	pCi/L	Uranium-Total	93	89	65.5-115	A
ERA	3rd / 2014	11/25/14	MRAD-21	Water	ug/L	Uranium-Total(mass)	126	130	104-157	A
ERA	3rd / 2014	11/25/14	MRAD-21	Water	ug/L	Uranium-Total(mass)	144	130	104-157	A
ERA	3rd / 2014	11/25/14	MRAD-21	Water	pCi/L	Gross Alpha	96.2	98	34.8-152	A
ERA	3rd /	11/25/14	MRAD-	Water	pCi/L	Gross Beta	86.1	77.5	44.4-115	A

TABLE D-7 **ERA PROGRAM (MRAD) PERFORMANCE EVALUATION RESULTS**
GEL LABORATORIES
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PT Provider	Quarter / Year	Report Date	Sample Number	Sample Media	Unit	Analyte / Nuclide	GEL Value	Known value	Acceptance Range/ Ratio	Evaluation
ERA	3rd / 2014	11/25/14	MRAD -21	Water	pCi/L	Tritium	5490	5500	3680-7840	A

(1) The americium-241in water reported value was higher than the ERA known value. After a thorough review of all data, a definitive reason for the failure could not be determined. GEL assumes an unidentified random error caused the high bias for the batch associated with these samples (Corrective Action CARR140520-874).