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Technical Specification Section 6.9.1.7 (Salem)
Technical Specification Section 6.9.1.6 (Hope Creek)

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United States Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Hope Creek Generating Station
Facility Operating License No. NPF-57
NRC Docket No. 50-354

Salem Nuclear Generating Station, Unit Nos. 1and 2
Facility Operating License Nos. DPR-70 and DPR-75
NRC Docket Nos. 50-272 and 50-311

Subject: 2007 Annual Radiological Environmental Operating Report

As required by Section 6.9.1.7 of Appendix A to Facility Operating Licenses DPR-70 and DPR-75 for Salem Generating Station Unit Nos. 1 and 2, and Section 6.9.1.6 of Appendix A to the Operating License NPF-57 for Hope Creek Generating Station, PSEG Nuclear hereby transmits one copy of the 2007 Annual Radiological Environmental Operating Report. This report summarizes the results of the radiological environmental surveillance program for 2007 in the vicinity of the Salem and Hope Creek Generating Stations. The result of this program for 2007 was specifically compared to the result of the pre-operational program.

JE25

NRR

If you have any questions or comments on this transmittal, please contact Richard Labott at (856) 339-1094.

Sincerely,

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Attachment - 2007 Annual Radiological Environmental Operating Report

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RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

For

Salem Generating Station, Unit 1: Docket No. 50-272
Salem Generating Station, Unit 2: Docket No. 50-311
Hope Creek Generating Station : Docket No. 50-354

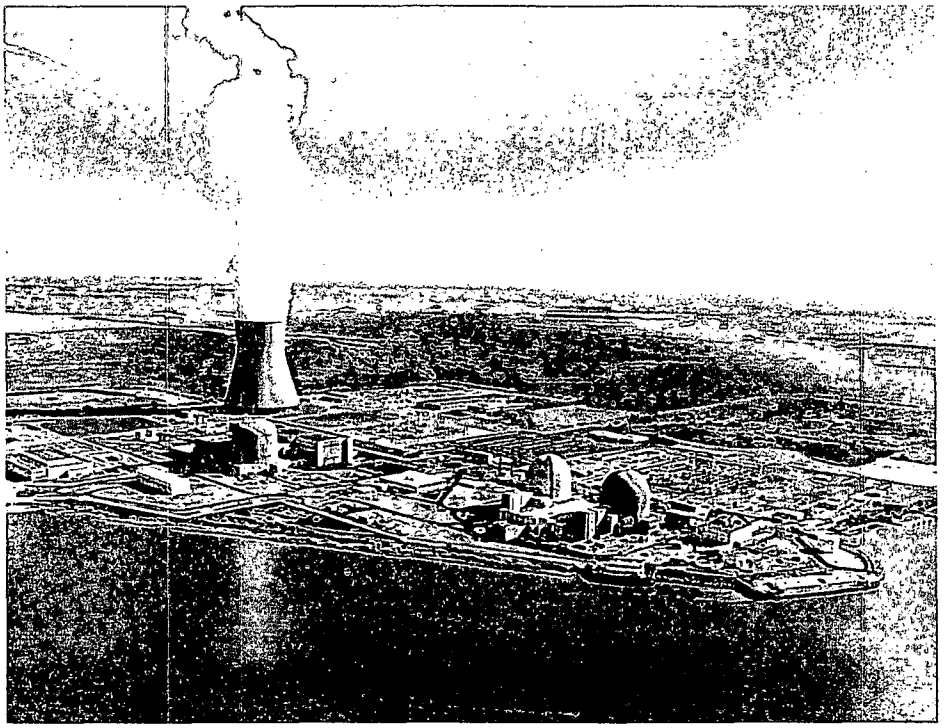
2007 ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

JANUARY 1 TO DECEMBER 31, 2007

Prepared by
PSEG SERVICE CORPORATION
MAPLEWOOD TESTING SERVICES

APRIL 2008

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM



SALEM & HOPE CREEK GENERATING STATIONS

2007 ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

JANUARY 1 TO DECEMBER 31, 2007

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SUMMARY

During normal operations of a nuclear power generating station there are 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 environment around Artificial Island where the Salem Generating Stations (SGS) and Hope Creek Generating Station (HCGS) are located. The results of the REMP are published annually, providing a summary and interpretation of the data collected.

PSEG's Maplewood Testing Services (MTS) has been responsible for the collection and analysis of environmental samples during the period of January 1, 2007, through December 31, 2007, and the results are discussed in this report. The REMP for SGS/HCGS was conducted in accordance with the SGS and HCGS Technical Specifications/Offsite Dose Calculation Manual. The Lower Limit of Detection (LLD) values required by the Technical Specifications/ODCM were achieved for this reporting period. The objectives of the program were also met during this period. The data collected assists in demonstrating that SGS and HCGS were operated in compliance with Technical Specifications/ODCM.

Most of the radioactive materials noted in this report are normally present in the environment, either naturally, such as potassium-40, or as a result of non-nuclear generating station activity, such as nuclear bomb testing. Measurements made in the vicinity of SGS/HCGS were compared to background or control measurements and the preoperational REMP study performed before Salem Unit 1 became operational. Samples of air particulates, air iodine, milk, surface, ground and drinking water, vegetables, game, fodder crops, fish, crabs, and sediment were collected and analyzed. External radiation dose measurements were also made in the vicinity of SGS/HCGS using thermoluminescent dosimeters.

From the results obtained, it can be concluded that the levels and fluctuations of radioactivity in environmental samples were as expected for an estuarine environment. No unusual radiological characteristics were observed in the environs of SGS/HCGS during this reporting period. Since these results were comparable to the results obtained during the preoperational phase of the program, and with historical results collected since commercial operation, we can conclude that the operation of SGS and HCGS had no significant impact on the radiological characteristics of the environs of these stations.

To demonstrate compliance with Technical Specifications/ODCM (Sections 3/4.12.1 & 6.8.4.h –1,2,3), samples were analyzed for one or more of the following: gamma emitting isotopes, tritium (H-3), iodine-131 (I-131), gross beta and gross alpha. The results of these analyses were used to assess the environmental impact of SGS and HCGS operations, thereby demonstrating compliance with Technical Specifications/ODCM (Section 3/4.11) and applicable Federal and State regulations, and to verify the adequacy of radioactive effluent control systems.
The results provided in this report are summarized below:

- There were a total of 1419 analyses on 1112 environmental samples during 2007, including direct radiation dose measurements made using 196 thermoluminescent dosimeters (TLDs).

- In addition to the detection of naturally - occurring isotopes (i.e. Be-7, K-40, Radium and Th-232) trace levels of H-3 and Cs-137 were also detected. The concentrations of these nuclides were well below the Technical Specification reporting limit.

- Dose measurements made with quarterly TLDs at 31 offsite locations around the SGS/HCGS site averaged 50 millirems for the year 2007.

The average of the dose measurements at the control locations (background) was 52 millirems for the year. This was comparable to the preoperational phase of the program which had an average of 55 millirems per year for 1973 to 1976.

Appendix F contains the annual report on the status of the Radiological Groundwater Protection Program (RGPP) conducted at Salem and Hope Creek Stations. The RGPP was initiated by PSEG to determine whether groundwater at and in the vicinity of Salem and Hope Creek Stations had been adversely impacted by any releases of radionuclides and not previously identified. The RGPP is a voluntary program implemented by PSEG in conjunction with industry initiatives and guidance. It was concluded that the operation of Salem and Hope creek Stations has had no adverse radiological impact on the environment from unmonitored or unplanned releases of radionuclides to groundwater.

During 2007, PSEG Nuclear continued remedial actions for tritium identified in shallow groundwater at Salem Station. These remedial actions have been conducted in accordance with a Remedial Action Work Plan that was approved by the New Jersey Department of Environmental Protection – Bureau of Nuclear Engineering (NJDEP-BNE) in November, 2004. The GRS is in operation, providing hydraulic control of the plume and effectively removing tritium contaminated groundwater, all monitoring wells are below 100,000 pCi/L at this time. The tritium contaminated groundwater is disposed of in accordance with Salem Station's liquid radioactive waste disposal program. There is no evidence or indication that tritium contaminated water above Ground Water Quality Criteria (GWQC) levels [GWQC is <20,000 pCi/L] has migrated to the station boundary or the Delaware River.

THE RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Lower Alloways Creek Township, Salem County, New Jersey is the site of Salem (SGS)and Hope Creek (HCGS) Generating Stations. SGS consists of two operating pressurized water nuclear power reactors. Salem Unit One has a net rating of 1169 megawatt electric(MWe) and Salem Unit Two has a net rating of 1155 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 1091 MWe (3339 MWt).

SGS/HCGS are located on a man-made peninsula on the east bank of the Delaware River. It was created by the deposition of hydraulic fill from dredging operations. The environment surrounding SGS/HCGS is characterized mainly by the Delaware River 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. Most of the remaining land is used for agriculture [1,2]. More specific information on the demography, hydrology, meteorology, and land use of the area may be found in the Environmental Reports [1,2], Environmental Statements [3,4], and the Updated Final Safety Analysis Reports for SGS and HCGS [5,6].

Since 1968, a radiological environmental monitoring program (REMP) has been conducted at the SGS/HCGS Site. Starting in December, 1972, more extensive radiological monitoring programs were initiated. The operational REMP was initiated in December, 1976, when Salem Unit 1 achieved criticality. PSEG's Maplewood Testing Services (MTS) has been involved in the REMP since its inception. MTS is responsible for the collection of all radiological environmental samples and, from 1973 through June, 1983, conducted a quality assurance program in which duplicates of a portion of those samples analyzed by the primary laboratory were also analyzed by MTS.

From January, 1973, through June, 1983, Radiation Management Corporation (RMC) had primary responsibility for the analysis of all samples under the SGS/HCGS REMP and annual reporting of results.

RMC reports for the preoperational and operational phase of the program are referenced in this report [7-9]. On July 1, 1983, MTS assumed primary responsibility for the analysis of all samples (except TLDs) and the reporting of results. Teledyne Brown Engineering Environmental Services (TBE), assumed responsibility for third-party QA analyses and TLDs. An additional vendor, Controls for Environmental Pollution Inc. (CEP), was retained to provide third-party QA analyses and certain non-routine analyses from May, 1988, until June 1, 1992. Currently, AREVA NP, Inc. Environmental Laboratory (AREVA) is the third party QA vendor and the laboratory which performs the TLD analyses. MTS reports for the operational phase from 1983 to 2006 are referenced in this report [10].

An overview of the 2007 Program is provided in Table 1. Radioanalytical data from samples collected under this program were compared with results from the preoperational phase. 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, 2007, for the SGS/HCGS REMP.

OBJECTIVES

The objectives of the Operational REMP are:

- To fulfill the requirements of the Radiological Surveillance sections of the Technical Specifications/ODCM for SGS/HCGS.

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

- To determine if SGS or HCGS has caused an increase in the radioactive inventory of long-lived radionuclides.

- To detect any change in ambient gamma radiation levels.

- To verify that SGS and HCGS operations have no detrimental effects on the health and safety of the public or on the environment.

This report, as required by Section 6.9.1.7 of the Salem Technical Specifications/ODCM and Section 6.9.1.6 of the Hope Creek Technical Specifications/ODCM, summarizes the findings of the 2007 REMP. Results of the four-year preoperational program have been summarized for comparison with subsequent operational reports [8].

In order to meet the objectives, an operational REMP was developed. 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: (1), established critical pathways for the transfer of radionuclides through the environment to man, and, (2), experience gained during the preoperational phase. Sampling locations were determined based on site meteorology, Delaware estuarine hydrology, local demography, and land uses.

Sampling locations were 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 distance. 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. Appendix A describes and summarizes, in accordance with Section 6.9.1.7 of the Salem TS and Section 6.9.1.6 of the Hope Creek TS, the operational program as performed in 2007.

Appendix B describes the coding system which identifies sample type and location. Table B-1 lists the sampling stations and the types of samples collected at each station. These sampling stations are indicated on Maps B-1 and B-2.

DATA INTERPRETATION

Results of analyses are grouped according to sample type and presented in Appendix C. 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 Regulatory Guide 4.8, 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". LLD is normally calculated as 4.66 times the standard deviation of the background counting rate, or of the blank sample count, as appropriate, divided by counting efficiency, sample size, 2.22 (dpm per picocurie), the radiochemical yield when applicable, the radioactive decay constant and the elapsed time between sample collection and time of counting. The Minimum Detectable Concentration (MDC) is defined as the smallest concentration of radioactive material that can be detected at a given confidence level. The MDC differs from the LLD in that the MDC takes into consideration the interference caused by the presence of other nuclides while the LLD does not.

The grouped data were averaged and standard deviations calculated in accordance with Appendix B of Reference 16. Thus, the 2 sigma deviations of the averaged data represent sample and not analytical variability. For reporting and calculation of averages, any result occurring at or below the LLD is considered to be at that level. When a group of data was composed of 50% or more LLD values, averages were not calculated.

Grab sampling is a useful and acceptable procedure for taking environmental samples of a medium in which the concentration of radionuclides is expected to vary slowly with time or where intermittent sampling is deemed sufficient to establish the radiological characteristics of the medium. This method, however, is only representative of the sampled medium for that specific location and instant of time. As a result, variation in the radionuclide concentrations of the samples will normally occur.

Since these variations will tend to counterbalance one another; averages based upon repetitive grab samples is considered valid.

QUALITY ASSURANCE PROGRAM

MTS has a quality assurance program designed to ensure confidence in the analytical program. Approximately 10 -15% of the total analytical effort is spent on quality control, including process quality control, instrument quality control, interlaboratory cross-check analyses, and data review.

The quality of the results obtained by MTS is ensured by the implementation of the Quality Assurance Program as described in the Maplewood Testing Services Quality Assurance Plan [11] and the Environmental and Chemical Division Procedures Manual. The internal quality control activity of MTS includes the quality control of instrumentation, equipment and reagents; the use of reference standards in calibration, documentation of established procedures and computer programs, and analysis of duplicate samples. The external quality control activity is implemented through participation in both the Analytics and the Environmental Resource Associates Interlaboratory Comparison Programs. (The results of these Interlaboratory Comparison Programs are listed in Tables D-1 through D-4 in Appendix D). MTS's internal QC results are evaluated in accordance with the NRC Resolution Criteria [18]. This criteria is also used for the Analytics Crosscheck Program results. Since ERA has its own established performance criteria, MTS utilizes their comparison data with our results.

RESULTS AND DISCUSSION

The analytical results of the 2007 REMP samples are divided into categories based on exposure pathways: atmospheric, direct, terrestrial, and aquatic. The analytical results for the 2007 REMP are summarized in Appendix A.

The data for individual samples are presented in Appendix C. The data collected demonstrates that the SGS and HCGS REMP was conducted in compliance with the Technical Specifications/ODCM.

The REMP for the SGS/HCGS Site has historically included samples and analyses not specifically required by these Stations' Technical Specifications/ODCM. MTS continues to collect and analyze some of these samples in order to maintain personnel proficiency in performing these non-routine analyses. These analyses are referenced throughout the report as Management Audit samples. The summary tables in this report include these additional samples and analyses.

ATMOSPHERIC

Air particulates 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 cartridges connected in series after the air particulate filters. Air sample volumes were measured with calibrated dry-gas meters and were corrected to standard temperature and pressure.

Air Particulates (Tables C-1, C-2)

Air particulate samples were collected weekly, at 6 locations. Each of the 310 samples (see Program Deviations) collected for the year were analyzed for gross beta. Quarterly composites of the weekly samples from each station were analyzed for specific gamma emitters. Total data recovery for the 6 sampling stations in 2007 was 99.2 percent.

- Gross beta activity was detected in all of the indicator station samples collected at concentrations ranging from 9.7×10^{-3} to 37×10^{-3} pCi/m^3 and in all of the control

station samples from 10 x 10^{-3} to 36 x 10^{-3} pCi/m^3. The averages for the indicator and control station samples were 22 and 23 x 10^{-3} pCi/m^3, respectively. The maximum preoperational level detected was 920 x 10^{-3} pCi/m^3, with an average of 74 x 10^{-3} pCi/m^3. Results from 1987 to current year are plotted on Figure 1 as quarterly averages. Included along with this plot, for purposes of comparison, is an inset depicting a continuation of this plot from the current year all the way back to 1973.

- Gamma spectroscopy, performed on each of the 24 quarterly composite samples analyzed, indicated the presence of the naturally-occurring radionuclides Be-7 and K-40. All other gamma emitters searched for were below the LLD.

  - Beryllium-7, attributed to cosmic ray activity in the atmosphere, was detected in all 20 indicator station composites that were analyzed, at concentrations ranging from 68 x 10^{-3} to 100 x 10^{-3} pCi/m^3, with an average of 83 x 10^{-3} pCi/m^3. It was detected in the 4 control station composites ranging from 76 x 10^{-3} to 95 x 10^{-3} pCi/m^3, with an average of 85 x 10^{-3} pCi/m^3. The maximum preoperational level detected was 330 x 10^{-3} pCi/m^3, with an average of 109 x 10^{-3} pCi/m^3.

  - Potassium-40 activity was detected in 18 of the indicator station samples, with concentrations ranging from 7.1 x 10^{-3} to 14 x 10^{-3} pCi/m^3, with an average of 10 x 10^{-3} pCi/m^3. K-40 was also detected in 3 control station samples, at concentrations of 7.4 X 10^{-3} to 16 x 10^{-3}. No preoperational data is available for comparison.

Air Iodine (Table C-3)

Iodine in filtered air samples was collected weekly, at 6 locations. Each of the 310 samples collected (see Program Deviations) for the year was analyzed for I-131.

Iodine-131 was not detected in any of the weekly samples analyzed. LLD's for all the stations, both indicator and control, ranged from $<1.2 \times 10^{-3}$ to $<9.8 \times 10^{-3}$ pCi/m^3. The maximum preoperational level detected was 42×10^{-3} pCi/m^3.

DIRECT RADIATION

Ambient radiation levels in the environs were measured with energy-compensated $CaSO_4$ (Tl) thermoluminescent dosimeters (TLDs) supplied and read by AREVA NP EL. Packets containing TLDs for quarterly exposure were placed in the owner controlled area and around the Site at various distances and in each land based meteorological sector. Special emphasis was placed on special interest areas such as population centers, nearby residences, and schools.

Direct Radiation (Table C-4)

A total of 49 locations were monitored for direct radiation during 2007, including 12 on-site locations, 31 off-site locations within the 10 mile zone, and 6 control locations beyond 10 miles. Effort was made to locate TLDs at schools and population centers in the area.

Five readings for each TLD (ie; 5 elements) at each location were taken in order to obtain a more statistically valid result. For these measurements, the rad is considered equivalent to the rem, in accordance with 10CFR20.1004.

The average dose rate for the 31 quarterly off-site indicator TLDs was 4.2 millirads per standard month, while the on-site average was 4.1 millirads per standard month. The average control rate was similar at 4.3 millirads per standard month. The preoperational average for the quarterly TLD readings was 4.4 millirads per standard month.

In Figure 2, the quarterly average radiation levels of the off-site indicator stations versus the control stations, are plotted for the period 1987 through 2007, with an inset graph depicting the current year back to 1973.

TERRESTRIAL

Milk samples were taken semi-monthly when cows were on pasture and monthly when cows were not grazing on open pasture. Animals are considered on pasture from April to November of each year. Samples were collected in polyethylene containers and transported in ice chests with no preservatives added to the milk.

A well water sample was collected monthly. Separate raw and treated potable water samples were composited daily at the City of Salem water treatment plant. All samples were collected in new polyethylene containers.

Locally grown vegetable and fodder crops were collected at the time of harvest with the exception of ornamental cabbage. MTS personnel planted, maintained and harvested this broad leaf crop in the fall from three locations on site and one across the river. All samples were weighed and packed in plastic bags.

Soil is sampled every three years at nine locations. Ten core samples were collected at each location and then composited into one representative sample.

Milk (Table C-5)

Milk samples were collected at 4 local dairy farms (2 farms in NJ and 2 in Delaware). Each sample was analyzed for I-131 and gamma emitters.

- Iodine-131 was not detected in any of the 80 samples analyzed.

LLD's for both the indicator and the control station samples ranged from <0.1 to 0.8 pCi/L. The maximum preoperational level detected was 65 pCi/L which occurred following a period of atmospheric nuclear weapons tests. Results from 1987 to 2007 are plotted on Figure 3, with an inset graph depicting the current year back to 1973.

- Gamma spectroscopy performed on each of the 80 samples indicated the presence of the naturally-occurring radionuclides K-40 and Radium. All other gamma emitters searched for were below the LLD.

  - Potassium-40 was detected in all 30 samples. Concentrations for the 60 indicator station samples ranged from 1200 to 1510 pCi/L, with an average of 1340 pCi/L. The 20 control station sample concentrations ranged from 1250 to 1410 pCi/L, with an average of 1330 pCi/L. The maximum preoperational level detected was 2000 pCi/L, with an average of 1437 pCi/L.

  - Radium was detected in 5 indicator station samples at concentrations ranging from 6 to 13 pCi/L, with an average of 10 pCi/L. The 1 positive control station sample had a concentration of 10 pCi/L. The preoperational had an average of 3.8 pCi/L and a range of 1.5 to 11 pCi/L.

Well Water (Ground Water) (Tables C-6, C-7)

Although wells in the vicinity of SGS/HCGS are not directly affected by plant operations, water samples were collected monthly from one farm's well during January through December of the year. Each management audit sample was analyzed for gross alpha, gross beta, tritium, and gamma emitters.

- Gross alpha activity was not detected in any of the well water samples. LLD's ranged from <0.5 to 2.0 pCi/L.

The maximum preoperational level detected was 9.6 pCi/L. There was no preoperational average determined for this analysis.

- Gross beta activity was detected in all 12 well water samples. Concentrations for the samples ranged from 9.3 to 12 pCi/L, with an average of 10 pCi/L. The 2007 gross beta results are comparable with the preoperational results which ranged from <2.1 to 38 pCi/L, with an average value of 9 pCi/L.

- Tritium activity was not detected in any of the well water samples. The LLD's ranged from <147 to <158 pCi/L. The maximum preoperational level detected was 380 pCi/L. There was no preoperational average determined for this analysis.

- Gamma spectroscopy performed on each of the 12 well water samples indicated the presence of the naturally-occurring radionuclides K-40 and Radium. All other gamma emitters searched for were below the LLD.

    - Radium was detected in all 12 of the well water samples at concentrations ranging from 86 to 173 pCi/L with an average of 122 pCi/L. The maximum preoperational level detected was 2.0 pCi/L. There was no preoperational average determined for this analysis.

      These values are similar to those found in the past 18 years. However, as with the 1989 through 2006 results, they are higher than those found in the preoperational program. These results are due to a procedural change for sample preparation. The change results in less removal of radon (and its daughter products) from the sample. It is reasonable to conclude that values currently observed are typical for this region. [20,21,22]

    - Potassium-40 was detected in 6 of the samples at concentrations ranging from 53 to 74 pCi/L and an average of 39 pCi/L.

The maximum preoperational level detected was 30 pCi/L. There was no preoperational average determined for this analysis.

Potable Water (Drinking Water) (Tables C-8, C-9)

Both raw and treated potable water samples were collected and composited by Salem water treatment plant 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 will directly affect this pathway. Each of the 24 individual samples was analyzed for gross alpha, gross beta, tritium, iodine-131 and gamma emitters.

- Gross alpha activity was detected in 4 raw and 2 treated water samples at concentrations of 0.5 to 1.7 pCi/L with an average of 0.7 pCi/L. LLD's for the remaining 18 samples ranged from <0.22 to <1.1 pCi/L. The maximum preoperational level detected was 2.7 pCi/L. There was no preoperational average determined for this analysis.

- Gross beta activity was detected in all 24 of the raw and treated water samples. The raw samples were at concentrations ranging from 2.3 to 3.4 pCi/L. Concentrations for the treated water ranged from 2.5 to 3.7 pCi/L. The average concentration for both raw and treated was 3.0 pCi/L. The maximum preoperational level detected was 9.0 pCi/L, with an average of 4.2 pCi/L.

- Tritium activity was not detected in any of the raw or treated potable water samples. LLD's for the raw and treated samples ranged from <137 to <165 pCi/L. The maximum preoperational level detected was 350 pCi/L, with an average of 179 pCi/L.

- Iodine-131 measurements were performed to an LLD of 1.0 pCi/L, even though the drinking water supplies are not affected by discharges from the Site since the receiving water body (Delaware River) is brackish and therefore the water is not used

for human consumption. Iodine-131 measurements for all 24 samples were below the LLD's. These values ranged from <0.1 to <0.3 pCi/L. There was no preoperational data available for comparison.

- Gamma spectroscopy performed on each of the 24 monthly water samples indicated the presence of the naturally-occurring radionuclides K-40 and Radium. All other gamma emitters searched for were below the LLD.

  - The radionuclide K-40 was detected in 6 of the treated potable waters at concentrations ranging from 28 to 55 pCi/L. It was detected in 5 of the raw potable water samples at concentrations from 34 to 57 pCi/L. The average for both raw and treated results was 43 pCi/L. LLD's for the remaining 13 potable water samples were <14 to <23 pCi/L. There was no preoperational data available for comparison.

  - Radium was detected in 4 of the treated potable waters at concentrations ranging from 3.2 to 38 pCi/L. It was detected in 1 of the raw potable water samples at a concentration of 8.1 pCi/L. The average for all the positive potable water samples was 14 pCi/L. LLD's for the remaining 19 samples were <1.5 to <5.8 pCi/L. The maximum preoperational level detected was 1.4 pCi/L. There was no preoperational average determined for this analysis. The higher results in the three measurable samples are due to the procedural change for sample preparation, as discussed in the Well Water section.

Vegetables (Table C-10)

Although vegetables in the region are not irrigated with water into which liquid plant effluents have been discharged, a variety of food products grown in the area for human consumption were sampled at 5 indicator stations (16 samples) and 3 control stations (8

samples). These vegetables, collected as management audit samples, were analyzed for gamma emitters and included asparagus, cabbage, sweet corn, peppers, and tomatoes.

- Gamma spectroscopy performed on each of the 24 samples indicated the presence of the naturally-occurring radionuclide K-40 and in one sample radium. All other gamma emitters searched for were below the LLD.

  - Potassium-40 was detected in all 24 samples. Concentrations for the 16 indicator station samples ranged from 1330 to 2700 pCi/kg-wet and averaged 2090 pCi/kg-wet. Concentrations for the 8 control station samples ranged from 1490 to 2670 pCi/kg-wet, and averaged 2060 pCi/kg-wet. The average concentration detected for all samples, both indicator and control, was 2080 pCi/kg-wet. The maximum preoperational level detected was 4800 pCi/kg-wet, with an average of 2140 pCi/kg-wet.

  - Radium was detected in 1 of the indicator tomato samples at a concentration of 23 pCi/kg-wet. LLD's for all the remaining vegetable samples, both indicator and control, ranged from <2.2 to <10 pCi/L. There was no preoperational data available for comparison.

Fodder Crops (Table C-11)

Although not required by the SGS or HCGS Technical Specifications/ODCM, 3 samples of crops normally used as cattle feed (silage and soybeans) were collected from three indicator stations (4 samples) and one control station (2 samples). It was determined that these products may be a significant 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 this year are milk sampling stations.

In addition to the silage and soybean, ornamental cabbage was planted and maintained by MTS personnel at 3 locations on site and 1 in Delaware, at 3.9 miles. These samples were harvested in December. These broad leaf vegetation samples were deemed necessary since there are no longer any milk farms operating within the 5-km radius of SGS/HCGS. The closest milk farm we have is located in Odessa, DE at 4.9 miles (7.88 km).

- Gamma spectroscopy performed on each of the 10 samples indicated the presence of the naturally-occurring radionuclides Be-7, K-40 plus Radium in one sample. All other gamma emitters searched for were below the LLD.

  - Beryllium-7, attributed to cosmic ray activity in the atmosphere, was detected in 3 of the indicator silage samples at concentrations from 170 to 506 pCi/kg-wet. It was detected in the control station silage sample at 976 pCi/kg-wet. The maximum preoperational level detected for silage was 4700 pCi/kg-wet, with an average of 2000 pCi/kg-wet. Be-7 was not detected in either the indicator nor control station soybean samples. The maximum preoperational level detected for soybean samples was 9300 pCi/kg-dry. Be-7 was detected in all 4 of the ornamental cabbage samples at concentrations of 75 to 336 pCi/kg-wet with a combined average of 200 pCi/kg-wet. There was no preoperational data available for comparison with this type of samples.

  - Potassium-40 was detected in all 10 of the vegetation station samples. The combined average for the indicator station samples was 5420 pCi/kg-wet. The average for the 2 control station vegetation samples was 11350 pCi/kg-wet. The average concentration detected for the silage samples (both indicator and control) was 4890 pCi/kg-wet. Preoperational results averaged 7000 pci/kg-wet. Results for the soybean samples (indicator and control) was 15100 pCi/kg-wet. Preoperational soybean results averaged 22000 pCi/kg-dry. The average concentration of K-40 for the 4 ornamental cabbage samples was 4100 pCi/kg-wet. There was no preoperational data available for comparison with these samples.

- Radium was detected in 1 of the indicator soybean samples at a concentration of 15 pCi/kg-wet. LLD's for all the remaining vegetation samples, both indicator and control, ranged from <7.2 to <14 pCi/L. There was no preoperational average available for comparison.

SOIL (Table C-12)

Soil is sampled every three years at nine stations, including two control , and analyzed for gamma emitters. Samples are collected at each station, in areas that have been relatively undisturbed since the last collection, in order to determine any change in the radionuclide inventory of the area.

- Gamma spectroscopy, performed on each of the 9 samples, indicated the presence of the naturally-occurring radionuclides K-40, Radium and Th-232, in addition to low levels of the fission product Cs-137. All other gamma emitters searched for were below the LLD.

  - Potassium-40 was detected in all 7 of the indicator station samples at concentrations ranging from 33000 to 13510 pCi/kg-dry with an average of 7700 pCi/kg-dry. The 2 control station samples had an average of 8150 pCi/kg-dry. The maximum preoperational level detected was 24000 pCi/kg-dry with an average of 10000 pCi/kg-dry.

  - Cesium-137 was detected in 5 of the indicator station samples ranging from 76 to 196 pCi/kg-dry, with an average of 150 pCi/kg-dry. The control station samples had an average of 110 pCi/kg-dry. The maximum preoperational level detected was 2800 pCi/kg-dry, with an average of 800 pCi/kg-dry. Results from 1974 to the current year are plotted on Figure 7.

- Radium was detected in all 7 indicator station samples in concentrations of 259 to 1155 pCi/kg-dry, with an average of 600 pCi/kg-dry. The control station samples showed an average of 680 pCi/kg-dry. The maximum preoperational level detected was 1500 pCi/kg-dry with an average of 870 pCi/kg-dry.

- Thorium-232 was detected in all of the indicator station samples in ranges of 230 to 1176 pCi/kg-dry, and had an average of 600 pCi/kg-dry. The 2 control station samples were 739 and 790 pCi/kg-dry with an average of 765 pCi/kg-dry. The maximum preoperational level detected was 1400 pCi/kg-dry with an average of 740 pCi/kg-dry.

AQUATIC

Environmental Consulting Services, Inc (ECSI) collected all aquatic samples (with the exception of the 6S2 shoreline sediment and February's alternate surface water locations 7E1 and 11A1).

Surface water samples were collected in new polyethylene containers that were rinsed twice with the sample medium prior to collection.

Edible fish and crabs are taken by net and then processed. In processing, the flesh is separated from the bone and shell and the flesh placed in sealed containers and frozen before being transported in ice chests.

Sediment samples collected by ECSI were taken with a bottom grab sampler and frozen in sealed polyethylene containers before being transported in ice chests. MTS personnel collect location 6S2 shoreline sediment on the beach behind the parking area for the Helicopter Pad.

Surface Water (Tables C-13, C-14, C-15)

Surface water samples were collected monthly at 4 indicator stations and one control station in the Delaware estuary. One location is at the outfall area (which is the area where liquid radioactive effluents from the Salem Station are allowed to be discharged into the Delaware River), another is downstream from the outfall area, and another is directly west of the outfall area at the mouth of the Appoquinimink River. Two upstream locations are in the Delaware River and at the mouth of the Chesapeake and Delaware Canal, the latter being sampled when the flow is from the Canal into the river. Station 12C1, at the mouth of the Appoquinimink River, serves as the operational control. [Location 12C1 was chosen 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 pre-operational summary report, due to the tidal nature of this Delaware-River-Bay estuary, there are flow rate variations. The further the distance from the boundary between the Delaware River and the Delaware Bay (Liston Point), the lower the background levels, the lower the salinity, lower K-40(AA) and lower concentrations of soluble gross beta emitters.] All surface water samples were analyzed monthly for gross beta, tritium and gamma emitters.

- Gross beta activity was detected in 45 of the indicator station samples ranging from 5.4 to 255 pCi/L, with an average of 82 pCi/L. Beta activity was detected in all 12 of the control station samples with concentrations ranging from 16 to 137 pCi/L, with an average of 70 pCi/L. The maximum preoperational level detected was 110 pCi/L, with an average of 32 pCi/L. Quarterly results for all locations are plotted on Figure 4, for the years 1987 to 2007, with an inset graph depicting the current year back to 1973.

- Tritium activity was not detected in any of the control station samples. It was detected in 8 of the indicator station samples at concentrations ranging from 170 to 460 pCi/L and an average of 82 pCi/L. LLD's for the remaining station samples, both indicator and control, ranged from <150 to <190 pCi/L. The maximum preoperational level detected was 600 pCi/L, with an average of 210 pCi/L.

Positive results from 1987 to 2007 are plotted on Figure 5, with an inset graph depicting the current year back to 1973.

- Gamma spectroscopy performed on each of the 47 indicator station and 12 control station surface water samples indicated the presence of the naturally-occurring radionuclides K-40 and Radium. All other gamma emitters searched for were below the LLD.

  - Potassium-40 was detected in 46 samples from the indicator stations at concentrations ranging from 39 to 170 pCi/L and in all 12 of the control station samples ranging from 44 to 155 pCi/L. The average for the indicator station locations was 85 pCi/L, while the average for the control station locations was 88 pCi/L. The maximum preoperational level detected was 200 pCi/L, with an average of 48 pCi/L.

  - Radium was detected in 2 of the indicator stations at concentrations of 6.4 and 7.3 pCi/L and an average of 6.9 pCi/L. It was detected in 3 of the control location samples from 7.4 to 8.4 pCi/L with an average of 7.9 pCi/L. LLD's for the remaining station samples, both indicator and control, ranged from <1.5 to <13 pCi/L. The maximum preoperational level detected was 4 pCi/L with no average determined.

Fish (Table C-15)

Edible species of fish were collected semi-annually at 3 locations, 2 indicator and 1 control, and analyzed for gamma emitters in flesh. Samples included channel catfish, white catfish, bluefish, white perch, American shad, carp and striped bass. (See explanation of controls in the surface water section).

- Gamma spectroscopy performed on each of the 4 indicator station samples and 2 control station samples indicated the presence of the naturally-occurring radionuclide K-40. All other gamma emitters searched for were below the LLD.

  - Potassium-40 was detected in all 4 samples from the indicator stations at concentrations ranging from 3440 to 3764 pCi/kg-wet for an average of 3618 pCi/kg-wet. K-40 was detected in both samples from the control location at 3420 and 3700 pCi/kg-wet. The average for the control samples was 3560 pCi/kg-wet. The maximum preoperational level detected was 13000 pCi/kg-wet, with an average of 2900 pCi/kg-wet.

Blue Crab (Table C-16)

Blue crab samples were collected twice during the season at 2 locations, 1 indicator and 1 control, and the edible portions were analyzed for gamma emitters. (See explanation of controls in the surface water section).

- Gamma spectroscopy performed on the flesh of the indicator station samples and the control station samples indicated the presence of the naturally-occurring radionuclide K-40. All other gamma emitters searched for were below the LLD.

  - Potassium-40 was detected in both indicator station samples at concentrations of 2430 and 3170 pCi/kg-wet. It was detected in both control station samples at 1390 and 3120 pCi/kg-wet. The average for both the indicator and control station samples was 2530 pCi/kg-wet. The maximum preoperational level detected was 12000 pCi/kg-wet, with an average of 2835 pCi/kg-wet.

Sediment (Table C-17)

Sediment samples were collected semi-annually from 7 locations, including 6 indicator stations and 1 control station. (Location 6S2 is the only shoreline sediment and it is directly affected by tidal fluctuations) Each of the 14 samples was analyzed for gamma emitters. Besides the naturally-occurring radionuclides K-40, Be-7, Th-232 and Radium, trace levels of the man-made nuclide, Cs-137, were detected in two sediment locations. These levels were well within the acceptable levels specified in section 3/4.12.1 of the Technical Specifications/ODCM. (See explanation of controls in the surface water section)

- Gamma spectroscopy was performed on each of the 12 indicator station samples and 2 control station samples. Except for the radionuclides listed above, all other gamma emitters searched for were below the LLD.

  - Cesium-137 was detected in 2 indicator station samples at concentrations of 32 and 53 pCi/kg-dry. It was not detected in any of the control station samples. The maximum preoperational level detected was 400 pCi/kg-dry with an average of 150 pCi/kg-dry. Results from 1987 to 2007 are plotted on Figure 6, with an inset graph depicting the current year back to 1973.

  - Cobalt-60 was not detected in any of the sediment samples. LLD's for the 14 samples, indicator and control, ranged from <5.2 to <150 pCi/kg-dry. Results of all the positive values from 1987 to 2007 are plotted on Figure 6, with an inset graph depicting the current year back to 1973. There was no preoperational data available for comparison.

  - Beryllium-7 was only detected in one of the indicator station samples at a concentration of 1711 pCi/kg-dry. It was not detected in either control location. The maximum preoperational level detected was 2300 pCi/kg-dry. There was no preoperational average determined for this nuclide.

- Potassium-40 was detected in all 12 indicator station samples at concentrations ranging from 2250 to 20100 pCi/kg-dry, with an average of 8250 pCi/kg-dry. Concentrations detected in both of the control station samples were at 14200 and 17100 pCi/kg-dry. The average for the control station samples was 15650 pCi/kg-dry. The maximum preoperational level detected was 21000 pCi/kg-dry, with an average of 15000 pCi/kg-dry.

- Radium was detected in all 12 indicator station samples at concentrations ranging from 217 to 1050 pCi/kg-dry, with an average of 550 pCi/kg-dry. Concentrations detected in both of the control station samples were at 604 and 614 pCi/kg-dry, with an average of 610 pCi/kg-dry. The grand average for both the indicator and control station samples was 560 pCi/kg-dry. The maximum pre-operational level detected was 1200 pCi/kg-dry, with an average of 760 pCi/kg-dry.

- Thorium-232 was detected in all 12 indicator station samples at concentrations ranging from 240 to 995 pCi/kg-dry, with an average of 635 pCi/kg-dry. Concentrations detected in both of the control station samples were at 920 and 1050 pCi/kg-dry, with an average of 985 pCi/kg-dry. The grand average for both the indicator and control station samples was 690 pCi/kg-dry. The maximum pre-operational level detected was 1300 pCi/kg-dry, with an average of 840 pCi/kg-dry.

PROGRAM DEVIATIONS

The following air samplers were unavailable due to power loss:

STATION	LOCATION	HOURS UNAVAILABLE
(1) 1F1	5.8 mi. N of vent	145.9 (1.7% for year)
(2) 16E1	4.1 mi. NNW of vent	149.8 (1.8% for year)

(1) Both an air particulate and an air iodine sample were considered invalid due to a power outage at location 1F1 during the last week of February, 2007. This power outage was attributable to equipment malfunction. It was determined that the pump vanes had broken into small pieces causing the pump to seize. Although this had not happened before, it was noted that the samplers/pumps had not been overhauled in over three years. MTS personnel decided to overhaul all the air sampler pumps over the next several weeks. To avoid this happening in the future, all pumps will be placed on an 18-24 month maintenance schedule. Overall availability for this air sampling location was 98.3% for the year 2007.

(2) Both an air particulate and an air iodine sample were considered invalid due to a power outage at location 16E1 during the first week of October, 2007. MTS considered this power outage to be attributable to a blown fuse. It was decided to change the fuses in all the air samplers over the next several weeks. Overall availability for this air sampling location was 98.2% for the year 2007.

During the month of February, ice floes in the Delaware River prevented the aquatic sampling vendor, ECSI, from launching a boat to collect the monthly surface water samples. Four alternate, land accessible sampling locations were used for this months collection instead. Since location 1F2 is midpoint in the river, an alternate land was not established.

CONCLUSIONS

The Radiological Environmental Monitoring Program for Salem and Hope Creek Generating Stations was conducted during 2007 in accordance with the SGS and HCGS Technical Specifications/ODCM. The LLD values required by the Technical Specifications/ODCM were achieved for this reporting period. The objectives of the program were also met during this period. The data collected assists in demonstrating that SGS and HCGS were operated in compliance with Technical Specifications/ODCM.

From the results obtained, it can be concluded that the levels and fluctuations of radioactivity in environmental samples were as expected for an estuarine environment. No unusual radiological characteristics were observed in the environs of SGS/HCGS during this reporting period. 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, we can conclude that the operation of the Salem and Hope Creek Stations had no significant impact on the radiological characteristics of the environs of that area.

TABLE 1

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 Thermoluminescent Dosimeters	Forty-nine routine monitoring stations with two or more dosimeters placed as follows: An inner ring of stations, one in each land based meteorological sector (not bounded by water) in the general area of the site boundary: 1S1, 2S2, 2S4, 3S1, 4S1, 5S1, 6S2, 7S1, 10S1, 11S1, 15S1, 16S1. An outer ring of stations, one in each land-based meteorological sector in the 5 - 11 km range (3.12 - 6.88 miles) from the site (not bounded by or over water): 4D2, 5D1, 10D1, 14D1, 15D1, 2E1, 3E1, 11E2, 12E1, 13E1, 16E1, 1F1, 3F2, 4F2, 5F1, 6F1, 9F1, 10F2, 11F1, 13F2, 14F2, 14F3, 15F3. The balance of the stations to be placed in special interest areas such as population centers, nearby residences, and schools: 2F2, 2F5, 2F6, 3F3, 7F2, 12F1, 13F3, 13F4, 14F4, 16F2, 1G3, 10G1, 16G1, 3H1. and in one or two areas to serve as control stations: 3G1, 14G1.	Quarterly	Gamma dose/ quarterly

TABLE 1 (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	Samples from 6 locations:		
a. Air Particulate	4 Samples - one sample from close to the Site Boundary : 5S1 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, as for example 15-30 km distant and in the least prevalent wind direction: 14G1.		Iodine-131 / weekly
3. TERRESTRIAL	Samples from milking animals in 3 locations within 5 km distance. If there are none, then, 1 sample from milking animals in each of 3 areas between 5 - 8 km (3.12 - 5 miles) distant: 13E3, 14F4, 2G3. (1)		
a. Milk		Semi-monthly (when animals are on pasture)	Gamma scan / semi-monthly Iodine-131 / semi-monthly
	1 Sample from milking animals at a control location 15 - 30 km distant (9.38 - 18.75 miles): 3G1.	Monthly (when animals are not on pasture)	Gamma scan / monthly Iodine-131 / monthly
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, we sample 3E1 farm's well, as management audit.	Monthly	Gamma Scan / monthly Gross alpha / monthly Gross beta / monthly Tritium / monthly

TABLE 1 (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. Potable Water (Drinking Water)	One sample of the nearest water supply affected by its discharge (No groundwater samples are required as liquid effluents discharged from SGS/HCGS do not directly affect this pathway) However for management audit, one raw and one treated sample from nearest unaffected water supply is required: 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: 2F4, 2F9, 3F7, 6F2, 14F3, 1G4, 2G2, 9G1, 3H5.	Annually (at harvest)	Gamma scan/on collection
e. Fodder Crops	Although not required by SGS/HCGS ODCM, samples of crops normally used as cattle feed (silage-soybeans) were collected as management audit samples: 14F4, 3G1. Broad leaf vegetation (ornamental cabbage) was planted & collected in lieu of having a milk farm within 5 km of the Site [1] : 10D1, 1S1, 15S1, 16S1	Annually (at harvest)	Gamma scan/on collection

TABLE 1 (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
f. Soil	Although not required by SGS/HCGS ODCM, samples of soil were collected as management audit samples: 6S2, 2F9, 5F1, 10D1, 16E1, 13E3, 14F4, 2G3, 3G1	Every 3 years (2007-2010-2013)	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 (2) And an additional location in the Chesapeake & Delaware Canal: 16F1	Monthly	Gross Beta/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 (2) And an additional location downstream: 7E1	Semi-annually	Gamma scan (flesh)/ on collection
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 (2)	Semi-annually	Gamma scan (flesh)/ on collection

TABLE 1 (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
d. Sediment	One sample from downstream area: 7E1 One sample from cross-stream area: 12C1 One sample from outfall area: 11A1 One sample from upstream area: 1F2 One sample from a control location: 12C1(2) One sample from shoreline area: 6S2 One sample from Cooling Tower Blowdown: 15A1 And an additional location of south storm drain discharge line: 16A1	Semi-annually	Gamma scan/on collection

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

** Tech Specs/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) 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, MTS personnel planted and harvested ornamental cabbage (Brassica oleracea) at three locations on Site (1S1, 15S1, 16S1) and one across the river in Delaware (10D1).

(2) 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 plus lower K40 and Beta Activity.

FIGURE 1
GROSS BETA ACTIVITY IN AIR PARTICULATE
1987 THROUGH 2007

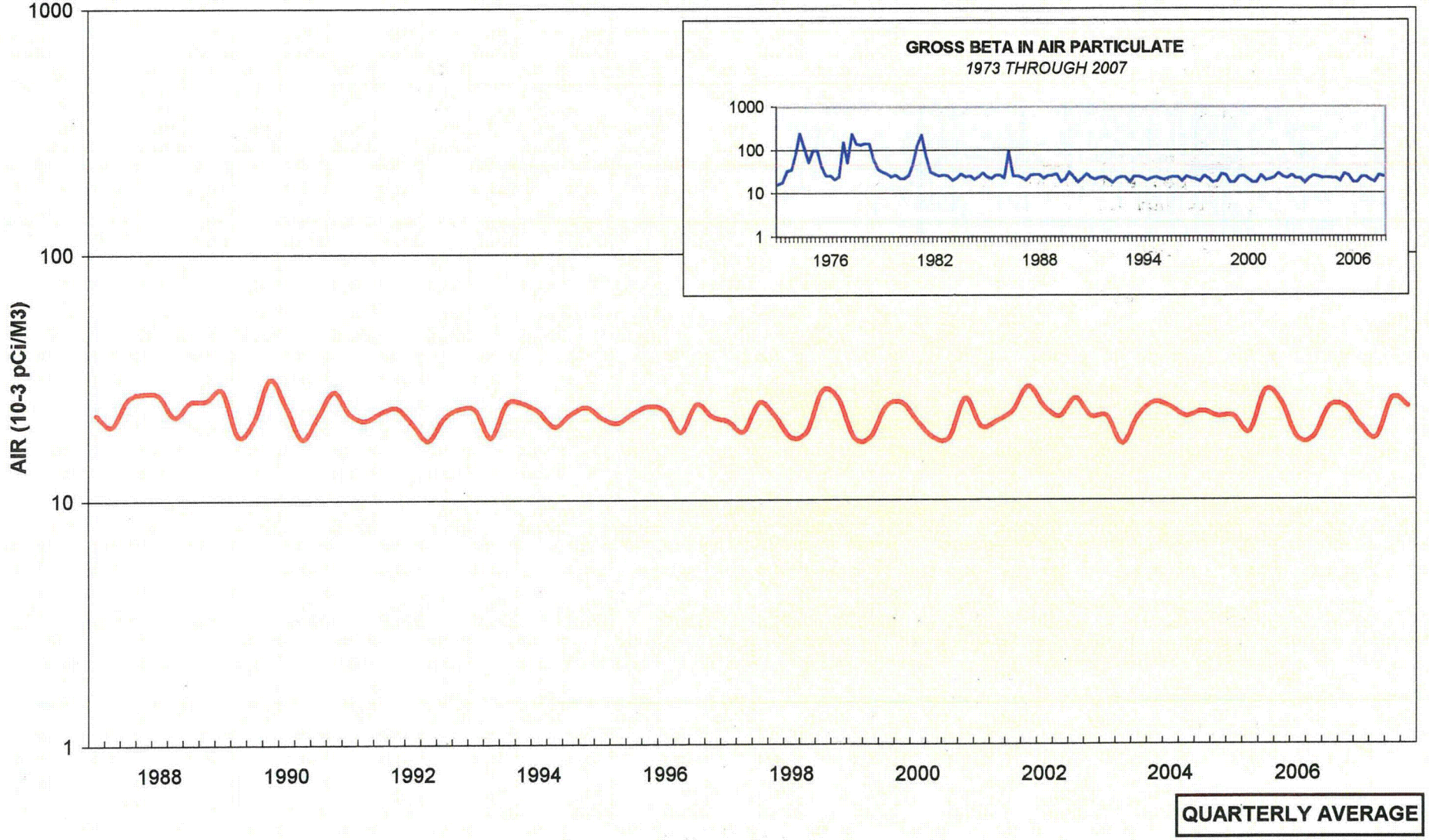


FIGURE 2
AMBIENT RADIATION - OFFSITE vs CONTROL STATION
1987 THROUGH 2007

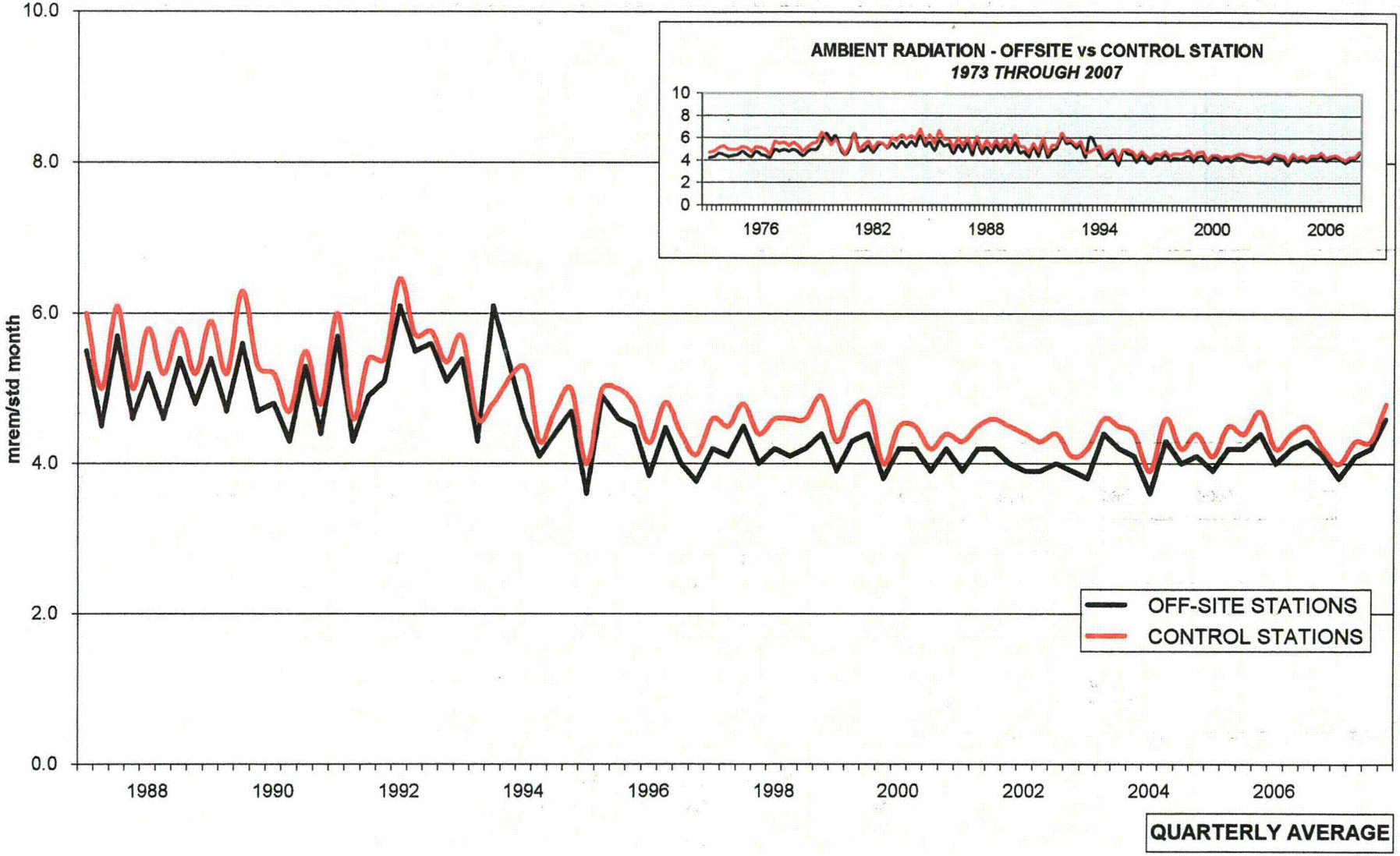


FIGURE 3
IODINE - 131 ACTIVITY IN MILK
1987 THROUGH 2007

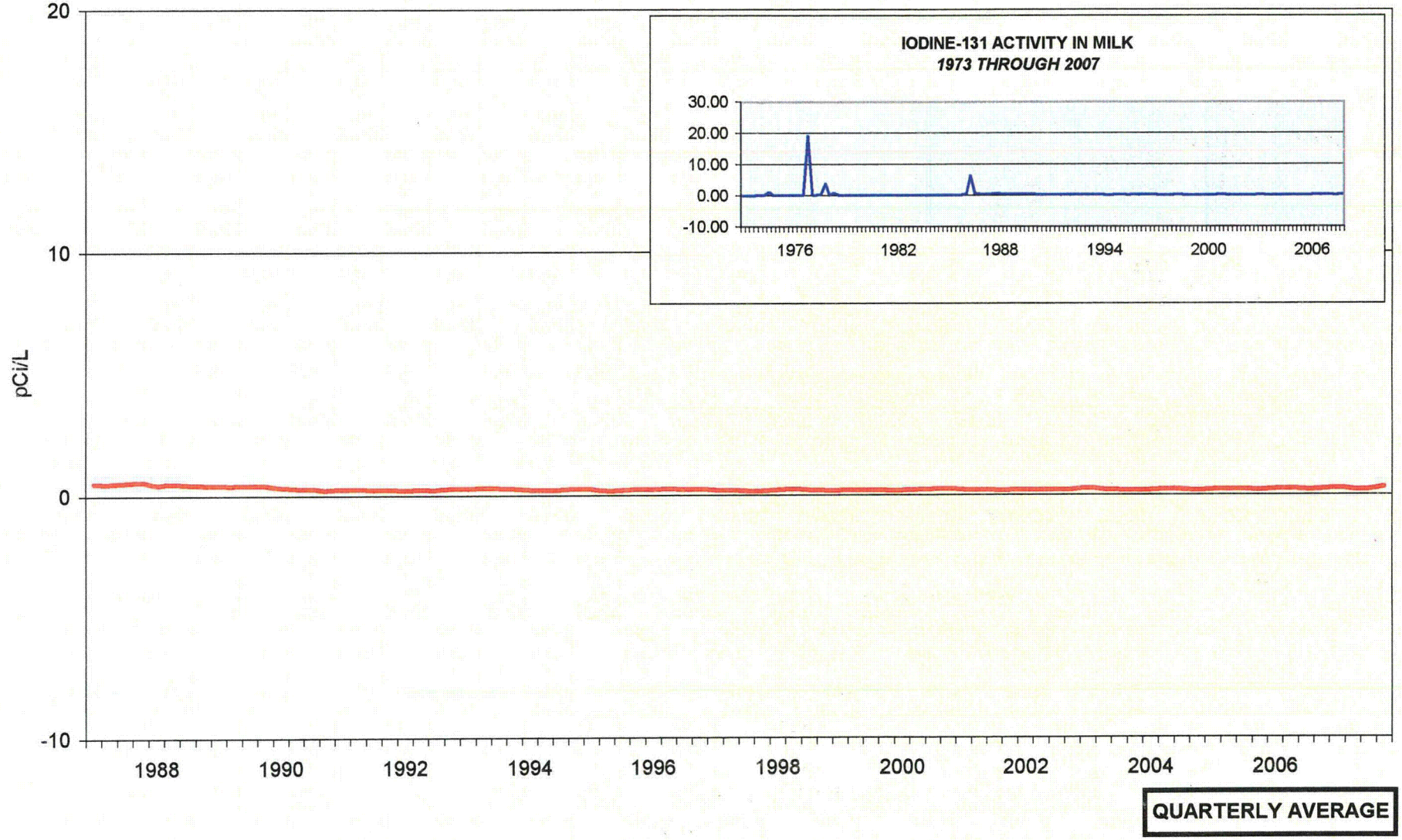


FIGURE 4
GROSS BETA ACTIVITY IN SURFACE WATER
1987 THROUGH 2007

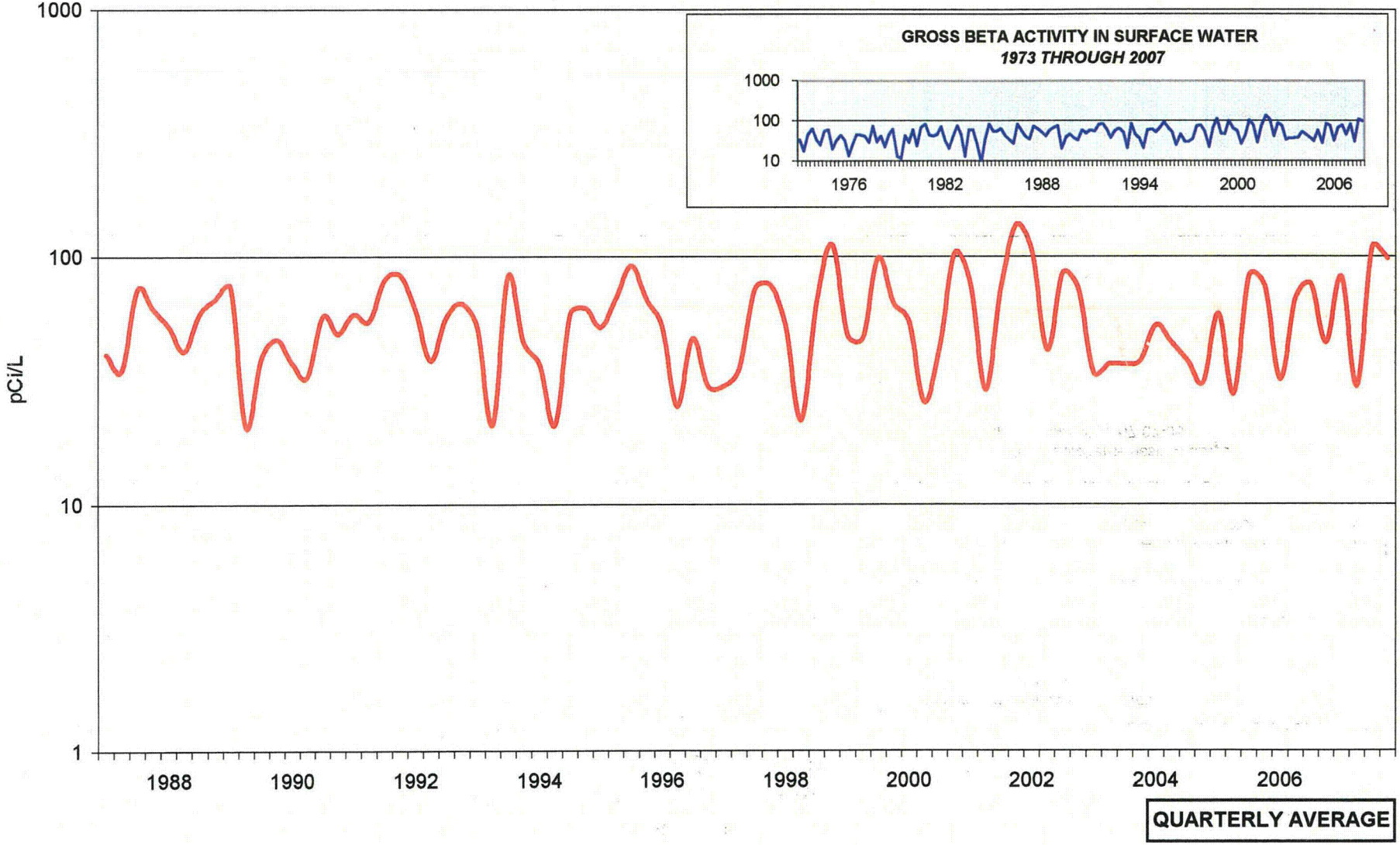


FIGURE 5
TRITIUM ACTIVITY IN SURFACE WATER
1987 THROUGH 2007

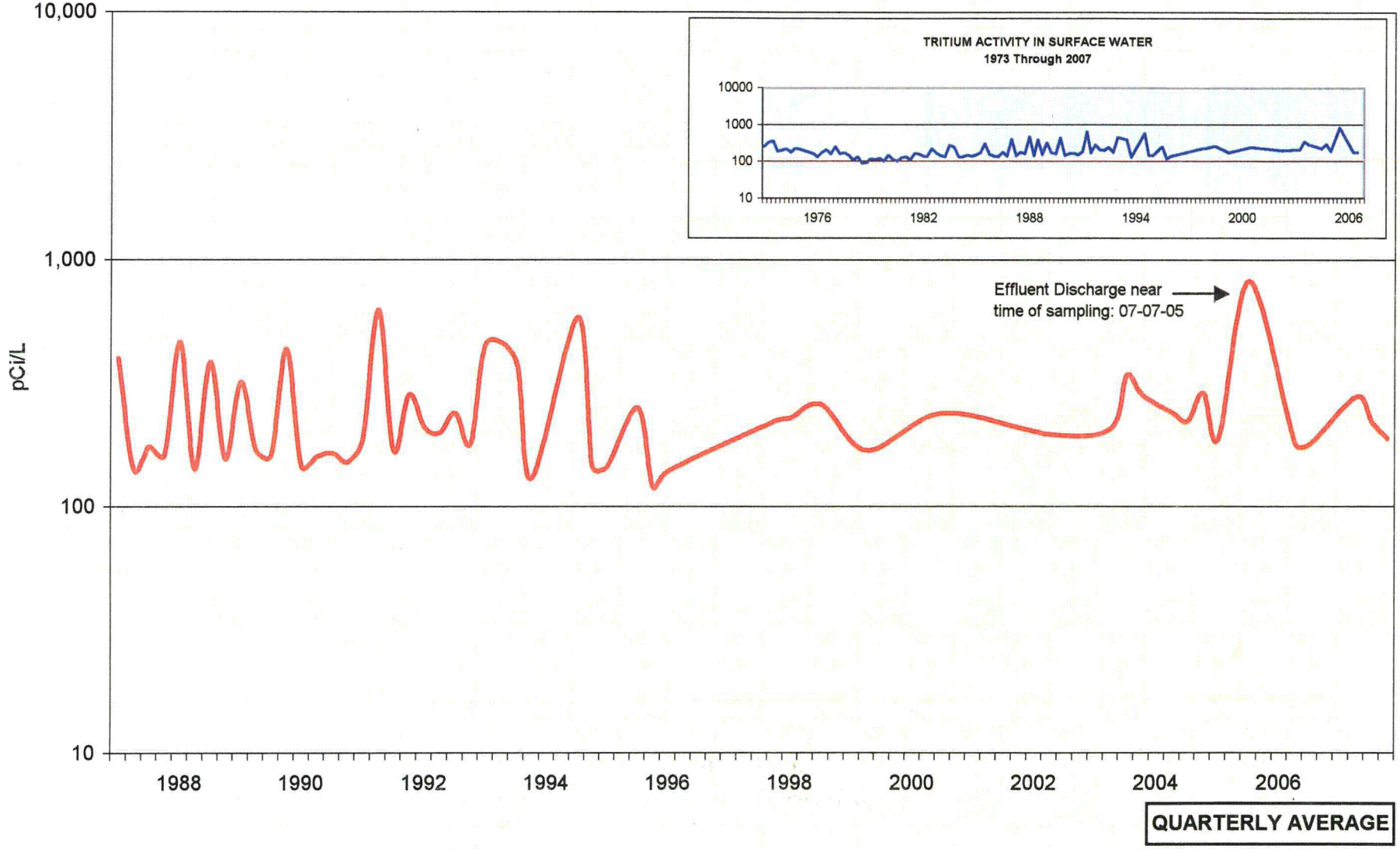


FIGURE 6
CESIUM-137 & COBALT-60 ACTIVITY IN AQUATIC SEDIMENT
1987 THROUGH 2007

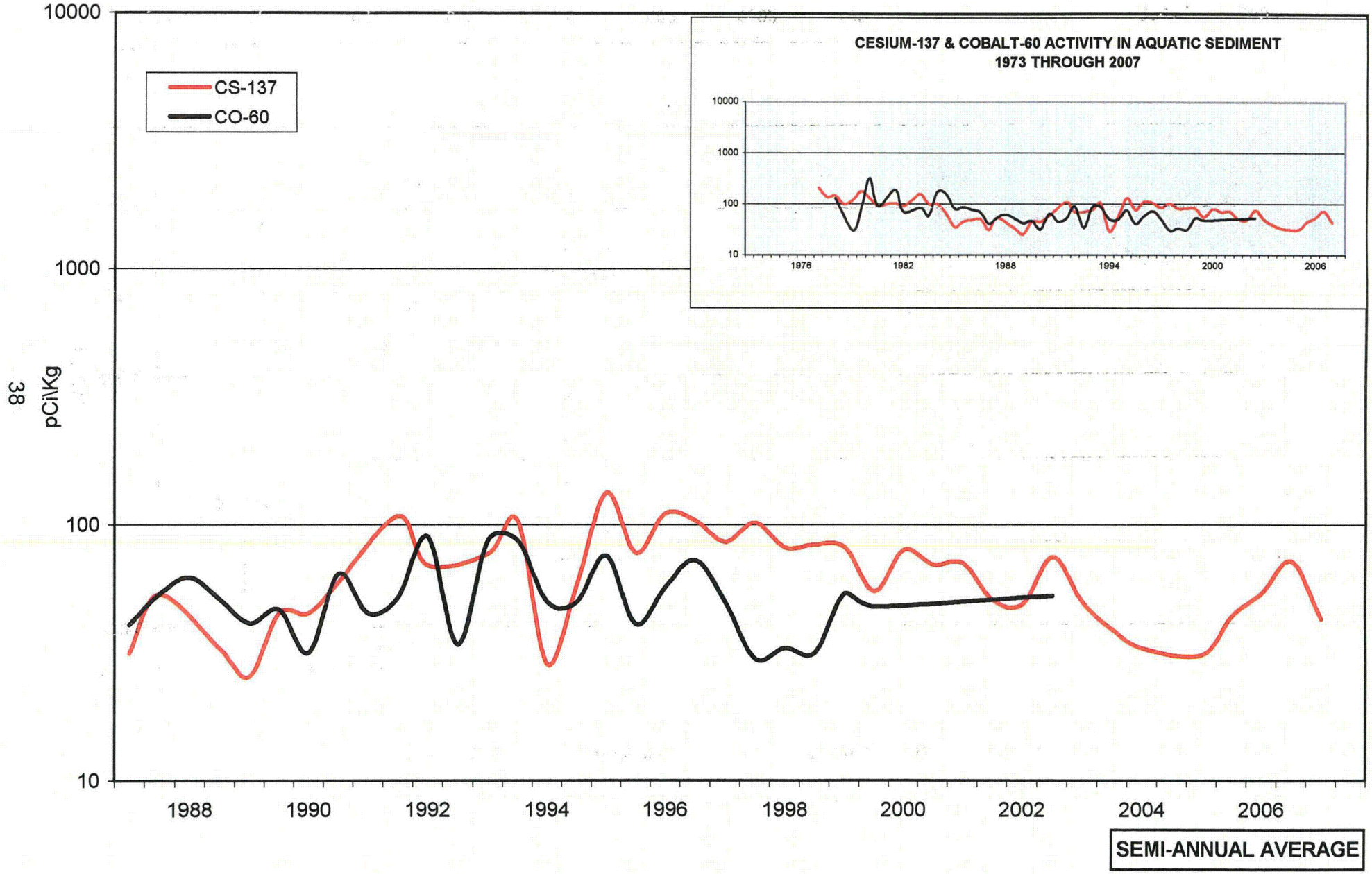
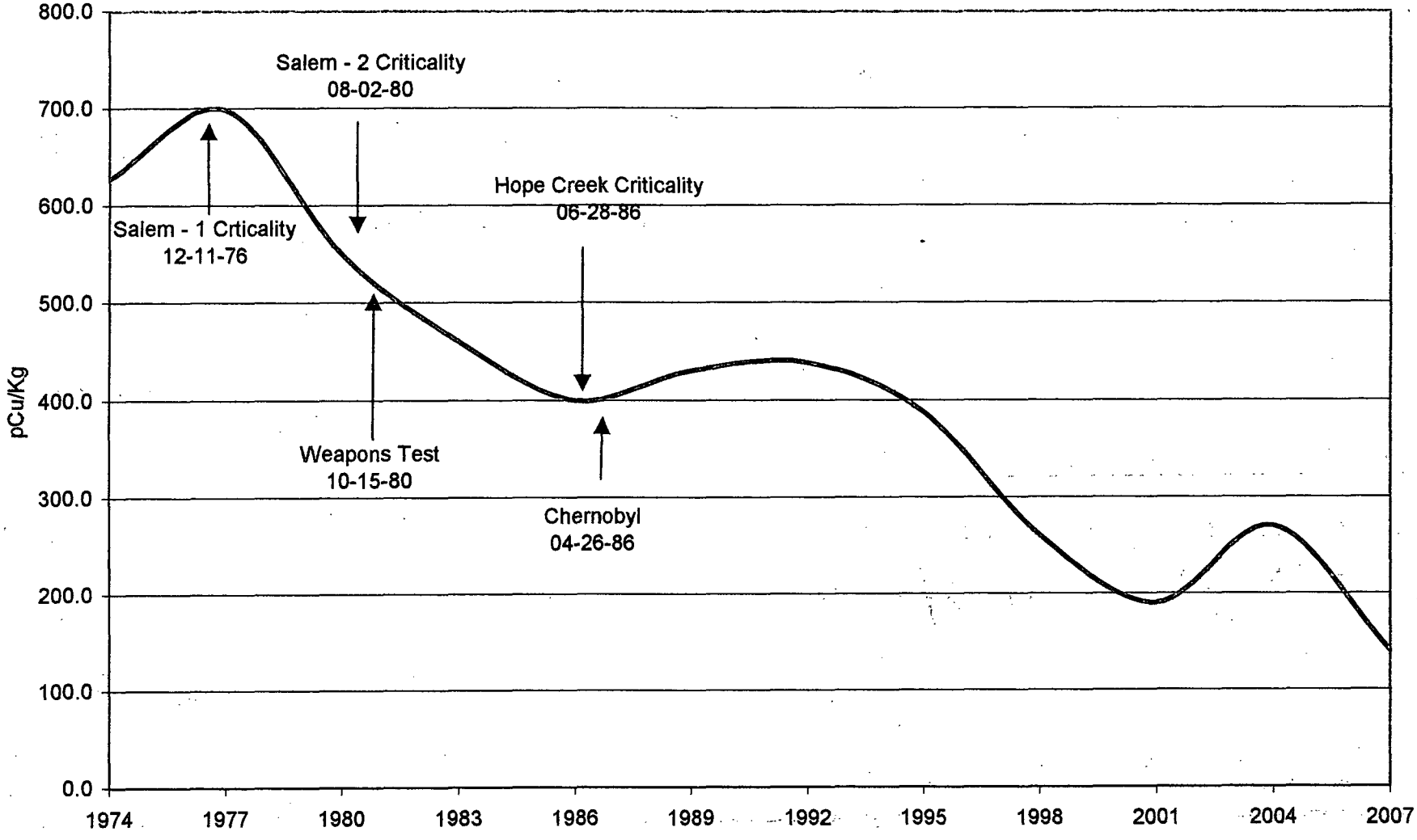


FIGURE 7

CESIUM -137 ACTIVITY IN SOIL 1974 THROUGH 2007



REFERENCES

[1] Public Service Enterprise Group . "Environmental Report, Operating License Stage - Salem Nuclear Generating Station Units 1 and 2". 1971.

[2] Public Service Enterprise Group . "Environmental Report, Operating License Stage - Hope Creek Generating Station". 1983.

[3] United States Atomic Energy Commission. "Final Environmental Statement - Salem Nuclear Generating Station, Units 1 and 2". Docket No. 50-272 and 50-311. 1973.

[4] United States Atomic Energy Commission. "Final Environmental Statement - Hope Creek Generating Station. Docket No. 50-354. 1983.

[5] Public Service Enterprise Group . "Updated Final Safety Analysis Report - Salem Nuclear Generating Station, Units 1 and 2". 1982.

[6] Public Service Enterprise Group . "Updated Final Safety Analysis Report - Hope Creek Generating Station.

[7] Radiation Management Corporation. "Artificial Island Radiological Environmental Monitoring Program - Annual Reports 1973 through 1982".

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

[9] Radiation Management Corporation. "Artificial Island Radiological Environmental Monitoring Program - December 11 to December 31, 1976". RMC-TR-77-02, 1977.

[10] Maplewood Testing Services. "Salem and Hope Creek Generating Stations' Radiological Environmental Monitoring Program - Annual Reports 1983 through 2006".

[11] Maplewood Testing Services. "Quality Assurance Plan." February, 2004

[12] Public Service Enterprise Group . "Salem Nuclear Generating Station Technical Specifications", Appendix A to Operating License No. DPR-70, 1976, Sections 6.8.4.h - 1,2,3 and 6.9.1.7.

[13] Public Service Enterprise Group . "Hope Creek Generating Station Technical Specifications", Appendix A to Facility Operating License No. NPF-57, 1986, Sections 6.8.4.h – 1,2,3 and 6.9.1.6.

REFERENCES (cont'd)

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

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

[16] U.S. Environmental Protection Agency. "Prescribed Procedures for Measurement of Radioactivity in Drinking Water." EPA-600/4-80-032, August, 1980.

[17] U.S. Nuclear Regulatory Commission. "Environmental Technical Specifications For Nuclear Power Plants." Regulatory Guide 4.8, December, 1975.

[18] U.S. Nuclear Regulatory Commission : "NRC Inspection Manual". Inspection Procedure 84750, Issue Date 3/15/94.

[19] Maplewood Testing Services. "Procedures Manual." Mechanical Division / Environmental Section

[20] NJDEP : "A South Jersey Homeowner's Guide to Radioactivity in Drinking Water: Radium" Revised April 2004.

[21] U.S. Geological Survey : "Water Quality in the Delaware River Basin :1998-2001", Circular 1227.

[22] U.S. Geological Survey : "Major Aquifers in New Jersey"

APPENDIX A

PROGRAM SUMMARY

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

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

SALEM COUNTY, NEW JERSEY JANUARY 1, 2007 to DECEMBER 31, 2007

MEDIUM OR PATHWAY SAMPLE (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 Particulates (10^{-3} pCi/m^3)	Beta	310	6.0	22 (258 /258) (10-37)	14G1 11.8 mi WNW	23 (52 /52) (10-36)	23 (52 /52) (10-36)	0
	Gamma Be7	24	2.0	83 (20 /20) (68-100)	16E1 4.1 mi NNW	88 (4 /4) (72-100)	85 (4 /4) (76-95)	0
	K-40	24	11.0	10 (18 /20) (7-14)	14G1 11.8 mi WNW	12 (3 /4) (7-16)	12 (3 /4) (7-16)	0
Air Iodine (10^{-3} pCi/m^3)	I-131	310	9	<LLD	-	<LLD	<LLD	0
II DIRECT								
Direct Radiation (mrad/std. month)	Quarterly Badges	196	-	4.2 (172 /172) (2.8-6)	1F1 5.8 mi N	5.6 (4 /4) (5.1-6)	4.3 (24 /24) (3.2-5.6)	0
III TERRESTRIAL								
Milk (pCi/L)	I-131	80	0.4	<LLD	-	<LLD	<LLD	0
	Gamma K-40	80	32	1340 (60 /60) (1200-1510)	13E3 4.9 mi W	1390 (20 /20) (1290-1460)	1330 (20 /20) (1250-1410)	0
	RA-NAT	80	8.5	10 (5 /60) (6-13)	14F4 7.6 mi WNW 13E3 4.9 mi W	11 (1 /20) (11-11) 11 (1 /20) (11-11)	10 (1 /20) (10-10)	0

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

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

SALEM COUNTY, NEW JERSEY JANUARY 1, 2007 to DECEMBER 31, 2007

MEDIUM OR PATHWAY SAMPLE (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
III TERRESTRIAL								
Well Water (pCi/L)	Alpha	12	2.6	<LLD	-	<LLD	No Control Location	0
	Beta	12	1.0***	10 (12 /12) (9.3-12)	3E1 4.1 mi NE	10 (12 /12) (9.3-12)	No Control Location	0
	H-3	12	158	<LLD	-	<LLD	No Control Location	0
	Gamma							
	K-40	12	31	60 (6 /12) (53-74)	3E1 4.1mi NE	60 (6 /12) (53-74)	No Control Location	0
	RA-NAT	12	4.7	122 (12 /12) (86-173)	3E1 4.1mi NE	122 (12 /12) (86-173)	No Control Location	0
Potable Water (pCi/L)	Alpha	24	1.5	0.8 (6 /24) (0.5-1.7)	2F3 8.0 mi NNE	0.8 (6 /24) (0.5-1.7)	No Control Location	0
	Beta	24	1.0***	3 (24 /24) (2.3-3.7)	2F3 8.0 mi NNE	3 (24 /24) (2.3-3.7)	No Control Location	0
	H-3	24	156	<LLD	-	<LLD	No Control Location	0
	Gamma							
	K-40	24	34	43 (11 /24) (28-57)	2F3 8.0 mi NNE	43 (11 /24) (28-57)	No Control Location	0
	I-131	24	0.4	<LLD	-	<LLD	No Control Location	0
	RA-NAT	24	4.7	14 (5 /24) (3-38)	2F3 8.0 mi NNE	14 (5 /24) (3-38)	No Control Location	0
Fruit & Vegetables (pCi/Kg-wet)	Gamma K-40	24	55	2090 (16 /16) (1330-2700)	15F4 7.0 mi NW	2500 (2 /2) (2460-2530)	2060 (8 /8) (1490-2670)	0

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

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

SALEM COUNTY, NEW JERSEY JANUARY 1, 2007 to DECEMBER 31, 2007

MEDIUM OR PATHWAY SAMPLE (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
	RA-NAT	24	17	23 (1 /16) (23-23)	2F9 7.5 mi NNE	23 (1 /4) (23-23)	LLD	0
III TERRESTRIAL								
Fodder Crops (pCi/Kg-wet)	Gamma							
	Be-7	10	66	240 (7 /8) (75-506)	3G1 17 mi NE	976 (1 /2) (976)	976 (1 /2) (976-976)	0
	K-40	10	32	5420 (8 /8) (2460-15800)	3G1 17 mi NE	11350 (2 /2) (8390-14300)	11350 (2 /2) (8390-14300)	0
	RA-NAT	10	17	15 (1 /8) (15-15)	14F4 7.6 mi WNW	15 (1 /2) (15-15)	<LLD	0
Soil (pCi/kg (dry)	Gamma							
	K-40	9	70	7700 (7 /7) (3300-13510)	14F4 7.6 mi. WNW	13510 (1 /1) (13510-13510)	8150 (2 /2) (7790-8510)	0
	Cs-137	9	33	150 (5 /7) (76-196)	10D1 3.9 mi. SSW	196 (1 /1) (196-196)	110 (2 /2) (97-123)	0
	RA-NAT	9	50	600 (7 /7) (259-1155)	14F4 7.6 mi. WNW	1155 (1 /1) (1155-1155)	680 (2 /2) (671-694)	0
	Th-232	9	50	600 (7 /7) (230-1176)	14F4 7.6 mi. WNW	1176 (1 /1) (1176-1176)	765 (2 /2) (739-790)	0
IV AQUATIC								
Surface Water (pCi/L)	Beta	59	11	82 (46 /47) (5.4-255)	7E1 4.5 mi SE	137 (12 /12) (33-255)	70 (12 /12) (16-137)	0
	H-3	59	170	239 (8 /47) (170-460)	7E1 4.5 mi SE	260 (4 /12) (180-460)	<LLD	0
	Gamma							
	K-40	59	31	85 (46 /47) (39-170)	7E1 4.5 mi SE	102 (12 /12) (46-170)	88 (12 /12) (44-155)	0
	RA-NAT	59	4.7	6.9 (2 /47) (6.4-7.3)	12C1 2.5 mi. WSW	7.9 (3 /12) (7.4-8.4)	7.9 (3 /12) (7.4-8.4)	0

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

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

SALEM COUNTY, NEW JERSEY JANUARY 1, 2007 to DECEMBER 31, 2007

MEDIUM OR PATHWAY SAMPLE (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
IV AQUATIC								
Blue Crabs (pCi/kg-wet)	Gamma K-40	4	55	2800 (2 /2) (2430-3170)	11A1 0.2 mi. SW	2800 (2 /2) (2430-3170)	2255 (2 /2) (1390-3120)	0
Edible Fish (pCi/kg-wet)	Gamma K-40	6	55	3620 (4 /4) (3440-3740)	7E1 4.5 mi. SE	3645 (2 /2) (3560-3730)	3560 (2 /2) (3420-3700)	0
Sediment (pCi/kg-dry)	Gamma							
	Be-7	14	301	1710 (1 /12) (1710-1710)	16F1 6.9 mi. NNW	1710 (1 /2) (1710-1710)	<LLD	0
	K-40	14	55	8250 (12 /12) (2250-20100)	16F1 6.9 mi. NNW	18050 (2 /2) (16000-20100)	15650 (2 /2) (14200-17100)	0
	Co-60	14	25	<LLD	-		<LLD	0
	Cs-137	14	54	43 (2 /12) (32-53)	16F1 6.9 mi. NNW	53 (1 /2) (53-53)	<LLD	0
	RA-NAT	14	5.0	550 (12 /12) (217-1050)	16F1 6.9 mi. NNW	810 (2 /2) (566-1050)	610 (2 /2) (604-614)	0
	Th-232	14	8.1	635 (12 /12) (240-995)	12C1 2.5 mi. WSW	985 (2 /2) (920-1050)	985 (2 /2) (920-1050)	0

* LLD listed is the lower limit of detection which we endeavored to achieve during this reporting period. In some instances nuclides were detected at concentrations above/below the LLD values shown.

** Mean calculated using values above LLD only. Fraction of measurements above LLD are in parentheses.

*** Typical LLD values.

APPENDIX B

SAMPLE DESIGNATION AND LOCATIONS

APPENDIX B

SAMPLE DESIGNATION

The PSEG's Maplewood Testing Services identifies samples by a three part code. 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 being conducted. The identification code, "SA", has been applied to Salem and Hope Creek stations. The next three letters are for 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 Leafy Vegetables	SWA	= Surface Water
FPV	= Vegetables (Various)	VGT	= Fodder Crops (Various)
GAM	= Game (Muskrat)	WWA	= Well Water

The last four symbols are a location code based on direction and distance from a standard reference point. Of these, the first 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; e.g., 2=NNE, 3=NE, 4=ENE, etc. 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,... 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 reactor site at a radial distance of 4 to 5 miles off-site, (therefore, radial distance E). The number 1 indicates that this is sampling station #1 in that particular sector.

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. The Datem used was WGS 84.

STATION CODE	STATION LOCATION	LATITUDINAL DEG. MIN. SEC	LONGITUDINAL DEG. MIN. SEC	SAMPLE TYPE
1S1	0.55mi. N of vent	39 - 28 - 16	75 - 32 - 13	IDM,VGT
2S2	0.4 mi. NNE of vent; Lamp Pole 65 Near HC Switch Yard	39 - 28 - 07	75 - 32 - 00	IDM
2S4	0.59 mi. NNE of vent	39 - 28 - 18	75 - 31 - 54	IDM
3S1	0.58 mi. NE of vent	39 - 28 - 08	75 - 31 - 41	IDM
4S1	0.60 mi. ENE of vent	39 - 28 - 02	75 - 31 - 33	IDM
5S1	1.0 mi. E of vent; site access road	39 - 27 - 38	75 - 31 - 08	AIO,APT,IDM
6S2	0.2 mi. ESE of vent; area around Helicopter Pad	39 - 27 - 43	75 - 31 - 55	IDM,SOL,ESS
7S1	0.12 mi. SE of vent; station personnel gate	39 - 27 - 44	75 - 32 - 03	IDM
10S1	0.14 mi. SSW of vent; inlet cooling water bldg.	39 - 27 - 41	75 - 32 - 10	IDM
11S1	0.09 mi. SW of vent; service water inlet bldg.	39 - 27 - 43	75 - 32 - 12	IDM
15S1	0.57 mi. NW of vent	39 - 28 - 10	75 - 32 - 32	IDM,VGT
16S1	0.54 mi. NNW of vent	39 - 28 - 13	75 - 32 - 26	IDM,VGT
11A1	0.2 mi. SW of vent; outfall area	39 - 27 - 59	75 - 32 - 25	ECH,ESF,ESS,SWA
11A1A	0.17 mi. SW of vent; Located at the plant barge slip	39 - 27 - 41	75 - 32 - 02	Alternate SWA
15A1	0.3 mi. NW of vent; cooling tower blowdown discharge line outfall	39 - 27 - 67	75 - 32 - 19	ESS
16A1	0.7 mi. NNW of vent; south storm drain discharge line	39 - 28 - 24	75 - 32 - 58	ESS
12C1	2.5 mi. WSW of vent; west bank of Delaware River	39 - 27 - 22	75 - 34 - 08	ECH,ESF,ESS,SWA
12C1A	3.7 mi. WSW of vent; Located at the tip of Augustine Beach Boat Ramp	39 - -30 - 17	75 - 34 - 48	Alternate SWA
4D2	3.7 mi. ENE of vent; Alloway Creek Neck Road	39 - 29 - 18	75 - 32 - 11	IDM
5D1	3.5 mi. E of vent; local farm	39 - 28 - 24	75 - 28 - 22	AIO,APT,IDM
10D1	3.9 mi. SSW of vent; Taylor's Bridge Spur	39 - 24 - 37	75 - 33 - 44	IDM,SOL,VGT
14D1	3.4 mi. WNW of vent; Bay View, Delaware	39 - 29 - 02	75 - 35 - 31	IDM
15D1	3.8 mi. NW of vent; Rt. 9, Augustine Beach	39 - 30 - 08	75 - 35 - 02	IDM

TABLE B-1 (cont'd)

STATION CODE	STATION LOCATION	LATITUDINAL DEG. MIN. SEC	LONGITUDINAL DEG. MIN. SEC	SAMPLE TYPE
2E1	4.4 mi. NNE of vent; local farm	39 - 31 - 23	75 - 30 - 26	IDM
3E1	4.1 mi. NE of vent; local farm	39 - 30 - 07	75 - 28 - 41	GAM,IDM,VGT,WWA, FPV
7E1	4.5 mi. SE of vent; 1 mi. W of Mad Horse Creek	39 - 25 - 08	75 - 28 - 64	ESF,ESS,SWA
7E1A	8.87 mi. SE of vent; Located at the end of Bayside Road	39 - 22 - 57	75 - 24 - 24	Alternate SWA
11E2	5.0 mi. SW of vent; Rt. 9	39 - 24 - 20	75 - 35 - 33	IDM
12E1	4.4 mi. WSW of vent; Thomas Landing	39 - 26 - 52	75 - 36 - 59	IDM
13E1	4.2 mi. W of vent; Diehl House Lab	39 - 27 - 59	75 - 36 - 44	IDM
13E3	4.9 mi. W of vent; Joseph Vari, Odessa, DE	39 - 27 - 17	75 - 37 - 30	MLK,FPV,VGT,SOL
16E1	4.1 mi. NNW of vent; Port Penn	39 - 30 - 47	75 - 34 - 34	AIO,APT,IDM,SOL
1F1	5.8 mi. N of vent; Fort Elfsborg	39 - 32 - 43	75 - 31 - 05	AIO,APT,IDM
1F2	7.1 mi. N of vent; midpoint of Delaware River	39 - 33 - 08	75 - 32 - 54	SWA
2F2	8.7 mi. NNE of vent; Corner of 5th & Howell, Salem	39 - 34 - 38	75 - 28 - 04	IDM
2F3	8.0 mi. NNE of vent; Salem Water Company	39 - 33 - 40	75 - 27 - 18	PWR,PWT
2F5	7.4 mi. NNE of vent; Salem High School	39 - 33 - 27	75 - 28 - 31	IDM
2F6	7.3 mi. NNE of vent; Southern Training Center	39 - 33 - 43	75 - 28 - 48	AIO,APT,IDM
2F9	7.5 mi. NNE of vent; Tilbury Farms , 45 S. Tilbury Rd, Salem	39 - 33 - 55	75 - 29 - 30	FPV,FPL,SOL
2F10	9.2 mi. NNE of vent; Lewis Messer Farm, 1027 South Broadway (Rt. 49) Pennsville	39 - 35 - 35	75 - 29 - 35	FPV,FPL
3F2	5.1 mi. NE of vent;Hancocks Bridge Municipal Bld	39 - 30 - 25	75 - 27 - 36	IDM
3F3	8.6 mi. NE of vent; Quinton Township School	39 - 32 - 38	75 - 24 - 45	IDM
3F6	6.5 mi. NE of vent; #324 Salem/Hancocks Bridge Road	39 - 32 - 03	75 - 28 - 00	FPV,FPL
3F7	7.2 mi. NE of vent; 55 Beasley Neck Road, RD#3	39 - 32 - 07	75 - 25 - 46	FPV,FPL
4F2	6.0 mi. ENE of vent; Mays Lane, Harmersville	39 - 29 - 58	75 - 26 - 03	IDM
5F1	6.5 mi. E of vent; Canton	39 - 28 - 22	75 - 24 - 59	IDM,SOL
6F1	6.4 mi. ESE of vent; Stow Neck Road	39 - 26 - 24	75 - 25 - 09	IDM
7F2	9.1 mi. SE of vent; Bayside, New Jersey	39 - 22 - 56	75 - 24 - 17	IDM
9F1	5.3 mi. S of vent; D.P.A.L. 48912-30217	39 - 23 - 03	75 - 32 - 32	IDM
10F2	5.8 mi. SSW of vent; Rt. 9	39 - 23 - 01	75 - 34 - 09	IDM
11F1	6.2 mi. SW of vent; Taylor's Bridge Delaware	39 - 24 - 44	75 - 37 - 37	IDM
12F1	9.4 mi. WSW of vent; Townsend Elementary School	39 - 23 - 47	75 - 41 - 18	IDM
13F2	6.5 mi. W of vent; Odessa, Delaware	39 - 27 - 18	75 - 39 - 21	IDM

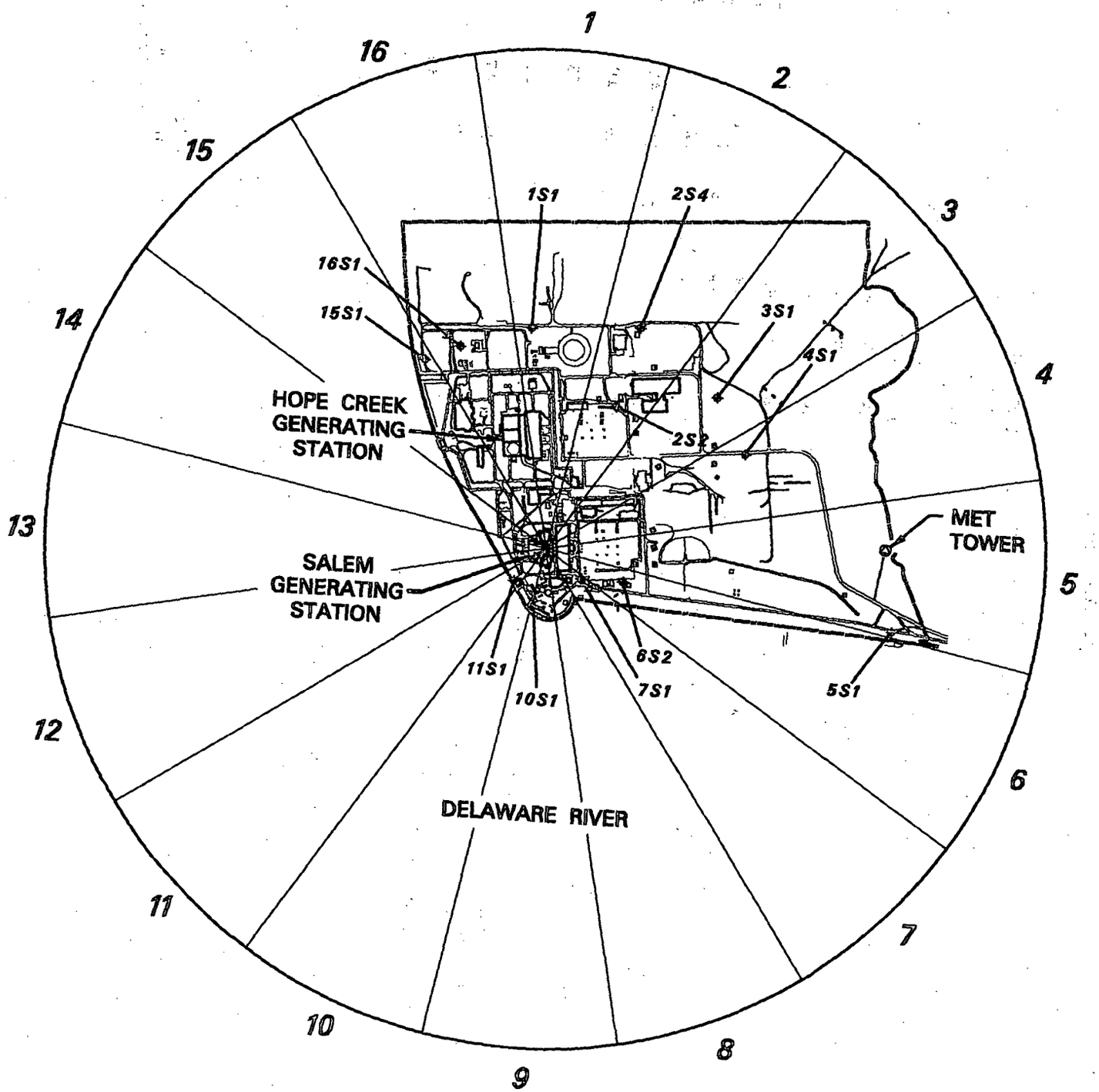
TABLE B-1 (cont'd)

STATION CODE	STATION LOCATION	LATITUDINAL DEG. MIN. SEC	LONGITUDINAL DEG. MIN. SEC	SAMPLE TYPE
13F3	9.3 mi. W of vent; Redding Middle School, Middletown, Delaware	39 - 27 - 14	75 - 42 - 32	IDM
13F4	9.8 mi. W of vent; Middletown, Delaware	39 - 26 - 51	75 - 43 - 07	IDM
14F2	6.6 mi. WNW of vent; Boyds Corner	39 - 30 - 00	75 - 38 - 59	IDM
14F3	5.4 mi. WNW of vent; local farm	39 - 29 - 33	75 - 37 - 55	FPV,FPL
14F4	7.6 mi. WNW of vent; local farm	39 - 30 - 44	75 - 40 - 52	MLK,VGT,SOL
15F3	5.4 mi. NW of vent	39 - 30 - 58	75 - 36 - 36	IDM
15F4	7.0 mi. NW of vent; local farm; 388 Port Penn Road; Delaware	39 - 31 - 21	75 - 38 - 31	FPV
16F1	6.9 mi. NNW of vent; C&D Canal	39 - 33 - 55	75 - 34 - 25	ESS,SWA
16F1A	6.84 mi. NNW of vent; Located at the C&D Canal tip	39 - 33 - 34	75 - 33 - 56	Alternate SWA
16F2	8.1 mi. NNW of vent; Delaware City Public School	39 - 34 - 18	75 - 35 - 25	IDM
1G3	19 mi. N of vent; N. Church St. Wilmington, Del (Old Swedish Church Yard Park)	39 - 44 - 16	75 - 32 - 31	IDM
1G4	10.8 mi. N of vent; (Dads Produce) Rte. 49, South Broadway, Pennsville	39 - 37 - 54	75 - 30 - 45	FPV
2G2	13.5 mi. NNE of vent; Moore's Market; 324 Pointers Auburn Road (Rt. 540), Salem, NJ 08079	39 - 38 - 19	75 - 26 - 10	FPV
2G3	12 mi. NNE of vent; Asa Caldwallader, Waldac Farms, Corner of Routes 540 & 45, Mannington, NJ	39 - 36 - 21	75 - 24 - 53	MLK,FPV,VGT
2G4	11.3 mi. NNE of vent; large family garden; 498 Rt 45 & Welchville Rd,Mannington, NJ	39 - 36 - 02	75 - 25 - 21	FPV
3G1	17 mi. NE of vent; Mr. Lee Williams Farm	39 - 35 - 56	75 - 16 - 47	IDM,MLK,VGT,SOL
10G1	12 mi. SSW of vent; Smyrna, Delaware	39 - 18 - 13	75 - 36 - 05	IDM
14G1	11.8 mi. WNW of vent; Rte. 286; Bethel Church Road; Delaware	39 - 31 - 18	75 - 46 - 30	AIO,APT,IDM
16G1	15 mi. NNW of vent; Across from Greater Wilmington Airport	39 - 40 - 38	75 - 35 - 35	IDM
3H1	32 mi. NE of vent; National Park, New Jersey	39 - 51 - 36	75 - 11 - 06	IDM
3H5	25 mi. NE of vent; Sorbello Farm Market, Rt 77	39 - 41 - 02	75 - 12 - 23	FPL,FPV

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

All Game (GAM), Vegetables(FPV & FPL) and Vegetation (VGT), are management audit samples. They are not required by the Salem & Hope Creek Stations' Tech Specs nor listed in the Station's ODCM. Vegetable samples are not always collected in consecutive years from the same farmer since they rotate the type of crop they grow.

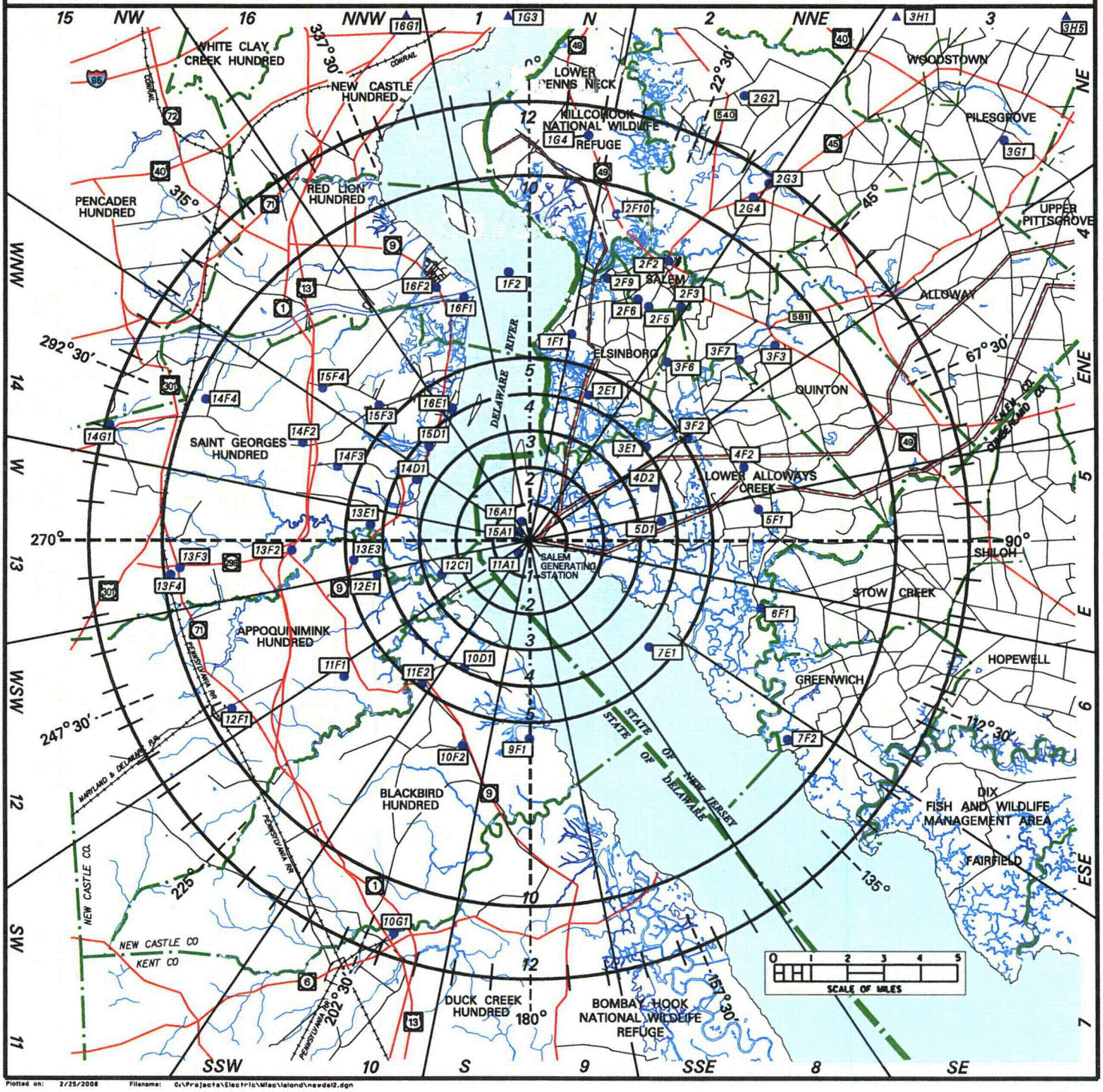
MAP B–1
ON–SITE SAMPLING LOCATIONS



Plotted on: 2/25/2008 Filename: O:\Projects\Electric\Misc\Island\newdel3.dgn

MAP B–2

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



APPENDIX C

DATA TABLES

APPENDIX C

DATA TABLES

Appendix C presents the analytical results of the 2007 Radiological Environmental Monitoring Program for the period of January 1 to December 31, 2007.

DATA TABLES (cont'd.)

Table C-1

2007 CONCENTRATIONS OF GAMMA EMITTERS*
IN QUARTERLY COMPOSITES OF AIR PARTICULATES

Results in Units of 10^{-3} pCi/m^3 +/- 2 sigma

STATION ID	Sampling Period Start		Stop	<- Gamma Emitters -> Be-7	K-40
SA-APT-5S1	12/26/2006	to	3/26/2007	70±4	10±4
SA-APT-1F1	12/26/2006	to	3/26/2007	80±5	9±2
SA-APT-2F6	12/26/2006	to	3/26/2007	68±5	14±3
SA-APT-5D1	12/26/2006	to	3/26/2007	74±4	11±2
SA-APT-16E1	12/26/2006	to	3/26/2007	72±4	<4
SA-APT-14G1(C)	12/26/2006	to	3/26/2007	76±5	<7
SA-APT-5S1	3/26/2007	to	6/25/2007	85±4	8±2
SA-APT-1F1	3/26/2007	to	6/25/2007	89±5	11±3
SA-APT-2F6	3/26/2007	to	6/25/2007	90±5	10±2
SA-APT-5D1	3/26/2007	to	6/25/2007	86±5	11±3
SA-APT-16E1	3/26/2007	to	6/25/2007	100±5	11±2
SA-APT-14G1(C)	3/26/2007	to	6/25/2007	92±5	11±3
SA-APT-5S1	6/25/2007	to	9/25/2007	95±5	9±3
SA-APT-1F1	6/25/2007	to	9/24/2007	93±4	10±2
SA-APT-2F6	6/25/2007	to	9/24/2007	92±4	8±2
SA-APT-5D1	6/25/2007	to	9/25/2007	84±5	<4
SA-APT-16E1	6/25/2007	to	9/24/2007	98±5	12±3
SA-APT-14G1(C)	6/25/2007	to	9/24/2007	95±5	16±4
SA-APT-5S1	9/25/2007	to	12/26/2007	74±4	12±3
SA-APT-1F1	9/24/2007	to	12/26/2007	79±5	12±4
SA-APT-2F6	9/24/2007	to	12/26/2007	74±4	7±2
SA-APT-5D1	9/25/2007	to	12/26/2007	75±4	9±3
SA-APT-16E1	9/24/2007	to	12/26/2007	81±4	7±3
SA-APT-14G1(C)	9/24/2007	to	12/26/2007	77±4	7±3
AVERAGE				83±19	10±6

* All other gamma emitters searched for were <LLD; typical LLDs are given in Table C-19.
(C) Control Station

TABLE C-2

2007 CONCENTRATIONS OF GROSS BETA EMITTERS IN AIR PARTICULATES

Results in Units of 10^{-3} pCi/m^3 +/- 2 sigma

	<---------- STATION ID ---------->						
MONTH	Control SA-APT-14G1	SA-APT-16E1	SA-APT-1F1	SA-APT-2F6	SA-APT-5D1	SA-APT-5S1	AVERAGE
January	21±2	16±2	18±2	18±2	17±2	16±2	18±4
	17±3	18±3	15±2	15±2	16±3	16±3	16±2
	19±2	18±2	16±2	16±2	18±2	17±2	17±3
	21±2	18±2	19±2	17±2	17±2	18±2	18±3
	21±2	22±2	23±2	23±2	22±2	22±2	22±2
February	27±2	28±2	26±2	26±2	24±2	27±2	26±2
	22±2	22±2	23±2	24±3	25±3	24±3	23±2
	28±2	26±2	26±2	25±2	24±2	23±2	25±4
	16±2	15±2	(1)	14±2	17±2	18±2	16±3
March	14±2	14±2	13±2	16±2	14±2	10±2	13±4
	24±3	25±2	26±2	21±2	29±3	23±2	25±5
	23±2	21±2	22±2	22±2	20±2	24±2	22±2
	18±2	14±2	18±2	19±2	15±2	15±2	16±4
April	21±2	20±2	20±2	20±2	17±2	20±2	20±3
	14±2	14±2	15±2	15±2	12±2	13±2	14±3
	13±2	11±2	11±2	12±2	12±2	10±2	12±2
	12±2	10±2	10±2	11±2	10±2	10±2	10±1
May	18±2	17±2	16±2	17±2	16±2	16±2	17±2
	16±2	14±2	16±2	17±2	15±2	14±2	15±3
	16±2	14±2	16±2	15±2	13±2	12±2	14±3
	23±2	22±2	29±2	28±2	19±2	22±2	24±8
	28±2	26±2	27±2	30±2	24±2	24±2	26±4
June	21±2	19±2	20±2	22±2	16±2	18±2	19±4
	19±2	21±2	19±2	19±2	17±2	20±2	19±3
	16±2	18±2	20±2	19±2	18±2	15±2	17±4
	24±2	21±2	23±2	22±2	20±2	24±2	22±3

TABLE C-2

2007 CONCENTRATIONS OF GROSS BETA EMITTERS IN AIR PARTICULATES

Results in Units of 10^{-3} pCi/m^3 +/- 2 sigma

	<---------- STATION ID ---------->						
MONTH	Control SA-APT-14G1	SA-APT-16E1	SA-APT-1F1	SA-APT-2F6	SA-APT-5D1	SA-APT-5S1	AVERAGE
July	26±2	25±2	24±2	23±2	20±2	24±2	24±4
	21±2	22±2	25±2	23±2	22±2	25±2	23±3
	36±3	30±2	28±3	28±3	28±2	30±3	30±6
	28±2	26±2	24±2	25±2	23±2	28±2	26±4
	21±2	19±2	21±2	21±2	16±2	16±2	19±5
August	32±3	34±3	37±2	33±2	34±2	34±3	34±4
	34±3	34±3	33±3	32±3	28±3	35±3	33±5
	32±3	28±2	27±2	29±2	26±2	28±2	28±4
	10±2	12±2	12±2	12±2	12±2	11±2	11±1
September	36±2	31±2	31±2	33±2	29±2	28±2	31±6
	34±3	33±3	33±3	34±3	30±3	30±3	32±4
	21±2	23±2	19±10	19±2	19±2	20±2	20±4
	27±2	24±2	21±2	26±2	24±2	26±2	24±4
	35±3	32±3	32±2	34±2	28±3	31±3	32±5
October	16±2	(1)	16±2	16±2	16±2	15±2	16±1
	23±2	21±2	19±2	20±2	19±2	15±2	20±6
	34±3	32±2	33±2	29±2	27±2	28±2	31±6
	23±2	21±2	22±2	21±2	20±2	26±2	22±4
November	28±2	28±2	27±2	28±2	26±2	27±2	27±2
	24±2	24±2	26±2	22±2	25±2	22±2	24±3
	24±2	22±2	26±2	21±2	20±2	25±2	23±4
	25±2	24±2	24±2	25±2	22±2	27±2	24±3
December	29±2	30±2	26±2	24±2	24±2	27±2	27±5
	19±2	19±2	20±2	18±2	19±2	22±2	19±2
	21±2	21±2	20±2	22±2	20±2	22±2	21±2
	31±2	22±2	29±2	27±2	24±2	27±2	27±6
AVERAGE	23±13	22±12	22±12	22±12	21±11	21±13	27±6
					GRAND AVERAGE		22±12

(1) Power outage; results not included in averages. See program deviations.

TABLE C-3

2007 CONCENTRATIONS OF IODINE-131* IN FILTERED AIR

Results in Units of 10^{-3} pCi/m^3

	<---------- STATION ID ---------->					
MONTH	Control SA-AIO-14G1	SA-AIO-16E1	SA-AIO-1F1	SA-AIO-2F6	SA-AIO-5D1	SA-AIO-5S1
January	<5.1	<2.8	<1.7	<4.3	<2.9	<1.7
	<4.4	<4.3	<3.8	<4.6	<3.8	<2.4
	<2.9	<1.9	<3.6	<2.6	<3.8	<3.4
	<2.8	<3.2	<3.5	<4.1	<2.9	<3.1
	<2.2	<3.3	<1.8	<4.2	<8.8	<3.7
February	<3.5	<3.2	<3	<2.6	<2.8	<4.5
	<2	<1.7	<3.3	<6.9	<2.6	<2.1
	<3.7	<3.6	<3	<1.6	<3.3	<2
	<4.5	<3	(1)	<6.2	<4.5	<4.2
March	<5.1	<1.8	<2.5	<3.9	<4.1	<3.2
	<4.5	<3.9	<5.8	<4.2	<2.3	<4.2
	<5.6	<3.1	<3.5	<2.5	<2.8	<1.8
	<5.7	<2.2	<3.3	<2.4	<2.1	<3.8
April	<3.5	<4.9	<2.6	<2.1	<5.6	<3.1
	<3	<5.4	<2.3	<3.2	<4.2	<3.4
	<2.7	<8.7	<8.3	<5.3	<1.9	<4.4
(2)	<9.6	<9.6	<8	<9.8	<8.4	<8.9
May	<3.5	<2.2	<4.4	<7.1	<2	<3.4
	<4.9	<1.6	<2.3	<2.4	<1.6	<3.6
	<1.4	<3.3	<6.4	<6.8	<2.3	<3.8
	<7.1	<4.5	<3.1	<2.7	<2.4	<3.9
	<2.6	<1.7	<2.9	<1.9	<4.7	<3
June	<9.5	<4.5	<2.8	<5	<3.6	<3.2
	<2.4	<3.5	<3.8	<2	<3.9	<2
	<8.1	<2.5	<3.9	<2	<1.6	<4.3
	<4.9	<2.4	<4.6	<3.1	<3.7	<7.7

TABLE C-3

2007 CONCENTRATIONS OF IODINE-131* IN FILTERED AIR

Results in Units of 10^{-3} pCi/m^3

	<---------- STATION ID ---------->					
MONTH	Control SA-AIO-14G1	SA-AIO-16E1	SA-AIO-1F1	SA-AIO-2F6	SA-AIO-5D1	SA-AIO-5S1
July	<3.3	<1.8	<3.9	<2.9	<3.9	<2
	<3.1	<3	<4.4	<2.6	<4.3	<4.9
	<4.2	<3.4	<4.5	<3.7	<4.2	<4
	<2.7	<3.6	<3.6	<3.4	<2.9	<3
	<2.4	<3.3	<3.1	<3.4	<2.6	<5.2
August	<3	<2	<2	<2.3	<2.5	<2.1
	<1.5	<4	<2.9	<4.2	<3.1	<2.2
	<7.9	<2.8	<2.3	<3.2	<2.9	<4.3
	<2.4	<3.5	<4.1	<2.7	<1.6	<2.7
September	<3	<2.5	<4	<3.8	<3.7	<1.9
	<4.7	<2.4	<2.4	<3.9	<3.6	<3
	<2.5	<1.5	<2	<2.8	<3.8	<1.3
	<1.8	<2.3	<2.2	<5.5	<2.7	<3
October	<3.5	<4.8	<1.3	<4.3	<2.7	<6.9
	<3.3	(1)	<2.7	<2.3	<5.4	<3.9
	<2.2	<2	<2	<3.6	<4.9	<5.2
	<4.8	<1.6	<3.7	<1.5	<2.4	<4
	<1.4	<2.5	<7.9	<3.9	<1.7	<3.5
November (2)	<7.7	<6.1	<6.2	<5.9	<6.4	<5.9
(2)	<8.2	<6.9	<9	<7.1	<7.3	<7.2
	<5.1	<6	<1.7	<3	<8.1	<2.1
	<1.6	<2.3	<2.4	<2.5	<4.2	<4
December	<3.3	<3.3	<3.8	<1.2	<1.7	<2.2
	<1.5	<2.6	<6.1	<4.3	<4.1	<1.6
	<4.9	<3.7	<1.4	<2.8	<1.9	<2
	<3.5	<2	<7.4	<2.1	<3.4	<4.9

* I-131 results are corrected for decay to sample stop date.

(1) Power Outage: See program deviations.

(2) Samples analyzed by AREVA NP, Environmental Laboratory.

TABLE C-4

2007 DIRECT RADIATION MEASUREMENTS - QUARTERLY TLD RESULTS

Results in mrad/standard month* +/- 2 sigma

STATION ID	JAN to MAR	APR to JUN	JUL to SEP	OCT to DEC	QTR ELEMENTS AVG**
SA-IDM-2S2	4.6±0.5	5.1±0.3	5.3±0.5	5.0±0.7	5.0±0.5
SA-IDM-5S1	3.3±0.4	3.3±0.3	3.5±0.4	3.8±0.5	3.4±0.5
SA-IDM-6S2	4.7±0.6	4.8±0.6	5.0±0.5	5.3±0.5	5.0±0.6
SA-IDM-7S1	5.1±0.5	5.6±0.4	5.3±0.5	5.6±0.7	5.4±0.6
SA-IDM-10S1	3.1±0.3	3.7±0.5	3.3±0.4	3.9±0.5	3.5±0.7
SA-IDM-11S1	2.9±0.3	3.4±0.3	3.0±0.3	3.4±0.5	3.2±0.5
SA-IDM-4D2	4.0±0.4	4.4±0.4	4.5±0.5	4.7±0.5	4.4±0.6
SA-IDM-5D1	3.6±0.4	3.8±0.3	4.1±0.3	4.2±0.4	3.9±0.6
SA-IDM-10D1	4.2±0.4	4.5±0.3	5.0±0.4	5.3±0.6	4.7±1.0
SA-IDM-14D1	3.6±0.5	3.9±0.4	3.9±0.3	4.2±0.4	3.9±0.5
SA-IDM-15D1	4.0±0.4	4.4±0.4	4.6±0.4	4.9±0.5	4.5±0.8
SA-IDM-2E1	3.9±0.4	4.0±0.4	4.3±0.4	4.5±0.4	4.2±0.6
SA-IDM-3E1	3.3±0.2	3.4±0.2	3.5±0.4	3.9±0.3	3.5±0.5
SA-IDM-9F1	4.4±0.6	4.7±0.3	4.8±0.7	5.2±0.5	4.8±0.6
SA-IDM-11E2	4.2±0.8	4.5±0.3	4.7±0.4	5.1±0.5	4.6±0.7
SA-IDM-12E1	4.2±0.4	4.4±0.3	4.7±0.4	5.0±0.8	4.6±0.7
SA-IDM-13E1	3.3±0.4	3.5±0.4	3.7±0.4	4.0±0.4	3.6±0.5
SA-IDM-16E1	4.2±0.6	4.3±0.5	4.4±0.4	4.9±0.7	4.4±0.6
SA-IDM-1F1	5.1±0.4	5.6±0.5	5.6±0.5	6.0±0.7	5.6±0.7
SA-IDM-2F2	3.4±0.3	3.5±0.4	3.4±0.3	3.8±0.4	3.5±0.4
SA-IDM-2F5	4.0±0.3	4.3±0.3	4.4±0.5	4.7±0.6	4.3±0.6
SA-IDM-2F6	3.6±0.6	4.0±0.4	4.0±0.5	4.3±0.4	4.0±0.5
SA-IDM-3F2	3.3±0.5	3.7±0.3	3.7±0.3	3.9±0.5	3.7±0.5
SA-IDM-3F3	3.5±0.6	3.6±0.3	3.7±0.3	4.2±0.7	3.7±0.6
SA-IDM-4F2	3.3±0.3	3.6±0.5	3.6±0.4	4.1±0.4	3.6±0.7
SA-IDM-5F1	3.5±0.2	3.8±0.3	3.8±0.4	4.2±0.5	3.8±0.6
SA-IDM-6F1	3.0±0.3	3.2±0.4	3.2±0.3	3.7±0.5	3.3±0.5
SA-IDM-7F2	2.9±0.4	2.9±0.2	2.9±0.3	3.3±0.4	3.0±0.4
SA-IDM-10F2	4.1±0.3	4.4±0.7	4.6±0.4	4.7±0.5	4.5±0.6
SA-IDM-11F1	4.3±0.3	4.5±0.4	4.9±0.5	5.0±0.8	4.7±0.6
SA-IDM-12F1	4.1±0.3	4.2±0.4	4.3±0.5	4.8±0.4	4.3±0.6
SA-IDM-13F2	3.9±0.3	4.0±0.3	4.3±0.5	4.6±0.5	4.2±0.7
SA-IDM-13F3	3.8±0.5	4.0±0.5	4.5±0.5	4.7±0.6	4.3±0.8
SA-IDM-13F4	4.1±0.4	4.1±0.4	4.4±0.4	4.7±0.5	4.3±0.6
SA-IDM-14F2	4.3±0.7	4.5±0.4	4.7±0.5	5.1±0.4	4.6±0.7
SA-IDM-15F3	4.5±0.4	4.9±0.8	5.1±0.7	5.1±0.5	4.9±0.6
SA-IDM-16F2	3.6±0.3	3.8±0.5	4.1±0.4	4.6±0.5	4.0±0.9
SA-IDM-1G3 (C)	4.8±0.5	5.1±0.4	5.1±0.4	5.6±0.5	5.2±0.7
SA-IDM-3G1 (C)	4.1±0.3	4.4±0.4	4.5±0.8	5.0±0.6	4.5±0.8
SA-IDM-10G1(C)	4.0±0.3	4.2±0.3	4.3±0.3	4.7±0.6	4.3±0.6
SA-IDM-16G1(C)	3.6±0.6	4.0±0.4	3.9±0.3	4.4±0.4	4.0±0.6
SA-IDM-3H1 (C)	3.2±0.3	3.6±0.4	3.5±0.4	3.9±0.4	3.5±0.6
SA-IDM-1S1	4.3±0.4	4.5±0.5	4.5±0.5	4.9±0.4	4.5±0.5
SA-IDM-3S1	3.2±0.4	3.2±0.4	3.3±0.4	3.4±0.6	3.3±0.3
SA-IDM-2S4	3.7±0.4	4.0±0.4	3.9±0.3	4.4±0.8	4.0±0.6
SA-IDM-4S1	3.7±0.2	4.0±0.4	4.1±0.5	4.3±0.5	4.0±0.5
SA-IDM-15S1	3.3±0.4	3.4±0.5	3.6±0.3	3.8±0.5	3.5±0.5
SA-IDM-16S1	3.9±0.5	4.1±0.5	4.1±0.4	4.3±0.5	4.1±0.3
SA-IDM-14G1(C)	4.2±0.4	4.4±0.4	4.5±0.4	4.9±0.6	4.5±0.6
AVERAGE	3.9±1.1	4.1±1.2	4.2±1.3	4.5±1.2	
			GRAND AVG		4.2±1.3

* The standard month = 30.4 days.

** Quarterly Element TLD results by AREVA - NP Environmental Laboratory.

(C) Control Station

TABLE C-5

2007 CONCENTRATIONS OF IODINE-131* AND GAMMA EMITTERS** IN MILK

Results in Units of pCi/L +/- 2 sigma

STATION ID	SAMPLING PERIOD*** START	STOP	I-131	<---- GAMMA EMITTERS ----> K-40	RA-NAT
SA-MLK-2G3	1/2/2007	1/3/2007	<0.2	1270 ±72	<3.1
SA-MLK-13E3	1/1/2007	1/2/2007	<0.2	1410 ±75	<3.1
SA-MLK-14F4	1/1/2007	1/2/2007	<0.2	1410 ±73	<2.9
SA-MLK-3G1 (C)	1/2/2007	1/3/2007	<0.2	1310 ±70	<3
SA-MLK-2G3	2/5/2007	2/6/2007	<0.4	1230 ±72	<3
SA-MLK-13E3	2/4/2007	2/5/2007	<0.2	1400 ±72	<3.4
SA-MLK-14F4	2/4/2007	2/5/2007	<0.2	1270 ±70	<3.3
SA-MLK-3G1 (C)	2/5/2007	2/6/2007	<0.2	1250 ±72	<2.8
SA-MLK-2G3	3/5/2007	3/6/2007	<0.3	1280 ±71	<3.2
SA-MLK-13E3	3/4/2007	3/5/2007	<0.3	1330 ±74	<2.4
SA-MLK-14F4	3/4/2007	3/5/2007	<0.4	1330 ±70	<3.3
SA-MLK-3G1 (C)	3/5/2007	3/6/2007	<0.2	1260 ±70	<3.4
SA-MLK-2G3	4/1/2007	4/2/2007	<0.2	1340 ±72	<3.8
SA-MLK-13E3	4/1/2007	4/2/2007	<0.4	1410 ±69	<3.5
SA-MLK-14F4	4/1/2007	4/2/2007	<0.2	1330 ±74	<2.3
SA-MLK-3G1 (C)	4/1/2007	4/2/2007	<0.2	1400 ±72	<3.3
SA-MLK-2G3	4/15/2007	4/16/2007	<0.2	1320 ±74	<3.1
SA-MLK-13E3	4/15/2007	4/16/2007	<0.2	1410 ±71	<3.1
SA-MLK-14F4	4/15/2007	4/16/2007	<0.3	1270 ±69	<2.9
SA-MLK-3G1 (C)	4/15/2007	4/16/2007	<0.2	1280 ±71	<2.9
SA-MLK-2G3	5/7/2007	5/8/2007	<0.2	1240 ±70	<5.5
SA-MLK-13E3	5/6/2007	5/7/2007	<0.3	1370 ±74	<2.4
SA-MLK-14F4	5/6/2007	5/7/2007	<0.2	1310 ±74	<3
SA-MLK-3G1 (C)	5/7/2007	5/8/2007	<0.2	1380 ±73	<2.8
SA-MLK-2G3	5/21/2007	5/22/2007	<0.2	1230 ±71	<5.2
SA-MLK-13E3	5/20/2007	5/21/2007	<0.2	1350 ±68	<3.3
SA-MLK-14F4	5/20/2007	5/21/2007	<0.3	1300 ±72	<2.9
SA-MLK-3G1 (C)	5/21/2007	5/22/2007	<0.2	1300 ±74	<2.7
SA-MLK-2G3	6/4/2007	6/4/2007	<0.1	1270 ±69	<3.3
SA-MLK-13E3	6/3/2007	6/4/2007	<0.2	1290 ±74	<6.1
SA-MLK-14F4	6/3/2007	6/4/2007	<0.2	1380 ±73	<3.1
SA-MLK-3G1 (C)	6/3/2007	6/4/2007	<0.3	1290 ±71	<3.1
SA-MLK-2G3	6/18/2007	6/19/2007	<0.2	1380 ±70	<5.2
SA-MLK-13E3	6/17/2007	6/18/2007	<0.2	1350 ±73	<3.2
SA-MLK-14F4	6/17/2007	6/18/2007	<0.2	1300 ±70	<2.3
SA-MLK-3G1 (C)	6/18/2007	6/19/2007	<0.2	1310 ±74	<3.1
SA-MLK-2G3	7/9/2007	7/10/2007	<0.2	1330 ±70	<4.3
SA-MLK-13E3	7/8/2007	7/9/2007	<0.3	1420 ±75	<2.3
SA-MLK-14F4	7/8/2007	7/9/2007	<0.3	1350 ±71	<3.7
SA-MLK-3G1 (C)	7/9/2007	7/10/2007	<0.2	1260 ±69	<2.9
SA-MLK-2G3	7/22/2007	7/23/2007	<0.2	1510 ±77	<4.8
SA-MLK-13E3	7/22/2007	7/23/2007	<0.2	1390 ±72	<3
SA-MLK-14F4	7/22/2007	7/23/2007	<0.2	1290 ±66	<3.5
SA-MLK-3G1 (C)	7/23/2007	7/23/2007	<0.3	1310 ±68	<3.3

TABLE C-5

2007 CONCENTRATIONS OF IODINE-131* AND GAMMA EMITTERS** IN MILK

Results in Units of pCi/L +/- 2 sigma

STATION ID	SAMPLING PERIOD START	SAMPLING PERIOD STOP	I-131	<---- GAMMA EMITTERS ----> K-40	RA-NAT
SA-MLK-2G3	8/6/2007	8/7/2007	<0.1	1370 ±70	<3.3
SA-MLK-13E3	8/5/2007	8/6/2007	<0.2	1380 ±74	<2.8
SA-MLK-14F4	8/5/2007	8/6/2007	<0.3	1270 ±70	<3.2
SA-MLK-3G1 (C)	8/6/2007	8/6/2007	<0.2	1360 ±67	<3.6
SA-MLK-2G3	8/20/2007	8/21/2007	<0.2	1360 ±74	<3.6
SA-MLK-13E3	8/19/2007	8/20/2007	<0.2	1390 ±73	<3.2
SA-MLK-14F4	8/19/2007	8/20/2007	<0.3	1360 ±66	<3.3
SA-MLK-3G1 (C)	8/20/2007	8/21/2007	<0.3	1390 ±72	<3.3
SA-MLK-2G3	9/3/2007	9/4/2007	<0.2	1320 ±72	13 ±4
SA-MLK-13E3	9/3/2007	9/4/2007	<0.2	1400 ±69	<6.8
SA-MLK-14F4	9/3/2007	9/4/2007	<0.3	1280 ±70	<9.1
SA-MLK-3G1 (C)	9/3/2007	9/4/2007	<0.2	1340 ±75	<4.4
SA-MLK-2G3	9/17/2007	9/18/2007	<0.1	1340 ±73	6 ±3
SA-MLK-13E3	9/16/2007	9/17/2007	<0.3	1310 ±67	11 ±3
SA-MLK-14F4	9/16/2007	9/17/2007	<0.2	1270 ±70	11 ±4
SA-MLK-3G1 (C)	9/17/2007	9/18/2007	<0.2	1300 ±72	10 ±3
SA-MLK-2G3	9/30/2007	10/1/2007	<0.3	1410 ±75	7 ±2
SA-MLK-13E3	9/30/2007	10/1/2007	<0.2	1410 ±75	<3.9
SA-MLK-14F4	9/30/2007	10/1/2007	<0.1	1340 ±67	<3.9
SA-MLK-3G1 (C)	9/30/2007	10/1/2007	<0.2	1300 ±68	<4.3
SA-MLK-2G3	10/14/2007	10/15/2007	<0.2	1330 ±66	<3.9
SA-MLK-13E3	10/14/2007	10/15/2007	<0.2	1400 ±74	<4
SA-MLK-14F4	10/14/2007	10/15/2007	<0.2	1420 ±75	<3.9
SA-MLK-3G1 (C)	10/14/2007	10/15/2007	<0.2	1410 ±72	<9.7
SA-MLK-2G3 (1)	11/4/2007	11/5/2007	<0.7	1300 ±49	<6.2
SA-MLK-13E3 (1)	11/5/2007	11/5/2007	<0.7	1420 ±37	<4.7
SA-MLK-14F4 (1)	11/4/2007	11/5/2007	<0.8	1200 ±34	<4.9
SA-MLK-3G1 (C)(1)	11/4/2007	11/5/2007	<0.8	1340 ±37	<5.2
SA-MLK-2G3	11/19/2007	11/20/2007	<0.1	1260 ±69	<4.4
SA-MLK-13E3	11/19/2007	11/20/2007	<0.2	1460 ±70	<4.4
SA-MLK-14F4	11/18/2007	11/19/2007	<0.3	1440 ±74	<3.6
SA-MLK-3G1 (C)	11/18/2007	11/19/2007	<0.2	1400 ±77	<3.3
SA-MLK-2G3	12/3/2007	12/4/2007	<0.2	1240 ±73	<3.6
SA-MLK-13E3	12/2/2007	12/3/2007	<0.2	1450 ±73	<6
SA-MLK-14F4	12/2/2007	12/3/2007	<0.3	1230 ±65	<4.2
SA-MLK-3G1 (C)	12/3/2007	12/4/2007	<0.2	1350 ±70	<4.1
AVERAGE			-	1340 ±130	-

* Iodine-131 results are corrected for decay to stop date of collection period & analyzed to an LLD of 1.0 pCi/L.

** All other gamma emitters searched for were <LLD; typical LLDs are given in Table C-19

*** Monthly sample collected during Jan., Feb., March and Dec., when animals are not on pasture.

(C) Control Station

(1) Samples analyzed by AREVA NP Environmental Laboratory.

TABLE C-6

2007 CONCENTRATIONS OF GROSS ALPHA AND GROSS BETA EMITTERS, AND TRITIUM IN WELL WATER

Results in Units of pCi/L +/- 2 sigma

STATION ID	SAMPLING DATE	GROSS ALPHA	GROSS BETA	TRITIUM
SA-WWA-3E1	1/30/2007	<0.7	11±0.9	<155
SA-WWA-3E1	2/26/2007	<1.5	10±0.9	<151
SA-WWA-3E1	3/26/2007	<0.7	12±0.9	<151
SA-WWA-3E1	4/30/2007	<0.7	9.6±0.9	<156
SA-WWA-3E1	5/29/2007	<0.7	10±0.9	<158
SA-WWA-3E1	6/25/2007	<1.4	9.3±0.9	<151
SA-WWA-3E1	7/30/2007	<1.5	10±0.9	<149
SA-WWA-3E1	8/27/2007	<2	11±1	<148
SA-WWA-3E1	9/25/2007	<1.8	10±0.9	<147
SA-WWA-3E1	10/29/2007	<0.5	11±0.9	<148
SA-WWA-3E1	11/26/2007	<0.7	10±0.9	<149
SA-WWA-3E1	12/26/2007	<0.7	10±0.9	<148
AVERAGE		-	10±1	-

TABLE C-7

2007 CONCENTRATIONS OF GAMMA EMITTERS* IN WELL WATER

Results in Units of pCi/L +/- 2 sigma

STATION ID	SAMPLING DATE	<-----GAMMA EMITTERS -----> K-40	RA-NAT
SA-WWA-3E1	1/30/2007	74±22	86±5
SA-WWA-3E1	2/26/2007	53±22	100±5
SA-WWA-3E1	3/26/2007	<17	98±5
SA-WWA-3E1	4/30/2007	53±21	173±6
SA-WWA-3E1	5/29/2007	57±20	164±6
SA-WWA-3E1	6/25/2007	<13	96±4
SA-WWA-3E1	7/30/2007	<19	131±4
SA-WWA-3E1	8/27/2007	<17	107±6
SA-WWA-3E1	9/25/2007	<18	111±4
SA-WWA-3E1	10/29/2007	<19	124±4
SA-WWA-3E1	11/26/2007	67±20	146±6
SA-WWA-3E1	12/26/2007	56±17	123±4
AVERAGE		-	122±55

* All other gamma emitters searched for were <LLD; typical LLDs are given in Table C-19.

TABLE C-8

2007 CONCENTRATIONS OF GROSS ALPHA AND GROSS BETA EMITTERS AND TRITIUM IN RAW AND TREATED POTABLE WATER

Results in Units of pCi/L +/- 2 sigma

TYPE	SAMPLING PERIOD	GROSS ALPHA	GROSS BETA	TRITIUM
RAW	1/1-31/2007	0.6±0.3	2.8±0.6	<150
TREATED	1/1-31/2007	<0.4	2.6±0.5	<151
RAW	2/1-28/2007	<0.5	3.4±0.6	<145
TREATED	2/1-28/2007	<0.6	3.2±0.6	<149
RAW	3/1-31/2007	0.8±0.4	3.1±0.6	<150
TREATED	3/1-31/2007	0.6±0.3	3.3±0.6	<147
RAW	4/1-30/2007	<0.3	2.8±0.6	<153
TREATED	4/1-30/2007	1.7±0.5	3.4±0.6	<162
RAW	5/1-31/2007	0.6±0.3	2.9±0.6	<165
TREATED	5/1-31/2007	<0.3	2.7±0.6	<165
RAW	6/1-30/2007	<0.7	2.9±0.6	<149
TREATED	6/1-30/2007	<0.8	2.5±0.6	<151
RAW	7/1-31/2007	<0.8	2.5±0.6	<147
TREATED	7/1-31/2007	<0.9	3.1±0.7	<148
RAW	8/1-31/2007	<0.9	3.1±0.6	<146
TREATED	8/1-31/2007	<1.1	2.9±0.6	<141
RAW	9/1-30/2007	<0.9	3.2±0.6	<147
TREATED	9/1-30/2007	<1	3±0.6	<148
RAW	10/1-31/2007	<0.2	3.1±0.6	<137
TREATED	10/1-31/2007	<0.3	3.7±0.6	<138
RAW	11/1-30/2007	<0.3	2.3±0.5	<155
TREATED	11/1-30/2007	<0.3	2.9±0.5	<140
RAW	12/1-31/2007	0.5±0.3	2.9±0.5	<155
TREATED	12/1-31/2007	<0.3	3±0.5	<145
AVERAGE				
RAW		-	2.9±0.6	-
TREATED		-	3±0.7	-
GRAND AVERAGE		-	3±0.7	-

TABLE C-9

2007 CONCENTRATIONS OF IODINE-131* AND GAMMA EMITTERS**
IN RAW AND TREATED POTABLE WATER

Results in Units of pCi/L +/- 2 sigma

TYPE	SAMPLING PERIOD	<---GAMMA EMITTERS ---> I-131	K-40	RA-NAT
RAW	1/1-31/2007	<0.3	54±17	<1.8
TREATED	1/1-31/2007	<0.2	55±15	<1.9
RAW	2/1-28/2007	<0.3	<15	<2.3
TREATED	2/1-28/2007	<0.1	<23	<3.5
RAW	3/1-31/2007	<0.3	<20	<1.8
TREATED	3/1-31/2007	<0.3	<16	<2.1
RAW	4/1-30/2007	<0.2	34±13	<2.1
TREATED	4/1-30/2007	<0.2	36±13	<2.1
RAW	5/1-31/2007	<0.2	<21	<1.6
TREATED	5/1-31/2007	<0.1	<16	3±1
RAW	6/1-30/2007	<0.2	<20	<1.9
TREATED	6/1-30/2007	<0.3	28±11	10±2
RAW	7/1-31/2007	<0.2	46±17	<1.6
TREATED	7/1-31/2007	<0.3	39±13	<1.5
RAW	8/1-31/2007	<0.2	<19	<5.8
TREATED	8/1-31/2007	<0.2	<15	12±4
RAW	9/1-30/2007	<0.2	57±19	8±3
TREATED	9/1-30/2007	<0.2	44±14	38±3
RAW	10/1-31/2007	<0.3	<20	<2.9
TREATED	10/1-31/2007	<0.2	<14	<1.9
RAW	11/1-30/2007	<0.3	<16	<2
TREATED	11/1-30/2007	<0.2	<15	<2.6
RAW	12/1-31/2007	<0.2	38±10	<2.4
TREATED	12/1-31/2007	<0.3	40±13	<3.6
AVERAGES				
RAW		-	-	-
TREATED		-	-	-
GRAND AVERAGE		-	-	-

* Iodine-131 analyzed to an LLD of 1.0 pCi/L.

** All other gamma emitters searched for were <LLD; typical LLDs are given in Table C-19.

TABLE C-10

2007 CONCENTRATIONS OF GAMMA EMITTERS* IN VEGETABLES
Results in Units of pCi/kg (Wet) +/- 2 sigma

STATION ID	SAMPLING DATE	SAMPLE TYPE	<--- GAMMA EMITTERS ---> K-40	RA-NAT
SA-FPV-2F9	5/14/2007	Asparagus	1750±159	<6.8
SA-FPV-2G2 (C)	5/21/2007	Asparagus	1860±173	<10
AVERAGE			1810±160	-
SA-FPL-2F10	7/17/2007	Cabbage	1860±96	<3.5
SA-FPL-3F6	7/17/2007	Cabbage	2700±110	<3.2
SA-FPL-3F7	7/17/2007	Cabbage	2350±172	<8.2
SA-FPL-3H5 (C)	7/17/2007	Cabbage	1990±93	<3.9
AVERAGE			2230±760	-
SA-FPV-2F9	7/17/2007	Corn	2140±148	<6.1
SA-FPV-2F10	7/17/2007	Corn	2370±151	<6.5
SA-FPV-3F6	7/17/2007	Corn	2700±175	<6.9
SA-FPV-2G4 (C)	7/17/2007	Corn	2320±146	<6
SA-FPV-3H5 (C)	7/17/2007	Corn	2150±146	<7.6
SA-FPV-15F4	7/30/2007	Corn	2530±163	<7.3
AVERAGE			2370±440	-
SA-FPV-2F9	7/17/2007	Peppers	1820±159	<9.3
SA-FPV-2F10	7/17/2007	Peppers	1850±163	<2.2
SA-FPV-3F6	7/17/2007	Peppers	1330±148	<9.5
SA-FPV-3F7	7/17/2007	Peppers	1900±156	<10
SA-FPV-2G2 (C)	7/17/2007	Peppers	1490±164	<9.5
SA-FPV-3H5 (C)	7/17/2007	Peppers	1700±164	<19
AVERAGE			1680±450	-
SA-FPV-2F10	7/17/2007	Tomatoes	1690±241	<7.5
SA-FPV-3F7	7/17/2007	Tomatoes	2070±147	<7.2
SA-FPV-15F4	7/30/2007	Tomatoes	2460±153	<9.8
SA-FPV-2F9	7/17/2007	Tomatoes	1920±139	23±8
SA-FPV-2G4 (C)	7/17/2007	Tomatoes	2320±153	<5.7
SA-FPV-3H5 (C)	7/27/2007	Tomatoes	2670±165	<8.5
AVERAGE			2190±730	-
GRAND AVERAGE			2080±760	-

* All other gamma emitters searched for were <LLD; typical LLDs are given in Table C-19
(C) Control Station

TABLE C-11

2007 CONCENTRATIONS OF GAMMA EMITTERS* IN FODDER CROPS

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

STATION ID	SAMPLING DATE	SAMPLE TYPE	<--------- GAMMA EMITTERS ---------> Be-7	K-40	RA-NAT
SA-VGT-1S1	12/14/2007	Ornamental Cabbage	75±34	3710±190	<8.1
SA-VGT-10D1	12/14/2007	Ornamental Cabbage	336±61	4060±235	<14
SA-VGT-15S1	12/14/2007	Ornamental Cabbage	272±47	3890±182	<7.7
SA-VGT-16S1	12/14/2007	Ornamental Cabbage	112±34	4740±194	<9.3
AVERAGE			200±250	4100±900	-
SA-VGT-2G3	10/8/2007	Silage	209±36	3860±163	<7.2
SA-VGT-3G1 (C)	10/8/2007	Silage	976±105	8390±310	<13
SA-VGT-13E3	10/8/2007	Silage	170±39	2460±132	<8.1
SA-VGT-14F4	10/1/2007	Silage	506±64	4840±192	<9.3
AVERAGE			470±740	4890±5060	-
SA-VGT-14F4	10/8/2007	Soybeans	<26	15800±277	15±5
SA-VGT-3G1 (C)	12/4/2007	Soybeans	<25	14300±276	<8.2
AVERAGE			-	15100±2120	-

* All other gamma emitters searched for were <LLD; typical LLDs are given in Table C-19.
(C) Location 3G1 is the Control Station.

TABLE C-12

2007 CONCENTRATIONS OF GAMMA EMITTERS* IN SOIL

Results in Units of pCi/kg (dry) +/- 2 sigma

STATION ID	SAMPLING DATE	K-40	Cs-137	Ra-NAT	Th-232
SA-SOL-6S2 (1)	10/11/2007	3920±360	<20	259±25	230±44
SA-SOL-2F9 (1)	10/11/2007	5510±470	163±26	414±37	423±56
SA-SOL-5F1 (1)	10/11/2007	3300±720	193±49	585±72	400±110
SA-SOL-10D1 (1)	10/11/2007	9100±1200	196±62	892±95	880±160
SA-SOL-16E1 (1)	10/11/2007	8630±710	<33	475±47	566±81
SA-SOL-13E3 (1)	10/11/2007	9960±710	76±25	422±42	536±73
SA-SOL-14F4 (1)	10/11/2007	13510±770	129±31	1155±60	1176±87
SA-SOL-2G3 (C) (1)	10/11/2007	8510±820	97±34	671±59	739±97
SA-SOL-3G1 (C) (1)	10/11/2007	7790±770	123±36	694±59	790±89
GRAND AVERAGE		7800±6350	110±130	620±550	640±580

* All other gamma emitters searched for were <LLD; typical LLDs are given in Table C-20

(C) Control Station

(1) All soil samples analyzed by AREVA, NP Environmental Laboratory

TABLE C-13

2007 CONCENTRATIONS OF GROSS BETA EMITTERS IN SURFACE WATER

Results in Units of pCi/L +/- 2 sigma

SAMPLING DATE	STATION ID SA-SWA-11A1	SA-SWA-12C1 (Control)	SA-SWA-16F1	SA-SWA-1F2	SA-SWA-7E1	AVERAGE
January	34±3	36±3	16±2	14±2	69±5	34±44
February (1)	206±16	128±13	121±13	(1)	218±17	168±101
March	95±8	59±6	36±5	19±4	115±9	65±80
April	28±5	20±5	7±4	<5.9	54±6	23±39
May	18±4	16±4	10±4	<5.4	33±5	16±22
June	51±6	59±7	40±6	13±4	95±9	52±59
July	110±9	65±7	62±7	38±6	152±13	85±91
August	162±12	109±9	85±8	84±8	192±15	126±97
September	134±11	110±9	62±7	51±7	218±15	115±134
October	199±14	137±11	99±9	90±8	255±18	156±140
November	79±7	70±7	66±7	49±6	187±13	91±111
December	98±8	35±5	36±5	15±4	52±6	47±62
AVERAGE	101±128	70±83	53±72	30±60	137±153	
				GRAND AVERAGE		78±126

(1) Land accessible alternate surface water sampling locations were used for this month's collection. See Program Deviations.

TABLE C-14

2007 CONCENTRATIONS OF GAMMA EMITTERS* IN SURFACE WATER

Results in Units of pCi/L +/- 2 sigma

STATION ID	SAMPLING DATE	<--------GAMMA EMITTERS--------> K-40	RA-NAT
SA-SWA-1F2	1/3/2007	43±13	<1.5
SA-SWA-7E1	1/3/2007	77±14	<2.7
SA-SWA-11A1	1/3/2007	64±17	<2.1
SA-SWA-12C1(C)	1/3/2007	57±16	<1.7
SA-SWA-16F1	1/3/2007	55±15	<1.9
SA-SWA-1F2 (1)	(1)	(1)	(1)
SA-SWA-7E1 (1)	2/26/2007	170±20	<1.7
SA-SWA-11A1 (1)	2/26/2007	138±20	<1.8
SA-SWA-12C1 (C) (1)	2/26/2007	155±20	7.4±2
SA-SWA-16F1 (1)	2/26/2007	135±21	<2.1
SA-SWA-1F2	3/7/2007	69±17	<2
SA-SWA-7E1	3/7/2007	71±17	<2.2
SA-SWA-11A1	3/7/2007	80±20	<1.7
SA-SWA-12C1(C)	3/7/2007	102±19	<1.7
SA-SWA-16F1	3/7/2007	49±16	<2.3
SA-SWA-1F2	4/2/2007	48±21	<1.9
SA-SWA-7E1	1/2/1900	46±17	<1.9
SA-SWA-11A1	4/2/2007	85±21	<1.6
SA-SWA-12C1(C)	4/2/2007	51±14	<1.9
SA-SWA-16F1	4/2/2007	42±12	<1.6
SA-SWA-1F2	5/9/2007	49±14	<1.6
SA-SWA-7E1	5/9/2007	74±16	<1.7
SA-SWA-11A1	5/9/2007	49±12	<2.2
SA-SWA-12C1(C)	5/9/2007	44±12	<2.1
SA-SWA-16F1	5/9/2007	39±12	<1.9
SA-SWA-1F2	6/7/2007	54±17	<1.5
SA-SWA-7E1	6/7/2007	120±19	<1.7
SA-SWA-11A1	6/7/2007	88±15	<2.1
SA-SWA-12C1(C)	6/7/2007	93±21	<1.6
SA-SWA-16F1	6/7/2007	67±16	<1.7
SA-SWA-1F2	7/6/2007	78±20	<1.8
SA-SWA-7E1	7/6/2007	99±18	<1.7
SA-SWA-11A1	7/6/2007	68±20	<2
SA-SWA-12C1(C)	7/6/2007	69±17	<1.7
SA-SWA-16F1	7/6/2007	75±17	<2

TABLE C-14

2007 CONCENTRATIONS OF GAMMA EMITTERS* IN SURFACE WATER

Results in Units of pCi/L +/- 2 sigma

STATION ID	SAMPLING DATE	<--------GAMMA EMITTERS--------> K-40	RA-NAT
SA-SWA-1F2	8/7/2007	110±19	<4.6
SA-SWA-7E1	8/7/2007	144±21	<2.1
SA-SWA-11A1	8/7/2007	53±18	<3
SA-SWA-12C1(C)	8/7/2007	65±17	<1.6
SA-SWA-16F1	8/7/2007	70±19	<2.2
SA-SWA-1F2	9/4/2007	<34	<2.7
SA-SWA-7E1	9/4/2007	125±24	<2.3
SA-SWA-11A1	9/4/2007	131±18	6.4±2
SA-SWA-12C1(C)	9/4/2007	121±18	8±3
SA-SWA-16F1	9/4/2007	119±18	<6.2
SA-SWA-1F2	10/4/2007	48±19	<2.5
SA-SWA-7E1	10/4/2007	117±19	<2
SA-SWA-11A1	10/4/2007	140±17	7.3±2
SA-SWA-12C1(C)	10/4/2007	133±20	<2.4
SA-SWA-16F1	10/4/2007	68±15	<2.4
SA-SWA-1F2 (2)	11/5/2007	69±38	<10
SA-SWA-7E1 (2)	11/5/2007	93±46	<13
SA-SWA-11A1 (2)	11/5/2007	96±48	<12
SA-SWA-12C1 (C) (2)	11/5/2007	76±57	<13
SA-SWA-16F1 (2)	11/5/2007	60±41	<12
SA-SWA-1F2	12/5/2007	<20	<2.8
SA-SWA-7E1	12/5/2007	90±17	<2.4
SA-SWA-11A1	12/5/2007	104±20	<2
SA-SWA-12C1(C)	12/5/2007	89±17	8.4±3
SA-SWA-16F1	12/5/2007	70±14	<2.6
AVERAGE		82±68	-

* All other gamma emitters searched for were <LLD; typical LLDs are given in Table C-19

(C) Control Station

(1) Alternate surface water locations used for this month's collection. See Program Deviations.

(2) Samples were analyzed by AREVA NP Environmental Laboratory.

TABLE C-15

2007 CONCENTRATIONS OF TRITIUM IN SURFACE WATER

Results in Units of pCi/L +/- 2 sigma

SAMPLING PERIOD	STATION ID SA-SWA-11A1	SA-SWA-12C1 (Control)	SA-SWA-16F1	SA-SWA-1F2	SA-SWA-7E1	AVERAGE
January	<170	<170	<160	<160	<170	-
February (1)	<150	<140	<150	(1)	<150	-
March	<150	<150	<150	<150	<150	-
April	290±100	<150	<160	<150	460±100	-
May	190±100	<150	<150	<150	180±90	-
June	<170	<160	<170	<170	<170	-
July	<150	<150	<150	<150	<150	-
August	<150	<150	<150	<150	220±90	-
September	<150	<150	<150	<140	<150	-
October	170±90	<140	<140	<140	180±90	-
November	<150	<150	<150	<150	<140	-
December	220±90	<170	<150	<190	<160	-

(1) Samples were collected at alternate land accessed sites. See Program Deviations.

TABLE C-16

2007 CONCENTRATIONS OF GAMMA EMITTERS** IN EDIBLE FISH

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

STATION ID	SAMPLING PERIOD	GAMMA EMITTERS (FLESH) K-40
SA-ESF-7E1	5/8-30/2007	3560±200
SA-ESF-11A1	5/8-30/2007	3440±210
SA-ESF-12C1 (C)	5/8-30/2007	3420±190
AVERAGE		3470±150
SA-ESF-7E1	9/19/2007	3730±200
SA-ESF-11A1	9/19/07-9/25/2007	3740±200
SA-ESF-12C1 (C)	9/18/2007	3700±190
AVERAGE		3720±40
GRAND AVERAGE		3600±290

** All other gamma emitters searched for were <LLD; typical LLDs are given in Table C-19
(C) Control Station

TABLE C-17

2007 CONCENTRATIONS OF GAMMA EMITTERS* IN CRABS

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

STATION ID	SAMPLING PERIOD	GAMMA EMITTER (FLESH) K-40
SA-ECH-11A1	7/23/2007	3170±190
SA-ECH-12C1 (C)	7/23/2007	3120±190
AVERAGE		3150±70
SA-ECH-11A1	8/30/2007	2430±160
SA-ECH-12C1 (C)	8/30/2007	1390±120
AVERAGE		1910±1470
GRAND AVERAGE		2530±1660

* All other gamma emitters searched for were <LLD; Typical LLDs are given in Table C-19.

(C) Control Station

TABLE C-18

2007 CONCENTRATIONS OF GAMMA EMITTERS* IN SEDIMENT

Results in Units of pCi/kg (dry) +/- 2 sigma

STATION ID	SAMPLING DATE	Be-7	K-40	Co-60	Cs-137	RA-NAT	Th-232
SA-ESS-6S2	6/25/2007	<72	2250±142	<5.4	<5.19	478±20.2	641±32.7
SA-ESS-7E1	6/27/2007	<88	12900±371	<5.9	<28.1	735±20.5	995±66.2
SA-ESS-11A1	6/27/2007	<66	8140±269	<6.8	32±8	466±16.8	664±50.4
SA-ESS-15A1	6/27/2007	<116	3820±201	<7.3	<9.08	543±17.9	691±39
SA-ESS-16A1	6/27/2007	<109	6530±233	<11	<5.9	632±16.8	936±62.8
SA-ESS-12C1 (C)	6/27/2007	<74	14200±389	<11	<10.2	614±23.4	1050±53
SA-ESS-16F1	6/27/2007	1710±160	16000±456	<11	53±11	566±23.8	864±67.6
AVERAGE			9100±10700	-	-	580±190	830±340
SA-ESS-6S2 (1)	10/29/2007	<360	2560±660	<49	<51	217±56	240±140
SA-ESS-7E1 (1)	10/17/2007	<691	8500±1230	<59	<71	604±93	560±160
SA-ESS-11A1 (1)	10/17/2007	<302	4230±560	<33	<22	313±40	342±70
SA-ESS-15A1 (1)	10/17/2007	<360	8060±820	<50	<38	426±48	648±88
SA-ESS-16A1 (1)	10/17/2007	<300	5910±510	<30	<30	604±37	521±72
SA-ESS-12C1 (C) (1)	10/17/2007	<470	17100±1300	<64	<49	604±69	920±39
SA-ESS-16F1 (1)	10/17/2007	<1500	20100±2400	<150	<120	1050±160	521±72
AVERAGE		-	9500±13200	-	-	550±540	540±440
GRAND AVERAGE		-	9300±11500	-	-	560±390	690±490

* All other gamma emitters searched for were <LLD; typical LLDs are given in Table C-19

(C) Control Station

(1) Samples were analyzed by AREVA NP Environmental Laboratory.

TABLE C-19

2007 MAPLEWOOD TESTING SERVICES

LLDs FOR GAMMA SPECTROSCOPY

SAMPLE TYPE:	<---- -----AIR---------->		<--------WATER-------->		<---------MILK-------->	
	IODINE	PARTICULATES	GAMMA SCAN	IODINE	GAMMA SCAN	IODINE
ACTIVITY:	10-3 pCi/m^3	10^{-3} pCi/m^3	pCi/L	pCi/L	pCi/L	pCi/L
GEOMETRY:	47 ML	13 FILTERS	3.5 LITER	100 ML	3.5 LITER	100 ML
COUNT TIME:	120 MINS	500 MINS	1000 MIN	1000 MINS	500 MINS	1000 MINS
DELAY TO COUNT:	2 DAYS	5 DAYS	7 DAYS	3 DAYS	2 DAYS	2 DAYS
NUCLIDES						
BE-7	-	2.0	16	-	27	-
NA-22	-	0.37	1.8	-	5.2	-
K-40	-	9	34	-	32	-
CR-51	-	1.7	15	-	36	-
MN-54	-	0.31	1.6	-	3.2	-
CO-58	-	0.40	1.8	-	5.0	-
FE-59	-	0.61	4.3		10	-
CO-60	-	0.33	3.5	-	6.3	-
ZN-65	-	0.70	5.2		11	-
ZRNB-95	-	0.41	3.1	-	10	-
MO-99	-	127	240	-	8.3	-
RU-103	-	0.32	1.6	-	38	-
RU-106	-	1.9	21	-	9.0	-
AG-110M	-	0.43	2.7	-	15	-
SB-125	-	0.64	3.5	-	6.7	-
TE-129M	-	13	59	-	126	-
I-131	9.6	0.85	5.2	0.34	5.5	0.79
TE-132	-	4.5	3.9	-	3.9	-
BA-133	-	0.22	1.5	-	3.5	-
CS-134	-	0.20	1.5	-	3.4	-
CS-136	-	0.48	3.0	-	3.7	-
CS-137	-	0.53	1.3	-	2.7	-
BALA-140	-	1.5	9.0	-	21	-
CE-141	-	0.19	2.7	-	4.3	-
CE-144	-	0.76	11.3	-	4.2	-
RA-NAT	-	1.2	6.2	-	9.7	-
TH-232	-	1.4	11.1	-	18	-

TABLE C-19 (Cont'd)

2007 MAPLEWOOD TESTING SERVICES
LLDs FOR GAMMA SPECTROSCOPY

SAMPLE TYPE:	FOOD PRODUCTS	VEGETATION	SOIL	FISH & SHELLFISH	SEDIMENT
ACTIVITY:	pCi/kg WET	pCi/kg WET	pCi/kg DRY	pCi/kg WET	pCi/kg DRY
GEOMETRY:	3.5 LITER	3.5 LITER	500 ml	500 ml	500 ml
COUNT TIME:	500 MINS	500 MINS	33 MINS	500 MINS	500 MINS
DELAY TO COUNT:	3 DAYS	7 DAYS	30 DAYS (1)	5 DAYS	30 DAYS
NUCLIDES					
BE-7	27	66	390	47	301
NA-22	5	16	57	7.3	16
K-40	70	32	70	55	55
CR-51	20	79	1100	43	183
MN-54	2.8	12	57	6.0	16
CO-58	4.2	8.5	102	7.8	29
FE-59	10	14	140	38	30
CO-60	10	8	77	20	25
ZN-65	12	14	270	19	26
ZRNB-95	8.2	11	170	15	23
MO-99	69	81	6600000	433	124000
RU-103	3.4	4.0	100	4.4	11
RU-106	49	44	520	36	106
AG-110M	16	24	91	11	18
SB-125	9.0	13	110	12	22
TE-129M	155	300	2000	204	1160
I-131	3.5	9.3	560	9.6	93
TE-132	7.0	23	160000	16	3270
BA-133	33	7.6	220	14	11
CS-134	2.5	8.2	134	7.3	7.0
CS-136	7.5	9.8	640	7.8	44
CS-137	6.8	8.9	80	13	54
BALA-140	10	30	650	25	182
CE-141	3.7	8.0	140	6.9	23
CE-144	14	35	360	34	47
RA-NAT	14	17	120	14	5.0
TH-232	30	40	150	36	8.1

(1) All Soil samples were analyzed by Areva NP Environmental Laboratory.

APPENDIX D

SUMMARY OF RESULTS FROM ANALYTICS AND ENVIRONMENTAL RESOURCE ASSOCIATES INTERLABORATORY COMPARISON PROGRAMS

APPENDIX D

SUMMARY OF RESULTS FOR ANALYTICS AND ENVIRONMENTAL RESOURCE ASSOCIATES INTERLABORATORY COMPARISON PROGRAM

Appendix D presents a summary of the analytical results for the 2007 Analytics and Environmental Resource Associates (ERA) Interlaboratory Comparison Program.

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TABLE D-1

RESULTS FOR ANALYTICS ENVIRONMENTAL CROSS CHECK PROGRAM

Gross Alpha and Gross Beta Emitters In Water (pCi/L), Iodine In Air Samples (pCi/m^3), Gross Beta In Air Particulate Filter (pCi/m^3), And Tritium Analysis In Water (pCi/L)

Date MM-YY	MTS Sample Code	Sample Media	Nuclide	MTS Reported Value	Known Value	Resolution	Ratio MTS/ Analytics	Evaluation
03-2007	B655	APT	Beta	94.7	87.7	30	1.08	Acceptable
03-2007	H657	WAT	H-3	4997	5010	30	1.00	Acceptable
03-2007	I660	AIO	I-131	75.0	70.1	30	1.07	Acceptable
06-2007	B663	APT	Beta	90.8	79.9	30	1.14	Acceptable
06-2007	AB664	WAT	Alpha	209.6	164	30	1.28	Acceptable
			Beta	193.5	148	30	1.31	Acceptable
06-2007	I665	AIO	I-131	79.8	79	30	1.01	Acceptable
06-2007	H667	WAT	H-3	9538	9040	30	1.06	Acceptable
09-2007	I670	AIO	I-131	68.7	69.7	60	0.99	Acceptable
09-2007	H672	WAT	H-3	12285	12000	60	1.02	Acceptable
09-2007	AB673	WAT	Alpha	92.0	109.0	60	0.84	Acceptable
			Beta	197.1	204.0	60	0.97	Acceptable
12-2007	AB676	WAT	Alpha	141.1	158	60	0.89	Acceptable
			Beta	228.2	200	60	1.14	Acceptable
12-2007	I677	AIO	I-131	73.4	74.2	60	0.99	Acceptable
12-2007	H679	WAT	H-3	8987	9020	60	1.00	Acceptable
12-2007	B680	APT	Beta	87.2	77.5	60	1.12	Acceptable

TABLE D-2

RESULTS FOR ANALYTICS ENVIRONMENTAL CROSS CHECK PROGRAM

Gamma Emitters in Water And Milk (pCi/L)

Date MM-YY	MTS Sample Code	Sample Media	Nuclide	MTS Reported Value	Known Value	Resolution	Ratio MTS/ Analytics	Evaluation
03-2007	G658	WAT	Cr-51	215.7	213.0	30	1.01	Acceptable
			Mn-54	166.7	158.0	30	1.05	Acceptable
			Co-58	86.9	85.8	30	1.01	Acceptable
			Fe-59	99.0	91.7	30	1.08	Acceptable
			Co-60	131.0	132.0	30	0.99	Acceptable
			Zn-65	912.7	869.0	30	1.05	Acceptable
			I-131	101.7	89.8	30	1.13	Acceptable
			Cs-134	94.3	97.1	30	0.97	Acceptable
			Cs-137	209.0	204.0	30	1.02	Acceptable
			Ce-141	265.3	258.0	30	1.03	Acceptable
03-2007	G656	MILK	Cr-51	246.0	245.0	30	1.00	Acceptable
			Mn-54	192.7	182.0	30	1.06	Acceptable
			Co-58	101.7	98.8	30	1.03	Acceptable
			Fe-59	112.7	106.0	30	1.06	Acceptable
			Co-60	148.0	152.0	30	0.97	Acceptable
			Zn-65	1040.0	1000.0	30	1.04	Acceptable
			I-131	95.7	85.2	30	1.13	Acceptable
			Cs-134	105.7	112.0	30	0.94	Acceptable
			Cs-137	240.0	234.0	30	1.03	Acceptable
			Ce-141	305.3	297.0	30	1.03	Acceptable
12-2007	G678	WAT	Cr-51	542.0	572	60	0.95	Acceptable
			Mn-54	221.7	212	60	1.05	Acceptable
			Co-58	196.0	194	60	1.01	Acceptable
			Fe-59	168.0	166	60	1.01	Acceptable
			Co-60	229.3	236	60	0.97	Acceptable
			Zn-65	271.0	261	60	1.04	Acceptable
			I-131	72.4	71.6	60	1.01	Acceptable
			Cs-134	143.0	153	60	0.93	Acceptable
			Cs-137	192.7	185	60	1.04	Acceptable
			Ce-141	152.0	157	60	0.97	Acceptable

TABLE D-3

RESULTS FOR ANALYTICS ENVIRONMENTAL CROSS CHECK PROGRAM

Gamma Emitters in Soil (pCi/g-dry) And Air Particulate Samples (pCi/m^3)

Date MM-YY	MTS Sample Code	Sample Media	Nuclide	MTS Reported Value	Known Value	Resolution	Ratio MTS/ Analytics	Evaluation
03-2007	G659	Soil	Cr-51	0.268	0.241	30	1.11	Acceptable
			Mn-54	0.203	0.130	30	1.13	Acceptable
			Co-58	0.101	0.097	30	1.04	Acceptable
			Fe-59	0.124	0.104	30	1.20	Acceptable
			Co-60	0.153	0.150	30	1.02	Acceptable
			Zn-65	0.991	0.986	30	1.01	Acceptable
			Cs-134	0.102	0.110	30	0.93	Acceptable
			Cs-137	0.371	0.329	30	1.13	Acceptable
			Ce-141	0.313	0.292	30	1.07	Acceptable
06-2007	G666	APT	Cr-51	325.0	322.0	30	1.01	Acceptable
			Mn-54	125.7	105.0	30	1.20	Acceptable
			Co-58	136.0	125.0	30	1.09	Acceptable
			Fe-59	126.7	105.0	30	1.21	Acceptable
			Co-60	152.7	150.0	30	1.02	Acceptable
			Zn-65	250.7	210.0	30	1.19	Acceptable
			Cs-134	132.3	152.0	30	0.87	Acceptable
			Cs-137	116.7	106.0	30	1.10	Acceptable
			Ce-141	127.0	126.0	30	1.01	Acceptable
09-2007	G671	SOIL	Cr-51	0.453	0.391	60	1.16	Acceptable
			Mn-54	0.259	0.227	60	1.14	Acceptable
			Co-58	0.166	0.154	60	1.08	Acceptable
			Fe-59	0.178	0.149	60	1.19	Acceptable
			Co-60	0.211	0.200	60	1.06	Acceptable
			Zn-65	0.328	0.273	60	1.20	Acceptable
			Cs-134	0.206	0.199	60	1.04	Acceptable
			Cs-137	0.330	0.273	60	1.21	Acceptable
			Ce-141	0.313	0.285	60	1.10	Acceptable

TABLE D-4

RESULTS FOR ENVIRONMENTAL RESOURCE ASSOCIATES (ERA) PROFICIENCY TESTING PROGRAM

Gamma Emitters in Water (pCi/L), Gross Alpha and Beta in Water (pCi/L), Iodine-131 Analysis in Water (pCi/L), and Tritium in Water (pCi/L),

Date MM-YY	MTS Sample Code	Sample Media	Nuclide	MTS Reported Value	ERA Assigned Value	Acceptance Limits	Evaluation
04-2007	H662	WAT	H-3	8023	8060	6660 - 9450	Acceptable
04-2007	I661	WAT	I-131	16.3	18.9	13.7 – 24.1	Acceptable
07-2007	G669	WAT	Ba-133	19.6	19.4	10.7 – 28.1	Acceptable
			Co-60	35.3	33.5	24.8 – 42.2	Acceptable
			Cs-134	65.5	68.9	60.2 – 77.6	Acceptable
			Cs-137	61.0	61.3	52.6 – 70.0	Acceptable
			Zn-65	60.7	54.6	45.2 – 64.0	Acceptable
07-2007	AB668	WAT	Alpha	17.3	27.1	15.4 – 38.8	Acceptable
			Beta	14.1	11.5	2.8 – 20.2	Acceptable
10-2007	AB675	WAT	Alpha	39.0	58.6	30.6 – 72.9	Acceptable
			Beta	17.8	9.73	4.3 – 18.2	Acceptable
10-2007	I674	WAT	I-131	31.3	28.9	24 – 33.8	Acceptable
10-2007	H681	WAT	H-3	10037	9700	8430 - 10700	Acceptable

APPENDIX E

SYNOPSIS OF LAND USE CENSUS

APPENDIX E

SYNOPSIS OF 2007 LAND USE CENSUS

A land use census was conducted 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 $50m^2$ ($500ft^2$) producing broad leaf vegetation, in each of the 16 meteorological sectors.

Tabulated below are the results of these surveys:

Meteorological Sector	Milk Animal July, 2007 Km (miles)	Nearest Residence July, 2007 Km (miles)	Vegetable Garden July, 2007 Km (miles)
N	None	None	None
NNE	None	None	None
NE	None	6.4 (4.0)	None
ENE	None	5.2 (3.2)	None
E	None	8.7 (5.4)	None
ESE	None	None	None
SE	None	None	None
SSE	None	None	None
S	None	None	None
SSW	None	5.5 (3.4)	None
SW	None	6.9 (4.3)	None
WSW	None	7.1 (4.4)	None
W	7.8 (4.9)	6.5 (4.0)	None
WNW	None	5.5 (3.4)	None
NW	None	5.9 (3.7)	None
NNW	None	6.8 (4.2)	None

APPENDIX F

RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM (RGPP)

Table of Contents

I. Summary and Conclusions

This is the annual report on the status of the Radiological Groundwater Protection Program (RGPP) conducted at Salem and Hope Creek Stations. This report contains significant background information and programmatic descriptions, reflects changes to this program; and provides the data and information representative of the reporting year.

The RGPP was initiated by PSEG Nuclear LLC (PSEG) to determine whether groundwater at and in the vicinity of Salem and Hope Creek Stations had been adversely impacted by any releases of radionuclides and not previously identified. The RGPP is a voluntary program implemented by PSEG in conjunction with industry initiatives and guidance that is designed to complement the existing Radiological Environmental Monitoring Program and Radioactive Effluent Release Report programs. This report covers the RGPP groundwater samples collected from the environment in 2007. All analytical results for 2007 monitoring are included in Tables 4A and 4B.

Salem Generating Station identified a release from the Unit 1 Spent Fuel Pool in 2002, and has implemented the Remedial Action Work Plan (RAWP) reviewed by the USNRC and approved by the New Jersey Department of Environmental Protection (NJDEP) Bureau of Nuclear Engineering (BNE). Only tritium activity was identified from this release; neither Strontium nor plant-related gamma emitters were identified in monitoring well water samples. In accordance with the RAWP, a Groundwater Recovery System (GRS) has been installed and is in operation to remove the tritiated water and maintain containment of the contaminated plume to prevent migration to the plant boundary. The GRS is fully discussed in the quarterly Remedial Action Plan Reports (RAPR) provided to the regulatory agencies and the information is not included in the RGPP.

Five specific monitoring wells are included in both the GRS monitoring and RGPP to ensure program comprehensiveness. In assessing all the data gathered for this report, it was concluded that the operation of Salem and Hope Creek Stations has had no adverse radiological impact on the environment from unmonitored or unplanned releases of radionuclides to groundwater. Historical unplanned and unmonitored releases on site are maintained in accordance with federal regulation 10CFR50.75.(g) and are shown in Table 8. There are no known active releases into the groundwater at Salem or Hope Creek Stations. Gamma-emitting radionuclides associated with licensed plant operations were not detected at concentrations greater than their respective Environmental Lower Limits of Detection (LLDs) as specified in the Offsite Dose Calculation Manual (ODCM) in any of the groundwater samples. In the case of tritium, PSEG specified that its laboratories achieve a lower limit of detection significantly lower than that required by federal regulation.

Strontium-89/90 was not detected at a concentration greater than the LLD of 2.0 Pico Curies per liter (pCi/L) in any of the groundwater samples tested. Tritium was not detected in any of the groundwater or surface water samples at concentrations greater than the United States Environmental Protection Agency (USEPA) drinking water standard of 20,000 pCi/L. Low levels of tritium were detected at concentrations greater than the LLD of 200 pCi/L in 10 of the 26 groundwater monitoring locations. The tritium concentrations were all below the Environmental LLD specified in the ODCM. Most of the tritium that was detected in groundwater at Salem is believed to be the result of isolated historical releases, and at Hope Creek the investigation does not indicate an increasing trend or an unmonitored release pathway to the groundwater. To facilitate trending, additional samples are collected to ensure the trend analysis has a robust basis.

II. Introduction

PSEG's Salem and Hope Creek generating stations are located in a flat, largely undeveloped region of southern New Jersey. The Stations are bordered on the west and south by the Delaware River Estuary and on the east and north by extensive marshlands. The Stations both obtain cooling water from and discharge cooling water to the Delaware River. The Stations are underlain by over 1,000 feet of interlayered sand, silt and clay. The uppermost 55 feet of these geologic formations does not transmit appreciable quantities of groundwater. The Stations draw potable water from wells greater than 300 feet below ground surface. There are no off-site wells within at least one mile of the site. The nearest potable supply well is located 3.65 miles away in the state of Delaware.

Investigation into a release of tritiated water from the spent fuel pool at Salem was initiated in 2002. The mechanism for the release and pathway taken by the tritiated water have been identified and controlled. Groundwater remediation began in 2004 with the Groundwater Recovery System (GRS) and is ongoing. Tritium has not migrated to the property boundary nor to geologic formations deeper than the shallow water-bearing unit on site, and there is no complete exposure pathway to humans or biota resulting from this release. The GRS and related results are reported separately to the regulatory agencies and are not included in this report.

A. Objective of the RGPP

The long-term objectives of the RGPP are as follows:

1. Identify suitable locations to monitor and evaluate potential impacts from station operations before significant radiological impact to the environment or potential drinking water sources can occur.

2. Understand the local hydrogeologic regime in the vicinity of the station and maintain up-to-date knowledge of flow patterns on the surface and shallow subsurface.

3. Perform routine water sampling and radiological analysis of water from selected locations.

4. Report new leaks, spills, or other detections with potential radiological significance to stakeholders in a timely manner.

5. Regularly assess analytical results to identify adverse trends.

6. Take necessary corrective actions to protect groundwater resources.

B. Implementation of the Objectives

The objectives identified have been implemented at Salem and Hope Creek Generating Stations as discussed below:

1. PSEG personnel performed a systematic analysis of all structures, systems and system components that handle plant-related radionuclides to identify which of these posed a potential risk with respect to the release of radiological contaminants to the environment. The program was designed to ensure that PSEG fully understands the safety and reliability of the equipment that stores, processes, and conveys radioactively contaminated water. It also serves to satisfy PSEG, its stakeholders, and the surrounding Community, that PSEG operates and maintains station equipment and systems with a high degree of integrity.

   The systematic risk evaluation was performed to determine which systems, structures and components at the stations have the most significant potential to release radionuclides to the environment. Each of the 97 Salem and 137 Hope Creek facility systems was analyzed by the system engineers and system managers to identify and rate the potential risk of release of radionuclides. Detailed evaluation criteria, including the potential exposure for all piping, tanks, valves, sumps, and water bodies, were used to evaluate each system and system component. The system components were rated based upon: 1) the degree of severity of a potential release, based upon concentration, flow rate or volume, if a release occurred from the specified component, 2) likelihood of the occurrence of such a failure, and 3) the ability to detect the release should such a failure occur.

All systems and components that screened in were targeted as potential sources during development of the monitoring program. There were 16 Salem systems and 24 Hope Creek systems that screened in for further evaluation. These systems are identified in Tables 6 and 7.

2. PSEG Salem and Hope Creek Generating Stations performed evaluations and measurements to determine the geological and hydrological characteristics applicable to meeting the objective of the RGPP. The following sections provide information regarding the setting of the stations, including land use, environmental setting, precipitation and drainage, local geology and local hydrogeology.

a. Land Use

PSEG owns and/or controls an approximately 740-acre area of Artificial Island that includes the stations. This area contains administrative and support facilities used by both the Salem and Hope Creek Stations, including the Salem and Hope Creek Switch Yards, Administrative Support Buildings and 367 acres of uncommitted, undeveloped land. The zoning classification for the stations is industrial. The land adjacent is zoned for industrial and residential or agricultural use.

b. Environmental Setting

Beginning in the early twentieth century, The United States Army Corps of Engineers (USACOE) created the land upon which the stations are located.

So-called Artificial Island was created by depositing hydraulic dredge spoils from a shipping channel in the Delaware River Estuary into a diked area established around a natural sand bar in the estuary. The stations are located on that portion of Artificial Island bordering the Delaware Estuary. The entire area of Artificial Island is within the Delaware River's estuarine zone, as defined by the Delaware River Basin Commission (Zone 5). In the vicinity of the stations, water in the estuary is tidal and brackish, with the salinity varying with both the tides and seasonally from almost fresh water to almost saltwater. Prior to construction, the property known as Artificial Island was undeveloped, low-lying land.

c. Topography and Station Drainage

The topography at the stations is essentially flat with limited local relief. The average elevation of the site is approximately 9 ft above mean sea level (msl). Storm water is managed in accordance with the New Jersey Pollutant Discharge Elimination System (NJPDES) permits and Storm Water Pollution Prevention Plan. Storm water is collected in storm drains and routed to the Delaware River for discharge. Storm water from the major petroleum storage handling areas is routed to an oil/water separator prior to discharge.

d. Climate and Precipitation

Salem County is located in southwestern New Jersey. The county's climate is considered to be humid and temperate, as the climate in this county is readily influenced by its proximity to the Delaware Bay.

Coastal storms are not uncommon in this region and can produce high winds and heavy rainfall, which can result in wind damage and flooding in low-lying areas.

Wind direction in this region is dependent upon the season; during the summer, winds are typically from the southwest while during the winter winds are commonly from the northwest. Temperatures vary by season and the maximum expected high temperature for a given year is 100 degrees Fahrenheit, while the minimum expected yearly low temperature is minus 2 degrees Fahrenheit. The average annual precipitation total is 39.9 inches.

e. Geology

The stations are located in the Atlantic Coastal Plain Physiographic Province. This area is characterized by relatively flat to gently undulating terrain, underlain by unconsolidated sediments that increase in thickness to the southeast. These sediments range in age from Holocene to Cretaceous (0 to 146 million years old), are primarily comprised of clay, silt, sand, and gravel, and are generally classified as continental, coastal, or marine in nature. Published geologic mapping indicates that the basement rock beneath these sediments (in the area of the stations) is metamorphic schist of the Wissahickon Formation, which is Pre-Cambrian in age (570 to 900 million years old). The Atlantic Coastal Plain Physiographic Province, which is characterized by a southeasterly dipping wedge of unconsolidated sediments consisting of clays, silts, sands, and gravels that thicken in a seaward direction. The Cretaceous and Tertiary age sediments that overlie the bedrock strike northeast-southwest and dip gently to the southeast between 10 and 60 feet per mile.

The unconsolidated overburden at the Salem and Hope Creek portions of Artificial Island consist of approximately 25 feet of dredge spoils, engineered fill material, tidal marsh deposits and riverbed deposits. The engineered fill, composed mainly of silt, silty clay, sand, and gravel, was used to replace the dredge spoils during the construction period of the stations. Due to the composition and nature of the engineered fill, the hydraulic conductivity of this material is expected to be very low, thus limiting the ability of the subsurface materials to transmit a significant quantity of groundwater. Below the engineered fill there is an approximate five-foot layer of tidal marsh deposits consisting of silty peat, and organic silt and meadow mat, which is semi-confining. Beneath the tidal marsh deposits, there are approximately ten feet of discontinuous Quaternary Age riverbed deposits which consist of sand and gravel. The engineered fill, the tidal marsh deposits, and the riverbed deposits combine to form the shallow water-bearing zone. Beneath the shallow water-bearing zone, in order of increasing depth, are the following geologic formations (Figure 4):

Kirkwood Formation - The Kirkwood Formation in the vicinity of the site consists of dark, gray to brown clay, with some silt and layers of fine-grained micaceous quartz sand. It is approximately 15 feet thick and occurs from approximately 40 to 55 feet below ground surface (bgs).

Vincentown Formation – The Vincentown Formation occurs from a depth of approximately 55 feet bgs to a depth of 135 feet bgs and consists of a competent, greenish-gray, fine-to-medium sand with some silt, shell fragments, feldspar and glauconite.

Hornerstown Formation – The Hornerstown Formation is highly glauconitic, clayey, dark green sand that contains small percentages of quartz grains and apatite pellets. The Hornerstown Formation unconformably overlies the Navesink Formation and is unconformably overlain by the Vincentown Formation. The Hornerstown Formation occurs from approximately 135 to 145 feet bgs.

Navesink Formation – The Navesink Formation is characteristically glauconitic sand with varying amounts of silt and clay. It is brown or dark green to blue-black and has a shell bed at its base. The upper part of the formation is less glauconitic, more clayey, more micaceous, and lighter in color than the deeper strata. The Navesink Formation conformably overlies the Mount Laurel Sand (State of New Jersey Department of Conservation and Economic Development, 1969). The contact with the overlying Hornerstown Formation is gradational. The Navesink Formation is encountered from approximately 145 to 170 feet bgs.

Mount Laurel-Wenonah Formation – The Mount Laurel-Wenonah Formation consists of clayey, medium-grained sand with some gravel, feldspar and glauconite. In the vicinity of the stations, the Mount Laurel-Wenonah Formation is approximately 100 feet thick and occurs from 170 to 270 feet bgs.

Beneath the Mount Laurel-Wenonah Formation, more than 1,000 feet of Upper Cretaceous sediments overlie the crystalline bedrock. The Upper Cretaceous sediments include in descending order: the Marshalltown Formation (gray, fine sand); the Englishtown Formation (yellow-brown, fine sand); the Woodbury Clay (dark gray, stiff, silty clay); the Merchantville Formation (dark green clay); the Magothy Formation (coarse to fine silt with little fine sand);

and the Raritan and Potomac Formations (interbedded sand, gravelly sand and clay).

f. Hydrogeology

There are four primary water-bearing zones underlying the stations, the shallow water-bearing zone and three aquifers: 1) the Vincentown Formation; 2) the Mount Laurel-Wenonah Formations; and, 3) the Potomac-Raritan-Magothy Formations. The shallow water-bearing zone, which consists of the dredge spoils, engineered fill, tidal marsh deposits and the discontinuous Quaternary riverbed deposits, occurs between approximately 10 and 40 feet bgs. In general, the dredge spoils, engineered fill and tidal marsh deposits are characterized by high porosity and low permeability. Occasional lenses of sand within the dredge spoils may contain perched water within a few feet of the ground surface. The groundwater in the shallow water-bearing zone is generally brackish, with flow generally to the southwest under a gradient of approximately 0.007 feet/foot.

The Kirkwood Formation is encountered at approximately 40 feet bgs., in the vicinity of the stations. In this location, the Kirkwood Formation consists of Miocene clays and acts as a confining layer, separating the shallow water-bearing zone from the underlying Vincentown Formation. The Kirkwood Formation in this vicinity may be discontinuous due to excavation that was conducted to enable the construction.

The Vincentown Formation, which occurs from approximately 55 to 135 feet bgs in this vicinity, is a semi-confined to confined aquifer. Groundwater in the Vincentown Formation generally flows from north to south under a gradient of approximately 0.003 feet/foot.

The Vincentown Formation supplies potable water to domestic wells located upgradient in eastern Salem County, where groundwater in the aquifer is moderately hard with high iron content. Saltwater intrusion into the aquifer occurs along the Delaware River in western Salem County, however, rendering water quality brackish and non-potable. The Hornerstown and Navesink confining units separate the Vincentown Formation from the Mount Laurel-Wenonah Formations. The Mount Laurel-Wenonah aquifer occurs from approximately 135 to 170 feet bgs. Both potable and fire-water supply wells at the stations are screened in this formation as well as the PRM aquifer.

g. Groundwater Use

As described above, several geologic formations beneath Artificial Island contain transmissive units and are capable of supplying a useable quantity of water. The shallow and manmade geologic units beneath the Station are not transmissive and groundwater within the shallow zone is not used for potable or non-potable purposes. Moreover, in the general vicinity of the station there are no public water supply wells or private wells completed in the Vincentown Formation. The station derives its potable and sanitary water from the Mount Laurel-Wenonah and/or PRM formations, where supply wells for both Salem and Hope Creek are completed at depths of approximately 300 to 1,100 ft bgs. The nearest public water supply well is located approximately 3.5 miles from the station in Delaware.

3. PSEG has proceduralized the commitment to sample the RGPP monitoring wells twice per year for tritium and plant related gamma isotope concentrations and annually for strontium. The results of analyses performed in 2007 are discussed in Section IV and included in Tables 4A and 4B.

Samples of surface water from the Delaware River water are collected monthly by PSEG as part of the existing site REMP program. Therefore, it was not considered necessary to incorporate Delaware River sampling into the RGPP.

4. PSEG has implemented new procedures to identify and report new leaks, spills, or other detections with potential radiological significance in a timely manner. No new leaks, spills, or other detections with potential radiological significance to stakeholders were identified in 2007.

5. PSEG regularly assesses analytical results to identify adverse trends. The investigation initiated at Hope Creek exemplifies this commitment, where Hope Creek initiated the investigation at tritium concentrations in groundwater significantly below the ODCM Environmental LLD with limited data for trending to ensure timely and effective response to unexplained results. Investigation results are discussed in Section IV.

6. PSEG will take all necessary corrective actions to protect groundwater resources.

C. Radionuclide Evaluation Strategies

1. Evaluation Strategy for Tritium

The strategy approved in the Salem GRS RAWP is applied to the interpretation of tritium data generated during the RGPP.

If tritium is detected in groundwater samples from Station monitoring wells at concentrations above 3,000 pCi/L (ODCM LLD), further evaluation of the source and extent of tritium, strontium and plant-related gamma emitters will be completed. Additionally, PSEG has implemented procedures defining escalating investigations at tritium concentrations between 200 pCi/L and 3,000 pCi/L. These procedures define the investigative criteria for each specific monitoring well based on the background tritium concentration to ensure the proper investigation is initiated to meet the objectives of the RGPP.

2. Evaluation Strategy for Strontium

PSEG made a decision to add total Strontium (Sr) as an analyte for groundwater samples. Analyses were performed for total Sr, which includes both Strontium 89 and Strontium 90. The detection of Strontium above 2.0 pCi/L (the lower quantitation limit) was established by PSEG as a further investigation criterion; detections at or above this concentration would result in implementation of the investigative measures outlined above.

3. Evaluation Strategy for Plant-Related Gamma Emitters

Plant related gamma emitters are analyzed by multi-channel gamma spectroscopy to the Environmental LLD specified in the ODCM. The results of the analyses would also be used to assess any plant-related radionuclides detected in groundwater. If analytical results suggest specific sources are likely, these sources will be further investigated to enable mitigation of releases to the environment. The ODCM Environmental LLDs were applied and no detections above these concentrations have occurred.

Any detection of a plant-related gamma emitter above the ODCM concentration would be investigated.

D. Characteristics of Tritium (H-3)

Tritium (chemical symbol H-3) is a radioactive isotope of hydrogen. The most common form of tritium is tritium oxide, which is also called "tritiated water." The chemical properties of tritium are essentially those of ordinary hydrogen.

Tritiated water behaves the same as ordinary water in both the environment and the body. Tritium can be taken into the body by drinking water, breathing air, eating food, or absorption through skin. Once tritium enters the body, it disperses quickly and is uniformly distributed throughout the body. Tritium is excreted primarily through urine with a clearance rate characterized by an effective biological half-life of about 14 days. Within one month or so after ingestion, essentially all tritium is cleared. Organically bound tritium (tritium that is incorporated in organic compounds) can remain in the body for a longer period.

Tritium is produced naturally in the upper atmosphere when cosmic rays strike air molecules. Tritium is also produced during nuclear weapons explosions, as a by-product in reactors producing electricity, and in special production reactors, where the isotopes lithium-7 and/or boron-10 are activated to produce tritium. Like normal water, tritiated water is colorless and odorless. Tritiated water behaves chemically and physically like nontritiated water in the subsurface, and therefore tritiated water will travel at the same velocity as the average groundwater velocity.

Tritium has a half-life of approximately 12.3 years. It decays spontaneously to helium-3 (He-3). This radioactive decay releases a beta particle (low-energy electron). The radioactive decay of tritium is the source of the health risk from exposure to tritium. Tritium is one of the least dangerous radionuclides because it emits very weak radiation and leaves the body relatively quickly. Since tritium is almost always found as water, it goes directly into soft tissues and organs. The associated dose to these tissues is generally uniform and is dependent on the water content of the specific tissue.

III. Program Description

A. Sample Analysis

This section describes the general analytical methodologies used to analyze the environmental samples for radioactivity for the Salem and Hope Creek Generating Station RGPP in 2007.

In order to achieve the stated objectives, the current program includes the following analyses:

- Concentrations of gamma emitters in groundwater.
- Concentrations of strontium in groundwater.
- Concentrations of tritium in groundwater.

As noted above, samples of surface water from the Delaware River water are collected monthly by PSEG as part of the existing site REMP program. Therefore, Delaware River sampling is not incorporated into the RGPP.

I. Sampling

Groundwater samples were collected from all monitoring wells. These samples were collected by PSEG Maplewood Testing Laboratory Technicians. Consistent with USEPA and NJDEP guidance, a modified low-flow sampling methodology was used. This methodology is consistent with protocols established for the Salem GRS investigation.

Groundwater samples were analyzed for plant-related gamma emitting radionuclides, and tritium, and annually for total strontium by a qualified laboratory. Samples were collected in April and October 2007 for the same parameters from all 26 RGPP wells. Well details are shown on Tables 1 and 2.

The 26 wells in the RGPP are sampled at a minimum of twice per year. Samples of water are collected, managed, transported and analyzed in accordance with approved procedures following EPA methods. Sample locations, sample collection frequencies and analytical frequencies are controlled in accordance with approved station procedures. Contractor and/or station personnel are trained in the collection, preservation management, and shipment of samples, as well as in documentation of sampling events. Analytical laboratories are subject to internal quality assurance programs and industry cross-check programs. Station personnel review and evaluate all analytical data deliverables as data are received. Analytical data results are reviewed for adverse trends, or anomalous data, field measurements are reviewed to monitor for changes to hydrogeologic conditions.

B. Data Interpretation

The radiological data collected during the history of the stations in the groundwater were used as a baseline with which current operational data were compared. Several factors are important in the interpretation of the data:

1. Lower Limit of Detection

The lower limit of detection (LLD) is specified by federal regulation as a minimum sensitivity value that must be achieved routinely by the analytical parameter. The Environmental LLD specified in the ODCM for tritium is 3,000 pCi/L (ODCM Table 14.12-1 for Salem and Table 14.12.1-1 for Hope Creek). For the RGPP all tritium analyses are performed with the LLD of 200 pCi/L.

2. Laboratory Measurements Uncertainty

The estimated uncertainty in measurement of tritium in environmental samples is frequently on the order of 50% of the measurement value.

Statistically, the exact value of a measurement is expressed as a range with a stated level of confidence. The convention is to report results with a 95% level of confidence. The uncertainty comes from calibration standards, sample volume or weight measurements, sampling uncertainty and other factors.

Analytical uncertainties are reported at the 95% confidence level in this report for reporting consistency with the AREOR.

3. Groundwater Quality Data Analysis

Groundwater samples generally consisted of at least four aliquots, denoted as "A", "B", and "C" samples and the NJDEP-BNE split sample. These samples were either submitted to a laboratory or held as back up samples as described in the following section.

Groundwater "A" samples were submitted to the station's onsite chemistry laboratory for tritium and gamma scans. If these scans indicated that tritium concentrations were below 10,000 pCi/L and no plant-related gamma emitters were present (all RGPP samples met this criteria), then the "B" samples were submitted to Teledyne Brown analytical laboratory for low-level analysis. "C" samples were held as back up until the analytical results were received and determined to be accurate and valid. In the event that the results were believed to be questionable, the "C" samples were submitted for analysis. However, none were required in 2007. Sample aliquots were also periodically transmitted to the PSEG Maplewood Testing Services laboratory for comparison and quality verification. Additionally a split sample from each well was submitted to the NJDEP-BNE designated laboratory, Eberline Services, for analysis regardless of the screening concentration, according to the request of the BNE. Results for these samples will be provided by Eberline Services to the NJDEP-BNE.

C. Background Analysis

A pre-operational radiological environmental monitoring program (pre-operational REMP) was conducted to establish background radioactivity levels prior to operation of the Station. The pre-operational REMP did not address the groundwater at the facility from a radionuclide standpoint. Subsequent natural and anthropogenic events and activities, such as half-life, nuclear bomb testing, and Chernobyl, have altered the radiological environmental character. Some of the anthropogenic impacts were clearly identified during the Salem GRS investigation by age-dating characterization of low-level tritium concentrations. Anthropogenic impacts have also been historically noted in Annual Radiological Environmental Operating Reports (AREORs).

Background evaluation for each monitoring well was conducted using adjacent well concentrations, upgradient concentrations, areal gradient impacts from construction, and similar factors. A factor to be considered in the RGPP is the very low level of tritium in the groundwater and the inability to reasonably perform reproducible analyses at a lower level than 200 pCi/L. Since plant-related radionuclides have not been detected in the groundwater, even in the known area at the Salem GRS, the historical background value is "not detected" and there is essentially no comparative data.

1. Creation of Tritium

Tritium is created in the environment from naturally occurring processes both cosmic and subterranean, as well as from anthropogenic (i.e., man-made) sources. In the upper atmosphere, "Cosmogenic" tritium is produced from the bombardment of stable nuclides and combines with oxygen to form tritiated water, which will then enter the hydrologic cycle. Below ground, "lithogenic" tritium is produced by the bombardment of natural lithium present in crystalline rocks by neutrons produced by the radioactive decay of naturally abundant uranium and thorium. Lithogenic production of tritium is usually negligible compared to other sources due to the limited abundance of lithium in rock. The lithogenic tritium is introduced directly to groundwater.

A major anthropogenic source of tritium and strontium-90 comes from the former atmospheric testing of thermonuclear weapons. Levels of tritium in precipitation increased significantly during the 1950s and early 1960s, and later with additional testing, resulting in the release of significant amounts of tritium to the atmosphere.

The Canadian heavy water nuclear power reactors, other commercial power reactors, nuclear research and weapons production continue to influence tritium concentrations in the environment.

2. Precipitation Data

Precipitation samples are routinely collected at stations around the world for the analysis of tritium and other radionuclides. Two publicly available databases that provide tritium concentrations in precipitation are Global Network of Isotopes in Precipitation (GNIP) and USEPA's RadNet database. GNIP provides tritium precipitation concentration data for samples collected world wide from 1960 to 2007. RadNet provides tritium precipitation concentration data for samples collected at stations throughout the U.S. from 1960 up to and including 2007. Tritium concentrations peaked around 1963. This peak, which approached 10,000 pCi/L for some stations, coincided with the atmospheric testing of thermonuclear weapons. Tritium concentrations in surface water showed a sharp decline up until 1975 followed by a gradual decline since that time. Tritium concentrations in wells may still be above the 200 pCi/L detection limit from the external causes described above. Water from previous years and decades is naturally captured in groundwater, so some well water sources today are affected by the surface water from the 1960s that was elevated in tritium.

IV. Results and Discussion

The locations of the wells relative to major plant components are shown in Figures 1 and 2. The analytical results are shown on Tables 4A and 4B.

A. Groundwater Results

Samples were collected from RGPP monitoring wells throughout the year in accordance with the station radiological groundwater protection program. Analytical results and anomalies are discussed below.

Tables 4A and 4B present the ground water quality analytical results from the 26 RGPP wells. The groundwater samples were analyzed for tritium, strontium and plant-related gamma emitters by Teledyne-Brown. The lower quantitation limits for tritium and strontium were 200 pCi/L and 2.0 pCi/L, respectively. Gamma emitting isotopes were analyzed to the LLD shown in Table 3, plant-related gamma emitters were not detected during the investigation.

Tritium at Salem Generating Station

The results of the laboratory analysis indicate that tritium was detected (i.e., reported at a concentration above the lower quantitation limit of 200 pCi/L) in groundwater within the shallow water-bearing zone (i.e., riverbed deposits) in three of the Salem monitoring wells sampled. The sampled wells included all of the "B Series" wells, and existing wells T, U, Y, Z and AL. Detection of tritium occurred in wells AL, and Z and BD, which is located just outside the cofferdam. The tritium concentrations in these wells were above the quantitation limit, reported as 243 pCi/L, 264 pCi/L and 217 pCi/L respectively.

The concentration of tritium detected in these wells is greater than an order of magnitude below the ODCM LLD of 3,000 pCi/L. The tritium concentrations are being monitored and trended in these wells through semi-annual sampling. No adverse trend has been observed.

Tritium at Hope Creek Generating Station

Hope Creek Generating Station has observed low concentrations of tritium in certain wells and anomalous tritium concentrations in other specific wells.

Based on the 2006 tritium results, sample frequencies were increased on specific wells in accordance with the evaluation protocol discussed in Section II.C above and Station procedures. Tritium was detected (concentration greater than 200 pCi/L) in wells BM, BN, and BQ at concentrations ranging from < 200 pCi/L to 326 pCi/L. Tritium was detected in the range of < 200 pCi/L to 481 pCi/l at Well BJ, located down gradient of the CST. These low concentrations of tritium were evaluated and determined not to be indicative of an adverse trend, these wells are being monitored semi-annually and the results will continue to be evaluated.

Wells BH, BI, and BK have presented anomalous tritium concentrations, ranging from < 200 pCi/L to 967 pCi/L during this reporting period. Confirmatory analyses were inconclusive and more recent analyses show a significant reduction in the reported tritium concentrations. Laboratory quality assurance and quality control have been evaluated and determined not to be the source of the anomalous data. To ensure adequate trending and evaluations, sampling frequency for these wells was increased as shown in Table 4A. These analytical results showed no adverse trends.

Strontium

Total strontium, including Sr-89 and Sr-90, was not detected above the LLD of 2 pCi/L in any RGPP well sample.

Gamma Emitters

No plant-related gamma emitters were detected to above the ODCM Environmental LLDs in any RGPP well samples. Naturally occurring Potassium-40 was detected in 7 of the wells sampled.

B. Leaks, Spills, and Releases

No significant leaks, spills or releases occurred or were detected during this monitoring period.

C. Trends

There have been no adverse trends identified through the RGPP during this reporting period.

D. Investigations

Salem Generating Station

The tritium detections at Salem Generating Station were evaluated and determined to be greater than an order of magnitude below the Further Investigation Criteria. The investigation included validation of the results through independent analysis and is continuing through semi-annual monitoring of the wells for tritium concentration and evaluation of the results.

Hope Creek Generating Station

The tritium detections at Hope Creek Generating Station were evaluated and determined to be less than an order of magnitude below the Further Investigation Criteria. Other than Well BJ all other wells included in this investigation showed significantly lower in tritium concentrations. The investigation included validation of the results through independent analysis and is continuing through semi-annual monitoring of the wells for tritium concentration and evaluation of the results.

E. Projected RGPP Activities

The RGPP will be continued in 2008, being modified as required to adaptively manage the program to meet the objectives. Sampling will continue on the following schedule (in addition to the specific wells which exceed the LLD of 200 pCi/L being sampled quarterly for tritium concentration at Hope Creek):

- Tritium will be analyzed at least twice each calendar year to an LLD of 200 pCi/L;
- Plant-related gamma emitters will be analyzed semi-annually to the ODCM Environmental LLD; and,
- Strontium will be analyzed annually as total strontium; if the total strontium is greater than 2.0 pCi/L a separate analysis will be performed specifically for Strontium-89 and strontium-90.

Table 1 Monitoring Well Construction Details, Hope Creek Generating Station

Well ID	Installation Date	Construction Details	Diameter (inches)	Total Depth (feet bgs)	Monitoring Interval (feet bgs)	MP Elevation (feet RPD)	MP Elevation (feet msl)	Monitoring Purpose	Source Targets
Well BH	May-06	Sch-40 PVC	4	37.0	27 - 37	97.92	8	Perimeter	NA
Well BI	May-06	Sch-40 PVC	4	38.5	28.5 - 38.5	99.6	9.68	Source	Facilities; Piping
Well BJ	May-06	Sch-40 PVC	4	38.0	28 - 38	100.23	10.31	Source	Condensate Storage & Transfer; Facilities; Piping
Well BK	May-06	Sch-40 PVC	4	38.5	28.5 - 38.5	98.19	8.27	Perimeter	NA
Well BL	May-06	Sch-40 PVC	4	35.0	25 - 35	99.71	9.79	Perimeter	NA
Well BM	May-06	Sch-40 PVC	4	38.0	28 - 38	99.76	9.84	Source	Facilities; Piping
Well BN	May-06	Sch-40 PVC	4	12.5	7.5 - 12.5	102.64	12.72	Source	Auxiliary Boiler Building; Piping
Well BO	May-06	Sch-40 PVC	4	36.0	26 - 36	97.98	8.06	Perimeter/Source	Building Sewage
Well BP	May-06	Sch-40 PVC	4	38.0	28 - 38	99.06	9.14	Perimeter/Source	Building Sewage
Well BQ	May-06	Sch-40 PVC	4	42.0	32 - 42	102.16	12.24	Source	Auxiliary Boiler Building; Dry Cask Storage Building; Piping
Well BR	May-06	Sch-40 PVC	4	40.5	30.5 - 40.5	104.28	14.36	Perimeter/Source	Piping; Dry Cask Storage Building
Well BS	May-06	Sch-40 PVC	4	35.0	25 - 35	100.55	10.63	Upgradient	NA
Well BT	May-06	Sch-40 PVC	4	38.5	28.5 - 38.5	99.60	9.68	Upgradient	NA

Notes:

MP	Measuring Point
bgs	Below ground surface
RPD	Relative to plant datum
msl	Relative to mean sea level (NAVD 1988)
NA	Not applicable
NAD 83	North American Datum 1983

Table 2. Monitoring Well Construction Details, Salem Generating Station, Hancock's Bridge, New Jersey

Well ID	Installation Date	Construction Details	Diameter (inches)	Total Depth (feet bgs)	Monitoring Interval (feet bgs)	MP Elevation (feet RPD)	MP Elevation (feet msl)	Monitoring Purpose	Source Targets
Well T	Jun-03	Sch-40 PVC	2	31.2	21.2 - 31.2	104.13	14.21	Source	Facilities; House Heating Blr
Well U	May-03	Sch-40 PVC	2	32.2	27.2 - 32.2	98.57	8.65	Source	Facilities; House Heating Blr
Well Y	Sep-03	Sch-40 PVC	2	37.0	27.0 - 35.0	101.81	11.89	Perimeter	NA
Well Z	Sep-03	Sch-40 PVC	2	37.5	27.5 - 37.5	101.86	11.94	Perimeter	NA
Well AL	Jan-04	Sch-40 PVC	2	25.3	15.3 - 25.3	99.13	9.21	Perimeter	NA
Well BA	May-06	Sch-40 PVC	4	39.5	29.5 - 39.5	101.07	11.15	Perimeter	NA
Well BB	May-06	Sch-40 PVC	4	47.0	37 - 47	99.38	9.46	Perimeter	NA
Well BC	May-06	Sch-40 PVC	4	38.0	28 - 38	98.78	8.86	Source / Perimeter	Facilities; RAP Tanks; Piping
Well BD	May-06	Sch-40 PVC	4	40.5	30.5 - 40.5	98.78	8.86	Source	Facilities; RAP Tanks; Piping
Well BE	May-06	Sch-40 PVC	4	37.0	27 - 37	98.31	8.39	Perimeter	NA
Well BF	May-06	Sch-40 PVC	4	42.5	32.5 - 42.5	99.11	9.19	Perimeter	NA
Well BG	May-06	Sch-40 PVC	4	37.0	27 - 37	100	10.08	Perimeter	NA
Well BU	May-06	Sch-40 PVC	4	36.0	26 - 36	100.16	10.24	Upgradient	NA

Notes:

MP	Measuring Point
bgs	Below ground surface
RPD	Relative to plant datum
msl	Relative to mean sea level (NAVD 1988)
NA	Not applicable
NAD 83	North American Datum 1983

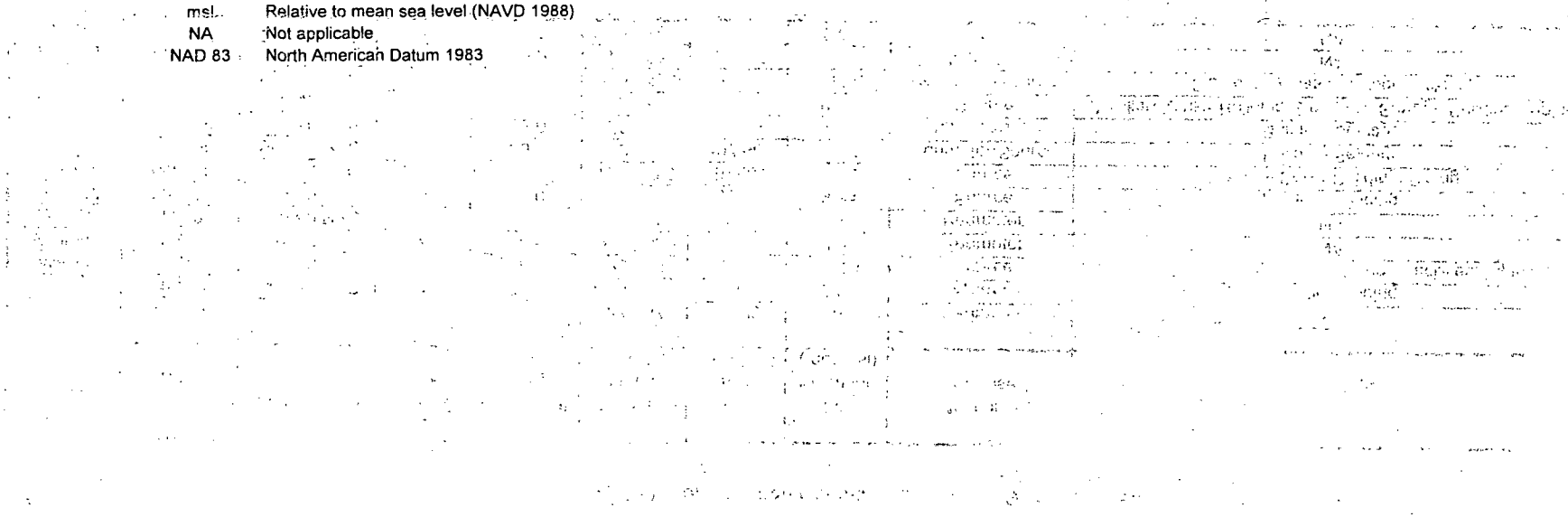


Table 3. Relevant Groundwater Screening Criteria, Salem and Hope Creek Generating Stations

isotope	RGPP LLD (pCi/L)	PSEG Reporting Level (pCi/L)
Tritium Conc. (pCi/L)	200	3000*
Total Strontium (pCi/L)	2.0	8
Mn-54	15	1000
Fe-59	30	400
Co-60	15	300
Zn-65	30	300
Nb-95	15	400
Zr-95	15	200
Cs-134	15	30
Cs-137	18	50
Ba-140	60	200
La-140	15	200

* Informal Report, ODCM Report at 30,000 pCi/L

Table 4A. Groundwater Tritium Analytical Results, Hope Creek Generating Station

Well ID	Sample Date	Tritium Conc. (pCi/L)
BH	Jan-07	**967**
	Feb-07	**476**
	Mar-07	<200
	Apr-07	**301**
	Oct-07	**250**
BI	Jan-07	**475**
	Feb-07	**284**
	Mar-07	<200
	Apr-07	**214**
	Oct-07	**350**
BJ	Jan-07	**402**
	Feb-07	**455**
	Mar-07	**481**
	Apr-07	**269**
	Oct-07	<200
BK	Jan-07	<200
	Feb-07	<200
	Mar-07	<200
	Apr-07	<200
	Oct-07	**383**
BL	Apr-07	<200
	Oct-07	<200
BT	Apr-07	<200
	Oct-07	<200
BM	Jan-07	<200
	Feb-07	<200
	Mar-07	<200
	Apr-07	**226**
	Oct-07	<200
BN	Jan-07	347
	Feb-07	<200
	Mar-07	**264**
	Apr-07	<200
	Oct-07	**231**
BO	Apr-07	<200
	Oct-07	<200
BP	Apr-07	<200
	Oct-07	<200
BQ	Jan-07	<200
	Feb-07	**326**
	Mar-07	<200
	Apr-07	<200
	Oct-07	<200
BR	Apr-07	<200
	Oct-07	<200
BS	Apr-07	<200
	Oct-07	<200

Table 4B. Groundwater Tritium Analytical Results, Salem Generating Station						
Well ID	Sample Date	Tritium Conc. (pCi/L)		Well ID	Sample Date	Tritium Conc. (pCi/L)
AL	Jan-07	<200		U	Jan-07	<200
	Apr-07	**243**			Apr-07	<200
	Jul-07	**203**			Jul-07	<200
	Oct-07	<200			Oct-07	<200
BA	Apr-07	<200				
	May-07	<200				
	Oct-07	<200		Y	Jan-07	<200
					Feb-07	<200
BB	Apr-07	<200			Mar-07	<200
	Oct-07	<200			Apr-07	<200
					May-07	<200
BC	Apr-07	<200			Jun-07	<200
	Oct-07	<200			Jul-07	<200
					Aug-07	<200
BD	Apr-07	**256**			Sep-07	<200
	Oct-07	**264**			Oct-07	<200
					Nov-07	<200
BE	Apr-07	<200			Dec-07	<200
	Oct-07	<200				
BF	Apr-07	<200		Z	Jan-07	<200
	Oct-07	<200			Feb-07	<200
					Mar-07	<200
BG	Apr-07	<200			Apr-07	**217**
	Nov-07	<200			May-07	<200
					Jun-07	<200
BU	Apr-07	<200			Jul-07	<200
	Oct-07	<200			Aug-07	<200
					Sep-07	<200
T	Jan-07	<200			Oct-07	<200
	Apr-07	<200			Nov-07	<200
	Jul-07	<200			Dec-07	<200
	Oct-07	<200				

Table 5. Groundwater Elevations, Salem and Hope Creek Generating Stations

Well Identification	Location	Reference Point Elevation (NGVD 1988)	Depth to Water (ft btoc) 16-May-07	Water-Level Elevation (ft rpd) 16-May-07	Water-Level Elevation (ft msl) 16-May-07	Depth to Water (ft btoc) 01-Aug-07	Water-Level Elevation (ft rpd) 01-Aug-07	Water-Level Elevation (ft msl) 01-Aug-07
Well T	SGS	14.21	11.67	92.46	2.54	13.59	90.54	0.62
Well U	SGS	8.65	8.27	NA	0.38	6.24	92.33	2.41
Well Y	SGS	11.89	10.5	91.31	1.39	10.62	91.4	1.48
Well Z	SGS	11.94	10.52	91.34	1.42	10.44	91.42	1.5
Well AL	SGS	9.21	7.11	92.02	2.1	6.99	92.14	2.22
Well BA	SGS	11.15	9.71	91.36	1.44	9.79	91.28	1.6
Well BB	SGS	9.46	8.53	90.85	0.93	8.31	91.07	1.15
Well BC	SGS	8.86	7.31	91.47	1.55	7.35	91.47	1.51
Well BD	SGS	8.86	7	91.78	1.86	7.21	91.57	1.65
Well BE	SGS	8.39	6.6	91.71	1.79	6.73	91.58	1.66
Well BF	SGS	9.19	7.4	91.71	1.79	7.58	91.53	1.51
Well BG	SGS	10.08	7.73	92.27	2.35	8.03	91.97	2.25
Well BH	HCGS	8	6.33	91.59	1.67	6.49	91.43	1.51
Well BI	HCGS	9.68	7.13	92.47	2.55	7.19	91.41	2.49
Well BJ	HCGS	10.31	7.24	92.99	3.07	7.42	92.81	2.89
Well BK	HCGS	8.27	6.25	91.94	2.02	6.25	91.94	2.02
Well BL	HCGS	9.79	8.29	91.42	1.5	8.43	91.28	1.36
Well BM	HCGS	9.84	NA	NA	NA	7.9	91.86	1.94
Well BN	HCGS	12.72	6.48	96.16	6.24	7.61	95.03	5.11
Well BO	HCGS	8.06	NA	NA	NA	NA	NA	NA
Well BP	HCGS	9.14	8.54	90.52	0.6	8.34	90.72	0.8
Well BQ	HCGS	12.24	NA	NA	NA	NA	NA	NA
Well BR	HCGS	14.36	12.44	91.64	1.72	12.76	91.52	1.6
Well BS	HCGS	10.63	7.77	92.78	2.86	7.98	92.57	2.65
Well BT	HCGS	9.68	6.59	93.01	3.09	7	92.6	2.63
Well BU	SGS	10.24	7.32	92.84	2.92	7.65	90.51	2.59

Notes

ft bgs	Feet below ground surface.
ft rpd	Elevation (in feet) relative to plant datum.
ft amsl	Feet above mean sea level (NAVD 1988).
	Mean tide level at Artificial Island is 0.11 feet (NAVD 1988).
NA	Data not available
UTM	Unable to monitor (No access)

Table 6. List of Systems of RGPP Interest and General Location and Description of System, Hope Creek Generating Station

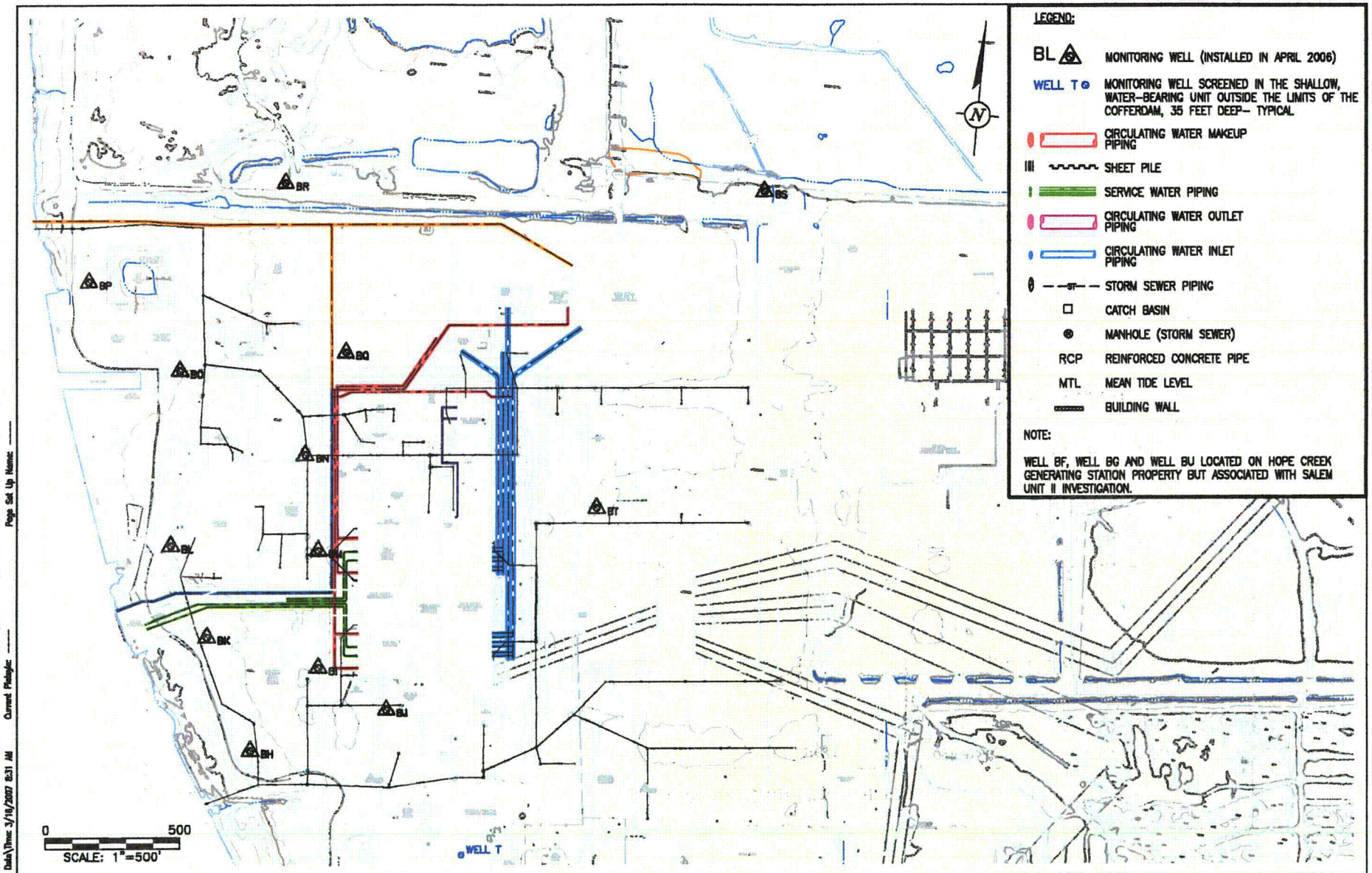
System Name	System ID	System Description/Location
Core Spray System	BE	Provides support to nuclear reaction process; housed within the Containment Dome.
Reactor Core Isolation System	BD	Provides support to nuclear reaction process; housed within the Containment Dome.
Fuel Pool Cooling and Cleanup	EC	Provides support to nuclear reaction process; housed within the Containment Dome.
Filtration, Recirculation, and Ventilation System (FRVS)	GU	Provides support to nuclear reaction process; housed within the Containment Dome.
Containment Atmosphere Control System	GS	Provides support to nuclear reaction process; housed within the Containment Dome.
Reactor Building HVAC System	GR	Provides support to nuclear reaction process; housed within the Containment Dome.
Lube Oil Storage and Transfer System	CF	Located within the Outer Containment Building.
Reactor Building Pressure Relief System	SL	Located within the Outer Containment Building.
Auxiliary Building HVAC System (Radwaste Area)	GH	Located at the boundary between the Outer Containment Building and the Hope Creek Service/Radwaste Building.
Liquid Radwaste System	HB	Located within the Radwaste Building.
Radioactive Laundry	HH	Located within the Radwaste Building.
Auxiliary Building HVAC System (Service Area)	GL	Located within the Radwaste Building.
Building and Equipment Drains	HG	Located within the Turbine Building.
Turbine Building HVAC System	GE	Located within the Turbine Building.
Condensate Storage and Transfer System	AP/BN	Contains and transfers water used in cooling applications; located outside of the sheetpile adjacent to the Outer Containment Building.
Residual Heat Removal System	BC	Contains and transfers water used in cooling applications; located outside of the sheetpile adjacent to the Outer Containment Building.
Service Water System	EA	Provides raw water from the Delaware River; located within sheetpile trench.
Storm Drainage System	LB	Collects precipitation runoff.
Building Sewage System	LA	Processes waste water generated from sink drains and other comfort facilities at the Station.
Auxiliary Boilers	FA/FB	Provide additional power to Station.
Circulating Water System	DA	Supports cooling process; located within containment trenches and containment sleeves.
Cooling Tower	DB	Supports cooling process for steam turbines.
Low Volume Oily Waste	LE	Oily water from oil storage tank contaminant basins
High Pressure Cooling Injection System	BJ	Cooling support to nuclear reaction process

Table 7. List of Systems of RGPP Interest and General Location and Description of System, Salem Generating Station

System Name	System ID	System Description/Location
Auxiliary Feedwater	AF	Provides feedwater to supplement steam generation process. Storage tanks located on the west side of the Auxiliary Building, situated above the cofferdam.
Building and Yard Drains	BD	Located within and around the Turbine Building and throughout the Station yard.
Feedwater and Condensate	CN/FW	Contains and transfers water transported to steam generator from turbines; located inside the Turbine Building and between the Containment Dome and the Turbine Building.
Condensate Polishing	CP	Contains and transfers condensate from the Turbine Building to the proximally located Condensate Polishing Buildings.
Chemical Volume Control	CVC	Provides support to the nuclear process water management systems; housed within and adjacent to the Auxiliary Building and within the Containment Domes.
Circulating Water	CW	Non contact cooling water for the condensation process; runs from the Delaware River to the Turbine Building.
Demineralized Water	DM	Provides support to Reactor Coolant System; located adjacent to the Auxiliary Building.
Steam Generator Drains and Blowdown	GBD	Provides support to the steam generation process; located within the Containment Domes and runs to the Waste Basin to the south and to the Turbine Building.
House Heating Boiler	HHB	Steam source for building heating; located to the north of the Turbine Building
Non-Radioactive Liquid Waste	LW	Liquid Waste lines that run from the Turbine Building south and east to Clarifiers 1 and 2 and the equalization basin.
Main Steam	MS	Contains and transfers steam from the Generator to the Turbines; located within the Containment Domes and run to the Turbine Building.
Spent Fuel Pool Cooling	SF	Supports storage and transfer of spent fuel; located within the Fuel Handling Buildings.
Safety Injection	SJ	Provides support to the nuclear reaction process; storage tanks located on the west side of the Auxiliary Building, situated above the cofferdam.
Service Water	SW	Provides raw water from the Delaware River; located south and east of the Containment Domes.
Radioactive Liquid Drains	WD	Located within the Auxiliary Building.
Waste Liquid	WL	Radioactive liquid waste system, located primarily in the Containment Dome and the Auxiliary Building.

Table 8. Salem and Hope Creek 10CFR 50.75(g) Data

Spill/Discharge	Quantity(ies) Spilled Discharged	Location of Spill/Discharge	Description
Apr-95	~ 88 mCi	Hope Creek and Salem	Steam from the Decon Solution Evaporator released from Hope Creek's South Plant Vent
Jun-01	~5Ci	Unit 1 RWST	Salem Unit 1 RWST Nozzle Leak
Sep-02	~5 Ci	Ground west of Unit 1 Spent Fuel Building	Blockage of the Spent Fuel Pool liner's "tell-tales" caused backup of contaminated water through building seams
Jan-05	No discharge to the environment	Hope Creek rooms 3133, 3135, 3129 and 5102	Water from inside the Waste Sludge Phase Separator Tank
May-07	2.8 milli Curies of Cs 137	In front of Salem Unit 2 condensate polisher	Burst site glass during operation. Resin blown through wall into switchyard



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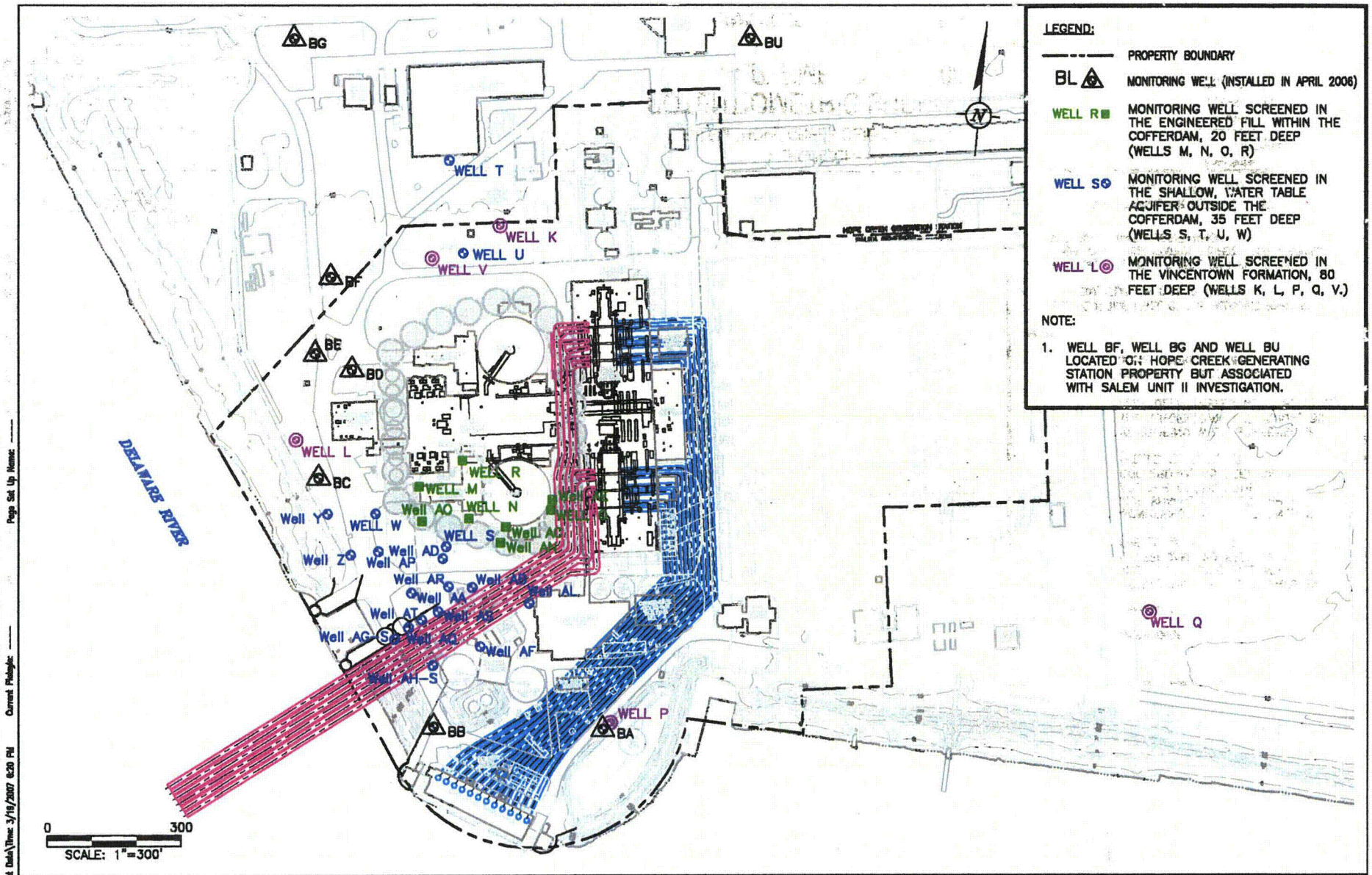
HOPE CREEK GENERATING STATION

STATION LAYOUT

HANCOCK'S BRIDGE, NEW JERSEY

Project Number	NP000571.0030
Drawing Date	16, MARCH 2007
Figure	1



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SALEM GENERATING STATION

STATION LAYOUT

HANCOCK'S BRIDGE, NEW JERSEY

Project Number	NP000571.0021
Drawing Date	16 MARCH, 2007
Figure	2

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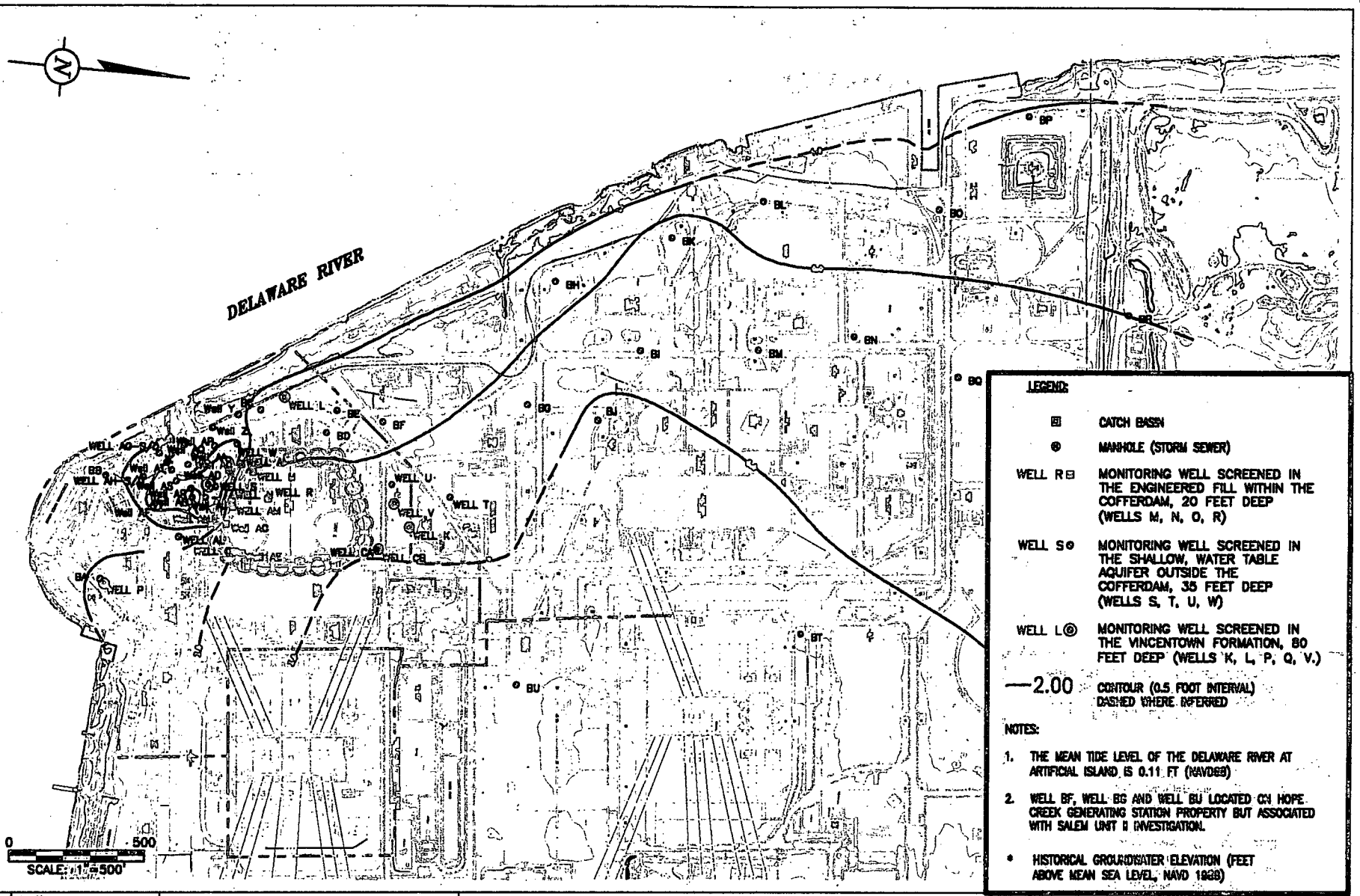

LEGEND:

- ⊟ CATCH BASIN
- ⊛ MANHOLE (STORM SEWER)
- WELL R ⊟ MONITORING WELL SCREENED IN THE ENGINEERED FILL WITHIN THE COFFERDAM, 20 FEET DEEP (WELLS M, N, O, R)
- WELL S ⊙ MONITORING WELL SCREENED IN THE SHALLOW, WATER TABLE AQUIFER OUTSIDE THE COFFERDAM, 35 FEET DEEP (WELLS S, T, U, W)
- WELL L ◎ MONITORING WELL SCREENED IN THE VINCENTOWN FORMATION, 80 FEET DEEP (WELLS K, L, P, Q, V.)
- —2.00 CONTOUR (0.5 FOOT INTERVAL) DASHED WHERE INFERRED

NOTES:

1. THE MEAN TIDE LEVEL OF THE DELAWARE RIVER AT ARTIFICIAL ISLAND IS 0.11 FT (NAVD88)
2. WELL BF, WELL BG AND WELL BU LOCATED ON HOPE CREEK GENERATING STATION PROPERTY BUT ASSOCIATED WITH SALEM UNIT 2 INVESTIGATION.

• HISTORICAL GROUNDWATER ELEVATION (FEET ABOVE MEAN SEA LEVEL, NAVD 1988)

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POTENTIOMETRIC SURFACE MAP SEPTEMBER 28, 2006

HANCOCK'S BRIDGE, NEW JERSEY

Project Number	NP000571.0005
Drawing Date	16 MARCH 2007
Figure	3

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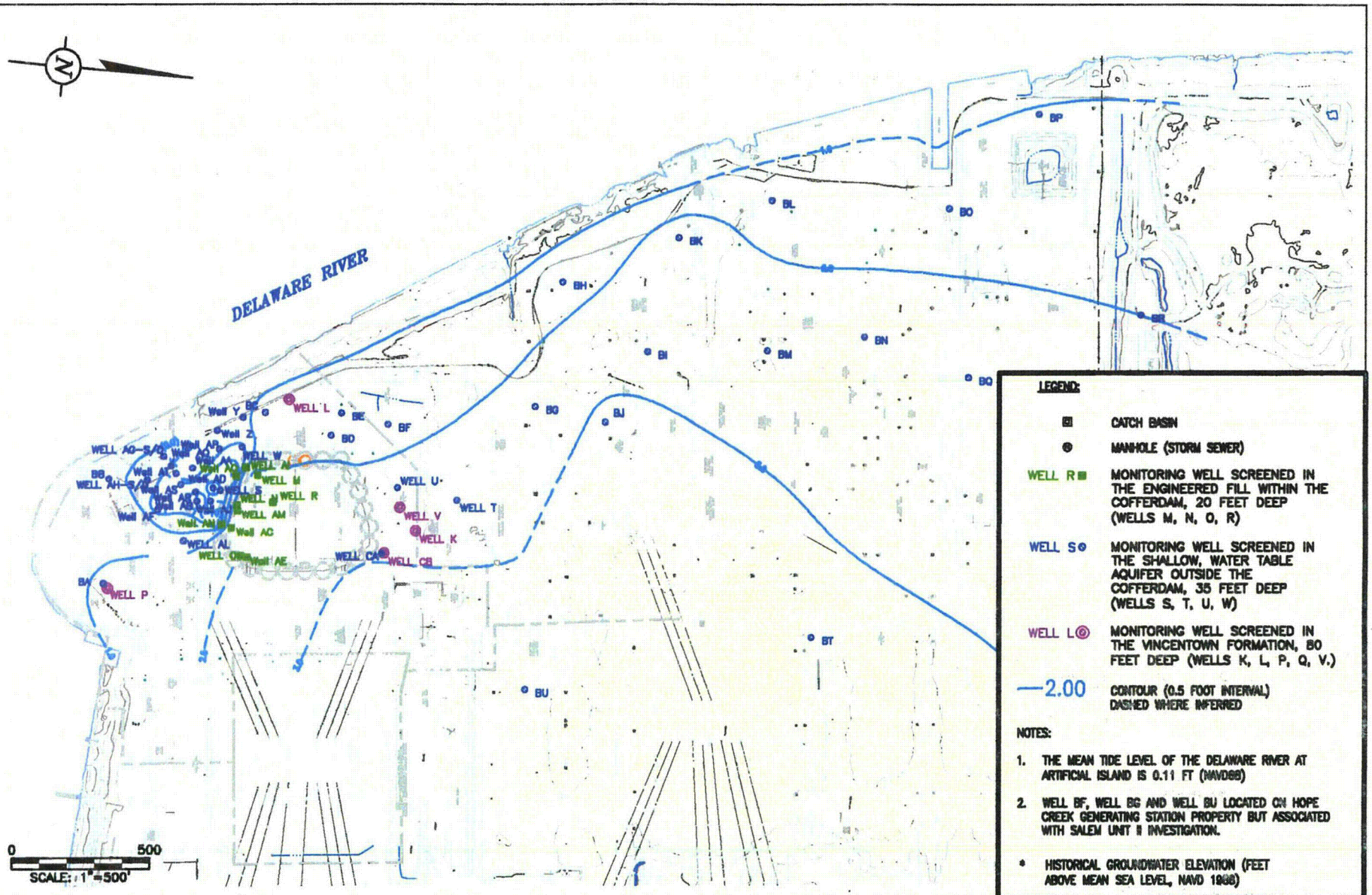

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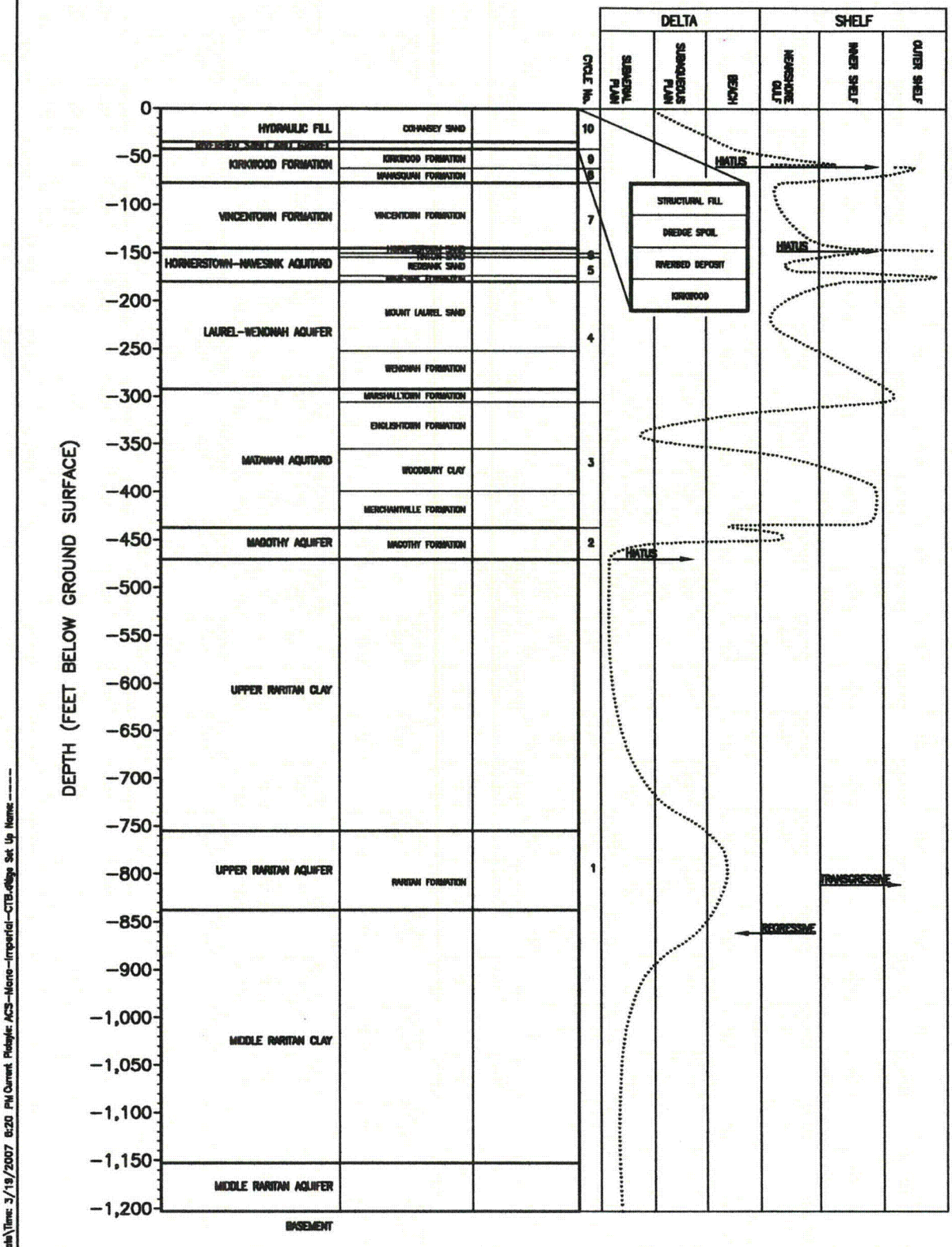
POTENTIOMETRIC SURFACE MAP SEPTEMBER 28, 2006

HANCOCK'S BRIDGE, NEW JERSEY

Project Number	NP000571.0005
Drawing Date	16, MARCH 2007
Figure	3



Area Manager: R. GAN	ARCADIS	PSEG NUCLEAR, LLC SALEM	Project Number: NP000571.0021
Project Director: P. MILIONIS	6 Terry Drive Suite 300 Newtown, Pa 18940 Tel: 267/685-1600 Fax: 267/685-1601 www.arcadis-us.com	STRATIGRAPHY COLUMN HANCOCK'S BRIDGE, SALEM COUNTY, NEW JERSEY	Drawing Date: 16 MARCH, 2007
Project Manager: K. EYRE			Figure: 4
Technical Review: C. SHARPE			

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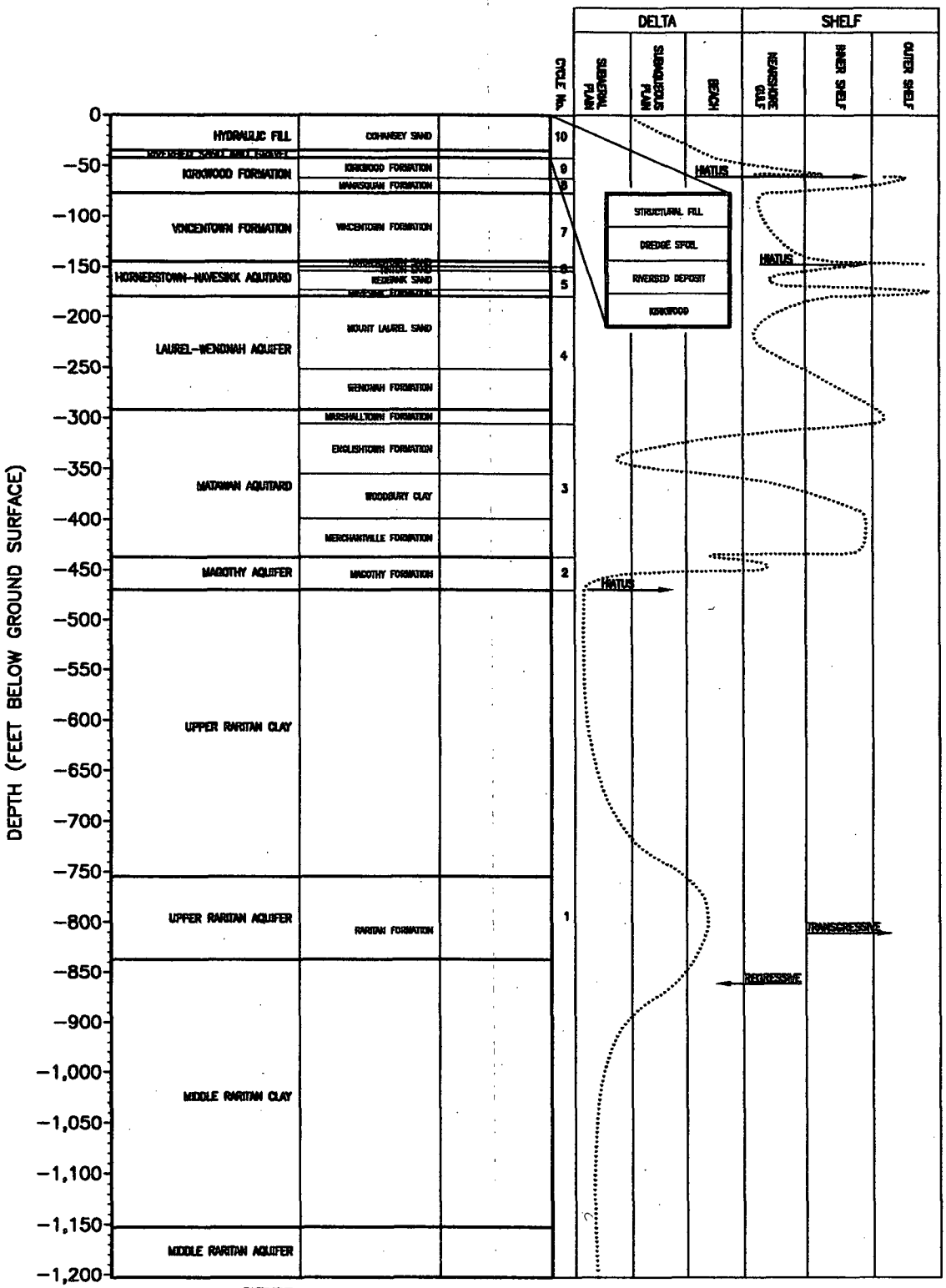

Area Manager: R. GAN Project Director: P. MELONIS Project Manager: K. EYRE Technical Review: C. SHARPE	ARCADIS 6 Terry Drive Suite 300 Newtown, Pa 18940 Tel: 267/685-1600 Fax: 267/685-1601 www.arcadis-us.com	PSEG NUCLEAR, LLC SALEM STRATIGRAPHY COLUMN HANCOCK'S BRIDGE, SALEM COUNTY, NEW JERSEY	Project Number: NP000571.0021 Drawing Date: 16 MARCH, 2007 Figure: 4	