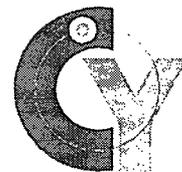




# **Final Status Survey Final Report Phase V**

**Appendix A3  
Survey Unit Release Record  
9520-0003, Southwest Site Storage Area**

**December 2006**



CYAPCO  
FINAL STATUS SURVEY RELEASE RECORD  
SOUTHWEST SITE STORAGE AREA  
SURVEY UNIT 9520-0003

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**1. SURVEY UNIT DESCRIPTION**

Survey Unit 9520-0003 (Southwest Site Storage Area) is designated as Final Status Survey (FSS) Class 2 and consists of 8,106 m<sup>2</sup> (2.0 acres) of uninhabited open land located approximately 1,661 feet from the reference coordinate system benchmark used at Haddam Neck Plant (HNP) (see Attachment 1). The survey unit is bounded as follows: land Survey Unit 9520-0002 to the north (called north as oriented with the north to south flow of the Connecticut River), the Discharge Canal to the east, land Survey Unit 9530-0004 to the south, and the Connecticut River to the west. The survey unit is relatively level open space in the middle of the peninsula. The restoration of the peninsula for FSS has removed most of the surface interference in the survey unit.

The reference coordinates associated with this survey unit are E005 through E010 by S086 through S093 (refer to License Termination Plan (LTP) Section 5.4.4). The reference coordinates provide the maximum dimensions of a rectangle containing this survey unit. Some areas contained in this rectangle may not be part of this survey unit. The boundary of the survey unit was defined using a Global Positioning System (GPS) based on the Connecticut State Plane System North American Datum (NAD) 1927.

**2. CLASSIFICATION BASIS**

The survey unit was classified in accordance with Procedure RPM 5.1-10, "Survey Unit Classification."

The "Classification Basis Summary" conducted for Survey Unit 9520-0003 consisted of:

- a) A review of the 10CFR50.75 (g) (1) database,
- b) A review of the "Initial Characterization Report" and the "Historic Site Assessment Supplement,"
- c) Historic and current survey records review,
- d) Visual inspections and a "walkdown."

A review of the 10CFR50.75(g)(1) database report and historical files shows a documented history of the use of this survey unit as a radioactive materials storage area. Additionally, at least one (1) case of contamination to underlying soil has been recorded (refer to survey performed 3/23/1985). Examples of some of the major events are provided below.

- a) Plant Incident Report (PIR) 80-37 reported the discovery of three (3) discrete sources of elevated activity on the Southeast Site Storage area in March 1980, along with other areas around the site. Two (2) of the discrete sources were identified within nearby Survey Unit 9520-0001. The location of the third discrete source, identified as 3-24-2, was probably in Survey Unit 9520-0002, which is adjacent to Survey Unit 9520-0003, based on a review of the 1980 survey maps.

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- b) Health Physics surveys performed in 1983 and 1985 document the discovery of radioactive material (strainers, bolts, wood pallets, sections of pipe, etc.) on the peninsula. The 1985 survey documents the discovery of contaminated dirt under a pallet.
- c) Condition Report (CR) 05-0314: Documents the discovery of excavation spoils, intended for backfill, above the radiological criteria for use as backfill. These spoils were likely located in Survey Units 9520-0003 and 9520-0004 based on review of the documentation. According to the CR closure documentation, the affected spoils were removed and packaged for disposal. Follow-up survey and sampling was performed and the results were below established action levels.

A review of the *"Initial and Supplemental Characterization Reports"* as well as the previous *"Classification Basis Summaries"* was performed. Survey Unit 9520-0003 was initially designated as Class 2 during the development of the LTP. The source documents, the *"Connecticut Yankee Haddam Neck Characterization Report"* and *"Initial Classification for Survey Areas at Connecticut Yankee"*, were incorporated by reference in LTP revision 0 (references 2-2 and 2-7 respectively). The second source document justified a Class 2 designation for those areas for which there was historical evidence of contamination above the Derived Concentration Guideline Levels (DCGLs - refer to Section 2 for definition and description of DCGL), but for which recent surveys had shown that decontamination efforts had occurred and that the radiological conditions were expected to be below the DCGLs. Additional justification for a Class 2 designation based on survey and sampling data was provided as another reference to the LTP by the *"Haddam Neck Plant Historical Site Assessment Supplement"*.

Removal of material and restoration of the peninsula for FSS has been ongoing since 2000, starting with the radiological release of the South Access Point and several abandoned trailers. The collapse of the Radioactive Material(s) Area (RMA) boundary and the removal of subsurface commodities has produced a large data set that has helped characterize the radiological contaminants of concern and extent of contamination. Co-60 has been identified in the past (refer to the *"Haddam Neck Plant Historical Site Assessment Supplement"*), and has the potential to exceed the screening criteria (refer to Section 3).

Characterization was performed in August 2006 to support final classification and FSS planning. Statistical quantities (mean, median and standard deviation) from the 2006 characterization survey conducted under SSWP 06-07-006 are provided in Table 1.

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**Table 1 – Basic Statistical Quantities for Cs-137 and Co-60 from the 2006 Characterization Survey**

	Cs-137	Co-60
Minimum Observed Concentration (pCi/g) :	7.39E-04	-9.79E-03
Maximum Observed Concentration (pCi/g) :	1.03E-01	1.41E-01
Mean (pCi/g):	6.63E-02	1.96E-02
Median (pCi/g):	6.86E-02	-2.93E-03
Standard Deviation (pCi/g):	3.74E-02	5.96E-02

The FSS Engineer performed a visual inspection and walk-down during September 2006 to assess the physical condition of the survey unit, evaluate access points and travel paths and identify potentially hazardous conditions.

This survey area is affected by existing groundwater (reference CY memo ISC 06-024) which will be a source of dose from residual radioactivity, as discussed in Section 3 under the Data Quality Objectives.

Based upon the results of radiological surveys performed over six years of restoration and the 2006 characterization survey, it was concluded that there was a low probability for residual radioactivity in concentrations greater than the DCGLs, justifying a final survey unit classification of Class 2 (refer to Section 3).

### 3. DATA QUALITY OBJECTIVES (DQO)

FSS design and planning used the Data Quality Objective (DQO) process as described by the LTP, Procedure RPM 5.1-11, "Preparation of Final Status Survey Plan," and the "Multi-Agency Radiation Survey and Site Investigation Manual" (MARSSIM). A summary of the main features of the DQO process are provided herein.

The DQO process incorporated hypothesis testing and probabilistic sampling distributions to control decision errors during data analysis. Hypothesis testing is a process based on the scientific method that compares a baseline condition to an alternate condition. The baseline condition is technically known as the null hypothesis. Hypothesis testing rests on the premise that the null hypothesis is true and that sufficient evidence must be provided for rejection. In designing the survey plan, the underlying assumption, or null hypothesis was that residual activity in the survey unit exceeded the release criteria. Rejection of the null hypothesis would indicate that residual activity within the survey unit does not exceed the release criteria. Therefore, the survey unit does satisfy the primary objective of the FSS plan.

The primary objective of the FSS plan was to demonstrate that the level of residual radioactivity in Survey Unit 9520-0003 did not exceed the release criteria specified in the LTP and that the potential dose from residual radioactivity is As Low As Reasonably Achievable (ALARA).

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A fundamental precursor to survey design is to establish a relationship between the release criteria and some measurable quantity. This is done through the development of DCGLs. The DCGLs represent average levels of radioactivity above background levels and are presented in terms of surface or mass activity concentrations. Chapter 6 of the LTP describes in detail the modeling used to develop the DCGLs for soil (called Base Case Soil DCGL), existing groundwater radioactivity and future groundwater radioactivity that will be contributed by building basements and footings.

The DCGLs presented in Chapter 6 of the LTP were developed for exposures from three (3) components, that is, residual radioactivity in soil, existing groundwater radioactivity, and future groundwater radioactivity from the burial of concrete foundations or footings from site buildings containing residual radioactivity. Equation 1 shows the mathematical relationship between the three (3) components and the total dose.

*Equation 1*

$$H_{\text{Total}} = H_{\text{Soil}} + H_{\text{ExistingGW}} + H_{\text{FutureGW}}$$

The total dose under the LTP criteria is twenty-five (25) mrem/yr TEDE from all three (3) components. The allowable total dose under the Connecticut Department of Environmental Protection (CTDEP) radiological remediation standard for CY is nineteen (19) mrem/yr TEDE. To satisfy both the LTP and CY CTDEP criteria, the dose from soil must be reduced when using the existing and future groundwater dose values discussed above.

This survey area is affected by existing groundwater (reference CY memo ISC 06-024). Therefore, the dose contribution from existing groundwater is bounded by two (2) mrem/yr TEDE.

This survey unit is not considered impacted by future groundwater radioactive contamination, as there are no buried concrete foundations or footings containing residual radioactive material within the groundwater saturated zone in the area (reference CY memo ISC 06-024). The dose contribution from future groundwater, the third dose component is, therefore, zero (0) mrem/yr TEDE.

*Equation 2*

$$19 \text{ mrem/yr}_{\text{Total}} = 17 \text{ mrem/yr}_{\text{Soil}} + 2 \text{ mrem/yr}_{\text{Existing GW}} + 0 \text{ mrem/yr}_{\text{FutureGW}}$$

The allowable dose for soil in this survey unit is seventeen (17) mrem/yr TEDE as shown by Equation 2 above. The concentration of residual radioactivity resulting in seventeen (17) mrem/yr TEDE is designated as the Operational DCGL, and has been established for the radionuclides of concern as provided in Table 2.

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**Table 2 – Radionuclide Specific Base Case Soil DCGL, Operational DCGLs and Required Minimum Detectable Concentrations**

Radionuclide <sup>(1)</sup>	Base Case Soil DCGL (pCi/g) <sup>(2)</sup>	Operational DCGL (pCi/g) <sup>(3)</sup>	Required MDC (pCi/g) <sup>(4)</sup>
<b>H-3</b>	4.12E+02	2.80E+02	1.65E+01
<b>C-14</b>	5.66E+00	3.85E+00	2.26E-01
Mn-54	1.74E+01	1.18E+01	6.96E-01
<b>Fe-55</b>	2.74E+04	1.86E+04	1.10E+03
Co-60	3.81E+00	2.59E+00	1.52E-01
<b>Ni-63</b>	7.23E+02	4.92E+02	2.89E+01
<b>Sr-90</b>	1.55E+00	1.05E+00	6.20E-02
Nb-94	7.12E+00	4.84E+00	2.85E-01
<b>Tc-99</b>	1.26E+01	8.57E+00	5.04E-01
Ag-108m	7.14E+00	4.86E+00	2.86E-01
Cs-134	4.67E+00	3.18E+00	1.87E-01
Cs-137	7.91E+00	5.38E+00	3.16E-01
Eu-152	1.01E+01	6.87E+00	4.04E-01
Eu-154	9.29E+00	6.32E+00	3.72E-01
Eu-155	3.92E+02	2.67E+02	1.57E+01
<b>Pu-238</b>	2.96E+01	2.01E+01	1.18E+00
<b>Pu-239/240</b>	2.67E+01	1.82E+01	1.07E+00
<b>Pu-241</b>	8.70E+02	5.92E+02	3.48E+01
Am-241 <sup>(5)</sup>	2.58E+01	1.75E+01	1.03E+00
<b>Cm-243/244</b>	2.90E+01	1.97E+01	1.16E+00

(1) Bold indicates those radionuclides considered to be Hard-to-Detect (HTD)

(2) The Base Case Soil DCGLs for soil are specified by the LTP in Chapter 6 and are equivalent to 25 mrem/yr TEDE

(3) The Operational DCGL is equivalent to 17 mrem/yr TEDE

(4) The required MDC is equivalent to 1 mrem/yr TEDE

(5) Americium-241 can be analyzed by gamma and alpha spectroscopy and is considered to be Easy to Detect (ETD); the preferred result is the alpha spectroscopy's when both analyses are performed

Another important facet of the DQO process is to identify the radionuclides of concern and determine the concentration variability. Soil samples were collected in 2006 to establish the radiological condition of Survey Unit 9520-0003 for FSS. Cs-137 and Co-60 are the only gamma emitting radionuclides reported in concentrations with the potential for exceeding the screening criteria. The characterization data were used for the survey design and are provided in Table 1.

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Instrument DQOs included a verification of the ability of the survey instrument to detect the radiation(s) of interest relative to the DCGL. Survey instrument response checks were required prior to issue and after the instrument had been used. Control and accountability of survey instruments was required to assure the quality and prevent the loss of data.

As part of the DQOs applied to laboratory processes, analysis results were reported as actual calculated results. Results reported as less than Minimum Detectable Concentration (MDC) were not accepted for FSS. Sample report summaries included unique sample identification, analytical method, radionuclide, result, and uncertainty to two (2) standard deviations, laboratory data qualifiers, units, and the required and observed MDC.

4. **SURVEY DESIGN**

The level of effort associated with planning a survey is based on the complexity of the survey and nature of the hazards. Guidance for preparing FSS plans is provided in Procedure RPM 5.1-11, "*Preparation of Final Status Survey Plans*". The FSS plan uses an integrated sample design that combines scanning surveys and sampling which can be either random or biased.

The DQO process determined that Cs-137 and Co-60 would be the radionuclides of concern in Survey Unit 9520-0003 (refer to Section 3). Other radionuclides identified during this FSS would be evaluated to ensure adequate survey design.

Surrogate DCGLs were not required for this survey unit based the previous FSS of this survey unit and via screening under LTP Section 5.4.7.2, "*Gross Activity DCGLs*". Radionuclide screening or de-selection is a process where an individual radionuclide or aggregates may be considered insignificant and eliminated from the FSS. The criteria for de-selection are concentrations less than 5% for individual radionuclides and less than 10% for aggregates.

The Elevated Measurement Comparison (EMC) did not apply to this survey unit since it is a Class 2 area and discrete, elevated areas of contamination were not expected.

The Sign Test was selected as the non-parametric statistical test. The use of the Sign Test did not require the selection or use of a background reference area, which simplified survey design and implementation. This approach was conservative since it included background Cs-137 as part of the sample set.

The number of soil samples for FSS was determined in accordance with Procedure RPM 5.1-12, "*Determination of the Number of Surface Samples for Final Status Survey*." The Lower Bound of the Gray Region (LBGR) was set in accordance with Procedure RPM 5.1-11 to 0.95 to maintain the relative shift ( $\Delta/\sigma$ ) in the range of 1 and 3. The resulting Adjusted Relative Shift was 2.0. A Prospective Power Curve was generated using COMPASS, a software package developed under the sponsorship of the United States Nuclear Regulatory

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Commission (USNRC) for implementation of the MARSSIM in support of the decommissioning license termination rule (10 CFR 20, Subpart E). The result of the COMPASS computer run showed adequate power for the survey design. The survey design specified fifteen (15) surface soil samples for non-parametric statistical testing and five (5) samples at biased locations.

The grid pattern and locations of the soil samples were determined using Visual Sample Plan (VSP) in accordance with Procedure RPM 5.1-14, "*Identifying, and Marking Surface Sample Locations for Final Status Survey.*" Visual Sample Plan was created by Pacific Northwest National Laboratory (PNNL) for the United States Department of Energy. A systematic triangular grid pattern with a random starting point was selected for sample design, which is appropriate for a Class 2 area. Two of the sample locations, 9520-0003-009F and 9520-0003-010F, were selected randomly since the systematic locations fell within the boundary of Survey Unit 9520-0004, a Class 1 survey unit contained within Survey Unit 9520-0003.

Judgmental sampling was included as a feature of this survey design to account for any anomalies potentially identified in the field.

Sample locations were identified using AutoCAD-LT, a commercially available plotting software package with coordinates consistent with the Connecticut State Plane System. These coordinates were integrated with a GPS to locate sample locations in the field. Sample Measurement Locations for the design are listed with the GPS coordinates in Table 3.

**Table 3 - Sample Measurement Locations with Associated GPS Coordinates**

Designation	Northing	Easting
9520-0003-001F	235740.79	669643.56
9520-0003-003F	235654.02	669693.65
9520-0003-004F	235654.02	669793.84
9520-0003-005F	235654.02	669894.03
9520-0003-006F	235654.02	669994.22
9520-0003-007F	235654.02	670094.41
9520-0003-008F	235567.26	669643.56
9520-0003-009F	235487.99	669999.66
9520-0003-010F	235540.74	670070.44
9520-0003-011F	235567.26	669944.12
9520-0003-012F	235567.26	670044.31
9520-0003-013F	235480.49	669793.84

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<b>Designation</b>	<b>Northing</b>	<b>Easting</b>
9520-0003-014F	235480.49	669894.03
9520-0003-015F	235480.49	669994.22
9520-0003-016F	235575.69	669956.27
9520-0003-017F	235550.58	669950.98
9520-0003-018F	235630.38	669849.11
9520-0003-019F	235707.61	669714.28
9520-0003-020F	235544.37	669657.91
9520-0003-039F <sup>(1)</sup>	235604.73	669995.37

(1) Sample 9520-0003-039F was added to the FSS plan to replace sample 9520-0003-002F, which was reassigned to adjacent Class 1 Survey Unit 9520-0005

Procedure RPM 5.1-11 specifies that 5% of the samples are required to be selected for HTD analysis. Two (2) soil samples, or about 10% of the number of samples that would be used for non-parametric statistical testing were randomly selected for HTD radionuclide analysis using the Microsoft Excel "RANDBETWEEN" function. Each sample was sent off-site for a full suite analysis of the HTD radionuclides specified in the LTP, Table 2-12, "*Radionuclides Potentially Present at Haddam Neck Plant*" and as provided in Table 2.

The implementation of quality control measures as referenced by Procedure RPM 5.1-24, "*Split Sample Assessment for Final Status Survey*," included the collection of two (2) soil samples for "split sample" analysis by the off-site laboratory. These locations were selected randomly using the Microsoft Excel "RANDBETWEEN" function. The number of quality control soil samples was about 10% of fifteen (15) samples.

The LTP specifies a required scanning coverage of 10% to 100% for outdoor Class 2 areas. The fraction of scanning coverage was determined during the DQO process with the total amount and location(s) based on the likelihood of finding elevated activity during FSS. Based on the historical site assessment, the characterization data available, and the use of the survey unit to store spoils from remediation, it was determined that scanning was required in six (6) separate areas. The total surface area to be scanned was approximately 20% of the survey unit.

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For this Class 2 survey unit, the "Investigation Level" for area scanning and soil sample measurement results are those levels specified in LTP, Table 5-8. Table 4 provides a synopsis of the survey design.

<b>Table 4 – Synopsis of the Survey Design</b>		
Feature	Design Criteria	Basis
Survey Unit Land Area	8,106 m <sup>2</sup>	Based on AutoCAD-LT
Number of Measurements	20 (15 systematic grid) (5 biased)	Type 1 and Type 2 errors were 0.05, sigma was 0.029 pCi/g, the LBGR was adjusted to 0.95 to maintain Relative Shift in the range of 1 and 3
Grid Spacing	25.0 m	Based on triangular grid
Operational DCGL	5.38 pCi/g Cs-137 2.59 pCi/g Co-60	Administratively set to achieve 17 mrem/yr TEDE <sup>(1)(2)</sup>
Soil Investigation Level	5.38 pCi/g Cs-137 2.59 pCi/g Co-60	The Operational DCGL meets the LTP criteria for a Class 2 survey unit <sup>(2)</sup>
Scan Survey Area Coverage	Approximately 20% of the area	The LTP requires >10% area coverage for Class 2 survey units
Scan Investigation Level	Detectable over background	Administratively set to achieve 17 mrem/yr TEDE <sup>(1)</sup>

(1) The allowable dose for soil in this survey unit is 17 mrem/yr TEDE as the bounding dose from existing and future groundwater has been established based on field data (reference CY memo ISC 06-024)

(2) In conjunction with the unity rule

**5. SURVEY IMPLEMENTATION**

FSS field activities were conducted under Work Plan and Inspection Record (WP&IR) 2006-0038. The WP&IR package included a detailed FSS plan, job safety analysis, job planning checklist and related procedures for reference. Daily briefings were conducted to discuss the expectations for job performance and the safety aspects of the survey. The "Daily Survey Journal" was used to document field activities and other information pertaining to the FSS.

Six (6) scan areas were established that constituted approximately 20% of the surface area of Survey Unit 9520-0003. Grid lines, one meter wide, were painted on the ground of the scan area. A background survey was performed around the survey unit and it was determined that, using an Eberline E-600 with a SPA-3 sodium iodide detector, background ranged from 5,580 counts per minute (cpm) up to 9,920 cpm.

The scan areas were established and scanned for elevated readings (see Attachment 2 for all scan results). Scanning was performed with an Eberline E-600 using a SPA-3 sodium iodide detector. The E-600 was operated in the rate-

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meter mode and used with audio response. The probe was positioned as close to the ground as possible and was moved at a scan speed of about 0.5 meters per second. Approximately 20% of the survey unit was scanned.

Measurement locations were identified in North American Datum (NAD) 1927 coordinates using GPS coordinates; sample locations were identified and marked with a surveyor's flag or paint for identification. At each sample location, a one (1) meter radius around the sample flag or paint mark was scanned for elevated radiation levels.

Twenty-four (24) surface soil samples were collected and packaged in accordance with Haddam Neck Plant (HNP) Procedure RPM 5.1-3, "Collection of Sample Media for Final Status Survey" and FSS design. Samples were controlled, transported, stored, and transferred to the off-site laboratory using Chain-of-Custody (COC) protocol in accordance with Procedure RPM 5.1-5, "Chain of Custody for Final Status Survey Samples."

Two (2) samples (9520-0003-010F and 9520-0003-039F) were randomly selected for HTD radionuclide analysis. Sample 9520-0003-039F replaced sample 9520-0003-002F, which was reassigned to another survey unit (refer to Section 10 for additional detail).

The implementation of survey specific quality control measures included the collection of two (2) samples (9520-0003-004F and 9520-0003-014F) for "split sample" analysis.

**6. SURVEY RESULTS**

All field survey activities were conducted between September 25, 2006 and October 4, 2006.

The sample locations identified in the FSS plan were scanned over approximately a one (1) meter radius for elevated radiation levels. Table 5 provides an overview of the scan results for sample measurement locations. Scan results are provided in Attachment 2.

**Table 5 - Scan Results for Sample Measurement Locations**

Sample Measurement Location	Highest Logged Reading (kcpm)	Action Level <sup>(1)</sup> (kcpm)	> Action Level <sup>(2)</sup>
1	7.65	8.73	NO
3	5.08	6.10	NO
4	6.57	7.50	NO
5	7.01	7.49	NO
6	7.65	8.19	NO
7	7.70	8.83	NO
8	6.21	7.71	NO

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**Table 5 - Scan Results for Sample Measurement Locations**

Sample Measurement Location	Highest Logged Reading (kcpm)	Action Level <sup>(1)</sup> (kcpm)	> Action Level <sup>(2)</sup>
9	7.28	8.48	NO
10	7.32	8.88	NO
11	6.65	8.62	NO
12	7.56	8.86	NO
13	6.44	7.37	NO
14	7.23	9.01	NO
15	7.88	8.34	NO
16	6.91	9.94	NO
17	7.40	8.74	NO
18	5.82	7.32	NO
19	6.39	8.37	NO
20	6.13	7.68	NO
39 <sup>(3)</sup>	6.56	7.86	NO

(1) The action level is based on a measurement above ambient background in accordance with the FSS plan

(2) The FSS plan requires movement of the sample measurement location to the area within the 1 meter radius yielding the response above the action level

(3) Sample location 9520-0003-039F replaced sample location 9520-0003-002F which was reassigned to Survey Unit 9520-0005

The scan areas, that comprised approximately 20% of the total surface area for the survey unit, were scanned for elevated radiation levels. The areas were scanned in accordance with the FSS plan on September 26, 2006 through October 2, 2006. Several elevated measurement locations were identified during scanning. One elevated area warranted analysis on-site since it was twice ambient background. The gamma spectroscopy result reported Co-60 above the Operational DCGL. A new Class 1 survey unit was created around the area of elevated activity (refer to Section 10). Table 6 provides an overview of the scan area survey. Scan results are provided in Attachment 2.

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**Table 6 - Scan Area Results**

Scan Area <sup>(1)</sup>	Highest Logged Reading (kcpm)	Action Level <sup>(2)</sup> (kcpm)	Elevated Reading Identification <sup>(3)</sup>	Investigation Sample
1	7.90	9.17	None – no elevated areas identified	None
2	6.97	8.82	None – no elevated areas identified	None
3	6.41	7.56	None – no elevated areas identified	None
4	10.5	7.23	9520-03-ER-04-06-1	9520-0003-035F
			9520-03-ER-04-08-1	9520-0003-036F
			9520-03-ER-04-10-1	9520-0003-037F
			9520-03-ER-04-12-1	9520-0003-038F
5	8.68	10.3	None – no elevated areas identified	None
6	8.90	9.18	None – no elevated areas identified	None

(1) Most of scanning performed in scan area 1 and scan area 2 is now relevant to Survey Unit 9520-0005 (refer to Section 10).

(2) The action level is based on a measurement above ambient background

(3) ER is an abbreviation associated with the barcodes used in the field where ER stands for Elevated Reading

The off-site laboratory employed for the radiological analyses of samples was General Engineering Laboratories, LLC. The laboratory analyzed the fifteen (15) samples collected for non-parametric statistical testing, the associated field splits, the five (5) biased samples, and the four (4) confirmatory samples using gamma spectroscopy. Gamma spectroscopy analysis was performed to the required MDCs. Gamma spectroscopy results identified some radionuclides meeting the accepted criteria for detection (i.e., a result greater than two standard deviations uncertainty). However, Cs-137 and Co-60 were the only radionuclides reported in concentrations exceeding the de-selection criteria.

Cs-137 was identified in thirteen (13) of the fifteen (15) samples collected for non-parametric statistical testing. Cs-137 was the primary radionuclide confirming the DQOs. The mean of the gamma spectroscopic analysis results

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for the sample population indicated that Cs-137 was present at levels lower than the concentrations of Cs-137 found in soil at off-site locations within the vicinity of the HNP as presented in the Health Physics TSD BCY-HP-0063. Co-60 was identified in three (3) of the fifteen (15) samples collected for non-parametric statistical testing.

A summary of the fifteen (15) samples collected for non-parametric statistical testing results is provided in Table 7.

**Table 7 - Summary of Soil Sample Results for the Statistical Sample Population**

Sample Number	Cs-137 pCi/g	Co-60 pCi/g	Fraction of the Operational DCGL <sup>(1)</sup>
9520-0003-001F	1.58E-01	2.14E-01	0.112
9520-0003-003F	5.54E-02	1.42E-02	0.016
9520-0003-004F	2.45E-02	1.33E-02	0.010
9520-0003-005F	1.07E-01	1.78E-02	0.027
9520-0003-006F	6.53E-02	1.94E-02	0.020
9520-0003-007F	1.37E-01	-4.29E-03	0.025
9520-0003-008F	1.99E-01	5.69E-03	0.039
9520-0003-009F	1.71E-01	-5.58E-03	0.032
9520-0003-010F	4.59E-02	2.48E-02	0.018
9520-0003-011F	5.77E-02	1.51E-02	0.017
9520-0003-012F	2.75E-02	6.71E-03	0.008
9520-0003-013F	2.80E-02	-8.93E-03	0.005
9520-0003-014F	1.14E-01	1.97E-02	0.029
9520-0003-015F	1.55E-01	1.22E-02	0.034
9520-0003-039F	5.30E-02	-2.51E-02	0.010

(1) The Operational DCGL from Table 2 is 5.38 pCi/g for Cs-137 and 2.59 pCi/g for Co-60 used in conjunction with the unity rule to achieve 17 mrem/yr TEDE

The off-site laboratory also processed two (2) samples for HTD analysis as required by the sample plan. The requested analyses included alpha spectroscopy, gas proportional counting, and liquid scintillation depending on the radionuclide and the measurement method. All analyses met the required MDC.

As previously stated in Section 4 of this report, the criteria for de-selection of a radionuclide is a concentration that is less than 5% of the Operational DCGL for individual radionuclides and less than 10% of the Operational DCGLs for aggregates. None of the HTDs, which by analysis, met the criteria for detection (i.e., a result greater than two standard deviations uncertainty).

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Five (5) biased samples were collected at locations selected by FSS Supervision based on professional judgment and observation. Gamma spectroscopy analysis was performed by the off-site laboratory to the required MDC.

**Table 8 - Judgmental or Biased Sample Results**

Sample Number	Cs-137 pCi/g	Co-60 pCi/g	Fraction of the Operational DCGL <sup>(1)</sup>
9520-0003-016F	3.25E-02	6.31E-03	0.008
9520-0003-017F	4.37E-02	1.14E-02	0.013
9520-0003-018F	3.26E-02	6.29E-04	0.006
9520-0003-019F	1.78E-01	4.63E-03	0.035
9520-0003-020F	2.05E-01	3.79E-02	0.053

(1) The Operational DCGL from Table 2 is 5.38 pCi/g for Cs-137 and 2.59 pCi/g for Co-60 used in conjunction with the unity rule to achieve 17 mrem/yr TEDE

**7. QUALITY CONTROL**

The off-site laboratory processed the split samples and performed gamma spectroscopy analysis. Ten percent (10%) of the samples were selected for analysis, which exceeds the 5% minimum required by the LTP. The data were evaluated using USNRC acceptance criteria specified in Inspection Procedure 84750 as detailed in HNP Procedure RPM 5.1-24, "Split Sample Assessment for Final Status Survey". Cs-137 was not detected in sufficient quantities in the field split results at location 9520-0003-004 to evaluate in accordance with procedure. Evaluation using the reported results for K-40 resulted in acceptable agreement between the field split result at this location. Cs-137 was not detected in one of the field split results at location 9520-0003-0014. Evaluation using the reported results for K-40 resulted in acceptable agreement between the field split result at this location.

The sample analysis vendor, General Engineering Laboratories, LLC, maintains quality control and quality assurance plans as part of normal operation. Refer to Attachment 4 for data and data quality analysis results.

**8. INVESTIGATIONS AND RESULTS**

Four confirmatory samples were collected from scan area 4 at locations exhibiting elevated scan readings. The samples are denoted as shown in Table 6, with the sample results shown in Table 9 below.

**Table 9 - Confirmatory Sample Results**

Sample Number <sup>(1)</sup>	Cs-137 pCi/g	Co-60 pCi/g	Fraction of the Operational DCGL <sup>(2)</sup>
9520-0003-035F	5.19E-02	2.69E-02	0.020
9520-0003-036F	4.99E-02	2.25E-02	0.018

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**Table 9 - Confirmatory Sample Results**

Sample Number <sup>(1)</sup>	Cs-137 pCi/g	Co-60 pCi/g	Fraction of the Operational DCGL <sup>(2)</sup>
9520-0003-037F	1.25E-01	3.69E-02	0.037
9520-0003-038F	1.24E-01	8.88E-03	0.026

(1) Samples 9520-0003-021F through 9520-0003-034F were reassigned to Class 1 Survey Unit 9520-0005 (refer to Section 10)

(2) The Operational DCGL from Table 2 is 5.38 pCi/g for Cs-137 and 2.59 pCi/g for Co-60 used in conjunction with the unity rule to achieve 17 mrem/yr TEDE

**9. REMEDIATION AND RESULTS**

Historically, no radiological remedial action as described by MARSSIM Section 5.4 was performed in this survey unit prior to or as a result of the FSS. Health Physics TSD BCY-HP-0078, "ALARA Evaluation of Soil Remediation in Support of Final Status Survey," determined that remediation beyond that required to meet the release criteria is unnecessary and that the remaining residual radioactivity in soil was ALARA.

**10. CHANGES FROM THE FINAL STATUS SURVEY PLAN**

One elevated area warranted analysis on-site since the scan measurement was twice ambient background. The gamma spectroscopy result reported Co-60 above the Operational DCGL. Additional scanning did not identify other elevated areas indicating that the extent of contamination was localized to an area of about 36 square inches (six inches by six inches). A new Class 1 survey unit, Survey Unit 9520-0005, was created based on the sample result around the area of elevated activity and within the borders of Survey Unit 9520-0003.

The change to the FSS plan included the generation of a new sample location to complete the fifteen (15) samples for non-parametric statistical sampling. The sample location was determined randomly using VSP. Also, most of scanning performed in scan area 1 and scan area 2 is now relevant to Survey Unit 9520-0005. The scanning that was performed in scan area 1 and scan area 2 did not identify elevated areas of activity; and, along with the other four scan areas, the minimum land area to be scanned (>10%) was satisfied for this survey unit.

**11. DATA QUALITY ASSESSMENT (DQA)**

The DQO sample design and data were reviewed in accordance with Procedure RPM 5.1-23, "Data Quality Assessment," for completeness and consistency. The sampling design had adequate power as indicated by the Retrospective Power Curve. The Sign Test was performed on the data and compared to the original assumptions of the DQOs. The evaluation of the Sign Test results demonstrates that the survey unit passes the unrestricted release criteria, thus, the null hypothesis is rejected.

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Documentation was complete and legible. Surveys and sample collection were consistent with the DQOs and were sufficient to ensure that the survey unit was properly designated as Class 2 after the new Class 1 survey unit (9520-0005) was created.

The preliminary data review consisted of calculating basic statistical quantities (e.g., mean, median, standard deviation). The mean and median values are well below the Operational DCGL. Also, the retrospective power curve shows that a sufficient number of samples were collected to achieve the desired power. Therefore, the survey unit meets the unrestricted release criteria with adequate power as required by the DQOs.

For Cs-137, the range of the data, about four (4) standard deviations, was not a particularly large variation considering that the levels were essentially at existing environmental levels where such variation is to be expected. The difference between the mean and median was about 27% of the standard deviation which indicates some skewness in the data. The data was represented graphically through posting plots, a frequency plot, and a quantile plot. The frequency plot indicates positive skewness as confirmed by the calculated skew of 0.44.

Co-60, although included in the FSS plan for compliance purposes, was identified in only three (3) of the fifteen (15) samples collected for non-parametric statistical testing. Data assessment and graphical representation of Co-60 was not considered useful given the limited number of data points to represent the distribution.

All data, assessments, and graphical representations for Cs-137 are provided in Attachment 4.

**12. ANOMALIES**

A discrete source of elevated activity was identified during scanning as discussed in Section 10. A new Class 1 survey unit, Survey Unit 9520-0005, was created based on the soil sample result.

**13. CONCLUSION**

Survey Unit 9520-0003 has met the final DQOs of the FSS plan. The ALARA criteria for soils as specified in Chapter 4 of the LTP were achieved. Elevated Measurement Comparison and remediation was not required.

Cs-137 and Co-60 were used for statistical testing to determine the adequacy of the survey unit for FSS.

The sample data passed the Sign Test. The null hypothesis was rejected. The Retrospective Power Curve generated using COMPASS shows adequate power was achieved. The survey unit is properly designated as Class 2.

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The dose contribution from soil is less than 1 mrem/yr TEDE based on the average concentration of the samples used for non-parametric statistical sampling.

This survey area is affected by existing groundwater (reference CY memo ISC 06-024); therefore the dose contribution from existing groundwater is bounded at two (2) mrem/yr TEDE.

This survey unit is not considered impacted by future groundwater radioactive contamination, as there are no underground structures, systems or components containing residual radioactive material within the groundwater saturated zone in the area (reference CY memo ISC 06-024); therefore, the dose contribution from future groundwater is zero (0) mrem/yr TEDE.

The average total dose from residual radioactivity in this survey unit, including exposures from the three (3) components as described in Section 3, that is, residual radioactivity in soil, existing groundwater radioactivity, and future groundwater radioactivity from the burial of concrete foundations or footings from site buildings containing residual radioactivity, will not exceed 3 mrem/yr TEDE. Therefore, Survey Unit 9520-0003 is acceptable for unrestricted release.

**14. ATTACHMENTS**

- 14.1 Attachment 1 – Figures
- 14.2 Attachment 2 – Scan Results
- 14.3 Attachment 3 – Laboratory Results
- 14.4 Attachment 4 – DQA Results

SOUTHWEST SITE STORAGE AREA  
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**ATTACHMENT 1 (FIGURES)**

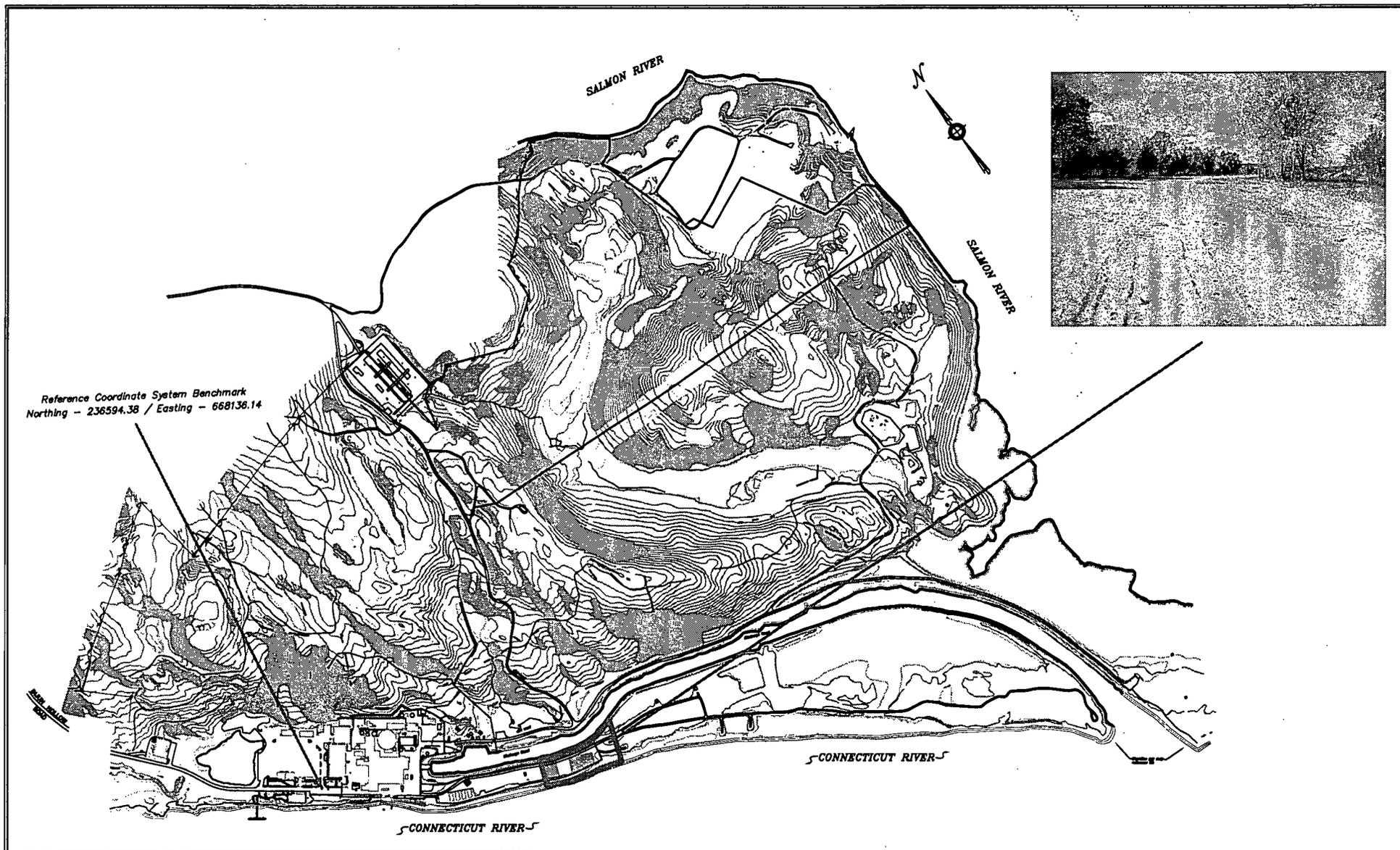


Figure 1



Connecticut Yankee Atomic Power Company  
 Site Map With Reference To Survey Unit 9520-0003

Date	By
November 2006	J. McC.

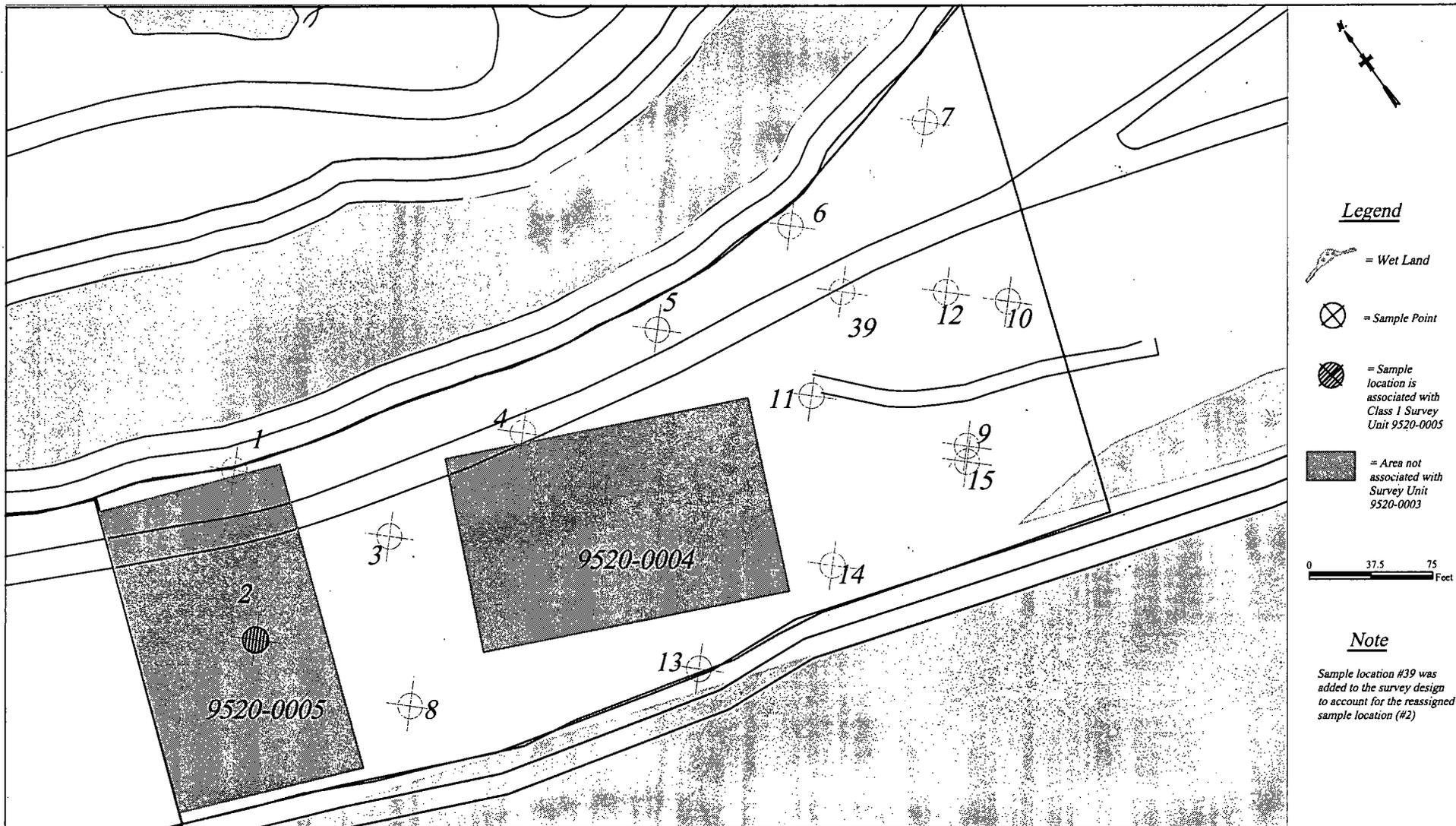


Figure 2



Connecticut Yankee Atomic Power Company  
 Survey Unit 9520-0003 Final Status Survey Design

Date	By
November 2006	J. McCarthy

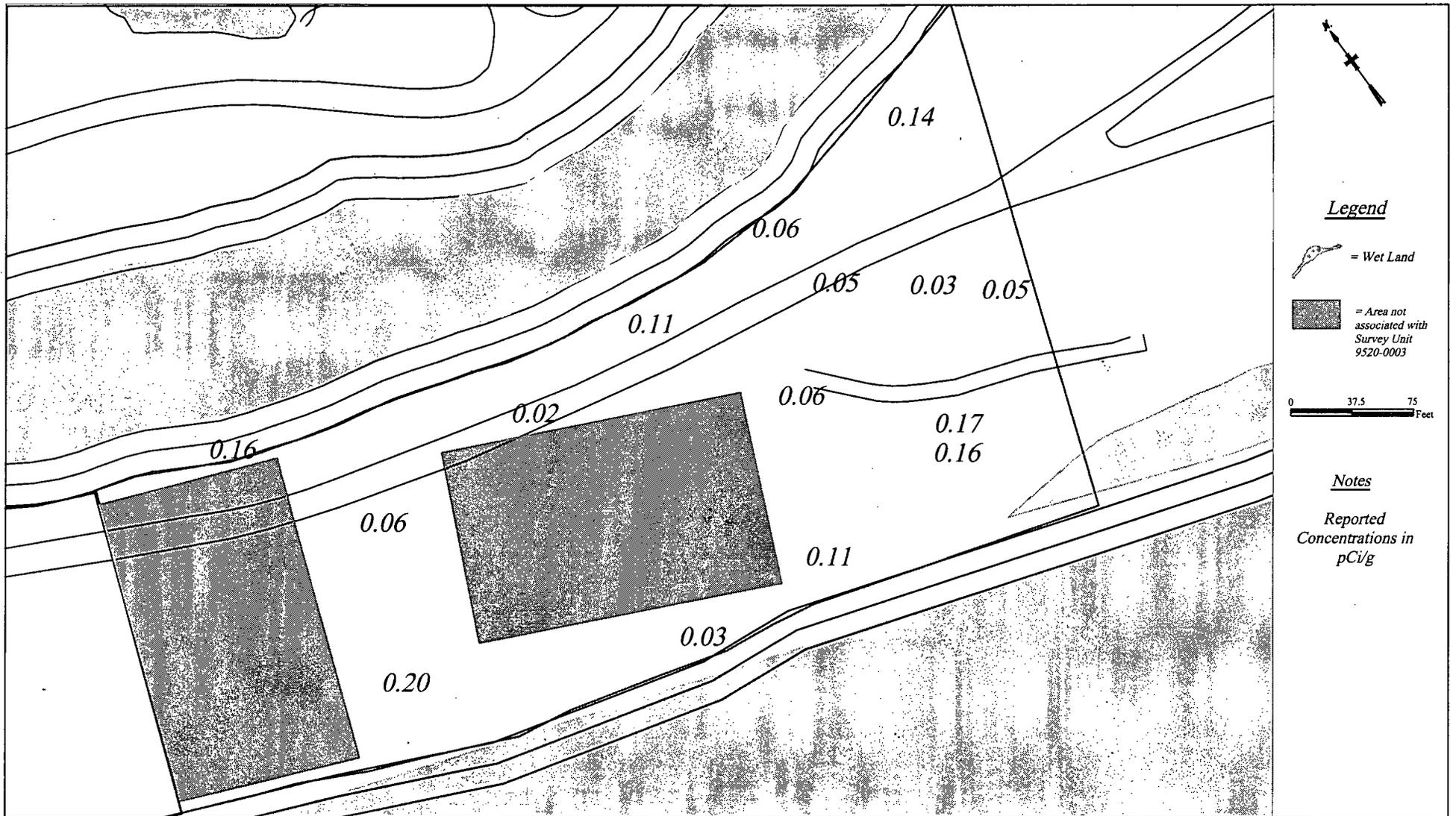


Figure 3



Connecticut Yankee Atomic Power Company  
 Survey Unit 9520-0003 Final Status Survey Cs-137 Posting Plot

Date	By
November 2006	J. McCarthy

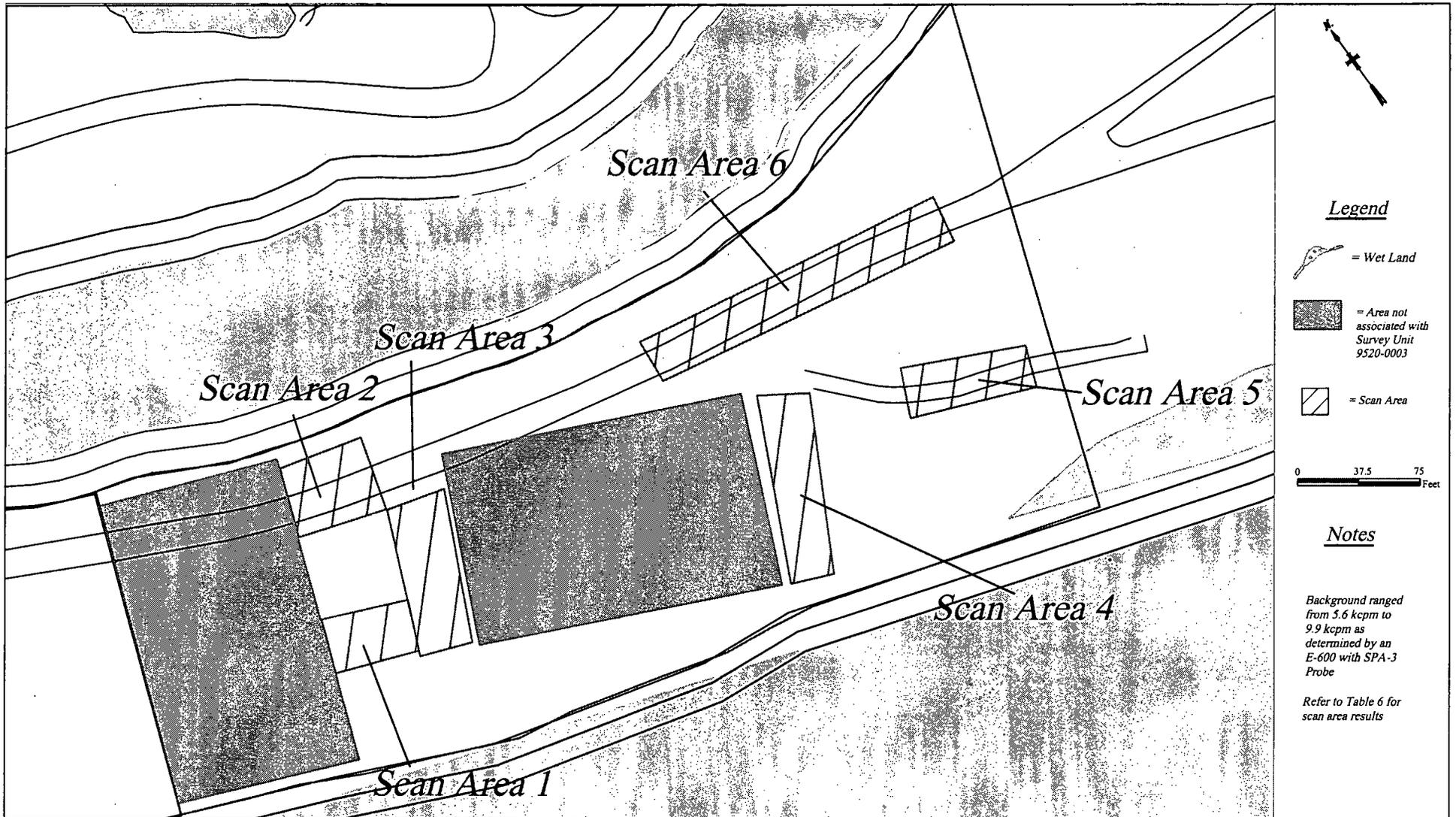


Figure 4



Connecticut Yankee Atomic Power Company  
 Survey Unit 9520-0003 Final Status Survey Scan Areas

Date	By
November 2006	J. McCarthy

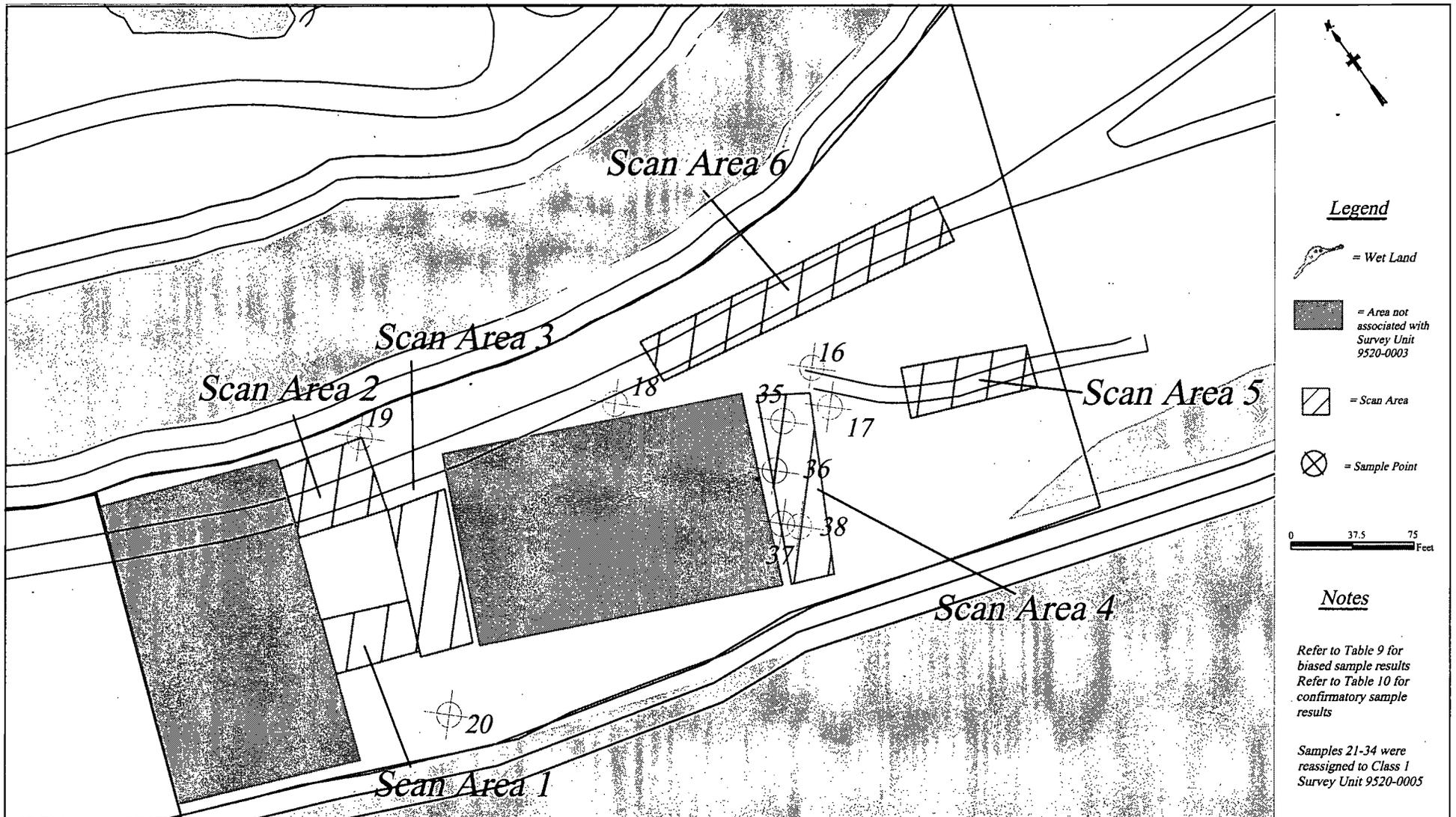


Figure 5



Connecticut Yankee Atomic Power Company  
 Survey Unit 9520-0003 Final Status Survey Biased and Confirmatory Samples

Date	By
November 2006	J. McCarthy

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**ATTACHMENT 2 (SCAN RESULTS)**

# Survey Release Record Sample Location Scan Results

## Survey Unit 9520-0003

<u>Sample Name</u>	<u>Background (cpm)</u>	<u>Action Level (cpm)</u>	<u>Results (cpm)</u>	<u>Above AL</u>	<u>Log Date</u>	<u>Log Time</u>	<u>E600 S/N</u>	<u>Probe S/N</u>
9520-03-SL-00-01-0	7.49E+03	8.73E+03	7.65E+03		9/26/2006	8:44:00	1114	1014
9520-03-SL-00-03-0	5.08E+03	6.10E+03	5.08E+03		9/25/2006	9:54:00	1114	1014
9520-03-SL-00-04-0	6.36E+03	7.50E+03	6.57E+03		9/25/2006	10:06:00	1114	1014
9520-03-SL-00-05-0	6.35E+03	7.49E+03	7.01E+03		9/25/2006	14:50:00	1114	1014
9520-03-SL-00-06-0	7.00E+03	8.19E+03	7.65E+03		9/25/2006	14:09:00	1114	1014
9520-03-SL-00-07-0	7.59E+03	8.83E+03	7.70E+03		9/25/2006	15:29:00	1114	1014
9520-03-SL-00-08-0	6.55E+03	7.71E+03	6.21E+03		9/25/2006	15:04:00	1114	1014
9520-03-SL-00-09-0	7.26E+03	8.48E+03	7.28E+03		9/25/2006	13:53:00	1114	1014
9520-03-SL-00-10-0	7.63E+03	8.88E+03	7.32E+03		9/25/2006	13:43:00	1114	1014
9520-03-SL-00-11-0	7.39E+03	8.62E+03	6.65E+03		9/25/2006	11:10:00	1114	1014
9520-03-SL-00-12-0	7.61E+03	8.86E+03	7.56E+03		9/25/2006	13:32:00	1114	1014
9520-03-SL-00-13-0	6.24E+03	7.37E+03	6.44E+03		9/26/2006	8:15:00	1114	1014
9520-03-SL-00-14-0	7.75E+03	9.01E+03	7.23E+03		9/26/2006	8:24:00	1114	1014
9520-03-SL-00-15-0	7.13E+03	8.34E+03	7.88E+03		9/25/2006	13:54:00	1114	1014
9520-03-SL-00-16-0	8.61E+03	9.94E+03	6.91E+03		9/25/2006	11:12:00	1114	1014
9520-03-SL-00-17-0	7.50E+03	8.74E+03	7.40E+03		9/25/2006	11:15:00	1114	1014
9520-03-SL-00-18-0	6.20E+03	7.32E+03	5.82E+03		9/25/2006	10:08:00	1114	1014
9520-03-SL-00-19-0	7.16E+03	8.37E+03	6.39E+03		9/25/2006	9:59:00	1114	1014
9520-03-SL-00-20-0	6.53E+03	7.68E+03	6.13E+03		9/25/2006	15:17:00	1114	1014
9520-03-SL-00-39-0	6.69E+03	7.86E+03	6.56E+03		10/4/2006	13:31:00	1105	1012

Sample location 9520-03-SL-00-39-0 replaced sample location 9520-03-SL-00-02-0 which was reassigned to Survey Unit 9520-0005

# Survey Release Record Scan Area Results

## Survey Unit 9520-0003

9520-0003 SCAN AREA 1

<u>Sample Name</u>	<u>Background (cpm)</u>	<u>Action Level (cpm)</u>	<u>Results (cpm)</u>	<u>Above AL</u>	<u>Log Date</u>	<u>Log Time</u>	<u>E600 S/N</u>	<u>Probe S/N</u>
9520-03-SC-02-01-0	8.10E+03	9.39E+03	7.27E+03		9/27/2006	11:20:00	1114	1014
9520-03-SC-02-02-0	7.51E+03	8.75E+03	7.20E+03		9/27/2006	11:15:00	1114	1014
9520-03-SC-02-03-0	7.85E+03	9.12E+03	7.68E+03		9/27/2006	11:07:00	1114	1014
9520-03-SC-02-04-0	8.26E+03	9.56E+03	7.27E+03		9/27/2006	10:58:00	1114	1014
9520-03-SC-02-05-0	7.90E+03	9.17E+03	7.72E+03		9/27/2006	10:51:00	1114	1014
9520-03-SC-02-06-0	8.39E+03	9.70E+03	7.62E+03		9/27/2006	10:26:00	1114	1014
9520-03-SC-02-07-0	8.02E+03	9.30E+03	7.87E+03		9/27/2006	10:21:00	1114	1014
9520-03-SC-02-08-0	7.90E+03	9.17E+03	7.90E+03		9/27/2006	10:16:00	1114	1014
9520-03-SC-02-09-0	8.70E+03	1.00E+04	7.10E+03		9/27/2006	10:10:00	1114	1014
9520-03-SC-02-10-0	9.33E+03	1.07E+04	7.13E+03		9/27/2006	10:03:00	1114	1014
9520-03-SC-02-11-0	9.05E+03	1.04E+04	7.36E+03		9/27/2006	9:57:00	1114	1014
9520-03-SC-02-12-0	5.95E+03	7.05E+03	5.81E+03		9/27/2006	13:35:00	1114	1014
9520-03-SC-02-13-0	6.60E+03	7.76E+03	6.98E+03		9/27/2006	13:43:00	1114	1014
9520-03-SC-02-14-0	6.91E+03	8.10E+03	6.89E+03		9/27/2006	13:51:00	1114	1014
9520-03-SC-02-15-0	7.57E+03	8.81E+03	7.15E+03		9/27/2006	13:58:00	1114	1014
9520-03-SC-02-16-0	6.86E+03	8.04E+03	6.81E+03		9/27/2006	14:03:00	1114	1014
9520-03-SC-02-17-0	7.43E+03	8.66E+03	7.21E+03		9/27/2006	14:09:00	1114	1014
9520-03-SC-02-18-0	6.77E+03	7.94E+03	6.38E+03		9/27/2006	14:17:00	1114	1014
9520-03-SC-02-19-0	6.52E+03	7.67E+03	7.05E+03		9/27/2006	14:22:00	1114	1014
9520-03-SC-02-20-0	6.55E+03	7.71E+03	7.10E+03		9/27/2006	14:28:00	1114	1014
9520-03-SC-02-21-0	6.55E+03	7.71E+03	6.60E+03		9/27/2006	14:35:00	1114	1014
9520-03-SC-02-22-0	6.35E+03	7.49E+03	6.71E+03		9/27/2006	14:40:00	1114	1014

AL - Action Level

# Survey Release Record Scan Area Results

## Survey Unit 9520-0003

### 9520-0003 SCAN AREA 2

<u>Sample Name</u>	<u>Background (cpm)</u>	<u>Action Level (cpm)</u>	<u>Results (cpm)</u>	<u>Above AL</u>	<u>Log Date</u>	<u>Log Time</u>	<u>E600 S/N</u>	<u>Probe S/N</u>
9520-03-SC-01-01-0	5.86E+03	6.95E+03	5.98E+03		9/26/2006	10:16:00	1114	1014
9520-03-SC-01-02-0	6.11E+03	7.23E+03	6.26E+03		9/26/2006	10:22:00	1114	1014
9520-03-SC-01-03-0	6.37E+03	7.51E+03	5.66E+03		9/26/2006	10:32:00	1114	1014
9520-03-SC-01-04-0	6.01E+03	7.12E+03	6.48E+03		9/26/2006	10:40:00	1114	1014
9520-03-SC-01-05-0	7.04E+03	8.24E+03	6.38E+03		9/26/2006	10:48:00	1114	1014
9520-03-SC-01-06-0	6.03E+03	7.14E+03	6.57E+03		9/26/2006	11:04:00	1114	1014
9520-03-SC-01-07-0	7.41E+03	8.64E+03	5.42E+03		9/26/2006	11:11:00	1114	1014
9520-03-SC-01-08-0	7.58E+03	8.82E+03	6.97E+03		9/26/2006	11:16:00	1114	1014
9520-03-SC-01-09-0	7.89E+03	9.16E+03	6.35E+03		9/26/2006	11:20:00	1114	1014

### 9520-0003 SCAN AREA 3

<u>Sample Name</u>	<u>Background (cpm)</u>	<u>Action Level (cpm)</u>	<u>Results (cpm)</u>	<u>Above AL</u>	<u>Log Date</u>	<u>Log Time</u>	<u>E600 S/N</u>	<u>Probe S/N</u>
9520-03-SC-03-01-0	6.52E+03	7.67E+03	5.86E+03		9/28/2006	8:02:00	1114	1014
9520-03-SC-03-02-0	5.58E+03	6.65E+03	5.66E+03		9/28/2006	8:06:00	1114	1014
9520-03-SC-03-03-0	6.73E+03	7.90E+03	5.55E+03		9/28/2006	8:11:00	1114	1014
9520-03-SC-03-04-0	5.71E+03	6.79E+03	5.73E+03		9/28/2006	8:19:00	1114	1014
9520-03-SC-03-05-0	5.66E+03	6.73E+03	5.86E+03		9/28/2006	8:27:00	1114	1014
9520-03-SC-03-06-0	6.42E+03	7.56E+03	6.41E+03		9/28/2006	8:31:00	1114	1014
9520-03-SC-03-07-0	6.41E+03	7.55E+03	5.68E+03		9/28/2006	8:35:00	1114	1014
9520-03-SC-03-08-0	6.54E+03	7.69E+03	5.44E+03		9/28/2006	8:39:00	1114	1014
9520-03-SC-03-09-0	6.33E+03	7.47E+03	5.80E+03		9/28/2006	8:43:00	1114	1014
9520-03-SC-03-10-0	6.41E+03	7.55E+03	6.11E+03		9/28/2006	8:46:00	1114	1014

AL - Action Level

# Survey Release Record Scan Area Results

## Survey Unit 9520-0003

9520-0003 SCAN AREA 4

<u>Sample Name</u>	<u>Background (cpm)</u>	<u>Action Level (cpm)</u>	<u>Results (cpm)</u>	<u>Above AL</u>	<u>Log Date</u>	<u>Log Time</u>	<u>E600 S/N</u>	<u>Probe S/N</u>
9520-03-SC-04-01-0	7.64E+03	8.89E+03	6.67E+03		9/28/2006	14:42:00	1114	1014
9520-03-SC-04-02-0	7.76E+03	9.02E+03	7.27E+03		9/28/2006	14:40:00	1114	1014
9520-03-SC-04-03-0	7.40E+03	8.63E+03	7.48E+03		9/28/2006	14:37:00	1114	1014
9520-03-SC-04-04-0	7.20E+03	8.41E+03	7.40E+03		9/28/2006	14:34:00	1114	1014
9520-03-SC-04-05-0	7.38E+03	8.61E+03	7.69E+03		9/28/2006	14:31:00	1114	1014
9520-03-SC-04-06-0	6.82E+03	8.00E+03	7.34E+03		9/28/2006	14:27:00	1114	1014
9520-03-ER-04-06-1	6.82E+03	8.00E+03	9.19E+03	+	9/29/2006	7:22:00	1114	1014
9520-03-SC-04-07-0	7.70E+03	8.95E+03	6.65E+03		9/28/2006	14:22:00	1114	1014
9520-03-SC-04-08-0	6.97E+03	8.16E+03	7.79E+03		9/28/2006	14:18:00	1114	1014
9520-03-ER-04-08-1	6.97E+03	8.16E+03	1.00E+04	+	9/29/2006	7:27:00	1114	1014
9520-03-SC-04-09-0	7.16E+03	8.37E+03	6.80E+03		9/28/2006	14:12:00	1114	1014
9520-03-SC-04-10-0	6.11E+03	7.23E+03	5.98E+03		9/28/2006	15:00:00	1114	1014
9520-03-ER-04-10-1	6.11E+03	7.23E+03	1.05E+04	+	9/29/2006	7:33:00	1114	1014
9520-03-SC-04-11-0	6.69E+03	7.86E+03	6.94E+03		9/28/2006	15:03:00	1114	1014
9520-03-SC-04-12-0	7.71E+03	8.96E+03	6.89E+03		9/28/2006	15:05:00	1114	1014
9520-03-ER-04-12-1	7.71E+03	8.96E+03	1.03E+04	+	9/29/2006	7:35:00	1114	1014
9520-03-SC-04-13-0	6.68E+03	7.85E+03	6.88E+03		9/28/2006	15:08:00	1114	1014
9520-03-SC-04-14-0	6.99E+03	8.18E+03	6.66E+03		9/28/2006	15:11:00	1114	1014
9520-03-SC-04-15-0	6.62E+03	7.78E+03	6.45E+03		9/28/2006	15:14:00	1114	1014
9520-03-SC-04-16-0	6.91E+03	8.10E+03	7.15E+03		9/28/2006	15:16:00	1114	1014

# Survey Release Record Scan Area Results

## Survey Unit 9520-0003

### 9520-0003 SCAN AREA 5

<u>Sample Name</u>	<u>Background (cpm)</u>	<u>Action Level (cpm)</u>	<u>Results (cpm)</u>	<u>Above AL</u>	<u>Log Date</u>	<u>Log Time</u>	<u>E600 S/N</u>	<u>Probe S/N</u>
9520-03-SC-05-01-0	8.32E+03	9.62E+03	7.80E+03		9/27/2006	7:58:00	1114	1014
9520-03-SC-05-02-0	8.39E+03	9.70E+03	8.58E+03		9/27/2006	8:02:00	1114	1014
9520-03-SC-05-03-0	8.43E+03	9.74E+03	8.27E+03		9/27/2006	8:04:00	1114	1014
9520-03-SC-05-04-0	8.93E+03	1.03E+04	8.44E+03		9/27/2006	8:08:00	1114	1014
9520-03-SC-05-05-0	8.48E+03	9.80E+03	8.10E+03		9/27/2006	8:10:00	1114	1014
9520-03-SC-05-06-0	8.98E+03	1.03E+04	8.68E+03		9/27/2006	8:13:00	1114	1014
9520-03-SC-05-07-0	8.18E+03	9.47E+03	7.69E+03		9/27/2006	8:15:00	1114	1014
9520-03-SC-05-08-0	8.42E+03	9.73E+03	8.60E+03		9/27/2006	8:18:00	1114	1014

### 9520-0003 SCAN AREA 6

<u>Sample Name</u>	<u>Background (cpm)</u>	<u>Action Level (cpm)</u>	<u>Results (cpm)</u>	<u>Above AL</u>	<u>Log Date</u>	<u>Log Time</u>	<u>E600 S/N</u>	<u>Probe S/N</u>
9520-03-SC-06-01-0	7.81E+03	9.07E+03	8.21E+03		9/28/2006	10:09:00	1114	1014
9520-03-SC-06-02-0	7.91E+03	9.18E+03	8.90E+03		9/28/2006	10:24:00	1114	1014
9520-03-SC-06-03-0	8.12E+03	9.41E+03	8.02E+03		9/28/2006	10:33:00	1114	1014
9520-03-SC-06-04-0	8.61E+03	9.94E+03	7.95E+03		9/28/2006	10:46:00	1114	1014
9520-03-SC-06-05-0	9.92E+03	1.13E+04	7.63E+03		9/28/2006	10:52:00	1114	1014
9520-03-SC-06-06-0	8.77E+03	1.01E+04	8.80E+03		9/28/2006	10:57:00	1114	1014
9520-03-SC-06-07-0	8.14E+03	9.43E+03	8.14E+03		9/28/2006	11:04:00	1114	1014
9520-03-SC-06-08-0	8.04E+03	9.32E+03	7.88E+03		9/28/2006	11:08:00	1114	1014

SOUTHWEST SITE STORAGE AREA  
SURVEY UNIT 9520-0003

RELEASE RECORD

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**ATTACHMENT 3 (LABORATORY DATA)**

# **General Narrative**

**General Narrative  
for  
Connecticut Yankee Atomic Power Co.  
Work Order: 172875  
SDG: MSR#06-1312**

**October 12, 2006**

**Laboratory Identification:**

General Engineering Laboratories, LLC  
2040 Savage Road  
Charleston, South Carolina 29407  
(843) 556-8171

**Summary**

**Sample receipt**

The samples arrived at General Engineering Laboratories, LLC, Charleston, South Carolina on September 29, 2006 for analysis. Shipping container temperatures were checked, documented, and within specifications. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage.

**Sample Identification** The laboratory received the following samples:

<b><u>Laboratory Identification</u></b>	<b><u>Sample Description</u></b>
172875001	9520-0003-002F
172875002	9520-0003-003F
172875003	9520-0003-019F
172875004	9520-0003-004F
172875005	9520-0003-004FS
172875006	9520-0003-018F
172875007	9520-0003-011F
172875008	9520-0003-016F
172875009	9520-0003-017F
172875010	9520-0003-012F
172875011	9520-0003-010F
172875012	9520-0003-009F
172875013	9520-0003-015F
172875014	9520-0003-006F
172875015	9520-0003-005F
172875016	9520-0003-008F
172875017	9520-0003-020F
172875018	9520-0003-007F
172875019	9520-0003-013F
172875020	9520-0003-014F
172875021	9520-0003-014FS
172875022	9520-0003-001F

**Items of Note**

There are no items to note.

**Case Narrative**

Sample analyses were conducted using methodology as outlined in General Engineering Laboratories (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

**Analytical Request**

Twenty soil samples were analyzed for FSSGAM. Two soil samples were analyzed for FSSALL.

**Data Package**

The enclosed data package contains the following sections: General Narrative, Chain of Custody and Supporting Documentation, Data Review Qualifier Definitions, and data from the following fractions: Radiochemistry.

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.



Cheryl Jones  
Project Manager

**List of current GEL Certifications as of 12 October 2006**

<b>State</b>	<b>Certification</b>
Alaska	UST-062
Arizona	AZ0668
Arkansas	88-0651
CLIA	42D0904046
California	01151CA
Colorado	GenEngLabs
Connecticut	PH-0169
Dept. of Navy	NFESC 413
EPA	WG-15J
Florida/NELAP	E87156
Georgia	E87156 (FL/NELAP)
Hawaii	N/A
Idaho	N/A
Illinois	200029
Indiana	C-SC-01
Kansas	E-10332
Kentucky	90129
Louisiana	03046
Maryland	270
Massachusetts	M-SC012
Michigan	9903
Nevada	SC12
New Jersey	SC002
New Mexico	FL NELAP E87156
New York	11501
North Carolina	233
North Carolina Drinking W	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania	68-00485
South Carolina	10120001/10585001/10120002
Tennessee	02934
Texas	TX213-2006A
Texas NELAP	T104704235-06-TX
U.S. Dept. of Agriculture	S-52597
US Army Corps of Engineer	N/A
Utah	8037697376 GEL
Vermont	VT87156
Virginia	00151
Washington	C1641

**Chain of Custody  
and  
Supporting  
Documentation**



Figure 1. Sample Check-in List

Date/Time Received: 9/29/06 . 9:30

SDG#: MSR#06-1312

Work Order Number: 1728751

Shipping Container ID: 7900 8130 9457 Chain of Custody # 2006-00585

- 1. Custody Seals on shipping container intact? Yes  No
- 2. Custody Seals dated and signed? Yes  No
- 3. Chain-of-Custody record present? Yes  No
- 4. Cooler temperature 20°
- 5. Vermiculite/packing materials is: Wet  Dry
- 6. Number of samples in shipping container: 11
- 7. Sample holding times exceeded? Yes  No

8. Samples have: <input checked="" type="checkbox"/> tape <input type="checkbox"/> hazard labels <input type="checkbox"/> custody seals <input type="checkbox"/> appropriate sample labels
9. Samples are: <input checked="" type="checkbox"/> in good condition <input type="checkbox"/> leaking <input type="checkbox"/> broken <input type="checkbox"/> have air bubbles

10. Were any anomalies identified in sample receipt? Yes  No

11. Description of anomalies (include sample numbers): \_\_\_\_\_

Sample Custodian/Laboratory: Chause Date: 9/29/06

Telephoned to: \_\_\_\_\_ On \_\_\_\_\_ By \_\_\_\_\_





Figure 1. Sample Check-in List

Date/Time Received: 9/29/06 9:30

SDG#: MSR#06-1312, MSR#06-1313

Work Order Number: 172875, 172873

Shipping Container ID: 790081309441 Chain of Custody # 2006-00593, 2006-00586, 2006-00587

- 1. Custody Seals on shipping container intact? Yes  No
- 2. Custody Seals dated and signed? Yes  No
- 3. Chain-of-Custody record present? Yes  No
- 4. Cooler temperature 21°
- 5. Vermiculite/packing materials is: Wet  Dry
- 6. Number of samples in shipping container: 13
- 7. Sample holding times exceeded? Yes  No

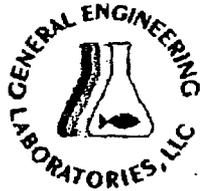
8. Samples have:	
<input checked="" type="checkbox"/> tape	<input type="checkbox"/> hazard labels
<input checked="" type="checkbox"/> custody seals	<input type="checkbox"/> appropriate sample labels
9. Samples are:	
<input checked="" type="checkbox"/> in good condition	<input type="checkbox"/> leaking
<input type="checkbox"/> broken	<input type="checkbox"/> have air bubbles

10. Were any anomalies identified in sample receipt? Yes  No

11. Description of anomalies (include sample numbers): \_\_\_\_\_

Sample Custodian/Laboratory: Jason Polots Date: 9/29/06

Telephoned to: \_\_\_\_\_ On \_\_\_\_\_ By \_\_\_\_\_



# SAMPLE RECEIPT & REVIEW FORM

PM use only

Client: <u>YCAK</u>	SDC/ARCOC/Work Order: <u>172873, 172875</u>
Date Received: <u>9/29/06</u>	PM(A) Review (ensure non-conforming items are resolved prior to signing): <i>[Signature]</i>
Received By: <u>JR</u>	

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?				Circle Applicable: seals broken damaged container leaking container other (describe)
2 Samples requiring cold preservation within (4 +/- 2 C)? Record preservation method.				Circle Coolant # ice bags blue ice dry ice none other describe)
3 Chain of custody documents included with shipment?				
4 Sample containers intact and sealed?				Circle Applicable: seals broken damaged container leaking container other (describe)
5 Samples requiring chemical preservation at proper pH?				Sample ID's, containers affected and observed pH:
6 VOA vials free of headspace (defined as < 6mm bubble)?				Sample ID's and containers affected:
7 Are Encore containers present? (If yes, immediately deliver to VOA laboratory)				
8 Samples received within holding time?				ID's and tests affected:
9 Sample ID's on COC match ID's on bottles?				Sample ID's and containers affected:
10 Date & time on COC match date & time on bottles?				Sample ID's affected:
11 Number of containers received match number indicated on COC?				Sample ID's affected:
12 COC form is properly signed in relinquished/received sections?				
14 Air Bill, Tracking #'s, & Additional Comments				<u>FedEx 7900 830 9441</u>

Suspected Hazard Information	Non-Regulated	Regulated	High Level	RSO RAD Receipt # _____ *If > x2 area background is observed on samples identified as "non-regulated/non-radioactive", contact the Radiation Safety group for further investigation.
A Radiological Classification?	X			Maximum Counts Observed*: <u>40 CPM</u>
B PCB Regulated?	X			Comments:
C Shipped as DOT Hazardous Material? If yes, contact Waste Manager or ESH Manager.	X			Hazard Class Shipped: UN#:
PM (or PMA) review of Hazard classification: <u>CAJ</u> Initials <u>9/29/06</u> Date:				

# **Data Review Qualifier Definitions**

## Data Review Qualifier Definitions

### Qualifier Explanation

- \* A quality control analyte recovery is outside of specified acceptance criteria
- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
- A The TIC is a suspected aldol-condensation product
- B Target analyte was detected in the associated blank
- B Metals-Either presence of analyte detected in the associated blank, or  
MDL/IDL < sample value < PQL
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- d 5-day BOD-The 2:1 depletion requirement was not met for this sample
- E Organics-Concentration of the target analyte exceeds the instrument calibration range
- E Metals-%difference of sample and SD is >10%. Sample concentration must meet flagging criteria
- H Analytical holding time was exceeded
- h Preparation or preservation holding time was exceeded
- J Value is estimated
- N Metals-The Matrix spike sample recovery is not within specified control limits
- N Organics-Presumptive evidence based on mass spectral library search to make a tentative  
identification of the analyte (TIC). Quantitation is based on nearest internal standard  
response factor
- N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration  
by 4X or more
- ND Analyte concentration is not detected above the reporting limit
- UI Gamma Spectroscopy-Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- Z Paint Filter Test-Particulates passed through the filter, however no free liquids were observed.

# RADIOLOGICAL ANALYSIS

**Radiochemistry Case Narrative  
Connecticut Yankee Atomic Power Co. (YANK)  
Work Order 172875**

**Method/Analysis Information**

**Product:** Alphaspec Am241, Cm, Solid ALL FSS  
**Analytical Method:** DOE EML HASL-300, Am-05-RC Modified  
**Prep Method:** Ash Soil Prep  
**Dry Soil Prep GL-RAD-A-021 Method:** Dry Soil Prep  
**Analytical Batch Number:** 578044  
**Prep Batch Number:** 574186  
**Dry Soil Prep GL-RAD-A-021 Batch Number:** 574174

<b>Sample ID</b>	<b>Client ID</b>
172875001	9520-0003-002F
172875011	9520-0003-010F
1201204515	Method Blank (MB)
1201204516	172879001(9805-0000-008F) Sample Duplicate (DUP)
1201204517	172879001(9805-0000-008F) Matrix Spike (MS)
1201204518	Laboratory Control Sample (LCS)

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-011 REV# 14.

**Calibration Information:**

**Calibration Information**

All initial and continuing calibration requirements have been met.

**Standards Information**

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

**Sample Geometry**

All counting sources were prepared in the same geometry as the calibration standards.

**Quality Control (QC) Information:**

**Blank Information**

The blank volume is representative of the sample volume in this batch.

**Designated QC**

The following sample was used for QC: 172879001 (9805-0000-008F).

**QC Information**

All of the QC samples met the required acceptance limits.

**Technical Information:**

**Holding Time**

All sample procedures for this sample set were performed within the required holding time.

**Preparation Information**

All preparation criteria have been met for these analyses.

**Sample Re-prep/Re-analysis**

Samples were re-prepped due to high relative percent difference/relative error ratio.

**Miscellaneous Information:**

**NCR Documentation**

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A nonconformance report (NCR) was not generated for this SDG.

**Manual Integration**

No manual integrations were performed on data in this batch.

**Additional Comments**

Additional comments were not required for this sample set.

**Qualifier information**

Manual qualifiers were not required.

**Method/Analysis Information**

**Product:** Liquid Scint Pu241, Solid-ALL FSS  
**Analytical Method:** DOE EML HASL-300, Pu-11-RC Modified  
**Prep Method:** Ash Soil Prep  
**Dry Soil Prep GL-RAD-A-021 Method:** Dry-Soil Prep  
**Analytical Batch Number:** 574558  
**Prep Batch Number:** 574186  
**Dry Soil Prep GL-RAD-A-021 Batch Number:** 574174

<b>Sample ID</b>	<b>Client ID</b>
172875001	9520-0003-002F
172875011	9520-0003-010F
1201197066	Method Blank (MB)
1201197067	172879001(9805-0000-008F) Sample Duplicate (DUP)
1201197068	172879001(9805-0000-008F) Matrix Spike (MS)
1201197069	Laboratory Control Sample (LCS)

#### **SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-035 REV# 8.

#### **Calibration Information:**

##### **Calibration Information**

All initial and continuing calibration requirements have been met.

##### **Standards Information**

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

##### **Sample Geometry**

All counting sources were prepared in the same geometry as the calibration standards.

#### **Quality Control (QC) Information:**

##### **Blank Information**

The blank volume is representative of the sample volumes in this batch.

##### **Designated QC**

The following sample was used for QC: 172879001 (9805-0000-008F).

##### **QC Information**

All of the QC samples met the required acceptance limits.

**Technical Information:**

**Holding Time**

All sample procedures for this sample set were performed within the required holding time.

**Preparation Information**

All preparation criteria have been met for these analyses.

**Sample Re-prep/Re-analysis**

Samples were recounted due to low/high recovery.

**Miscellaneous Information:**

**NCR Documentation**

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A nonconformance report (NCR) was not generated for this SDG.

**Manual Integration**

No manual integrations were performed on data in this batch.

**Additional Comments**

Additional comments were not required for this sample set.

**Qualifier information**

Manual qualifiers were not required.

**Method/Analysis Information**

<b>Product:</b>	<b>Alphaspec Pu, Solid-ALL FSS</b>
Analytical Method:	DOE EML HASL-300, Pu-11-RC Modified
Prep Method:	Ash Soil Prep
Dry Soil Prep GL-RAD-A-021 Method:	Dry Soil Prep
Analytical Batch Number:	578046
Prep Batch Number:	574186
Dry Soil Prep GL-RAD-A-021 Batch Number:	574174

<b>Sample ID</b>	<b>Client ID</b>
172875001	9520-0003-002F
172875011	9520-0003-010F
1201204519	Method Blank (MB)
1201204520	172879001(9805-0000-008F) Sample Duplicate (DUP)
1201204521	172879001(9805-0000-008F) Matrix Spike (MS)
1201204522	Laboratory Control Sample (LCS)

#### **SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-011 REV# 14.

#### **Calibration Information:**

##### **Calibration Information**

All initial and continuing calibration requirements have been met.

##### **Standards Information**

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

##### **Sample Geometry**

All counting sources were prepared in the same geometry as the calibration standards.

#### **Quality Control (QC) Information:**

##### **Blank Information**

The blank volume is representative of the sample volume in this batch.

##### **Designated QC**

The following sample was used for QC: 172879001 (9805-0000-008F).

##### **QC Information**

All of the QC samples met the required acceptance limits.

#### **Technical Information:**

##### **Holding Time**

All sample procedures for this sample set were performed within the required holding time.

##### **Preparation Information**

All preparation criteria have been met for these analyses.

##### **Sample Re-prep/Re-analysis**

Samples 172875001 (9520-0003-002F) and 172875011 (9520-0003-010F) were repped due to high relative percent difference/relative error ratio.

#### **Miscellaneous Information:**

##### **NCR Documentation**

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A nonconformance report (NCR) was not generated for this SDG.

**Manual Integration**

No manual integrations were performed on data in this batch.

**Additional Comments**

Additional comments were not required for this sample set.

**Qualifier information**

Manual qualifiers were not required.

**Method/Analysis Information**

<b>Product:</b>	<b>Gamma,Solid-FSS GAM &amp; ALL FSS 226 Ingrowth Waived</b>
Analytical Method:	EML HASL 300, 4.5.2.3
Prep Method:	Dry Soil Prep
Analytical Batch Number:	574336
Prep Batch Number:	574180

<b>Sample ID</b>	<b>Client ID</b>
172875021	9520-0003-014FS
172875022	9520-0003-001F
1201196539	Method Blank (MB)
1201196540	172275028(9807-0000-025F) Sample Duplicate (DUP)
1201196541	Laboratory Control Sample (LCS)

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-013 REV# 12.

**Calibration Information:**

**Calibration Information**

All initial and continuing calibration requirements have been met.

**Standards Information**

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

**Sample Geometry**

All counting sources were prepared in the same geometry as the calibration standards.

**Quality Control (QC) Information:**

**Blank Information**

The blank volume is representative of the sample volume in this batch.

**Designated QC**

The following sample was used for QC: 172275028 (9807-0000-025F).

**QC Information**

Refer to Non-Conformance Report.

**Technical Information:**

**Holding Time**

All sample procedures for this sample set were performed within the required holding time.

**Preparation Information**

All preparation criteria have been met for these analyses.

**Sample Re-prep/Re-analysis**

None of the samples in this sample set required reprep or reanalysis.

**Miscellaneous Information:**

**NCR Documentation**

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. The following NCR was generated for this SDG: NCR 368031 was generated due to Failed RPD for DUP. 1. Failed RPD for DUP: The relative percent difference (172275028 and 120119654) for K-40 and Pb-212 did not meet the duplication criteria. 1. K-40 and Pb-212 are naturally occurring nuclides. All other nuclides meet within the duplication criteria. Reporting results.

**Additional Comments**

Additional comments were not required for this sample set.

**Qualifier information**

Qualifier	Reason	Analyte	Sample
UI	Data rejected due to low abundance.	Cesium-134	172875021 1201196540

**Method/Analysis Information**

**Product:** Gamma,Solid-FSS GAM & ALL FSS 226 Ingrowth Waived  
**Analytical Method:** EML HASL 300, 4.5.2.3  
**Prep Method:** Dry Soil Prep  
**Analytical Batch Number:** 574338  
**Prep Batch Number:** 574174

<b>Sample ID</b>	<b>Client ID</b>
172875001	9520-0003-002F
172875002	9520-0003-003F
172875003	9520-0003-019F
172875004	9520-0003-004F
172875005	9520-0003-004FS
172875006	9520-0003-018F
172875007	9520-0003-011F
172875008	9520-0003-016F
172875009	9520-0003-017F
172875010	9520-0003-012F
172875011	9520-0003-010F
172875012	9520-0003-009F
172875013	9520-0003-015F
172875014	9520-0003-006F
172875015	9520-0003-005F
172875016	9520-0003-008F
172875017	9520-0003-020F
172875018	9520-0003-007F
172875019	9520-0003-013F
172875020	9520-0003-014F
1201196545	Method Blank (MB)
1201196546	172875001(9520-0003-002F) Sample Duplicate (DUP)
1201196547	Laboratory Control Sample (LCS)

#### **SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-013 REV# 13.

#### **Calibration Information:**

##### **Calibration Information**

All initial and continuing calibration requirements have been met.

##### **Standards Information**

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

**Sample Geometry**

All counting sources were prepared in the same geometry as the calibration standards.

**Quality Control (QC) Information:****Blank Information**

The blank volume is representative of the sample volume in this batch.

**Designated QC**

The following sample was used for QC: 172875001 (9520-0003-002F).

**QC Information**

All of the QC samples met the required acceptance limits.

**Technical Information:****Holding Time**

All sample procedures for this sample set were performed within the required holding time.

**Preparation Information**

All preparation criteria have been met for these analyses.

**Sample Re-prep/Re-analysis**

None of the samples in this sample set required reprep or reanalysis.

**Miscellaneous Information:****NCR Documentation**

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. The following NCR was generated for this SDG: NCR 371401 was generated due to Failed RPD for DUP. 1. Failed RPD for DUP: The Ac-228 relative percent difference (172875001 and 1201196546) did not meet within the duplication criteria. 1. Ac-228 is a naturally occurring nuclide. All other nuclides meet the duplication criteria. Reporting results.

**Additional Comments**

Additional comments were not required for this sample set.

**Qualifier information**

Qualifier	Reason	Analyte	Sample
UI	Data rejected due to high peak-width.	Cesium-134	172875002
UI	Data rejected due to interference.	Europium-155	172875009
		Manganese-54	172875006
			172875011
			172875014
UI	Data rejected due to low abundance.	Cesium-134	172875003
			172875004
			172875006
			172875007
			172875009
			172875014
			172875018
		Europium-154	172875008

**Method/Analysis Information**

**Product:** GFPC, Sr90, solid-ALL FSS  
**Analytical Method:** EPA 905.0 Modified  
**Prep Method:** Ash Soil Prep  
**Dry Soil Prep GL-RAD-A-021 Method:** Dry Soil Prep  
**Analytical Batch Number:** 574221  
**Prep Batch Number:** 574186  
**Dry Soil Prep GL-RAD-A-021 Batch Number:** 574174

Sample ID	Client ID
172875001	9520-0003-002F
172875011	9520-0003-010F
1201196231	Method Blank (MB)
1201196232	172875011(9520-0003-010F) Sample Duplicate (DUP)
1201196233	172875011(9520-0003-010F) Matrix Spike (MS)
1201196234	Laboratory Control Sample (LCS)

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-004 REV# 10.

**Calibration Information:****Calibration Information**

All initial and continuing calibration requirements have been met.

**Standards Information**

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

**Sample Geometry**

All counting sources were prepared in the same geometry as the calibration standards.

**Quality Control (QC) Information:****Blank Information**

The blank volume is representative of the sample volume in this batch.

**Designated QC**

The following sample was used for QC: 172875011 (9520-0003-010F).

**QC Information**

All of the QC samples met the required acceptance limits.

**Technical Information:****Holding Time**

All sample procedures for this sample set were performed within the required holding time.

**Preparation Information**

All preparation criteria have been met for these analyses.

**Sample Re-prep/Re-analysis**

None of the samples in this sample set required reprep or reanalysis.

**Chemical Recoveries**

All chemical recoveries meet the required acceptance limits for this sample set.

**Miscellaneous Information:****NCR Documentation**

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A nonconformance report (NCR) was not generated for this SDG.

**Additional Comments**

Additional comments were not required for this sample set.

### **Qualifier information**

Manual qualifiers were not required.

### **Method/Analysis Information**

**Product:** Liquid Scint Tc99, Solid-ALL FSS  
**Analytical Method:** DOE EML HASL-300, Tc-02-RC Modified  
**Analytical Batch Number:** 574010

<b>Sample ID</b>	<b>Client ID</b>
172875001	9520-0003-002F
172875011	9520-0003-010F
1201195648	Method Blank (MB)
1201195649	172879001(9805-0000-008F) Sample Duplicate (DUP)
1201195650	172879001(9805-0000-008F) Matrix Spike (MS)
1201195651	Laboratory Control Sample (LCS)

### **SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-005 REV# 13.

### **Calibration Information:**

#### **Calibration Information**

All initial and continuing calibration requirements have been met.

#### **Standards Information**

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

#### **Sample Geometry**

All counting sources were prepared in the same geometry as the calibration standards.

### **Quality Control (QC) Information:**

#### **Blank Information**

The blank volume is representative of the sample volume in this batch.

#### **Designated QC**

The following sample was used for QC: 172879001 (9805-0000-008F).

#### **QC Information**

All of the QC samples met the required acceptance limits.

**Technical Information:**

**Holding Time**

All sample procedures for this sample set were performed within the required holding time.

**Preparation Information**

All preparation criteria have been met for these analyses.

**Sample Re-prep/Re-analysis**

Sample 172875001 (9520-0003-002F) was recounted due to high MDA.

**Miscellaneous Information:**

**NCR Documentation**

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A nonconformance report (NCR) was not generated for this SDG.

**Additional Comments**

Additional comments were not required for this sample set.

**Qualifier information**

Manual qualifiers were not required.

**Method/Analysis Information**

<b>Product:</b>	<b>Liquid Scint Fe55, Solid-ALL FSS</b>
Analytical Method:	DOE RESL Fe-1, Modified
Prep Method:	Ash Soil Prep
Dry Soil Prep GL-RAD-A-021 Method:	Dry Soil Prep
Analytical Batch Number:	574527
Prep Batch Number:	574186
Dry Soil Prep GL-RAD-A-021 Batch Number:	574174

<b>Sample ID</b>	<b>Client ID</b>
172875001	9520-0003-002F
172875011	9520-0003-010F
1201196975	Method Blank (MB)
1201196976	172875001(9520-0003-002F) Sample Duplicate (DUP)
1201196977	172875001(9520-0003-002F) Matrix Spike (MS)
1201196978	Laboratory Control Sample (LCS)

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-040 REV# 3.

**Calibration Information:****Calibration Information**

All initial and continuing calibration requirements have been met.

**Standards Information**

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

**Sample Geometry**

All counting sources were prepared in the same geometry as the calibration standards.

**Quality Control (QC) Information:****Blank Information**

The blank volume is representative of the sample volume in this batch.

**Designated QC**

The following sample was used for QC: 172875001 (9520-0003-002F).

**QC Information**

All of the QC samples met the required acceptance limits.

**Technical Information:****Holding Time**

All sample procedures for this sample set were performed within the required holding time.

**Preparation Information**

All preparation criteria have been met for these analyses.

**Sample Re-prep/Re-analysis**

None of the samples in this sample set required reprep or reanalysis.

**Miscellaneous Information:****NCR Documentation**

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A nonconformance report (NCR) was not generated for this SDG.

**Additional Comments**

Additional comments were not required for this sample set.

**Qualifier information**

Manual qualifiers were not required.

**Method/Analysis Information**

**Product:** Liquid Scint Ni63, Solid-ALL FSS  
**Analytical Method:** DOE RESL Ni-1, Modified  
**Prep Method:** Ash Soil Prep  
**Dry Soil Prep GL-RAD-A-021 Method:** Dry Soil Prep  
**Analytical Batch Number:** 574530  
**Prep Batch Number:** 574186  
**Dry Soil Prep GL-RAD-A-021 Batch Number:** 574174

<b>Sample ID</b>	<b>Client ID</b>
172875001	9520-0003-002F
172875011	9520-0003-010F
1201196983	Method Blank (MB)
1201196984	172879007(9805-0000-013F) Sample Duplicate (DUP)
1201196985	172879007(9805-0000-013F) Matrix Spike (MS)
1201196986	Laboratory Control Sample (LCS)

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-022 REV# 8.

**Calibration Information:**

**Calibration Information**

All initial and continuing calibration requirements have been met.

**Standards Information**

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

**Sample Geometry**

All counting sources were prepared in the same geometry as the calibration standards.

**Quality Control (QC) Information:**

**Blank Information**

The blank volume is representative of the sample volume in this batch.

**Designated QC**

The following sample was used for QC: 172879007 (9805-0000-013F).

**QC Information**

All of the QC samples met the required acceptance limits.

**Technical Information:**

**Holding Time**

All sample procedures for this sample set were performed within the required holding time.

**Preparation Information**

All preparation criteria have been met for these analyses.

**Sample Re-prep/Re-analysis**

None of the samples in this sample set required reprep or reanalysis.

**Miscellaneous Information:**

**NCR Documentation**

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A nonconformance report (NCR) was not generated for this SDG.

**Additional Comments**

Additional comments were not required for this sample set.

**Qualifier information**

Manual qualifiers were not required.

**Method/Analysis Information**

**Product:** LSC, Tritium Dist, Solid-HTD2,ALL FSS  
**Analytical Method:** EPA 906.0 Modified  
**Analytical Batch Number:** 579033

<b>Sample ID</b>	<b>Client ID</b>
172875001	9520-0003-002F
172875011	9520-0003-010F
1201206809	Method Blank (MB)
1201206810	172879001(9805-0000-008F) Sample Duplicate (DUP)
1201206811	172879001(9805-0000-008F) Matrix Spike (MS)
1201206812	Laboratory Control Sample (LCS)

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-002 REV# 13.

**Calibration Information:****Calibration Information**

All initial and continuing calibration requirements have been met.

**Standards Information**

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

**Sample Geometry**

All counting sources were prepared in the same geometry as the calibration standards.

**Quality Control (QC) Information:****Blank Information**

The blank volume is representative of the sample volume in this batch.

**Designated QC**

The following sample was used for QC: 172879001 (9805-0000-008F).

**QC Information**

All of the QC samples met the required acceptance limits.

**Technical Information:****Holding Time**

All sample procedures for this sample set were performed within the required holding time.

**Preparation Information**

All preparation criteria have been met for these analyses.

**Sample Re-prep/Re-analysis**

Samples were reprepared due to low/high recovery.

**Miscellaneous Information:****NCR Documentation**

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A nonconformance report (NCR) was not generated for this SDG.

**Additional Comments**

Additional comments were not required for this sample set.

**Qualifier information**

Manual qualifiers were not required.

**Method/Analysis Information**

**Product:** Liquid Scint C14, Solid All,FSS  
**Analytical Method:** EPA EERF C-01 Modified  
**Analytical Batch Number:** 574014

<b>Sample ID</b>	<b>Client ID</b>
172875001	9520-0003-002F
172875011	9520-0003-010F
1201195657	Method Blank (MB)
1201195658	172875001(9520-0003-002F) Sample Duplicate (DUP)
1201195659	172875001(9520-0003-002F) Matrix Spike (MS)
1201195660	Laboratory Control Sample (LCS)

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-003 REV# 8.

**Calibration Information:**

**Calibration Information**

All initial and continuing calibration requirements have been met.

**Standards Information**

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

**Sample Geometry**

All counting sources were prepared in the same geometry as the calibration standards.

**Quality Control (QC) Information:**

**Blank Information**

The blank volume is representative of the sample volume in this batch.

**Designated QC**

The following sample was used for QC: 172875001 (9520-0003-002F).

**QC Information**

All of the QC samples met the required acceptance limits.



<b>COMPANY - WIDE NONCONFORMANCE REPORT</b>			
<b>Mo. Day Yr.</b> 05-OCT-06	<b>Division:</b> Radiochemistry	<b>Quality Criteria:</b> Specifications	<b>Type:</b> Process
<b>Instrument Type:</b> GAMMA SPECTROMETER	<b>Test / Method:</b> EML HASL 300, 4.5.2.3	<b>Matrix Type:</b> Solid	<b>Client Code:</b> YANK
<b>Batch ID:</b> 574336	<b>Sample Numbers:</b> See Below		
<b>Potentially affected work order(s)(SDG):</b> 172275(MSR#06-1282),172873(MSR#06-1313),172875(MSR#06-1312),172879(MSR#06-1311)			
<b>Application Issues:</b> Failed RPD for DUP			
<b>Specification and Requirements</b> <b>Nonconformance Description:</b>		<b>NRG Disposition:</b>	
1. Failed RPD for DUP: The relative percent difference (172275028 and 120119654) for K-40 and Pb-212 did not meet the duplication criteria.		1. K-40 and Pb-212 are naturally occurring nuclides. All other nuclides meet within the duplication criteria. Reporting results.	

**Originator's Name:**  
 Jimmy Hartley      05-OCT-06

**Data Validator/Group Leader:**  
 Lesley Anderson      09-OCT-06

**Quality Review:**

**Director:**

COMPANY - WIDE NONCONFORMANCE REPORT			
Mo. Day Yr. 13-OCT-06	Division: Radiochemistry	Quality Criteria: SOP	Type: Process
Instrument Type: GAMMA SPECTROMETER	Test / Method: EML HASL 300, 4.5.2.3	Matrix Type: Solid	Client Code: YANK
Batch ID: 574338	Sample Numbers: 172875001, 1201196546		
Potentially affected work order(s)(SDG): 172875(MSR#06-1312)			
Application Issues: Failed RPD for DUP			
Specification and Requirements Nonconformance Description:		NRG Disposition:	
1. Failed RPD for DUP: The Ac-228 relative percent difference (172875001 and 1201196546) did not meet within the duplication criteria.		1. Ac-228 is a naturally occurring nuclide. All other nuclides meet the duplication criteria. Reporting results.	

Originator's Name:  
 Jimmy Hartley      13-OCT-06

Data Validator/Group Leader:  
 Heather Anderson      18-OCT-06

Quality Review:

Director:

# SAMPLE DATA SUMMARY

**GENERAL ENGINEERING LABORATORIES, LLC**

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis Report  
for**

**YANK001 Connecticut Yankee Atomic Power Co.**

**Client SDG: MSR#06-1312 GEL Work Order: 172875**

**The Qualifiers in this report are defined as follows:**

- \* A quality control analyte recovery is outside of specified acceptance criteria
- \*\* Analyte is a surrogate compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- ND The analyte concentration is not detected above the detection limit.

The above sample is reported on a dry weight basis except where prohibited by the analytical procedure.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Cheryl Jones.



Reviewed by \_\_\_\_\_

# GENERAL ENGINEERING LABORATORIES, LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID:	9520-0003-002F	Project:	YANK01204
Sample ID:	172875001	Client ID:	YANK001
Matrix:	TS	Vol. Recv.:	
Collect Date:	25-SEP-06		
Receive Date:	29-SEP-06		
Collector:	Client		
Moisture:	8.18%		

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Alpha Spec Analysis</b>													
<i>Alphaspec Am241, Cm, Solid ALL FSS</i>													
Americium-241	U	-0.0174	+/-0.0837	0.0808	+/-0.0837	0.254	pCi/g		JAS1	10/12/06	1617	578044	1
Curium-242	U	0.0367	+/-0.0719	0.00	+/-0.0721	0.0995	pCi/g						
Curium-243/244	U	0.0218	+/-0.146	0.114	+/-0.147	0.321	pCi/g						
<i>Alphaspec Pu, Solid-ALL FSS</i>													
Plutonium-238	U	0.0481	+/-0.111	0.0678	+/-0.111	0.219	pCi/g		JAS1	10/12/06	1204	578046	3
Plutonium-239/240	U	-0.0518	+/-0.0384	0.0732	+/-0.0387	0.230	pCi/g						
<i>Liquid Scint Pu241, Solid-ALL FSS</i>													
Plutonium-241	U	3.31	+/-8.25	6.78	+/-8.26	14.2	pCi/g		JAS1	10/10/06	1615	574558	5
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid-FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.439	+/-0.182	0.065	+/-0.182	0.140	pCi/g		MJH1	10/11/06	1645	574338	7
Americium-241	U	-0.0205	+/-0.107	0.0854	+/-0.107	0.177	pCi/g						
Bismuth-212		0.430	+/-0.282	0.134	+/-0.282	0.287	pCi/g						
Bismuth-214		0.551	+/-0.0772	0.0304	+/-0.0772	0.0652	pCi/g						
Cesium-134	U	0.0212	+/-0.024	0.0218	+/-0.024	0.0467	pCi/g						
Cesium-137	U	0.0306	+/-0.0362	0.0184	+/-0.0362	0.0394	pCi/g						
Cobalt-60	U	0.00322	+/-0.0221	0.019	+/-0.0221	0.0421	pCi/g						
Europium-152	U	-0.0167	+/-0.0527	0.0438	+/-0.0527	0.0926	pCi/g						
Europium-154	U	-0.0206	+/-0.0573	0.0463	+/-0.0573	0.104	pCi/g						
Europium-155	U	0.0578	+/-0.0545	0.053	+/-0.0545	0.110	pCi/g						
Lead-212		0.727	+/-0.0603	0.0242	+/-0.0603	0.0507	pCi/g						
Lead-214		0.591	+/-0.0923	0.0296	+/-0.0923	0.0627	pCi/g						
Manganese-54	U	0.022	+/-0.0369	0.0177	+/-0.0369	0.0381	pCi/g						
Niobium-94	U	0.012	+/-0.0191	0.0172	+/-0.0191	0.0367	pCi/g						
Potassium-40		12.0	+/-0.921	0.172	+/-0.921	0.385	pCi/g						
Radium-226		0.551	+/-0.0772	0.0304	+/-0.0772	0.0652	pCi/g						
Silver-108m	U	0.00876	+/-0.0166	0.0154	+/-0.0166	0.0326	pCi/g						
Thallium-208		0.211	+/-0.0451	0.0165	+/-0.0451	0.0354	pCi/g						
<b>Rad Gas Flow Proportional Counting</b>													
<i>GFPC, Sr90, solid-ALL FSS</i>													
Strontium-90	U	0.00739	+/-0.0146	0.0117	+/-0.0146	0.0254	pCi/g		KSD1	10/04/06	2326	574221	8
<b>Rad Liquid Scintillation Analysis</b>													
<i>LSC, Tritium Dist, Solid-HTD2, ALL FSS</i>													
Tritium	U	0.567	+/-7.07	5.89	+/-7.07	12.7	pCi/g		MXP1	10/16/06	1818	579033	9

**GENERAL ENGINEERING LABORATORIES, LLC**  
 2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis**

Company : Connecticut Yankee Atomic Power  
 Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
 Contact: Mr. Jack McCarthy  
 Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-002F  
 Sample ID: 172875001

Project: YANK01204  
 Client ID: YANK001  
 Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Liquid Scintillation Analysis</b>													
<i>Liquid Scint C14, Solid-ALL FSS</i>													
Carbon-14	U	-0.018	+/-0.0708	0.0602	+/-0.0708	0.126	pCi/g		AXD2	10/03/06	1902	574014	12
<i>Liquid Scint Fe55, Solid-ALL FSS</i>													
Iron-55	U	1.82	+/-42.6	30.8	+/-42.6	64.5	pCi/g		MXP1	10/04/06	1949	574527	13
<i>Liquid Scint Ni63, Solid-ALL FSS</i>													
Nickel-63	U	3.44	+/-4.86	3.93	+/-4.86	8.24	pCi/g		MXP1	10/06/06	0928	574530	14
<i>Liquid Scint Tc99, Solid-ALL FSS</i>													
Technetium-99	U	0.173	+/-0.229	0.188	+/-0.229	0.387	pCi/g		KXR1	10/10/06	1023	574010	16

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	09/29/06	1610	574174

**The following Analytical Methods were performed**

Method	Description
1	DOE EML HASL-300, Am-05-RC Modified
2	DOE EML HASL-300, Am-05-RC Modified
3	DOE EML HASL-300, Pu-11-RC Modified
4	DOE EML HASL-300, Pu-11-RC Modified
5	DOE EML HASL-300, Pu-11-RC Modified
6	DOE EML HASL-300, Pu-11-RC Modified
7	EML HASL 300, 4.5.2.3
8	EPA 905.0 Modified
9	EPA 906.0 Modified
10	EPA 906.0 Modified
11	EPA 906.0 Modified
12	EPA EERF C-01 Modified
13	DOE RESL Fe-1, Modified
14	DOE RESL Ni-1, Modified
15	DOE RESL Ni-1, Modified
16	DOE EML HASL-300, Tc-02-RC Modified
17	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
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**GENERAL ENGINEERING LABORATORIES, LLC**  
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis**

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-002F  
Sample ID: 172875001

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
Surrogate/Tracer recovery	Test				Recovery%	Acceptable Limits							
Americium-243		Alphaspec Am241, Cm, Solid ALL			83		(15%-125%)						
Plutonium-242		Alphaspec Pu, Solid-ALL FSS			91		(15%-125%)						
Carrier/Tracer Recovery		Liquid Scint Pu241, Solid-ALL FS			88		(25%-125%)						
Carrier/Tracer Recovery		GFPC, Sr90, solid-ALL FSS			84		(25%-125%)						
Carrier/Tracer Recovery		Liquid Scint Fe55, Solid-ALL FS			55		(15%-125%)						
Carrier/Tracer Recovery		Liquid Scint Ni63, Solid-ALL FS			84		(25%-125%)						
Carrier/Tracer Recovery		Liquid Scint Te99, Solid-ALL FS			72		(15%-125%)						

Notes:

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
  - < Result is less than value reported
  - > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy--Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

# GENERAL ENGINEERING LABORATORIES, LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-003F  
Sample ID: 172875002  
Matrix: TS  
Collect Date: 25-SEP-06  
Receive Date: 29-SEP-06  
Collector: Client  
Moisture: 3.97%

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid - FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.658	+/-0.138	0.0527	+/-0.138	0.114	pCi/g		MJH1	10/11/06	1645	574338	1
Americium-241	U	0.102	+/-0.0924	0.0679	+/-0.0924	0.140	pCi/g						
Bismuth-212		0.582	+/-0.240	0.117	+/-0.240	0.251	pCi/g						
Bismuth-214		0.526	+/-0.0735	0.0291	+/-0.0735	0.062	pCi/g						
Cesium-134	UI	0.00	+/-0.0364	0.0161	+/-0.0364	0.0348	pCi/g						
Cesium-137		0.0554	+/-0.0272	0.0174	+/-0.0272	0.0371	pCi/g						
Cobalt-60	U	0.0142	+/-0.0225	0.0204	+/-0.0225	0.0443	pCi/g						
Europium-152	U	-0.0164	+/-0.0522	0.0393	+/-0.0522	0.0828	pCi/g						
Europium-154	U	0.0532	+/-0.0619	0.0575	+/-0.0619	0.124	pCi/g						
Europium-155	U	0.0222	+/-0.0524	0.0482	+/-0.0524	0.0997	pCi/g						
Lead-212		0.650	+/-0.0589	0.0255	+/-0.0589	0.0529	pCi/g						
Lead-214		0.512	+/-0.0832	0.0302	+/-0.0832	0.0634	pCi/g						
Manganese-54	U	0.00982	+/-0.0177	0.0159	+/-0.0177	0.0342	pCi/g						
Niobium-94	U	0.012	+/-0.0178	0.0162	+/-0.0178	0.0344	pCi/g						
Potassium-40		9.49	+/-0.807	0.150	+/-0.807	0.334	pCi/g						
Radium-226		0.526	+/-0.0735	0.0291	+/-0.0735	0.062	pCi/g						
Silver-108m	U	-0.00728	+/-0.0165	0.0138	+/-0.0165	0.0293	pCi/g						
Thallium-208		0.158	+/-0.037	0.0172	+/-0.037	0.0364	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	09/29/06	1610	574174

**The following Analytical Methods were performed**

Method	Description
I	EML HASL 300, 4.5.2.3

**Notes:**

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported

# GENERAL ENGINEERING LABORATORIES, LLC

2040 Savage Road Charleston SC 29407 – (843) 556-8171 – www.gei.com

## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-003F  
Sample ID: 172875002

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
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- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy—Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

# GENERAL ENGINEERING LABORATORIES, LLC

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
 Address : 362 Injun Hollow Rd  
 East Hampton, Connecticut 06424  
 Contact: Mr. Jack McCarthy  
 Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-019F  
 Sample ID: 172875003  
 Matrix: TS  
 Collect Date: 25-SEP-06  
 Receive Date: 29-SEP-06  
 Collector: Client  
 Moisture: 6.79%

Project: YANK01204  
 Client ID: YANK001  
 Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid - FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.702	+/-0.154	0.0521	+/-0.154	0.111	pCi/g		MJH1	10/11/06	1646	574338	1
Americium-241	U	-0.0596	+/-0.106	0.0828	+/-0.106	0.171	pCi/g						
Bismuth-212		0.408	+/-0.217	0.116	+/-0.217	0.245	pCi/g						
Bismuth-214		0.570	+/-0.0854	0.0275	+/-0.0854	0.0578	pCi/g						
Cesium-134	UI	0.00	+/-0.033	0.0181	+/-0.033	0.0383	pCi/g						
Cesium-137		0.178	+/-0.0403	0.017	+/-0.0403	0.0357	pCi/g						
Cobalt-60	U	0.00463	+/-0.018	0.0153	+/-0.018	0.0334	pCi/g						
Europium-152	U	0.00359	+/-0.047	0.0382	+/-0.047	0.0797	pCi/g						
Europium-154	U	0.0118	+/-0.0585	0.0496	+/-0.0585	0.107	pCi/g						
Europium-155	U	0.0378	+/-0.0497	0.0443	+/-0.0497	0.0912	pCi/g						
Lead-212		0.777	+/-0.0554	0.0248	+/-0.0554	0.0511	pCi/g						
Lead-214		0.606	+/-0.0779	0.0278	+/-0.0779	0.058	pCi/g						
Manganese-54	U	0.0026	+/-0.0211	0.0152	+/-0.0211	0.0322	pCi/g						
Niobium-94	U	0.000837	+/-0.0158	0.0131	+/-0.0158	0.0278	pCi/g						
Potassium-40		11.3	+/-0.782	0.125	+/-0.782	0.277	pCi/g						
Radium-226		0.570	+/-0.0854	0.0275	+/-0.0854	0.0578	pCi/g						
Silver-108m	U	-0.00243	+/-0.016	0.0136	+/-0.016	0.0285	pCi/g						
Thallium-208		0.239	+/-0.0397	0.0133	+/-0.0397	0.0282	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	09/29/06	1610	574174

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

**Notes:**

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported

# GENERAL ENGINEERING LABORATORIES, LLC

2040 Savage Road Charleston SC 29407 – (843) 556-8171 – www.gel.com

## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-019F  
Sample ID: 172875003

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
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- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy—Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-004F  
Sample ID: 172875004  
Matrix: TS  
Collect Date: 25-SEP-06  
Receive Date: 29-SEP-06  
Collector: Client  
Moisture: 5.58%

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid-FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.760	+/-0.142	0.0565	+/-0.142	0.123	pCi/g		MJH1	10/11/06	1646	574338	1
Americium-241	U	0.0261	+/-0.0287	0.0258	+/-0.0287	0.053	pCi/g						
Bismuth-212		0.448	+/-0.358	0.130	+/-0.358	0.280	pCi/g						
Bismuth-214		0.577	+/-0.0856	0.0322	+/-0.0856	0.0686	pCi/g						
Cesium-134	UI	0.00	+/-0.0273	0.023	+/-0.0273	0.0489	pCi/g						
Cesium-137	U	0.0245	+/-0.0272	0.0195	+/-0.0272	0.0414	pCi/g						
Cobalt-60	U	0.0133	+/-0.0192	0.0179	+/-0.0192	0.0397	pCi/g						
Europium-152	U	0.0284	+/-0.0494	0.0419	+/-0.0494	0.0883	pCi/g						
Europium-154	U	-0.0176	+/-0.058	0.0479	+/-0.058	0.106	pCi/g						
Europium-155	U	0.0249	+/-0.0459	0.0435	+/-0.0459	0.0897	pCi/g						
Lead-212		0.681	+/-0.0575	0.0246	+/-0.0575	0.0512	pCi/g						
Lead-214		0.558	+/-0.0905	0.0304	+/-0.0905	0.0641	pCi/g						
Manganese-54	U	-0.0119	+/-0.0198	0.0157	+/-0.0198	0.0341	pCi/g						
Niobium-94	U	0.0174	+/-0.0214	0.0176	+/-0.0214	0.0375	pCi/g						
Potassium-40		10.7	+/-0.907	0.157	+/-0.907	0.353	pCi/g						
Radium-226		0.577	+/-0.0856	0.0322	+/-0.0856	0.0686	pCi/g						
Silver-108m	U	0.00125	+/-0.0154	0.0139	+/-0.0154	0.0296	pCi/g						
Thallium-208		0.255	+/-0.0413	0.0183	+/-0.0413	0.0389	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	09/29/06	1610	574174

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

**Notes:**

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported

# GENERAL ENGINEERING LABORATORIES, LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-004F  
Sample ID: 172875004

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
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- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy--Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

# GENERAL ENGINEERING LABORATORIES, LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-004FS  
Sample ID: 172875005  
Matrix: TS  
Collect Date: 25-SEP-06  
Receive Date: 29-SEP-06  
Collector: Client  
Moisture: 5.6%

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.: .

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid - FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.687	+/-0.159	0.0507	+/-0.159	0.111	pCi/g		MJH1	10/11/06	1646	574338	1
Americium-241	U	-0.0904	+/-0.0881	0.0664	+/-0.0881	0.138	pCi/g						
Bismuth-212	U	0.157	+/-0.144	0.130	+/-0.144	0.277	pCi/g						
Bismuth-214		0.531	+/-0.0763	0.0302	+/-0.0763	0.0644	pCi/g						
Cesium-134	U	0.0129	+/-0.0235	0.0187	+/-0.0235	0.0402	pCi/g						
Cesium-137		0.0433	+/-0.0207	0.0153	+/-0.0207	0.0329	pCi/g						
Cobalt-60	U	0.0132	+/-0.0212	0.0194	+/-0.0212	0.0423	pCi/g						
Europium-152	U	-0.0203	+/-0.0465	0.0386	+/-0.0465	0.0815	pCi/g						
Europium-154	U	-0.0241	+/-0.0612	0.0501	+/-0.0612	0.110	pCi/g						
Europium-155	U	0.0814	+/-0.0498	0.0499	+/-0.0498	0.103	pCi/g						
Lead-212		0.654	+/-0.0542	0.0238	+/-0.0542	0.0497	pCi/g						
Lead-214		0.570	+/-0.0845	0.0313	+/-0.0845	0.0658	pCi/g						
Manganese-54	U	-0.00247	+/-0.0192	0.0161	+/-0.0192	0.0347	pCi/g						
Niobium-94	U	0.0235	+/-0.0249	0.0176	+/-0.0249	0.0374	pCi/g						
Potassium-40		10.6	+/-0.830	0.152	+/-0.830	0.340	pCi/g						
Radium-226		0.531	+/-0.0763	0.0302	+/-0.0763	0.0644	pCi/g						
Silver-108m	U	-0.00796	+/-0.0151	0.0131	+/-0.0151	0.028	pCi/g						
Thallium-208		0.215	+/-0.0382	0.0157	+/-0.0382	0.0335	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	09/29/06	1610	574174

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

**Notes:**

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported

# GENERAL ENGINEERING LABORATORIES, LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-004FS  
Sample ID: 172875005

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
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- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy—Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

# GENERAL ENGINEERING LABORATORIES, LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-018F  
Sample ID: 172875006  
Matrix: TS  
Collect Date: 25-SEP-06  
Receive Date: 29-SEP-06  
Collector: Client  
Moisture: 4.05%

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid - FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.722	+/-0.153	0.0484	+/-0.153	0.106	pCi/g		MJH1	10/11/06	1647	574338	1
Americium-241	U	-0.0346	+/-0.0861	0.072	+/-0.0861	0.149	pCi/g						
Bismuth-212		0.326	+/-0.213	0.126	+/-0.213	0.269	pCi/g						
Bismuth-214		0.641	+/-0.0863	0.0283	+/-0.0863	0.0604	pCi/g						
Cesium-134	UI	0.00	+/-0.0253	0.0196	+/-0.0253	0.0417	pCi/g						
Cesium-137	U	0.0326	+/-0.0204	0.0175	+/-0.0204	0.0372	pCi/g						
Cobalt-60	U	0.000629	+/-0.0188	0.0159	+/-0.0188	0.0351	pCi/g						
Europium-152	U	-0.0152	+/-0.0456	0.0404	+/-0.0456	0.085	pCi/g						
Europium-154	U	-0.0641	+/-0.0591	0.0434	+/-0.0591	0.096	pCi/g						
Europium-155	U	0.0737	+/-0.0544	0.0524	+/-0.0544	0.108	pCi/g						
Lead-212		0.799	+/-0.0578	0.0228	+/-0.0578	0.0476	pCi/g						
Lead-214		0.701	+/-0.0849	0.0258	+/-0.0849	0.0547	pCi/g						
Manganese-54	UI	0.00	+/-0.032	0.0159	+/-0.032	0.0341	pCi/g						
Niobium-94	U	0.00886	+/-0.0178	0.0157	+/-0.0178	0.0333	pCi/g						
Potassium-40		11.5	+/-0.844	0.151	+/-0.844	0.335	pCi/g						
Radium-226		0.641	+/-0.0863	0.0283	+/-0.0863	0.0604	pCi/g						
Silver-108m	U	-0.000698	+/-0.0168	0.0148	+/-0.0168	0.0313	pCi/g						
Thallium-208		0.244	+/-0.0429	0.0155	+/-0.0429	0.033	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	09/29/06	1610	574174

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

**Notes:**

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported

# GENERAL ENGINEERING LABORATORIES, LLC

2040 Savage Road Charleston SC 29407 -- (843) 556-8171 -- www.gel.com

## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-018F  
Sample ID: 172875006

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
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- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy---Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
 Address : 362 Injun Hollow Rd  
 East Hampton, Connecticut 06424  
 Contact: Mr. Jack McCarthy  
 Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-011F  
 Sample ID: 172875007  
 Matrix: TS  
 Collect Date: 25-SEP-06  
 Receive Date: 29-SEP-06  
 Collector: Client  
 Moisture: 6.05%

Project: YANK01204  
 Client ID: YANK001  
 Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid-FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.789	+/-0.189	0.0531	+/-0.189	0.117	pCi/g		MJH1	10/11/06	1647	574338	1
Americium-241	U	-0.0329	+/-0.0774	0.0668	+/-0.0774	0.137	pCi/g						
Bismuth-212		0.761	+/-0.316	0.131	+/-0.316	0.282	pCi/g						
Bismuth-214		0.551	+/-0.108	0.038	+/-0.108	0.0803	pCi/g						
Cesium-134	UI	0.00	+/-0.0429	0.0238	+/-0.0429	0.0507	pCi/g						
Cesium-137		0.0577	+/-0.049	0.0197	+/-0.049	0.042	pCi/g						
Cobalt-60	U	0.0151	+/-0.0225	0.0206	+/-0.0225	0.0452	pCi/g						
Europium-152	U	0.0262	+/-0.0605	0.0537	+/-0.0605	0.112	pCi/g						
Europium-154	U	0.0687	+/-0.0733	0.0676	+/-0.0733	0.146	pCi/g						
Europium-155	U	0.0147	+/-0.0603	0.0524	+/-0.0603	0.108	pCi/g						
Lead-212		0.758	+/-0.0859	0.0323	+/-0.0859	0.0669	pCi/g						
Lead-214		0.637	+/-0.104	0.0364	+/-0.104	0.0763	pCi/g						
Manganese-54	U	0.0408	+/-0.0421	0.0204	+/-0.0421	0.0436	pCi/g						
Niobium-94	U	0.00463	+/-0.021	0.0179	+/-0.021	0.0381	pCi/g						
Potassium-40		11.1	+/-1.12	0.152	+/-1.12	0.345	pCi/g						
Radium-226		0.551	+/-0.108	0.038	+/-0.108	0.0803	pCi/g						
Silver-108m	U	-0.0137	+/-0.0204	0.0167	+/-0.0204	0.0354	pCi/g						
Thallium-208		0.214	+/-0.0417	0.0179	+/-0.0417	0.0381	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	09/29/06	1610	574174

**The following Analytical Methods were performed**

Method	Description
I	EML HASL 300, 4.5.2.3

Notes:

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-011F  
Sample ID: 172875007

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
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- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy—Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-016F  
Sample ID: 172875008  
Matrix: TS  
Collect Date: 25-SEP-06  
Receive Date: 29-SEP-06  
Collector: Client  
Moisture: 8%

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid--FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.677	+/-0.137	0.0644	+/-0.137	0.137	pCi/g		MJH1	10/11/06	1647	574338	1
Americium-241	U	-0.192	+/-0.0975	0.0761	+/-0.0975	0.157	pCi/g						
Bismuth-212	U	0.252	+/-0.310	0.134	+/-0.310	0.284	pCi/g						
Bismuth-214		0.595	+/-0.085	0.0289	+/-0.085	0.0614	pCi/g						
Cesium-134	U	0.0322	+/-0.0386	0.0206	+/-0.0386	0.0437	pCi/g						
Cesium-137	U	0.0325	+/-0.0285	0.0175	+/-0.0285	0.037	pCi/g						
Cobalt-60	U	0.00631	+/-0.0213	0.0183	+/-0.0213	0.0399	pCi/g						
Europium-152	U	-0.0166	+/-0.0515	0.0442	+/-0.0515	0.0925	pCi/g						
Europium-154	UI	0.00	+/-0.0623	0.0497	+/-0.0623	0.108	pCi/g						
Europium-155	U	-0.00423	+/-0.0543	0.0509	+/-0.0543	0.105	pCi/g						
Lead-212		0.755	+/-0.0564	0.0274	+/-0.0564	0.0568	pCi/g						
Lead-214		0.610	+/-0.0848	0.0318	+/-0.0848	0.0666	pCi/g						
Manganese-54	U	0.00966	+/-0.0222	0.0175	+/-0.0222	0.0372	pCi/g						
Niobium-94	U	-0.00145	+/-0.0175	0.0153	+/-0.0175	0.0325	pCi/g						
Potassium-40		10.5	+/-0.762	0.126	+/-0.762	0.285	pCi/g						
Radium-226		0.595	+/-0.085	0.0289	+/-0.085	0.0614	pCi/g						
Silver-108m	U	0.00607	+/-0.0185	0.0144	+/-0.0185	0.0303	pCi/g						
Thallium-208		0.258	+/-0.0424	0.0173	+/-0.0424	0.0366	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	09/29/06	1610	574174

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

**Notes:**

The Qualifiers in this report are defined as follows :

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- < Result is less than value reported

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power

Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424

Contact: Mr. Jack McCarthy

Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-016F

Sample ID: 172875008

Project: YANK01204

Client ID: YANK001

Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
-----------	-----------	--------	-------------	----	-----	-----	-------	----	---------	------	------	-------	-----

- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy—Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

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## Certificate of Analysis

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Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-017F  
Sample ID: 172875009  
Matrix: TS  
Collect Date: 25-SEP-06  
Receive Date: 29-SEP-06  
Collector: Client  
Moisture: 9.26%

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.: :

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid--FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.739	+/-0.175	0.0725	+/-0.175	0.155	pCi/g		MJH1	10/11/06	1648	574338	1
Americium-241	U	0.0177	+/-0.0394	0.0287	+/-0.0394	0.059	pCi/g						
Bismuth-212	U	0.251	+/-0.306	0.155	+/-0.306	0.328	pCi/g						
Bismuth-214		0.536	+/-0.106	0.0395	+/-0.106	0.083	pCi/g						
Cesium-134	UI	0.00	+/-0.0307	0.0258	+/-0.0307	0.0544	pCi/g						
Cesium-137	U	0.0437	+/-0.0381	0.022	+/-0.0381	0.0464	pCi/g						
Cobalt-60	U	0.0114	+/-0.0252	0.0222	+/-0.0252	0.0481	pCi/g						
Europium-152	U	0.0107	+/-0.0555	0.0489	+/-0.0555	0.102	pCi/g						
Europium-154	U	0.00269	+/-0.0741	0.0631	+/-0.0741	0.136	pCi/g						
Europium-155	UI	0.00	+/-0.0718	0.0437	+/-0.0718	0.0903	pCi/g						
Lead-212		0.663	+/-0.065	0.0358	+/-0.065	0.0737	pCi/g						
Lead-214		0.654	+/-0.0852	0.0338	+/-0.0852	0.0708	pCi/g						
Manganese-54	U	0.0141	+/-0.0265	0.0233	+/-0.0265	0.0491	pCi/g						
Niobium-94	U	-0.00139	+/-0.0225	0.0194	+/-0.0225	0.0409	pCi/g						
Potassium-40		10.1	+/-0.799	0.198	+/-0.799	0.432	pCi/g						
Radium-226		0.536	+/-0.106	0.0395	+/-0.106	0.083	pCi/g						
Silver-108m	U-0.000385		+/-0.0185	0.0168	+/-0.0185	0.0354	pCi/g						
Thallium-208		0.225	+/-0.0482	0.0199	+/-0.0482	0.042	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	09/29/06	1610	574174

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

**Notes:**

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-017F  
Sample ID: 172875009

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
-----------	-----------	--------	-------------	----	-----	-----	-------	----	---------	------	------	-------	-----

- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
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  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy—Uncertain identification
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  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-012F  
Sample ID: 172875010  
Matrix: TS  
Collect Date: 25-SEP-06  
Receive Date: 29-SEP-06  
Collector: Client  
Moisture: 5.86%

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid - FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.740	+/-0.151	0.0586	+/-0.151	0.126	pCi/g						
Americium-241	U	0.000773	+/-0.0261	0.0217	+/-0.0261	0.0447	pCi/g						
Bismuth-212		0.509	+/-0.216	0.126	+/-0.216	0.268	pCi/g						
Bismuth-214		0.544	+/-0.0716	0.0282	+/-0.0716	0.0601	pCi/g						
Cesium-134	U	0.00754	+/-0.0217	0.0189	+/-0.0217	0.0404	pCi/g						
Cesium-137	U	0.0275	+/-0.0288	0.0179	+/-0.0288	0.0381	pCi/g						
Cobalt-60	U	0.00671	+/-0.0233	0.0178	+/-0.0233	0.039	pCi/g						
Europium-152	U	-0.0293	+/-0.0427	0.0348	+/-0.0427	0.0736	pCi/g						
Europium-154	U	0.00364	+/-0.0666	0.0566	+/-0.0666	0.123	pCi/g						
Europium-155	U	0.0648	+/-0.0376	0.038	+/-0.0376	0.0785	pCi/g						
Lead-212		0.729	+/-0.0518	0.022	+/-0.0518	0.0458	pCi/g						
Lead-214		0.598	+/-0.0879	0.029	+/-0.0879	0.0608	pCi/g						
Manganese-54	U	0.0257	+/-0.0234	0.0157	+/-0.0234	0.0339	pCi/g						
Niobium-94	U	0.00374	+/-0.0179	0.0156	+/-0.0179	0.0332	pCi/g						
Potassium-40		11.1	+/-0.770	0.126	+/-0.770	0.287	pCi/g						
Radium-226		0.544	+/-0.0716	0.0282	+/-0.0716	0.0601	pCi/g						
Silver-108m	U	0.00507	+/-0.0147	0.0136	+/-0.0147	0.0287	pCi/g						
Thallium-208		0.240	+/-0.0423	0.0162	+/-0.0423	0.0344	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	09/29/06	1610	574174

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

**Notes:**

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- < Result is less than value reported

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**Certificate of Analysis**

Company : Connecticut Yankee Atomic Power  
 Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
 Contact: Mr. Jack McCarthy  
 Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-012F  
 Sample ID: 172875010

Project: YANK01204  
 Client ID: YANK001  
 Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
-----------	-----------	--------	-------------	----	-----	-----	-------	----	---------	------	------	-------	-----

- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy--Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID:	9520-0003-010F	Project:	YANK01204
Sample ID:	172875011	Client ID:	YANK001
Matrix:	TS	Vol. Recv.:	
Collect Date:	25-SEP-06		
Receive Date:	29-SEP-06		
Collector:	Client		
Moisture:	4.97%		

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Alpha Spec Analysis</b>													
<i>Alphaspec Am241, Cm, Solid ALL FSS</i>													
Americium-241	U	-0.00369	+/-0.0863	0.0743	+/-0.0863	0.224	pCi/g		JAS1	10/12/06	1617	578044	1
Curium-242	U	-0.0119	+/-0.0936	0.0845	+/-0.0936	0.250	pCi/g						
Curium-243/244	U	0.0874	+/-0.153	0.0992	+/-0.153	0.273	pCi/g						
<i>Alphaspec Pu, Solid-ALL FSS</i>													
Plutonium-238	U	-0.0198	+/-0.0982	0.0919	+/-0.0982	0.268	pCi/g		JAS1	10/12/06	1204	578046	3
Plutonium-239/240	U	0.0259	+/-0.113	0.0831	+/-0.114	0.250	pCi/g						
<i>Liquid Scint Pu241, Solid-ALL FSS</i>													
Plutonium-241	U	3.96	+/-7.88	6.44	+/-7.90	13.5	pCi/g		JAS1	10/10/06	1631	574558	5
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid-FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.796	+/-0.164	0.0461	+/-0.164	0.0976	pCi/g		MJH1	10/11/06	2007	574338	7
Americium-241	U	-0.0141	+/-0.0609	0.046	+/-0.0609	0.0939	pCi/g						
Bismuth-212		0.627	+/-0.202	0.108	+/-0.202	0.225	pCi/g						
Bismuth-214		0.508	+/-0.0846	0.0247	+/-0.0846	0.0516	pCi/g						
Cesium-134	U	0.0257	+/-0.0248	0.0181	+/-0.0248	0.0378	pCi/g						
Cesium-137		0.0459	+/-0.0227	0.0155	+/-0.0227	0.0324	pCi/g						
Cobalt-60	U	0.0248	+/-0.0231	0.0154	+/-0.0231	0.0328	pCi/g						
Europium-152	U	0.0668	+/-0.0362	0.0361	+/-0.0362	0.0748	pCi/g						
Europium-154	U	-0.00831	+/-0.0527	0.044	+/-0.0527	0.0937	pCi/g						
Europium-155	U	0.0314	+/-0.0467	0.0406	+/-0.0467	0.0829	pCi/g						
Lead-212		0.764	+/-0.0753	0.0227	+/-0.0753	0.0466	pCi/g						
Lead-214		0.637	+/-0.075	0.026	+/-0.075	0.0539	pCi/g						
Manganese-54	UI	0.00	+/-0.0188	0.0127	+/-0.0188	0.0269	pCi/g						
Niobium-94	U	0.00106	+/-0.018	0.0131	+/-0.018	0.0273	pCi/g						
Potassium-40		11.5	+/-0.962	0.119	+/-0.962	0.258	pCi/g						
Radium-226		0.508	+/-0.0846	0.0247	+/-0.0846	0.0516	pCi/g						
Silver-108m	U	-0.000216	+/-0.0149	0.0127	+/-0.0149	0.0265	pCi/g						
Thallium-208		0.262	+/-0.0434	0.0131	+/-0.0434	0.0275	pCi/g						
<b>Rad Gas Flow Proportional Counting</b>													
<i>GFPC, Sr90, solid-ALL FSS</i>													
Strontium-90	U	-0.0251	+/-0.0121	0.0121	+/-0.0121	0.0262	pCi/g		KSD1	10/04/06	2326	574221	8
<b>Rad Liquid Scintillation Analysis</b>													
<i>LSC, Tritium Dist, Solid-HTD2, ALL FSS</i>													
Tritium	U	1.65	+/-8.18	6.76	+/-8.18	14.5	pCi/g		MXP1	10/16/06	1834	579033	9

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**Certificate of Analysis**

Company : Connecticut Yankee Atomic Power  
 Address : 362 Injun Hollow Rd  
 East Hampton, Connecticut 06424  
 Contact: Mr. Jack McCarthy  
 Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-010F  
 Sample ID: 172875011

Project: YANK01204  
 Client ID: YANK001  
 Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Liquid Scintillation Analysis</b>													
<i>Liquid Scint C14, Solid All, FSS:</i>													
Carbon-14	U	0.00604	+/-0.0774	0.0647	+/-0.0774	0.135	pCi/g		AXD2	10/03/06	2004	574014	12
<i>Liquid Scint Fe55, Solid-ALL FSS</i>													
Iron-55	U	1.20	+/-37.8	26.9	+/-37.8	56.1	pCi/g		MXP1	10/04/06	2005	574527	13
<i>Liquid Scint Ni63, Solid-ALL FSS</i>													
Nickel-63	U	10.4	+/-6.43	4.97	+/-6.44	10.4	pCi/g		MXP1	10/06/06	1000	574530	14
<i>Liquid Scint Tc99, Solid-ALL FSS</i>													
Technetium-99	U	0.164	+/-0.288	0.237	+/-0.288	0.489	pCi/g		KXR1	10/09/06	0806	574010	16

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	09/29/06	1610	574174

**The following Analytical Methods were performed**

Method	Description
1	DOE EML HASL-300, Am-05-RC Modified
2	DOE EML HASL-300, Am-05-RC Modified
3	DOE EML HASL-300, Pu-11-RC Modified
4	DOE EML HASL-300, Pu-11-RC Modified
5	DOE EML HASL-300, Pu-11-RC Modified
6	DOE EML HASL-300, Pu-11-RC Modified
7	EML HASL 300, 4.5.2.3
8	EPA 905.0 Modified
9	EPA 906.0 Modified
10	EPA 906.0 Modified
11	EPA 906.0 Modified
12	EPA EERF C-01 Modified
13	DOE RESL Fe-1, Modified
14	DOE RESL Ni-1, Modified
15	DOE RESL Ni-1, Modified
16	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer recovery	Test	Recovery %	Acceptable Limits
Americium-243	Alphaspec Am241, Cm, Solid ALL	94	(15%-125%)

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**Certificate of Analysis**

Company : Connecticut Yankee Atomic Power  
 Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
 Contact: Mr. Jack McCarthy  
 Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-010F  
 Sample ID: 172875011

Project: YANK01204  
 Client ID: YANK001  
 Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time Batch	Mtd
Plutonium-242		Alphaspec Pu, Solid-ALL FSS			84		(15%-125%)					
Carrier/Tracer Recovery		Liquid Scint Pu241, Solid-ALL FS			92		(25%-125%)					
Carrier/Tracer Recovery		GFPC, Sr90, solid-ALL FSS			88		(25%-125%)					
Carrier/Tracer Recovery		Liquid Scint Fe55, Solid-ALL FS			68		(15%-125%)					
Carrier/Tracer Recovery		Liquid Scint Ni63, Solid-ALL FS			77		(25%-125%)					
Carrier/Tracer Recovery		Liquid Scint Tc99, Solid-ALL FS			74		(15%-125%)					

Notes:

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
  - < Result is less than value reported
  - > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy—Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-009F  
Sample ID: 172875012  
Matrix: TS  
Collect Date: 25-SEP-06  
Receive Date: 29-SEP-06  
Collector: Client  
Moisture: 9.79%

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid-FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.682	+/-0.226	0.0827	+/-0.226	0.179	pCi/g		MJH1	10/11/06	1650	574338	1
Americium-241	U	0.0296	+/-0.0355	0.0337	+/-0.0355	0.0693	pCi/g						
Bismuth-212		0.708	+/-0.366	0.176	+/-0.366	0.379	pCi/g						
Bismuth-214		0.569	+/-0.109	0.0469	+/-0.109	0.0996	pCi/g						
Cesium-134	U	0.0335	+/-0.0365	0.0277	+/-0.0365	0.0594	pCi/g						
Cesium-137		0.171	+/-0.067	0.0246	+/-0.067	0.0525	pCi/g						
Cobalt-60	U	-0.00558	+/-0.033	0.0272	+/-0.033	0.0598	pCi/g						
Europium-152	U	0.00569	+/-0.0618	0.0555	+/-0.0618	0.117	pCi/g						
Europium-154	U	0.0155	+/-0.0747	0.0649	+/-0.0747	0.144	pCi/g						
Europium-155	U	0.0428	+/-0.0819	0.0512	+/-0.0819	0.106	pCi/g						
Lead-212		0.737	+/-0.065	0.0298	+/-0.065	0.0622	pCi/g						
Lead-214		0.663	+/-0.102	0.0379	+/-0.102	0.080	pCi/g						
Manganese-54	U	0.000384	+/-0.0284	0.0236	+/-0.0284	0.0509	pCi/g						
Niobium-94	U	-0.0228	+/-0.026	0.0202	+/-0.026	0.0435	pCi/g						
Potassium-40		11.4	+/-1.04	0.184	+/-1.04	0.422	pCi/g						
Radium-226		0.569	+/-0.109	0.0469	+/-0.109	0.0996	pCi/g						
Silver-108m	U	0.0142	+/-0.0232	0.0211	+/-0.0232	0.0447	pCi/g						
Thallium-208		0.322	+/-0.0507	0.021	+/-0.0507	0.0452	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	09/29/06	1615	574180

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

Notes:

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-009F  
Sample ID: 172875012

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
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- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy--Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-015F  
Sample ID: 172875013  
Matrix: TS  
Collect Date: 25-SEP-06  
Receive Date: 29-SEP-06  
Collector: Client  
Moisture: 10.1%

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid - FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.803	+/-0.120	0.0446	+/-0.120	0.0948	pCi/g		MJH1	10/11/06	2007	574338	1
Americium-241	U	0.0138	+/-0.0213	0.0183	+/-0.0213	0.0374	pCi/g						
Bismuth-212		0.567	+/-0.237	0.101	+/-0.237	0.212	pCi/g						
Bismuth-214		0.568	+/-0.0676	0.0245	+/-0.0676	0.0513	pCi/g						
Cesium-134	U	0.0221	+/-0.0181	0.0164	+/-0.0181	0.0344	pCi/g						
Cesium-137		0.155	+/-0.0259	0.0114	+/-0.0259	0.0242	pCi/g						
Cobalt-60	U	0.0122	+/-0.0155	0.0141	+/-0.0155	0.0303	pCi/g						
Europium-152	U	0.0151	+/-0.0381	0.0349	+/-0.0381	0.0722	pCi/g						
Europium-154	U	-0.00537	+/-0.0436	0.0368	+/-0.0436	0.0793	pCi/g						
Europium-155	U	0.0396	+/-0.0347	0.0325	+/-0.0347	0.0665	pCi/g						
Lead-212		0.782	+/-0.0461	0.0183	+/-0.0461	0.0377	pCi/g						
Lead-214		0.607	+/-0.0666	0.024	+/-0.0666	0.0497	pCi/g						
Manganese-54	U	-0.00484	+/-0.0164	0.0135	+/-0.0164	0.0284	pCi/g						
Niobium-94	U	-0.0114	+/-0.0138	0.0112	+/-0.0138	0.0235	pCi/g						
Potassium-40		11.4	+/-0.620	0.0944	+/-0.620	0.210	pCi/g						
Radium-226		0.568	+/-0.0676	0.0245	+/-0.0676	0.0513	pCi/g						
Silver-108m	U	-0.000441	+/-0.013	0.0115	+/-0.013	0.0239	pCi/g						
Thallium-208		0.221	+/-0.0355	0.0133	+/-0.0355	0.0278	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	09/29/06	1615	574180

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

**Notes:**

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported

# GENERAL ENGINEERING LABORATORIES, LLC

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-015F  
Sample ID: 172875013

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mid
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- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy--Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

# GENERAL ENGINEERING LABORATORIES, LLC

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-006F  
Sample ID: 172875014  
Matrix: TS  
Collect Date: 25-SEP-06  
Receive Date: 29-SEP-06  
Collector: Client  
Moisture: 9.44%

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid - FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.773	+/-0.163	0.0497	+/-0.163	0.105	pCi/g		MJH1	10/11/06	1650	574338	1
Americium-241	U	0.0294	+/-0.0601	0.0568	+/-0.0601	0.117	pCi/g						
Bismuth-212		0.382	+/-0.210	0.100	+/-0.210	0.212	pCi/g						
Bismuth-214		0.585	+/-0.0732	0.0243	+/-0.0732	0.0512	pCi/g						
Cesium-134	UI	0.00	+/-0.0197	0.0161	+/-0.0197	0.0339	pCi/g						
Cesium-137		0.0653	+/-0.0253	0.0139	+/-0.0253	0.0293	pCi/g						
Cobalt-60	U	0.0194	+/-0.0173	0.0138	+/-0.0173	0.0297	pCi/g						
Europium-152	U	-0.00837	+/-0.0405	0.0357	+/-0.0405	0.0743	pCi/g						
Europium-154	U	-0.0331	+/-0.0503	0.0395	+/-0.0503	0.0847	pCi/g						
Europium-155	U	0.0736	+/-0.0494	0.0468	+/-0.0494	0.0961	pCi/g						
Lead-212		0.786	+/-0.0521	0.0206	+/-0.0521	0.0427	pCi/g						
Lead-214		0.743	+/-0.0707	0.0256	+/-0.0707	0.0533	pCi/g						
Manganese-54	UI	0.00	+/-0.0165	0.0122	+/-0.0165	0.026	pCi/g						
Niobium-94	U	0.0114	+/-0.0137	0.0127	+/-0.0137	0.0266	pCi/g						
Potassium-40		12.9	+/-0.672	0.111	+/-0.672	0.244	pCi/g						
Radium-226		0.585	+/-0.0732	0.0243	+/-0.0732	0.0512	pCi/g						
Silver-108m	U	0.00368	+/-0.0133	0.0118	+/-0.0133	0.0247	pCi/g						
Thallium-208		0.275	+/-0.0396	0.0133	+/-0.0396	0.0279	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	09/29/06	1615	574180

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

**Notes:**

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported

# GENERAL ENGINEERING LABORATORIES, LLC

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-006F  
Sample ID: 172875014

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
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- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy--Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL.
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

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2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-005F  
Sample ID: 172875015  
Matrix: TS  
Collect Date: 25-SEP-06  
Receive Date: 29-SEP-06  
Collector: Client  
Moisture: 14.5%

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid-FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.682	+/-0.198	0.0662	+/-0.198	0.132	pCi/g		MJH1	10/11/06	1705	574338	1
Americium-241	U	-0.0659	+/-0.106	0.0789	+/-0.106	0.158	pCi/g						
Bismuth-212		0.740	+/-0.403	0.146	+/-0.403	0.291	pCi/g						
Bismuth-214		0.519	+/-0.110	0.0415	+/-0.110	0.083	pCi/g						
Cesium-134	U	0.0364	+/-0.0299	0.0271	+/-0.0299	0.0541	pCi/g						
Cesium-137		0.107	+/-0.0466	0.0199	+/-0.0466	0.0397	pCi/g						
Cobalt-60	U	0.0178	+/-0.0265	0.0239	+/-0.0265	0.0477	pCi/g						
Europium-152	U	0.000438	+/-0.0751	0.059	+/-0.0751	0.118	pCi/g						
Europium-154	U	-0.00468	+/-0.0814	0.0677	+/-0.0814	0.135	pCi/g						
Europium-155	U	0.122	+/-0.0704	0.064	+/-0.0704	0.128	pCi/g						
Lead-212		0.806	+/-0.0974	0.030	+/-0.0974	0.060	pCi/g						
Lead-214		0.594	+/-0.112	0.0412	+/-0.112	0.0824	pCi/g						
Manganese-54	U	0.0278	+/-0.0284	0.0234	+/-0.0284	0.0468	pCi/g						
Niobium-94	U	-0.00909	+/-0.0236	0.0189	+/-0.0236	0.0378	pCi/g						
Potassium-40		12.7	+/-1.21	0.182	+/-1.21	0.365	pCi/g						
Radium-226		0.519	+/-0.110	0.0415	+/-0.110	0.083	pCi/g						
Silver-108m	U	-0.00725	+/-0.0215	0.018	+/-0.0215	0.0359	pCi/g						
Thallium-208		0.218	+/-0.0516	0.0222	+/-0.0516	0.0444	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	09/29/06	1615	574180

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

**Notes:**

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported

# GENERAL ENGINEERING LABORATORIES, LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-005F  
Sample ID: 172875015

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
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- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy—Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

# GENERAL ENGINEERING LABORATORIES, LLC

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-008F  
Sample ID: 172875016  
Matrix: TS  
Collect Date: 25-SEP-06  
Receive Date: 29-SEP-06  
Collector: Client  
Moisture: 9.55%

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid--FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.679	+/-0.204	0.0817	+/-0.204	0.163	pCi/g		MJH1	10/11/06	1706	574338	1
Americium-241	U	0.0491	+/-0.0357	0.0303	+/-0.0357	0.0606	pCi/g						
Bismuth-212	U	0.331	+/-0.302	0.177	+/-0.302	0.354	pCi/g						
Bismuth-214		0.576	+/-0.119	0.0424	+/-0.119	0.0847	pCi/g						
Cesium-134	U	0.0397	+/-0.0364	0.0315	+/-0.0364	0.063	pCi/g						
Cesium-137		0.199	+/-0.0558	0.0273	+/-0.0558	0.0546	pCi/g						
Cobalt-60	U	0.00569	+/-0.0275	0.0237	+/-0.0275	0.0474	pCi/g						
Europium-152	U	-0.0747	+/-0.076	0.0495	+/-0.076	0.0989	pCi/g						
Europium-154	U	0.0702	+/-0.0924	0.0842	+/-0.0924	0.168	pCi/g						
Europium-155	U	0.0435	+/-0.0691	0.046	+/-0.0691	0.092	pCi/g						
Lead-212		0.620	+/-0.0827	0.0281	+/-0.0827	0.0561	pCi/g						
Lead-214		0.461	+/-0.102	0.0386	+/-0.102	0.0771	pCi/g						
Manganese-54	U	0.0163	+/-0.0231	0.0214	+/-0.0231	0.0429	pCi/g						
Niobium-94	U	-0.0111	+/-0.024	0.0203	+/-0.024	0.0406	pCi/g						
Potassium-40		11.0	+/-1.02	0.187	+/-1.02	0.373	pCi/g						
Radium-226		0.576	+/-0.119	0.0424	+/-0.119	0.0847	pCi/g						
Silver-108m	U	-0.00143	+/-0.0206	0.0178	+/-0.0206	0.0356	pCi/g						
Thallium-208		0.173	+/-0.0516	0.0194	+/-0.0516	0.0389	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	09/29/06	1615	574180

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

**Notes:**

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-008F  
Sample ID: 172875016

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
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- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy--Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-020F  
Sample ID: 172875017  
Matrix: TS  
Collect Date: 25-SEP-06  
Receive Date: 29-SEP-06  
Collector: Client  
Moisture: 6.44%

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid - FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.699	+/-0.208	0.0771	+/-0.208	0.165	pCi/g		MJH1	10/12/06	1202	574338	1
Americium-241	U	-0.00562	+/-0.0339	0.0299	+/-0.0339	0.0616	pCi/g						
Bismuth-212		0.731	+/-0.365	0.168	+/-0.365	0.357	pCi/g						
Bismuth-214		0.485	+/-0.120	0.039	+/-0.120	0.0827	pCi/g						
Cesium-134	U	0.0406	+/-0.0463	0.0297	+/-0.0463	0.0626	pCi/g						
Cesium-137		0.205	+/-0.053	0.027	+/-0.053	0.0566	pCi/g						
Cobalt-60	U	0.0379	+/-0.0291	0.0275	+/-0.0291	0.0592	pCi/g						
Europium-152	U	-0.0152	+/-0.0658	0.0553	+/-0.0658	0.116	pCi/g						
Europium-154	U	-0.0312	+/-0.0821	0.0665	+/-0.0821	0.144	pCi/g						
Europium-155	U	0.0626	+/-0.0752	0.0515	+/-0.0752	0.106	pCi/g						
Lead-212		0.658	+/-0.0731	0.0398	+/-0.0731	0.0818	pCi/g						
Lead-214		0.588	+/-0.109	0.0416	+/-0.109	0.0868	pCi/g						
Manganese-54	U	-0.0308	+/-0.0278	0.021	+/-0.0278	0.0449	pCi/g						
Niobium-94	U	0.0278	+/-0.0253	0.0231	+/-0.0253	0.0487	pCi/g						
Potassium-40		10.3	+/-0.932	0.238	+/-0.932	0.516	pCi/g						
Radium-226		0.485	+/-0.120	0.039	+/-0.120	0.0827	pCi/g						
Silver-108m	U	0.0131	+/-0.0214	0.0198	+/-0.0214	0.0416	pCi/g						
Thallium-208		0.260	+/-0.0574	0.0227	+/-0.0574	0.0479	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	09/29/06	1615	574180

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

**Notes:**

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported

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**Certificate of Analysis**

Company : Connecticut Yankee Atomic Power  
 Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
 Contact: Mr. Jack McCarthy  
 Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-020F  
 Sample ID: 172875017

Project: YANK01204  
 Client ID: YANK001  
 Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
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- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy—Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

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**Certificate of Analysis**

Company : Connecticut Yankee Atomic Power  
 Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
 Contact: Mr. Jack McCarthy  
 Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-007F  
 Sample ID: 172875018  
 Matrix: TS  
 Collect Date: 25-SEP-06  
 Receive Date: 29-SEP-06  
 Collector: Client  
 Moisture: 16.5%

Project: YANK01204  
 Client ID: YANK001  
 Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid - FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.904	+/-0.146	0.0498	+/-0.146	0.106	pCi/g		MJH1	10/12/06	1202	574338	1
Americium-241	U	0.0203	+/-0.067	0.061	+/-0.067	0.126	pCi/g						
Bismuth-212		0.477	+/-0.206	0.105	+/-0.206	0.223	pCi/g						
Bismuth-214		0.629	+/-0.0815	0.0277	+/-0.0815	0.0583	pCi/g						
Cesium-134	UI	0.00	+/-0.0315	0.018	+/-0.0315	0.0379	pCi/g						
Cesium-137		0.137	+/-0.0417	0.0155	+/-0.0417	0.0327	pCi/g						
Cobalt-60	U	-0.00429	+/-0.0182	0.0146	+/-0.0182	0.0316	pCi/g						
Europium-152	U	-0.00502	+/-0.0449	0.039	+/-0.0449	0.0813	pCi/g						
Europium-154	U	0.021	+/-0.0489	0.0422	+/-0.0489	0.091	pCi/g						
Europium-155	U	0.0831	+/-0.0561	0.0516	+/-0.0561	0.106	pCi/g						
Lead-212		0.870	+/-0.0594	0.0233	+/-0.0594	0.0482	pCi/g						
Lead-214		0.715	+/-0.0849	0.0279	+/-0.0849	0.0582	pCi/g						
Manganese-54	U	0.0225	+/-0.0191	0.0159	+/-0.0191	0.0335	pCi/g						
Niobium-94	U	0.017	+/-0.0171	0.0157	+/-0.0171	0.0329	pCi/g						
Potassium-40		15.1	+/-0.827	0.141	+/-0.827	0.305	pCi/g						
Radium-226		0.629	+/-0.0815	0.0277	+/-0.0815	0.0583	pCi/g						
Silver-108m	U	-0.0051	+/-0.015	0.0126	+/-0.015	0.0265	pCi/g						
Thallium-208		0.317	+/-0.0425	0.0134	+/-0.0425	0.0283	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	09/29/06	1615	574180

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

**Notes:**

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported

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**Certificate of Analysis**

Company : Connecticut Yankee Atomic Power  
 Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
 Contact: Mr. Jack McCarthy  
 Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-007F  
 Sample ID: 172875018

Project: YANK01204  
 Client ID: YANK001  
 Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time Batch	Mtd
-----------	-----------	--------	-------------	----	-----	-----	-------	----	---------	------	------------	-----

- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy—Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-013F  
Sample ID: 172875019  
Matrix: TS  
Collect Date: 26-SEP-06  
Receive Date: 29-SEP-06  
Collector: Client  
Moisture: 11%

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.: .

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid - FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.603	+/-0.141	0.0499	+/-0.141	0.109	pCi/g		MJH1	10/12/06	1328	574338	1
Americium-241	U	0.00973	+/-0.023	0.0228	+/-0.023	0.047	pCi/g						
Bismuth-212		0.345	+/-0.216	0.132	+/-0.216	0.282	pCi/g						
Bismuth-214		0.469	+/-0.0805	0.0281	+/-0.0805	0.0602	pCi/g						
Cesium-134	U	0.0325	+/-0.0348	0.019	+/-0.0348	0.0407	pCi/g						
Cesium-137	U	0.028	+/-0.0243	0.0149	+/-0.0243	0.0321	pCi/g						
Cobalt-60	U	-0.00893	+/-0.0187	0.015	+/-0.0187	0.0336	pCi/g						
Europium-152	U	-0.0115	+/-0.040	0.0363	+/-0.040	0.0768	pCi/g						
Europium-154	U	0.000379	+/-0.0568	0.049	+/-0.0568	0.108	pCi/g						
Europium-155	U	0.0425	+/-0.0645	0.038	+/-0.0645	0.0786	pCi/g						
Lead-212		0.513	+/-0.0494	0.0229	+/-0.0494	0.0477	pCi/g						
Lead-214		0.558	+/-0.0756	0.0241	+/-0.0756	0.0513	pCi/g						
Manganese-54	U	-0.0059	+/-0.0174	0.0142	+/-0.0174	0.031	pCi/g						
Niobium-94	U	-0.0164	+/-0.0166	0.0131	+/-0.0166	0.0282	pCi/g						
Potassium-40		8.50	+/-0.766	0.173	+/-0.766	0.383	pCi/g						
Radium-226		0.469	+/-0.0805	0.0281	+/-0.0805	0.0602	pCi/g						
Silver-108m	U	0.000482	+/-0.0143	0.013	+/-0.0143	0.0276	pCi/g						
Thallium-208		0.167	+/-0.0346	0.0174	+/-0.0346	0.0369	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	09/29/06	1615	574180

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

**Notes:**

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-013F  
Sample ID: 172875019

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
-----------	-----------	--------	-------------	----	-----	-----	-------	----	---------	------	------	-------	-----

- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy--Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-014F  
Sample ID: 172875020  
Matrix: TS  
Collect Date: 26-SEP-06  
Receive Date: 29-SEP-06  
Collector: Client  
Moisture: 6.86%

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid-FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.596	+/-0.195	0.0675	+/-0.195	0.147	pCi/g		MJH1	10/12/06	1329	574338	1
Americium-241	U	0.034	+/-0.0893	0.079	+/-0.0893	0.164	pCi/g						
Bismuth-212		0.405	+/-0.255	0.120	+/-0.255	0.263	pCi/g						
Bismuth-214		0.431	+/-0.097	0.0344	+/-0.097	0.0737	pCi/g						
Cesium-134	U	0.0279	+/-0.0243	0.023	+/-0.0243	0.0494	pCi/g						
Cesium-137		0.114	+/-0.0421	0.0184	+/-0.0421	0.0397	pCi/g						
Cobalt-60	U	0.0197	+/-0.020	0.0195	+/-0.020	0.0437	pCi/g						
Europium-152	U	0.0246	+/-0.0634	0.0555	+/-0.0634	0.117	pCi/g						
Europium-154	U	0.00746	+/-0.0719	0.0625	+/-0.0719	0.138	pCi/g						
Europium-155	U	0.0342	+/-0.0586	0.0557	+/-0.0586	0.115	pCi/g						
Lead-212		0.627	+/-0.0674	0.0311	+/-0.0674	0.0647	pCi/g						
Lead-214		0.492	+/-0.0753	0.0345	+/-0.0753	0.073	pCi/g						
Manganese-54	U	-0.00486	+/-0.0229	0.019	+/-0.0229	0.0412	pCi/g						
Niobium-94	U	0.00327	+/-0.0183	0.0161	+/-0.0183	0.0348	pCi/g						
Potassium-40		11.8	+/-0.935	0.164	+/-0.935	0.374	pCi/g						
Radium-226		0.431	+/-0.097	0.0344	+/-0.097	0.0737	pCi/g						
Silver-108m	U	-0.0108	+/-0.0204	0.0163	+/-0.0204	0.0348	pCi/g						
Thallium-208		0.238	+/-0.0588	0.0185	+/-0.0588	0.0398	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	09/29/06	1615	574180

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

**Notes:**

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported

# GENERAL ENGINEERING LABORATORIES, LLC

2040 Savage Road Charleston SC 29407 – (843) 556-8171 – www.gel.com

## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-014F  
Sample ID: 172875020

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
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- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy—Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID:	9520-0003-014FS	Project:	YANK01204
Sample ID:	172875021	Client ID:	YANK001
Matrix:	TS	Vol. Recv.:	
Collect Date:	26-SEP-06		
Receive Date:	29-SEP-06		
Collector:	Client		
Moisture:	6.55%		

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid-FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.933	+/-0.230	0.092	+/-0.230	0.184	pCi/g		MJH1	10/02/06	1518	574336	1
Americium-241	U	0.025	+/-0.0421	0.0338	+/-0.0421	0.0676	pCi/g						
Bismuth-212		0.829	+/-0.494	0.180	+/-0.494	0.359	pCi/g						
Bismuth-214		0.707	+/-0.137	0.0411	+/-0.137	0.0821	pCi/g						
Cesium-134	UI	0.00	+/-0.0481	0.0323	+/-0.0481	0.0646	pCi/g						
Cesium-137	U	0.0127	+/-0.032	0.0287	+/-0.032	0.0574	pCi/g						
Cobalt-60	U	0.00321	+/-0.0343	0.0289	+/-0.0343	0.0578	pCi/g						
Europium-152	U	0.012	+/-0.0899	0.0601	+/-0.0899	0.120	pCi/g						
Europium-154	U	-0.063	+/-0.112	0.0872	+/-0.112	0.174	pCi/g						
Europium-155	U	0.0403	+/-0.0642	0.0571	+/-0.0642	0.114	pCi/g						
Lead-212		0.898	+/-0.104	0.0308	+/-0.104	0.0617	pCi/g						
Lead-214		0.633	+/-0.120	0.0432	+/-0.120	0.0863	pCi/g						
Manganese-54	U	-0.00428	+/-0.0286	0.0243	+/-0.0286	0.0486	pCi/g						
Niobium-94	U	-0.011	+/-0.0275	0.0232	+/-0.0275	0.0463	pCi/g						
Potassium-40		13.9	+/-1.30	0.257	+/-1.30	0.514	pCi/g						
Radium-226		0.707	+/-0.137	0.0411	+/-0.137	0.0821	pCi/g						
Silver-108m	U	-0.0106	+/-0.0242	0.0201	+/-0.0242	0.0402	pCi/g						
Thallium-208		0.306	+/-0.0668	0.0228	+/-0.0668	0.0456	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	09/29/06	1615	574180

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

**Notes:**

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported

# GENERAL ENGINEERING LABORATORIES, LLC

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424

Contact: Mr. Jack McCarthy

Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-014FS  
Sample ID: 172875021

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
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- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy--Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-001F  
Sample ID: 172875022  
Matrix: TS  
Collect Date: 26-SEP-06  
Receive Date: 29-SEP-06  
Collector: Client  
Moisture: 12.5%

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid - FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.592	+/-0.107	0.0424	+/-0.107	0.0905	pCi/g		MJH1	10/03/06	0520	574336	1
Americium-241	U	0.0138	+/-0.089	0.0786	+/-0.089	0.162	pCi/g						
Bismuth-212		0.386	+/-0.261	0.0877	+/-0.261	0.187	pCi/g						
Bismuth-214		0.542	+/-0.0677	0.025	+/-0.0677	0.0524	pCi/g						
Cesium-134	U	0.0314	+/-0.0202	0.0176	+/-0.0202	0.0369	pCi/g						
Cesium-137		0.158	+/-0.0254	0.014	+/-0.0254	0.0294	pCi/g						
Cobalt-60		0.214	+/-0.0344	0.0128	+/-0.0344	0.0278	pCi/g						
Europium-152	U	-0.00552	+/-0.0376	0.0337	+/-0.0376	0.0704	pCi/g						
Europium-154	U	0.0287	+/-0.0474	0.0431	+/-0.0474	0.092	pCi/g						
Europium-155	U	0.0327	+/-0.0528	0.0439	+/-0.0528	0.0908	pCi/g						
Lead-212		0.707	+/-0.0477	0.0202	+/-0.0477	0.0419	pCi/g						
Lead-214		0.639	+/-0.0656	0.0264	+/-0.0656	0.055	pCi/g						
Manganese-54	U	-0.00202	+/-0.0163	0.0122	+/-0.0163	0.0259	pCi/g						
Niobium-94	U	-0.00393	+/-0.013	0.0113	+/-0.013	0.0239	pCi/g						
Potassium-40		11.6	+/-0.692	0.123	+/-0.692	0.268	pCi/g						
Radium-226		0.542	+/-0.0677	0.025	+/-0.0677	0.0524	pCi/g						
Silver-108m	U	-0.00514	+/-0.0155	0.0117	+/-0.0155	0.0245	pCi/g						
Thallium-208		0.201	+/-0.0344	0.0128	+/-0.0344	0.0268	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	09/29/06	1615	574180

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

**Notes:**

The Qualifiers in this report are defined as follows :

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# GENERAL ENGINEERING LABORATORIES, LLC

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 18, 2006

Client Sample ID: 9520-0003-001F  
Sample ID: 172875022

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
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- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
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  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy—Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

**QUALITY  
CONTROL  
DATA**

# GENERAL ENGINEERING LABORATORIES, LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## QC Summary

Report Date: October 18, 2006

Page 1 of 12

Client : Connecticut Yankee Atomic Power  
362 Injun Hollow Rd

Contact: East Hampton, Connecticut  
Mr. Jack McCarthy

Workorder: 172875

Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Rad Alpha Spec</b>											
Batch	574558										
QC1201197067	172879001	DUP									
Plutonium-241	U	2.68	U	3.67	pCi/g	0		(0% - 100%)	JAS1	10/10/06	17:36
	Uncert:	+/-7.20		+/-9.16							
	TPU:	+/-7.20		+/-9.17							
QC1201197069	LCS										
Plutonium-241	123			107	pCi/g		87	(75%-125%)		10/10/06	18:09
	Uncert:			+/-12.0							
	TPU:			+/-18.6							
QC1201197066	MB										
Plutonium-241			U	3.56	pCi/g					10/10/06	17:20
	Uncert:			+/-7.43							
	TPU:			+/-7.44							
QC1201197068	172879001	MS									
Plutonium-241	144	U	2.68	127	pCi/g		89	(75%-125%)		10/10/06	17:53
	Uncert:			+/-16.3							
	TPU:			+/-23.9							
Batch	578044										
QC1201204516	172879001	DUP									
Americium-241	U	-0.0902	U	-0.0331	pCi/g	93		(0% - 100%)	JAS1	10/12/06	16:17
	Uncert:	+/-0.120		+/-0.101							
	TPU:	+/-0.121		+/-0.101							
Curium-242	U	-0.143	U	-0.00812	pCi/g	179		(0% - 100%)			
	Uncert:	+/-0.0702		+/-0.0159							
	TPU:	+/-0.0724		+/-0.0159							
Curium-243/244	U	-0.0746	U	-0.163	pCi/g	74		(0% - 100%)			
	Uncert:	+/-0.172		+/-0.178							
	TPU:	+/-0.173		+/-0.179							
QC1201204518	LCS										
Americium-241	12.3			13.0	pCi/g		106	(75%-125%)			
	Uncert:			+/-1.24							
	TPU:			+/-2.01							
Curium-242			U	0.00	pCi/g						
	Uncert:			+/-0.0599							
	TPU:			+/-0.0599							
Curium-243/244	14.8			16.6	pCi/g		112	(75%-125%)			
	Uncert:			+/-1.40							
	TPU:			+/-2.46							
QC1201204515	MB										
Americium-241			U	0.00339	pCi/g						
	Uncert:			+/-0.118							
	TPU:			+/-0.118							
Curium-242			U	0.00	pCi/g						
	Uncert:			+/-0.0711							
	TPU:			+/-0.0711							

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## QC Summary

Workorder: 172875

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Rad Alpha Spec</b>											
Batch	578044										
Curium-243/244			U	-0.164	pCi/g						
	Uncert:			+/-0.0739							
	TPU:			+/-0.0767							
QC1201204517	172879001	MS									
Americium-241	13.5	U	-0.0902	12.8	pCi/g		95	(75%-125%)			
	Uncert:		+/-0.120	+/-1.31							
	TPU:		+/-0.121	+/-2.05							
Curium-242		U	-0.143	U -0.0368	pCi/g						
	Uncert:		+/-0.0702	+/-0.0361							
	TPU:		+/-0.0724	+/-0.0364							
Curium-243/244	16.3	U	-0.0746	17.7	pCi/g		109	(75%-125%)			
	Uncert:		+/-0.172	+/-1.55							
	TPU:		+/-0.173	+/-2.68							
Batch	578046										
QC1201204520	172879001	DUP									
Plutonium-238		U	-0.0161	U 0.0223	pCi/g	1240		(0% - 100%)	JAS1	10/12/06	12:04
	Uncert:		+/-0.127	+/-0.150							
	TPU:		+/-0.127	+/-0.150							
Plutonium-239/240		U	0.047	U 0.00278	pCi/g	178		(0% - 100%)			
	Uncert:		+/-0.135	+/-0.107							
	TPU:		+/-0.135	+/-0.107							
QC1201204522	LCS										
Plutonium-238				U 0.0311	pCi/g			(75%-125%)			
	Uncert:			+/-0.128							
	TPU:			+/-0.128							
Plutonium-239/240	11.4			10.3	pCi/g		90	(75%-125%)			
	Uncert:			+/-1.03							
	TPU:			+/-1.46							
QC1201204519	MB										
Plutonium-238				U -0.0384	pCi/g						
	Uncert:			+/-0.0799							
	TPU:			+/-0.080							
Plutonium-239/240				U -0.0317	pCi/g						
	Uncert:			+/-0.0719							
	TPU:			+/-0.0719							
QC1201204521	172879001	MS									
Plutonium-238		U	-0.0161	U -0.0462	pCi/g			(75%-125%)			
	Uncert:		+/-0.127	+/-0.0811							
	TPU:		+/-0.127	+/-0.0813							
Plutonium-239/240	12.5	U	0.047	11.6	pCi/g		93	(75%-125%)			
	Uncert:		+/-0.135	+/-1.21							
	TPU:		+/-0.135	+/-1.71							
<b>Rad Gamma Spec</b>											
Batch	574336										
QC1201196540	172275028	DUP									
Actinium-228			0.575	0.630	pCi/g	9		(0% - 100%)	MJH1	10/03/06	06:14
	Uncert:		+/-0.137	+/-0.144							
	TPU:		+/-0.137	+/-0.144							

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**QC Summary**

Workorder: 172875

Page 3 of 12

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Gamma Spec											
Batch 574336											
Americium-241	U	-0.000377	U	-0.000296	pCi/g	24		(0% - 100%)			
		Uncert: +/-0.0553		+/-0.0229							
		TPU: +/-0.0553		+/-0.0229							
Bismuth-212		0.487		0.548	pCi/g	12		(0% - 100%)			
		Uncert: +/-0.229		+/-0.181							
		TPU: +/-0.229		+/-0.181							
Bismuth-214		0.606		0.535	pCi/g	12		(0% - 100%)			
		Uncert: +/-0.0922		+/-0.0773							
		TPU: +/-0.0922		+/-0.0773							
Cesium-134	U	0.027	UI	0.00	pCi/g	72		(0% - 100%)			
		Uncert: +/-0.0188		+/-0.0445							
		TPU: +/-0.0188		+/-0.0445							
Cesium-137		3.50	U	0.0209	pCi/g	198*		(0%-20%)			
		Uncert: +/-0.317		+/-0.0312							
		TPU: +/-0.317		+/-0.0312							
Cobalt-60		0.089	U	0.00347	pCi/g	185		(0% - 100%)			
		Uncert: +/-0.0294		+/-0.0186							
		TPU: +/-0.0294		+/-0.0186							
Europium-152	U	-0.0197	U	-0.00689	pCi/g	96		(0% - 100%)			
		Uncert: +/-0.049		+/-0.0417							
		TPU: +/-0.049		+/-0.0417							
Europium-154	U	-0.0211	U	0.081	pCi/g	341		(0% - 100%)			
		Uncert: +/-0.0462		+/-0.109							
		TPU: +/-0.0462		+/-0.109							
Europium-155	U	0.0382	U	0.0429	pCi/g	12		(0% - 100%)			
		Uncert: +/-0.0686		+/-0.047							
		TPU: +/-0.0686		+/-0.047							
Lead-212		0.583		0.738	pCi/g	23*		(0% - 20%)			
		Uncert: +/-0.066		+/-0.0492							
		TPU: +/-0.066		+/-0.0492							
Lead-214		0.695		0.589	pCi/g	17		(0% - 20%)			
		Uncert: +/-0.107		+/-0.0747							
		TPU: +/-0.107		+/-0.0747							
Manganese-54	U	0.0169	U	0.0287	pCi/g	52		(0% - 100%)			
		Uncert: +/-0.0161		+/-0.0174							
		TPU: +/-0.0161		+/-0.0174							
Niobium-94	U	-0.00138	U	0.0073	pCi/g	293		(0% - 100%)			
		Uncert: +/-0.0123		+/-0.0179							
		TPU: +/-0.0123		+/-0.0179							
Potassium-40		9.02		12.2	pCi/g	30*		(0% - 20%)			
		Uncert: +/-0.922		+/-0.876							
		TPU: +/-0.922		+/-0.876							
Radium-226		0.606		0.535	pCi/g	12		(0% - 100%)			
		Uncert: +/-0.0922		+/-0.0773							
		TPU: +/-0.0922		+/-0.0773							
Silver-108m	U	-0.0159	U	0.0066	pCi/g	483		(0% - 100%)			
		Uncert: +/-0.0205		+/-0.014							
		TPU: +/-0.0205		+/-0.014							

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**QC Summary**

Workorder: 172875

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Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec									
Batch 574336									
Thallium-208		0.186	0.254	pCi/g	31		(0% - 100%)		
	Uncert:	+/-0.0436	+/-0.0405						
	TPU:	+/-0.0436	+/-0.0405						
QC1201196541 LCS									
Actinium-228			U -0.000391	pCi/g					10/03/06 07:26
	Uncert:		+/-0.575						
	TPU:		+/-0.575						
Americium-241	23.4		25.5	pCi/g		109	(75%-125%)		
	Uncert:		+/-2.52						
	TPU:		+/-2.52						
Bismuth-212			U -0.528	pCi/g					
	Uncert:		+/-0.989						
	TPU:		+/-0.989						
Bismuth-214			U 0.0129	pCi/g					
	Uncert:		+/-0.236						
	TPU:		+/-0.236						
Cesium-134			U -0.0169	pCi/g					
	Uncert:		+/-0.145						
	TPU:		+/-0.145						
Cesium-137	9.56		10.1	pCi/g		106	(75%-125%)		
	Uncert:		+/-0.768						
	TPU:		+/-0.768						
Cobalt-60	14.3		14.6	pCi/g		102	(75%-125%)		
	Uncert:		+/-1.01						
	TPU:		+/-1.01						
Europium-152			U -0.00861	pCi/g					
	Uncert:		+/-0.305						
	TPU:		+/-0.305						
Europium-154			U 0.382	pCi/g					
	Uncert:		+/-0.275						
	TPU:		+/-0.275						
Europium-155			U -0.0392	pCi/g					
	Uncert:		+/-0.332						
	TPU:		+/-0.332						
Lead-212			U -0.11	pCi/g					
	Uncert:		+/-0.163						
	TPU:		+/-0.163						
Lead-214			U 0.185	pCi/g					
	Uncert:		+/-0.234						
	TPU:		+/-0.234						
Manganese-54			U -0.00693	pCi/g					
	Uncert:		+/-0.128						
	TPU:		+/-0.128						
Niobium-94			U -0.0972	pCi/g					
	Uncert:		+/-0.118						
	TPU:		+/-0.118						
Potassium-40			U 0.676	pCi/g					
	Uncert:		+/-1.06						

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**QC Summary**

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Parmname	NOM	Sample Qual	QC	Units	RPD %	REC %	Range	Anlst	Date	Time
Rad Gamma Spec Batch 574336										
Radium-226	TPU:	U	+/-1.06 0.0129	pCi/g			(75%-125%)			
	Uncert:		+/-0.236							
Silver-108m	TPU:	U	+/-0.236 -0.0142	pCi/g						
	Uncert:		+/-0.119							
Thallium-208	TPU:	U	+/-0.119 0.100	pCi/g						
	Uncert:		+/-0.123							
QC1201196539 MB Actinium-228	TPU:	U	+/-0.123 0.0435	pCi/g					10/03/06	06:13
	Uncert:		+/-0.091							
Americium-241	TPU:	U	+/-0.091 -0.0204	pCi/g						
	Uncert:		+/-0.055							
Bismuth-212	TPU:	U	+/-0.055 -0.00499	pCi/g						
	Uncert:		+/-0.109							
Bismuth-214	TPU:	U	+/-0.109 0.0577	pCi/g						
	Uncert:		+/-0.031							
Cesium-134	TPU:	U	+/-0.031 0.00937	pCi/g						
	Uncert:		+/-0.0158							
Cesium-137	TPU:	U	+/-0.0158 -0.00291	pCi/g						
	Uncert:		+/-0.0137							
Cobalt-60	TPU:	U	+/-0.0137 0.000491	pCi/g						
	Uncert:		+/-0.0155							
Europium-152	TPU:	U	+/-0.0155 -0.00472	pCi/g						
	Uncert:		+/-0.0376							
Europium-154	TPU:	U	+/-0.0376 0.00671	pCi/g						
	Uncert:		+/-0.0299							
Europium-155	TPU:	U	+/-0.0299 0.0139	pCi/g						
	Uncert:		+/-0.0336							
Lead-212	TPU:	U	+/-0.0336 0.0167	pCi/g						
	Uncert:		+/-0.0287							
Lead-214	TPU:	U	+/-0.0287 0.0536	pCi/g						
	Uncert:		+/-0.0433							
Manganese-54	TPU:	U	+/-0.0433 -0.00217	pCi/g						

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Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Gamma Spec										
Batch 574336										
Niobium-94	Uncert:		+/-0.0116							
	TPU:		+/-0.0116							
		U	0.0106	pCi/g						
Potassium-40	Uncert:		+/-0.0136							
	TPU:		+/-0.0136							
		U	0.0767	pCi/g						
Radium-226	Uncert:		+/-0.436							
	TPU:		+/-0.436							
		U	0.0577	pCi/g						
Silver-108m	Uncert:		+/-0.031							
	TPU:		+/-0.031							
		U	0.0117	pCi/g						
Thallium-208	Uncert:		+/-0.0122							
	TPU:		+/-0.0122							
		U	0.0111	pCi/g						
	Uncert:		+/-0.0142							
	TPU:		+/-0.0142							
Batch 574338										
QC1201196546 172875001 DUP										
Actinium-228			0.439	pCi/g	64		(0% - 100%)	MJH1	10/12/06	13:31
Americium-241	Uncert:		+/-0.182							
	TPU:		+/-0.182							
		U	-0.0205	pCi/g	137		(0% - 100%)			
Bismuth-212	Uncert:		+/-0.107							
	TPU:		+/-0.107							
		U	0.430	pCi/g	23		(0% - 100%)			
Bismuth-214	Uncert:		+/-0.282							
	TPU:		+/-0.282							
		U	0.551	pCi/g	14		(0% - 100%)			
Cesium-134	Uncert:		+/-0.0772							
	TPU:		+/-0.0772							
		U	0.0212	pCi/g	28		(0% - 100%)			
Cesium-137	Uncert:		+/-0.024							
	TPU:		+/-0.024							
		U	0.0306	pCi/g	30		(0% - 100%)			
Cobalt-60	Uncert:		+/-0.0362							
	TPU:		+/-0.0362							
		U	0.00322	pCi/g	143		(0% - 100%)			
Europium-152	Uncert:		+/-0.0221							
	TPU:		+/-0.0221							
		U	-0.0167	pCi/g	99		(0% - 100%)			
Europium-154	Uncert:		+/-0.0527							
	TPU:		+/-0.0527							
		U	-0.0206	pCi/g	2540		(0% - 100%)			
Europium-155	Uncert:		+/-0.0573							
	TPU:		+/-0.0573							
		U	0.0578	pCi/g	1		(0% - 100%)			
	Uncert:		+/-0.0545							

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Gamma Spec											
Batch 574338											
Lead-212	TPU:	+/-0.0545		+/-0.0581							
		0.727		0.666	pCi/g	9		(0% - 20%)			
Lead-214	Uncert:	+/-0.0603		+/-0.0618							
	TPU:	+/-0.0603		+/-0.0618	pCi/g	2		(0% - 20%)			
Manganese-54	TPU:	+/-0.0923		+/-0.0817							
	U	0.022	U	-0.00234	pCi/g	248		(0% - 100%)			
Niobium-94	Uncert:	+/-0.0369		+/-0.0224							
	TPU:	+/-0.0369		+/-0.0224	pCi/g	197		(0% - 100%)			
Potassium-40	U	0.012	U	9.630E-05							
	TPU:	+/-0.0191		+/-0.0186	pCi/g	2		(0% - 20%)			
Radium-226	Uncert:	+/-0.0191		+/-0.0186							
	TPU:	+/-0.0191		+/-0.0186	pCi/g	14		(0% - 100%)			
Silver-108m	TPU:	12.0		11.8							
	U	0.00876	U	0.00663	pCi/g	28		(0% - 100%)			
Thallium-208	Uncert:	+/-0.921		+/-0.937							
	TPU:	+/-0.921		+/-0.937	pCi/g	7		(0% - 100%)			
Actinium-228	TPU:	0.551		0.480							
	U	0.00876	U	0.00663							10/12/06 13:31
Americium-241	Uncert:	+/-0.0772		+/-0.109							
	TPU:	+/-0.0772		+/-0.109	pCi/g	111		(75%-125%)			
Bismuth-212	U	0.00876	U	0.00663							
	TPU:	+/-0.0166		+/-0.0254							
Bismuth-214	Uncert:	+/-0.0166		+/-0.0254							
	TPU:	+/-0.0166		+/-0.0254	pCi/g	7		(0% - 100%)			
Cesium-134	U	0.211	U	0.225							
	TPU:	+/-0.0451		+/-0.0394							
Cesium-137	U	0.0546	U	0.0546	pCi/g						
	TPU:	+/-0.413		+/-0.413							
Cobalt-60	U	23.4	U	26.1	pCi/g						
	TPU:	+/-1.51		+/-1.51							
Europium-152	U	-0.00138	U	-0.00138	pCi/g						
	TPU:	+/-0.683		+/-0.683							
Europium-152	U	0.168	U	0.168	pCi/g						
	TPU:	+/-0.165		+/-0.165							
Europium-152	U	0.0431	U	0.0431	pCi/g						
	TPU:	+/-0.104		+/-0.104							
Europium-152	U	10.7	U	10.7	pCi/g						
	TPU:	+/-0.394		+/-0.394							
Europium-152	U	15.7	U	15.7	pCi/g						
	TPU:	+/-0.536		+/-0.536							
Europium-152	U	0.00889	U	0.00889	pCi/g						
	TPU:	+/-0.536		+/-0.536							

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Partname	NOM	Sample Qual	QC	Units	RPD %	REC %	Range	Anlst	Date	Time
Rad Gamma Spec Batch 574338										
	Uncert:		+/-0.210							
	TPU:		+/-0.210							
Europium-154		U	0.0265	pCi/g						
	Uncert:		+/-0.208							
	TPU:		+/-0.208							
Europium-155		U	-0.103	pCi/g						
	Uncert:		+/-0.255							
	TPU:		+/-0.255							
Lead-212		U	0.0523	pCi/g						
	Uncert:		+/-0.133							
	TPU:		+/-0.133							
Lead-214		U	0.0178	pCi/g						
	Uncert:		+/-0.164							
	TPU:		+/-0.164							
Manganese-54		U	-0.0545	pCi/g						
	Uncert:		+/-0.0953							
	TPU:		+/-0.0953							
Niobium-94		U	-0.00841	pCi/g						
	Uncert:		+/-0.0849							
	TPU:		+/-0.0849							
Potassium-40		U	-0.238	pCi/g						
	Uncert:		+/-0.763							
	TPU:		+/-0.763							
Radium-226		U	0.168	pCi/g			(75%-125%)			
	Uncert:		+/-0.165							
	TPU:		+/-0.165							
Silver-108m		U	0.0372	pCi/g						
	Uncert:		+/-0.0841							
	TPU:		+/-0.0841							
Thallium-208		U	0.0104	pCi/g						
	Uncert:		+/-0.0874							
	TPU:		+/-0.0874							
QC1201196545 MB										
Actinium-228		U	0.00146	pCi/g					10/12/06	13:30
	Uncert:		+/-0.0566							
	TPU:		+/-0.0566							
Americium-241		U	-0.0603	pCi/g						
	Uncert:		+/-0.0328							
	TPU:		+/-0.0328							
Bismuth-212		U	-0.0159	pCi/g						
	Uncert:		+/-0.0908							
	TPU:		+/-0.0908							
Bismuth-214		U	0.0195	pCi/g						
	Uncert:		+/-0.0237							
	TPU:		+/-0.0237							
Cesium-134		U	-0.00834	pCi/g						
	Uncert:		+/-0.0106							
	TPU:		+/-0.0106							

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**QC Summary**

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Parname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Rad Gamma Spec</b>										
Batch	574338									
Cesium-137		U	0.00238	pCi/g						
	Uncert:		+/-0.0107							
	TPU:		+/-0.0107							
Cobalt-60		U	0.00992	pCi/g						
	Uncert:		+/-0.0105							
	TPU:		+/-0.0105							
Europium-152		U	-0.00483	pCi/g						
	Uncert:		+/-0.0303							
	TPU:		+/-0.0303							
Europium-154		U	-0.0113	pCi/g						
	Uncert:		+/-0.0308							
	TPU:		+/-0.0308							
Europium-155		U	-0.00238	pCi/g						
	Uncert:		+/-0.0277							
	TPU:		+/-0.0277							
Lead-212		U	0.025	pCi/g						
	Uncert:		+/-0.0186							
	TPU:		+/-0.0186							
Lead-214		U	0.000345	pCi/g						
	Uncert:		+/-0.0225							
	TPU:		+/-0.0225							
Manganese-54		U	0.00744	pCi/g						
	Uncert:		+/-0.0114							
	TPU:		+/-0.0114							
Niobium-94		U	0.00162	pCi/g						
	Uncert:		+/-0.0116							
	TPU:		+/-0.0116							
Potassium-40		U	0.160	pCi/g						
	Uncert:		+/-0.129							
	TPU:		+/-0.129							
Radium-226		U	0.0195	pCi/g						
	Uncert:		+/-0.0237							
	TPU:		+/-0.0237							
Silyer-108m		U	-0.00271	pCi/g						
	Uncert:		+/-0.0105							
	TPU:		+/-0.0105							
Tballium-208		U	0.00702	pCi/g						
	Uncert:		+/-0.0114							
	TPU:		+/-0.0114							
<b>Rad Gas Flow</b>										
Batch	574221									
QC1201196232 172875011 DUP										
Strontium-90		U	-0.0251	U	0.0221	pCi/g	0	(0% - 100%) KSD1	10/04/06	23:26
	Uncert:		+/-0.0121		+/-0.0157					
	TPU:		+/-0.0121		+/-0.0157					
QC1201196234 LCS										
Strontium-90		1.74			1.83	pCi/g	105	(75%-125%)	10/04/06	23:26
	Uncert:				+/-0.121					

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## QC Summary

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Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Rad Gas Flow</b>										
Batch	574221									
QC1201196231	MB									
Strontium-90			U	pCi/g					10/04/06	23:26
		TPU:								
		Uncert:								
		TPU:								
QC1201196233	172875011	MS								
Strontium-90			U	pCi/g		87	(75%-125%)		10/04/06	23:26
		3.72								
		Uncert:								
		TPU:								
		TPU:								
<b>Rad Liquid Scintillation</b>										
Batch	574010									
QC1201195649	172879001	DUP								
Technetium-99			U	pCi/g	0		(0% - 100%)	KXR1	10/09/06	09:12
		Uncert:								
		TPU:								
QC1201195651	LCS									
Technetium-99			U	pCi/g		94	(75%-125%)		10/09/06	09:44
		13.0								
		Uncert:								
		TPU:								
QC1201195648	MB									
Technetium-99			U	pCi/g					10/09/06	08:55
		Uncert:								
		TPU:								
QC1201195650	172879001	MS								
Technetium-99			U	pCi/g		95	(75%-125%)		10/09/06	09:28
		13.0								
		Uncert:								
		TPU:								
Batch	574014									
QC1201195658	172875001	DUP								
Carbon-14			U	pCi/g	0		(0% - 100%)	AXD2	10/04/06	00:15
		Uncert:								
		TPU:								
QC1201195660	LCS									
Carbon-14			U	pCi/g		115	(75%-125%)		10/04/06	01:35
		6.74								
		Uncert:								
		TPU:								
QC1201195657	MB									
Carbon-14			U	pCi/g					10/03/06	23:12
		Uncert:								
		TPU:								
QC1201195659	172875001	MS								
Carbon-14			U	pCi/g		111	(75%-125%)		10/04/06	01:17
		7.18								
		Uncert:								
		TPU:								
Batch	574527									
QC1201196976	172875001	DUP								
Iron-55			U	pCi/g	0		(0% - 100%)	MXPI	10/04/06	21:11
		Uncert:								
		TPU:								

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Parname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Rad Liquid Scintillation</b>										
Batch	574527									
QC1201196978	LCS									
Iron-55	631		629	pCi/g		100	(75%-125%)		10/04/06	21:43
	Uncert:		+/-58.3							
	TPU:		+/-76.2							
QC1201196975	MB									
Iron-55		U	20.6	pCi/g					10/04/06	20:54
	Uncert:		+/-32.0							
	TPU:		+/-32.0							
QC1201196977	172875001	MS								
Iron-55	663	U	1.82	636	pCi/g	96	(75%-125%)		10/04/06	21:27
	Uncert:		+/-42.6	+/-59.5						
	TPU:		+/-42.6	+/-74.9						
Batch	574530									
QC1201196984	172879007	DUP								
Nickel-63		U	9.42	10.2	pCi/g	8	(0% - 100%)	MXP1	10/06/06	12:07
	Uncert:		+/-6.03	+/-6.13						
	TPU:		+/-6.04	+/-6.14						
QC1201196986	LCS									
Nickel-63	500		469	pCi/g		94	(75%-125%)		10/06/06	13:10
	Uncert:		+/-15.9							
	TPU:		+/-21.7							
QC1201196983	MB									
Nickel-63		U	6.26	6.26	pCi/g				10/06/06	11:35
	Uncert:		+/-7.08							
	TPU:		+/-7.08							
QC1201196985	172879007	MS								
Nickel-63	556	U	9.42	528	pCi/g	95	(75%-125%)		10/06/06	12:38
	Uncert:		+/-6.03	+/-17.4						
	TPU:		+/-6.04	+/-24.7						
Batch	579033									
QC1201206810	172879001	DUP								
Tritium		U	-3.35	0.248	pCi/g	0	(0% - 100%)	MXP1	10/16/06	19:40
	Uncert:		+/-6.99	+/-6.67						
	TPU:		+/-6.99	+/-6.67						
QC1201206812	LCS									
Tritium	67.6		72.3	pCi/g		107	(75%-125%)		10/16/06	20:12
	Uncert:		+/-12.3							
	TPU:		+/-12.3							
QC1201206809	MB									
Tritium		U	1.63	1.63	pCi/g				10/16/06	19:23
	Uncert:		+/-8.10							
	TPU:		+/-8.10							
QC1201206811	172879001	MS								
Tritium	58.5	U	-3.35	51.6	pCi/g	88	(75%-125%)		10/16/06	19:56
	Uncert:		+/-6.99	+/-10.2						
	TPU:		+/-6.99	+/-10.3						

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**QC Summary**

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Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
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Notes:

The Qualifiers in this report are defined as follows:

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B Target analyte was detected in the associated blank
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- H Analytical holding time was exceeded
- J Value is estimated
- N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
- h Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more.

\*\* Indicates analyte is a surrogate compound.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

# **General Narrative**

**General Narrative  
for  
Connecticut Yankee Atomic Power Co.  
Work Order: 173429  
SDG: MSR#06-1334**

**October 12, 2006**

**Laboratory Identification:**

General Engineering Laboratories, LLC  
2040 Savage Road  
Charleston, South Carolina 29407  
(843) 556-8171

**Summary**

**Sample receipt**

The samples arrived at General Engineering Laboratories, LLC, Charleston, South Carolina on October 06, 2006 and October 09, 2006 for analysis. Shipping container temperatures were checked, documented, and within specifications. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. The incorrect MSR was listed on COC 2006-00560, please see attached email for clarification.

**Sample Identification** The laboratory received the following samples:

<b><u>Laboratory Identification</u></b>	<b><u>Sample Description</u></b>
173429001	9520-0003-021F
173429002	9520-0003-022F
173429003	9520-0003-023F
173429004	9520-0003-024F
173429005	9520-0003-025F
173429006	9520-0003-026F
173429007	9520-0003-027F
173429008	9520-0003-028F
173429009	9520-0003-029F
173429010	9520-0003-030F
173429011	9520-0003-031F
173429012	9520-0003-035F
173429013	9520-0003-036F
173429014	9520-0003-037F
173429015	9520-0003-038F

**Items of Note**

There are no items to note.

**Case Narrative**

Sample analyses were conducted using methodology as outlined in General Engineering Laboratories (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

**Analytical Request**

Fifteen soil samples were analyzed for FSSGAM.

**Data Package**

The enclosed data package contains the following sections: General Narrative, Chain of Custody and Supporting Documentation, Data Review Qualifier Definitions, and data from the following fractions: Radiochemistry.

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.



Cheryl Jones  
Project Manager

**List of current GEL Certifications as of 12 October 2006**

<b>State</b>	<b>Certification</b>
Alaska	UST-062
Arizona	AZ0668
Arkansas	88-0651
CLIA	42D0904046
California	01151CA
Colorado	GenEngLabs
Connecticut	PH-0169
Dept. of Navy	NFESC 413
EPA	WG-15J
Florida/NELAP	E87156
Georgia	E87156 (FL/NELAP)
Hawaii	N/A
Idaho	N/A
Illinois	200029
Indiana	C-SC-01
Kansas	E-10332
Kentucky	90129
Louisiana	03046
Maryland	270
Massachusetts	M-SC012
Michigan	9903
Nevada	SC12
New Jersey	SC002
New Mexico	FL NELAP E87156
New York	11501
North Carolina	233
North Carolina Drinking W	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania	68-00485
South Carolina	10120001/10585001/10120002
Tennessee	02934
Texas	TX213-2006A
Texas NELAP	T104704235-06-TX
U.S. Dept. of Agriculture	S-52597
US Army Corps of Engineer	N/A
Utah	8037697376 GEL
Vermont	VT87156
Virginia	00151
Washington	C1641

**Chain of Custody  
and  
Supporting  
Documentation**





RE: Please confirm MSR designation

**Subject:** RE: Please confirm MSR designation  
**From:** "Arthur L. Hammond" <Hammond@CYAPCO.com>  
**Date:** Tue, 10 Oct 2006 15:22:42 -0400  
**To:** "Cheryl Jones" <cj@gel.com>  
**CC:** "John McCarthy" <McCarthy@CYAPCO.com>

Cheryl,

All information, per your e-mail, is correct.

Sample 9506-0-6C is for CHALL.

MSR#06 1334: includes COCs 2006-00595, 00560, 00561, and 00603  
MSR#06-1335: sample 9506-0-6C on COC 2006 00597

Thank you,

Arthur

----- Original Message -----

From: Cheryl Jones [mailto:cj@gel.com]  
Sent: Tuesday, October 10, 2006 3:07 PM  
To: Arthur L. Hammond  
Cc: John McCarthy; Amanda Rasco  
Subject: Please confirm MSR designation

Arthur,

Please confirm the following MSR designation for samples we received

10/5 and 10/9:

MSR#06-1334: 9520 series on COCs 2006-00595, 00560, 00561, 00603  
MSR#06-1335: only sample 9506-0-6C on COC 2006-00597

Please also confirm that sample 9506-0-6C is for CHALL, as the X was not  
on the COC under that request column.

Thanks,  
Cheryl

--

-----  
Cheryl A. Jones  
Project Manager/PM Team Leader  
General Engineering Laboratories, LLC  
2040 Savage Road  
Charleston, SC (USA) 29407  
Direct: 843.769.7388  
Main: 843.556.8171 x 4243  
Fax: 843.766.1178  
E mail: cj@gel.com  
Web: www.gel.com

The information contained in this message is confidential and is intended only for the use of the individual or firm of record. If you are not the intended recipient and have received this message in error, you are asked not to copy or distribute any of the pages that follow. Please notify the sender immediately by telephone or email if you have received this communication in error and destroy the contents that do not pertain to your business with The GEL Group, INC.

Figure I. Sample Check-in List

Date/Time Received: 9:45 10/6/06

SDG#: MSR#06-1334, MSR#06-1335

Work Order Number: 173429, 173432, 173434, 173435

Shipping Container ID: 2900 8695 2905 Chain of Custody # 2006 00603 / 2006-00597  
2006 00511  
2006 00535

1. Custody Seals on shipping container intact? Yes  No
2. Custody Seals dated and signed? Yes  No
3. Chain-of-Custody record present? Yes  No
4. Cooler temperature 19.0
5. Vermiculite/packing materials is: Wet  Dry
6. Number of samples in shipping container: 8
7. Sample holding times exceeded? Yes  No

8. Samples have:	
<input checked="" type="checkbox"/> tape	<input type="checkbox"/> hazard labels
<input type="checkbox"/> custody seals	<input type="checkbox"/> appropriate sample labels
9. Samples are:	
<input type="checkbox"/> in good condition	<input type="checkbox"/> leaking
<input checked="" type="checkbox"/> broken	<input type="checkbox"/> have air bubbles

10. Were any anomalies identified in sample receipt? Yes  No

11. Description of anomalies (include sample numbers): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Sample Custodian/Laboratory: C. Gause Date: 10/6/06

Telephoned to: \_\_\_\_\_ On \_\_\_\_\_ By \_\_\_\_\_

Figure 1. Sample Check-in List

Date/Time Received: 10/9/06 8:30  
SDG#: MSR# 06-1334  
MSR# 06-1335 CAJ 10/10/06  
Work Order Number: 173429  
Shipping Container ID: 798513947689 Chain of Custody #: 2006-00560

1. Custody Seals on shipping container intact? Yes  No
2. Custody Seals dated and signed? Yes  No
3. Chain-of-Custody record present? Yes  No
4. Cooler temperature 21°
5. Vermiculite/packing materials is: Wet  Dry  NA
6. Number of samples in shipping container: 11
7. Sample holding times exceeded? Yes  No

8. Samples have: <input checked="" type="checkbox"/> tape <input type="checkbox"/> hazard labels <input checked="" type="checkbox"/> custody seals <input checked="" type="checkbox"/> appropriate sample labels
9. Samples are: <input checked="" type="checkbox"/> in good condition <input type="checkbox"/> leaking <input type="checkbox"/> broken <input type="checkbox"/> have air bubbles

10. Were any anomalies identified in sample receipt? Yes  No
11. Description of anomalies (include sample numbers): \_\_\_\_\_

Sample Custodian/Laboratory: Joselyn P. Adams Date: 10/9/06  
Telephoned to: \_\_\_\_\_ On \_\_\_\_\_ By \_\_\_\_\_

# **Data Review Qualifier Definitions**

## Data Review Qualifier Definitions

Qualifier Explanation

- \* A quality control analyte recovery is outside of specified acceptance criteria
- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
- A The TIC is a suspected aldol-condensation product
- B Target analyte was detected in the associated blank
- B Metals-Either presence of analyte detected in the associated blank, or MDL/IDL < sample value < PQL
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- d 5-day BOD-The 2:1 depletion requirement was not met for this sample
- E Organics-Concentration of the target analyte exceeds the instrument calibration range
- E Metals-%difference of sample and SD is >10%. Sample concentration must meet flagging criteria
- H Analytical holding time was exceeded
- h Preparation or preservation holding time was exceeded
- J Value is estimated
- N Metals-The Matrix spike sample recovery is not within specified control limits
- N Organics-Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC). Quantitation is based on nearest internal standard response factor
- N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
- ND Analyte concentration is not detected above the reporting limit
- UI Gamma Spectroscopy-Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- Z Paint Filter Test-Particulates passed through the filter, however no free liquids were observed.

# RADIOLOGICAL ANALYSIS

**Radiochemistry Case Narrative  
Connecticut Yankee Atomic Power Co. (YANK)  
Work Order 173429**

**Method/Analysis Information**

**Product:** Gamma,Solid-FSS GAM & ALL FSS 226 Ingrowth Waived  
**Analytical Method:** EML HASL 300, 4.5.2.3  
**Prep Method:** Dry Soil Prep  
**Analytical Batch Number:** 576803  
**Prep Batch Number:** 576541

<b>Sample ID</b>	<b>Client ID</b>
173429001	9520-0003-021F
173429002	9520-0003-022F
173429003	9520-0003-023F
173429004	9520-0003-024F
173429005	9520-0003-025F
173429006	9520-0003-026F
173429007	9520-0003-027F
173429008	9520-0003-028F
173429009	9520-0003-029F
173429010	9520-0003-030F
173429011	9520-0003-031F
173429012	9520-0003-035F
173429013	9520-0003-036F
173429014	9520-0003-037F
173429015	9520-0003-038F
1201201884	Method Blank (MB)
1201201885	173429001(9520-0003-021F) Sample Duplicate (DUP)
1201201886	Laboratory Control Sample (LCS)

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-013 REV# 13.

**Calibration Information:**

**Calibration Information**

All initial and continuing calibration requirements have been met.

**Standards Information**

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

**Sample Geometry**

All counting sources were prepared in the same geometry as the calibration standards.

**Quality Control (QC) Information:**

**Blank Information**

The blank volume is representative of the sample volume in this batch.

**Designated QC**

The following sample was used for QC: 173429001 (9520-0003-021F).

**QC Information**

All of the QC samples met the required acceptance limits.

**Technical Information:**

**Holding Time**

All sample procedures for this sample set were performed within the required holding time.

**Preparation Information**

All preparation criteria have been met for these analyses.

**Sample Re-prep/Re-analysis**

Samples 1201201885 (9520-0003-021F) and 173429001 (9520-0003-021F) were recounted due to high relative percent difference/relative error ratio.

**Miscellaneous Information:**

**NCR Documentation**

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A nonconformance report (NCR) was not generated for this SDG.

**Additional Comments**

Additional comments were not required for this sample set.

**Qualifier information**



# SAMPLE DATA SUMMARY

**GENERAL ENGINEERING LABORATORIES, LLC**

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis Report  
for**

YANK001 Connecticut Yankee Atomic Power Co.

Client SDG: MSR#06-1334 GEL Work Order: 173429

**The Qualifiers in this report are defined as follows:**

- \* A quality control analyte recovery is outside of specified acceptance criteria
- \*\* Analyte is a surrogate compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- ND The analyte concentration is not detected above the detection limit.

The above sample is reported on a dry weight basis except where prohibited by the analytical procedure.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Cheryl Jones.



Reviewed by

# GENERAL ENGINEERING LABORATORIES, LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
 Address : 362 Injun Hollow Rd  
 East Hampton, Connecticut 06424  
 Contact: Mr. Jack McCarthy  
 Project: Soils PO# 002332

Report Date: October 12, 2006

Client Sample ID:	9520-0003-021F	Project:	YANK01204
Sample ID:	173429001	Client ID:	YANK001
Matrix:	TS	Vol. Recv.:	
Collect Date:	26-SEP-06		
Receive Date:	09-OCT-06		
Collector:	Client		
Moisture:	9.25%		

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid - FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.669	+/-0.167	0.0571	+/-0.167	0.126	pCi/g		MJH1	10/12/06	1015	576803	1
Americium-241	U	0.0158	+/-0.0993	0.0804	+/-0.0993	0.167	pCi/g						
Bismuth-212		0.636	+/-0.338	0.132	+/-0.338	0.287	pCi/g						
Bismuth-214		0.524	+/-0.103	0.0304	+/-0.103	0.0657	pCi/g						
Cesium-134	UI	0.00	+/-0.0401	0.0269	+/-0.0401	0.0572	pCi/g						
Cesium-137		0.0868	+/-0.0408	0.0203	+/-0.0408	0.0434	pCi/g						
Cobalt-60	U	0.0098	+/-0.0245	0.0221	+/-0.0245	0.0486	pCi/g						
Europium-152	U	0.016	+/-0.0604	0.0526	+/-0.0604	0.111	pCi/g						
Europium-154	U	0.0853	+/-0.0845	0.0639	+/-0.0845	0.140	pCi/g						
Europium-155	U	0.0625	+/-0.0553	0.0539	+/-0.0553	0.112	pCi/g						
Lead-212		0.665	+/-0.0653	0.0283	+/-0.0653	0.059	pCi/g						
Lead-214		0.609	+/-0.0981	0.0361	+/-0.0981	0.0762	pCi/g						
Manganese-54	U	0.0081	+/-0.0243	0.0213	+/-0.0243	0.0456	pCi/g						
Niobium-94	U	0.00664	+/-0.021	0.0186	+/-0.021	0.0397	pCi/g						
Potassium-40		11.2	+/-0.949	0.161	+/-0.949	0.367	pCi/g						
Radium-226		0.524	+/-0.103	0.0304	+/-0.103	0.0657	pCi/g						
Silver-108m	U	0.0278	+/-0.0208	0.0192	+/-0.0208	0.0406	pCi/g						
Thallium-208		0.204	+/-0.053	0.0176	+/-0.053	0.0378	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	TMB1	10/09/06	1211	576541

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

**Notes:**

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported

# GENERAL ENGINEERING LABORATORIES, LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 12, 2006

Client Sample ID: 9520-0003-021F  
Sample ID: 173429001

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
-----------	-----------	--------	-------------	----	-----	-----	-------	----	---------	------	------	-------	-----

- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy--Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

# GENERAL ENGINEERING LABORATORIES, LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 12, 2006

Client Sample ID: 9520-0003-022F  
Sample ID: 173429002  
Matrix: TS  
Collect Date: 26-SEP-06  
Receive Date: 09-OCT-06  
Collector: Client  
Moisture: 13.3%

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid - FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.686	+/-0.175	0.0602	+/-0.175	0.131	pCi/g		MJH1	10/10/06	1409	576803	1
Americium-241	U	0.0752	+/-0.139	0.0852	+/-0.139	0.176	pCi/g						
Bismuth-212	U	0.275	+/-0.317	0.150	+/-0.317	0.322	pCi/g						
Bismuth-214		0.540	+/-0.0998	0.0334	+/-0.0998	0.0713	pCi/g						
Cesium-134	UI	0.00	+/-0.0316	0.024	+/-0.0316	0.051	pCi/g						
Cesium-137		0.0752	+/-0.0338	0.020	+/-0.0338	0.0426	pCi/g						
Cobalt-60	U	-0.00209	+/-0.0246	0.020	+/-0.0246	0.0442	pCi/g						
Europium-152	U	-0.0237	+/-0.0607	0.050	+/-0.0607	0.105	pCi/g						
Europium-154	U	0.0393	+/-0.0827	0.0635	+/-0.0827	0.138	pCi/g						
Europium-155	U	-0.0528	+/-0.0639	0.0552	+/-0.0639	0.114	pCi/g						
Lead-212		0.752	+/-0.0629	0.0302	+/-0.0629	0.0627	pCi/g						
Lead-214		0.549	+/-0.0959	0.0408	+/-0.0959	0.0853	pCi/g						
Manganese-54	U	0.0209	+/-0.0216	0.020	+/-0.0216	0.0427	pCi/g						
Niobium-94	U	-0.00183	+/-0.022	0.0187	+/-0.022	0.0398	pCi/g						
Potassium-40		11.6	+/-0.943	0.149	+/-0.943	0.340	pCi/g						
Radium-226		0.540	+/-0.0998	0.0334	+/-0.0998	0.0713	pCi/g						
Silver-108m	U	-0.00164	+/-0.0207	0.0172	+/-0.0207	0.0363	pCi/g						
Thallium-208		0.233	+/-0.0423	0.0188	+/-0.0423	0.040	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	TMB1	10/09/06	1211	576541

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

**Notes:**

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported

# GENERAL ENGINEERING LABORATORIES, LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 12, 2006

Client Sample ID: 9520-0003-022F  
Sample ID: 173429002

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time Batch	Mtd
-----------	-----------	--------	-------------	----	-----	-----	-------	----	---------	------	------------	-----

- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy--Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

**GENERAL ENGINEERING LABORATORIES, LLC**  
2040 Savage Road Charleston SC 29407 – (843) 556-8171 – www.gel.com

**Certificate of Analysis**

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 12, 2006

Client Sample ID: 9520-0003-023F  
Sample ID: 173429003  
Matrix: TS  
Collect Date: 26-SEP-06  
Receive Date: 09-OCT-06  
Collector: Client  
Moisture: 4.43%

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid – FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.950	+/-0.235	0.093	+/-0.235	0.198	pCi/g		MJH1	10/10/06	1409	576803	1
Americium-241	U	-0.0193	+/-0.0372	0.0318	+/-0.0372	0.0656	pCi/g						
Bismuth-212		0.533	+/-0.331	0.200	+/-0.331	0.424	pCi/g						
Bismuth-214		0.618	+/-0.119	0.0476	+/-0.119	0.100	pCi/g						
Cesium-134	U	0.0678	+/-0.0427	0.0329	+/-0.0427	0.0692	pCi/g						
Cesium-137		0.194	+/-0.0686	0.0241	+/-0.0686	0.0511	pCi/g						
Cobalt-60	U	0.0118	+/-0.0335	0.0289	+/-0.0335	0.0623	pCi/g						
Europium-152	U	-0.00811	+/-0.0711	0.0595	+/-0.0711	0.124	pCi/g						
Europium-154	U	-0.00214	+/-0.0919	0.0769	+/-0.0919	0.166	pCi/g						
Europium-155	U	0.0958	+/-0.0892	0.0503	+/-0.0892	0.104	pCi/g						
Lead-212		0.784	+/-0.0871	0.0466	+/-0.0871	0.0955	pCi/g						
Lead-214		0.753	+/-0.110	0.0396	+/-0.110	0.0832	pCi/g						
Manganese-54	U	0.00839	+/-0.048	0.0257	+/-0.048	0.0545	pCi/g						
Niobium-94	U	0.012	+/-0.0263	0.023	+/-0.0263	0.0486	pCi/g						
Potassium-40		13.1	+/-1.03	0.168	+/-1.03	0.381	pCi/g						
Radium-226		0.618	+/-0.119	0.0476	+/-0.119	0.100	pCi/g						
Silver-108m	U	0.000128	+/-0.0231	0.0205	+/-0.0231	0.0431	pCi/g						
Thallium-208		0.312	+/-0.0526	0.0228	+/-0.0526	0.0482	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	TMB1	10/09/06	1211	576541

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

Notes:

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported

**GENERAL ENGINEERING LABORATORIES, LLC**  
 2040 Savage Road Charleston SC 29407 – (843) 556-8171 – www.gel.com

**Certificate of Analysis**

Company : Connecticut Yankee Atomic Power  
 Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
 Contact: Mr. Jack McCarthy  
 Project: Soils PO# 002332

Report Date: October 12, 2006

Client Sample ID: 9520-0003-023F  
 Sample ID: 173429003

Project: YANK01204  
 Client ID: YANK001  
 Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
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- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy--Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

# GENERAL ENGINEERING LABORATORIES, LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 12, 2006

Client Sample ID: 9520-0003-024F  
Sample ID: 173429004  
Matrix: TS  
Collect Date: 26-SEP-06  
Receive Date: 09-OCT-06  
Collector: Client  
Moisture: 10.5%

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid - FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.749	+/-0.186	0.0629	+/-0.186	0.135	pCi/g		MJHI	10/10/06	1410	576803	1
Americium-241	U	-0.002	+/-0.0554	0.0477	+/-0.0554	0.0991	pCi/g						
Bismuth-212		0.413	+/-0.237	0.109	+/-0.237	0.236	pCi/g						
Bismuth-214		0.422	+/-0.0859	0.0362	+/-0.0859	0.0763	pCi/g						
Cesium-134	U	0.0255	+/-0.0217	0.0202	+/-0.0217	0.0431	pCi/g						
Cesium-137		0.0393	+/-0.0359	0.0169	+/-0.0359	0.0361	pCi/g						
Cobalt-60	U	0.00672	+/-0.0174	0.0157	+/-0.0174	0.0349	pCi/g						
Europium-152	U	-0.0479	+/-0.0541	0.0375	+/-0.0541	0.0794	pCi/g						
Europium-154	U	-0.0375	+/-0.0602	0.0479	+/-0.0602	0.106	pCi/g						
Europium-155	U	0.0474	+/-0.0486	0.0427	+/-0.0486	0.0886	pCi/g						
Lead-212		0.655	+/-0.0743	0.0205	+/-0.0743	0.0431	pCi/g						
Lead-214		0.502	+/-0.0823	0.0286	+/-0.0823	0.0605	pCi/g						
Manganese-54	U	-0.00789	+/-0.0172	0.0138	+/-0.0172	0.0301	pCi/g						
Niobium-94	U	-0.00708	+/-0.0176	0.0146	+/-0.0176	0.0314	pCi/g						
Potassium-40		12.2	+/-1.16	0.155	+/-1.16	0.346	pCi/g						
Radium-226		0.422	+/-0.0859	0.0362	+/-0.0859	0.0763	pCi/g						
Silver-108m	U	0.00837	+/-0.015	0.0131	+/-0.015	0.028	pCi/g						
Thallium-208		0.185	+/-0.0363	0.0168	+/-0.0363	0.0357	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	TMB1	10/09/06	1211	576541

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

**Notes:**

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported

# GENERAL ENGINEERING LABORATORIES, LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 12, 2006

Client Sample ID: 9520-0003-024F  
Sample ID: 173429004

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
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- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy--Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

**GENERAL ENGINEERING LABORATORIES, LLC**  
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**Certificate of Analysis**

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 12, 2006

Client Sample ID: 9520-0003-025F  
Sample ID: 173429005  
Matrix: TS  
Collect Date: 26-SEP-06  
Receive Date: 09-OCT-06  
Collector: Client  
Moisture: 8.44%

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid - FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.706	+/-0.223	0.0754	+/-0.223	0.166	pCi/g		MJH1	10/10/06	1410	576803	1
Americium-241	U	0.0159	+/-0.0368	0.0341	+/-0.0368	0.0703	pCi/g						
Bismuth-212		0.523	+/-0.287	0.193	+/-0.287	0.413	pCi/g						
Bismuth-214		0.606	+/-0.114	0.041	+/-0.114	0.0882	pCi/g						
Cesium-134	U	0.0408	+/-0.0408	0.0331	+/-0.0408	0.0704	pCi/g						
Cesium-137		0.0568	+/-0.0427	0.0248	+/-0.0427	0.0531	pCi/g						
Cobalt-60	U	-0.0014	+/-0.0307	0.0256	+/-0.0307	0.0569	pCi/g						
Europium-152	U	0.0749	+/-0.066	0.0622	+/-0.066	0.131	pCi/g						
Europium-154	U	0.0757	+/-0.0972	0.0888	+/-0.0972	0.193	pCi/g						
Europium-155	U	0.0796	+/-0.0578	0.0542	+/-0.0578	0.112	pCi/g						
Lead-212		0.750	+/-0.0696	0.0321	+/-0.0696	0.0669	pCi/g						
Lead-214		0.539	+/-0.102	0.0398	+/-0.102	0.0841	pCi/g						
Manganese-54	U	0.00981	+/-0.0321	0.0273	+/-0.0321	0.0585	pCi/g						
Niobium-94	U	-0.0335	+/-0.0284	0.0213	+/-0.0284	0.0458	pCi/g						
Potassium-40		13.3	+/-1.12	0.206	+/-1.12	0.469	pCi/g						
Radium-226		0.606	+/-0.114	0.041	+/-0.114	0.0882	pCi/g						
Silver-108m	U	0.00702	+/-0.0236	0.021	+/-0.0236	0.0445	pCi/g						
Thallium-208		0.288	+/-0.0638	0.0219	+/-0.0638	0.047	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	TMB1	10/09/06	1211	576541

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

Notes:

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported

# GENERAL ENGINEERING LABORATORIES, LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 12, 2006

Client Sample ID: 9520-0003-025F  
Sample ID: 173429005

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
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- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy---Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 12, 2006

Client Sample ID: 9520-0003-026F  
Sample ID: 173429006  
Matrix: TS  
Collect Date: 26-SEP-06  
Receive Date: 09-OCT-06  
Collector: Client  
Moisture: 10.9%

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma,Solid-FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.764	+/-0.135	0.0458	+/-0.135	0.0985	pCi/g		MJH1	10/10/06	1411	576803	1
Americium-241	U	-0.0873	+/-0.105	0.0843	+/-0.105	0.175	pCi/g						
Bismuth-212		0.633	+/-0.243	0.108	+/-0.243	0.230	pCi/g						
Bismuth-214		0.507	+/-0.0821	0.0292	+/-0.0821	0.0615	pCi/g						
Cesium-134	U	0.033	+/-0.0219	0.0188	+/-0.0219	0.0396	pCi/g						
Cesium-137		0.0654	+/-0.0289	0.014	+/-0.0289	0.0298	pCi/g						
Cobalt-60	U	-0.008	+/-0.0178	0.0145	+/-0.0178	0.0317	pCi/g						
Europium-152	U	-0.0195	+/-0.0439	0.0377	+/-0.0439	0.079	pCi/g						
Europium-154	U	-0.01	+/-0.0605	0.0438	+/-0.0605	0.0947	pCi/g						
Europium-155	U	0.0341	+/-0.0556	0.051	+/-0.0556	0.106	pCi/g						
Lead-212		0.735	+/-0.0563	0.0256	+/-0.0563	0.053	pCi/g						
Lead-214		0.523	+/-0.063	0.0266	+/-0.063	0.0557	pCi/g						
Manganese-54	U	0.0185	+/-0.0178	0.0163	+/-0.0178	0.0344	pCi/g						
Niobium-94	U	0.00577	+/-0.0165	0.0147	+/-0.0165	0.031	pCi/g						
Potassium-40		13.5	+/-0.789	0.128	+/-0.789	0.282	pCi/g						
Radium-226		0.507	+/-0.0821	0.0292	+/-0.0821	0.0615	pCi/g						
Silver-108m	U	-0.0156	+/-0.0155	0.0125	+/-0.0155	0.0264	pCi/g						
Thallium-208		0.247	+/-0.0363	0.0147	+/-0.0363	0.031	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	TMB1	10/09/06	1211	576541

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

**Notes:**

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported

**GENERAL ENGINEERING LABORATORIES, LLC**  
 2040 Savage Road Charleston SC 29407 – (843) 556-8171 – www.gel.com

**Certificate of Analysis**

Company : Connecticut Yankee Atomic Power  
 Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
 Contact: Mr. Jack McCarthy  
 Project: Soils PO# 002332

Report Date: October 12, 2006

Client Sample ID: 9520-0003-026F  
 Sample ID: 173429006

Project: YANK01204  
 Client ID: YANK001  
 Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time Batch	Mtd
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- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy--Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

# GENERAL ENGINEERING LABORATORIES, LLC

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 12, 2006

Client Sample ID: 9520-0003-027F  
Sample ID: 173429007  
Matrix: TS  
Collect Date: 26-SEP-06  
Receive Date: 09-OCT-06  
Collector: Client  
Moisture: 12.4%

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid-FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.732	+/-0.132	0.0418	+/-0.132	0.0905	pCi/g		MJH1	10/10/06	1411	576803	1
Americium-241	U	-0.00442	+/-0.0642	0.0571	+/-0.0642	0.118	pCi/g						
Bismuth-212		0.476	+/-0.237	0.111	+/-0.237	0.235	pCi/g						
Bismuth-214		0.502	+/-0.0823	0.028	+/-0.0823	0.0589	pCi/g						
Cesium-134	UI	0.00	+/-0.026	0.0185	+/-0.026	0.039	pCi/g						
Cesium-137		0.0772	+/-0.0253	0.0152	+/-0.0253	0.0321	pCi/g						
Cobalt-60	U	0.00256	+/-0.0168	0.014	+/-0.0168	0.0306	pCi/g						
Europium-152	U	-0.0364	+/-0.0448	0.0372	+/-0.0448	0.0779	pCi/g						
Europium-154	U	0.035	+/-0.0576	0.0501	+/-0.0576	0.107	pCi/g						
Europium-155	U	0.00602	+/-0.0573	0.0499	+/-0.0573	0.103	pCi/g						
Lead-212		0.748	+/-0.0555	0.0227	+/-0.0555	0.047	pCi/g						
Lead-214		0.595	+/-0.0701	0.0273	+/-0.0701	0.0571	pCi/g						
Manganese-54	U	-0.0121	+/-0.0183	0.015	+/-0.0183	0.0317	pCi/g						
Niobium-94	U	0.00366	+/-0.0163	0.0144	+/-0.0163	0.0303	pCi/g						
Potassium-40		13.5	+/-0.799	0.103	+/-0.799	0.231	pCi/g						
Radium-226		0.502	+/-0.0823	0.028	+/-0.0823	0.0589	pCi/g						
Silver-108m	U	0.000168	+/-0.0154	0.0131	+/-0.0154	0.0276	pCi/g						
Thallium-208		0.252	+/-0.0377	0.0139	+/-0.0377	0.0293	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	TMB1	10/09/06	1211	576541

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

**Notes:**

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 12, 2006

Client Sample ID: 9520-0003-027F  
Sample ID: 173429007

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
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- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy--Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL.
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

# GENERAL ENGINEERING LABORATORIES, LLC

2040 Savage Road Charleston SC 29407 – (843) 556-8171 – www.gel.com

## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 12, 2006

Client Sample ID: 9520-0003-028F  
Sample ID: 173429008  
Matrix: TS  
Collect Date: 26-SEP-06  
Receive Date: 09-OCT-06  
Collector: Client  
Moisture: 6.72%

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid – FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.864	+/-0.178	0.0627	+/-0.178	0.125	pCi/g		MJH1	10/10/06	1426	576803	1
Americium-241	U	-0.0233	+/-0.0765	0.0585	+/-0.0765	0.117	pCi/g						
Bismuth-212		0.445	+/-0.333	0.148	+/-0.333	0.295	pCi/g						
Bismuth-214		0.436	+/-0.0953	0.033	+/-0.0953	0.066	pCi/g						
Cesium-134	U	0.0341	+/-0.0377	0.0239	+/-0.0377	0.0477	pCi/g						
Cesium-137		0.0596	+/-0.0297	0.0151	+/-0.0297	0.0302	pCi/g						
Cobalt-60	U	0.00503	+/-0.0226	0.0193	+/-0.0226	0.0385	pCi/g						
Europium-152	U	-0.0127	+/-0.0635	0.0492	+/-0.0635	0.0984	pCi/g						
Europium-154	U	-0.0266	+/-0.0666	0.0529	+/-0.0666	0.106	pCi/g						
Europium-155	U	0.0468	+/-0.0594	0.053	+/-0.0594	0.106	pCi/g						
Lead-212		0.703	+/-0.0826	0.0281	+/-0.0826	0.0562	pCi/g						
Lead-214		0.584	+/-0.0986	0.0308	+/-0.0986	0.0616	pCi/g						
Manganese-54	U	0.0109	+/-0.0212	0.0189	+/-0.0212	0.0379	pCi/g						
Niobium-94	U	-0.00114	+/-0.0202	0.0175	+/-0.0202	0.035	pCi/g						
Potassium-40		12.4	+/-1.14	0.129	+/-1.14	0.258	pCi/g						
Radium-226		0.436	+/-0.0953	0.033	+/-0.0953	0.066	pCi/g						
Silver-108m	U	0.00362	+/-0.0194	0.0168	+/-0.0194	0.0336	pCi/g						
Thallium-208		0.205	+/-0.0495	0.0179	+/-0.0495	0.0357	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	TMB1	10/09/06	1211	576541

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

**Notes:**

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported

**GENERAL ENGINEERING LABORATORIES, LLC**  
 2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis**

Company : Connecticut Yankee Atomic Power  
 Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
 Contact: Mr. Jack McCarthy  
 Project: Soils PO# 002332

Report Date: October 12, 2006

Client Sample ID: 9520-0003-028F  
 Sample ID: 173429008

Project: YANK01204  
 Client ID: YANK001  
 Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
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- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy---Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

# GENERAL ENGINEERING LABORATORIES, LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 12, 2006

Client Sample ID: 9520-0003-029F  
Sample ID: 173429009  
Matrix: TS  
Collect Date: 26-SEP-06  
Receive Date: 09-OCT-06  
Collector: Client  
Moisture: 12%

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid-FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.689	+/-0.205	0.0745	+/-0.205	0.149	pCi/g		MJH1	10/10/06	1426	576803	1
Americium-241	U	0.00775	+/-0.0963	0.0742	+/-0.0963	0.148	pCi/g						
Bismuth-212	UI	0.00	+/-0.395	0.157	+/-0.395	0.313	pCi/g						
Bismuth-214	UI	0.00	+/-0.110	0.0803	+/-0.110	0.161	pCi/g						
Cesium-134	U	0.0388	+/-0.0318	0.0286	+/-0.0318	0.0571	pCi/g						
Cesium-137		0.0804	+/-0.0483	0.0184	+/-0.0483	0.0367	pCi/g						
Cobalt-60	U	0.0103	+/-0.0264	0.023	+/-0.0264	0.046	pCi/g						
Europium-152	U	0.0389	+/-0.101	0.0542	+/-0.101	0.108	pCi/g						
Europium-154	U	0.0532	+/-0.0833	0.0661	+/-0.0833	0.132	pCi/g						
Europium-155	U	0.0361	+/-0.0685	0.060	+/-0.0685	0.120	pCi/g						
Lead-212		0.701	+/-0.0886	0.0299	+/-0.0886	0.0597	pCi/g						
Lead-214		0.633	+/-0.110	0.0373	+/-0.110	0.0745	pCi/g						
Manganese-54	U	0.00795	+/-0.026	0.020	+/-0.026	0.040	pCi/g						
Niobium-94	U	-0.0143	+/-0.0431	0.0189	+/-0.0431	0.0377	pCi/g						
Potassium-40		11.8	+/-1.12	0.140	+/-1.12	0.280	pCi/g						
Radium-226		0.457	+/-0.110	0.0383	+/-0.110	0.0766	pCi/g						
Silver-108m	U	-0.00296	+/-0.021	0.0177	+/-0.021	0.0354	pCi/g						
Thallium-208		0.261	+/-0.0556	0.0204	+/-0.0556	0.0408	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	TMB1	10/09/06	1211	576541

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

**Notes:**

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported

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**Certificate of Analysis**

Company : Connecticut Yankee Atomic Power  
 Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
 Contact: Mr. Jack McCarthy  
 Project: Soils PO# 002332

Report Date: October 12, 2006

Client Sample ID: 9520-0003-029F  
 Sample ID: 173429009

Project: YANK01204  
 Client ID: YANK001  
 Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
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- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy—Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 12, 2006

Client Sample ID: 9520-0003-030F  
Sample ID: 173429010  
Matrix: TS  
Collect Date: 26-SEP-06  
Receive Date: 09-OCT-06  
Collector: Client  
Moisture: 8.37%

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid - FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.906	+/-0.239	0.0933	+/-0.239	0.187	pCi/g		MJH1	10/10/06	1427	576803	1
Americium-241	U	0.067	+/-0.0425	0.0346	+/-0.0425	0.0692	pCi/g						
Bismuth-212	U	0.386	+/-0.254	0.242	+/-0.254	0.484	pCi/g						
Bismuth-214		0.586	+/-0.127	0.0531	+/-0.127	0.106	pCi/g						
Cesium-134	U	-0.0184	+/-0.0378	0.0309	+/-0.0378	0.0618	pCi/g						
Cesium-137	U	0.0458	+/-0.0342	0.0322	+/-0.0342	0.0644	pCi/g						
Cobalt-60	U	0.00348	+/-0.0376	0.0271	+/-0.0376	0.0543	pCi/g						
Europium-152	U	-0.00247	+/-0.105	0.0609	+/-0.105	0.122	pCi/g						
Europium-154	U	0.0564	+/-0.112	0.0986	+/-0.112	0.197	pCi/g						
Europium-155	UI	0.00	+/-0.0802	0.0538	+/-0.0802	0.108	pCi/g						
Lead-212		0.667	+/-0.0919	0.0321	+/-0.0919	0.0642	pCi/g						
Lead-214		0.667	+/-0.119	0.0439	+/-0.119	0.0878	pCi/g						
Manganese-54	U	0.00647	+/-0.0324	0.0282	+/-0.0324	0.0563	pCi/g						
Niobium-94	U	0.00262	+/-0.0295	0.0256	+/-0.0295	0.0512	pCi/g						
Potassium-40		11.5	+/-1.35	0.248	+/-1.35	0.495	pCi/g						
Radium-226		0.586	+/-0.127	0.0531	+/-0.127	0.106	pCi/g						
Silver-108m	U	0.00473	+/-0.0235	0.0202	+/-0.0235	0.0404	pCi/g						
Thallium-208		0.271	+/-0.0574	0.0264	+/-0.0574	0.0528	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	TMB1	10/09/06	1211	576541

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

Notes:

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 12, 2006

Client Sample ID: 9520-0003-030F  
Sample ID: 173429010

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
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- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy—Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

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**Certificate of Analysis**

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 12, 2006

Client Sample ID:	9520-0003-031F	Project:	YANK01204
Sample ID:	173429011	Client ID:	YANK001
Matrix:	TS	Vol. Recv.:	
Collect Date:	26-SEP-06		
Receive Date:	09-OCT-06		
Collector:	Client		
Moisture:	10.4%		

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid-FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.771	+/-0.161	0.0437	+/-0.161	0.0922	pCi/g		MJH1	10/10/06	1413	576803	1
Americium-241	U	-0.00729	+/-0.0882	0.0759	+/-0.0882	0.155	pCi/g						
Bismuth-212		0.434	+/-0.195	0.103	+/-0.195	0.216	pCi/g						
Bismuth-214		0.477	+/-0.078	0.0239	+/-0.078	0.0499	pCi/g						
Cesium-134	UI	0.00	+/-0.0263	0.0166	+/-0.0263	0.0347	pCi/g						
Cesium-137		0.0461	+/-0.0276	0.0137	+/-0.0276	0.0286	pCi/g						
Cobalt-60	U	-0.00186	+/-0.0157	0.0133	+/-0.0157	0.0285	pCi/g						
Europium-152	U	-0.0437	+/-0.0398	0.0322	+/-0.0398	0.0666	pCi/g						
Europium-154	U	-0.00674	+/-0.0498	0.0422	+/-0.0498	0.0895	pCi/g						
Europium-155	UI	0.00	+/-0.0609	0.0356	+/-0.0609	0.0729	pCi/g						
Lead-212		0.764	+/-0.0761	0.0191	+/-0.0761	0.0393	pCi/g						
Lead-214		0.539	+/-0.0777	0.0241	+/-0.0777	0.0498	pCi/g						
Manganese-54	U	0.00846	+/-0.0159	0.0138	+/-0.0159	0.0289	pCi/g						
Niobium-94	U	0.00588	+/-0.0143	0.0125	+/-0.0143	0.026	pCi/g						
Potassium-40		12.4	+/-1.06	0.110	+/-1.06	0.239	pCi/g						
Radium-226		0.477	+/-0.078	0.0239	+/-0.078	0.0499	pCi/g						
Silver-108m	U	-0.000156	+/-0.0134	0.0112	+/-0.0134	0.0232	pCi/g						
Thallium-208		0.217	+/-0.0382	0.0122	+/-0.0382	0.0254	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	TMB1	10/09/06	1211	576541

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

**Notes:**

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 12, 2006

Client Sample ID: 9520-0003-031F  
Sample ID: 173429011

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
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- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy—Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

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**Certificate of Analysis**

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 12, 2006

Client Sample ID: 9520-0003-035F  
Sample ID: 173429012  
Matrix: TS  
Collect Date: 29-SEP-06  
Receive Date: 06-OCT-06  
Collector: Client  
Moisture: 6.38%

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid-FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.671	+/-0.197	0.0615	+/-0.197	0.133	pCi/g		MJH1	10/10/06	1413	576803	1
Americium-241	U	-0.129	+/-0.0787	0.0646	+/-0.0787	0.133	pCi/g						
Bismuth-212		0.320	+/-0.383	0.148	+/-0.383	0.317	pCi/g						
Bismuth-214		0.512	+/-0.0883	0.0341	+/-0.0883	0.0725	pCi/g						
Cesium-134	U	0.033	+/-0.0329	0.0237	+/-0.0329	0.0503	pCi/g						
Cesium-137		0.0519	+/-0.034	0.0178	+/-0.034	0.0382	pCi/g						
Cobalt-60	U	0.0269	+/-0.0229	0.0219	+/-0.0229	0.0478	pCi/g						
Europium-152	U	-0.0438	+/-0.0676	0.0483	+/-0.0676	0.102	pCi/g						
Europium-154	U	-0.0156	+/-0.0718	0.0594	+/-0.0718	0.130	pCi/g						
Europium-155	U	-0.0284	+/-0.0608	0.0515	+/-0.0608	0.106	pCi/g						
Lead-212		0.677	+/-0.0782	0.0279	+/-0.0782	0.0581	pCi/g						
Lead-214		0.584	+/-0.108	0.0347	+/-0.108	0.0729	pCi/g						
Manganese-54	U	0.0157	+/-0.0269	0.0206	+/-0.0269	0.0439	pCi/g						
Niobium-94	U	-0.00582	+/-0.0216	0.0177	+/-0.0216	0.0377	pCi/g						
Potassium-40		11.8	+/-1.18	0.179	+/-1.18	0.397	pCi/g						
Radium-226		0.512	+/-0.0883	0.0341	+/-0.0883	0.0725	pCi/g						
Silver-108m	U	-0.00466	+/-0.020	0.0169	+/-0.020	0.0357	pCi/g						
Thallium-208		0.212	+/-0.0467	0.0175	+/-0.0467	0.0373	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	10/08/06	1251	576541

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

Notes:

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 12, 2006

Client Sample ID: 9520-0003-035F  
Sample ID: 173429012

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
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- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy--Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 12, 2006

Client Sample ID: 9520-0003-036F  
Sample ID: 173429013  
Matrix: TS  
Collect Date: 29-SEP-06  
Receive Date: 06-OCT-06  
Collector: Client  
Moisture: 8.02%

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid – FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.678	+/-0.205	0.0563	+/-0.205	0.125	pCi/g		MJH1	10/10/06	1740	576803	1
Americium-241	U	0.00563	+/-0.124	0.0806	+/-0.124	0.167	pCi/g						
Bismuth-212		0.762	+/-0.314	0.133	+/-0.314	0.291	pCi/g						
Bismuth-214		0.621	+/-0.0932	0.0298	+/-0.0932	0.0648	pCi/g						
Cesium-134	UI	0.00	+/-0.0281	0.0285	+/-0.0281	0.0606	pCi/g						
Cesium-137	U	0.0499	+/-0.035	0.0237	+/-0.035	0.0505	pCi/g						
Cobalt-60	U	0.0225	+/-0.0241	0.0214	+/-0.0241	0.0477	pCi/g						
Europium-152	U	-0.0084	+/-0.0585	0.0478	+/-0.0585	0.101	pCi/g						
Europium-154	U	0.0111	+/-0.0645	0.0564	+/-0.0645	0.126	pCi/g						
Europium-155	U	0.0121	+/-0.059	0.0525	+/-0.059	0.109	pCi/g						
Lead-212		0.741	+/-0.0681	0.0311	+/-0.0681	0.0649	pCi/g						
Lead-214		0.697	+/-0.0948	0.0341	+/-0.0948	0.0724	pCi/g						
Manganese-54	U	0.0234	+/-0.0302	0.0173	+/-0.0302	0.0379	pCi/g						
Niobium-94	U	0.000568	+/-0.0208	0.0177	+/-0.0208	0.0381	pCi/g						
Potassium-40		12.8	+/-1.04	0.147	+/-1.04	0.345	pCi/g						
Radium-226		0.621	+/-0.0932	0.0298	+/-0.0932	0.0648	pCi/g						
Silver-108m	U	-0.00405	+/-0.019	0.0164	+/-0.019	0.035	pCi/g						
Thallium-208		0.243	+/-0.0539	0.0184	+/-0.0539	0.0395	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	10/08/06	1251	576541

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

Notes:

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported

# GENERAL ENGINEERING LABORATORIES, LLC

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## Certificate of Analysis

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East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 12, 2006

Client Sample ID: 9520-0003-036F  
Sample ID: 173429013

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
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- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy—Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

# GENERAL ENGINEERING LABORATORIES, LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 12, 2006

Client Sample ID: 9520-0003-037F  
Sample ID: 173429014  
Matrix: TS  
Collect Date: 29-SEP-06  
Receive Date: 06-OCT-06  
Collector: Client  
Moisture: 10.1%

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid-FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.872	+/-0.210	0.0673	+/-0.210	0.148	pCi/g		MJH1	10/10/06	1740	576803	1
Americium-241	U	-0.08	+/-0.125	0.0919	+/-0.125	0.192	pCi/g						
Bismuth-212		0.496	+/-0.327	0.153	+/-0.327	0.331	pCi/g						
Bismuth-214		0.646	+/-0.101	0.0311	+/-0.101	0.0675	pCi/g						
Cesium-134	U	0.0427	+/-0.0431	0.0269	+/-0.0431	0.0575	pCi/g						
Cesium-137		0.125	+/-0.0497	0.021	+/-0.0497	0.0451	pCi/g						
Cobalt-60	U	0.0369	+/-0.0315	0.0227	+/-0.0315	0.0504	pCi/g						
Europium-152	U	-0.0142	+/-0.063	0.0512	+/-0.063	0.108	pCi/g						
Europium-154	U	0.048	+/-0.079	0.0711	+/-0.079	0.156	pCi/g						
Europium-155	U	0.0285	+/-0.062	0.0566	+/-0.062	0.118	pCi/g						
Lead-212		0.726	+/-0.0686	0.0278	+/-0.0686	0.0583	pCi/g						
Lead-214		0.621	+/-0.0991	0.0371	+/-0.0991	0.0785	pCi/g						
Manganese-54	U	-0.00503	+/-0.0232	0.0187	+/-0.0232	0.0407	pCi/g						
Niobium-94	U	-0.000164	+/-0.0222	0.0186	+/-0.0222	0.0401	pCi/g						
Potassium-40		11.4	+/-0.986	0.205	+/-0.986	0.461	pCi/g						
Radium-226		0.646	+/-0.101	0.0311	+/-0.101	0.0675	pCi/g						
Silver-108m	U	0.000684	+/-0.0194	0.017	+/-0.0194	0.0363	pCi/g						
Thallium-208		0.191	+/-0.0524	0.0183	+/-0.0524	0.0394	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	10/08/06	1251	576541

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

Notes:

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported

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**Certificate of Analysis**

Company : Connecticut Yankee Atomic Power  
 Address : 362 Injun Hollow Rd  
 East Hampton, Connecticut 06424  
 Contact: Mr. Jack McCarthy  
 Project: Soils PO# 002332

Report Date: October 12, 2006

Client Sample ID: 9520-0003-037F  
 Sample ID: 173429014

Project: YANK01204  
 Client ID: YANK001  
 Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
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- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
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  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
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  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy—Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

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**Certificate of Analysis**

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 12, 2006

Client Sample ID: 9520-0003-038F  
Sample ID: 173429015  
Matrix: TS  
Collect Date: 29-SEP-06  
Receive Date: 06-OCT-06  
Collector: Client  
Moisture: 7.52%

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid - FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.734	+/-0.155	0.070	+/-0.155	0.152	pCi/g		MJH1	10/10/06	1741	576803	1
Americium-241	U	-0.119	+/-0.108	0.0809	+/-0.108	0.167	pCi/g						
Bismuth-212	UI	0.00	+/-0.577	0.137	+/-0.577	0.296	pCi/g						
Bismuth-214		0.565	+/-0.105	0.0391	+/-0.105	0.0831	pCi/g						
Cesium-134	U	0.0465	+/-0.0297	0.0258	+/-0.0297	0.0549	pCi/g						
Cesium-137		0.124	+/-0.0474	0.0226	+/-0.0474	0.0479	pCi/g						
Cobalt-60	U	0.00888	+/-0.0243	0.0213	+/-0.0243	0.0472	pCi/g						
Europium-152	U	0.0475	+/-0.067	0.0533	+/-0.067	0.112	pCi/g						
Europium-154	U	-0.0332	+/-0.0783	0.0629	+/-0.0783	0.138	pCi/g						
Europium-155	U	0.0289	+/-0.0645	0.0565	+/-0.0645	0.117	pCi/g						
Lead-212		0.716	+/-0.0773	0.0296	+/-0.0773	0.0617	pCi/g						
Lead-214		0.538	+/-0.0987	0.0366	+/-0.0987	0.0772	pCi/g						
Manganes-54	U	-0.0138	+/-0.0249	0.0198	+/-0.0249	0.0427	pCi/g						
Niobium-94	U	-0.00995	+/-0.0225	0.0185	+/-0.0225	0.0394	pCi/g						
Potassium-40		10.1	+/-0.944	0.155	+/-0.944	0.356	pCi/g						
Radium-226		0.565	+/-0.105	0.0391	+/-0.105	0.0831	pCi/g						
Silver-108m	U	0.00639	+/-0.0219	0.0187	+/-0.0219	0.0395	pCi/g						
Thallium-208		0.198	+/-0.0509	0.0174	+/-0.0509	0.0374	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	10/08/06	1251	576541

**The following Analytical Methods were performed**

Method	Description
1	EML HASL 300, 4.5.2.3

**Notes:**

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
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# GENERAL ENGINEERING LABORATORIES, LLC

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## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
Address : 362 Injun Hollow Rd

East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 12, 2006

Client Sample ID: 9520-0003-038F  
Sample ID: 173429015

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
-----------	-----------	--------	-------------	----	-----	-----	-------	----	---------	------	------	-------	-----

- > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
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  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
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  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy--Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

**QUALITY  
CONTROL  
DATA**

**GENERAL ENGINEERING LABORATORIES, LLC**  
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**QC Summary**

Report Date: October 12, 2006  
 Page 1 of 5

Client : Connecticut Yankee Atomic Power  
 362 Injun Hollow Rd

Contact: East Hampton, Connecticut  
 Mr. Jack McCarthy

Workorder: 173429

Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Gamma Spec											
Batch 576803											
QC1201201885 173429001 DUP											
Actinium-228		0.669		0.684	pCi/g	2		(0% - 100%)	MJH1	10/12/06	10:16
		Uncert: +/-0.167		+/-0.171							
		TPU: +/-0.167		+/-0.171							
Americium-241	U	0.0158	U	-0.0698	pCi/g	317		(0% - 100%)			
		Uncert: +/-0.0993		+/-0.0944							
		TPU: +/-0.0993		+/-0.0944							
Bismuth-212		0.636		0.398	pCi/g	46		(0% - 100%)			
		Uncert: +/-0.338		+/-0.249							
		TPU: +/-0.338		+/-0.249							
Bismuth-214		0.524		0.557	pCi/g	6		(0% - 100%)			
		Uncert: +/-0.103		+/-0.109							
		TPU: +/-0.103		+/-0.109							
Cesium-134	UI	0.00	U	0.0301	pCi/g	70		(0% - 100%)			
		Uncert: +/-0.0401		+/-0.0326							
		TPU: +/-0.0401		+/-0.0326							
Cesium-137		0.0868		0.0709	pCi/g	20		(0% - 100%)			
		Uncert: +/-0.0408		+/-0.0374							
		TPU: +/-0.0408		+/-0.0374							
Cobalt-60	U	0.0098	U	-0.01	pCi/g	17900		(0% - 100%)			
		Uncert: +/-0.0245		+/-0.0223							
		TPU: +/-0.0245		+/-0.0223							
Europium-152	U	0.016	U	0.029	pCi/g	58		(0% - 100%)			
		Uncert: +/-0.0604		+/-0.0523							
		TPU: +/-0.0604		+/-0.0523							
Europium-154	U	0.0853	U	0.0471	pCi/g	58		(0% - 100%)			
		Uncert: +/-0.0845		+/-0.0679							
		TPU: +/-0.0845		+/-0.0679							
Europium-155	U	0.0625	U	0.0477	pCi/g	27		(0% - 100%)			
		Uncert: +/-0.0553		+/-0.055							
		TPU: +/-0.0553		+/-0.055							
Lead-212		0.665		0.731	pCi/g	9		(0% - 20%)			
		Uncert: +/-0.0653		+/-0.0652							
		TPU: +/-0.0653		+/-0.0652							
Lead-214		0.609		0.693	pCi/g	13		(0% - 20%)			
		Uncert: +/-0.0981		+/-0.099							
		TPU: +/-0.0981		+/-0.099							
Manganese-54	U	0.0081	U	0.000224	pCi/g	189		(0% - 100%)			
		Uncert: +/-0.0243		+/-0.0218							
		TPU: +/-0.0243		+/-0.0218							
Niobium-94	U	0.00664	U	-0.00917	pCi/g	1250		(0% - 100%)			
		Uncert: +/-0.021		+/-0.0191							
		TPU: +/-0.021		+/-0.0191							

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## QC Summary

Workorder: 173429

Page 2 of 5

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Rad Gamma Spec</b>											
Batch	576803										
Potassium-40		11.2		10.9	pCi/g	3		(0% - 20%)			
	Uncert:	+/-0.949		+/-0.876							
	TPU:	+/-0.949		+/-0.876							
Radium-226		0.524		0.557	pCi/g	6		(0% - 100%)			
	Uncert:	+/-0.103		+/-0.109							
	TPU:	+/-0.103		+/-0.109							
Silver-108m	U	0.0278	U	-0.0087	pCi/g	382		(0% - 100%)			
	Uncert:	+/-0.0208		+/-0.0167							
	TPU:	+/-0.0208		+/-0.0167							
Thallium-208		0.204		0.236	pCi/g	14		(0% - 100%)			
	Uncert:	+/-0.053		+/-0.0418							
	TPU:	+/-0.053		+/-0.0418							
QC1201201886	LCS										
Actinium-228			U	0.0901	pCi/g					10/10/06	16:25
	Uncert:			+/-0.586							
	TPU:			+/-0.586							
Americium-241	23.4			23.8	pCi/g		102	(75%-125%)			
	Uncert:			+/-0.543							
	TPU:			+/-0.543							
Bismuth-212			U	0.891	pCi/g						
	Uncert:			+/-1.14							
	TPU:			+/-1.14							
Bismuth-214			U	-0.087	pCi/g						
	Uncert:			+/-0.223							
	TPU:			+/-0.223							
Cesium-134			U	0.103	pCi/g						
	Uncert:			+/-0.148							
	TPU:			+/-0.148							
Cesium-137	9.55			10.6	pCi/g		111	(75%-125%)			
	Uncert:			+/-0.517							
	TPU:			+/-0.517							
Cobalt-60	14.3			14.9	pCi/g		105	(75%-125%)			
	Uncert:			+/-0.677							
	TPU:			+/-0.677							
Europium-152			U	0.0502	pCi/g						
	Uncert:			+/-0.259							
	TPU:			+/-0.259							
Europium-154			U	-0.0216	pCi/g						
	Uncert:			+/-0.295							
	TPU:			+/-0.295							
Europium-155			U	0.111	pCi/g						
	Uncert:			+/-0.244							
	TPU:			+/-0.244							
Lead-212			U	-0.0772	pCi/g						
	Uncert:			+/-0.155							
	TPU:			+/-0.155							
Lead-214			U	0.103	pCi/g						
	Uncert:			+/-0.193							

# GENERAL ENGINEERING LABORATORIES, LLC

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## QC Summary

Workorder: 173429

Page 3 of 5

Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec									
Batch 576803									
Manganese-54	TPU:		+/-0.193						
	Uncert:	U	-0.0122	pCi/g					
	TPU:		+/-0.140						
Niobium-94	TPU:		+/-0.140						
	Uncert:	U	-0.0052	pCi/g					
	TPU:		+/-0.120						
Potassium-40	TPU:		+/-0.120						
	Uncert:	U	0.806	pCi/g					
	TPU:		+/-0.822						
Radium-226	TPU:		+/-0.822				(75%-125%)		
	Uncert:	U	-0.087	pCi/g					
	TPU:		+/-0.223						
Silver-108m	TPU:		+/-0.223						
	Uncert:	U	0.0776	pCi/g					
	TPU:		+/-0.110						
Thallium-208	TPU:		+/-0.110						
	Uncert:	U	0.0912	pCi/g					
	TPU:		+/-0.117						
	TPU:		+/-0.117						
QC1201201884 MB									
Actinium-228		U	0.066	pCi/g					10/10/06 17:41
	Uncert:		+/-0.0443						
	TPU:		+/-0.0443						
Americium-241		U	-0.0193	pCi/g					
	Uncert:		+/-0.0707						
	TPU:		+/-0.0707						
Bismuth-212		U	-0.0381	pCi/g					
	Uncert:		+/-0.0917						
	TPU:		+/-0.0917						
Bismuth-214		U	0.029	pCi/g					
	Uncert:		+/-0.0461						
	TPU:		+/-0.0461						
Cesium-134		U	-1.530E-05	pCi/g					
	Uncert:		+/-0.0129						
	TPU:		+/-0.0129						
Cesium-137		U	-0.00234	pCi/g					
	Uncert:		+/-0.0115						
	TPU:		+/-0.0115						
Cobalt-60		U	0.00601	pCi/g					
	Uncert:		+/-0.0136						
	TPU:		+/-0.0136						
Europium-152		U	0.00342	pCi/g					
	Uncert:		+/-0.0355						
	TPU:		+/-0.0355						
Europium-154		U	0.0343	pCi/g					
	Uncert:		+/-0.040						
	TPU:		+/-0.040						
Europium-155		U	0.0333	pCi/g					

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## QC Summary

Workorder: 173429

Page 4 of 5

Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Gamma Spec										
Batch 576803										
Lead-212	Uncert:		+/-0.0335							
	TPU:		+/-0.0335							
Lead-214	Uncert:	U	0.00562	pCi/g						
	TPU:		+/-0.0281							
Manganese-54	Uncert:	U	0.00442	pCi/g						
	TPU:		+/-0.0399							
Niobium-94	Uncert:	U	-0.00189	pCi/g						
	TPU:		+/-0.0107							
Potassium-40	Uncert:	U	0.282	pCi/g						
	TPU:		+/-0.123							
Radium-226	Uncert:	U	0.029	pCi/g						
	TPU:		+/-0.0461							
Silver-108m	Uncert:	U	-0.00109	pCi/g						
	TPU:		+/-0.00954							
Thallium-208	Uncert:	U	0.0137	pCi/g						
	TPU:		+/-0.0159							

**Notes:**

The Qualifiers in this report are defined as follows:

- \* A quality control analyte recovery is outside of specified acceptance criteria
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B Target analyte was detected in the associated blank
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- H Analytical holding time was exceeded
- J Value is estimated
- N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

**GENERAL ENGINEERING LABORATORIES, LLC**  
 2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**QC Summary**

Workorder: 173429

Page 5 of 5

Parname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Y		QC Samples were not spiked with this compound								
^		RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL								
h		Preparation or preservation holding time was exceeded								

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more.

\*\* Indicates analyte is a surrogate compound.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

# **General Narrative**

**General Narrative  
for  
Connecticut Yankee Atomic Power Co.  
Work Order: 173435  
SDG: MSR#06-1334**

**October 12, 2006**

**Laboratory Identification:**

General Engineering Laboratories, LLC  
2040 Savage Road  
Charleston, South Carolina 29407  
(843) 556-8171

**Summary**

**Sample receipt**

The sample arrived at General Engineering Laboratories, LLC, Charleston, South Carolina on October 06, 2006 for analysis. Shipping container temperature was checked, documented, and within specifications. The sample was delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage.

**Sample Identification** The laboratory received the following sample:

<b><u>Laboratory Identification</u></b>	<b><u>Sample Description</u></b>
173435001	9520-0003-039F

**Items of Note**

There are no items to note.

**Case Narrative**

Sample analyses were conducted using methodology as outlined in General Engineering Laboratories (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

**Analytical Request**

One soil sample was analyzed for FSSALL.

**Data Package**

The enclosed data package contains the following sections: General Narrative, Chain of Custody and Supporting Documentation, Data Review Qualifier Definitions, and data from the following fractions: Radiochemistry.

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.



Cheryl Jones  
Project Manager

**List of current GEL Certifications as of 12 October 2006**

<b>State</b>	<b>Certification</b>
Alaska	UST-062
Arizona	AZ0668
Arkansas	88-0651
CLIA	42D0904046
California	01151CA
Colorado	GenEngLabs
Connecticut	PH-0169
Dept. of Navy	NFESC 413
EPA	WG-15J
Florida/NELAP	E87156
Georgia	E87156 (FL/NELAP)
Hawaii	N/A
Idaho	N/A
Illinois	200029
Indiana	C-SC-01
Kansas	E-10332
Kentucky	90129
Louisiana	03046
Maryland	270
Massachusetts	M-SC012
Michigan	9903
Nevada	SC12
New Jersey	SC002
New Mexico	FL NELAP E87156
New York	11501
North Carolina	233
North Carolina Drinking W	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania	68-00485
South Carolina	10120001/10585001/10120002
Tennessee	02934
Texas	TX213-2006A
Texas NELAP	T104704235-06-TX
U.S. Dept. of Agriculture	S-52597
US Army Corps of Engineer	N/A
Utah	8037697376 GEL
Vermont	VT87156
Virginia	00151
Washington	C1641

**Chain of Custody  
and  
Supporting  
Documentation**



Figure 1. Sample Check-in List

Date/Time Received: 9:45 10/6/06

SDG#: MSP#06-1334, MSP#06-1335

Work Order Number: 173429, 173432, 173434, 173435

Shipping Container ID: 2900 8695 2965 Chain of Custody # 2006 00603 / 2006-00597  
2006 00595

- 1. Custody Seals on shipping container intact? Yes  No
- 2. Custody Seals dated and signed? Yes  No
- 3. Chain-of-Custody record present? Yes  No
- 4. Cooler temperature 19.0
- 5. Vermiculite/packing materials is: Wet  Dry
- 6. Number of samples in shipping container: 8
- 7. Sample holding times exceeded? Yes  No

8. Samples have:

<input checked="" type="checkbox"/> tape	<input type="checkbox"/> hazard labels
<input type="checkbox"/> custody seals	<input type="checkbox"/> appropriate sample labels

9. Samples are:

<input type="checkbox"/> in good condition	<input type="checkbox"/> leaking
<input checked="" type="checkbox"/> broken	<input type="checkbox"/> have air bubbles

10. Were any anomalies identified in sample receipt? Yes  No

11. Description of anomalies (include sample numbers): \_\_\_\_\_

Sample Custodian/Laboratory: Cause Date: 10/6/06

Telephoned to: \_\_\_\_\_ On \_\_\_\_\_ By \_\_\_\_\_

# **Data Review Qualifier Definitions**

## Data Review Qualifier Definitions

Qualifier	Explanation
*	A quality control analyte recovery is outside of specified acceptance criteria
**	Analyte is a surrogate compound
<	Result is less than value reported
>	Result is greater than value reported
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
A	The TIC is a suspected aldol-condensation product
B	Target analyte was detected in the associated blank
B	Metals-Either presence of analyte detected in the associated blank, or MDL/IDL < sample value < PQL
BD	Results are either below the MDC or tracer recovery is low
C	Analyte has been confirmed by GC/MS analysis
D	Results are reported from a diluted aliquot of the sample
d	5-day BOD-The 2:1 depletion requirement was not met for this sample
E	Organics-Concentration of the target analyte exceeds the instrument calibration range
E	Metals-%difference of sample and SD is >10%. Sample concentration must meet flagging criteria
H	Analytical holding time was exceeded
h	Preparation or preservation holding time was exceeded
J	Value is estimated
N	Metals-The Matrix spike sample recovery is not within specified control limits
N	Organics-Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC). Quantitation is based on nearest internal standard response factor
N/A	Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
ND	Analyte concentration is not detected above the reporting limit
UI	Gamma Spectroscopy-Uncertain identification
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y	QC Samples were not spiked with this compound
Z	Paint Filter Test-Particulates passed through the filter, however no free liquids were observed.

# RADIOLOGICAL ANALYSIS

**Radiochemistry Case Narrative  
Connecticut Yankee Atomic Power Co. (YANK)  
Work Order 173435**

**Method/Analysis Information**

**Product:** Alphaspec Am241, Cm, Solid ALL FSS  
**Analytical Method:** DOE EML HASL-300, Am-05-RC Modified  
**Prep Method:** Ash Soil Prep  
**Dry Soil Prep GL-RAD-A-021 Method:** Dry Soil Prep  
**Analytical Batch Number:** 577050  
**Prep Batch Number:** 576639  
**Dry Soil Prep GL-RAD-A-021 Batch Number:** 576546

<b>Sample ID</b>	<b>Client ID</b>
173435001	9520-0003-039F
1201202528	Method Blank (MB)
1201202529	173435001(9520-0003-039F) Sample Duplicate (DUP)
1201202530	173435001(9520-0003-039F) Matrix Spike (MS)
1201202531	Laboratory Control Sample (LCS)

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-011 REV# 14.

**Calibration Information:**

**Calibration Information**

All initial and continuing calibration requirements have been met.

**Standards Information**

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

**Sample Geometry**

All counting sources were prepared in the same geometry as the calibration standards.

**Quality Control (QC) Information:**

**Blank Information**

The blank volume is representative of the sample volume in this batch.

**Designated QC**

The following sample was used for QC: 173435001 (9520-0003-039F).

**QC Information**

All of the QC samples met the required acceptance limits.

**Technical Information:**

**Holding Time**

All sample procedures for this sample set were performed within the required holding time.

**Preparation Information**

All preparation criteria have been met for these analyses.

**Sample Re-prep/Re-analysis**

Sample 1201202529 (9520-0003-039F) was recounted due to a negative result greater than three times the error.

**Miscellaneous Information:**

**NCR Documentation**

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A nonconformance report (NCR) was not generated for this SDG.

**Manual Integration**

No manual integrations were performed on data in this batch.

**Additional Comments**

Additional comments were not required for this sample set.

**Qualifier information**

Manual qualifiers were not required.

**Method/Analysis Information**

<b>Product:</b>	<b>Alphaspec Pu, Solid-ALL FSS</b>
Analytical Method:	DOE EML HASL-300, Pu-11-RC Modified
Prep Method:	Ash Soil Prep
Dry Soil Prep GL-RAD-A-021 Method:	Dry Soil Prep
Analytical Batch Number:	577051
Prep Batch Number:	576639
Dry Soil Prep GL-RAD-A-021 Batch Number:	576546

<b>Sample ID</b>	<b>Client ID</b>
173435001	9520-0003-039F
1201202532	Method Blank (MB)
1201202533	173435001(9520-0003-039F) Sample Duplicate (DUP)
1201202534	173435001(9520-0003-039F) Matrix Spike (MS)
1201202535	Laboratory Control Sample (LCS)

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-011 REV# 14.

**Calibration Information:**

**Calibration Information**

All initial and continuing calibration requirements have been met.

**Standards Information**

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

**Sample Geometry**

All counting sources were prepared in the same geometry as the calibration standards.

**Quality Control (QC) Information:****Blank Information**

The blank volume is representative of the sample volume in this batch.

**Designated QC**

The following sample was used for QC: 173435001 (9520-0003-039F).

**QC Information**

All of the QC samples met the required acceptance limits.

**Technical Information:****Holding Time**

All sample procedures for this sample set were performed within the required holding time.

**Preparation Information**

All preparation criteria have been met for these analyses.

**Sample Re-prep/Re-analysis**

None of the samples in this sample set required reprep or reanalysis.

**Miscellaneous Information:****NCR Documentation**

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A nonconformance report (NCR) was not generated for this SDG.

**Manual Integration**

No manual integrations were performed on data in this batch.

**Additional Comments**

Additional comments were not required for this sample set.

**Qualifier information**

Manual qualifiers were not required.

**Method/Analysis Information**

<b>Product:</b>	<b>Liquid Scint Pu241, Solid-ALL FSS</b>
Analytical Method:	DOE EML HASL-300, Pu-11-RC Modified
Prep Method:	Ash Soil Prep
Dry Soil Prep GL-RAD-A-021 Method:	Dry Soil Prep
Analytical Batch Number:	577052
Prep Batch Number:	576639
Dry Soil Prep GL-RAD-A-021 Batch Number:	576546

<b>Sample ID</b>	<b>Client ID</b>
173435001	9520-0003-039F
1201202536	Method Blank (MB)
1201202537	173435001(9520-0003-039F) Sample Duplicate (DUP)
1201202538	173435001(9520-0003-039F) Matrix Spike (MS)
1201202539	Laboratory Control Sample (LCS)

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-035 REV# 8.

**Calibration Information:**

**Calibration Information**

All initial and continuing calibration requirements have been met.

**Standards Information**

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

**Sample Geometry**

All counting sources were prepared in the same geometry as the calibration standards.

**Quality Control (QC) Information:**

**Blank Information**

The blank volume is representative of the sample volume in this batch.

**Designated QC**

The following sample was used for QC: 173435001 (9520-0003-039F).

**QC Information**

All of the QC samples met the required acceptance limits.

**Technical Information:**

**Holding Time**

All sample procedures for this sample set were performed within the required holding time.

**Preparation Information**

All preparation criteria have been met for these analyses.

**Sample Re-prep/Re-analysis**

None of the samples in this sample set required reprep or reanalysis.

**Miscellaneous Information:**

**NCR Documentation**

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A nonconformance report (NCR) was not generated for this SDG.

**Manual Integration**

No manual integrations were performed on data in this batch.

**Additional Comments**

Additional comments were not required for this sample set.

**Qualifier information**

Manual qualifiers were not required.

**Method/Analysis Information**

**Product:** Gamma,Solid-FSS GAM & ALL FSS 226 Ingrowth Waived  
**Analytical Method:** EML HASL 300, 4.5.2.3  
**Prep Method:** Dry Soil Prep  
**Analytical Batch Number:** 576804  
**Prep Batch Number:** 576546

<b>Sample ID</b>	<b>Client ID</b>
173435001	9520-0003-039F
1201201887	Method Blank (MB)
1201201888	173432001(9520-0003-032F) Sample Duplicate (DUP)
1201201889	Laboratory Control Sample (LCS)

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-013 REV# 13.

**Calibration Information:****Calibration Information**

All initial and continuing calibration requirements have been met.

**Standards Information**

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

**Sample Geometry**

All counting sources were prepared in the same geometry as the calibration standards.

**Quality Control (QC) Information:****Blank Information**

The blank volume is representative of the sample volume in this batch.

**Designated QC**

The following sample was used for QC: 173432001 (9520-0003-032F).

**QC Information**

All of the QC samples met the required acceptance limits.

**Technical Information:****Holding Time**

All sample procedures for this sample set were performed within the required holding time.

**Preparation Information**

All preparation criteria have been met for these analyses.

**Sample Re-prep/Re-analysis**

Sample 1201201887 (MB) was recounted due to count room error.

**Miscellaneous Information:****NCR Documentation**

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A nonconformance report (NCR) was not generated for this SDG.

**Additional Comments**

The sample and duplicate 1201201888 (9520-0003-032F) for Bi-214 and Tl-208 did not meet the relative percent difference requirement, however when the relative error ratio was calculated, precision was shown at 2.26279 for Bi-214 and 1.66238 for Tl-208.

**Qualifier information**

Qualifier	Reason	Analyte	Sample
UI	Data rejected due to high peak-width.	Bismuth-212	173435001
UI	Data rejected due to low abundance.	Actinium-228	173435001

**Method/Analysis Information**

<b>Product:</b>	<b>GFPC, Sr90, solid-ALL FSS</b>
Analytical Method:	EPA 905.0 Modified
Prep Method:	Ash Soil Prep
Dry Soil Prep GL-RAD-A-021 Method:	Dry Soil Prep
Analytical Batch Number:	577080
Prep Batch Number:	576639
Dry Soil Prep GL-RAD-A-021 Batch Number:	576546

Sample ID	Client ID
173435001	9520-0003-039F
1201202607	Method Blank (MB)
1201202608	173435001(9520-0003-039F) Sample Duplicate (DUP)
1201202609	173435001(9520-0003-039F) Matrix Spike (MS)
1201202610	Laboratory Control Sample (LCS)

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-004 REV# 10.

**Calibration Information:****Calibration Information**

All initial and continuing calibration requirements have been met.

**Standards Information**

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

**Sample Geometry**

All counting sources were prepared in the same geometry as the calibration standards.

**Quality Control (QC) Information:****Blank Information**

The blank volume is representative of the sample volume in this batch.

**Designated QC**

The following sample was used for QC: 173435001 (9520-0003-039F).

**QC Information**

All of the QC samples met the required acceptance limits.

**Technical Information:****Holding Time**

All sample procedures for this sample set were performed within the required holding time.

**Preparation Information**

All preparation criteria have been met for these analyses.

**Sample Re-prep/Re-analysis**

None of the samples in this sample set required reprep or reanalysis.

**Chemical Recoveries**

All chemical recoveries meet the required acceptance limits for this sample set.

**Miscellaneous Information:****NCR Documentation**

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A nonconformance report (NCR) was not generated for this SDG.

**Additional Comments**

Additional comments were not required for this sample set.

**Qualifier information**

Manual qualifiers were not required.

**Method/Analysis Information**

**Product:** Liquid Scint Tc99, Solid-ALL FSS  
**Analytical Method:** DOE EML HASL-300, Tc-02-RC Modified  
**Analytical Batch Number:** 576582

<b>Sample ID</b>	<b>Client ID</b>
173435001	9520-0003-039F
1201201414	Method Blank (MB)
1201201415	173434001(9506-0-6C) Sample Duplicate (DUP)

1201201416 173434001(9506-0-6C) Matrix Spike (MS)  
1201201417 Laboratory Control Sample (LCS)

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-005 REV# 13.

**Calibration Information:**

**Calibration Information**

All initial and continuing calibration requirements have been met.

**Standards Information**

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

**Sample Geometry**

All counting sources were prepared in the same geometry as the calibration standards.

**Quality Control (QC) Information:**

**Blank Information**

The blank volume is representative of the sample volume in this batch.

**Designated QC**

The following sample was used for QC: 173434001 (9506-0-6C).

**QC Information**

All of the QC samples met the required acceptance limits.

**Technical Information:**

**Holding Time**

All sample procedures for this sample set were performed within the required holding time.

**Preparation Information**

All preparation criteria have been met for these analyses.

**Sample Re-prep/Re-analysis**

None of the samples in this sample set required reprep or reanalysis.

**Miscellaneous Information:**

**NCR Documentation**

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A nonconformance report (NCR) was not generated for this SDG.

**Additional Comments**

Additional comments were not required for this sample set.

**Qualifier information**

Manual qualifiers were not required.

**Method/Analysis Information**

**Product:** Liquid Scint Fe55, Solid-ALL FSS  
**Analytical Method:** DOE RESL Fe-1, Modified  
**Prep Method:** Ash Soil Prep  
**Dry Soil Prep GL-RAD-A-021 Method:** Dry Soil Prep  
**Analytical Batch Number:** 576967  
**Prep Batch Number:** 576639  
**Dry Soil Prep GL-RAD-A-021 Batch Number:** 576546

<b>Sample ID</b>	<b>Client ID</b>
173435001	9520-0003-039F
1201202288	Method Blank (MB)
1201202289	173329001(9312-0002-01-SUB08) Sample Duplicate (DUP)
1201202290	173329001(9312-0002-01-SUB08) Matrix Spike (MS)
1201202291	Laboratory Control Sample (LCS)

#### **SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-040 REV# 3.

#### **Calibration Information:**

##### **Calibration Information**

All initial and continuing calibration requirements have been met.

##### **Standards Information**

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

##### **Sample Geometry**

All counting sources were prepared in the same geometry as the calibration standards.

#### **Quality Control (QC) Information:**

##### **Blank Information**

The blank volume is representative of the sample volume in this batch.

##### **Designated QC**

The following sample was used for QC: 173329001 (9312-0002-01-SUB08).

##### **QC Information**

All of the QC samples met the required acceptance limits.

#### **Technical Information:**

##### **Holding Time**

All sample procedures for this sample set were performed within the required holding time.

##### **Preparation Information**

All preparation criteria have been met for these analyses.

**Sample Re-prep/Re-analysis**

None of the samples in this sample set required reprep or reanalysis.

**Miscellaneous Information:****NCR Documentation**

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A nonconformance report (NCR) was not generated for this SDG.

**Additional Comments**

Additional comments were not required for this sample set.

**Qualifier information**

Manual qualifiers were not required.

**Method/Analysis Information**

<b>Product:</b>	<b>Liquid Scint Ni63, Solid-ALL FSS</b>
Analytical Method:	DOE RESL Ni-1, Modified
Prep Method:	Ash Soil Prep
Dry Soil Prep GL-RAD-A-021 Method:	Dry Soil Prep
Analytical Batch Number:	576968
Prep Batch Number:	576639
Dry Soil Prep GL-RAD-A-021 Batch Number:	576546

<b>Sample ID</b>	<b>Client ID</b>
173435001	9520-0003-039F
1201202292	Method Blank (MB)
1201202293	173329001(9312-0002-01-SUB08) Sample Duplicate (DUP)
1201202294	173329001(9312-0002-01-SUB08) Matrix Spike (MS)
1201202295	Laboratory Control Sample (LCS)

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-022 REV# 8.

**Calibration Information:****Calibration Information**

All initial and continuing calibration requirements have been met.

**Standards Information**

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

**Sample Geometry**

All counting sources were prepared in the same geometry as the calibration standards.

**Quality Control (QC) Information:**

**Blank Information**

The blank volume is representative of the sample volume in this batch.

**Designated QC**

The following sample was used for QC: 173329001 (9312-0002-01-SUB08).

**QC Information**

All of the QC samples met the required acceptance limits.

**Technical Information:****Holding Time**

All sample procedures for this sample set were performed within the required holding time.

**Preparation Information**

All preparation criteria have been met for these analyses.

**Sample Re-prep/Re-analysis**

None of the samples in this sample set required reprep or reanalysis.

**Miscellaneous Information:****NCR Documentation**

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A nonconformance report (NCR) was not generated for this SDG.

**Additional Comments**

Additional comments were not required for this sample set.

**Qualifier information**

Manual qualifiers were not required.

**Method/Analysis Information**

Product: LSC, Tritium Dist, Solid-HTD2,ALL FSS

Analytical Method: EPA 906.0 Modified

Analytical Batch Number: 576969

Sample ID	Client ID
173435001	9520-0003-039F
1201202296	Method Blank (MB)
1201202297	173435001(9520-0003-039F) Sample Duplicate (DUP)
1201202298	173435001(9520-0003-039F) Matrix Spike (MS)
1201202299	Laboratory Control Sample (LCS)

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-002 REV# 13.

**Calibration Information:**

**Calibration Information**

All initial and continuing calibration requirements have been met.

**Standards Information**

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

**Sample Geometry**

All counting sources were prepared in the same geometry as the calibration standards.

**Quality Control (QC) Information:****Blank Information**

The blank volume is representative of the sample volume in this batch.

**Designated QC**

The following sample was used for QC: 173435001 (9520-0003-039F).

**QC Information**

All of the QC samples met the required acceptance limits.

**Technical Information:****Holding Time**

All sample procedures for this sample set were performed within the required holding time.

**Preparation Information**

All preparation criteria have been met for these analyses.

**Sample Re-prep/Re-analysis**

Sample 1201202299 (LCS) was recounted due to the quench number being outside the calibration range.

**Miscellaneous Information:****NCR Documentation**

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A nonconformance report (NCR) was not generated for this SDG.

**Additional Comments**

Additional comments were not required for this sample set.

**Qualifier information**

Manual qualifiers were not required.

**Method/Analysis Information**

**Product:** Liquid Scint C14, Solid All,FSS

Analytical Method: EPA EERF C-01 Modified

Analytical Batch Number: 578362

<b>Sample ID</b>	<b>Client ID</b>
173435001	9520-0003-039F
1201205173	Method Blank (MB)
1201205174	173435001(9520-0003-039F) Sample Duplicate (DUP)

1201205175 173435001(9520-0003-039F) Matrix Spike (MS)  
1201205176 Laboratory Control Sample (LCS)

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-003 REV# 8.

**Calibration Information:**

**Calibration Information**

All initial and continuing calibration requirements have been met.

**Standards Information**

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

**Sample Geometry**

All counting sources were prepared in the same geometry as the calibration standards.

**Quality Control (QC) Information:**

**Blank Information**

The blank volume is representative of the sample volume in this batch.

**Designated QC**

The following sample was used for QC: 173435001 (9520-0003-039F).

**QC Information**

All of the QC samples met the required acceptance limits.

**Technical Information:**

**Holding Time**

All sample procedures for this sample set were performed within the required holding time.

**Preparation Information**

All preparation criteria have been met for these analyses.

**Sample Re-prep/Re-analysis**

Samples 173435001 (9520-0003-039F) were re-prepped due to high MDAs. The background was recounted due to high MDAs.

**Miscellaneous Information:**

**NCR Documentation**

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A nonconformance report (NCR) was not generated for this SDG.

**Additional Comments**

Additional comments were not required for this sample set.

**Qualifier information**

Manual qualifiers were not required.

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**Review Validation:**

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

**The following data validator verified the information presented in this case narrative:**

Reviewer/Date:                     *Pamela Williams* 10/16/06

# SAMPLE DATA SUMMARY

**GENERAL ENGINEERING LABORATORIES, LLC**

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis Report  
for**

YANK001 Connecticut Yankee Atomic Power Co.

Client SDG: MSR#06-1334 GEL Work Order: 173435

**The Qualifiers in this report are defined as follows:**

\* A quality control analyte recovery is outside of specified acceptance criteria

\*\* Analyte is a surrogate compound

U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

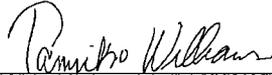
UI Gamma Spectroscopy--Uncertain identification

ND The analyte concentration is not detected above the detection limit.

The above sample is reported on a dry weight basis except where prohibited by the analytical procedure.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Cheryl Jones.



Reviewed by \_\_\_\_\_

# GENERAL ENGINEERING LABORATORIES, LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Connecticut Yankee Atomic Power  
 Address : 362 Injun Hollow Rd  
 East Hampton, Connecticut 06424  
 Contact: Mr. Jack McCarthy  
 Project: Soils PO# 002332

Report Date: October 16, 2006

Client Sample ID:	9520-0003-039F	Project:	YANK01204
Sample ID:	173435001	Client ID:	YANK001
Matrix:	TS	Vol. Recv.:	
Collect Date:	04-OCT-06		
Receive Date:	06-OCT-06		
Collector:	Client		
Moisture:	11.2%		

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Alpha Spec Analysis</b>													
<i>Alphaspec Am241, Cm, Solid ALL FSS</i>													
Americium-241	U	0.0368	+/-0.114	0.0738	+/-0.114	0.247	pCi/g		MXA	10/11/06	0915	577050	1
Curium-242	U	-0.0273	+/-0.0309	0.059	+/-0.0312	0.221	pCi/g						
Curium-243/244	U	-0.0589	+/-0.122	0.128	+/-0.122	0.355	pCi/g						
<i>Alphaspec Pu, Solid-ALL FSS</i>													
Plutonium-238	U	-0.00643	+/-0.054	0.0241	+/-0.0541	0.121	pCi/g		MXA	10/11/06	0721	577051	2
Plutonium-239/240	U	0.075	+/-0.109	0.0538	+/-0.109	0.180	pCi/g						
<i>Liquid Scint Pu241, Solid-ALL FSS</i>													
Plutonium-241	U	-5.64	+/-8.51	7.39	+/-8.51	15.5	pCi/g		MXA	10/12/06	1549	577052	3
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid-FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228	UI	0.00	+/-0.248	0.198	+/-0.248	0.396	pCi/g		MJH1	10/12/06	1718	576804	4
Americium-241	U	0.0285	+/-0.0414	0.0328	+/-0.0414	0.0656	pCi/g						
Bismuth-212	UI	0.00	+/-0.528	0.193	+/-0.528	0.385	pCi/g						
Bismuth-214		0.543	+/-0.117	0.050	+/-0.117	0.100	pCi/g						
Cesium-134	U	0.0137	+/-0.0319	0.0285	+/-0.0319	0.057	pCi/g						
Cesium-137	U	0.053	+/-0.0334	0.032	+/-0.0334	0.0639	pCi/g						
Cobalt-60	U	-0.0251	+/-0.0394	0.0299	+/-0.0394	0.0598	pCi/g						
Europium-152	U	0.00593	+/-0.0774	0.0549	+/-0.0774	0.110	pCi/g						
Europium-154	U	0.000552	+/-0.0963	0.0801	+/-0.0963	0.160	pCi/g						
Europium-155	U	0.0599	+/-0.0822	0.0494	+/-0.0822	0.0987	pCi/g						
Lead-212		0.680	+/-0.0906	0.0312	+/-0.0906	0.0623	pCi/g						
Lead-214		0.608	+/-0.111	0.0397	+/-0.111	0.0794	pCi/g						
Manganese-54	U	0.0136	+/-0.0325	0.0288	+/-0.0325	0.0575	pCi/g						
Niobium-94	U	0.0208	+/-0.0279	0.0255	+/-0.0279	0.051	pCi/g						
Potassium-40		11.8	+/-1.22	0.287	+/-1.22	0.574	pCi/g						
Radium-226		0.543	+/-0.117	0.050	+/-0.117	0.100	pCi/g						
Silver-108m	U	-0.00276	+/-0.0254	0.0215	+/-0.0254	0.0429	pCi/g						
Thallium-208		0.231	+/-0.0664	0.0258	+/-0.0664	0.0517	pCi/g						
<b>Rad Gas Flow Proportional Counting</b>													
<i>GFPC, Sr90, solid-ALL FSS</i>													
Strontium-90	U	0.00169	+/-0.00745	0.00617	+/-0.00745	0.013	pCi/g		KSD1	10/11/06	2226	577080	5

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East Hampton, Connecticut 06424  
Contact: Mr. Jack McCarthy  
Project: Soils PO# 002332

Report Date: October 16, 2006

Client Sample ID: 9520-0003-039F  
Sample ID: 173435001

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
<b>Rad Liquid Scintillation Analysis</b>													
<i>LSC, Tritium Dist, Solid-HTD2, ALL FSS</i>													
Tritium	U	3.10	+/-5.93	4.81	+/-5.93	10.2	pCi/g	DFA1	10/10/06	0801	576969	6	
<i>Liquid Scint C14, Solid All, FSS</i>													
Carbon-14	U	0.0477	+/-0.111	0.0916	+/-0.111	0.188	pCi/g	AXD2	10/13/06	1830	578362	7	
<i>Liquid Scint Fe55, Solid-ALL FSS</i>													
Iron-55	U	12.3	+/-26.9	18.4	+/-26.9	38.4	pCi/g	MXP1	10/10/06	2311	576967	9	
<i>Liquid Scint Ni63, Solid-ALL FSS</i>													
Nickel-63	U	0.00	+/-11.5	9.62	+/-11.5	20.1	pCi/g	MXP1	10/11/06	1605	576968	10	
<i>Liquid Scint Tc99, Solid-ALL FSS</i>													
Technetium-99	U	-0.0885	+/-0.226	0.192	+/-0.226	0.396	pCi/g	EGD1	10/11/06	1502	576582	11	

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LXM1	10/07/06	1057	576546

**The following Analytical Methods were performed**

Method	Description
1	DOE EML HASL-300, Am-05-RC Modified
2	DOE EML HASL-300, Pu-11-RC Modified
3	DOE EML HASL-300, Pu-11-RC Modified
4	EML HASL 300, 4.5.2.3
5	EPA 905.0 Modified
6	EPA 906.0 Modified
7	EPA EERF C-01 Modified
8	EPA EERF C-01 Modified
9	DOE RESL Fe-1, Modified
10	DOE RESL Ni-1, Modified
11	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer recovery	Test	Recovery %	Acceptable Limits
Americium-243	Alphaspec Am241, Cm, Solid ALL	83	(15%-125%)
Plutonium-242	Alphaspec Pu, Solid-ALL FSS	92	(15%-125%)
Carrier/Tracer Recovery	Liquid Scint Pu241, Solid-ALL FS	74	(25%-125%)
Carrier/Tracer Recovery	GFPC, Sr90, solid-ALL FSS	84	(25%-125%)

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East Hampton, Connecticut 06424  
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Report Date: October 16, 2006

Client Sample ID: 9520-0003-039F  
Sample ID: 173435001

Project: YANK01204  
Client ID: YANK001  
Vol. Recv.:

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time Batch	Mtd
Carrier/Tracer Recovery		Liquid Scint Fe55, Solid-ALL FS			80		(15%-125%)					
Carrier/Tracer Recovery		Liquid Scint Ni63, Solid-ALL FS			61		(25%-125%)					
Carrier/Tracer Recovery		Liquid Scint Tc99, Solid-ALL FS			75		(15%-125%)					

**Notes:**

The Qualifiers in this report are defined as follows :

- \* A quality control analyte recovery is outside of specified acceptance criteria
  - < Result is less than value reported
  - > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy--Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
  - ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
  - h Preparation or preservation holding time was exceeded
- The above sample is reported on a dry weight basis.

**QUALITY  
CONTROL  
DATA**

# GENERAL ENGINEERING LABORATORIES, LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## QC Summary

Report Date: October 16, 2006

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Client : Connecticut Yankee Atomic Power  
362 Injun Hollow Rd

Contact: East Hampton, Connecticut  
Mr. Jack McCarthy

Workorder: 173435

Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch 577050											
QC1201202529 173435001 DUP											
Americium-241		U	0.0368	U	-0.0696	pCi/g	649	(0% - 100%)	AXA1	10/12/06	12:04
		Uncert:	+/-0.114		+/-0.0529						
		TPU:	+/-0.114		+/-0.0536						
Curium-242		U	-0.0273	U	-0.0324	pCi/g	17	(0% - 100%)			
		Uncert:	+/-0.0309		+/-0.0835						
		TPU:	+/-0.0312		+/-0.0836						
Curium-243/244		U	-0.0589	U	0.125	pCi/g	556	(0% - 100%)			
		Uncert:	+/-0.122		+/-0.200						
		TPU:	+/-0.122		+/-0.201						
QC1201202531 LCS											
Americium-241	13.2				12.7	pCi/g	96	(75%-125%)		10/11/06	09:15
		Uncert:			+/-1.28						
		TPU:			+/-2.16						
Curium-242				U	0.0597	pCi/g					
		Uncert:			+/-0.0953						
		TPU:			+/-0.0957						
Curium-243/244	15.9				14.8	pCi/g	93	(75%-125%)			
		Uncert:			+/-1.39						
		TPU:			+/-2.47						
QC1201202528 MB											
Americium-241				U	-0.0869	pCi/g					
		Uncert:			+/-0.200						
		TPU:			+/-0.200						
Curium-242				U	0.0299	pCi/g					
		Uncert:			+/-0.131						
		TPU:			+/-0.131						
Curium-243/244				U	0.116	pCi/g					
		Uncert:			+/-0.237						
		TPU:			+/-0.237						
QC1201202530 173435001 MS											
Americium-241	13.7	U	0.0368		12.1	pCi/g	88	(75%-125%)			
		Uncert:	+/-0.114		+/-1.26						
		TPU:	+/-0.114		+/-2.07						
Curium-242		U	-0.0273	U	-0.0497	pCi/g					
		Uncert:	+/-0.0309		+/-0.0398						
		TPU:	+/-0.0312		+/-0.0404						
Curium-243/244	16.6	U	-0.0589		16.0	pCi/g	96	(75%-125%)			
		Uncert:	+/-0.122		+/-1.44						
		TPU:	+/-0.122		+/-2.61						
Batch 577051											
QC1201202533 173435001 DUP											
Plutonium-238		U	-0.00643	U	0.0489	pCi/g	261	(0% - 100%)	AXA1	10/11/06	08:16

**GENERAL ENGINEERING LABORATORIES, LLC**  
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**QC Summary**

Workorder: 173435

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Parname	NOM	Sample	Qual	QC	Units	RPD %	REC%	Range	Anlst	Date	Time
<b>Rad Alpha Spec</b>											
Batch 577051											
Plutonium-239/240					pCi/g	232		(0% - 100%)			
		Uncert:	+/-0.054	+/-0.0781							
		TPU:	+/-0.0541	+/-0.0783							
		U	0.075	-0.00555							
		Uncert:	+/-0.109	+/-0.0618							
		TPU:	+/-0.109	+/-0.0618							
QC1201202535 LCS					pCi/g			(75%-125%)		10/11/06	08:16
Plutonium-238			U	0.0826							
		Uncert:		+/-0.120							
		TPU:		+/-0.120							
Plutonium-239/240	12.2			10.4	pCi/g		85	(75%-125%)			
		Uncert:		+/-1.09							
		TPU:		+/-1.62							
QC1201202532 MB					pCi/g					10/11/06	07:22
Plutonium-238			U	-0.0848							
		Uncert:		+/-0.0873							
		TPU:		+/-0.0877							
Plutonium-239/240			U	0.0926	pCi/g						
		Uncert:		+/-0.150							
		TPU:		+/-0.150							
QC1201202534 173435001 MS					pCi/g			(75%-125%)		10/11/06	08:16
Plutonium-238		U	-0.00643	U 0.0362							
		Uncert:	+/-0.054	+/-0.0817							
		TPU:	+/-0.0541	+/-0.0818							
Plutonium-239/240	12.7	U	0.075	10.8	pCi/g		84	(75%-125%)			
		Uncert:	+/-0.109	+/-1.09							
		TPU:	+/-0.109	+/-1.64							
Batch 577052											
QC1201202537 173435001 DUP					pCi/g	0		(0% - 100%)	MXA1	10/12/06	16:22
Plutonium-241		U	-5.64	U -3.09							
		Uncert:	+/-8.51	+/-7.05							
		TPU:	+/-8.51	+/-7.05							
QC1201202539 LCS				124	pCi/g		87	(75%-125%)		10/12/06	16:54
Plutonium-241				+/-12.9							
		Uncert:		+/-17.9							
		TPU:									
QC1201202536 MB					pCi/g					10/12/06	16:06
Plutonium-241			U	-3.41							
		Uncert:		+/-8.36							
		TPU:		+/-8.36							
QC1201202538 173435001 MS				115	pCi/g		80	(75%-125%)		10/12/06	16:38
Plutonium-241	144	U	-5.64								
		Uncert:	+/-8.51	+/-11.2							
		TPU:	+/-8.51	+/-15.7							
<b>Rad Gamma Spec</b>											
Batch 576804											
QC1201201888 173432001 DUP					pCi/g	20		(0% - 100%)	MJH1	10/12/06	17:42
Actinium-228			0.807	0.990							
		Uncert:	+/-0.151	+/-0.252							
				+/-0.252							

# GENERAL ENGINEERING LABORATORIES, LLC

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## QC Summary

Workorder: 173435

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Partname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Gamma Spec										
Batch 576804										
Americium-241		TPU: +/-0.151								
	U	0.0208	U	0.0313	pCi/g	40	(0% - 100%)			
		Uncert: +/-0.116		+/-0.0519						
Bismuth-212		TPU: +/-0.116		+/-0.0519						
		0.720		0.872	pCi/g	19	(0% - 100%)			
		Uncert: +/-0.249		+/-0.536						
Bismuth-214		TPU: +/-0.249		+/-0.536						
		0.554		0.781	pCi/g	34*	(0% - 100%)			
		Uncert: +/-0.0875		+/-0.176						
Cesium-134		TPU: +/-0.0875		+/-0.176						
	UI	0.00	U	0.0223	pCi/g	92	(0% - 100%)			
		Uncert: +/-0.0361		+/-0.0481						
Cesium-137		TPU: +/-0.0361		+/-0.0481						
		0.0461	U	0.0664	pCi/g	36	(0% - 100%)			
		Uncert: +/-0.0279		+/-0.0774						
Cobalt-60		TPU: +/-0.0279		+/-0.0774						
	U	-0.0122	U	0.0212	pCi/g	742	(0% - 100%)			
		Uncert: +/-0.0193		+/-0.0343						
Europium-152		TPU: +/-0.0193		+/-0.0343						
	U	-0.0204	U	-0.0365	pCi/g	57	(0% - 100%)			
		Uncert: +/-0.0484		+/-0.0833						
Europium-154		TPU: +/-0.0484		+/-0.0833						
	U	0.0428	U	0.062	pCi/g	37	(0% - 100%)			
		Uncert: +/-0.0569		+/-0.109						
Europium-155		TPU: +/-0.0569		+/-0.109						
	U	0.00564	U	0.0466	pCi/g	157	(0% - 100%)			
		Uncert: +/-0.0696		+/-0.082						
Lead-212		TPU: +/-0.0696		+/-0.082						
		0.798		0.788	pCi/g	1	(0% - 20%)			
		Uncert: +/-0.0616		+/-0.0889						
Lead-214		TPU: +/-0.0616		+/-0.0889						
		0.638		0.645	pCi/g	1	(0% - 20%)			
		Uncert: +/-0.0749		+/-0.122						
Manganese-54		TPU: +/-0.0749		+/-0.122						
	U	-0.0022	U	0.0124	pCi/g	286	(0% - 100%)			
		Uncert: +/-0.0198		+/-0.040						
Niobium-94		TPU: +/-0.0198		+/-0.040						
	U	0.0143	U	0.0259	pCi/g	58	(0% - 100%)			
		Uncert: +/-0.0181		+/-0.035						
Potassium-40		TPU: +/-0.0181		+/-0.035						
		13.8		12.2	pCi/g	13	(0% - 20%)			
		Uncert: +/-0.824		+/-1.36						
Radium-226		TPU: +/-0.824		+/-1.36						
		0.554		0.781	pCi/g	34	(0% - 100%)			
		Uncert: +/-0.0875		+/-0.176						
Silver-108m		TPU: +/-0.0875		+/-0.176						
	U	0.000225	U	0.0115	pCi/g	192	(0% - 100%)			
		Uncert: +/-0.0161		+/-0.0281						

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## QC Summary

Workorder: 173435

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Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec									
Batch	576804								
Thallium-208		TPU: +/-0.0161 0.231	+/-0.0281 0.300	pCi/g	26		(0% - 100%)		
		Uncert: +/-0.0401	+/-0.0703						
		TPU: +/-0.0401	+/-0.0703						
QC1201201889	LCS								
Actinium-228			U 0.0685	pCi/g					10/12/06 19:15
		Uncert: +/-0.531							
		TPU: +/-0.531							
Americium-241	23.4		24.7	pCi/g		106	(75%-125%)		
		Uncert: +/-2.62							
		TPU: +/-2.62							
Bismuth-212			U 0.235	pCi/g					
		Uncert: +/-0.989							
		TPU: +/-0.989							
Bismuth-214			U -0.0375	pCi/g					
		Uncert: +/-0.233							
		TPU: +/-0.233							
Cesium-134			U -0.00479	pCi/g					
		Uncert: +/-0.147							
		TPU: +/-0.147							
Cesium-137	9.55		9.73	pCi/g		102	(75%-125%)		
		Uncert: +/-0.768							
		TPU: +/-0.768							
Cobalt-60	14.3		15.1	pCi/g		106	(75%-125%)		
		Uncert: +/-1.04							
		TPU: +/-1.04							
Europium-152			U -0.287	pCi/g					
		Uncert: +/-0.311							
		TPU: +/-0.311							
Europium-154			U 0.112	pCi/g					
		Uncert: +/-0.276							
		TPU: +/-0.276							
Europium-155			U -0.0442	pCi/g					
		Uncert: +/-0.328							
		TPU: +/-0.328							
Lead-212			U -0.125	pCi/g					
		Uncert: +/-0.159							
		TPU: +/-0.159							
Lead-214			U -0.193	pCi/g					
		Uncert: +/-0.224							
		TPU: +/-0.224							
Manganese-54			U 0.0482	pCi/g					
		Uncert: +/-0.133							
		TPU: +/-0.133							
Niobium-94			U 0.0277	pCi/g					
		Uncert: +/-0.116							
		TPU: +/-0.116							
Potassium-40			U 0.581	pCi/g					

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## QC Summary

Workorder: 173435

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Parname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Gamma Spec										
Batch	576804									
Radium-226	Uncert: TPU:	U	+/-1.04 -0.0375	pCi/g			(75%-125%)			
Silver-108m	Uncert: TPU:	U	+/-0.233 -0.0727	pCi/g						
Thallium-208	Uncert: TPU:	U	+/-0.114 -0.0423	pCi/g						
QC1201201887 MB Actinium-228	Uncert: TPU:	U	+/-0.118 +/-0.118	pCi/g					10/13/06	12:27
Americium-241	Uncert: TPU:	U	-0.00601 +/-0.0434	pCi/g						
Bismuth-212	Uncert: TPU:	U	-0.0137 +/-0.0533	pCi/g						
Bismuth-214	Uncert: TPU:	U	0.0252 +/-0.0533	pCi/g						
Cesium-134	Uncert: TPU:	U	+/-0.0887 0.0258	pCi/g						
Cesium-137	Uncert: TPU:	U	+/-0.0337 +/-0.0337	pCi/g						
Cobalt-60	Uncert: TPU:	U	0.000666 +/-0.0118	pCi/g						
Europium-152	Uncert: TPU:	U	+/-0.0118 -0.00269	pCi/g						
Europium-154	Uncert: TPU:	U	+/-0.0111 +/-0.0111	pCi/g						
Europium-155	Uncert: TPU:	U	-0.000359 +/-0.0142	pCi/g						
Lead-212	Uncert: TPU:	U	+/-0.0142 -0.00823	pCi/g						
Lead-214	Uncert: TPU:	U	+/-0.0289 +/-0.0289	pCi/g						
	Uncert: TPU:	U	0.0206 +/-0.0308	pCi/g						
	Uncert: TPU:	U	+/-0.0308 0.0121	pCi/g						
	Uncert: TPU:	U	+/-0.0283 +/-0.0283	pCi/g						
	Uncert: TPU:	U	0.000673 +/-0.0259	pCi/g						
	Uncert: TPU:	U	+/-0.0259 0.0286	pCi/g						
	Uncert: TPU:		+/-0.045 +/-0.045							

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## QC Summary

Workorder: 173435

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Parname	NOM	Sample	Qual	QC	Units	RPD %	REC%	Range	Anlst	Date	Time
<b>Rad Gamma Spec</b>											
Batch	576804										
Manganese-54			U	0.00755	pCi/g						
	Uncert:			+/-0.00957							
	TPU:			+/-0.00957							
Niobium-94			U	-0.000868	pCi/g						
	Uncert:			+/-0.0108							
	TPU:			+/-0.0108							
Potassium-40			U	0.150	pCi/g						
	Uncert:			+/-0.137							
	TPU:			+/-0.137							
Radium-226			U	0.0258	pCi/g						
	Uncert:			+/-0.0337							
	TPU:			+/-0.0337							
Silver-108m			U	0.00351	pCi/g						
	Uncert:			+/-0.0101							
	TPU:			+/-0.0101							
Thallium-208			U	0.00714	pCi/g						
	Uncert:			+/-0.0164							
	TPU:			+/-0.0164							
<b>Rad Gas Flow</b>											
Batch	577080										
QC1201202608	173435001	DUP									
Strontium-90			U	0.00169	U	0.0107	pCi/g	0	(0% - 100%)	KSDI	10/11/06 22:26
	Uncert:			+/-0.00745		+/-0.0071					
	TPU:			+/-0.00745		+/-0.00711					
QC1201202610	LCS										
Strontium-90			1.54			1.28	pCi/g	83	(75%-125%)		10/12/06 10:14
	Uncert:					+/-0.0853					
	TPU:					+/-0.0898					
QC1201202607	MB										
Strontium-90					U	0.00602	pCi/g				10/11/06 22:26
	Uncert:					+/-0.00554					
	TPU:					+/-0.00554					
QC1201202609	173435001	MS									
Strontium-90			2.90	U	0.00169	2.46	pCi/g	85	(75%-125%)		10/12/06 10:10
	Uncert:					+/-0.00745					
	TPU:					+/-0.00745					
<b>Rad Liquid Scintillation</b>											
Batch	576582										
QC1201201415	173434001	DUP									
Technetium-99			U	0.349	U	0.255	pCi/g	0	(0% - 100%)	EGDI	10/11/06 15:44
	Uncert:			+/-0.252		+/-0.241					
	TPU:			+/-0.253		+/-0.242					
QC1201201417	LCS										
Technetium-99			12.7			11.6	pCi/g	91	(75%-125%)		10/11/06 16:23
	Uncert:					+/-0.477					
	TPU:					+/-0.554					
QC1201201414	MB										
Technetium-99					U	-0.0189	pCi/g				10/11/06 15:23

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## QC Summary

Workorder: 173435

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Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time	
<b>Rad Liquid Scintillation</b>											
Batch	576582										
			Uncert:								
			TPU:								
QC1201201416	173434001	MS									
Technetium-99			13.0	U	0.349		12.2	pCi/g	94	(75%-125%)	10/11/06 16:05
			Uncert:		+/-0.252		+/-0.529				
			TPU:		+/-0.253		+/-0.606				
Batch	576967										
QC1201202289	173329001	DUP									
Iron-55				U	25.4		37.8	pCi/g	39	(0% - 100%) MXP1	10/10/06 23:44
			Uncert:		+/-27.4		+/-25.9				
			TPU:		+/-27.4		+/-26.1				
QC1201202291	LCS										
Iron-55			603				607	pCi/g	101	(75%-125%)	10/11/06 00:17
			Uncert:				+/-42.6				
			TPU:				+/-61.1				
QC1201202288	MB										
Iron-55				U			7.46	pCi/g			10/10/06 23:28
			Uncert:				+/-24.7				
			TPU:				+/-24.8				
QC1201202290	173329001	MS									
Iron-55			619	U	25.4		549	pCi/g	89	(75%-125%)	10/11/06 00:00
			Uncert:		+/-27.4		+/-41.6				
			TPU:		+/-27.4		+/-57.4				
Batch	576968										
QC1201202293	173329001	DUP									
Nickel-63					64.1		53.1	pCi/g	0	(0% - 100%) MXP1	10/11/06 16:48
			Uncert:		+/-13.3		+/-12.0				
			TPU:		+/-13.5		+/-12.2				
QC1201202295	LCS										
Nickel-63			503				462	pCi/g	92	(75%-125%)	10/11/06 17:31
			Uncert:				+/-18.0				
			TPU:				+/-24.0				
QC1201202292	MB										
Nickel-63				U			1.69	pCi/g			10/11/06 16:27
			Uncert:				+/-10.1				
			TPU:				+/-10.1				
QC1201202294	173329001	MS									
Nickel-63			503		64.1		523	pCi/g	91	(75%-125%)	10/11/06 17:10
			Uncert:		+/-13.3		+/-23.1				
			TPU:		+/-13.5		+/-29.2				
Batch	576969										
QC1201202297	173435001	DUP									
Tritium				U	3.10	U	4.37	pCi/g	0	(0% - 100%) DFA1	10/10/06 08:45
			Uncert:		+/-5.93		+/-6.75				
			TPU:		+/-5.93		+/-6.75				
QC1201202299	LCS										
Tritium			67.6				56.2	pCi/g	83	(75%-125%)	10/12/06 02:55
			Uncert:				+/-9.27				
			TPU:				+/-9.32				

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## QC Summary

Workorder: 173435

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Rad Liquid Scintillation</b>											
Batch 576969											
QC1201202296	MB										
Tritium			U	0.850	pCi/g					10/10/06	08:23
				Uncert: +/-6.34							
				TPU: +/-6.34							
QC1201202298	173435001	MS									
Tritium	58.4	U	3.10	63.3	pCi/g		108	(75%-125%)		10/10/06	09:07
				Uncert: +/-5.93							
				TPU: +/-5.93							
Batch 578362											
QC1201205174	173435001	DUP									
Carbon-14		U	0.0477	U	-0.118	pCi/g	0	(0% - 100%)	AXD2	10/13/06	22:26
				Uncert: +/-0.111							
				TPU: +/-0.111							
QC1201205176	LCS										
Carbon-14	7.27			8.66	pCi/g		119	(75%-125%)		10/14/06	00:00
				Uncert: +/-0.265							
				TPU: +/-0.297							
QC1201205173	MB										
Carbon-14			U	-0.0701	pCi/g					10/13/06	21:38
				Uncert: +/-0.113							
				TPU: +/-0.113							
QC1201205175	173435001	MS									
Carbon-14	7.10	U	0.0477	8.27	pCi/g		116	(75%-125%)		10/13/06	23:13
				Uncert: +/-0.111							
				TPU: +/-0.111							

**Notes:**

The Qualifiers in this report are defined as follows:

- \* A quality control analyte recovery is outside of specified acceptance criteria
  - < Result is less than value reported
  - > Result is greater than value reported
  - A The TIC is a suspected aldol-condensation product
  - B Target analyte was detected in the associated blank
  - BD Results are either below the MDC or tracer recovery is low
  - C Analyte has been confirmed by GC/MS analysis
  - D Results are reported from a diluted aliquot of the sample
  - H Analytical holding time was exceeded
  - J Value is estimated
  - N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
  - R Sample results are rejected
  - U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
  - UI Gamma Spectroscopy--Uncertain identification
  - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
  - Y QC Samples were not spiked with this compound
- RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL

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## QC Summary

Workorder: 173435

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Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
----------	-----	-------------	----	-------	------	------	-------	-------	------	------

^

h Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more.

\*\* Indicates analyte is a surrogate compound.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

SOUTHWEST SITE STORAGE AREA  
SURVEY UNIT 9520-0003

RELEASE RECORD

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**ATTACHMENT 4 (DQA RESULTS)**

SOUTHWEST SITE STORAGE AREA  
SURVEY UNIT 9520-0003

RELEASE RECORD

---

**ATTACHMENT 4A (PRELIMINARY DATA REVIEW)**

PRELIMINARY DATA REVIEW FORM

Survey Unit : 9520-0003  
 Survey Unit Name : Southwest Site Storage area  
 Classification : 2  
 Survey Media : Soil  
 Type of Survey : Final Status Survey  
 Type of Measurement : Radionuclide Specific  
 Number of Measurements : 15

BASIC STATISTICAL QUANTITIES

	Cs-137	Co-60
Target Level (pCi/g) :	5.38E+00	2.59E+00
Minimum Value :	2.45E-02	-2.51E-02
Maximum Value :	1.99E-01	2.14E-01
Mean :	9.32E-02	2.13E-02
Median :	6.53E-02	1.33E-02
Standard Deviation :	5.88E-02	5.50E-02

Reported Results

Sample Identification <sup>(1)</sup>	Cs-137		Co-60		Fraction of Target Level
	Concentration (pCi/g)	Detect?	Concentration (pCi/g)	Detect?	
9520-0003-001F	1.58E-01	+	2.14E-01	+	0.112
9520-0003-003F	5.54E-02	+	1.42E-02		0.016
9520-0003-004F	2.45E-02		1.33E-02		0.010
9520-0003-005F	1.07E-01	+	1.78E-02		0.027
9520-0003-006F	6.53E-02	+	1.94E-02	+	0.020
9520-0003-007F	1.37E-01	+	-4.29E-03		0.025
9520-0003-008F	1.99E-01	+	5.69E-03		0.039
9520-0003-009F	1.71E-01	+	-5.58E-03		0.032
9520-0003-010F	4.59E-02	+	2.48E-02	+	0.018
9520-0003-011F	5.77E-02	+	1.51E-02		0.017
9520-0003-012F	2.75E-02		6.71E-03		0.008
9520-0003-013F	2.80E-02	+	-8.93E-03		0.005
9520-0003-014F	1.14E-01	+	1.97E-02		0.029
9520-0003-015F	1.55E-01	+	1.22E-02		0.034
9520-0003-039F	5.30E-02	+	-2.51E-02		0.010

(1) Sample 9520-0003-039F replaced 9520-0003-002F under an addendum to the FSS plan

  
 Submitted by/Date Jack McLeskey 11/13/06

SOUTHWEST SITE STORAGE AREA  
SURVEY UNIT 9520-0003

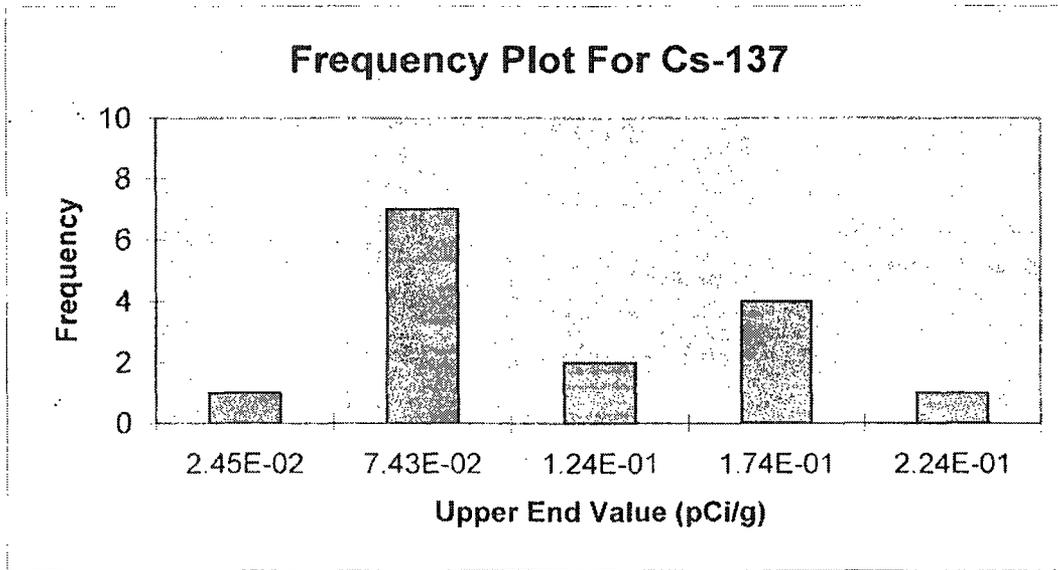
RELEASE RECORD

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**ATTACHMENT 4B (GRAPHICAL REPRESENTATION OF DATA)**

FREQUENCY PLOT FOR CESIUM-137

Survey Unit: 9520-0003  
 Survey Unit Name: Southwest Site Storage Area  
 Mean: 9.32E-02 pCi/g



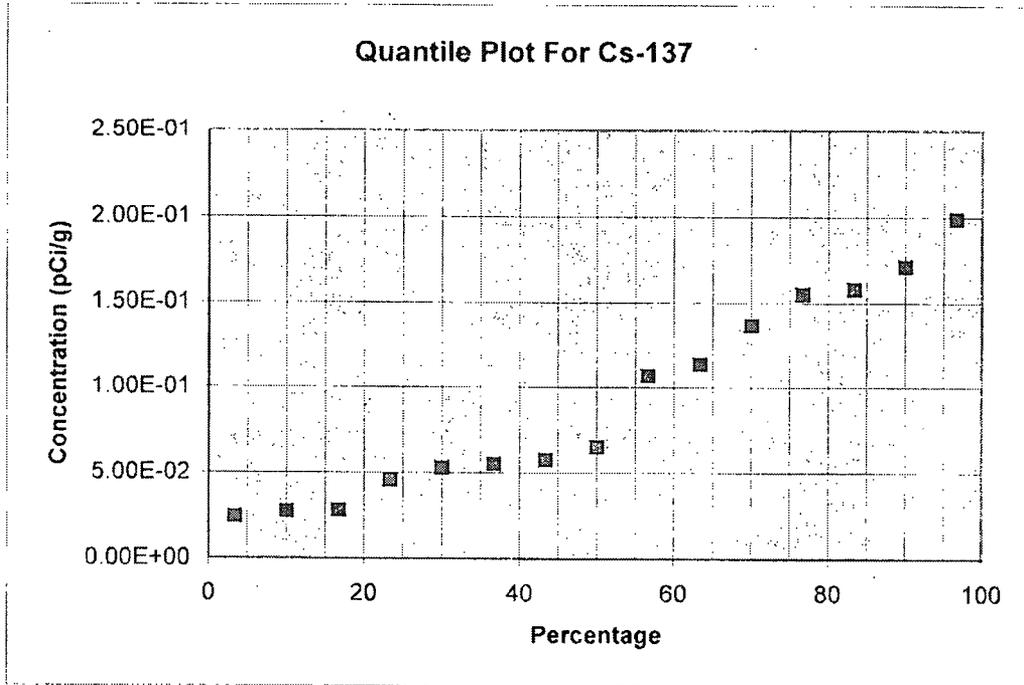
Upper End Value	Observation Frequency	Observation Frequency
2.45E-02	1	7%
7.43E-02	7	47%
1.24E-01	2	13%
1.74E-01	4	27%
2.24E-01	1	7%
Total:	15	100%

*[Signature]*  
 Submitted by/Date 11/13/06

*[Signature]*  
 Reviewed by/Date 11/15/06

QUANTILE PLOT FOR CESIUM-137

Survey Unit: 9520-0003  
 Survey Unit Name: Southwest Site Storage Area  
 Mean: 9.32E-02 pCi/g



Cs-137	Rank	Percentage
2.45E-02	1	3%
2.75E-02	2	10%
2.80E-02	3	17%
4.59E-02	4	23%
5.30E-02	5	30%
5.54E-02	6	37%
5.77E-02	7	43%
6.53E-02	8	50%
1.07E-01	9	57%
1.14E-01	10	63%
1.37E-01	11	70%
1.55E-01	12	77%
1.58E-01	13	83%
1.71E-01	14	90%
1.99E-01	15	97%

*[Signature]*  
 Submitted by/Date: 11/13/06

*[Signature]*  
 Reviewed by/Date: 11/15/06

SOUTHWEST SITE STORAGE AREA  
SURVEY UNIT 9520-0003

RELEASE RECORD

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**ATTACHMENT 4C (SIGN TEST)**

**Attachment B**

**Sign Test Calculation Sheet For Multiple Radionuclides**

Survey Area Number: 9520				
Survey Unit Number: 0003				
Survey Area Name: Southwest Site Storage area				
WPIR#: 2006-008				
Classification: 2		TYPE I ( $\alpha$ error): 0.05		(N): 15
Radionuclides:		Cs-137		Co-60
DCGL:		5.38 pCi/g		2.59 pCi/g
Results 1 <sup>st</sup> Radionuclide (pCi/g)	Results 2 <sup>nd</sup> Radionuclide (pCi/g)	Weighted Sum ( $W_s$ )	1 - $W_s$	Sign
1.58E-01	2.14E-01	1.12E-01	8.88E-01	1
5.54E-02	1.42E-02	1.58E-02	9.84E-01	1
2.45E-02	1.33E-02	9.69E-03	9.90E-01	1
1.07E-01	1.78E-02	2.68E-02	9.73E-01	1
6.53E-02	1.94E-02	1.96E-02	9.80E-01	1
1.37E-01	-4.29E-03	2.38E-02	9.76E-01	1
1.99E-01	5.69E-03	3.92E-02	9.61E-01	1
1.71E-01	-5.58E-03	2.96E-02	9.70E-01	1
4.59E-02	2.48E-02	1.81E-02	9.82E-01	1
5.77E-02	1.51E-02	1.66E-02	9.83E-01	1
2.75E-02	6.71E-03	7.70E-03	9.92E-01	1
2.80E-02	-8.93E-03	1.76E-03	9.98E-01	1
1.14E-01	1.97E-02	2.88E-02	9.71E-01	1
1.55E-01	1.22E-02	3.35E-02	9.66E-01	1
5.30E-02	-2.51E-02	1.60E-04	1.00E+00	1
Number of positive differences (S+):				15

Critical Value: 11

Survey Unit Meets Acceptance Criterion

Performed by: JACK McCARTHY

Date: 11/13/06

Independent Review by: [Signature]

Date: 11/15/06

SOUTHWEST SITE STORAGE AREA  
SURVEY UNIT 9520-0003

RELEASE RECORD

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**ATTACHMENT 4D (QC SPLIT RESULTS)**

**Split Sample Assessment Form**

Survey Area#: 9520		Survey Unit #: 0003		Survey Unit name: Southwest Site Storage Area																
Sample Plan or WPIR#: 2005-0038						SML#: 9520-0003-004														
Sample Description: Comparison of split samples collected from sample measurement location #4 and analyzed using gamma spectroscopy by off-site Vendor Laboratory. The standard sample was 9520-0003-004F, the comparison sample was 9520-0003-004FS.																				
STANDARD					COMPARISON															
Radionuclide	Activity Value	Standard Error	Resolution	Agreement Range	Activity Value	Standard Error	Comparison Ratio	Acceptable (Y/N)												
K-40	10.7	4.5E-1	24	0.75 - 1.33	10.6	4.2E-1	0.99	Y												
Comments/Corrective Actions: Not enough Cs-137 to yield an acceptable Resolution					Table is provided to show acceptance criteria used to assess split samples.															
					<table border="0"> <tr> <td><u>Resolution</u></td> <td><u>Agreement Range</u></td> </tr> <tr> <td>4 - 7</td> <td>0.5 - 2.0</td> </tr> <tr> <td>8 - 15</td> <td>0.6 - 1.66</td> </tr> <tr> <td>16 - 50</td> <td>0.75 - 1.33</td> </tr> <tr> <td>51 - 200</td> <td>0.80 - 1.25</td> </tr> <tr> <td>&gt;200</td> <td>0.85 - 1.18</td> </tr> </table>				<u>Resolution</u>	<u>Agreement Range</u>	4 - 7	0.5 - 2.0	8 - 15	0.6 - 1.66	16 - 50	0.75 - 1.33	51 - 200	0.80 - 1.25	>200	0.85 - 1.18
<u>Resolution</u>	<u>Agreement Range</u>																			
4 - 7	0.5 - 2.0																			
8 - 15	0.6 - 1.66																			
16 - 50	0.75 - 1.33																			
51 - 200	0.80 - 1.25																			
>200	0.85 - 1.18																			
Performed By: <i>Jack McCarty</i>		Date: 11/15/06		Reviewed By: <i>[Signature]</i>			Date: 11/16/06													

*[Handwritten mark]*

*[Handwritten signature]*

### Split Sample Assessment Form

Survey Area#: 9520		Survey Unit #: 0003		Survey Unit name: Southwest Site Storage Area				
Sample Plan or WPIR#: 2005-0038						SML#: 9520-0003-014		
Sample Description: Comparison of split samples collected from sample measurement location #14 and analyzed using gamma spectroscopy by off-site Vendor Laboratory. The standard sample was 9520-0003-014F, the comparison sample was 9520-0003-014FS.								
STANDARD					COMPARISON			
Radionuclide	Activity Value	Standard Error	Resolution	Agreement Range	Activity Value	Standard Error	Comparison Ratio	Acceptable (Y/N)
K-40	11.8	4.68E-1	25	0.75 - 1.33	13.9	6.5E-1	1.12	Y
Comments/Corrective Actions: Cs-137 was not detected in one of the field split results					Table is provided to show acceptance criteria used to assess split samples.			
					<u>Resolution</u>		<u>Agreement Range</u>	
					4 - 7		0.5 - 2.0	
					8 - 15		0.6 - 1.66	
					16 - 50		0.75 - 1.33	
					51 - 200		0.80 - 1.25	
					>200		0.85 - 1.18	
Performed By: <i>JACK McLOREY</i>		Date: <i>11/14/06</i>		Reviewed By: <i>[Signature]</i>			Date: <i>11/15/06</i>	

*67*

SOUTHWEST SITE STORAGE AREA  
SURVEY UNIT 9520-0003

RELEASE RECORD

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**ATTACHMENT 4E (COMPASS DQA WITH POWER CURVE)**



# DQA Surface Soil Report

## Assessment Summary

Site: 9520-0003 FSS  
Planner(s): McCarthy *[Signature]* 11/15/06  
Survey Unit Name: Southwest Site Storage  
Report Number: 1  
Survey Unit Samples: 15  
Reference Area Samples: 0  
Test Performed: Sign Test Result: Not Performed  
Judgmental Samples: 0 EMC Result: Not Performed  
Assessment Conclusion: **Reject Null Hypothesis (Survey Unit PASSES)**

## Retrospective Power Curve

