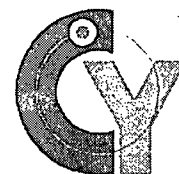


# **Final Status Survey Final Report Phase V**

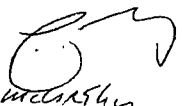
**Appendix A7**  
**Survey Unit Release Record**  
**9530-0002, Central Peninsula**

**December 2006**



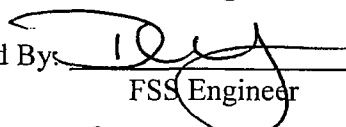
CYAPCO  
FINAL STATUS SURVEY RELEASE RECORD  
CENTRAL PENINSULA  
SURVEY UNIT 9530-0002

Prepared By:

  
FSS Engineer

Date: 10/23/06

Reviewed By:

  
FSS Engineer

Date: 10/24/06

Approved By:

  
Technical Support Manager

Date: 11/26/06

CENTRAL PENINSULA  
SURVEY UNIT 9530-0002

RELEASE RECORD

---

**TABLE OF CONTENTS**

1. SURVEY UNIT DESCRIPTION .....	3
2. CLASSIFICATION BASIS .....	3
3. DATA QUALITY OBJECTIVES (DQO) .....	5
4. SURVEY DESIGN .....	8
5. SURVEY IMPLEMENTATION .....	11
6. SURVEY RESULTS .....	12
7. QUALITY CONTROL .....	15
8. INVESTIGATIONS AND RESULTS .....	15
9. REMEDIATION AND RESULTS .....	15
10. CHANGES FROM THE FINAL STATUS SURVEY PLAN .....	16
11. DATA QUALITY ASSESSMENT (DQA) .....	16
12. ANOMALIES .....	16
13. CONCLUSION .....	16
14. ATTACHMENTS .....	17
14.1 Attachment 1 – Figures (6 pages including cover)	
14.2 Attachment 2 – Scan Results (3 pages including cover)	
14.3 Attachment 3 – Laboratory Data (86 pages including cover)	
14.4 Attachment 4 – DQA Results (13 pages including covers)	

TOTAL 125

CENTRAL PENINSULA  
SURVEY UNIT 9530-0002  

---

RELEASE RECORD

**1. SURVEY UNIT DESCRIPTION**

Survey Unit 9530-0002 (Central Peninsula) is designated as Final Status Survey (FSS) Class 2 and consists of 6,438 m<sup>2</sup> (1.6 acres) of uninhabited open land located approximately 2,900 feet from the reference coordinate system benchmark used at Haddam Neck Plant (HNP) (see Attachment 1). The survey unit is bounded by land Survey Unit 9530-0004. The survey unit is relatively level open space in the middle of the peninsula. The restoration of the peninsula for FSS has removed most surface interference in the survey unit.

The reference coordinates associated with this survey unit are E014 through E021 by S107 through S113 (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 historical information, scoping analyses and characterization results provided sufficient data to designate Survey Unit 9530-0002 as Class 2 in September 2006.

The "*Classification Basis Summary*" conducted for Survey Unit 9530-0002 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 identified two documents associated with this survey unit.

- a) Northeast Utilities Radiological Assessment Branch memo NE-86-RA-1142: Relates to dredging of two areas of the Discharge Canal to support the Low Pressure Turbine replacement project. Spoils from dredging were relocated to this survey unit and adjacent survey unit 9530-0003.
- b) Condition Report (CR) 98-0049: Documents that dredge spoils from the Discharge Canal contained radioactive material in 1987.

A review of the "*Initial and Supplemental Characterization Reports*" as well as the previous "*Classification Basis Summaries*" provided no additional information pertinent to classification.

CENTRAL PENINSULA  
SURVEY UNIT 9530-0002

RELEASE RECORD

The survey unit had undergone FSS in the fall of 2004 and release records documenting the satisfactory completion of the FSS objectives were in preparation. In 2006, utilities were being removed as part of the decommissioning effort on the Upper Peninsula. Construction debris including Asbestos Containing Material (ACM) was identified and remediated. In addition to the ACM, several objects were also identified that had detectable radioactivity. Two pieces of angle iron were located in a water utility trench in adjacent Survey Unit 9530-0004. Most of the work involved two areas adjacent to Survey Unit 9530-0002. Based on the potential to change the final radiological status of the survey unit, another FSS was considered prudent to define the as-left radiological condition.

Soil samples were collected in 2006 to establish the radiological condition of the surface and subsurface area following removal of soil. Cs-137 was the only gamma emitting radionuclide reported in concentrations with the potential for exceeding the screening criteria. Therefore, the previous FSS data and statistical parameters were used for the survey design. Statistical quantities from the previous FSS survey are provided in Table 1.

**Table 1 – Basic Statistical Quantities for Cs-137 from the previous FSS Survey**

Minimum Observed Concentration (pCi/g) :	2.01E-02
Maximum Observed Concentration (pCi/g) :	2.47E-01
Mean (pCi/g):	9.05E-02
Median (pCi/g):	6.10E-02
Standard Deviation (pCi/g):	6.86E-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 historical information and the results of radiological surveys performed during characterization, it was concluded that there was a low probability for residual radioactivity to be present in this survey unit in concentrations greater than the Operational Derived Concentration Guideline Levels (DCGLs) justifying a final survey unit classification of Class 2 (refer to Section 3).

CENTRAL PENINSULA  
SURVEY UNIT 9530-0002

RELEASE RECORD

---

**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 9530-0002 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).

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.

CENTRAL PENINSULA  
SURVEY UNIT 9530-0002

RELEASE RECORD

---

*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.

CENTRAL PENINSULA  
SURVEY UNIT 9530-0002  
RELEASE RECORD

<b>Table 2 – Radionuclide Specific Base Case Soil DCGL, Operational DCGLs and Required Minimum Detectable Concentrations</b>			
<b>Radionuclide <sup>(1)</sup></b>	<b>Base Case Soil DCGL (pCi/g) <sup>(2)</sup></b>	<b>Operational DCGL (pCi/g) <sup>(3)</sup></b>	<b>Required MDC (pCi/g) <sup>(4)</sup></b>
<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	1.74E+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 the surface and subsurface area following removal of soil. Cs-137 was the only gamma emitting radionuclide reported in concentrations with the potential for exceeding the screening criteria. The previous FSS data and statistical parameters were used for the survey design and are provided in Table 1.



CENTRAL PENINSULA  
SURVEY UNIT 9530-0002

RELEASE RECORD

---

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 would be the radionuclide of concern in survey unit 9530-0002 (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 5.24 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 Commission (USNRC) for implementation of the MARSSIM in support of the

CENTRAL PENINSULA  
SURVEY UNIT 9530-0002

RELEASE RECORD

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 two (2) 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.

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**

<b>Designation</b>	<b>Northing</b>	<b>Easting</b>
9530-0002-001F	235542.06	670286.23
9530-0002-002F	235542.06	670355.12
9530-0002-003F	235542.06	670424.01
9530-0002-004F	235542.06	670492.90
9530-0002-005F	235482.40	670389.57
9530-0002-006F	235482.40	670458.45
9530-0002-007F	235482.40	670527.34
9530-0002-008F	235482.40	670596.23
9530-0002-009F	235422.74	670492.90
9530-0002-010F	235422.74	670561.79
9530-0002-011F	235422.74	670630.67
9530-0002-012F	235422.74	670699.56
9530-0002-013F	235422.74	670768.45

CENTRAL PENINSULA  
SURVEY UNIT 9530-0002

RELEASE RECORD

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

<b>Designation</b>	<b>Northing</b>	<b>Easting</b>
9530-0002-014F	235363.09	670665.12
9530-0002-015F	235363.09	670734.01
9530-0002-016F	235311.90	670727.10
9530-0002-017F	235563.44	670233.36

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 that scanning will be performed along with a combination of systematic and judgmental measurements (samples) for a Class 2 land area and should cover between 10% to 100% of the area. 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 three (3) separate areas. The total surface area to be scanned was approximately 12% of the survey unit. A map of the scan grid locations is provided in Attachment 1.

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.

CENTRAL PENINSULA  
SURVEY UNIT 9530-0002

RELEASE RECORD

Table 4 - Synopsis of the Survey Design		
Feature	Design Criteria	Basis
Survey Unit Land Area	6,438 m <sup>2</sup>	Based on AutoCAD-LT
Number of Measurements	17 (15 systematic grid) (2 biased)	Type 1 and Type 2 errors were 0.05, sigma was 0.069 pCi/g, the LBGR was adjusted to 5.2 to maintain Relative Shift in the range of 1 and 3
Grid Spacing	22.3 m	Based on triangular grid
Operational DCGL	5.38 pCi/g Cs-137	Administratively set to achieve 17 mrem/yr TEDE <sup>(1)</sup>
Soil Investigation Level	5.38 pCi/g Cs-137	The Operational DCGL meets the LTP criteria for a Class 2 survey unit
Scan Survey Area Coverage	Approximately 12% 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)

## 5. SURVEY IMPLEMENTATION

Final status survey 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.

One (1) scan area was established that constituted approximately 12% of the surface area of Survey Unit 9530-0002. 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 6,480 counts per minute (cpm) up to 7,930 cpm.

The scan area was 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-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 12% of the survey unit was scanned.

CENTRAL PENINSULA  
SURVEY UNIT 9530-0002

RELEASE RECORD

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.

Seventeen (17) 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 (9530-0002-005F and 9530-0002-008F) were randomly selected for HTD radionuclide analysis.

The implementation of survey specific quality control measures included the collection of two (2) samples (9530-0002-004F and 9530-0002-014F) for "split sample" analysis.

6. SURVEY RESULTS

All field survey activities were conducted between September 7, 2006 and September 8, 2006.

The area was scanned in accordance with the FSS plan on September 7, 2006. No elevated measurement locations were identified during scanning.

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	6.18	7.72	NO
2	7.65	8.61	NO
3	7.67	9.02	NO
4	6.49	7.97	NO
5	6.89	8.63	NO
6	7.65	9.20	NO
7	6.47	8.29	NO

CENTRAL PENINSULA  
SURVEY UNIT 9530-0002

RELEASE RECORD

**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>
8	6.20	7.64	NO
9	6.39	7.78	NO
10	7.16	7.83	NO
11	6.18	7.37	NO
12	6.31	7.52	NO
13	6.88	7.78	NO
14	6.47	7.93	NO
15	6.36	8.09	NO
16	6.16	8.09	NO
17	6.51	7.58	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

The scan area, that comprised approximately 12% of the total surface area for the survey unit, was scanned for elevated radiation levels. Table 6 provides an overview of the scan area survey. Scan results are provided in Attachment 2.

**Table 6 - Scan Area Results**

Scan Area	Highest Logged Reading (kcpm)	Action Level <sup>(1)</sup> (kcpm)	Elevated Reading Identification <sup>(2)</sup>	Investigation Sample
1	7.82	8.35	None – no elevated areas identified	None

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

(2) 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, Charleston, South Carolina. The laboratory analyzed the fifteen (15) samples collected for non-parametric statistical testing, the associated field splits, and the two (2) biased 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

CENTRAL PENINSULA  
SURVEY UNIT 9530-0002  
RELEASE RECORD

---

standard deviations uncertainty). However, Cs-137 was the only radionuclide reported in concentrations exceeding the de-selection criteria.

Cs-137 was identified in all 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 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.

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	Fraction of the Operational DCGL <sup>(1)</sup>
9530-0002-001F	7.73E-02	0.014
9530-0002-002F	9.32E-02	0.017
9530-0002-003F	3.15E-02	0.006
9530-0002-004F	8.55E-02	0.016
9530-0002-005F	1.21E-01	0.022
9530-0002-006F	2.07E-01	0.038
9530-0002-007F	7.69E-02	0.014
9530-0002-008F	6.91E-02	0.013
9530-0002-009F	4.49E-02	0.008
9530-0002-010F	1.96E-01	0.036
9530-0002-011F	5.93E-02	0.011
9530-0002-012F	6.16E-02	0.011
9530-0002-013F	8.04E-02	0.015
9530-0002-014F	4.22E-02	0.008
9530-0002-015F	4.82E-02	0.009

(1) The Operational DCGL from Table 2 is 5.38 pCi/g for Cs-137 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.

CENTRAL PENINSULA  
SURVEY UNIT 9530-0002

RELEASE RECORD

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 HTD radionuclides identified by analysis met the criteria for detection (i.e., a result greater than two standard deviations uncertainty).

Two (2) 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	Fraction of the Operational DCGL <sup>(1)</sup>
9530-0002-016F	9.11E-02	0.017
9530-0002-017F	0.00E+00	0.000

(1) The Operational DCGL from Table 2 is 5.38 pCi/g for Cs-137 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." There was acceptable agreement between field split results for Cs-137 at location 9530-0002-004. However, Cs-137 was not detected in sufficient quantities in the field split results at location 9530-0002-014 to evaluate in accordance with procedure. Evaluation using the reported results for K-40 resulted in acceptable agreement between the field split results at location 9530-0002-014.

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**

No confirmatory samples were necessary.

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.



CENTRAL PENINSULA  
SURVEY UNIT 9530-0002

RELEASE RECORD

---

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

No changes were made to the FSS plan.

**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.

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.

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 18% 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 1.6.

All data, assessments, and graphical representations are provided in Attachment 4.

**12. ANOMALIES**

No anomalies were noted.

**13. CONCLUSION**

Survey Unit 9530-0002 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 was used for statistical testing to determine the adequacy of the survey unit for FSS.

CENTRAL PENINSULA  
SURVEY UNIT 9530-0002

RELEASE RECORD

---

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.

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 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 9530-0002 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

CENTRAL PENINSULA  
SURVEY UNIT 9530-0002

RELEASE RECORD

---

**ATTACHMENT 1 (FIGURES)**

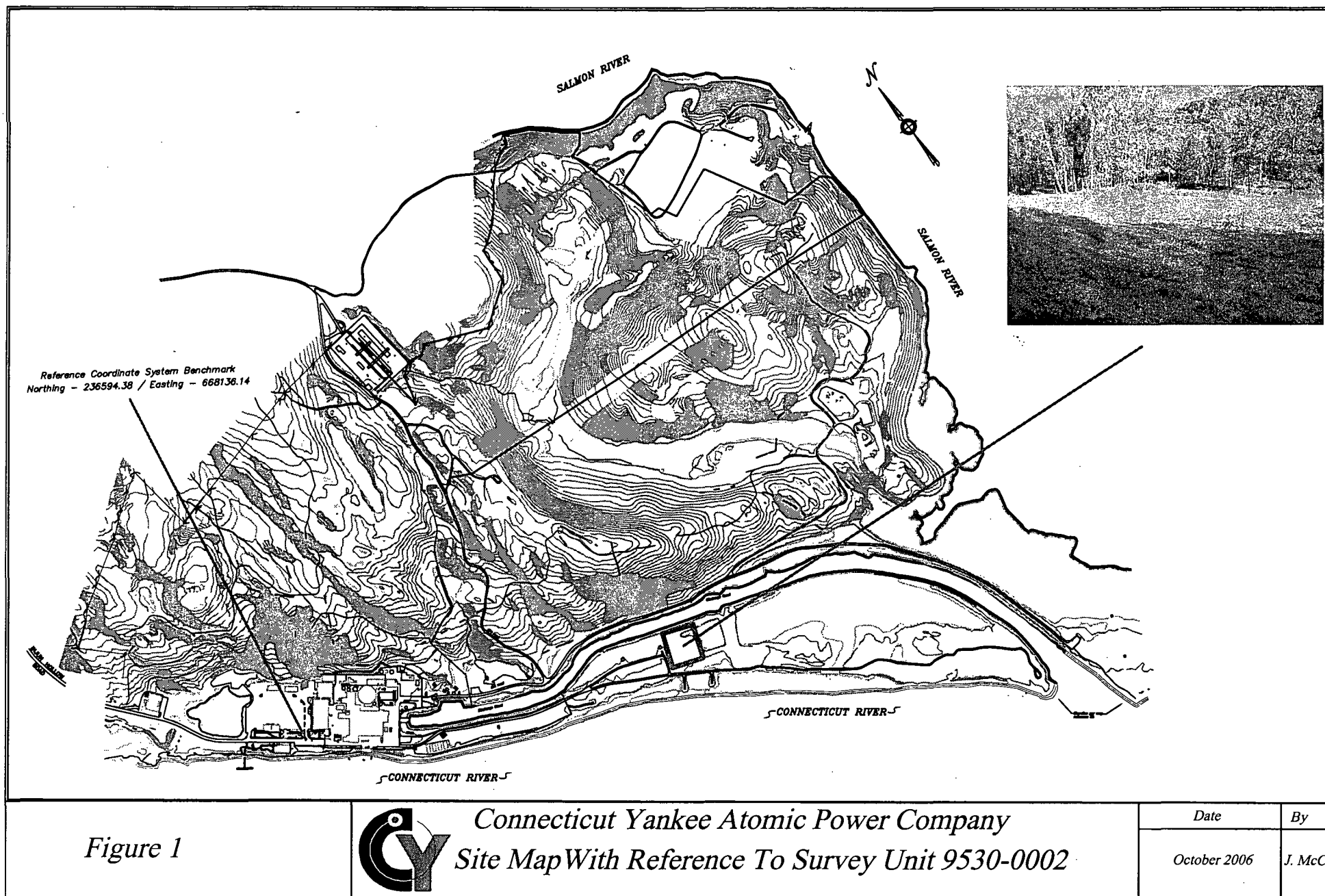


Figure 1



Connecticut Yankee Atomic Power Company  
 Site Map With Reference To Survey Unit 9530-0002

Date

By

October 2006

J. McC.

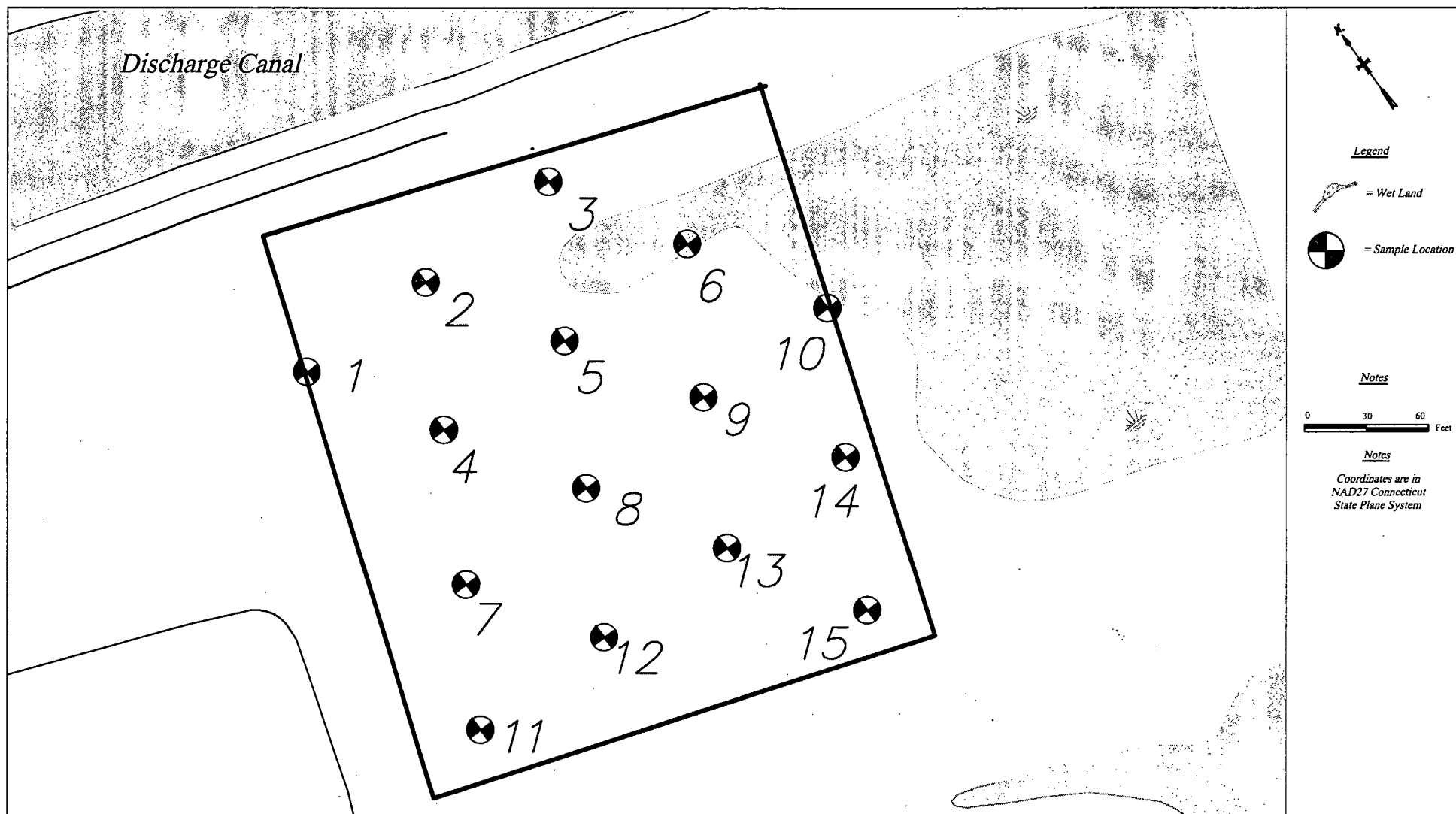


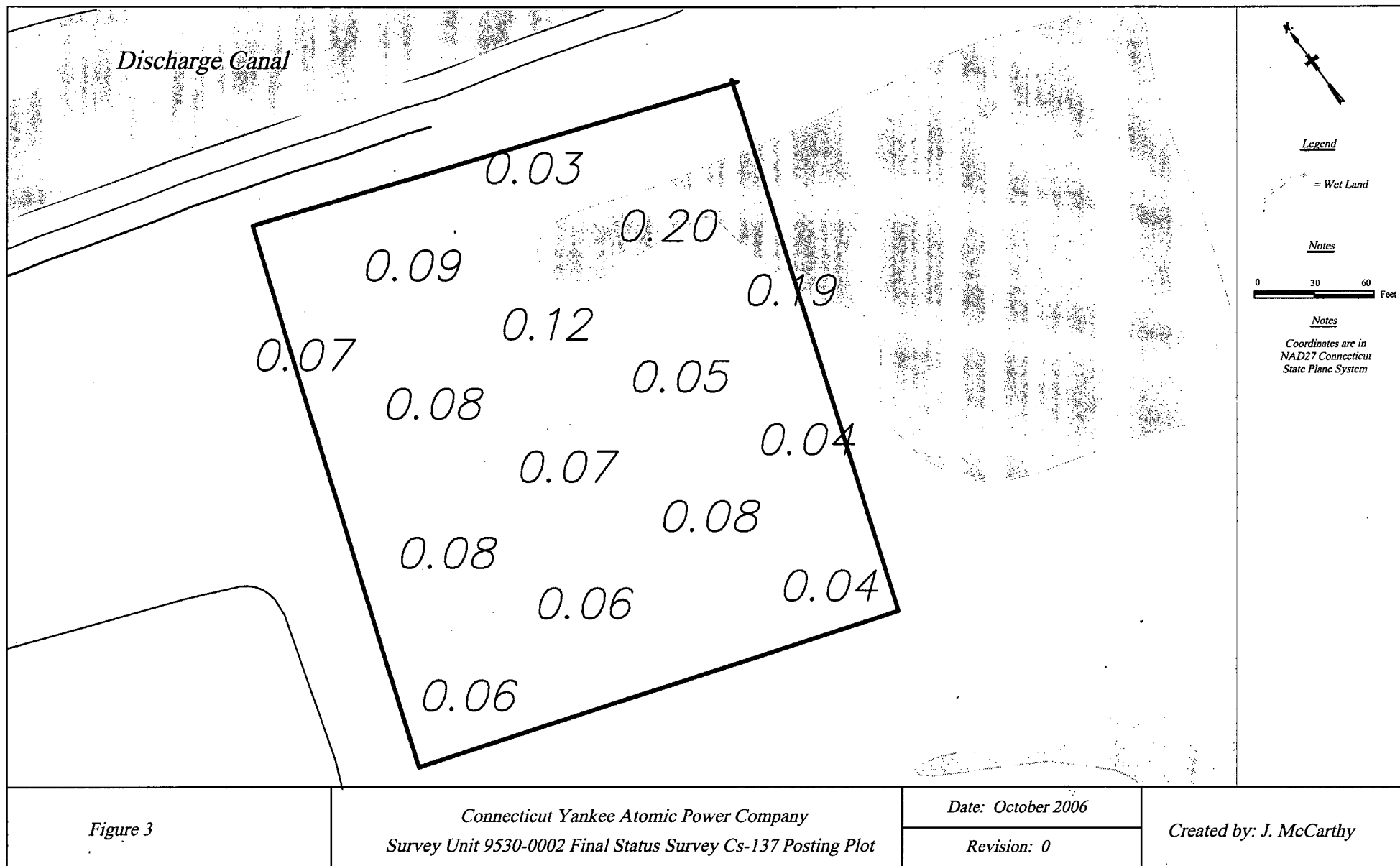
Figure 2

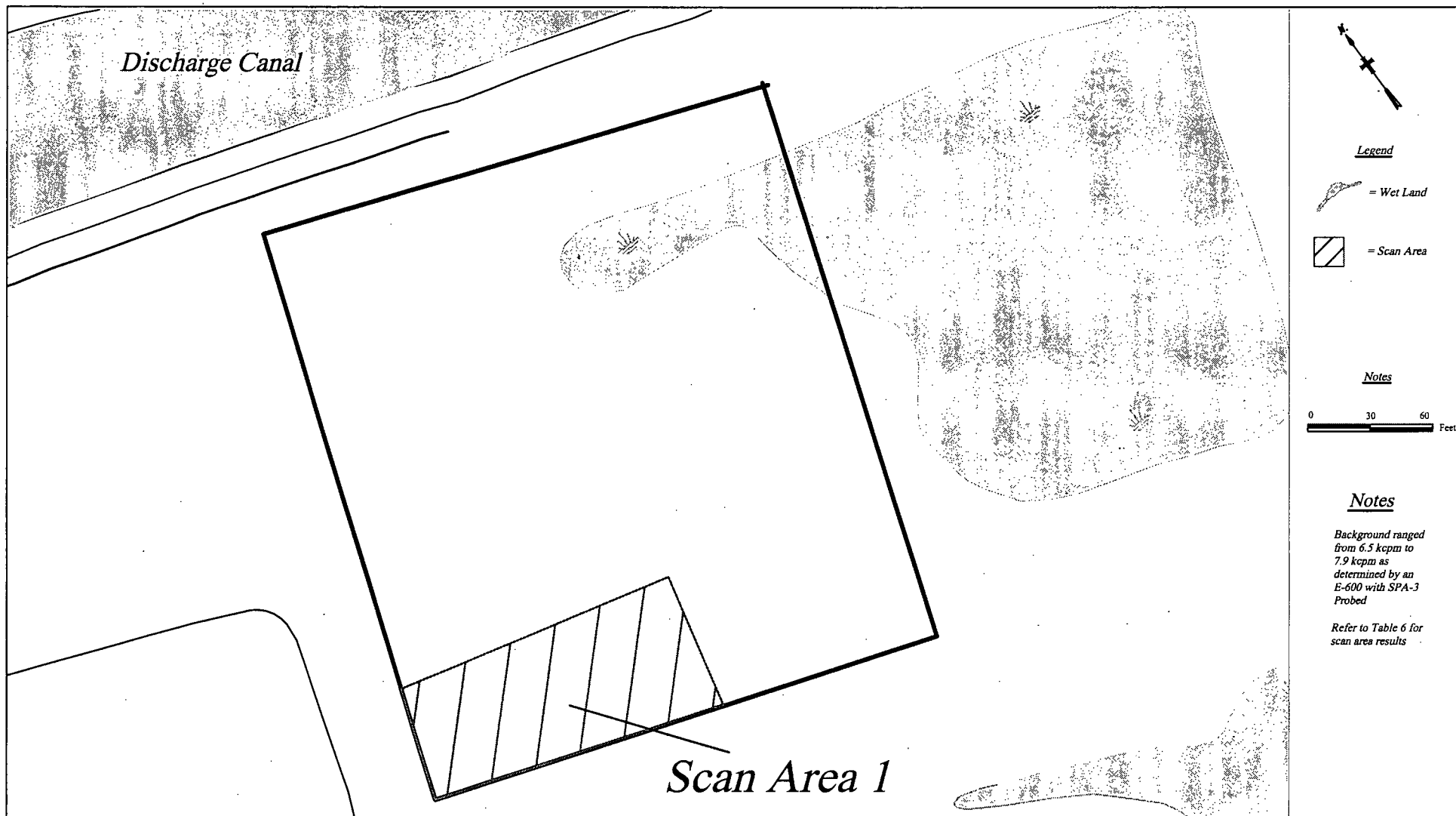
Connecticut Yankee Atomic Power Company  
Survey Unit 9530-0002 Final Status Survey Design

Date: October 2006

Revision: 0

Created by: J. McCarthy





*Figure 4*

*Connecticut Yankee Atomic Power Company  
Survey Unit 9530-0002 Final Status Survey Scan Areas*

*Date: October 2006*

*Revision: 0*

*Created by: J. McCarthy*

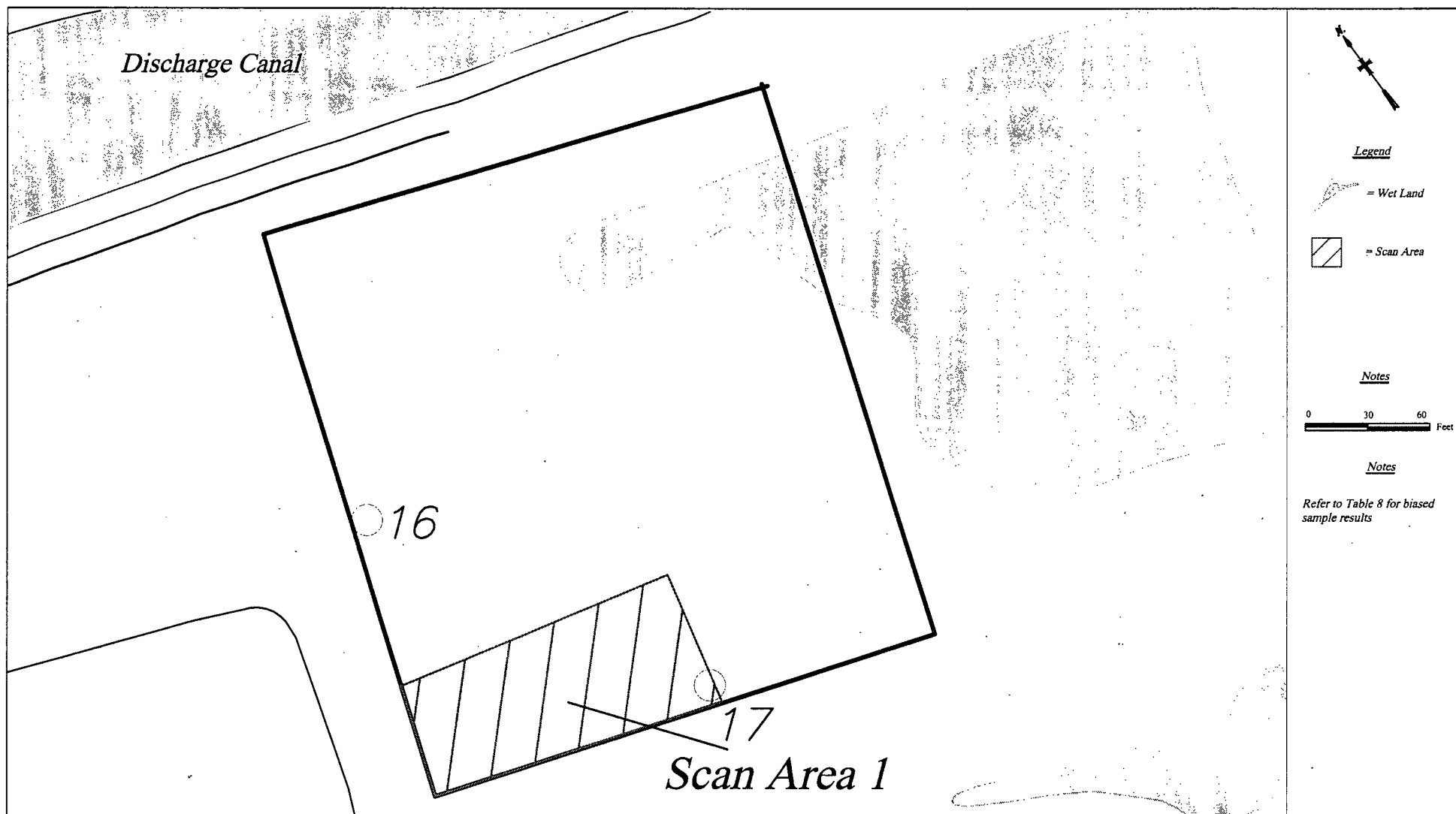


Figure 5

Connecticut Yankee Atomic Power Company  
Survey Unit 9530-0002 Biased

Date: October 2006

Revision: 0

Created by: J. McCarthy



CENTRAL PENINSULA  
SURVEY UNIT 9530-0002

RELEASE RECORD

---

**ATTACHMENT 2 (SCAN RESULTS)**

# Survey Release Record Sample Location Scan Results

## Survey Unit 9530-0002

<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>
9530-02-SL-00-01-0	6.56E+03	7.72E+03	6.18E+03		9/7/2006	14:45:00	1117	1008
9530-02-SL-00-02-0	7.38E+03	8.61E+03	7.65E+03		9/7/2006	14:30:00	1117	1008
9530-02-SL-00-03-0	7.76E+03	9.02E+03	7.67E+03		9/7/2006	14:34:00	1117	1008
9530-02-SL-00-04-0	6.79E+03	7.97E+03	6.49E+03		9/7/2006	13:46:00	1117	1008
9530-02-SL-00-05-0	7.40E+03	8.63E+03	6.89E+03		9/7/2006	13:54:00	1117	1008
9530-02-SL-00-06-0	7.93E+03	9.20E+03	7.65E+03		9/7/2006	13:59:00	1117	1008
9530-02-SL-00-07-0	7.09E+03	8.29E+03	6.47E+03		9/7/2006	13:42:00	1117	1008
9530-02-SL-00-08-0	6.49E+03	7.64E+03	6.20E+03		9/7/2006	13:39:00	1117	1008
9530-02-SL-00-09-0	6.62E+03	7.78E+03	6.39E+03		9/7/2006	14:23:00	1117	1008
9530-02-SL-00-10-0	6.66E+03	7.83E+03	7.16E+03		9/7/2006	14:03:00	1117	1008
9530-02-SL-00-11-0	6.24E+03	7.37E+03	6.18E+03		9/7/2006	13:28:00	1117	1008
9530-02-SL-00-12-0	6.38E+03	7.52E+03	6.31E+03		9/7/2006	13:35:00	1117	1008
9530-02-SL-00-13-0	6.62E+03	7.78E+03	6.88E+03		9/7/2006	14:20:00	1117	1008
9530-02-SL-00-14-0	6.76E+03	7.93E+03	6.47E+03		9/7/2006	14:07:00	1117	1008
9530-02-SL-00-15-0	6.90E+03	8.09E+03	6.36E+03		9/7/2006	14:16:00	1117	1008
9530-02-SL-00-16-0	6.90E+03	8.09E+03	6.16E+03		9/7/2006	14:50:00	1117	1008
9530-02-SL-00-17-0	6.43E+03	7.58E+03	6.51E+03		9/7/2006	13:32:00	1117	1008

AL - Action Level

# Survey Release Record Scan Area Results

## Survey Unit 9530-0002

9530-0002 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>
9530-02-SC-01-01-0	7.39E+03	8.62E+03	6.81E+03		9/7/2006	10:07:00	1117	1008
9530-02-SC-01-02-0	6.87E+03	8.05E+03	6.46E+03		9/7/2006	10:15:00	1117	1008
9530-02-SC-01-03-0	7.18E+03	8.39E+03	7.82E+03		9/7/2006	10:23:00	1117	1008
9530-02-SC-01-04-0	6.49E+03	7.64E+03	7.37E+03		9/7/2006	10:33:00	1117	1008
9530-02-SC-01-05-0	6.48E+03	7.63E+03	5.59E+03		9/7/2006	10:52:00	1117	1008
9530-02-SC-01-06-0	7.86E+03	9.13E+03	7.18E+03		9/7/2006	11:00:00	1117	1008
9530-02-SC-01-07-0	7.32E+03	8.54E+03	7.24E+03		9/7/2006	11:05:00	1117	1008
9530-02-SC-01-08-0	6.92E+03	8.11E+03	7.27E+03		9/7/2006	11:09:00	1117	1008
9530-02-SC-01-09-0	6.95E+03	8.14E+03	6.90E+03		9/7/2006	11:03:00	1114	1014
9530-02-SC-01-10-0	7.93E+03	9.20E+03	7.39E+03		9/7/2006	10:58:00	1114	1014
9530-02-SC-01-11-0	7.33E+03	8.55E+03	7.41E+03		9/7/2006	10:52:00	1114	1014
9530-02-SC-01-12-0	7.61E+03	8.86E+03	6.51E+03		9/7/2006	10:44:00	1114	1014
9530-02-SC-01-13-0	7.50E+03	8.74E+03	7.53E+03		9/7/2006	10:35:00	1114	1014
9530-02-SC-01-14-0	7.77E+03	9.03E+03	7.13E+03		9/7/2006	10:30:00	1114	1014
9530-02-SC-01-15-0	7.14E+03	8.35E+03	7.82E+03		9/7/2006	10:25:00	1114	1014
9530-02-SC-01-16-0	7.05E+03	8.25E+03	6.90E+03		9/7/2006	10:18:00	1114	1014

AL - Action Level

CENTRAL PENINSULA  
SURVEY UNIT 9530-0002

RELEASE RECORD

---

**ATTACHMENT 3 (LABORATORY DATA)**

# **General Narrative**

**CASE NARRATIVE  
For  
CONNECTICUT YANKEE  
RE: Soil  
PO# 002332  
Work Order: 171459  
SDG: MSR#06-1237**

**September 21, 2006**

**Laboratory Identification:**

General Engineering Laboratories, LLC

**Mailing Address:**

P.O. Box 30712  
Charleston, South Carolina 29417

**Express Mail Delivery and Shipping Address:**

2040 Savage Road  
Charleston, South Carolina 29407

**Telephone Number:**

(843) 556-8171

**Summary:**

**Sample receipt**

The sample(s) for this Project arrived at General Engineering Laboratories, LLC, (GEL) in Charleston, South Carolina on September 12, 2006. All sample containers arrived without any visible signs of tampering or breakage. The chain of custody contained the proper documentation and signatures.

The laboratory received the following sample(s):

<b><u>Sample ID</u></b>	<b><u>Client Sample ID</u></b>
171459001	9530-0002-001F
171459002	9530-0002-002F
171459003	9530-0002-003F
171459004	9530-0002-004F
171459005	9530-0002-004FS
171459006	9530-0002-006F
171459007	9530-0002-007F
171459008	9530-0002-009F
171459009	9530-0002-010F

GENERAL ENGINEERING LABORATORIES, LLC

*a Member of THE GEL GROUP, INC.*

P.O. Box 30712 • Charleston, SC 29417 • 2040 Savage Road (29407)  
Phone (843) 556-8171 • Fax (843) 766-1178 • www.gel.com

171459010	9530-0002-011F
171459011	9530-0002-012F
171459012	9530-0002-013F
171459013	9530-0002-014F
171459014	9530-0002-014FS
171459015	9530-0002-015F
171459016	9530-0002-016F
171459017	9530-0002-017F
171459018	9530-0002-005F
171459019	9530-0002-008F

**Items of Note:**

There are no items of 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 listed below by analytical parameter.

**Analytical Request:**

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

**Internal Chain of Custody:**

Custody was maintained for the sample(s).

**Data Package:**

The enclosed data package contains the following sections: Case Narrative, Chain of Custody and Supporting Documentation and all analytical fractions.

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 21 September 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	CI641



# **Chain of Custody And Supporting Documentation**

Connecticut Yankee Atomic Power Company						Chain of Custody Form					No. 2006-00540		
362 Injun Hollow Road, East Hampton, CT 06424 860-267-2556													
Project Name: Haddam Neck Decommissioning						Analyses Requested					Lab Use Only		
Contact Name & Phone: Jack McCarthy 860-267-3924						FSSGAM	FSSALL						Comments:
Analytical Lab (Name, City, State) General Engineering Laboratories 2040 Savage Road. Charleston SC. 29407 843 556 8171. Attn. Cheryl Jones													
Priority: <input type="checkbox"/> 30 D. <input checked="" type="checkbox"/> 14 D. <input type="checkbox"/> 7 D. <input type="checkbox"/> 3 D.													
Sample Designation	Date	Time	Media Code	Sample Type Code	Container Size- & Type Code						Comment, Preservation	Lab Sample ID	
9530-0002-001F	9/7/06	1446	TS	G	BP	X							
9530-0002-002F	9/7/06	1429	TS	G	BP	X							
9530-0002-003F	9/7/06	1435	TS	G	BP	X							
9530-0002-004F	9/7/06	1343	TS	G	BP	X							
9530-0002-004FS	9/7/06	1343	TS	G	BP								
9530-0002-005F	9/7/06	1354	TS	G	BP		X						
9530-0002-006F	9/7/06	1358	TS	G	BP	X							
9530-0002-007F	9/7/06	1342	TS	G	BP	X							
9530-0002-008F	9/7/06	1339	TS	G	BP		X						
9530-0002-009F	9/7/06	1423	TS	G	BP	X							
9530-0002-010F	9/7/06	1403	TS	G	BP	X							
NOTES: PO #: 002332    MSR #: 06- <del>1231</del> SSWP# NA <input checked="" type="checkbox"/> LTP QA <input type="checkbox"/> Radwaste QA <input type="checkbox"/> Non QA						Samples Shipped Via: <input checked="" type="checkbox"/> Fed Ex <input type="checkbox"/> UPS <input type="checkbox"/> Hand  <input type="checkbox"/> Other					Internal Container Temp.: 21 (Deg. C) Custody Sealed? Y <input type="checkbox"/> N <input checked="" type="checkbox"/> Custody Seal Intact? Y <input type="checkbox"/> N <input checked="" type="checkbox"/>		
1) Relinquished By <i>[Signature]</i>		Date/Time 9/11/06 1330		2) Received By <i>[Signature]</i>		Date/Time 9/12/06 0930		Bill of Lading #					
3) Relinquished By		Date/Time		4) Received By		Date/Time							

**Connecticut Yankee Atomic Power Company**362 Injun Hollow Road, East Hampton, CT 06424  
860-267-2556**Chain of Custody Form**

No. 2006-00541

Project Name: Haddam Neck Decommissioning						Analyses Requested				Lab Use Only			
Contact Name & Phone: Jack McCarthy 860-267-3924						FSSGAM	FSSALL				Comments:		
Analytical Lab (Name, City, State) General Engineering Laboratories 2040 Savage Road, Charleston SC. 29407 843 556 8171. Attn. Cheryl Jones													
Priority: <input type="checkbox"/> 30 D. <input checked="" type="checkbox"/> 14 D. <input type="checkbox"/> 7 D. <input type="checkbox"/> 3 D.													
Sample Designation	Date	Time	Media Code	Sample Type Code	Container Size & Type Code						Comment, Preservation	Lab Sample ID	
9530-0002-011F	9/7/06	1330	TS	G	BP	X							
9530-0002-012F	9/7/06	1335	TS	G	BP	X							
9530-0002-013F	9/7/06	1420	TS	G	BP	X							
9530-0002-014F	9/7/06	1407	TS	G	BP	X							
9530-0002-014FS	9/7/06	1407	TS	G	BP	X							
9530-0002-015F	9/7/06	1416	TS	G	BP	X							
9530-0002-016F	9/7/06	1453	TS	G	BP	X							
9530-0002-017F	9/7/06	1332	TS	G	BP	X							
NOTES: PO #: 002332    MSR #: 06-1237    SSWP# NA <input checked="" type="checkbox"/> LTP QA <input type="checkbox"/> Radwaste QA <input type="checkbox"/> Non QA										Samples Shipped Via: <input checked="" type="checkbox"/> Fed Ex <input type="checkbox"/> UPS <input type="checkbox"/> Hand  <input type="checkbox"/> Other		Internal Container Temp.: <u>21</u> Deg. C Custody Sealed? Y <input type="checkbox"/> N <input type="checkbox"/> Custody Seal Intact? Y <input type="checkbox"/> N <input type="checkbox"/>	
1) Relinquished By <u>[Signature]</u>			Date/Time <u>9/11/06 1335</u>			2) Received By <u>[Signature]</u>			Date/Time <u>9/12/06 9:30</u>			Bill of Lading #	
3) Relinquished By <u>[Signature]</u>			Date/Time <u>9/12/06 9:30</u>			4) Received By <u>[Signature]</u>			Date/Time				

RE: MSR#06-1237 Please confirm

Subject: RE: MSR#06-1237 Please confirm  
From: "John McCarthy" <McCarthy@CYAPCO.com>  
Date: Tue, 12 Sep 2006 14:45:27 -0400  
To: "Cheryl Jones" <cj@gel.com>

FSSGAM, sorry for the slip.

-----Original Message-----  
From: Cheryl Jones {mailto:cj@gel.com}  
Sent: Tuesday, September 12, 2006 2:44 PM  
To: John McCarthy  
Cc: Amanda Rasco  
Subject: MSR#06-1237 Please confirm

Jack,  
We received all these samples today with no problems. The COC for 2006-00540 under MSR#06-1237 doesn't have the analysis marked for sample 9530-0002-004FS. Please confirm you need FSSGAM on this sample.  
Thanks,  
Cheryl

John McCarthy wrote:

Our whole network was down, so I apologize for the short notice.

We are sending 40 samples for analysis. The COCs are attached. Basic breakdown is 4 samples HTD 7 day TAT; 27 samples (2 or 3 HTD) 14 day TAT and 19 samples (2 HTD) 14 day TAT.

--

-----  
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](mailto:cj@gel.com)  
Web: [www.gel.com](http://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 1. Sample Check-in List

Date/Time Received: 9-12-06 0930

SDG#: MSR# 06-1237

Work Order Number: 1714597

Shipping Container ID: 791547615830 Chain of Custody #: 2006-00540

1. Custody Seals on shipping container intact? Yes ☐ No ☐ NA
2. Custody Seals dated and signed? Yes ☐ No ☐ NA
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: 11
7. Sample holding times exceeded? Yes ☐ No ☒

8. Samples have:

☒ tape ☐ hazard labels  
☒ custody seals ☒ appropriate sample labels

9. Samples are:

☒ in good condition ☐ leaking  
☐ broken ☐ have air bubbles

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

Sample Custodian/Laboratory: K. Hefner Date: 9-12-06

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

Figure 1. Sample Check-in List

Date/Time Received: 9/12/06 9:30

SDG#: MSR#06-1235, MSR#06-1236, MSR#06-1237

Work Order Number: 171450, 171454, 171459

Shipping Container ID: See Cont. Chain of Custody #: See Cont.

1. Custody Seals on shipping container intact? Yes ☐ No ☐ NA
2. Custody Seals dated and signed? Yes ☐ No ☐ NA
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: See Cont.
7. Sample holding times exceeded? Yes ☐ No ☒

8. Samples have:

☒ tape ☐ hazard labels  
☒ custody seals ☒ appropriate sample labels

9. Samples are:

☒ in good condition ☐ leaking  
☐ broken ☐ have air bubbles

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

11. Description of anomalies (include sample numbers): See Cont.

Sample Custodian/Laboratory: Japan Labs Date: 9/12/06

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



# SAMPLE RECEIPT & REVIEW FORM

PM use only

Client: <u>Conn. Yankee</u>	SDG/ARCOC/Work Order: <u>171450, 171454, 171459</u>
Date Received: <u>2/12/06</u>	PM(A) Review (ensure non-conforming items are resolved prior to signing):
Received By: <u>JB</u>	<u>[Signature]</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>See COCs: 2006-00521, 00522, 00523, 00529, 00530, 00532, 00535, 00541</u>			

Suspected Hazard Information	Non-Regulated	Regulated	High Level	RSO RAD Receipt #
A Radiological Classification?	/			*If > x2 area background is observed on samples identified as "non-regulated/non-radioactive", contact the Radiation Safety group for further investigation.
B PCB Regulated?	/			Maximum Counts Observed*: <u>cpm 2.2</u>
C Shipped as DOT Hazardous Material? If yes, contact Waste Manager or ESH Manager.	/			Comments:
				Hazard Class Shipped:
				UN#:

## SAMPLE RECEIPT & REVIEW FORM CONTINUATION FORM

**Client:**

**Date Received:**

Conn. Yankee		9/12/06	
Track ID		COC No.	Total # of Containers
7915 476158140		2006-00541	12
"	"	2006-00529	
"	"	2006-00530	
"	"	2006-00532	
7990 00199827		2006-00522	17
"	"	2006-00535	
7990 00199849		2006-00523	10
"	"	2006-00521	



# RADIOLOGICAL ANALYSIS

**Radiochemistry Case Narrative  
Connecticut Yankee Atomic Power Co. (YANK)  
Work Order 171459**

**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:** 567824  
**Prep Batch Number:** 567639  
**Dry Soil Prep GL-RAD-A-021 Batch Number:** 567635

<b>Sample ID</b>	<b>Client ID</b>
171459018	9530-0002-005F
171459019	9530-0002-008F
1201181597	Method Blank (MB)
1201181598	171450001(9520-04-1C) Sample Duplicate (DUP)
1201181599	171450001(9520-04-1C) Matrix Spike (MS)
1201181600	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: 171450001 (9520-04-1C).

**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:** Alphaspec Pu, 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:** 567825  
**Prep Batch Number:** 567639  
**Dry Soil Prep GL-RAD-A-021 Batch Number:** 567635

Sample ID	Client ID
171459018	9530-0002-005F
171459019	9530-0002-008F
1201181601	Method Blank (MB)
1201181602	171450001(9520-04-1C) Sample Duplicate (DUP)
1201181603	171450001(9520-04-1C) Matrix Spike (MS)
1201181604	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: 171450001 (9520-04-1C).

##### **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:	567826
Prep Batch Number:	567639
Dry Soil Prep GL-RAD-A-021 Batch Number:	567635

<b>Sample ID</b>	<b>Client ID</b>
171459018	9530-0002-005F
171459019	9530-0002-008F
1201181605	Method Blank (MB)
1201181606	171450001(9520-04-1C) Sample Duplicate (DUP)
1201181607	171450001(9520-04-1C) Matrix Spike (MS)
1201181608	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: 171450001 (9520-04-1C).

##### **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>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:	569470
Prep Batch Number:	567635

<b>Sample ID</b>	<b>Client ID</b>
171459001	9530-0002-001F
171459002	9530-0002-002F
171459003	9530-0002-003F
171459004	9530-0002-004F
171459005	9530-0002-004FS
171459006	9530-0002-006F
171459007	9530-0002-007F
171459008	9530-0002-009F
171459009	9530-0002-010F
171459010	9530-0002-011F
171459011	9530-0002-012F
171459012	9530-0002-013F
171459013	9530-0002-014F
171459014	9530-0002-014FS
171459015	9530-0002-015F
171459016	9530-0002-016F
171459017	9530-0002-017F
171459018	9530-0002-005F
171459019	9530-0002-008F
1201185434	Method Blank (MB)
1201185435	171459001(9530-0002-001F) Sample Duplicate (DUP)
1201185436	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: 171459001 (9530-0002-001F).

##### **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**

Qualifier	Reason	Analyte	Sample
UI	Data rejected due to high counting uncertainty.	Bismuth-212	171459019
UI	Data rejected due to high peak-width.		171459014
		Cesium-137	171459017
UI	Data rejected due to interference.	Manganese-54	171459011
			171459018
UI	Data rejected due to low abundance.	Actinium-228	1201185435
		Cesium-134	171459003
			171459005
			171459010
			171459011
			171459015
		Cobalt-60	171459017
		Silver-108m	171459012
			171459017
		Thallium-208	171459018

#### **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:	567998
Prep Batch Number:	567639
Dry Soil Prep GL-RAD-A-021 Batch Number:	567635

<b>Sample ID</b>	<b>Client ID</b>
171459018	9530-0002-005F
171459019	9530-0002-008F
1201181989	Method Blank (MB)
1201181990	171450001(9520-04-1C) Sample Duplicate (DUP)
1201181991	171450001(9520-04-1C) Matrix Spike (MS)
1201181992	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: 171450001 (9520-04-1C).

##### **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:** 567935

<b>Sample ID</b>	<b>Client ID</b>
171459018	9530-0002-005F
171459019	9530-0002-008F
1201181858	Method Blank (MB)
1201181859	171454026(9530-0004-012F) Sample Duplicate (DUP)
1201181860	171454026(9530-0004-012F) Matrix Spike (MS)
1201181861	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 volumes in this batch.

**Designated QC**

The following sample was used for QC: 171454026 (9530-0004-012F).

**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 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.

**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:	567933
Prep Batch Number:	567639
Dry Soil Prep GL-RAD-A-021 Batch Number:	567635

Sample ID	Client ID
171459018	9530-0002-005F
171459019	9530-0002-008F
1201181849	Method Blank (MB)
1201181850	171450001(9520-04-1C) Sample Duplicate (DUP)
1201181851	171450001(9520-04-1C) Matrix Spike (MS)
1201181852	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: 171450001 (9520-04-1C).

##### **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 1201181849 (MB), 1201181850 (9520-04-1C), 1201181851 (9520-04-1C), 1201181852 (LCS), 171459018 (9530-0002-005F) and 171459019 (9530-0002-008F) were 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**

<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:	567934
Prep Batch Number:	567639
Dry Soil Prep GL-RAD-A-021 Batch Number:	567635

<b>Sample ID</b>	<b>Client ID</b>
171459018	9530-0002-005F
171459019	9530-0002-008F
1201181854	Method Blank (MB)
1201181855	171450001(9520-04-1C) Sample Duplicate (DUP)
1201181856	171450001(9520-04-1C) Matrix Spike (MS)
1201181857	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: 171450001 (9520-04-1C).

**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:** 567994



Sample ID	Client ID
171459018	9530-0002-005F
171459019	9530-0002-008F
1201181977	Method Blank (MB)
1201181978	171454026(9530-0004-012F) Sample Duplicate (DUP)
1201181979	171454026(9530-0004-012F) Matrix Spike (MS)
1201181980	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 volumes in this batch.

##### **Designated QC**

The following sample was used for QC: 171454026 (9530-0004-012F).

##### **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 361821 was generated due to Container scanning event for custody missed. 1. The analyst did not scan the samples 171454026, 171454027, 171459018, and 171459019 into the batch prior to analysis, however the samples did remain in their custody at all times. 1. The error has been corrected and the analyst has been instructed on the proper scanning procedures.

**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:** 567937

<b>Sample ID</b>	<b>Client ID</b>
171459018	9530-0002-005F
171459019	9530-0002-008F
1201181862	Method Blank (MB)
1201181863	171454026(9530-0004-012F) Sample Duplicate (DUP)
1201181864	171454026(9530-0004-012F) Matrix Spike (MS)
1201181865	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: 171454026 (9530-0004-012F).

**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.

**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:

*Kathleen Ball* 9/26/06

COMPANY - WIDE NONCONFORMANCE REPORT			
<b>Mo. Day Yr.</b> 21-SEP-06	<b>Division:</b> Radiochemistry	<b>Quality Criteria:</b> Specifications	<b>Type:</b> Process
<b>Instrument Type:</b> LSC	<b>Test / Method:</b> EPA 906.0 Modified	<b>Matrix Type:</b> Solid	<b>Client Code:</b> YANK
<b>Batch ID:</b> 567994	<b>Sample Numbers:</b> See Below		
<b>Potentially affected work order(s)(SDG):</b> 171454(MSR#06-1236), 171459(MSR#06-1237) <b>Application Issues:</b> Container scanning event for custody missed			
<b>Specification and Requirements</b>		<b>NRG Disposition:</b>	
<b>Nonconformance Description:</b>  1. The analyst did not scan the samples 171454026, 171454027, 171459018, and 171459019 into the batch prior to analysis, however the samples did remain in their custody at all times.		1. The error has been corrected and the analyst has been instructed on the proper scanning procedures.	

**Originator's Name:**

Amy Scott 21-SEP-06

**Data Validator/Group Leader:**

Melanie Aycock 22-SEP-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#06-1237 GEL Work Order: 171459**

**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: September 26, 2006

Client Sample ID: 9530-0002-001F  
Sample ID: 171459001  
Matrix: TS  
Collect Date: 07-SEP-06  
Receive Date: 12-SEP-06  
Collector: Client  
Moisture: 1.52%

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		0.451	+/-0.116	0.0459	+/-0.116	0.100	pCi/g						
Americium-241	U	0.00827	+/-0.0741	0.0639	+/-0.0741	0.132	pCi/g						
Bismuth-212		0.385	+/-0.170	0.107	+/-0.170	0.231	pCi/g						
Bismuth-214		0.247	+/-0.058	0.0301	+/-0.058	0.0637	pCi/g						
Cesium-134	U	0.00966	+/-0.0198	0.0179	+/-0.0198	0.0383	pCi/g						
Cesium-137		0.0773	+/-0.0359	0.0144	+/-0.0359	0.0308	pCi/g						
Cobalt-60	U	0.002	+/-0.0191	0.014	+/-0.0191	0.0313	pCi/g						
Europium-152	U	-0.00753	+/-0.0423	0.0367	+/-0.0423	0.0774	pCi/g						
Europium-154	U	-0.00523	+/-0.0556	0.0461	+/-0.0556	0.101	pCi/g						
Europium-155	U	0.00174	+/-0.0463	0.0438	+/-0.0463	0.0906	pCi/g						
Lead-212		0.369	+/-0.0425	0.025	+/-0.0425	0.0519	pCi/g						
Lead-214		0.271	+/-0.0651	0.026	+/-0.0651	0.0549	pCi/g						
Manganese-54	U	-0.000155	+/-0.0163	0.0142	+/-0.0163	0.0306	pCi/g						
Niobium-94	U	0.00779	+/-0.0158	0.0144	+/-0.0158	0.0307	pCi/g						
Potassium-40		10.3	+/-0.745	0.117	+/-0.745	0.266	pCi/g						
Radium-226		0.247	+/-0.058	0.0301	+/-0.058	0.0637	pCi/g						
Silver-108m	U	-0.0111	+/-0.0159	0.013	+/-0.0159	0.0276	pCi/g						
Thallium-208		0.151	+/-0.036	0.013	+/-0.036	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	MXP2	09/12/06	1824	567635

**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: September 26, 2006

Client Sample ID: 9530-0002-001F  
Sample ID: 171459001

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: September 26, 2006

Client Sample ID: 9530-0002-002F  
Sample ID: 171459002  
Matrix: TS  
Collect Date: 07-SEP-06  
Receive Date: 12-SEP-06  
Collector: Client  
Moisture: 6.13%

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		0.500	+/-0.182	0.0725	+/-0.182	0.155	pCi/g						
Americium-241	U	-0.00236	+/-0.0293	0.0269	+/-0.0293	0.0555	pCi/g						
Bismuth-212		0.328	+/-0.235	0.155	+/-0.235	0.328	pCi/g						
Bismuth-214		0.388	+/-0.0985	0.0372	+/-0.0985	0.0785	pCi/g						
Cesium-134	U	0.0464	+/-0.0361	0.0224	+/-0.0361	0.0476	pCi/g						
Cesium-137		0.0932	+/-0.0521	0.0196	+/-0.0521	0.0416	pCi/g						
Cobalt-60	U	0.00115	+/-0.0214	0.0182	+/-0.0214	0.040	pCi/g						
Europium-152	U	0.00596	+/-0.0537	0.047	+/-0.0537	0.0984	pCi/g						
Europium-154	U	-0.0393	+/-0.0791	0.0537	+/-0.0791	0.117	pCi/g						
Europium-155	U	0.090	+/-0.0892	0.0465	+/-0.0892	0.0958	pCi/g						
Lead-212		0.371	+/-0.0846	0.028	+/-0.0846	0.0581	pCi/g						
Lead-214		0.499	+/-0.0773	0.0331	+/-0.0773	0.0695	pCi/g						
Manganese-54	U	-0.0266	+/-0.027	0.0175	+/-0.027	0.0375	pCi/g						
Niobium-94	U	-0.00251	+/-0.021	0.018	+/-0.021	0.0381	pCi/g						
Potassium-40		8.74	+/-0.788	0.180	+/-0.788	0.395	pCi/g						
Radium-226		0.388	+/-0.0985	0.0372	+/-0.0985	0.0785	pCi/g						
Silver-108m	U	0.00638	+/-0.0182	0.0169	+/-0.0182	0.0356	pCi/g						
Thallium-208		0.158	+/-0.0442	0.0183	+/-0.0442	0.0387	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	MPX2	09/12/06	1824	567635

**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: September 26, 2006

Client Sample ID: 9530-0002-002F  
Sample ID: 171459002

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: September 26, 2006

Client Sample ID: 9530-0002-003F  
Sample ID: 171459003  
Matrix: TS  
Collect Date: 07-SEP-06  
Receive Date: 12-SEP-06  
Collector: Client  
Moisture: 3.52%

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		0.572	+/-0.116	0.0424	+/-0.116	0.0905	pCi/g						
Americium-241	U	0.0285	+/-0.0975	0.0703	+/-0.0975	0.146	pCi/g						
Bismuth-212		0.305	+/-0.190	0.0932	+/-0.190	0.198	pCi/g						
Bismuth-214		0.274	+/-0.0724	0.025	+/-0.0724	0.0524	pCi/g						
Cesium-134	UI	0.00	+/-0.0238	0.0144	+/-0.0238	0.0304	pCi/g						
Cesium-137		0.0315	+/-0.0163	0.0105	+/-0.0163	0.0224	pCi/g						
Cobalt-60	U	-0.00858	+/-0.0125	0.00987	+/-0.0125	0.0219	pCi/g						
Europium-152	U	-0.00353	+/-0.0337	0.0303	+/-0.0337	0.0636	pCi/g						
Europium-154	U	-0.0301	+/-0.0424	0.0343	+/-0.0424	0.0745	pCi/g						
Europium-155	U	0.0198	+/-0.0419	0.0399	+/-0.0419	0.0828	pCi/g						
Lead-212		0.429	+/-0.0402	0.0185	+/-0.0402	0.0384	pCi/g						
Lead-214		0.347	+/-0.0595	0.0224	+/-0.0595	0.0469	pCi/g						
Manganese-54	U	0.0134	+/-0.0145	0.0121	+/-0.0145	0.0257	pCi/g						
Niobium-94	U	0.00641	+/-0.0126	0.0115	+/-0.0126	0.0243	pCi/g						
Potassium-40		8.78	+/-0.606	0.107	+/-0.606	0.235	pCi/g						
Radium-226		0.274	+/-0.0724	0.025	+/-0.0724	0.0524	pCi/g						
Silver-108m	U	0.000801	+/-0.0111	0.00985	+/-0.0111	0.0208	pCi/g						
Thallium-208		0.131	+/-0.0285	0.0116	+/-0.0285	0.0245	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	MXP2	09/12/06	1824	567635

### 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.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: September 26, 2006

Client Sample ID: 9530-0002-003F  
Sample ID: 171459003

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: September 26, 2006

Client Sample ID: 9530-0002-004F  
Sample ID: 171459004  
Matrix: TS  
Collect Date: 07-SEP-06  
Receive Date: 12-SEP-06  
Collector: Client  
Moisture: 9.54%

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		0.504	+/-0.120	0.0472	+/-0.120	0.102	pCi/g						
Americium-241	U	-0.00986	+/-0.0469	0.0393	+/-0.0469	0.0812	pCi/g		MJH1	09/21/06	1628	569470	1
Bismuth-212	U	0.173	+/-0.285	0.119	+/-0.285	0.253	pCi/g						
Bismuth-214		0.333	+/-0.0738	0.0304	+/-0.0738	0.0642	pCi/g						
Cesium-134	U	0.0143	+/-0.0199	0.018	+/-0.0199	0.0384	pCi/g						
Cesium-137		0.0855	+/-0.0273	0.0144	+/-0.0273	0.0308	pCi/g						
Cobalt-60	U	0.0117	+/-0.0153	0.0145	+/-0.0153	0.0319	pCi/g						
Europium-152	U	-0.0175	+/-0.0411	0.0366	+/-0.0411	0.077	pCi/g						
Europium-154	U	-0.00142	+/-0.0482	0.0416	+/-0.0482	0.0914	pCi/g						
Europium-155	U	0.0134	+/-0.0433	0.0403	+/-0.0433	0.0833	pCi/g						
Lead-212		0.469	+/-0.0589	0.0218	+/-0.0589	0.0454	pCi/g						
Lead-214		0.354	+/-0.0777	0.0263	+/-0.0777	0.0554	pCi/g						
Manganese-54	U	-0.0095	+/-0.0201	0.014	+/-0.0201	0.0302	pCi/g						
Niobium-94	U	0.00406	+/-0.0152	0.0134	+/-0.0152	0.0286	pCi/g						
Potassium-40		10.8	+/-0.950	0.109	+/-0.950	0.249	pCi/g						
Radium-226		0.333	+/-0.0738	0.0304	+/-0.0738	0.0642	pCi/g						
Silver-108m	U	-0.00126	+/-0.0151	0.0135	+/-0.0151	0.0284	pCi/g						
Thallium-208		0.164	+/-0.0408	0.0131	+/-0.0408	0.0281	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	MXP2	09/12/06	1824	567635

### 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: September 26, 2006

Client Sample ID: 9530-0002-004F  
Sample ID: 171459004

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: September 26, 2006

Client Sample ID: 9530-0002-004FS  
Sample ID: 171459005  
Matrix: TS  
Collect Date: 07-SEP-06  
Receive Date: 12-SEP-06  
Collector: Client  
Moisture: 9.59%

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		0.519	+/-0.128	0.038	+/-0.128	0.0815	pCi/g						
Americium-241	U	-0.0121	+/-0.0518	0.0484	+/-0.0518	0.0998	pCi/g						
Bismuth-212		0.504	+/-0.185	0.0827	+/-0.185	0.176	pCi/g						
Bismuth-214		0.365	+/-0.0732	0.0232	+/-0.0732	0.0487	pCi/g						
Cesium-134	UI	0.00	+/-0.0184	0.0147	+/-0.0184	0.031	pCi/g						
Cesium-137		0.0939	+/-0.0346	0.012	+/-0.0346	0.0253	pCi/g						
Cobalt-60	U	0.00569	+/-0.0135	0.0118	+/-0.0135	0.0256	pCi/g						
Europium-152	U	-0.00784	+/-0.0342	0.0303	+/-0.0342	0.0634	pCi/g						
Europium-154	U	-0.0133	+/-0.0403	0.0325	+/-0.0403	0.0705	pCi/g						
Europium-155	U	0.0437	+/-0.0493	0.0387	+/-0.0493	0.0799	pCi/g						
Lead-212		0.479	+/-0.0449	0.0187	+/-0.0449	0.0388	pCi/g						
Lead-214		0.432	+/-0.0597	0.0217	+/-0.0597	0.0455	pCi/g						
Manganese-54	U	0.0131	+/-0.0131	0.0122	+/-0.0131	0.0259	pCi/g						
Niobium-94	U	0.00559	+/-0.0118	0.0108	+/-0.0118	0.0228	pCi/g						
Potassium-40		10.7	+/-0.654	0.0866	+/-0.654	0.193	pCi/g						
Radium-226		0.365	+/-0.0732	0.0232	+/-0.0732	0.0487	pCi/g						
Silver-108m	U	0.000866	+/-0.0121	0.0106	+/-0.0121	0.0224	pCi/g						
Thallium-208		0.126	+/-0.0267	0.0107	+/-0.0267	0.0227	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	MXP2	09/12/06	1824	567635

### 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: September 26, 2006

Client Sample ID: 9530-0002-004FS  
Sample ID: 171459005

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: September 26, 2006

Client Sample ID: 9530-0002-006F  
Sample ID: 171459006  
Matrix: TS  
Collect Date: 07-SEP-06  
Receive Date: 12-SEP-06  
Collector: Client  
Moisture: 18.8%

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		0.784	+/-0.209	0.0639	+/-0.209	0.128	pCi/g						
Americium-241	U	0.0557	+/-0.0851	0.0661	+/-0.0851	0.132	pCi/g						
Bismuth-212		0.526	+/-0.370	0.154	+/-0.370	0.308	pCi/g						
Bismuth-214		0.625	+/-0.114	0.040	+/-0.114	0.0799	pCi/g						
Cesium-134	U	0.0488	+/-0.0256	0.0253	+/-0.0256	0.0506	pCi/g						
Cesium-137		0.207	+/-0.0505	0.0224	+/-0.0505	0.0447	pCi/g						
Cobalt-60	U	-0.00697	+/-0.0277	0.0222	+/-0.0277	0.0443	pCi/g						
Europium-152	U	0.0199	+/-0.0732	0.0552	+/-0.0732	0.110	pCi/g						
Europium-154	U	0.0327	+/-0.0813	0.0702	+/-0.0813	0.140	pCi/g						
Europium-155	U	-0.0147	+/-0.0689	0.0576	+/-0.0689	0.115	pCi/g						
Lead-212		0.827	+/-0.0965	0.0315	+/-0.0965	0.063	pCi/g						
Lead-214		0.710	+/-0.114	0.0374	+/-0.114	0.0747	pCi/g						
Manganese-54	U	0.013	+/-0.0256	0.020	+/-0.0256	0.0399	pCi/g						
Niobium-94	U	0.00787	+/-0.0236	0.0207	+/-0.0236	0.0414	pCi/g						
Potassium-40		12.1	+/-1.20	0.189	+/-1.20	0.378	pCi/g						
Radium-226		0.625	+/-0.114	0.040	+/-0.114	0.0799	pCi/g						
Silver-108m	U	0.0207	+/-0.0219	0.0195	+/-0.0219	0.039	pCi/g						
Thallium-208		0.262	+/-0.0524	0.0205	+/-0.0524	0.041	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	MPX2	09/12/06	1824	567635

### 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: September 26, 2006

Client Sample ID: 9530-0002-006F  
Sample ID: 171459006

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: September 26, 2006

Client Sample ID: 9530-0002-007F  
Sample ID: 171459007  
Matrix: TS  
Collect Date: 07-SEP-06  
Receive Date: 12-SEP-06  
Collector: Client  
Moisture: 8.32%

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		0.488	+/-0.143	0.0439	+/-0.143	0.0878	pCi/g		MJH1	09/21/06	1643	569470	1
Americium-241	U	0.0603	+/-0.0678	0.0592	+/-0.0678	0.118	pCi/g						
Bismuth-212		0.365	+/-0.205	0.112	+/-0.205	0.224	pCi/g						
Bismuth-214		0.292	+/-0.0738	0.028	+/-0.0738	0.056	pCi/g						
Cesium-134	U	0.0241	+/-0.0215	0.0199	+/-0.0215	0.0397	pCi/g						
Cesium-137		0.0769	+/-0.0288	0.0155	+/-0.0288	0.0311	pCi/g						
Cobalt-60	U	0.00992	+/-0.0178	0.0162	+/-0.0178	0.0323	pCi/g						
Europium-152	U	-0.0422	+/-0.0551	0.0393	+/-0.0551	0.0786	pCi/g						
Europium-154	U	-0.000383	+/-0.0659	0.0495	+/-0.0659	0.099	pCi/g						
Europium-155	U	0.0536	+/-0.0595	0.0413	+/-0.0595	0.0825	pCi/g						
Lead-212		0.466	+/-0.0613	0.0229	+/-0.0613	0.0457	pCi/g						
Lead-214		0.393	+/-0.0676	0.0281	+/-0.0676	0.0563	pCi/g						
Manganese-54	U	0.0241	+/-0.0167	0.0124	+/-0.0167	0.0248	pCi/g						
Niobium-94	U	0.025	+/-0.0187	0.0139	+/-0.0187	0.0277	pCi/g						
Potassium-40		11.1	+/-0.986	0.0977	+/-0.986	0.195	pCi/g						
Radium-226		0.292	+/-0.0738	0.028	+/-0.0738	0.056	pCi/g						
Silver-108m	U	0.00346	+/-0.0159	0.0144	+/-0.0159	0.0287	pCi/g						
Thallium-208		0.163	+/-0.0381	0.0134	+/-0.0381	0.0267	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	MXP2	09/12/06	1824	567635

### 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: September 26, 2006

Client Sample ID: 9530-0002-007F  
Sample ID: 171459007

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: September 26, 2006

Client Sample ID: 9530-0002-009F  
Sample ID: 171459008  
Matrix: TS  
Collect Date: 07-SEP-06  
Receive Date: 12-SEP-06  
Collector: Client  
Moisture: 4.06%

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		0.368	+/-0.168	0.0729	+/-0.168	0.146	pCi/g						
Americium-241	U	0.0144	+/-0.0285	0.0241	+/-0.0285	0.0481	pCi/g						
Bismuth-212		0.409	+/-0.274	0.133	+/-0.274	0.266	pCi/g						
Bismuth-214		0.248	+/-0.0886	0.0359	+/-0.0886	0.0718	pCi/g						
Cesium-134	U	0.0382	+/-0.0307	0.0232	+/-0.0307	0.0464	pCi/g						
Cesium-137		0.0449	+/-0.0329	0.0176	+/-0.0329	0.0351	pCi/g						
Cobalt-60	U	0.0151	+/-0.0254	0.0231	+/-0.0254	0.0462	pCi/g						
Europium-152	U	0.017	+/-0.066	0.0419	+/-0.066	0.0838	pCi/g						
Europium-154	U	-0.00692	+/-0.0884	0.0741	+/-0.0884	0.148	pCi/g						
Europium-155	U	0.033	+/-0.0407	0.0383	+/-0.0407	0.0765	pCi/g						
Lead-212		0.359	+/-0.0541	0.0236	+/-0.0541	0.0472	pCi/g						
Lead-214		0.297	+/-0.0678	0.0298	+/-0.0678	0.0595	pCi/g						
Manganese-54	U	0.0141	+/-0.0232	0.0214	+/-0.0232	0.0428	pCi/g						
Niobium-94	U	-0.00397	+/-0.0183	0.0155	+/-0.0183	0.0311	pCi/g						
Potassium-40		8.95	+/-0.885	0.168	+/-0.885	0.335	pCi/g						
Radium-226		0.248	+/-0.0886	0.0359	+/-0.0886	0.0718	pCi/g						
Silver-108m	U	-0.00493	+/-0.0168	0.0144	+/-0.0168	0.0289	pCi/g						
Thallium-208		0.113	+/-0.0345	0.0159	+/-0.0345	0.0318	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	MXP2	09/12/06	1824	567635

**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.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: September 26, 2006

Client Sample ID: 9530-0002-009F  
Sample ID: 171459008

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: September 26, 2006

Client Sample ID: 9530-0002-010F  
Sample ID: 171459009  
Matrix: TS  
Collect Date: 07-SEP-06  
Receive Date: 12-SEP-06  
Collector: Client  
Moisture: 18.1%

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

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
Rad Gamma Spec Analysis													
<i>Gamma, Solid-FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.655	+/-0.137	0.0541	+/-0.137	0.118	pCi/g						
Americium-241	U	-0.0227	+/-0.123	0.0821	+/-0.123	0.170	pCi/g						
Bismuth-212		0.339	+/-0.219	0.141	+/-0.219	0.301	pCi/g						
Bismuth-214		0.525	+/-0.0722	0.0277	+/-0.0722	0.0594	pCi/g						
Cesium-134	U	0.0425	+/-0.0274	0.021	+/-0.0274	0.0447	pCi/g						
Cesium-137		0.196	+/-0.0367	0.0176	+/-0.0367	0.0374	pCi/g						
Cobalt-60	U	-0.00176	+/-0.0227	0.0188	+/-0.0227	0.0414	pCi/g						
Europium-152	U	-0.0336	+/-0.0495	0.039	+/-0.0495	0.0825	pCi/g						
Europium-154	U	-0.0168	+/-0.069	0.0481	+/-0.069	0.106	pCi/g						
Europium-155	U	0.0684	+/-0.0523	0.0492	+/-0.0523	0.102	pCi/g						
Lead-212		0.568	+/-0.0649	0.0358	+/-0.0649	0.0737	pCi/g						
Lead-214		0.562	+/-0.0786	0.0301	+/-0.0786	0.0635	pCi/g						
Manganese-54	U	0.00579	+/-0.0203	0.0172	+/-0.0203	0.037	pCi/g						
Niobium-94	U	0.00715	+/-0.0186	0.0161	+/-0.0186	0.0343	pCi/g						
Potassium-40		10.8	+/-0.826	0.151	+/-0.826	0.340	pCi/g						
Radium-226		0.525	+/-0.0722	0.0277	+/-0.0722	0.0594	pCi/g						
Silver-108m	U	0.0151	+/-0.0163	0.0151	+/-0.0163	0.0318	pCi/g						
Thallium-208		0.219	+/-0.0446	0.0156	+/-0.0446	0.0333	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	MXP2	09/12/06	1824	567635

### 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: September 26, 2006

Client Sample ID: 9530-0002-010F  
Sample ID: 171459009

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: September 26, 2006

Client Sample ID: 9530-0002-011F  
Sample ID: 171459010  
Matrix: TS  
Collect Date: 07-SEP-06  
Receive Date: 12-SEP-06  
Collector: Client  
Moisture: 8.68%

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

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analyst	Date	Time	Batch	Mtd
Rad Gamma Spec Analysis													
<i>Gamma, Solid-FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.433	+/-0.165	0.0742	+/-0.165	0.159	pCi/g						
Americium-241	U	0.00172	+/-0.0293	0.0266	+/-0.0293	0.0549	pCi/g		MJH1	09/21/06	1945	569470	1
Bismuth-212		0.606	+/-0.406	0.153	+/-0.406	0.327	pCi/g						
Bismuth-214		0.440	+/-0.0885	0.0365	+/-0.0885	0.0773	pCi/g						
Cesium-134	UI	0.00	+/-0.033	0.0273	+/-0.033	0.0576	pCi/g						
Cesium-137		0.0593	+/-0.0456	0.022	+/-0.0456	0.0466	pCi/g						
Cobalt-60	U	0.00362	+/-0.0269	0.0229	+/-0.0269	0.0497	pCi/g						
Europium-152	U	-0.051	+/-0.0616	0.0505	+/-0.0616	0.106	pCi/g						
Europium-154	U	0.0104	+/-0.0804	0.0688	+/-0.0804	0.148	pCi/g						
Europium-155	U	-0.0393	+/-0.0497	0.0413	+/-0.0497	0.0857	pCi/g						
Lead-212		0.398	+/-0.0657	0.0354	+/-0.0657	0.0728	pCi/g						
Lead-214		0.453	+/-0.0831	0.0343	+/-0.0831	0.072	pCi/g						
Manganese-54	U	0.00239	+/-0.0256	0.0217	+/-0.0256	0.046	pCi/g						
Niobium-94	U	0.0044	+/-0.0217	0.0189	+/-0.0217	0.0401	pCi/g						
Potassium-40		10.3	+/-0.927	0.174	+/-0.927	0.386	pCi/g						
Radium-226		0.440	+/-0.0885	0.0365	+/-0.0885	0.0773	pCi/g						
Silver-108m	U	-0.00291	+/-0.019	0.0171	+/-0.019	0.036	pCi/g						
Thallium-208		0.180	+/-0.0409	0.0188	+/-0.0409	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	MXP2	09/12/06	1824	567635

### 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.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: September 26, 2006

Client Sample ID: 9530-0002-011F  
Sample ID: 171459010

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: September 26, 2006

Client Sample ID: 9530-0002-012F  
Sample ID: 171459011  
Matrix: TS  
Collect Date: 07-SEP-06  
Receive Date: 12-SEP-06  
Collector: Client  
Moisture: 7.78%

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		0.436	+/-0.113	0.0398	+/-0.113	0.0852	pCi/g		MJH1	09/21/06	1946	569470	1
Americium-241	U	-0.0391	+/-0.0895	0.071	+/-0.0895	0.147	pCi/g						
Bismuth-212		0.343	+/-0.162	0.087	+/-0.162	0.185	pCi/g						
Bismuth-214		0.363	+/-0.057	0.0226	+/-0.057	0.0476	pCi/g						
Cesium-134	UI	0.00	+/-0.0194	0.0147	+/-0.0194	0.031	pCi/g						
Cesium-137		0.0616	+/-0.0222	0.0118	+/-0.0222	0.0249	pCi/g						
Cobalt-60	U	0.00174	+/-0.0141	0.0124	+/-0.0141	0.0268	pCi/g						
Europium-152	U	0.00393	+/-0.035	0.0321	+/-0.035	0.067	pCi/g						
Europium-154	U	0.0347	+/-0.045	0.0416	+/-0.045	0.0887	pCi/g						
Europium-155	U	0.0222	+/-0.0425	0.0409	+/-0.0425	0.0846	pCi/g						
Lead-212		0.485	+/-0.0407	0.0187	+/-0.0407	0.0388	pCi/g						
Lead-214		0.424	+/-0.0582	0.0223	+/-0.0582	0.0467	pCi/g						
Manganese-54	UI	0.00	+/-0.0193	0.00683	+/-0.0193	0.0151	pCi/g						
Niobium-94	U	0.00144	+/-0.0124	0.0112	+/-0.0124	0.0236	pCi/g						
Potassium-40		11.3	+/-0.604	0.0962	+/-0.604	0.213	pCi/g						
Radium-226		0.363	+/-0.057	0.0226	+/-0.057	0.0476	pCi/g						
Silver-108m	U	0.0108	+/-0.0115	0.0108	+/-0.0115	0.0227	pCi/g						
Thallium-208		0.151	+/-0.0266	0.0119	+/-0.0266	0.025	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	MXP2	09/12/06	1824	567635

### 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: September 26, 2006

Client Sample ID: 9530-0002-012F  
Sample ID: 171459011

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: September 26, 2006

Client Sample ID: 9530-0002-013F  
Sample ID: 171459012  
Matrix: TS  
Collect Date: 07-SEP-06  
Receive Date: 12-SEP-06  
Collector: Client  
Moisture: 7.13%

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		0.554	+/-0.108	0.0405	+/-0.108	0.0865	pCi/g						
Americium-241	U	-0.0208	+/-0.0507	0.0469	+/-0.0507	0.0969	pCi/g						
Bismuth-212		0.298	+/-0.171	0.0849	+/-0.171	0.181	pCi/g						
Bismuth-214		0.342	+/-0.063	0.023	+/-0.063	0.0484	pCi/g						
Cesium-134	U	0.025	+/-0.0141	0.0139	+/-0.0141	0.0294	pCi/g						
Cesium-137		0.0804	+/-0.0289	0.0119	+/-0.0289	0.0251	pCi/g						
Cobalt-60	U	-0.00478	+/-0.0134	0.0107	+/-0.0134	0.0234	pCi/g						
Europium-152	U	-0.0062	+/-0.0399	0.0311	+/-0.0399	0.065	pCi/g						
Europium-154	U	0.0211	+/-0.0364	0.0323	+/-0.0364	0.0702	pCi/g						
Europium-155	U	0.0169	+/-0.0416	0.0384	+/-0.0416	0.0794	pCi/g						
Lead-212		0.523	+/-0.0453	0.0178	+/-0.0453	0.037	pCi/g						
Lead-214		0.420	+/-0.0625	0.0232	+/-0.0625	0.0484	pCi/g						
Manganese-54	U	-1.210E-05	+/-0.0133	0.0116	+/-0.0133	0.0247	pCi/g						
Niobium-94	U	-0.000509	+/-0.0119	0.0105	+/-0.0119	0.0223	pCi/g						
Potassium-40		10.4	+/-0.621	0.0993	+/-0.621	0.219	pCi/g						
Radium-226		0.342	+/-0.063	0.023	+/-0.063	0.0484	pCi/g						
Silver-108m	UI	0.00	+/-0.033	0.00993	+/-0.033	0.021	pCi/g						
Thallium-208		0.162	+/-0.0326	0.0113	+/-0.0326	0.0238	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	MXP2	09/12/06	1824	567635

### 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: September 26, 2006

Client Sample ID: 9530-0002-013F  
Sample ID: 171459012

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: September 26, 2006

Client Sample ID: 9530-0002-014F  
Sample ID: 171459013  
Matrix: TS  
Collect Date: 07-SEP-06  
Receive Date: 12-SEP-06  
Collector: Client  
Moisture: 3.4%

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		0.533	+/-0.157	0.0731	+/-0.157	0.146	pCi/g						
Americium-241	U	-0.0156	+/-0.031	0.0246	+/-0.031	0.0492	pCi/g						
Bismuth-212		0.418	+/-0.212	0.149	+/-0.212	0.297	pCi/g						
Bismuth-214		0.256	+/-0.0872	0.0344	+/-0.0872	0.0687	pCi/g						
Cesium-134	U	0.0389	+/-0.0341	0.0249	+/-0.0341	0.0498	pCi/g						
Cesium-137		0.0422	+/-0.0325	0.0194	+/-0.0325	0.0388	pCi/g						
Cobalt-60	U	-0.00202	+/-0.0317	0.0225	+/-0.0317	0.0449	pCi/g						
Europium-152	U	-0.0557	+/-0.0634	0.0418	+/-0.0634	0.0836	pCi/g						
Europium-154	U	-0.088	+/-0.0852	0.0622	+/-0.0852	0.124	pCi/g						
Europium-155	U	0.00658	+/-0.0424	0.0387	+/-0.0424	0.0773	pCi/g						
Lead-212		0.372	+/-0.0581	0.0249	+/-0.0581	0.0498	pCi/g						
Lead-214		0.309	+/-0.083	0.0305	+/-0.083	0.0609	pCi/g						
Manganese-54	U	0.000962	+/-0.0219	0.0192	+/-0.0219	0.0384	pCi/g						
Niobium-94	U	0.00419	+/-0.0202	0.0182	+/-0.0202	0.0364	pCi/g						
Potassium-40		10.2	+/-0.929	0.167	+/-0.929	0.333	pCi/g						
Radium-226		0.256	+/-0.0872	0.0344	+/-0.0872	0.0687	pCi/g						
Silver-108m	U	0.0134	+/-0.019	0.0176	+/-0.019	0.0351	pCi/g						
Thallium-208		0.142	+/-0.0403	0.0176	+/-0.0403	0.0352	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	MXP2	09/12/06	1824	567635

### 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: September 26, 2006

Client Sample ID: 9530-0002-014F  
Sample ID: 171459013

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: September 26, 2006

Client Sample ID: 9530-0002-014FS  
Sample ID: 171459014  
Matrix: TS  
Collect Date: 07-SEP-06  
Receive Date: 12-SEP-06  
Collector: Client  
Moisture: 4.41%

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		0.393	+/-0.146	0.0636	+/-0.146	0.142	pCi/g						
Americium-241	U	-0.0873	+/-0.129	0.0863	+/-0.129	0.182	pCi/g						
Bismuth-212	UI	0.00	+/-0.443	0.124	+/-0.443	0.275	pCi/g						
Bismuth-214		0.243	+/-0.0728	0.0327	+/-0.0728	0.0714	pCi/g						
Cesium-134	U	0.0183	+/-0.0235	0.0219	+/-0.0235	0.048	pCi/g						
Cesium-137	U	0.0517	+/-0.0242	0.0251	+/-0.0242	0.0537	pCi/g						
Cobalt-60	U	-0.00378	+/-0.022	0.0181	+/-0.022	0.0418	pCi/g						
Europium-152	U	-0.0145	+/-0.0514	0.0431	+/-0.0514	0.093	pCi/g						
Europium-154	U	0.0636	+/-0.0692	0.0668	+/-0.0692	0.149	pCi/g						
Europium-155	U	0.0133	+/-0.0504	0.0488	+/-0.0504	0.103	pCi/g						
Lead-212		0.377	+/-0.059	0.0339	+/-0.059	0.071	pCi/g						
Lead-214		0.440	+/-0.0813	0.0307	+/-0.0813	0.0663	pCi/g						
Manganese-54	U	0.0159	+/-0.0192	0.0181	+/-0.0192	0.040	pCi/g						
Niobium-94	U	0.00965	+/-0.0179	0.0165	+/-0.0179	0.036	pCi/g						
Potassium-40		9.43	+/-0.927	0.130	+/-0.927	0.315	pCi/g						
Radium-226		0.243	+/-0.0728	0.0327	+/-0.0728	0.0714	pCi/g						
Silver-108m	U	0.00287	+/-0.018	0.0148	+/-0.018	0.0321	pCi/g						
Thallium-208		0.153	+/-0.0356	0.0159	+/-0.0356	0.0351	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	MPX2	09/12/06	1824	567635

### 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: September 26, 2006

Client Sample ID: 9530-0002-014FS  
Sample ID: 171459014

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: September 26, 2006

Client Sample ID: 9530-0002-015F  
Sample ID: 171459015  
Matrix: TS  
Collect Date: 07-SEP-06  
Receive Date: 12-SEP-06  
Collector: Client  
Moisture: 4.29%

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		0.402	+/-0.117	0.0392	+/-0.117	0.0848	pCi/g						
Americium-241	U	0.024	+/-0.0836	0.0778	+/-0.0836	0.160	pCi/g						
Bismuth-212	U	0.161	+/-0.169	0.099	+/-0.169	0.210	pCi/g						
Bismuth-214		0.234	+/-0.0594	0.0243	+/-0.0594	0.0512	pCi/g						
Cesium-134	UI	0.00	+/-0.0195	0.0152	+/-0.0195	0.0322	pCi/g						
Cesium-137		0.0482	+/-0.0234	0.0123	+/-0.0234	0.0262	pCi/g						
Cobalt-60	U	-0.00424	+/-0.0146	0.0118	+/-0.0146	0.0261	pCi/g						
Europium-152	U	0.011	+/-0.0358	0.0324	+/-0.0358	0.0678	pCi/g						
Europium-154	U	-0.0347	+/-0.045	0.0345	+/-0.045	0.0757	pCi/g						
Europium-155	U	0.0302	+/-0.0576	0.0356	+/-0.0576	0.0735	pCi/g						
Lead-212		0.355	+/-0.048	0.0187	+/-0.048	0.0388	pCi/g						
Lead-214		0.336	+/-0.0604	0.0229	+/-0.0604	0.0479	pCi/g						
Manganese-54	U	0.0136	+/-0.0136	0.0128	+/-0.0136	0.0273	pCi/g						
Niobium-94	U	0.00358	+/-0.0131	0.0118	+/-0.0131	0.0251	pCi/g						
Potassium-40		11.2	+/-0.973	0.100	+/-0.973	0.226	pCi/g						
Radium-226		0.234	+/-0.0594	0.0243	+/-0.0594	0.0512	pCi/g						
Silver-108m	U	0.00853	+/-0.012	0.011	+/-0.012	0.0232	pCi/g						
Thallium-208		0.142	+/-0.0353	0.0122	+/-0.0353	0.0259	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	MXP2	09/12/06	1824	567635

### 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: September 26, 2006

Client Sample ID: 9530-0002-015F  
Sample ID: 171459015

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: September 26, 2006

Client Sample ID: 9530-0002-016F  
Sample ID: 171459016  
Matrix: TS  
Collect Date: 07-SEP-06  
Receive Date: 12-SEP-06  
Collector: Client  
Moisture: 9.29%

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		0.359	+/-0.160	0.0961	+/-0.160	0.210	pCi/g						
Americium-241	U	0.0236	+/-0.0374	0.0335	+/-0.0374	0.0697	pCi/g						
Bismuth-212		0.617	+/-0.299	0.210	+/-0.299	0.455	pCi/g						
Bismuth-214		0.472	+/-0.116	0.0407	+/-0.116	0.0889	pCi/g						
Cesium-134	U	0.0201	+/-0.0232	0.027	+/-0.0232	0.0593	pCi/g						
Cesium-137		0.0911	+/-0.0449	0.0209	+/-0.0449	0.0462	pCi/g						
Cobalt-60	U	0.000777	+/-0.0247	0.0211	+/-0.0247	0.0491	pCi/g						
Europium-152	U	0.0341	+/-0.0657	0.056	+/-0.0657	0.120	pCi/g						
Europium-154	U	0.158	+/-0.0922	0.0742	+/-0.0922	0.167	pCi/g						
Europium-155	U	-0.0199	+/-0.0573	0.052	+/-0.0573	0.109	pCi/g						
Lead-212		0.414	+/-0.0661	0.0339	+/-0.0661	0.0713	pCi/g						
Lead-214		0.327	+/-0.0801	0.0445	+/-0.0801	0.0946	pCi/g						
Manganese-54	U	0.0142	+/-0.0276	0.0248	+/-0.0276	0.0543	pCi/g						
Niobium-94	U	0.00776	+/-0.0242	0.0215	+/-0.0242	0.0469	pCi/g						
Potassium-40		10.1	+/-1.18	0.162	+/-1.18	0.394	pCi/g						
Radium-226		0.472	+/-0.116	0.0407	+/-0.116	0.0889	pCi/g						
Silver-108m	U	-0.003	+/-0.0247	0.0191	+/-0.0247	0.0414	pCi/g						
Thallium-208		0.173	+/-0.0582	0.0207	+/-0.0582	0.0455	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	MXP2	09/12/06	1824	567635

### 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: September 26, 2006

Client Sample ID: 9530-0002-016F  
Sample ID: 171459016

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: September 26, 2006

Client Sample ID: 9530-0002-017F  
Sample ID: 171459017  
Matrix: TS  
Collect Date: 07-SEP-06  
Receive Date: 12-SEP-06  
Collector: Client  
Moisture: 3.38%

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		0.485	+/-0.156	0.0625	+/-0.156	0.139	pCi/g						
Americium-241	U	0.0291	+/-0.0904	0.0656	+/-0.0904	0.138	pCi/g						
Bismuth-212	U	0.136	+/-0.213	0.125	+/-0.213	0.278	pCi/g						
Bismuth-214		0.285	+/-0.0774	0.0351	+/-0.0774	0.0762	pCi/g						
Cesium-134	U	0.00791	+/-0.0225	0.0203	+/-0.0225	0.0447	pCi/g						
Cesium-137	UI	0.00	+/-0.0324	0.015	+/-0.0324	0.0334	pCi/g						
Cobalt-60	UI	0.00	+/-0.0366	0.0201	+/-0.0366	0.0458	pCi/g						
Europium-152	U	-0.00664	+/-0.0509	0.0432	+/-0.0509	0.0931	pCi/g						
Europium-154	U	-0.0121	+/-0.0594	0.0498	+/-0.0594	0.115	pCi/g						
Europium-155	U	0.0449	+/-0.0494	0.0487	+/-0.0494	0.102	pCi/g						
Lead-212		0.278	+/-0.0686	0.0345	+/-0.0686	0.0721	pCi/g						
Lead-214		0.265	+/-0.0735	0.0308	+/-0.0735	0.0665	pCi/g						
Manganese-54	U	0.0173	+/-0.0205	0.0195	+/-0.0205	0.0427	pCi/g						
Niobium-94	U	0.000127	+/-0.017	0.0148	+/-0.017	0.0327	pCi/g						
Potassium-40		10.4	+/-0.956	0.165	+/-0.956	0.386	pCi/g						
Radium-226		0.285	+/-0.0774	0.0351	+/-0.0774	0.0762	pCi/g						
Silver-108m	UI	0.00	+/-0.0399	0.0155	+/-0.0399	0.0337	pCi/g						
Thallium-208		0.118	+/-0.0452	0.0178	+/-0.0452	0.0388	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	MXP2	09/12/06	1824	567635

### 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: September 26, 2006

Client Sample ID: 9530-0002-017F  
Sample ID: 171459017

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: September 26, 2006

Client Sample ID: 9530-0002-005F  
Sample ID: 171459018  
Matrix: TS  
Collect Date: 07-SEP-06  
Receive Date: 12-SEP-06  
Collector: Client  
Moisture: 6.68%

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

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	0.051	+/-0.0809	0.0257	+/-0.0811	0.129	pCi/g	JAS1	09/15/06	1152	567824	1	
Curium-242	U	-0.0142	+/-0.0614	0.0377	+/-0.0615	0.156	pCi/g						
Curium-243/244	U	0.0298	+/-0.0838	0.0514	+/-0.0839	0.180	pCi/g						
<i>Alphaspec Pu, Solid-ALL FSS</i>													
Plutonium-238	U	-0.0575	+/-0.0426	0.0812	+/-0.043	0.255	pCi/g	JAS1	09/16/06	0952	567825	2	
Plutonium-239/240	U	-0.041	+/-0.036	0.0686	+/-0.0362	0.230	pCi/g						
<i>Liquid Scint Pu241, Solid-ALL FSS</i>													
Plutonium-241	U	0.00	+/-12.0	10.1	+/-12.0	21.1	pCi/g	JAS1	09/17/06	0634	567826	3	
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid-FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.344	+/-0.193	0.0932	+/-0.193	0.201	pCi/g	MJH1	09/22/06	0702	569470	4	
Americium-241	U	0.0183	+/-0.035	0.0329	+/-0.035	0.0683	pCi/g						
Bismuth-212	U	0.357	+/-0.393	0.179	+/-0.393	0.387	pCi/g						
Bismuth-214		0.335	+/-0.139	0.0466	+/-0.139	0.0996	pCi/g						
Cesium-134	U	0.0515	+/-0.0559	0.0332	+/-0.0559	0.0707	pCi/g						
Cesium-137		0.121	+/-0.0547	0.0253	+/-0.0547	0.0542	pCi/g						
Cobalt-60	U	-0.00858	+/-0.0323	0.0263	+/-0.0323	0.0581	pCi/g						
Europium-152	U	0.030	+/-0.0619	0.0557	+/-0.0619	0.118	pCi/g						
Europium-154	U	0.00678	+/-0.0873	0.0747	+/-0.0873	0.165	pCi/g						
Europium-155	U	0.0288	+/-0.0599	0.0538	+/-0.0599	0.112	pCi/g						
Lead-212		0.318	+/-0.0646	0.0429	+/-0.0646	0.0888	pCi/g						
Lead-214		0.300	+/-0.0808	0.0431	+/-0.0808	0.0912	pCi/g						
Manganese-54	UI	0.00	+/-0.0319	0.0234	+/-0.0319	0.0508	pCi/g						
Niobium-94	U	0.00339	+/-0.0261	0.0228	+/-0.0261	0.0488	pCi/g						
Potassium-40		11.4	+/-1.06	0.205	+/-1.06	0.465	pCi/g						
Radium-226		0.335	+/-0.139	0.0466	+/-0.139	0.0996	pCi/g						
Silver-108m	U	0.019	+/-0.0232	0.0222	+/-0.0232	0.0471	pCi/g						
Thallium-208	UI	0.00	+/-0.0512	0.0421	+/-0.0512	0.0876	pCi/g						
<b>Rad Gas Flow Proportional Counting</b>													
<i>GFPC, Sr90, solid-ALL FSS</i>													
Strontium-90	U	0.0165	+/-0.0176	0.013	+/-0.0176	0.0294	pCi/g	KSD1	09/16/06	1622	567998	5	
<b>Rad Liquid Scintillation Analysis</b>													
<i>LSC, Tritium Dist, Solid-HTD2, ALL FSS</i>													
Tritium	U	-3.47	+/-4.16	3.69	+/-4.16	7.84	pCi/g	ATH2	09/17/06	0602	567994	6	

# 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: September 26, 2006

Client Sample ID: 9530-0002-005F  
Sample ID: 171459018

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	0.0646	+/-0.0829	0.0662	+/-0.0829	0.140	pCi/g		AXD2	09/14/06	1707	567937	8
<i>Liquid Scint Fe55, Solid-ALL FSS</i>													
Iron-55	U	1.67	+/-37.9	25.9	+/-37.9	53.9	pCi/g		MXP1	09/19/06	1409	567933	9
<i>Liquid Scint Ni63, Solid-ALL FSS</i>													
Nickel-63	U	-0.583	+/-7.08	5.96	+/-7.08	12.3	pCi/g		MXP1	09/16/06	1139	567934	10
<i>Liquid Scint Tc99, Solid-ALL FSS</i>													
Technetium-99	U	-0.218	+/-0.276	0.237	+/-0.276	0.487	pCi/g		KXR1	09/23/06	1112	567935	11

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	MXP2	09/12/06	1824	567635

### 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 906.0 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
12	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Americium-243	Alphaspec Am241, Cm, Solid ALL	98	(15%-125%)
Plutonium-242	Alphaspec Pu, Solid-ALL FSS	86	(15%-125%)
Carrier/Tracer Recovery	Liquid Scint Pu241, Solid-ALL FSS	77	(25%-125%)
Carrier/Tracer Recovery	GFPC, Sr90, solid-ALL FSS	81	(25%-125%)
Carrier/Tracer Recovery	Liquid Scint Fe55, Solid-ALL FS	73	(15%-125%)

# 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: September 26, 2006

Client Sample ID: 9530-0002-005F  
Sample ID: 171459018

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 Ni63, Solid-ALL FS			72		(25%-125%)					
Carrier/Tracer Recovery		Liquid Scint Tc99, Solid-ALL FS			81		(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: September 26, 2006

Client Sample ID: 9530-0002-008F  
Sample ID: 171459019  
Matrix: TS  
Collect Date: 07-SEP-06  
Receive Date: 12-SEP-06  
Collector: Client  
Moisture: 12.8%

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

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	0.0113	+/-0.0716	0.0455	+/-0.0716	0.228	pCi/g	JAS1	09/15/06	1152	567824	1	
Curium-242	U	0.0273	+/-0.109	0.0667	+/-0.109	0.276	pCi/g						
Curium-243/244	U	0.0507	+/-0.0993	0.00	+/-0.0996	0.137	pCi/g						
<i>Alphaspec Pu, Solid-ALL FSS</i>													
Plutonium-238	U	-0.0761	+/-0.124	0.135	+/-0.124	0.370	pCi/g	JAS1	09/16/06	0952	567825	2	
Plutonium-239/240	U	0.0293	+/-0.108	0.0734	+/-0.109	0.246	pCi/g						
<i>Liquid Scint Pu241, Solid-ALL FSS</i>													
Plutonium-241	U	0.806	+/-10.1	8.48	+/-10.1	17.8	pCi/g	JAS1	09/17/06	0651	567826	3	
<b>Rad Gamma Spec Analysis</b>													
<i>Gamma, Solid-FSS GAM &amp; ALL FSS 226 Ingrowth</i>													
<i>Waived</i>													
Actinium-228		0.513	+/-0.119	0.0533	+/-0.119	0.115	pCi/g	MJH1	09/22/06	0702	569470	4	
Americium-241	U	0.0265	+/-0.111	0.0908	+/-0.111	0.189	pCi/g						
Bismuth-212	UI	0.00	+/-0.259	0.106	+/-0.259	0.229	pCi/g						
Bismuth-214		0.329	+/-0.0733	0.0296	+/-0.0733	0.0629	pCi/g						
Cesium-134	U	0.0211	+/-0.0191	0.0182	+/-0.0191	0.039	pCi/g						
Cesium-137		0.0691	+/-0.0311	0.0138	+/-0.0311	0.0297	pCi/g						
Cobalt-60	U	0.00183	+/-0.0191	0.0167	+/-0.0191	0.0366	pCi/g						
Europium-152	U	-0.0072	+/-0.0448	0.0351	+/-0.0448	0.0749	pCi/g						
Europium-154	U	0.00297	+/-0.0582	0.0508	+/-0.0582	0.110	pCi/g						
Europium-155	U	0.00564	+/-0.0538	0.0505	+/-0.0538	0.105	pCi/g						
Lead-212		0.415	+/-0.053	0.0322	+/-0.053	0.0667	pCi/g						
Lead-214		0.315	+/-0.0559	0.0278	+/-0.0559	0.059	pCi/g						
Manganese-54	U	0.0218	+/-0.0171	0.0165	+/-0.0171	0.0353	pCi/g						
Niobium-94	U	0.000382	+/-0.0149	0.0132	+/-0.0149	0.0283	pCi/g						
Potassium-40		11.6	+/-0.784	0.110	+/-0.784	0.251	pCi/g						
Radium-226		0.329	+/-0.0733	0.0296	+/-0.0733	0.0629	pCi/g						
Silver-108m	U	0.00181	+/-0.0147	0.0131	+/-0.0147	0.0279	pCi/g						
Thallium-208		0.175	+/-0.0304	0.0138	+/-0.0304	0.0296	pCi/g						
<b>Rad Gas Flow Proportional Counting</b>													
<i>GFPC, Sr90, solid-ALL FSS</i>													
Strontium-90	U	0.00601	+/-0.0151	0.012	+/-0.0151	0.0271	pCi/g	KSD1	09/16/06	1622	567998	5	
<b>Rad Liquid Scintillation Analysis</b>													
<i>LSC, Tritium Dist, Solid-HTD2, ALL FSS</i>													
Tritium	U	-0.939	+/-4.47	3.80	+/-4.47	8.07	pCi/g	ATH2	09/17/06	0633	567994	6	

# 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: September 26, 2006

Client Sample ID: 9530-0002-008F  
Sample ID: 171459019

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	0.00	+/-0.0838	0.0703	+/-0.0838	0.149	pCi/g		AXD2	09/14/06	1754	567937	8
<i>Liquid Scint Fe55, Solid-ALL FSS</i>													
Iron-55	U	16.0	+/-51.7	35.1	+/-51.7	73.1	pCi/g		MXP1	09/19/06	1425	567933	9
<i>Liquid Scint Ni63, Solid-ALL FSS</i>													
Nickel-63	U	-2.72	+/-6.17	5.26	+/-6.17	10.9	pCi/g		MXP1	09/16/06	1210	567934	10
<i>Liquid Scint Tc99, Solid-ALL FSS</i>													
Technetium-99	U	-0.316	+/-0.277	0.241	+/-0.277	0.495	pCi/g		KXR1	09/23/06	1129	567935	11

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	MXP2	09/12/06	1824	567635

### 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 906.0 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
12	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Americium-243	Alphaspec Am241, Cm, Solid ALL	51	(15%-125%)
Plutonium-242	Alphaspec Pu, Solid-ALL FSS	82	(15%-125%)
Carrier/Tracer Recovery	Liquid Scint Pu241, Solid-ALL FSS	92	(25%-125%)
Carrier/Tracer Recovery	GFPC, Sr90, solid-ALL FSS	92	(25%-125%)
Carrier/Tracer Recovery	Liquid Scint Fe55, Solid-ALL FS	68	(15%-125%)

# 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: September 26, 2006

Client Sample ID: 9530-0002-008F  
Sample ID: 171459019

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 Ni63, Solid-ALL FS			87		(25%-125%)						
Carrier/Tracer Recovery		Liquid Scint Tc99, Solid-ALL FS			80		(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

Client : Connecticut Yankee Atomic Power  
362 Injun Hollow Rd

Report Date: September 26, 2006  
Page 1 of 9

Contact: East Hampton, Connecticut  
Mr. Jack McCarthy

Workorder: 171459

Paramname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch	567824										
QC1201181598	171450001	DUP									
Americium-241	U	0.0224	U	-0.0344	pCi/g	947		(0% - 100%)	JAS1	09/19/06	08:08
	Uncert:	+/-0.0562		+/-0.0558							
	TPU:	+/-0.0563		+/-0.0558							
Curium-242	U	0.029	U	0.00	pCi/g	200		(0% - 100%)			
	Uncert:	+/-0.0568		+/-0.0576							
	TPU:	+/-0.0569		+/-0.0576							
Curium-243/244	U	0.0152	U	-0.0054	pCi/g	420		(0% - 100%)			
	Uncert:	+/-0.0812		+/-0.060							
	TPU:	+/-0.0812		+/-0.060							
QC1201181600	LCS										
Americium-241	9.83			9.33	pCi/g		95	(75%-125%)			
	Uncert:			+/-0.996							
	TPU:			+/-1.40							
Curium-242			U	0.092	pCi/g						
	Uncert:			+/-0.112							
	TPU:			+/-0.113							
Curium-243/244	11.9			10.9	pCi/g		92	(75%-125%)			
	Uncert:			+/-1.08							
	TPU:			+/-1.58							
QC1201181597	MB										
Americium-241			U	-0.0214	pCi/g					09/15/06	11:52
	Uncert:			+/-0.0709							
	TPU:			+/-0.0711							
Curium-242			U	0.019	pCi/g						
	Uncert:			+/-0.0757							
	TPU:			+/-0.0757							
Curium-243/244			U	0.00145	pCi/g						
	Uncert:			+/-0.0787							
	TPU:			+/-0.0787							
QC1201181599	171450001	MS									
Americium-241	13.0	U	0.0224	12.3	pCi/g		95	(75%-125%)		09/19/06	08:08
	Uncert:	+/-0.0562		+/-1.24							
	TPU:	+/-0.0563		+/-1.79							
Curium-242		U	0.029	-0.0661	pCi/g						
	Uncert:	+/-0.0568		+/-0.0458							
	TPU:	+/-0.0569		+/-0.0463							
Curium-243/244	15.7	U	0.0152	17.3	pCi/g		110	(75%-125%)			
	Uncert:	+/-0.0812		+/-1.46							
	TPU:	+/-0.0812		+/-2.33							
Batch	567825										
QC1201181602	171450001	DUP									
Plutonium-238	U	-0.00319	U	-0.0577	pCi/g	179		(0% - 100%)	JAS1	09/16/06	09:52

# GENERAL ENGINEERING LABORATORIES, LLC

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

## QC Summary

Workorder: 171459

Page 2 of 9

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time									
Rad Alpha Spec																				
Batch	567825																			
		Uncert:	+/-0.174	+/-0.0594																
		TPU:	+/-0.174	+/-0.0597																
Plutonium-239/240		U	-0.0638	U	-0.024	pCi/g	91	(0% - 100%)												
		Uncert:	+/-0.132		+/-0.0868															
		TPU:	+/-0.132		+/-0.0868															
QC1201181604	LCS																			
Plutonium-238				U	0.0415	pCi/g		(75%-125%)												
		Uncert:			+/-0.0777															
		TPU:			+/-0.0779															
Plutonium-239/240		9.08			7.12	pCi/g	78	(75%-125%)												
		Uncert:			+/-0.872															
		TPU:			+/-1.16															
QC1201181601	MB																			
Plutonium-238				U	-0.0876	pCi/g														
		Uncert:			+/-0.107															
		TPU:			+/-0.108															
Plutonium-239/240				U	0.00165	pCi/g														
		Uncert:			+/-0.0898															
		TPU:			+/-0.0898															
QC1201181603	171450001 MS																			
Plutonium-238		U	-0.00319	U	-0.0197	pCi/g		(75%-125%)												
		Uncert:	+/-0.174		+/-0.0981															
		TPU:	+/-0.174		+/-0.0981															
Plutonium-239/240		12.0	U	-0.0638	10.3	pCi/g	86	(75%-125%)												
		Uncert:	+/-0.132		+/-1.11															
		TPU:	+/-0.132		+/-1.53															
Batch	567826																			
QC1201181606	171450001 DUP																			
Plutonium-241		U	6.26	U	-8.24	pCi/g	0	(0% - 100%)	JAS1	09/17/06	07:23									
		Uncert:	+/-11.5		+/-11.0															
		TPU:	+/-11.5		+/-11.0															
QC1201181608	LCS																			
Plutonium-241		127			112	pCi/g	88	(75%-125%)												
		Uncert:			+/-16.4															
		TPU:			+/-20.0															
QC1201181605	MB																			
Plutonium-241				U	-2.99	pCi/g														
		Uncert:			+/-11.0															
		TPU:			+/-11.0															
QC1201181607	171450001 MS																			
Plutonium-241		138	U	6.26	104	pCi/g	76	(75%-125%)												
		Uncert:	+/-11.5		+/-14.0															
		TPU:	+/-11.5		+/-17.1															
Rad Gamma Spec																				
Batch	569470																			
QC1201185435	171459001 DUP																			
Actinium-228			0.451	UI	0.00	pCi/g	4	(0% - 100%)	MJH1	09/22/06	08:19									
		Uncert:	+/-0.116		+/-0.158															
					+/-0.158															

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

**QC Summary**

Workorder: 171459

Page 3 of 9

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Gamma Spec											
Batch 569470											
Americium-241	TPU:	+/-0.116									
	U	0.00827	U	-0.0155	pCi/g	656		(0% - 100%)			
	Uncert:	+/-0.0741		+/-0.109							
Bismuth-212	TPU:	+/-0.0741		+/-0.109							
		0.385		0.437	pCi/g	13		(0% - 100%)			
	Uncert:	+/-0.170		+/-0.274							
Bismuth-214	TPU:	+/-0.170		+/-0.274							
		0.247		0.258	pCi/g	4		(0% - 100%)			
	Uncert:	+/-0.058		+/-0.0755							
Cesium-134	TPU:	+/-0.058		+/-0.0755							
	U	0.00966	U	0.0205	pCi/g	72		(0% - 100%)			
	Uncert:	+/-0.0198		+/-0.0245							
Cesium-137	TPU:	+/-0.0198		+/-0.0245							
		0.0773		0.0612	pCi/g	23		(0% - 100%)			
	Uncert:	+/-0.0359		+/-0.0319							
Cobalt-60	TPU:	+/-0.0359		+/-0.0319							
	U	0.002	U	0.00337	pCi/g	51		(0% - 100%)			
	Uncert:	+/-0.0191		+/-0.0191							
Europium-152	TPU:	+/-0.0191		+/-0.0191							
	U	-0.00753	U	0.00154	pCi/g	303		(0% - 100%)			
	Uncert:	+/-0.0423		+/-0.053							
Europium-154	TPU:	+/-0.0423		+/-0.053							
	U	-0.00523	U	-0.0195	pCi/g	115		(0% - 100%)			
	Uncert:	+/-0.0556		+/-0.0653							
Europium-155	TPU:	+/-0.0556		+/-0.0653							
	U	0.00174	U	0.00779	pCi/g	127		(0% - 100%)			
	Uncert:	+/-0.0463		+/-0.0506							
Lead-212	TPU:	+/-0.0463		+/-0.0506							
		0.369		0.414	pCi/g	11		(0% - 100%)			
	Uncert:	+/-0.0425		+/-0.0533							
Lead-214	TPU:	+/-0.0425		+/-0.0533							
		0.271		0.302	pCi/g	11		(0% - 100%)			
	Uncert:	+/-0.0651		+/-0.0623							
Manganese-54	TPU:	+/-0.0651		+/-0.0623							
	U	-0.000155	U	0.0283	pCi/g	202		(0% - 100%)			
	Uncert:	+/-0.0163		+/-0.023							
Niobium-94	TPU:	+/-0.0163		+/-0.023							
	U	0.00779	U	-0.00441	pCi/g	723		(0% - 100%)			
	Uncert:	+/-0.0158		+/-0.0175							
Potassium-40	TPU:	+/-0.0158		+/-0.0175							
		10.3		9.98	pCi/g	3		(0% - 20%)			
	Uncert:	+/-0.745		+/-0.931							
Radium-226	TPU:	+/-0.745		+/-0.931							
		0.247		0.258	pCi/g	4		(0% - 100%)			
	Uncert:	+/-0.058		+/-0.0755							
Silver-108m	TPU:	+/-0.058		+/-0.0755							
	U	-0.0111	U	0.00517	pCi/g	550		(0% - 100%)			
	Uncert:	+/-0.0159		+/-0.015							

# GENERAL ENGINEERING LABORATORIES, LLC

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

## QC Summary

Workorder: 171459

Page 4 of 9

Paramname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Gamma Spec											
Batch	569470										
Thallium-208	TPU:	+/-0.0159		+/-0.015							
		0.151		0.130	pCi/g	15		(0% - 100%)			
	Uncert:	+/-0.036		+/-0.0376							
	TPU:	+/-0.036		+/-0.0376							
QC1201185436 LCS Actinium-228			U	0.298	pCi/g					09/22/06	07:05
	Uncert:			+/-0.799							
	TPU:			+/-0.799							
Americium-241	23.4			26.2	pCi/g		112	(75%-125%)			
	Uncert:			+/-2.16							
	TPU:			+/-2.16							
Bismuth-212			U	1.00	pCi/g						
	Uncert:			+/-1.27							
	TPU:			+/-1.27							
Bismuth-214			U	0.0159	pCi/g						
	Uncert:			+/-0.309							
	TPU:			+/-0.309							
Cesium-134			U	-0.116	pCi/g						
	Uncert:			+/-0.216							
	TPU:			+/-0.216							
Cesium-137	9.57			10.1	pCi/g		106	(75%-125%)			
	Uncert:			+/-1.15							
	TPU:			+/-1.15							
Cobalt-60	14.4			15.0	pCi/g		104	(75%-125%)			
	Uncert:			+/-0.819							
	TPU:			+/-0.819							
Europium-152			U	-0.243	pCi/g						
	Uncert:			+/-0.369							
	TPU:			+/-0.369							
Europium-154			U	-0.11	pCi/g						
	Uncert:			+/-0.410							
	TPU:			+/-0.410							
Europium-155			U	0.013	pCi/g						
	Uncert:			+/-0.321							
	TPU:			+/-0.321							
Lead-212			U	0.0784	pCi/g						
	Uncert:			+/-0.191							
	TPU:			+/-0.191							
Lead-214			U	-0.038	pCi/g						
	Uncert:			+/-0.307							
	TPU:			+/-0.307							
Manganese-54			U	-0.155	pCi/g						
	Uncert:			+/-0.182							
	TPU:			+/-0.182							
Niobium-94			U	-0.039	pCi/g						
	Uncert:			+/-0.158							
	TPU:			+/-0.158							
Potassium-40			U	0.688	pCi/g						

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

**QC Summary**

Workorder: 171459

Page 5 of 9

Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Gamma Spec										
Batch	569470									
Radium-226	Uncert: +/-1.74 TPU: +/-1.74	U	0.0159	pCi/g			(75%-125%)			
Silver-108m	Uncert: +/-0.309 TPU: +/-0.309	U	-0.0793	pCi/g						
Thallium-208	Uncert: +/-0.150 TPU: +/-0.150	U	0.0756	pCi/g						
QC1201185434 MB Actinium-228	Uncert: +/-0.158 TPU: +/-0.158	U	0.0263	pCi/g					09/22/06	07:03
Americium-241	Uncert: +/-0.040 TPU: +/-0.040	U	-0.0217	pCi/g						
Bismuth-212	Uncert: +/-0.0382 TPU: +/-0.0382	U	0.0381	pCi/g						
Bismuth-214	Uncert: +/-0.144 TPU: +/-0.144	U	0.00388	pCi/g						
Cesium-134	Uncert: +/-0.0281 TPU: +/-0.0281	U	0.00104	pCi/g						
Cesium-137	Uncert: +/-0.0102 TPU: +/-0.0102	U	0.00609	pCi/g						
Cobalt-60	Uncert: +/-0.00962 TPU: +/-0.00962	U	0.0122	pCi/g						
Europium-152	Uncert: +/-0.0125 TPU: +/-0.0125	U	-0.00302	pCi/g						
Europium-154	Uncert: +/-0.0255 TPU: +/-0.0255	U	0.0216	pCi/g						
Europium-155	Uncert: +/-0.0383 TPU: +/-0.0383	U	-0.0014	pCi/g						
Lead-212	Uncert: +/-0.0306 TPU: +/-0.0306	U	0.00111	pCi/g						
Lead-214	Uncert: +/-0.0314 TPU: +/-0.0314	U	0.0114	pCi/g						
	Uncert: +/-0.0402 TPU: +/-0.0402									

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

**QC Summary**

Workorder: 171459

Page 6 of 9

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Rad Gamma Spec</b>											
Batch	569470										
Manganese-54			U	0.00318	pCi/g						
	Uncert:			+/-0.0108							
	TPU:			+/-0.0108							
Niobium-94			U	0.000782	pCi/g						
	Uncert:			+/-0.00945							
	TPU:			+/-0.00945							
Potassium-40			U	0.0412	pCi/g						
	Uncert:			+/-0.164							
	TPU:			+/-0.164							
Radium-226			U	0.00388	pCi/g						
	Uncert:			+/-0.0281							
	TPU:			+/-0.0281							
Silver-108m			U	0.00306	pCi/g						
	Uncert:			+/-0.00936							
	TPU:			+/-0.00936							
Thallium-208			U	0.0021	pCi/g						
	Uncert:			+/-0.0113							
	TPU:			+/-0.0113							
<b>Rad Gas Flow</b>											
Batch	567998										
QC1201181990	171450001	DUP									
Strontium-90		U	0.00357	U	0.00343	pCi/g	0	(0% - 100%)	KSD1	09/16/06	16:22
	Uncert:		+/-0.0189		+/-0.016						
	TPU:		+/-0.0189		+/-0.016						
QC1201181992	LCS										
Strontium-90		1.74		1.60	pCi/g		92	(75%-125%)		09/16/06	16:22
	Uncert:			+/-0.0923							
	TPU:			+/-0.104							
QC1201181989	MB										
Strontium-90				U	0.00814	pCi/g				09/16/06	16:22
	Uncert:			+/-0.0156							
	TPU:			+/-0.0156							
QC1201181991	171450001	MS									
Strontium-90		1.59	U	0.00357	1.31	pCi/g		83	(75%-125%)	09/16/06	16:22
	Uncert:			+/-0.0189	+/-0.0727						
	TPU:			+/-0.0189	+/-0.0821						
<b>Rad Liquid Scintillation</b>											
Batch	567933										
QC1201181850	171450001	DUP									
Iron-55		U	-9.33	U	-6.78	pCi/g	0	(0% - 100%)	MXPI	09/19/06	14:59
	Uncert:		+/-42.3		+/-58.7						
	TPU:		+/-42.3		+/-58.7						
QC1201181852	LCS										
Iron-55		625		599	pCi/g		96	(75%-125%)		09/19/06	15:32
	Uncert:			+/-50.6							
	TPU:			+/-63.3							
QC1201181849	MB										
Iron-55				U	9.17	pCi/g				09/19/06	14:42

# GENERAL ENGINEERING LABORATORIES, LLC

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

## QC Summary

Workorder: 171459

Page 7 of 9

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Liquid Scintillation											
Batch	567933										
		Uncert:		+/-33.0							
		TPU:		+/-33.0							
QC1201181851	171450001	MS									
Iron-55		703	U	-9.33	635	pCi/g	90	(75%-125%)		09/19/06	15:15
		Uncert:		+/-42.3	+/-62.9						
		TPU:		+/-42.3	+/-75.0						
Batch	567934										
QC1201181855	171450001	DUP									
Nickel-63			U	-2.65	U	-1.49	pCi/g	0	(0% - 100%)	VXP1	09/16/06 13:14
		Uncert:		+/-6.01		+/-6.32					
		TPU:		+/-6.01		+/-6.32					
QC1201181857	LCS										
Nickel-63		512			456	pCi/g	89	(75%-125%)		09/16/06	14:17
		Uncert:			+/-16.3						
		TPU:			+/-21.9						
QC1201181854	MB										
Nickel-63			U	-0.881		pCi/g				09/16/06	12:42
		Uncert:		+/-5.53							
		TPU:		+/-5.53							
QC1201181856	171450001	MS									
Nickel-63		594	U	-2.65	544	pCi/g	92	(75%-125%)		09/16/06	13:45
		Uncert:		+/-6.01	+/-18.3						
		TPU:		+/-6.01	+/-26.2						
Batch	567935										
QC1201181859	171454026	DUP									
Technetium-99			U	0.167	U	-0.187	pCi/g	0	(0% - 100%)	KXR1	09/23/06 12:01
		Uncert:		+/-0.285		+/-0.284					
		TPU:		+/-0.285		+/-0.284					
QC1201181861	LCS										
Technetium-99		12.9			12.6	pCi/g	98	(75%-125%)		09/23/06	12:34
		Uncert:			+/-0.514						
		TPU:			+/-0.588						
QC1201181858	MB										
Technetium-99			U	0.0238		pCi/g				09/23/06	11:45
		Uncert:		+/-0.252							
		TPU:		+/-0.252							
QC1201181860	171454026	MS									
Technetium-99		13.0	U	0.167	12.8	pCi/g	99	(75%-125%)		09/23/06	12:18
		Uncert:		+/-0.285	+/-0.552						
		TPU:		+/-0.285	+/-0.623						
Batch	567937										
QC1201181863	171454026	DUP									
Carbon-14			U	0.0855	U	0.0747	pCi/g	0	(0% - 100%)	AXD2	09/14/06 19:29
		Uncert:		+/-0.0887		+/-0.0883					
		TPU:		+/-0.0887		+/-0.0883					
QC1201181865	LCS										
Carbon-14		6.66			6.81	pCi/g	102	(75%-125%)		09/14/06	20:34
		Uncert:			+/-0.458						
		TPU:			+/-0.470						

# GENERAL ENGINEERING LABORATORIES, LLC

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

## QC Summary

Workorder: 171459

Page 8 of 9

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Liquid Scintillation											
Batch 567937											
QC1201181862 MB											
Carbon-14			U	0.0127	pCi/g					09/14/06	18:42
				+/-0.0794							
				TPU: +/-0.0794							
QC1201181864 171454026 MS											
Carbon-14	7.13	U	0.0855	6.82	pCi/g		96	(75%-125%)		09/14/06	20:17
				+/-0.0887							
				TPU: +/-0.0887							
Batch 567994											
QC1201181978 171454026 DUP											
Tritium		U	2.19	U	-0.623	pCi/g	0	(0% - 100%)	ATH2	09/17/06	07:37
				+/-4.65							
				TPU: +/-4.65							
QC1201181980 LCS											
Tritium	65.1			61.4	pCi/g		94	(75%-125%)		09/17/06	08:40
				+/-7.48							
				TPU: +/-7.56							
QC1201181977 MB											
Tritium			U	0.459	pCi/g					09/17/06	07:05
				+/-4.46							
				TPU: +/-4.46							
QC1201181979 171454026 MS											
Tritium	65.7	U	2.19	60.0	pCi/g		91	(75%-125%)		09/17/06	08:08
				+/-4.65							
				TPU: +/-4.65							

### 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



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

**QC Summary**

Workorder: 171459

Page 9 of 9

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.

CENTRAL PENINSULA  
SURVEY UNIT 9530-0002

RELEASE RECORD

---

**ATTACHMENT 4 (DQA RESULTS)**

CENTRAL PENINSULA  
SURVEY UNIT 9530-0002

RELEASE RECORD

---

**ATTACHMENT 4A (PRELIMINARY DATA REVIEW)**


# PRELIMINARY DATA REVIEW FORM

Survey Unit : 9530-0002  
 Survey Unit Name : Central Peninsula  
 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  
 Target Level (pCi/g) : 5.38E+00  
 Minimum Value : 3.15E-02  
 Maximum Value : 2.07E-01  
 Mean : 8.63E-02  
 Median : 7.69E-02  
 Standard Deviation : 5.20E-02

Sample Identification	Reported Results		Fraction of Target Level
	Cs-137 Concentration (pCi/g)	Detect?	
9530-0002-001F	7.73E-02	+	0.014
9530-0002-002F	9.32E-02	+	0.017
9530-0002-003F	3.15E-02	+	0.006
9530-0002-004F	8.55E-02	+	0.016
9530-0002-005F	1.21E-01	+	0.022
9530-0002-006F	2.07E-01	+	0.038
9530-0002-007F	7.69E-02	+	0.014
9530-0002-008F	6.91E-02	+	0.013
9530-0002-009F	4.49E-02	+	0.008
9530-0002-010F	1.96E-01	+	0.036
9530-0002-011F	5.93E-02	+	0.011
9530-0002-012F	6.16E-02	+	0.011
9530-0002-013F	8.04E-02	+	0.015
9530-0002-014F	4.22E-02	+	0.008
9530-0002-015F	4.82E-02	+	0.009

  
 Submitted by/Date Jack McArthur 10/23/06

CENTRAL PENINSULA  
SURVEY UNIT 9530-0002

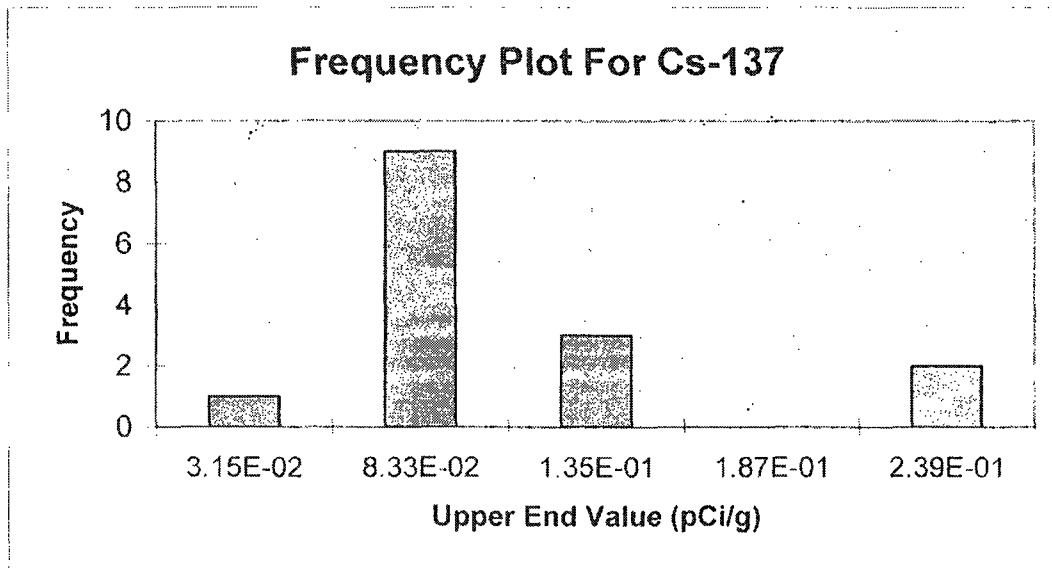
RELEASE RECORD

---

**ATTACHMENT 4B (GRAPHICAL REPRESENTATION OF DATA)**

# FREQUENCY PLOT FOR CESIUM-137

Survey Unit: 9530-0002  
 Survey Unit Name: Central Peninsula  
 Mean: 8.63E-02 pCi/g



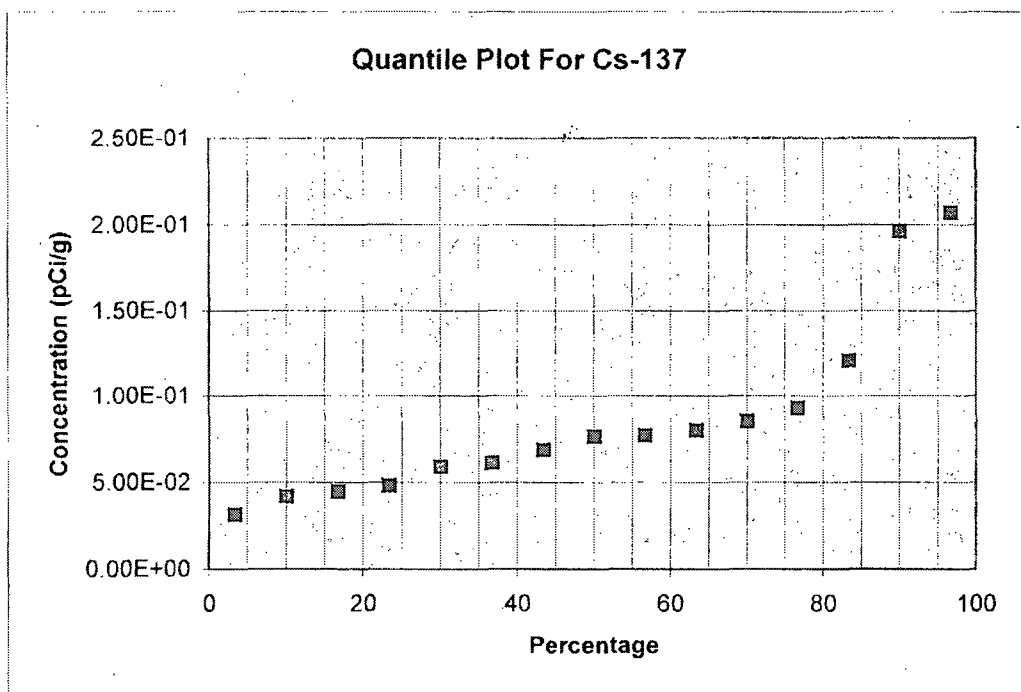
Upper End Value	Observation Frequency	Observation Frequency
3.15E-02	1	7%
8.33E-02	9	60%
1.35E-01	3	20%
1.87E-01	0	0%
2.39E-01	2	13%
Total:	15	100%

Submitted by/Date

Reviewed by/Date

# QUANTILE PLOT FOR CESIUM-137

Survey Unit: 9530-0002  
 Survey Unit Name: Central Peninsula  
 Mean: 8.63E-02 pCi/g



Cs-137	Rank	Percentage
3.15E-02	1	3%
4.22E-02	2	10%
4.49E-02	3	17%
4.82E-02	4	23%
5.93E-02	5	30%
6.16E-02	6	37%
6.91E-02	7	43%
7.69E-02	8	50%
7.73E-02	9	57%
8.04E-02	10	63%
8.55E-02	11	70%
9.32E-02	12	77%
1.21E-01	13	83%
1.96E-01	14	90%
2.07E-01	15	97%

Submitted by/Date

Reviewed by/Date

10/23/06

10/24/06

CENTRAL PENINSULA  
SURVEY UNIT 9530-0002  
RELEASE RECORD

---

**ATTACHMENT 4C (SIGN TEST)**



<b>Survey Area Number:</b> 9530		
<b>Survey Unit Number:</b> 0002		
<b>Survey Area Name:</b> Central Peninsula		
<b>WPIR#:</b> 2006-0038		
<b>Classification:</b> 2	<b>Type I (<math>\alpha</math> error):</b> 0.05	(N): 15
<b>Radionuclide:</b> Cs-137	<b>DCGL:</b> 5.38	
<b>Results (pCi/g)</b>	<b>DCGL - Results</b>	<b>Sign</b>
7.73E-02	5.30E+00	1
9.32E-02	5.29E+00	1
3.15E-02	5.35E+00	1
8.55E-02	5.29E+00	1
1.21E-01	5.26E+00	1
2.07E-01	5.17E+00	1
7.69E-02	5.30E+00	1
6.91E-02	5.31E+00	1
4.49E-02	5.34E+00	1
1.96E-01	5.18E+00	1
5.93E-02	5.32E+00	1
6.16E-02	5.32E+00	1
8.04E-02	5.30E+00	1
4.22E-02	5.34E+00	1
4.82E-02	5.33E+00	1
<b>Number of positive differences (S<sup>+</sup>): 15</b>		

### Survey Unit Meets Acceptance Criterion

Date: 10/23/06

Date: 10/24/06

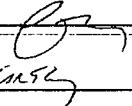
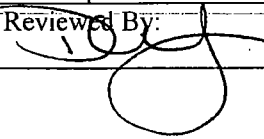
CENTRAL PENINSULA  
SURVEY UNIT 9530-0002

RELEASE RECORD

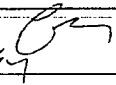
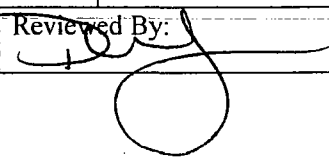
---

**ATTACHMENT 4D (QC SPLIT RESULTS)**

## Split Sample Assessment Form

Survey Area#: 9530		Survey Unit #: 0002		Survey Unit name: Central Peninsula																
Sample Plan or WPIR#: 2005-0038						SML#: 9530-0002-004														
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 9530-0002-004F, the comparison sample was 9530-0002-004FS.																				
STANDARD					COMPARISON															
Radionuclide	Activity Value	Standard Error	Resolution	Agreement Range	Activity Value	Standard Error	Comparison Ratio	Acceptable (Y/N)												
Cs-137	8.55E-2	1.37E-2	6	0.5 - 2.0	9.39E-2	1.73E-2	1.1	Y												
Comments/Corrective Actions: N/A					Table is provided to show acceptance criteria used to assess split samples.  <table><thead><tr><th><u>Resolution</u></th><th><u>Agreement Range</u></th></tr></thead><tbody><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></tbody></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: 		Date: 10/23/06		Reviewed By: 		Date: 10/24/06														

## Split Sample Assessment Form

Survey Area#: 9530		Survey Unit #: 0002		Survey Unit name: Central Peninsula																
Sample Plan or WPIR#: 2005-0038						SML#: 9530-0002-014														
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 9530-0002-014F, the comparison sample was 9530-0002-014FS.																				
STANDARD					COMPARISON															
Radionuclide	Activity Value	Standard Error	Resolution	Agreement Range	Activity Value	Standard Error	Comparison Ratio	Acceptable (Y/N)												
K-40	10.2	9.29E-1	22	0.75 - 1.33	9.43	4.64E-1	0.92	Y												
Comments/Corrective Actions: Not enough Cs-137 to yield an acceptable Resolution (result was less than 4).					Table is provided to show acceptance criteria used to assess split samples.  <table> <tr> <th><u>Resolution</u></th> <th><u>Agreement Range</u></th> </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: 					Date: 10/23/06		Reviewed By: 													
					Date: 10/24/06															

CENTRAL PENINSULA  
SURVEY UNIT 9530-0002

RELEASE RECORD

---

**ATTACHMENT 4E (COMPASS DQA WITH POWER CURVE)**



# DQA Surface Soil Report

## Assessment Summary

Site:	9530-0002		
Planner(s):	McCarthy <i>[Signature]</i> 10/27/06		
Survey Unit Name:	Central Peninsula Area		
Report Number:	2		
Survey Unit Samples:	15		
Reference Area Samples:	0		
Test Performed:	Sign	Test Result:	Not Performed
Judgmental Samples:	0	EMC Result:	Not Performed
Assessment Conclusion:	<b>Reject Null Hypothesis (Survey Unit PASSES)</b>		

## Retrospective Power Curve

