

Final Status Survey Final Report Phase II

Appendix A2 Survey Unit Release Record 9524-0000, South Site Grounds

Book 3 of 16

CYAPCO FINAL STATUS SURVEY RELEASE RECORD SOUTH SITE GROUNDS SURVEY UNIT 9524-0000

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RELEASE RECORD

TABLE OF CONTENTS

1.	SURVEY UNIT DESCRIPTION	3
2.	CLASSIFICATION BASIS	3
3.	DATA QUALITY OBJECTIVES (DQO)	5
4.	SURVEY DESIGN	6
5.	SURVEY IMPLEMENTATION	10
6.	SURVEY RESULTS	11
7.	QUALITY CONTROL	13
8.	INVESTIGATIONS AND RESULTS	14
9.	REMEDIATION AND RESULTS	14
10.	CHANGES FROM THE FINAL STATUS SURVEY PLAN	14
11.	DATA QUALITY ASSESSMENT (DQA)	14
12.	ANOMALIES	15
13.	CONCLUSION	15
14.	ATTACHMENTS	16
14	.1 Attachment 1 – Figures (7 pages including cover)	
14	.2 Attachment 2 – Sample and Statistical Data (121 pages including	
	covers)	

RELEASE RECORD

1. SURVEY UNIT DESCRIPTION

Survey Unit (SU) 9524-0000, (South Site Grounds) is designated as Final Status Survey (FSS) Class 3 and consists of approximately 61,974.8 m² (15.3 acres) of uninhabited, undeveloped land located about a 0.85 miles from the center of the Haddam Neck Plant (HNP) Containment Building (see Attachment 1-Figure 1). The survey unit is an open space with little or no obstructions. Most of the area consisted of ancient glacial sand dunes that were mined during the construction of the HNP. Glacial till and occasional rock masses containing naturally occurring radioactive minerals have been identified during trenching. Survey Unit 9524-0000 is bounded to the north by SU 9528, to the east the Salmon River, and to the south SU 9523. The South Site Grounds also acts as a buffer zone for several survey areas with more restrictive classification designations. Four (4) survey units are situated interior of this unit, SU 9535, 9536, 9537 and 9538. The area topography is a small-elevated saddle situated between two hills that slope downward towards the wetlands associated with the Salmon River. The area was excavated and reshaped over the years for various reasons.

The reference coordinates associated with SU 9524-0000 are E010 through E021 by S116 through S172 (see License Termination Plan 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).

The historic files indicate that this area was originally wooded then cleared during construction of the HNP. Sand and fill materials were taken from the area and eventually backfilled with construction debris placed in the area for disposal. The South Site Grounds contained the former shotgun range and pistol/rifle range that was used from the late 1960s, when the plant opened, through 1997.

Hazardous materials related to the shooting range, construction materials, debris and spoils were removed from the area prior to FSS. This activity and the materials removal disturbed the soil down to two (2) meters in depth. Portions of the area were backfilled, graded and seeded for erosion control.

2. CLASSIFICATION BASIS

The survey unit was classified in accordance with Procedure RPM 5.1-10, *"Survey Unit Classification."* The historical information and scoping results provide sufficient data to designate SU 9524-0000 as Class 3 in April 2004.

The "Classification Basis Summary" conducted for SU 9538-0000 consisted of:

- a) A review of the 10CFR50.75 (g) (1) database,
- b) A review of the "Initial Characterization Report" and "Historic Site Assessment Supplement,"

RELEASE RECORD

- c) Historic and current survey records review,
- d) Personal interviews,
- e) Visual inspections and a "walk down."

A review of the 10CFR50.75 (g) (1) database report identified one document HP99-057 associated with this survey area described the addition of a monitoring well with survey results indicating no plant related activity in the soil or water.

Current survey records were reviewed. Two (2) scoping surveys were noted. Both surveys (SSWP No. BCY-SSWP-03-08-002 and SSWP No. BCY-SSWP-03-10-002) indicated Cs-137 levels less than background as reported in Health Physics Technical Support Document (TSD) BCY-HP-0063, "*Background Cs-*137 Concentration in Soil."

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

To obtain the necessary data of sufficient data quality for FSS planning purposes, two (2) work plans were developed and implemented during August and October 2003. Twenty (20) biased samples were obtained throughout SU 9524-0000. The mean value of the samples taken for classification did not exceed 3% of the Cs-137 Administrative Level Derived Concentration Guideline Level (DCGL) (see Table 1). One classification sample in this set contained a maximum Cs-137 concentration of 0.415 pCi/g, or 13% of the Base Case DCGL for Cs-137. It was unlikely that the aggregate concentration of the other nineteen (19) radionuclides listed in Table 2 would be identified or exceeds 10% of the Administrative Level DCGL. The concentrations of Cs-137 found in the soil were below those concentrations determined from off-site locations as documented by Health Physics TSD BCY-HP-0063.

Parameter	Cesium-137 (pCi/g)
Minimum Value:	-0.006
Maximum Value:	0.415
Mean:	0.088
Median:	0.034
Standard Deviation:	0.122

Table 1	– Basis	Statistica	l Quantitio	es for
Cosium_	137 from	m the Cha	ractorizat	ion Survey

No formal interviews were conducted.

The FSS Engineer performed a visual inspection and walk down during April 2004. By this time, all RCRA remediation and material removal projects had

RELEASE RECORD

been completed. The classification process continues to support the original Class 3 designation.

At the time of FSS, the dose impact from groundwater contamination was not considered. However, spoils from Monitoring Well MW207 were analyzed with no activity identified other than naturally occurring radionuclides. Survey Areas 9535, 9536, 9537, and 9538 were separated from this Survey Area and classified Class 1 and Class 2. A large section of this survey unit was split off and added to Area 9523 to facilitate the construction of the Independent Spent Fuel Storage Installation (ISFSI) pad and access road. The classification basis shows that the expected residual radioactivity in the survey unit would be below the site remediation criteria and are consistent with procedural guidance, thereby sufficient to justify final designation as Class 3.

3. DATA QUALITY OBJECTIVES (DQO)

The primary objective of the Final Status Survey Plan (FSSP) was to demonstrate that the level of residual radioactivity in Survey Unit 9524-0000 did not exceed the release criteria specified in the License Termination Plan (LTP), was below the 10 mrem/yr Administrative Level DCGLs, and that the potential dose from residual radioactivity is As Low As Reasonably Achievable (ALARA).

FSS design and planning endorsed the use of 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 satisfy the release criteria objective of the FSS.

The DQO process determined that Cs-137 would be the radionuclide of concern during the 9524-0000 FSS process. Additionally, to provide conservatism, the Base Case DCGLs for radionuclides in soil was reduced by 60% to establish the Administrative Level DCGL.

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 performed before issue and after the instrument had been

RELEASE RECORD

used. Control and accountability of survey instruments were maintained to assure the quality and prevent the loss of data.

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

Radionuclide	Base Case Soil	Administrative Level	Required MDC
	DCGL (pCi/g) ⁽¹⁾	$DCGL (pCi/g)^{(2)}$	$(pCi/g)^{(3)}$
H-3	4.12E+02	1.65E+02	1.65E+01
C-14	5.66E+00	2.26E+00	2.26E-01
Mn-54	1.74E+01	6.96E+00	6.96E-01
Fe-55	2.74E+04	1.10E+04	1.10E+03
Co-60	3.81E+00	1.52E+00	1.52E-01
Ag-108m	7.14E+00	2.86E+00	2.86E-01
Ni-63	7.23E+02	2.89E+02	2.89E+01
Sr-90	1.55E+00	6.20E-01	6.20E-02
Nb-94	7.12E+00	2.85E+00	2.85E-01
Tc-99	1.26E+01	5.04E+00	5.04E-01
Cs-134	4.67E+00	1.87E+00	1.87E-01
Cs-137	7.91E+00	3.16E+00	3.16E-01
Eu-152	1.01E+01	4.04E+00	4.04E-01
Eu-154	9.29E+00	3.72E+00	3.72E-01
Eu-155	3.92E+02	1.57E+02	1.57E+01
Pu-238	2.96E+01	1.18E+01	1.18E+00
Pu-239/240	2.67E+01	1.07E+01	1.07E+00
Pu-241	8.70E+02	3.48E+02	3.48E+01
Am-241	2.58E+01	1.03E+01	1.03E+00
Cm-243/244	2.90E+01	1.16E+01	1.16E+00

Table 2 – FSS DCGL Values and Required Minimum Detectable Concentrations

(1) The Base Case DCGLs for soil are specified by the LTP in Chapter 6.

(2) The Administrative Level DCGL is 40% of the Base Case DCGL.

(3) The required MDC was 10% of the Administrative Level DCGL.

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. To assist the FSS Engineers when preparing survey plans for FSS, guidance is provided in Procedure RPM 5.1-11. By design, the FSSP meets the ALARA criteria for soils as specified in Chapter 4 of the LTP.

RELEASE RECORD

The LTP specifies that the selection of the scan area size is judgmental for Class 3 areas. The fraction of scanning coverage was determined during the DQO process with the total amount, and location(s) based on the likelihood of finding elevated activity during FSS. Based on conditions found during the area inspection tours, four (4) areas, totaling 1,949.8 m² the SU surface area, were selected for scanning in SU 9524-0000. Four (4) areas were chosen for scanning based on proximity to Class 1 and 2 areas and excavation activities. Scans were also prescribed for a one (1) meter radius around each random and biased Sample Measurement Location (SML).

During the characterization and classification surveys conducted in 2003, only Cs-137 was identified in nine (9) of the twenty (20) samples collected. This data, presented in Table 1, was used to determine the radiological concentration variability

Radionuclide-specific analyses of soil samples collected from this survey unit and adjacent land areas with similar history and physical characteristics have identified principally Cs-137. The data collected prior to FSS indicated that the remaining radionuclides listed in Table 2 would not be present in quantities greater than 5% of the applicable Base Case DCGL in this survey unit at the time of FSS. It was unlikely that the aggregate concentration of the remaining radionuclides would exceed 10% of the DCGL; therefore, only Cs-137 was used in the survey planning of SU 9524-0000. The use of the 5% and 10% rule is consistent with the development of surrogate ratio DCGLs as described in the LTP.

The DQO process determined that Cs-137 would be the radionuclide of concern during the 9524-0000 FSS process. The Operation DCGL of 3.16 pCi/g for Cs-137 was used to demonstrate compliance with the release criteria.

Surrogate DCGLs are not required for this survey unit because of the radionuclide specific analysis and radionuclide de-selection in accordance with the 5% and 10% rule.

The Elevated Measurement Comparison (EMC) does not apply to this survey unit since discrete, elevated areas of contamination are 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 FSS." Survey design specified fifteen (15) surface soil samples for the Sign Test non-parametric statistical testing.

For the FSS, six (6) biased soil SMLs were selected in the area where soil was either removed or added to backfill trenches excavated for the material removal project. Two (2) additional biased soil SMLs were selected "at depth"

RELEASE RECORD

from locations closest to the area of disturbance following the collection of surface samples. These samples will be collected from a horizontal profile to a dept of 2 meters, which is the assumed depth of soil disturbance.

Although Procedure RPM 5.1-11 only specified that 5% of the samples be selected for Hard-to-Detect (HTD) analysis, two (2) soil samples or 13% were randomly selected for HTD radionuclide analysis by using the Microsoft® Excel "RANDBETWEEN" function. Each sample will be sent for a full suite analysis of the HTD radionuclides specified in the LTP, Table 2-12, "Radionuclides Potentially Present at Haddam Neck Plant."

The implementation of survey specific 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 determined to be 13% of seventeen (17) samples, rounded up to the next whole number.

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 FSS." Visual Sample Plan was created by Pacific Northwest National Laboratory (PNNL) for the United States Department of Energy. A random grid pattern with a random starting point was selected for sample design, which is appropriate for a Class 3 area.

Sample location and scan areas were identified using AutoCAD-Lt^{\circ} a commercially available plotting software with coordinates consistent with the Connecticut State Plane System. These coordinates were integrated with a GPS to locate sample and scan locations in the field. The SMLs for the design are listed with the GPS coordinates in Table 3.

RELEASE RECORD

Locations (SML) with Associated GPS Coordinates.					
Designation	Northing	Easting			
9524-0000-001F	673238.9049	236077.8409			
9524-0000-002F	673135.6742	235772.5947			
9524-0000-003F	673728.7060	236095.8389			
9524-0000-004F	672980.3854	235831.8972			
9524-0000-005F	673230.9546	235910.5774			
9524-0000-006F	673191.4437	236142.2527			
9524-0000-007F	673135.1205	235619.4970			
9524-0000-008F	672959.5741	235802.1848			
9524-0000-009F	672879.8205	235964.2611			
9524-0000-010F	673225.5406	236241.6248			
9524-0000-011F	673419.5139	236119.745			
9524-0000-012F	673266.3626	236090.4119			
9524-0000-013F	673370.7049	235724.5897			
9524-0000-014F	673318.4618	236041.9947			
9524-0000-015F	673041.82	235865.0027			

Table 3 -Sample Measurement ocations (SML) with Associated GPS Coordinates.

For this Class 3 survey unit, the "Investigation Level" for area scanning and soil sample measurement results are those levels specified in LTP, Table 5-8, "Investigation Levels."

The Lower Bound of the Gray Region (LBGR) was adjusted in accordance with Procedure RPM 5.1-11 to 0.924 of the Operational DCGL to maintain the relative shift (Δ/σ) in the range of 1 and 3. In a Class 3 survey unit the median concentration is expected to be below the LBGR; however a Prospective Power Curve was generated using the data described in this FSSP and COMPASS, a software package developed under the sponsorship of the USNRC for implementation of the MARSSIM in support of the decommissioning license termination rule (Title 10 CFR 20, Subpart E). The result of the COMPASS computer run shows adequate power for this survey design.

Table 4 provides a synopsis of the survey design.

RELEASE RECORD

Feature	Design Criteria	Basis
Survey Unit Size	61,974.8 m ²	Based on AutoCAD and Visual Sample Plan calculations
Number of Measurements	15	Type I (α) and Type II (β) error were 0.05; relative shift (Δ/σ) set at 2 by procedure, the LBGR was set to 0.924.
Grid Spacing	Random and Random Start	Appropriate design for Class 3 Area.
Interval Spacing	Not Applicable	Not appropriate design for Class 3 random sampling
DCGL	3.16 pCi/g Cs-137	Operational DCGL applied to field data ⁽¹⁾
Scan Survey Coverage	1,949.8 m ² (3.1%)	Based on likelihood of finding elevated readings in this particular Class 3 survey unit
Scan Investigation Level	Detectable over background	Based on achieving the Administrative Level DCGL

Table 4 – Synopsis of the Survey Design

(1) The Operational DCGL was based on achieving an administrative level that was 40% of the soil DCGL and assuming no impact from radioactive contamination in groundwater or from buried concrete debris.

5. SURVEY IMPLEMENTATION

Final status survey field activities were conducted under Work Plan and Inspection Record (WP&IR) 000-GEN-9245-001056-000. The WP&IR package included a detailed FSSP, 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.

Survey activities occurred between May 12 and May 25, 2004.

Four (4) land areas, Scan Areas 1 through 4, were marked out using GPS coordinates consistent with the Connecticut State Plane System and scanned for elevated readings (see Attachment 2 for Scan Area 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.

Using GPS coordinates, SMLs were identified and marked with a surveyor's flag for identification. At each SML, a one (1) meter radius around the sample flag was scanned for elevated radiation levels.

RELEASE RECORD

Fifteen (15) surface soil samples were collected in random locations and packaged in accordance with HNP Procedure RPM 5.1-3, "Collection of Surface and Subsurface Soil, Shoreline Sediment, Asphalt and Liquid samples for Scoping, Characterization and 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 Scoping, Characterization and Final Status Samples."

Two (2) samples (007F and 010F) were randomly selected for HTD radionuclide analysis.

Six (6) biased samples (016F to 021F) were collected in areas where the soil appeared "disturbed" or excavated. Two (2) "at depth" samples were taken, (016FD and 017FD). Because of "resistance" to digging, sample 9524-0000-016FD was taken at a depth of five (5) feet (1.5 m); whereas, sample 9524-0000-017FD was taken at a depth of four (4) feet (1.2 m).

Two (2) "split samples" were collected at SML 009FS and 013FS for analysis.

6. SURVEY RESULTS

No elevated readings were identified during scanning at the SMLs. Scan Area 1 contained an area with an elevated reading, which prompted the collection of investigation samples from this area. The investigation results are discussed in Section 8 of this report. Table 5 provides a summary of the Scan Area survey. All scan area results are provided in Attachment 2.

Scan Area	Highest Logged Reading (cpm)	Investigation Level (MDC-cpm)	Elevated Reading Identification	Investigation Sample
1	8010	8389	-	-
1	1 16900	8617	ER-0001	9524-0000-022I
	8040	8140	-	-
2	6800	6832	-	-
	8270	9363	-	-
2	8450	9114		-
5	8670	9028	-	-
4	8510	8823	-	•
4	8010	8422	-	-

Table 5- Scan Area Results

RELEASE RECORD

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 taken for non-parametric statistical testing, the associated duplicates, biased and scan area samples using gamma spectroscopy. Gamma spectroscopy analysis was performed to the required MDC. Cesium-137 was the only gamma-emitting radionuclides detected at statistically significant concentrations and in most cases greater than the MDC. The results of gamma spectrometry analysis for a majority of the samples indicated Cs-137 at or below levels consistent with concentrations of Cs-137 found in soil at offsite locations within the vicinity of the HNP. A summary of the sample results is provided in Table 6.

Sample Number	Cs-137 pCi/g	f-DCGL ⁽¹⁾
9524-0000-001F	0.0161	0.005
9524-0000-002F	0.0204	0.006
9524-0000-003F	0.392	0.124
9524-0000-004F	0.646	0.204
9524-0000-005F	0.0465	0.015
9524-0000-006F	0.103	0.033
9524-0000-007F	0.0333	0.011
9524-0000-008F	0.607	0.192
9524-0000-009F	0.192	0.061
9524-0000-010F	0.0768	0.024
9524-0000-011F	-0.00595	0
9524-0000-012F	0.0137	0.004
9524-0000-013F	0.378	0.120
9524-0000-014F	0.0651	0.021
9524-0000-015F	0.042	0.013

Table 6- Summary of Soil Sample Results

(1) f-DCGL-fraction of the Administrative Level DCGL.

The offsite laboratory processed two (2) samples for HTD analysis as required by the sample plan, 9524-0000-007F and 010F. The requested analyses included alpha spectroscopy, gas proportional counting and liquid scintillation depending on the radionuclide and the measurement method. In both samples, Sr-90 was the only HTD listed above the lab reported MDC. Table 7 lists all radionuclides found in the analysis of 007F and 010F, greater than two standard deviations (2σ), as a fraction of the Administrative Level DCGL. In total with all other radionuclides detected, the f-DCGL for sample 007F is 0.063 or 6.3% of the 10 mrem/yr Administrative Level DCGL (see Table 6 and 7). No further action or investigations were required.

RELEASE RECORD

Sample Number	C-14	Sr-90	f-DCGL ⁽¹⁾
9524-0000-007F	-	0.0328	0.052
9524-0000-010F	0.172	0.045	0.14

Table 7-Hard-to-Detect Sample Results pCi/g

(1) f-DCGL-fraction of the Administrative Level DCGL.

The offsite laboratory analyzed the six (6) biased samples and the two (2) "at depth" (D) samples using gamma spectroscopy. Gamma spectroscopy analysis was performed to the required MDC. The results of gamma spectrometry analysis for a majority of the samples indicated only Cs-137 at levels consistent with concentrations of Cs-137 found in soil at offsite locations within the vicinity of the HNP. The highest f-DCGL in the sample set was 0.269 or 27% of the Administrative Level DCGL, well below any investigation level. No further action or investigations were required (see Table 8).

Table 8-Biased Sample Results

Sample Number	Cs-137 pCi/g	f-DCGL ⁽¹⁾
9524-0000-016F	0.00124	0.0004
9524-0000-016FD	0.0	0
9524-0000-017F	0.0162	0.0051
9524-0000-017FD	0.0826	0.0261
9524-0000-018F	0.12	0.0380
9524-0000-019F	0.116	0.0367
9524-0000-020F	0.853	0.2699
9524-0000-021F	0.022	0.0070

(1) f-DCGL-fraction of the Administrative Level DCGL.

7. QUALITY CONTROL

The off site laboratory processed the split samples and performed gamma spectroscopy analysis. Thirteen (13%) percent of the samples were selected for analysis, which exceeds the 5% minimum required by the LTP. The data were evaluated using United States Nuclear Regulatory Commission acceptance criteria specified in Inspection Procedure 84750 as detailed in Procedure RPM 5.1-24. There was acceptable agreement between field split results. The sample analysis vendor, General Engineering Laboratories-LLC; Charleston, South Carolina, maintains quality assurance and quality control plans as part of normal operation. Refer to Attachment 2 for data and data quality analysis results.

RELEASE RECORD

8. INVESTIGATIONS AND RESULTS

During Area 1 scanning, one (1) location above the scan investigation level was identified and designated ER-0001. Sample 9524-0000-022I was collected from this location. The results of gamma spectrometry analyses of this sample indicated only Cs-137 at levels consistent with concentrations of Cs-137 found in soil at offsite locations within the vicinity of the HNP. No further action or investigations were required. See Scan Area Readings in Attachment 2.

Scan	Sample Number	Elevated	Cs-137	f-
Area		Reading	pCi/g	DCGL ⁽¹⁾
1	9524-0000-022I	ER-0001	0.052	0.017

Table	9-	Scan	Area	Sam	nle	Results
Tanc		D Call	INC	Dam		Tresuits

(1) 1-DCGL-fraction of the Administrative Le

9. **REMEDIATION AND RESULTS**

Historically, no remediation 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 to be unnecessary and that the remaining residual radioactivity in soil was ALARA.

10. CHANGES FROM THE FINAL STATUS SURVEY PLAN

The change made from the LTP, prior to this FSS, was a decrease in the concentrations for the Base Case $DCGL_{soils}$. The LTP presents DCGLs that correspond to a Total Effective Dose Equivalent (TEDE) of 25 mrem/yr. This survey unit was evaluated against Administrative Level DCGLs that correspond to 10 mrem/yr.

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. All sample results were less than the release criteria. Therefore, the Sign Test shows that the survey unit passes Final Status Survey.

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 3.

The preliminary data review consisted of converting the data into units relative to the release criteria (i.e., pCi/g) and calculating basic statistical quantities (e.g., mean, median, standard deviation).

Revision 1

RELEASE RECORD

For Cs-137, the sample standard deviation was almost twice the value used for the survey design, which reflects the variability of the soils sampled in this excavated area. The range of the data, about three standard deviations (3σ) , was not unusually large. The frequency plot indicates that the data is skewed positive.

Analysis of the data utilizing a cumulative frequency distribution indicates that more than one distribution exists within the data set. This occurrence is a normal expectation and is frequently seen when sampling areas of varied geographical terrain as found in nature. This data is consistent with the distribution of Cs-137 found in soil at off site locations within the vicinity of the HNP.

All data, assessments and graphical representations are provided in Attachment 2.

12. ANOMALIES

All data is considered valid including negative values, zeros, values reported below the MDC and values reported with uncertainties greater than two standard deviations. Some radionuclides have been reported at low concentrations that are statistically significant at the 95% confidence level, but with a relatively high level of uncertainty.

Hard-to-Detect analyses results identified Sr-90 in two (2) samples. The Sr-90 value compares favorably with research conducted in other regional areas concerning fallout resultant from nuclear testing in the past as referenced in EPRI Technical Report 1003030, "Determining Background Radiation Levels in Support of Decommissioning Nuclear Power Plants." No further actions were taken or needed.

In several of the samples, C-14, Co-60, Cs-134, Eu-154 and Eu-155 were listed in the analysis as meeting the criteria for detection, greater than two standard deviations (2σ); however, all were reported below the laboratory listed MDC.

The data shows that the quantities of identified radionuclides do not represent quantities that would increase the requisite number of samples for nonparametric statistical sampling or cause the survey unit to fail to meet the release criteria. Most radionuclides were reported at levels near or below the required MDC.

13. CONCLUSION

Survey Unit 9524-0000 has met the DQOs of the Final Status Survey. For this survey unit, the ALARA criteria for soils as specified in Section 4 of the LTP were achieved. Elevated Measurement Comparison and remediation was not required.

RELEASE RECORD

The sample data passed the Sign Test. The null hypothesis was rejected. Evaluation of the data shows that none of the FSS design radionuclides or HTD soil concentration values exceeded the Administrative Level DCGL or unity. No large anomalies were observed in the graphical representation of the data. The survey unit was properly designated as Class 3. The Retrospective Power Curve generated using COMPASS shows adequate power was achieved.

This survey unit is not considered impacted by radioactive contamination in groundwater based on location, topography and current hydro-geologic sampling data as referenced in Health Physics TSD CY-HP-0193, "Assessment of Existing Groundwater Dose for Phase II Release Areas of the Final Status Survey Report."

14. ATTACHMENTS

14.1 Attachment 1 – Figures

14.2 Attachment 2 – Sample and Statistical Data

RELEASE RECORD

Attachment 1 Figures (6 pages)

Revision 1













RELEASE RECORD

Attachment 2 Sample and Statistical Data

RELEASE RECORD

Attachment 2a Gamma Spectroscopy Data (94 Pages)

Table of Contents

Case Narrative	1
Chain of Custody	4
Cooler Receipt Checklist	8
Radiological Analysis Sample Data Summary Quality Control Data	10 26 81

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CASE NARRATIVE For CONNECTICUT YANKEE RE: Soils PO# 002332 Work Order: 114103 SDG: MSR#04-1708

July 1, 2004

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

<u>Telephone Number:</u> (843) 556-8171

Summary:

Sample receipt

The samples for the Soil Project for work order 114103 arrived at General Engineering Laboratories, LLC, (GEL) in Charleston, South Carolina June 3, 2004 for environmental analysis. 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 samples:

114103001	9524-0000-001F
114103002	9524-0000-002F
114103003	9524-0000-005F
114103004	9524-0000-006F
114103005	9524-0000-008F
114103006	9524-0000-009F
114103007	9524-0000-009FS
114103008	9524-0000-011F
114103009	9524-0000-012F
114103010	9524-0000-014F
114103011	9524-0000-015F
114103012	9524-0000-022I

GENERAL ENGINEERING LABORATORIES, LLC a Member of THE GEL GROUP, INC. P.O. Box 30712 • Charlaston, SC 29417 • 2040 Savaga Road (29407) Phone (843) 556-8171 • Fax (2013) 766-1178 • www.gel.com

114103013	9524-0000-019F
114103014	9524-0000-003F
114103015	9524-0000-004F
114103016	9524-0000-013FS
114103017	9524-0000-013F
114103018	9524-0000-016F
114103019	9524-0000-016FD
114103020	9524-0000-017F
114103021	9524-0000-017FD
114103022	9524-0000-018F
114103023	9524-0000-020F
114103024	9524-0000-021F
114103025	9524-0000-007F
114103026	9524-0000-010F

Items of Note:

There are not items to note.

Case Narrative:

Sample analyses were conducted using methodology as outlined in General Engineering Laboratories (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are listed below by analytical parameter.

Analytical Request:

Twenty-four soil samples were analyzed for FSSGAM. Two additional soil samples were analyzed for FSSGAM and FSS ALL.

Internal Chain of Custody:

Custody was maintained for all of these samples.

Data Package:

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Laboratory Certifications, and Radiochemistry.

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

Project Manager

GENERAL ENGINEERING LABORATORIES, LLC a Member of THE GEL GROUP, INC. P.O. Box 30712 • Charleston, SC 29417 • 2040 Savage Road (29407) Phone (843) 558-8171 • Fax (243) 766-1178 • www.gel.com



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Health Physics Procedure

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	Project Name: Haddam Ne	ck Decom	missioning	<u> </u>				A	nalyses	Reques	sted		Lab Use Only	•
	Contact Name & Phone: Jack McCarthy 860-267-255	6 Ext. 3024	ŧ	Mcdia Code	Sample Type	Container Size-							Comments: 90 Ibs	
	Analytical Lab (Name, City General Engineering Laborato 2040 Savage Road Charteston, SC 29407 (843-5 Sarah Kozlik	, State ories 556-8171)	<u> </u>		Code	&Type Code	FSSGAM	FSS ALL	FSSHTD	FSSTRU	FSSOTHR	•		
			JOther:					Į –					Comment Processian	Tab Servela ID
	Sample Designation	Date	Time				77						Comment, Preservation	Lio Sample IL
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5	9524-0000-007F*	5/24/04	1442	10			<u> </u>	<u> </u>			┝╍╼╍╂╸			
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09	9524-0000-0095	5/24/04	1505	15	<u> </u>		-A ▼	}'				·	<u> </u>	
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	3) felinquished By		Date/Tim	e	4) Recei	ved By				Date/	ſime		Bill of Lading #	(Y) N
	5) Relinquished By		Date/Tim	c	6) Recei	ved By				Date/	lime		790165579186	•••

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	Project Name: Haddam Ne	ck Decom	nissioning					A	nalvses	Reque	sted	Lab Use Only	
	Contact Name & Phone: Jack McCarthy 860-267-2550	5 Ext. 3024		Media Code	Sampla Type	Container Size-						Comments: . 90165	•
	Analytical Lab (Name, City General Engineering Laborato 2040 Savage Road Charleston, SC 29407 (843-5 Sarah Kozlik Priority: X 30 D. 15 D.	7, State ries 56-8171)	Other		Code	&Type Code	FSSGAM	FSS ALL	GTHSSF	FSSTRU	FSSOTHR		
	Sample Designation	Date	Time		Į							Comment, Preservation	Lab Sample ID
2	9524-0000-0118	5/24/04	1413	TS	G	BP	x						
00	9524-0000-0128	5/24/04	1400	TS	G	BP	x						
2	9524-0000-014F	5/24/04	1408	TS	G	BP	x			}			
5	· 9524-0000-015F	5/24/04	1418	TS	G	BP	x						
5	9524-0000-0221	5/24/04	1445	TS	G	BP	X						
12	9524-0000-019F	5/24/04	1425	TS	G	BP	x						
11	9524-0000-003F	5/25/04	0940	TS	G	BP	X						
2	9524-0000-004F	5/25/04	1010	TS	G	BP	X						
5	9524-0000-013FS .	5/25/04	0950	TS	G	BP	X	- <u></u>					•
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Health Physics Procedure

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	Project Name: Haddam Ne	ck Decom	nissioning					A	nalyses	Reques	sted	Lab Use Only	•••
	Contact Name & Phone: Jack McCarthy 860-267-255	6 Ext. 3024		Media Code	Sam _è le Type	Container Size-						Comments: 90 165	
	Analytical Lab (Name, City General Engineering Laborato 2040 Savage Road Charleston, SC 29407 (843-5 Sarah Kozlik	y, State pries 556-8171)			Code	&Typ= Code	FSSGAM	FSS ALL	FSSHTD	FSSTRU	FSSOTHR		
	Priority: 🛛 30 D. 🗌 15 D	, [_]7D. [Other:									ļ	·
_	Sample Designation	Date	Time						. <u> </u>	l		Comment, Preservation	Lab Sample ID
17	9524-0000-013F	5/25/04	0950	TS	G	BP	X				_		
10	9524-0000-016F ·	5/25/04	0855	TS	G	BP	X						·
19	9524-0000-016FD	5/25/04	0915	TS	G	BP	<u>X</u>					·	
20	9524-0000-017F	5/25/04	0830	TS	G	BP	<u>X</u>						
21	9524-0000-017FD	5/25/04	0848	TS_	G	BP	<u>X</u>	i					
2	9524-0000-018F	5/25/04	1010	TS	G	BP	X						
23	<u>9524-0000-020F</u>	5/25/04	1020	TS	G	BP	X						· · · ·
24	9524-0000-021F	5/25/04	0920	TS_	G	BP	<u>x</u>						
	NOTES: PO #: 002332	IMS	L SR #: 04-17	08	X :	LTP QA		Radw	aste QA		Non QA	Samples Shipped Via: Ped Ex UPS Hand	Internal Container Temp:: <u>Z.L.</u> /Deg. C Custody Sealed?
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	5) Relinquished By		Date/Tim	8	6) Recei	ved By		· · · · · ·		Date/	lime	7901 6551 9786	

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COOLER RECEIPT CHECKLIST

Connecticut Yankee Statement of Work for Analytical Lab Services	CY-ISC-SOW-001
Figure 1. Sample Check-in	List
Date/Time Received: 6-3- v4	
SDG#: MSR#04-1708	
Work Order Number:	
Shipping Container ID: 7901 6551 9786 Chain of C	2004- Sustody # 000 90,000 9/,000 9
1. Custody Seals on shipping container intact?	Yes [9 No []
2. Custody Seals dated and signed?	Yes [] No []
3. Chain-of-Custody record present?	Yes [] No []
4. Cooler temperature _20.	
5. Vermiculite/packing materials is: N/A	Wet [] Dry []
6. Number of samples in shipping container:	
7. Sample holding times exceeded?	Yes [] No []
8. Samples have: 	le labels .
9. Samples are:	
in good conditionleaking	
brok=nhave air bubb	les
10. Were any anomalies identified in sample receipt?	Yes [] No [4
11. Description of anomalies (include sample numbers):	
Sample Custodian/Laboratory:	Date: 6/3/04
	• - ·

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Radiochemistry Case Narrative Connecticut Yankee Atomic Power Co. (YANK) SDG MSR#04-1708

Method/Analysis Information Product: Analytical Method: Prep Method: Dry Soil Prep GL-RAD-A-021 Method: Analytical Batch Number: Prep Batch Number: Dry Soil Prep GL-RAD-A-021 Batch Number:

Alphaspec Am241, Cm, Solid ALL FSS DOE EML HASL-300, Am-05-RC Modified Ash Soil Prep 342904 338594 338588

Sample ID	Client ID
114103025	9524-0000-007F
114103026	9524-0000-010F
1200648444	Method Blank (MB)
1200648447	Laboratory Control Sample (LCS)
1200648445	114103025(9524-0000-007F) Sample Duplicate (DUP)
1200648446	114103025(9524-0000-007F) Matrix Spike (MS)

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# 13.

Calibration Information:

Calibration Information All initial and continuing calibration requirements have been met.

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

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

Designated QC

The following sample was used for QC: 114103025 (9524-0000-007F).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

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

Preparation Information

All preparation criteria have been met for these analyses.

Sample Re-prep/Re-analysis Sample 114103025 (9524-0000-007F) was recounted due to a peak shift.

Miscellaneous Information:

NCR Documentation

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

Manual Integration

No manual integrations were performed on data in this batch.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information Product: Analytical Method: Prep Method:

Dry Soil Prep GL-RAD-A-021 Method: Analytical Batch Number: Prep Batch Number: Dry Soil Prep GL-RAD-A-021 Batch Number: Alphaspee Pu, Solid-ALL FSS DOE EML HASL-300, Pu-11-RC Modified Ash Soil Prep Dry Soil Prep 342900 338594 338588

Sample ID	Client ID
114103025	9524-0000-007F
114103026	9524-0000-010F
1200648424	Method Blank (MB)
1200648427	Laboratory Control Sample (LCS)
1200648425	114103025(9524-0000-007F) Sample Duplicate (DUP)
1200648426	114103025(9524-0000-007F) Matrix Spike (MS)

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# 13.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

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

Designated QC

The following sample was used for QC: 114103025 (9524-0000-007F).

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.

Miscellancous Information:

NCR Documentation

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

Manual Integration

No manual integrations were performed on data in this batch.

Qualifier information

Manual qualifiers were not required.

Method/Analysis Information

Product: Analytical Method: Prep Method: Dry Soil Prep GL-RAD-A-021 Method: Analytical Batch Number: Prep Batch Number: Dry Soil Prep GL-RAD-A-021 Batch Number:

Llquid Scint Pu241, Solid-ALL FSS DOE EML HASL-300, Pu-11-RC Modified Ash Soil Prep 342903 338594 338588

Sample ID	Client ID
114103025	9524-0000-007F
114103026	9524-0000-010F
1200648437	Method Blank (MB)
1200648440	Laboratory Control Sample (LCS)
1200648438	114103025(9524-0000-007F) Sample Duplicate (DUP)
1200648439	114103025(9524-0000-007F) Matrix Spike (MS)

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# 5.

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: 114103025 (9524-0000-007F).

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. An NCR was not generated for this SDG.

Manual Integration

No manual integrations were performed on data in this batch.

Qualifier information Manual qualifiers were not requ

Manual qualifiers were not required.

Method/Analysis InformationProduct:Gammaspee, Gamma, Solid-FSS GAM & ALL FSSAnalytical Method:EML HASL 300, 4.5.2.3Prep Method:Dry Soil PrepAnalytical Batch Number:339714Prep Batch Number:338588

Sample ID	Client ID
114103014	9524-0000-003F
114103015	9524-0000-004F
114103016	9524-0000-013FS
114103017	9524-0000-013F
114103018	9524-0000-016F
114103019	9524-0000-016FD

114103020	9524-0000-017F
114103021	9524-0000-017FD
114103022	9524-0000-018F
114103023	9524-0000-020F
114103024	9524-0000-021F
114103025	9524-0000-007F
114103026	9524-0000-010F
1200640440	Method Blank (MB)
1200640442	Laboratory Control Sample (LCS)
1200640441	114103014(9524-0000-003F) Sample Duplicate (DUP)

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratorics, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-013 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: 114103014 (9524-0000-003F).

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. An NCR was not generated for this SDG.

Qualifier Information

Qualifier	Reason	Analyte	Sample
ហ	Data rejected due to low abundance.	Actinium-228	114103025
	· · · · · · · · · · · · · · · · · · ·	Lead-212	1200640440
		Silver-108m	1200640441
UI	Data rejected due to no valid peak.	Cesium-137	114103019
		Europium-155	114103022

Method/Analysis Information

Product: Analytical Metho Prep Method: Analytical Batch	d: Number:	Gammaspec, Gamma, Solid-FSS GAM & ALL FSS EML HASL 300, 4.5.2.3 Dry Soil Prep 339715
Prep Batch Numb	ier:	338587
Sample ID 114103001 114103002 114103003 114103004 114103006 114103006 114103008 114103008 114103009	Client ID 9524-0000-001F 9524-0000-002F 9524-0000-005F 9524-0000-008F 9524-0000-008F 9524-0000-009F 9524-0000-009F 9524-0000-011F 9524-0000-012F	S
114103010 114103011 114103012 114103013 1200640443 1200640445 1200640444	9524-0000-014F 9524-0000-015F 9524-0000-022I 9524-0000-019F Method Blank (N Laboratory Cont 114103001(9524	MB) rol Sample (LCS) 1-0000-001F) Sample Duplicate (DUP)

SOP Reference

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

Blank Information

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

16

Designated QC

The following sample was used for QC: 114103001 (9524-0000-001F).

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

NCR ID 121363 The following NCR was generated for this SDG:

NCR 121363 was generated due to Non-Rad samples analyzed with Rad Samples. Non-Rad samples analyzed with Rad Samples: 114103 001,002,003,004,005,006,007,008,009, 010,011,012,013 Above samples are "Non RAD" No cross-contamination occurred. Reporting results.

<u>Oualifier information</u>

Qualifier	Reason	Analyte	Sample
UI	Data rejected due to interference.	Europium-155	114103006
UI	Data rejected due to low abundance.	Actinium-228	114103005
	· · · · · · · · · · · · · · · · · · ·		114103007
		Cesium-134	114103002
			114103003
			114103006
			114103009
			114103012
			114103013

Method/Analysis Information Product: Analytical Method: Prep Method: Dry Soil Prep GL-RAD-A-021 Method: Analytical Batch Number: Prep Batch Number: Dry Soil Prep GL-RAD-A-021 Batch Number:

GFPC, Sr90, solld-ALL FSS EPA 905.0 Modified Ash Soil Prep Dry Soil Prep 341279 338594 338588

Sample ID	Client ID
114103025	9524-0000-007F
114103026	9524-0000-010F
1200644297	Method Blank (MB)
1200644300	Laboratory Control Sample (LCS)
1200644298	114103026(9524-0000-010F) Sample Duplicate (DUP)
1200644299	114103026(9524-0000-010F) Matrix Spike (MS)

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# 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: 114103026 (9524-0000-010F).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

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

Preparation Information

All preparation criteria have been met for these analyses.

Sample Re-prep/Re-analysis

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

Chemical Recoveries

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

Miscellancous Information:

NCR Documentation

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

Qualifier information

Manual qualifiers were not required.

<u>Method/Analysis Information</u> Product: Analytical Method:

Analytical Batch Number:

Liquid Scint Tc99, Solid-ALL FSS DOE EML HASL-300, Tc-02-RC Modified 341070

Client ID
9524-0000-007F
9524-0000-010F
Method Blank (MB)
Laboratory Control Sample (LCS)
114644001(WWTP/EPOTW Sludge) Sample Duplicate (DUP)
114644001(WWTP/EPOTW Sludge) Matrix Spike (MS)

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# 11.

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 OC

The following sample was used for QC: 114644001 (WWTP/EPOTW Sludge).

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.

Miscellancous Information:

NCR Documentation

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

Qualifier information

Manual qualifiers were not required.

Method/Analysis Information

Product: Analytical Method: Prep Method: Dry Soil Prep GL-RAD-A-021 Method: Analytical Batch Number: Prep Batch Number: Dry Soil Prep GL-RAD-A-021 Batch Number: Liquid Scint Fe55, Solid-ALL FSS DOE RESL Fe-1, Modified Ash Soil Prep 342541 338594 338588

Sample ID	Client ID
114103025	9524-0000-007F
114103026	9524-0000-010F
1200647440	Method Blank (MB)
1200647443	Laboratory Control Sample (LCS)
1200647441	113282019(9535-0001-002F) Sample Duplicate (DUP)
1200647442	113282019(9535-0001-002F) Matrix Spike (MS)

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# 2.

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: 113282019 (9535-0001-002F).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

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

Preparation Information

All preparation criteria have been met for these analyses.

Sample Re-prep/Re-analysis

Samples 114103026 (9524-0000-010F), 1200647440 (MB) and 1200647441 (9535-0001-002F) were recounted due to a negative result greater than three times the error.

Samples were reprepped due to low/high recovery.

Miscellancous Information:

NCR Documentation

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

Additional Comments

The absolute value of the sample 1200647440 (MB) activity is greater than three times the one sigma total propagated uncertainty due to subtraction of the cross talk from the Iron-59 tracer.

Qualifier information

Manual qualifiers were not required.

Method/Analysis Information

Product: Analytical Method: Prep Method: Dry Soil Prep GL-RAD-A-021 Method: Analytical Batch Number: Prep Batch Number: Dry Soil Prep GL-RAD-A-021 Batch Number: Liquid Scint Ni63, Solid-ALL FSS DOE RESL Ni-1, Modified Ash Soil Prep 342542 338594 338588

Sample ID	Client ID
114103025	9524-0000-007F
114103026	9524-0000-010F
1200647444	Method Blank (MB)
1200647447	Laboratory Control Sample (LCS)
1200647445	114103026(9524-0000-010F) Sample Duplicate (DUP)
1200647446	114103026(9524-0000-010F) Matrix Spike (MS)

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# 6.

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: 114103026 (9524-0000-010F).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

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

Preparation Information All preparation criteria have been met for these analyses.

Sample Re-prep/Re-analysis None of the samples in this sample set required reprep or reanalysis.

Miscellaneous Information:

NCR Documentation

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

Qualifier information Manual qualifiers were not required.

<u>Method/Analysis Information</u> Product: Analytical Method: Analytical Batch Number:

LSC, Tritium Dist, Solid-HTD2, ALL FSS EPA 906.0 Modified 342680

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(MSD)

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# 9.

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: 115079001 (SSIBF158).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

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

Preparation Information

All preparation criteria have been met for these analyses.

Sample Re-prep/Re-analysis

Sample 1200647788 (SSIBF158) was recounted due to high MDA.

Miscellaneous Information:

NCR Documentation

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

Qualifier information

Manual qualifiers were not required.

Method/Analysis Information Product: Analytical Method: Analytical Batch Number:

Liquid Scint C14, Solid FSS EPA EERF C-01 Modified 342387

Sample ID	Client ID
114103025	9524-0000-007F
114103026	9524-0000-010F
1200647032	Method Blank (MB)
1200647035	Laboratory Control Sample (LCS)
1200647033	113282020(9535-0001-006F) Sample Duplicate (DUP)
1200647034	113282020(9535-0001-006F) Matrix Spike (MS)

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratorics, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-B-023 REV# 0.

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 (OC) Information:

Blank Information

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

Designated QC

The following sample was used for QC: 113282020 (9535-0001-006F).

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 114103025 (9524-0000-007F), 114103026 (9524-0000-010F), 1200647032 (MB) and 1200647033 (9535-0001-006F) were recounted due to high MDAs. Samples were repreped due to low/high recovery.

Miscellancous Information:

NCR Documentation

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

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:

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Reviewer:_

General Engineering Laboratories Form GEL-XXX Rev. 06/02

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	COMPANY - WIDE N	ONCONFORMANCE RE	PORT						
Mo.Day Yr. 22-JUN-04	Division: Radiochemistry		Type: Process						
Instrument Type: GAMMA SPECTROMETER	Quality Criteria: Specifications		Client Code: YANK						
Test / Method: EML HASL 300, 4.5.2.3	Matrix Type: Solid	Batch 1D: 339715	Sample Numbers: See Below						
Potentially affected work order(s)	SDG): 114103(MSR#04-1708),11	14379(MSR#04-1324),114738(N	MSR#04-1763&1784)						
Application issues: Non-Rad samples analyzed with Rad Samples									
Specification and Requirements Nonconformance Description:		NRG Disposition:							
Non-Rad samples analyzed with Ra 114103 001,002,003,004,005, 010,011,012,013 Above samples are "Non RAD"	ad Samples: 008,007,008,009,	No cross-contaminatio	on occurred. Reporting results.						

Originator's Na	ne:	
Seth Wells	22-JUN-04	
Quality Review:		

Director:

Data Validator/Group Leader: Scott Baskett 22-JUN-04

Corrective Action:

Corrective Action ID and Complete Date:

SAMPLE DATA SUMMARY

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Certificate of Analysis

Comp Addre	any : :55 :	Connecticu Haddam No 362 Injun H	t Yankee At eck Plant Iollow Road	omic Power							1 0004		
Carl		East Houp	ion, Connect	ucut 06424				Re	pont Date	נומר ::	1,2004		
Conu		NI, FEIS M	DUCUUCUK								17.	- 1 -	
Proje	ct:	Soils PO# (02332								Pa	ge t d	Dr 2
		Client San Sample II Matrix: Collect Di Receive D Collector: Moisture:	nple ID: D: ate: Date:		9524-00 1141030 Soil 24-MAT 03-JUN Clicnt 4.74%	00-001F)01 /-04 -04		Project: Client ID: Vol. Recv.:	YANKO YANKO	0504 01			
Parameter		Ouglifier	Result	Uncertainty	LC	TPU		Units	DF	Analy	stDate	Time	BatchMtd
Rad Gamma Spec	Analy	sis											
Gammarner, Ga	rma S	alid-FSS GA	M & ALL F.	\$\$									
Actinium.778		5114 1 66 612	0 529	+/-0.176	0.0575	+/-0.173	0.122	nC1/g		SRB	06/19/04	1541	3397151
Americium 741		TT	-0.00178	±/_0 0784	0.0229	+/-0.0278	0.047	nC1/a				10.11	
Blemuth.712		4	0.00170	-1.0 272	0 135		0.283	pC1/g				•	
Dismuth-214			0317	+/_0 0855	0.135	+/-0.0838	0.0664	nC1/g					
Cerima134		IJ	0.0313	+/-0 0338	0.0185	+/-0'0331	0.0389						
Ceshm-137		ŭ	0.0161	1.000	0.0176	+/-0 0196	0.0368	nC1/g					
Cobalt-60		ŭ	0.0199	+/-0.0209	0.0186	+/-0.0205	0.0396	nCI/g					
Europhim 157		ŭ	-0.00309	-1-0.0426	0.0183	+/_0.018	0.0396	nCi/g	•				
Europhin-152		17	0.0183	1/0 0681	0.0105	1/-0.0468	n 121	nCila					
Rumpium-155		й. 11 -	0.0656	1/-0.0001	0.0381	+/-0.0000	0.0782	nCl/g					
Lesd-212		ų	0.434	+/-0.0577	0.0223	+/-0.0565	0.046	nCi/g					
1 end-714			0.365	+/-0.0712	0.028	+/-0.0698	0.0582	nCl/g					
Manganese-S4		CT .	0.0149	+/-0.0218	0.0174	+/-0.0213	0.0365	pCI/g					
Nichlm.Q4		ŭ	0.00791	+/-0.0189	0.0162	+/-0.0185	0.0338	pCl/g					
Potassium-40		-	11.7	+/-1.06	0.132	+/-1.04	0.288	pCl/g					
Radium-226			0.317	+/-0.0855	0.0319	+/-0.0838	0.0664	pCl/g					
Silver-108m		ប	0.0064	+/-0.0149	0.0134	+/-0.0146	0.0279	pCl/g					
Thallium-208		-	0.152	+/-0.0419	0.0172	+/-0.041	0.0359	pCl/g					
The following Pr	ep Mei	ihods were ş	erformed										
Method	Descr	iption				Analyst	Date	Time	Prep	Batch			
Dry Soil Prep	Dry S	oll Prep GL-	RAD-A-021	L		BSWI	06/04/0	1508	3385	87			
The following An	alytica	i Methods v	vere perfori	med									
Method	Deser	iption											
1	EML	HASL 300, 4	4.5.2.3										
Notes: The Qualifiers	in this	report are	defined as t	follows :									

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B Target analyte was detected in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration of the target analyte exceeds the instrument calibration range.

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Certificate of Analysis

Parameter	Qualifier Result U	incertainty LC	TPU MDA	Units	DF AnalystDate	Time Batch Mid.
	Client Sample ID: Sample ID:	9524-0000 11410300	-001F I	Project: Client ID: Vol. Recv.:	YANK00504 YANK001	
Project:	Soils PO# 002332					Page 2 of 2
Contact:	Soz Injun Hollow Road East Hampton, Connecticu Mr. Pete Hollenbeck	1t 06424		Rej	port Date: July 1, 200)4 .
Company : Address :	Connecticut Yankee Atom Haddam Neck Plant	lic Power				,

Analytical holding time exceeded. Η

Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit. J

U Indicates the target analyte was analyzed for but not detected above the detection limit.

UI Uncertain Identification for gamma spectroscopy.

X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
h Sample preparation or preservation holding time exceeded.

The above sample is reported on a dry weight basis.

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, Sarah Kozlik.

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Reviewed by

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Certificate of Analysis

Comj Addr	pany : ress :	Connectic Haddam N 362 Injun East Hamj	ut Yankee A leck Plant Hollow Road pton, Connec	tomic Power d :ticut 06424				R	eport Da	te: July 1, 2004		
Cont	act:	Mr. Pete H	Hollenbeck							D		
Fioje	ж н :	20113 PU#	002332							E	ige i o	
		Client Sa Sample I Matrix: Collect I Receive Collector Moisture	umple ID: D: Date: Date: r: ::		9524-00 1141030 Soil 24-MAX 03-JUN Client 9.54%	00-002F 002 Y-04 -04		Project: Client ID: Vol. Recv.:	YANK YANK	00504 001		
Parameter		Qualifier	r Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch Mid.
Rad Gamma Spec	Analy	ais .										
Gammaspec, Ga	mma, S	olid-FSS G	AM & ALL F	55								
Actinium-228			0.690	+/-0,199	0.0552	+/-0.195	0.120	pCl/g		SRB 06/19/04	1 1541 3	397151
Americium-241		U	-0.012	+/-0.0261	0.0233	+/-0.0256	0.048	pCi/g				
Bismuth-212			0,334	+/-0.233	0.129	+/-0.228	0.276	pCl/g				
Bismuth-214			0.619	+/-0.107	0.0304	+/-0.105	0.0645	pCl/g				
Cesium-134		U UI	0.00	+/-0.048	0.0236	+/-0.0471	0.0498	pCl/g				
Cesium-137		U	0.024	+/-0.0271	0.0174	+/-0.0265	0.0369	pCi/g				
Cobalt-60		U	0.00863	+/-0.0228	0.0202	+/-0.0224	0.0439	pCl/g				
Europium-152		U	-0.0156	+/-0.0469	0.0398	+/-0.0459	0.0836	pCl/g				
Europium-154		ប	0.0743	+/-0.0694	0.0593	+/-0.068	0.128	pCl/g				
Europium-155		ប	0.0673	+/-0.0639	0.033	+/-0.0626	0.0685	pCl/g				
Lesd-212			0.654	+/-0.0746	0,0204	+/-0.0731	0.0426	pCl/g				
Lead-214			0.616	+/-0.0834	0.0258	+/-0.0817	0.0545	pCl/g				
Manganese-54		ប	-0.00604	+/-0.0197	0,0163	+/-0.0193	0.035	pCi/g				
Niobium-94		บ	0.0154	+/-0.0195	0.0177	+/-0.0191	0.0374	pCl/g				
Potassium-40			11.8	+/-1.12	0.158	+/-1.10	0,351	pCl/g				
Radium-226			0.619	+/-0.107	0.0304	+/-0.105	0.0645	pCl/g				
Silver-108m		ប	-0,000724	+/-0.0155	0.0131	+/-0.0152	0.0278	pCl/g				
Thallium-208			0.228	+/-0.0528	0.0156	+/-0.0517	0.0333	pCi/g				
The following Pr	ep Mei	bods were	performed									
Method	Descr	tption				Analyst	Date	Time	Pre	p Batch		
Dry Soil Prep	Dry S	oll Prep GL	-RAD-A-02	1		BSW1	06/04/0	1508	338	587		
The following An	nlytica	I Methods	were perform	med								
Method	Descri	iption										
1	EML	HASL 300,	4.5.2.3									
Notes:												
The Qualifiers	in this	report are	defined as	fellows :								

B Target analyte was detected in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
B Concentration of the target analyte exceeds the instrument calibration range.

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Certificate of Analysis

~	Confact: Project:	Mr. Pele Hol Soils PO# 00 Client Sam Sample ID:	ilenbeck 02332 iple ID:		9524-0000 11410300)-002F 2	Project: Client ID:	YANK YANK	P 00504 001	age 2 c	of 2
		Ounlitter	Perult	Tineortalaty		4 	 Val. Recv.:		AnniestDate		Batch Mid

H Analytical holding time exceeded.

J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.

U Indicates the target analyte was analyzed for but not detected above the detection limit.

UI Uncertain identification for gamma spectroscopy.

X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.

h Sample preparation or preservation holding time exceeded.

The above sample is reported on a dry weight basis.

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

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Reviewed by

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Certificate of Analysis

Com Addi	bavà :	Connection Haddam N 362 Injun J	it Yankee A leek Plant Hollow Road	iomic Power				Per	wet Dute: fi	1.1.2004	1	
Cont	act:	Mr. Pets H	lollenbeck					1~1				
Proje	::	Soils PO#	002332							P	age 1 d	of 2
		Client Sa Sample I Matrix: Collect D Receive I Collector Moisture	mple ID: D: Date: Date: :		9524-00 114103 Soil 24-MA 03-JUN Client 8.73%	00-005F 003 Y-04 -04		Project: J Client ID: J Vol. Recv.:	YANK00504 YANK001	4		
Parameter		Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF Ans	lysiDate	Time	Botch Mid
Rad Gamma Spe	c Analy	rsis										•
Gammaspec, Ga	mma, S	lolid-FSS G/	M& ALL F	55								
Actinium-228			0.694	+/-0.145	0.0361	+/-0.142	0.0761	pCi/g	SRB	06/19/0	4 1542 :	3397151
Americium-241	L	ប	-0.000356	+/-0.106	0.067	+/-0.104	0.137	pCVg				
Bismuth-212			0.447	+/-0.160	0.0769	+/-0.157	0.162	pCVg				
Bismuth-214			0.511	+/~0.0737	0.0233	+/-0.0722	0.0484	pCl/g				
Ceslum-134		UI	0.0474	+/-0.0273	0.0141	+/-0.0267	0.0293	pCl/g				
Cesium-137			0.0465	+/-0.024	0.0102	+/-0.0236	0.02.14	pCl/g				
Cobalt-60		U	0.0163	+/-0.0136	0.0125	+/-0.0134	0.0265	pCl/g				
Europium-152		U	-0.0191	+/-0.0352	0.0295	+/-0.0345	0.0612	pCVg				
Europium-154		U	-0.017	+/-0.0388	0.0316	+/-0.038	0.0674	pCl/g				
Europium-155		ប	-0.0168	+/-0.046	0.0395	+/-0.0451	0.081	pCl/g				
Lead-212			0.554	+/-0.0601	0.0208	+/-0.0589	0.0427	pCl/g				
Lead-214			0.638	+/-0.0764	0.0204	+/-0.0748	0.0423	pCl/g				
Manganese-54		ប	0.0155	+/-0.0177	0.011	+/-0.0173	0.0232	pCl/g				
Nicblum-94		U	0.000242	+/-0.0121	0.0103	+/-0.0118	0.0216	pCVg		·		
Potassium-40			12.6	+/-1.09	0.0898	+/-1.07	0.195	pCi/g				
Radium-225			0.511	+/-0.0737	0.0233	+/-0.0722	0.0484	pCVg				
Silver-108m		U	0.00864	+/-0.0114	0.010	+/-0.0112	0.0208	pCVg				
1 hallium-208			0.185	+/-0.0330	0.0110	+7-0.033	0.0242	peng				
The following P	rep Me	thods were	performed									
Method	Desc	ription				Amlyst	Date	Time	Prep Bat	ch		
Dry Soil Prep	Dry S	ioil Prep GL	-RAD-A-02	1		BSWI	06/04/0	1508	338587			<u> </u>
The following A	natutle	Methoda	were perfor	međ								
Method	Desci	dption	nete perior									
1	EML	HASL 300.	4.5.2.3					·		<u> </u>		
Notes: The Qualifier	s in this	s report are	defined as	follows :								

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B Target analyte was detected in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration of the target analyte exceeds the instrument calibration range.

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Certificate of Analysis

Parameter		Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalysiDate	Time	Batch Mid.
		Clicot Sam Sample ID	iple ID: :		9524-000 11410300	0-005F 13		Project: Client ID: Vol. Recv.:	YANK YANK	00504 001		
Projec		Scils PO# 00	02332							F	Poge 2	of 2
Conta	ct;	East Hampto Mr. Pete Hol	n, Connec llenbeck	ticut 06424				R	leport Da	te: July 1, 2004	4	
Addre	31 :	Haddam Nec 362 Injun Ha	k Plant Sllow Rose	i								
Comp	any:	Connecticut	Yankee A	tomic Power								

H Analytical holding time exceeded.

Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit. J

U Indicates the target analyte was analyzed for but not detected above the detection limit.
UI Uncertain identification for gamma spectroscopy.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.

h Sample preparation or preservation holding time exceeded. The above sample is reported on a dry weight basis.

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, Sarah Kozlik.

Heaten & (4 COU)

Reviewed by

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Certificate of Analysis

Com Addi	ipany:	Connecticu Haddam No	t Yankee At eck Plant	omic Power									
•••=		362 Injun H	lollow Road	•									
		East Hampi	ion, Connect	ticut 06424				R	port Dat	e: July	1.2004		
Con	lact:	Mr. Pete H	ollenbeck						•				
- Proj	ect:	Soils PO# (02332								Pa	ge 1 o	f 2
		Client Sau Sample II Matrix: Collect D Receive D Collector: Moisture:	nple ID: D: ate: Date:		9524-00 1141030 Soil 24-MAX 03-JUN Client 6.83%	00-006F 004 Y-04 -04		Project: Client ID: Vol. Recv.:	YANKO YANKO	20504 201			
Parameter		Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analy	stDate	Time	Batch Mid.
Rad Gamma Spec	c Analy	ris											
Gammaspec, Ga	mma, S	olid-FSS GA	M & ALL F	55									
Actinium-228			0.647	+/-0.197	0.0752	+/-0.193	0.161	pCi/g		SRB	06/19/04	1542 3	397151
Americium-241	l	ប	0.0101	+/-0.0504	0.0467	+/-0.0494	0.0956	pCl/g					-
Bismuth-212			0.562	+/-0.280	0.162	+/-0.274	0.345	pCl/g					
Bismuth-214			0.478	+/-0.122	0.0365	+/-0.120	0.0775	pCi/g					
Cesium-134		U	0.0304	+/-0.037	0.025	+/-0.0363	0.0532	pCl/g					
Cesium-137			0.103	+/-0.0531	0.021	+/-0.0521	0.0445	pCi/g					
Cobalt-60		U	0.0355	+/-0.0195	0.0213	+/-0.0191	0.0467	pCl/g					
Europium-152		U	0.00213	+/-0.0576	0.051	+/-0.0565	0.107	pCl/g					
Europium-154		U	-0.0199	+/-0.0837	0.0577	+/-0.082	0.127	pCl/g					
Europlum-155		ប	0.0475	+/-0.0602	0.0551	+/-0.059	0.113	pCi/g					
Lead-212			0.565	+1-0.0767	0.0294	+/-0.0751	0.0607	pCl/g					
Lead-214			0,574	+/-0.0972	0.0325	+/-0.0953	0.0682	pCi/g					
Manganese-54		U	0.00139	+/-0.0245	0.0213	+/-0.024	0.0455	pCl/g					
Nioblum-94		U	-0.0152	+/-0.0249	0.0166	+/-0.0244	0.0356	pCi/g					
Potessium-40	•		12.1	+/-1.16	0.146	+/-1.14	0.333	pCl/g					
Radium-226			0.478	+/-0.122	0.0365	+/-0.120	0.0775	pCi/g					
Suver-108m		U	-0.00444	+/-0.0203	0.0173	+/-0.0199	0.0365	pCl/g					
Thallium-208			0.208	+/-0.0493	0.0199	+/-0.0483	0.0423	pCi/g					
The following Pr	rep Mei	hods were p	erformed										
Method	Descr	ipllon				Analyst	Date	Time	Prep	Batch			
Dry Soil Prep	Dry S	oil Prep GL-	RAD-A-021			BSWI	06/04/0	4 1508	3385	87			
The following An	ulytica	l Methods w	ere perform	1ed									
Method	Descri	pllon											
1	EML	HASL 300, 4	.5.2.3			······							

Notes:

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The Qualifiers in this report are defined as follows :

B Target analyte was detected in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration of the target analyte exceeds the instrument calibration range.

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2

Certificate of Analysis

Company : Address : Contact:	Connecticut Yankee Atomic P Haddam Neck Plant 362 Injun Hollow Road East Hampton, Connecticut 06 Mr. Pete Hollenbeck	ower 424	Report Date: July 1, 2004
Project:	Soils PO# 002332		Page 2 of 2
	Client Sample ID: Sample ID:	. 9524-0000-006F 114103004	Project: YANK00504 Client ID: YANK001 Vol. Recy.:
Parameter	Qualifier Result Uncer	rtainty LC TPU	MDA Units DF AnniystDate Time Batch Mtd

H Analytical holding time exceeded.

Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit. J

U Indicates the target analyte was analyzed for but not detected above the detection limit.

UI

Uncertain identification for gamma spectroscopy. Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details. Х

Sample preparation or preservation holding time exceeded. h

The above sample is reported on a dry weight basis.

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, Sarah Kozlik.

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Reviewed by

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Certificate of Analysis

Com Add	ipany : ress :	Connecticu Haddam Na 362 Injun H	t Yankee Af eck Plant follow Road	lomic Power								
G		East Hamp	ton, Connect	ticut 06424				Re	port Date: July	1,2004		
Cod		Mr. reid H								Da	- 1 -	
PTOJ	CCL	Joils LOA	NL332							14	50 1 0	
		Client Sau Sample II Matrix: Collect D Receive I Collector: Moisture:	nple ID: D: ale: bate:		9524-00 114103 Soil 24-MAX 03-JUN Client 34%)00-008F 005 Y-04 1-04	į	Project: Client ID: Vol. Recv.:	YANK00504 YANK001			
Parameter		Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF Analy	stDate	Time	Batch Mtd.
Rad Gamma Spe	c Analy	sis							· · · · · · · · · · · · · · · · · · ·			·····
Gammaspec, Ga	ımma, S	olid-FSS GA	M & ALL F.	\$\$								
Actinium-228	-	. ע ע	0.00	+/-0.128	0.0821	+/-0.126	0.170	pCl/g	SRB	06/19/04	1543 3	339715 1
Americium-241	L	U	0.0397	+/-0.0522	0.0459	+/-0.0512	0.0948	pCi/g				
Bismuth-212		ប	0.227	+/-0.133	0.119	+/-0.130	0.250	pCl/g				
Bismuth-214			0.321	+/-0.0784	0.027	+/-0.0769	0.0566	pCl/g				
Cesium-134		U	0.0218	+/-0.018	0.0158	+/-0.0176	0.0334	pCl/g				
Cesium-137			0.607	+/-0.0767	0.0129	+/-0.0751	0.0274	pCl/g				
Cobalt-60		ប	-0.00429	+/-0.0171	0.0136	+/-0.0167	0.0294	pCi/g				
Buropium-152		U	0.0221	+/-0.0487	0.0365	+/-0.0477	D.0761	pCl/g				
Europium-154		Ŭ	0.00695	+/-0.0575	0.0411	+/-0.0563	0.0884	pCl/g				
Europium-155		ប	0.0272	+/-0.0477	0.0406	+/-0.0468	0.0838	pCl/g				
Lend-212		-	0.378	+/-0.0541	0.0212	+/-0.053	0.0438	DCi/g				
Lead-214			0.374	+/-0.0796	0.0261	+/-0.078	0.0544	nCi/g				
Manganese-54		บ	-0.00376	+/-0.017	0.0136	+/-0.0166	0.0287	nCl/g				
Nichium-94		บ	-0.00711	+/-0.015	0.012	+/-0.0147	0.0253	nCi/g				
Potassium-40		-	11.3	+/-1.05	0.132	+/-1.03	0.288	nCl/g				
Radium-226			0.321	+/-0.0784	0.027	+/-0.0769	0.0566	nCl/g				
Silver-108m		17	0 00153	+/-0.016	0.0131	+/-0.0157	0.0273	DCi/g				
Thallium-208		-	0.114	+/-0.0333	0.0123	+/-0.0326	0.0261	pCl/g				
The following Pi	ren Mei	lhods were r	erformed									
Method	Desc	iption				Analyst	Date	Time	Prep Batch	L		
Dry Soil Prep	Dry S	oil Prep GL-	RAD-A-021		· ·	BSW1	06/04/0	4 1508	338587			
The following A	alytics	l Methods v	ere perfor	ned								
Method	Descr	iption										
1	EML	HASL 300, 4	.5.2.3									-

Notes:

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The Qualifiers in this report are defined as follows :

•

B Target analyte was detected in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration of the target analyte exceeds the instrument calibration range.

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Certificate of Analysis

-	Company : Address :	Connecticut Haddam Nec 362 Injun Ho East Hampto Mr. Pere Hol	Yankes A k Plant low Roa n, Connec lienbeck	tomic Power d :ticut 06424			Report Date: July 1, 2004						
	Benfante		10170							r		5 7	
-	Project:	Sous POR O	12332							•		~ 2	
		Client Sam Sample ID:	ple ID: :		9524-000 11410300	0-008F S		Project: Cilent ID: Vol. Recy.:	YANK YANK	00504 001			
Para	meter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch Mid.	

H Analytical holding time exceeded.
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.

U Indicates the target analyte was analyzed for but not detected above the detection limit.

UI Uncertain identification for gamma spectroscopy.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
h Sample preparation or preservation holding time exceeded.
The above sample is reported on a dry weight basis.

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, Sarah Kozlik.

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Certificate of Analysis

Соп	ipany :	Connecticu	t Yankeo Al	tomic Power								
· Add	ress :	Haddam Ne	eck Plant									
		362 Injun H	Iollow Road	1								
•		East Hampl	ton, Connec	ticut 06424				Rej	port Dat	z: July 1, 2004		
Con	lact:	Mr. Pets H	ollenbeck							_		• -
Proj	ect:	Solls PO# (02332							P	ige 1 o	82
•		Client Sa	mple ID:		9524-00	00-009F		Project:	YANK	00504		
•		Sample II):):		114103	306	l	Client ID:	YANK	001		
		Matrix:	-1-1		24.MA1	V-04		YUI. ILLY	•			
		Receive I	auc: Date:		03-JUN	-04						
		Collector			Client							
		Moisture:	:		29.9%					•		
Parameter		Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch Mid
Rad Gamma Spe	c Analy	nis										
Gammaspec, Ge	umma, S	olid-FSS GA	M & ALL F	SS								
Actinium-228	_		0.479	+/-0.133	0.0482	+/-0.130	0.105	pCl/g		SRB 06/19/0	4 2149 3	539715 I
Americium-24	I	U	-0.0316	+/-0.0898	0.0573	+/-0.088	0.119	pCVg				
Bismuth-212			0.437	+/-0.233	0.103	+/-0229	0.223	pcvg				
Bismuth-214			0.334	+/-0.0783	0.02/9	+/-0.0/0/	0.0393	pcug pCug				
Cesium-134		111	0.00	47-0.0195	0.0191	4/-0.0191	0.0407	prug				
Ceaium-137			0.192	+/-0.036	0.014	+/-0.0353	0.0302	pCl/g				
Cobalt-60		ប	-0.00186	+/-0.0163	0.0135	+/-0.016	0.0305	pCi/g				
Europium-152		U	0.0405	+/-0.0736	0.0348	+/-0.0721	0.0734	pCi/g				
Europium-154		ប	0.0182	+/-0.0575	0.048	+/-0.0564	0.105	pCl/g				
Europlum-155		ប	0.00	+/-0.0653	0.0368	+/-0.064	0.0764	pCl/g				
-		ហ										
Lead-212			0.510	+/-0.0636	0.0216	+/-0.0623	0.045	pCl/g				
Lead-214			0.482	+/-0.0804	0.0259	+/-0.0788	0.0547	pCl/g				
Manganese-54		U	0.00328	+/-0.0167	0.0141	+/-0.0163	0.0306	pCi/g				
Niobium-94		U	0,00394	47-0.0157	0.0135	+/-0.0154	0.0289	pCt/g				
Potassium-40			11.8	+/-1.13	0,151	+/-1.11	0.335	pCl/g				
Radium-226		** *	0.334	+/-0.0783	0.02/9	+/~0.0/0/	0.0242	pc//g				
Silver-108m Thallium-208		U -3	0.156	+/-0.0139	0.0113	+/-0.0138	0.0294	pCi/g				
The following P	Tep Me	thods were j	performed			Anolyst	Date	Time	Pre	n Batch		
		all Dan Cit		1		new/1	06/04/	1508		587		
Dia 2011 Lich	Litys	ou rich Or	·KALI-A-V2	.1		<i>D</i> 3111	000000	- 1709	220	201		
The following A	nalytic	al Methods y	vere perfor	med								
Method	Desci	ription										
1	EML	HASL 300,	4.5.2.3									
Notes:												

The Qualifiers in this report are defined as follows :

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B Target analyte was detected in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.

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Paramete	r	Quallfler	Result	Uncertainty	LC	TFU	MDA	Units	DF	AnalystDate	Time	Batch Mid.
•		Client Sam Sample ID	iple ID: :		9524-000 11410300	0-009F 6		Project: Client ID: Vol. Recv.:	YANK YANK	00504 001	•	
	Project:	Soils PO# 0	02332							1	Page 2 (of 2
	Conlact:	362 Injun He East Hampto Mr. Pete Ho	ollow Roa 10, Connec Lienbeck	d :dcut 06424				R	leport Da	te: July 1,200	4	
	Company : Address :	Connecticut Haddam Net	Yankee A ck Plant	tomic Power								

E Concentration of the target analyte exceeds the instrument calibration range.

H Analytical holding time exceeded.

J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.

U Indicates the target analyte was analyzed for but not detected above the detection limit.

UI Uncertain identification for gamma spectroscopy.

X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.

h Sample preparation or preservation holding time exceeded.

The above sample is reported on a dry weight basis.

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, Sarah Kozlik.

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Reviewed by

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Certificate of Analysis

Compa Addres	iny: Connectic is: Haddam N	ut Yankee A leck Plant	tomic Power		•						
Contac	East Hamp East Hamp	pton, Connec follenbeck	u cticut 06424				R	eport Da	te: July 1, 2004		
Project	: Salls PO#	002332							P	age 1 d	of 2
_	Client Sa Sample I Matrix: Collect I Receive I Collector Moisture	imple ID: D: Date: Date: C: ::		9524-00 114103 Soil 24-MA 03-JUN Client 27.3%	100-009FS 1007 Y-04 -04		Project: Client ID: Vol. Recv.:	YANK YANK	100 <i>5</i> 04 1001		
Parameter	Qualifier	r Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch Mtd
Rad Gamma Spec A	nalysis										
Gammaspec, Gam	ma, Solid-FSS G	AM & ALL F	55								
Actinium-228	ប ហ	0.00	+/-0.170	0.123	+/-0.166	0.256	pCl/g		SRB 06/19/04	1 2149 :	339715 1
Americium-241	U	0.0335	+/-0.0969	0.0762	+/-0.095	0.158	pCl/g				
Bismuth-212		0.641	+/-0.351	0.125	+/-0.344	0.269	pCl/g				
Birmuth-214		0.414	+/-0.0962	0.0289	+/-0.0943	0.0619	pCi/g				
- Cesium-134	U	0.0201	+/-0.0279	0.0204	+/-0.0273	0.0437	pCi/g				
Cesium-137		0.197	+/-0.0465	0.0184	+/-0.0455	0.0391	pCVg				
Cobalt-60	υ	0.0169	+/-0.0173	0.0218	+/-0.0169	0.0475	pCi∕g				
Europlum-152	U	-0.0344	+/-0.0597	0.0477	+/-0.0585	0.099B	pCi/g				
Europium-154	Ŭ	-0.0261	+/-0.0669	0.0535	+/-0.0656	0.117	pCVg				
Europlum-155	Ŭ	-0.00344	+/-0.0542	0.0486	+/-0.0531	0.100	pCi/g				
Lcad-212		0.562	+/-0.0742	0.027	+/-0.0727	0.056	pCi/g				
Lead-214		0.524	+/-0.103	0.0338	+/-0.101	0.0709	pCl/g				
Manganeso-54	. U	0.0124	+/-0.021	0.0182	+/-0.0205	0.039	pCl/g				
Niobium-94	U	-0.00339	+/-0.0195	0.0161	+/-0.0191	6:0343	pCl/g				
Potassium-40		12.3	+/-1.26	0.155	+/-1.23	0.348	pCl/g				
Radium-226		0.414	+/-0.0962	0.0289	+/-0.0943	0.0619	pCVg				
Thallium-208	U U	0.217	+/-0.0192 +/-0.0465	0.015	+/-0.0456	0.0402	pCi/g pCi/g				
The following Pres	Methods were	performed									
Method I	Description				Analyst	Date	Time	Pre	p Batch		
Dry Soil Prep I	Dry Soll Prep GL	-RAD-A-02			BSW1	06/04/0	4 1508	338	587		
The following Anal	-tion) Mathadas										
Method D	escription	WEIE DELION	neu				<u></u>			<u> </u>	
1 E	ML HASL 300,	4.5.2.3									
Notes: The Qualifiers in	this report are	defined as :	follows :								
B Target anal	yto was detecto	d in the san	aple as well a	the assoc	tated blank.						

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BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration of the target analyte exceeds the instrument calibration range.

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Parameter	Qualifier F	Result U	incertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch Mid.	
	Client Sample Sample ID:	9524-000 11410300)-009FS 7		Project: Client ID: Vol. Recv.;	00504 D01						
Project:	Soils PO# 0023	32							F	age 2 c	of 2	
Contact:	East Hampton, Connecticut 06424 Contact: Mr. Pete Hollenbeck Project: Soils PO# 002332					. Report Date: July 1, 2004						
Company : Address :	Connecticut Ya Haddam Neck I	inkee Atom Plant	ic Power									

H Analytical holding time exceeded.

J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.

U Indicates the target analyte was analyzed for but not detected above the detection limit.

UI Uncertain identification for gamma spectroscopy.

X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.

h Sample preparation or preservation holding time exceeded.

The above sample is reported on a dry weight basis.

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standard operating procedures. Please direct any questions to your Project Manager, Sarah Kozlik.

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Certificate of Analysis

Comp Adda Conti	pany: ess:	Connecticu Haddam Ne 362 Iajun H East Hampi Mr. Pete Ho	t Yankee Al eek Plant Jollow Road on, Connee bliebbeek	lomic Power 1 ticut 06424				Re	port Dat	e: July 1, 2004		
Proje	ct:	Soils PO# C	02332							P	age 1 (of 2
		Client Sar Sample II Matrix: Collect Da Receive D Collector: Moisture:	npic ID: D: Date: Date:		9524-00 114103 Soll 24-MA ¹ 03-JUN Client 3.61%	000-011F 008 Y-04 -04		Project: Client ID; Vol. Recv.:	YANK(YANK()0504)01		
Parameter		Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch Mid.
Rad Gamma Spec	: Analy	sis										
Gammaspec, Ga	mma, S	olid-FSS GA	M & ALL F	33								
Actinium-228			0.416	+/-0.137	0.0481	+/-0.134	0.103	pCVg		SRB 06/19/04	1 2150	339715 1
Americium-241		U	-0.0256	+/-0.068	0.0575	+/-0.0666	0,119	pCi/g				
Bismuth-212			0.347	+/-0,180	0.101	+/-0.177	0.216	pCl/g				
Bismuth-214			0.345	+/-0.0681	0.0237	+/-0.0668	0,0503	pCl/g				
Cesium-134		U	0.0352	+/-0.0245	0.0191	+/-0.024	0.0402	pCl/g				
Ceatum-137		U	-0.00595	+/-0.0158	0.0129	+/-0.0155	0.0276	pCl/g				
Cobalt-60		U	-0.0128	+/-0.01/0	0.0132	+/-0.01/2	0.0292	pCl/g				
Europium-152		U	-0.0157	+1-0.0373	0.0329	+/-0.030/	0.0091	pcrg				
Europium-154		1	-0.0332	0,00 0,1 1	0.0382	±/-0.049	0.0037	pcvg nCi/a				
Lead-212		U	0110	+/-0.0521	0 0203	+/-0.0511	0.042	nC1/g				
Tend-214			0.441	+/-0.0745	0.0236	+/-0.073	0.0496	nCi/g				
Manganese-54		U	0.0124	+/-0.0185	0.015	+/-0.0181	0.032					
Nioblum-94		บิ	0.00175	+/-0.0148	0.0125	+/-0.0145	0.0266	pCl/g				
Potassium-40			13.6	+/-1.19	0,130	+/-1.17	0.287	pCi/g				
Redium-226			0.345	+/-0.0681	0.0237	+1-0.0668	0.0503	pCVg				
Silver-108m		U	-0.00331	+/-0.0123	0.0106	+/-0.0121	0.0225	pCl/g		•		
Tballium-208			0.154	+/-0.0345	0.0134	+/-0.0338	0.0284	pCl/g				
The following Pr	rp Me	thods were p	erformed	<u> </u>						- YD - 4 - 3		
Method	Deta	npuon				Analysi	Date	11me	Pre			
Dry Soil Prep	Dry S	ioil Prep GL-	RAD-A-02	1		BSW1	06/04/0	4 1508	338	587		
The following An	ulytics	l Methods v	rere perfor	med						·		
Method	Descr	ipilon										
1	EML.	HASL 300, 4	1.5.2.3									
Notes: The Qualifiers	in this	s report are	defined as	follows :								

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B Target analyte was detected in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration of the target analyte exceeds the instrument calibration range.

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

Certificate of Analysis

Company ; Address : Contact:	Connecticut Yankes Atomic Power Haddam Neck Plant 362 Injun Hollow Road East Hampton, Connecticut 06424 Mr. Pete Hollenbeck		Report Date: July 1, 2004	
Project:	Sails PO# 002332		Page 2 of 2	
	Client Sample ID: Sample ID:	9524-0000-011F 114103008	Project: YANK00504 Client ID: YANK001 Vol. Recv.:	
Parameter	Qualifier Result Uncertainty	LC TPU MD	A Units DF AnalystDate Time Batel	n Mtd.

H Analytical holding time exceeded.

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Certificate of Analysis

Company	y: Connectica	ut Yankee A	tomic Power								
Address	: Hacoam N	(CCX Plant Mollow Deco	,								
	302 injun	Honow Road	1				Ba		T.I. 1 0004		
Contact:	Mr. Pete H	iollenbeck	ticul 00424				KC	port Date:	July 1, 2004		
Project:	Soils PO#	002332							Pa	ige 1 of	٢ 2
										-	
	Client Sa	umple ID:		9524-00	00-012F		Project:	YANK00	504		
	Sample I	D:		114103	09	•	Vol Recy	YANKUU	1		
	Matrix:			24.3441	k_n4		Y UI. 10007				
	Collect L	Jale: Date:		03-NIN	-64						
	Collector			Client	•••						
	Moisture	:		4.58%							
Parameter	Qualifier	r Result	Uncertainty	LC	TPU	MDA	Units	DF 4	AnalystDate	Time	Batch Mtd
Rad Gamma Spec Ar	mlysis										
Gammaspec, Gamm	a, Solid-FSS G	AM & ALL F	33								
Actinium-228		0.429	+/-0.122	0.0397	+/-0.120	0.0863	pCl/g	S	RB 06/19/04	1 2150 3	39715 1
Americium-241	U	0.0226	+/-0.0605	0.0537	+/-0.0593	0.111	pCl/g				
Bismuth-212	U	0.084	+/-0.161	0.096	+/-0,158	0.205	pCl/g				
Bismuth-214		0.345	+/-0.0692	0.023	+/-0.0678	0.0488	pCl/g				
Cesium-134	Ű	0.00	+/-0.02.56	0.0156	+/-0.0251	0,0332	pC1/g				
Charleson 177	UI	0.0137	1100016	0.0110	10.0010	0.0353	-Cila				
Cestum-137	1	-0.0113	+/-0.0210	0.0114	+1-0.0212	0.0233	pcvg nCi/a				
Econium_157	11	-0.0113	4/-0.0152	0.0714	+1.0 0347	0.0233	pCl/g				
Europium-154	U U	-0.011	+/-0.0524	0.0433	+/-0.0514	0.0938	pCi/g				
Puroplum-155	Ū	0.0055	+/-0.0369	0.0346	+/-0.0362	0.0716	pC1/g				
Lead-212	-	0.405	+/-0.0549	0.0186	+/-0.0538	0.0388	pCVg				
Lead-214		0.393	+/-0.0665	0.0251	+/-0.0652	0.0526	pCVg				
Manganese-54	U	0.0108	+/-0.0154	0.0136	+/-0.0151	0.0291	pCl/g				
Nichlam-94	Ū	0.0102	+/-0.016	0.0115	+/-0.0157	0.0245	pCi/g				•
Potassium-40		10.5	+/-1.02	0.0994	+/-1.00	0.226	pCi/g				
Radium-226		0.345	+/-0.0692	0.023	+/-0.0678	0.0488	pCVg				
Silver-108m	ប	-0.00615	+/-0.0115	0.0098	+/-0.0112	0.0209	pCi/g				
Thallium-208		0.119	+/-0.0274	0.0129	+/-0.0268	0.0274	pCl/g				
The following Prep	Methods were	performed									
Method D	escription				Analyst	Date	Time	Prepl	Jatch		
Dry Soil Prep D	ry Soil Prep GL	-RAD-A-02	1		BSWI	06/04/0	4 1508	33858	7		
The following Analy	tical Methods	were perfor	med								
Method D	escription										
1 E	ML HASL 300,	4.5.2.3									
Notes: The Qualifiers in	this report are	defined as	follows :								

:

÷ B Target analyte was detected in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration of the target analyte exceeds the instrument calibration range.

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Certificate of Analysis

Company : Address :	Connecticut Yankes Atomic Power Haddam Neck Plant 362 Injun Hollow Road East Hampton, Connecticut 06424 Mr. Pate Hollonbeck		Report Date: July 1, 2004
COLUME	MIL, FEIS RUHEHOGEK		
Project:	Soils PO# 002332		Page 2 of 2
_ .	Client Sample ID: Sample ID:	9524-0000-012F 114103009	Project: YANK00504 Client ID: YANK001 Vol. Recv.:
Parameter	Qualifier Result Uncertainty	LC TPU MD	A Units DF AnalystDate Time Batch Mid.

H Analytical holding time exceeded.

J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.

U Indicates the target analyte was analyzed for but not detected above the detection limit.

UI Uncertain identification for gamma spectroscopy.

х Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.

h Sample preparation or preservation holding time exceeded. The above sample is reported on a dry weight basis.

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, Sarah Kozlik.

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Reviewed by

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Certificate of Analysis

Comp Adda	pany : ess :	Connecticu Haddam No	t Yankee At eck Plant	omic Power								
		362 Injun H	follow Road	inut 06424				De	nort Date	• Toly 1 2004		
Contr	act:	Mr. Pete H	ollenbeck						porcidad	. July 1, 2004		
Proje	et:	Soils PO# (02332							Pr	ige 1 e	of 2
	Client Sample ID: Sample ID: Matrix: Collect Date: Receive Date: Collector: Moisture: rameter Qualifier Result Uncertain				9524-0000-014F 114103010 Soli 24-MAY-04 03-JUN-04 Client 4.18%			Project: Client ID: Vol. Recv.:				
Parameter		Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch Mtd.
Rad Gamma Spec	Analy	sis										
Gammaspec, Ga	mma, S	alid-FSS GA	M & ALL F	55								
Actinium-228			0.565	+/-0.183	0.0668	+/-0.179	0.145	pCi/g		SRB 06/19/04	1 2151 3	339715 1
Americium-241		U	0.0133	+/-0.0559	0.0462	+/-0.0548	0.0946	pCl/g				
Bismuth-212		ប	0,310	+/-0.398	0,187	+/-0,390	0.395	pCl/g				
Bismuth-214			0.433	+/-0.115	0.0392	+/-0.113	0.0829	pCl/g				
Cesium-134		U	0.0307	+/-0.0421	0.026	+/-0.0413	0.0553	pCl/g				
Cesium-137			0.0651	+/-0.0509	0.018	+/-0.0499	0.0386	pCl/g				
Cobalt-60		ប	0.00515	+/-0.0252	0.0214	+1-0.0247	0.0469	pCi/g				
Europium-152		U	-0.029	+/-0.0583	0.0498	+/-0.0571	0.104	pCl/g				
Europium-154		U	0.0204	+/-0.0792	0.0675	+/-0.0776	0.146	pCl/g				
Europium-155		ប	-0.00283	+/-0.0614	0.0544	+/-0.0602	0.112	pCl/g				
Lend-212			0.525	+/-0.0767	0.0276	+/-0.0751	0.0572	pCl/g				
Lead-214			0.542	+/-0.0996	0.035	+/-0.0976	0.0734	pCi/g				
Manganese-54		U	-0.00683	+/-0.0258	0.0218	+/-0.0253	0.0466	pCl/g				
Niobium-94		U	-0.00512	+/-0.0222	0.018	+/-0.0218	0.0385	pCi/g				
Potossium-40			14.1	+/-1.35	0.172	+/-1.32	0.386	pCl/g				
Radium-226			0.433	+/-0.115	0.0392	+/-0.113	0.0829	pCl/g				
Silver-108m Thallium-208		U	-0.00758 0.194	+/-0.0201 +/-0.0448	0.0169	+/-0.0197 +/-0.0439	0.0357 0.0431	pCi/g pCi/g				
The following Pr	ep Me	thods were j	erformed			<u>. </u>	. <u></u>					
Method	Deca	ription				Analyst	Date	Time	Prep	Batch		
Dry Soil Prep	Dry S	loil Prep GL	RAD-A-021			BSW1	06/04/0	1508	3385	187		
The following An	alytics	I Methods v	vere perform	ned								
Method	Descr	iption										
1	EML	HASL 300, 4	1.5.2.3									
Notes-												

The Qualifiers in this report are defined as follows :

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E Concentration of the target analyte exceeds the instrument calibration range.

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Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Thme	Batch Mtd
	Client Sam Sample ID	aple ID: :		9524-000 11410301	0-014F 0		Project: Client ID: Vol. Recv.:	YANK YANK	00504 · 001		
Project:	Solls PO# 00	02332							1	Page 2 (of 2
Contact:	362 Injun Ho East Hampto Mr. Pete Ho	ollow Road In, Connec Uenbeck	d :ticut 06424				F	Report Dai	te: July 1,200	4	
Company : Address :	Connecticut Haddam Neu	Yankee A ck Plant	tomic Power								

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H Analytical holding time exceeded.

J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
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UI Uncertain identification for gamma spectroscopy.

X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.

h Sample preparation or preservation holding time exceeded. The above sample is reported on a dry weight basis.

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Certificate of Analysis

Company : Address :	Connection Haddam N 362 Injun East Hang	ut Yankee Al leck Plant Hollow Road pton, Connec	tomic Power 1 ticut 06424				Rep	ort Date: July	1,2004		
Contact:	Mr. Peic H	Iollenbeck									
Project:	Soils PO#	002332							Pag	C 1 0	12
	Client Sa Sample I Matrix: Collect L Receive I Collector Moisture	ample ID: D: Date: Date: r: ::		9524-00 114103 Soil 24-MA 03-JUN Client 9.28%	00-015F 011 Y-04 -04		Project: Y Client ID: Y Vol. Recv.:	(ANK00504 (ANK001			
Parameter	Qualifier	r Result	Uncertainty	LC	TPU	MDA	Units	DF Analys	iDate	Time	Baich Mid
Rad Gamma Spec Ana	lysis						•				
Gammaspec, Gamma,	Solid-FSS G	AM & ALL F	32								
Actinium-228		0.571	+/-0.143	0.0517	+/-0.140	0.110	pCi/g	SRB (06/19/04	2151 3	39715 1
Americium-241	ប	0.0385	+/-0.0878	0.0788	+/-0.086	0.163	pCi/g				
Bismuth-212		0.416	+/-0.181	0,0845	+/-0.177	0.182	pCl/g				
Bismuth-214		0.465	+/-0.0767	0.0223	+/-0.0752	0.0474	pCi/g				
Cesium-134	U	0.0204	+/-0.0288	0.0164	+/-0.0282	0.0347	pCi/g				
Cesium-137		0.042	+/-0.0278	0.015	+/-0.0272	0.0316	pCi/g				
Cobalt-60	U	-0.00277	+/-0.0169	0.0139	+/-0.0165	0.0304	pCl/g				
Europium-152	U	-0.000488	+/-0.0414	0.0352	+/-0.0406	0.0737	pCi/g				
Europium-154	U	0.0164	+/-0.0504	0.0439	+/-0.0494	0.0951	pCi/g				
Europhim-155	U	0.0504	+/-0.0604	860.0	+/-0.0392	0.0787	pC/g				
Lead-212		0.534	+/-0.0/30	0.0226	+/-0.0/21	0.0408	pCVg				
Lead-214		0.005/7	+/-0.080/	0.0244	+/-0.0399	0.0312	pC/g				
Manganese-24	U	0.00343	+1-0.0103	0.0142	+/-0.0102	0.0302	pcvg				
Nicolum-94	U	0.0023	+/-U.UL34	0.0110	11106	0.0247	pcug				
Polassium-40 Dedium 226		0.465	+1.00767	0.112	±/_0 0752	0.0474	pcvg				
	17	0.403	+/-0.0/07	0.0225	TTOUITE	0.0474	pcug nCl/a				
Thallium-208	U	0.178	+/-0.0386	0.0129	+/-0.0379	0.0273	pCi/g				
The following Prep M	ethads were	performed									
Method Des	cription				Annlyst	Date	Time	Prep Batch			
Dry Soil Prep Dry	Soil Prep GL	-RAD-A-02	1		BSW1	06/04/0	4 1508	338587			
The following Amilytic	al Methods	were perform	med						<u>-</u> .		
Method Desc	ription										_
1 EMI	HASL 300,	4.5.2.3									
Notes:											

The Qualifiers in this report are defined as follows :

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Certificate of Analysis

Paramete	r	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch Mtd.
		Client Sam Sample ID:	ipic ID: :		9524-000 11410301	0-015F 1		Project: Client ID: Vol. Recv.:	YANK YANK	00504 001		
	Project:	Soils PO# 00	2332							P	age 2 c	if 2
	Contact:	Bast Hampto Mr. Pete Hol	ilow Roa in, Connec ilenbeck	d :ticut 06424				R	eport Da	te: July 1, 2004	Ļ	
	Company : Address :	Connecticut Haddam Nec	Yankee A k Plant	tomic Power								

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Certificate of Analysis

Com	pan y :	Connectic	ut Yankee At	amic Power								
Add	1CSS :	Haddam P	leck Plant									
		362 Injun	Hollow Road	l								
		East Harny	pton, Connect	licut 06424				Re	port Dat	e: July 1,2004		
Cont	act:	Mr. Peto I	Iollenbeck									
Proje	ect:	Solls PO#	002332							P	age 1 i	of 2
		Client St	imple ID:		9524-00	00-0221		Project:	YANKI	0504		
		Sample I	D:		114103	012			YANK	201		
		Matrix:	J adas		2011 24.MA	V_04		YUI. RCCY				
		Collect			03.11 N	.04						
		Collector			Client	••						
		Moisture	 D:		6.96%							
Parameter		Qualifie	r Repli	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch Mtd.
Rad Gamma Spec	e Analy	sis			·····							
Gammaspec, Ga	mma, S	olid-FSS G	AM & ALL F	SS								
Actinium-228			0.396	+/-0.131	0.0479	+/-0,129	0.103	pCi/g		SRB 06/19/0	4 2152 :	339715 L
Americium-241	L	U	0.0158	+/-0.062	0.0541	+/-0.0608	0.112	pCVg				
Bismuth-212			0.235	+/-0.163	0.104	+/-0.160	0.220	pCl/g				
Bismuth-214			0.470	+/-0.0807	0.0233	+/-0.0791	0.0494	pCl/g				
Ccsium-134		U	0.00	+/-0.0221	0.0159	+/-0.0216	0.0338	pCi/g				
		UI						-				
Ceslum-137			0.052	+/-0.020	0.0156	+/-0,0196	0.0329	pCi/g				
Cobalt-60		ប	-0.0155	+/-0.0162	0.0116	+/-0.0159	0.0258	pCl/g				
Europium-152		ប	0.00524	+/-0.0389	0.0327	+/-0.0381	0.0685	pCi/g				
Europium-154		ប	-0.0411	+/-0.0546	0.0415	+/-0.0535	0.0903	pCi/g				
Europium-155		ប	0.0532	+/-0,060	0.035	+/-0.0588	0.0723	pCi/g				
Lead-212			0.468	+/-0.0561	0.0198	+/-0.0549	0.0409	pCi/g				
Lead-214			0,587	+/-0.0866	0.0233	+/-0.0848	0.0489	pCi/g				
Manganese-54		U	-0.000163	+/-0.0167	0.0137	+/-0.0164	0,0292	pCi/g				
Nioblum-94		U	0.0109	+/-0.0136	0.0121	+/-0.0133	0.0256	pCi/g				
Potassium-40			11.1	+/-1.05	0.127	+/-1.03	0.282	pCl/g				
Radium-226			0.470	+/-0.0807	0.0233	+/-0.0791	0.0494	pCVg				
Silver-108m		U	0.00515	+/-0.0126	0.0114	+/-0.0124	0,0239	pCl/g				
Thallium-208			0.164	+/-0.0323	0.0103	+/-0.0317	0,0221	pCVg				
The following Pr	rep Me	thods were	performed									
Method	Desci	lplion				Analyst	Date	Thue	Pre	p Batch		
Dry Soil Prep	Dry S	all Prep GL	-RAD-A-021			BSWI	06/04/0	4 1508	338	587		
The following Ar	anlytics	il Methods	were perform	ned								
Method	Descr	lption										
1	EML.	HASL 300,	4.5.2.3									
Notes:												

The Qualifiers in this report are defined as follows :

B Target analyte was detected in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration of the target analyte exceeds the instrument calibration range.

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Parameter	Qualifier Result Uncertainty	LC TPU	MDA Units DF AnalystDate Time Batch Mtd.
	Client Sample ID: Sample ID:	9524-0000-022I 114103012	Project: YANK00504 Client ID: YANK001 Vol. Recy.:
Project:	Sails PO# 002332		Page 2 of 2
Address : Contact:	Haddam Neek Plant 362 Injun Hollow Road East Hampton, Connecticut 06424 Mr. Pete Hollenbeck		Report Date: July 1, 2004
Company :	Connecticut Yankee Atomic Power		

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Analytical holding time exceeded. Н

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Certificate of Analysis

Сотралу	: Connecti	cut Yankee A	tomic Power								
Address :		Vellaw Day	a								
	202 Iujui						П.			,	
Contact:	Mr. Pete	pion, Connec Hollenbeck	:00424				K	pon Da	a: July 1, 2004	1	
Project:	Soils PO	# 002332							P	age 1 (of 2
	Client S	ample ID:		9524-00	00-019F		Project:	YANK	00504		
	Marine	Ш:		Soil	11.5		Vol. Recy.:	IANA	001		
	Collect	Date:		24-MA	7-04						
	Receive	Date:		03-JUN	-04		•				
	Collecto			Client							
	Moistur	:5	•	13.2%							
Parameter	Qualifi	r Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch Mtd
Rad Gamma Spec An	nlysis										
Gammaspec, Gamma	, Solid-FSS C	iam & all f	55								
Actinium-228		0.661	+/-0.164	0.0408	+/-0.161	0.086	pCl/g		SRB 06/19/0-	4 2152 :	339715 1
Americium-241	U	-0.000717	+/-0.120	0.074	+/-0.118	0.152	pCi/g				
Bismuth-212		0.544	+/-0.173	0.0904	+/-0.169	0.190	pCi/g				
Bismuth-214		0.751	+/-0.0963	0.0218	+/-0.0943	0.0455	pCi/g				
Cesium-134	ប	0.00	+/-0.0268	0.0166	+/-0.0263	0.0345	pCl/g				
Carlum 127	U	0.116	4/-0.0258	0.0114	1/0 0753	0.0238	nCi/a				
Cobalt 60	11	0.110	41-0.0250	0.0114	1.0 0252	0.0230	pCi/g				
Euconium 152	1	0.0123	1/-0.0237	0.0133	4/-0.0232	0.0201	pCl/g				
Europium-152	11	-0.00367		0.0354	-1.0 0485	0.0051	pCJg pCJg				
Europhin-155	11	001156		0.0333		0.0011	pCu <u>z</u>				
Lord 212	Ŭ	0.0430	4/-0.0304	0.0773	1.0 0707	0.0425	pCl/g				
1 eed-214		0.949		0.0244	+/-0 104	0.0504					
Managanese 54	TI	0.005	+1-0.0157	0.0111	+/-0.0153	0 0278	nCV/				
Nichlum QA	ŭ	0.0137	+/.0 0134	0.0110	11-0.0131	0 0248	nCi/g				
Potestium_AD	0	14 3	-1.24	0.0974	+/-1 21	0 202	nCi/a				
Podium 226		0751	±/_0 0963	0.0718	+1.0 0943	0.0455	nCila				
Silver_108m	11	0.00281	+/-0.0503	0.0211	4/-0.013	0 0231	nCi/a				
Thallium-208		0.218	+/-0.0398	0.0121	+/-0.039	0.0252	pCl/g				
176 - Fallandar 75	Talkada mem	manfarmad									
Method De	scription	e periormed		······	Analyst	Date	Time	Pre	p Batch		
Dry Soil Prep Dr	y Soil Prep G	L-RAD-A-02	1	<u> </u>	BSW1	06/04/0	4 1508	338	587		
	last b fails - J.										
Method Des	ical Methods	were perior	ш с и		<u> </u>						
1 911	T LTA DT 900	4622									
L EM	LL HASL 300	4.3.4.3									
Notes											
			Callennes								

The Qualifiers in this report are defined as follows :

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Parameter	Qualifier F	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch Mtd.
	Client Sample Sample ID:	: ID:		9524-000 11410301	0-019F 3		Project: Client ID: Vol. Recv.:	YANK YANK	00504 001		
Project:	Soils PO# 0023	32							F	Page 2 (of 2
Contact:	362 Injun Hollo East Hampton, 4 Mr. Pete Hollen	rw Road Connect ibeck	lcut 06424				R	eport Da	te: July 1, 2004	\$	
Company : Address	Connecticut Ya Haddam Neck I	nkee At Plant	omic Power								

H Analytical holding time exceeded.

Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit. J

U Indicates the target analyte was analyzed for but not detected above the detection limit. UI Uncertain identification for gamma spectroscopy.

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h Sample preparation or preservation holding time exceeded.
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Reviewed by

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Certificate of Analysis

Compa Addres	ny: C s: F 3 E	Connecticut Iaddam Ne 162 Injun H Iast Hampto	Yankee Al ck Plant ollow Road	iomic Power 1 ticut 06424				Re	port Dat	e: July 1, 200	14	
Contac	t: N	Ar. Pete Ho	licnbeck					•	••••			
Project	: 5	ioils PO# O	02332								Page 1	of 2
		Client San Sample ID Matrix: Collect Da Receive D Collector: Molsture:	nple ID:): ate: ate:		9524-00 1141030 Soil 25-MA` 03-JUN Client 18.7%	00-003F 314 Y-04 -04		Project: Client ID: Vol. Recv.;	YANKI YANKI	00504 201		
Parameter	1	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch Mid
Rad Gamma Spec A	nalysis	5										
Gammaspec, Gams	ma, Soli	H-FSS GAN	H & ALL F	22						-		
Actinium-228			0.488	+/-0.185	0.0617	+/-0.182	0.133	pCi/g		SRB 06/18/	04 1057	339714 1
Americium-241		U	0.0212	+/-0.147	0.116	+/-0.144	0.239	pC1/g				
Bismuth-212			0.353	+/-0.193	0.126	+/-0.189	0.269	pCl/g				
Bismuth-214			0.550	+/-0.0989	0.0278	+/-0.0969	0.0594	pCl/g				
Cesium-134		ប	0.030	+/-0.0311	0.0194	+/-0.0305	0.0413	pCl/g				
Cesium-137			0.392	+/-0.0607	0.0153	+/-0.0595	0.0329	pCl/g				
Cobalt-60		U	-0.0131	+/-0.0214	0.0163	+/-0.021	0.0361	pCi/g				
Europium-152		U	-0.0132	+/-0.0551	0.0467	+/-0.054	0.0978	pCl/g				
Europlum-154		U	-0.0238	+/-0.0731	0.0495	+/-0.0716	0.109	pCl/g				
Europium-155		Ŭ	0.0336	+/-0.0631	0.0549	+/-0.0618	0.113	pCl/g				
Lead-212			0.535	+/-0.0729	0.0269	+/-0.0714	0.0558	pCl/g				
Lead-214			0.601	+/-0.101	0.0312	+/-0.0989	0.0656	pCVg				
Manganese-54		U	0.0251	+/-0.0222	0.0143	+/-0.0217	0.031	pCi/g				
Nioblum-94		U	0.00641	+/-0.0179	0.0152	+/-0.0176	0.0323	pCi/g				
Potassium-40			11,4	+/-1.18	0.141	+/-1.16	0,318	pCi/g				
Radium-226			0.550	+/-0.0989	0.0278	+/-0.0969	0.0594	pCl/g				
Silver-108m		U	0.0103	+/-0.0191	0.0167	+/-0.0187	0.0351	pCl/g				
Thailm-208			0.171	+/-U.U448	0.0142	+/-0.0439	0.0300	pcvg				
The following Prep	Metho	da were po	rformed									
Method I	Descript	llon				Analyst	Date	Time	Pre	Batch		
Dry Soil Prep I	Dry Soll	Prep GL-R	LAD-A-021			BSW1	06/04/0	4 1510	3384	188		
The following Anal	vtical N	lethods w	ere perfort	ned								
Method D	recript	lon										
1 E	ML HA	SL 300, 4.	5.2.3							•		
Notes: The Qualifiers in	, this re	port are d	efined as i	follows :								

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Certificate of Analysis

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch Mtd.
	Client San Sample ID	pic ID: :		9524-000 11410301	0-003F 14	Project: YANK00504 Client ID: YANK001 Vol. Recy.:					
Project:	Soils PO# 0	02332							F	Page 2 (of 2
Contact:	362 Injun He East Hampto Mr. Pete Ho	ollow Roa on, Connec llenbeck	d cticut 06424			te: July 1, 2004	ly 1, 2004				
Company :	Connecticut	Yankee A	tomic Power								

H Analytical holding time exceeded.

J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit. U Indicates the target analyte was analyzed for but not detected above the detection limit.

UI Uncertain identification for gamma spectroscopy.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.

h Sample preparation or preservation holding time exceeded. The above sample is reported on a dry weight basis.

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, Sarah Kozlik.

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Certificate of Analysis

Compar Address	y: Connecticu Haddam N 362 Injun I East Hamp	it Yankee A eck Plant Hollow Road ton, Connec	tomic Power 1 ticut 06424				Re	port Dat	e: July 1, 2004	
Project:	Soils PO#	002332							P	age 1 of 2
·	Client Sa Sample I Matrix: Collect D Receive I Collector Molsture	mple ID: D: Date: Date: :		9524-00 1141030 Soil 25-MAY 03-JUN Client 30.8%	00-004F 015 Y-04 -04	Į	Project: Dient ID: Vol. Recv.:	YANK(YANK(00504 001	
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time Batch Mt
Rad Gamma Spec A	nalysis									
Gammaspec, Gamm	na, Solid-FSS GA	M&ALLF	22							
Actinium-228		0.537	+/-0.165	0.0554	+/-0.161	0.121	pCl/g		SRB 06/18/0	4 1058 339714 1
Americium-241	U	0.0685	+/-0.147	0.111	+/-0.144	0.231	pCVg			
Bismuth-212	Ŭ	0.0737	+/-0.236	0.146	+/-0.232	0.310	pCl/g			
Birmuth-214		0,334	+/-0.0919	0.0292	+/-0.090	0.0625	pCl/g			
Ceslum-134	U	0.00929	+/-0.0223	0.0189	+/-0.0219	0.0407	pCi/g			
Cesium-137	-	0.646	+/-0.0769	0.0182	+/-0.0754	0.0387	DCI/g			
Cabalt-60	U	0.00924	+/-0.0209	0.0183	+/-0.0205	0.0405	pCi/g			
Europium-152	Ũ	-0.00509	+/-0.0583	0.0465	+/-0.0571	0.0978	pCl/g			
Europium-154	Ŭ	0.0307	+/-0.068	0.0591	+/-0.0667	0.129	pCi/g			
Europium-155	Ū	0.0449	+/-0.0584	0.0516	+/-0.0572	0.107	pCi/g			
Lead-212	_	0.494	+/-0.0752	0.0249	+/-0.0737	0.052	pCVg			
Lead-214		0.431	+/-0.0913	0.0298	+/-0.0895	0.063	DCVg			
Manganese-54	ប	0.00376	+/-0.0239	0.0173	+/-0.0234	0.0373	nCi/g			
Nichium-94	Ū	0.0012	+/-0.0182	0.0151	+/-0.0178	0.0322	DCi/g			
Potassium_40	-	11.2	+/-1.26	0.174	+/-1.23	0.389				
Radium-226		0.334	+/-0.0919	0.0292	+/-0.090	0.0625	nCVg			
Silver-108m	IJ	-0.0189	+/-0.0188	0.0149	+/-0.0184	0.0315	DCi/g			
Thallium-208	-	0.164	+/-0.042	0.0161	+/-0.0412	0.0345	pCl/g			
The following Prep	Methods were	performed								
Method D	escription				Analyst	Date	Thue	Prej	p Batch	
Dry Soil Prep D	ry Soil Prep GL	RAD-A-02	1		BSW1	06/04/0	4 1510	3385	588	
The following Analy	vilcal Methods	vera perfor	med						· · · · · · · · · · · · · · · · · · ·	
memoa D	escripuon									
I E	ML HASL 300,	4.5.2.3								
Notes: The Qualifiers in	this report are	defined as	follows :							

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Paramete	r	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnnlystDate	Time	Batch Mid.
		Client Sam Sample ID:	plc ID:		9524-000 11410301	0-004F 5		Project: Client ID: Vol. Recv.:	YANK YANK	00504 001		
	Project:	Soils PO# 00)2332							F	age 2 d	of 2
	Contact:	East Hampto Mr. Pete Hol	lienbeck	a cticut 06424				R	eport Da	te: July 1, 2004	Ļ	
•	Company : Address :	Connecticut Haddam Nec	Yankee A K Plant	tomic Power			•					•

H Analytical holding time exceeded.

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X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
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The above sample is reported on a dry weight basis.

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Certificate of Analysis

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Con	ipany:	Connecticu	t Yankeo A	tomic Power								
Add	ress :	Haddam Ne	ck Plant						-			
		362 Injun H	Iollow Road	4								
		East Hampt	ton, Connec	ticut 06424				Rej	port Date	: July 1,2004		
Con	lact:	Mr. Pete Ho	ollenbeck									
Proj	ect:	Soils PO# 0	02332							P	ige 1 c	of 2
		Client Sar	nple ID;		9524-00	00-013FS		Project:	YANKO	0504		
		Sample II):		1141030)16		Client ID:	YANKO	01		
		Matrix:			Soll			Vol. Recv.:				
		Collect D	ate:		23-MA	K-04						
		Receive L	/ще:		03-1014	-0-4						
		Collector			Chent							
		Molsture:			21.2%	<u> </u>						
Parameter		Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch Mid.
Rad Gamma Spe	e Analy	sis										
Gammaspec, Ga	mma, S	olid-FSS GA	M & ALL F	35								
Actinium-228			0.680	+/-0.166	0.046	+/-0.162	0.101	pCi/g		SRB 06/18/04	1143 :	339714 1
Americium-241	1	ប	0.0779	+/-0.123	0.0957	+/-0.120	0.199	pCi/g				
Bismuth-212			0.458	+/-0.391	0.115	+/-0.383	0.247	pCi/g				
Bismuth-214			0,502	+/-0.0873	0.027	+/-0.0856	0.0578	pCi/g				
Cesium-134		ប	0.0183	+/-0.023	0.0201	+/-0.0225	0.0428	pCl/g				
Cesium-137			0.346	+/-0.0533	0.0188	+/-0.0522	0.0399	pCl/g				
Cobalt-60		U	0.0153	+/-0.0219	0.0195	+/-0.0214	0.0427	pCVg				
Europium-152		U	0.0218	+/-0.0534	0.0446	+/-0.0523	0.0936	pCVg				
Europium-154		U	-0.0347	+/-0.0603	0.0464	+/-0.0591	0.103	pCi/g				
Europium-155		U	0.0753	+/-0.0576	0.0528	+/-0.0565	0.109	pCl/g				
Lead-212			0.598	+/-0.0832	0.0291	+/-0.0815	0.0603	pCVg				
Lead-214			0.614	+/-0.107	0.0308	+/-0.105	0.0647	pCVg				
Manganese-54		U	0.00286	+/-0.0186	0.0154	+/-0.0183	0.0333	pCVg				
Nichium-94		U	0.00402	+/-0.0159	0.0135	+/-0.0150	0.029	pCl/g			•	
Potestium-40			11.0	+/-1.20	0,143	+/-1.17	0.323	pCvg				
Radium-226			0.502	+/-0.0873	0.027	+/-0.0830	0.0578	pCl/g				
Silver-108m		U	-0.00943	+/-0.0162	0.0134	4/-0.0159	0.0284	pCl/g				
10000-208			601.0	+1-0.0353	0.110	+/-U.U305		heng				
The following Pr	rep Me	lhods were p	erformed					<u> </u>	<u> </u>	<u></u>		<u> </u>
Method	Desci	tption				Analyst	Date	The	Prep	Batch		
Dry Soil Prep	Dry S	oil Prep GL-	RAD-A-02	I	<u>_</u>	BSW1	06/04/0	4 1510	3385	88		
The following A.	naturien	1 Mathada w	are nerfor	med								
Method	Deer	iption	cie penori				·	·		······		
1	EML	HASL 300, 4	523						••••••			
Matao					•							
NOLES:				c 11								
The Qualifiers	in this	report are d	ichned as	tollows:								

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B Target analyte was detected in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration of the target analyte exceeds the instrument calibration range.

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Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalysiDate	Time	Batch Mid
	Client San Sample II	nple ID:):		9524-000 11410301	0-013FS 16	•	Project: Client ID: Vol. Recv.:	YANK YANK	00504 001		
Project	Solls PO# 0	02332							P	age 2 c	of 2
Contact	East Hampt Mr. Pete Ho	on, Conner ollenbeck	cticut 06424				R	eport Da	te: July 1, 2004	•	
Addres	: Haddam Ne	ck Plant	a								

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Certificate of Analysis

Company Address :	: Connecticu Haddam No	t Yankee A eck Plant	amic Power								
	362 Injun H	Iollow Road	l North OCIAN								
Contact:	Mr. Pete H	ollepbeck	UCUI 00424				Re	port Date: Jul	y 1, 2004		
Project:	Soils PO# (02332							Pa	ge 1 of	2
	Client Sar Sample II Matrix: Collect Di Receive L Collector: Moisture:	nple ID; D: ate: Date:		9524-00 114103 Soil 25-MA 03-JUN Client 21.4%	XXX-013F 017 Y-04 -04		Project: Client ID; Vol. Recv.:	YANK00504 YANK001			
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF Anal	ystDate	Time]	Batch Mtd.
Rad Gamma Spec Ana	lysis										•
Gammaspec, Gamma,	Solid-FSS GA	M & ALL F	55								
Actinium-228 Americium-241	ប	0.448 0.0409	+/-0.194 +/-0.107	0.0679 0.0822	+/-0.190 . +/-0.105	0.147 0.170	pCl/g pCi/g	SRB	06/18/04	1143 33	9714 1
Birmuth-212		0.543	+/-0.323	0.154	+/-0.317	0.329	pCl/g				
Bismuth-214		0.562	+/-0.122	0.0338	+/-0.119	0.072	pCl/g				
Cesium-134	ប	0.0035	+/-0.0257	0.0213	+/-0.0252	0.0459	pCi/g				
Cesium-137		0.378	+/-0.0558	0.0205	+/-0.0547	0.0437	pCl/g				
Cobalt-60	U	0.0101	+/-0.0232	0.0203	+/-0.0227	0.0449	pCl/g				
Europlum-152	U	-0.0815	+/-0.0649	0.0484	+/-0.0636	0.102	pCl/g				
Europiam-154	U	0.0583	+/-0.0734	0.0662	+/-0.072	0.144	pCl/g				
Europium-155	U	0.0487	+/-0.0597	0.0539	+7-0.0585	0.111	pCl/g				
Lend-212		0.452	+/-0.0816	0.0337	+/-0.080	0.0697	pCl/g				
Lead-214		0.569	+/-0.123	0.0364	+/-0.120	0.0763	pCl/g				
Manganese-54	U	0.016	+/-0.0235	0.0204	+/-0.023	0.0437	pCl/g				
Niobium-94	U	0.00949	+/-0.0196	0.0169	+/-0.0192	0.0362	pCl/g				
Potassium-40		12.6	+/-1.31	0.167	+/-1.28	0.378	pCl/g .				
Radium-226		0.562.	+/-0.122	0.0338	+/-0.119	0.072	pCl/g				
Suver-108m Thallium-208	U	0.0111	+/-0.0215 +/-0.0616	0.0179	+/-0.0211 +/-0.0604	0.0376 0.0404	pCVg pCVg				
The following Prep M	lethods were p	erformed									
Method Des	cription				Analyst	Date	Time	Prep Batch			
Dry Soil Prep Dry	Soil Prep GL-	RAD-A-021			BSW1	06/04/0	4 1510 .	338588			
The following Analytic	cal Methods w	ere perfori	ned								
Method Desi	cription										
I EM	L HASL 300, 4	523					<u> </u>			<u></u>	

Notes:

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The Qualifiers in this report are defined as follows :

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Certificate of Analysis

Company : Address : Contact:	Haddam Neck Plant 362 Injun Hollow Road East Hampton, Connecticut 06424 Mr. Pete Hollenbeck		Report Date: July 1, 2004
Project:	Sails PO# 002332		Page 2 of 2
	Client Sample ID: Sample ID:	9524-0000-013F 114103017	Project: YANK00504 Client ID: YANK001 Vol. Recv.:
Parameter	Qualifier Result Uncertainty	LC TPU M	ADA Units DF AnalystDate Time Batch Mtd

Analytical holding time exceeded. Н

Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit. J

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Certificate of Analysis

Comp	any:	Connecticut	Yankee Al	omic Power								
Addit	22.	362 Toine 12	ollow Road									
		Wast Harmate		- New 66474			•	Der	wrl Date:	Into 1 2004		
Conta	ch	Mr. Pete Ho	llenbeck	1041 00727				100	<i>////</i>	July 1, 2004		
Donia			01227							P	nge 1 d	nf 2
rioja	51;	3003 PO# 0	02332							•	allo I s	
		Client Sam	aple ID:		9524-00	X00-016F		Project:	YANK005	i04		
		Sample ID):		114103	018		Client ID:	YANK001			
		Matrix:			25.MA	V.04		Y UI. ACCY.:				
		Collect Da	nte*		03-IUN	-04						
		Collector	() (L) .		Client							
		Mointum										
		MOBULC:			4.970							
Parameter		Qualifier	Rerult	Uncertainty	LC	TPU	MDA	Units	DF A	nalystDate	Time	Batch M
ad Gamma Spec	Analy:	sis										
Gammaspec, Gan	nma, Sc	olid-FSS GAM	H & ALL F	SS								
Actinium-228			0.561	+/-0.138	0.0432	+/-0.135	0.0921	pCVg	SI	CH 06/18/0	4 1217 :	3397141
Americium-241		U	-0.0366	+/-0.102	0.0791	+/-0.0998	0.163	pCVg				
Bismuth-212			0.433	+/-0.202	0.101	+/-0.198	0.213	pCl/g				
Bismuth-214			0.434	+/-0.0859	0.0231	+/-0.0842	0.0326	pC/g				
Cesium-134		U	0.0300	+/-0.0218	0.0107	+/-0.0214	0,0331	pcvg				
Cesium-137		U	0.0124	+/-0.0140	0.0132	+/-0.0143	0.02/7	pCvg				
Cobalt-60		U	0.00163	+/-0.0145	0.0123	+/-0.0142	0.0268	pcvg				
Europium-152		U 	-0.0103	+/-0.0402	0.0338	+/-0,0394	0.0700	pcvg				
Europium-154		U	-0.08/9	4/-0.0471	0.0317	+/-0.0462	0.0693	pCl/g				
Europium-155		U	0.0407	+/-0.100	0.0467	+/-0.103	0.0962	pCvg				
Lead-212			0.608	+/-0.0000	0.0208	+/-0.0031	0.0431	pcvg				
Lead-214		••	0,201	+/-0.0802	0.0230	·+/-U.U844	0.0493	pcug				
Manganese-54		U	0.00/19	+/-0.0177	0.0152	+/-0.0174	0.0319	pcug				
Nicbium-94		U	0.013	+/-0.014	0.0120	+/-0.0137	0.0264	pcvg				
Poinssiun:-40			15.1	4/-1.32	0.112	+/-1.30	0.245	pug				
Radium-226			0,434	+/-0.0809	0.0231	+/-0.0842	0.0526	pCVg				
Silver-108m.		U	0.00395	+/-0.0135	0.0115	+/-0.0132	0.0242	pCug				
Thailiam-208			0.157	+/-0.0355	0.0129	+/-0.0348	0.0272	pc/g				
The following Pre	p Mel	hods were p	erformed									
Method	Deer	lption				Analyst	Date	Time	Preb R	aich		<u> </u>
Dry Soil Prep	Dry So	oil Prep GL-F	RAD-A-02	L		BSW1	06/04/0	1510	338588	1		
The following An	alytical	I Methods w	ere perfor	med					•			
Mielhod	Dead	puon							·			
1	EMLI	HASL 300, 4	5.2.3									
Notes												
140109:												

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	Company : Address : Contact:	Connecticut Yankee Atom Haddam Neck Plant 362 Injun Hollow Road East Hampton, Connecticu Mr. Pete Hollenbeck	uic Power 1t 06424				R	eport Da	e: July 1, 2004	1	
	Project:	Soils PO# 002332							F	'age 2	of 2
		Client Sample ID: Sample ID:		9524-0000 11410301)-016F 8	•	Project: Client ID: Vol. Recv.:	YANK YANK	00504 001		
_ "	Parameter	Qualifier Result U	ncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch Mtd.

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Healend Cle cral Reviewed by

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Comp	many:	Connecticu Haddam M	it Yankee Al	tomic Power									
Addu	: 223	362 Inine I	un think	f									
		Boet Hemn	ton Connec	+ Hent 06474				P	errort Da	ter Inl	1 2004		
Conto	nct:	Mr. Pete H	ollenbeck					-			1 1, 2007		
Proje	ct:	Soils PO#	002332								Pa	ge 1 (of 2
		Client Sa Sample II Matrix: Collect D Receive I	mple ID: D; ale: Date:		9524-00 1141030 Soil 25-MA 03-JUN	000-016FD 019 Y-04 -04		Project: Client ID: Vol. Recv.:	YANK YANK	(00504 (001			
		Moisture:	:		Client 7.75%								
Parameter	<u> </u>	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Anah	stDate	Time	Batch Mtd
Rad Gamma Spec	Analy	sis											
Gammaspec, Gan	nma, S	olid-FSS GA	M & ALL F	55									
Actinium-228	•		0.550	+/-0.143	0.0414	+/-0.140	0.0896	pCi/g		SRB	06/18/04	1341	339714 1
Americium-241		U	0.0267	+/-0.0911	0.0766	+/-0.0893	0.158	pCl/g					
Bismuth-212			0.360	+/-0.205	0.0952	+/-0.201	0.203	pCl/g					
Bismuth-214			0.515	+/-0.0805	0.024	+/-0.0789	0.0507	pCl/g					
Cesium-134		U	0.0339	+/-0.0213	0.0162	+/-0.0209	0.0344	pCi/g					
Ceslum-137		U	0.00	+/-0.0302	0.0133	+/-0.0296	0.0281	pCl/g					
		UI											
Cobalt-60		U	-0.0031	+/-0.0188	0.0131	+/-0.0184	0.0289	pCl/g					
Europium-152		Ŭ	0.0119	+/-0.0377	0.0339	+/-0.0369	0.071	pCl/g					
Europium-154		Ŭ	-0.0249	+/-0.0508	0.0401	+/-0.0498	0.0875	pCi/g					
Euronium-155		Ŭ	0.0734	+/-0.062	0.0392	+/-0.0608	0.0809	pCl/g					
Lead-212		-	0.622	+/-0.0719	0.0182	+/-0.0705	0.038	pCI/g	•				
Lead-214			0.599	+/-0.0823	0.0238	+/-0.0806	0.0498	pCi/g					
Manganese-Sd		ŤŤ	-0.0132	+/-0.0157	0.0118	4/-0.0153	0.0253	nCl/g					
Michium 04		11	0000000	JLD 0146	0.0121	1/-0.0143	0.0257	nCila					
Boteseitum 40		0	19 8	1/-1 74	0.0120	1.1 92	П 326	PC1/a	•				
Pedine 226			0515	1/J 0804	0.074	11-0 0780	0.0507	pose p	·				
Cilute 109m		11	-0.0005	+/-0.0305	0.024	ALD 0127	0.0307	pcur pCi/g					
SHACT-INGHI		U	-0,0093	+/-0.0123	0.0107	1000206	0.0220	pcug pCl/g					
1 uantun+200			0.190	47-02031Z	0.0119	77-0.0300	0.0232	head					
The following Pro	ep Mei	hods were p	erformed										
Method	Descr	sption				Analyst	Date	Time	e Pre	p Batch	<u>ا</u>		
Dry Soil Prep	Dry S	oil Prep GL-	RAD-A-02	1		BSW1	06/04/0	1510) 338	3588			
The following An Method	alytica Descri	l Methods y lotion	rere perfor	med				···					

EML HASL 300, 4.5.2.3

Notes:

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The Qualifiers in this report are defined as follows :

B Target analyte was detected in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration of the target analyte exceeds the instrument calibration range.

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Certificate of Analysis

Parameter	•	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnaivatDate	Time	Batch Mtd.
		Client Sam Sample ID	ple ID:		9524-000 11410301	0-016FD 9		Project: Client ID: Vol. Recv.:	YANK YANK	00504 001		
	Project:	Soils PO# 0	02332							P	age 2 c	of 2
	Contact:	East Hampto Mr. Pete Ho	on, Connec llenbeck	ticut 06424				R	eport Da	te: July 1, 2004	Ļ	
	Company : Address :	Connecticut Haddam Nea 362 Injun He	Yankee A ck Plant ollow Roa	tomic Power								

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H Analytical holding time exceeded.

J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.

U Indicates the target analyte was analyzed for but not detected above the detection limit.

UI Uncertain identification for gamma spectroscopy.

X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.

h Sample preparation or preservation holding time exceeded.

The above sample is reported on a dry weight basis.

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

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Certificate of Analysis

Company	: Connecticu	t Yankee A	tomic Power								
Address :	Haddam No	eck Plant									
	362 Injun H	Iallow Rose	4								•
	East Hamp	ton, Connec	ticut 06424				Rep	port Date:	July 1, 2004		
Contact:	Mr. Pete H	ollenbeck					-		-		
Project:	Soils PO# (02332							P	ago 1 c	of 2
	Client Sar	nole ID:		9524-00	00-017F		Project: 3	ANK00	504		
	Sample II	D:		114103	020		Client ID: y	ANKOO	1		
	Matrix:			Soll			Vol. Recv.:				
	Collect D	ate:		23-MA	1-04						
	Receive L	Date:		03-1011	-04						
	Collector			Client							
	Moisture:			4.16%							
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF A	nalystDate	Time	Batch Mt
Rad Gamma Spec Ana	lysis										
Gammaspec, Gamma,	Solid-FSS GA	M & ALL F	35								
Actinium-228		0.502	+/-0.140	0.0452	+/-0.137	0.0972	pCi/g	SI	RB 06/18/04	\$ 1341 3	3397141
Americium-241	ប	0.0112	+/-0.0617	0.0566	+/-0.0605	0.117	pCl/g				
Bismuth-212		0.323	+/-0.265	0.0937	+/-0.260	0.201	pCl/g				
Bismuth-214		0.411	+/-0.0774	0.0246	+/-0.0758	0.0519	pCI/g				
Cesium-134	U	0.00319	+/-0.0279	0.0157	+/-0.0273	0.0333	pCl/g				
Cesium-137	U	0.0162	+/-0.0166	0.0148	+/-0.0163	0.0313	pCl/g				
Cobalt-60	U -8	.430E-05	+/-0.0158	0.0131	+/-0.0155	0.0288	pCi/g				
Europium-152	ប	0.0017	+/-0.0394	0.0348	+/-0.0386	0.0127	pCVg				
Europium-154	U	0.0179	+/-0.048	0.0416	+/-0.0471	0.0902	pCl/g				
Europium-155	U	0.00988	+/-0.046	0.041	+/-0.0451	0.0845	pCl/g				
Lead-212		0.435	+/-0.0551	0.0206	+/-0.054	0.0428	pCl/g				
Lead-214		0.424	+/-0.0686	0.0258	+/-0.0672	0.0539	pCl/g				
Manganese-54	U	0.014	+/-0.0211	0.0137	+/-0.0207	0.0292	pC1/g				
Nlobium-94	U	-0.00259	+/-0.0145	0.0119	+/-0.0142	0.0252	pCl/g				
Potassium-40		13.8	+/-1.27	0.086	+/-1.24	0.198	pCl/g				
Radium-226		0.411	+/-0.0774	0.0246	+/-0,0758	0.0519	pC/g				
Silver-108m	U	-0.00319	4/-0.013	0.0111	+/-0.0127	0.0233	pCVg				
Thallium-208		0.143	+/-0.0325	0.0132	+/-0.0318	0.0278	pcug				
The following Prep M	ethods were p	erformed		*			<u></u>				
Method Des	cription				Analysi	Date	Time	Prep B	atch		
Dry Soil Prep Dry	Soil Prep GL-	RAD-A-02	1		BSWI	06/04/0	1510	338588	ł		
The following Analyti	cal Methods w	rere perfor	med			<u></u>					
TATERIOO DES	anpuon		<u></u>								
1 EM	l HASL 300, 4	5.2.3									
Notes:	is report and	tabaad oo	follout .								

The Qualifiers in this report are defined as follows:

B Target analyte was detected in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration of the target analyte exceeds the instrument calibration range.

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Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch Mtd.
	Clieat Sam Sample ID:	ple ID:		9524-000 11410302	0-017F 20		Project: Client ID: Vol. Recv.:	YANK YANK	00504 001		
Project:	Soils PO# 00)2332							P	age 2	of 2
Contact	Bast Hampto Mr. Pete Hol	n, Connec llenbeck	a cticut 06424				F	Leport Da	te: July 1, 2004	l	
Company : Address :	Connecticut Haddam Nec	Yankee A k Plant	tomic Power								

H Analytical holding time exceeded.

J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
U Indicates the target analyte was analyzed for but not detected above the detection limit.

UI Uncertain identification for gamma spectroscopy.

X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.

h Sample preparation or preservation holding time exceeded.

The above sample is reported on a dry weight basis.

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, Sarah Kozlik.

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Certificate of Analysis

	Company:	Connecticu	t Yankee A	lomic Power								
	Address :	Haddam No	eck Plant									
		362 Injua H	Iollow Rose	1								
		East Hamp	ton, Connec	ticut 06424				R	eport Dal	c: July 1,200	Ж	
	Contact:	Mr. Pele H	ollenbeck									
	Project:	Soils PO# (002332								Page 1	of 2
		Client So	mole ID:		9524-00	00-017FD		Project:	YANK	0504		
		Sample II	D:		114103	021	I	Client ID:	YANK	001		
		Matrix:			Soil			Vol. Recv.:				
		Collect D	ate:		22-MA	X-04 704						
		RECEIVE L	Jaic:		01-1014	-0-4						
		Collector;			Chent							
	·	Moisture			8.33%	. <u></u>						
Paramete	tr	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M
Rad Gamma	a Spec Analy	rais 										
Gammaspe	ec, Ganma, S	Solid-FSS GA	M&ALL F	32								
Actinium	-228		0.523	+/-0.154	0,0633	+/-0.151	0.134	pCl/g		SRB 06/18/	04 1342	3397141
Americiu	m-241	U	0.0408	+/-0.0409	0.0248	4/-0.0401	0.0508	pCUg				
Bismuth-	212		0.458	+/-0.290	0.137	+/-0.285	0.289	pCVg				
Bismuth-2	214		0.492	+/-0.113	0.0327	+/-0.111	0.0085	pCVg				
Cesium-1	34	U	0.0368	+/-0.0308	0.0234	+/-0.0301	0.049	pCug				
Cesium-1	37		0.0825	+/-0.0403	0.0174	+/-0.0397	0.0105	pC//g				
Coonit-ou)	U.	0.0188	+/-0.0255	0.0215	+/-0.0248	0.0403					
Europium	1-152	u v	-0.0291	+/-0.0303	0.0433	+/-0.0493	0.0599	pCVg		•		
Huropium	1-134	U 17	-0.0255	+/-0.0703	0.0337	+/-0.0009	0.119	pcvg				
Europium	1-122	u	-0.0154	+/-0.0404	0.0413	+/-0.0455	0.0632	pcug				
Lead-212			0.640	+/-0.000	0.0234	+/-0.0784	0.0479	peng				
Lcsd-214	- 64		0.020	+/-0.0899	0.0328	+/-0.0881	0.068	pCrg				
Manganei	16-34	U T	-0.018	+/-0.041	0.0109	+1-0.0200	0.0358	pC/g				
Nichium-	94	U	-0.00922	+/-0.0210	0.0173	+/-0.0211	0.0302	pcng				
Potassium	1-40		13,1	+/-1.17	0.109	+/-1.13	0.307	pcvg		•		
Radium-2	26		0.492	+/-0.113	0,0347	+/-0.111	0.0043	perg		•		
Thallium-	3m -208	U	0.00168	+/-0.0174	0.0151	+/-0.017	0.0315	pCl/g				
	200							10				
The followi	ing Prep Me	thads were t	erformed								•	
Method	Desc	ription				Analyst	Date	Time	Pre	p Balch		
Dry Soil Pre	p Dry S	Soil Prep GL-	RAD-A-02	1		BSW1	06/04/0	1510	338	588		
The followi	ing Analytics	nl Methods v	vero perfor	med	_							
Method	Deta	lption					······································					

The Qualifiers in this report are defined as follows :

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Certificate of Analysis

Parameter	Qualifler Result Un	icertainty LC	TPU MDA	Units	DF	AnalystDate	Time	Batch Mid.
	Client Sample ID: Sample ID:	9524-0000 114103021	-017FD	Project: Client ID: Vol. Recv.:	YANKO YANKO	20504 201		
Project:	Soils PO# 002332					P	age 2 d	of 2
Contact:	362 Injun Hollow Road East Hampton, Connecticut Mr. Pete Hollenbeck	1 06424		Re	port Date	e: July 1, 2004		
Company Address :	: Connecticut Yankee Atomi Haddam Neck Plant	'c Power						

H Analytical holding time exceeded.

J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.

U Indicates the target analyte was analyzed for but not detected above the detection limit.

UI Uncertain identification for gamma spectroscopy.

X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.

h Sample preparation or preservation holding time exceeded.

The above sample is reported on a dry weight basis.

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Certificate of Analysis

Ca	mpany:	Connecticut	Yankee A	tomic Power							
Ad	dress :	Haddam Ne	ck Plant								
		362 Injun H	lollow Rose	4							
	•	East Hampt	on, Connec	ticut 06424				Re	port Date	:: July 1, 2004	
Ca	niact	Mr. Peta Ho	lienbeck								
Pro	oject:	Soils PO# 0	02332							P	age 1 of 2
		Client Sar	nole ID:		9524-00	00-018F		Project:	YANKO	0504	
		Sample II):		1141030	22		Client ID:	YANKO	01	
		Matrix:			Soll			VOI. RECY.:			
		Collect Dr	itc:		23-MA	1-04 01					
		Receive D	alci		00-0011	-0-4					
		Conector:									
<u></u>		MOISURE:			12.9%						<u>-</u>
Parameter		Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time Batch Mtd
Rad Gamma Sp	ec Analy	sis									
Gammaspec, G	Tamma, S	iolid-FSS GAI	M & ALL F	55							
Actinium-228	1		0.744	+/-0.189	0.0717	+/-0.185	0.154	pCi/g		SRB 06/18/0	1343 339714 1
Americium-24	41	ប	-0.0252	+/-0.0297	0.0229	+/-0.0291	0.0474	pCi/g			
Bismuth-212			0.542	+/-0.446	0.137	+/-0.437	0.295	pCl/g			
Bismuth-214			0.539	+/-0.108	0.0363	+/-0.106	0.077	pCi/g			
Cesium-134		U	0.0354	+/-0.0261	0.0236	+/-0.0256	0.0504	pCl/g			
Cesium-137			0.120	+/-0.0387	0.0192	+/-0.0379	0.0409	pCVg			
Cobalt-60		U	0.0113	+/-0.0239	0.0212	+/-0.0234	0.0466	pCl/g			
Europlum-152	2	U	0.0103	+/-0.0498	0.0428	+/-0.0488	0.0902	pCl/g			
Europium-154	f	U	0.0959	+/-0.0892	0.0604	+/-0.0874	0.132	pCl/g			
Europlam-155	5	U	0.00	+/-0.0831	0.037	+/-0.0814	0.0769	pCi/g			
		U									
Lend-212			0.687	+/-0.0849	0.0259	+/-0.0832	0.0538	pCl/g			
Lead-214			0.666	+/-0.108	0.0294	+/-0.106	0.0621	pCl/g			
Manganese-54	4	Ŭ	0.0161	+/-0.0223	0.0207	+/-0.0218	0.0442	pCl/g			
Nioblum-94		U	0.00925	+/-0.0200	0.0182	+/-0.0202	0.0380	pCi/g			•
Potassium-40			13.1	4/-1.30	0.182	+/-1.27	0.405	pCl/g			
Radium-226		,	0.0339	+/-0.108	0.0303	+/-0.100	0.077	pCVg			
Silver-IU8m Thallium-208		U	-0.0174 0.232	+/-0.0195	0.0151	+/-0.0191	0.032	pCi/g pCi/g			
The following I	Prep Me	thods were p	erformed								
Method	Desci	nptica				Analyst	Date	Тше	Prep	Hatch	
Dry Soil Prep	Dry S	ioil Prep GL-1	RAD-A-02	t		BSWI	06/04/0	4 1510	3385	88	
The following A	Inalytics	d Methods w	ere perfori	med							
Method	Descr	iption									
1	EML	HASL 300, 4	5.2.3						-		
Notes:	•						-				

The Qualifiers in this report are defined as follows :

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Certificate of Analysis

Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalysiDate	Time	Batch Mid.
	Client Sam Sample ID	nple ID: :		9524-000 11410302	0-018F 22	•	Project: Client ID: Vol. Recv.:	YANK YANK	00504 001		
Project:	Solls PO# 0	02332							I	Page 2 (of 2
Company : Address : Contact:	Connecticat Haddam Nea 362 Iojun Ho East Hampto Mr. Pete Ho	Yankee A ek Plant ollow Roa on, Connee llenbeek	tomic Power d :ticut 06424				R	te: July 1,200	4		

H Analytical holding time exceeded.

Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.
U Indicates the target analyte was analyzed for but not detected above the detection limit.

UI Uncertain identification for gamma spectroscopy.

X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
h Sample preparation or preservation holding time exceeded.

The above sample is reported on a dry weight basis.

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Harower Claser L

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Certificate of Analysis

Com	pany :	Connecticut	t Yankee At	omic Power								
Addr	ess :	Haddam Ne	ck Plant									
		362 Injun H	follow Road	l								
		East Hampt	on, Connect	ticut 06424				Re	port Date:	July 1, 2004		
Cont	act:	Mr. Pete Ho	llenbeck						-	÷		
Proje	::::	Soils PO# 0	02332							P	age 1	of 2
		Client San	nple ID:		9524-00	00-020F		Project:	YANKOOS	04		
		Sample II):	•	1141030	123		Client ID:	YANK001			
		Matrix:			SOU DE MAR	1.04		VOL RCCV.:				
		Collect Dr			M.TIN.							
		Collector			Clinat							
		Molature										
<u> </u>		MOBILIC:			42.870							
Parameter		Qualifler	Result	Uncertainty	LC	TPU	MDA	Units	DF A	nalysiDate	Time	Batch Mtd.
Rad Gamma Spec	Analy	sis										
Gammaspec, Ga	mma, S	olid-FSS GA	M & ALL F.	22								
Actinium-228			0.569	+/-0.187	0.0588	+/-0.183	0.127	pCl/g	SF	UB 06/20/0	4 1109	339714 1
Americium-241		U	-0.0243	+/-0.0926	0.0678	+/-0.0907	0.140	pCl/g				
Bismuth-212			0.577	+/-0.277	0.134	+/-0.272	0.287	pCVg				
Bismuth-214			0.676	+/-0.108	0.0326	+/-0.106	0.0689	pCVg				
Cesium-134		U	0.007	+/-0.0263	0.0211	+/-0.0258	0.0449	pCl/g				
Cesium-137			0.853	+/-0.0989	0.0174	47-0.0969	0.0371	pCVg				
Cobalt-60		. <u>U</u>	0.00385	+/-0.0256	0.0208	+/-0.0251	0.0454	pCug				
Europiam-152		U T	0.00931	+/-0.0001	0.0403	+/-0.0369	0.097	pCVg				
Europiam-154		U II	-0.0239	+/-0.0074	0.0312	11-0.0001	V.115	pC/g				
Europium-135		U	0.00088	+/-0.0340	0,0110		0.0910	pcing pCile				
			0.004	-1010	0,0229	+/-0.000	0.0477	pcug pCUg	•			
LCBU-214 Mancanara SA		11	-0.0612	+1-0.104	0.0341	4/-0.101	0.0712	pCl/g				
Minblum 04		11	0.0012	+/-0.0233	0.0166	±/_0 0203	0.0357	nCi/a				
Potoerium_A0		U	0.00101	4/-111	0 167	4/-1.09	0.373	nCl/g				
Radiam-226			0.676	+/-0 108	0.0326	+/-0.106	0.0689	nCi/d				
Silver-108m		TT.	0.00961	+/-0.0201	0.0168	+/-0.0197	0.0351					
Thailium-208			0.203	+/-0.0451	0.0161	+/-0.0142	0.0343	pCi/g				
The following Pr	en Mei	hade were n	erformed									
Method	Descr	iption				Analyst	Date	Time	Prep B	stch		
Dry Soil Prep	Dry S	oil Prep GL-I	RAD-A-021			BSW1	06/04/0	4 1510	338588			<u> </u>
• • • • • • • •												
The following An	alytica	I Methods w	ere perfort	ned								
Method	Descri	ption		······		<u> </u>	······					
1	EMLI	HASL 300, 4	5.2.3									
N-4	•											
NOUS:												

The Qualifiers in this report are defined as follows :

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B Target analyte was detected in the sample as well as the associated blank.
BD Flag for results below the MDC or a flag for low tracer recovery.
E Concentration of the target analyte exceeds the instrument calibration range.

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Certificate of Analysis

Parameter	Qualifier Result Uncert	ainty LC TPU	MDA Units DF AnalystDate Time Batch Mid
	Client Sample ID: Sample ID:	9524-0000-020F 114103023	Project: YANK00504 Clicnt ID: YANK001 Vol. Recv.:
Project:	Soils PO# 002332		Page 2 of 2
Contact:	East Hampton, Connecticut 064 Mr. Pete Hollenbeck	24	Report Date: July 1, 2004
Company : Address :	Connecticut Yankee Alomic Po Haddam Neck Plant 362 Injun Hollow Road	Wer	

Η Analytical holding time exceeded.

Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit. J

Indicates the target analyte was analyzed for but not detected above the detection limit. U

UI Uncertain identification for gamma spectroscopy.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.

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standard operating procedures. Please direct any questions to your Project Manager, Sarah Kozlik.

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Certificate of Analysis

Compa Addres	ny: Conn s: Hadd	ecticu am N	it Yankee Au eck Plant	mic Power									
	362 1	njun I	Iollow Road	ans 66191				۳-		as Talas	1 9001		
Contac	r Mr P	namp Ste H	ion, Connect	1011 00424				RE	port Dai	C: JULY	1,2004		
Design	. Calle	DO4	000000								Pa	on 1 m	F 2
Project	5011	ru#	002332								1 0	54 1 4	
	Clie: Sam Matr Colle Rece Colle Moi	nt Sa ple II fix: ect D five I ctor. sture:	mple ID: D: atc: Datc: :		9524-00 1141030 Soil 25-MAX 03-JUN Client 4.81%	00-021F 024 Y-04 -04		Project: Client ID: Vol. Recv.:	YANKO	00504 001			
Parameter	Qua	llfler	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analys	Dafe	Time	Batch M
iad Gamma Spec A	nalysis											<u> </u>	
Gammaspec, Gam	na, Solid-F:	SS GA	M & ALL F	S									
Actinium-228			0.508	+/-0.155	0.0523	+/-0.152	0.111	pCi/g		SRB C	6/20/04	1109	3397141
Americium-241		U	0.00417	+/-0.0702	0,0573	+/-0.0688	0.118	pCi/g					-
Blamuth-212			0.323	+/-0.205	0.0986	+/-0.200	0.210	pCl/g					
Bismuth-214			0.347	+/-0.084	0.0257	+/-0.0823	0.0542	pCl/g					
Ceslum-134		ប	0.0283	+/-0.0224	0,0164	+/-0.022	0.0348	pCl/g					
Cesium-137		U	0.022	+/-0.0265	0.0141	+/-0.026	0.0298	pCl/g					
Cobalt-60		U	0.0233	+/-0.0276	0.0161	+/-0.0271	0.0348	pCi/g					
Europium-152		U	-0.00725	+/-0.0407	0.0355	+/-0.0399	0.0741	pCl/g					
Europium-154		U	-0.0496	+/-0.0532	0.0398	+/-0.0522	0.0867	pCl/g					
Europium-155		U	0.0362	+/-0.0468	0.0424	+/-0.0458	0.0872	pCl/g					
Lead-212			0.525	+/-0.0613	0.0201	+/-0.0601	0.0417	pCi/g					
Lead-214			0.473	+/-0.0732	0.0278	+/-0.0718	0.058	pCl/g					
Manganese-54		U	0.00806	+/-0.016	0.0144	+/-0.0157	0.0306	pCl/g					
Niobium-94		U	-0.00533	+/-0.0173	0.0121	+/-0.017	0.0257	pCi/g					
Potassium-40	•		13.2	+/-1.24	0.131	+/-1.22	0.289	pCl/g					
Radium-226			0.347	+/-0.084	0.0257	+/-0.0823	0.0542	pCl/g					
Silver-108m		U	0.00622	+/-0.0137	0.0122	+/-0.0134	0.0255	pCl/g					
Thallium-208			0.142	+/-0.0343	0.0125	+/-0.0336	0.0264	pCVg					
The following Prep	Methods v	Verd I	erformed										
Method I	ercription					Analyst	Dale	Time	Pre	p Batch			
Dry Soil Prep I	Dry Soil Pre	GL	RAD-A-021			BSW1	06/04/0	1510	338	588			
The following Anal	yilcal Melh	ods v	vere perform	ied									
Method D	escripilon												
E	ML HASL	300, 4	1.5.2.3			<u> </u>		· · · · · · · · · · · · · · · · ·					
Notes													

The Qualifiers in this report are defined as follows :

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Parameter	Qualifier Result Uncertainty	LC TPU MDA	Units DF AnalystDate Time . Batch M	 (tđ.
	Client Sample ID: Sample ID:	9524-0000-021F 114103024	Project: YANK00504 Client ID: YANK001 Vol. Recy.:	
Project:	Soils PO# 002332		Page 2 of 2	
Contact:	362 Injun Hollow Road East Hampton, Connecticut 06424 Mr. Pete Hollenbeck		Report Date: July 1, 2004	
Company Address	: Connecticut Yankee Atomic Power Haddam Neck Plant			

Analytical holding time exceeded. H

Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit. J

U Indicates the target analyte was analyzed for but not detected above the detection limit.

UI Uncertain identification for gamma spectroscopy.
X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.

Sample preparation or preservation holding time exceeded. h

The above sample is reported on a dry weight basis.

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, Sarah Kozlik.

Hearly acroch Reviewed by

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Certificate of Analysis

C A	Company : Address :	Connection Haddam N 362 Injun I Bast Hamp	it Yankee A eek Plant Hollow Roas ton, Coance willenheek	tomic Power d :ticut 06424				F	leport Da	te: Jul	ly 1, 2004		
L F	miect:	Soils PO#	002332								Po	ge 1 e	of 3
		Client Sa Sample D Matrix: Collect D Receive I Collector Moisture:	mple ID: D: ale: Date: :		9524-00 114103 Soil 24-MA 03-JUN Client 11%	000-007F 025 Y-04 I-04		Project: Client ID: Vol. Recv.:	YANK YANK	00504 001			
Parameter		Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Anal	ysiDale	Time	Batch Mtd.
Rad Alpha Sp	ec Annlysi	3											·
Alphaspec A	m241, Cm,	Solid ALL F	35										
Americium-	241	U	0.00119	+/-0.0646	0.0677	+/-0.0646	0.216	pCi/g		JSI	06/30/04	1840	342904 1
Curium-242		U	-0.00837	+/-0.0164	0.0397	+/-0.0164	0.174	pCl/g					
Curium-243	1244	U	0.00	+/-0.0584	0.00	+/-0.0584	0.0807	pCVg					
Alphaspec Pi	u, Solid-AL	L FSS											
Plutonium-2	138	U	-0.0444	+/-0.0329	0.0797	+/-0.0332	0.231	pCi/g		JS1	06/26/04	1541 :	342900 2
Plutonium-2	39/240	U	0.0148	+/-0.0792	0.0737	+/-0.0793	0.219	pCI/g					
Liquid Scint	Pu241, Sol	Id-ALL FSS											
Plutonium-2	241	U L	3.47	+/-4.82	3.98	+/-4.83	8.12	pCl/g		JSI	06/29/04	2314	342903 3
Rad Gamma	spec Analy	7815											
Gammaspec,	Gamma, S	olid-FSS GA	M& ALL F	55									
Actinium-22	28	ប បា	0.00	+/-0.154	0.119	+/-0.151	0.248	pCl/g		SRB	06/21/04	1616 :	339714 4
Americium	241	Ŭ	-0.0388	+/-0.203	0.120	+/-0.199	0.249	pCi/g					
Bismuth-21	2	U	0.358	+/-0.203	0.171	+/-0.199	0.360	pCl/g					
Biannih-21	4	**	0.581	+/-0.105	0.0335	+/-0.103	0.071	pCi/g					
Cesium-134		11	0.0411	+1-0.021	0.0243	+/-0.0204	0.0014	pcug pCl/g					
Cohalt-60		U U	0.0000		0.0220		0.0477	pCl/s					
Europium-1	52	ŭ	0.0412	+/-0.0549	0.0486	+/-0.0538	0.102	nCi/g					
Europium-1	54	Ū	0.0605	+/-0.0711	0.0637	+7-0.0697	0.138	pCl/g					
Europium-1	55	U	0.0295	+/-0.0688	0.0586	+/-0.0674	0.121	pCl/g					
1.cad-212			0.648	+/-0.0836	0.0284	+/-0.0819	0.059	pCi/g					
Lead-214			0.594	+/-0.109	0.0326	+/-0.107	0.0687	pCl/g					
Manganese-	54	U	0.00865	+/-0.0222	0.0194	+/-0.0217	0.0415	pCi/g					
Nioblum-94	-	U	0.00398	+/-0.020	0.0166	+/-0.0196	0.0353	pCl/g					
Polessium-4	0 .		13.2	+/-1.38	0.138	+/-1.35	0.315	pCl/g					•
Kanun-220 Silver-109-			10000	47-0.103	0.0150	+/-0.103	0.071	pCVg					
Thailinm.70	12	Ŭ	0,00202	4/-0.015	0.0139	-1-0.0107	0.0355	pcing pCing					
Red Ges Klow	Proportio	nal Counfir	0.227	41-0,0307	V.0132		0.0320	feng.					
CEPC C.M	entid ATT	273	.										
Streeting G	30100-70LL2 N	1.00	0 0328	1/ N M954	0.00632	1/ D 0122	0 0129	nCil-		VOD	ncnom.	m 57 7	141270 F
Rad Llouid Se	- intiflation	Analysis	0.0770	DC000.0-17	0.00022	77-0,0144	V.V[20	freng		1001		101:	141217 J
LSC, Tritium	Dist, Solid	-HTD2.ALL	F55										•
Tritium		U	0.868	+/-5.20	4,33	+/-5.20	8.66	pCl/g		JLB1	06/26/04	1916 3	42680 6

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Certificate of Analysis

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	Company : Address : Contact:	Connecticu Haddam Ne 362 Injun H East Hampi Mr. Pete He	t Yankee A eek Plant Iollow Roas Ion, Connee Iollenbeek	tomic Power d tleut 06424				Rej	port Date:	July 1, 2004		
F	Project:	Soils PO# (02332							Pa	ge 2 of 3	
		Client Sar Sample II	nple ID: D:		9524-00 1141030	00-007F 125	P. C V	roject: licat ID: ol. Recy.:	YANKOOS YANKOO1	04		
Parameter		Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF A	alysiDate	Time Ba	ich Mid.
Rad Liquid Se	Intillation	Analysis										
Liquid Scint	CI4, Solid	FSS										
Carbon-14		ַט	0.0683	+/-0.125	0.0845	+/-0.125	0.174	pCi/g	M 1	NX 06/21/04	1701 3423	87 7
Liquid Scint . Iron-55	Fe55, Solid	-ALL FSS U	15.8	+/-37_5	15.3	+/-37.5	31.9	pC1/g	JLJ	B1 06/22/04	2158 3425	41 9
Liquid Scint	Ni63, Sólid	ALL FSS										
Nickel-63		Ŭ	0.416	+/-12.7	10.6	+/-12.7	21.8	pCi/g	n.	31 06/27/04	2055 3425	42 10
Liquid Scint Technetium	Tc99, Solid - 9 9	-ALL FSS U	0.0885	+/-0.254	0.211	+/-0.254	0,432	pCi/g	DA	J1 06/28/04	0404 3410	70 11
The following	r Pren Mai	hade were n	erformed									
Method	Deser	iption				Analyst	Date	Time	Prep Ba	itch		
Ash Soil Pren	Ash S	all Prev. GL	RAD-A-02	18		BSW1	06/07/04	1610	738594			-
Dry Soil Prep	Dry S	oil Prep GL-	RAD-A-02	I		BSW1	D6/04/04	1510	338588			
The fall- dee		1 1 1										
Method	Descri	i Metion	re perior	mea	<u> </u>							
1	DOBI	DAL UASI	200 A-0	RC Mollfiel								
2	DORI	MI. HASL	300, A ii-0. 300, Pu-11.	RC Modified								
3	DORI	ML HASL	300, Pu-11-	RC Modified								
4	EML	HASL 300.4	523									
5	EPA 9	05.0 Modifie	d									
6	EPA 9	06.0 Modifie	d									
7	EPA E	ERF C-01 N	lodified									
8	EPA E	ERF C-01 M	Iodified			•						
9	DOBI	esl Fe-1, N	lodified									
10	DOBI	esl Ni-1, h	lodified									
11	DOEI	ML HASL	300, Tc-02-	RC Modified								
Surrogate/Tr	acer recov	ery Test				Recovery %	Accept	able Limits				
Americium-24	3	Alph	uspec Am2	41, Cm, Solid A	11	82	(25)	%-125%)			•	
Plutonium-242	Bacasca	Alph	inspec Pu, S	iolid-ALL FSS		80						
Carrier/Tracer 1	Recovery	upu AFP	ia sent Pit C. Sc90 rol	id-ALL ESS	rs	79 86	05	X.17501				
Carries/Tracer	Recovery	Liqu	id Scint Fe	55, Solid-ALL F	5	81	(4.)					

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Company : Address : Contact:	Connecticut Haddam Nea 362 Injun He East Hampie Mr. Pete Ho	Yankes A ck Plant allow Ros on, Connec llenbeck	tomic Power d cticut 06424				R	leport Dai	e: July 1,2004	Ļ			
Project:	Soils PO# 0	02332							P	age 3 c	13		
Client Sample ID: Sample ID:					0-007F 25		Project: YANK00504 Client ID: YANK001 Vol. Recv.:						
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalysiDate	Time	Batch Mtd.		
Carrier/Tracer Recovery Carrier/Tracer Recovery	Liqui Liqui	id Scint N id Scint To	163, Solid-ALL 199, Solid-ALL	FS FS	87 73								

Notes:

The Qualifiers in this report are defined as follows :

B Target analyte was detected in the sample as well as the associated blank.

BD Flag for results below the MDC or a flag for low tracer recovery.

E Concentration of the target analyte exceeds the instrument calibration range.

H Analytical holding time exceeded.

J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.

U Indicates the target analyte was analyzed for but not detected above the detection limit.

UI Uncertain identification for gamma spectroscopy.

X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.

h Sample preparation or preservation holding time exceeded.

The above sample is reported on a dry weight basis.

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, Sarah Kozlik.

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Certificate of Analysis

Company Address :	: Connectica Haddam N 362 Injun I East Hamp	ut Yankee A leck Plant Hollow Road oton, Connec	tomic Power d :ticut 06424				q	leport Date:	July	1,2004	•	
Project	Soils PO#	002332								Paj	ye 1 (of 3
	Client Sa Sample I Matrix: Collect D Receive I Collector Moisture	mple ID: D: Date: Date: T		9524-00 1141030 Soil 24-MAT 03-JUN Client 12.4%	00-010F 726 ¥-04 -04		Project: Client ID: Vol. Recv.:	YANKOO YANKOO	1504 11			
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF .	Annlys	Dale	Time	Balch Mid.
Rad Alpha Spec Analy	<u>sis</u>	·	······		•	···				t		
Alahamer Am741. Ca	• Salid ALL. F	227										
Americium-241	U	-0.0726	+/-0.101	0.244	+/-0.101	0.897	nCi/g	J	ISI C	6/30/04	0925 :	342904 1
Curium-242	ប័	0.177	+/-0.347	0.00	+/-0.348	0.480		•				5125012
Curium-243/244	บ	0.115	+/-0.306	0.173	+/-0.306	0.757	pCl/g					
Alphamec Pu. Solid-A	LL FSS						• -					
Philonium-738	ti	0.00	+/-0.288	0.00	+/-0.288	0.399	nCi/g	J	S1 0	6/26/04	1541 :	342900 2
Plutonium-239/240	ū	0.147	+/-0.288	0.00	+/-0.289	0.398	pCVg	-				
Liquid Scint Bu741 S	ALL ESS						10					
Phyonium 741	11	0 143	1/-13 7	115	+/-137	234	nCi/g	1	SI 0	6/30/04	0046 ·	142901 1
Rad Comma Snec Ana	lada	0.1.13	11 2011				Pub	-				,
Comma Oper And			-60									
Gammaspec, Gamma,	20(14-1-22 C)			0.04/2	./ 0.160	0.0064	-01-		מ ממי	<0004	1110 -	120714 4
Aconsum-228		0.440	+/-0.102	0.099.3	+/-0.155	0.0004	pcvg pCvg	•	OKD V	0/20/04	1110 3	3397144
Americium-241	U T	-0.0141	+/-0.123	0 112	+/-0.120	0.134	pcug pCi/g					
Dismuul-212 Biomath 214	U	0.411	-1-0.221	0.112	4/-0.217	0.0569	pCi/g					
Conjum-174	IJ	0.0116	+/-0.0009	0.0164	+/-0.0184	0.0352	nCi/g					
Cesinm-137	Ŭ	0.0768	+/-0.0293	0.0129	+/-0.0288	0.0277						
Cobalt-60	ប	0.00932	+/-0.0179	0.0159	+/-0.0175	0.0349	pCl/g					
Europium-152	บ	-0.00325	+/-0.0434	0.0357	+/-0.0425	0.0752	pCi/g					
Europium-154	ŭ	-0.0565	+/-0.0538	0.0392	+/-0.0527	0.0869	DCI/R					
Europium-155	Ŭ	0.0128	+/-0.0449	0.0407	+/-0.044	0.0846	pCl/g					
Lead-212	-	0,433	+/-0.0615	0.0218	+/-0.0602	0.0455	pCl/g					
Lead-214		0.500	+/-0.0814	0.0241	+/-0.0798	0.0509	pCi/g					
Manganese-54	ប	0.00316	+/-0.017	0.0143	+/-0.0167	0.0308	pCVg					
Niobium-94	ប	-0.00031	+/-0.0155	0.013	+/-0.0152	0.0277	pCi/g					
Potassium-40		11.5	+/-1.23	0.118	+/-1.21	0.268	pCi/g					
Radium-226		0.411	+/-0.0869	0.0268	+/-0.0851	0.0569	pCl/g					
Silver-108m	ប	-0.00293	+/-0.0138	0.0119	+/-0.0135	0.0252	pCi/g	•				
Thallium-208		0.120	+/-0.0394	0.0137	+/-0.0386	0.0291	pCl/g					
Rad Gas Flow Proport	ional Countie	ng										
GFPC, Sr90, solid-AL	L FSS											
Strontium-90		0.045	+/-0.0116	0.00875	+/-0.0165	0.0179	pCl/g	ł	10810	6/28/04	0411 3	341279 5
Rad Liquid Scintillatio	n Analysis	-				-	• •	-			-	
LSC, Tritium Dist, Sol	W-HTD2,ALL	FSS				F M		-		4 M 4 10 1	10/0 -	
Liquid Scint C14, Soll	d FSS	1.70	4/-J.4Y	4.34	41-3.49	9,09	peng	1		0/20/04	1248 3	74208U 6

Certificate of Analysis

Project: cintillation , cl4, Solid 1 FeSS, Solid	Soils PO# 0 Client Sam Sample ID Qualifier Analysis 755 U	02332 npic ID: : Result	Uncertainty	9524-00 1141030 LC	00-010F 126	Pr Ci Vo	piect: ient ID:	YANK YANK	00504 001	Pa	ge 2 (nf 3
cintillation , C14, Solid I FeS5, Solid	Client San Sample ID Qualifier Analysis 755 U	Result	Uncertalaty	9524-00 1141030 LC	00-010F 126	Pr Cl Vo	piect: ient ID:	YANK YANK	00504 001			
cintilation / C14, Solid I Fe55, Solid	Qualifier Analysis TSS U	Result	Uncertainty	LC								
cinWintion . C14, Solid I FeS5, Solid	Analysis 755 U	0 172			TPU	MDA	Units	DF	AnalystI	late	Thue	Batch Mi
C14, Solid 1 FeSS, Solid	U 222	0 172										
FeSS, Solid	U	0 172										
FeSS, Solid		u, 1 / 4.	+/-0.153	0.102	+/-0.153	0.209	pCi/g		MWX 06	/21/04	1904 :	342387 7
	ALE FSS U	-50.2	+/-41.6	17.0	+/-41.6	35.4	pCl/g		JLB1 06	/23/04	1637 :	342541 9
NIG3, Solid-	ALL FSS U	-12	+/-12.9	11.2	+/-12.9	23.1	pCi/g		JLB1 06	/27/04	2126	342542 10
1 Tc99, Solid- 1-99	ALL FSS U	0.0104	+/-0.237	0.198	+/-0.237	0.406	pCi/g		DAJ1 06	/28/04	0436 :	341070 11
ig Prep Meti Descri	bods were po pilon	erformed			Analysi	Date	Time	Pro	ep Batch			
AihS	HI Prep, GL-	RAD-A-02	!IB		BSW1	06/07/04	1610	338	1594			
Dry Sc	il Prep GL-F	RAD-A-02	1		BSW1	06/04/04	1510	338	1588			
g Analytical	Methods w	ere perfor	med						•			•
Descri	ption											······
DOEL	ML HASL	300, Am-0	5-RC Modified									
DOEI	iml Hasl-	300, Pu-11-	-RC Modified									
DOEL	ML HASL-	300, Pu-11	-RC Modified									
EML I	IASL 300, 4	.5.2.3								•		
EPA 9	05.0 Modifie	d										
EPA 9	06.0 Modifie	d										
HPA E	ERF C-01 M	lodified							•			•
EPA E	ERF C-01 M	lodified										
DOBI	uesl Fe-1, N	Aodified										
DOEF	LESL NI-I, N	roouned										
DOEE	ML HASL-	300, Tc-02	-RC Modified									
racer recove	ry Test				Recovery%	Accept	able Limits					
43	Alph	aspec Am	241, Cm, Solid A	<u>II</u> ,	82	(259	6-125%)					
2	Alph	aspec Pu, S	Solid-ALL FSS		89							
Recovery	Liqu Ann	ng Sciat Pu C Scial ea	114.30114-ALL)	F3	85		2 17521					
Recovery	t ferr	いっ いけしょ ゴロ こう ちょうー・ ビー		-	0/	(2)7	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~					
	e FeSS, Solid- e NI63, Solid- e NI63, Solid- e Tc99, Solid- e Tc99, Solid- e Tc99, Solid- e Tc99, Solid- e Te99 e Prep Mett Descrit Descrit DOE F DOE F DOE F DOE F ENA 9 EPA 9 EPA 9 HPA E DOE F DOE F DOE F DOE F COE F DOE F ERML I EPA 9 EPA 8 DOE F DOE F DOE F ECOVERY Recovery	recovery Liqu Recovery Liqu Recovery Liqu Recovery Liqu	U 0.172 U 0.172 Fe55, Solid-ALL FSS U -50.2 NIG3, Solid-ALL FSS U -12 Te99, Solid-ALL FSS u -12 Te99, Solid-ALL FSS a-99 U 0.0104 g Prep Methods were performed Description Ash Soil Prep, GL-RAD-A-02 Dry Soil Prep GL-RAD-A-02 Dry Soil Prep GL-RAD-A-02 Dry Soil Prep GL-RAD-A-02 g Analytical Methods were perfor Description DOE EML HASL-300, Am-03 DOE EML HASL-300, Pu-11 DOE EML HASL-300, Pu-11 EML HASL-300, Pu-11 EML HASL-300, 4.5.2.3 HPA 905.0 Modified EPA 906.0 Modified HPA EERF C-01 Modified HPA EERF C-01 Modified DOE RESL Fe-1, Modified DOE RESL Fe-1, Modified DOE RESL Fe-1, Modified DOE RESL Fe-1, Modified DOE EML HASL-300, Tc-02 Tatter recovery Test A3 Alphaspec Am2 2 Alphaspec Pu, S Recovery Liquid Sciat Pa	U 0.172 +/-0.153 U 0.172 +/-0.153 Fe55, Solid-ALL FSS U -50.2 +/-41.6 NI63, Solid-ALL FSS U -12 +/-12.9 Te59, Solid-ALL FSS a-99 U 0.0104 +/-0.237 Description Ash Soli Prep, GL-RAD-A-021B Dry Soli Prep GL-RAD-A-021 Mg Analytical Methods were performed Description DOE EML HASL-300, Am-05-RC Modified DOE HML HASL-300, Pu-11-RC Modified EPA 905.0 Modified HPA EERF C-01 Modified HPA EERF C-01 Modified DOE RESL Fe-1, MOE FE-1,	U 0.172 +/-0.153 0.102 Fe55, Solid-ALL FSS U -50.2 +/-41.6 17.0 N163, Solid-ALL FSS U -12 +/-12.9 11.2 Te99, Solid-ALL FSS a-99 U 0.0104 +/-0.237 0.198 Bg Prep Methods were performed Description Ash Soil Prep, GL-RAD-A-021B Dry Soil Prep GL-RAD-A-021 g Analytical Methods were performed Description DOE EML HASL-300, Am-05-RC Modified DOE EML HASL-300, Pu-11-RC Modified DOE EML HASL-300, Te-02-RC Modified EPA 905.0 Modified HPA EERF C-01 Modified DOE RESL Ni-1, Modified DOE RESL Ni-1, Modified DOE EML HASL-300, Te-02-RC Modified Tacer recovery Test A3 Alphaspec Am241, Cm, Solid ALL Alphaspec Pu, Solid-ALL FSS Recovery Liquid Sciat Pu241, Solid-ALL FSS Recovery Liquid Sciat Pu241, Solid-ALL FSS	U 0.172 +/-0.153 0.102 +/-0.153 IF e55, Solid-ALL F5S U -50.2 +/-41.6 17.0 +/-41.6 IN63, Solid-ALL F5S U -12 +/-12.9 11.2 +/-12.9 IT c59, Solid-ALL F5S U -12 +/-12.9 11.2 +/-12.9 IT c59, Solid-ALL F5S 0.0104 +/-0.237 0.198 +/-0.237 IT c59, Solid-ALL F5S It c50 It c50 It c50 It c50 IT c50 IT c50 It c50 It c50 It c50 It c50 It c50 It c50 It c50 It c50 It	U 0.172 +/-0.153 0.102 +/-0.153 0.209 IF E55, Solid-ALL FSS U -50.2 +/-41.6 17.0 +/-41.6 35.4 INIG3, Solid-ALL FSS U -12 +/-12.9 11.2 +/-12.9 23.1 ITe99, Solid-ALL FSS u 0.104 +/-0.237 0.198 +/-0.237 0.406 bg Prep Methods were performed Description Analyst Date a-39 U 0.0104 +/-0.237 0.406 bg Prep Methods were performed Date Description Analyst Date a Ath Soil Prep, GL-RAD-A-021 BSW1 06/07/04 bry Soil Prep GL-RAD-A-021 BSW1 06/07/04 g Analytical Methods were performed Description DOE EML HASL-300, Am-05-RC Modified DOE HML HASL 300, 4.5.2.3 HPA 905.0 Modified HPA 905.0 Modified HPA 995.0 Modified DOE RESL Pi-1, Modified DOE RESL Pi-1, Modified DOE RESL Ni-1, Modified DOE RES	U 0.172 +/-0.153 0.102 +/-0.153 0.209 pCi/g if E55, Solid-ALL FSS U -50.2 +/-41.6 17.0 +/-41.6 35.4 pCi/g if Re55, Solid-ALL FSS U -12 +/-41.6 17.0 +/-41.6 35.4 pCi/g if Re59, Solid-ALL FSS 0 11.2 +/-12.9 23.1 pCi/g if 299, Solid-ALL FSS 0 0.104 +/-0.237 0.198 +/-0.237 0.406 pCi/g if 2 Prep Methods were performed Description Analyst Date Time if Ash Soil Prep, GL-RAD-A-021B BSW1 06/07/04 1610 Dry Soil Prep GL-RAD-A-021 BSW1 06/04/04 1510 ig Analytical Methods were performed Description Description DOE EML HASL-300, Am-05-RC Modified DOE EML HASL-300, Pu-11-RC Modified DOE EML HASL-300, Pu-11-RC Modified EPA 905.0 Modified EPA 905.0 Modified EPA 905.0 Modified EPA 905.0 Modified EPA 905.0 Modified EPA 905.0 Modified EPA 905.0 Modified EPA 905.0 Modified DOE EML HASL-300, Tc-02-RC Modified DOE HML HASL-300, Tc-02-RC Modif	C14, Solid FSS U 0.172 +/-0.153 0.102 +/-0.153 0.209 pCi/g i Fe55, Solid-ALL FSS U -50.2 +/-41.6 17.0 +/-41.6 35.4 pCi/g i Ni63, Solid-ALL FSS U -12 +/-12.9 11.2 +/-12.9 23.1 pCi/g i Tc59, Solid-ALL FSS a.99 U 0.0104 +/-0.237 0.198 +/-0.237 0.406 pCi/g ig Prep Methods were performed Description Analyst Date Time Pro is Arh Soil Prep GL-RAD-A-021B BSW1 06/07/04 1610 331 ig Analytical Methods were performed Description 331 331 jg Analytical Methods were performed Description 500 510 331 DOE HML HASL-300, Pu-11-RC Modified DOE HML HASL-300, Pu-11-RC Modified 500 500 500 DOE HML HASL-300, Pu-11-RC Modified HPA 905.0 Modified HPA 905.0 Modified 500 500 IFA PERF C-01 Modified IFA PERF C-01 Modified IFA PERF C-01 Modified 160 500 500 500 500 500	Cl4, Solid FSS U 0.172 +/-0.153 0.102 +/-0.153 0.209 pCi/g MWX 06 1 F.55, Solid-ALL FSS 1 1 1 1 1 1 F.55, Solid-ALL FSS 1 1 35.4 pCi/g JLB1 06 1 1 R163, Solid-ALL FSS 1 1.2 +/-12.9 23.1 pCi/g JLB1 06 17:59, Solid-ALL FSS 0 0.0104 +/-0.237 0.198 +/-0.237 0.406 pCi/g DAJ1 06 12 Frep, Methods were performed 1 1610 338594 160 338594 160 338594 160 338594 160 1610 338594 160 1610 338594 160 1610 338594 160 1610 338594 160 1610 338594 160 1610 338594 160 1610 338594 160 1610 338594 160 1610 338594 160 1610 338594 1610 1610 1610 1610 1610 1610 1610 1610 1610 <	Cli4, Solid FSS U 0.172 +/-0.153 0.102 +/-0.153 0.209 pCl/g MWX 06/21/04 1 F255, Solid-ALL FSS U -50.2 +/-41.6 17.0 +/-41.6 35.4 pCl/g JLB1 06/23/04 1N63, Solid-ALL FSS U -12 +/-12.9 11.2 +/-12.9 23.1 pCl/g JLB1 06/23/04 1Tc99, Solid-ALL FSS 0.104 +/-0.237 0.198 +/-0.237 0.406 pCl/g DAJ1 06/28/04 1SP Prep Methods were performed Description Analyst Date Time Prep Batch 1 Arh Soli Prep, GL-RAD-A-021 BSW1 06/07/04 1610 338594 1 Dry Soli Prep GL-RAD-A-021 BSW1 06/07/04 1510 338584 1 Dos Endi HASL-300, Am-05-RC Modified DOS ENL HASL-300, Pu-11-RC Modified DOE EML HASL-300, Pu-11-RC Modified 100E EML HASL-300, Pu-11-RC Modified EPA 905.0 Modified EPA 905.0 Modified EPA 905.0 Modified 100E EML HASL-300, Pu-11-RC Modified	C14, Solid FSS U 0.172 +/-0.153 0.102 +/-0.153 0.209 pCi/g MWX 06/21/04 1904 3 1 1 -50.2 +/-41.6 17.0 +/-41.6 35.4 pCL/g ILB1 06/23/04 1637 3 1 1 -50.2 +/-41.6 17.0 +/-41.6 35.4 pCL/g ILB1 06/23/04 1637 3 1 1 23.1 pCi/g JLB1 06/23/04 1637 3 1 1 1.12 +/-12.9 23.1 pCi/g JLB1 06/23/04 2126 3 1 1.12 +/-12.9 11.2 +/-12.9 23.1 pCi/g DAI1 06/23/04 0436 3 1 0.198 +/-0.237 0.198 +/-0.237 0.406 pCl/g DAI1 06/28/04 0436 3 1 Description Analysi Date Time Prep Batch 1 Ath Soil Prep, GL-RAD-A-021 BSW1 06/07/04 1610 338598 1 DOE EML HASL-300, Pu-11-RC Modified DOE EML HASL-300, Pu-11-RC Modified DOE EML HASL-300, Pu-11-RC Modified DOE EML HASL-300, Pu-11-RC Modified

79

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

Certificate of Analysis

Company : Address : Contact:	Connecticut Haddam Net 362 Injun He East Hampto Mr. Pete Ho	Yankee A ek Plant ollow Roa on, Connes llenbeck	tomic Power d :ticut 06424				R	leport Da	te: July 1, 2004	L	
Project;	Soils PO# 0	2332							P	oge 3 c	of 3
	Client Sam Sample ID	ple ID: :		9524-000 11410302	0-010F !6						
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch Mid.
arrier/Tracer Recovery	Liqu	d Scint N	63, Solid-ALL	FS	78						
arrier/Tracer Recovery	Linu	d Scint To	JITA-bilo2 PP	FS	76						

Notes:

The Qualifiers in this report are defined as follows :

B Target analyte was detected in the sample as well as the associated blank.

BD Fing for results below the MDC or a fing for low tracer recovery.

E Concentration of the target analyte exceeds the instrument calibration range.

H Analytical holding time exceeded.

J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.

U Indicates the target analyte was analyzed for but not detected above the detection limit.

UI Uncertain identification for gamma spectroscopy.

X. Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.

h Sample preparation or preservation holding time exceeded.

The above sample is reported on a dry weight basis.

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, Sarah Kozlik.

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Connecticut Yankee Aton		Acardo Douron	<u>QC</u>	<u>Su</u>	mmary			Report D	ate: July 1, 20	104	
	Haddam Neck Plant 362 Injun Hollow Ron East Hampton, Conne	id seticut							Page 1	of 12	
Contact:	Mr. Pete Hollenbeck										
_Workorder:	114103										
Parmname		NOM	Sample (Qual	QC	Units	RPD%	REC%	Range	Anist	Date Time
' lad Alpha Spec latch	342900										
QC12006484	125 114103025 DUP								(00) 10000		66966115 I.
olutonium-238		្ម	-0.0444	U	0.0517	pCi/g	N/A		(0% - 100%)	181	06/26/04 15:41
		Uncert:	+/-0.0329		+/-0.102						
Distantium 230	<i>m</i> 40	TPU:	+/-0.0332	11	+/-0.102	-Cile	179		(094 - 10094)		
Plutonium-239	/240	U	U.U 148	Ų	U.UUU070	րշոց	170		(078 - 10078)		
		TDI I.	+/-0.0792		+1-0.0476						
- OC12006484	127 LCS	110.			17-0.0470						
Plutonium-238				บ	-0.0189	pCi/g					
		Uncert:			+/-0.105						
		TPU:			+/-0.105						
LePlutonium-239	/240	8.54			9.05	pCi/g		106			
		Uncert:			+/-0.908						
		TPU:			+/-1.41						
QC1200648	424 MB										
_Plutonium-238	i i i i i i i i i i i i i i i i i i i			U	-0.0105	pCrg					
		Uncert:			+/-0.0146						
Distonium 230	0400	TPU:			-0.0140	nCila					
Flutomunt-259	//240	1 Incents		U	-0.0105	hea R					
<u> </u>		TDI 1.			+/-0.0146						
0C1200648	426 114103025 MS	110.			17-0,0140						
Plutonium-238		11	-0.0444	ប	0.0247	pCi/g					
<u> </u>		Uncert:	+/-0.0329		+/-0.120	1 - 0					•
		TPU:	+/-0.0332		+/-0.120						
Plutonium-239	/240	9.19 U	0.0148		11.3	pCi/g		123			
		Uncert:	+/-0.0792		+/-1.10						
<u> </u>		TPU:	+/-0.0793		+/-1.77						
Batch	342903										
QC1200648	438 114103025 DUP										
Plutonium-241	l	ប	3.47	U	5.15	pCi/g	0		(0% - 100%)	JSI	06/30/04 03:50
-		Uncert:	+/-4.82		+/-5.31						
		TPU:	+/-4.83		+/-5.33						
QC1200648	440 LCS					~ .					
Plutonium-241		128			110	pCi/g		86	(75%-125%)		06/30/04 06:54
		Uncert:			+/-6.23						
0010000000	117 110	TPU:			+/-12,0						
QC1200648	4 <i>31 N</i> B 1			11	3 JO	-C i/-					06/30/04 02-15
	•	Uncert		U	+/_4.15	իշղջ					
		TPII			+/-4.16						
QC1200648	439 114103025 MS				.,						
Plutonium-241	1	129 ប	3.47		102	pCi/g		77	(75%-125%)	ļ	06/30/04 05:22
<u> </u>		Uncert:	+/-4.82		+/-5.71						

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QC Summary

Workorder: 114103					Page 2 of 12						
Parmname	NOM	Sample (Qual	QC	Units	RPD%	REC%	Range	Anist	Date	Time
Rad Alpha Spec											
Batch 342903											
. •	TPU:	+/-4.83		+/-11.0							
Batch 342904								•			
OC1200648445 114103025 DUP											
Americium-241	IJ	0.00119	U	-0.0182	pCi/	g N/A		(0% - 100%)	JS1	06/30/0	4 09:25
_	Uncert:	+/-0.0646		+/-0.0206	•	-					
	TPU:	+/-0.0646		+/-0.0208							
Curium-242	11	-0.00837	U	-0.0142	pCi/	¢ N/A		(0% - 100%)			
	Uncert:	+/-0.0164		+/-0.0197	• • • •			、、			
<u> </u>	TPL	+/-0.0164		+/-0.0198							
Curium-743/244	11	0.00	U	0.0142	nCi/	a 200		(0% - 100%)			
	Uncert:	+/-0 0584		+/-0 0762	han	5 400		(0/0 - 100/0)			
	-tion	+/_0.0584		+4.0 0762							
- OC1200648447 1 CS	110.	17-0.0304		17-0.0702							
Americium-241	9.59			10.0	nCi/	r,	104	(75%-125%)			
	[Incart			+/_0 078	Post.	þ		(12/1-12/14)			
	TDI I			+1-1 66							
Curium-242	170.		11	.0.00552	nCi/	~					
Currum-242	I lagarts		u	-0.00332	րշոյ	6					
	Uncent.			11-0.0100							
0	170:			77-0.0103	-01	_	100	(758/ 1950/)			
Curium-243/244	12.5			12.5	pc//	g	102	(1274-12270)			
	Uncen:			+/-1.04							
	TPU:			+/-2.00							
. QC1200648444 MII Americium 241				0.00000		_					
Americium-241	Unanda		U	U.U.J722	pcv.	6					
2	Uncert:			+/-0.0930							
G	TPU:			+/-0.095/	- 01/	L					
Cunum-242			U	-0.0127	pCV	g					
	Uncen:			+/-0.01/6							
	TPU:		••	+/-0.0177	~ * *						
Curium-243/244			U	0.0645	pCi/	g					
	Uncert:			+/-0.0886							
. •	TPU:			+/-0.089							
QC1200648446 114103025 MS		0 00110			~	,					
Americium-241	U 2.01	0.00119		10.2	pCu	g	99	(75%-125%)			
	Uncert:	+/-0.0646		+/-1.00							
,	TPU:	+/-0.0646		+/-1.74							
Curium-242	U	-0.00837	U	0.00	pCi/	g					
	Uncert:	+/-0.0164		+/-0.0585							
·	TPU:	+/-0.0164		+/-0.0585							
Curium-243/244	13.3 U	0.00		13.9	pCi/	g	105	(75%-125%)			
	Uncert:	+/-0.0584		+/-1.17							
	TPU:	+/-0.0584		+/-2.26							
Rad Gamma Spec Batch 339714											
OC1200640441 114103014 DUP											
Actinium-228		0.488		0.534	pCi/	g 9		(0% - 100%)	SRB	06/20/0	411:11
	Uncert:	+/-0.185		+/-0.156	•	-					
	TPU:	+/-0.182		+/-0.153							

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QC Summary

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Workorder: 114103				Page 3 of 12						
Parmname	NOM	Sample Qual	QC	Units R	PD%	REC% Range Anist	Date Time			
Rad Gamma Spec										
. Batch 339714										
Americium-241	U	0.0212 U	0.0389	pCi/g	59	(0% - 100%)				
-	Uncert:	+/-0.147	+/-0.0436							
	TPU:	+/-0.144	+/-0.0427							
Bismuth-212		0.353	0.374	pCi/g	6	(0% - 100%)				
	Uncert:	+/-0.193	+/-0.277	•						
	TPU:	+/-0.189	+/-0.271							
Bismuth-214		0.550	0.512	pCi/g	7	(0% - 100%)				
- · ·	Uncert:	+/-0.0989	+/-0.0957							
<u> </u>	TPU:	+/-0.0969	+/-0.0938							
Cesium-134	U	0.030 U	0.0109	pCi/g	93	(0% - 100%)				
	Uncert:	+/-0.0311	+/-0.0237							
	TPU:	+/-0.0305	+/-0.0232		_					
_ Cesium-137		0.392	0.399	pCi/g	2	(0% - 100%)				
	Uncert:	+/-0.0607	+/-0.0616							
	TPU:	+/-0.0595	+/-0.0603							
Cobalt-60	ប	-0.0131 U	-0.0274	pCi/g	N/A	(0% - 100%)				
<i>ن</i> ـــ	Uncert:	+/-0.0214	+/-0.0239							
· · · · · · · · · · · · · · · · · · ·	TPU:	+/-0.021	+/-0.0235							
Europium-152	U	-0.0132 U	0.0403	pCi/g	N/A	(0% - 100%)				
	Uncert:	+/-0.0551	+/-0.0467							
<u> </u>	TPU:	+/-0.054	+/-0.0457	~		(001 10081)				
Europium-154	· U	-0.0238 U	0.0125	pC⊮g	N/A	(0% - 100%)				
	Uncert:	+/-0.0731	+/-0.0/29							
	TPU:	+/-0.0716	+/-0.0715	C ''	~	(00/ 1007/)				
- Europium-155	U .	0.0336 U	0.0342	pCvg	2	(0% - 100%)				
	Uncert:	+/-0.0631	+/-0.0444							
	TPU:	+/-0.0618	+/-0.0435	-04-	2	(08/ 208/)				
Lead-212		CCC.U	0.343	pc//g	2	(U7a - 207a)				
_	Uncen:	T/-U.U/29	7/-0.0002							
Lood 214	TPO:	+/-0.0/14	4/-0.0008	aCi/a	11	(0% - 20%)				
1,000-214	Linearts		**0001-1-	heng		(078 - 2078)				
	Uncert.		1/ 0 0035							
Managanese Sd	IPU:	77-0.0989	n nnn734	nCi/a	180	(0% - 100%)				
Munguiese-24	U Lincerts		+/.0 0220	henR	107	(070 - 10070)				
1 .	TDI I-	-1/-0.0222	+/-0.0223							
Nichium-04	11.	0.00641 11	-0.00206	nCi/a	N/A	(0% - 100%)				
Hiddium-94	U Uncert•	+/-0 0179	+/-0.0189	Pore						
	TDIA	+/-0.0175	+/-0.0185							
Potassium-40		11.4	9.97	nCi/g	14	(0% - 20%)				
	[Incert:	+/-1.18	+/-1.05	10-0	•••					
	TPU	+/-1.16	+/-1.03							
Radium-226		0.550	0.512	pCi/g	7	(0% - 100%)				
	Uncert:	+/-0.0989	+/-0.0957	r0	-					
<u> </u>	TPU	+/-0.0969	+/-0.0938							
Silver-108m		0.0103 UUI	0.00	pCi/g	122	(0% - 100%)				
	Uncert:	+/-0.0191	+/-0.0357							
	TPU:	+/-0.0187	+/-0.035							

QC Summary

Vorkorder: 114103					Page 4 of 12					
_irmname	NOM	Sample Qual	QC	Units RPD	% REC%	Range Anist	Date Time			
Rad Gamma Spec										
Ttch 339714										
hallium-208		0.171	0.172	pCi/g	1	(0% - 100%)				
	Uncert:	+/-0.0448	+/-0.0411	1	-	(
	TPU	+/-0.0439	+/-0.0403							
OC1200640442 LCS										
ctinium-228		ប	0.276	pCi/g			06/18/04 09:28			
	Uncert:		+/-0.422	• •						
	TPU:		+/-0.413							
mericium-241	23.4		23.7	pCi/g	101	(75%-125%)				
	Uncert:		+/-2.10	• -		•				
	TPU:		+/-2.06							
Bismuth-212		ប	-0.171	pCi/g						
	Uncert:		+/-0.744	•						
_	TPU:		+/-0.729							
Bismuth-214		ប	-0.0842	pCi/g						
	Uncert:		+/-0.171	• •						
	TPU:		+/-0.167							
icsium-134		ប	0.000649	pCi/g						
	Uncert:		+/-0.109	• •						
	TPU:		+/-0.106							
lesium-137	9.25		10.1	pCi/g	109	(75%-125%)				
<u> </u>	Uncert:		+/-1.09	• -		•				
	TPU:		+/-1.07							
Cobalt-60	14.4		15.2	pCi/g	106	(75%-125%)				
:	Uncert:		+/-1.14	·						
<u> </u>	TPU:		+/-1.11							
Europium-152		U	0.0841	pCi/g						
	Uncert:		+/-0.234	• -						
	TPU:		+/-0.230							
-Europium-154		ប	0.284	pCi/g						
	Uncert:		+/-0.231	• -						
	TPU:		+/-0.226							
iuropium-155		ប	-0,104	pCi/g						
<u> </u>	Uncert:		+/-0.289							
	TPU:		+/-0.283							
Lend-212		U	0.075	pCi/g						
	Uncert:		+/-0.196							
_	TPU:		+/-0.192							
Lead-214		ប	0.00716	pCi/g						
	Uncert:		+/-0.167							
	TPU:		+/-0.164							
Manganese-54		ប	0.0272	pCi/g						
	Uncert:		+/-0.0938							
	TPU:		+/-0.0919							
Niobium-94		U	-0.0445	pCi/g						
	Uncert:		+/-0.0865							
	TPU:		+/-0.0848							
Potassium-40		U	1.07	pCi/g						
<u> </u>	Uncert:		+/-0.947							

85

QC Summary

Vorkorder: 114103						Page 5	of 12		
armname	NOM	Sample Qual	QC	Units RPD%	REC%	Range	Anist	Date	Time
Rad Gamma Spec									
Tatch 339714									
:	TPL		+/-0 928						
Radium-226		U	-0.0842	nCi/g	í	(75%-125%)		
	Uncert:	-	+/-0.171	PB		(•		
	112112 • 119T		+/-0.167						
Silver-108m		ប	-0.0112	nCi/g					
	Uncert	-	+/-0.0983	r5					
	TPU		+/-0.0964						
Challium-208		U	0.0773	pCi/g					
	Uncert:	•	+/-0.0899	9.5775 рслу +/-0.0899					
<u> </u>	TPU		+/-0.0881	81					
OC1200640440 MB			.,						
Actinium-228		U	0.0246	nCi/g				06/18/0	4 09:26
	Uncert:		+/-0.158	F0					
_	TPU		+/-0.155						
Americium-241		U	0.0017	nCi/g					
1	Uncert:	-	+/-0.0296	F0					
	TPI		+/-0.029						
Bismuth-212		ប	0,100	nCi/g					
	Uncert:	-	+/-0.236	F0					
	TPI		+/-0.232						
- Sismuth-214		ប	0.0391	pCi/g					
	Uncert:	-	+/-0.0951	FB					
	TPII		+/-0.0932						
Cesium-134		ប	0.0266	pCi/g					
	Uncert	-	+/-0.031	F0					
-	TPII		+/-0.0304						
Cesium-137		ប	-0.00305	nCi/g					
	Uncert:	-	+/-0.0319	tion B					
·	TPH		+/-0.0312						
Cobalt-60		ប	0.00573	nCi/g					•
,	Uncert:	•	+/-0.0319	1					
1			+/-0.0313						
-Euronium-152		U	0.0347	pCi/g					
	Uncert:	-	+/-0.0621	F0					
	TPII		+/-0.0609						
Euronium-154		U	-0.0707	nCi/g					
	Uncert	•	+/-0.0819	F 8					
			+/-0.0802						
Europium-155		ប	-0.0202	oCi/g					
	Uncert:	-	+/-0.0555	F0					
<u>—</u>	Tpil		+/-0.0544						
Lend-212	11.0.	ហោ	0.00	nCi/g					
	Uncert		+/-0.040	F8					
	Tpit.		+/-0.0392						
Lead-214	11 U.	11	0.0181	nCi/g					
	Uncert	Ŭ	+/-0.0704	P0					
	TDI 1-		+/.n n.co					•	
Manganese-54		11	0.012	nCi/a					
		U	0.012	18					

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QC Summary

Workorder: 114103								Page 6	of 12		
Parmname	NOM	Sample Qu	Ial	QC	Units	RPD%	REC%	Range	Anist	Date	Time
Rad Gamma Spee											
Batch 339714											
	Uncert:			+/-0.0249							
	TPU:			+/-0.0244							
Nicbium-94			U	0.00627	pCi/s	z					
•••••••	Uncert:			+/-0.0282	• •						
:	TPU:			+/-0.0276							
Potassium-40			U	0.295	pCi/j	g					
	Uncert:			+/-0.273							
	. TPU:			+/-0.267							
Radium-226			U	0.0391	pCi/j	S					
_	Uncert:			+/-0.0951							
	TPU:			+/-0.0932							
Silver-108m			U	0.00328	pCi/	5					
_	Uncert:			+/-0.0226							
	TPU:			+/-0.0222							
Thallium-208			ប	0.036	pCi/	g					
	Uncert:			+/-0.0289							
	ፕዮሀ:			+/-0.0283							
Batch 339715											
DC1200640444 114103001 DUP											
Actinium-228		0.529		0.422	pCi/	a 23		(0% - 100%)	SRB	06/19/0	421:56
	Uncert:	+/-0.176		+/-0.0972	• •	-		. ,			
	TPU:	+/-0.173		+/-0.0952							
Americium-241	บ	-0.00178	U	-0.0232	pCi/	g N/A		(0% - 100%)			
	Uncert:	+/-0.0284		+/-0.0412	•	-		•			
	TPU:	+/-0.0278		+/-0.0404							
Bismuth-212		0.557		0.366	pCi/	g 41		(0% - 100%)			
	Uncert:	+/-0.272		+/-0.150	-						
	TPU:	+/-0.266		+/-0.147							
Bismuth-214		0.317		0.355	pCi/	g 11		(0% - 100%)			•
	Uncert:	+/-0.0855		+/-0.0638							
	TPU:	+/-0.0838		+/-0.0625							
Cesium-134	ប	0.0313	ប	. 0.020	pCi/	g 44		(0% - 100%)			
	Uncert:	+/-0.0338		+/-0.0225							
	TPU:	+/-0.0331		+/-0.022							
Cesium-137	ប	0.0161	U	0.00443	pCi/	g 114		(0% - 100%))		
	Uncert:	+/-0.020		+/-0.0111							
—	TPU:	+/-0.0196		+/-0.0109							
Cabalt-60	ប	0,0199	U	0.00192	pCi/	g 165		(0% - 100%))		
	Uncert:	+/-0.0209		+/-0.011							
<u> </u>	TPU:	+/-0.0205		+/-0.0108							
Europium-152	U	-0.00309	U	-0.032	pCi/	g N/A		(0% - 100%))		
	Uncert:	+/-0.0426		+/-0.0277							
•	TPU:	+/-0.0418		+/-0.0272							
Europium-154	U	0.0183	U	0.00912	pCi/	g 67		(0% - 100%)	1		
	Uncert:	+/-0.0681		+/-0.033							
	TPU:	+/-0.0668	••	+/-0.0324							
Europium-155	U	0.0656	U	0.0534	pCi/	g 21		(0% - 100%))		
	Uncert:	+/-0.039		+/-0.0463							

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QC Summary

							Page 7 of 12					
armnome	NOM	Sample Q	Qual	QC	Units	RFD%	REC%	Range	Anist	Date	Time	
Rad Gamma Spec												
339715												
:	TPU:	+/-0.0382		+/-0.0454								
Lead-212		0.434		0.455	pCi/g	g 5		(0% - 100%)				
	Uncert:	+/-0.0577		+/-0.0477	-							
•	TPU:	+/-0.0565		+/-0.0467								
Lead-214		0.365		0.389	pCi/g	g 7		(0% - 100%)				
	Uncert:	+/-0.0712		+/-0.0543								
	TPU:	+/-0.0698		+/-0.0532								
Manganese-54	U	0.0149	U	0.0099	pCi/į	g 40		(0% - 100%)				
<u> </u>	Uncert:	+/-0.0218		+/-0.013								
	TPU:	+/-0.0213		+/-0.0127								
Niobium-94	U	0.00791	U	0.00158	pCi/g	g 133		(0% - 100%)				
	Uncert:	+/-0.0189		+/-0.00963								
	TPU:	+/-0.0185		+7-0.00944		_ 10		109/ 2001)				
Poussium-40	Linearte	11./		12.8	pent	g iu		(0% - 20%)				
	Uncen:	+/-1.UO										
Padium 226	IPU:	T/-1.04		+/-1.U1 0.355	-Cili	- 11		(0% - 100%)				
_Kadiani-220	l Incert:	4/_0.0855		4/_0 0638	իշոլ	5 11		(074 - 10074)				
	TDI 1-	+/_0.00000		+/-0.0030								
Silver-108m	11	0.0064	U	0.0059	nCi/i	r 8		(0% - 100%)				
	Uncert:	+/-0.0149	•	+/-0.00932	P1	6 -		()				
_	TPU	+/-0.0146		+/-0 00914								
Thallium-208		0.152		0.140	pCi/r	e 8		(0% - 100%)				
	Uncert:	+/-0.0419		+/-0.0243	- •	0 -		(,				
<u> </u>	TPU:	+/-0.041		+/-0.0238								
QC1200640445 LCS												
- Actinium-228			U	0.207	pCi/j	g				06/20/0	4 10:38	
	Uncert:			+/-0.412								
<u>`</u>	TPU:			+/-0.404								
Americium-241	23.4			24.2	pCi/	g	103	(75%-125%)				
	Uncert:			+/-2.50								
	TPU:			+/-2.45	~ • •							
-Bismuth-212			U	0.155	pCi/	g						
	Uncert:			+/-0.770								
	TPU:			+/-0.755		_						
Bismuth-214	••		U	0.0532	pCu	g						
	Uncert			+/-0,180								
Carine 124	110:			+/-U.182 0.0339	-01	-						
Cestum-134	Linearty		U	+0.0338 +/_0 127	րշոյ	8						
	Uncert.			+/-0.127								
Cesium-137	974			47-0,123 Q 54		'n	103	(75%-125%)				
	Lincert:			+/_0 872	per,	5	105	(10/0-12070)				
· ·	TPI 1-			+/-0.872								
Cobalt-60	14.3			15.2	pCi/	ά	106	(75%-125%)				
	Uncert:			+/-1.20	F-2-1	~						
	TPU:			+/-1.17								
Europium-152	••		U	0.0179	pCi/	g						

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—		QC Su	mmary						
Yorkorder: 114103						Page 8	oľ 12		
armname	NOM	Sample Qual	QC	Units RPD%	REC%	Range	Anlst	Date	Time
Rad Gamma Spec Totch 339715									
	Lincert:		+/-0.241						
_	TPU		+/-0.236						
Europium-154		U	-0.0453	pCi/g					
_	Uncert:		+/-0.230	10					
	TPU:		+/-0.225						
Europium-155	•	ប	0.160	pCi/g					
	Uncert:		+/-0.339	• -					
	TPU:		+/-0.332						
esd-212		U	0.00789	ըCi/g					
	Uncert:		+/-0.146						
	TPU:		+/-0.143	•					
.ead-214		U	-0.00281	pCi/g					
-	Uncert:		+/-0.184						
	TPU:		+/-0.180						
Manganese-54		ប	0.011	pCi/g					
•	Uncert:		+/-0.0984						
<u> </u>	TPU:		+/-0.0965						
Niobium-94		U	0.0296	pCi/g					
	Uncert:		+/-0.0927						
	TPU:		+/-0.0909						
'otassium-40		ប	0.526	pCi/g					
	Uncert:		+/-0.921						
	TPU:		+/-0,903						
tadium-226		U	0.0532	pCi/g		(75%-125%)			
<u> </u>	Uncert:		+/-0.186						
	TPU:		+/-0.182						
Tilver-108m		U	-0.0944	pCi/g					
	Uncert:		+/-0.093						
	TPU:		+/-0.0911		•				
Thallium-208	••	U	0.0854	pCi/g					
	Uncert:		+/-0.0977						
	TPU:		+/-0.0957						
QC1200640443 MB		11	0.0999	-Cilo				06/10/0	14 21.56
Actimum-228	Linnerte	0		henR				00/15/0	7 21.30
•			+/-0.108						
	170:	11	0.00766	nCi/a					
Automotion-241	Lincert	U	+/.0 0339	իշոց					
	TOI I-		+/-0.0332						
i liemuth_717	Iro,	11	0.0866	nCi/a					•
	I Incert-	U	+/-0 208	hene					
	TDI		+1.0 204						
Signuth-214	110	11	0.0177	nCi/e					
vo uz e 6886 588 "da 8 "T t	Uncert	J	+/-0.0845	1-42					
·	000000 TPI I-		+/-0.0878						
Cesium-134	11 U.	U	0.00791	nCi/e					
	Uncert:	-	+/-0.0305	r-*0					
•	TPIJ		+/-0.0298						

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QC Summary

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Workarder: 114103			Page 9 of 12						
?armname	NOM	Sample Qua	I QC	Units RF	PD% REC	% Range	Anlst	Date Time	
Rad Gamma Spec									
Jatch 339715									
Cesium-137		ι	0.00287	pCi/g					
C	Uncert:		+/-0.0287						
	TPU:		+/-0.0282						
Cobalt-60		t	J 0.020	pCi/g					
	Uncert:		+/-0.0311						
	TPU:		+/-0.0305	~					
Europium-152	••	Ľ	J -0.0261	pCvg					
•	Uncert:		+/-0.0615						
Europium 154	TPU:			-01-					
Europium-134	t lagante	L		peng					
			-1-0.0001						
Eumpium_155	11:0:	,		nCi/a					
-Europhani-155	I Incert-	·	+/_0 0507	peng					
	TPII		+/_0 0497						
Lead-212		t	1 0.056	pCi/g					
	Uncert:	-	+/-0.0388	F8					
	TPU:		+/-0.038						
Lend-214		ι	J 0.0779	pCi/g					
•	Uncert:		+/-0.048	• -					
·	TPU:		+/-0.047						
Manganese-54		t	J 0.0115	pCi/g					
• •	Uncert:		+/-0.0258						
	TPU:	_	+/-0.0253						
-Niobium-94		τ	J 0.0369	pCi/g					
	Uncert:		+/-0.027						
	TPU:		+/-0.0265	- 01/-					
U'otassium-40	I for an at a	ı	1 0.209	pcvg					
	Uncen:								
Radium-226	TPU:	1	T/-U.297	nCi/a					
. Nutrium-220	Uncert	· ·	+/_0 0845	hene					
·	TPII		+/-0.0878						
Silver-108m		T	J 0.00786	pCi/g					
	Uncert:		+/-0.0232	P 8					
	TPU:		+/-0.0228						
Thallium-208		t	J 0.0148	pCi/g					
	Uncert:		+/-0.0595	• •					
	TPU:		+/-0.0583						
Lad Gas Flow Batch 241270									
Dukit 341217									
QC1200644298 114103026 DUP				~		/08/ 1000		000000000	
Strontium-90	••	0.045	0.0291	pCt/g	43	(0% - 100%	9 HOBI	00/28/04 04:1	
<u> </u>	Uncert:	+/-0.0116	+/-0.00953						
00120061/200 1.05	TPU:	+1-0.0165	+/-0.0119						
Strontium-90	1.84		2.02	pCi/e	11	0 (75%-125%	6)	06/28/04 07:5	
<u> </u>	Uncert:		+/-0.0954	r 8	• •		•		

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QC Summary

Workorder: 114103										Page 1	0 of 12	
Parmname			NOM	Sample (Qual	QC	Units	RPD%	REC%	Range	Anist	Date Time
Rad Gas Flow 9atch 341	279											
•			TPU:			+/-0.552						
QC1200644297 Strontium-90	MB				U	0.00852	րCi/	g				06/28/04 04:11
1 12			Uncert: TPU:			+/-0.00848 +/-0.00875						
QC1200644299 Strontium-90	114103026	MS	3.81	0.045		3.87	pCi/	g	100	(75%-125%))	06/28/04 07:51
			Uncert: TPU:	+/-0.0116 +/-0.0165		+/-0.188 +/-0.998						
Rad Liquid Scintilla Batch 341	tion 1070											
QC1200643930 Technetium-99	114644001	DUP	U	-3.85	U	-2.67	pCi/	'g N/A		(0% - 100%)) DAJI	06/28/04 06:13
			Uncert: TPU:	+/-3.39 +/-3.39		+/-3.07 +/-3.07						
QC1200613932 Technetium-99	LCS		14.2			14.4	pCi/	'g	101	(75%-125%))	06/28/04 07:17
_			Uncert: TPU:			+/-0.439 +/-0.573	·	-		-		
QC1200643929 Technetium-99	МВ				ប	0.0183	pCi/	'g				06/28/04 05:41
			Uncert: TPU:			+/-0.209 +/-0.209						
QC1200643931 Technetium-99	114644001	MS	210 U	-3.85		207	pCi/	'g	99	(75%-125%)	06/28/04 06:45
-			Uncert: TPU:	+/-3.39 +/-3.39		+/-6.57 +/-8.48	•	-				
Batch 342	2387											
- QC1200647033 Carbon-14	113282020	DUP	IJ	-0.0219	ប	0.0321	pCi/	/g N/A		(0% - 100%) MWX	06/22/04 01:09
•			Uncert:	+/-0.115 +/-0.115		+/-0.155 +/-0.155	•	-		•		
QC1200647035	LCS		8.21			7.60	pCi/	/c	93	(75%-125%)	06/20/04 17:23
			Uncert:			+/-0.541	•	0		•••••		
QC1200647032	MB		11 0.		IJ	0.122	nCi/	la la				06/21/04 22:36
			Uncert:		•	+/-0.184	1	8				
QC1200647034	113282020	MS	815	.0.0710		775	-00	la	05	(7594-17594	`	06/20/04 16-51
			Uncert:	+/-0.115		+/-0.614	բշտ	8	33	(1378-12378	,	0020104 10.31
Latch 34	2541		TPU:	+/-0.115		+/-0.020						
QC1200647441	113282019	DUP										
Iron-55			U	-31,4	U	-45.5	pCi/	/g N/A		(0% - 100%) JLBI	06/23/04 17:41
_			Uncert: TPU:	+/-41.4 +/-41.4		+/-40.7 +/-40.8						

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QC Summary

Workorder: 114103									Page 11 of 12				
Parmname		NOM	Sample (Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time		
Rad Liquid Scintilla	llon												
QC1200647443	LCS	1170			1110	nCi/	•	05	(75%-175%)		06/23/04 00-37		
N011-33		lineed			+1.58.3	heat	5		(1370-12370)		00/23/04 00.37		
		TPII			41.75 4								
- OC1200647440	MB				11-120-1								
Iron-55				U	-73.1	pCi/j	g				06/23/04 17:09		
		Uncert:			+/-37.1	• •							
		TPU:			+/-37.2								
QC1200647442	113282019 MS												
Iron-55		1510 U	-31.4		1450	pCi/j	g	96	(75%-125%))	06/23/04 00:05		
		Uncert:	+/-41.4		+/-53.5								
		TPU:	+/-41.4		+/-82.4								
Batch 34	2542												
QC1200647445	114103026 DUP												
Nickel-63		U	-12	U	-2.06	pCi/	g N/A		(0% - 100%)	JLBI	06/27/04 22:29		
		Uncert:	+/-12.9		+/-11.0								
		TPU:	+/-12.9		+/-11.0								
QC1200647447	LCS	400							1701 10001		0610010100.00		
MICKEI-03		480			41/	pcu	g	80	(73%-123%)	1	00/2//04 23:32		
_		Uncen:			-19.3 -19.0								
001200547444	MB	IPU:			7/-20.9								
Nickel-63	110			U	-2.24	nCi/i	r .				06/27/04 21:57		
••••••		Uncert:		-	+/-10.1	P	0						
		TPH			+/-10.1								
QC1200647446	114103026 MS												
Nickel-63		618 U	-12		556	pCi/j	g	90	(75%-125%)		06/27/04 23:00		
,		Uncert:	+/-12.9		+/-27.0								
-		TPU:	· +/-12.9		+/-28.8								
Batch 34	2680												
QC1200647788	115079001 DUP												
Tritium		U	0.0936	U	-0.032	pCi/	g N/A		(0% - 100%)	JLB1	06/30/04 13:30		
_		Uncert:	+/-0.766		+/-0.782								
		TPU:	+/-0.766		+/-0.782								
QC1200647791	LCS												
Tritium		5.25			5.58	pCi/j	g	106	(75%-125%))	06/27/04 01:05		
		Uncert:			+/-0.599								
		TPU:			+/-0,689								
QC1200647787	мв				0 201	-Cil	a				06176104 72-58		
- ··///		Lincerte		U	+60402	իշո	6				00120104 22.20		
		TDII.			+/.0.402								
OC1200647789	115079001 MS	tro.			17-0.402								
Tritium		5.39 11	0.0936		5.24	pCi/i	g	95	(75%-125%)	ŧ.	06/27/04 00:02		
_		Uncert:	+/-0.766		+/-0.951	• •	-						
		TPU:	+/-0.766		+/-0.994								
QC1200647790	115079001 MSD												
Tritium		5.25 U	0.0936		4.75	pCi/j	g 10	89			06/27/04 00:34		
-		Uncert:	+/-0.766		+/-0.969								

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		QC Sur	nmary								
							Page	12 of 12			
Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time	
Batch 342680											
	TPU:	+/-0.766	+/-1.01								
Notes: The Qualifiers in this report are defined a	s follows:										
 B Target analyte was detected in th BD Flag for results below the MDC E Concentration of the target analytic 	ie sample as well or a flag for low de exceeds the in	as the associated blar tracer recovery. strument calibration r	ık. ange.								
 H Analytical holding time exceeded. J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit. 											
 U Indicates the target analyte was analyzed for but not detected above the detection limit. UI Uncertain identification for gamma spectroscopy. 											
h Sample preparation or preservati	on holding time	ata summary package exceeded.	or contact y	our proje	et manager	lor delails.					
N/A indicates that spike recovery limits de ** Indicates analyte is a surrogate compon ^ The Relative Percent Difference (RPD) sample is greater than five times (SX less than SX the RL, a control limit of +/- For PS, PSD, and SDILT results, the value	o not apply when ind. obtained from the) the contract req the RL is use as listed are the n	sample concentration a sample duplicate (D ulred detection limit (ad to evaluate the DU teasured amounts, not	exceeds spi PUP) is evalu RL). In case P result. I final conce	ke conc. I inted agni s where e ntrations.	by a factor o inst the acce ither the sai	of 4 or more. optence criteri mple or dupli	a when the cate value	c is			
Where the analytical method has been requirements of the NELAC standard	a performed und unless qualified	ler NELAP certifica 1 on the QC Summa	ition, the ar iry.	nlysis h	as met all o	of the					
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SOUTH SITE GROUNDS SURVEY UNIT 9524-0000

RELEASE RECORD

Attachment 2b Hard-to-Detect Data (6 Pages)

Certificate of Analysis

	Company:	Connecticu	t Yankee A	tomic Power									
	Address :	Haddam Ne	ck Plant										
•		362 Injun H	lollow Roa	đ									
		East Hampt	on, Connec	rticut 06424				R	leport Dal	le: Jul	y 1,2004		
	Contact:	Mr. Pete Ho	ollenbeck						-		-		
	Project:	Soils PO# (02332								Pi	ige I (01 3
		Client Sar Sample II Matrix: Collect Da Receive D Collector: Moisture:	nple ID:): ate: pate:		9524-00 114103 Soil 24-MA 03-JUN Client 11%	00-007F 025 Y-04 I-04		Project: Client ID: Vol. Recv.:	YANK	00504			
Paramet	ler	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Anal	ysiDate	Time	Batch Mtd.
Red Alpha	Spec Analysis	5											
Alphasped	: Am241, Cm,	Solid ALL FS	15										
Americiu	um-241	U	0.00119	+/-0.0646	0.0677	+/-0.0646	0.216	pCVg		JS1	06/30/04	1840	342904 1
Curium-2	242	U	-0.00837	+/-0.0164	0.0397	+/-0.0164	0.174	pCVg					
Curium-2	243/244	U	0.00	-+/-0.0584	0.00	+/-0.0584	0.0807	pCi/g					
Alphaspea	: Рц, Solid-AL	L FSS											
Plutoniur	m-238	ប	-0.0444	+/-0.0329	0.0797	+/-0.0332	0.231	pCl/g		JS1	06/26/04	1541	342900 2
Plutoniur	m-239/240	U	0.0148	+/-0.0792	0.0737	+/-0.0793	0.219	pCI/g					
Liquid Sci	int Pu241. Soli	Id-ALL FSS									•		
Plutoniur	m-241	U	3.47	+/-4.82	3.98	+/-4.83	8.12	pCl/g		JSI	06/29/04	2314	342903 3
Rad Gamm	in Spec Analy	sis											
Gammasn	ec. Gamma. S	olid-FSS GA	M & ALL F	55									
Actinium	-228	U	0.00	+/-0.154	0.119	+/-0.151	0.248	pCl/g		SRB	06/21/04	1616	339714 4
		ប											
Americiu	in:-241	U	-0.0388	+/-0.203	0.120	+/-0.199	0.249	pCi/g					
Bismuth-	212	U	0.358	+/-0.203	0.171	+/-0.199	0.360	pCI/g					
Blamuth-	-214		0.581	+/-0.105	0.0335	+/-0.103	0.071	pCi/g					
Cesium-1	134	U	0.0411	+/-0.027	0.0243	+/-0.0264	0.0514	pCl/g					
Ceshum-1	137	U	0.0333	+/-0.0284	0.0226	+/-0.0279	0.0477	pCvg					
- Cobalt-60	0	U	0.000406	-+/-0.0284	0.0203	+/-0.02/9	0.0445	pC/g					
Europium	n-152	U	0.0412	47-0.0349	0.0480	+/-0.0338	0.102	pCl/g					
Europiun	1-134	U T	0.0005	+/-0.0/11	0.003/	+/-0.0097	0.138	pcvg					
Europium	0-122	U	0.0295	-1-0.0000 -1/-0.0976	0.0380	4/-0.00/4	0.121	pcug pCila					
			0.048	0.000.00-17- 001 0.VL	0.0204	-1-0.0017	0.0537	nCi/a					
Mangane	r ee-54	17	0.00865	+/-0 0222	0.0320	+/-0.0217	0.0415						
Nichlam.	-94	ŭ	0.00398	+/-0.020	0.0166	+/-0.0196	0.0353	DC1/g					
Potassiun	n-40	-	13.2	+/-1.38	0.138	+/-1.35	0.315	pCI/g					
- Radium-2	226		0.581	+/-0.105	0.0335	+/-0.103	0.071	pC1/g					•
Silver-10	8m	U	-0.00202	+/-0.019	0.0159	+/-0.0187	0.0335	pCi/g					
Thallium	-208		0.224	+/-0.0567	0.0152	+/-0.0555	0.0326	pCi/g					
Rad Gas Flo	ow Proportion	ml Counting	:										
- GFPC, Srs	90, solid-ALL	FSS											
Strontium	1-90		0.0328	+/-0.00856	0.00622	+/-0.0122	0.0128	pCi/g		HOBI	06/28/04	0257 3	141279 5
Rad Liquid	Scintillation .	Analysis											•
LSC, Trinu	um Dist, Solid	HTD2,ALL I	555										
, Tritium		U	0.868	+/-5.20	4.33	+/-5.20	8.66	pCl/g		JLBI	06/26/04	1916 3	342680 6

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Certificate of Analysis

	Comj Addr Conti	pany: Cor ess: Hau 362 Eas act: Mr.	inecticut Idam Nea Injun He t Hampto Pete Ho	Yankee Ai ek Plant ollow Road m, Connee lienbeek	tomic Power 1 sticut 06424				Re	port Dal	te: July	1, 2004			
	Proje	ct: Soi	ls PO# 00	02332								Paj	je 2 a	f 3	
		Cli Sa	icat Sam mple ID	ple ID: :		9524-00 1141030	00-007F 25	L C	Project: Client ID; Vol. Recv.:	YANK YANK	00504 001				
	Parameter	Q	mlifler	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analy	rtDate	Time	Batch Mt	đ.
	Rad Liquid Scinth	lation Ana	lysis												
:	Liquid Scint C14	Solid FSS	-												
	Carbon-14		្ឋ	0.0683	+/-0.125	0.0845	+/-0.125	0.174	pCi/g		MWX	06/21/04	1701 3	342387 7	
	t tand Saint Fall	< Calid.ATT	EC6								1				
	Iron-55	, 10110- <u>717</u>	U 1	15.8	+/-37.5	15.3	+/-37.5	31.9	pCi/g		лві	06/22/04	2158 :	142541 9	
;	Liquid Scint Ni63	I, Sölid-ALL	FSS												
	Nickel-63		U	0.416	+/-12.7	10.6	+/-12.7	21.8	pCi/g		JLB1	06/27/04	2055 3	342542 10	
	Liquid Scint Tc99	9, Solid-ALL	FSS	0.0885	+1.0.254	0211	+1-0.254	0.432	nCile		DATI	05/29/04	MM :	M1070 11	
	Lecune dum-23		U	0.0665	+1-0.2.34	0.211	4(*U.Z.)4	0.432	heng		PUI	00/20/04	0404.3	410/0 11	
	The following Pro	ep Methods	were pe	rformed											
	Method	Descriptio	a		-		Analyst	Date	Time	Pre	p Batch				
	Ash Soil Prep	Ash Soil P	rep, GL-I	RAD-A-02	1B		BSW1	06/07/04	4 1610	338	594				
•	Dry Soil Prep	Dry Soll P	nep GL-R	AD-A-021	L		BSW1	06/04/04	4 1510	338	588				
	The following An	alytical Me	thads we	re nerfari	med	•				•					
	Method	Description	1												
	1	DOBEML	HASL-3	00, Am-05	-RC Modified								<u> </u>		
_	2	DOE EML	HASL-3	00, Pu-11-	RC Modified										
	3	DOE EML	HÀSL-3	00, Pu-11-	RC Modified										
	4	EML HAS	L 300, 4.	5.2.3											
	5	EPA 905.0	Modified	1											
	6	EPA 906.0	Modified	1											
	7	EPA EERP	C-01 M	DOULCO adified											
	9	DOB RESI	.Fe-1. M	odified											
	10	DOB RESI	.Ni-1, M	odified											
	11	DOE EML	HASL-3	00, Tc-02-	RC Modified										
			-												
	Surrogate/Tracer	recovery	Test				Recovery%	Accep	table Limits						
	Americium-243 Plutonium-242		Alphi Alaba	SPCC Am2	41, Cm, Solid A olid.At 1. FSS	u.Ľ	82	(25	1%-125%)						
	Carrier/Tracer Reco	very	Liqui	d Scint Put	241, Solid-ALL	FS	79								
	Carrier/Tracer Reco	wary	GFPC	, Sc90, sol	id-ALL FSS		86	(25	5%-125%)						
	Carrier/Tracer Reco	ivery	Liquie	d Scint Fe	55, Solid-ALL F	S	81								

76

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Certificate of Analysis

Company : Address : Contact:	Connecticut Haddam Ner 362 Injun He East Hampto Mr. Pete Ho	Yankee A k Piant ollow Roa n, Connee llenbeek	tomic Power d cticut 06424				ł	Report Da	te: July 1, 2004	ţ	
Project:	Salls PO# 0	02332							P	oge 3 c	of 3
	Client Sam Sample ID	iple ID: :		9524-000 11410302	0-007F 25		Project: Client ID: Vol. Recv.:	YANK YANK	00504 001		
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch Mtd.
Carrier/Tracer Recovery	Liqui	id Scint N	63, Solid-ALL	FS	87						
Carrier/Tracer Recovery	Liqu	a Scint 10	99, 2000-ALL	r5	73						

Notes:

The Qualifiers in this report are defined as follows :

B Target analyte was detected in the sample as well as the associated blank.

BD Flag for results below the MDC or a flag for low tracer recovery.

E Concentration of the target analyte exceeds the instrument calibration range.

H Analytical holding time exceeded.

J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit.

U Indicates the target analyte was analyzed for but not detected above the detection limit.

UI Uncertain identification for gamma spectroscopy.

X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.

h Sample preparation or preservation holding time exceeded.

The above sample is reported on a dry weight basis.

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

Heating W rol

Reviewed by

Certificate of Analysis

Company : Address : Contact:	Connecticu Haddam No 362 Injun H East Hampi Mr. Pete Ho	t Yankee A eck Plant Jollow Road ion, Connec ollenbeck	tomic Power d ticut 06424				R	Report Date: Jul	y 1, 2004		
Project:	Soils PO# (02332							Pa	ge 1 of 3	
	Client Sar Sample II Matrix: Collect Dr Receive D Collector: Moisture:	nple ID: D: ate: Date:		9524-00 114103 Soil 24-MA 03-JUN Client 12.4%	000-010F 026 Y-04 -04		Project: Client ID: Vol. Recv.:	YANK00504 YANK001			
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF Anal	ysiDate	Time Bate	h Mid.
Rad Alpha Spec Analys	is				•						
Alphaspec Am241, Cm	Solid ALL F	55									
Americium-241	U	-0.0726	+/-0.101	0.244	+/-0.101	0.897	pCi/g	JS1	06/30/04	0925 34290	41
Curlum-242	ប	0.177	+/-0.347	0.00	+/-0,348	0.480	pCl/g				
Curium-243/244	U	0.115	+/-0,306	0.173	+/-0.306	0.757	pCi/g				
Alphaspec Pu, Solid-Al	LL FSS										
Plutonium-238	ប	0.00	+/-0.288	0.00	+/-0.288	0.399	pCi/g	JSI	06/26/04	1541 34290	02
Plutonium-239/240	U	0.147	+/-0,288	0.00	+/-0.289	0.398	pCi/g				
Liquid Scint Pu241, So	lul-ALL FSS										
Plutonium-241	U	0.143	+/-13.7	11.5	+/-13.7	23.4	pCi/g	JS1	06/30/04	0046 34290	33
Rad Gamma Spec Anal	ysis										
Gammaspec, Gamma, S	Solid-FSS GA	M & ALL F	22								
Actinium-228		0.446	+/-0.162	0.0443	+/-0.159	0.0964	pCi/g	SRB	06/20/04	1110 339714	44
Americium-241	U	-0.0141	+/-0.123	0.0933	+/-0.120	0.194	pCi/g				
Bismuth-212	U	0.235	+/-0.221	0.112	+/-0.217	0.239	pCl/g				
Bismuth-214		0.411	+/-0.0869	0.0268	+/-0.0851	0.0569	pCi/g				
Cesium-134	U	0.0116	+/-0.0188	0.0164	+/-0.0184	0.0352	pCl/g		•		
Cesium-137		0.0768	+/-0.0293	0.0129	+/-0.0288	0.0277	pCi/g				
Cobalt-60	U	0.00932	+/-0.0179	0.0159	+/-0.0175	0.0349	pCi/g				
Europium-152	Ŭ	-0.00325	+/-0.0434	0.0357	+/-0.0423	0.0752	pCVg				
Europium-154	U	-0.0303	+/-0.0538	0.0392	+/-0.052/	0.0809	pCVg				
Europium-155	U	0.0120	+/-0.0449	0.0407	-+/-U.U-1-1	0.0040	pcug pCl/g				
Lead-212		0.500	±/.0.0814	0.0210	-1-0.002	0.0509	nCila				
Manganese-54	11	0.00316	+/-0.0014	0.0143	+/-0 0167	0.0308	pCl/g				
Nichium-94	Ŭ	-0.00031	+/-0.0155	0.013	+/-0.0152	0.0277	pCi/g				
Potassium-40	-	11.5	+/-1.23	0.118	+/-1.21	0.268	pCi/g				
Radium-226		0.411	+/-0.0869	0.0268	+/-0.0851	0.0569	pCi/g				
Silver-108m	ប	-0.00293	+/-0.0138	0.0119	+/-0.0135	0.0252	pCi/g	•			
Thallium-208		0.120	+/-0.0394	0.0137	+/-0.0386	0.0291	pCl/g				
Rad Gas Flow Proportio	anal Counting	g									
GFPC, Sr90. solid-ALL	FSS										
Strontium-90		0.045	+/-0.0116	0.00875	+/-0.0165	0.0179	pCi/g	HOBI	06/28/04	0411 341279) 5
Rad Liquid Scintillation	Analysis										
LSC. Tritium Dist. Soli	- I-HTD2.ALL.	FSS									
Tritium	U	1.70	+/-5.49	4.54	+/-5,49	9.09	pCi/g	л.ві	06/26/04	1948 342680	9 6
Liquid Scint C14, Solid	FSS										

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Certificate of Analysis

Company : Address : Contact:	Connecticut Haddam Ne 362 Injun H East Hampt Mr. Pete Ho	Yankee A ck Plant ollow Road on, Connec illenbeck	tomic Power d nicut 06424				Re	port Da	te: July 1, 2004		
Project:	Soils PO# 0	02332							Pa	ge 2	of 3
	Client San Sample III	nple ID:):		9524-00 114103(00-010F)26		Project: Client ID: Vol. Recy.:	YANK YANK	00504 001		
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch Mi
Rad Liquid Scintillation	Apalysis						· · · · · · · · · · · · · · · · · · ·				
Liquid Scint C14, Solid	FSS										
Carbon-14	ប	0.172	+/-0.153	0.102	+/-0.153	0.209	pCi/g		MWX 06/21/04	1904	342387 7
Liquid Scint Fe55, Soli Iron-55	d-ALL FSS U	-50.2	+/-41.6	17.0	+/-41.6	35.4	pCi/g		JLB1 06/23/04	1637	342541 9
Liquid Scint Ni63, Solid Nickel-63	I-ALL FSS U	-12	+/-12.9	11,2	+/-12.9	23.1	pCi/g		JLB1 06/27/04	2126	342542 10
Liquid Scint Tc99, Solid Technetium-99	I-ALL FSS U	0.0104	+/-0.237	0.198	+/-0.237	0.406	pCVg		DAJ1 06/28/04	0436	341070 11
Dry Soil Prep Dry S	ioil Prep GL-F	AD-A-02	l med		BSWI	06/04/0	1510	338	588		
Method Desci	dpilon	ere periori									
DOE	EML HASL-	00, Am-05	5-RC Modified								
2 DOE	EML HASL-	800, Pu-11-	RC Modified								
DOE DOE	EML HASL-3	100, Pu-11-	RC Modified								
EML.	HASL 300, 4.	5.2.3									
S EPA	905.0 Modifie	d									
EPA		0 Sectors and Sectors and Sec									
	CCKP C-VI M	odified									
	RESL Feat A	lodified									
10 DOE	RESL NI-1. M	lodified									
DOE	EML HASL-3	00, Tc-02-	RC Modified								
Surrogale/Tracer recov	ery Test				Recovery%	Acce	ptable Limits				
Americium-243	Alph	aspec Am2	41, Cm, Solid A	II	82	(2	5%-125%)				
Plutonium-242	Alph	aspec Pu, S	olid-ALL FSS		89						
Lamer/Incer Recovery	шріл МЯНО	a Seint Pul 2. Sr90. and	id-ALL FSS	гэ	85	(7	5%-125%)				
"artier/Tracer Recovery	Limi	d Scint Fe	55. Solid-ALL E	S	83	(2					

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Certificate of Analysis

Company : Address : Control:	Company: Connecticut Yankee Atomic Power Address: Haddam Neck Plant 362 Injun Hollow Road Hast Hampton, Connecticut 06424 Contact: Mr. Pete Hollenbeck						R	leport Dal	e: July 1,2004	Ļ		
Project:	Soils PO# 0	02332							P	Page 3 of 3		
	Client Sample ID: Sample ID:			9524-000 11410302	9524-0000-010F 114103026			Project: YANK00504 Client ID: YANK001 Vol. Recv.:				
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Ualis	DF	AnalystDate	Time	Batch Mid.	
Carrier/Tracer Recovery	Liqu	id Scint N	63, Solid-ALL	FS	78							
Carrier/Tracer Recovery	Liqu	id Scint To	99, Solid-ALL	FS	76							

Notes:

The Qualifiers in this report are defined as follows :

B Target analyte was detected in the sample as well as the associated blank.

BD Flag for results below the MDC or a flag for low tracer recovery.

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The above sample is reported on a dry weight basis.

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, Sarah Kozlik.

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Reviewed by

SOUTH SITE GROUNDS SURVEY UNIT 9524-0000

RELEASE RECORD

Attachment 2c Sample and Scan Area Data (4 Pages)

Survey Unit 9524-0000 Scan Area 1

Survey Location	Background (cpm)	Action Level (cpm)	Reading (gross cpm)	Log Date	Log Time	E-600 S/N	Probe S/N
9524-00-001-BC-001	-	0	7390	5/17/2004	10:07:00	1112	1005
9524-00-001-BC-002		0	7180	5/12/2004	13:41:00	1112	1005
9524-00-001-SC-001	7180	8389	7750	5/12/2004	13:54:00	1112	1005
9524-00-001-SC-002	7390	8617	6040	5/17/2004	10:10:00	1112	1005
9524-00-001-SC-003	7180	8389	6560	5/12/2004	13:57:00	1112	1005
9524-00-001-SC-004	7390	8617	6980	5/17/2004	10:13:00	1112	1005
9524-00-001-SC-005	7180	8389	7510	5/12/2004	14:12:00	1112	1005
9524-00-001-SC-006	7390	8617	6760	5/17/2004	10:18:00	1112	1005
9524-00-001-SC-007	7180	8389	7040	5/12/2004	14:15:00	1112	1005
9524-00-001-SC-008	7390	8617	5950	5/17/2004	10:21:00	1112	1005
9524-00-001-SC-009	7180	8389	7250	5/12/2004	14:22:00	1112	1005
9524-00-001-ER-001	7390	8617	16900	5/17/2004	10:25:00	1112	1005
9524-00-001-SC-010	7390	8617	6560	5/17/2004	10:27:00	1112	1005
9524-00-001-SC-011	7180	8389	6890	5/12/2004	14:24:00	1112	1005
9524-00-001-SC-012	7390	8617	6260	5/17/2004	10:29:00	1112	1005
9524-00-001-SC-013	7180	8389	7060	5/12/2004	14:37:00	1112	1005
9524-00-001-SC-014	7180	8389	7050	5/12/2004	14:38:00	1109	1009
9524-00-001-SC-015	7180	8389	8010	5/12/2004	14:41:00	1112	1005
9524-00-001-SC-016	7180	8389	7480	5/12/2004	14:41:00	1109	1009
9524-00-001-SC-017	7180	8389	6620	5/12/2004	14:44:00	1112	1005
9524-00-001-SC-018	7180	8389	7270	5/12/2004	14:47:00	1109	1009
9524-00-001-SC-019	7180	8389	7080	5/12/2004	14:49:00	1112	1005
9524-00-001-SC-020	7180	8389	7070	5/12/2004	14:51:00	1112	1005
9524-00-002-BC-001	-	0	7090	5/12/2004	15:00:00	1112	1005
9524-00-002-BC-002	-	0	7870	5/12/2004	14:59:00	1109	1009

Scan Area 2

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Survey Location	Background (cpm)	Action Level (cpm)	Reading (gross cpm)	Log Date	Log Time	E-600 S/N	Probe S/N
9524-00-002-BC-003	-	0	6950	5/18/2004	12:43:00	1111	1001
9524-00-002-SC-019	6950	8140	6970	5/18/2004	12:49:00	1111	1001
9524-00-002-SC-020	6950	8140	6310	5/18/2004	12:51:00	1111	1001
9524-00-002-SC-021	6950	8140	8040	5/18/2004	12:52:00	1111	1001
9524-00-002-SC-022	6950	8140	6340	5/18/2004	12:54:00	1111	1001
9524-00-002-SC-023	6950	8140	6290	5/18/2004	12:56:00	1111	1001
9524-00-002-SC-024	6950	8140	7630	5/18/2004	12:58:00	1111	1001
9524-00-002-SC-026	6950	8140	7240	5/18/2004	13:00:00	1111	1001
9524-00-002-SC-025	6950	8140	7170	5/18/2004	13:01:00	1111	1001
9524-00-002-SC-026	6950	8140	7090	5/18/2004	13:03:00	1111	1001
9524-00-002-SC-027	6950	8140	6860	5/18/2004	13:05:00	1111	1001
9524-00-002-SC-028	6950	8140	7200	5/18/2004	13:07:00	1111	1001

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Scan Area 2

Survey Location	Background (cpm)	Action Level (cpm)	Reading (gross cpm)	Log Date	Log Time	E-600 S/N	Probe S/N
9524-00-002-SC-029	6950	8140	6630	5/18/2004	13:10:00	1111	1001
9524-00-002-SC-030	6950	8140	6440	5/18/2004	13:12:00	_ 1111	1001
9524-00-002-SC-031	6950	8140	7660	5/18/2004	13:14:00	1111	1001
9524-00-002-SC-033	6950	8140	7380	5/18/2004	13:16:00	1111	1001
9524-00-002-SC-032	6950	8140	7430	5/18/2004	13:17:00	1111	1001
9524-00-002-SC-033	6950	8140	6480	5/18/2004	13:19:00	_ 1111	1001
9524-00-002-SC-034	6950	8140	6170	5/18/2004	13:21:00	1111	1001
9524-00-002-SC-035	6950	8140	7220	5/18/2004	13:23:00	1111	1001
9524-00-002-SC-036	6950	8140	7170	5/18/2004	13:24:00	1111	1001
9524-00-002-SC-037	6950	8140	7630	5/18/2004	13:26:00	1111	1001
9524-00-002-SC-038	6950	8140	7200	5/18/2004	13:29:00	1111	1001
9524-00-002-SC-039	6950	8140	7720	5/18/2004	13:31:00	1111	1001

Scan Area 3

Survey Location	Background (cpm)	Action Level (cpm)	Reading (gross cpm)	Log Date	Log Time	E-600 S/N	Probe S/N
9524-00-003-BC-001	-	0	7850	5/19/2004	10:23:00	13124097	1007
9524-00-003-SC-001	7850	9114	8140	5/19/2004	10:27:00	13124097	1007
9524-00-003-SC-002	7850	9114	8030	5/19/2004	10:30:00	13124097	1007
9524-00-003-SC-003	7850	9114	7220	5/19/2004	10:34:00	13124097	1007
9524-00-003-SC-004	7850	9114	8050	5/19/2004	10:37:00	13124097	1007
9524-00-003-SC-005	7850	9114	7250	5/19/2004	10:41:00	13124097	1007
9524-00-003-SC-006	7850	9114	8070	5/19/2004	10:44:00	13124097	1007
9524-00-003-SC-007	7850	9114	7190	5/19/2004	10:46:00	13124097	1007
9524-00-003-SC-008	7850	9114	7670	5/19/2004	10:49:00	13124097	1007
9524-00-003-SC-009	7850	9114	6820	5/19/2004	10:54:00	13124097	1007
9524-00-003-SC-010	7850	9114	7010	5/19/2004	10:57:00	13124097	1007
9524-00-003-SC-011	7850	9114	7840	5/19/2004	11:02:00	13124097	1007
9524-00-003-SC-012	7850	9114	6850	5/19/2004	11:07:00	13124097	1007
9524-00-003-SC-013	7850	9114	6880	5/19/2004	11:11:00	13124097	1007
9524-00-003-SC-014	7850	9114	7000	5/19/2004	11:15:00	13124097	1007
9524-00-003-SC-015	7850	_9114	8450	5/19/2004	11:19:00	13124097	1007
9524-00-003-SC-016	7850	9114	7020	5/19/2004	11:23:00	13124097	1007
9524-00-003-SC-017	7850	9114	7930	5/19/2004	11:26:00	13124097	1007
9524-00-003-BC-002	•	0	7770	5/19/2004	13:34:00	13124097	1007
9524-00-003-SC-018	7770	9028	7300	5/19/2004	13:38:00	13124097	1007
9524-00-003-SC-019	7770	9028	7280	5/19/2004	13:42:00	13124097	1007
9524-00-003-SC-020	7770	9028	7890	5/19/2004	13:45:00	13124097	1007
9524-00-003-SC-021	7770	9028	7360	5/19/2004	13:49:00	13124097	1007
9524-00-003-SC-022	7770	_9028	7250	5/19/2004	13:53:00	13124097	1007
9524-00-003-SC-023	7770	9028	6830	5/19/2004	13:56:00	13124097	1007
9524-00-003-SC-024	7770	9028	7670	5/19/2004	14:01:00	13124097	1007

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Scan Area 3

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Survey Location	Background (cpm)	Action Levei (cpm)	Reading (gross cpm)	Log Date	Log Time	E-600 S/N	Probe S/N
9524-00-003-SC-026	7770	9028	7670	5/19/2004	14:04:00	13124097	1007
9524-00-003-SC-025	7770	9028	7170	5/19/2004	14:04:00	13124097	1007
9524-00-003-SC-026	7770	9028	7580	5/19/2004	14:09:00	13124097	1007
9524-00-003-SC-027	7770	9028	6690	5/19/2004	14:13:00	13124097	1007
9524-00-003-SC-028	7770	9028	8340	5/19/2004	14:20:00	13124097	1007
9524-00-003-SC-030	7770	9028	_6410	5/19/2004	14:25:00	13124097	1007
9524-00-003-SC-029	7770	9028	6610	5/19/2004	14:27:00	13124097	1007
9524-00-003-SC-030	7770	9028	7770	5/19/2004	14:30:00	13124097	1007
9524-00-003-SC-031	7770	9028	7120	5/19/2004	14:33:00	13124097	1007
9524-00-032-SC-032	7770	9028	8120	5/19/2004	14:36:00	13124097	1007
9524-00-003-SC-033	7770	9028	8630	5/19/2004	14:39:00	13124097	1007
9524-00-003-SC-034	7770	9028	7920	5/19/2004	14:43:00	13124097	1007
9524-00-003-SC-035	7770	9028	6900	5/19/2004	14:46:00	13124097	1007
9524-00-003-SC-036	7770	9028	8330	5/19/2004	14:50:00	13124097	1007
9524-00-003-SC-037	7770	9028	8670	5/19/2004	14:53:00	13124097	1007

Scan Area 4

Survey Location	Background (cpm)	Action Level (cpm)	Reading (gross cpm)	Log Date	Log Time	E-600 S/N	Probe S/N
9524-00-004-BC-001	•	0	7580	5/20/2004	8:52:00	13124097	1007
9524-00-004-SC-001	7580	8823	8020	5/20/2004	8:56:00	13124097	1007
9524-00-004-SC-002	7580	8823	6850	5/20/2004	8:59:00	13124097	1007
9524-00-004-SC-003	7580	8823	8170	5/20/2004	9:01:00	13124097	1007
9524-00-004-SC-004	7580	8823	7200	5/20/2004	9:03:00	13124097	1007
9524-00-004-SC-005	7580	8823	8400	5/20/2004	9:05:00	13124097	1007
9524-00-004-SC-006	7580	8823	6320	5/20/2004	9:07:00	13124097	1007
9524-00-004-SC-007	7580	8823	7380	5/20/2004	9:10:00	13124097	1007
9524-00-004-SC-008	7580	8823	8510	5/20/2004	9:13:00	13124097	1007
9524-00-004-SC-009	7580	8823	8500	5/20/2004	9:17:00	13124097	1007
9524-00-004-SC-010	7580	8823	7670	5/20/2004	9:19:00	13124097	1007
9524-00-004-SC-011	7580	8823	8510	5/20/2004	9:21:00	13124097	1007
9524-00-004-SC-012	7580	8823	7140	5/20/2004	9:24:00	13124097	1007
9524-00-004-SC-013	7580	8823	7700	5/20/2004	9:27:00	13124097	1007
9524-00-003-SC-014	7580	8823	7210	5/20/2004	9:30:00	13124097	1007
9524-00-004-SC-015	7580	8823	8240	5/20/2004	9:33:00	13124097	1007
9524-00-004-SC-016	7580	8823	6800	5/20/2004	9:36:00	13124097	1007
9524-00-004-SC-017	7580	8823	7900	5/20/2004	<u>9:39:00</u>	13124097	1007
9524-00-004-SC-018	7580	8823	7440	5/20/2004	9:42:00	13124097	_1007
9524-00-004-SC-019	7580	8823	6720	5/20/2004	9:44:00	13124097	1007
9524-00-004-SC-020	7580	8823	6860	5/20/2004	9:47:00	13124097	1007
9524-00-004-SC-021	7580	8823	7050	5/20/2004	10:25:00	13124097	1007
9524-00-004-SC-022	7580	8823	7570	5/20/2004	10:28:00	13124097	1007

Scan Area 4

Survey Location	Background (cpm)	Action Level (cpm)	Reading (gross cpm)	Log Date	Log Time	E-600 S/N	Probe S/N
9524-00-004-SC-023	7580	8823	7870	5/20/2004	10:32:00	13124097	1007
9524-00-004-SC-024	7580	8823	7570	5/20/2004	10:35:00	13124097	1007
9524-00-004-SC-025	7580	8823	7400	5/20/2004	10:37:00	13124097	1007
9524-00-004-SC-026	7580	8823	7840	5/20/2004	10:41:00	13124097	1007
9524-00-004-SC-027	7580	8823	7050	5/20/2004	10:44:00	13124097	1007
9524-00-004-SC-028	7580	8823	7590	5/20/2004	10:47:00	13124097	1007
9524-00-004-SC-029	7580	8823	7090	5/20/2004	10:49:00	13124097	1007
9524-00-004-SC-030	7580	8823	7610	5/20/2004	10:52:00	13124097	1007
9524-00-004-SC-031	7580	8823	7910	5/20/2004	10:54:00	13124097	1007
9524-00-004-SC-032	7580	8823	7270	5/20/2004	10:58:00	13124097	1007
9524-00-004-SC-033	7580	8823	7550	5/20/2004	11:02:00	13124097	1007
9524-00-004-BC-002	Disregard	#VALUE!	6670	5/20/2004	13:40:00	13124097	1007
9524-00-004-BC-002	-	0	7210	5/20/2004	13:42:00	13124097	1007
9524-00-004-SC-034	7210	8422	7520	5/20/2004	13:48:00	13124097	1007
9524-00-004-SC-035	7210	8422	7260	5/20/2004	13:54:00	13124097	1007
9524-00-004-SC-036	7210	8422	6970	5/20/2004	13:58:00	13124097	1007
9524-00-004-SC-037	7210	8422	7540	5/20/2004	14:04:00	13124097	1007
9524-00-004-SC-038	7210	8422	7030	5/20/2004	14:09:00	13124097	1007
9524-00-004-SC-039	7210	8422	7320	5/20/2004	14:12:00	13124097	1007
9524-00-004-SC-040	7210	8422	7360	5/20/2004	14:17:00	13124097	1007
9524-00-004-SC-041	7210	8422	7730	5/20/2004	14:20:00	13124097	1007
9524-00-004-SC-042	7210	8422	6960	5/20/2004	14:24:00	13124097	1007
9524-00-004-SC-043	7210	8422	7200	5/20/2004	14:27:00	13124097	1007
9524-00-004-SC-044	7210	8422	7500	5/20/2004	14:30:00	13124097	1007
9524-00-004-SC-045	7210	8422	7160	5/20/2004	14:33:00	13124097	1007
9524-00-004-SC-046	7210	8422	8010	5/20/2004	14:37:00	•13124097	1007
9524-00-004-SC-047	7210	8422	7290	5/20/2004	14:39:00	13124097	1007
9524-00-004-SC-048	7210	8422	7190	5/20/2004	14:40:00	13124097	1007

SOUTH SITE GROUNDS SURVEY UNIT 9524-0000

RELEASE RECORD

Attachment 2d Split Sample Assessment Forms (2 Pages) Health Physics Procedure

Split Sample Assessment Form

Survey Area#:	9524	Survey Uni	t #: 0000	Surv	ey Unit na	me: South	Site Grour	nds	
Sample Plan or WPIR#: 000-GEN-9524-001056-000					SML#: 9524-0000-009F/9FS				
Sample Descr spectroscopy by	iption: Co off-site Vo	mparison of endor Labora	split sampl atory.	les fro	m sample n	neasuremen	nt location #9	and analyzed	using gamm
		STANDAR	D				COM	IPARISON	
Radionuclide	Activity Value pCi/g	Standard Error	Resolutio	on A	Agreement Range	Activity Value pCi/g	Standard Error	Comparison Ratio	Acceptable (Y/N)
Cs-137	0.192	0.036	5.3		0.5-2.0	0.197	0.0465	1.02	Y
Comments/Co	orrective A	Actions: N/A	 \			Table is used to a	provided to assess split :	show accepta	nce criteria
							<u>Resolution</u> 4 - 7 8 - 15 16 - 50 51 - 200	Agreement I 0.5 - 2.0 0.6 - 1.66 0.75 - 1.33 0.80 - 1.25	<u>lange</u>
							>200	0.85 - 1.18	
Performed By	/:		Date , ہ ⊊ ، ∘ ت	-	Reviewed	By: And	<u> </u>	Date:	105

Health Physics Procedure

Split Sample Assessment Form

Survey Area#: 9524 Survey Unit #: 0000 Survey Unit name: South Site Grounds										
Sample Plan o	Sample Plan or WPIR#: 000-GEN-9524-001056-000						SML#: 9524-0000-013F/13FS			
Sample Description: Comparison of split samples from sample measurement location #13 and analyzed using gamma spectroscopy by off-site Vendor Laboratory.										
		STANDAR	D		[COM	IPARISON			
Radionuclide	Activity Value pCi/g	Standard Error	Resolution	Agreement Range	Activity Value pCi/g	Standard Error	Comparison Ratio	Acceptable (Y/N)		
Cs-137	0.378	0.0558	6.7	0.5-2.0	0.346	0.0533	0.915	Y		
				-						
] 									
							·			
Comments/Co	orrective A	Actions: N/A	ł		Table is used to a	provided to ssess split	show accepta samples.	nce criteria		
]	Resolution 4-7 8-15 16-50 51-200 >200	Agreement F 0.5 - 2.0 0.6 - 1.66 0.75 - 1.33 0.80 - 1.25 0.85 - 1.18	<u>Sange</u>		
Performed By	/:		Date	Reviewe	By	/	Date:	105		
X					pro-					

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SOUTH SITE GROUNDS SURVEY UNIT 9524-0000

RELEASE RECORD

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Attachment 2e Preliminary Data Review Form (1 Page)

24265-000-GPP-GGGR-R5123-000-Rev.CY-000 Attachment B

PRELIMINARY DATA REVIEW FORM

	Survey Unit:	9524-0000			
	Survey Unit Name:	South Site Gr	ounds		
	Classification:	3			
	Survey Media:	Soil			
	Type of Survey:	Final Status S	urvey		
	Type of Measurement:	Radionuclide	Specific		
	Number of Measurements:	15	-		
	Operational DCGL (pCi/g)	3.16pCi/g			
	BASIC STATIST	CAL QUANTI	TIES		
		Cs-137			
B	Minimum Value:	-5.95E-03			
RAN	Maximum Value:	6.46E-01			
	Mean:	1.75E-01			
	Median:	6.51E-02			
	Standard Deviation:	2.21E-01			
		RADIO	NUCLIDE CO	NCENTRATION (pCi/g)	
	NUMBER	Cs-137	Identified?		
	9524-0000-001F	1.61E-02	N		
	9524-0000-002F	2.04E-02	N		
	9524-0000-003F	3.92E-01	N		
	9524-0000-004F	6.46E-01	Y		
	9524-0000-005F	4.65E-02	N		
	9524-0000-006F	1.03E-01	N		
	9524-0000-007F	3.33E-02	N		
	9524-0000-008F	6.07E-01	Y		
	9524-0000-009F	1.92E-01	N		
	9524-0000-010F	7.68E-02	N		
	9524-0000-011F	-5.95E-03	N		
	9524-0000-012F	1.37E-02	N		
	9524-0000-013F	3.78E-01	N		
	9524-0000-014F	6.51E-02	N		
	9524-0000-015F	4.20E-02	N		

2/17/05-Submitted by/Date

1 Reviewed by/Date

1 of 1

SOUTH SITE GROUNDS SURVEY UNIT 9524-0000

RELEASE RECORD

Attachment 2f Graphical Representation of Data (2 Pages)

HISTOGRAM PRESENTATION OF Cs-137 DATA

Survey Unit: 9524-0000 Survey Unit Name: South Site Grounds



Upper End Value	Observation Frequency	Observation Frequency
0.00	1	7%
0.05	6	40%
0.10	2	13%
0.15	1	7%
0.20	1	7%
0.25	0	0%
0.30	0	0%
0.35	0 •	0%
0.40	2	13%
0.45	0	0%
0.50	0	0%
0.55	0	0%
0.60	0	0%
0.65	2	13%
0.70	0	0%
Total=	15	100%

Submitted by/Date

2/17/05 Reviewed by/Date

Health Physics Procedure

DATA QUANTILE PLOT

Survey Unit: 9524-0000

Survey Unit Name: South Site Grounds



Cs-137 pCi/g	Rank	Percentage
-5.95E-03	1	3%
1.37E-02	2	10%
1.61E-02	3	17%
2.04E-02	4	23%
3.33E-02	5	30%
4.20E-02	6	37%
4.65E-02	7	43%
6.51E-02	8	50%
7.68E-02	9	57%
1.03E-01	10	63%
1.92E-01	11	70%
3.78E-01	12	77%
3.92E-01	13	83%
6.07E-01	14	90%
6.46E-01	15	97%

Submitted By/Date

2 117/05 Reviewed By/Date

SOUTH SITE GROUNDS SURVEY UNIT 9524-0000

RELEASE RECORD

Attachment 2g Sign Test Calculation (1 Page) Health Physics Procedure

Sign Test Calculation Sheet for a Single Radionuclide

Survey Unit Name: South Site Gro	unds	
WP&IR#: 000-GEN-9524-00105	56-000	
Classification: 3	TYPE I (α error): 0.05	ТҮРЕ II (β еггог): 0.05
Radionuclide:	Cesium	1-137
Survey Design DCGL (pCi/g):	3.1	6
Results (pCi/g)	DCGL - Results	Sign
1.61E-02	3.14	1
2.04E-02	3.14	1
3.92E-01	2.77	1
6.46E-01	2.51	1
4.65E-02	3.11	1
1.03E-01	3.06	1
3.33E-02	3.13	1
6.07E-01	2.55	1
1.92E-01	2.97	1
7.68E-02	3.08	1
-5.95E-03	3.17	1
1.37E-02	3.15	1
3.78E-01	2.78	1
6.51E-02	3.09	1
4.20E-02	3.12	1
	Number Of Positive Diffe	erences (S+): 15
Critical Value: <u>11</u>	Survey Unit: Meets Ac	ceptance Criterion
Performed By:	— Date: <i>f</i> .	09.05

Independent Review By. March Date: 2/17/05

SOUTH SITE GROUNDS SURVEY UNIT 9524-0000

RELEASE RECORD

Attachment 2h COMPASS DQA Surface Soil Report with Retrospective Power Curve (2 Pages)



Assessment Summary

Site:	Survey Unit 9524-000	0				
Planner(s):	CE Davis					
Survey Unit Name:	South Site Ground					
Report Number:	1					
Survey Unit Samples:	15					
Reference Area Samples:	0					
Test Performed:	Sign	Test Result:	Not Performed			
Judgmental Samples:	0	EMC Result:	Not Performed			
Assessment Conclusion:	Reject Null Hypothes	sis (Survey Unit PAS	SFS)			

Retrospective Power Curve



COMPASS v1.0.0

1/4/2005




Survey Unit Data

NOTE: Type = "S" indicates survey unit sample. Type = "R" indicates reference area sample.

Sample Number	Туре	Cs-137 (pCl/g)	
9524-0000-001F	S	0.02	
9524-0000-002F	S	0.02	
9524-0000-003F	S	0.39	
9524-0000-004F	S	0.65	
9524-0000-005F	S	0.05	
9524-0000-006F	S	0.1	
9524-0000-007F	S	0.03	
9524-0000-008F	S	0.61	
9524-0000-009F	S	0.19	
9524-0000-010F	S	0.08	
9524-0000-011F	S	-0.01	
9524-0000-012F	S	0.01	
9524-0000-013F	S	0.38	
9524-0000-014F	S	0.07	
9524-0000-015F	S	0.04	

Basic Statistical Quantities Summary

Statistic	Survey Unit	Background	DQO Results
Sample Number	15	N/A	N=15
Mean (pCl/g)	0.18	N/A	0.09
Median (pCi/g)	0.07	N/A	N/A
Std Dev (pCi/g)	0.22	N/A	0.122
High Value (pCi/g)	0.65	N/A	N/A
Low Value (pCi/g)	-0.01	N/A	N/A
Low Value (pCl/g)	-0.01	N/A	N/A

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Page 2