REPORT FOR THE EXCAVATION VOLUME UNCERTAINTY REDUCTION INVESTIGATION AT THE LUCKEY FUSRAP SITE IN LUCKEY, OHIO

FINAL

LUCKEY FUSRAP SITE
LUCKEY, OHIO

Contract No. W912P4-07-D-0010-0001

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FOR:

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ACRONYMS AND ABBREVIATIONS

ABF	Ammonium Bifluoride (solution)
Ac-228	Actinium-228
AEC	Atomic Energy Commission
AHA	Accident Hazard Analysis
ANL	Argonne National Laboratories
APP/HASP	Accident Prevention Plan/Health and Safety Plan
ARAR	Applicable or Relevant and Appropriate Requirement
ASTM	American Society for Testing and Materials
ATV	All-Terrain Vehicle
BBC	Brush Beryllium Company
Be	Beryllium
BeO	Beryllium Oxide
Bgs	Below Ground Surface
Bi-214	Bismuth-214
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CHP	Certified Health Physicist
Cm	Centimeter
CoC	Chain of Custody
COC(s)	Contaminant(s) of Concern
COR	Contracting Officer's Representative
cpm	Counts per minute
cps	Counts per second
CQC	Contractor Quality Control
Cs-137	Cesium-137
DCGL	Derived Concentration Guidance Level
DoD	Department of Defense
DQO	Data Quality Objective
DQCR	Daily Quality Control Report
EH&S	Environmental, Health, and Safety
ELAP	Environmental Laboratory Accreditation Program
EM	Electromagnetic
EML	Environmental Measurements Laboratory (DOE/DHS)
FIDLER	Field Instrument for Detection of Low Energy Radiation
FS	Feasibility Study
FSP	Field Sampling Plan

ACRONYMS AND ABBREVIATIONS

ft	Feet
FUSRAP	Formerly Utilized Sites Remedial Action Program
FWHM	Full Width Half Maximum
GIS	Geographical Information System
GPS	Global Positioning System
GW	Groundwater
GWS	Gamma Walkover Survey
HASP	Health and Safety Plan
HBQS	Hydroxybenzoquinoline Sulfonate
HDPE	High Density Polyethylene
HPGe	High Purity Germanium
keV	kiloelectronvolt
LIBS	Laser Induced Breakdown Spectroscopy
ICP-MS	Inductively-Couple Plasma – Mass Spectrometer
IDW	Investigation Derived Waste
ITR	Independent Technical Review
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MCL	Maximum Contaminant Level
MDC	Minimum Detectable Concentration
MDCR	Minimum Detectable Count Rate
MDER	Minimum Detectable Exposure Rate
mL	Milliliter
MS	Matrix Spike
MSD	Matrix Spike Duplicate
µR/h	MicroRoentgens per hour
µg/L	Micrograms per liter
mg/kg	Milligrams per kilogram
NAD	North American Datum
NaI	Sodium Iodide
NELAP	National Environmental Laboratory Accrediation Program
NGVD	National Geodetic Vertical Datum
OAC	Ohio Administrative Code
ORNL	Oak Ridge National Laboratory
pCi/g	picocuries per gram
pCi/L	picocuries per liter
Pb	Lead
PE	Professional Engineer

ACRONYMS AND ABBREVIATIONS

PG	Professional Geologist
PgM	Program Manager
PM	Project Manager
PPE	Personal Protective Equipment
PVC	Polyvinylchloride
QA	Quality Assurance
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
QC	Quality Control
QCP	Quality Control Plan
Ra-226	Radium-226
RAO	Remedial Action Objective
RBC	Risk Based Concentration
RCRA	Resource Conservation and Recovery Act
RCT	Radiological Control Technician
RI	Remedial Investigation
ROD	Record of Decision
RSP	Radiation Safety Plan
SAP	Sampling and Analysis Plan
SAIC	Science Applications International Corporation
SDWA	Safe Drinking Water Act
Site	Luckey Formerly Utilized Sites Remedial Action Program Site
SOP	Standard Operating Procedure
SOR	Sum of Ratio
SOW	Scope of Work
SSHO	Site Safety and Health Officer
SVOC	Semi-Volatile Organic Compound
TCLP	Toxicity Characteristic Leaching Procedure
TES	TerranearPMC-Energy*Solutions* Environmental Services, LLC
Th-230	Thorium-230
TPMC	TerranearPMC, LLC
U-234	Uranium-234
U-238	Uranium-238
USACE	United States Army Corps of Engineers
USACE-Buffalo	United States Army Corps of Engineers – Buffalo District
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

ACRONYMS AND ABBREVIATIONS

WAAS Wide-Area Augmentation System

1.0 EXECUTIVE SUMMARY

1.1 OBJECTIVES

This report presents the results of environmental sampling and analysis that was performed to reduce the volume uncertainty for radionuclide and beryllium (Be) contaminated soils requiring removal and off-site disposal at the Luckey Formerly Utilized Sites Remedial Action Program (FUSRAP) Site near Luckey, Ohio. Previous volume estimates identified data gaps and uncertainty regarding the vertical and horizontal extent of contaminated soils. The purpose of the program was to further delineate the horizontal and vertical extent of contaminated soils requiring excavation.

1.2 PROJECT SUMMARY

TPMC-Energy*Solutions* Environmental Services LLC (TES), a joint venture of TerranearPMC, Inc. (TPMC) and Energy*Solutions*, LLC, was contracted by the U.S. Army Corps of Engineers – Buffalo District (USACE-Buffalo) under Contract No. W921P4-07-D-0010-0001, to provide Health Physics services for an excavation volume uncertainty reduction investigation at the Luckey FUSRAP Site (hereafter referred to as the “Site”) in Luckey, Ohio.

The Site is contaminated with metals and radioactive materials in soils, sediments, and groundwater from previous manufacturing operations. Contaminants of concern (COCs) include the metals Be and lead (Pb) and the radioactive materials radium-226 (Ra-226), thorium-230 (Th-230), uranium-234 (U-234), and uranium-238 (U-238). Several characterization efforts were previously conducted at the Site. However, a degree of uncertainty existed regarding the volume and extent of contaminated materials. The investigation was performed to collect data of sufficient quality and quantity to reduce this uncertainty.

Work associated with the volume uncertainty reduction investigation included: 1) radiological, geophysical, and topographic field surveys, 2) borings and soil sampling, 3) analysis (on-site and off-site) for Be and radionuclide COCs, 4) installing, repairing, and decommissioning monitoring wells, 5) investigation derived waste (IDW) management and characterization, and 6) data analysis, evaluation, and reporting.

The investigation was performed by TES and subcontractors during the period November 2009 to April 2010.

The following conclusions are made as a result of this study:

- Trenches associated with previous disposal activities at the Site were identified by the geophysical surveys.
- Several anomalies identified by the geophysical surveys appear to contain metallic debris.

- The extent of surface radiological contamination was established by a gamma walkover survey.
- Soils contaminated by Ra-226, U-238, and Th-230 are present at the Site. Soils contaminated by U-238 and Th-230 also contain Ra-226, which implies that the extent of U-238 and Th-230 contaminated soil is bounded by the Ra-226 contaminated area.
- The majority of Ra-226 contaminated soils occurs within the uppermost 5 feet (ft) of soil. Ra-226 contamination below 5 ft occurs primarily in the northeast corner of the Site where previous disposal pits and trenches were used.
- Radionuclide COCs were not detected in sediment samples from Site manholes, drains, and pipes.
- Gamma walkover survey count rates could not be correlated with radionuclide analytical results.
- Soils contaminated by Be are present at the Site. The majority of Be contaminated soils occurs within the uppermost 5 ft of soil.
- Be contaminated sediments are present in two manholes located on the Site. Be contaminated soils are also present in soils surrounding some of the underground utilities at the Site.
- Be concentrations measured on-site generally correlate with concentrations measured by an off-site laboratory. Although, the on-site results were typically greater than the off-site results,
- The area of Ra-226 contaminated soils coincides with and is bounded by a larger area of Be contaminated soils.

2.0 PROJECT BACKGROUND

2.1 SITE LOCATION AND FEATURES

The Site is located at 21200 Luckey Road, just north of the village of Luckey, Ohio approximately 22 miles southeast of Toledo (Figure 2-1). The property covers approximately 40 acres with Luckey Road forming the western boundary of the Site. A private residence and farm are located across Luckey Road and a privately owned farm bounds the Site to the north. The Site is bounded on the east by an abandoned railroad bed of the New York Central Railroad and by Gilbert Road to the south.

Figure 2-2 shows the Site building layout and investigated areas. The Site is currently vacant and some of the buildings have been demolished including the Annex (warehouse) and two buildings to the north of the Production Building. The foundations of these buildings appear to still be present. There are two water supply (production) wells on Site as well as an inactive sewage disposal system (consisting of a septic tank, pump house, and two exposed filter beds); parking lots; and two abandoned railroad spurs. A pile of demolition debris from the Annex is on-site at its former location.

2.2 SITE HISTORY

From 1949 to the early 1960s, the Brush Beryllium Company (BBC), as a Contractor to the Atomic Energy Commission (AEC), used the Site for Be processing to support the national defense program. Be production activities brought different types of source media or potential contaminants to the Site. Primary source media at the Site included materials delivered for processing or pre-processing: Be ore; scrap Be; and radiologically contaminated scrap steel.

Be processing primarily occurred in the Annex on the south side of the Production Building, where Be ore was converted to Be oxides and metal. Process wastes were discharged to three lagoons (identified as A, B, and C) south of the Annex in liquid or slurry form and were allowed to either evaporate or discharge to Site ditches. From 1950 through 1958, sludge from the lagoons was dredged, transported, and placed into disposal pits and trenches located in the northeast corner of the property. Figure 2-3 shows the approximate locations of the lagoons and buried trenches. Toussaint Creek, shown on Figure 2-4, is located approximately 1,200 ft north of the Site and flows generally to the northeast towards Lake Erie.

The AEC contracted with BBC in 1959 to close the Luckey plant, at which time the disposal area was constructed in the northeastern corner of the property. Following closure, the lagoons were reportedly covered with three to five ft of clean soil and later capped with up to two ft of clay. Sampling conducted by Oak Ridge National Laboratory (ORNL) in 1988 indicated that residual sludge might still exist in all three lagoons.

Previous environmental testing, analyses, and investigations at the Site are summarized below.

- 1949 - 1954: The Ohio Department of Health approved the use of the lagoons but required groundwater and surface water monitoring; however, no monitoring records have been found. Later analyses indicate that some connectivity exists between the lagoons and groundwater.
- 1985 - 1990: Potable water supply tests on the Site production wells showed the presence of Be, but at levels below the Safe Drinking Water Act (SDWA) maximum contaminant level (MCL) of 4 micrograms per liter (µg/L), with one exception (8.8 µg/L) in late 1985. ORNL also conducted a preliminary radiological survey of the Site. This study involved gamma walkover surveys over a large portion of the property and the collection and analysis of surface water and groundwater samples. Gamma exposure rates over the majority of the property ranged from 5 to 9 microRoentgens per hour (µR/h). The radioactivity was elevated in the lagoons and disposal areas. Lagoons A, B, and C had elevated Be concentrations with Lagoon B having concentrations as high as 6,400 milligrams per kilogram (mg/kg).
- 1991: The Site was designated for inclusion in FUSRAP.
- 1992 - 2000: The US Department of Energy (DOE) evaluated potential risk from Be and radionuclides at the Site. This study indicated there might be an unacceptable risk to potential receptors at the Site. In 1998, the USACE received authority to identify and implement remedial actions at FUSRAP sites subject to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). A remedial investigation (RI) was conducted in 1998 to determine the nature and extent of FUSRAP contamination and evaluate the potential risk posed to human health and the surrounding environment caused by the contaminants. Field activities were performed between June 1998 and December 1999. On-site and off-site surface water, groundwater, sediments, and soil were monitored, collected and analyzed. The results are presented in a Remedial Investigation Report (Volumes I, II, and III) (USACE 2000). The RI concluded that both on-site and off-site soil, as well as groundwater, had been impacted by AEC-related activities and required evaluation of remedial options in a feasibility study (FS).
- 2001: EnviroScience, Inc., Montgomery Watson Harza, and Science Applications International Corporation (SAIC) completed a bioassessment of Toussaint Creek. The bioassessment supported the RI and determined possible impacts from the release of contaminants into adjacent waterways. This study included the sampling of 17 sites for evaluation of fish and benthic macroinvertebrate communities and in-stream habitat. The data collected suggested that landscape-level impacts (fair habitat and potentially non-point source pollution) and sewage outfalls are the primary and secondary factors affecting the health of aquatic biota in Toussaint Creek. There was some evidence that Be may be a tertiary stressor, but of a much smaller magnitude than the two main factors.
- 2001 - 2002: The USACE and Wood County Health Department tested groundwater from residential wells near the Site for Be, manganese, and total uranium. Be was not detected in any of the residential groundwater samples and average concentrations for manganese (6.1 µg/L) and total uranium (3.39 µg/L) indicated that

neither was above their respective MCLs of 50 µg/L and 30 µg/L. Subsequent groundwater modeling efforts and CERCLA decision documents were compiled by the USACE and provided the basis for a Record of Decision (ROD) for the Groundwater Operable Unit (USACE 2008).

The RI activities identified six AEC-related soil COCs that pose an unacceptable risk to human health including Be, Pb, Ra-226, Th-230, U-234, and U-238 (FUSRAP Contaminants). Pb was identified as a COC since lead oxide was used as an additive in the Be production process. All six COCs were determined to pose unacceptable risks under a subsistence farmer scenario (i.e., a human health receptor who resides on the Site and is self-sufficient from food grown or produced on the Site), which was identified as a reasonable future use scenario (i.e., the critical group) for the Site. The analyses also showed that Site COCs in groundwater were Be, Pb, and total uranium.

The FS Report (USACE 2003) detailed the development, screening, and evaluation of remedial alternatives for the Site. Based on the conclusions presented in the RI, the focus of the FS was the media contaminated by AEC-related constituents. The FS identified remedial action objectives (RAOs) and evaluated remedial alternatives for FUSRAP-contaminated media. The selected remedial alternatives for soil and groundwater contamination were excavation and off-site disposal and natural attenuation, respectively.

A ROD for the Soils Operable Unit selected excavation and off-site disposal as the remedial strategy for FUSRAP-contaminated soil at the Site. The Groundwater Operable Unit ROD instituted monitored natural attenuation as the remedial strategy for FUSRAP-contaminated groundwater at the Site. Interim annual monitoring is being performed to evaluate groundwater quality at the Site and build a comparative groundwater database for future decision-making.

Groundwater monitoring has been conducted at the Site with select wells exhibiting detectable to elevated COC concentrations. Several wells that initially showed contamination have declined over time. Groundwater monitoring data indicates a stable (steady state) or reducing groundwater contaminant plume but several wells still produce results above their respective COC MCLs.

2.3 AREAS OF CONCERN

2.3.1 Sludge Disposal Trenches

A significant area of uncertainty was located in the northeast portion of the Site where the RI Report suggested that 14 ft wide by 18 ft deep trenches received contaminated sludge from operations involving Lagoons A, B, and C. The exact length and depth of these trenches were not clearly determined during previous field investigations. Based on geophysical anomalies and historical information, it appeared that the trenches could be approximately 400 ft long.

Historically, approximately two out of three soil borings advanced in this area did not reach the target depth of 18 ft below ground surface (bgs) due to equipment refusal typically encountered on expanding clays. However, data collected showed that COCs did not exceed the cleanup criteria below 9 ft bgs within the area.

Several soil borings were advanced into the purported locations of the sludge disposal trenches. However, based on a review of soil boring logs, sludge material was only identified to depths of 5 ft bgs, with a 'soft material' detected to 15 ft bgs. It appears that the majority of the soil borings advanced within this area did not intercept the sludge disposal trenches (or their purported locations) and these trenches may not extend to 18 ft bgs.

Several soil piles are also located within the area. The exact dimensions and soil characterization of these piles were not established during previous field investigations. These factors resulted in a large potential impact on the soil volumes potentially requiring excavation during remedial actions.

The RI report asserts that several different disposal events occurred and that in lieu of the sludge disposal trenches, indiscriminate dumping or disposal holes may have been dug to dispose of waste materials. As a result, delineating the waste disposal trenches (or a discontinuous series of disposal pits) in this area was necessary for estimating soil volumes requiring excavation.

2.3.2 Former Lagoons

Lagoon A received wastes discharged from the conversion of plant grade Be hydroxide to Be metal in vacuum cast billets and was approximately three to four ft deep with a clay liner. Lagoons B and C received discharges from the conversion or beryl ore to beryllium hydroxide by the sulfate process and were approximately five to six ft and 1.5 ft deep, respectively, with clay liners. Sludge material from each lagoon was reportedly dredged and disposed in the sludge disposal trenches in the northeast portion of the property; these as- needed dredging disposals also indicate that separate sludge disposal pits are more likely than continuous trenches.

Each lagoon was capped with an approximate two-ft thick clay layer. The cap thickness for Lagoons A, B, and C required verification for in-situ volume estimates.

Limited RI data was available within the approximate footprints of Lagoons A, B, and C. The limited radionuclide data showed no surficial samples or elevated gamma walkover survey (GWS) zones at Lagoons A or B, but Lagoon C had scattered sample exceedances and GWS hotspots. In addition, Laser Induced Breakdown Spectroscopy (LIBS) walkover (i.e., Be scanning method) data indicated elevated Be readings across the surface of Lagoon C and south of Lagoons A and B. Based on soil sampling and monitoring results, it appeared that contaminated soils were beneath the caps at the former Lagoons A and B with clean soil overlying contaminated soil.

Lagoon C had surficial contamination as well as soil sampling exceedances for radiological contaminants and Be below the purported depth of this Lagoon. ORNL's Site data indicated radionuclide exceedances at one location each in Lagoons A and B; the USACE detected up to 333 picocuries per liter (pCi/L) of total uranium in nearby monitoring well MW-24(S), just north of Lagoon B. ORNL also found that the sludge in Lagoon C was not removed prior to placing the clay cap.

The RI reported the existence of Lagoon D, which was reportedly constructed but never used. Previous Site owners reported to USACE that it might have been planned as a temporary storm water management system for the lagoon area runoff during large rain events. Soil samples were not advanced within this area even though the LIBS scan results show elevated Be concentrations.

2.3.3 Off-Site Areas

The main drainage ditch north of the Site had data gaps associated with a 1997 field instrument for detection of low energy radiation (FIDLER) GWS. Dredged soil from the main ditch had been placed on the ditch's bank where plowing occurs. However, the extent of dredged soil was not delineated to the east and west of the main ditch. Several radionuclide and Be exceedances were detected along the eastern side of the main ditch but soil samples were not collected along the western side. In addition, the COC exceedances on the eastern side of the main ditch were unbounded and required further delineation to the east. Consequently, the volume estimates for FUSRAP-contaminated soil might have been significantly impacted without further evaluation of the ditch sediments and the eastern and western sides of the main ditch.

Based on a bioassessment study of the Toussaint Creek (USACE 2002), no further action was required as landscape-level impacts (fair habitat and potentially non-point source pollution) and sewage outfalls were considered primary and secondary factors affecting the health of aquatic biota. The study also indicated that attempts to remove contaminated sediments may cause further habitat impairment.

There has been inadequate GWS or Be scanning north of the sludge disposal trenches and only surficial soil sampling of the main railroad track located east of the Site. Significant COC concentrations were detected along the eastern edge of the northeast area near the sludge disposal trenches. As a result, a field investigation was required to delineate the eastern extent of soil contamination and any impacts north of the sludge disposal trenches.

Due to the potential for Lagoon A to discharge into the west ditch, soil samples or screening were required to verify whether Be or radiological contamination might have been transferred from Lagoon A to the ditch.

2.3.4 Other Miscellaneous Areas

There was limited data available regarding the presence and location of subsurface utilities (e.g., waste, storm sewer, drainage lines, and electrical conduits) and

appurtenances at the Site, and no sampling or scanning had been performed near underground utilities and appurtenances. Evaluation of the subsurface utilities would be required prior to any remedial efforts to identify any potential problems or concerns with migrating contamination.

Since geophysical surveys were performed several years ago, it was possible that a new survey of the northeastern portion of the Site might improve the understanding and delineation of the sludge disposal trenches including their number, orientation, and dimensions.

Several Be and radionuclide exceedances were detected in areas near the filter beds, sewage disposal system pump house, and former propane tanks. There also was an area of distressed vegetation near the former propane tanks. Additionally, LIBS survey data indicated exceedances near the northern boundary of the Site near the former propane tanks and sewage disposal building. Consequently, the vertical and horizontal extent of soil contamination required further delineation to identify the excavation limits for these areas.

Finally, it was unclear whether contaminated soil near buildings either ends or potentially extends beneath the structures.

2.4 INVESTIGATION OVERVIEW

Although the existing RI dataset was considered suitable for use in a remedial design, it did not provide adequate data to delineate remedial excavations of contaminated Site soils. Additional characterization work was needed to assess the presence or absence of COCs. The overall objective of this work was to reduce the volume estimate uncertainty by further delineating the vertical and horizontal extent of COCs in the surface and subsurface soils at the Site.

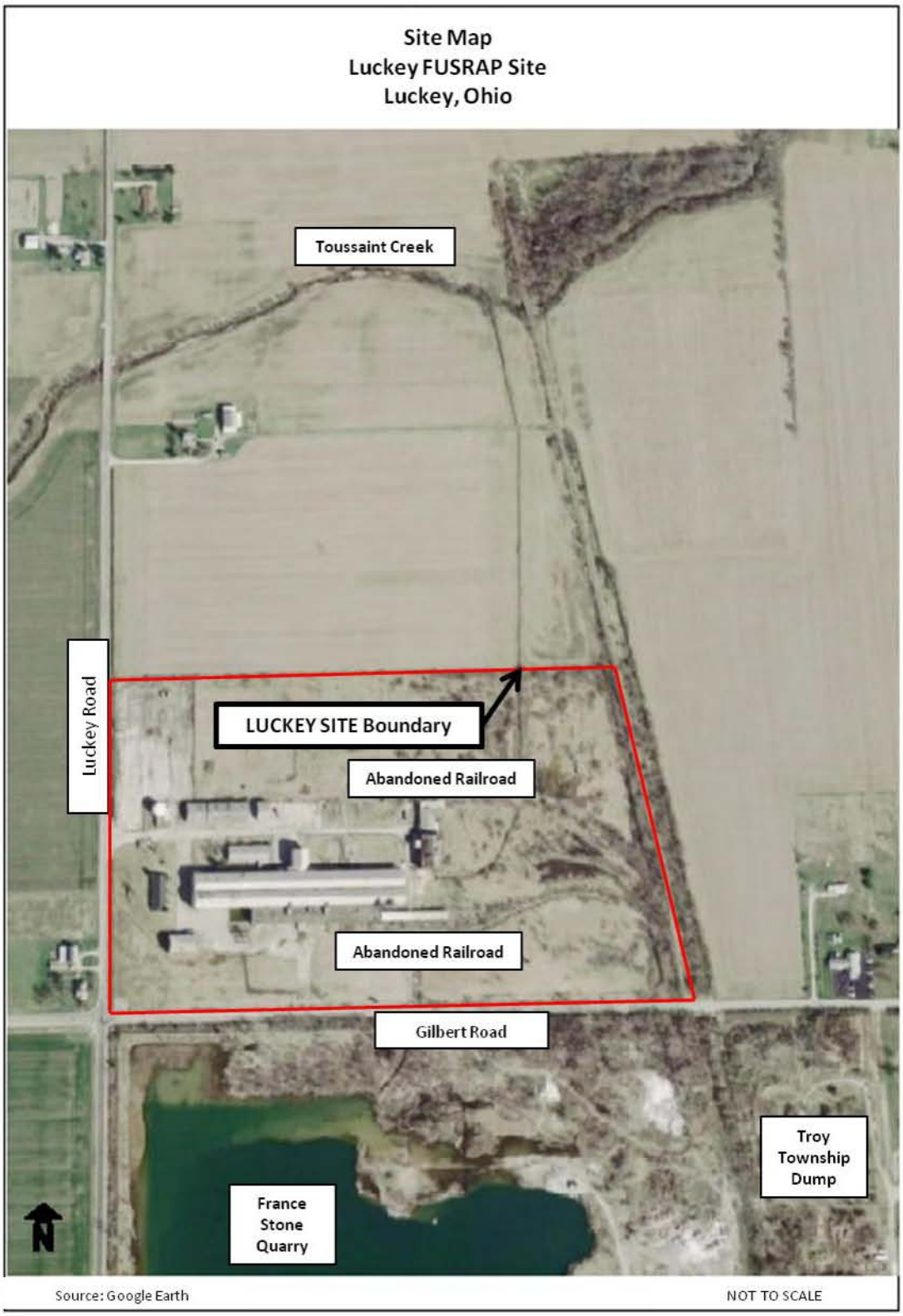


Figure 2-1: Luckey Site Map

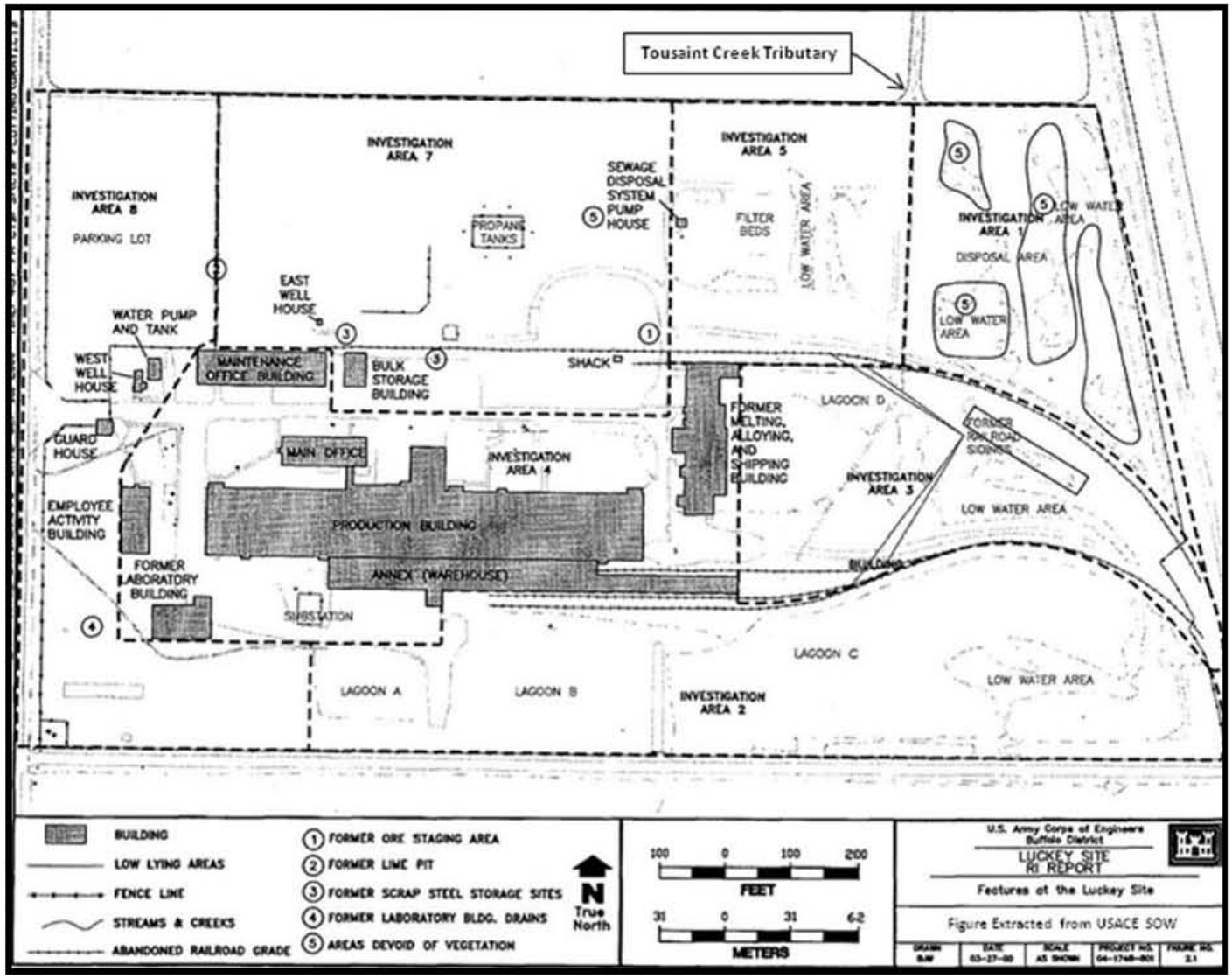


Figure 2-2: Site Building Layout

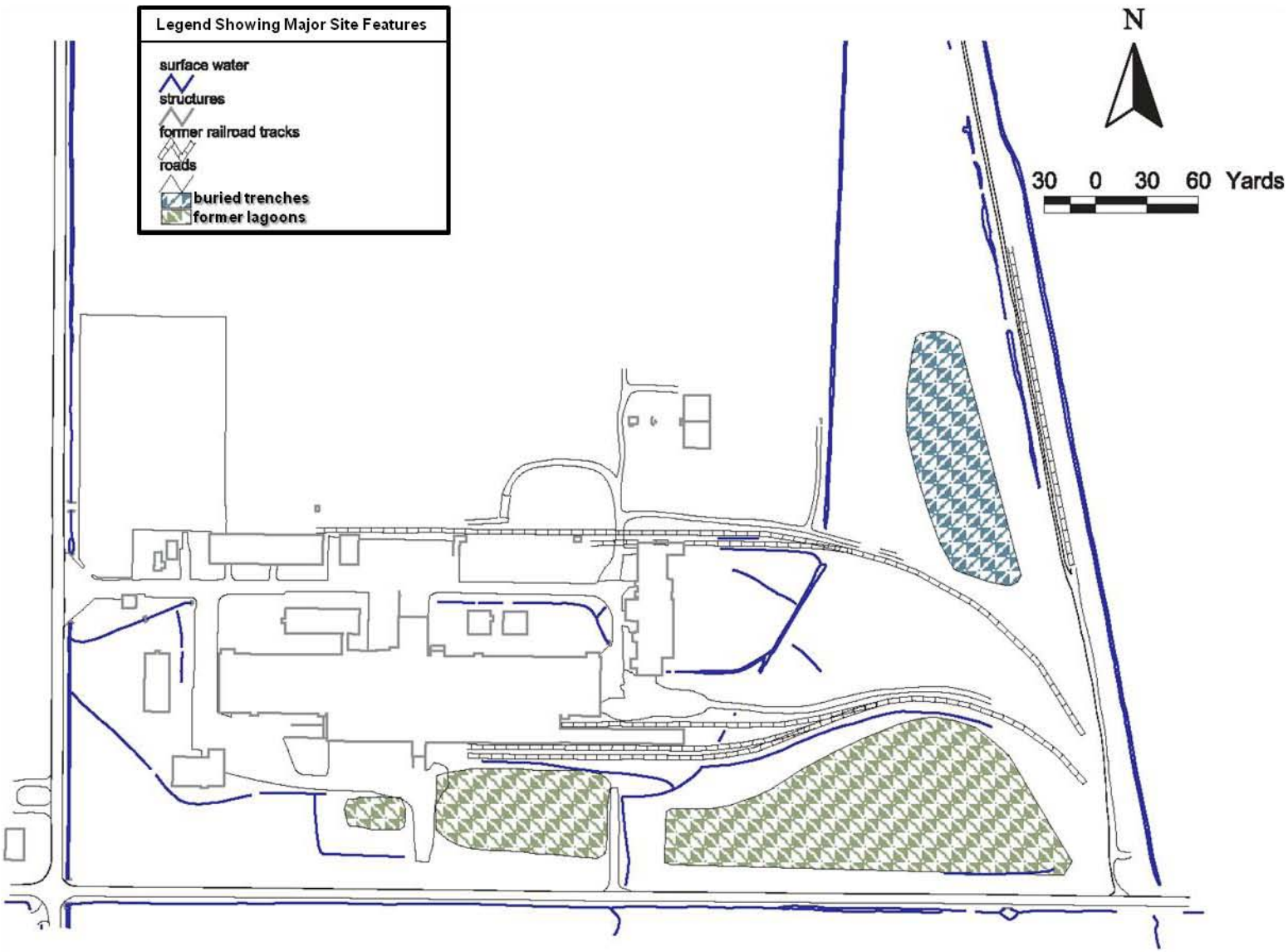


Figure 2-3: Site Plan Showing Approximate Locations of Lagoons and Buried Trenches

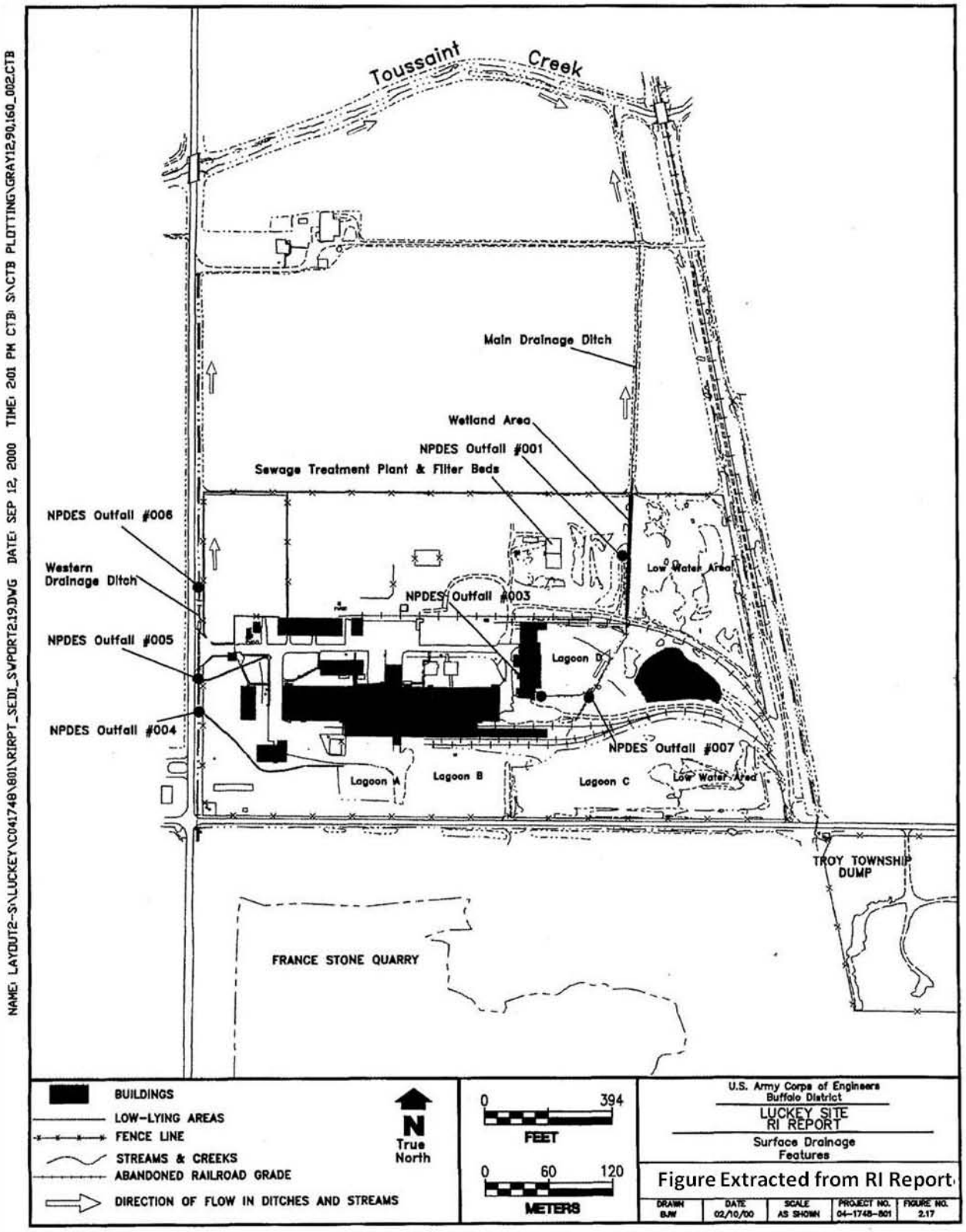


Figure 2-4: Site Outfalls and Surface Water Features

3.0 PROJECT ORGANIZATION

3.1 PROJECT TEAM

The project was performed by TES under contract with the USACE-Buffalo. Subcontractors were used for: 1) health physics monitoring, 2) Site clearing and grubbing, 3) geophysical surveying, 4) topographic surveying, 4) borehole drilling, well installation, well decommissioning, and well rehabilitation, 5) off-site analytical testing, 6) excavation and trenching, and 7) manpower support. Supervisory individuals of the Site investigation team are listed in Table 3-1. Personnel responsibility and lines of authority for this project are provided below.

Program Manager (PgM) – The PgM had overall management responsibility for the project and was responsible for providing adequate resources (budget and staff). The PgM had the explicit authority to delegate specific tasks to other staff, but was ultimately responsible for completion of the project.

Project Manager/Site Manager (PM) – The PM was responsible for the overall Site preparation, surveys, drilling and sampling, on-site analytical and waste management activities, and was responsible for the quality of work. The PM also served as the Site Manager and maintained a physical presence at the Site.

Contractor Quality Control (CQC) Systems Manager – The CQC Systems Manager maintained a presence at the Site at all times during progress of the work and had the authority and responsibility to take any action necessary to ensure contract compliance. The CQC Systems Manager was responsible for overall management of CQC and had the authority to act in all matters related to quality control (QC).

Site Safety and Health Officer (SSHO) – The SSHO had overall responsibility for the safety and health of all personnel on the Site.

Laboratory Supervisor – The Laboratory Supervisor was responsible for on-site laboratory operations associated with gamma spectroscopy and Be analysis. This individual was responsible for assuring that properly calibrated equipment and instruments were maintained and that sample preparation and analytical protocols were followed in accordance with the Quality Assurance Project Plan (QAPP) (USACE 2009d). Additional responsibilities included liaison with the off-site analytical laboratory and capturing and support of analytical data verification and reviews.

Site Investigations Manager – The Site Investigations Manager scheduled and coordinated the activities of drilling and trenching subcontractors and provided supervision for borehole logging and core sampling. This individual also assured that all field data generated during drilling and sampling was appropriately documented and required QC provisions were maintained at the Site. The Site Investigations Manager also had primary responsibility for scheduling and coordinating activities of the geophysical surveyor, topographic surveyor, and clearing and grubbing subcontractor.

Senior Health Physicist – The Senior Health Physicist provided radiological health physics oversight and review of the radiological data generated during the Site investigation. This individual was responsible for the procedural requirements and the instrumentation used for field gamma walkover surveys and for performing calculations for development and refinement of correlation factors.

Design QC Manager – The Design QC Manager provided QC oversight and review of all project deliverables. This individual assured that required QC standards, including peer reviews, conformance inspections, and compliance assessments, were accomplished in support of the QC system. This individual's activities were coordinated with those of an on-site QC System Manager to assure that all project deliverables met the specifications and standards established in the base contract and the project planning documents.

Senior Radiological Control Technician (RCT) – The Senior RCT was responsible for on-site environmental monitoring and radiological control programs in accordance with applicable regulatory guidelines, USACE requirements, and the Health and Safety Plan (HASP). The Senior RCT led the field radiological survey activities, assured properly calibrated equipment and field instruments were available for use, and provided day to day supervision of other RCTs in efforts associated with sample collection, borehole and soil core scanning, and preparation of documentation related to radiological data generated from field measurements.

Waste/Site Support Manager – The Waste/Site Support Manager managed and coordinated on-site activities associated with the collection, packaging, and handling of wastes generated as a result of the Site investigation. This individual also provided Site operations and logistics support for vehicles, equipment operation and maintenance, subcontractor and supplier coordination, and support for sample collection, preparation and shipment. The Waste/Site Support Manager also assisted the Site Investigation Manager as required.

Table 3-1: Luckey Site Investigation Project Team

Name	Discipline/Responsibility	Experience (Years)
Dan Caputo	Program Manager (CHP)	22
John Davis	Project Manager	14
Daren McEleney	CQC System Manager/SSHO	24
Stan Stevens	Laboratory Supervisor	28
Steve Deeter	Site Investigation Manager (PG)	15
Duane Quayle	Senior Health Physicist	25
Walter Wujick	Design QC Manager (PE)	27
Bill Rigby	Senior Radiation Control Technician and Waste/Site Support Manager	19

PG = Professional Geologist
PE = Professional Engineer

3.2 Corporate Support

An independent technical review (ITR) was performed on all products and deliverables prepared for submittal to the USACE. The purpose of this review was to verify compliance with established policy principles and procedures in the products and deliverables and that justified and valid assumptions were used in preparation of the deliverables.

TES conducted ITRs prior to submitting products and deliverables for review by USACE. TES also provided certification that the reviews had been conducted by individuals with the required knowledge and expertise to confirm that the products or deliverables met the requirements and objectives for use as specified in the Quality Control Plan (USACE 2009c) and Sampling and Analysis Plan (SAP) (USACE 2009b).

All observations and issues identified during the ITRs were documented and provided to the project team for resolution.

The members of the ITR Team are identified in Table 3-2. These individuals were assigned responsibility to review, as appropriate, those aspects of the deliverables that fall within their respective areas of subject matter expertise.

Table 3-2: Independent Technical Review Team

Name	Project Phase	Discipline/Expertise	Experience (Years)
David Bunn	Planning	Geology, Site Investigation (PG)	25
Jeff Case	Planning	Site Remediation, Project Management (PE)	25
Walter Wujick	Planning	Environmental Engineer (PE)	27
Dan Caputo	Reporting	Program Manager (CHP)	22
Phill Malich	Reporting	Operations Manager	28

CHP = Certified Health Physicist

3.3 SUBCONTRACTOR SUPPORT

Multiple subcontractors were used to perform specialized tasks and to provide local manpower. Table 3-3 identifies subcontractors that were utilized and their respective roles and/or responsibilities. Additional details are provided in Section 5.

Table 3-3: Subcontractor Support

Name	Role/Responsibility
TGA	Health physics instrumentation and manpower
Midwest Land Clearing	Site clearing and grubbing
Frontz Drillers	Bore hole drilling, well installation, well rehabilitation, and well decommissioning
SAIC	Geophysical surveys
Kleinger and Associates	Topographic surveys
TestAmerica	Off-site analytical laboratory
Nerone and Sons	Excavation and trenching
Aerotek	Local environmental technician manning support
Carl Services	Specialized analytical manpower support

4.0 PROJECT OBJECTIVES AND SCOPE

The investigation was performed to reduce the volume uncertainty associated with FUSRAP-contaminated soils at the Site that will require removal and off-site disposal. Previous volume estimation work identified data gaps where uncertainty existed regarding the vertical and horizontal extent of contaminated soils. The volume uncertainty investigation was designed to further delineate the horizontal and vertical extent of contaminated soils requiring excavation.

4.1 OBJECTIVES

Objectives of the investigation are summarized below.

- Identify the boundaries of FUSRAP-contaminated soils where the COC concentrations were less than or equal to established cleanup goals to reduce the uncertainty in the volume estimate for contaminated soils requiring excavation.
- Determine if FUSRAP contamination has migrated along subsurface utilities and appurtenances.
- Verify that FUSRAP-contaminated soils above the cleanup goals do not extend into areas where previously collected data indicated that excavation was not required.
- Determine soil characteristics within the sludge disposal trenches and lagoons relative to future remedial efforts.
- Determine the characteristics of soil, liquid, and miscellaneous IDW for disposal.
- Determine if a correlation exists between gamma count rate measurements and analytical results for radiological COCs.
- Evaluate Be analytical results associated with an on-site method (BeFinder) and off-site analysis using established USEPA procedures.

Soil cleanup goals specified in the Soils ROD are summarized in Table 4-1.

Table 4-1 Luckey FUSRAP Site Soil Cleanup Goals

Receptors	COC	Cleanup Goal[a]		Source
		Above Background	Including Background	
Subsistence Farmer	Be	131 mg/kg	131 mg/kg	Risk Based Concentration (RBC)
	Pb	400 mg/kg	400 mg/kg	Applicable or Relevant and Appropriate Requirements (ARAR)
	Radium-226	2.0 pCi/g[b]	4.97 pCi/g	ARAR
	Thorium-230	5.8 pCi/g[b]	9.0 pCi/g	ARAR
	Uranium-234	26 pCi/g[b]	28.61 pCi/g	ARAR
	Uranium-238	26 pCi/g[b]	28.63 pCi/g	ARAR

- [a] SESOL® Modeling results indicated risk-based and/or ARAR based cleanup goals selected for soils are protective of the chemical quality of groundwater.

- [b] Soil cleanup goals for radionuclides represent activity levels above site background activity corresponding to 25 mrem/yr (10 CFR Part 20 Subpart E and QAC 3701:1-38-22). If a mixture of radionuclides is present, then the sum of the ratios (SOR) applies per Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) and the ratio should not exceed unity. For example, use the 25 mrem/yr cleanup goals for unrestricted use by the critical group, which has been identified as the subsistence farmer for the Luckey site, for soil to get the following sum of the ratios equation:

- SOR = (Ra-226/2.0 pCi/g) + (Th-230/5.8 pCi/g) + (U-234/26 pCi/g) + (U-238/26 pCi/g)
  Where: SOR = sum of the ratios result
  Ra-226 = the net Ra-226 soil concentration (background = 2.97 pCi/g)
  Th-230 = the net Th-230 soil concentration (background = 3.20 pCi/g)
  U-234 = the net U-234 soil concentration (background = 2.61 pCi/g)
  U-238 = the net U-238 soil concentration (background = 2.63 pCi/g)

4.2 SCOPE

The project scope consisted of the following general activities:

- Site visit
- Preparation of work plans
- Clearing and grubbing
- Topographic survey
- Geophysical surveys
- Gamma walkover surveys
- Soil sampling and analysis
- Investigative trenching and underground utility sampling
- Development of correlation factors
- Be extraction study

- Be homogeneity study
- Be filter study
- Groundwater monitoring well installation, decommissioning, repair, and development
- Site security upgrades
- IDW management and characterization
- Site perimeter and worker health and safety air monitoring

The scope and results of the Be extraction study, Be homogeneity study, and Be filter study are not presented in this report. These studies will be documented in a separate report.

4.3 DATA QUALITY OBJECTIVES

Data Quality Objectives (DQOs) are qualitative and quantitative statements that specify the quality of the data required to support decisions. DQOs are developed to achieve a level of quality required to meet project goals and are implemented to obtain data that are legally and scientifically defensible. The development of DQOs for a specific site and measurement activity takes into account project needs, data uses and types, and data collection methods. The DQOs for this project were developed based upon USACE guidance and the DQO planning process provided in *"EPA Guidance on Systematic Planning using the Data Quality Objective Process"*, EPA QA/G-4, February 2006, and are summarized in Table 4-2.

Table 4-2: Data Quality Objectives

Objective	Discussion
State the Problem	Perform pre-remediation sampling and analysis to address data gaps where uncertainty exists regarding the vertical and horizontal extent of radiological and Be contamination.
Identify the Decision	Delineate the vertical and horizontal extent of contamination in the following areas: 1. Waste disposal trenches, the soil piles in the disposal trench area, and the former lagoons 2. The eastern extent of soil contamination and impacts north of the sludge disposal trenches off-site 3. The West Ditch connected to Lagoon A 4. Areas near the filter beds, sewage disposal system pump house, former propane tanks, and existing buildings. Actions that may result from the decision are an adjustment in the volume of soil (either an increase or a decrease) requiring excavation and off-site disposal.
Identify Inputs to the Decision	1. Historical background of the Site, including site-specific operational layouts and locations of current operational areas. 2. Previous field investigation results. 3. Geophysical survey. 4. Field-based and fixed laboratory testing of soils for constituents of concern. 5. Relevant cleanup criteria for impacted soils.
Define the Study Boundaries	1. Geographic boundaries for the investigation will be within the designated investigation areas shown in the Field Sampling Plan (FSP). 2. Soil samples will be investigated down to bedrock/refusal or as directed by USACE.
Develop Decision Rule	1. If COC concentrations are less than or equal to the cleanup goals, the volume of impacted soil requiring excavation will be adjusted accordingly. 2. If COC concentrations for impacted soil extend into areas where previously collected data indicated that impacts had not occurred, the volume of soil requiring excavation will be adjusted accordingly.
Specify Limits on Decision Errors	1. The sampling program design will determine the presence or absence of COCs in the soil at locations that were not adequately delineated in previous investigations. QC procedures implemented during sample collection and analysis (both field and fixed-laboratory) will minimize the probability of excavating non-impacted soil based on false positive data. The consequence of a false positive decision is excavation and removal of additional soil when it is not required. 2. A false negative decision error, which fails to detect and measure a COC that is present in soil at concentrations greater than the cleanup criteria, could result in failure to remove soil that is impacted by COCs. The sampling plan design and quality control procedures employed minimize the probability of making a false negative decision error. The investigation program is designed to detect and measure any COCs present in areas that were not adequately delineated in previous investigations.
Optimize the Sampling Design	1. Samples will be collected in locations to address data gaps remaining from previous investigations. 2. Geophysical surveys will be performed near underground utilities to identify potential problems or concerns. 3. Geophysical surveys of the sludge disposal trench area will be performed to obtain additional information on their orientation and dimensions.

4.4 PROJECT ACTIVITIES

4.4.1 Site Visit

A Site visit was required prior to initiating the field investigation. The visit was intended to observe natural features such as topography, vegetation growth, drainage features, delineated federal wetland boundaries, layout of the buildings and open land, Site property boundaries, debris, any visual evidence of contamination, and any obstacles/issues that might affect the investigation. Information obtained from the Site visit was to be provided the USACE together with recommendations for performing the project. Information gathered during the Site visit was also used for various work plans and is summarized in this report.

4.4.2 Preparation of Project Work Plans

The following USACE-approved work plans were required prior to conducting the field surveys, sampling, and laboratory analyses:

- Sampling and Analysis Plan
- Accident Prevention Plan/Site Safety and Health Plan
- Quality Control Plan

4.4.2.1 Sampling and Analysis Plan

The SAP was prepared to provide information on how the field and laboratory activities would be conducted and consisted of two volumes: Volume I: Field Sampling Plan (FSP); and Volume II: Quality Assurance Project Plan (QAPP).

The FSP addressed all field investigative activities. The FSP specified the number of samples to be collected, the type of analysis required, the methods and procedures for collecting soil samples, and the vertical and lateral soil sample locations. Also included were methods and procedures for radiological soil screening, including instruments.

The QAPP addressed data quality objectives, analytical methodologies, specific quality assurance (QA) and QC activities, laboratory instruments, and data assessment activities designed to achieve the project objectives.

4.4.2.2 Accident Prevention Plan

A site-specific Accident Prevention Plan/Health and Safety Plan (APP/HASP) was prepared in accordance with USACE EM 385-1-1, 15 September 2008, “Safety and Health Requirements Manual.” The APP/HASP included the following documents as attachments:

- A HASP prepared in accordance with EM 385-1-1 01.A.13.
- A Radiation Safety Plan (RSP) prepared in accordance with Ohio Administrative Code (OAC) 3701:1-38.

4.4.2.3 Quality Control Plan and Independent Technical Review Documentation

A QCP was prepared that described the protocol for producing deliverables and controlling the quality of these deliverables. The QCP defined how quality control was executed for all aspects of the project except sample acquisition and analysis.

4.4.3 Clearing and Grubbing

Clearing and grubbing was required prior to the initiation of the field investigation to facilitate the GWS, geophysical surveys, topographic survey, and to make areas accessible to drill rigs. Clearing and grubbing was required to be consistent across the Site regardless of vegetation extent and type such that 100% coverage of the GWS and geophysical survey areas was possible.

4.4.4 Topographic Survey

A three-dimensional topographic survey was required to delineate on and off-site features within areas of concern. The survey was to include building exteriors, existing planimetric features such as, but not limited to, driveways, parking lots, utility structures (both overhead and underground), abandoned railroad beds, streams, ditches, buildings, fences, roadways, tree lines, and sidewalks. The topographic survey was to be performed in accordance with standard industry practice and USACE EM 1110-1-1005 (January 1, 2007).

The following items were to be addressed by the survey:

- Exact dimensions and locations of the known soil mounds using a global positioning system (GPS) with emphasis placed on outer limits and elevations.
- Each lagoon with emphasis on outer limits and elevations.
- Anomalies associated with both on- and off-site areas of concern.

4.4.5 Geophysical Surveys

Geophysical surveys and visual inspections were required to map subsurface utilities and appurtenances (e.g., sanitary sewer, storm sewer, and discharge piping), delineate the boundaries of sludge disposal trenches within the northeast section of the Site, detect any scrap metal north of waste water treatment system filter beds, and map areas that were devoid of vegetation, especially near former propane tanks. The geophysical surveys were to include drain/pipe line tracing and preparation of maps showing utility and subsurface appurtenances. Where possible, the approximate path of the drain line on the ground/floor surface was to be traced using a permanent

marking device with a clearly identified location of the endpoint. Proposed survey methods for mapping utility locations included electromagnetic (EM-31 and -61) and magnetometer. The surveys were to be conducted in accordance with procedures provided in the following references:

- USACE EM 1110-1-1003 (1 July 2003) NAVSTAR Global Positioning System Surveying.
- USACE EM 1110-1-1005 (1 January 2007) Control and Topographic Surveying.
- USACE EM 1110-1-1802 (31 August 1995) Geophysical Exploration for Engineering and Environmental Investigations.

4.4.6 Gamma Walkover Surveys

To address data gaps from previous investigations, new GWS surveys were required at the following areas:

- North of the Site along the eastern and western boundaries of the drainage ditch leading to Toussaint Creek.
- Along the property boundary to the east and north of the northeast portion of the Site (i.e., sludge disposal trenches) and the remaining off-site eastern boundary of the Site.
- Miscellaneous areas missed during previous field investigative activities.

If significant surficial radiological contamination was encountered, the GWS was to be expanded until surficial contamination was no longer detected. Any significantly elevated surface radiation areas (i.e., hot spots) were to be demarcated in conjunction with the USACE.

The GWS was to be performed in accordance with the procedures identified in MARSSIM (DoD, DOE, USEPA, and NRC 2000), as detailed in the SAP.

4.4.7 Soil Sampling and Analysis

Initial soil sampling locations and methods were specified in the SAP – Volume I Field Sampling Plan based on an evaluation of previous field investigation results and Site history. Follow-up soil sample locations were to be determined using information and data from the GWS, geophysical survey, laboratory analyses, and field measurements/observations from the initial soil samples. The follow-up soil sample locations were to be conveyed to the USACE via maps and/or written/verbal correspondence. Initial and follow-up soil borings are described in Sections 5.5.1 and 5.5.2

On-site and off-site laboratory analyses were required for Be and radionuclides as summarized below.

Table 4-3 Required Analytical Methods

Parameter	On-Site Laboratory	Off-Site Laboratory
Be	BeFinder (Berylliant, Inc.) in accordance with ASTM D 7458-08	USEPA Method 6020 (or equivalent)
Radionuclides	Gamma Spectroscopy in accordance with ANSI N42.14	USEPA 901.1 or equivalent (for Ra-226) DOE EML HASL 300 Th-01 mod or equivalent (for isotopic thorium) DOE EML HASL 300 U-02 mod or equivalent (for isotopic uranium)
Notes: ASTM = American Society for Testing and Materials		

4.4.7.1 Samples Based on GWS

Soil samples were required from locations where the GWS measurements exceed three standard deviations above the survey average or where the data indicated elevated areas and possible trends. Biased sample locations were also required based upon the results of previous field investigations.

4.4.7.2 Initial Soil Borings

Soil borings were to be advanced in the Lagoon A, B, and C areas to delineate the vertical and horizontal extent of radionuclide and Be contamination and to provide information about any contamination of the lagoon caps (especially for Lagoon C) and thicknesses that could affect future remedial actions regarding disposal and stockpiling.

4.4.7.3 Follow-up Soil Borings

Additional borings and soil samples were required to establish the limits of Be and radionuclide contamination relative to the Site clean-up goals. The boring/sample locations were to be based on analytical data, field measurements, and observations from the initial soil borings and subsurface utility samples.

4.4.8 Investigative Trenches and Underground Utility Sampling

Investigative trenches and soil samples were to be located and collected from subsurface utilities and other anomalies discovered during the geophysical surveys. This included:

- Samples from underground utility lines, manholes, and appurtenances that were identified by the USACE upon review and evaluation of utility and subsurface appurtenance maps.
- Locations where contamination may be present based on the geophysical/magnetometer survey results, analytical results, and/or visual observations.

4.4.9 Development of Correlation Factors

Correlation factors were required for: (1) soil radionuclide concentrations and surface gamma count rates, and (2) on-site and off-site Be analytical results.

4.4.9.1 Radionuclide Concentrations/Surface Gamma Count Rates

Methods were to be evaluated for developing correlations between gamma count rates and analytical laboratory activity concentrations based on sum-of-ratio (SOR) values. The data to be used included gamma count rates at each sampling or boring location and soil analytical results for radionuclides. A non-parametric correlation was required between the field measurements and analytical laboratory data (if one exists). The correlation would be used as a gross count rate trigger level that would include gross count thresholds for reliably identifying soil concentrations representative of a SOR greater than unity (1) based on the Derived Concentration Guidance Level (DCGL) expressed as cleanup goals for the Site.

4.4.9.2 On-Site/Off-Site Be Analytical Results

The USACE evaluated an optical fluorescence technique developed by Berylliant, Inc. for detecting Be (known as BeFinder) using soil from the Site and concluded the following:

- The BeFinder data exhibited a strong correlation with laboratory analytical data across the range of Be concentrations analyzed by the study. It appeared possible to shorten extraction times from 40 hours (standard protocol for this method) to as little as two hours with only a 10% loss in Be detection. However sample homogenization prior to sub-sampling was considered to be extremely important.
- The BeFinder had detection limits meeting the project objectives.

Consequently, the BeFinder method was required for on-site analysis of Be in soil. Approximately 5% of soil samples to be analyzed on-site were to be submitted to an off-site laboratory for verification of the BeFinder method. Samples submitted to the off-site

laboratory were to be based on BeFinder results and represent a range of concentrations.

4.4.10 Be Extraction Study

A Be extraction study was required to determine the effects of longer digestion times during the BeFinder analytical process on the analysis results. The efficacy of the chemical extraction process was evaluated by performing tests over a range of digestion/extraction times from 2 to 40 hours.

4.4.11 Be Homogeneity Study

During the project and based on unexplained variability in analytical results, a Be homogeneity study was designed and performed to assess the impact of homogeneity variability within a sample volume. Since the BeFinder and off-site Be analytical techniques only use a small volume or aliquot of soil, the USACE requested performing a homogeneity study to determine the effects of this variability on analytical results and the modeling of Be soil concentrations. Sixteen samples were selected and analyzed both on-site and off-site to evaluate the variability in Be soil concentrations within a sample volume.

4.4.12 Be Filter Study

The Be filter study was an internal study to determine the effect of interferences in samples. The BeFinder procedures suggest filtration based on a qualitative color determination of the extractant. The filter study was performed to better understand the impacts of these interferences and the subsequent filtration steps.

4.4.13 Investigation Derived Waste Characterization and Management

Management of IDW and other field investigative wastes was required in accordance with Ohio EPA and federal regulatory requirements. Indigenous on-site IDW would be returned to its source, if the action did not result in cross contamination. Indigenous off-site IDW would be containerized for future disposal during remedial activities. Characterization (i.e. laboratory analyses) of containerized IDW was required. If the results indicated that IDW was clean material that would be difficult to place back in the borehole without cross contamination, the IDW would be spread around the sampling location as long as waste piles were not generated and this action did not contaminate ‘clean’ surface soil. Waste minimization methods were required, such as radiological trash bags for used personal protective equipment (PPE) and items that would not puncture bags. Wet and/or sharp media and soil for subsequent transfer to a roll-off container were required to be placed in 55-gallon drums.

4.4.14 Site Security Upgrades

This activity was scoped after mobilization and involved site security upgrades to maintain access controls.

4.4.15 Groundwater Monitoring Well Installation, Decommissioning, Repair, and Development

Monitoring well installation, decommissioning, repair, and development activities that were required included:

- Installation of six (6) wells: MW-50(I), MW-51(S), MW-52(I), MW-53(I), MW-54(S), and MW-55(I) at locations that were downgradient from the Site. Wells MW-51(S) and MW-54(S) were to be installed in unconsolidated soil deposits and wells MW-50(I), MW-52(I), MW-53(I), and MW-55(I) were to be installed in the upper 10 ft of bedrock. The wells were required pursuant to a performance monitoring plan specified in the Groundwater Operable Unit ROD.
- Installation of replacement wells for MW-22(I) and MW-24(S).
- Decommissioning of wells OMW-29(I), OMW-30(B), OMW-33(I), OMW-34(B), OMW-35(I), OMW-36(B), OMW-37(I), OMW-38(B), OMW-44, OMW-45, and OMW-46.
- Repair of wells MW-01(I), MW-02 (S), MW-19(I), MW-21(I), MW-25(I), MW-26(S), and OMW-27(I).
- Development of all new and repaired wells.

5.0 METHODS OF INVESTIGATION

This section discusses how project activities were preformed and identifies the locations of the field surveys, soil borings, and samples collected for laboratory analyses.

All work was performed in accordance with requirements and standard operating procedures (SOPs) specified in the SAP, QAPP, and APP. Any departures from these requirements and SOPs were accepted by the USACE prior to implementation. Field investigations were performed during the period November 2009 to April 2010.

Site visit results and the project work plans are discussed in Section 9.

5.1 CLEARING AND GRUBBING

Clearing and grubbing was performed by Midwest Land Clearing, Inc. (Midwest) of Newbury, Ohio. Areas that were cleared and grubbed included the main fenced area, an area east of the Site (the former railroad grade and ditch), and a swale located north of the Site. The work was performed using a combination tree feller, skidder, hydroaxe, and wood chipper.

Clearing consisted of felling, trimming, and cutting of trees into sections and removal of other vegetation such as downed timbers, snags, and brush. The brush was cut off flush with the ground level. Grubbing consisted of the removal of stumps, roots larger than three inches in diameter and matted roots from designated areas. Unless field sampling or other investigative activities were impacted, roots and/or masses remained buried.

Vegetative growth in the on-site and off-site ditches was removed, as warranted, to facilitate the GWS along the sidewalls and bottoms of ditches, at soil boring locations, and at soil sample locations. Soil disturbance was minimized as much as practical.

All tree limbs, vegetation and other cleared materials were shredded on-site with a wood chipper. The wood chips and any cut wood too large in diameter to be chipped were placed in an on-site area designated by the USACE. Composite samples of removed vegetation were collected and analyzed for Be and radionuclides. Upon receipt of analytical results indicating that the material was not contaminated by Be and radionuclides, the wood chips were spread over the Site as directed by USACE.

5.2 TOPOGRAPHIC SURVEY

The topographic survey and three-dimensional laser scan was performed by Kleingers and Associates, Inc. (Kleingers) of West Chester, Ohio using a two-person crew. The survey and scan was conducted utilizing a Trimble™ GX scanner and Trimble™ GPS. Two control points (i.e. benchmarks) were installed to provide fixed and semi-permanent reference points for the current and future investigations.

The topographic survey was performed following standard industry practice, the instrument manufacturer's procedures and recommendations, and USACE guidance (USACE 2007). The data was geo-referenced to North American Datum (NAD) 1983 Ohio North State Plane Coordinates and National Geodetic Vertical Datum (NGVD) 88 Datum.

The topographic survey included existing planimetric features such as underground utility structures, abandoned railroad beds, streams, ditches, buildings, fences, and roadways. Prints and electronic files associated with the topographic survey are provided in Appendix B and contour maps are provided in Figure 5-1 and Figure 5-2.

5.3 GEOPHYSICAL SURVEYS

The geophysical surveys were performed by SAIC using a two-person crew, an all-terrain vehicle with towed instrument array, a man-portable instrument array, and a mobile trailer. Geophysical surveys were conducted to: (1) locate subsurface utilities and other features that could potentially interfere with intrusive soil sampling activities or future remedial actions, (2) delineate the boundaries of disposal trenches in the northeast section of the Site, and (3) map subsurface utilities and appurtenances (e.g., sanitary sewer, storm sewer, and discharge piping).

The surveys were interfaced directly with a GPS unit and coordinates were electronically recorded simultaneously with the survey measurements using a data logger. Data was geo-referenced to NAD 1983 Ohio North State Plane Coordinates and NGVD 88 Datum and also referenced to the benchmarks that were installed at the Site. Modeling techniques were used to estimate the depth of buried objects and to determine any subsurface layering.

Figure 5-3 identifies the areas that were surveyed. The geophysical survey report, figures, and data are provided in Appendix B, which include graphical representations of the survey results overlain on Site plans showing the area of investigation and data collection points.

5.3.1 Electromagnetic (EM-31)

A Geonics Limited's EM-31™ terrain conductivity meter was utilized for mapping geologic formations and subsurface feature associated with changes in ground conductivity. The geophysical survey of these areas was conducted using east-west traverses spaced a maximum 10 ft (3 meters) apart with measurements continuously taken at a rate of 10 readings per second.

The EM-31 surveys were performed at the following locations (refer to Figures 2, 3, and 4 of the geophysics report in Appendix B):

- Sludge Disposal Trenches – performed to improve the understanding of the quantity, orientation, dimensions, and continuity of buried trenches at the northeast section of the Site, including areas that were devoid of vegetation.
- North of the Filter Beds – performed to identify the location of a scrap metal pit or any other anomalies in this area.
- Lagoon D – performed to improve the understanding of the lagoon including its orientation, dimensions, and continuity.
- Underground utilities and appurtenances associated with the buildings – performed to identify the presence and locations of underground utility lines and subsurface appurtenances that could serve as conduits for contaminant migration.
- Former propane tanks – performed to identify potentially buried material in this area.

5.3.2 Electromagnetic (EM-61)

A Geonics Limited's EM-61™ metal detector was used to detect and map buried metallic objects and to refine anomalies identified by the EM-31 survey. The EM-61 surveys were conducted using east-west traverses spaced a maximum 3 ft (one meter) apart with measurements continuously taken (10 readings per second). Areas surveyed with the EM-61 are shown on Figure 5-3 and in Appendix B.

5.3.3 Magnetometer

GEM Systems, Inc's GSM-19™ magentometer was used to assist in the identification of buried utilities or objects. The instrument was used concurrently with the EM-61 survey. Magnetometer data was collected at a "walking" rate (0.5 seconds per reading) and transmitted to a data acquisition center resulting in nearly continuous readings. The magnetometer results were used to construct magnetic contour maps showing the occurrence of magnetic anomalies that might represent buried objects or utilities. A base station was used to measure diurnal drift that is applied to normalize the field survey data. This survey data is provided in Appendix B, figures 5 and 7.

5.4 GAMMA WALKOVER SURVEY

The GWS was conducted to identify the presence of any elevated radiological surface contamination in areas that were not addressed during previous field investigations. These areas included:

- North of the Site along the eastern and western boundaries of the drainage ditch leading to Toussaint Creek.
- Along the property boundary to the east and north of the sludge disposal trenches and the off-site eastern boundary of the Site.
- Miscellaneous areas not surveyed during previous field investigations.

5.4.1 GWS Instrumentation

The GWS was conducted using two FIDLERs; (1) a Thermo/Bicron (Bicron), and (2) an Alpha Spectra. Both instruments were equipped with a 5-inch sodium iodide (NaI) crystal and Be window. A Ludlum 2350-1 data logger was also used.

Each FIDLER was source checked using cesium 137 (Cs-137) each day prior to and after use. Additionally, a 50-ft by 50-ft grid was chosen at the southwest corner of the Site (shown on Figure 5-4) to calibrate and test the equipment and to allow compensation for changing environmental conditions such as soil moisture. The same grid was used each day for calibration.

5.4.2 Scan Sensitivity

Based on the calculated scan sensitivities provided in the SAP (Volume 1- FSP) and the observed Th-230 to Ra-226 ratios of collected soil samples, the GWS scan sensitivity was determined to meet project DQOs.

5.4.3 Survey Procedures

5.4.3.1 Background Measurements

Prior to the start of the GWS activities, surface specific background measurements for soil were developed by performing a survey at an uncontaminated location southwest of the Site (identified as the Background Survey Grid on Figure 5-4). No significant amounts of asphalt or concrete were present at this location and background measurements were not performed for these materials.

5.4.3.2 Instrumentation Setup

GWS instrumentation was synchronized to a portable GPS unit (Trimble GeoXH) that collected time, coordinate, and velocity information. The GPS unit achieved real-time differential positioning using a built-in satellite-based augmentation system that used the Federal Aviation Administration's Wide-Area Augmentation System (WAAS) satellites. Trimble's TerraSync Professional software on the GeoXH was used to collect GPS and gamma scan data. The recorded gamma scan data were the raw counts per second (cps) from the Ludlum 2350-1 data logger. Raw cps data are unaltered collected detector counts in a one-second acquisition interval without any filters applied to the data.

The captured velocity information was reviewed and compared to the target speed. Reviews of the velocity records indicated that no surveys needed to be repeated.

5.4.3.3 Survey Grids

The GWS grids, shown in Figure 5-4, targeted areas not addressed during previous field investigations. Each survey grid had a corresponding unique file name or file names for collected GWS data. The file name or file names were noted on field maps. Examples of the numbering system are provided below:

File name: ES011709E

Where:

ES = EnergySolutions

0117 = Month/Day (January 17) – default year 2010

09E = daily survey identification

5.4.3.4 Scanning Approach

GWS instrumentation was operated in the following general mode:

- Instrument detection surface approximately three to four inches above the ground surface.
- Surveyor walking at a speed of approximately 0.5 meters per second.
- Surveyor moving the detector back and forth in a serpentine motion through an approximate one-meter arc.

5.5 SOIL SAMPLING AND ANALYSIS

Soil sampling and analysis consisted of obtaining soil cores for contaminant characterization. Sample collection and handling methods are described in this section. Sample labeling, processing, and analytical methods are described in Sections 6 and 7. Appendix G provides a listing of all borehole and surface samples by subtask and GPS locations. Table 5-1 identifies all borings and provides northing and easting coordinates. Figure 5-7 illustrates all soil sampling and borehole locations. As a note, manhole 10 (MH10) was unable to be located during the field efforts and was not sampled. It is expected MH10 is buried under building rubble and debris.

Table 5-1: Summary of Soil Boring and Sampling Locations

Location Identifier	Easting (feet) *	Northing (feet) *	Task	Location Type
BKG1	1696595.749000	655079.392000	7	Background Boring
BKG2	1696596.030000	655154.526000	7	Background Boring
BKG3	1696596.245000	655230.993000	7	Background Boring
BKG4	1696595.350000	655305.300000	7	Background Boring
BKG5	1696593.505000	655384.940000	7	Background Boring
98	1696907.206000	654584.378000	7a	Boring
99	1696951.067000	653847.123000	7a	Boring
100	1697046.896000	653962.019000	7a	Boring
101	1697204.377000	654033.992000	7a	Boring
102	1697303.466000	654649.493000	7a	Boring
103	1697138.355000	654920.124000	7a	Boring
104	1697395.259000	654070.077000	7a	Boring
105	1697657.075000	654470.166000	7a	Boring
106	1697815.061000	654231.717000	7a	Boring
107	1697912.311000	654327.305000	7a	Boring
108	1697877.149000	653884.282000	7a	Boring
109	1697901.364000	655716.435000	7a	Boring
110	1697945.166000	655569.822000	7a	Boring
111	1698076.229000	654204.259000	7a	Boring
112	1698153.606000	654607.801000	7a	Boring
113	1698181.985000	654494.451000	7a	Boring
114	1698219.830000	654288.999000	7a	Boring
115	1698259.302000	654198.451000	7a	Boring
116	1698243.615000	654362.094000	7a	Boring
117	1698350.988000	654058.124000	7a	Boring

* North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System

Table 5-1: Summary of Soil Boring and Sampling Locations (cont)

Location Identifier	Easting (feet) *	Northing (feet) *	Task	Location Type
1	1697387.445000	654634.492000	7c	Boring
2	1697446.238000	654580.116000	7c	Boring
3	1697459.189000	654701.588000	7c	Boring
4	1697707.450000	654721.283000	7c	Boring
5	1697736.173000	654498.366000	7c	Boring
6	1697704.562000	654278.578000	7c	Boring
7	1697679.414000	654360.234000	7c	Boring
8	1697629.410000	654315.122000	7c	Boring
9	1698043.948000	654304.044000	7c	Boring
10	1697937.105000	654347.415000	7c	Boring
11	1697976.373000	654255.357000	7c	Boring
15	1697601.855000	654388.897000	7c	Boring
16	1697760.209000	654387.440000	7c	Boring
17	1696935.336000	654674.301000	7c	Boring
18	1698300.365000	654282.749000	7c	Boring
19	1697073.504000	654424.810000	7c	Boring
20	1697588.498000	653979.230000	7c	Boring
21	1697718.747000	653970.819000	7c	Boring
22	1697917.272000	653931.445000	7c	Boring
23	1698050.145000	654028.606000	7c	Boring
24	1698135.057000	653914.332000	7c	Boring
25	1698368.195000	653883.844000	7c	Boring
26	1698317.100000	654372.900000	7c	Boring
27	1698260.525000	654465.876000	7c	Boring
28	1698193.491000	654804.283000	7c	Boring
29	1698186.335000	654858.428000	7c	Boring
30	1698225.598000	654648.272000	7c	Boring
31	1698239.702000	654576.005000	7c	Boring
32	1698210.677000	654703.055000	7c	Boring
33	1697236.236000	654593.867000	7c	Boring
34	1697069.552000	654737.239000	7c	Boring
35	1697266.405000	654536.627000	7c	Boring
36	1697024.456000	654031.010000	7c	Boring
37	1697030.454000	653846.241000	7c	Boring
38	1697128.609000	653845.458000	7c	Boring
39	1697000.820000	654482.685000	7c	Boring
40	1697691.288000	654628.350000	7c	Boring
41	1697509.694000	654484.565000	7c	Boring
42	1697695.194000	654568.413000	7c	Boring
43	1696918.454000	653952.618000	7c	Boring
44	1697257.987000	654023.541000	7c	Boring
45	1697364.551000	653985.951000	7c	Boring
46	1697338.255000	653856.834000	7c	Boring
47	1697552.283000	653847.162000	7c	Boring
48	1697518.706000	653942.155000	7c	Boring
49	1697802.903000	653839.659000	7c	Boring

* North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System

Table 5-1: Summary of Soil Boring and Sampling Locations (cont)

Location Identifier	Easting (feet) *	Northing (feet) *	Task	Location Type
50	1698092.507000	653833.513000	7c	Boring
51	1696995.363000	654859.289000	7c	Boring
52	1697132.328000	654853.011000	7c	Boring
53	1697240.791000	654852.728000	7c	Boring
54	1697323.828000	654751.376000	7c	Boring
55	1697428.176000	654802.187000	7c	Boring
56	1697622.175000	654802.704000	7c	Boring
57	1697708.500000	654865.500000	7c	Boring
58	1697794.528000	654865.771000	7c	Boring
59	1697887.975000	654861.885000	7c	Boring
60	1697962.098000	654857.794000	7c	Boring
61	1698031.963000	654861.438000	7c	Boring
62	1698111.550000	654858.622000	7c	Boring
63	1697256.717000	654433.396000	7c	Boring
64	1697398.711000	654425.049000	7c	Boring
65	1697823.900000	653908.400000	7c	Boring
66	1698223.544000	654027.005000	7c	Boring
67	1698237.303000	654087.132000	7c	Boring
68	1698310.958000	653956.310000	7c	Boring
69	1698272.485000	654403.323000	7c	Boring
70	1698202.803000	654732.956000	7c	Boring
71	1697913.249000	654730.949000	7c	Boring
72	1698106.691000	654735.348000	7c	Boring
73	1697964.008000	654656.923000	7c	Boring
74	1698147.183000	654650.213000	7c	Boring
75	1697916.252000	654548.974000	7c	Boring
76	1698003.437000	654515.485000	7c	Boring
77	1698092.240000	654443.439000	7c	Boring
78	1698174.558000	654373.381000	7c	Boring
79	1697778.894000	654059.601000	7c	Boring
200	1697861.744000	654836.726000	7c	Boring
201	1697974.642000	654898.995000	7c	Boring
202	1697830.179000	655006.309000	7c	Boring
203	1697876.484000	655028.674000	7c	Boring
204	1697880.578000	655098.594000	7c	Boring
205	1697884.256000	655210.430000	7c	Boring
206	1697884.257000	655357.003000	7c	Boring
207	1697894.444000	655514.939000	7c	Boring
208	1697824.099000	655952.408000	7c	Boring
209	1697854.262000	655834.740000	7c	Boring
210	1697806.857000	655822.904000	7c	Boring
211	1697876.630000	655682.067000	7c	Boring
212	1697826.334000	654869.530000	7c	Boring
213	1697830.524000	655085.019000	7c	Boring
214	1697843.364000	655359.826000	7c	Boring
215	1697841.963000	655640.985000	7c	Boring
216	1697788.440000	655910.101000	7c	Boring
217	1698108.000000	654916.200000	7c	Boring
218	1697837.693000	655226.255000	7c	Boring

* North American Datum 1933 (NAD83) Ohio North State Plane Coordinate System

Table 5-1: Summary of Soil Boring and Sampling Locations (cont)

Location Identifier	Easting (feet) *	Northing (feet) *	Task	Location Type
80	1697568.860000	554680.085000	7g	Boring
81	1697643.485000	554618.942000	7g	Boring
82	1697628.495000	554546.620000	7g	Boring
83	1697626.586000	554546.953000	7g	Boring
84	1697246.668000	554311.767000	7g	Boring
85	1697481.882000	554390.280000	7g	Boring
86	1697348.114000	554144.557000	7g	Boring
87	1697889.548000	554105.246000	7g	Boring
88	1697024.382000	554256.961000	7g	Boring
89	1697403.684000	554110.780000	7g	Boring
90	1697444.406000	554111.084000	7g	Boring
91	1696988.850000	554110.391000	7g	Boring
92	1697057.920000	554104.909000	7g	Boring
93	1697172.843000	554104.659000	7g	Boring
94	1697257.932000	554075.955000	7g	Boring
95	1697345.023000	554075.797000	7g	Boring
96	1697603.561000	554663.015000	7g	Boring
97	1697602.856000	554616.413000	7g	Boring
118	1697923.889000	555379.126000	7g	Boring
119	1697922.184000	555228.395000	7g	Boring
120	1697921.468000	555077.987000	7g	Boring
121	1697917.848000	554568.021000	7g	Boring
122	1697895.117000	554023.075000	7g	Boring
123	1698210.352000	554435.568000	7g	Boring
124	1697823.060000	554813.644000	7g	Boring
125	1697841.694000	554451.153000	7g	Boring
126	1697387.618000	554767.496000	7g	Boring
127	1697232.278000	554686.057000	7g	Boring
128	1697121.787000	554589.887000	7g	Boring
129	1697368.740000	554533.210000	7g	Boring
130	1697524.882000	554568.640000	7g	Boring
131	1696879.949000	554118.207000	7g	Boring
132	1696923.766000	554027.451000	7g	Boring
133	1697201.336000	553914.111000	7g	Boring
134	1697447.585000	553848.401000	7g	Boring
135	1697669.777000	553845.834000	7g	Boring
136	1697647.214000	554051.680000	7g	Boring
137	1697901.767000	554260.440000	7g	Boring
138	1698117.628000	554091.709000	7g	Boring
139	1698321.791000	553825.331000	7g	Boring
91A	1697007.720000	554101.005000	7g	Boring

* North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System

Table 5-1: Summary of Soil Boring and Sampling Locations (cont)

Location Identifier	Easting (feet) *	Northing (feet) *	Task	Location Type
MW22R	1697729.795000	654800.646000	Mod3-Replacement Well	Monitoring Well
MW24R	1697310.951000	654025.704000	Mod3-Replacement Well	Monitoring Well
MW50	1697031.647000	654304.991000	Mod3-New Well	Monitoring Well
MW53	1697889.011000	654971.754000	Mod3-New Well	Monitoring Well
MW54	1698132.118000	654819.529000	Mod3-New Well	Monitoring Well
MW55	1698135.232000	654801.750000	Mod3-New Well	Monitoring Well
MW56	1697310.951000	654025.704000	Mod3-New Well	Monitoring Well
6a001	1697501.249880	654845.325795	6a	Surface Sample
6a002	1697699.258550	654849.394466	6a	Surface Sample
6a003	1697851.976830	654855.669644	6a	Surface Sample
6a004	1697858.347600	654833.371960	6a	Surface Sample
6a005	1697879.371130	654795.147360	6a	Surface Sample
6a006	1697989.585390	654810.437200	6a	Surface Sample
6a007	1698004.238150	654792.399054	6a	Surface Sample
6a008	1698126.556880	654763.293527	6a	Surface Sample
6a009	1698155.707500	654728.997333	6a	Surface Sample
6a010	1698187.732090	654696.142035	6a	Surface Sample
6a011	1698196.586350	654648.503548	6a	Surface Sample
6a012	1698153.314100	654596.379439	6a	Surface Sample
6a013	1698157.773640	654554.969456	6a	Surface Sample
6a014	1698163.873490	654516.723080	6a	Surface Sample
6a015	1698178.527140	654474.673481	6a	Surface Sample
6a016	1698189.995210	654418.607348	6a	Surface Sample
6a017	1698204.011750	654320.491616	6a	Surface Sample
6a018	1698069.580450	654295.644126	6a	Surface Sample
6a019	1698033.902000	654286.724514	6a	Surface Sample
6a020	1697873.348990	654457.369051	6a	Surface Sample
6a021	1697803.726250	654576.718001	6a	Surface Sample
6a022	1697857.421110	654647.331684	6a	Surface Sample
6a023	1697712.158850	654496.972511	6a	Surface Sample
6a024	1697562.436800	654496.972511	6a	Surface Sample
6a025	1697529.306810	654502.069432	6a	Surface Sample
6a026	1697497.451050	654454.285796	6a	Surface Sample
6a027	1697533.747720	654582.060919	6a	Surface Sample
6a028	1697631.433620	654571.666639	6a	Surface Sample
6a029	1697486.668080	654559.187187	6a	Surface Sample
6a030	1697506.400780	654645.615048	6a	Surface Sample
TR01	1696613.374180	654003.079617	7g, centroid of trench	Trench Sample
TR02	1696716.517230	654075.567399	7g, centroid of trench	Trench Sample
TR03	1697172.841230	653992.345404	7g, centroid of trench	Trench Sample
TR04	1697442.425550	653995.433451	7g, centroid of trench	Trench Sample
TR05	1697674.605310	654021.586047	7g, centroid of trench	Trench Sample
TR06	1697021.575340	654329.966159	7g, centroid of trench	Trench Sample
TR06A	1696595.833620	654334.035570	7g, centroid of trench	Trench Sample
TR07	1697162.204950	654322.756833	7g, centroid of trench	Trench Sample
TR08	1697472.825830	654329.036556	7g, centroid of trench	Trench Sample
TR09	1697479.359450	654200.413120	7g, centroid of trench	Trench Sample

* North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System

Table 5-1: Summary of Soil Boring and Sampling Locations (cont)

Location Identifier	Easting (feet) *	Northing (feet) *	Task	Location Type
MH01	1696719.488000	654062.979000	7g, marhole	Manhole Sample
MH02	1696710.058000	654222.230000	7g, marhole	Manhole Sample
MH03	1696810.835000	654265.156000	7g, marhole	Manhole Sample
MH04	1696867.973000	654320.802000	7g, marhole	Manhole Sample
MH05	1697013.426000	654362.264000	7g, marhole	Manhole Sample
MH06	1697012.067000	654323.888000	7g, marhole	Manhole Sample
MH07	1697156.159000	654316.323000	7g, marhole	Manhole Sample
MH08	1697284.294000	654317.186000	7g, marhole	Manhole Sample
MH09	1697424.718000	654317.806000	7g, marhole	Manhole Sample
MH11	1697490.152000	654502.797000	7g, marhole	Manhole Sample
MH20	1696703.151000	654178.529000	7g, marhole	Manhole Sample
MH21	1696921.229000	654326.993000	7g, marhole	Manhole Sample
MH22	1696957.714000	654321.952000	7g, marhole	Manhole Sample
MH23	1696989.717000	654325.295000	7g, marhole	Manhole Sample
MH24	1697080.802000	654330.209000	7g, marhole	Manhole Sample
MH25	1697255.798000	654331.199000	7g, marhole	Manhole Sample
MH26	1697474.232000	654320.146000	7g, marhole	Manhole Sample
MH27	1697399.780000	654432.526000	7g, marhole	Manhole Sample
MH28	1697490.455000	654514.970000	7g, marhole	Manhole Sample
MH29	1697490.898000	654519.866000	7g, marhole	Manhole Sample
MH30	1697490.431000	654525.657000	7g, marhole	Manhole Sample
MH31	1697490.189000	654534.086000	7g, marhole	Manhole Sample
MH32	1697512.453000	654588.968000	7g, marhole	Manhole Sample
MH33	1697518.652000	654588.770000	7g, marhole	Manhole Sample
MH34	1697526.144000	654589.218000	7g, marhole	Manhole Sample
MH35	1697532.276000	654588.875000	7g, marhole	Manhole Sample
MH36	1697549.152000	654588.476000	7g, marhole	Manhole Sample
MH37	1697564.696000	654580.225000	7g, marhole	Manhole Sample
MH38	1697530.074000	654538.167000	7g, marhole	Manhole Sample
MH39	1697543.388000	654537.811000	7g, marhole	Manhole Sample
7G03	1696668.202000	653949.173000	7g, Utility	Utility Outfall Sample
7G04	1696684.996000	653941.584000	7g, Utility	Utility Outfall Sample
7G05	1696677.004000	654268.677000	7g, Utility	Utility Outfall Sample
7G09	1696748.721000	654337.725000	7g, Utility	Utility Outfall Sample
7G11	1696770.945000	654248.407000	7g, Utility	Utility Outfall Sample
7G16	1696804.992000	653941.938000	7g, Utility	Utility Outfall Sample
7G23	1696859.240000	654339.337000	7g, Utility	Utility Outfall Sample
7G43	1697241.811000	654340.326000	7g, Utility	Utility Outfall Sample
7G46	1697354.101000	654319.985000	7g, Utility	Utility Outfall Sample
7G50	1697485.106000	654444.351000	7g, Utility	Utility Outfall Sample

* North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System

5.5.1 Initial Soil Borings

Soil borings were advanced at on-site and off-site areas to delineate the vertical and horizontal extent of radionuclide and Be contamination. The boring locations were established in the SAP.

5.5.2 Follow-up Soil Borings

Additional soil borings were selected by the USACE to establish the vertical and horizontal extent of COC contamination near subsurface appurtenances and to refine the contamination boundaries at other areas of the Site. Follow-up boring locations were selected on the basis of geophysical and magnetometer survey results, visual observations, and analytical results.

The USACE identified an additional 50 soil sampling locations that were conveyed by the USACE upon completion of the geophysical and magnetometer surveys and review of analytical results from the soil samples, test trenches, and visual observations.

5.5.3 Soil Boring Advancement

Soil borings were advanced using a sonic drilling method and continuous undisturbed soil samples were collected with a six-inch diameter core barrel and an eight-inch diameter outer drive casing. After drilling a 10-ft interval, the outer casing was held in place within the boring while a five-ft acetate liner within the inner core barrel was removed. The liner was capped until the core was ready for field screening and inspection by a Site Geologist. The core was removed from the acetate liner and laid out on a working tray for field screening, visual description, and collection of samples for analytical testing. Soil cores from each boring were placed in clear plastic bags and saved on-site. The bags were labeled to identify the boring location and depth intervals relative to ground surface. The soil cores were stored in on-site Connex boxes.

The soil cores were scanned using radiological detectors (beta/gamma detector and/or alpha/beta scintillator) for each one-ft interval. The borings were advanced at least 20 ft bgs or until bedrock refusal unless otherwise indicated in the SAP or directed by the USACE. If on-site scanning or visual observations indicated elevated measurements, the borehole was advanced until on-site screening or visual observation indicated contaminant concentrations were below cleanup criteria or conditions were consistent with background. Upon reaching the borehole's termination depth, a downhole gamma scan was conducted.

Soil boring logs were prepared that included the following general information:

- Boring location and date.
- Coordinates (northing and easting).
- Soil/bedrock core sample depths and recovery amounts.
- Soil core radiological scan results and downhole gamma scan results.
- Soil/bedrock description.
- Identification numbers and tracking numbers for sample aliquots retained for analysis.

Copies of the borings logs are provided in Appendix A.

On-site boreholes were backfilled with bentonite pellets. For boreholes advanced on off-site properties, grout was placed in the borehole from the bottom to the top using a tremie pipe. The temporary casing was pulled as grouting progressed. The bottom of the tremie pipe was kept below the rising grout surface at all times during grouting, which continued until the grout level stabilized at three-ft bgs. Topsoil was backfilled in the remaining space to the ground surface.

5.5.4 Soil Sampling for Radionuclides

Soil samples for radionuclides analysis were collected from the soil cores at 3 one-ft sampling intervals exhibiting the highest radiological scan measurements. Two of the selected intervals were used to determine the vertical depth of radionuclide contamination at each boring location. In some instances, the sample intervals and numbers were adjusted based on subsurface conditions. The samples were analyzed for radiological parameters identified in Section 6.3.

Seventy-nine (79) additional soil samples were selected for off-site gamma spectroscopy based on recommendations provided by the USACE. The analyses were performed on soil core segments from the 0 to 7 ft depth increment (with one exception) to bound and verify previous results that identified COC contamination above the Site remediation goals. Seven of these samples were based on Ra-226 results that exceeded the Site cleanup goal of 4.97 pCi/g. These aliquots were taken from the soil core segment one-ft beyond the interval that exceeded the goal.

5.5.5 Soil Sampling for Beryllium

Soil samples for Be analysis were collected from 10 one-ft intervals from each boring. The samples were analyzed on-site using the BeFinder to provide results in a short period of time. These samples were dried and homogenized prior to analysis.

Seventy-two (72) additional soil samples were selected for off-site Be analysis based on recommendations provided by the USACE. The analyses were performed on soil core segments from the 0 to 7 ft depth increment (with one exception) to bound and verify previously results that identified COC contamination above the Site remediation goals.

Twenty-nine (29) of these samples were selected for analysis based on Be results that exceeded the Site cleanup goal of 131 mg/kg. These aliquots were taken from the soil core segment one-ft beyond the interval that exceeded the goal.

5.5.6 Soil Sample Handling

All soil core samples were transported from the soil boring locations to sample preparation areas established outside of the exclusion zone. From this point, aliquots were taken (where appropriate) and the soil cores were stored on-site. The aliquots were transferred to the on-site Be laboratory or shipped off-site for analysis.

5.6 INVESTIGATIVE TRENCHING, UNDERGROUND UTILITY, DITCH SEDIMENT, AND BOUNDING/VERIFICATION SAMPLING

5.6.1 Investigative Trenching

Investigative trenching was performed by Nerone and Sons using a Komatsu PC-200LC excavator. Approximately 230 linear ft was excavated at locations specified by the USACE that were based on the utility mapping and geophysical survey results. These trenches were typically between 2 and 10 ft wide, between 19 and 36 ft long, and varied in depth from 4 ft up to 10 ft bgs. Investigative trench locations are shown on Figure 5-5 and trench logs are provided in Appendix D.

Soil samples were collected from beneath pipe and pipe joints to determine if leaks had occurred. At each location, the condition of the exposed pipe (e.g., external signs of corrosion or pitting) was noted. At a minimum, samples were collected from the bottom of each sidewall and one sample was collected from below the pipe or appurtenance using a hand auger. Sidewall samples were collected from a one-ft interval. Soil samples were analyzed for Be and radionuclides.

Additional soil sample locations near underground utilities were selected based on geophysical and magnetometer survey results, analytical results, and visual observations. The additional soil samples were collected by core sampling with the drill rig.

5.6.2 Underground Utility Sampling

Manhole and utility outfall sampling locations, shown on Figure 5-6 and Figure 5-7, were identified by the USACE based upon review and evaluation of utility and subsurface appurtenance maps. Radiological scans were conducted by lowering a detector down manholes associated with storm and sewer piping at the Production Building, Melting, Alloying, and Shipping Building, Laboratory Building, and the Bulk Storage Building. Radiological scans were also conducted at each outfall, and at the manholes and piping associated with the wastewater treatment system.

Where manholes could not be located, trenches were excavated at locations specified by the USACE. These locations were determined following review of the utility and

subsurface mapping results. One soil sample was collected at the bottom of each sidewall, as well as from below the utility and/or subsurface appurtenance. Sidewall soil samples were collected to represent a one-ft interval at each sample location. Soil samples were collected within the trenches at locations identified by an on-site USACE representative based on appearance and survey measurements. Samples were also taken at locations where pipes were breached. The centroid location of each trench is provided in Table 5-1 and the trench locations are shown on Figure 5-5.

5.6.3 Ditch Sediment Sampling

An attempt was made to collect soil and sediment samples from Site drainage ditches in accordance with the SOW. Due to seasonal conditions (i.e. frozen water in the base of the ditches), sediment from within the ditches was inadvertently excavated while attempting to remove snow in order to scan the ditch base and sidewalls. This material was scanned using a FIDLER in conjunction with a Ludlum 2350-1 data logger. Grab samples were collected from the excavated sediment pile and analyzed for Be and radiological parameters. The sediment was then placed in new 55-gallon drums and samples were collected and analyzed to determine disposal requirements.

5.6.4 Bounding/Verification Sampling

Based on a review of data collected during the investigation, additional soil analysis was required to bound contamination in certain areas of the site. Seventy-two (72) soil samples were selected for off-site Be analysis and 79 soil samples were selected for off-site gamma spectroscopy analysis (see TestAmerica Chain-of-Custody forms dated 4/09/2010 in Appendix E).

Radiological analysis was performed on soil core segments from the 0 to 7 ft depth range (with one exception). Seven of the selected samples were based on Ra-226 results that exceeded the cleanup goal of 4.97 pCi/g.

5.7 DATA CORRELATIONS

Data correlations were evaluated for:

- Gamma count rate measurements and surface soil analytical results.
- Downhole gamma logging measurements, soil core gamma count rate measurements, and subsurface soil analytical results.
- Be analytical results from on-site (BeFinder) and off-site (TestAmerica) analyses.

5.7.1 Radionuclides

Correlation factors were developed after instrument detection levels were established. The correlations were developed between GWS measurements and analytical data from samples that contained a range of COC concentrations. Subsurface soil samples from 30 locations were used. The majority of the correlation samples were selected

from locations where the surface gamma count rates bounded the soil cleanup goals and along transects that started in areas of elevated radioactivity and terminated at or near background levels. In addition, 30 surface soil samples were collected from elevated locations identified during the GWS. These locations represented a range of activity concentrations across the Site with varying SOR values.

Five (5) boreholes were drilled in an uncontaminated area northwest of the Site to provide background count rates for the downhole gamma logging, soil core gamma count rate measurements, and GWS measurements.

Gamma radiation count rates were collected using a 2-inch x 2-inch NaI detector coupled to a Ludlum Model 2221 instrument. The readings were taken at the surface sample locations and at one-ft intervals of each soil core.

Soil samples were collected based on the highest scan reading and analyzed for all gamma emitting radionuclide peaks and quantified on-site for Ra-226 and Th-234/U-238 using n-type high purity germanium (HPGe) gamma spectroscopy detectors within the on-site analytical laboratory. Soil samples were also sent off-site to TestAmerica, an accredited DoD ELAP Laboratory for alpha spectroscopy, isotopic thorium analysis, and for Ra-226 and Th-234/U-238 analysis (used for quality control correlation) via gamma spectroscopy.

The radionuclides correlation data were used to construct statistically based relationships between gamma count rates and soil concentrations for the radiological COCs. For Th-230, which is not easily detected by gamma scanning, alpha spectroscopy was also used.

5.7.2 Beryllium

Five percent of the soil samples requiring Be analysis were submitted to the off-site laboratory (TestAmerica) to provide data for correlation of off-site and on-site Be analytical results.

5.8 BERYLLIUM EXTRACTION STUDY

Methods and results of the Be extraction study will be reported in a separate document.

5.9 BERYLLIUM HOMOGENEITY STUDY

Methods and results of the Be homogeneity study will be reported in a separate document.

5.10 BERYLLIUM FILTER STUDY

Methods and results of the Be filter study will be reported in a separate document.

5.11 GROUNDWATER MONITORING WELL INSTALLATION, DEVELOPMENT, REPAIR, AND DECOMMISSIONING

5.11.1 Monitoring Well Installation

New monitoring wells were installed at the locations shown on Figure 5-7. Wells MW-22R, MW-50(I), MW-53(I), MW-55(I) and MW-56(I) were intermediate bedrock wells that were advanced at least 10 ft into bedrock. Wells MW-24R(S) and MW-54(S) were shallow overburden wells that were isolated from the bedrock. All work was performed under the oversight of a Geologist, who also prepared boring logs, (provided in Appendix A) well construction diagrams (provided in Appendix I), and well development tables (provided in Appendix I).

Well MW-56(I), not included in the SOW, was installed adjacent to MW-24R(S). Collectively, wells MW-24R(S) and MW-56(I) monitor the shallow (overburden) and intermediate (upper bedrock) water-bearing zones south of the Production Annex (refer to Figure 5-7).

Wells MW-51 (S) and MW-52 (I) were installed during a subsequent mobilization because the locations were inaccessible during the period between November 2010 and April 2011. These wells are not shown on Figure 5-7 and their logs are not included in this report.

Monitoring well borings were advanced using a sonic drilling method. Drilling equipment was decontaminated between each well location in accordance with the SAP. All waste generated from decontaminating sampling and drilling equipment was drummed and stored on-site as IDW.

Six inch diameter soil cores were collected, screened, and logged. Soil and/or bedrock cores from each boring were labeled and stored in the Connex box(es). Soil samples were collected and analyzed for radionuclides and Be. Upon reaching the borehole's termination depth, a downhole gamma scan was performed.

Monitoring wells were constructed with two-inch diameter, Schedule 40 polyvinyl chloride (PVC) riser; 0.010-inch slotted screen (overburden wells) or 0.020-inch slotted screen (bedrock wells). The annular space between the borehole wall and the screen/riser was backfilled with a filter pack to two-ft above the screen and topped with a bentonite seal. The filter pack consisted of washed gravel or clean sand that was compatible with the slot openings of the well screen and grain size of the surrounding soil (for overburden wells). A minimum of one-ft of "choker sand" (size 00 sand) was placed at the top of the filter pack, below the bentonite seal.

Actual well depths and screen intervals were determined during installation based on the lithology encountered at each location. Final well depths and screen intervals were accepted by the USACE prior to installation.

The wells were extended at least three-ft above the ground surface and completed with a protective steel casing that was installed below the frost line. The protective casing diameter was at least two inches larger than the well pipe and outfitted with a locking cap. The annular space between the well pipe and protective casing was filled with sand to two inches below the top of the pipe. This was done to prevent the accidental loss of equipment into the protective casing during development or sampling. A cap was placed on top of each well pipe. A small drain or weep hole was installed above the surface seal to prevent the accumulation of water between the casings. An expansion joint was installed between the protective casing and concrete pad to isolate the casing from the pad in the event of frost heaving. Four yellow guard posts were placed within three or four ft of each well. Well identification tags were attached on top of the outer casing that identify each well number, bottom depth, and screened interval.

Well construction diagrams that depict each installation and include a log of material from the original boring log are provided in Appendix I.

5.11.2 Monitoring Well Development

New and repaired monitoring wells were developed by pumping and/or bailing until groundwater parameters, such as pH, specific conductance, and temperature had stabilized, or 55 gallons of groundwater had been removed. Well development documentation is provided in Appendix I.

5.11.3 Monitoring Well Repair

Monitoring wells MW-01(I), MW-02 (S), MW-19(I), MW-21(I), MW-25(I), MW-26(S), and OMW-27(I) were repaired, which consisted of:

- Replacing the protective covers and concrete pads.
- Redeveloping the wells.
- Re-installation of wells MW-22(s) and MW-24(S).
- Installation of guard posts.
- Painting the protective casings and guard posts yellow.

5.11.4 Monitoring Well Decommissioning

Wells OMW-29(I), OMW-30(B), OMW-33(I), OMW-34(B), OMW-35(I), OMW-36(B), OMW-37(I), OMW-38(B), OMW-45, and OMW-46 were decommissioned. Well OMW-44 was scheduled for decomissiong, however due to inaccessibility; this well was decommissioned during a subsequent mobilization and is reported separately. Well sealing reports for each decommissioned well are provided in Appendix H. Waste generated from well decommissioning activities was drummed and stored as IDW.

5.12 SITE SECURITY UPGRADES

New chain link fence was installed between the existing Site gate and perimeter fence at an abandoned railroad easement on the east end of the Site (i.e., entrance to the Warise property). Boulders and rocks were moved to the eastern side of the entrance gate. All fencing was installed using hardware recommended by the manufacturer. Fence posts were installed to a minimum depth of three-ft. Like material was provided to match existing conditions. Photos of the security upgrades are included in Appendix M titled, “Security Gate”.

5.13 EQUIPMENT DECONTAMINATION

All used sampling equipment, heavy equipment, and non-disposable protective equipment was decontaminated between sample locations and prior to removal from the Site. This included stainless steel scoops, bowls, spoons, core barrels, backhoe buckets, and hand auger barrels. Other equipment used during sampling activities that did not directly contact sampled materials (such as down-hole rods, shovels, etc.) was cleaned to remove visible soil using a pressurized steam cleaner.

A field decontamination station was selected and approved by the USACE prior to use. Decontamination fluids were collected daily and stored in 55 gallon drums located at the end of the decontamination line. Cleaning fluids from heavy equipment decontamination were collected at the decontamination station and transferred to 55 gallon drums.

5.14 IDW MANAGEMENT AND CHARACTERIZATION

IDW from the field investigation consisted of soil, sediment, water, decontamination solutions, clearing and grubbing waste, and used PPE. IDW was collected in containers and stored at a secure on-site location for off-site disposal. Most IDW was indigenous to the Site.

5.14.1 IDW Management

IDW was managed in accordance with OhioEPA and federal regulations. Because the ROD for contaminated soils requires excavation and off-site disposal of contaminated soils, indigenous IDW from on-site activities was returned to its source. IDW from off-site activities was placed in 55 gallon drums for future disposal. Any soil waste generated during the project that could not be placed back into a borehole or investigative trench was segregated by activity level and/or COC concentrations using gamma survey and/or analytical results. The trench excavation lay-down areas were large enough to impede soils at or below the cleanup goals from mixing with soils above the cleanup goals.

The following IDW management activities were used:

- Clearing and Grubbing Debris – stockpiled on-site and eventually spread over undeveloped sections of the Site.
- Off-site soil – placed in 55 gallon drums that were stored in locked Connex boxes located in a fenced area at the northwest corner of the Site.
- Miscellaneous solid wastes (i.e. used PPE, wooden pallets, tubing, etc.) – placed in heavy-duty polyethylene trash bags that were stored in the Connex boxes.
- Liquids – placed in 1,500 gallon and 1,200 gallon tanks that were located in a bermed area adjacent to the Connex boxes.

The IDW storage area was selected to minimize any potential impacts to on-site soils that did not require remedial action and to protect the containers. The storage area was placed in an asphalt paved location that was surrounded by chain link fence.

5.14.1.1 Clearing and Grubbing Debris

All clearing and grubbing debris was stockpiled on-site and outside of the investigation area. The debris was sampled and analyzed for radiolnuclide COCs and Be at the off-site laboratory (TestAmerica). Upon receipt of the laboratory results, which indicated that the materials were not contaminated, the debris was placed on the Site in undeveloped areas.

5.14.1.2 Soil IDW

After samples were taken, the remaining soil cores were bagged and placed in 55 gallon drums that were labeled. Each drum was inventoried. Two copies of the inventory were made; the original copy was given to Site supervisory personnel and a copy was stored in each drum. All drums were sealed and the Connex boxes were locked at the conclusion of field work.

New 55 gallon steel open-top drums were used. Each drum (UN 1A2, 49 CFR Part 178.504) complied with the packaging requirements of 49 CFR Part 178.350 (and OAC 3745-52-30) and all applicable requirements of Subpart B of Part 173 meeting the design and construction requirements specified in 49 CFR Parts 173.403, 173.410, 173.413, 173.415, and 173.465 for Type A packaging.

All soil aliquots that were not analyzed were placed in plastic bags, boxed, and labeled. The aliquots were included on the IDW inventory and stored on shelves in a Connex box.

5.14.1.3 Miscellaneous/PPE IDW

All waste generated on-site, including plastic, disposable PPE, and expendable materials was bagged and labeled according to the location which the waste was generated (i.e. sample process lab, field waste, etc.). All bags were stored in a designated waste Connex box. Acetate soil core tubes were sleeved in plastic and tie-

wrapped on the ends. These were then transferred to a waste Connex box that was radiologically scanned. The on-site lab also generated chemical lab waste, which was bagged and stored in 55 gallon drums until neutralization (pH adjustment) was performed.

5.14.1.4 Liquid IDW

Waste water was generated from several different areas of the Site. Decontamination pads were constructed to contain all water from equipment cleaning. The used decontamination water was then pumped into 55 gallon drums and transferred to a polypropylene tank for storage. The on-site sample processing laboratory also generated waste water. Alconox and soap solutions that were used in the decontamination of various tools were mixed in plastic sinks that were drained into five gallon buckets, which in turn were transferred to 55 gallon drums. The drums were then labeled and sealed.

During well drilling and decommissioning activities, 55 gallon drums were used to temporarily store recovered water. These drums were pumped into the on-site polypropylene tanks for storage. The empty drums were then reused for well drilling and development activities.

All liquid IDW was transferred into four-1,500 gallon tanks that were filled approximately 90% and one 1,200 gallon tank that was filled approximately 80%. The 1,200 gallon tank also contained soilids (i.e. soils and cuttings) from drilling. The tanks were located in a secure fenced area at the northwest corner of the Site and surrounded with a spill containment berm. Approximately 6,500 gallons of liquid IDW were collected.

5.14.2 IDW Characterization

Solid IDW characterization consisted of collecting random soil samples from 12 drums containing soil. One bagged soil core was sampled from each drum. Liquid IDW from each storage tank was also sampled.

Solid and liquid IDW was analyzed to determine if the materials were hazardous pursuant to the Resource Conservation and Recovery Act (RCRA), 40 CFR Parts 261.31 through 261.33. Analyses were performed on liquid IDW samples for ignitability, corrositivity, reactivity, and toxicity. Toxicity characteristic leaching procedure (TCLP) analysis was conducted for metals (solid and liquid IDW), VOCs (liquid IDW), and semi-volatile organic compounds (SVOCs) (liquid IDW) using USEPA methods SW1311/6020, SW1311/8260, and SW1311/8270, respectively. Analyses were also conducted on liquid IDW for Be via USEPA Method 6010c and radionuclides (Cs-137, Ra-226, Th-232, U-235, and U-238) via gamma spectroscopy. Where appropriate, free liquids were tested using a paint filter test.

5.14.3 IDW Tracking

IDW was cataloged and tracked during the field investigation. Waste logs were developed that document all generated IDW. A logbook was maintained to document drum (or waste container) identification numbers, type of waste, generation start date, and personnel performing the waste containerization. The logbook included a description of the contents of each drum and the total volume of IDW placed in the Connex boxes. IDW was segregated by waste type and location of origin.

5.14.4 IDW Drum and Waste Container Labeling

Each 55 gallon drum and waste container was labeled in accordance with 49 CFR Part 172 and OAC3745-52-31 and marked on the outside in accordance with 49 CFR Part 172 and OAC 3745-52-32 and applicable Department of Transportation regulatory requirements. Drums and waste containers were marked with a number specific to each container assigned. The drum and waste container inventory is provided in Appendix L.

5.15 SITE PERIMETER AIR AND HEALTH AND SAFETY MONITORING

Site perimeter air and worker health and safety monitoring was implemented to ensure that no member of the investigation team or general public exceeded the NRC and USACE non-occupational dose limit of 100 mRem/year. Monitoring was performed using permeter air sampling stations and contamination control surveys at entry and egress points to the radiological controlled area. Additional surveys were performed as deemed appropriate by the RCT and SSHO to ensure all radioactive and hazardous material exposures were below public exposure limits.

5.15.1 Site Perimeter Air Monitoring

Based on the data from previous investigations of the Luckey FUSRAP site and the planned field investigation activities, potential doses to the public above 100 mRem/yr or airborne concentration limits established in OAC 3701:1-38-12, Appendix C, Table II of the Radiation Protection Plan were considered highly unlikely. Therefore, direct exposure monitoring was not required or performed. Site permimeter air monitoring was performed to establish baseline, public, and occupational work area levels and to provide data ensuring protection of workers, public health and the environment for radionuclides.

Air samplers were placed downwind at the Site perimeter to collect air that may contain radioactive material or Be during Luckey project activities and upwind from the site to collect air samples that were used to determine background levels. Samples were collected on a daily basis during excavation activites and any detectable releases distinguishable from background were brought to the attention of the PM to determine proper corrective action.

5.15.2 Contamination Control

Positive control of radioactive material and Be were exercised to minimize the spread of contamination outside the exclusion zone. All equipment and personnel exiting the exclusion zone were monitored for contamination. Limits for contamination and associated personnel protective equipment are given in Table 5-2.

All materials and equipment used on the Site was thoroughly decontaminated prior to being cleared for release. This included, but was not limited to the following:

- Vehicles and heavy equipment.
- Equipment used to transport potentially contaminated materials (Bobcats, drums, containers, etc.).
- Air-monitoring instruments.
- Sampling apparatus.
- Hand tools.

The degree of decontamination necessary varied on the type of equipment and its use. Small items (i.e., hand-held items such as hand tools) were taken to the personnel decontamination area and decontaminated by the user. Larger items such as vehicles were taken to an established equipment decontamination area or decontamination pad.

To verify the effectiveness of the decontamination process, a robust survey was performed that included both direct measurements and smear surveys to measure loose radioactive material. Pre- and post-decontamination surveys were performed to identify potential hot spots from a radiological standpoint. Measurements were taken on both exterior and accessible interior surfaces. A final release survey was performed on the equipment prior to leaving the restricted area (decontamination area/pad).

5.15.3 Contamination Release Limits

Guidance for specific radionuclide contamination limits for materials and equipment are specified in "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of License for Byproduct, Source, or Special Nuclear Materials" (NRC, August 1987) and listed in Table 5-2. The contamination release limit for Be is 3.0 µg/100 squared centimeters (cm^2) for the controlled area and 0.2 µg/100 cm^2 for unrestricted release.

Table 5-2: Radioactive Material Contamination Limits for Personnel and Equipment

RADIONUCLIDES[a]	AVERAGE[b, d, f]	MAXIMUM[b, d, f]	REMOVABLE[b, e, f]
Equipment: U-nat, U-235, U-238 and associated decay products	5,000 dpm α/100 cm^2	15,000 dpm α/100 cm^2	1,000 dpm α/100 cm^2
Transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, & I-129	100 dpm/100 cm^2	300 dpm/100 cm^2	20 dpm/100 cm^2
Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, & I-133	1,000 dpm/100 cm^2	3,000 dpm/100 cm^2	200 dpm/100 cm^2
Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above.	5,000 dpm βγ/100 cm^2	15,000 dpm βγ/100 cm^2	1,000 dpm βγ/100 cm^2
Personnel	200 dpm βγ 20 dpm α		

[a] *Where surface contamination by both alpha- and beta-gamma-emitting nuclides exists, the limits established for alpha- and beta-gamma-emitting nuclides apply independently.*

[b] *As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.*

[c] *Measurements of average contaminant should not be averaged over more than one square meter. For objects of less surface area, the average should be derived for each such object.*

[d] *The maximum contamination level applies to an area of not more than 100 cm^2.*

[e] *The amount of removable radioactive material per 100 cm^2 of surface area is determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels are reduced proportionally and the entire surface is wiped.*

[f] *The average and maximum radiation levels associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/hr at 1 cm and 1.0 mrad/hr at 1 cm, respectively, measured through not more than 7 milligrams per square centimeter of total absorber.*

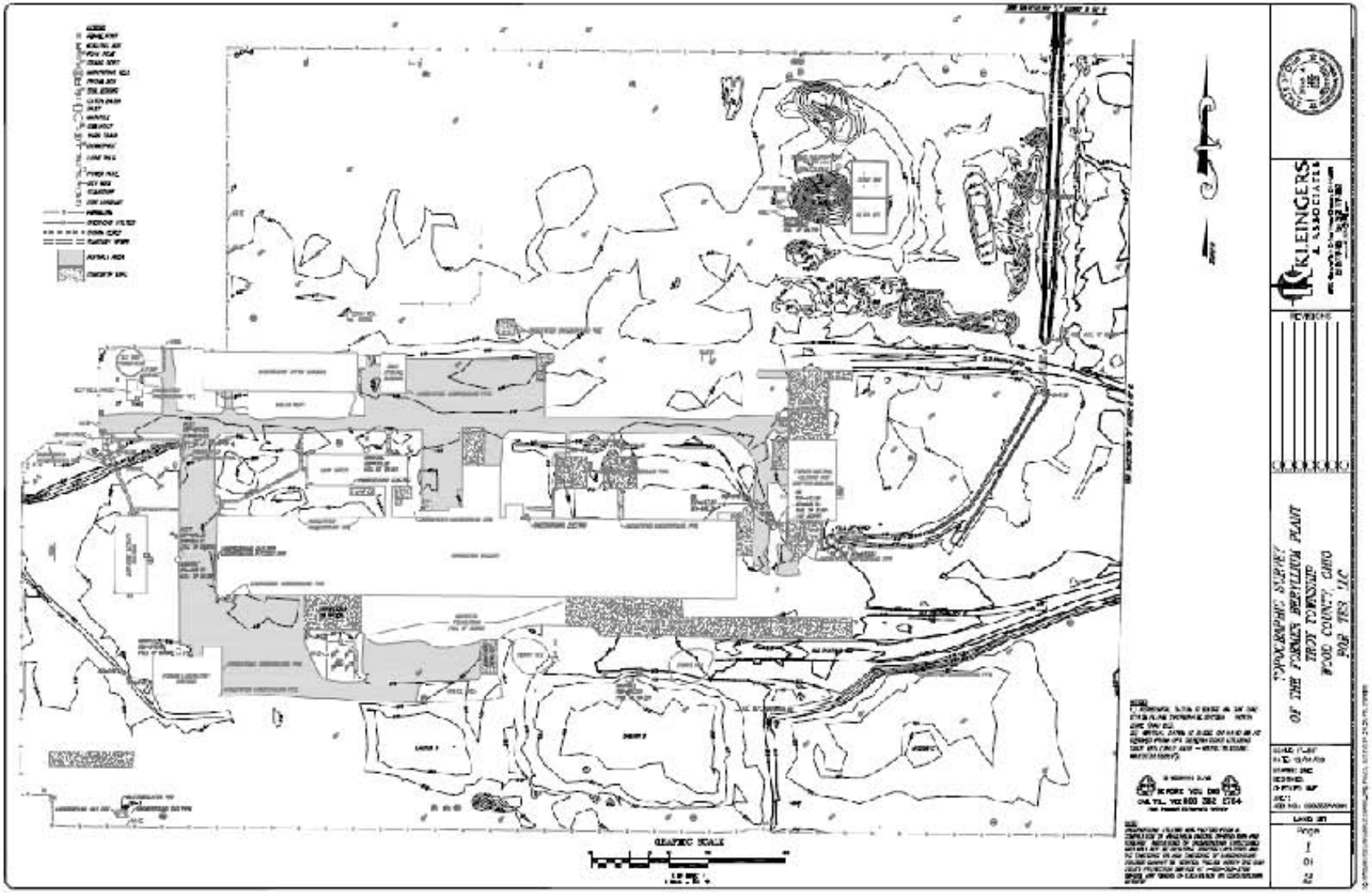


Figure 5-1: Topographic Survey Contour Map – Main Luckey Site

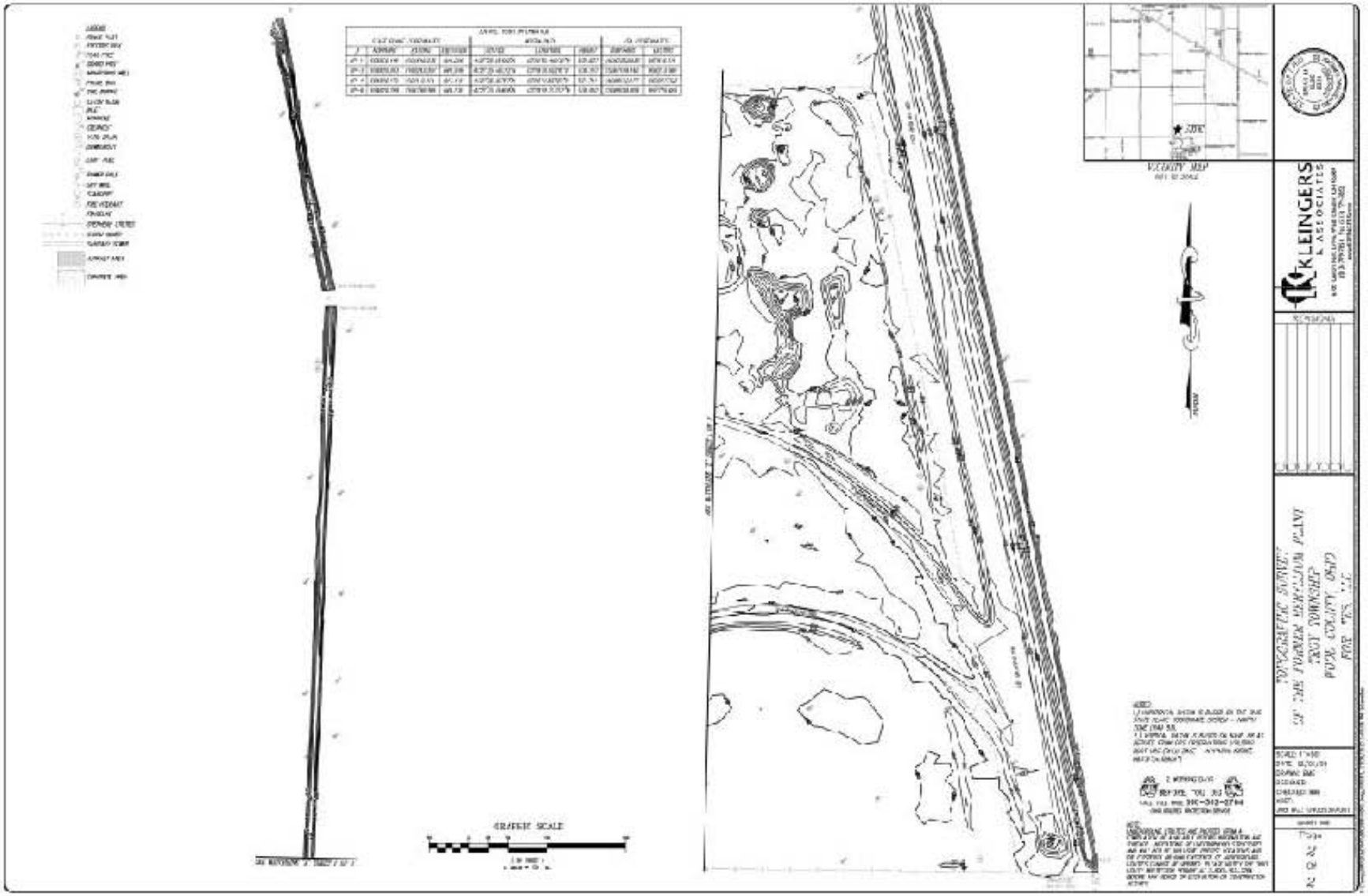


Figure 5-2: Topographic Survey Contour Map – Eastern Boundary

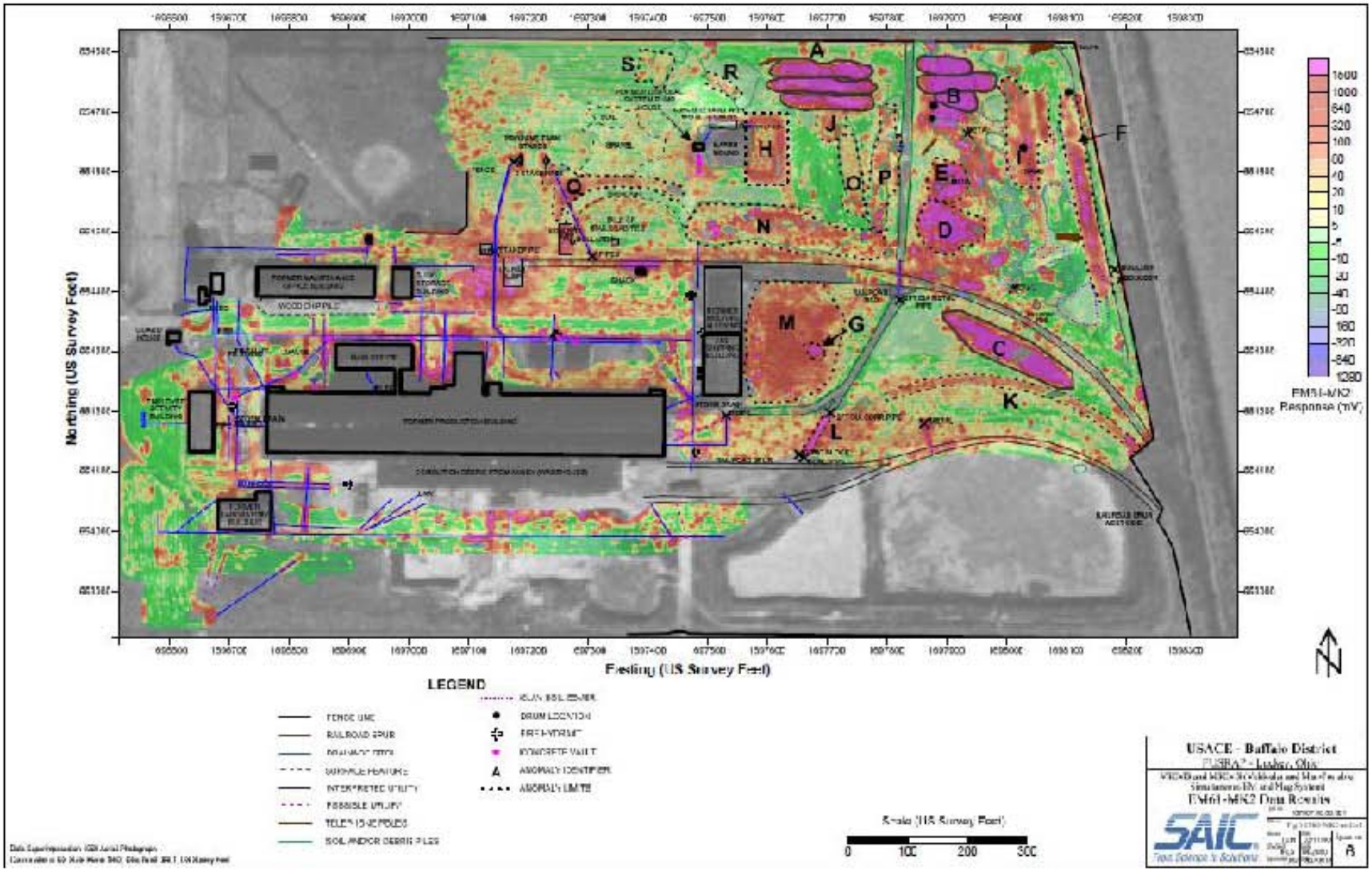


Figure 5-3: Geophysical Survey Area – EM61

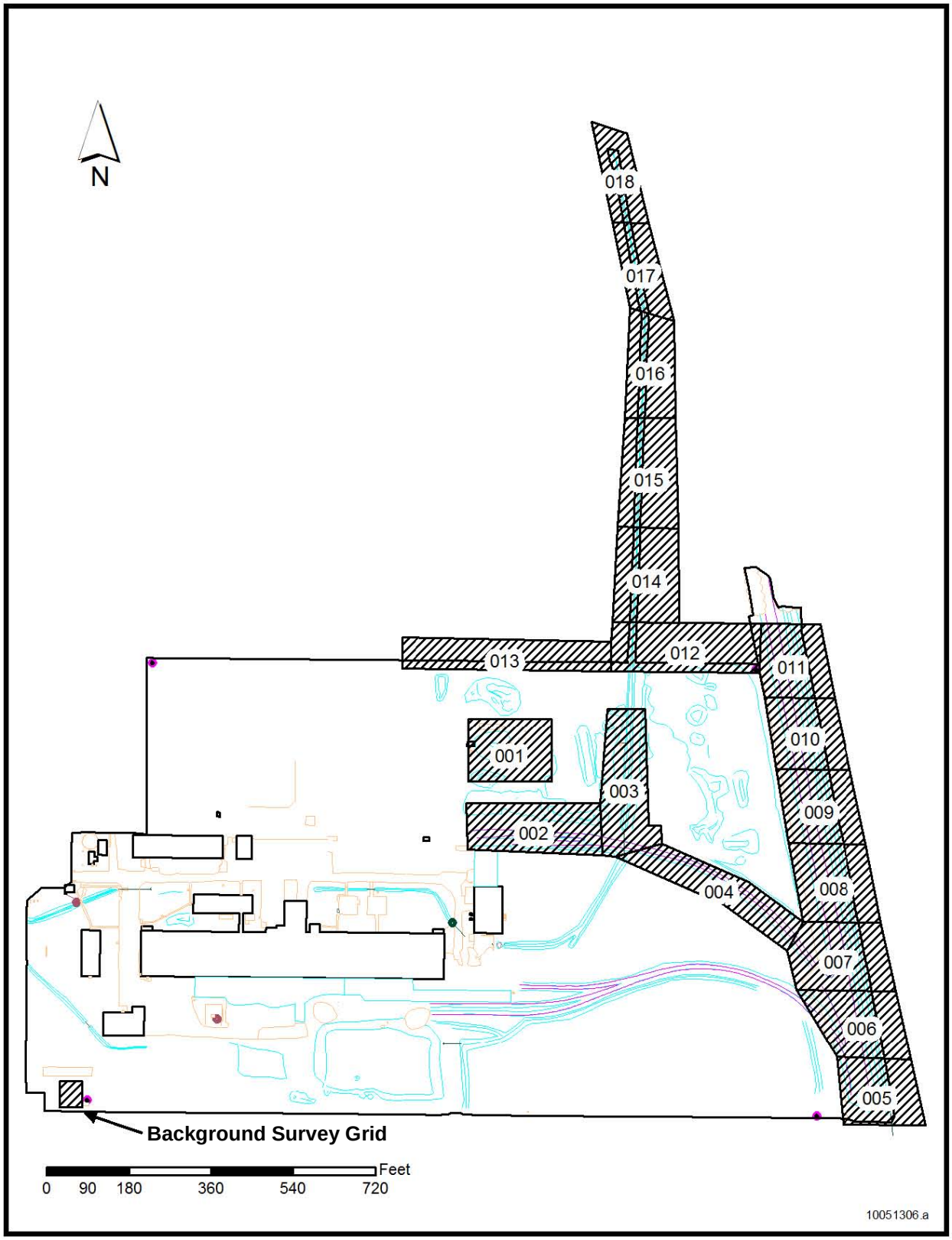


Figure 5-4: Gamma Walkover and Background Survey Grids

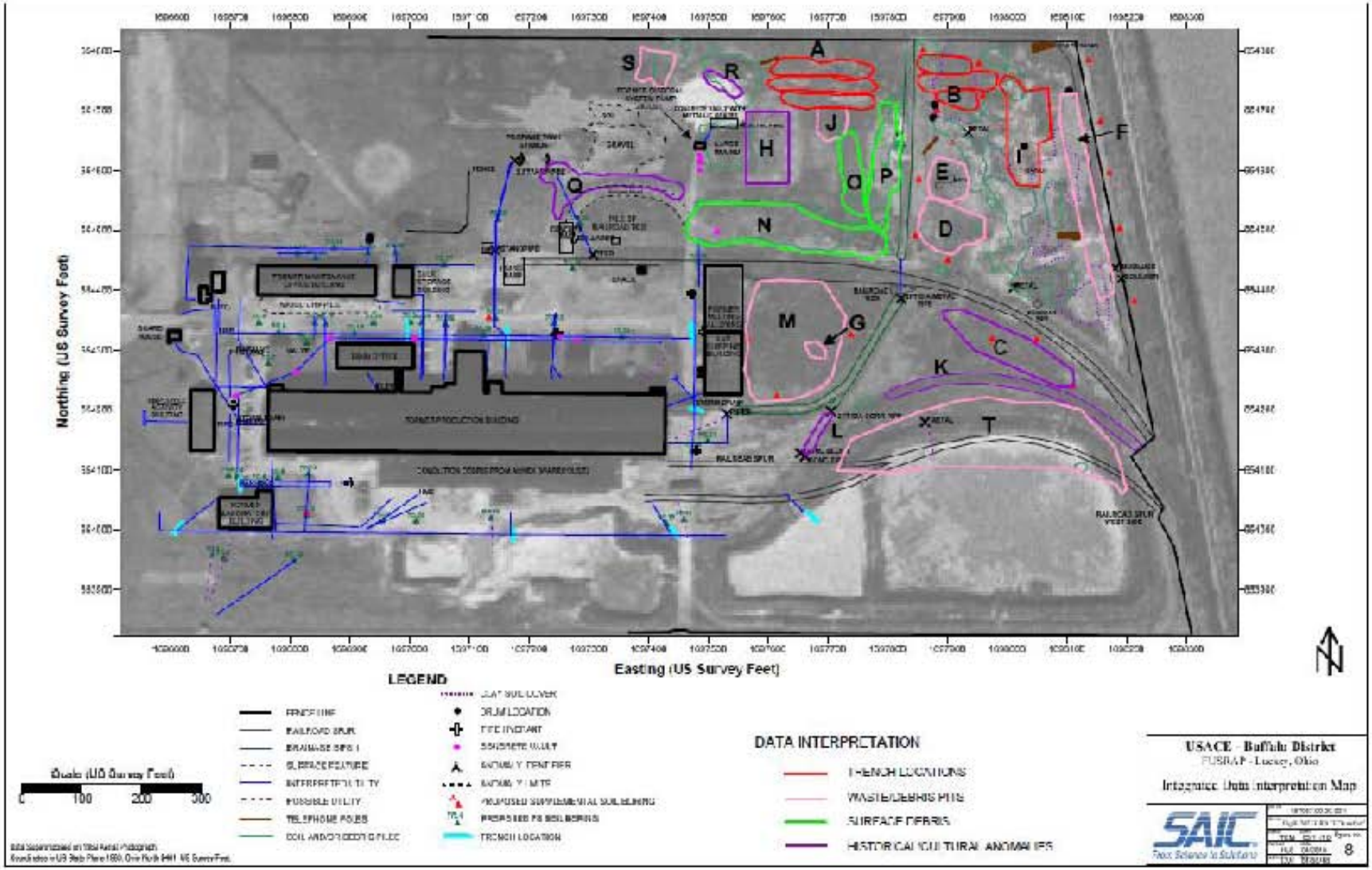


Figure 5-5: Investigative Trench Locations

American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 5-6: Manhole Locations

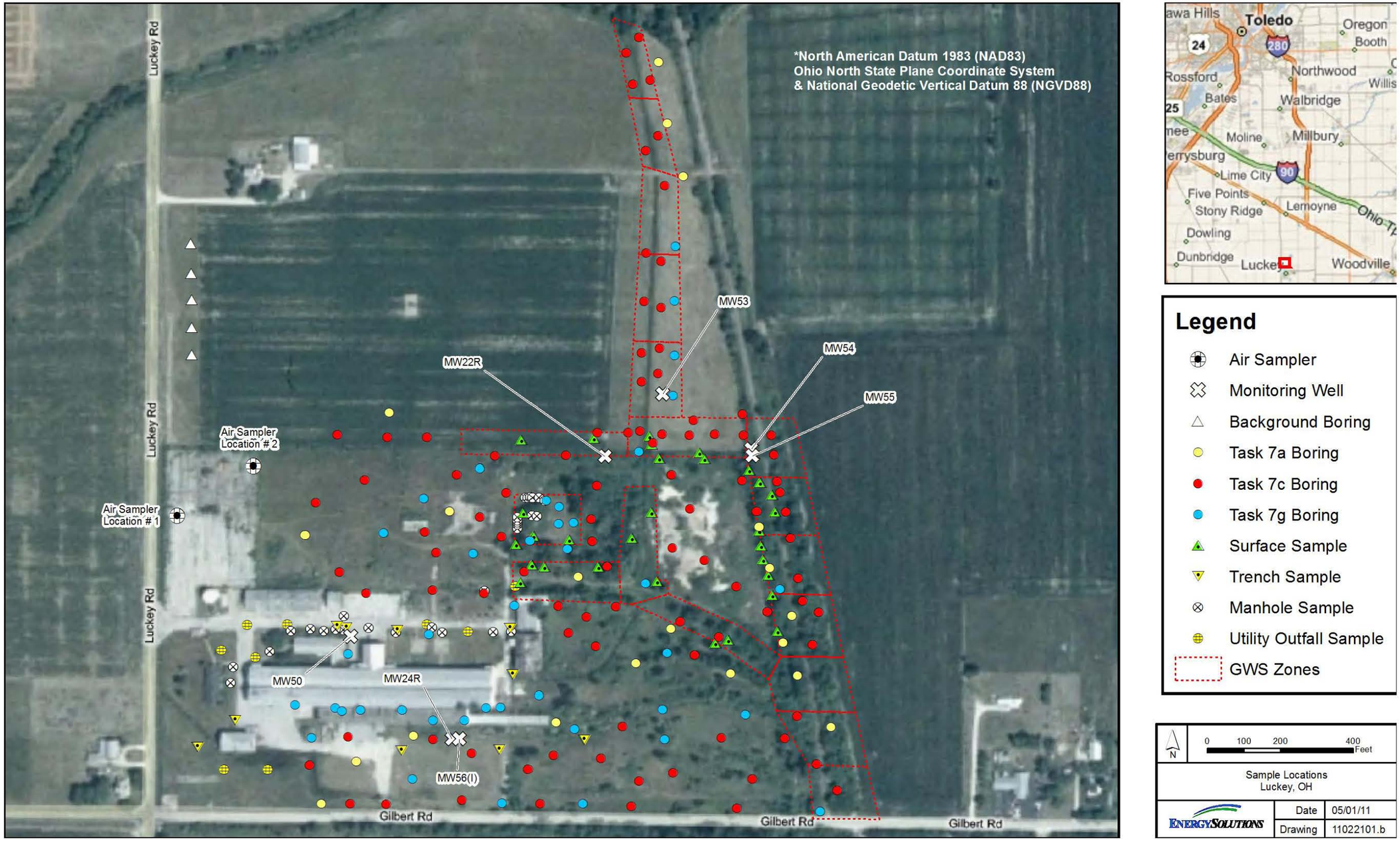


Figure 5-7: Summary of All Boring, Sampling, and Well Installation Locations

6.0 SAMPLE AND DATA COLLECTION

6.1 SAMPLE NUMBERING SYSTEM

A unique sample numbering system was used to identify each sample collected and submitted for laboratory analysis. This system provided a tracking procedure that enabled data retrieval and use and ensured that the sample numbers were not duplicated. The sample identification (ID) numbers were maintained in a field logbook and on sample field sheets. Sample ID numbers were used on all sample labels or tags, field data sheets and/or logbooks, chain of custody records, and any other applicable documentation used during the project.

Examples of the numbering system are provided below.

Example Soil Sample ID:

0005SO00101

Where:

0005 = sample location

SO = soil sample

001 = segment sample number

01 = sample bottom depth in ft bgs

A unique sample tracking number is comprised of a combination of the sample location and the segment sample number. Tracking numbers do not give an indication of the sample depth interval. The tracking number for this example would be: 5001.

The soil boring number, which is also found on soil boring logs and chain-of-custody (CoC) forms, is SB005 for the above example.

On-site laboratory duplicate samples were designated with a modified sample ID. An example of a laboratory duplicate is: 0005SO00101DUP.

For trenches, the following designation was used: TRXXSO00XSD, with TRXX being the trench number (TR01); SO meaning soil sample; 00X being the sample number; and SD being the sample bottom depth (ft).

For trench boring samples, the following designation was used: 7GXXSO00XSD, with 7GXX being the boring number (7G03); SO meaning soil sample; 00X being the sample number; and SD being the sample bottom depth (ft).

For background samples, the following designation was used: BKGXSO00XSD, with BKGX being the background boring number (BKG1); SO meaning soil sample; 00X being the sample number; and SD is the sample bottom depth (ft).

For manhole samples, the following designation was used: MHXXSE00XSD, with MHXX being the manhole number (MH01); SE meaning sediment sample; 00X being the sample number; and SD being the sample bottom depth (ft).

For composite IDW soil samples, the following designation was used: WDXXSO00XX, with WDXX being the waste drum number (WD01), SO meaning soil sample, and 00XX being the sample number.

For ditch sediment samples, the following designation was used: WDXXDS00XX, with WDXX being the waste drum number, DS meaning ditch sample and 00XX being the sample number.

QC samples sent to the off-site laboratory typically were recorded on the laboratory CoC form using the unique sample tracking number, but the sample ID might have been used at the discretion of the on-site Laboratory Supervisor or Site Investigations Manager.

6.2 Sample Containers, Preservation, and Holding Times

Sample containers, preservation requirements (if any), and holding times for soil samples collected for analysis were preformed in accordance with the QAPP and EM 200-1-3 (USACE 2001). All samples were saved and maintained until analysis, reporting, and reviews were completed and USACE issued directions that re-analysis was not required.

6.3 Analytical Methods

All soil samples sent to the off-site laboratory for analysis, including the associated QA/QC samples, were analyzed for the following parameters:

Table 6-1: Analytical Parameters

Parameter	Method
Ra-226 via gamma spectrometry	USEPA 901.1
Isotopic Thorium (Th-230 and Th-232) via alpha spectrometry	DOE EML HASL 300 Th-01 mod
Isotopic Uranium (U-234 and U-238) via alpha spectrometry	DOE EML HASL 300 U-02 mod
Be	USEPA Method 6020

6.4 RADIONUCLIDE SAMPLES

Soil samples for radionuclide analysis were collected from 3 one-ft sampling intervals exhibiting the highest radiological scan measurements determined by correlations developed for the survey instrument as described in Section 5. Two of the sampling intervals were selected to bound the vertical depth of radiological contamination at each boring.

The radionuclide samples were processed by mixing, drying, and screening the soil particles to 0.25-inch or less. Tared Marinelli containers were filled to a prescribed level with processed soil and the net weight of the soil sample was recorded. Samples of varying soil densities had weights of less than 1,100 grams.

The Marinelli container was assayed for the radiological COCs using a high-purity germanium (HPGe) detector system. Two types of detectors were used for this project: (1) a low energy germanium with a detection efficiency of approximately 30% [relative to a 3-inch x 3-inch NaI crystal] and (2) a broad energy germanium with a detection efficiency of approximately 40% (relative to a 3-inch x 3-inch NaI crystal). There was no specific requirement for samples to be counted on one type of detector versus the other since gamma-rays of interest were not in the low energy region (less than 50 keV). Photopeak activities were collected and processed using ORTEC GammaVision 6.08 gamma spectroscopy software. The results for radionuclides of concern were recorded in units of pCi/g.

Both on-site and off-site laboratories performed gamma spectroscopy analysis on the soil samples using identical radionuclide libraries and the ORTEC ENV-32 peak search software algorithm.

Analysis results were reviewed, approved, and hard copies were generated and archived in project ring binders. The results (including uncertainties and minimum detectable activities) were recorded in an analytical results master spreadsheet (Appendix A) along with the results for samples sent to TestAmerica.

6.5 BERYLLIUM SAMPLES

Soil samples for Be analysis were collected at continuous one-ft increments through the first eight ft of each borehole. Thereafter, two Be soil samples were collected from the sampled interval above the soil boring's termination depth and at the interval where fill material changed to native soil.

The Be samples were processed by collecting a representative cutting of the soil core, drying the sample, and weighing out an aliquot of approximately 0.5 grams.

The on-site laboratory performed Be analyses on soils with the project approved BeFinder developed by Berylliant, Inc. of Tucson, AZ. Aliquots of homogenized dried soil were shipped to TestAmerica for off-site analyses. TestAmerica performed the Be analysis using a 0.5 gram aliquot.

7.0 ANALYTICAL METHODS

Laboratory analyses were performed on-site and off-site. The on-site laboratory used a proprietary BeFinder analytical method for Be analysis and HPGe Gamma Spectroscopy for radionuclides analyses. TestAmerica, the off-site laboratory, performed analysis for Th-230 and QC samples from the on-site laboratory.

All laboratory analysis minimum detectable concentrations (MDCs) were initially set to the following limits for soil samples:

- Ra-226 via gamma spectroscopy: 1.0 pCi/g.
- Isotopic Th-230 and Th-232 via alpha spectroscopy: 0.5 pCi/g (typical sensitivity for the off-site laboratory).
- U-238 via gamma spectroscopy: 2.6 pCi/g.
- Isotopic U-234 and U-238 via alpha spectroscopy: 0.5 pCi/g (typical sensitivity for the off-site laboratory).
- Be: 100 µg/kg (typical sensitivity for the off-site laboratory).

7.1 OFF-SITE LABORATORY

Off-site analyses were conducted using the following methods:

- USEPA 903.0 (confirmed with the USACE to be equivalent to 903.1 for the purposes of this project) for Ra-226.
- DOE EML HASL 300 Th-01 mod for isotopic thorium (Th-230 and Th-232) via alpha spectroscopy.
- DOE EML HASL 300 U-02 mod for isotopic uranium (U-234 and U-238) via alpha spectroscopy,
- USEPA Method 6020A (ICP-MS) for Be.
- USEPA 1311/6010/7470/7760 for TCLP Metals.
- USEPA 1311/8260B for TCLP volatile organics.
- USEPA 1311/8270C for TCLP semi-volatile organics.
- USEPA 9095B Paint Filter Test.

Radionuclide analyses were performed using solid-state surface barrier detectors in conjunction with an alpha spectrometry system for the determination of isotopic thorium (Th-230) and HPGe detectors in conjunction with a gamma-ray spectroscopy system for the determination of Ra-226 and U-238 activity concentrations. The methodology for gamma spectroscopy analysis was based on EML GA-01-R mod and the methodology for alpha spectrometry analysis was based on EML A-01-R mod.

Be analysis was performed using an inductively coupled plasma mass spectrometry (ICP-MS) system.

7.2 ON-SITE BERYLLIUM LABORATORY

The USACE evaluated and approved an optical fluorescence technique developed by Berylliant, Inc. for detecting Be (known as BeFinder) on smear samples and in soil. This methodology incorporated approved analytical procedures based on ASTM Method D7458-08.

The method is designed to digest a 0.5 gram soil aliquot or smear sample containing Be particulates in a solution of ammonium bifluoride for a specified time and temperature to extract Be into solution. This solution is combined with a dye solution cuvette container and is then analyzed fluorimetrically.

The initial step of the BeFinder method required dissolution of Be from the soil matrix by heating the samples followed by a 2-hr dissolution period. This procedure was performed in accordance with the SAP and was based on a study conducted by the USACE that indicated a 2-hr dissolution period is capable of achieved Be results within 10% of results associated with a 40-hr period (recommended by the manufacturer). The BeFinder method also required the use of small aliquots (i.e., 0.5 grams), which provided the option for re-analysis, if necessary. Unused sample aliquots were maintained at the Site in locked Connex boxes.

After beryllium dissolution at 90 degrees Celsius, the soil sample and solution are allowed to cool to room temperature. The liquid pahse is then filtered using 3ml syringe with 0.2µm GHP sure lock syringe filter into Falcon tube with orange cap (volume ~ 3 ml). Then 1.9 ml of detection solution is placed in a cuvette and 0.1 ml of filtered sample is added. The detection solution and liquid sample is mixed by hand shaking and again filtered through 0.2µm GHP syringe filter, as above discussed above, into a cuvette. The cuvette is caped and analyzed. This process is referred to as 20X dilution.

The fluorescence analysis reading is displayed as ppb. To convert from ppb to µg of beryllium/g of soil, the result in ppb is multiplied by 2 (i.e. [ppb] x 2 = µg/g)

Samples with high Be concentrations outside of the calibration range required additional processing. In these cases, the samples were diluted as follows:

- Take 0.1ml of filtered soil solution and dilute with 1.9 ml of 3 wt% ABF. Take 0.1 ml of this solution and add to cuvette with 1.9 ml of detection solution and read fluorescence. Measure Be in ppb and multiply the results in ppb by 40 to get µg of beryllium/g of soil. This step is referred to as 400X dilution.

- If the result of 400X dilution result is outside of the calibration range then further dilution is necessary and performed as follows: Take 0.1 ml of filtered dissolute soil solution and dilute with 1.9 ml of 3% (by weight) ABF. Take 0.1 ml of this solution and add to cuvette with 3.9 ml of detection solution and read fluorescence. Measure

Be in ppb and multiply the results by 80 to get µg of beryllium/g of soil. This step is referred to as 800X dilution.

BeFinder readings were compared against a prepared fluorometric calibration curve generated using supplied standards of 0, 10, 40, 200, and 800 ppb Be. The resulting calibration curve covers a Be concentration range of 0 to 40 ppb for the solution in each measurement cuvette. Calibration curves were typically generated on a daily basis, however according to procedure, calibrations curve only needed to be generated once every three to four day unless laboratory conditions change significantly. For our analyses, calibration curves were generated using either of the following two methods:

- Using calibration solutions to generate a sample-specific calibration chart - this method was used for most part; or
- Using the most recent stored calibration chart and analyze using this chart. When using this second method, it was common to perform a single point measurement using the mid-concentration calibration solution as a means to check against drift and to ensure the calibration curve was still valid. This method is the preferred method recommended by the manufacturer.

The BeFinder instrument was connected to Windows™ based computer running Beryliant's proprietary Excel spreadsheet which processed readings and generated analysis results based on calibration curve calculations.

7.3 ON-SITE GAMMA SPECTROSCOPY LABORATORY

Gamma spectroscopy was used to determine pCi/g concentrations for Ra-226, U-238, U-235, and Th-232 in soil samples. Table 7-1 provides a list of gamma ray energies and yields that were measured in the on-site laboratories as well as the off-site laboratory, including the radionuclides that were measured as surrogates. A copy of the Site radionuclide library was provided to TestAmerica to provide consistency in gamma spectrometry data processing.

Table 7-1: Luckey FUSRAP Site Project Gamma-Ray Energies and Yields

Radionuclide	Surrogate Measurement	Energy Line (keV)	Yield (%)	Notes
Ra-226	--	186.26	3.59	
Th-232	Ac-228	911.20	25.8	
U-234	U-238	--	--	Assume natural, (U-234 = U-238)
U-235	--	143.76	10.96	
U-238	Th-234	92.35	5.41	

		63.29	3.8	

Notes:
Radiological data obtained from: http://www.nndc.bnl.gov/chart/chartNuc.jsp
Ac-228 = Actinium-228
keV = kiloelectron volt

Because of the ease of quantifying Th-232, the on-site laboratory measured and reported this radionuclide. However, the primary assessment was based on off-site alpha spectroscopy.

The gamma spectroscopy analysis system consisted of two ORTEC high purity germanium solid-state detectors in Pb shield assemblies, each connected to an ORTEC DESPEC Pro spectrometer processing unit. Counting geometries consisted of 250 milliliter (mL) and 500-mL Marinelli beakers containing dried and weighed soil with clump sizes of no greater than 0.25-inch. The majority of the samples were analyzed using the 500-mL Marinelli. Counting efficiency factors were established using NIST traceable mixed gamma simulated soil sources in 250-mL and 500-mL Marinelli beakers prior to sample counting at the beginning of the project.

System performance checks were run on each detector at a minimum of once per work shift. These checks monitored for significant changes in detector efficiency, detector photopeak resolution, and energy calibration. Performance checks were also run anytime the detector system was re-energized after a power-down or after any adjustments were made to detector electronic components. Parameters were evaluated using statistically derived acceptance criteria. Additionally, efficiency verification counts were made on each detection system and documented along with system efficiency data reports.

ORTEC GammaVision v.6.08 software was used and controlled on a Windows™ XP Service Pack 2 based computer. The specific ENV-32 peak search analysis routine was used for all sample analysis along with a customized radionuclide gamma photon library specific to the Luckey Site. Analysis count times ranging from 20-minutes to 90-minutes were used with assurance that the USACE required minimum detectable MDA of 1.0 pCi/g was met for Ra-226.

8.0 QUALITY ASSURANCE/QUALITY CONTROL

The QA/QC program was implemented under the QCP and QAPP documents and in accordance with USACE requirements. One of the primary QC methods for data analysis was the use of an independent off-site laboratory for analysis of split samples.

8.1 DESCRIPTION OF PROGRAM

The on-site gamma spectroscopy laboratory used analytical procedures based on ANSI/IEEE Standard 325-1986. TestAmerica performed isotopic thorium, Ra-226, U-238, U-235, and Th-232, and Be analysis in accordance with procedures under a National Environmental Laboratory Accreditation Program (NELAP). To provide QC assessment of the on-site gamma spectroscopy results, 10% of the analyzed soil samples were sent to TestAmerica for inter-laboratory comparison studies (QC samples). An additional 5% of the samples were sent off-site as splits for QC compliance and assessment.

The on-site BeFinder laboratory was operated in accordance with ASTM Method D7458-08. To provide QC assessment of the BeFinder measurements, 5% of the analyzed on-site Be soil samples were sent to TestAmerica for inter-laboratory comparison studies. Additional quality control checks such as blanks and MS/MSD samples were also performed by TestAmerica as defined under their QA/QC program. MS/MSD samples were not analyzed by the on-site gamma spectroscopy laboratory for radiological constituents. The on-site laboratory QA/QC procedures for gamma spectroscopy included laboratory control standards and laboratory duplicate measurements.

8.2 QUALITY/RELIABILITY OF DATA COLLECTED

All radiological field data were reviewed by the project Senior Health Physicist to ensure that the data were collected in accordance with the SAP and that all instrumentation used was in calibration and passed all QC measurements.

All laboratory data underwent two levels of review. The first level of review was performed at the laboratory. For the on-site laboratory, the Laboratory Supervisor performed the first level of review. Laboratory analyses were assessed for compliance with required precision, accuracy, completeness, and sensitivity. Methodology was in place to notate data that required qualification when acceptance criteria were not met and corrective action was not successful, or if corrective action was not performed. Analytical batch comments were provided as a case narrative to explain any non-conformance or other issues.

The second level of data review was provided by the Corporate QA Manager (or designee) to evaluate completeness by ensuring that all requested samples were analyzed and reported. Any QC deficiencies documented by the laboratory case narrative were reviewed. Significant problems noted were evaluated on a case by case basis to determine any impact upon project DQOs. All laboratory data were evaluated for blank contamination and sample duplicate precision.

The project team used measurements from air sample filters and results of field and laboratory duplicates and split samples to assess precision. Field duplicates were collected in the same vicinity and used to assess sampling precision. Laboratory duplicates were used to assess analytical precision.

The mean value of single or aggregated RPD is classically used. However, for reporting purposes, the RPD is used when a single pair is evaluated. For the purpose of the surveys, the RPD should not exceed 30% for both field and analytical samples. The RPD is calculated as shown below:

$$RPD = \frac{|S_1 - S_2|}{S_1 + S_2} \times 200 \text{ (Equation 9-1 of QAPP)}$$

Where:

S_1 = the value for the primary sample and/or measurement.

S_2 = the value for the duplicate sample.

The RPD methodology was used to compare on-site analytical results with off-site analytical results, field duplicate results, and laboratory duplicate results.

All daily performance check and efficiency data for each HPGe detector is documented in Appendix F. Additional efficiency verification counts were made on both gamma spectrometry systems to ensure the accuracy of counting efficiency conversion factors. Documentation of these reports and calculations are also included in Appendix F.

8.3 MANAGEMENT OF OUT OF CONTROL ANALYSES USING THE ON-SITE LABORATORY

The following is a discussion of “out of control” flagged radioanalytical results as related to the ORTEC Gamma Spectroscopy System.

The ORTEC software QA program was used as an initial indication of the gamma system counting performance. If the performance data were out of specification, no further sample analysis was performed until all spurious parameters were back within acceptable limits. The measurements were automatically stored in a system database, which consisted of total background, total activity of all nuclides, average Full Width Half Maximum (FWHM) ratio for all calibration peaks, average peak shift, and actual centroid energies.

Initial efficiency factor determination data was collected for each counting geometry over a range of 59.5 keV to 1,836 keV. System performance data were collected for a low energy peak (59.5 keV) and a high energy peak (1,332.46 keV). The performance parameters consisted of peak resolution, energy calibration, and total peak counts. The measurement of these parameters were used to calculate a mean value along with +/- 2 sigma and +/- 3 sigma limits as specified in the USACE SOW and detailed in the guidelines found in the SAP Vol. 2, Attachment 2, CP-INST-105, Rev.1 (USACE 2009c).

In addition, long count system background counts were made using empty Marinelli beakers in each shield assembly. No detectable COCs were detected at any time in either shield during the project.

Careful attention was paid to each peak parameter after a performance check and after each sample analysis. HPGe detectors tend to be hyper-sensitive to changes in room temperature, vibrations, poor AC power quality, and changes in humidity. Unless the detector end cap is damaged or the source is improperly placed on the end cap, detector efficiency factors should remain very stable. If photopeak resolution deteriorates significantly and/or a change in the energy calibration shifts the photopeaks out of position, then the system performance photopeak activities will be affected. Changes in the resolution and energy parameters will be the first indication of failing system performance.

Each system performance check report and each sample report were reviewed with sufficient detail to determine if any of these parameters were causing any loss of counts in the photopeaks of interest. In several cases, samples were recounted due to issues discovered in the analysis reports. All gamma spectroscopy reports were reviewed thoroughly for indications of resolution deterioration and energy shifts. Tolerances for peak resolution were +/- 20% warning and +/- 30% control. Tolerances for peak energy were +/- 0.5 keV warning and +/- 0.75 keV control. If energy tolerances were exceeded, then the photopeak could not be identified in the peak search program. Although there were some trends of peak counts that were biased near the warning and control limits, the gamma systems' overall performance appeared to be reliable and any amount of introduced uncertainty in counting efficiencies were relatively small considering other factors in the sample processing protocols.

Efficiency factor verification analysis was also performed for both HPGe detectors and associated electronics using the initial efficiency standards in the appropriate geometry. In each case, the results for each efficiency factor data point were well within +/- 10 % agreement, which is within industry standards. The files for D1 and D2 efficiency verification confirmation in Appendix F, Section 03 document these results.

Comparison of on-site gamma system results with off-site gamma system results for the same Marinelli containers are in good agreement, which provides further confidence in the accuracy of gamma system results.

9.0 SUMMARY OF FIELD INVESTIGATION RESULTS AND DATA

This section provides a summary of field and laboratory observations, results, data, and interpretations associated with the investigation. Summarized radionuclide results are provided in Table 9-1 (Appendix A) and summarized Be results are provided in Table 9-5 (Appendix A). These tables are included in the appendix because of size limitations.

9.1 SITE VISIT

TES and representatives from Midwest Land Clearing, Kleingers and Associates, and SAIC conducted a Site visit during August 4 and 5, 2009. Each team member walked the Site and evaluated conditions for real and potential impacts to their respective task(s) specified in the SAP.

Findings were presented in a "*Luckey Site Visit Report*" (USACE 2009a), which identified the following issues and concerns:

- Large debris throughout the Site presented a safety hazard for the equipment operator and Site personnel and would have a negative impact on the equipment that may cause down time and unnecessary equipment repair.
- Heavy tree density, canopy cover, and vegetative ground cover within and adjacent to the drainage ditch had the potential to negatively impact the surveys (topography, geophysical and gamma walkover) by affecting GPS capabilities and limiting access.
- Scattered surface scrap metal would mask any features at depth and negatively impact the quantity and quality of the geophysical data to be gathered.

Based on these identified issues and concerns, the following recommendations were offered:

- Amend the USACE SOW to allow for the identification and on-site disposition (removal, size reduction, relocation, consolidation, etc.) of wood, concrete, and large/small metal debris located around/throughout the Site. This task was performed prior to and during the execution of field surveying and sampling activities.

- Amend the USACE SOW to allow for the heavy ground vegetation within the on-site and off-site swale to be cleared to provide for a more complete gamma walkover survey.

9.2 TOPOGRAPHIC SURVEY

A three-dimensional topographic survey was perform across the entire 40-acre Site to map surface contours and to delineate physical features. Copies of the contour maps are provided in Figure 5-1 and Figure 5-2 and electronic drawing files are provided in Appendix B.

9.3 GEOPHYSICAL MAPPING

The geophysical investigation provided information on the lateral limits of trenches associated with historical disposal activities at the Site. While many anomalies coincide with surficial metallic debris piles, several elongated anomalies consistent with trenches were identified (Anomalies A and B) and are presented in the Geophysical Survey Report, which is provided in Appendix B. Two additional anomalous areas were identified that were consistent with metallic debris pits or emplaced metallic debris (Anomalies E and D). Lesser amounts of metal masses were interpreted to be present in the area of Anomaly I (an area devoid of vegetation) and Anomaly F. Maps are located in Appendix B and a summary EM-61 map is provided as Figure 5-3.

Anomaly Q was identified adjacent to a former access road. While this area did not present a definitive magnetic anomaly, EM-61 data suggest conductive metallic debris is present. Due to the proximity of this anomaly to a former access road, this feature may be a result of scattered/discarded or disposed metallic debris that may have been associated with historical disposal or transportation activities. The area immediately north of Anomaly Q was devoid of vegetation. While the data suggest some metallic debris is present at depth, the limits of this debris extended beyond the limits of the area devoid of vegetation.

The area of Lagoon D appears to contain metal masses at depth. It appears that the materials used to fill the lagoon contained metallic debris. A large metal mass is present within the lagoon limits in the area of Anomaly G. This feature exhibited a very large magnetic dipole response.

Utility and line locator surveys were used to indentify major utility trends in the area of the buildings and trending toward the main geophysical investigation area. These trends were substantiated by electromagnetic and magnetometer methods.

The EM-31 terrain conductivity survey indentified conductivity variations across the Site that appeared to be related to changes in non-homogeneous fill materials. The large amount of surficial and subsurface metal at the Site limited the ability to map the location and limits of nonnative, nonmetallic fill materials, if present.

The EM-61 and magnetometer datasets best represent the location of metallic debris at the Site. These anomalous zones are consistent with the magnetic susceptibility anomalies identified in the EM-31 data. While the magnetometer data mirrored the EM-61 data, the EM-61 high sensitivity metal detector survey results provide better lateral resolution of subsurface metallic debris.

To substantiate the nature of the interpreted trenches, investigation via intrusive methods were determined to be necessary. Additional soil borings were planned and implemented based on the locations proposed in the Geophysical Survey Report.

9.4 GAMMA WALKOVER SURVEY

Figure 9-1 illustrates the results of the background gamma walkover grid survey. Figure 9-2 through Figure 9-22 provide plotted GWS data for Survey Grids 001 through 018. Figure 9-23 provides plotted GWS data for soils adjacent to the ditches that were surveyed. Figure 9-24 combines all the collected GWS data onto one figure. The recorded radiological scan data at each location were color coded based on the cpm level and the size of the symbol was scaled to be one-meter wide to represent the back-and-forth swinging motion performed during the survey. The cpm level color ramp used in the figures was as follows:

- Dark Green – ≤ Background Mean (≤ 14,045 cpm)
- Green – Background Mean + Minimum Dectectable Count Rate of the Surveyor ($MDCR_{surveyor}$) (range: 14,046 to 15,753 cpm)
- Light Green – Background Mean + $MDCR_{surveyor}$ to 2× Background Mean (range: 15,754 to 28,090 cpm)
- Yellow – 2× to 3× Background Mean (range: 28,091 to 42,135 cpm)
- Light Orange – 3× to 4× Background Mean (range: 42,136 to 56,180 cpm)
- Dark Orange – 4× to 5× Background Mean (range: 56,181 to 70,225 cpm)
- Red – > 5× Background Mean (> 70,225 cpm)

At the request of the USACE, 2 elevated areas were rescanned in Survey Grid 002 (Figure 9-4 and Figure 9-5) and one elevated area was rescanned in Survey Grid 004 (Figure 9-8). The GWS for Survey Grid 002 (Figure 9-2) includes the elevated area data presented in Figure 9-4 and Figure 9-5, and the GWS for Survey Grid 004 (Figure 9-7) includes the elevated area data presented in Figure 9-8.

Two (2) different FIDLER detectors were used: the Bicron and the Alpha Spectra. At the request of the USACE, data collected using the Alpha Spectra were normalized to the Bicron response using measured calibration factors. In addition, surface specific background measurements for each FIDLER were developed by determining background count rates at an uncontaminated location north of the Site just east of Luckey Road. Figure 9-25 and Figure 9-26 show the new background for the Bicron and Alpha Spectra, respectively. The new background values were used to calculate revised $MDCR_{surveyor}$ values, which were calculated to be 15,231 cpm and 10,140 cpm for the Bicron and Alpha Spectra, respectively.

The GWS data was reassessed after spatial and low-end statistical outliers were removed. Alpha Spectra data were normalized (when both FIDLERs were used in a survey grid) and statistical analysis was performed to determine the underlying distribution of the data for each survey grid. The mean and standard deviation of the underlying distribution in each survey grid were used to calculate z-scores. For example, 3 z is equal to the mean of the underlying distribution plus three times the

standard deviation. Any values greater than the calculated 3 z result are considered to be outliers of the underlying distribution.

Figure 9-27 through Figure 9-44 provide the plotted reassessed GWS data for Survey Grids 001 through 018. Figure 9-45 and Figure 9-46 combine all the reassessed GWS data and present the data using z-scores and background mean, respectively. Each figure with reassessed GWS data includes a narrative that describes the plotted data in more detail.

9.5 GEOLOGIC CONDITIONS

Soil and bedrock conditions encountered during drilling and sampling at the Site were consistent with conditions described in the RI report (USACE 2000).

9.5.1 Unconsolidated Deposits

Unconsolidated deposits encountered in the soil borings consisted of glacial soils that contained variable amounts of clay and silt with occasional sand seams and lenses. Gravel and cobble were also identified in lower zones of the clay and silt soils, typically near the soil/bedrock interface. Disturbed soils in areas of previous industrial activity were characterized by different soil structure and the occasional presence of fill materials, such as concrete or metal fragments.

Groundwater was encountered in sand and gravel lenses that generally had poor water yields due to the relatively high clay and silt content.

9.5.2 Bedrock

Carbonate bedrock of the Lockport Dolomite formation was encountered beneath the unconsolidated deposits in borings drilled for monitoring wells screened in the bedrock. The encountered bedrock was described as a fossiliferous limestone with abundant vugs.

Groundwater within the upper bedrock had relatively good yields due to secondary porosity features that consist of interconnected fractures, bedding planes, and joints.

9.6 ANALYTICAL RESULTS

Soil and sediment sample analytical results for radionuclides and Be are discussed below. The USACE and Argonne National Labortories (ANL) have also evaluated the data, prepared figures that illustrate the extent of radionuclides and Be soil contamination, and estimated the volume of contaminated soil at different levels of certainty. The USACE/ANL evaluation incorporates a Bayesian statistical/geostatistical model that provides a quantitative means of incorporating the conceptual Site model with Site data to determne a probabilistic relationship between the volume estimate and the likelihood of contamination. Results of the USACE/ANL analysis will be presented in a separate report.

The ensuing discussion in this document does not duplicate the USACE/ANL evaluation. Rather, it provides: (1) a brief summary of the contaminants detected above the Site cleanup goals, (2) the range of concentrations in various media sampled, (3) general statements regarding the extent of soil contamination, and (4) a comparison of the Be analytical results associated with the BeFinder and TestAmerica analyses.

9.6.1 Radionuclides

Summarized radionuclides analytical results are presented in Table 9-1 (Appendix A) and discussed below. On-site gamma spectroscopy results are reported for Ra-226, Th-232, U-235, and U-238. TestAmerica results are reported for Ra-226, Th-230, Th-232, U-235, and U-238. Complete analytical reports are provided in Appendix A as noted below.

- On-site gamma spectroscopy reports are contained in folders 2 and 3.
- TestAmerica reports are contained in folder 5.

9.6.1.1 Background Soil Samples

Radionuclides were not detected at concentrations that exceeded the soil cleanup goals in 109 background soil samples.

- Ra-226 background concentrations varied from 1.22 to 3.97 pCi/g (on-site analysis) and 2.06 to 3.04 pCi/G (TestAmerica).
- Th-232 background concentrations varied from 0.08 to 28.63 pCi/g (TestAmerica).
- U-238 background concentrations varied from 0.08 to 0.17 pCi/g (on-site analysis) and 0.83 to 1.83 pCi/g (TestAmerica).

9.6.1.2 Surface and Subsurface Soil Samples

660 surface and subsurface soil samples from the soil borings, surface locations (designated 6a), and bounding/verification samples (designated 7g) were analyzed for radionuclides on-site or at the TestAmerica laboratories. The range and median concentrations for these samples are summarized in Table 9-2, below.

Table 9-2: Radionuclides Summary – Surface and Subsurface Soil Samples

Concentration (pCi/g)	On-Site Analysis		Off-Site (TestAmerica) Analysis		
	Ra-226	U-238	Ra-226	Th-230	U-238
Max.	174.7	65.2	52.2	442	21.9
Min.	0.93	0.32	1.12	0.62	0.40
Median	2.91	1.51	2.87	1.76	1.29
Clean-up Goal[a]	4.97	28.63	4.97	9.00	28.63

Note:

a = above background

The data presented in Table 9-1 and summarized above indicates that Ra-226, U-238, and Th-230 were detected in surface and subsurface soil samples at concentrations that exceeded the cleanup goals.

- The Ra-226 soil cleanup goal was exceeded in 71 of 593 surface and subsurface soil samples.
- The U-238 soil cleanup goal was exceeded in 13 of 593 surface and subsurface soil samples.
- The Th-230 soil cleanup goal was exceeded in 18 of 593 surface and subsurface soil samples.

All soil samples that contained U-238 and Th-230 at concentrations above the soil cleanup goals also exceeded the soil cleanup goal for Ra-226, which suggests that the extent of U-238 and Th-230 contaminated soil is bounded by the Ra-226 data.

Figure 9-47 is a scatter plot that compares soil sample bottom depth against Ra-226 concentration for samples that contained Ra-226 above the soil cleanup goal. As shown on the figure, most soil samples that exceed the cleanup goal occur between 0 to 5 ft bgs. The majority of the Ra-226 contaminated soil beneath 5 ft bgs occurs in the northeast corner of the site where the disposal pits were located.

9.6.1.3 Manhole, Drain, and Pipe Samples

Nine sediment samples (designated 6a) from manholes, pipes, and drains were analyzed for radionuclides on-site or at the TestAmerica laboratories. None of the radionuclides were detected at concentrations that exceeded the soil cleanup goals.

9.6.1.4 Trench Samples

99 soil samples from the investigative trenches (designated TR) were analyzed for radionuclides on site or at the TestAmerica laboratories. The range and median concentrations for these samples are summarized in Table 9-3, below.

Table 9-3: Radionuclides Summary – Trench Soil Samples

Concentration (pCi/g)	On-Site Analysis		Off-Site (TestAmerica) Analysis		
	Ra-226	U-238	Ra-226	Th-230	U-238
Max.	112.92	45.23	94.00	29.80	32.80
Min.	0.30	0.24	1.00	0.17	0.62
Median	2.78	1.22	2.84	1.69	1.34
Clean-up Goal[a]	4.97	28.63	4.97	9.00	28.63

Note:

a = above background

Ra-226, U-238, and Th-230 were detected in the trench soil samples at concentrations that exceed the respective cleanup goals as noted below.

- The Ra-226 soil cleanup goal was exceeded in 9 of 146 samples.
- The U-238 soil cleanup goal was exceeded in 1 of 146 samples.
- The Th-230 soil cleanup goal was exceeded in 5 of 102 samples.

All soil samples that contained U-238 and Th-230 above the soil cleanup goals also exceeded the soil cleanup goal for Ra-226, which suggests that the extent of U-238 and Th-230 contaminated soil within the trenches is bounded by the Ra-226 data.

9.6.1.5 Ditch Sediment Samples

The ditch sediment that was inadvertentley dredged was drummed as IDW. Fifteen (15) samples of the drummed sediments were sampled and analyzed. The analytical results are provided in Table 9-4, which indicates that Be was detected in 8 samples above the Site cleanup goal and Ra-226 and U-238 was detected above the Site cleanup goal in all samples.

Table 9-4: Ditch Sediment Sample Analytical Results

Sample Information			Analytical Results													
Sample ID	Collection Date	Sample Type	Be (mg/kg)	On-Site Gamma Spectroscopy (gross activity) (pCi/g)												
				Ra-226			Th-232 (Ac-228)			U-235			U-238 (Th-234)			
				Conc.	±2σ	MDC	Conc.	±2σ	MDC	Conc.	±2σ	MDC	Conc.	±2σ	MDC
WD00ds00001	2/19/2010	Sediment	19.28	8.61	1.39	1.19	1.06	0.21	0.19	0.47	0.25	0.32	3.39	0.69	0.78
WD00ds00002	2/19/2010	Sediment	251.62	4.43	0.96	0.89	1.06	0.19	0.18	0.32	n/a	0.32	1.59	0.41	0.79
WD00ds00003	2/19/2010	Sediment	893.2	11.18	1.57	1.18	1.10	0.21	0.17	0.26	0.25	0.41	4.14	0.69	0.86
WD00ds00004	2/19/2010	Sediment	105.88	4.65	1.07	1.01	1.09	0.20	0.16	0.14	0.18	0.30	1.75	0.45	0.62
WD00ds00005	2/19/2010	Sediment	692	3.88	0.85	0.80	1.15	0.20	0.11	0.30	n/a	0.30	2.08	0.54	0.62
WD00ds00006	2/20/2010	Sediment	124.18	4.55	0.87	1.02	1.04	0.19	0.23	0.19	0.22	0.35	1.67	0.56	0.85
WD00ds00007	2/20/2010	Sediment	255.78	6.07	0.99	0.18	1.15	0.22	0.18	0.13	0.19	0.31	2.20	0.47	0.71
WD00ds00008	2/20/2010	Sediment	225.64	4.96	1.09	1.05	1.02	0.20	0.19	0.15	0.21	0.36	2.53	0.57	0.65
WD00ds00009	2/20/2010	Sediment	164.72	5.32	1.18	1.09	1.08	0.17	0.16	0.16	0.20	0.32	1.90	0.50	0.74
WD00ds00010	2/20/2010	Sediment	59.86	5.41	1.08	0.94	1.03	0.21	0.16	0.16	0.18	0.29	2.61	0.56	0.69
WD00ds00011	2/20/2010	Sediment	51.6	5.58	1.05	0.92	1.02	0.16	0.13	0.28	n/a	0.28	0.85	0.39	0.61
WD00ds00012	2/20/2010	Sediment	43.86	3.18	0.70	0.70	1.02	0.16	0.13	0.28	n/a	0.28	1.56	0.45	0.56
WD00ds00013	2/20/2010	Sediment	170.26	5.38	1.04	0.92	1.28	0.26	0.15	0.23	0.21	0.34	2.84	0.57	0.74
WD00ds00014	2/20/2010	Sediment	177.22	4.04	1.09	1.04	1.08	0.16	0.16	0.14	0.17	0.27	0.64	0.34	0.86
WD00ds00015	2/20/2010	Sediment	98.46	5.95	1.22	1.12	1.17	0.20	0.17	0.20	0.21	0.34	0.84	0.36	1.01

Notes:

±2σ ± two standard deviations

MDC minimum detectable concentration

Yellow shading indicates the concentration exceeds the Site cleanup goal.

9.6.2 Beryllium

Summarized analytical results for Be are presented in Table 9-5 (Appendix A) and discussed below. Complete analytical reports are provided in Appendix A as noted below.

- On-site BeFinder reports are contained in folder 4.
- TestAmerica reports are contained in folder 5.

9.6.2.1 Background Soil Samples

Be was not detected at concentrations that exceeded the soil cleanup goal in 106 background soil samples. The Be background concentrations varied from non-detect to 3 mg/kg (on-site analysis) and 0.34 to 1 mg/kg (TestAmerica).

9.6.2.2 Surface and Subsurfce Soil Samples

1,976 surface and subsurface soil samples from the soil borings, monitoring well borings (designated MW), surface locations (designated 6a), and bounding/verification samples (designated 7g) were analyzed for Be using the BeFinder or by TestAmerica. The range and median concentrations for these samples are summarized in Table 9-6, below.

Table 9-6: Beryllium Summary – Surface and Subsurface Soil Samples

Concentration (mg/kg)	On-Site (BeFinder) Analysis	Off-Site (TestAmerica) Analysis
Max.	10,134	21,800
Min.	ND	0.12
Median	0.8	109.0
Clean-up Goal	131	131
Note: ND = not detected		

The Be cleanup goal was exceeded in 146 of 1,904 samples analyzed by the BeFinder and in 46 of 142 samples analyzed by TestAmerica.

Table 9-5 (Appendix A) indicates that approximately 34% of the samples from 0 to 5 ft bgs, which represent approximately 85% of the total soil samples analyzed for Be, reported Be concentrations greater than 131 mg/kg. This contrasts with samples below 5 ft bgs, which exceeded the Be cleanup goal in approximately 16% if the samples analyzed. Figure 9-48 is a scatter plot that compares soil sample bottom depth against Be concentration for samples that contained Be above the soil cleanup goal. The figure indicates that a majority of the soil samples that exceeded the cleanup goal occur between 0 and 5 ft bgs.

9.6.2.3 Manhole, Drain, and Pipe Samples

Two of 19 sediment samples (one from manhole 9 and one manhole 11) exeeded the Be cleanup goal. All manhole, drain and pipe sediment samples were analyzed with the BeFinder. The overall concentrations ranged from 0.70 mg/kg to 213 mg/kg.

9.6.2.4 Trench Samples

109 sediment samples from the investigative trenches were analyzed for Be by the BeFinder or at the TestAmerica laboratories. The range and median concentrations for these samples are summaried in Table 9-7, below.

Table 9-7: Beryllium Summary – Trench Soil Samples

Concentration (mg/kg)	On-Site (BeFinder) Analysis	Off-Site (TestAmerica) Analysis
Max.	472,102	2,460
Min.	ND	0.11
Median	0.9	258.0
Clean-up Goal	131	131

Note:

ND = not detected

The Be soil cleanup goal was exceeded in 19 of 109 samples analyzed by the BeFinder and in 13 of 22 samples analyzed by TestAmerica.

9.7 DATA CORRELATIONS

9.7.1 Radionuclides Ratios and Gamma Count Rates

Radionuclide analytical results, represented as the sum of the ratios of all fractions analyzed (SOR_{TOTAL}), were evaluated relative to the associated gamma count rates for surface, downhole, and soil cores to determine if a correlation existed between the SOR_{TOTAL} and the gamma count rate measurements.

The raw data used for the correlation assessment is provided in Appendix A and scatter plots are provided in Figure 9-49 through Figure 9-52 as noted below:

- Figure 9-49 – presents surface and downhole gamma survey measurements with respect to corresponding SOR_{TOTAL} values.
- Figure 9-50 – presents subsurface soil core gamma survey measurements with respect to corresponding SOR_{TOTAL} values less than one.
- Figure 9-51 – presents subsurface soil core gamma survey measurements with respect to corresponding SOR_{TOTAL} values between one and ten.
- Figure 9-52 – presents subsurface soil core gamma survey measurements with respect to corresponding SOR_{TOTAL} values greater than ten.

The data presented in these figures indicates that a statistically defensible correlation of the SOR_{TOTAL} to a specific gamma count rate measurement was not recognized for either the surface or subsurface sample results and their associated gamma count rates. It is TES' option that, for the surface correlation, the variability of the horizontal and vertical extent of radionuclides creates a non-uniform flux distribution of gamma radiation, and thus, a correlation across the Site cannot be established to the SOR_{TOTAL}. In regard to the subsurface correlation, it is TES' option that the vertical distribution of radionuclides across the Site creates a non-inform correlation. A correlation between subsurface gamma count rates and SOR_{TOTAL} values may be realized if the data from specific burial or survey areas were evaluated.

9.7.2 Radium and Beryllium Concentrations

Be and Ra-226 analytical results were compared to determine whether the extent of contamination by these constituents coincide. Table 9-8 provides a summary of Be and Ra-226 analytical results above the Site cleanup goals, which indicates that 149 sample locations contained Be and/or Ra-226 above the cleanup goals. As noted below, the locations of Ra-226 contaminated soils generally coincide with the Be contaminated soils and are bounded by the larger area of Be contaminated soil.

- 139 locations contained Be above the Site cleanup goal (131 mg/kg).
- 71 locations contained Ra-226 above the Site cleanup goal (4.97 pCi/g).
- 78 locations with Be exceedances did not exceed for Ra-226.
- 10 locations with Ra-226 exceedances did not exceed for Be.

The distribution of Be and Ra-226 contaminated soils will be presented graphically in the USACE/ANL In-Situ Contaminated Soil Volume Estimate report.

9.7.3 Beryllium Concentrations From On-Site and Off-Site Analyses

Be analytical results from the on-site (BeFinder) and off-site (TestAmerica) analyses were compared to determine if a correlation exists between the methods. Table 9-9 lists the results for samples that were analyzed by both methods. Average values are presented in the table for instances where more that one test result was reported for a sample. A scatter plot of the results from both methods is presented in Figure 9-53. The following conclusions are made from the data presented in this table and figure:

- Approximately 15% of the samples analyzed by TestAmerica with concentrations above the Site cleanup goal (131 mg/kg) did not report a corresponding exceedance from the BeFinder result.
- None of the BeFinder analyzed samples that had a concentration above 131 mg/kg had a corresponding TestAmerica result less than 131 mg/kg.

Table 9-8:
Comparison of Beryllium and Radium-226 Results Above Site Cleanup Goals

Sample Information					Concentration	
Sample ID	Boring No.	Sample No.	Depth Range (ft)	Collection Date	Be (mg/kg)	Ra-226 (pCi/g)
0001so00101	1	1	0 to 1	11/24/2009	558.40	
0001so00202	1	2	1 to 2	11/24/2009	180.84	
0001so00808	1	8	7 to 8	11/24/2009	167.52	
0004so00202	4	2	1 to 2	12/2/2009	2,806.80	
0004so00303	4	3	2 to 3	12/2/2009	170.62	
0004so00406	4	4	5 to 6	12/2/2009	348.06	5.53
0004so00511	4	5	10 to 11	12/2/2009	383.00	
0004so00612	4	6	11 to 12	12/2/2009	1,410.40	
0005so00101	5	1	0 to 1	12/1/2009	1,200.00	
0005so00202	5	2	1 to 2	12/1/2009	1,660.00	
0005so00303	5	3	2 to 3	12/1/2009	2,956.00	
0005so00404	5	4	3 to 4	12/1/2009	3,315.00	21.98
0005so00505	5	5	4 to 5	12/1/2009	1,312.00	11.00
0009so10002	9	---	1 to 2	4/9/2010	139.00	
0010so00611	10	6	10 to 11	12/2/2009	132.22	
0010so00712	10	7	11 to 12	12/2/2009	906.40	
0010so00916	10	9	15 to 16	12/2/2009	1,473.60	
0011SO00101	11	1	0 to 1	12/2/2009		5.67
0016so10001	16	---	0 to 1	4/9/2010	136.00	
0019so10002	19	---	1 to 2	4/9/2010	404.00	5.91
0021so00101	21	1	0 to 1	11/21/2009	180.52	
0021so00202	21	2	1 to 2	11/21/2009	429.06	
0021so00303	21	3	2 to 3	11/21/2009	4,748.40	11.54
0023so00101	23	1	0 to 1	11/20/2009	835.30	
0023so00202	23	2	1 to 2	11/20/2009	552.98	13.41
0023so00303BS1	23	3	2 to 3	---	2,822.50	28.52
0024SO00303	24	3	2 to 3	11/20/2009		7.06
0027so01015	27	10	14 to 15	12/7/2009	224.40	
0033so00101	33	1	0 to 1	11/24/2009	171.52	
0036so00101	36	1	0 to 1	11/23/2009	670.16	
0036so00404	36	4	3 to 4	11/23/2009	624.58	

Table 9-8:
Comparison of Beryllium and Radium-226 Results Above Site Cleanup Goals

Sample Information					Concentration	
Sample ID	Boring No.	Sample No.	Depth Range (ft)	Collection Date	Be (mg/kg)	Ra-226 (pCi/g)
0037so00303	37	3	2 to 3	11/23/2009	162.71	
0040so00101	40	1	0 to 1	12/2/2009	171.78	
0041so10001	41	---	0 to 1	4/9/2010	202.00	
0042so00101	42	1	0 to 1	12/1/2009	143.00	
0043so00101	43	1	0 to 1	11/23/2009	132.94	
0044so00303	44	3	2 to 3	11/23/2009	1,257.00	12.99
0045so00505BS1(f)	45	5	4 to 5	---	345.50	
0045so00606	45	6	5 to 6	11/23/2009	284.43	7.90
0048so10001	48	---	0 to 1	4/9/2010	152.00	
0065so00202	65	2	1 to 2	11/21/2009	5,186.67	
0071so00101	71	1	0 to 1	12/2/2009	268.20	
0072so00101	72	1	0 to 1	12/2/2009	523.69	
0072so00202	72	2	1 to 2	12/2/2009	1,774.00	
0072so00303	72	3	2 to 3	12/2/2009	939.20	
0072so00404	72	4	3 to 4	12/2/2009	680.00	
0072so00505	72	5	4 to 5	12/2/2009	1,526.60	8.93
0072so00606	72	6	5 to 6	12/2/2009	955.20	
0072so00707	72	7	6 to 7	12/2/2009	2,975.00	63.45
0072so00808	72	8	7 to 8	12/2/2009	2,757.20	
0072so10009	72	---	8 to 9	4/9/2010	526.00	
0072so10010	72	---	9 to 10	4/9/2010	131.00	
0072so10011	72	---	10 to 11	4/9/2010	1,220.00	
0072so10012	72	---	11 to 12	4/9/2010	1,360.00	
0072so00913	72	9	12 to 13	12/2/2009	1,100.00	24.89
0073so00101	73	1	0 to 1	12/2/2009	3,620.00	33.47
0073SO00202	73	2	1 to 2	12/3/2009		6.55
0073so00606	73	6	5 to 6	12/2/2009	5,529.20	
0074so00101	74	1	0 to 1	1/6/2010	1,026.80	10.06
0075so00202	75	2	1 to 2	1/5/2010	733.10	19.27
0075so00303	75	3	2 to 3	1/5/2010	410.44	56.28
0075so00404DUP	75	4	3 to 4	1/5/2010	1,628.00	
0075so10006	75	---	5 to 6	4/9/2010	158.00	

Table 9-8:
Comparison of Beryllium and Radium-226 Results Above Site Cleanup Goals

Sample Information					Concentration	
Sample ID	Boring No.	Sample No.	Depth Range (ft)	Collection Date	Be (mg/kg)	Ra-226 (pCi/g)
0076so00101	76	1	0 to 1	1/6/2010	1,580.00	8.78
0076so00202	76	2	1 to 2	1/6/2010	3,428.80	21.31
0076so00303	76	3	2 to 3	1/6/2010	166.62	
0076so00606	76	6	5 to 6	1/6/2010	2,593.60	
0077so00101	77	1	0 to 1	1/6/2010	2,308.20	7.26
0077so00202BS1(f)	77	2	1 to 2	---	1,500.00	9.90
0077so00303	77	3	2 to 3	1/6/2010	1,273.33	53.89
0077so00404	77	4	3 to 4	1/6/2010	1,128.00	45.20
0078so00101	78	1	0 to 1	1/6/2010	184.52	15.88
0078so00303	78	3	2 to 3	1/6/2010	285.82	
0079so00202	79	2	1 to 2	11/21/2009	225.92	
0081so00303	81	3	2 to 3	12/18/2009	192.12	
0081so00404	81	4	3 to 4	12/18/2009	593.28	
0081so00606	81	6	5 to 6	12/18/2009	168.74	
0082so00101	82	1	0 to 1	1/5/2010	215.52	
0087so00202	87	2	1 to 2	1/7/2010	573.00	6.33
0091so00101	91	1	0 to 1	2/2/2010	1,394.40	
0092so00101	92	1	0 to 1	3/2/2010	193.59	
0092so00506	92	5	5 to 6	3/2/2010	138.31	
0092so10008	92	---	7 to 8	4/9/2010	139.00	
0094so00101	94	1	0 to 1	3/3/2010	1,878.00	
0094so00202	94	2	1 to 2	3/3/2010	2,740.00	
0094so00303	94	3	2 to 3	3/3/2010	1,667.20	
0094so01120	94	11	19 to 20	3/3/2010	162.96	
0100so00303	100	3	2 to 3	2/4/2010	3,200.00	28.36
0100so00404	100	4	3 to 4	2/4/2010	6,810.00	87.72
0100so00505	100	5	4 to 5	2/4/2010	5,910.00	115.08
0101so00202	101	2	1 to 2	2/3/2010	291.60	
0101so00303	101	3	2 to 3	2/3/2010	1,804.00	
0102so00101	102	1	0 to 1	2/8/2010	838.80	
0112so00101	112	1	0 to 1	2/8/2010	2,420.00	70.36
0112so00202	112	2	1 to 2	2/8/2010	382.00	9.41

Table 9-8:
Comparison of Beryllium and Radium-226 Results Above Site Cleanup Goals

Sample Information					Concentration	
Sample ID	Boring No.	Sample No.	Depth Range (ft)	Collection Date	Be (mg/kg)	Ra-226 (pCi/g)
0113so00101DUP	113	1	0 to 1	2/8/2010	284.00	7.57
0122so00101	122	1	0 to 1	3/11/2010	2,760.00	21.37
0124so00101	124	1	0 to 1	3/15/2010	213.92	
0125so00101	125	1	0 to 1	3/11/2010	1,471.60	29.60
0132so00101	132	1	0 to 1	3/12/2010	936.80	
0132so00202	132	2	1 to 2	3/12/2010	205.60	
0132so10003	132	---	2 to 3	4/9/2010	157.00	
0133so00202	133	2	1 to 2	3/11/2010	2,852.40	
0133so00303	133	3	2 to 3	3/11/2010	2,210.00	19.42
0138so00101	138	1	0 to 1	3/11/2010	317.00	
0138so00202	138	2	1 to 2	3/11/2010	2,970.00	19.39
0200so00101	200	1	0 to 1	12/8/2009	232.00	7.24
0203so00101	203	1	0 to 1	12/8/2009	1,040.00	8.55
0203SO10002	203	---	1 to 2	4/9/2010		13.40
0204so00101	204	1	0 to 1	12/8/2009	409.97	7.00
0204so00505	204	5	4 to 5	12/8/2009	1,403.20	
0205so00101	205	1	0 to 1	12/9/2009	378.04	8.90
0206so00101	206	1	0 to 1	12/9/2009	486.50	5.92
0207so00101	207	1	0 to 1	12/4/2009	187.00	
0211so00101	211	1	0 to 1	12/10/2009	239.64	
091Aso00101	91A	1	0 to 1	2/3/2010	1,980.00	
6a003so00101	6a003	1	0 to 1	3/16/2010	299.06	19.07
6a004so00101	6a004	1	0 to 1	3/16/2010	169.62	8.29
6a005so00101	6a005	1	0 to 1	3/16/2010	177.90	10.49
6a007so00101	6a007	1	0 to 1	3/16/2010	2,507.20	41.89
6a008so00101	6a008	1	0 to 1	3/16/2010	2,864.00	67.66
6a009so00101	6a009	1	0 to 1	3/16/2010	321.86	14.98
6a011so00101	6a011	1	0 to 1	3/16/2010	138.00	
6a012so00101	6a012	1	0 to 1	3/16/2010	3,481.60	66.80
6a013so00101	6a013	1	0 to 1	3/16/2010	1,891.20	76.09
6a014so00101	6a014	1	0 to 1	3/16/2010	2,425.60	95.70
6a015so00101	6a015	1	0 to 1	3/11/2010	3,103.60	76.45

Table 9-8:
Comparison of Beryllium and Radium-226 Results Above Site Cleanup Goals

Sample Information					Concentration	
Sample ID	**Boring No.**	**Sample No.**	**Depth Range (ft)**	**Collection Date**	**Be (mg/kg)**	**Ra-226 (pCi/g)**
6a016so00101	6a016	1	0 to 1	3/11/2010	252.42	26.49
6a017so00101	6a017	1	0 to 1	3/11/2010	3,775.60	73.80
6A018SO00101	6A018	1	0 to 1	3/11/2010		105.65
6A019SO00101	6A019	1	0 to 1	3/11/2010		27.00
6a020so00101	6a020	1	0 to 1	3/11/2010	350.66	6.81
6A021SO00101	6A021	1	0 to 1	3/11/2010		9.83
6a022so00101	6a022	1	0 to 1	3/11/2010	1,606.00	15.03
6a023so00101	6a023	1	0 to 1	3/11/2010	628.00	174.73
6a024so00101	6a024	1	0 to 1	3/11/2010	135.36	129.91
6a025so00101	6a025	1	0 to 1	3/11/2010	311.90	16.79
6a026so00101	6a026	1	0 to 1	3/11/2010	1,452.00	26.20
6A028SO00101	6A028	1	0 to 1	3/11/2010		6.90
6A029SO00101	6A029	1	0 to 1	3/11/2010		8.84
MH09se00107	MH09	1	6 to 7	1/25/2010	213.06	
MH11se00109	MH11	1	8 to 9	1/25/2010	158.08	
TR03SO00302	TR03	3	1 to 2	1/14/2010		13.50
TR03so00702	TR03	7	1 to 2	1/14/2010	1,030.00	12.00
TR04so00601BS1(f)	TR04	6	0 to 1	---	244.00	6.20
TR04so00903	TR04	9	2 to 3	1/14/2010	1,823.33	103.46
TR05so00103	TR05	1	2 to 3	1/16/2010	1,954.47	21.80
TR05so00502	TR05	5	1 to 2	1/16/2010	375.75	
TR05so00705	TR05	7	4 to 5	1/16/2010	159.17	

Table 9-9:
Comparison of BeFinder and TestAmerica Analytical Results

Sample Information							Be Finder Result		Test America Result
Sample ID	**Boring No.**	**Sample No.**	**Depth Range (ft)**	**Collection Date**	**Sample Type**	**Analysis Date**	**Be (mg/kg)**	**Qual.**	**Be (mg/kg)**
0021so00303	21	3	2 to 3	11/21/2009	Normal	12/8/2009	119.76		**21,800.00**
0065so00202	65	2	1 to 2	11/21/2009	Normal	12/2/2009	**1,027.86**	E	**13,000.00**
0100so00404	100	4	3 to 4	2/4/2010	Normal	2/8/2010	**10,134.40**	D	**6,810.00**
0100so00505	100	5	4 to 5	2/4/2010	Normal	2/8/2010	**9,596.00**	D	**6,230.00**
0100so00505DUP	100	5	4 to 5	2/4/2010	Duplicate	2/8/2010	**8,544.80**	D	**5,590.00**
0073so00101	73	1	0 to 1	12/2/2009	Normal	2/2/2010	0.36		**3,620.00**
0005so00404	5	4	3 to 4	12/1/2009	Normal	2/1/2010	**1,218.80**	D,N	**3,500.00**
0073so00606	73	6	5 to 6	12/2/2009	Normal	1/28/2010	**7,558.40**	D	
0023so00303BS2	23	3	2 to 3	---	Homogeneity	---	**2,643.20**		**3,280.00**
0100so00303	100	3	2 to 3	2/4/2010	Normal	2/8/2010	**2,266.80**	D	**3,200.00**
0023so00303BS1	23	3	2 to 3	---	Homogeneity	---	**5,209.60**		**3,190.00**
0005so00404DUP	5	4	3 to 4	12/1/2009	Duplicate	2/1/2010	**1,006.00**	D,N	**3,130.00**
0072so00707DUP	72	7	6 to 7	12/2/2009	Duplicate	1/28/2010	**322.00**		**3,050.00**
0138so00202	138	2	1 to 2	3/11/2010	Normal	3/18/2010	**1,858.40**	D	**2,970.00**
0072so00707	72	7	6 to 7	12/2/2009	Normal	1/28/2010	**948.00**	D	**2,900.00**
0023so00303BS2(f)	23	3	2 to 3	---	Homogeneity	---	**3,348.80**		**2,770.00**
0122so00101	122	1	0 to 1	3/11/2010	Normal	3/18/2010	**2,096.40**	D	**2,760.00**
TR05so00203	TR05	2	2 to 3	1/16/2010	Normal	3/9/2010	**3,466.00**	D	**2,460.00**
0112so00101	112	1	0 to 1	2/8/2010	Normal	2/11/2010	**4,332.00**	D	**2,420.00**
0133so00303	133	3	2 to 3	3/11/2010	Normal	3/18/2010	**1,767.20**	D	**2,210.00**
0023so00303BS1(f)	23	3	2 to 3	---	Homogeneity	---	**4,690.80**		**2,050.00**
0072so00505	72	5	4 to 5	12/2/2009	Normal	3/9/2010	**1,185.60**	D	**1,990.00**
TR04so00903	TR04	9	2 to 3	1/14/2010	Normal	1/22/2010	**1,230.44**	D	**1,860.00**
TR04so00903BS1	TR04	9	2 to 3	---	Homogeneity	---	**6,628.00**		**1,850.00**
TR04so00903BS2	TR04	9	2 to 3	---	Homogeneity	---	**4,721.20**		**1,760.00**
0005so00202	5	2	1 to 2	12/1/2009	Normal	2/1/2010	**2,337.20**	D,N	**1,660.00**
0077so00202BS1(f)	77	2	1 to 2	---	Homogeneity	---	**3,792.00**		**1,590.00**
0076so00101	76	1	0 to 1	1/6/2010	Normal	1/29/2010	**3,137.20**	D	**1,580.00**
0077so00303	77	3	2 to 3	1/6/2010	Normal	3/9/2010	**3,310.80**	D	**1,450.00**

Table 9-9:
Comparison of BeFinder and TestAmerica Analytical Results

Sample Information							Be Finder Result		Test America Result
Sample ID	Boring No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
0077so00202BS2(f)	77	2	1 to 2	---	Homogeneity	---	**3,184.00**		**1,410.00**
0065so00202BS2	65	2	1 to 2	---	Homogeneity	---	**1,527.20**		**1,350.00**
0077so00303BS1	77	3	2 to 3	---	Homogeneity	---	**1,715.20**		**1,230.00**
0065so00202BS1	65	2	1 to 2	---	Homogeneity	---	**1,260.00**		**1,210.00**
0005so00101	5	1	0 to 1	12/1/2009	Normal	3/4/2010	**719.60**	D	**1,200.00**
0044so00303BS1(f)	44	3	2 to 3	---	Homogeneity	---	**2,341.20**		**1,200.00**
0077so00303BS2	77	3	2 to 3	---	Homogeneity	---	**2,375.60**		**1,140.00**
0072so00913	72	9	12 to 13	12/2/2009	Normal	3/4/2010	**908.80**	D	**1,100.00**
0203so00101	203	1	0 to 1	12/8/2009	Normal	3/8/2010	**3,340.80**	D	**1,040.00**
TR03so00702	TR03	7	1 to 2	1/14/2010	Normal	1/25/2010	**1,787.60**	D	**1,030.00**
0044so00303BS2(f)	44	3	2 to 3	---	Homogeneity	---	**2,700.40**		**1,010.00**
TR05so00303BS1(f)	TR05	3	2 to 3	1/16/2010	Homogeneity	---	**1,680.40**		**674.00**
TR05so00303BS2(f)	TR05	3	2 to 3	1/16/2010	Homogeneity	---	**1,286.80**		**674.00**
0021so00303BS2	21	3	2 to 3	11/21/2009	Homogeneity	---	**1,533.60**		**649.00**
0074so00101	74	1	0 to 1	1/6/2010	Normal	1/29/2010	**3,683.20**	D	**642.00**
0087so00202	87	2	1 to 2	1/7/2010	Normal	1/25/2010	**3,813.20**	D	**573.00**
TR05so00502DUP	TR05	5	1 to 2	1/16/2010	Duplicate	1/18/2010	**207.38**		**573.00**
0023so00202BS1(f)	23	2	1 to 2	11/20/2009	Homogeneity	---	**1,227.20**		**527.00**
0021so00303BS1(f)	21	3	2 to 3	11/21/2009	Homogeneity	---	**310.50**		**510.00**
0021so00303BS1	21	3	2 to 3	11/21/2009	Homogeneity	---	**796.40**		**470.00**
0023so00202BS2(f)	23	2	1 to 2	11/20/2009	Homogeneity	---	**704.40**		**420.00**
0019so00202	19	2	1 to 2	12/15/2009	Normal	3/8/2010	125.16		
0045so00505BS1(f)	45	5	4 to 5	---	Homogeneity	---	**2,092.40**		**402.00**
0004so00511	4	5	10 to 11	12/2/2009	Normal	2/1/2010	**261.30**	E	**383.00**
0112so00202	112	2	1 to 2	2/8/2010	Normal	2/11/2010	**310.44**		**382.00**
0044so00303	44	3	2 to 3	11/23/2009	Normal	2/2/2010	**2,444.00**	D	
TR05so00502BS1	TR05	5	1 to 2	1/16/2010	Homogeneity	---	**271.90**		**348.00**
TR05so00502BS2	TR05	5	1 to 2	1/16/2010	Homogeneity	---	**264.70**		**339.00**
0045so00606	45	6	5 to 6	11/23/2009	Normal	1/26/2010	**232.86**		
0138so00101	138	1	0 to 1	3/11/2010	Normal	3/18/2010	**1,100.80**	D	**317.00**

Table 9-9:
Comparison of BeFinder and TestAmerica Analytical Results

Sample Information							Be Finder Result		Test America Result
Sample ID	**Boring No.**	**Sample No.**	**Depth Range (ft)**	**Collection Date**	**Sample Type**	**Analysis Date**	**Be (mg/kg)**	**Qual.**	**Be (mg/kg)**
0021so00303BS2(f)	21	3	2 to 3	11/21/2009	Homogeneity	---	**371.40**		**313.00**
0045so00505BS2(f)	45	5	4 to 5	---	Homogeneity	---	**1,678.40**		**289.00**
0113so00101DUP	113	1	0 to 1	2/8/2010	Duplicate	2/11/2010	30.52		**284.00**
TR04so00601BS2(f)	TR04	6	0 to 1	---	Homogeneity	---	**231.90**		**273.00**
TR05so00502	TR05	5	1 to 2	1/16/2010	Normal	1/20/2010	**223.74**		**243.00**
0092so00101	92	1	0 to 1	3/2/2010	Normal	2/5/2010	**153.18**		**234.00**
0200so00101	200	1	0 to 1	12/8/2009	Normal	3/5/2010	**585.60**	D	**232.00**
TR04so00601BS1(f)	TR04	6	0 to 1	---	Homogeneity	---	**308.70**		**215.00**
0041so00101	41	1	0 to 1	12/15/2009	Normal	1/30/2010	107.24		
0076so00303	76	3	2 to 3	1/6/2010	Normal	2/2/2010	**144.24**		
0021so00101	21	1	0 to 1	11/21/2009	Normal	4/10/2010	**180.52**		
0075so00606	75	6	5 to 6	1/5/2010	Normal	1/21/2010	64.90		
0132so00303	132	3	2 to 3	3/12/2010	Normal	3/18/2010	94.20		
0048so00101	48	1	0 to 1	11/21/2009	Normal	12/7/2009	75.40		
0009so00202	9	2	1 to 2	12/2/2009	Normal	2/2/2010	53.50		
0092so00708	92	7	7 to 8	3/2/2010	Normal	2/5/2010	105.08		**139.00**
0016so00101	16	1	0 to 1	12/1/2009	Normal	1/29/2010	107.86		
0092so00506	92	5	5 to 6	3/2/2010	Normal	2/5/2010	**142.62**		**134.00**
0001so00404	1	4	3 to 4	11/24/2009	Normal	3/8/2010	127.48		
0136so00101	136	1	0 to 1	3/11/2010	Normal	3/19/2010	110.68		
0105so00101	105	1	0 to 1	2/5/2010	Normal	2/11/2010	124.96		
0095so00101	95	1	0 to 1	3/3/2010	Normal	2/5/2010	111.68		108.00
0096so00202	96	2	1 to 2	2/5/2010	Normal	2/11/2010	82.26		
0133so00404	133	4	3 to 4	3/11/2010	Normal	3/18/2010	66.00		
0005so00606	5	6	5 to 6	12/1/2009	Normal	2/1/2010	40.14	N	
0024so00303BS2(f)	24	3	2 to 3	---	Homogeneity	---	42.10		80.60
0024so00303BS1(f)	24	3	2 to 3	---	Homogeneity	---	52.10		78.90
0127so00101	127	1	0 to 1	3/15/2010	Normal	3/18/2010	63.62		
0091so00303	91	3	2 to 3	2/2/2010	Normal	2/3/2010	97.96		
0122so00202	122	2	1 to 2	3/11/2010	Normal	3/18/2010	48.88		

Table 9-9:
Comparison of BeFinder and TestAmerica Analytical Results

Sample Information							Be Finder Result		Test America Result
Sample ID	Boring No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
091Aso00202	91A	2	1 to 2	2/3/2010	Normal	2/5/2010	32.68		
0090so00202	90	2	1 to 2	1/7/2010	Normal	1/25/2010	83.24		
0010so00505	10	5	4 to 5	12/2/2009	Normal	2/3/2010	40.08		
0034so00101	34	1	0 to 1	11/24/2009	Normal	1/26/2010	74.64		
7G50so00101	7G50	1	0 to 1	1/7/2010	Normal	1/21/2010	61.40		
0135so00505	135	5	4 to 5	3/15/2010	Normal	3/19/2010	0.48		
0024so00101	24	1	0 to 1	11/19/2009	Normal	1/27/2010	97.96		57.20
0034so00303	34	3	2 to 3	11/24/2009	Normal	1/26/2010	31.08		54.60
0087so00202DUP	87	2	1 to 2	1/7/2010	Duplicate	1/25/2010	19.18		
0033so00606	33	6	5 to 6	11/24/2009	Normal	1/28/2010	129.62		
TR04so00601	TR04	6	0 to 1	1/14/2010	Normal	1/18/2010	45.72		48.90
0101so00404	101	4	3 to 4	2/3/2010	Normal	3/4/2010	60.56		
0032so00101	32	1	0 to 1	12/7/2009	Normal	1/28/2010	127.86		
0071so00303	71	3	2 to 3	12/2/2009	Normal	1/28/2010	76.18		
0125so00202	125	2	1 to 2	3/11/2010	Normal	3/19/2010	48.54		
0100so00606	100	6	5 to 6	2/4/2010	Normal	2/8/2010	69.48		
0077so00506	77	5	5 to 6	1/6/2010	Normal	2/2/2010	113.60		
0006so00101	6	1	0 to 1	12/1/2009	Normal	1/26/2010	48.54		
0102so00202	102	2	1 to 2	2/8/2010	Normal	2/11/2010	29.32		
0024so00202BS2	24	2	1 to 2	11/19/2009	Homogeneity	---	34.40		31.50
0024so00202BS1	24	2	1 to 2	11/19/2009	Homogeneity	---	35.20		29.30
0015so00101	15	1	0 to 1	12/1/2009	Normal	1/26/2010	45.62		
0200so00202	200	2	1 to 2	12/8/2009	Normal	1/30/2010	40.42		
0007so00101	7	1	0 to 1	12/1/2009	Normal	1/28/2010	40.74		
0094so00404	94	4	3 to 4	3/3/2010	Normal	2/5/2010	86.20		25.10
0074so00202	74	2	1 to 2	1/6/2010	Normal	1/21/2010	47.32		
0065so00303	65	3	2 to 3	11/21/2009	Normal	12/2/2009	51.42		
0206so00202	206	2	1 to 2	12/9/2009	Normal	1/2/2010	6.36		6.74
0112so00303	112	3	2 to 3	2/8/2010	Normal	2/11/2010	28.82		
0023so00404	23	4	3 to 4	11/20/2009	Normal	12/2/2009	16.50		4.06

Table 9-9:
Comparison of BeFinder and TestAmerica Analytical Results

Sample Information							Be Finder Result		Test America Result
Sample ID	**Boring No.**	**Sample No.**	**Depth Range (ft)**	**Collection Date**	**Sample Type**	**Analysis Date**	**Be (mg/kg)**	**Qual.**	**Be (mg/kg)**
TR08so00703	TR08	7	2 to 3	1/18/2010	Normal	1/19/2010	2.52		2.99
0115so00303	115	3	2 to 3	3/11/2010	Normal	3/13/2010	0.74		2.84
0003so00101	3	1	0 to 1	11/24/2009	Normal	1/28/2010	40.10		
TR08so00204	TR08	2	3 to 4	1/18/2010	Normal	1/25/2010	1.04		2.01
BKG5so00101	BKG5	1	0 to 1	1/4/2010	Normal	1/15/2010	1.74		1.13
TR09so00805	TR09	8	4 to 5	1/19/2010	Normal	1/19/2010	**ND**	U	1.10
BKG4so00303	BKG4	3	2 to 3	1/4/2010	Normal	1/14/2010	2.44	N	1.04
BKG3so00505	BKG3	5	4 to 5	1/4/2010	Normal	1/14/2010	1.60	N	1.00
TR01so00102	TR01	1	1 to 2	1/16/2010	Normal	1/23/2010	0.60		0.98
0202so00303	202	3	2 to 3	12/14/2009	Normal	1/3/2010	1.00		0.93
0216so00202	216	2	1 to 2	12/14/2009	Normal	1/2/2010	1.56		0.93
TR01so00603	TR01	6	2 to 3	1/16/2010	Normal	1/18/2010	3.44		0.85
0032so00606	32	6	5 to 6	12/7/2009	Normal	1/28/2010	113.32		0.81
0215so00303 DUP	215	3	2 to 3	12/14/2009	Duplicate	1/3/2010	2.20		0.77
0114so00404	114	4	3 to 4	2/9/2010	Normal	2/11/2010	0.78		0.75
0055so00404	55	4	3 to 4	11/24/2009	Normal	1/27/2010	0.60		0.73
TR01so00403	TR01	4	2 to 3	1/16/2010	Normal	1/19/2010	0.62		0.73
0026so00202	26	2	1 to 2	12/5/2009	Normal	1/28/2010	95.16		
0212so00303	212	3	2 to 3	12/14/2009	Normal	1/7/2010	0.44		0.68
0068so00808	68	8	7 to 8	12/8/2009	Normal	1/8/2010	0.22		0.67
TR02so00607	TR02	6	6 to 7	1/16/2010	Normal	1/19/2010	0.08		0.66
BKG5so00505	BKG5	5	4 to 5	1/4/2010	Normal	1/18/2010	0.46		0.65
7G03so01020	7G03	10	19 to 20	1/7/2010	Normal	1/22/2010	0.58		0.58
BKG2so00505	BKG2	5	4 to 5	1/4/2010	Normal	1/23/2010	0.44		0.56
0052so00404	52	4	3 to 4	12/11/2009	Normal	1/8/2010	83.66		
0069so00303	69	3	2 to 3	12/5/2009	Normal	1/28/2010	74.02		
0098so00808DUP	98	8	7 to 8	2/8/2010	Duplicate	2/11/2010	0.40		0.50
BKG5so02020	BKG5	20	19 to 20	1/4/2010	Normal	1/14/2010	1.96	N	0.44
0001so00505	1	5	4 to 5	11/24/2009	Normal	3/9/2010	107.54		

Table 9-9:
Comparison of BeFinder and TestAmerica Analytical Results

Sample Information							Be Finder Result		Test America Result
Sample ID	**Boring No.**	**Sample No.**	**Depth Range (ft)**	**Collection Date**	**Sample Type**	**Analysis Date**	**Be (mg/kg)**	**Qual.**	**Be (mg/kg)**
BKG2so01919	BKG2	19	18 to 19	1/4/2010	Normal	1/23/2010	0.24		0.34
0032so00910	32	9	9 to 10	12/7/2009	Normal	1/29/2010	2.20		0.19
0095so00915	95	9	14 to 15	3/3/2010	Normal	2/5/2010	1.24		0.12
0201so01014	201	10	13 to 14	12/8/2009	Normal	1/30/2010	0.70		0.12
TR09so00303	TR09	3	2 to 3	1/19/2010	Normal	1/25/2010	0.68		0.11
0001so10004	1	---	3 to 4	4/9/2010	Verification	---			126.00
0001so10005	1	---	4 to 5	4/9/2010	Verification	---			0.38
0003so10001	3	---	0 to 1	4/9/2010	Verification	---			2.78
0005so10006	5	---	5 to 6	4/9/2010	Verification	---			82.20
0006so10001	6	---	0 to 1	4/9/2010	Verification	---			34.80
0007so10001	7	---	0 to 1	4/9/2010	Verification	---			25.10
0009so10002	9	---	1 to 2	4/9/2010	Verification	---			**139.00**
0010so10005	10	---	4 to 5	4/9/2010	Verification	---			62.20
0015so10001	15	---	0 to 1	4/9/2010	Verification	---			28.20
0016so10001	16	---	0 to 1	4/9/2010	Verification	---			**136.00**
0019so10002	19	---	1 to 2	4/9/2010	Verification	---			**404.00**
0021so10001	21	---	0 to 1	4/9/2010	Verification	---			**185.00**
0026so10002	26	---	1 to 2	4/9/2010	Verification	---			0.68
0032so10001	32	---	0 to 1	4/9/2010	Verification	---			45.60
0033so00606DUP	33	6	5 to 6	11/24/2009	Duplicate	1/28/2010	22.10		
0033so10006	33	---	5 to 6	4/9/2010	Verification	---			44.50
0033so10006DUP	33	---	5 to 6	4/9/2010	Verification	---			55.30
0034so10001	34	---	0 to 1	4/9/2010	Verification	---			61.10
0041so10001	41	---	0 to 1	4/9/2010	Verification	---			**202.00**
0044so10003	44	---	2 to 3	4/9/2010	Verification	---			**374.00**
0045so10006	45	---	5 to 6	4/9/2010	Verification	---			**336.00**
0048so00101DUP	48	1	0 to 1	11/21/2009	Duplicate	12/7/2009	61.44		
0048so10001	48	---	0 to 1	4/9/2010	Verification	---			**152.00**
0052so10004	52	---	3 to 4	4/9/2010	Verification	---			0.54

Table 9-9:
Comparison of BeFinder and TestAmerica Analytical Results

Sample Information							Be Finder Result		Test America Result
Sample ID	**Boring No.**	**Sample No.**	**Depth Range (ft)**	**Collection Date**	**Sample Type**	**Analysis Date**	**Be (mg/kg)**	**Qual.**	**Be (mg/kg)**
0065so10003	65	---	2 to 3	4/9/2010	Verification	---			8.73
0069so00303DUP	69	3	2 to 3	12/5/2009	Duplicate	1/28/2010	65.30		
0069so10003	69	---	2 to 3	4/9/2010	Verification	---			0.51
0071so10003	71	---	2 to 3	4/9/2010	Verification	---			40.80
0072so00505REP	72	5	4 to 5	12/2/2009	Replicate	2/2/2010	**1,063.20**		
0073so10006	73	---	5 to 6	4/9/2010	Verification	---			**3,500.00**
0074so10002	74	---	1 to 2	4/9/2010	Verification	---			14.80
0075so10006	75	---	5 to 6	4/9/2010	Verification	---			**158.00**
0076so00303DUP	76	3	2 to 3	1/6/2010	Duplicate	2/2/2010	90.16		
0076so10003	76	---	2 to 3	4/9/2010	Verification	---			**189.00**
0077so00506DUP	77	5	5 to 6	1/6/2010	Duplicate	2/2/2010	45.80		
0077so10006	77	---	5 to 6	4/9/2010	Verification	---			35.50
0087so10002	87	---	1 to 2	4/9/2010	Verification	---			54.30
0090so10002	90	---	1 to 2	4/9/2010	Verification	---			63.50
0091so00303DUP	91	3	2 to 3	2/2/2010	Duplicate	2/3/2010	67.36		70.30
0096so00202DUP	96	2	1 to 2	2/5/2010	Duplicate	2/11/2010	90.46		
0096so10002	96	---	1 to 2	4/9/2010	Verification	---			106.00
0100so10006	100	---	5 to 6	4/9/2010	Verification	---			36.20
0101so10004	101	---	3 to 4	4/9/2010	Verification	---			46.50
0102so10002	102	---	1 to 2	4/9/2010	Verification	---			31.60
0105so10001	105	---	0 to 1	4/9/2010	Verification	---			109.00
0112so00303DUP	112	3	2 to 3	2/8/2010	Duplicate	2/11/2010	6.44		
0112so10003	112	---	2 to 3	4/9/2010	Verification	---			5.76
0122so00202DUP	122	2	1 to 2	3/11/2010	Duplicate	3/18/2010	39.30		
0122so10002	122	---	1 to 2	4/9/2010	Verification	---			66.70
0125so00202DUP	125	2	1 to 2	3/11/2010	Duplicate	3/19/2010	47.48		
0125so10002	125	---	1 to 2	4/9/2010	Verification	---			37.20
0127so10001	127	---	0 to 1	4/9/2010	Verification	---			72.70
0132so10003	132	---	2 to 3	4/9/2010	Verification	---			**157.00**

Table 9-9:
Comparison of BeFinder and TestAmerica Analytical Results

Sample Information							Be Finder Result		Test America Result
Sample ID	**Boring No.**	**Sample No.**	**Depth Range (ft)**	**Collection Date**	**Sample Type**	**Analysis Date**	**Be (mg/kg)**	**Qual.**	**Be (mg/kg)**
0133so10004	133	---	3 to 4	4/9/2010	Verification	---			90.30
0135so10002	135	---	4 to 5	4/9/2010	Verification	---			57.60
0136so10001	136	---	0 to 1	4/9/2010	Verification	---			112.00
0200so10002	200	---	1 to 2	4/9/2010	Verification	---			25.20
091Aso00202DUP	91A	2	1 to 2	2/3/2010	Duplicate	2/5/2010	60.76		
091Aso10002	91A	---	1 to 2	4/9/2010	Verification	---			65.40
7G50so10001	7G50	---	0 to 1	4/9/2010	Verification	---			61.10
BKG5so00505DUP	BKG5	5	4 to 5	1/4/2010	Duplicate	1/18/2010	0.40		

Notes:

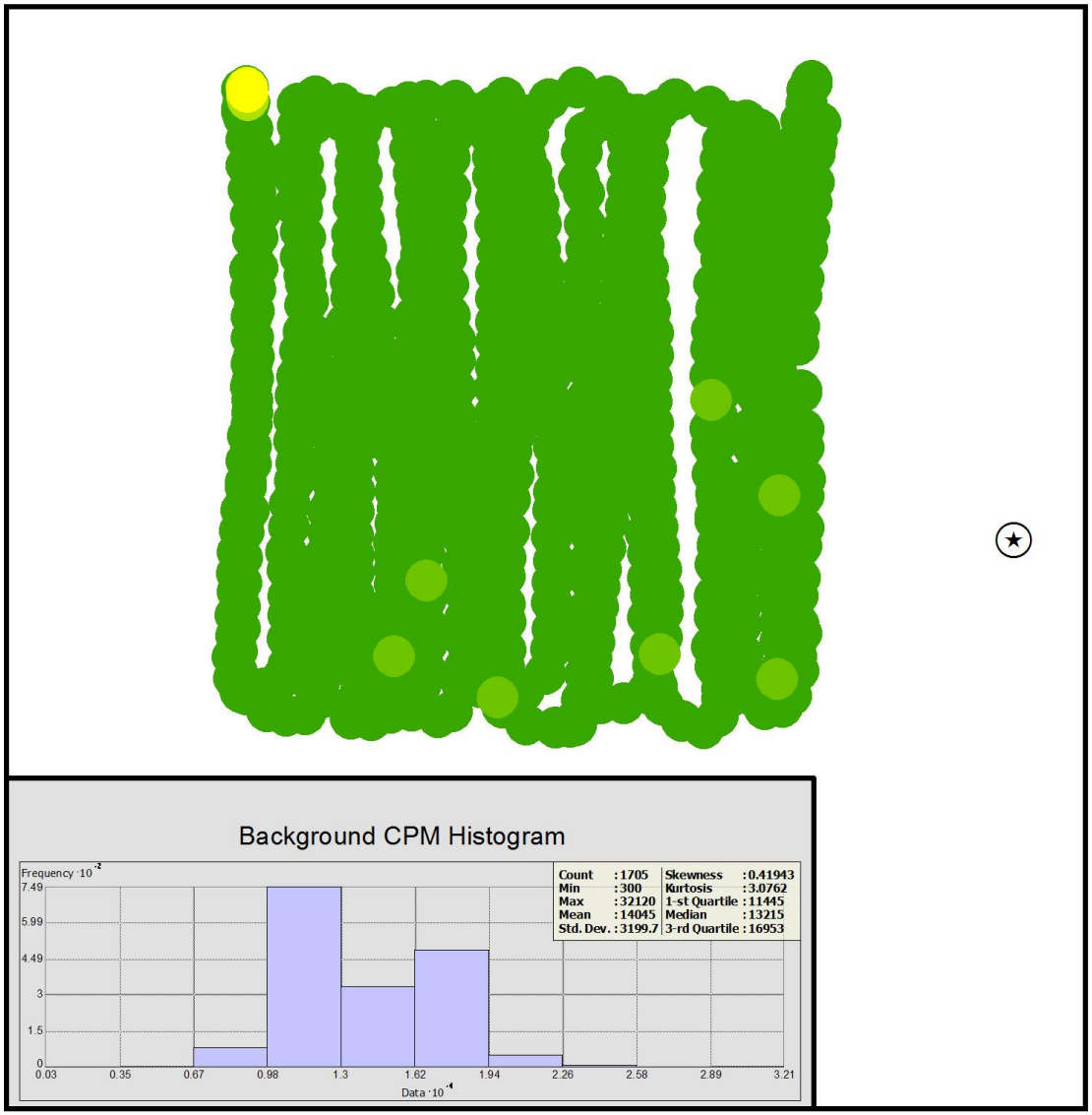
Qual.	Data Qualifier
D	Reported value is from a dilution
E	Reported value is outside of the iinstrument calibtation range
N	Calibration chart inconsistencies
U	Not detected
	Shaded cell indicates reported concentration exceeds Site cleanup goal

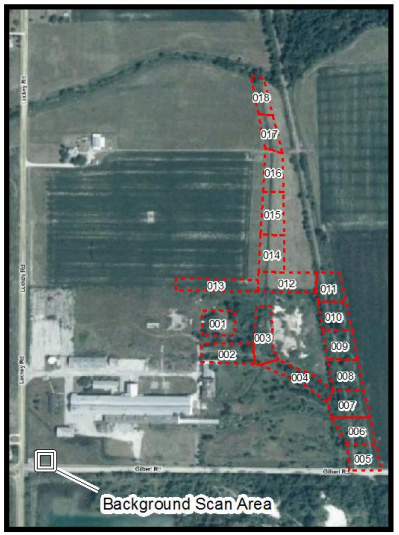
9.8 BERYLLIUM HOMOGENIETY STUDY, EXTRACTION STUDY, AND FILTER STUDY

Results and interpretations associated with the Be homogeneity, extraction, and filter studies will be provided in an addendum to the Excavation Volume Uncertainty Reduction Report.

9.9 INVESTIGATION DERIVED WASTE CHARACTERIZATION RESULTS

IDW waste inventories and analytical data are provided in Appendix L. Also included in Appendix L is a visual map of IDW container location and orientation in the Connex boxes. The IDW analytical results are located in Appendix A – file: 06_Composite_Waste_Samples / 02_LuckeyCompositeWasteSamples - updated 1-07-11.xls.





FIDLER Data Gross CPM

Anchor Point	
≤ Bkg Mean	= ≤ 14,045 cpm
Bkg + MDCR	= 14,046 to 15,753 cpm
Bkg+MDCR to 2x Bkg	= 15,754 to 28,090 cpm
2x to 3x Bkg	= 28,091 to 42,135 cpm
3x to 4x Bkg	= 42,136 to 56,180 cpm
4x to 5x Bkg	= 56,181 to 70,225 cpm
> 5x Bkg	= > 70,225 cpm

N

0 5 10 20 Feet

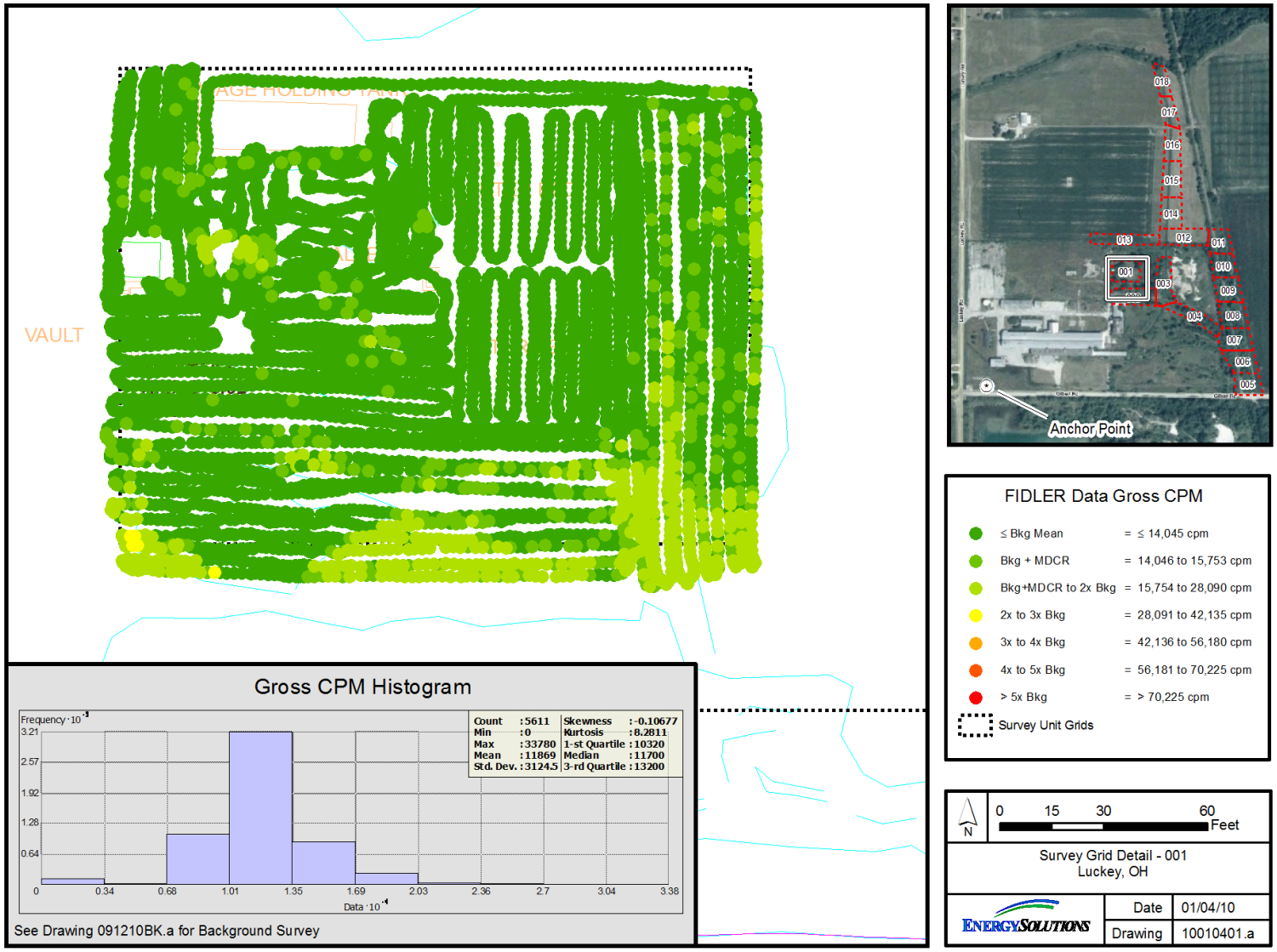
Background Scan for 12/12/09
Luckey, OH

ENERGYSOLUTIONS

Date	05/12/10
Drawing	091212BK.a

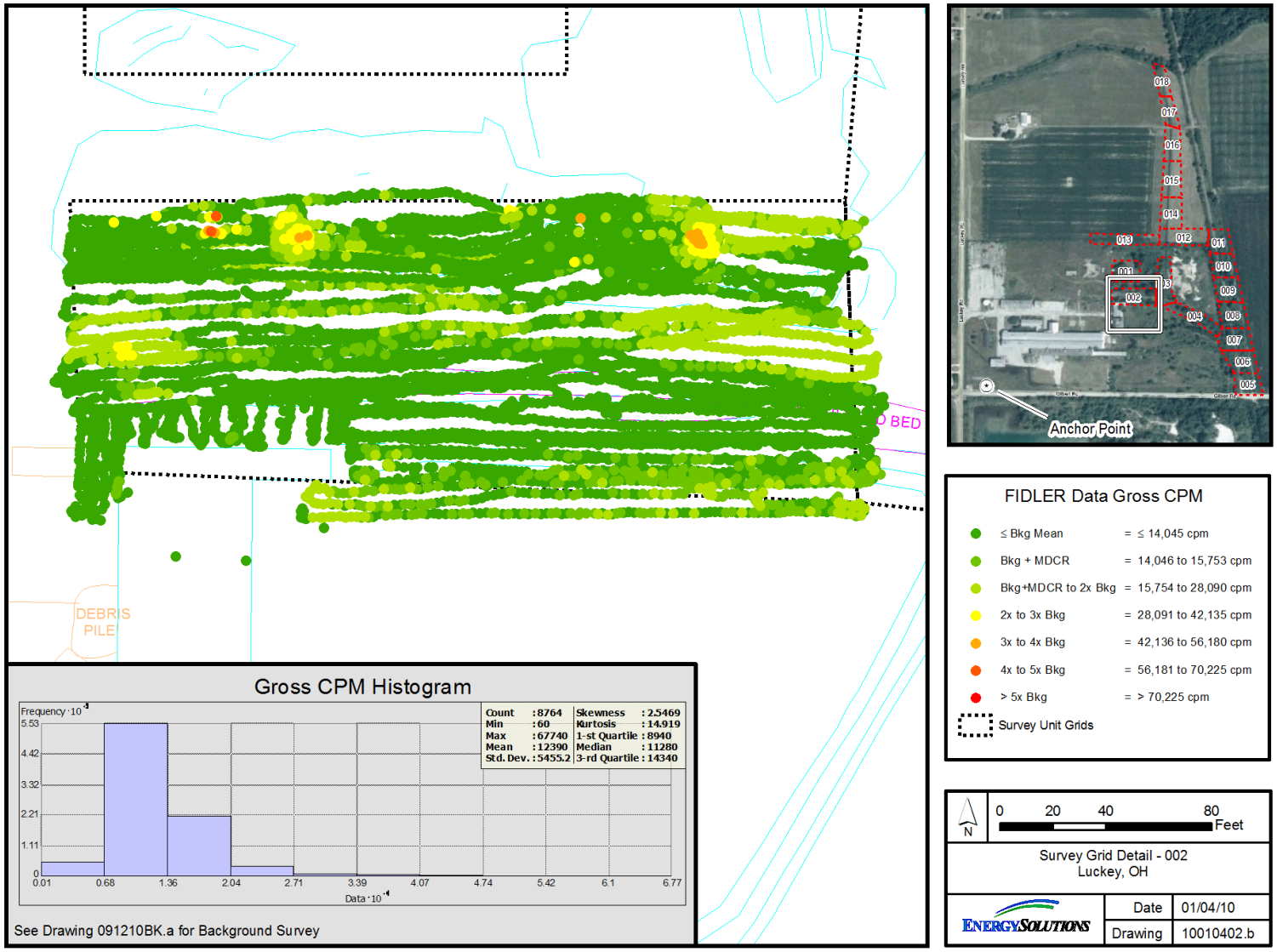
*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-1: Background GWS Results



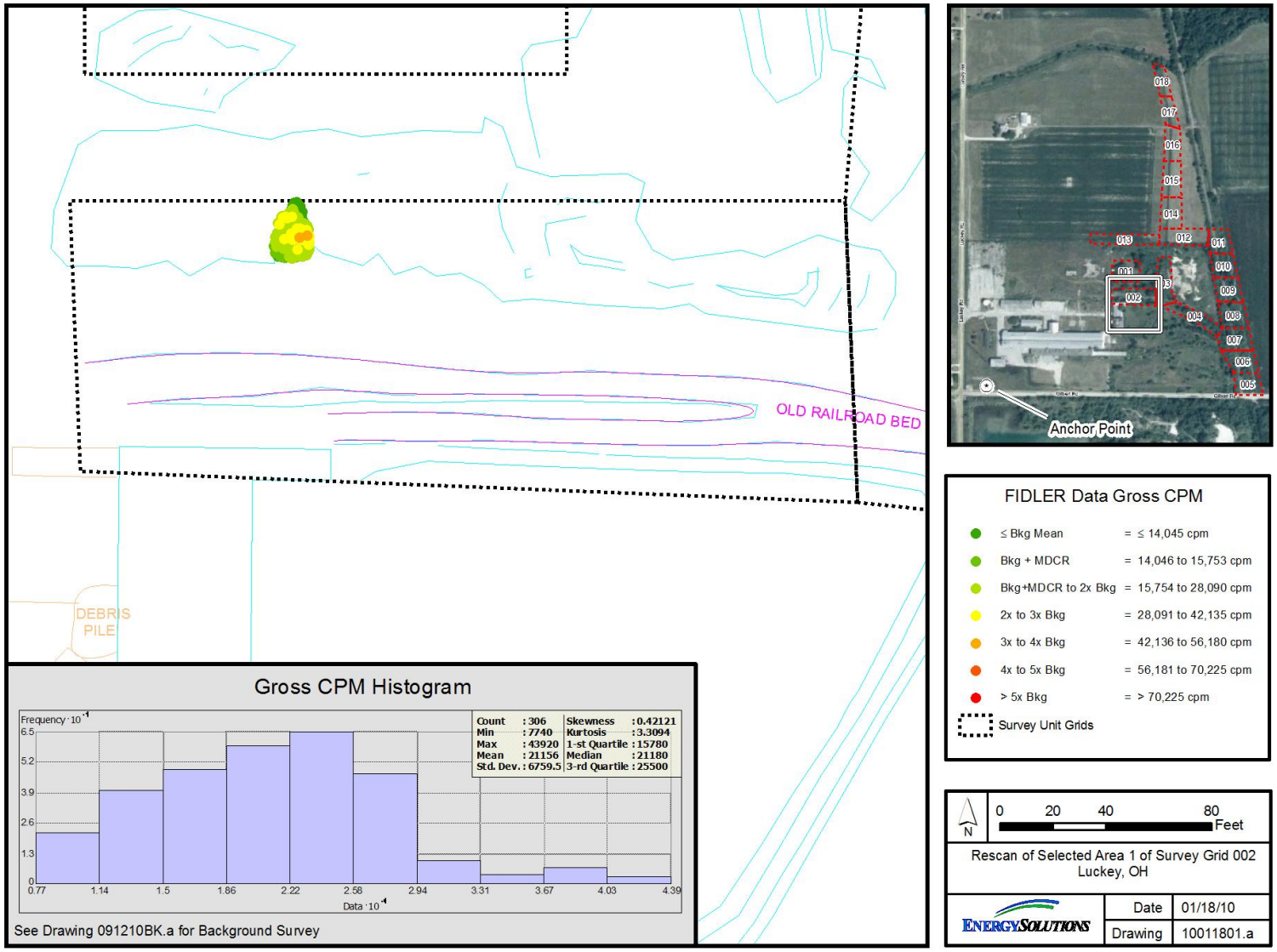
*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-2: Survey Grid 001 GWS



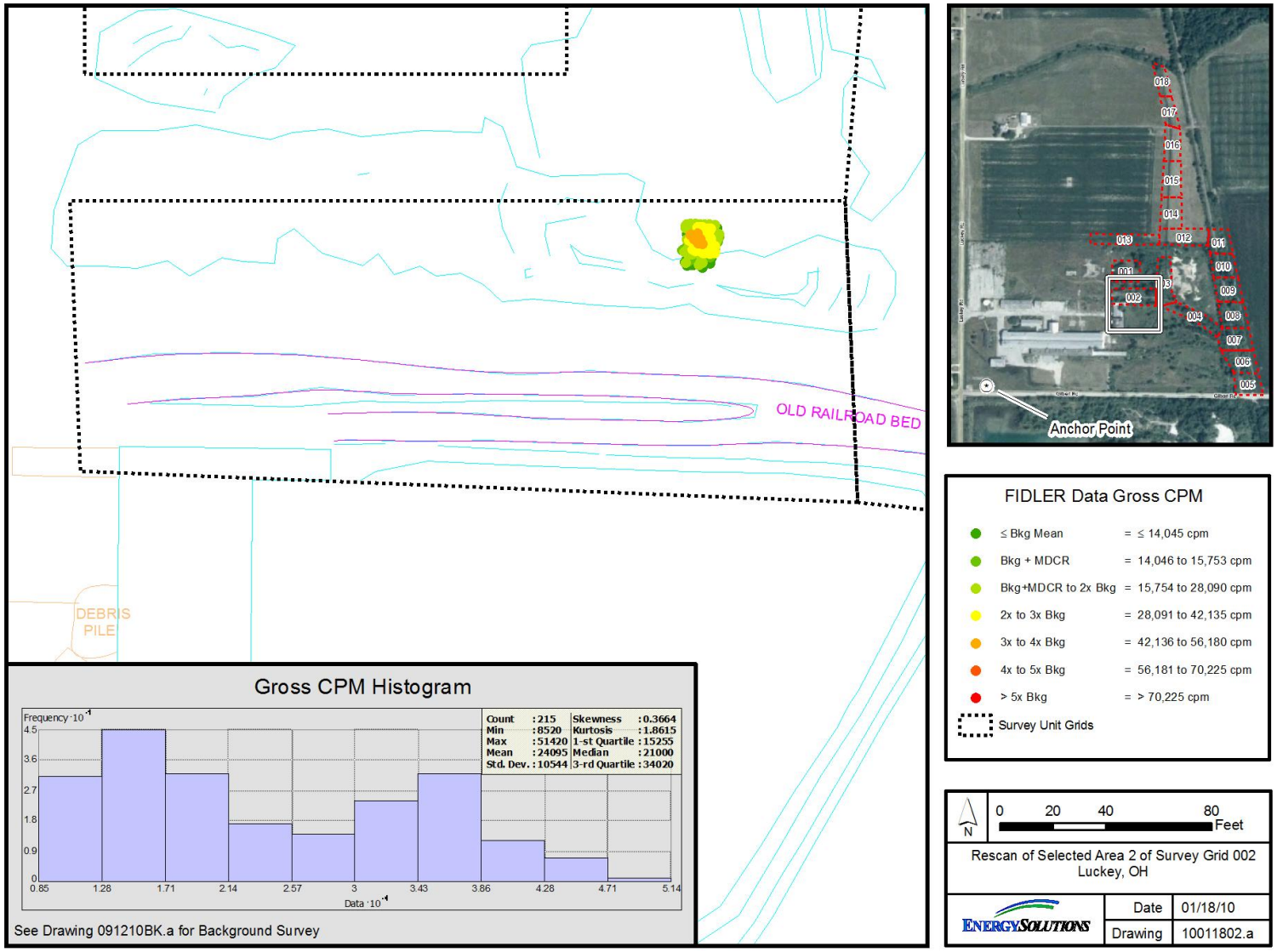
*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-3: Survey Grid 002 GWS



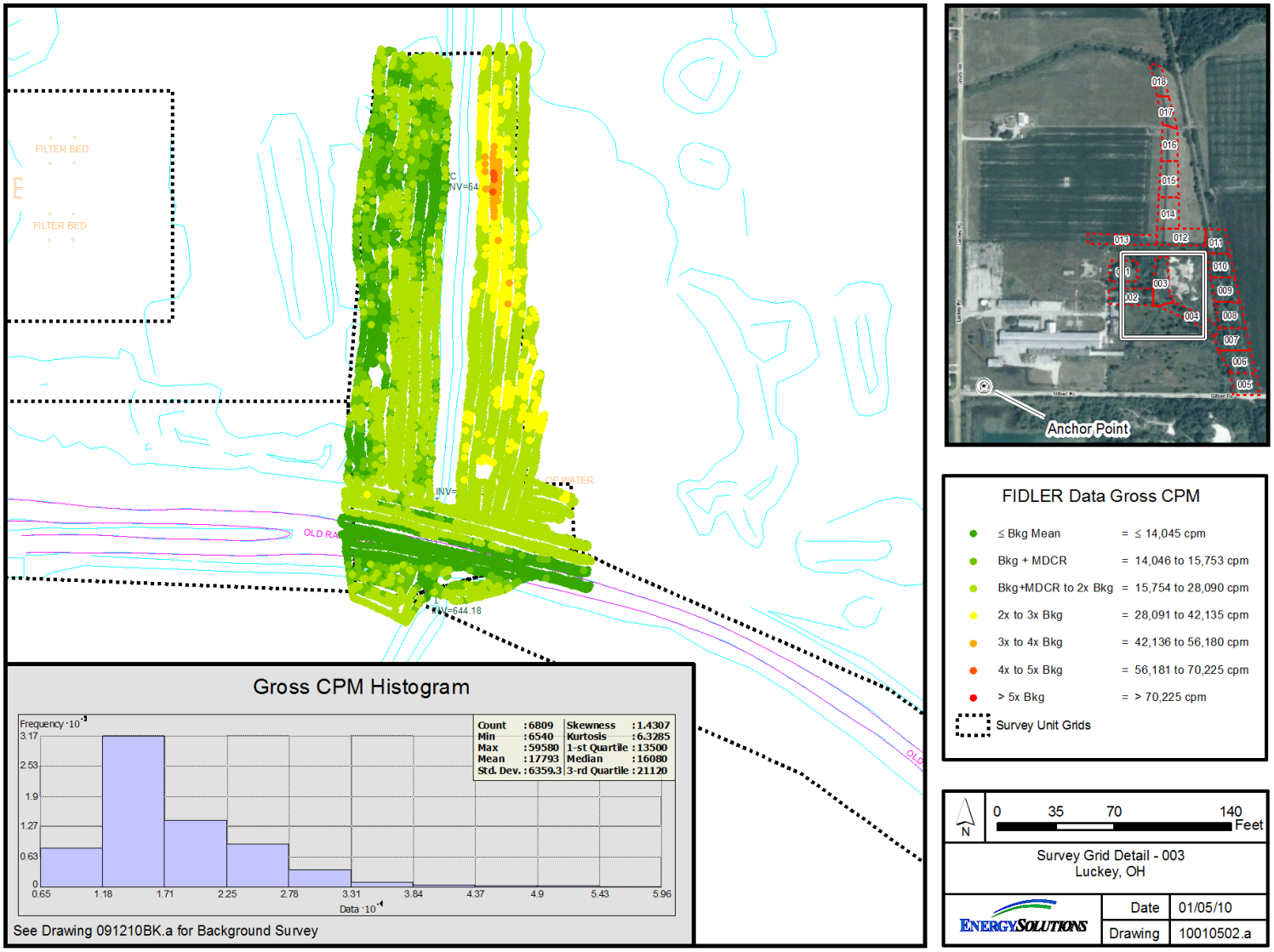
*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-4: Survey Grid 002 GWS – Rescan of Selected Area 1



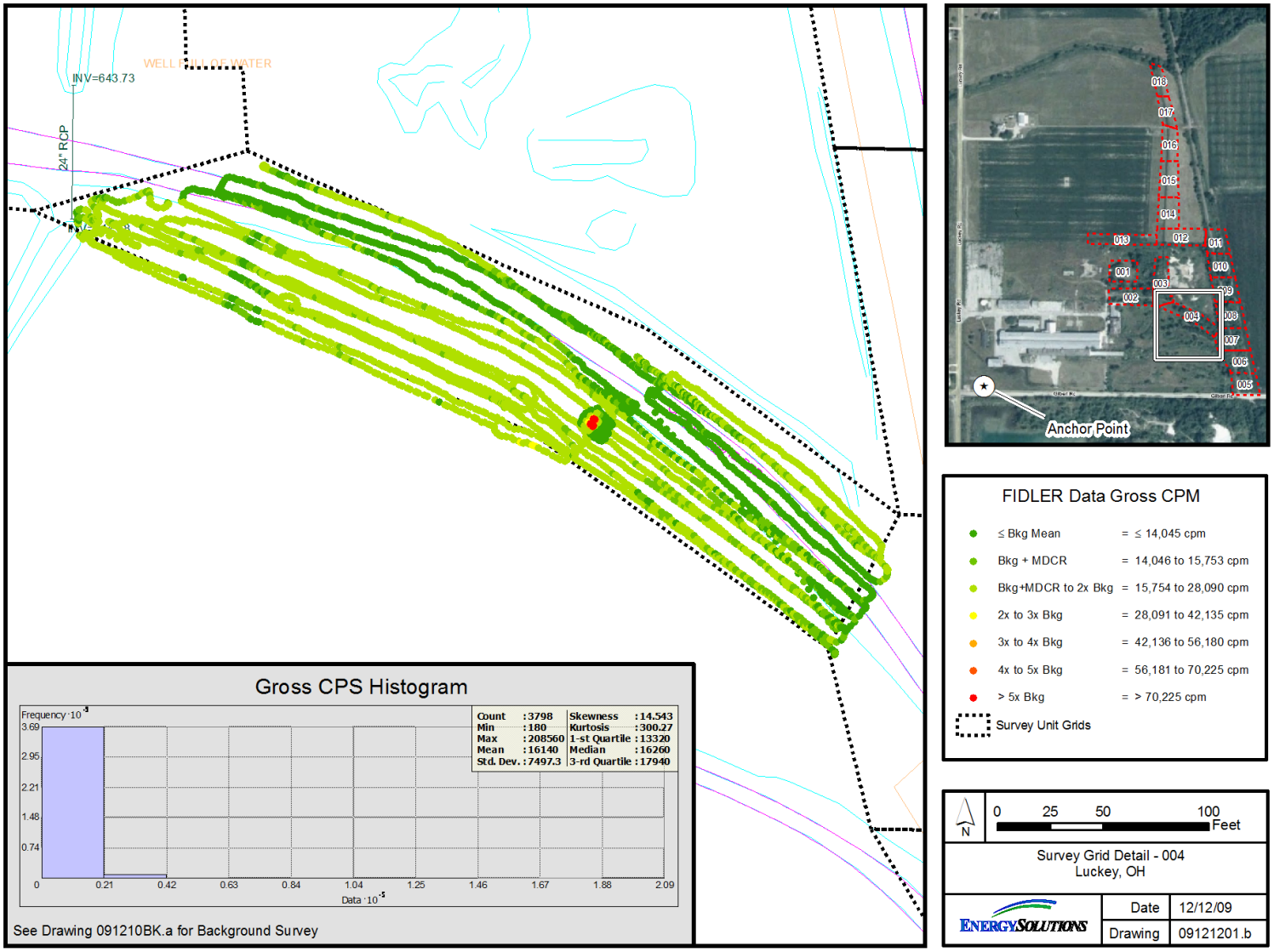
*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-5: Survey Grid 002 GWS – Rescan of Selected Area 2



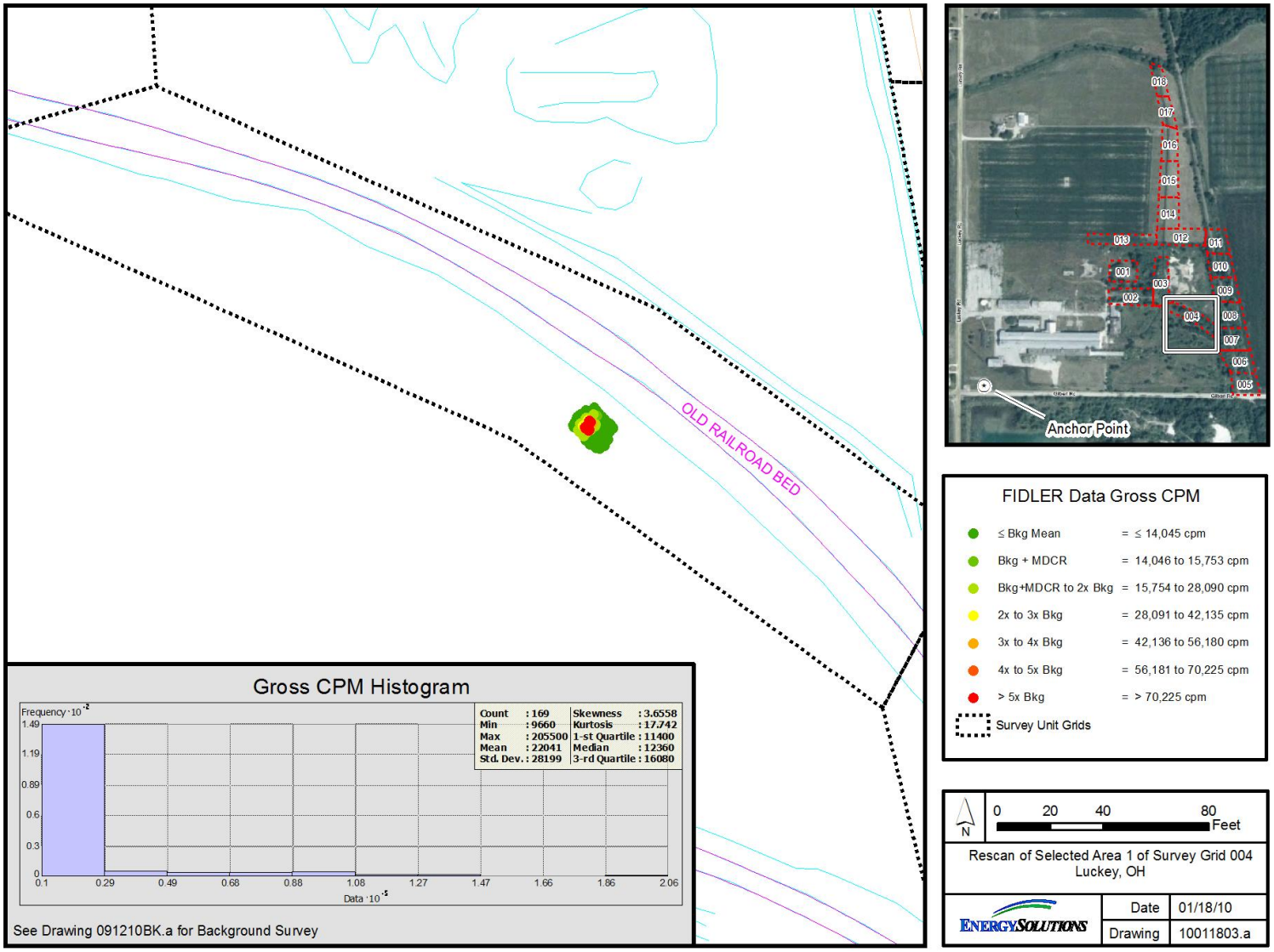
*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-6: Survey Grid 003 GWS



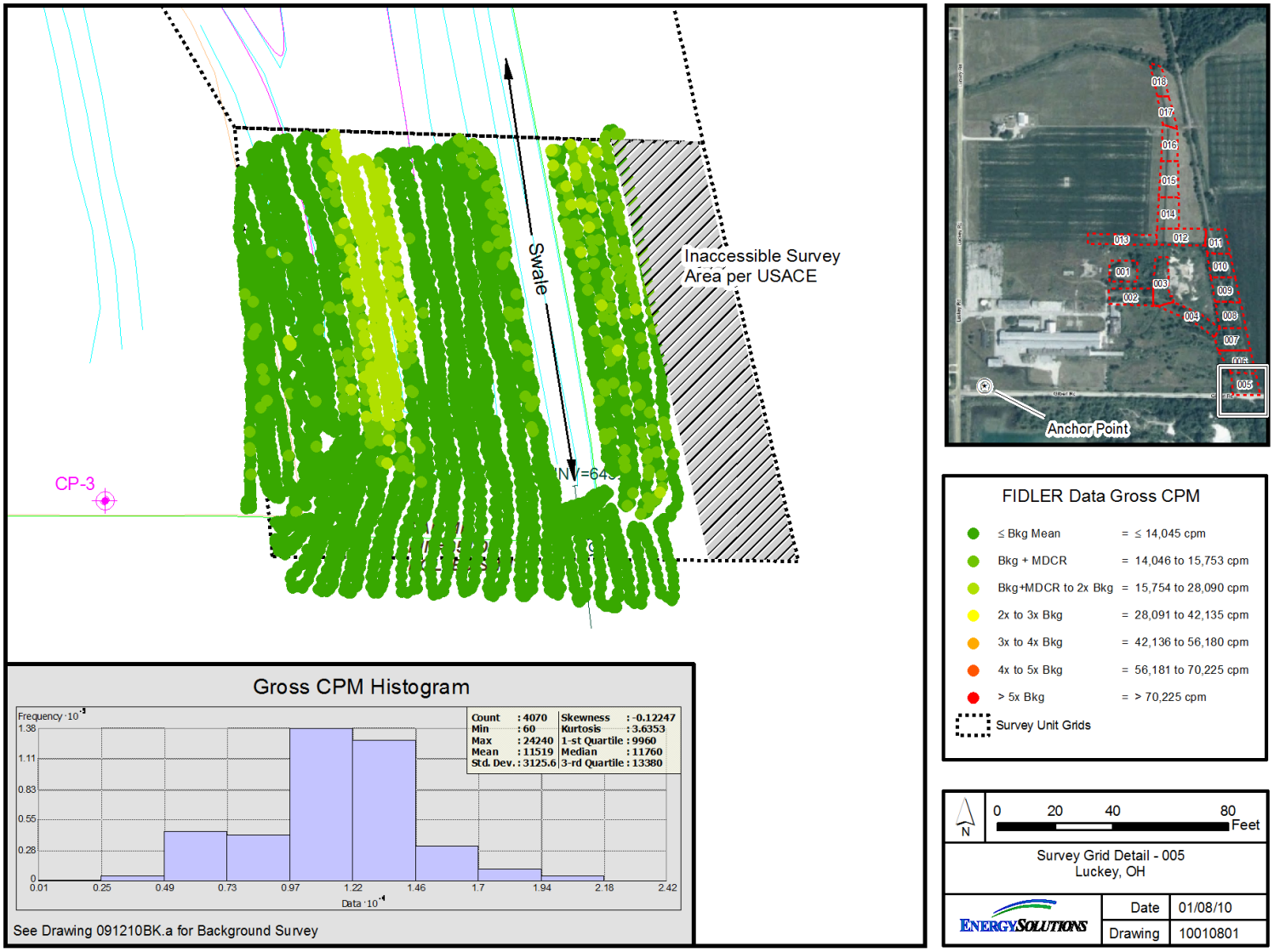
*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-7: Survey Grid 004 GWS



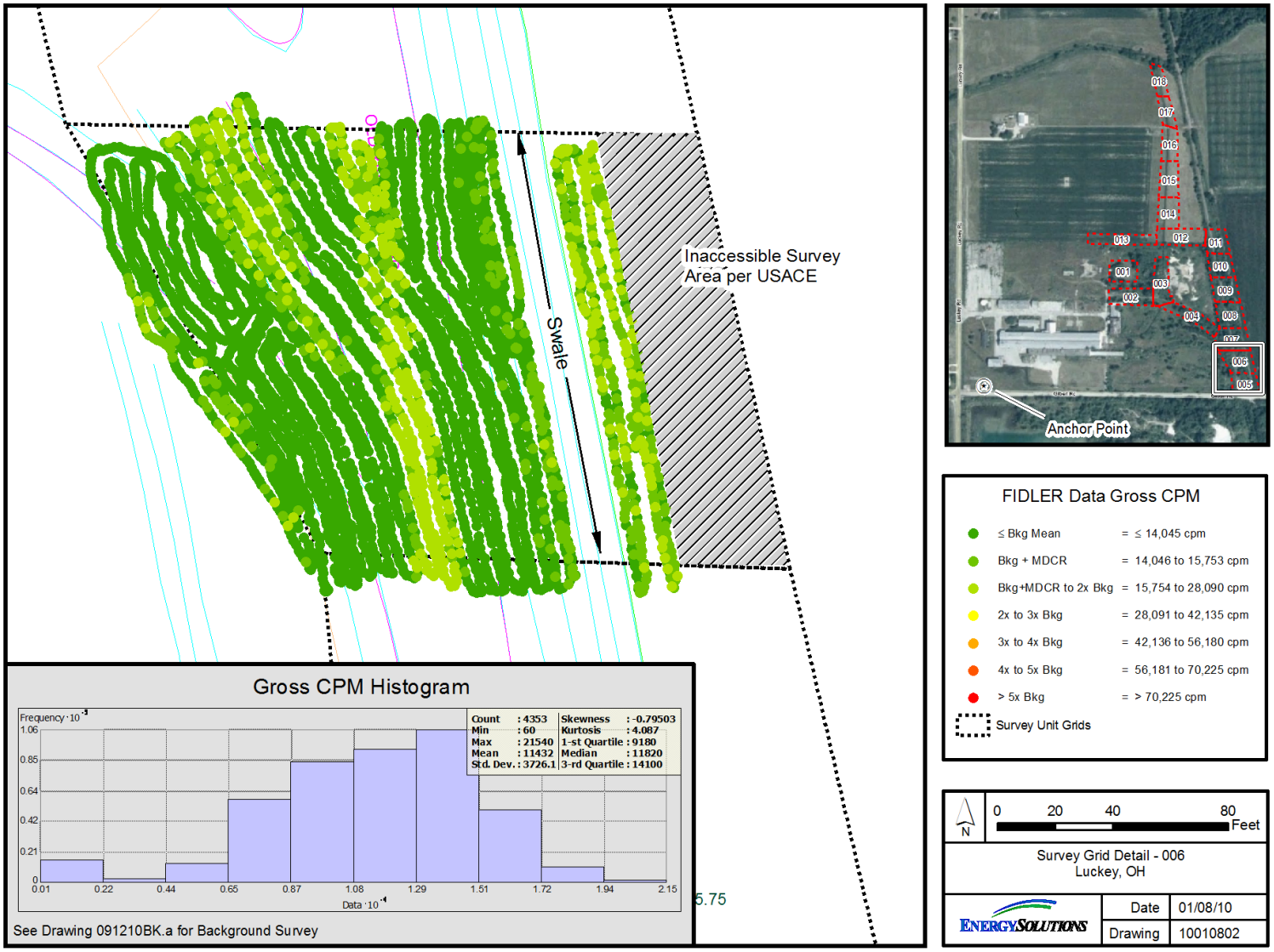
*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-8: Survey Grid 004 GWS – Rescan of Selected Area



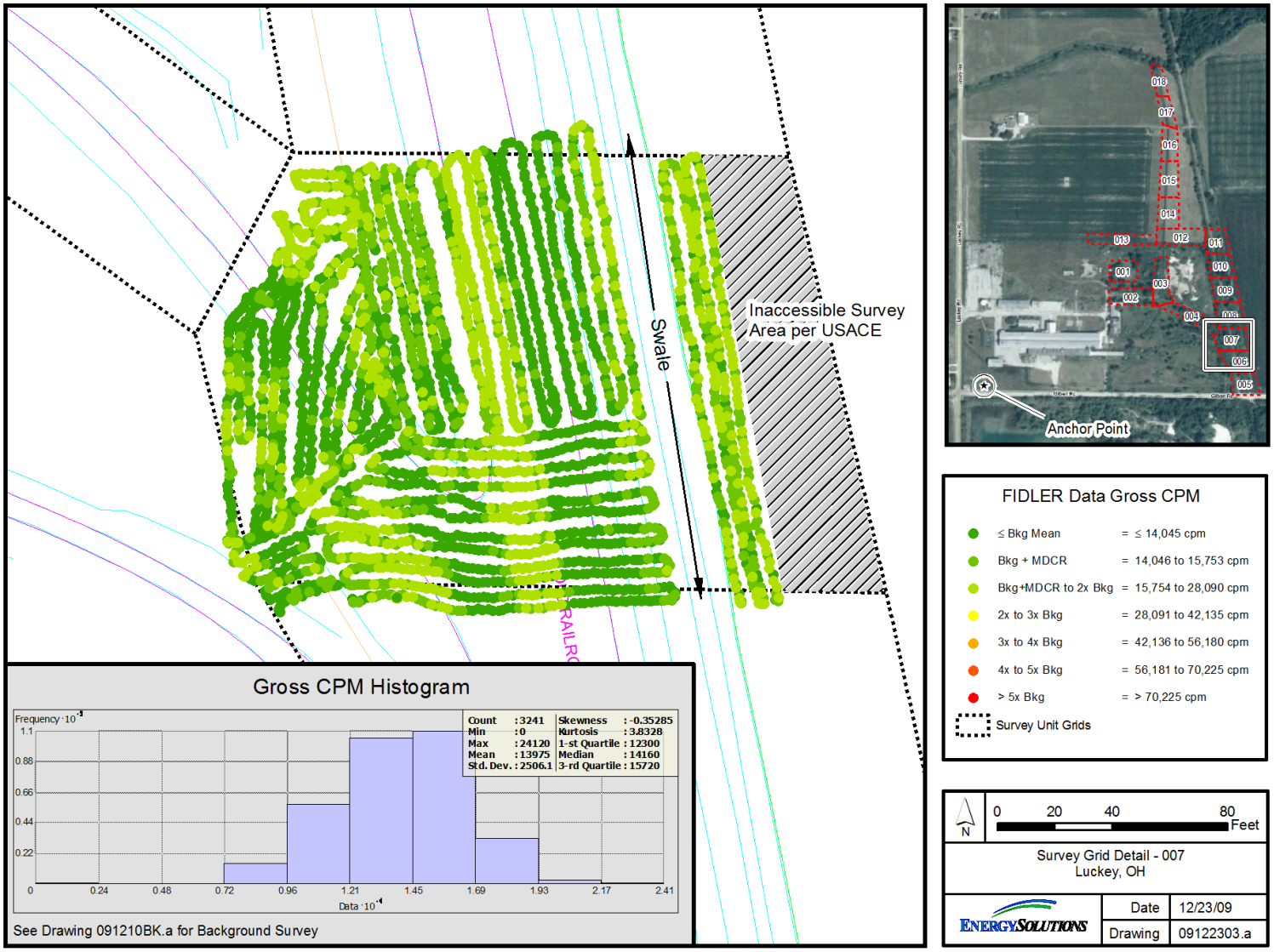
*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-9: Survey Grid 005 GWS



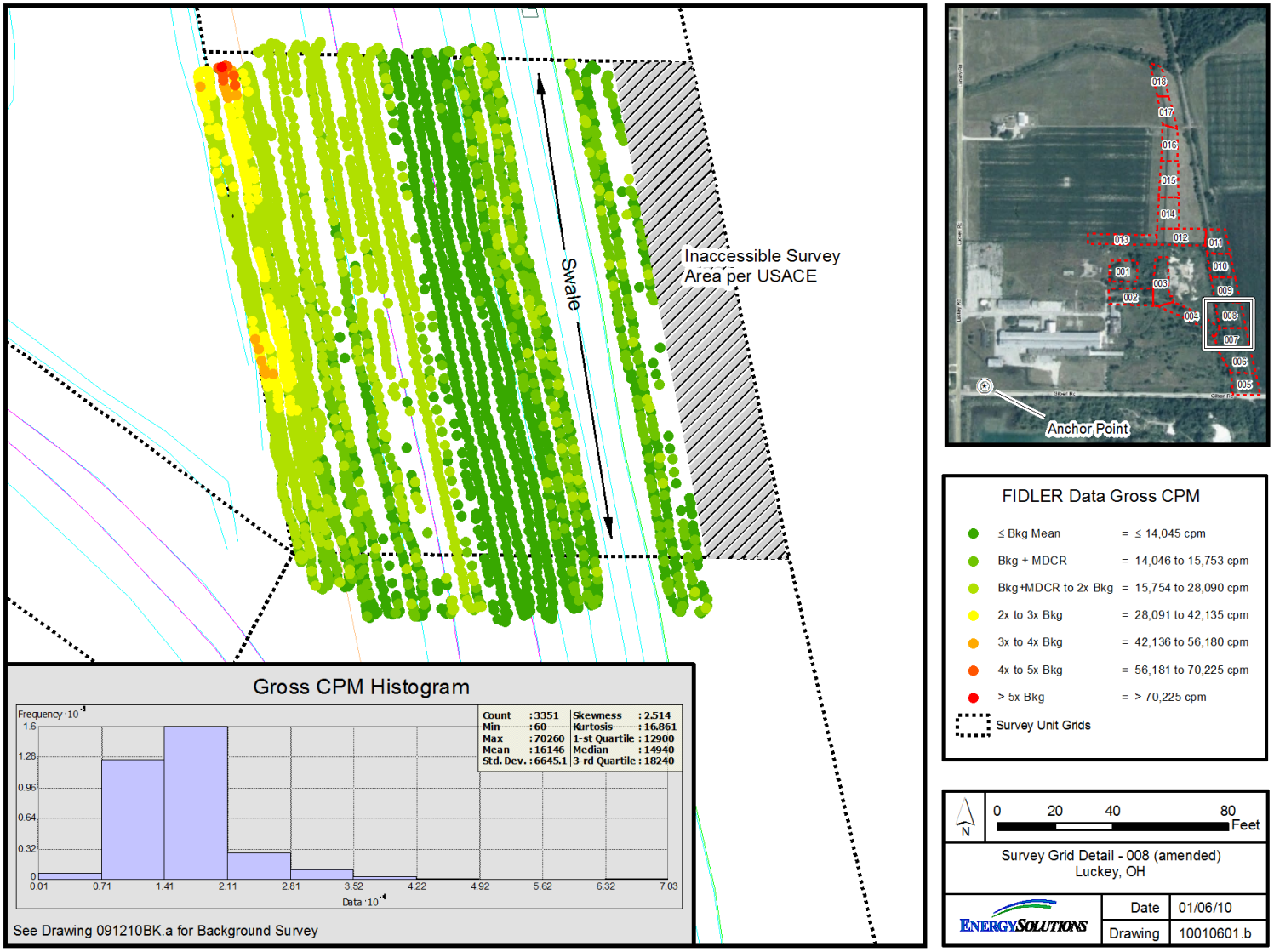
*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-10: Survey Grid 006 GWS



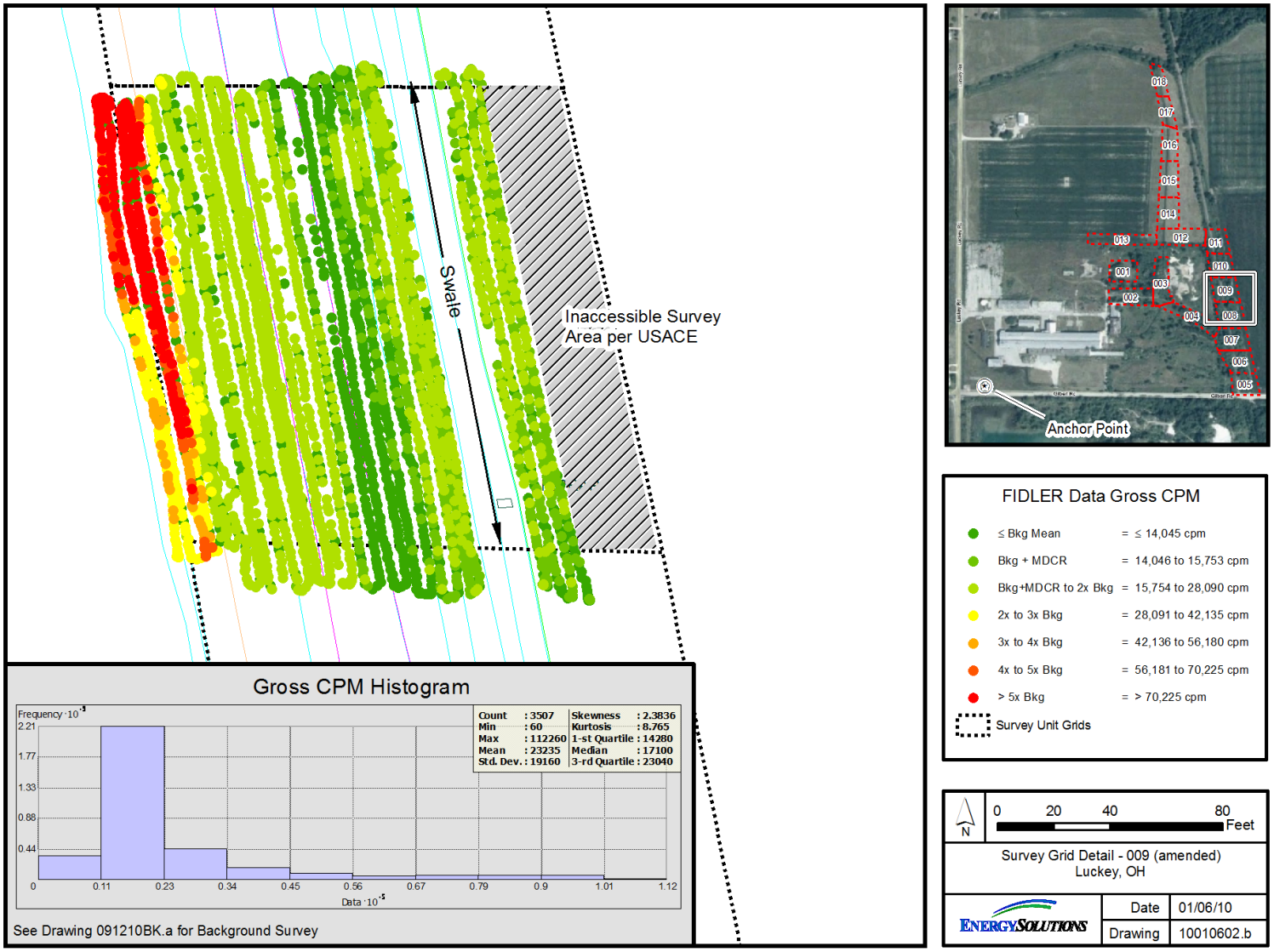
*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-11: Survey Grid 007 GWS



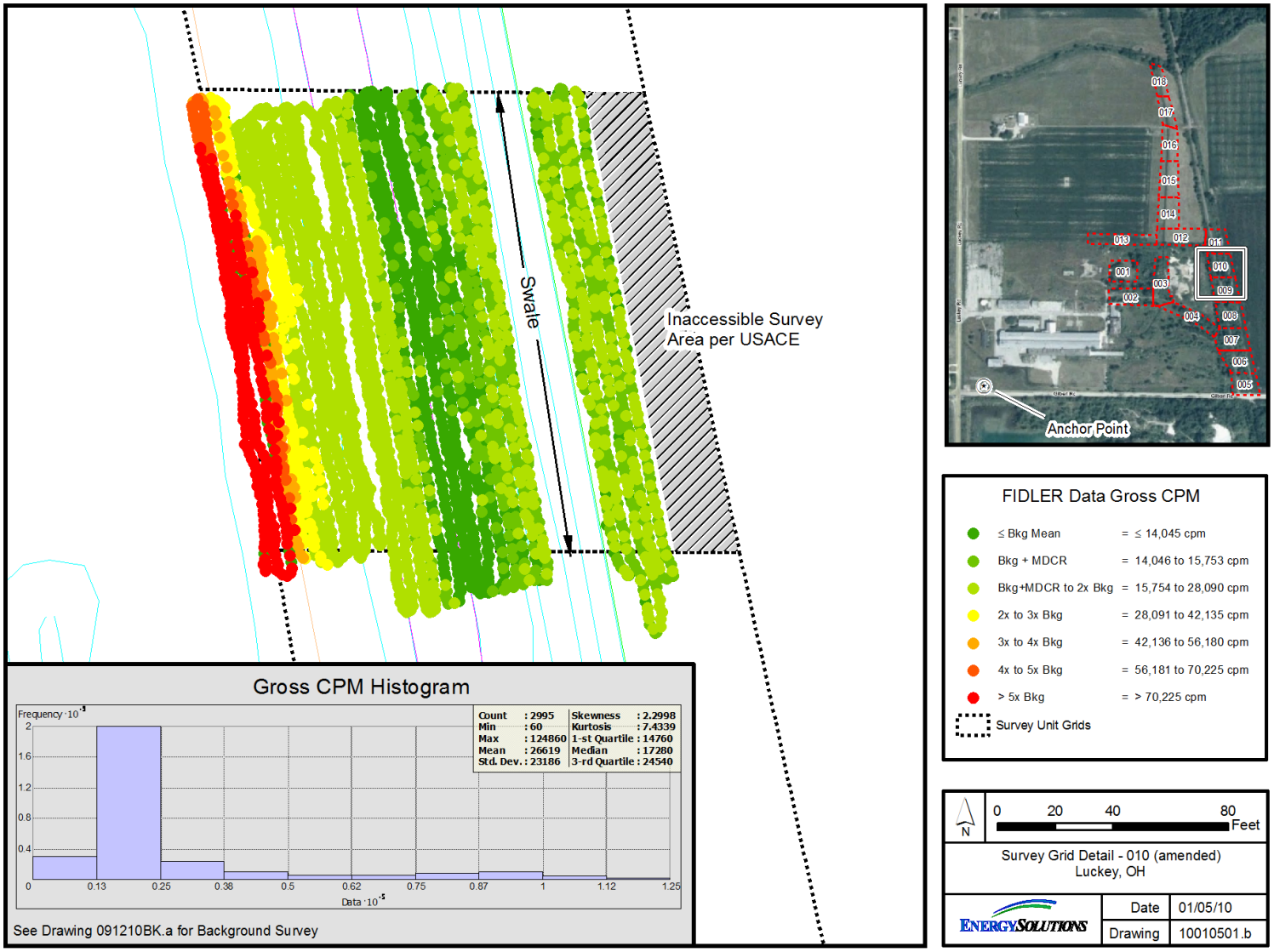
*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-12: Survey Grid 008 GWS



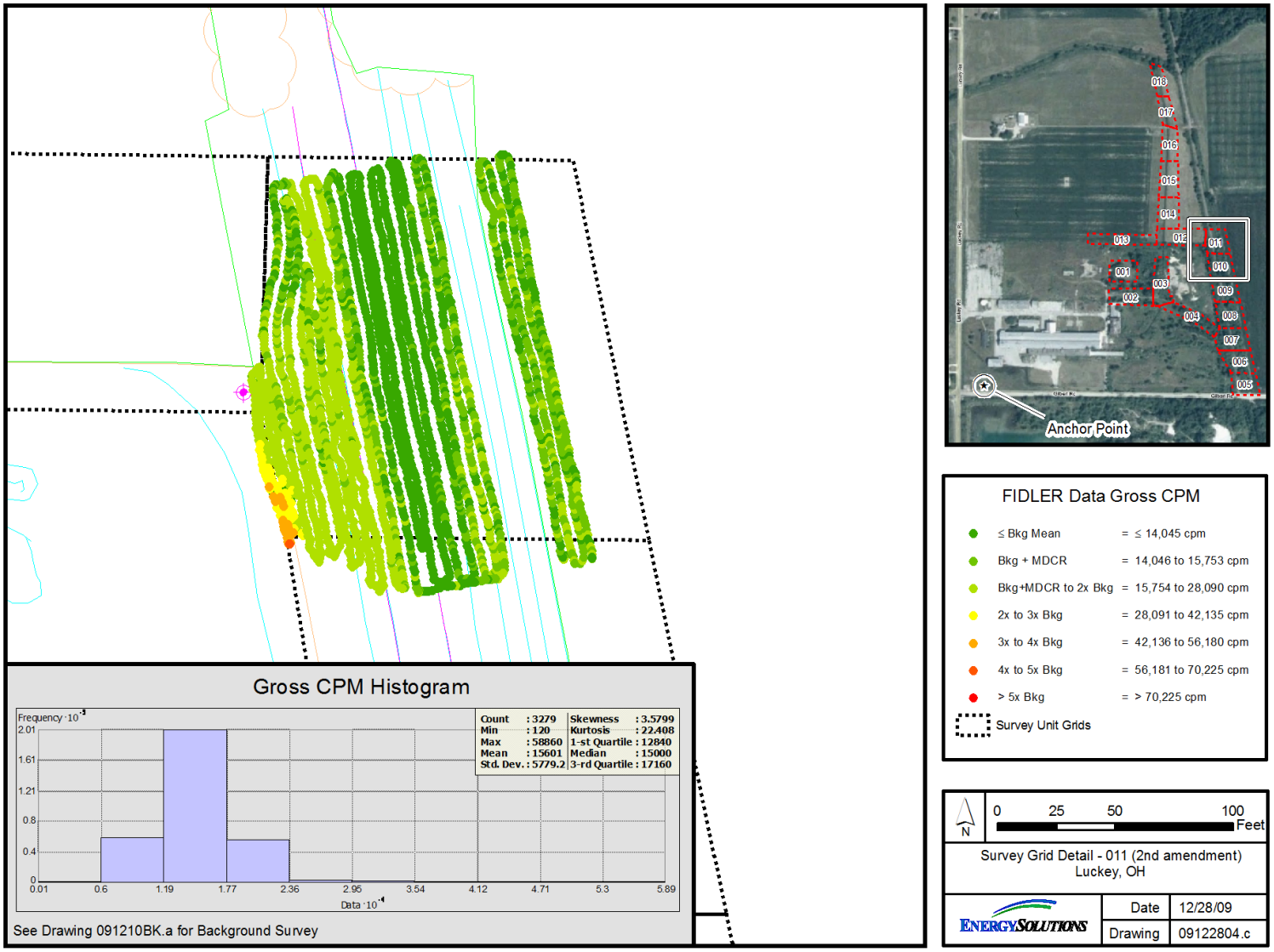
*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-13: Survey Grid 009 GWS



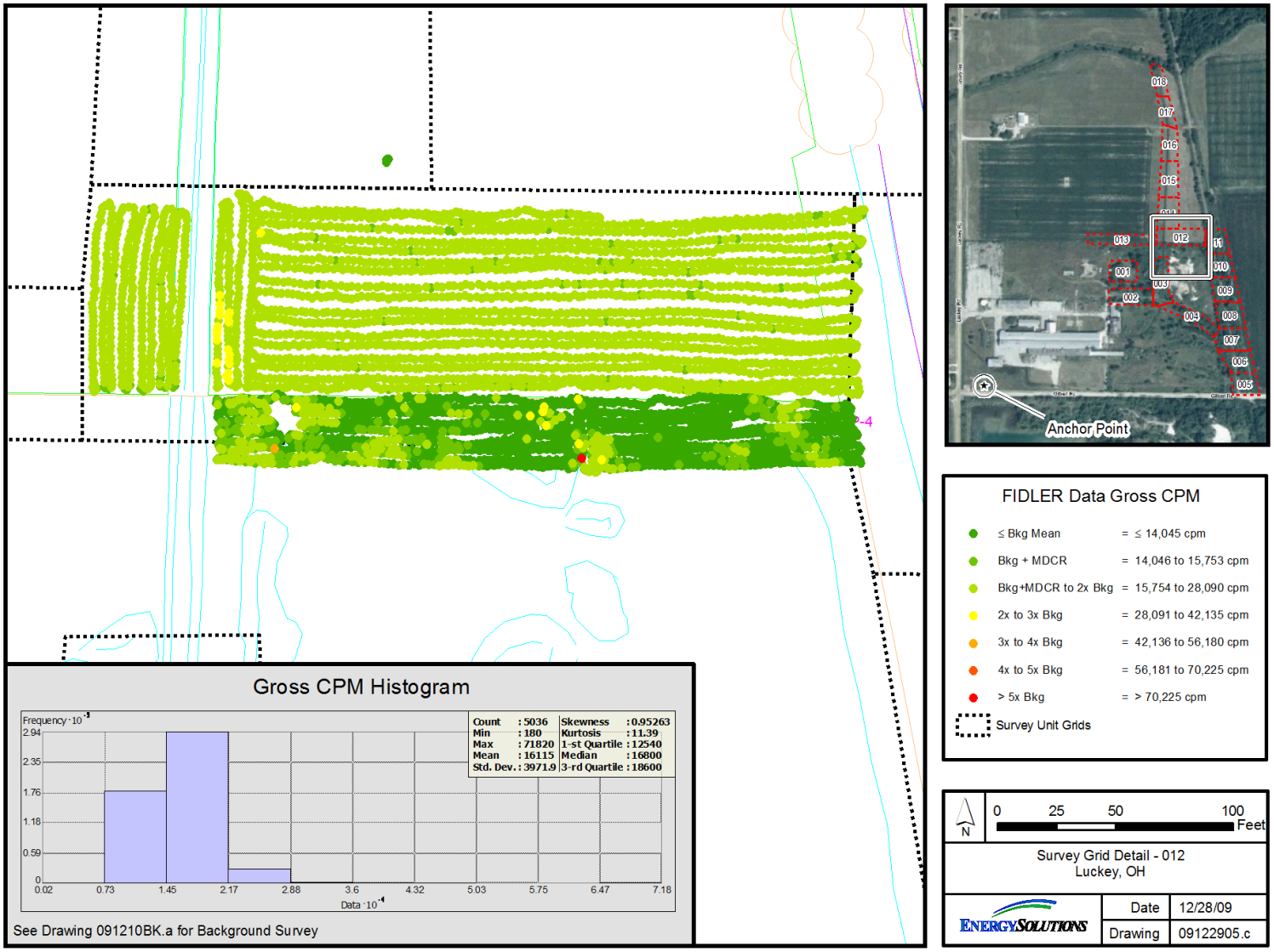
*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-14: Survey Grid 010 GWS



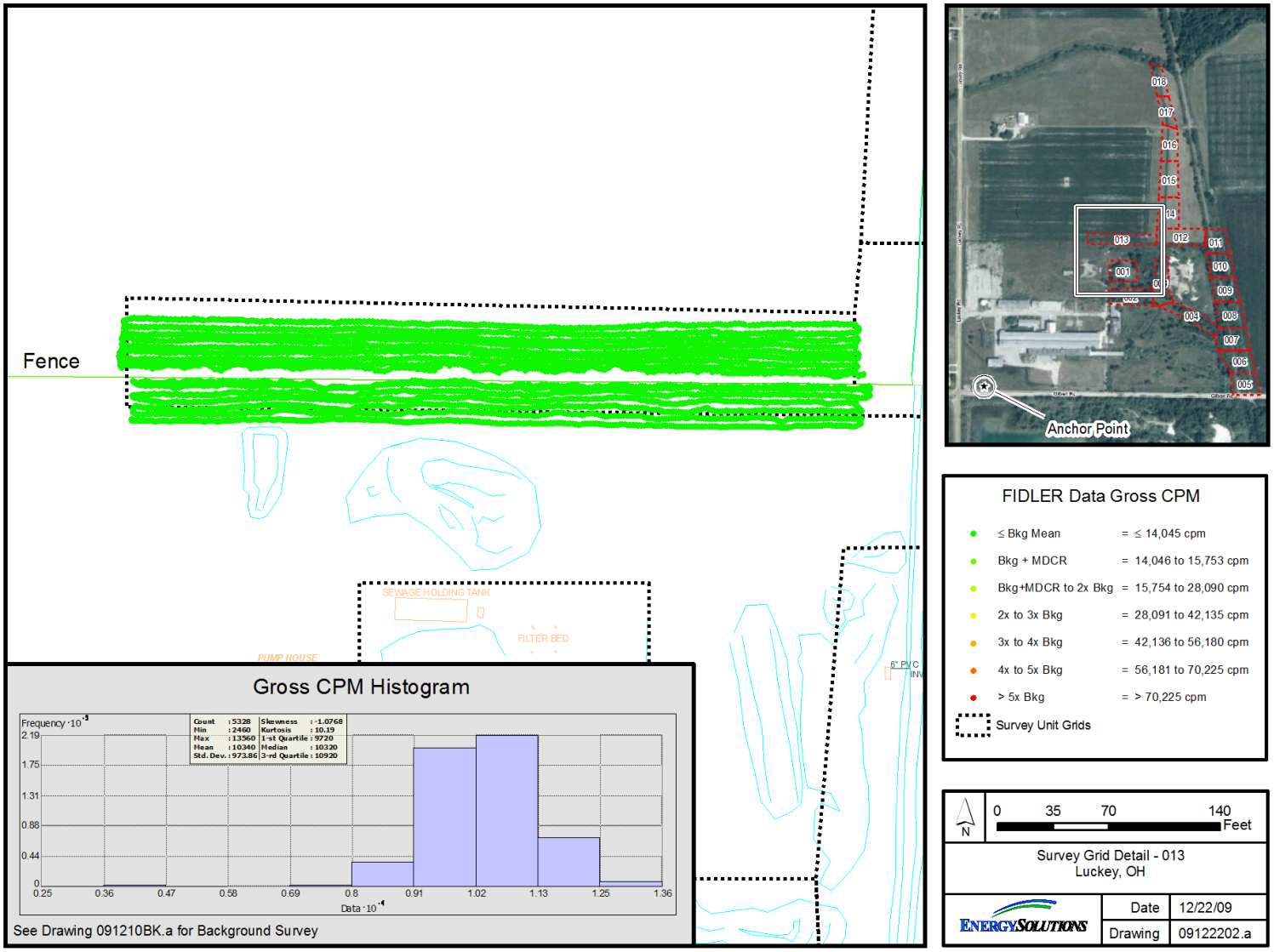
*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-15: Survey Grid 011 GWS



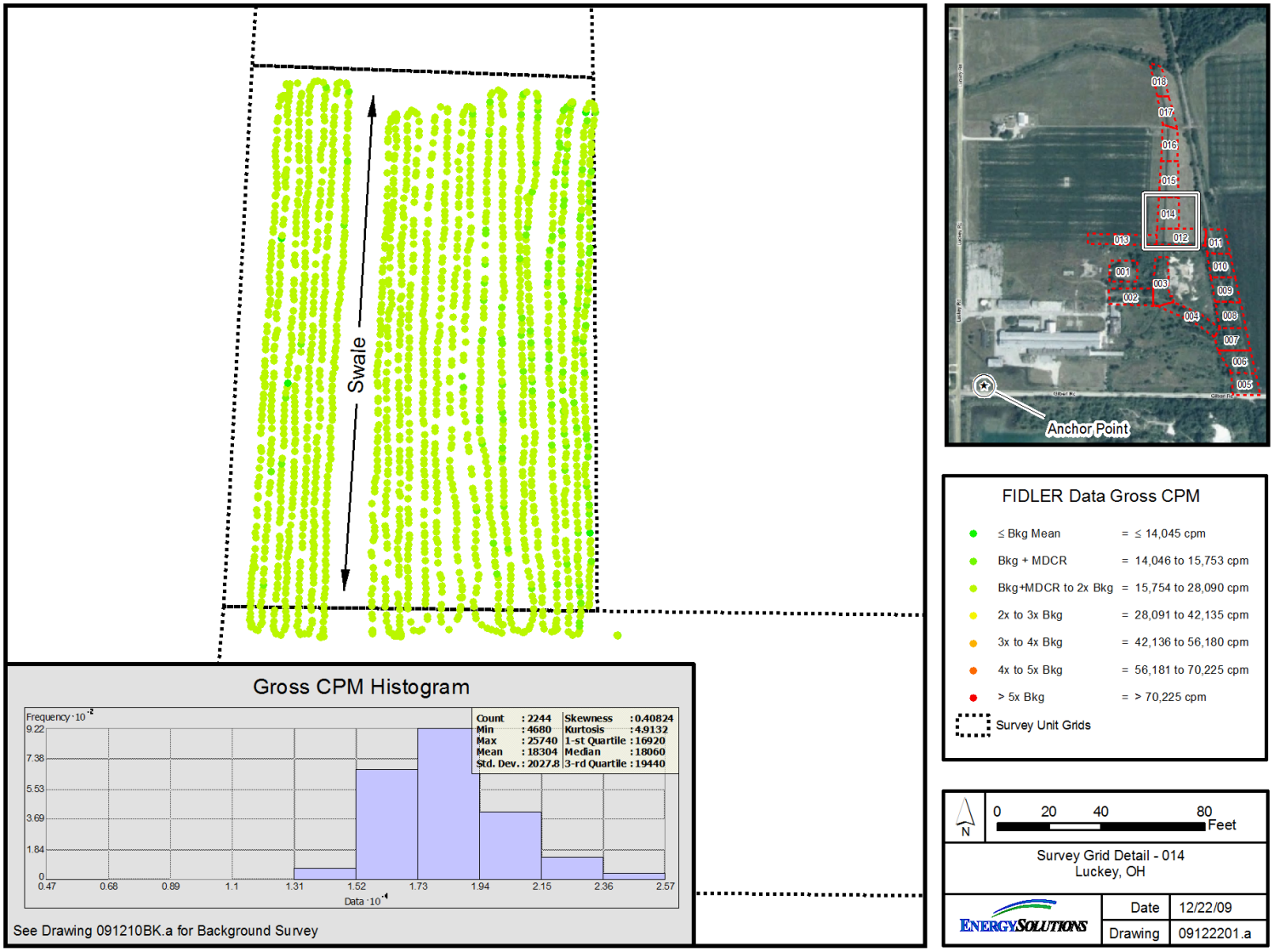
*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-16: Survey Grid 012 GWS



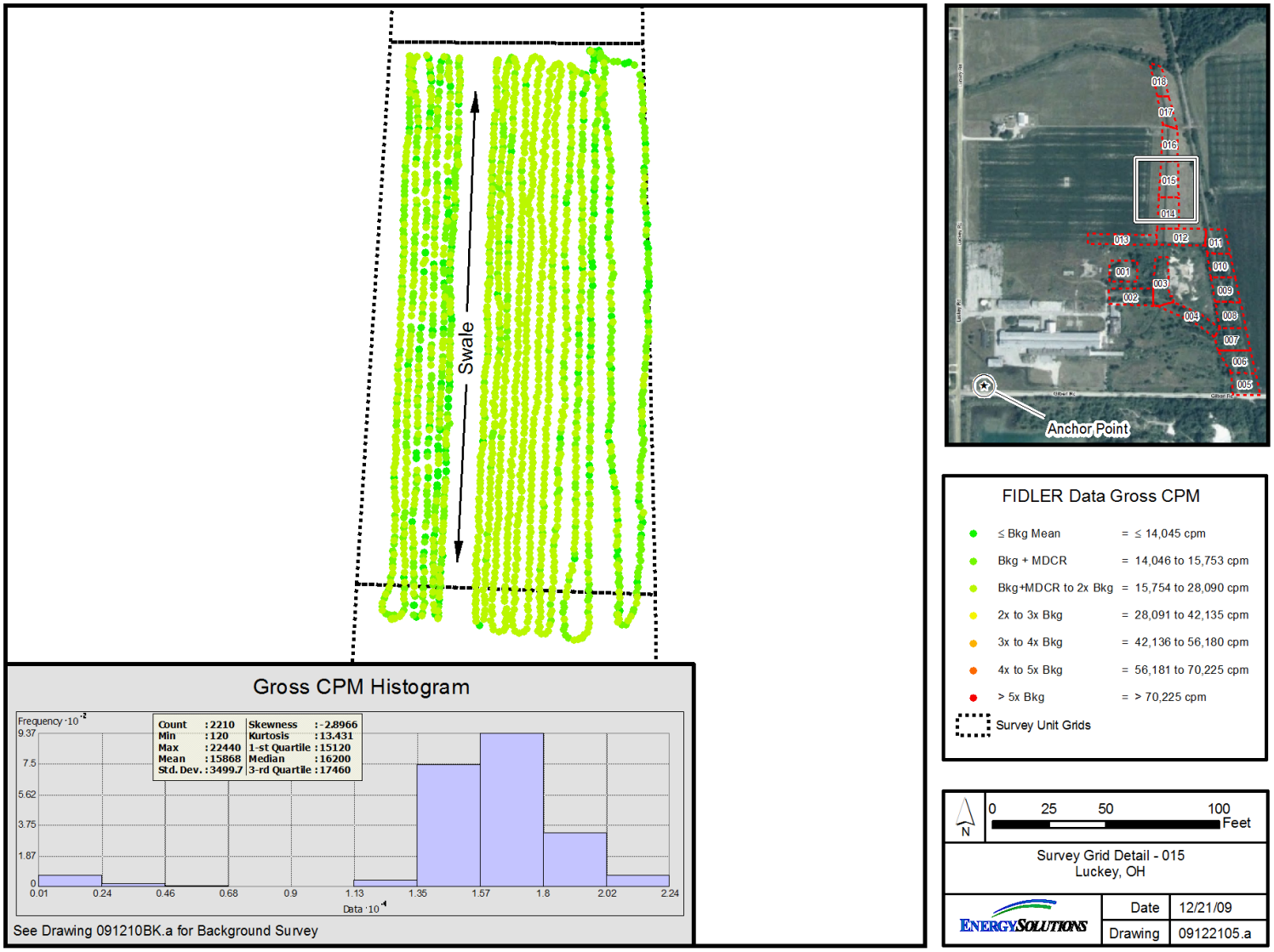
*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-17: Survey Grid 013 GWS



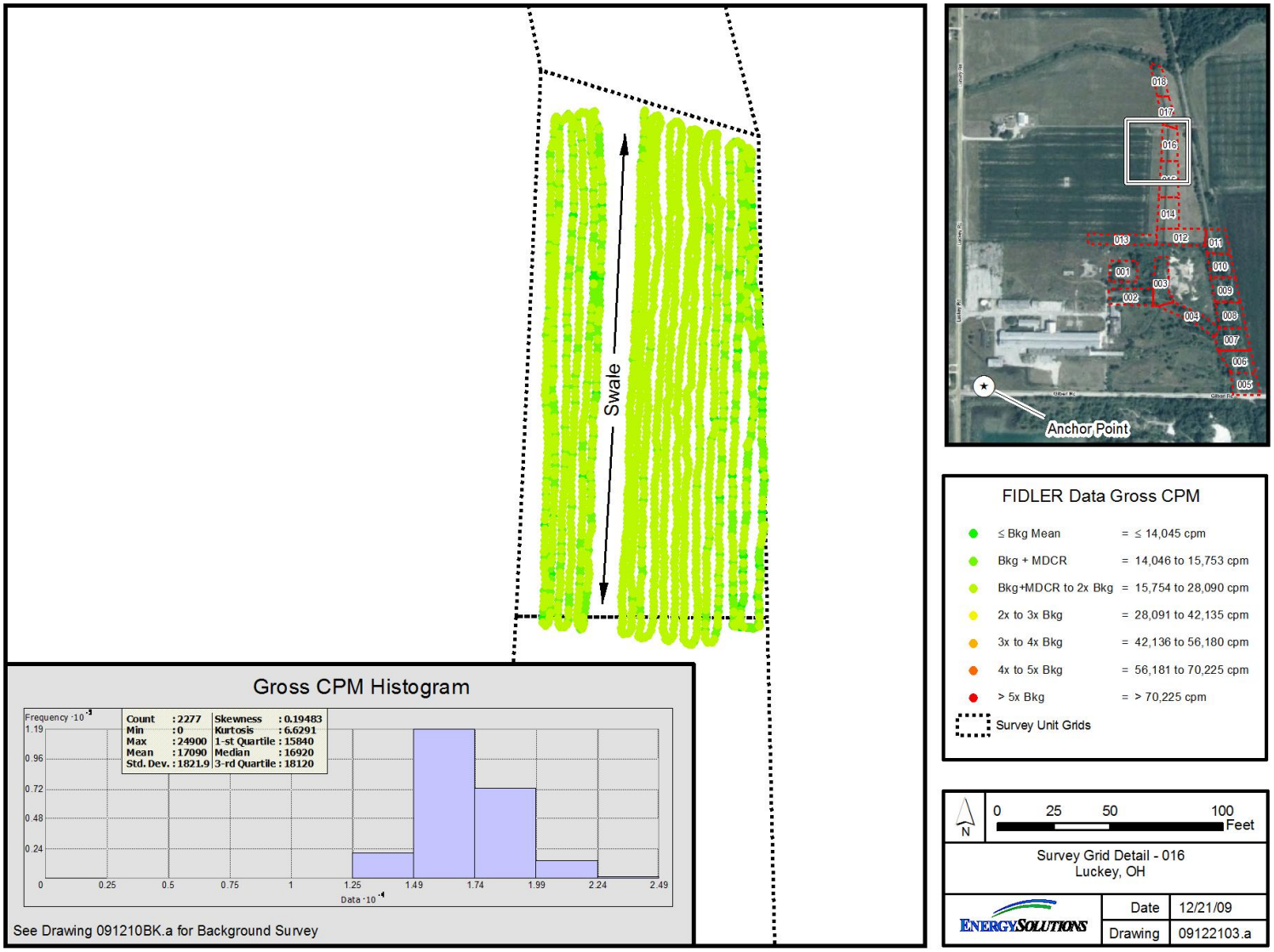
*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-18: Survey Grid 014 GWS



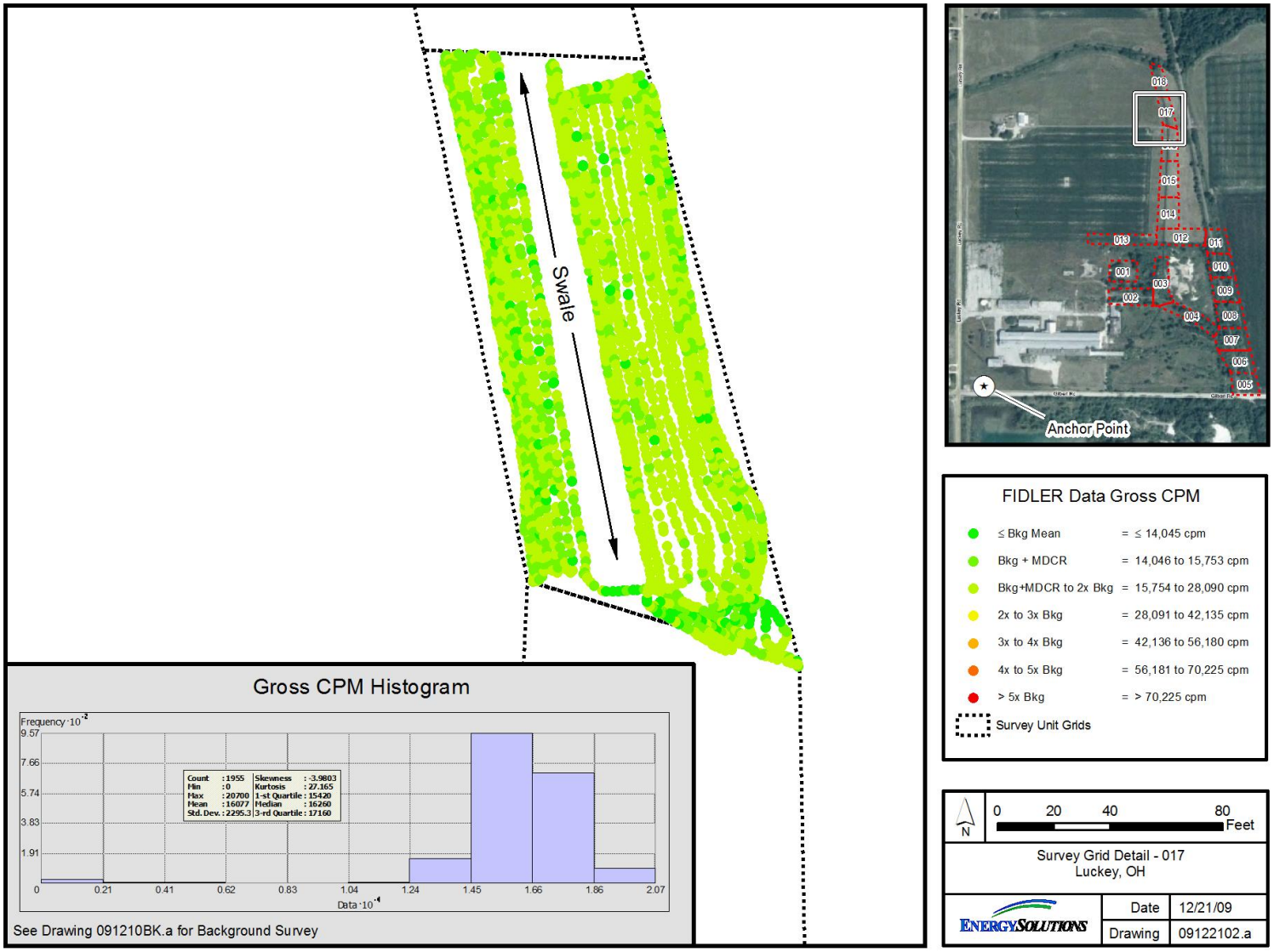
*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-19: Survey Grid 015 GWS



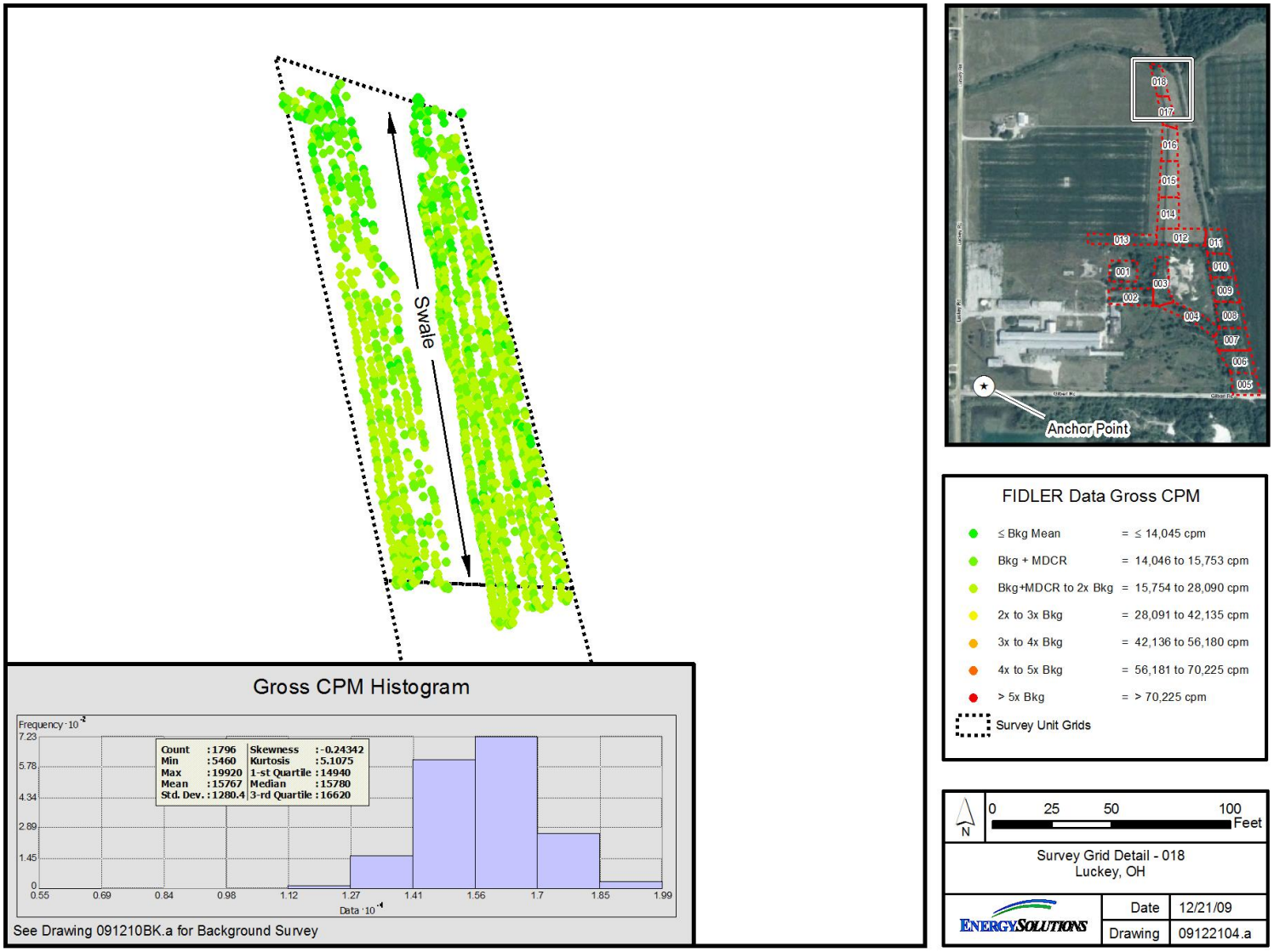
*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-20: Survey Grid 016 GWS



*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-21: Survey Grid 017 GWS



*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-22: Survey Grid 018 GWS

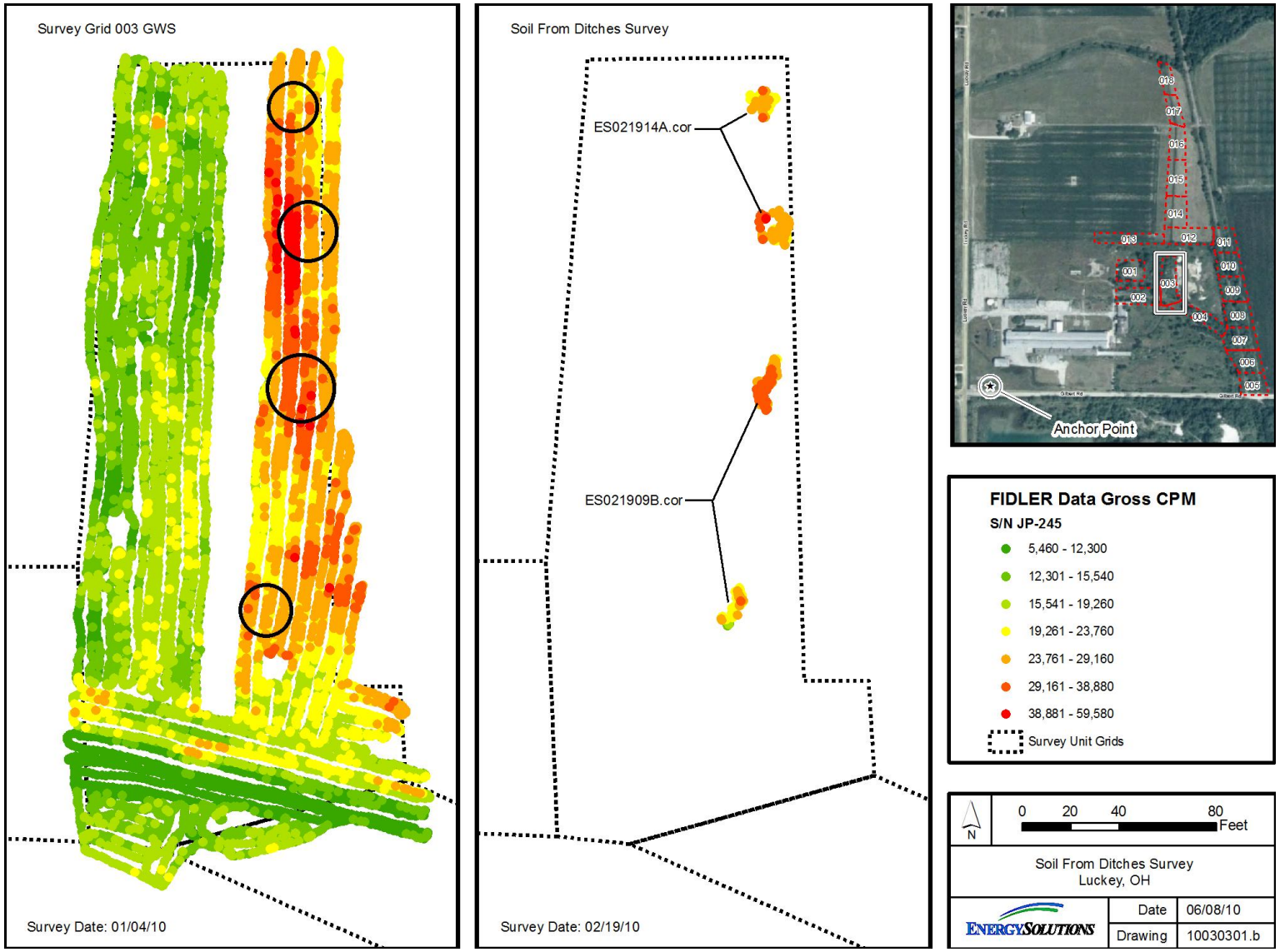
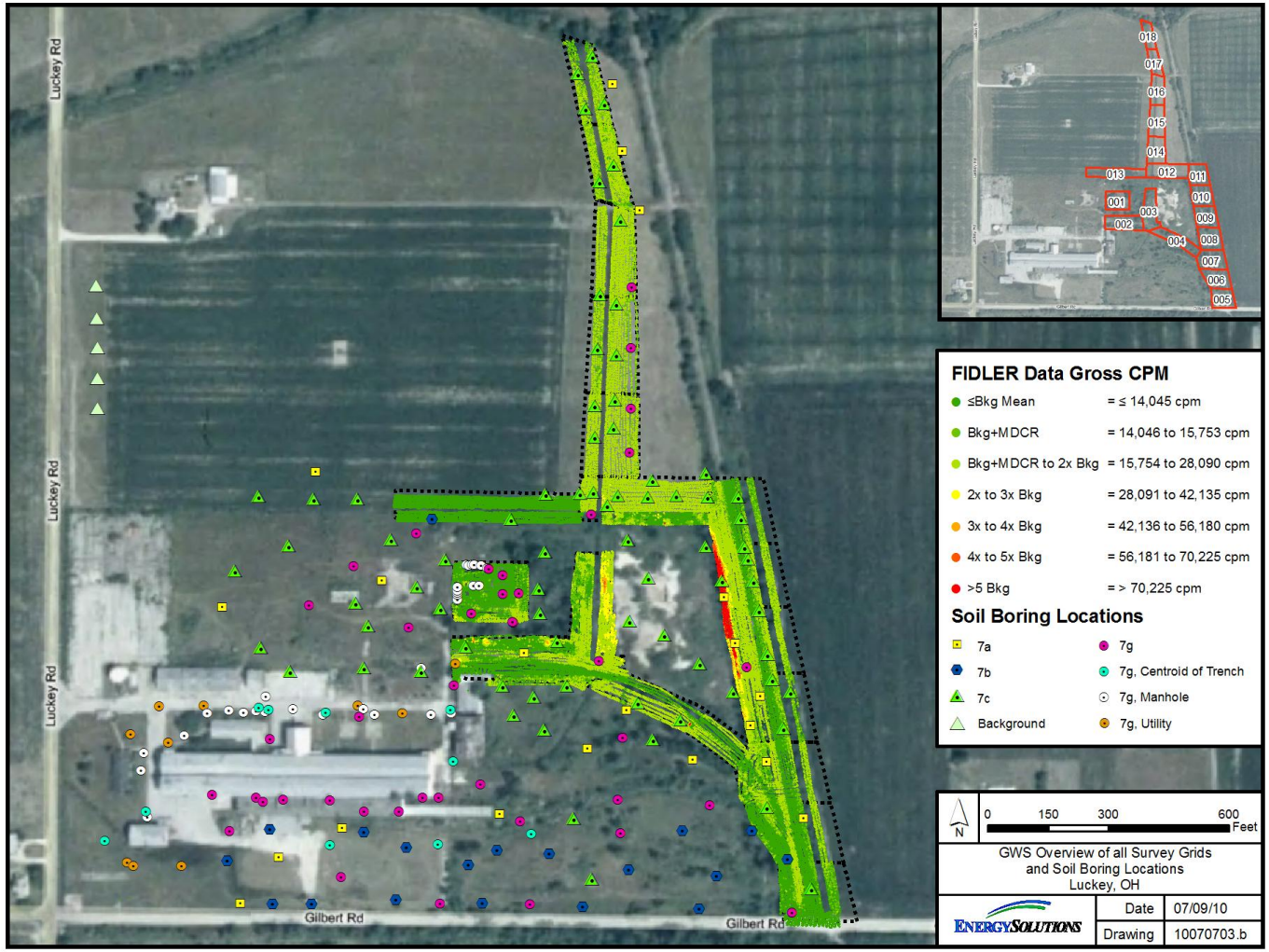
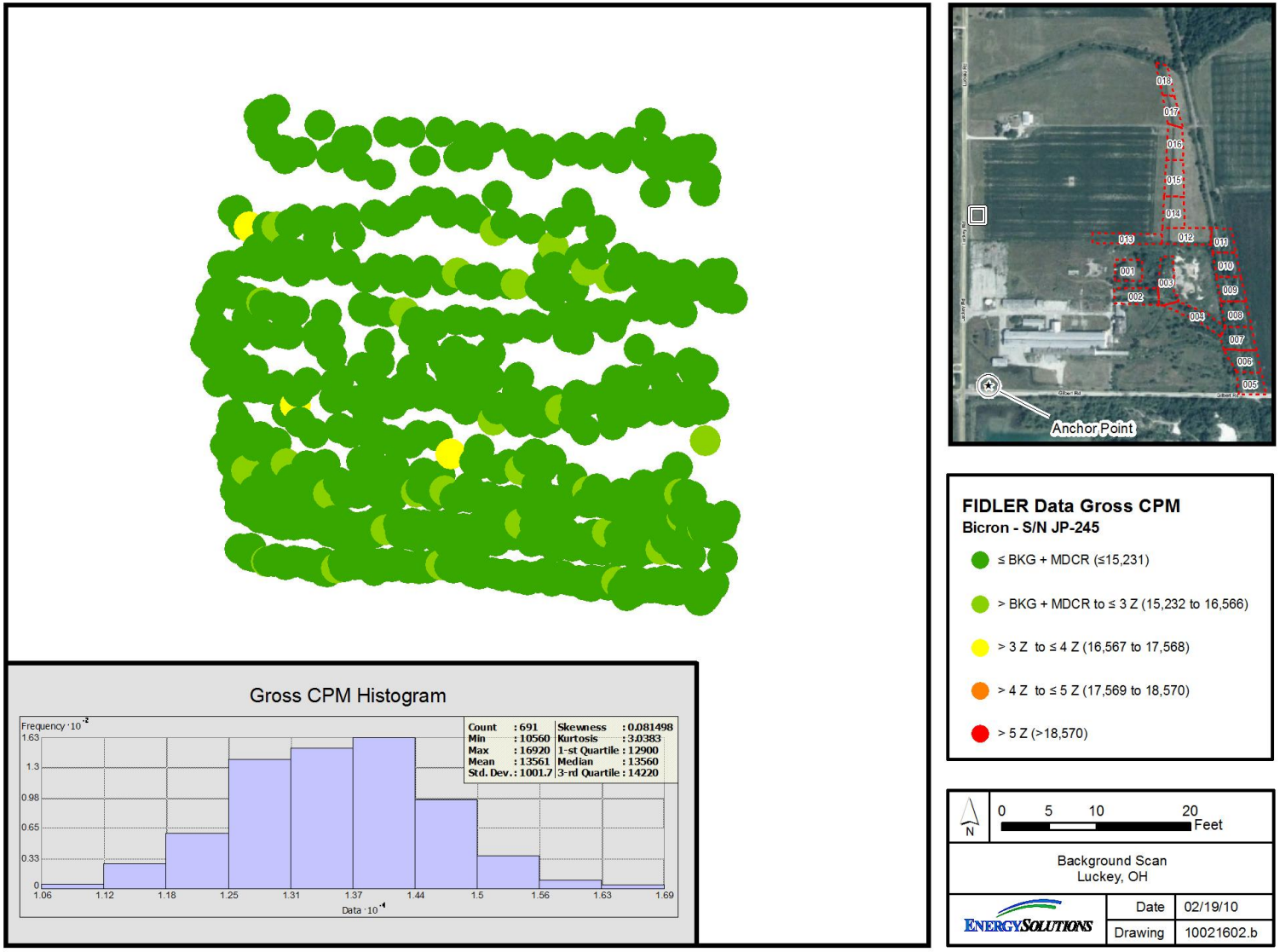


Figure 9-23: GWS of Soil Adjacent to Ditches



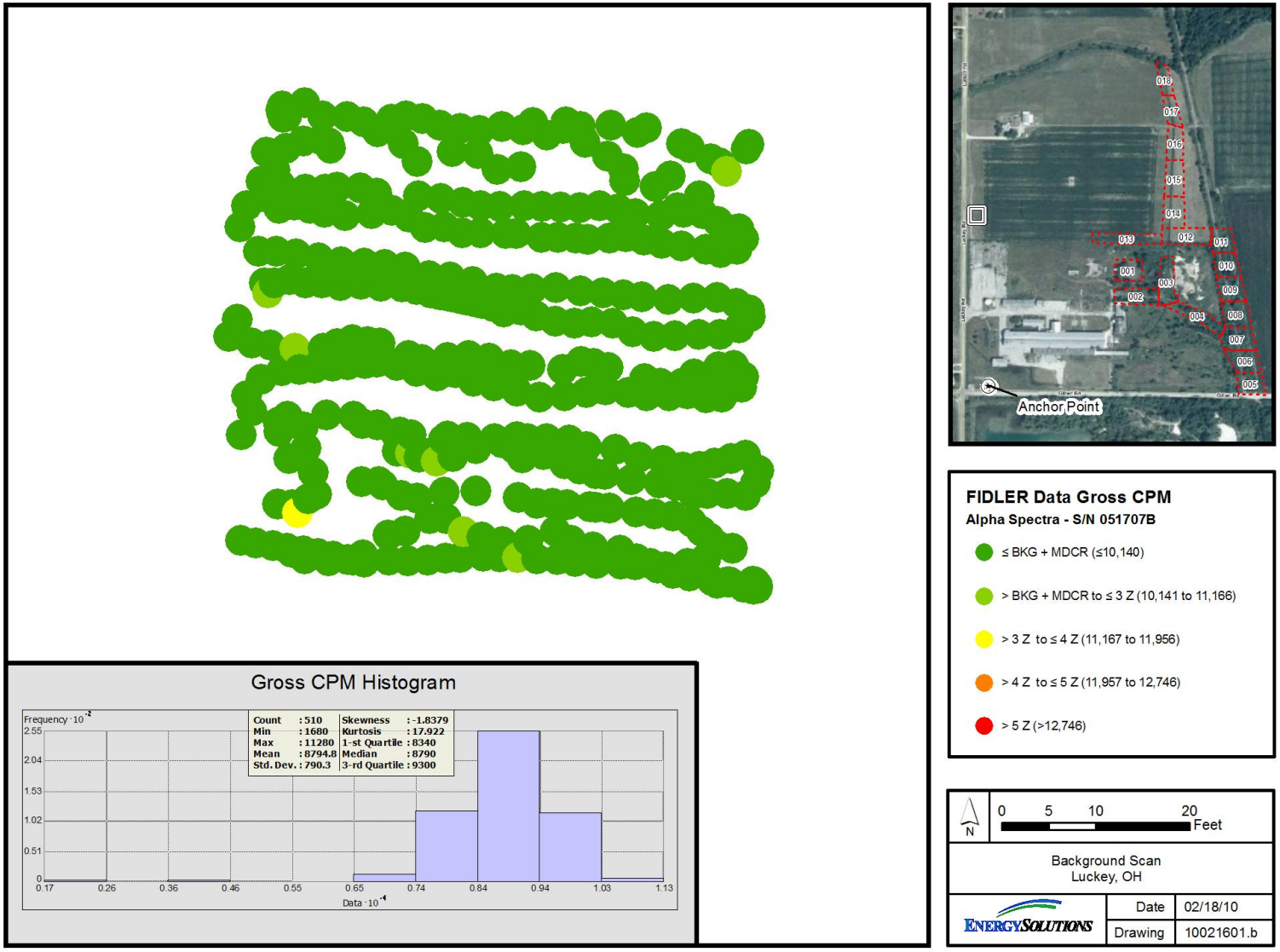
*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-24: GWS Overview of all Survey Grids



*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-25: GWS Reassessment – Bicron FIDLER Northwest Background GWS



*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-26: GWS Reassessment – Alpha Spectra FIDLER Northwest Background GWS

GWS DATA REASSESSMENT FOR SURVEY GRID 001

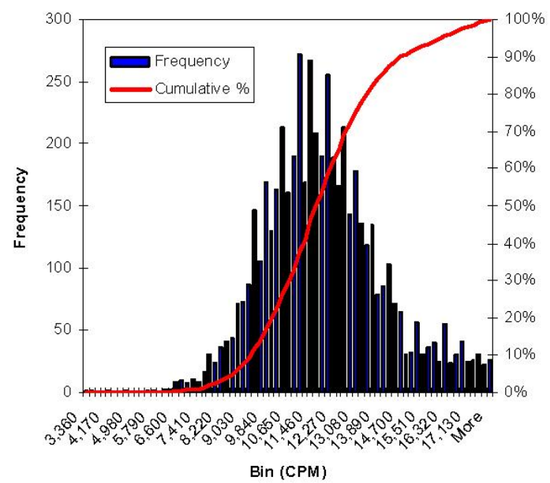
DATA ASSESSMENT NARRATIVE

Low-end statistical outliers were removed. A total of 121 points were removed, which amounted to 2.2% of the data collected.

The GWS data were collected using one FIDLER detector: Bicron S/N JP-245. The average background cpm result for the Bicron FIDLER was 13,561 cpm. The minimum detectable count rate for the surveyor ($MDCR_{surveyor}$) was calculated using this background level, per MARSSIM guidance, and was equal to 15,231 cpm.

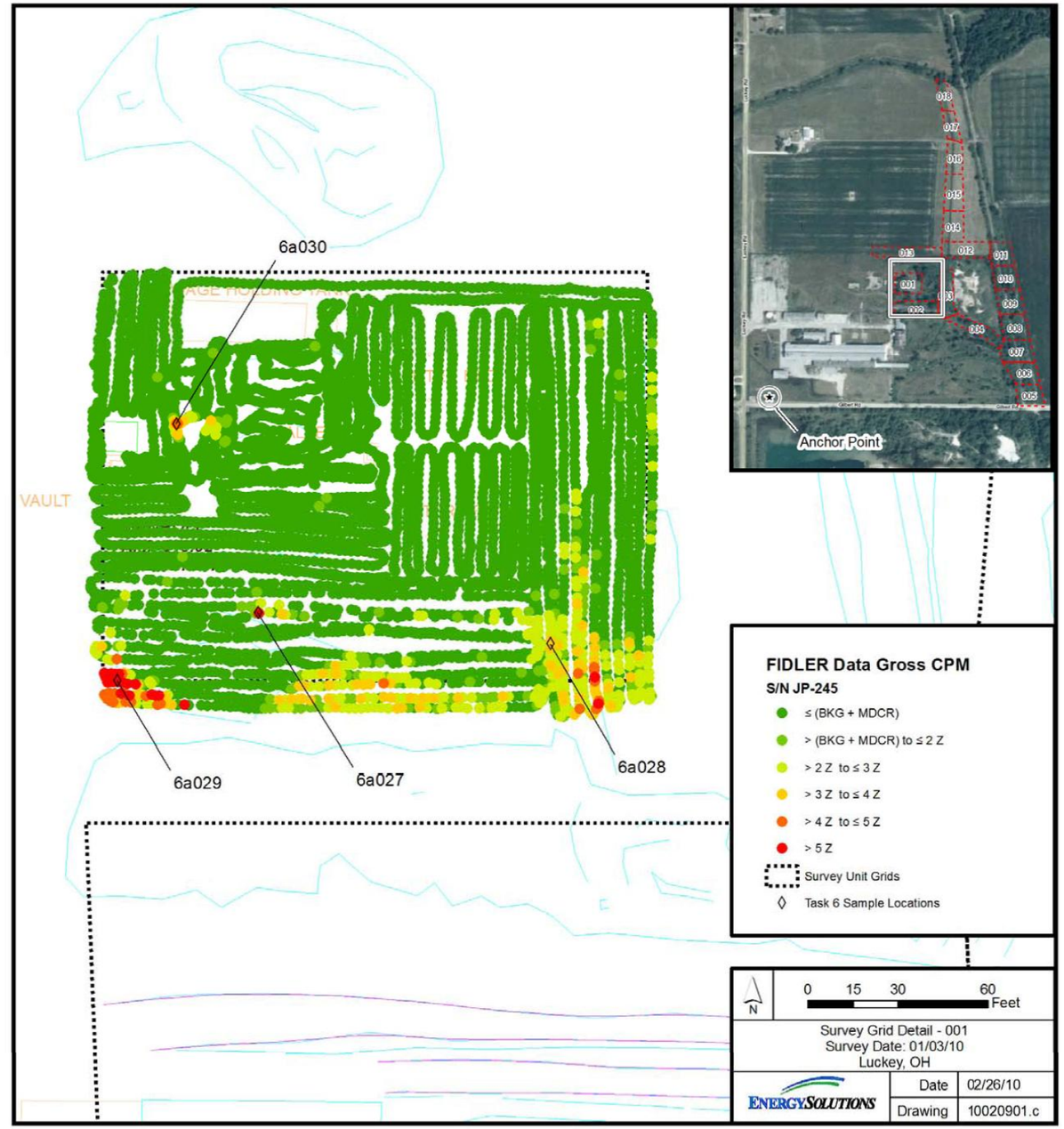
The data were sorted ascending (which ensures that higher values are plotted last and not hidden behind lower values) and statistically analyzed. There were multiple distributions apparent in the data. After an iterative process, the data with values less than 18,000 cpm were determined to be the underlying distribution for the survey grid based on kurtosis and skewness absolute values less than one. Z-scores were calculated based on the reduced data set. The statistical calculations and histogram for the data set of values less than 18,000 cpm are presented below.

Analysis for Data < 18,000 cpm	
Mean	11,861
Standard Error	30
Median	11,640
Mode	11,340
Standard Deviation	2,158
Sample Variance	4,654,998
Kurtosis	0.3
Skewness	0.4
Range	14,580
Minimum	3,360
Maximum	17,940
Sum	63,161,280
Count	5,325
1 Z	14,019
2 Z	16,176
3 Z	18,334
4 Z	20,491
5 Z	22,649



The color ramp for the figure was developed from the above information. Dark green represents all data that is less than or equal to the $MDCR_{surveyor}$ plus the background mean and can be considered indistinguishable from background. Data that exceeded the $MDCR_{surveyor}$ plus the background mean were color coded based on the Z-scores presented in the table above. Results that exceed the 3 Z value can be considered to be outliers of the underlying distribution of the survey grid. Note that the 1 Z value is not used for this figure because the value was less than the $MDCR_{surveyor}$ plus the background mean.

Selected surface soil sampling locations for Task 6 are provided on the figure.



*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-27: GWS Reassessment – Survey Grid 001

GWS DATA REASSESSMENT FOR SURVEY GRID 002

DATA ASSESSMENT NARRATIVE

Spatial outliers and low-end statistical outliers were removed. A total of 19 points were removed, which amounted to 0.2% of the data collected.

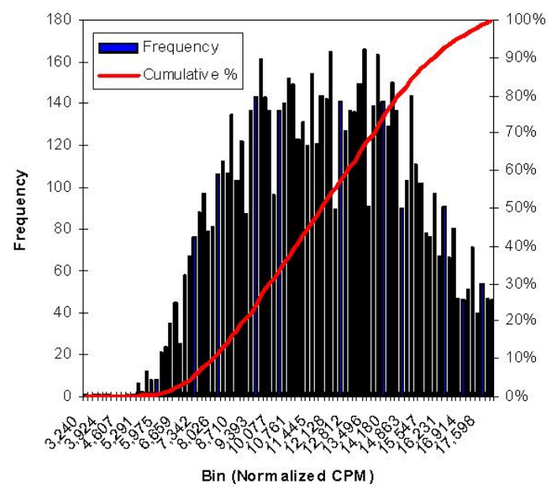
The GWS data were collected using two FIDLER detectors: Alpha Spectra S/N 051707B and Bicron S/N JP-245. During calibration, the average cpm/µR/hr using a Cs-137 source was measured: 757.4 and 1,244 cpm/µR/hr for the Alpha Spectra and Bicron FIDLERs, respectively. The Alpha Spectra collected data were normalized to the Bicron S/N JP-245 response by multiplying each Alpha Spectra result by the ratio shown below.

$$\frac{1{,}244\ \text{cpm}/\mu R/\text{hr}}{757.4\ \text{cpm}/\mu R/\text{hr}} = 1.64$$

The average background cpm result for the Bicron FIDLER was 13,561 cpm. The minimum detectable count rate for the surveyor ($MDCR_{surveyor}$) was calculated using this background level, per MARSSIM guidance, and was equal to 15,231 cpm.

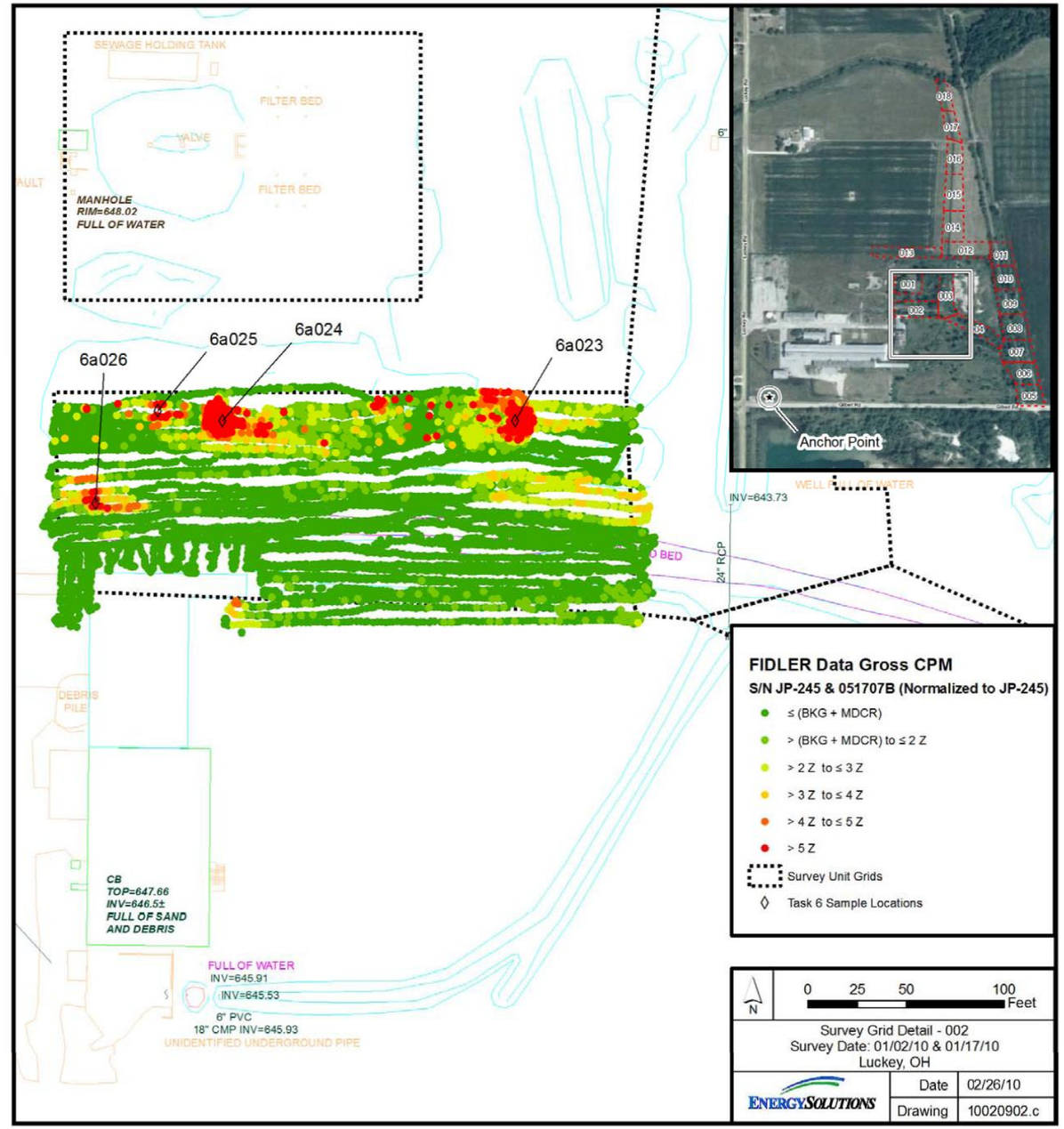
The data from the two FIDLER detectors, Bicron and normalized Alpha Spectra, were combined and sorted ascending (which ensures that higher values are plotted last and not hidden behind lower values). The data were statistically analyzed. There were multiple distributions apparent in the data. After an iterative process, the data with values less than 18,000 cpm were determined to be the underlying distribution for the survey grid based on kurtosis and skewness absolute values less than one. Z-scores were calculated based on the reduced data set. The statistical calculations and histogram for the data set of values less than 18,000 cpm are presented below.

Analysis for Data < 18,000 cpm	
Mean	11,805
Standard Error	34
Median	11,820
Mode	9,480
Standard Deviation	2,957
Sample Variance	8,742,783
Kurtosis	-0.9
Skewness	0.0
Range	14,700
Minimum	3,240
Maximum	17,940
Sum	87,452,184
Count	7,408
1 Z	14,762
2 Z	17,719
3 Z	20,676
4 Z	23,632
5 Z	26,589



The color ramp for the figure was developed from the above information. Dark green represents all data that is less than or equal to the $MDCR_{surveyor}$ plus the background mean and can be considered indistinguishable from background. Data that exceeded the $MDCR_{surveyor}$ plus the background mean were color coded based on the Z-scores presented in the table above. Results that exceed the 3 Z value can be considered to be outliers of the underlying distribution of the survey grid. Note that the 1 Z value is not used for this figure because the value was less than the $MDCR_{surveyor}$ plus the background mean.

Selected surface soil sampling locations for Task 6 are provided on the figure.



*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-28: GWS Reassessment – Survey Grid 002

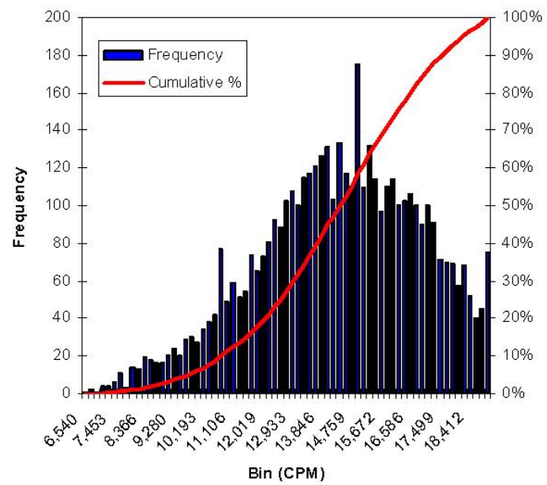
GWS DATA REASSESSMENT FOR SURVEY GRID 003

DATA ASSESSMENT NARRATIVE

The GWS data were collected using one FIDLER detector: Bicron S/N JP-245. The average background cpm result for the Bicron FIDLER was 13,561 cpm. The minimum detectable count rate for the surveyor ($MDCR_{surveyor}$) was calculated using this background level, per MARSSIM guidance, and was equal to 15,231 cpm.

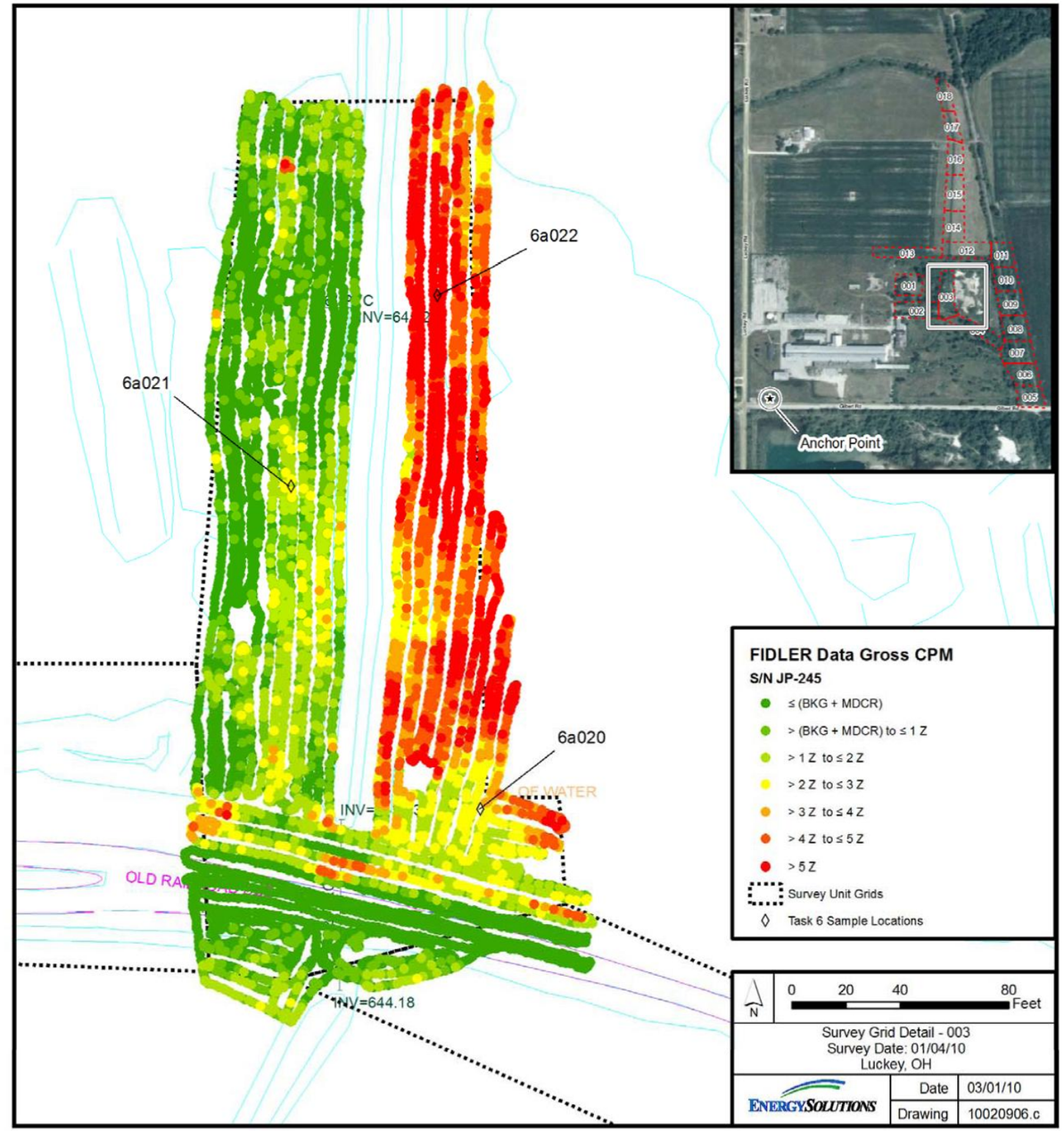
The data were sorted ascending (which ensures that higher values are plotted last and not hidden behind lower values) and statistically analyzed. There were multiple distributions apparent in the data. After an iterative process, the data with values less than 19,000 cpm were determined to be the underlying distribution for the survey grid based on kurtosis and skewness absolute values less than one. Z-scores were calculated based on the reduced data set. The statistical calculations and histogram for the data set of values less than 19,000 cpm are presented below.

Analysis for Data < 19,000 cpm	
Mean	14,248
Standard Error	37
Median	14,400
Mode	15,240
Standard Deviation	2,542
Sample Variance	6,460,535
Kurtosis	-0.4
Skewness	-0.3
Range	12,420
Minimum	6,540
Maximum	18,960
Sum	65,897,640
Count	4,625
1 Z	16,790
2 Z	19,332
3 Z	21,873
4 Z	24,415
5 Z	26,957



The color ramp for the figure was developed from the above information. Dark green represents all data that is less than or equal to the $MDCR_{surveyor}$ plus the background mean and can be considered indistinguishable from background. Data that exceeded the $MDCR_{surveyor}$ plus the background mean were color coded based on the Z-scores presented in the table above. Results that exceed the 3 Z value can be considered to be outliers of the underlying distribution of the survey grid.

Selected surface soil sampling locations for Task 6 are provided on the figure.



*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-29: GWS Reassessment – Survey Grid 003

GWS DATA REASSESSMENT FOR SURVEY GRID 004

DATA ASSESSMENT NARRATIVE

Low-end statistical outliers were removed. A total of 10 points were removed, which amounted to 0.2% of the data collected.

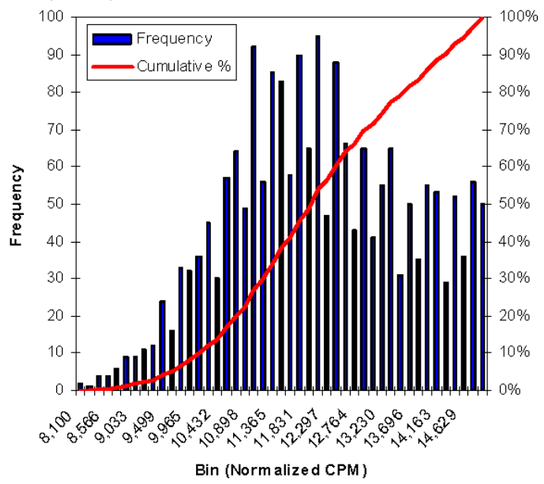
The GWS data were collected using two FIDLER detectors: Alpha Spectra S/N 051707B and Bicron S/N JP-245. During calibration, the average cpm/µR/hr using a Cs-137 source was measured: 757.4 and 1,244 cpm/µR/hr for the Alpha Spectra and Bicron FIDLERs, respectively. The Alpha Spectra collected data were normalized to the Bicron S/N JP-245 response by multiplying each Alpha Spectra result by the ratio shown below.

$$\frac{1{,}244\ \text{cpm}/\mu\text{R/hr}}{757.4\ \text{cpm}/\mu\text{R/hr}} = 1.64$$

The average background cpm result for the Bicron FIDLER was 13,561 cpm. The minimum detectable count rate for the surveyor ($MDCR_{surveyor}$) was calculated using this background level, per MARSSIM guidance, and was equal to 15,231 cpm.

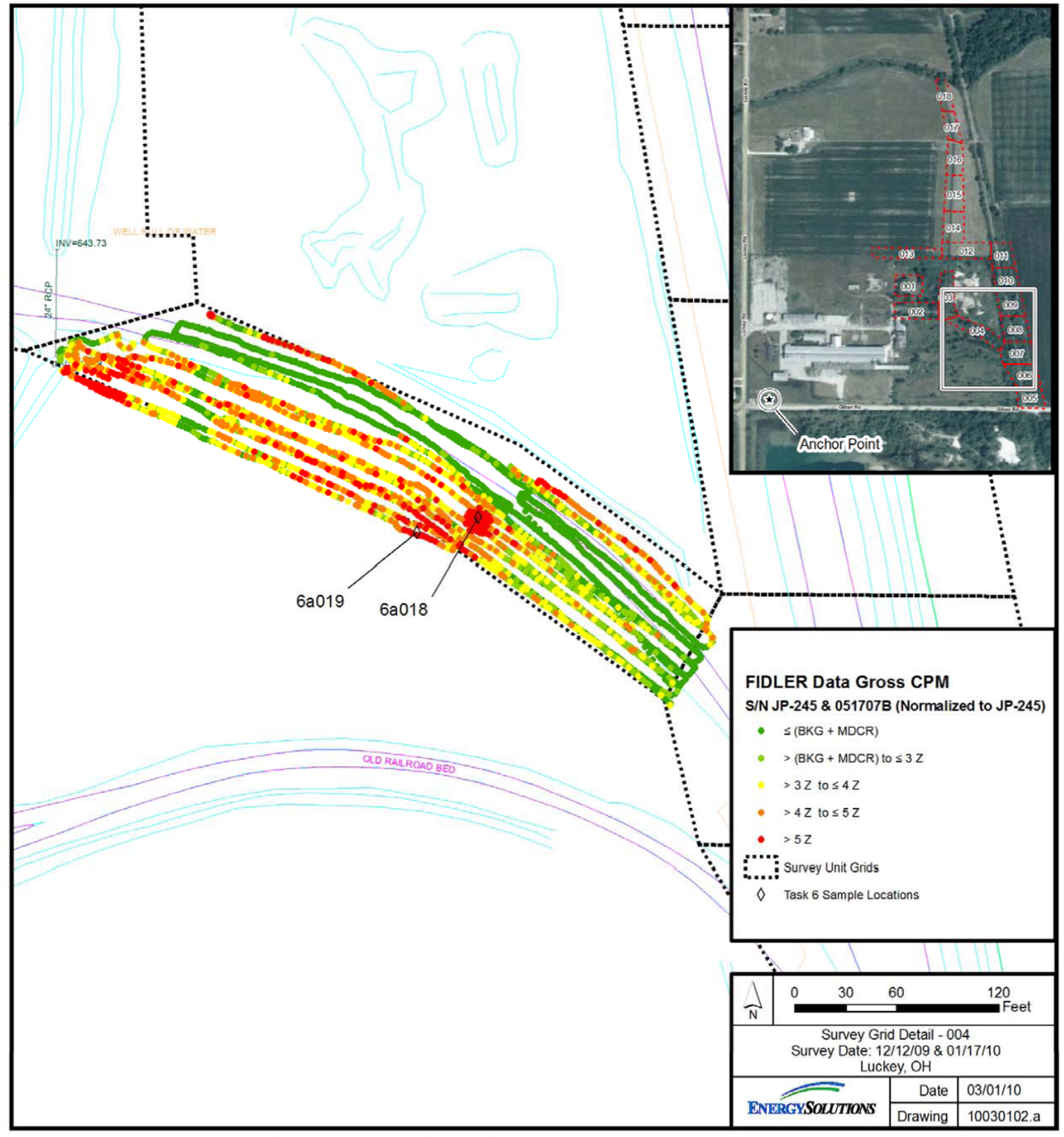
The data from the two FIDLER detectors, Bicron and normalized Alpha Spectra, were combined and sorted ascending (which ensures that higher values are plotted last and not hidden behind lower values). The data were statistically analyzed. There were multiple distributions apparent in the data. After an iterative process, the data with values greater than 8,000 cpm to less than 15,000 cpm were determined to be the underlying distribution for the survey grid based on kurtosis and skewness absolute values less than one. Z-scores were calculated based on the reduced data set. The statistical calculations and histogram for the data set of values greater than 8,000 cpm to less than 15,000 cpm are presented below.

Analysis for Data > 8,000 to < 15,000 cpm	
Mean	12,095
Standard Error	34
Median	12,000
Mode	11,160
Standard Deviation	1,519
Sample Variance	2,308,416
Kurtosis	-0.7
Skewness	0.0
Range	6,840
Minimum	8,100
Maximum	14,940
Sum	24,008,160
Count	1,985
1 Z	13,614
2 Z	15,133
3 Z	16,653
4 Z	18,172
5 Z	19,692



The color ramp for the figure was developed from the above information. Dark green represents all data that is less than or equal to the $MDCR_{surveyor}$ plus the background mean and can be considered indistinguishable from background. Data that exceeded the $MDCR_{surveyor}$ plus the background mean were color coded based on the Z-scores presented in the table above. Results that exceed the 3 Z value can be considered to be outliers of the underlying distribution of the survey grid. Note that the 1 Z and 2 Z values are not used for this figure because the values were less than the $MDCR_{surveyor}$ plus the background mean.

Selected surface soil sampling locations for Task 6 are provided on the figure.



*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-30: GWS Reassessment – Survey Grid 004

GWS DATA REASSESSMENT FOR SURVEY GRID 005

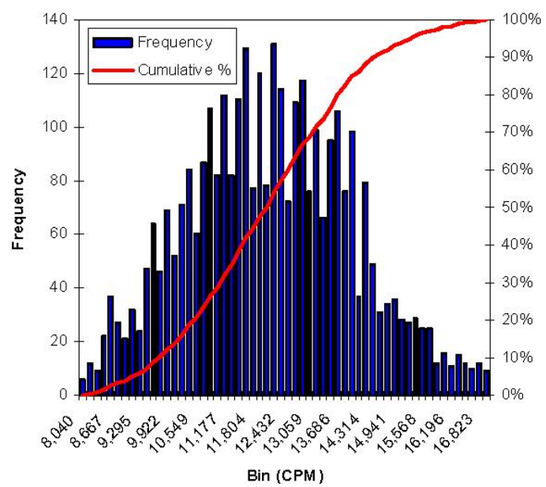
DATA ASSESSMENT NARRATIVE

Low-end statistical outliers were removed. A total of 8 points were removed, which amounted to 0.2% of the data collected.

The GWS data were collected using one FIDLER detector: Bicron S/N JP-245. The average background cpm result for the Bicron FIDLER was 13,561 cpm. The minimum detectable count rate for the surveyor ($MDCR_{surveyor}$) was calculated using this background level, per MARSSIM guidance, and was equal to 15,231 cpm.

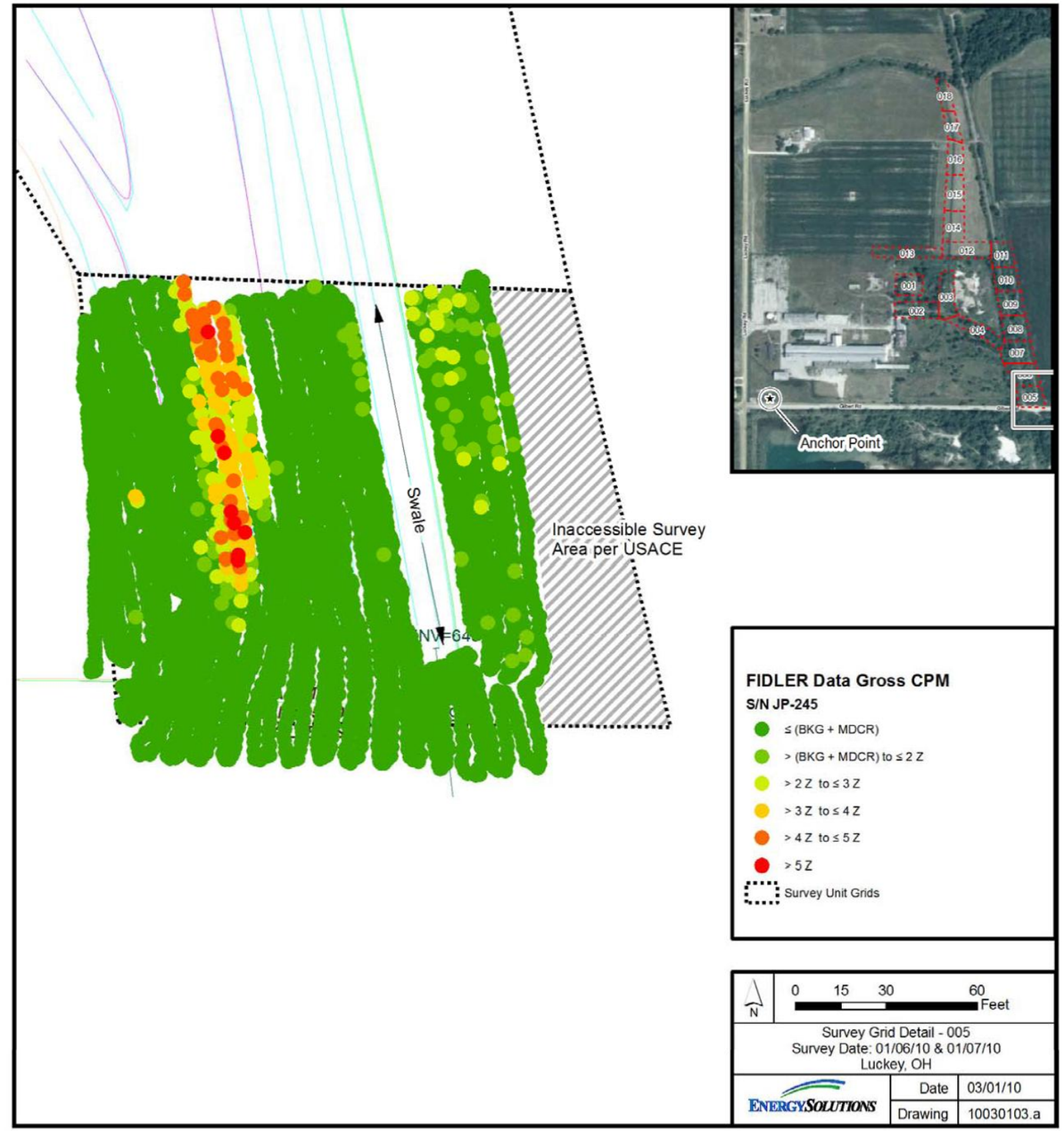
The data were sorted ascending (which ensures that higher values are plotted last and not hidden behind lower values) and statistically analyzed. There were multiple distributions apparent in the data. After an iterative process, the data with values greater than 8,000 to less than 17,000 cpm were determined to be the underlying distribution for the survey grid based on kurtosis and skewness absolute values less than one. Z-scores were calculated based on the reduced data set. The statistical calculations and histogram for the data set of values greater than 8,000 to less than 17,000 cpm are presented below.

Analysis for Data > 8,000 cpm to < 17,000 cpm	
Mean	12,121
Standard Error	32
Median	12,060
Mode	12,120
Standard Deviation	1,834
Sample Variance	3,363,157
Kurtosis	-0.4
Skewness	0.1
Range	8,940
Minimum	8,040
Maximum	16,980
Sum	40,279,320
Count	3,323
1 Z	13,955
2 Z	15,789
3 Z	17,623
4 Z	19,457
5 Z	21,291



The color ramp for the figure was developed from the above information. Dark green represents all data that is less than or equal to the $MDCR_{surveyor}$ plus the background mean and can be considered indistinguishable from background. Data that exceeded the $MDCR_{surveyor}$ plus the background mean were color coded based on the Z-scores presented in the table above. Results that exceed the 3 Z value can be considered to be outliers of the underlying distribution of the survey grid. Note that the 1 Z value is not used for this figure because the value was less than the $MDCR_{surveyor}$ plus the background mean.

No soil sampling locations were selected in this survey grid for Task 6.



*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-31: GWS Reassessment – Survey Grid 005

GWS DATA REASSESSMENT FOR SURVEY GRID 006

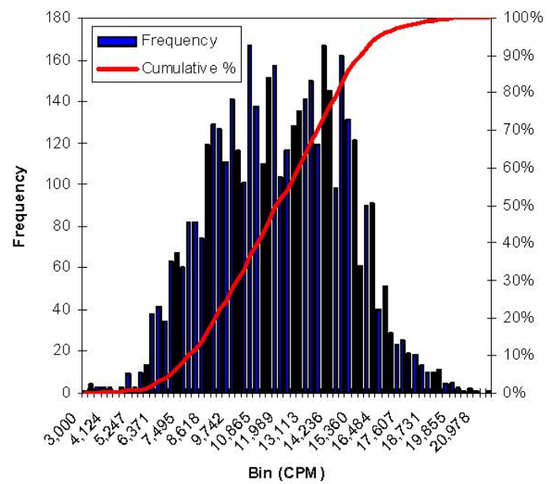
DATA ASSESSMENT NARRATIVE

Low-end statistical outliers were removed. A total of 165 points were removed, which amounted to 3.6% of the data collected.

The GWS data were collected using one FIDLER detector: Bicron S/N JP-245. The average background cpm result for the Bicron FIDLER was 13,561 cpm. The minimum detectable count rate for the surveyor ($MDCR_{surveyor}$) was calculated using this background level, per MARSSIM guidance, and was equal to 15,231 cpm.

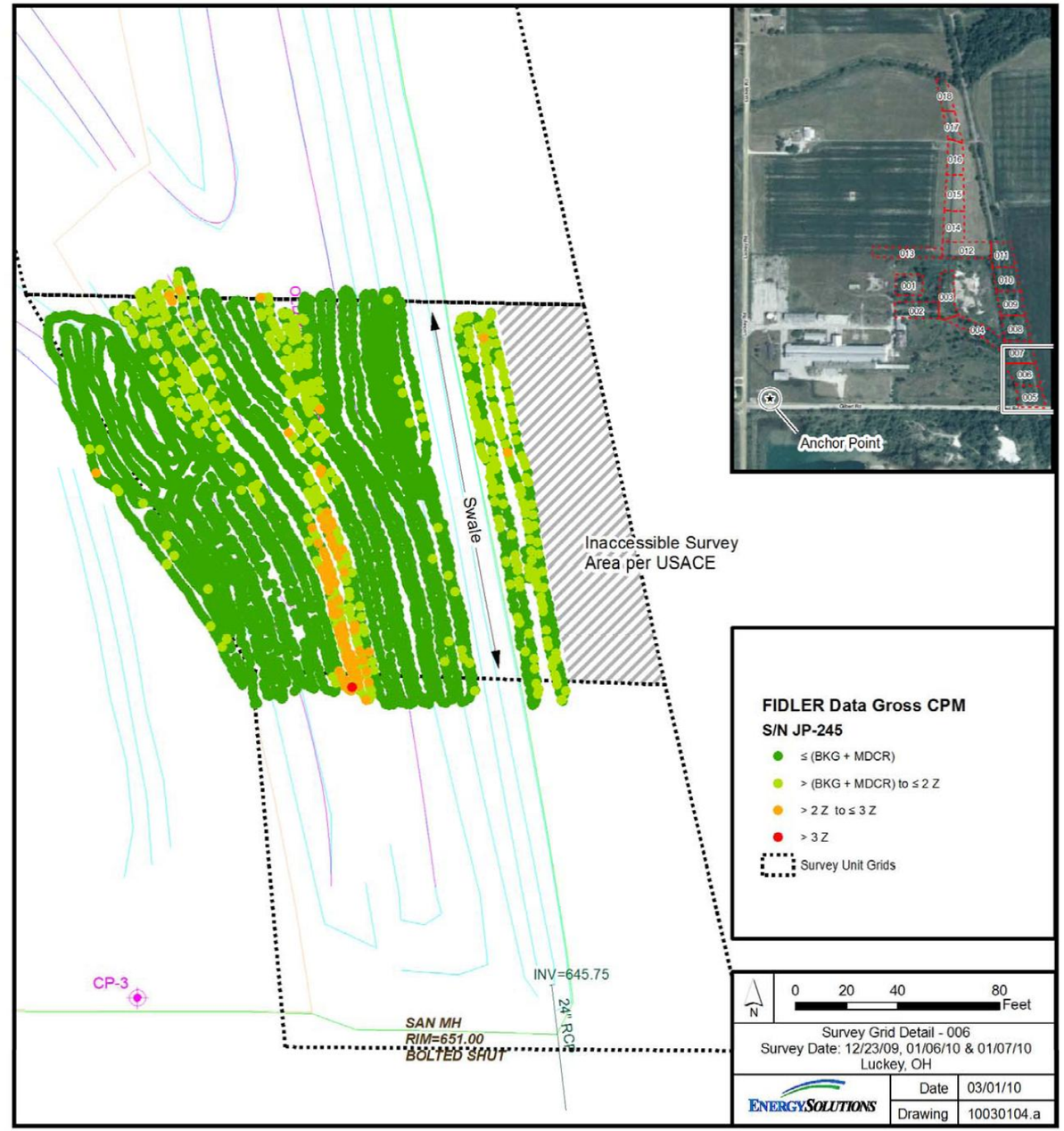
The data were sorted ascending (which ensures that higher values are plotted last and not hidden behind lower values) and statistically analyzed. There appeared to be two unresolvable distributions in the data. Z-scores were calculated based on the data set. The statistical calculations and histogram for the data set are presented below.

Analysis for Data	
Mean	11,804
Standard Error	46
Median	11,820
Mode	12,780
Standard Deviation	3,023
Sample Variance	9,140,230
Kurtosis	-0.5
Skewness	0.0
Range	18,540
Minimum	3,000
Maximum	21,540
Sum	51,758,520
Count	4,385
1 Z	14,827
2 Z	17,850
3 Z	20,873
4 Z	23,897
5 Z	26,920



The color ramp for the figure was developed from the above information. Dark green represents all data that is less than or equal to the $MDCR_{surveyor}$ plus the background mean and can be considered indistinguishable from background. Data that exceeded the $MDCR_{surveyor}$ plus the background mean were color coded based on the Z-scores presented in the table above. Results that exceed the 3 Z value can be considered to be outliers of the underlying distribution of the survey grid. Note that the 1 Z value is not used for this figure because the value was less than the $MDCR_{surveyor}$ plus the background mean and the 4 Z and 5 Z values are not used because no data values exceeded these levels.

No soil sampling locations were selected in this survey grid for Task 6.



*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-32: GWS Reassessment – Survey Grid 006

GWS DATA REASSESSMENT FOR SURVEY GRID 007

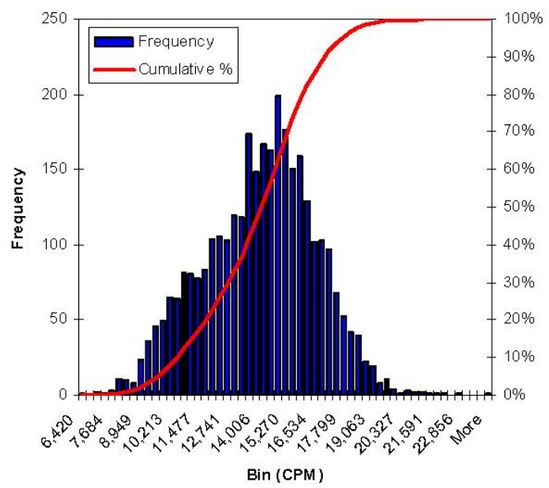
DATA ASSESSMENT NARRATIVE

Low-end statistical outliers were removed. A total of 2 points were removed, which amounted to 0.1% of the data collected.

The GWS data were collected using one FIDLER detector: Bicron S/N JP-245. The average background cpm result for the Bicron FIDLER was 13,561 cpm. The minimum detectable count rate for the surveyor ($MDCR_{surveyor}$) was calculated using this background level, per MARSSIM guidance, and was equal to 15,231 cpm.

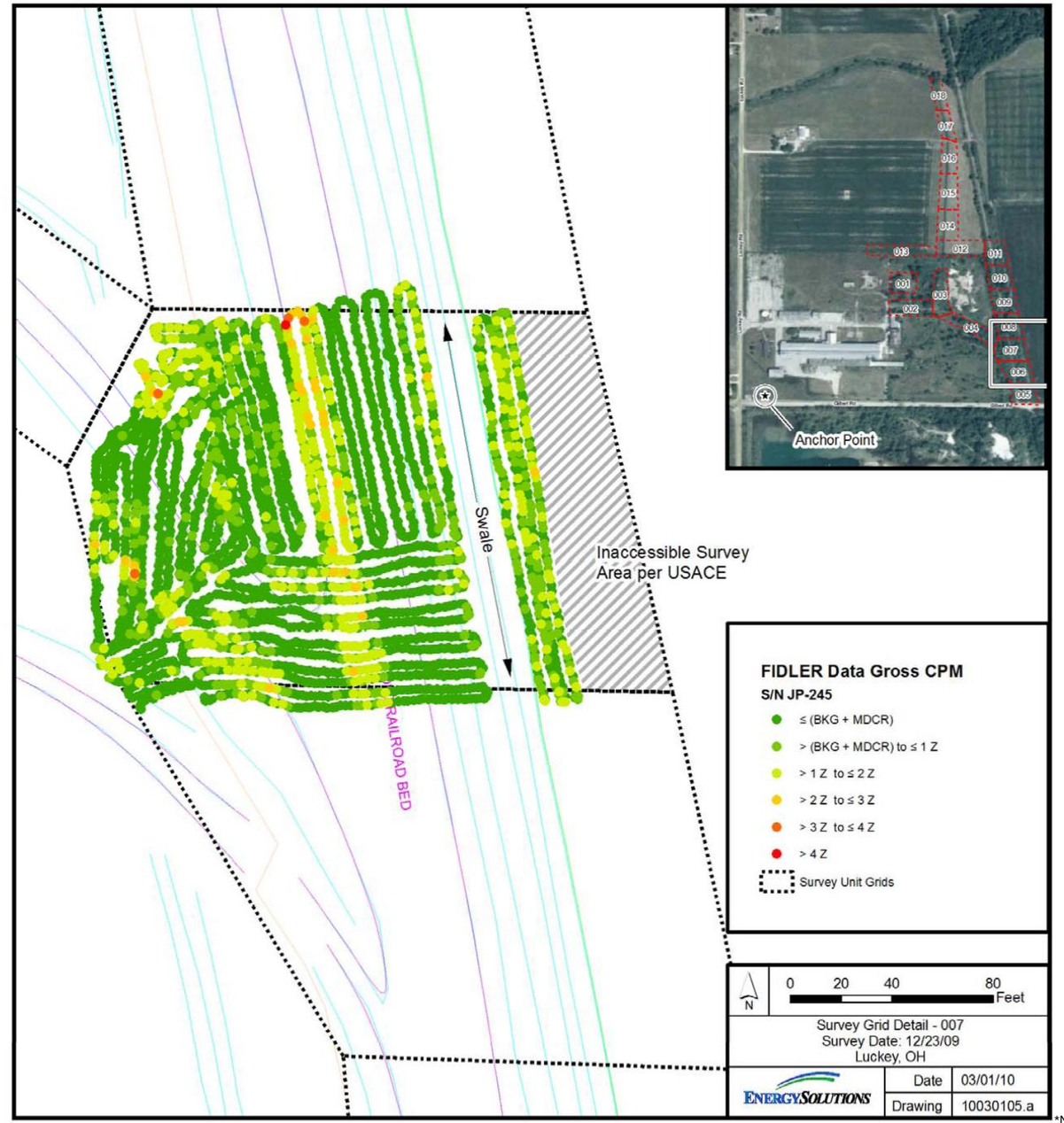
The data were sorted ascending (which ensures that higher values are plotted last and not hidden behind lower values) and statistically analyzed. There appeared to be two unresolvable distributions in the data. Z-scores were calculated based on the data set. The statistical calculations and histogram for the data set are presented below.

Analysis for Data	
Mean	13,996
Standard Error	43
Median	14,160
Mode	14,100
Standard Deviation	2,452
Sample Variance	6,012,461
Kurtosis	-0.2
Skewness	-0.1
Range	17,700
Minimum	6,420
Maximum	24,120
Sum	45,289,740
Count	3,236
1 Z	16,448
2 Z	18,900
3 Z	21,352
4 Z	23,804
5 Z	26,256



The color ramp for the figure was developed from the above information. Dark green represents all data that is less than or equal to the $MDCR_{surveyor}$ plus the background mean and can be considered indistinguishable from background. Data that exceeded the $MDCR_{surveyor}$ plus the background mean were color coded based on the Z-scores presented in the table above. Results that exceed the 3 Z value can be considered to be outliers of the underlying distribution of the survey grid. Note that the 5 Z value is not used for this figure because no data values exceeded this level.

No soil sampling locations were selected in this survey grid for Task 6.



*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-33: GWS Reassessment – Survey Grid 007

GWS DATA REASSESSMENT FOR SURVEY GRID 008

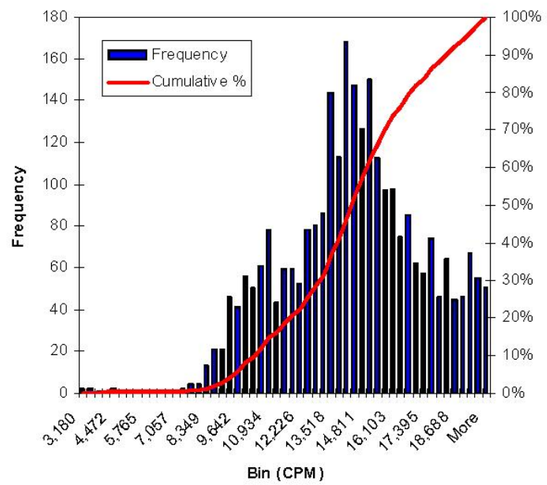
DATA ASSESSMENT NARRATIVE

Low-end statistical outliers were removed. A total of 56 points were removed, which amounted to 1.7% of the data collected.

The GWS data were collected using one FIDLER detector: Bicron S/N JP-245. The average background cpm result for the Bicron FIDLER was 13,561 cpm. The minimum detectable count rate for the surveyor ($MDCR_{surveyor}$) was calculated using this background level, per MARSSIM guidance, and was equal to 15,231 cpm.

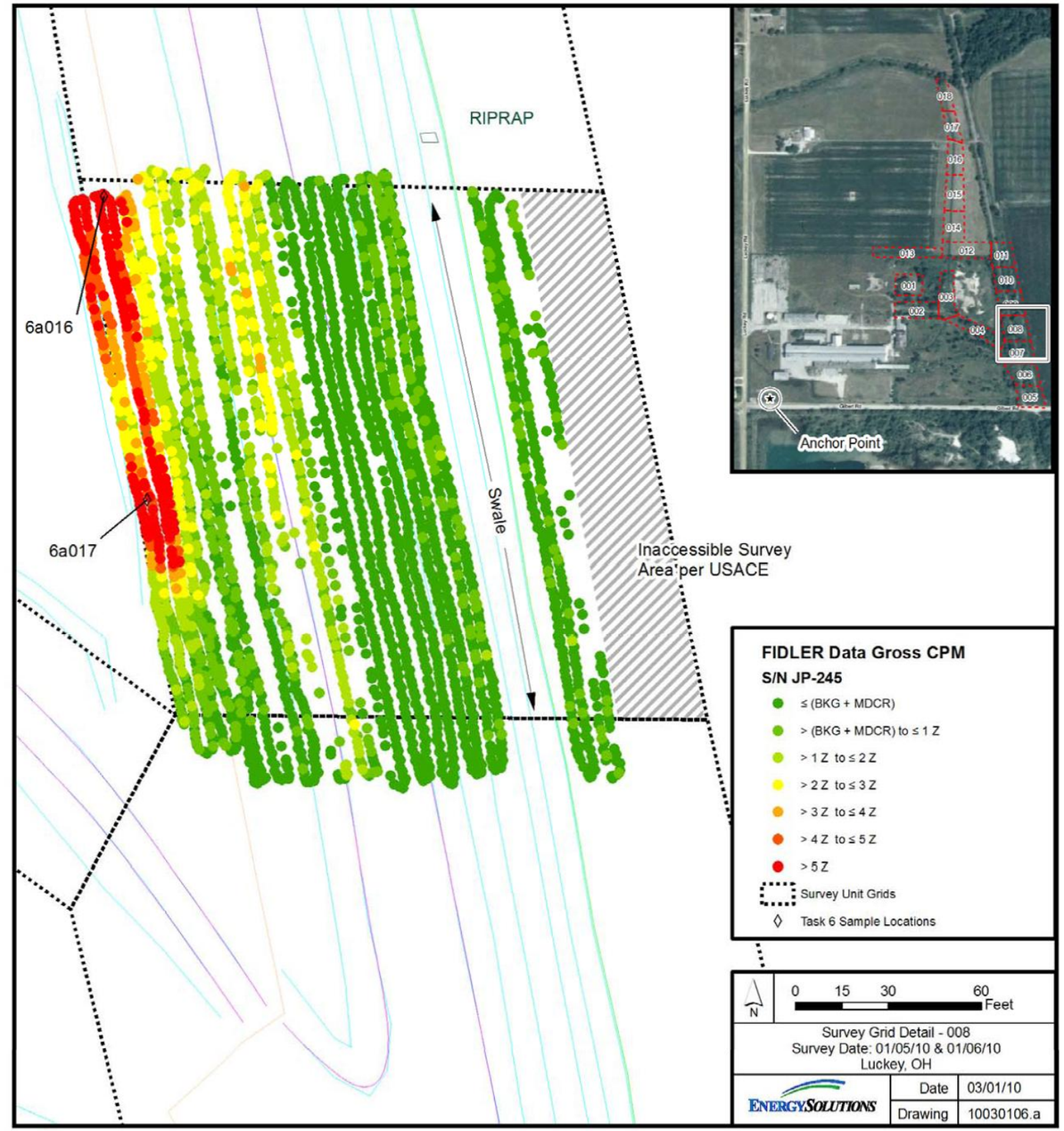
The data were sorted ascending (which ensures that higher values are plotted last and not hidden behind lower values) and statistically analyzed. There were multiple distributions apparent in the data. After an iterative process, the data with values less than 20,000 cpm were determined to be the underlying distribution for the survey grid based on kurtosis and skewness absolute values less than one. Z-scores were calculated based on the reduced data set. The statistical calculations and histogram for the data set of values less than 20,000 cpm are presented below.

Analysis for Data < 20,000 cpm	
Mean	14,323
Standard Error	55
Median	14,340
Mode	14,340
Standard Deviation	2,882
Sample Variance	8,305,433
Kurtosis	-0.2
Skewness	-0.2
Range	16,800
Minimum	3,180
Maximum	19,980
Sum	39,329,700
Count	2,746
1 Z	17,204
2 Z	20,086
3 Z	22,968
4 Z	25,850
5 Z	28,732



The color ramp for the figure was developed from the above information. Dark green represents all data that is less than or equal to the $MDCR_{surveyor}$ plus the background mean and can be considered indistinguishable from background. Data that exceeded the $MDCR_{surveyor}$ plus the background mean were color coded based on the Z-scores presented in the table above. Results that exceed the 3 Z value can be considered to be outliers of the underlying distribution of the survey grid.

Selected surface soil sampling locations for Task 6 are provided on the figure.



*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-34: GWS Reassessment – Survey Grid 008

GWS DATA REASSESSMENT FOR SURVEY GRID 009

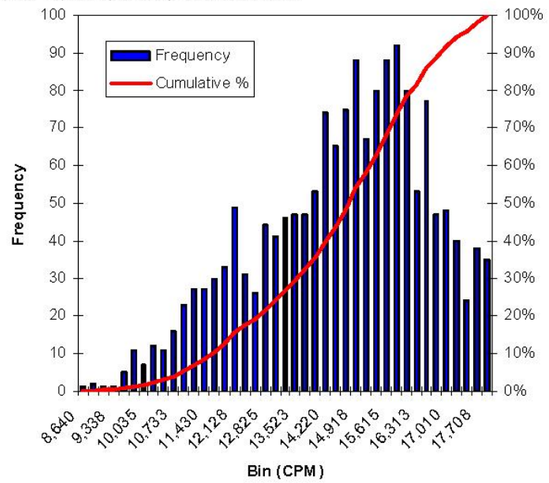
DATA ASSESSMENT NARRATIVE

Low-end statistical outliers were removed. A total of 169 points were removed, which amounted to 4.8% of the data collected.

The GWS data were collected using one FIDLER detector: Bicron S/N JP-245. The average background cpm result for the Bicron FIDLER was 13,561 cpm. The minimum detectable count rate for the surveyor ($MDCR_{surveyor}$) was calculated using this background level, per MARSSIM guidance, and was equal to 15,231 cpm.

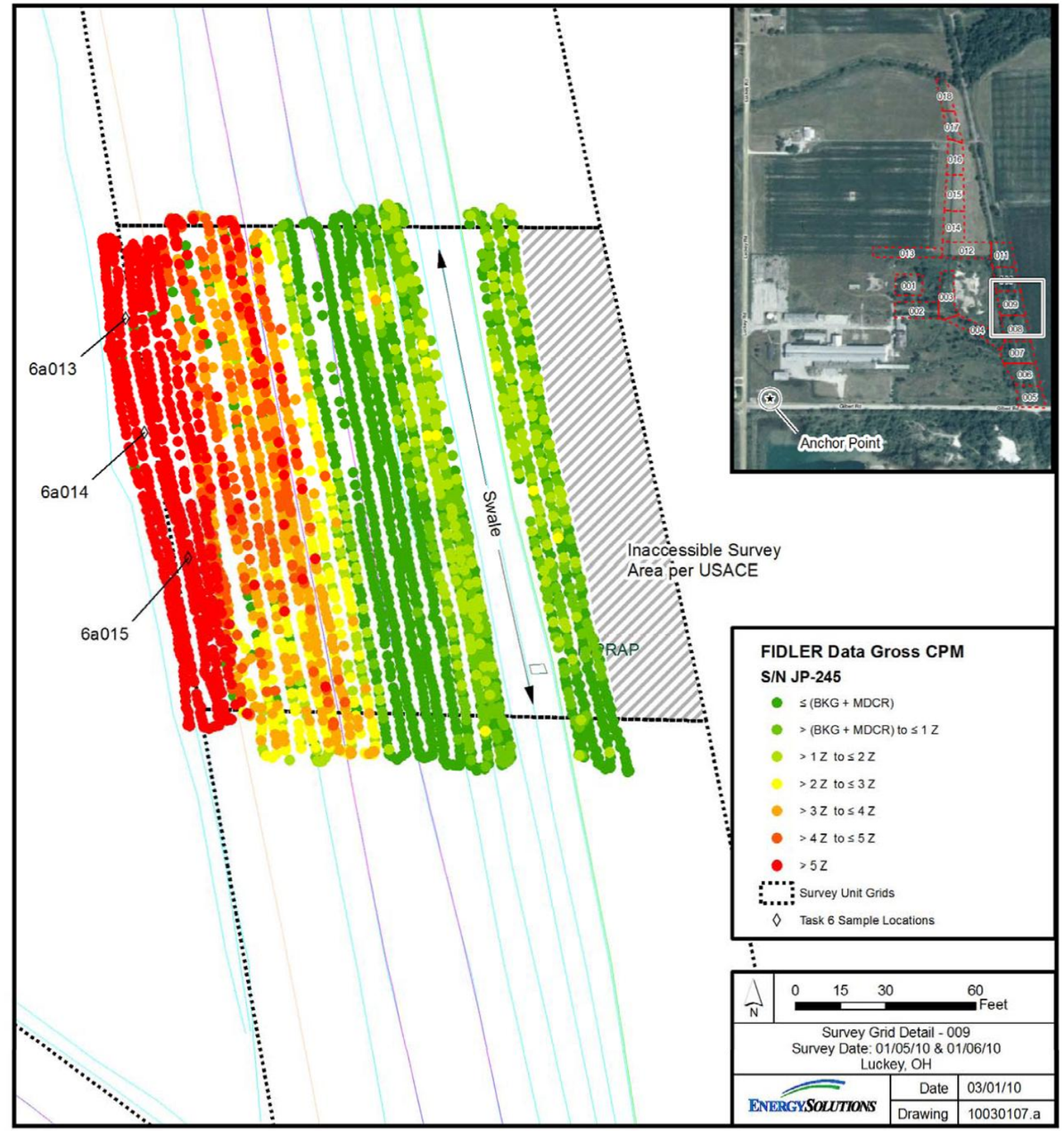
The data were sorted ascending (which ensures that higher values are plotted last and not hidden behind lower values) and statistically analyzed. There were multiple distributions apparent in the data. After an iterative process, the data with values greater than 8,000 and less than 18,000 cpm were determined to be the underlying distribution for the survey grid based on kurtosis and skewness absolute values less than one. Z-scores were calculated based on the reduced data set. The statistical calculations and histogram for the data set of values greater than 8,000 and less than 18,000 cpm are presented below.

Analysis for Data >8,000 to < 18,000 cpm	
Mean	14,479
Standard Error	48
Median	14,760
Mode	14,880
Standard Deviation	1,962
Sample Variance	3,851,007
Kurtosis	-0.5
Skewness	-0.5
Range	9,300
Minimum	8,640
Maximum	17,940
Sum	24,063,480
Count	1,662
1 Z	16,441
2 Z	18,403
3 Z	20,366
4 Z	22,328
5 Z	24,291



The color ramp for the figure was developed from the above information. Dark green represents all data that is less than or equal to the $MDCR_{surveyor}$ plus the background mean and can be considered indistinguishable from background. Data that exceeded the $MDCR_{surveyor}$ plus the background mean were color coded based on the Z-scores presented in the table above. Results that exceed the 3 Z value can be considered to be outliers of the underlying distribution of the survey grid.

Selected surface soil sampling locations for Task 6 are provided on the figure.



*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-35: GWS Reassessment – Survey Grid 009

GWS DATA REASSESSMENT FOR SURVEY GRID 010

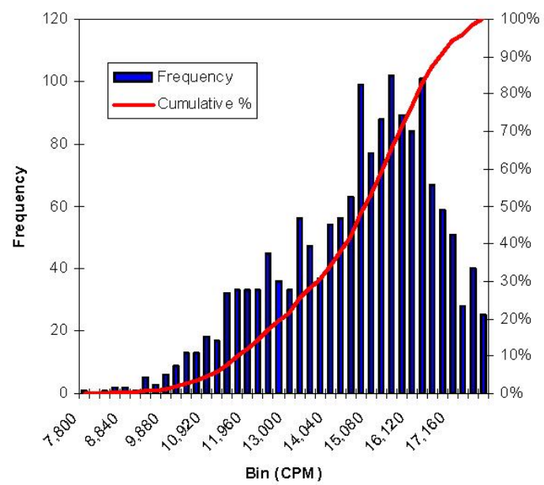
DATA ASSESSMENT NARRATIVE

Low-end statistical outliers were removed. A total of 27 points were removed, which amounted to 0.9% of the data collected.

The GWS data were collected using one FIDLER detector: Bicron S/N JP-245. The average background cpm result for the Bicron FIDLER was 13,561 cpm. The minimum detectable count rate for the surveyor ($MDCR_{surveyor}$) was calculated using this background level, per MARSSIM guidance, and was equal to 15,231 cpm.

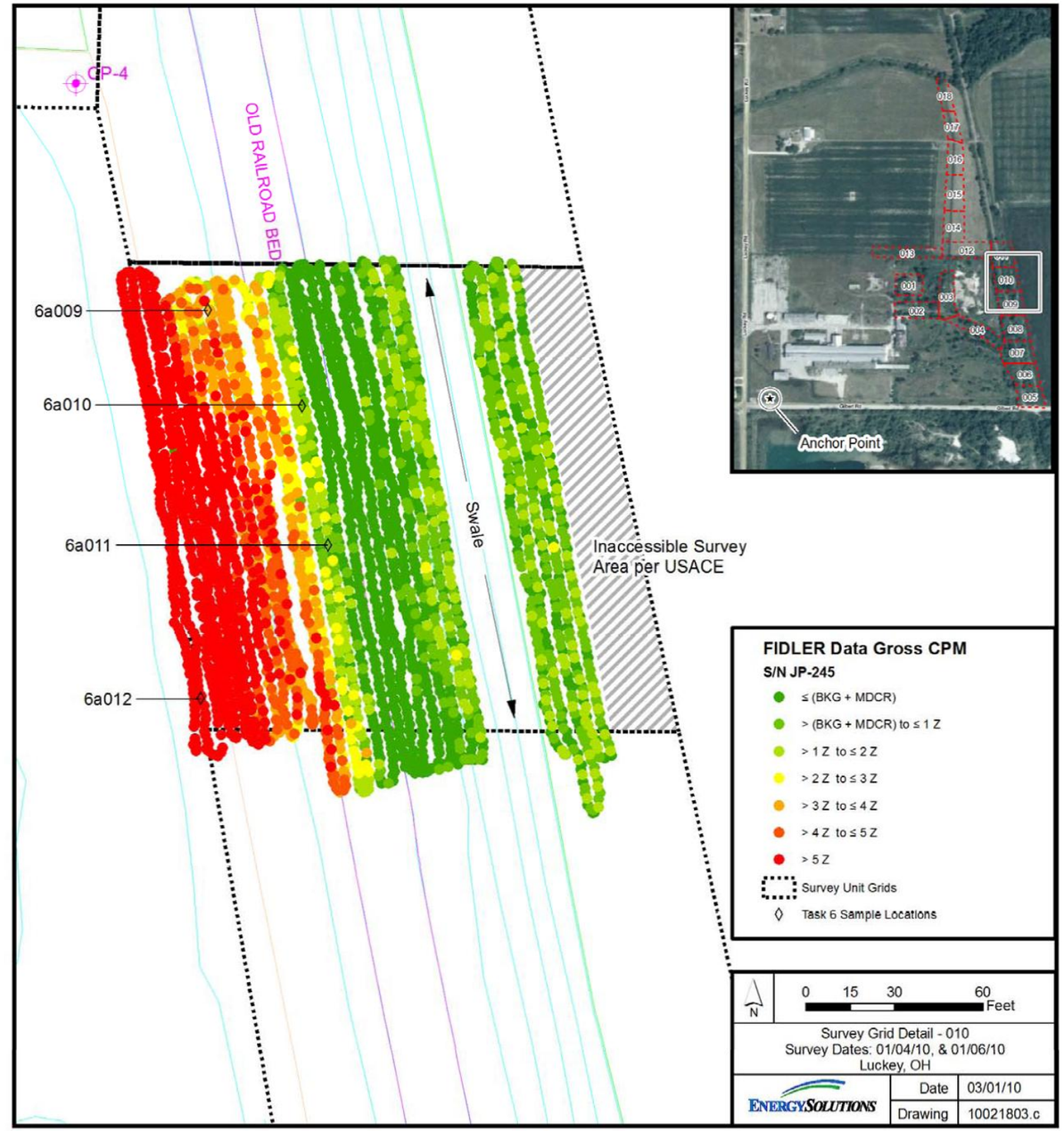
The data were sorted ascending (which ensures that higher values are plotted last and not hidden behind lower values) and statistically analyzed. There were multiple distributions apparent in the data. After an iterative process, the data with values less than 18,000 cpm were determined to be the underlying distribution for the survey grid based on kurtosis and skewness absolute values less than one. Z-scores were calculated based on the reduced data set. The statistical calculations and histogram for the data set of values less than 18,000 cpm are presented below.

Analysis for Data < 18,000 cpm	
Mean	14,588
Standard Error	49
Median	14,940
Mode	15,420
Standard Deviation	1,944
Sample Variance	3,777,667
Kurtosis	-0.2
Skewness	-0.6
Range	10,140
Minimum	7,800
Maximum	17,940
Sum	22,742,880
Count	1,559
1 Z	16,532
2 Z	18,475
3 Z	20,419
4 Z	22,363
5 Z	24,306



The color ramp for the figure was developed from the above information. Dark green represents all data that is less than or equal to the $MDCR_{surveyor}$ plus the background mean and can be considered indistinguishable from background. Data that exceeded the $MDCR_{surveyor}$ plus the background mean were color coded based on the Z-scores presented in the table above. Results that exceed the 3 Z value can be considered to be outliers of the underlying distribution of the survey grid.

Selected surface soil sampling locations for Task 6 are provided on the figure.



*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-36: GWS Reassessment – Survey Grid 010

GWS DATA REASSESSMENT FOR SURVEY GRID 011

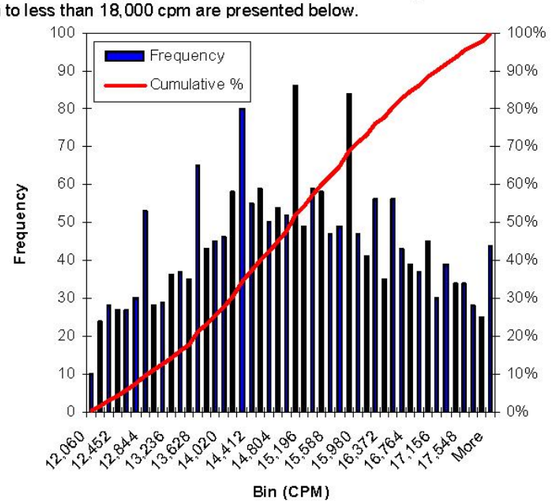
DATA ASSESSMENT NARRATIVE

Low-end statistical outliers were removed. A total of 7 points were removed, which amounted to 0.2% of the data collected.

The GWS data were collected using one FIDLER detector: Bicron S/N JP-245. The average background cpm result for the Bicron FIDLER was 13,561 cpm. The minimum detectable count rate for the surveyor ($MDCR_{surveyor}$) was calculated using this background level, per MARSSIM guidance, and was equal to 15,231 cpm.

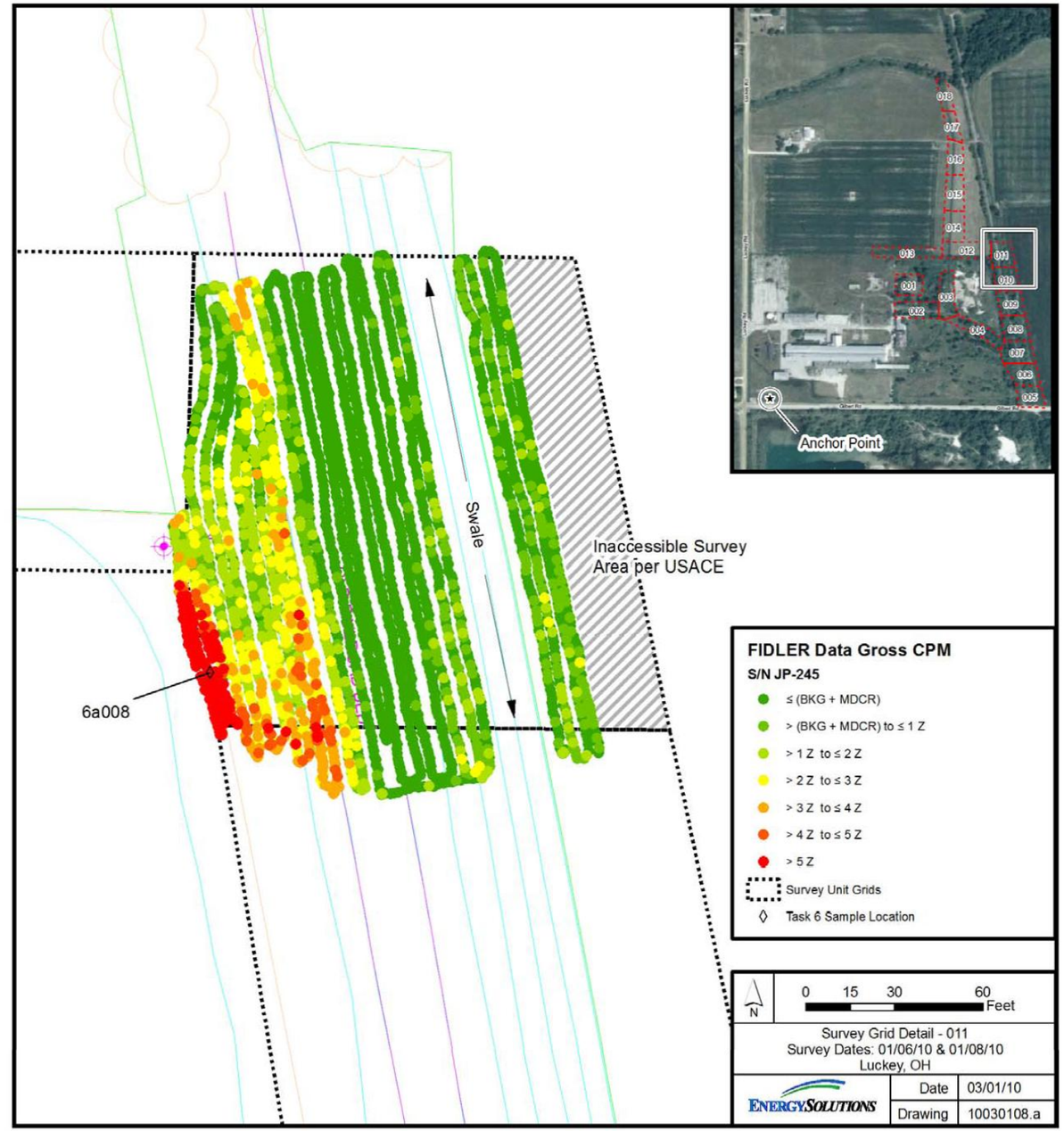
The data were sorted ascending (which ensures that higher values are plotted last and not hidden behind lower values) and statistically analyzed. There were multiple distributions apparent in the data. After an iterative process, the data with values greater than 12,000 cpm to less than 18,000 cpm were determined to be the underlying distribution for the survey grid based on kurtosis and skewness absolute values less than one. Z-scores were calculated based on the reduced data set. The statistical calculations and histogram for the data set of values greater than 12,000 cpm to less than 18,000 cpm are presented below.

Analysis for Data > 12,000 cpm to < 18,000 cpm	
Mean	15,021
Standard Error	34
Median	15,000
Mode	15,240
Standard Deviation	1,519
Sample Variance	2,306,605
Kurtosis	-0.9
Skewness	0.0
Range	5,880
Minimum	12,060
Maximum	17,940
Sum	30,582,660
Count	2,036
1 Z	16,540
2 Z	18,058
3 Z	19,577
4 Z	21,096
5 Z	22,615



The color ramp for the figure was developed from the above information. Dark green represents all data that is less than or equal to the $MDCR_{surveyor}$ plus the background mean and can be considered indistinguishable from background. Data that exceeded the $MDCR_{surveyor}$ plus the background mean were color coded based on the Z-scores presented in the table above. Results that exceed the 3 Z value can be considered to be outliers of the underlying distribution of the survey grid.

The selected surface soil sampling location for Task 6 is provided on the figure.



*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-37: GWS Reassessment – Survey Grid 011

GWS DATA REASSESSMENT FOR SURVEY GRID 012

DATA ASSESSMENT NARRATIVE

Spatial outliers and low-end statistical outliers were removed. A total of 49 points were removed, which amounted to 0.9% of the data collected.

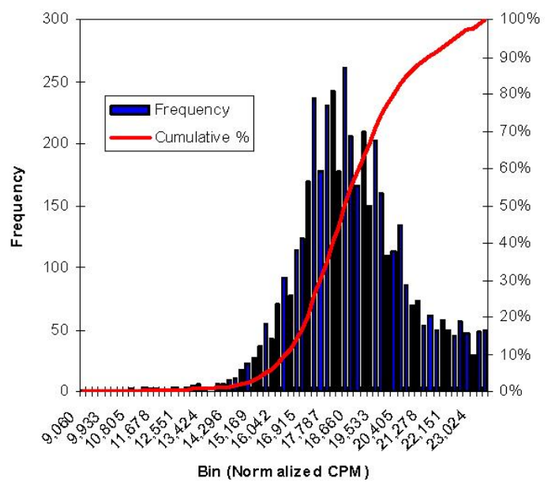
The GWS data were collected using two FIDLER detectors: Alpha Spectra S/N 051707B and Bicron S/N JP-245. During calibration, the average cpm/µR/hr using a Cs-137 source was measured: 757.4 and 1,244 cpm/µR/hr for the Alpha Spectra and Bicron FIDLERs, respectively. The Alpha Spectra collected data were normalized to the Bicron S/N JP-245 response by multiplying each Alpha Spectra result by the ratio shown below.

$$\frac{1{,}244\ \text{cpm}/\mu\text{R/hr}}{757.4\ \text{cpm}/\mu\text{R/hr}} = 1.64$$

The average background cpm result for the Bicron FIDLER was 13,561 cpm. The minimum detectable count rate for the surveyor ($MDCR_{surveyor}$) was calculated using this background level, per MARSSIM guidance, and was equal to 15,231 cpm.

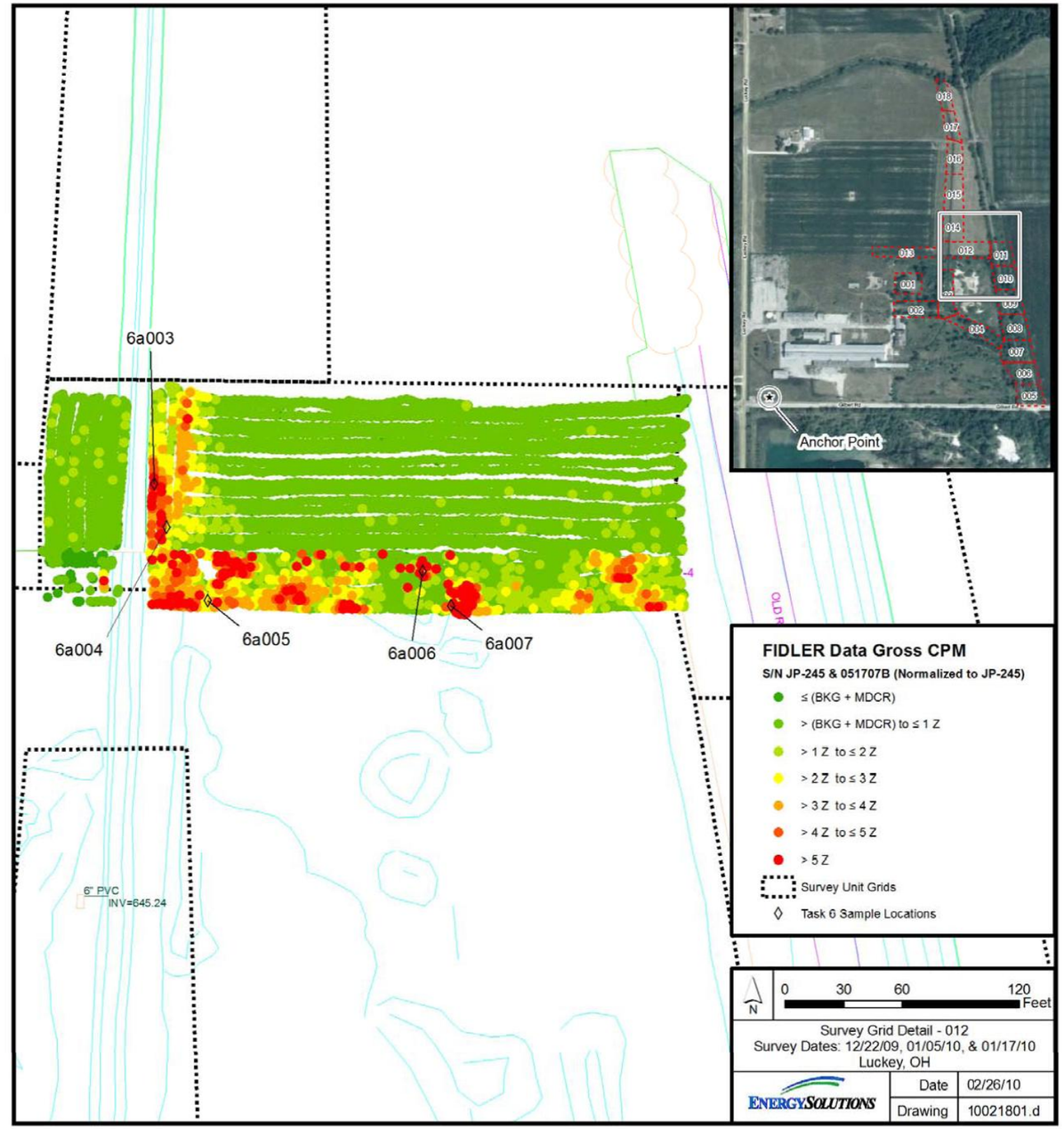
The data from the two FIDLER detectors, Bicron and normalized Alpha Spectra, were combined and sorted ascending (which ensures that higher values are plotted last and not hidden behind lower values). The data were statistically analyzed. There were multiple distributions apparent in the data. After an iterative process, the data with values less than 23,500 cpm were determined to be the underlying distribution for the survey grid based on kurtosis and skewness absolute values less than one. Z-scores were calculated based on the reduced data set. The statistical calculations and histogram for the data set of values less than 23,500 cpm are presented below.

Analysis for Data < 23,500 cpm	
Mean	18,620
Standard Error	30
Median	18,428
Mode	17,640
Standard Deviation	1,999
Sample Variance	3,997,665
Kurtosis	0.5
Skewness	0.1
Range	14,400
Minimum	9,060
Maximum	23,460
Sum	83,252,190
Count	4,471
1 Z	**20,620**
2 Z	**22,619**
3 Z	**24,619**
4 Z	**26,618**
5 Z	**28,618**



The color ramp for the figure was developed from the above information. Dark green represents all data that is less than or equal to the $MDCR_{surveyor}$ plus the background mean and can be considered indistinguishable from background. Data that exceeded the $MDCR_{surveyor}$ plus the background mean were color coded based on the Z-scores presented in the table above. Results that exceed the 3 Z value can be considered to be outliers of the underlying distribution of the survey grid.

Selected surface soil sampling locations for Task 6 are provided on the figure.



*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-38: GWS Reassessment – Survey Grid 012

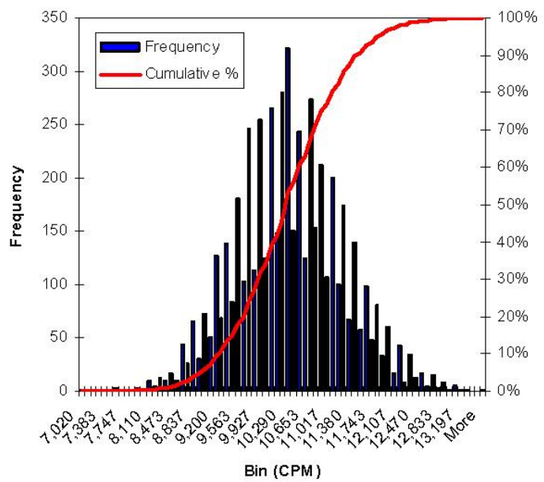
GWS DATA REASSESSMENT FOR SURVEY GRID 013

DATA ASSESSMENT NARRATIVE

The GWS data were collected using one FIDLER detector: Alpha Spectra S/N 051707B. The average background cpm result for the Alpha Spectra FIDLER was 8,795 cpm. The minimum detectable count rate for the surveyor ($MDCR_{surveyor}$) was calculated using this background level, per MARSSIM guidance, and was equal to 10,140 cpm.

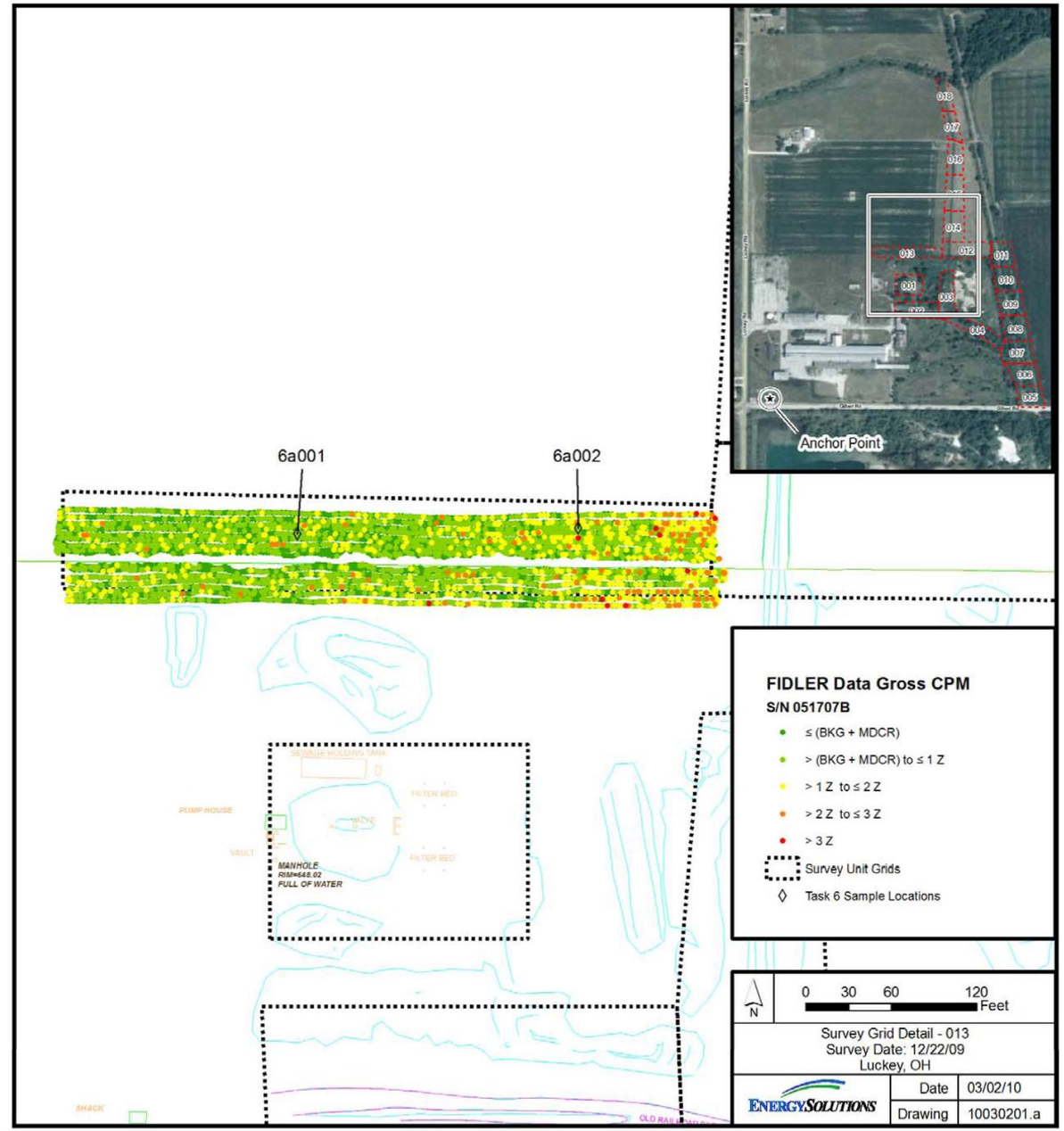
The data were sorted ascending (which ensures that higher values are plotted last and not hidden behind lower values) and statistically analyzed. Data with values greater than 7,000 cpm were determined to be the underlying distribution for the survey grid based on kurtosis and skewness absolute values less than one. Z-scores were calculated based on the reduced data set. The statistical calculations and histogram for the data set of values greater than 7,000 cpm are presented below.

Analysis for Data > 7,000 cpm	
Mean	10,368
Standard Error	12
Median	10,320
Mode	10,320
Standard Deviation	881
Sample Variance	775,595
Kurtosis	0.02
Skewness	0.1
Range	6,540
Minimum	7,020
Maximum	13,560
Sum	54,990,720
Count	5,304
1 Z	11,248
2 Z	12,129
3 Z	13,010
4 Z	13,890
5 Z	14,771



The color ramp for the figure was developed from the above information. Dark green represents all data that is less than or equal to the $MDCR_{surveyor}$ plus the background mean and can be considered indistinguishable from background. Data that exceeded the $MDCR_{surveyor}$ plus the background mean were color coded based on the Z-scores presented in the table above. Results that exceed the 3 Z value can be considered to be outliers of the underlying distribution of the survey grid. Note that the 4 Z and 5 Z values are not used for this figure because no data values exceeded these levels.

Selected surface soil sampling locations for Task 6 are provided on the figure.



*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-39: GWS Reassessment – Survey Grid 013

GWS DATA REASSESSMENT FOR SURVEY GRID 014

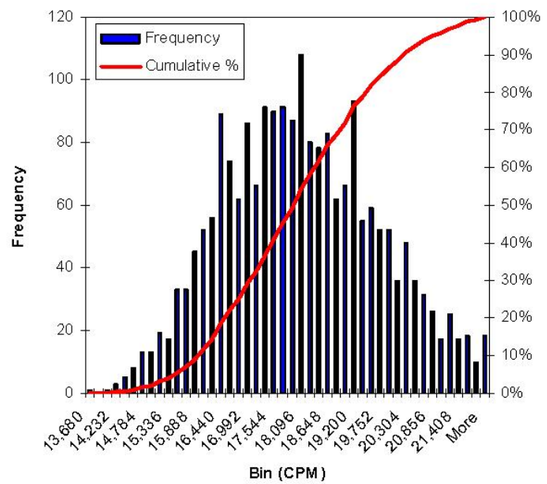
DATA ASSESSMENT NARRATIVE

Spatial outliers and low-end statistical outliers were removed. A total of 6 points were removed, which amounted to 0.3% of the data collected.

The GWS data were collected using one FIDLER detector: Bicron S/N JP-245. The average background cpm result for the Bicron FIDLER was 13,561 cpm. The minimum detectable count rate for the surveyor ($MDCR_{surveyor}$) was calculated using this background level, per MARSSIM guidance, and was equal to 15,231 cpm.

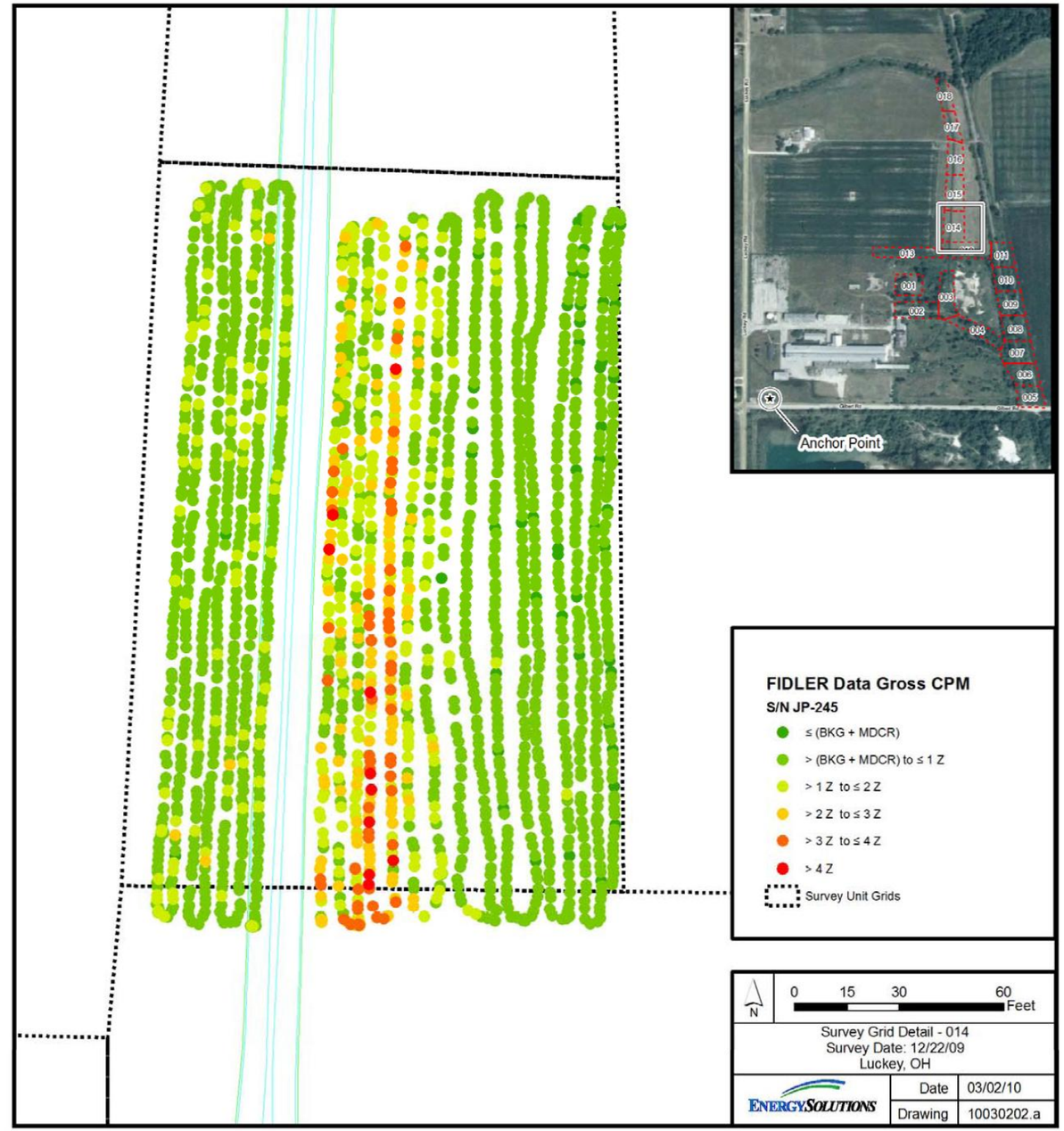
The data were sorted ascending (which ensures that higher values are plotted last and not hidden behind lower values) and statistically analyzed. There were multiple distributions apparent in the data. After an iterative process, the data with values less than 22,000 cpm were determined to be the underlying distribution for the survey grid based on kurtosis and skewness absolute values less than one. Z-scores were calculated based on the reduced data set. The statistical calculations and histogram for the data set of values less than 22,000 cpm are presented below.

Analysis for Data < 22,000 cpm	
Mean	18,019
Standard Error	35
Median	17,940
Mode	17,940
Standard Deviation	1,625
Sample Variance	2,640,586
Kurtosis	-0.5
Skewness	0.2
Range	8,280
Minimum	13,680
Maximum	21,960
Sum	37,929,120
Count	2,105
1 Z	19,644
2 Z	21,269
3 Z	22,894
4 Z	24,519
5 Z	26,144



The color ramp for the figure was developed from the above information. Dark green represents all data that is less than or equal to the $MDCR_{surveyor}$ plus the background mean and can be considered indistinguishable from background. Data that exceeded the $MDCR_{surveyor}$ plus the background mean were color coded based on the Z-scores presented in the table above. Results that exceed the 3 Z value can be considered to be outliers of the underlying distribution of the survey grid. Note that the 5 Z value is not used for this figure because no data values exceeded this level.

No soil sampling locations were selected in this survey grid for Task 6.



*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-40: GWS Reassessment – Survey Grid 014

GWS DATA REASSESSMENT FOR SURVEY GRID 015

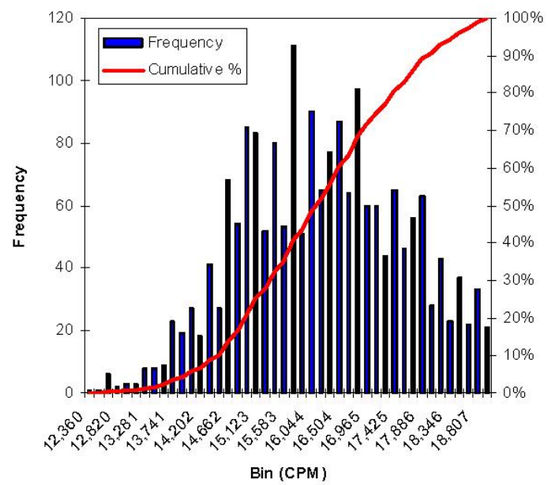
DATA ASSESSMENT NARRATIVE

Low-end statistical outliers were removed. A total of 95 points were removed, which amounted to 4.3% of the data collected.

The GWS data were collected using one FIDLER detector: Bicron S/N JP-245. The average background cpm result for the Bicron FIDLER was 13,561 cpm. The minimum detectable count rate for the surveyor ($MDCR_{surveyor}$) was calculated using this background level, per MARSSIM guidance, and was equal to 15,231 cpm.

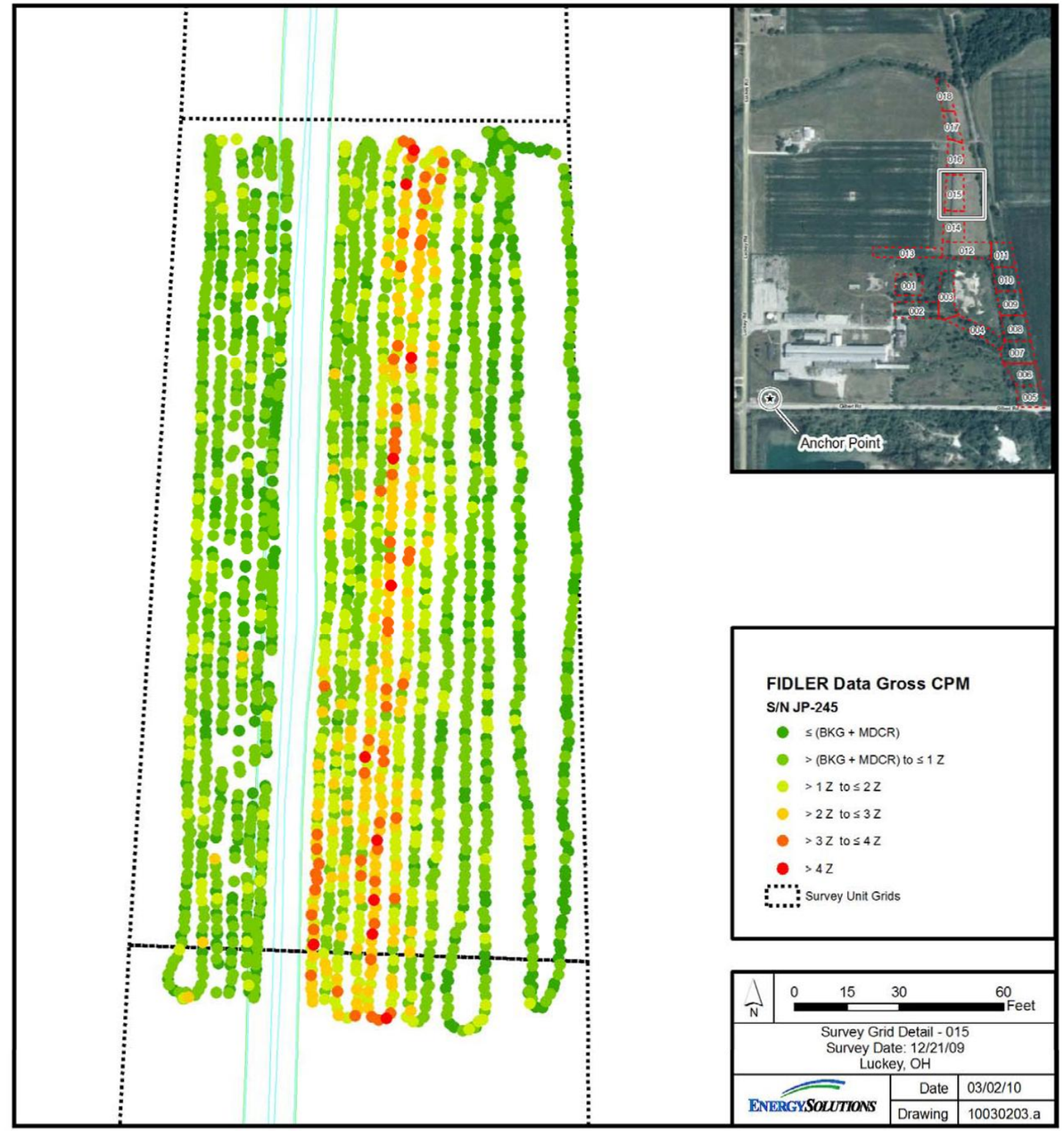
The data were sorted ascending (which ensures that higher values are plotted last and not hidden behind lower values) and statistically analyzed. There were multiple distributions apparent in the data. After an iterative process, the data with values less than 19,000 cpm were determined to be the underlying distribution for the survey grid based on kurtosis and skewness absolute values less than one. Z-scores were calculated based on the reduced data set. The statistical calculations and histogram for the data set of values less than 19,000 cpm are presented below.

Analysis for Data < 19,000 cpm	
Mean	16,146
Standard Error	31
Median	16,140
Mode	16,140
Standard Deviation	1,341
Sample Variance	1,798,761
Kurtosis	-0.6
Skewness	-0.02
Range	6,600
Minimum	12,360
Maximum	18,960
Sum	30,903,540
Count	1,914
1 Z	17,487
2 Z	18,828
3 Z	20,170
4 Z	21,511
5 Z	22,852



The color ramp for the figure was developed from the above information. Dark green represents all data that is less than or equal to the $MDCR_{surveyor}$ plus the background mean and can be considered indistinguishable from background. Data that exceeded the $MDCR_{surveyor}$ plus the background mean were color coded based on the Z-scores presented in the table above. Results that exceed the 3 Z value can be considered to be outliers of the underlying distribution of the survey grid. Note that the 5 Z value is not used for this figure because no data values exceeded this level.

No soil sampling locations were selected in this survey grid for Task 6.



*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-41: GWS Reassessment – Survey Grid 015

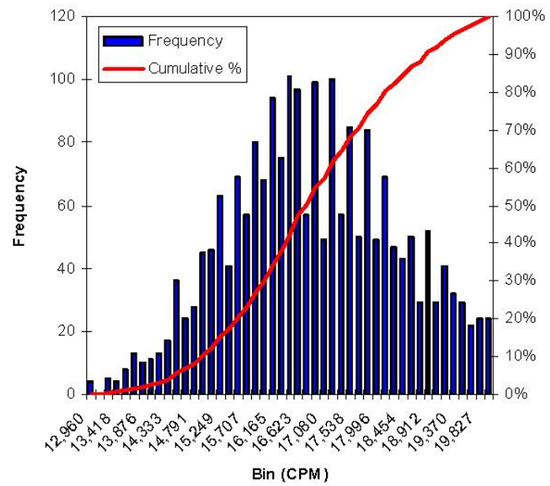
GWS DATA REASSESSMENT FOR SURVEY GRID 016

DATA ASSESSMENT NARRATIVE

The GWS data were collected using one FIDLER detector: Bicron S/N JP-245. The average background cpm result for the Bicron FIDLER was 13,561 cpm. The minimum detectable count rate for the surveyor ($MDCR_{surveyor}$) was calculated using this background level, per MARSSIM guidance, and was equal to 15,231 cpm.

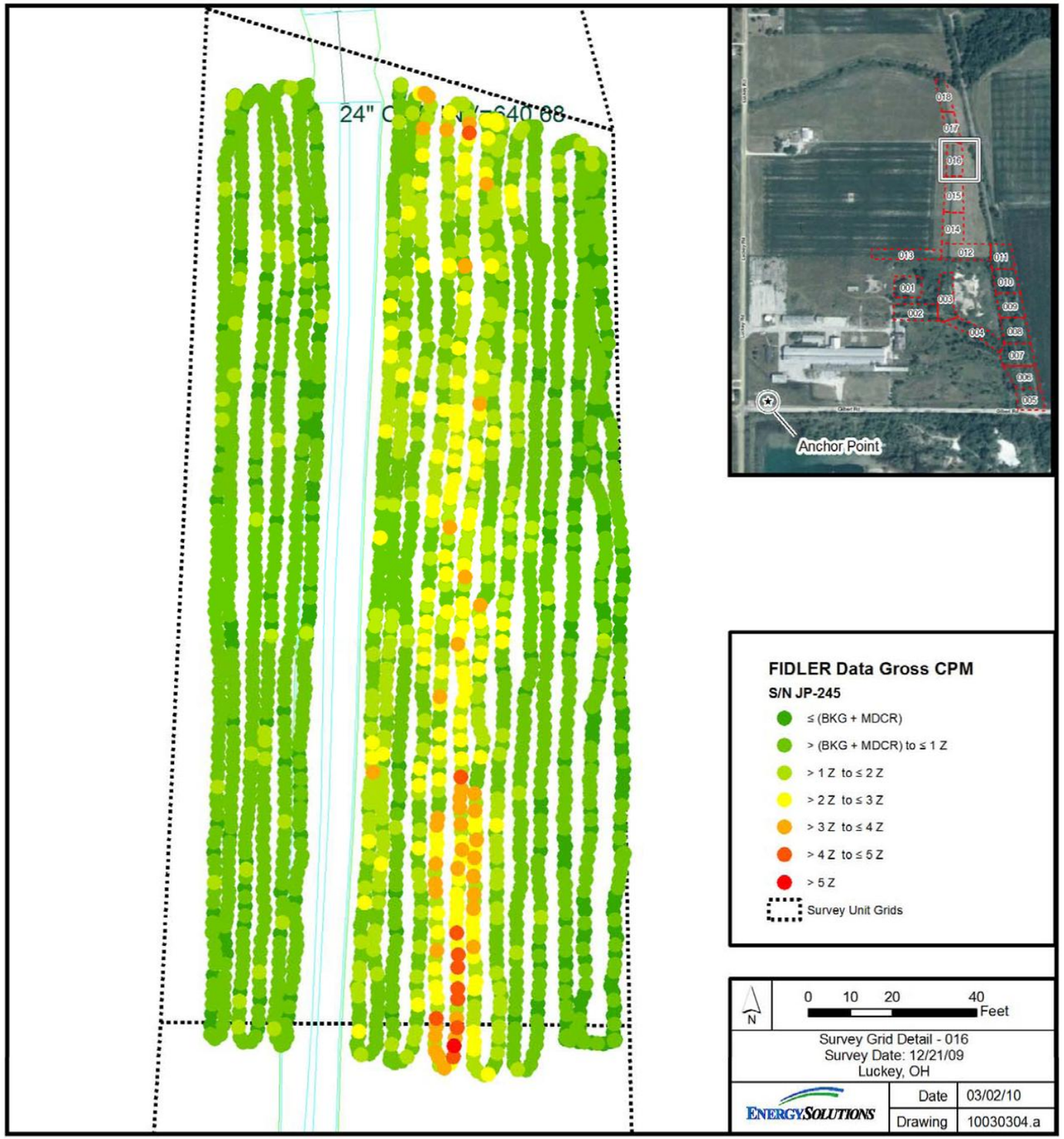
The data were sorted ascending (which ensures that higher values are plotted last and not hidden behind lower values) and statistically analyzed. There were multiple distributions apparent in the data. After an iterative process, the data with values less than 20,000 cpm were determined to be the underlying distribution for the survey grid based on kurtosis and skewness absolute values less than one. Z-scores were calculated based on the reduced data set. The statistical calculations and histogram for the data set of values less than 20,000 cpm are presented below.

Analysis for Data < 20,000 cpm	
Mean	16,822
Standard Error	32
Median	16,740
Mode	15,960
Standard Deviation	1,472
Sample Variance	2,166,926
Kurtosis	-0.6
Skewness	0.02
Range	7,020
Minimum	12,960
Maximum	19,980
Sum	35,830,260
Count	2,130
1 Z	18,294
2 Z	19,766
3 Z	21,238
4 Z	22,710
5 Z	24,182



The color ramp for the figure was developed from the above information. Dark green represents all data that is less than or equal to the $MDCR_{surveyor}$ plus the background mean and can be considered indistinguishable from background. Data that exceeded the $MDCR_{surveyor}$ plus the background mean were color coded based on the Z-scores presented in the table above. Results that exceed the 3 Z value can be considered to be outliers of the underlying distribution of the survey grid.

No soil sampling locations were selected in this survey grid for Task 6.



*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-42: GWS Reassessment – Survey Grid 016

GWS DATA REASSESSMENT FOR SURVEY GRID 017

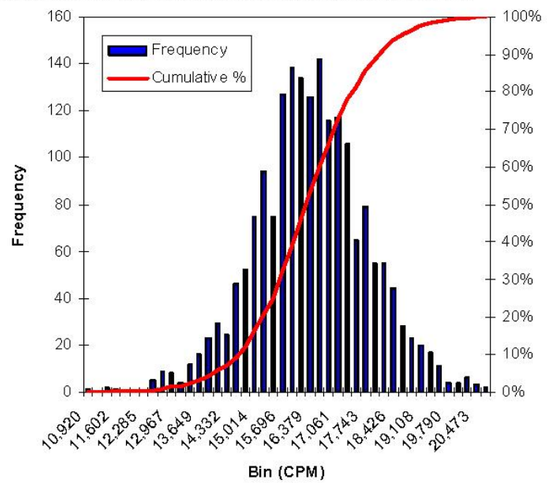
DATA ASSESSMENT NARRATIVE

Low-end statistical outliers were removed. A total of 31 points were removed, which amounted to 1.6% of the data collected.

The GWS data were collected using one FIDLER detector: Bicron S/N JP-245. The average background cpm result for the Bicron FIDLER was 13,561 cpm. The minimum detectable count rate for the surveyor ($MDCR_{surveyor}$) was calculated using this background level, per MARSSIM guidance, and was equal to 15,231 cpm.

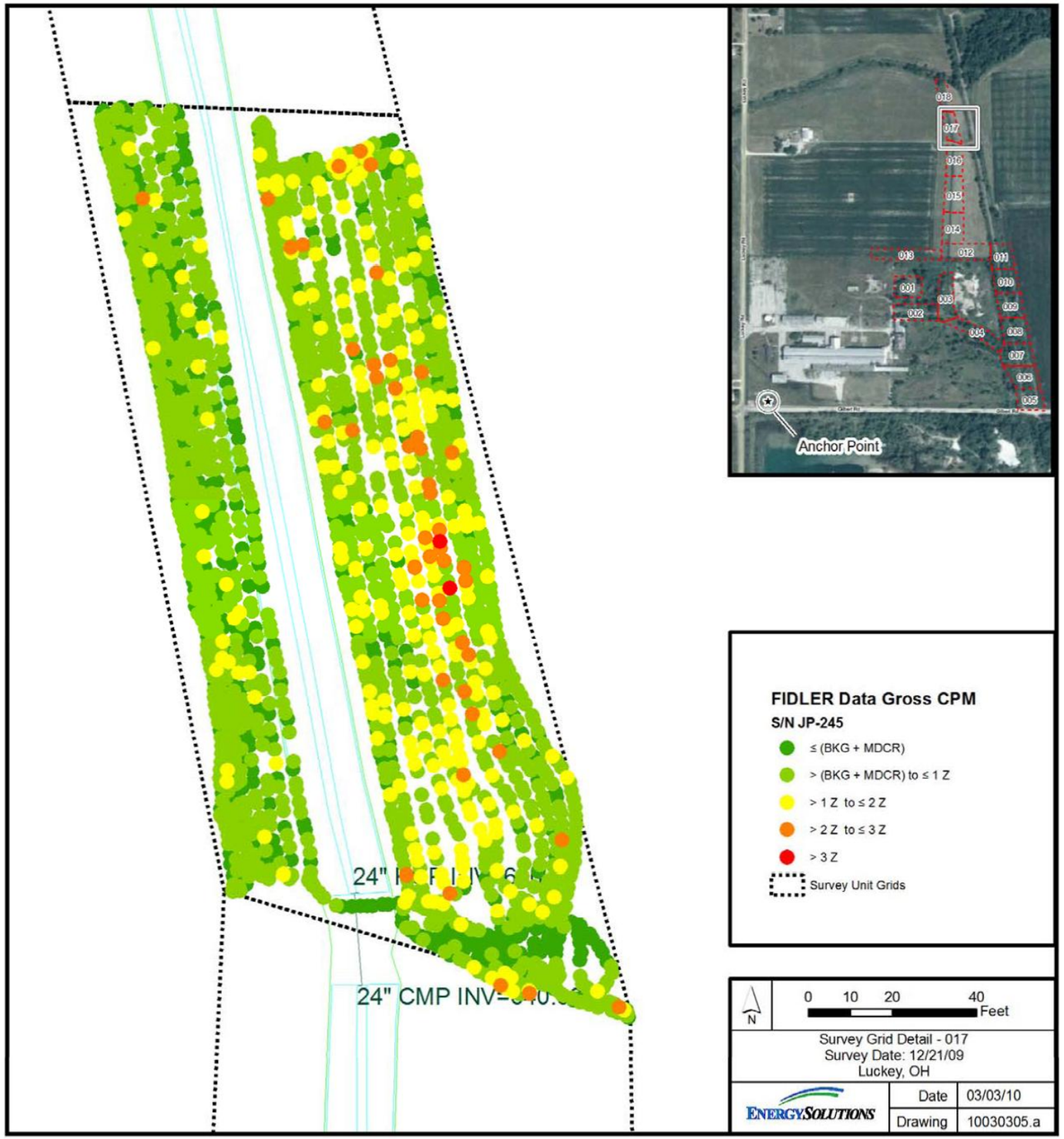
The data were sorted ascending (which ensures that higher values are plotted last and not hidden behind lower values) and statistically analyzed. There appeared to be either one somewhat wide distribution or two unresolvable distributions in the data based on the kurtosis and skewness values. Z-scores were calculated based on the data set. The statistical calculations and histogram for the data set are presented below.

Analysis for Data	
Mean	16,300
Standard Error	32
Median	16,260
Mode	16,440
Standard Deviation	1,381
Sample Variance	1,907,648
Kurtosis	0.4
Skewness	-0.05
Range	9,780
Minimum	10,920
Maximum	20,700
Sum	30,938,340
Count	1,898
1 Z	17,682
2 Z	19,063
3 Z	20,444
4 Z	21,825
5 Z	23,206



The color ramp for the figure was developed from the above information. Dark green represents all data that is less than or equal to the $MDCR_{surveyor}$ plus the background mean and can be considered indistinguishable from background. Data that exceeded the $MDCR_{surveyor}$ plus the background mean were color coded based on the Z-scores presented in the table above. Results that exceed the 3 Z value can be considered to be outliers of the underlying distribution of the survey grid. Note that the 4 Z and 5 Z values are not used for this figure because no data values exceeded these levels.

No soil sampling locations were selected in this survey grid for Task 6.



*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-43 GWS Reassessment – Survey Grid 017

GWS DATA REASSESSMENT FOR SURVEY GRID 018

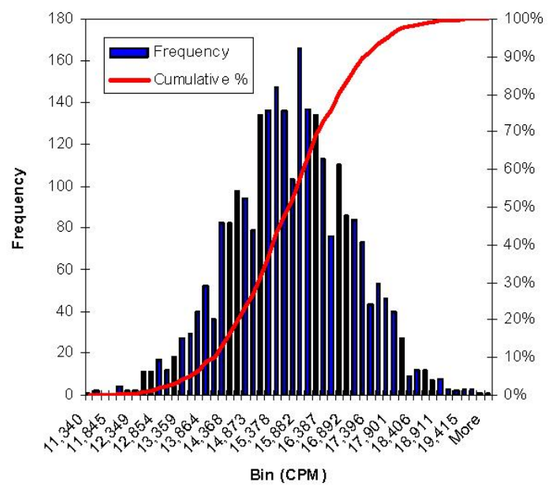
DATA ASSESSMENT NARRATIVE

Low-end statistical outliers were removed. A total of 4 points were removed, which amounted to 0.2% of the data collected.

The GWS data were collected using one FIDLER detector: Bicron S/N JP-245. The average background cpm result for the Bicron FIDLER was 13,561 cpm. The minimum detectable count rate for the surveyor ($MDCR_{surveyor}$) was calculated using this background level, per MARSSIM guidance, and was equal to 15,231 cpm.

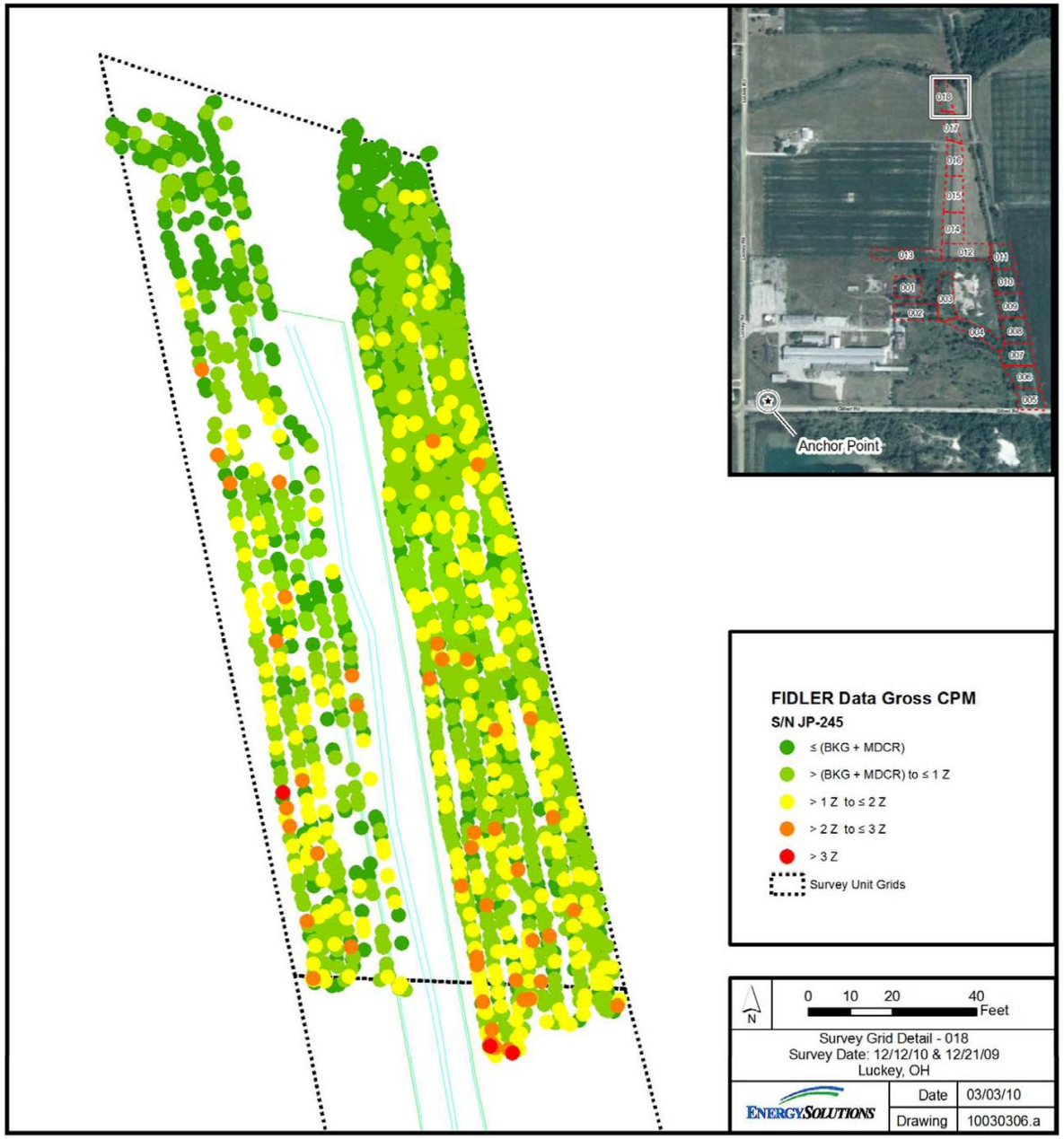
The data were sorted ascending (which ensures that higher values are plotted last and not hidden behind lower values) and statistically analyzed. There appeared to be one distribution in the data based on the kurtosis and skewness values. Z-scores were calculated based on the data set. The statistical calculations and histogram for the data set are presented below.

Analysis for Data	
Mean	15,619
Standard Error	25
Median	15,600
Mode	15,300
Standard Deviation	1,281
Sample Variance	1,641,253
Kurtosis	-0.001
Skewness	-0.02
Range	8,580
Minimum	11,340
Maximum	19,920
Sum	40,671,120
Count	2,604
1 Z	16,900
2 Z	18,181
3 Z	19,462
4 Z	20,743
5 Z	22,024



The color ramp for the figure was developed from the above information. Dark green represents all data that is less than or equal to the $MDCR_{surveyor}$ plus the background mean and can be considered indistinguishable from background. Data that exceeded the $MDCR_{surveyor}$ plus the background mean were color coded based on the Z-scores presented in the table above. Results that exceed the 3 Z value can be considered to be outliers of the underlying distribution of the survey grid. Note that the 4 Z and 5 Z values are not used for this figure because no data values exceeded these levels.

No soil sampling locations were selected in this survey grid for Task 6.



*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-44: GWS Reassessment – Survey Grid 018

GWS DATA ASSESSMENT FOR ALL SURVEY GRIDS

DATA ASSESSMENT USING Z-SCORES NARRATIVE

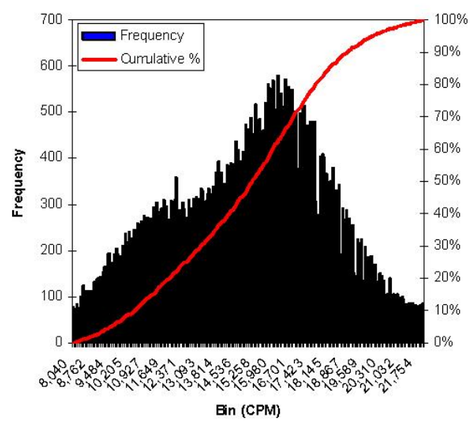
The GWS data for all survey grids were collected using two FIDLER detectors: Alpha Spectra S/N 051707B and Bicron S/N JP-245. During calibration, the average cpm/µR/hr using a Cs-137 source was measured: 757.4 and 1,244 cpm/µR/hr for the Alpha Spectra and Bicron FIDLERs, respectively. The Alpha Spectra collected data were normalized to the Bicron S/N JP-245 response by multiplying each Alpha Spectra result by the ratio shown below.

$$\frac{1244\ \text{cpm}/\mu\text{R/hr}}{757.4\ \text{cpm}/\mu\text{R/hr}} = 1.64$$

The average background cpm result for the Bicron FIDLER was 13,561 cpm. The minimum detectable count rate for the surveyor ($MDCR_{surveyor}$) was calculated using this background level, per MARSSIM guidance, and was equal to 15,231 cpm.

The data from the two FIDLER detectors, Bicron and normalized Alpha Spectra, were combined and sorted ascending (which ensures that higher values are plotted last and not hidden behind lower values). The data were statistically analyzed. There appeared to be two unresolvable distributions in the data. After an iterative process, the data with values greater than 8,000 cpm to less than 22,000 cpm were determined to be the most appropriate underlying distribution for the survey grid based on kurtosis and skewness absolute values less than one. Z-scores were calculated based on the reduced data set. The statistical calculations and histogram for the data set of values greater than 8,000 cpm to less than 22,000 cpm are presented below.

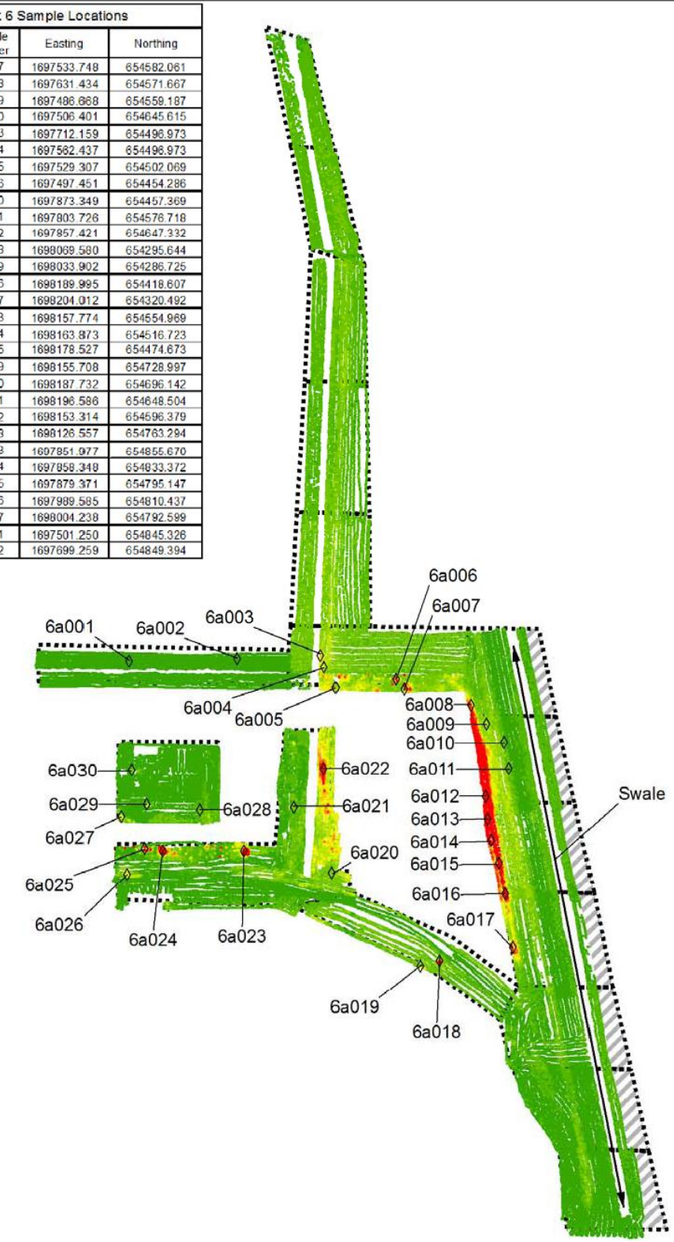
Analysis for Data > 8,000 cpm to < 22,000 cpm	
Mean	14,914
Standard Error	13
Median	15,180
Mode	16,260
Standard Deviation	3,159
Sample Variance	9,979,969
Kurtosis	-0.7
Skewness	-0.1
Range	13,936
Minimum	8,040
Maximum	21,976
Sum	944,972,872
Count	63,361
1 Z	18,073
2 Z	21,232
3 Z	24,391
4 Z	27,551
5 Z	30,710
6 Z	33,869
7 Z	37,028
8 Z	40,187
9 Z	43,346
10 Z	46,505



The color ramp for the figure was developed from the above information. Dark green represents all data that is less than or equal to the $MDCR_{surveyor}$ plus the background mean and can be considered indistinguishable from background. Data that exceeded the $MDCR_{surveyor}$ plus the background mean were color coded based on the Z-scores presented in the table above. Results that exceed the 3 Z value can be considered to be outliers of the underlying distribution of the survey grid.

The consolidated list and locations of surface soil samples for Task 6, 30 in total, are provided on the figure.

Task 6 Sample Locations			
Survey Grid	Sample Number	Easting	Northing
001	6a027	1697533.748	654582.061
	6a028	1697631.434	654571.667
	6a029	1697486.668	654559.187
	6a030	1697506.401	654645.615
002	6a023	1697712.159	654496.973
	6a024	1697582.437	654496.973
	6a025	1697529.307	654502.069
	6a026	1697497.451	654454.286
003	6a020	1697873.349	654457.369
	6a021	1697803.726	654576.718
	6a022	1697857.421	654647.332
004	6a018	1698069.580	654295.644
	6a019	1698033.902	654286.725
008	6a016	1698189.995	654418.607
	6a017	1698204.012	654320.492
009	6a013	1698157.774	654554.969
	6a014	1698163.873	654516.723
	6a015	1698178.527	654474.673
010	6a009	1698155.708	654728.997
	6a010	1698187.732	654696.142
	6a011	1698196.586	654648.504
	6a012	1698153.314	654596.379
011	6a008	1698126.557	654763.294
012	6a003	1697951.977	654855.670
	6a004	1697958.348	654833.372
	6a005	1697879.371	654795.147
	6a006	1697989.585	654810.437
	6a007	1698004.238	654792.599
013	6a001	1697501.250	654845.326
	6a002	1697699.259	654849.394



FIDLER Data Gross CPM
S/N JP-245 & 051707B (Normalized to JP-245)

- ≤ (BKG + MDCR)
- > (BKG + MDCR) to ≤ 1 Z
- > 1 Z to ≤ 2 Z
- > 2 Z to ≤ 3 Z
- > 3 Z to ≤ 4 Z
- > 4 Z to ≤ 5 Z
- > 5 Z to ≤ 6 Z
- > 6 Z to ≤ 7 Z
- > 7 Z to ≤ 8 Z
- > 8 Z to ≤ 9 Z
- > 9 Z to ≤ 10 Z
- > 10 Z
- Survey Unit Grids
- Task 6 Sample Locations

N
0 100 200 400 Feet

Consolidated Survey Grids
Luckey, OH

ENERGYSOLUTIONS

Date	03/04/10
Drawing	10030401.a

*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-45: GWS Reassessment – All Survey Grids Using Z-Scores

GWS DATA ASSESSMENT FOR ALL SURVEY GRIDS

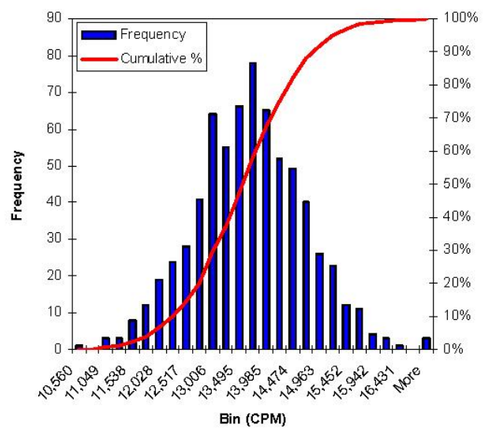
DATA ASSESSMENT USING BACKGROUND MEAN NARRATIVE

The GWS data for all survey grids were collected using two FIDLER detectors: Alpha Spectra S/N 051707B and Bicron S/N JP-245. During calibration, the average cpm/µR/hr using a Cs-137 source was measured: 757.4 and 1,244 cpm/µR/hr for the Alpha Spectra and Bicron FIDLERs, respectively. The Alpha Spectra collected data were normalized to the Bicron S/N JP-245 response by multiplying each Alpha Spectra result by the ratio shown below.

$$\frac{1{,}244\ \text{cpm}/\mu\text{R/hr}}{757.4\ \text{cpm}/\mu\text{R/hr}} = 1.64$$

The average background cpm result for the Bicron FIDLER was 13,561 cpm. The minimum detectable count rate for the surveyor ($MDCR_{surveyor}$) was calculated using this background level, per MARSSIM guidance, and was equal to 15,231 cpm. The statistical calculations and histogram for the background data set are presented below.

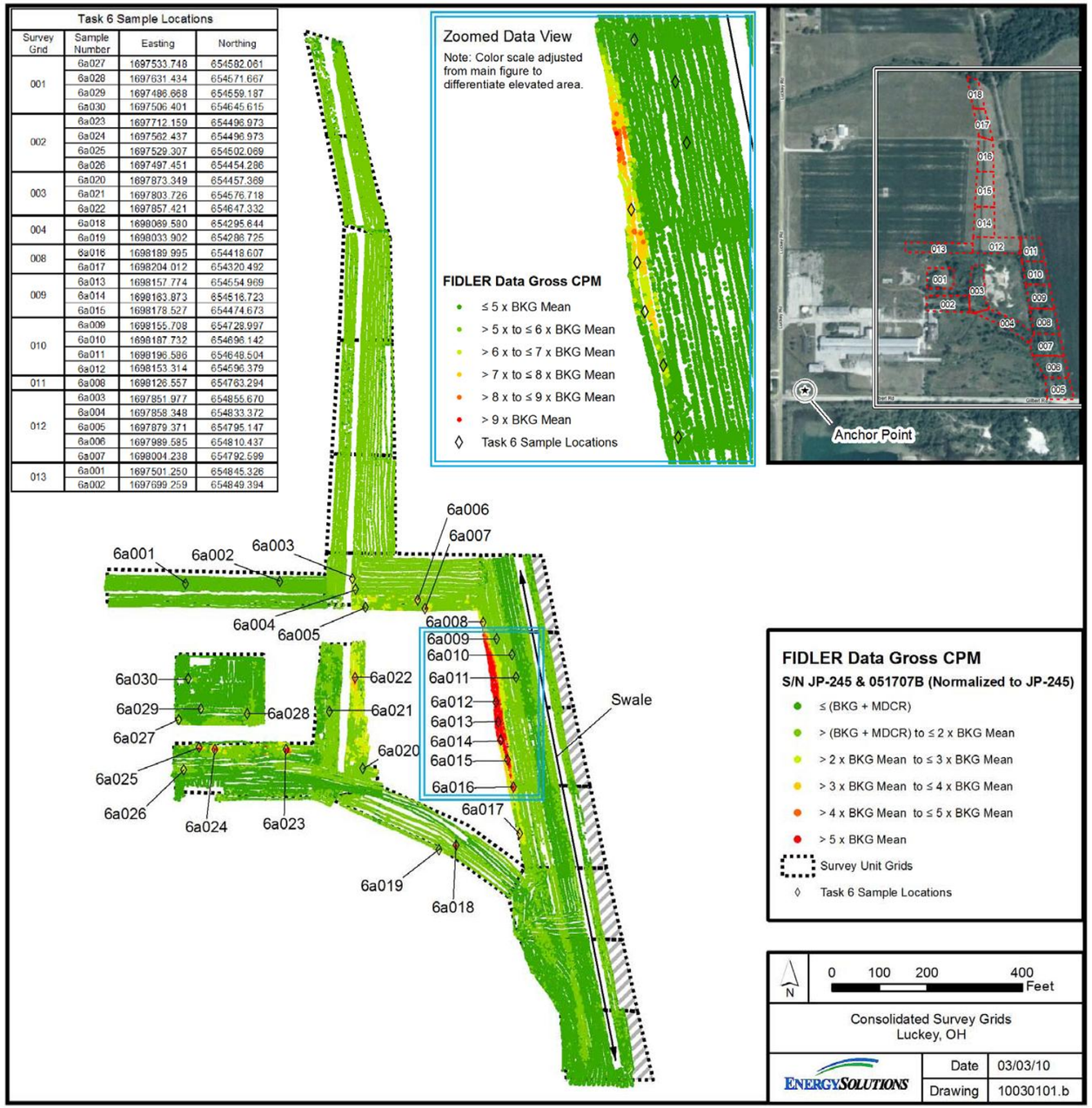
Analysis for Background Data	
Mean	13,561
Standard Error	38
Median	13,560
Mode	12,960
Standard Deviation	1,002
Sample Variance	1,003,449
Kurtosis	0.05
Skewness	0.1
Range	6,360
Minimum	10,560
Maximum	16,920
Sum	9,370,680
Count	691
2 x BKG Mean	27,122
3 x BKG Mean	40,683
4 x BKG Mean	54,244
5 x BKG Mean	67,805
6 x BKG Mean	81,366
7 x BKG Mean	94,927
8 x BKG Mean	108,488
9 x BKG Mean	122,049
10 x BKG Mean	135,610



The color ramp for the main figure was developed from the above information. Dark green represents all data that is less than or equal to the $MDCR_{surveyor}$ plus the background mean and can be considered indistinguishable from background. Data that exceeded the $MDCR_{surveyor}$ plus the background mean were color coded based on multiples of the background mean calculated above. The maximum level for the main figure color ramp was limited to 5-times the background mean in order to show details in survey grids that were not significantly elevated. This caused the elevated area in Survey Grids 008 through 010 to appear solid red. The zoomed data view shows this elevated area with a different color ramp which differentiates GWS levels. Therefore, a red point on the main map is not the same GWS level as a red point on the zoomed data view.

The consolidated list and locations of surface soil samples for Task 6, 30 in total, are provided on the figure.

Task 6 Sample Locations			
Survey Grid	Sample Number	Easting	Northing
001	6a027	1697533.748	654582.061
	6a028	1697631.434	654571.667
	6a029	1697486.668	654559.187
	6a030	1697506.401	654645.615
002	6a023	1697712.159	654496.973
	6a024	1697562.437	654496.973
	6a025	1697529.307	654502.069
	6a026	1697497.451	654454.286
003	6a020	1697873.349	654457.369
	6a021	1697803.726	654576.718
	6a022	1697857.421	654647.332
004	6a018	1698069.580	654295.644
	6a019	1698033.902	654286.725
008	6a016	1698189.995	654418.607
	6a017	1698204.012	654320.492
009	6a013	1698157.774	654554.969
	6a014	1698163.873	654516.723
	6a015	1698178.527	654474.673
010	6a009	1698155.708	654728.997
	6a010	1698187.732	654696.142
	6a011	1698196.586	654648.504
	6a012	1698153.314	654596.379
011	6a008	1698126.557	654763.294
012	6a003	1697851.977	654855.670
	6a004	1697858.348	654833.372
	6a005	1697879.371	654795.147
	6a006	1697989.585	654810.437
	6a007	1698004.238	654792.599
013	6a001	1697501.250	654845.326
	6a002	1697699.259	654849.394



*North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System & National Geodetic Vertical Datum 88 (NGVD88)

Figure 9-46: GWS Reassessment – All Survey Grids Using Background Mean

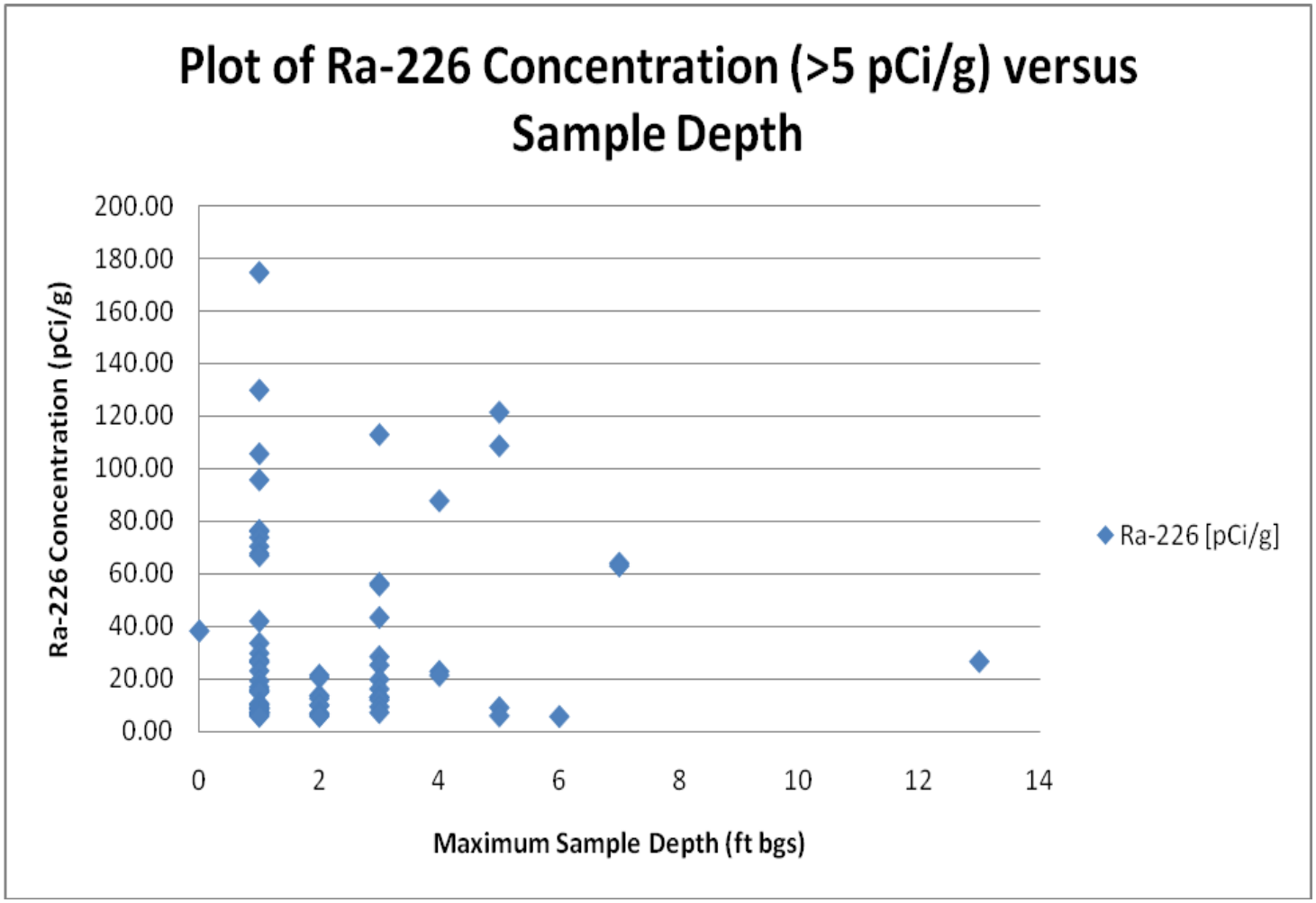


Figure 9-47: Ra-226 Concentration (>5pCi/g) Against Sample Depth

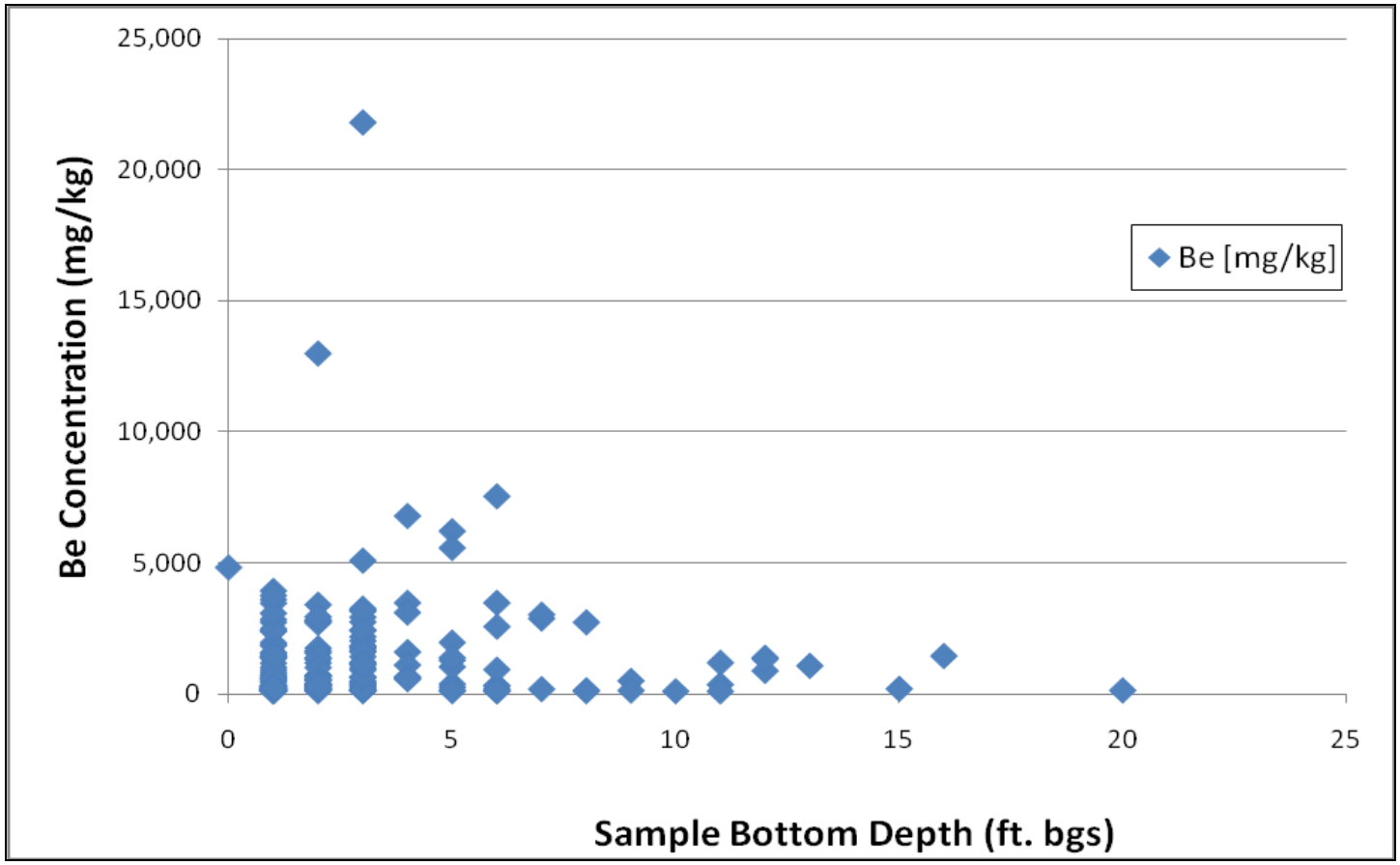
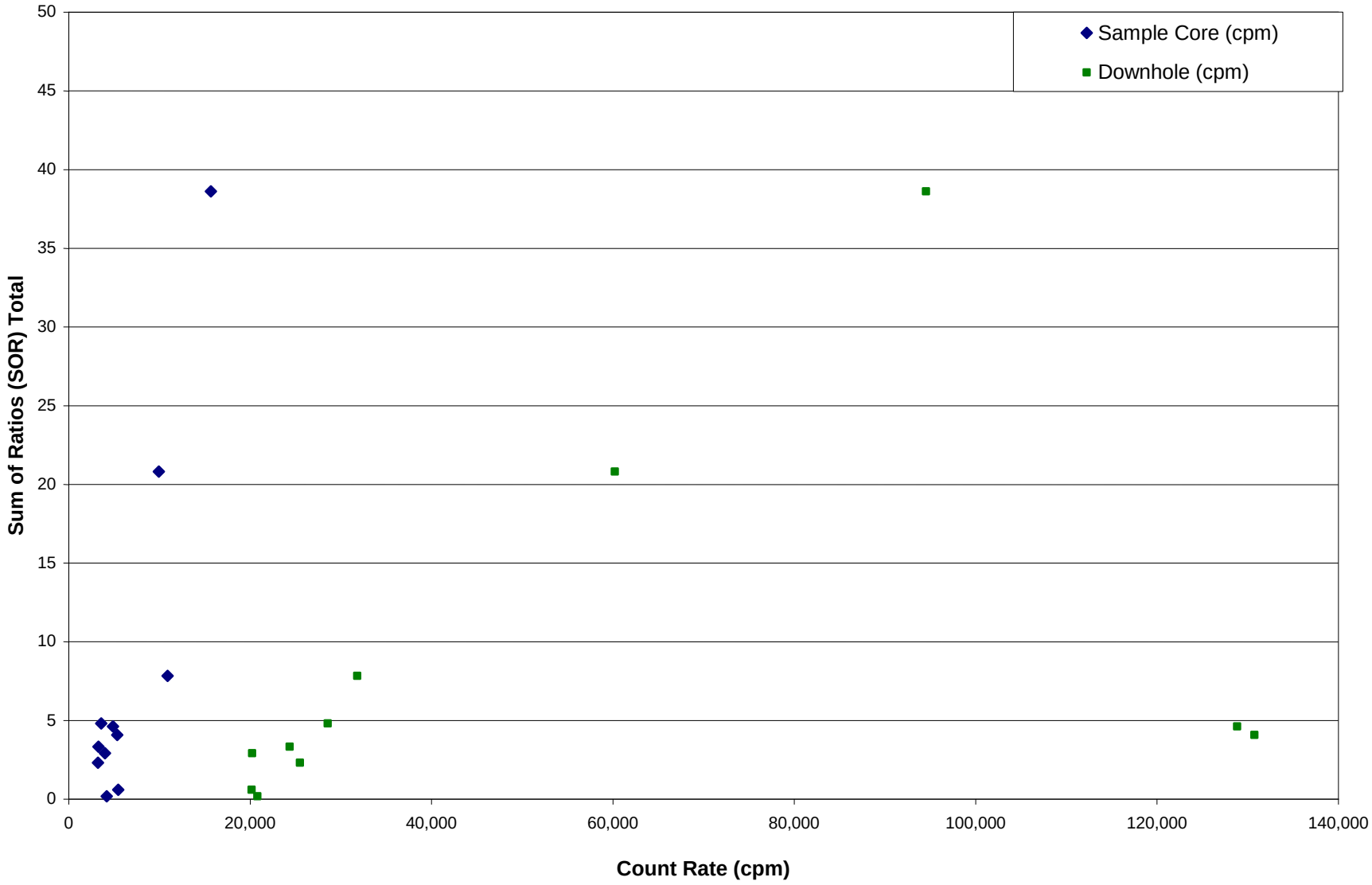
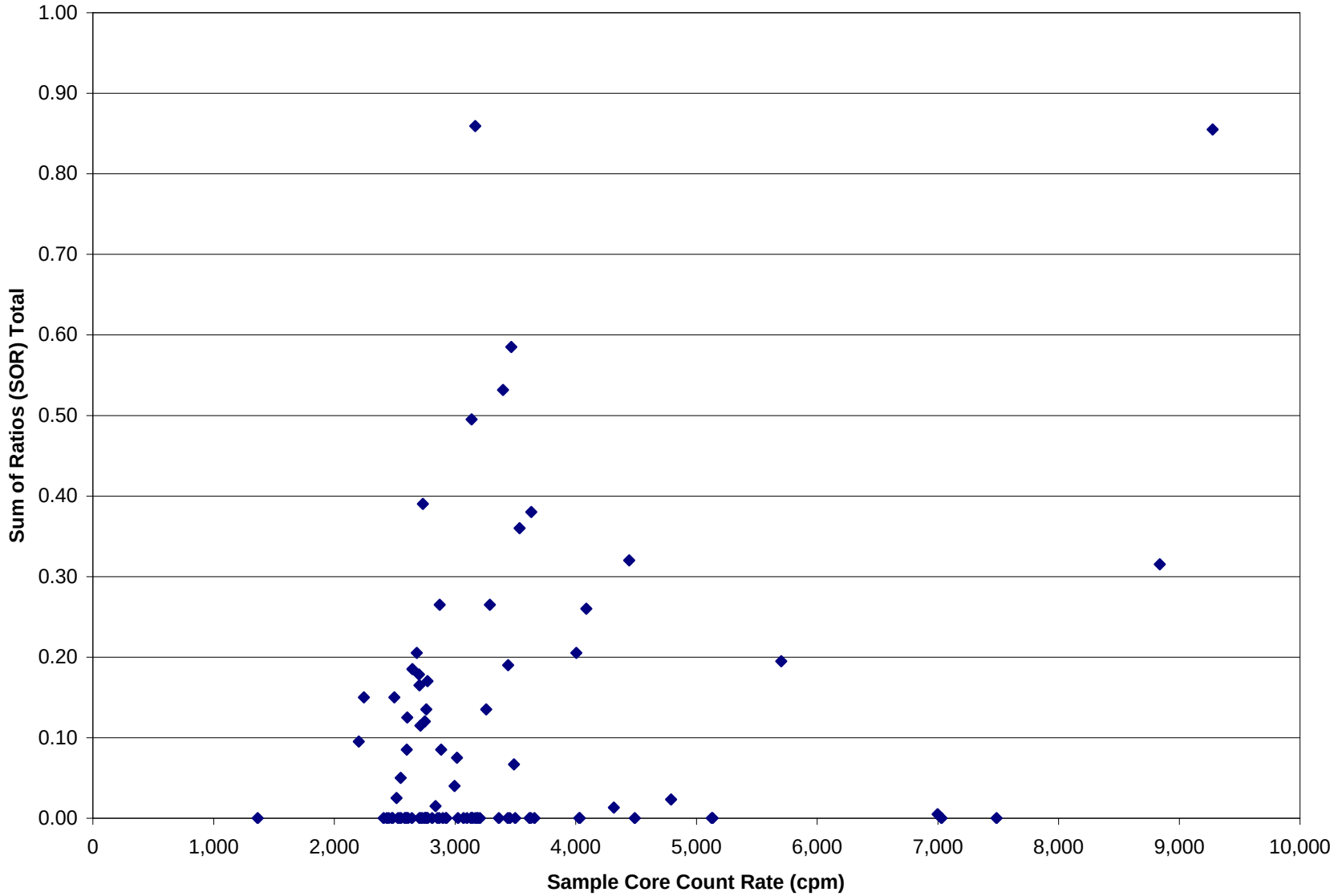


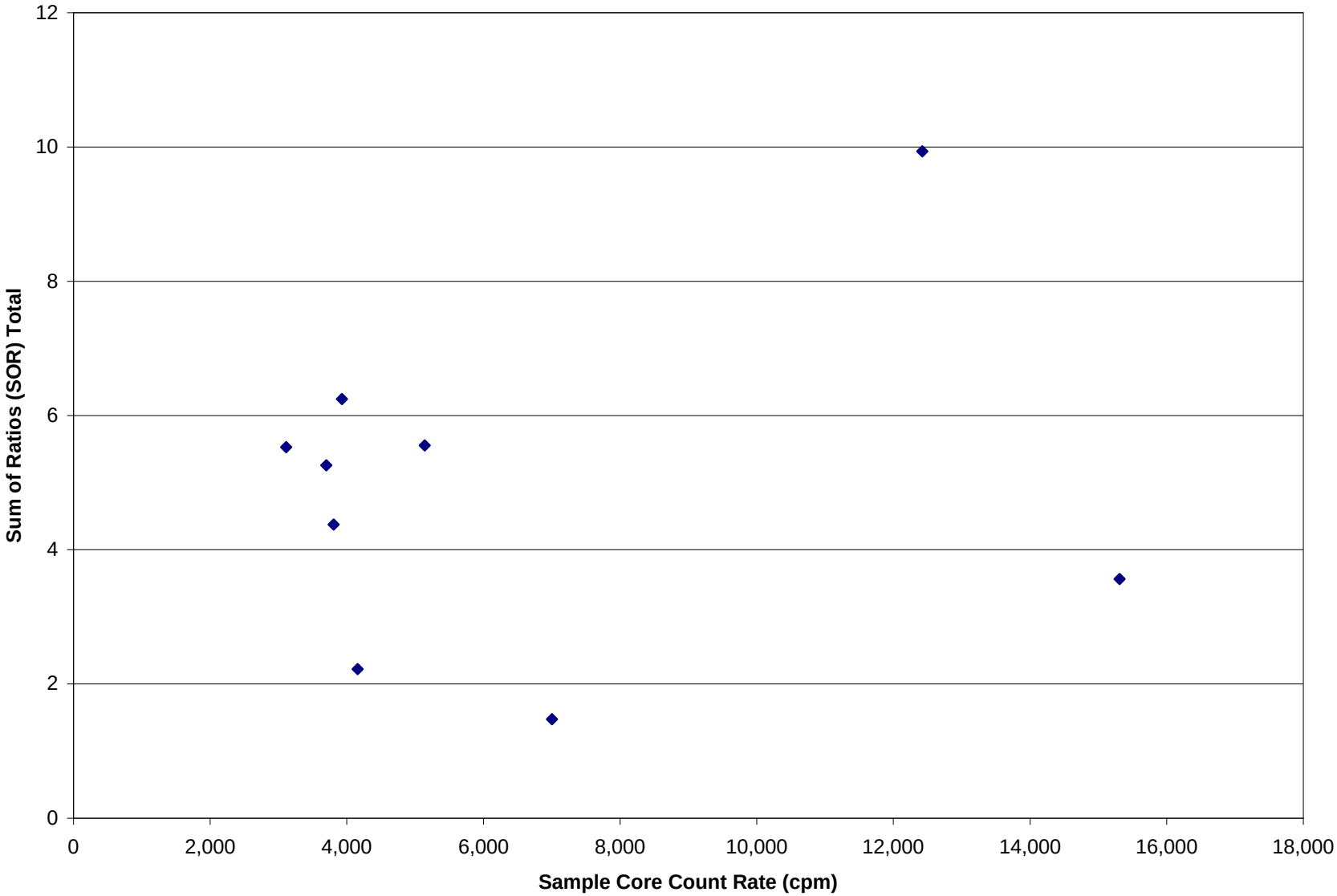
Figure 9-48: Be Concentration (>131 mg/kg) Against Sample Depth



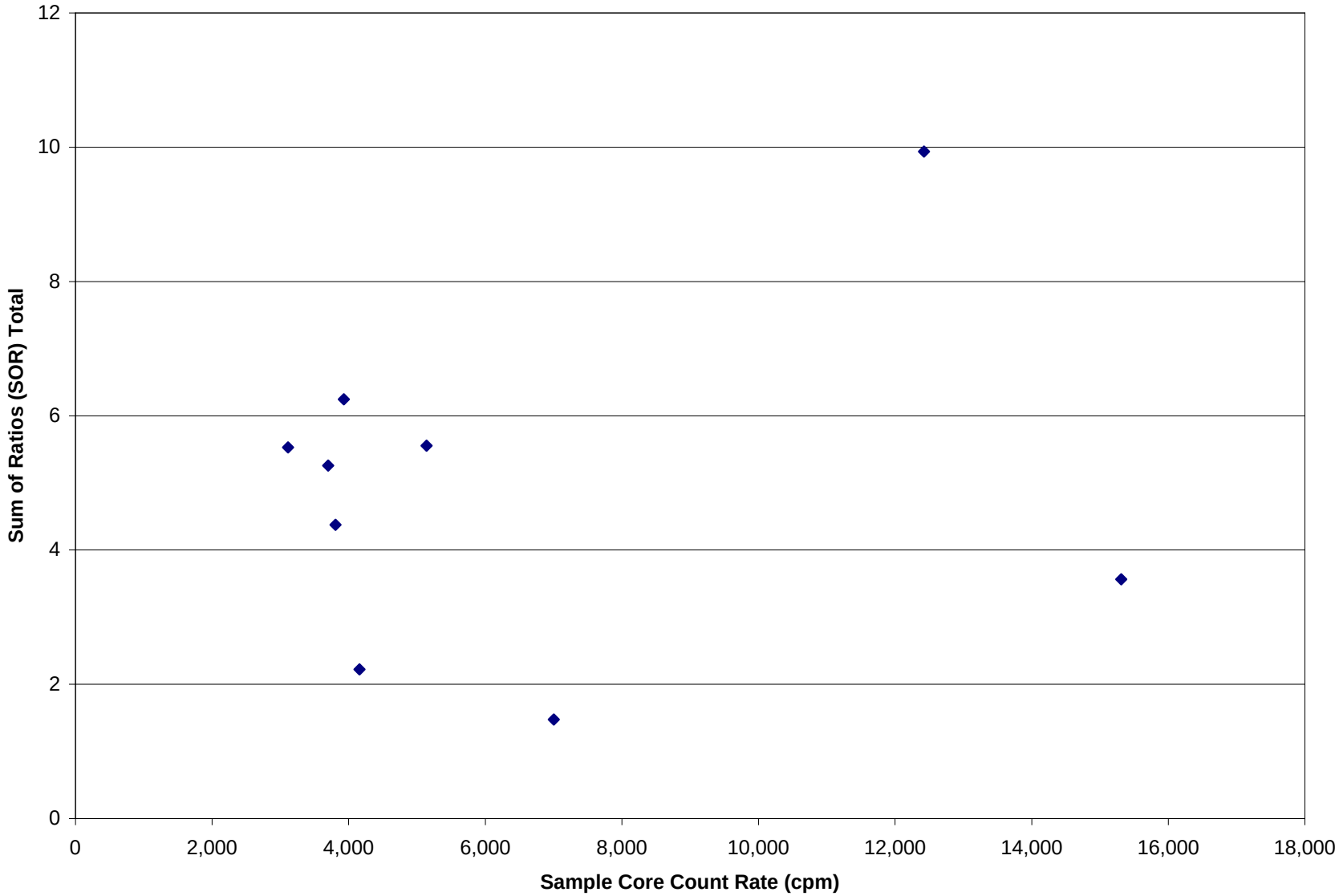
9-49: Surface Sample Core Scatter Plot Using 2-inch by 2-inch NaI Detector



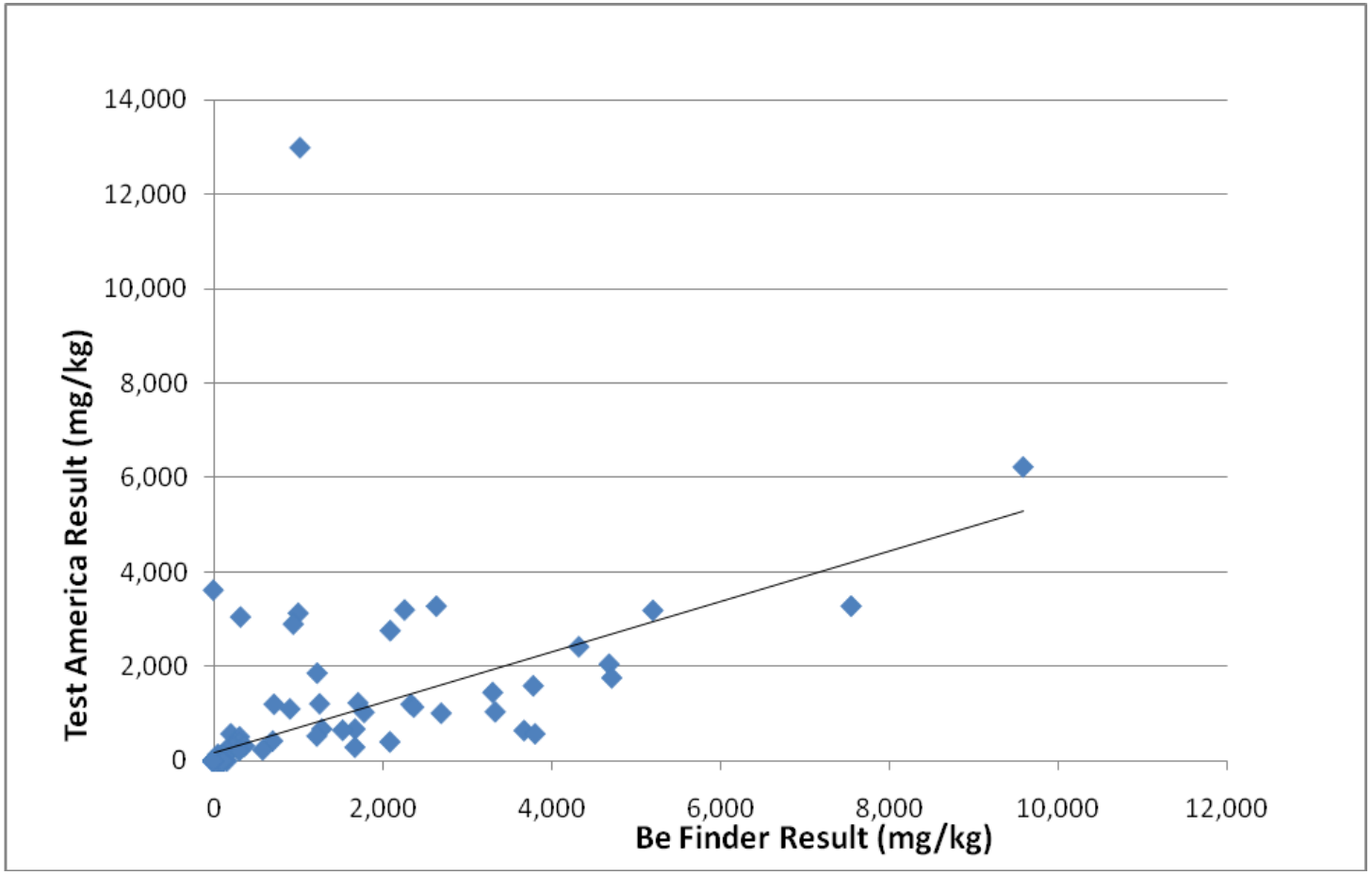
9-50: Subsurface Sample Core Scatter Plot For SOR < 1



9-51: Subsurface Sample Core Scatter Plot For SOR Between 1 and 10



9-52: Subsurface Sample Core Scatter Plot For SOR > 10



9-53: BeFinder and TestAmerica Analytical Results Correlation

10.0 CONCLUSIONS

Conclusions made as a result of this study are discussed in this section.

10.1 GEOPHYSICAL MAPPING

- The geophysical surveys identified the lateral limits of trenches associated with historical disposal activities at the Site. While many identified anomalies coincided with surficial metallic debris piles, elongated anomalies consistent with trenches were identified (anomalies A and B). Two additional anomalies were identified that were consistent with metallic debris pits or emplaced metallic debris (anomalies E and D). Lesser amounts of metal were interpreted to be present in the area of Anomaly I (an area devoid of vegetation) and Anomaly F.

- Anomaly Q is adjacent to a former access road. While this area did not present a definitive magnetic anomaly, EM-61 data suggest conductive metallic debris is present. Due to the proximity of this anomaly to the former access road, this feature may be a result of scattered/discarded or disposed metallic debris that may have been associated with historic disposal or transportation activities. The area immediately north of anomaly Q is devoid of vegetation. While the data suggest some metallic debris is present at depth, the limits of this debris extended beyond the limits of the area devoid of vegetation.

- The area of Lagoon D appears to contain metal masses at depth. It appears that the materials used to fill the lagoon contained metallic debris. A large metal mass is present within the lagoon limits in the area of Anomaly G. This feature exhibited a very large magnetic dipole response, suggesting a large metal mass or concentration of metal masses is present at depth.

- Utility and line locator surveys identified major utility lines in the area of the buildings and trending toward the main geophysical investigation area. These trends were substantiated by electromagnetic and magnetometer methods.

- The EM-31 terrain conductivity survey identified conductivity variations across the site that appeared to be related to changes in nonhomogeneous fill materials. The large amount of surficial and subsurface metal at site limited the ability to map the location and limits of nonnative, nonmetallic fill materials, if present.

- The EM-61 and magnetometer datasets best represent the location of metallic debris at the site. These anomalous zones are consistent with the magnetic susceptibility anomalies identified in the EM-31 data. While the magnetometer data mirrored the EM-61 data, the EM-61 high-sensitivity metal detector survey results provide better lateral resolution of subsurface metallic debris.

10.2 GAMMA WALKOVER SURVEY

- The GWS sufficiently bounded the surface radiological contamination. Based on survey results in grids 8, 9, and 10, elevated radioactivity is present in the northeast corner of the site near the former trenches.

- A few anomalous hot spots were identified in survey grids 2, 3, 4, and 12.

- All other areas surveyed at the Site boundary or off-site (north Toussaint Creek ditch) appears to be consistent with natural background levels of radiation and do not appear to be impacted. However, Toussaint Creek was not surved due to frozen conditions.

10.3 RADIONUCLIDES DATA

- Elevated concentrations of Ra-226, U-238, and Th-230, above the Site cleanup goals, are present in Site soils. All elevated U-238 and Th-230 soil concentrations coincide with elevated Ra-226 soil concentrations and appear to be bounded within a larger area of Ra-226 contaminated soil. Mapping that will be performed by USACE/ANL will confirm this assessment. A majority of the soils that exceeded the cleanup goals occurs within the 0 to 5 ft bgs depth range.

- Elevated radiological constituents were not detected in sediment samples from Site manholes, drains, and pipes.

- Elevated concentrations of Ra-226, U-238, and Th-230, above the Site cleanup goals, are present in soils taken from some of the trenches that were excavated near underground utility lines. All elevated U-238 and Th-230 soil concentrations coincide with elevated Ra-226 soil concentrations and appear to be bounded within a larger area of Ra-226 contaminated soil. Mapping that will be performed by USACE/ANL will confirm this assessment.

- Excavated ditch sediments contained Ra-226 and U-238 above the cleanup goals. These sediments were drummed and will be treated/disposed off-site at an appropriate facility.

- Radionuclides analytical results, expressed as SOR_{TOTAL} values, did not exhibit a correlation with gamma count rates from the GWS. It is believed that variability in the radionuclides distribution creates a non-uniform gamma flux that is the cause of the gamma count rate variability.

10.4 BERYLLIUM DATA

- Elevated Be concentrations above the Site cleanup goal are present in Site soils. A majority of the soils that exceeded the cleanup goal occurs within the 0 to 5 ft bgs depth range.

- Two sediment samples, one from manhole 9 and one from manhole 11, contained Be above the Site cleanup goal.
- Elevated Be concentrations above the Site cleanup goal are present in soils from some of the trenches that were excavated near underground utility lines.
- The extent of Ra-226 contaminated soils coincides with a larger area of Be contaminated soils and appears to be bounded by the Be contamination limits. Mapping that will be performed by USACE/ANL will confirm this assessment.
- Excavated ditch sediments contained Be above the cleanup goal. These sediments were drummed and will be treated/disposed off-site at an appropriate facility.
- Analytical results from the BeFinder are typically greater than corresponding results from TestAmerica. However, approximately 15% of the samples analyzed by TestAmerica with concentrations above the Site cleanup goal did not report a corresponding exceedance from the BeFinder result. None of the BeFinder results above the Site cleanup goal had a corresponding TestAmerica result less than the cleanup goal.
- The BeFinder methodology performed well enough to meet the soil cleanup level of 131 mg/kg on most soil samples.

10.5 BeFinder™ System Advantages and Lessons Learned

The BeFinder method is based on the fluorescence of beryllium bound to hydroxybenzoquinoline sulfonate (HBQS) that requires a dissolution technique using dilute ABF developed at Los Alamos National Laboratory (LANL) and licensed to Berylliant Inc. in Tucson Arizona. The system is commercialized under the name BeFinder by Berylliant Inc. The following discussion is not intended to be a technical discussion on fluorescence method versus widely accepted off-site laboratory methods such as ICP-MS, but instead presents pros and cons of deploying the BeFinder system for beryllium detection in soil and filter samples versus off-site laboratory analysis for a work similar in scope to the Luckey project.

Advantages of BeFinder system:

- Field Deployable and Rapid Turnaround

Fluorometers can be field deployable and small number of samples could be prepared for analysis within a short time and instantly analyzed for further decision making.

- Comparable Detection Limits

In general, detection limits for Be using BeFinder are comparable to ICP-MS.

- Good Accuracy and Precision When Using Fully Dissolved Samples

QC performance on known BeO calibration standards provided confidence in BeFinder on-site procedures and performance.

Limitations and Lessons Learned:

- Requires Well Trained and Experienced Laboratory Personnel

Based on experience gained from the Luckey Site investigation, the BeFinder system requires highly trained laboratory personnel and a support team to conduct high quality and reproduceable analyses. Successful operation of the system requires a thorough understanding of analytical chemistry and laboratory protocols, specifically as related to wet chemistry procedures and dissolutions. Without a high degree of training and experience, reagent mixing and pipetting errors can create significant quality and performance problems. In addition, the requirement to use professional judgment in performing required dilutions and additional filtrations can induce significant unquantifiable uncertainty into the analytical process.

- Limited Data Reports and EDDs

The BeFinder system generates output in a Microsoft Excel format which requires additional formatting and external processing to make the data presentable. This data manipulation process has the potential to impart error in the final data results packages.

- Extended Sample Preparation Time

One of the biggest lessons learned by TES was the effort required to prepare the soil samples for analysis by BeFinder. Samples would require homogenization and preparing an aliquot for analysis is time consuming and labor intensive.

- Challenges Managing Interferences

Interferences from iron or titanium can cause the measurement solution to appear yellowish/goldish which reduces the BeFinder's accuracy. Berylliant procedures recommend that the solution should be left standing for two hours and then re-filtration to remove precipitated iron. However, subjective evaluation of yellowness of the solution and the fact that the yellowness seen with naked eye is much more accentuated in the UV part of the spectrum; introduces an important source of error in the measurement.

- Variability in Dissolution Efficacy

ABF is a highly effective dissolution medium for both high-fired BeO and Be in soil samples. However, dissolution conditions can be optimized by changing the ABF concentration, time and temperature of dissolution. In addition, dissolution times vary based on the media being analyzed. The collection of representative samples and sample processing presented a unique challenge on this Site due to the presence of both undisturbed compacted clay layers and disturbed soils within contaminated zones.

11.0 REFERENCES

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Appendix A

Analytical Results

Table 9-1 and Table 9-5

Boring Logs (Provided in Electronic Files)

Radiological Data (rpt and rtf files) (Provided in Electronic Files)

Beryllium Data (Provided in Electronic Files)

Off-Site Laboratory Data (Provided in Electronic Files)

Composite Waste Sample Data (Provided in Electronic Files)

Correlation Data and Worksheets (Provided in Electronic Files)

Analytical Master Spreadsheet (Provided in Electronic File)

Table 9-1
Radionuclides Analytical Results - Soil Samples

Sample Information											On-Site Gamma Spectroscopy Results (gross activity)																Off-Site TestAmerica Analytical Results (gross activity)																	
Sample ID	Boring/ Location No.	Depth Range (ft)	Collection Date	Collection Time	Tracking Number	Sample Type	Date Counted	Time Counted	Detector (D1 or D2)	Spectrum Name	Ra-226 [pCi/g]				Th-232 (Ac-228 - γ Spec) [pCi/g]				U-235 [pCi/g]				U-238 (Th-234 - γ Spec) [pCi/g]				Ra-226 [pCi/g]			Th-232 (Ac-228 - γ Spec) [pCi/g]			U-235 [pCi/g]			U-238 (Th-234 - γ Spec) [pCi/g]			Th-230 (α Spec) [pCi/g]			Th-232 (α Spec) [pCi/g]		
											Conc.	±2σ	MDC	Qualifiers	Conc.	±2σ	MDC	Qualifiers	Conc.	±2σ	MDC	Qualifiers	Conc.	±2σ	MDC	Qualifiers	Conc.	±2σ	MDC	Conc.	±2σ	MDC	Conc.	±2σ	MDC	Conc.	±2σ	MDC	Conc.	±2σ	MDC	Conc.	±2σ	MDC
0001SO00404	1	3 to 4	11/24/2009	11:00	001004	Normal	12/16/09	15:01	D1	00010183.Anl	2.99	0.51	0.52	Jcc	1.02	0.13	0.12	Jcc	0.13	n/a	0.13	Jcc	1.45	0.25	0.51	Jcc													1.76	0.32	0.05	0.99	0.23	0.50
0001SO00505	1	4 to 5	11/24/2009	11:03	001005	Normal	12/28/09	17:33	D1	00010191.Anl	2.88	0.43	0.47	Jcc	0.94	0.13	0.10	Jcc	0.13	n/a	0.13	Jcc	2.04	0.31	0.63	Jcc													1.77	0.28	0.04	0.96	0.19	0.04
0001SO00910	1	9 to 10	11/24/2009	12:42	001009	Normal	12/16/09	15:03	D2	00020142.Anl	2.17	0.44	0.45		0.92	0.12	0.10		0.16	n/a	0.16		1.10	0.25	0.56														1.38	0.27	0.05	0.71	0.19	0.06
0002SO10005	2	4 to 5	4/9/2010	---	---	Bounding	---	---	---	---																	2.48	0.63	0.61	1.01	0.18	0.11	0.11	0.13	0.21	1.03	0.30	0.50						
0002SO01012	2	11 to 12	11/24/2009	9:50	002010	Normal	12/16/09	13:03	D1	00010182.Anl	3.12	0.54	0.47	Jcc	0.84	0.12	0.09	Jcc	0.12	n/a	0.12	Jcc	1.58	0.28	0.55	Jcc													1.49	0.28	0.08	0.79	0.19	0.08
0002SO01113	2	12 to 13	11/24/2009	9:47	002013	Dup	2/8/10	17:46	D2	00020412.Anl	3.07	0.81	0.77		0.77	0.20	0.14		0.24	n/a	0.24		1.50	0.62	0.77														1.65	0.31	0.03	0.76	0.20	0.03
0002SO01113	2	12 to 13	11/24/2009	9:47	002011	Normal	12/29/09	15:09	D1	00010192.Anl	2.73	0.44	0.41		0.75	0.10	0.07		0.12	n/a	0.12		1.54	0.25	0.49																			
0002SO01214	2	13 to 14	11/24/2009	9:45	002012	Normal	12/30/09	10:55	D2	00020151.Anl	2.36	0.45	0.42		0.49	0.08	0.06		0.11	n/a	0.11		1.48	0.25	0.49														1.30	0.26	0.06	0.43	0.14	0.06
0003SO10005	3	4 to 5	4/9/2010	---	---	Bounding	---	---	---	---																	2.99	0.75	0.65	0.92	0.18	0.13	0.21	n/a	0.21	1.54	0.47	0.47						
0003SO00912	3	11 to 12	11/24/2009	9:14	003009	Normal	12/30/09	10:52	D1	00010196.Anl	3.49	0.62	0.55	Jcc	1.04	0.14	0.10	Jcc	0.11	n/a	0.11	Jcc	1.98	0.30	0.61	Jcc													1.84	0.29	0.07	0.88	0.19	0.04
0003SO01115	3	14 to 15	11/24/2009	9:16	003011	Normal	2/2/10	18:23	D1	00010415.Anl	3.32	0.76	0.76		0.85	0.13	0.14		0.23	n/a	0.23		1.93	0.44	0.92														1.88	0.29	0.02	0.86	0.18	0.04
0003SO01014	3	13 to 14	11/24/2009	9:15	003010	Normal	12/29/09	16:50	D1	00010193.Anl	2.99	0.50	0.46		0.86	0.13	0.09		0.16	0.09	0.12		1.87	0.31	0.56														1.76	0.28	0.05	0.74	0.17	0.02
0004SO00406	4	5 to 6	12/2/2009	11:01	004004	Normal	2/6/10	12:20	D1	00010449.Anl	**5.53**	1.04	0.94		0.95	0.15	0.11		0.27	n/a	0.27		3.14	0.52	0.91																			
0004SO00511	4	10 to 11	12/2/2009	11:05	004005	Normal	2/13/10	13:41	D2	00020452.Anl	3.99	1.02	0.94		0.92	0.15	0.11		0.29	n/a	0.29		1.71	0.41	1.03		3.33	0.94	0.84	0.85	0.14	0.12	0.26	n/a	0.26	1.74	0.36	0.49						
0004SO00612	4	11 to 12	12/2/2009	11:10	004006	Normal	2/15/10	13:58	D2	00020470.Anl	3.20	0.93	0.89		0.86	0.16	0.12		0.27	n/a	0.27		1.55	0.48	0.91														2.17	0.36	0.03	0.85	0.21	0.05
0005SO00101	5	0 to 1	12/1/2009	16:55	005001	Normal	2/13/10	16:29	D2	00020457.Anl																													8.16	0.90	0.05	0.97	0.22	0.05
0005SO00202	5	1 to 2	12/1/2009	16:56	005002	Normal	3/2/10	9:06	D1	00010494.Anl	2.74	0.70	0.71		0.96	0.16	0.14		0.21	n/a	0.21		0.57	n/a	0.57		3.18	0.91	0.81	0.94	0.17	0.09	0.29	n/a	0.29	1.50	0.44	0.61						
0005SO00404	5	3 to 4	12/1/2009	17:02	005004	Normal	2/20/10	18:08	D2	00020538.Anl	**22.76**	2.51	1.64		2.18	0.28	0.22		4.34	0.59	0.51		8.42	1.07	1.18														**227.00**	19	0.08	2.43	0.42	0.07
0005SO00404	5	3 to 4	12/1/2009	17:02	005010	Dup	2/24/10	11:44	D2	00020565.Anl	**21.19**	3.06	2.34		2.00	0.39	0.33		3.79	0.80	0.73		9.93	1.71	2.32														**167.00**	14	0.05	1.52	0.28	0.04
0005SO10005	5	4 to 5	4/9/2010	---	---	Bounding	---	---	---	---																	**11.00**	2.40	1.80	1.20	0.25	0.26	1.77	0.63	0.58	4.50	1.40	2.00						
0006SO00101	6	0 to 1	12/1/2009	14:11	006001	Normal	2/5/10	11:03	D1	00010438.Anl	3.97	0.93	0.90		1.13	0.21	0.20		0.25	n/a	0.25		1.97	0.48	1.05														3.85	0.47	0.04	1.00	0.19	0.04
0006SO00707	6	6 to 7	12/1/2009	14:17	006007	Normal	2/5/10	11:04	D2	00020386.Anl	2.54	0.90	0.89		0.94	0.19	0.15		0.23	n/a	0.23		0.61	n/a	0.61														1.28	0.23	0.06	0.99	0.20	0.04
0006SO01016	6	15 to 16	12/1/2009	14:20	006010	Normal	2/5/10	12:08	D1	00010440.Anl	2.75	0.63	0.63		0.67	0.10	0.13		0.18	n/a	0.18		1.49	0.34	0.70														1.31	0.23	0.05	0.65	0.15	0.05
0007SO00707	7	6 to 7	12/1/2009	11:21	007007	Normal	2/5/10	12:10	D2	00020388.Anl	2.29	0.65	0.68		0.93	0.18	0.10		0.23	n/a	0.23		1.85	0.68	0.79														1.61	0.29	0.06	1.06	0.22	0.03
0007SO00707	7	6 to 7	12/1/2009	11:21	007012	Dup	2/3/10	14:57	D1	00010419.Anl	2.59	0.78	0.77		0.91	0.17	0.10		0.19	n/a	0.19		1.43	0.40	0.94																			
0007SO00910	7	9 to 10	12/1/2009	11:23	007009	Normal	2/3/10	14:57	D2	00020369.Anl	2.04	0.69	0.78		0.89	0.17	0.13		0.21	n/a	0.21		1.50	0.54	0.79														1.47	0.28	0.08	0.81	0.20	0.04
0007SO01012	7	11 to 12	12/1/2009	11:24	007010	Normal	2/3/10	16:32	D2	00020371.Anl	2.51	0.87	0.89		0.92	0.17	0.17		0.24	n/a	0.24		1.86	0.46	0.83														1.84	0.33	0.06	0.90	0.22	0.05
0008SO10002	8	1 to 2	4/9/2010	---	---	Bounding	---	---	---	---																	2.62	0.72	0.64	0.72	0.13	0.10	0.20	n/a	0.20	0.84	0.32	0.49						
0008SO00808	8	7 to 8	12/1/2009	16:47	008008	Normal	2/11/10	20:23	D1	00010481.Anl	3.01	0.81	0.85		0.85	0.17	0.34		0.26	n/a	0.26		1.45	0.47	0.92														1.40	0.27	0.06	0.75	0.19	0.03
0008SO01013	8	12 to 13	12/1/2009	16:49	008010	Normal	2/12/10	20:04	D2	00020447.Anl	3.56	0.99	0.93		0.78	0.13	0.16		0.19	n/a	0.19		1.77	0.43	0.84														1.54	0.29	0.06	0.86	0.21	0.06
0008SO01116	8	15 to 16	12/1/2009	16:50	008011	Normal	2/3/10	17:43	D1	00010423.Anl	2.36	0.68	0.70		0.64	0.12	0.10		0.22	n/a	0.22		1.49	0.33	0.79														1.35	0.24	0.04	0.44	0.12	0.04
0009SO00303	9	2 to 3	12/2/2009	11:47	009003	Normal	2/25/10	14:54	D2	00020568.Anl	3.04	0.89	0.93		1.11	0.21	0.17		0.26	n/a	0.26		1.86	0.49	0.90														2.30	0.35	0.04	1.10	0.22	0.04
0009SO00910	9	9 to 10	12/2/2009	11:53	009009	Normal	2/6/10	11:43	D1	00010448.Anl	3.05	0.83	0.84		0.94	0.20	0.16		0.26	n/a	0.26		1.77	0.49	0.97														1.71	0.28	0.05	0.95	0.19	0.04
0009SO01012	9	11 to 12	12/2/2009	11:54	009010	Normal	2/9/10	13:29	D2	00020419.Anl	3.00	0.69	0.84		1.22	0.25	0.18		0.32	n/a	0.32		1.54	0.37	0.95														1.75	0.32	0.08	1.08	0.24	0.06
0010SO00505	10	4 to 5	12/2/2009	10:12	010006	Normal	2/8/10	16:30	D2	00020410.Anl	3.74	0.84	0.81		1.00	0.18	0.19		0.33	n/a	0.33		2.09	0.46	0.97														2.38	0.39	0.05	1.07	0.24	0.05
0010SO00712	10	11 to 12	12/2/2009	10:14	010008	Normal	2/8/10	15:29	D2	00020408.Anl	3.51	0.89	0.91		0.90	0.18	0.14		0.30	n/a	0.30		1.74	0.41	0.96														1.61	0.29	0.03	0.65	0.17	0.03
0010SO00916	10	15 to 16	12/2/2009	10:16	010010	Normal	2/8/10	17:11	D1	00010462.Anl	3.28	0.72	0.71		0.88	0.17	0.14		0.15	0.16	0.25		1.58	0.41	0.60														2.86	0.42	0.03	0.82	0.20	0.03
0011SO00101	11	0 to 1	12/2/2009	12:52	011001	Normal	2/8/10	15:04	D2	00020407.Anl	**5.67**	1.14	1.40		1.17	0.23	0.29		0.25	0.26	0.41		4.74	0.86	0.78																			
0011SO00303	11	2 to 3	12/2/2009	12:54	011012	Dup	2/8/10	14:37	D2	00020406.Anl	2.71	0.99	1.01		1.10	0.22	0.16		0.32	n/a	0.32		1.33	0.71	0.92																			
0011SO00303	11	2 to 3	12/2/2009	12:54	011003	Normal	2/5/10	19:19	D2	00010445.Anl	3.25	0.88	0.88		1.00	0.17	0.16		0.25	n/a	0.25		0.61	n/a	0.61														1.90	0.30	0.02	0.98	0.20	0.04
0011SO00911	11	10 to 11	12/2/2009	13:00	011009	Normal	3/10/10	15:41	D1	00010530.Anl	2.89	0.91	0.90		0.98	0.18	0.14		0.17	0.17	0.26		1.01	0.33	0.46														1.59	0.26	0.02	0.86	0.18	0.02
0015SO10006	15	5 to 6	4/9/2010	---	---	Bounding	---	---	---	---																	2.23	0.72	0.72	0.79	0.16	0.15	0.22	n/a	0.22	1.03	0.35	0.46						
0015SO00915	15	14 to 15	12/1/2009	10:28	015009	Normal	3/9/10	17:25	D2	00020591.Anl	3.77	1.05	1.03	Jcc	1.32	0.25	0.14	Jcc	0.37	n/a	0.37	Jcc	1.02	0.51	0.80	Jcc													1.60	0.28	0.06	1.04	0.22	0.05
0015SO01017	15	16 to 17	12/1/2009	10:29	015010	Normal	2/5/10	13:38	D1	00010442.Anl	2.83	0.73	0.73		0.90	0.13	0.10		0.24	n/a	0.24		0.54	n/a	0.54														1.27	0.23	0.06	0.72	0.17	0.02
0015SO01119	15	18 to 19	12/1/2009	10:30	015011	Normal	2/13/10	8:47	D2	00020448.Anl	2.32	0.64	0.68		0.53	0.14	0.11		0.23	n/a	0.23		1.73	0.74	0.84														1.33	0.26	0.05	0.67	0.17	0.06
0016SO00101	16	0 to 1	12/1/2009	13:40	016001	Normal	2/12/10	15:14	D2	00020438.Anl	4.00	1.21	1.23		1.11	0.22	0.15		0.36	n/a	0.36		2.75	0.58	1.16														2.93	0.45	0.07	1.18	0.26	0.07
0016SO00303	16	2 to 3	12/1/2009	13:42	016003	Normal	2/11/10	18:31	D1	00010478.Anl	3.22	1.00	1.00		1.22	0.18	0.14		0.23	n/a	0.23		1.79	0.51	0.97														1.87	0.32	0.07	1.02	0.22	0.05
0016SO00911	16	10 to 11	12/1/2009	13:48	016009	Normal	2/12/10	14:43	D2	00020437.Anl	3.51	0.85	0.84		1.07	0.22	0.14		0.23	n/a	0.23		1.76	0.43	0.90														2.11	0.32	0.02	0.97	0.20	0.02
0017SO00303	17	2 to 3	11/24/2009	16:52	017003	Normal	2/19/10	14:38	D1	00010186.Anl	3.01	0.52	0.49		1.04	0.16	0.10		0.12	n/a	0.12		1.56	0.28	0.55														1.85	0.30	0.05	1.12	0.22	0.06
0017SO00303	17	2 to 3	11/24/2009	16:52	017013	Dup	3/15/10	12:15	D1	00010611.Anl	2.82	0.69	0.69		1.04	0.16	0.14		0.22	n/a	0.22		0.52	0.25	0.58																			
0017SO01017	17	16 to 17	11/24/2009	16:59	017010	Normal	2/3/10	18:17	D1	00010424.Anl	2.26	0.64	0.69		1.04	0.20	0.13		0.22	n/a	0.22		1.38	0.37	0.86														1.26	0.23	0.05	0.79	0.17	0.05
0017SO01118	17	17 to 18	11/24/2009	17:06	017011	Normal	2/3/10	18:23	D2	00020374.Anl	2.63	0.71	0.76		1.00	0.17	0.12		0.25	n/a	0.25		1.92	0.46	0.85														2.18	0.36	0.08	1.09	0.24	0.07
0018SO00202	18	1 to 2	12/8/2009	15:01	018002	Normal	2/6/10	16:26	D1	00010453.Anl	3.33	1.03	1.00		1.23	0.21	0.14		0.31	0.16	0.20		2.05	0.53	0.11														1.53	0.27	0.04	0.96	0.20	0.04
0018SO00607	18	6 to 7	12/8/2009	15:05	018006	Normal	2/12/10	11:56	D2	00020434.Anl	2.51	0.72	0.73		0.53	0.14	0.16		0.24	n/a	0.24		1.28	0.36	0.51														1.77	0.31	0.03	0.74	0.19	0.05
0018SO00708	18	7 to 8	12/8/2009	15:06	018007	Normal	2/18/10	17:23	D2	00020515.Anl	2.40	0.69	0.96		0.93	0.17	0.12		0.32	n/a	0.32		0.51	0.29	0.84														1.92	0.30	0.04	1.04	0.21	0.04
0019SO00202	19	1 to 2	12/15/2009	15:01	019002	Normal	3/10/10	13:55	D1	00010528.Anl	**5.91**	1.01	0.92		1.13	0.25	0.18		0.14	0.21	0.34		2.81	0.59	0.73																			
0019SO00303	19	2 to 3	12/15/2009	15:02	019003	Normal	3/10/10	10:11	D1	00010526.Anl	3.22	0.97	0.94		1.11	0.20	0.17		0.25	n/a	0.25		0.79	n/a	0.79														1.58	0.28	0.03	0.72	0.18	0.05
0019SO01017	19	16 to 17	12/15/2009	15:09	019010	Normal	1/15/10	12:56	D1	00010233.Anl	3.57	0.60	0.55		1.13	0.13	0.10		0.24	0.10	0.13		2.13	0.35	0.67														2.00	0.34	0.05	1.07	0.24	0.05
0020SO00606	20	5 to 6	11/21/2009	16:06	020006	Normal	12/7/09	16:17	D1	00010166.Anl	2.98	0.48	0.43		1.04	0.14	0.10		0.12	n/a	0.12		1.83	0.27	0.49		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.87	0.33	0.08	1.05	0.24	0.05
0020SO00911	20	10 to 11	11/21/2009	16:09	020009	Normal	12/5/09	13:33	D1	00010162.Anl	2.84	0.50	0.47		0.89	0.12	0.08		0.14	n/a	0.14		1.52	0.27	0.52		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.52	0.28	0.06	0.86	0.20	0.04
0020SO01012	20	11 to 12	11/21/2009	16:10	020010	Normal	12/4/09	15:00	D1	00010158.Anl	2.76	0.56	0.52		0.87	0.12	0.09		0.11	n/a	0.11		1.75	0.28	0.54		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.54	0.32	0.12	1.05	0.25	0.04
0021SO00303	21	2 to 3	11/21/2009	14:56	021003	Normal	12/5/09	16:22	D1	00010163.Anl	**11.87**	1.26	0.76		0.67	0.10	0.10		0.57	0.18	0.21		7.26	1.01	0.97		**11.20**	1.60	1.30	0.96	0.26	0.20	0.35	0.25	0.40	6.01	0.90	0.89	5.81	0.78	0.11	0.54	0.19	0.09
0021SO10004	21	3 to 4	4/9/2010	---	---	Bounding	---	---	---	---																	3.50	1.00	0.90	1.17	0.25	0.16	0.26	n/a	0.26	2.83	0.55	0.49						
0021SO00910	21	9 to 10	11/21/2009	15:39	021009	Normal	12/5/09	12:07	D1	00010161.Anl	2.55	0.49	0.46		0.94	0.12	0.09		0.12	n/a	0.12		1.51	0.26	0.53		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.51	0.29	0.07	1.05	0.24	0.06
0021SO01011	21	10 to 11	11/21/2009	15:45	021010	Normal	12/7/09	13:30	D1	00010165.Anl	2.32	0.39	0.37		0.79	0.09	0.07		0.11	n/a	0.11		1.50	0.26	0.50		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.63	0.32	0.05	0.59	0.18	0.05
0022SO00707	22	6 to 7	11/20/2009	15:49	022007	Normal	12/1/09	10:15	D1	00010150.Anl	2.67	0.53	0.49	Jcc	0.87	0.12	0.07	Jcc	0.11	n/a	0.11	Jcc	1.30	0.25	0.51	Jcc	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.88	0.33	0.05	0.72	0.19	0.08
0022SO00808	22	7 to 8	11/20/2009	15:54	022008	Normal	12/1/09	10:16	D2	00020115.Anl	2.87	0.51	0.48		0.81	0.12	0.11		0.20	0.11	0.13		1.66	0.29	0.54		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.44	0.28	0.05	0.74	0.19	0.03
0022SO00909	22	8 to 9	11/20/2009	16:02	022009	Normal	12/1/09	16:17	D1	00010151.Anl	2.71	0.44	0.40	Jcc	0.80	0.12	0.09	Jcc	0.13	n/a	0.13	Jcc	0.32	n/a	0.32	Jcc	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.82	0.37	0.07	0.92	0.25	0.07
0023SO00202	23	1 to 2	11/20/2009	10:45	023002	Normal	11/23/09	14:05	D1	00010145.Anl	**13.41**	1.32	0.61		0.44	0.11	0.12		0.66	0.15	0.17		9.67	0.93	0.73		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	5.99	0.70	0.04	0.63	0.16	0.05
0023SO00303	23	2 to 3	11/20/2009	10:45	023003	Normal	11/23/09	15:35	D2	00020108.Anl	**25.14**	2.48	1.26		1.51	0.20	0.23		0.85	0.25	0.30		14.25	1.46	1.29		**31.90**	4.30	3.30	0.73	0.50	0.77	1.72	0.98	1.20	21.90	3.50	3.00	7.04	0.91	0.10	0.59	0.21	0.09
0023SO10004	23	3 to 4	4/9/2010	---	---	Bounding	---	---	---	---																	**4.90**	1.10	0.90	1.33	0.21	0.16	0.30	n/a	0.30	3.15	0.76	0.75						
0023SO00909	23	8 to 9	11/20/2009	11:31	023009	Normal	11/24/09	16:58	D2	00020110.Anl	3.35	0.72	0.64		0.97	0.13	0.12		0.15	n/a	0.15		1.77	0.34	0.64		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.68	0.31	0.09	0.88	0.21	0.07
0023SO00909	23	8 to 9	11/20/2009	11:31	023011	Dup	11/24/09	18:32	D2	00020111.Anl	2.93	0.64	0.61		0.94	0.14	0.11		0.16	0.09	0.13		1.64	0.27	0.67		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.08	0.36	0.11	1.00	0.23	0.08
0024SO00202	24	1 to 2	11/20/2009	10:26	024002	Normal	11/21/09	13:20	D1	00010140.Anl	2.85	0.44	0.39		0.70	0.10	0.08		0.11	n/a	0.11		1.41	0.24	0.44		3.65	0.90	0.94	1.20	0.24	0.16	0.16	0.20	0.33	2.45	0.67	0.72	1.73	0.30	0.09	0.64	0.17	0.06
0024SO00303	24	2 to 3	11/20/2009	10:27	024003	Normal	2/5/10	9:34	D1	00010435.Anl	**7.06**	1.20	0.99		1.04	0.18	0.23		0.35	n/a	0.35		4.17	0.72	1.38		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	3.52	0.47	0.05	0.61	0.16	0.05
0024SO10004	24	3 to 4	4/9/2010	---	---	Bounding	---	---	---	---																	1.95	0.57	0.61	0.76	0.16	0.13	0.14	0.13	0.21	0.63	0.27	0.40						
0024SO01010	24	9 to 10	11/20/2009	10:49	024011	Dup	11/23/09	12:10	D2	00020106.Anl	2.81	0.51	0.49		0.78	0.11	0.10		0.16	n/a	0.16		1.77	0.42	0.52		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.00	0.34	0.07	0.82	0.20	0.06
0024SO01010	24	9 to 10	11/20/2009	10:49	024010	Normal	11/23/09	12:19	D1	00010144.Anl	2.77	0.50	0.46		0.79	0.12	0.08		0.12	n/a	0.12		1.58	0.26	0.47		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.74	0.31	0.05	0.84	0.20	0.06
0025SO00607	25	6 to 7	12/8/2009	15:45	025006	Normal	2/18/10	16:55	D2	00020514.Anl	1.81	0.64	0.92		1.07	0.20	0.11		0.14	0.17	0.26		0.55	0.32	0.76														1.62	0.29	0.03	1.12	0.23	0.04
0025SO00809	25	8 to 9	12/8/2009	15:47	025008	Normal	2/11/10	13:30	D2	00020424.Anl	3.02	0.72	0.71		0.89	0.17	0.15		0.27	n/a	0.27		1.59	0.73	0.89														1.71	0.31	0.07	0.95	0.22	0.06
0025SO00911	25	10 to 11	12/8/2009	15:48	025009	Normal	2/18/10	16:22	D2	00020513.Anl	3.04	0.89	0.89		1.00	0.19	0.16		0.31	n/a	0.31		1.90	0.52	0.54														1.81	0.32	0.06	1.06	0.23	0.07
0026SO10006	26	5 to 6	4/9/2010	---	---	Bounding	---	---	---	---																	2.34	0.79	0.76	0.88	**0.15**	0.13	0.24	n/a	0.24	1.24	0.37	0.59						
0026SO00813	26	12 to 13	12/5/2009	13:17	026008	Normal	2/16/10	12:04	D2	00020481.Anl	2.22	0.79	0.83		0.84	0.16	0.16		0.26	n/a	0.26		1.48	0.62	0.76														1.46	0.27	0.06	0.64	0.17	0.06
0026SO00914	26	13 to 14	12/5/2009	13:18	026009	Normal	2/11/10	12:40	D2	00020423.Anl	3.34	0.77	0.77		0.95	0.19	0.16		0.24	n/a	0.24		1.26	0.40	0.90														1.90	0.33	0.07	1.03	0.23	0.05
0026SO01015	26	14 to 15	12/5/2009	13:19	026010	Normal	2/11/10	20:25	D2	00020431.Anl	3.31	0.92	0.91		0.94	0.16	0.19		0.21	n/a	0.21		1.75	0.39	0.88														2.00	0.34	0.07	1.00	0.23	0.08
0027SO10007	27	6 to 7	4/9/2010	---	---	Bounding	---	---	---	---																	2.49	0.90	0.81	0.77	0.13	0.11	0.11	0.15	0.25	1.01	0.52	0.81						
0027SO00813	27	12 to 13	12/8/2009	10:07	027008	Normal	2/6/10	15:20	D1	00010452.Anl	2.83	0.62	0.78		1.15	0.19	0.16		0.26	n/a	0.26		0.61	n/a	0.61														1.77	0.28	0.02	0.81	0.17	0.02
0027SO00914	27	13 to 14	12/8/2009	10:08	027009	Normal	2/6/10	10:29	D1	00010446.Anl	4.10	0.91	0.88		1.12	0.21	0.18		0.25	n/a	0.25		0.53	n/a	0.53														1.88	0.29	0.02	0.98	0.19	0.04
0027SO01015	27	14 to 15	12/8/2009	10:09	027010	Normal	2/8/10	13:40	D2	00020404.Anl	3.44	0.86	0.83		0.97	0.21	0.17		0.28	n/a	0.28		1.26	0.33	0.85														1.83	0.32	0.03	0.87	0.20	0.04
0028SO00505	28	4 to 5	12/5/2009	8:44	028005	Normal	3/2/10	10:29	D1	00010495.Anl	3.07	0.72	0.73		1.23	0.19	0.13		0.13	0.15	0.24		0.56	0.29	0.66														1.85	0.29	0.04	1.22	0.22	0.04
0028SO00505	28	4 to 5	12/5/2009	8:44	028012	Dup	2/13/10	9:20	D2	00020449.Anl	2.90	0.98	1.02		1.18	0.19	0.20		0.33	n/a	0.33		1.36	0.46	0.75																			
0028SO00913	28	12 to 13	12/5/2009	8:48	028009	Normal	2/16/10	12:30	D2	00020482.Anl	3.42	0.93	0.94		1.01	0.17	0.14		0.22	n/a	0.22		2.04	0.50	1.03														2.00	0.34	0.06	1.19	0.25	0.06
0028SO01014	28	13 to 14	12/5/2009	8:49	028010	Normal	2/8/10	15:02	D1	00010458.Anl	2.79	0.71	0.75		1.08	0.18	0.11		0.27	n/a	0.27		0.74	n/a	0.74														1.73	0.30	0.05	0.88	0.20	0.03
0029SO10006	29	5 to 6	4/9/2010	---	---	Bounding	---	---	---	---																	2.93	0.85	0.77	1.01	0.17	0.11	0.14	0.14	0.23	1.08	0.32	0.48						
0029SO00914	29	13 to 14	12/4/2009	15:38	029009	Normal	2/6/10	14:24	D1	00010451.Anl	3.09	0.82	0.79		1.00	0.17	0.15		0.23	n/a	0.23		1.47	0.40	0.94														1.43	0.28	0.06	0.81	0.20	0.05
0029SO00813	29	12 to 13	12/4/2009	15:37	029008	Normal	2/16/10	13:31	D2	00020483.Anl	2.20	0.70	0.73		0.73	0.17	0.11		0.21	n/a	0.21		1.18	0.52	0.80														1.30	0.24	0.02	0.97	0.20	0.02
0029SO01117	29	16 to 17	12/4/2009	15:40	029011	Normal	2/6/10	13:37	D1	00010450.Anl	3.03	0.65	0.82		1.23	0.21	0.13		0.20	n/a	0.20		1.75	0.39	0.93														1.86	0.32	0.08	1.09	0.23	0.04
0030SO10003	30	2 to 3	4/9/2010	---	---	Bounding	---	---	---	---																	2.38	0.63	0.65	0.95	0.17	0.14	0.09	0.15	0.24	0.49	0.24	0.61						
0030SO00909	30	8 to 9	12/7/2009	14:08	030009	Normal	2/16/10	14:57	D2	00020486.Anl	2.16	0.69	0.75		0.76	0.13	0.15		0.23	n/a	0.23		1.41	0.34	0.65														1.50	0.28	0.06	0.79	0.20	0.05
0030SO01010	30	9 to 10	12/7/2009	14:09	030010	Normal	2/6/10	11:11	D1	00010447.Anl	2.77	0.75	0.73		0.77	0.16	0.14		0.24	n/a	0.24		0.43	n/a	0.43														1.58	0.29	0.06	0.74	0.19	0.03
0030SO01113	30	12 to 13	12/7/2009	14:10	030011	Normal	2/11/10	18:58	D2	00020429.Anl	2.63	0.76	0.81		0.98	0.22	0.17		0.26	n/a	0.26		1.46	0.38	0.99														1.50	0.29	0.06	0.97	0.22	0.06
0031SO10007	31	6 to 7	4/9/2010	---	---	Bounding	---	---	---	---																	3.14	0.97	0.82	0.94	0.17	0.08	0.07	0.15	0.25	1.29	0.47	0.50						
0031SO00912	31	11 to 12	12/7/2009	16:08	031009	Normal	2/5/10	16:05	D1	00010443.Anl	2.54	0.79	0.78		0.98	0.17	0.15		0.24	n/a	0.24		0.70	n/a	0.70														1.29	0.22	0.05	0.89	0.18	0.04
0031SO01013	31	12 to 13	12/7/2009	16:09	031010	Normal	2/9/10	14:53	D2	00020420.Anl	3.26	0.95	0.94		1.19	0.20	0.09		0.26	n/a	0.26		1.68	0.42	0.99														1.99	0.34	0.03	1.04	0.23	0.05
0031SO01114	31	13 to 14	12/7/2009	16:10	031011	Normal	2/11/10	18:57	D1	00010479.Anl	3.85	0.93	0.95		0.48	n/a	0.48		0.28	n/a	0.28		2.10	0.48	0.93														2.29	0.38	0.05	0.82	0.21	0.05
0032SO10005	32	4 to 5	4/9/2010	---	---	Bounding	---	---	---	---																	3.78	0.99	0.86	1.13	0.22	0.13	0.31	n/a	0.31	1.11	0.59	0.93						
0032SO00910	32	9 to 10	12/7/2009	12:53	032009	Normal	2/13/10	15:54	D2	00020456.Anl	2.10	0.63	0.67		0.87	0.15	0.11		0.22	n/a	0.22		1.08	0.52	0.80														1.85	0.33	0.06	0.77	0.20	0.06
0032SO00910	32	9 to 10	12/7/2009	12:53	032014	Dup	2/12/10	14:12	D2	00020436.Anl	2.69	0.64	0.62		0.81	0.14	0.11		0.15	0.17	0.26		0.91	0.38	0.57														1.85	0.33	0.06	0.77	0.20	0.06
0032SO01014	32	13 to 14	12/7/2009	12:54	032010	Normal	2/12/10	19:08	D2	00020445.Anl	2.44	0.79	0.79		0.82	0.15	0.14		0.24	n/a	0.24		1.69	0.43	0.85														1.32	0.26	0.03	0.85	0.20	0.03
0032SO01115	32	14 to 15	12/7/2009	12:55	032011	Normal	2/16/10	12:03	D2	00020484.Anl	1.34	0.59	0.89		0.73	0.16	0.17		0.23	n/a	0.23		1.52	0.44	0.84		3.26	0.82	0.71	0.92	0.16	0.12	0.24	n/a	0.24	1.91	0.52	0.50						
0033SO00606	33	5 to 6	11/24/2009	17:02	033006	Normal	2/5/10	10:05	D2	00020384.Anl	2.54	0.72	0.73		0.79	0.14	0.17		0.24	n/a	0.24		1.48	0.37	0.84														1.73	0.32	0.06	1.01	0.24	0.07
0033SO00606	33	5 to 6	11/24/2009	17:02	033013	Dup	2/4/10	18:40	D1	00010432.Anl	2.67	0.69	0.71		1.00	0.20	0.14		0.19	n/a	0.19		0.58	n/a	0.58																			
0033SO00912	33	11 to 12	11/24/2009	17:35	033009	Normal	2/5/10	9:01	D1	00010434.Anl	2.54	0.82	0.85		0.93	0.16	0.14		0.22	n/a	0.22		0.57	n/a	0.57														1.44	0.25	0.05	0.87	0.18	0.04
0033SO01013	33	12 to 13	11/24/2009	17:38	033010	Normal	2/5/10	12:42	D1	00010441.Anl	2.84	0.74	0.76		0.98	0.17	0.10		0.28	n/a	0.28		1.79	0.44	0.85														1.54	0.30	0.07	0.76	0.20	0.06
0034SO00303	34	2 to 3	11/24/2009	15:42	034003	Normal	2/25/10	15:19	D2	00020569.Anl	2.81	0.80	0.82		0.86	0.15	0.17		0.25	n/a	0.25		1.42	0.73	0.90		3.04	0.96	0.84	0.89	0.17	0.10	0.27	n/a	0.27	1.15	0.52	0.81						
0034SO01014	34	13 to 14	11/24/2009	15:49	034010	Normal	2/5/10	9:05	D2	00020382.Anl	4.11	0.93	0.88		1.11	0.20	0.14		0.23	n/a	0.23		0.66	n/a	0.66														1.67	0.30	0.03	1.00	0.23	0.06
0034SO01115	34	14 to 15	11/24/2009	15:50	034011	Normal	2/4/10	17:24	D1	00010431.Anl	3.32	0.86	0.84		0.85	0.16	0.16		0.26	n/a	0.26		0.59	n/a	0.59														1.92	0.33	0.06	1.09	0.24	0.06
0035SO10003	35	2 to 3	4/9/2010	---	---	Bounding	---	---	---	---																	2.78	0.79	0.74	1.02	0.16	0.14	0.25	n/a	0.25	1.40	0.38	0.48						
0035SO00912	35	11 to 12	12/1/2009	10:32	035009	Normal	2/4/10	18:42	D2	00020381.Anl	2.45	0.78	0.81		0.75	0.14	0.12		0.22	n/a	0.22		1.52	0.45	0.92														1.33	0.27	0.05	0.86	0.21	0.05
0035SO01014	35	13 to 14	12/1/2009	10:37	035010	Normal	2/5/10	11:37	D1	00010439.Anl	3.61	0.93	0.92		1.30	0.25	0.16		0.24	n/a	0.24		2.33	0.50	0.97														1.65	0.27	0.04	1.14	0.21	0.04

Table 9-1
Radionuclides Analytical Results - Soil Samples

Sample Information											On-Site Gamma Spectroscopy Results (gross activity)																Off-Site TestAmerica Analytical Results (gross activity)																	
Sample ID	Boring/ Location No.	Depth Range (ft)	Collection Date	Collection Time	Tracking Number	Sample Type	Date Counted	Time Counted	Detector (D1 or D2)	Spectrum Name	Ra-226 [pCi/g]				Th-232 (Ac-228 - γ Spec) [pCi/g]				U-235 [pCi/g]				U-238 (Th-234 - γ Spec) [pCi/g]				Ra-226 [pCi/g]			Th-232 (Ac-228 - γ Spec) [pCi/g]			U-235 [pCi/g]			U-238 (Th-234 - γ Spec) [pCi/g]			Th-230 (α Spec) [pCi/g]			Th-232 (α Spec) [pCi/g]		
											Conc.	±2σ	MDC	Qualifiers	Conc.	±2σ	MDC	Qualifiers	Conc.	±2σ	MDC	Qualifiers	Conc.	±2σ	MDC	Qualifiers	Conc.	±2σ	MDC	Conc.	±2σ	MDC	Conc.	±2σ	MDC	Conc.	±2σ	MDC	Conc.	±2σ	MDC	Conc.	±2σ	MDC
0035SO01115	35	14 to 15	12/1/2009	10:40	035011	Normal	2/25/10	16:02	D2	00020570.Anl	2.60	0.64	0.82		0.91	0.18	0.17		0.20	n/a	0.20		1.50	0.41	0.83														1.94	0.34	0.07	0.82	0.21	0.06
0035SO01115	35	14 to 15	12/1/2009	10:40	035013	Dup	2/5/10	9:36	D2	00020383.Anl	3.33	1.06	1.03		1.01	0.18	0.08		0.29	n/a	0.29		1.55	0.84	1.02																			
0036SO10005	36	4 to 5	4/9/2010	---	---	Bounding	---	---	---	---																	2.39	0.68	0.67	0.75	0.13	0.18	0.22	n/a	0.22	0.64	n/a	0.64						
0036SO00915	36	14 to 15	11/23/2009	15:45	036009	Normal	2/15/10	15:28	D1	00010177.Anl	3.27	0.58	0.52		0.95	0.13	0.10		0.21	0.11	0.13		1.68	0.29	0.60														2.19	0.37	0.06	0.96	0.23	0.05
0036SO00915	36	14 to 15	11/23/2009	15:45	036012	Dup	2/15/10	15:33	D2	00020137.Anl	3.08	0.58	0.57		1.00	0.15	0.12		0.25	0.14	0.17		2.07	0.40	0.78																			
0036SO01016	36	15 to 16	11/23/2009	15:55	036010	Normal	2/16/10	9:28	D1	00010180.Anl	2.65	0.47	0.46	Jcc	0.92	0.13	0.09	Jcc	0.11	n/a	0.11	Jcc	1.73	0.30	0.56	Jcc													1.47	0.28	0.05	0.85	0.21	0.05
0036SO01117	36	16 to 17	11/23/2009	16:00	036011	Normal	2/19/10	14:05	D2	00020519.Anl	3.36	0.98	0.98		0.89	0.15	0.13		0.31	n/a	0.31		0.64	0.30	0.64														1.90	0.33	0.06	0.83	0.20	0.03
0037SO10004	37	3 to 4	4/9/2010	---	---	Bounding	---	---	---	---																	3.00	0.83	0.78	1.38	0.27	0.16	0.27	n/a	0.27	1.89	0.57	0.56						
0037SO00909	37	8 to 9	11/23/2009	14:18	037009	Normal	2/12/10	15:59	D2	00020132.Anl	2.78	0.57	0.54		0.78	0.11	0.11		0.21	0.12	0.14		1.51	0.29	0.56														2.10	0.36	0.07	1.02	0.23	0.06
0037SO01010	37	9 to 10	11/23/2009	14:19	037010	Normal	2/15/10	17:13	D1	00010178.Anl	3.32	0.61	0.56		1.12	0.12	0.08		0.14	n/a	0.14		1.84	0.31	0.57														1.98	0.30	0.07	1.01	0.19	0.03
0037SO01112	37	11 to 12	11/23/2009	14:20	037011	Normal	2/3/10	18:55	D2	00020375.Anl	3.39	0.83	0.79		0.93	0.17	0.14		0.23	n/a	0.23		1.74	0.45	0.91														1.33	0.27	0.03	0.96	0.22	0.03
0038SO00303	38	2 to 3	11/23/2009	11:22	038003	Normal	12/8/09	19:14	D1	00010168.Anl	3.00	0.53	0.49		1.13	0.15	0.11		0.12	n/a	0.12		1.29	0.24	0.46		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.01	0.38	0.13	1.01	0.26	0.09
0038SO00303	38	2 to 3	11/23/2009	11:22	038012	Dup	12/8/09	19:16	D2	00020128.Anl	3.00	0.52	0.48	Jcc	1.16	0.15	0.11	Jcc	0.17	n/a	0.17	Jcc	1.68	0.29	0.52	Jcc	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.88	0.37	0.11	1.26	0.29	0.08
0038SO00910	38	9 to 10	11/23/2009	11:28	038009	Normal	12/9/09	18:19	D1	00010170.Anl	2.71	0.52	0.48		0.91	0.12	0.10		0.14	n/a	0.14		1.37	0.25	0.51														1.97	0.35	0.05	0.91	0.22	0.05
0038SO01012	38	11 to 12	11/23/2009	11:29	038010	Normal	12/11/09	13:35	D1	00010172.Anl	2.56	0.42	0.41		0.82	0.10	0.09		0.12	n/a	0.12		1.37	0.38	0.48														1.68	0.30	0.05	1.08	0.23	0.03
0039SO00303	39	2 to 3	12/15/2009	13:42	039003	Normal	1/26/10	10:14	D1	00010348.Anl	3.19	0.95	0.94		1.32	0.22	0.15		0.28	n/a	0.28		1.72	0.43	0.91														2.05	0.35	0.06	1.13	0.25	0.07
0039SO00404	39	3 to 4	12/15/2009	13:43	039004	Normal	3/9/10	13:35	D1	00010515.Anl	3.26	0.84	0.86		1.08	0.20	0.13		0.21	n/a	0.21		1.26	0.42	0.63														1.98	0.36	0.08	1.05	0.25	0.06
0039SO00606	39	5 to 6	12/15/2009	13:45	039006	Normal	1/26/10	11:17	D2	00020291.Anl	2.52	0.77	0.79		0.92	0.16	0.13		0.29	n/a	0.29		1.72	0.74	0.88														1.95	0.34	0.07	1.10	0.24	0.06
0039SO00606	39	5 to 6	12/15/2009	13:45	039011	Dup	1/26/10	10:47	D2	00020290.Anl	2.89	0.69	0.69		0.97	0.19	0.09		0.28	n/a	0.24		1.48	0.67	1.04																			
0040SO10001	40	0 to 1	4/9/2010	---	---	Bounding	---	---	---	---																	3.90	1.10	1.00	1.04	0.18	0.14	0.33	n/a	0.33	2.25	0.56	0.69						
0040SO00913	40	12 to 13	12/2/2009	9:52	040009	Normal	2/13/10	18:07	D2	00020460.Anl	3.15	0.89	0.90		0.86	0.17	0.18		0.28	n/a	0.28		1.72	0.77	0.95														1.66	0.30	0.05	1.01	0.22	0.04
0040SO00913	40	12 to 13	12/2/2009	9:52	040013	Dup	2/13/10	17:40	D2	00020459.Anl	3.00	0.85	0.89		0.93	0.17	0.16		0.28	n/a	0.28		1.47	0.42	0.88																			
0040SO01014	40	13 to 14	12/2/2009	10:00	040010	Normal	2/16/10	14:27	D2	00020485.Anl	2.97	0.86	0.88		1.03	0.19	0.13		0.27	n/a	0.27		0.97	0.37	0.93														1.84	0.32	0.06	1.08	0.24	0.03
0040SO01115	40	14 to 15	12/2/2009	10:05	040011	Normal	2/15/10	15:56	D2	00020474.Anl	3.91	0.90	0.83		0.79	0.16	0.12		0.23	n/a	0.23		1.45	0.39	0.61														1.94	0.34	0.06	0.89	0.21	0.05
0041SO00303	41	2 to 3	12/16/2009	9:52	041003	Normal	2/15/10	9:11	D2	00020462.Anl	3.51	0.97	0.90		0.95	0.18	0.12		0.19	n/a	0.19		1.15	0.39	0.88														2.01	0.34	0.03	0.96	0.22	0.03
0041SO00303	41	2 to 3	12/16/2009	9:52	041011	Dup	2/16/10	17:29	D2	00020491.Anl	2.84	0.74	0.74		1.03	0.20	0.11		0.27	n/a	0.27		1.50	0.42	0.79																			
0041SO00404	41	3 to 4	12/16/2009	9:53	041004	Normal	2/15/10	9:40	D2	00020463.Anl	2.81	0.96	0.99		1.08	0.16	0.15		0.31	n/a	0.31		1.41	0.42	0.61														2.17	0.36	0.05	1.23	0.26	0.03
0041SO00505	41	4 to 5	12/16/2009	9:54	041005	Normal	2/13/10	14:08	D2	00020453.Anl	2.30	0.76	0.79		0.90	0.14	0.11		0.30	n/a	0.30		1.03	0.37	0.66														1.93	0.33	0.05	1.08	0.24	0.05
0042SO00707	42	6 to 7	12/1/2009	15:40	042007	Normal	2/19/10	14:37	D2	00020520.Anl	2.34	0.74	0.80		0.85	0.14	0.08		0.13	0.17	0.27		0.85	0.42	0.64														1.55	0.28	0.05	0.88	0.20	0.05
0042SO00808	42	7 to 8	12/1/2009	15:45	042008	Normal	2/4/10	17:27	D2	00020380.Anl	2.23	0.90	0.95		0.92	0.17	0.12		0.24	n/a	0.24		1.55	0.47	0.90														1.70	0.31	0.05	1.00	0.23	0.03
0042SO00912	42	11 to 12	12/1/2009	16:00	042009	Normal	2/6/10	11:45	D2	00020397.Anl	3.32	0.71	0.66		0.90	0.16	0.08		0.28	n/a	0.28		0.59	n/a	0.59														1.43	0.28	0.07	0.92	0.22	0.05
0043SO00606	43	5 to 6	11/23/2009	15:40	043006	Normal	12/13/09	14:10	D1	00010174.Anl	2.65	0.45	0.42		0.89	0.11	0.07	Jcc	0.14	n/a	0.14	Jcc	1.16	0.38	0.48	Jcc													1.74	0.33	0.06	0.94	0.23	0.06
0043SO00707	43	6 to 7	11/23/2009	15:41	043007	Normal	12/13/09	14:12	D2	00020133.Anl	2.65	0.54	0.52	Jcc	1.03	0.18	0.13	Jcc	0.15	n/a	0.15	Jcc	1.58	0.52	0.62	Jcc													1.58	0.29	0.06	0.90	0.21	0.06
0043SO00707	43	6 to 7	11/23/2009	15:41	043012	Dup	12/13/09	15:43	D1	00010175.Anl	2.31	0.48	0.47	Jcc	0.94	0.12	0.09		0.12	n/a	0.12		1.37	0.26	0.53																			
0043SO01014	43	13 to 14	11/23/2009	15:44	043010	Normal	12/13/09	15:44	D2	00020134.Anl	3.82	0.68	0.63		1.32	0.20	0.14		0.20	n/a	0.20		2.10	0.35	0.74														2.18	0.36	0.03	1.14	0.24	0.05
0044SO00202	44	1 to 2	11/23/2009	11:27	044002	Normal	12/16/09	11:18	D1	00010181.Anl	4.48	0.60	0.48	Jcc	0.90	0.12	0.09	Jcc	0.16	n/a	0.16	Jcc	1.84	0.32	0.60	Jcc													2.18	0.35	0.06	0.75	0.18	0.05
0044SO00303	44	2 to 3	11/23/2009	11:30	044003	Normal	12/15/09	17:16	D2	00020138.Anl	**12.99**	1.42	0.89		0.98	0.17	0.14		0.44	0.22	0.25		4.67	0.78	0.91														5.43	0.65	0.04	0.94	0.21	0.03
0044SO10004	44	3 to 4	4/9/2010	---	---	Bounding	---	---	---	---																	2.51	0.74	0.69	0.83	0.13	0.08	0.24	n/a	0.24	0.59	0.28	0.46						
0044SO01017	44	16 to 17	11/23/2009	12:38	044010	Normal	12/11/09	12:20	D1	00010171.Anl	2.36	0.40	0.39		0.82	0.11	0.10		0.11	n/a	0.11		1.46	0.28	0.53														1.96	0.35	0.05	0.79	0.21	0.07
0044SO01017	44	16 to 17	11/23/2009	12:38	044011	Dup	12/12/09	15:30	D1	00010173.Anl	2.70	0.49	0.46		0.79	0.12	0.09		0.12	n/a	0.12		1.41	0.26	0.53																			
0045SO00404	45	3 to 4	11/23/2009	9:26	045004	Normal	12/8/09	13:09	D1	00010167.Anl	2.64	0.50	0.45	Jcc	0.92	0.12	0.08	Jcc	0.11	n/a	0.11	Jcc	1.34	0.26	0.51	Jcc	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.51	0.29	0.05	0.67	0.18	0.03
0045SO00505	45	4 to 5	11/23/2009	9:28	045005	Normal	12/8/09	13:14	D2	00020127.Anl	**5.79**	0.86	0.67		0.92	0.11	0.09		0.23	0.13	0.16		3.48	0.44	0.73		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.72	0.44	0.08	0.99	0.24	0.07
0045SO10006	45	5 to 6	4/9/2010	---	---	Bounding	---	---	---	---																	**7.90**	1.40	1.00	0.36	0.10	0.17	0.31	0.18	0.29	4.42	0.64	0.59						
0045SO01015	45	14 to 15	11/23/2009	10:27	045010	Normal	12/16/09	11:21	D2	00020140.Anl	3.15	0.55	0.52		0.92	0.14	0.12		0.18	n/a	0.18		1.75	0.26	0.61														1.54	0.28	0.06	0.83	0.20	0.06
0046SO10004	46	3 to 4	4/9/2010	---	---	Bounding	---	---	---	---																	2.24	0.74	0.71	0.95	0.16	0.11	0.24	n/a	0.24	1.19	0.36	0.47						
0046SO00911	46	10 to 11	11/23/2009	9:54	046009	Normal	12/14/09	11:00	D1	00010176.Anl	2.36	0.51	0.49		0.96	0.12	0.08		0.13	n/a	0.13		1.28	0.23	0.44														1.59	0.28	0.03	0.83	0.19	0.03
0046SO01012	46	11 to 12	11/23/2009	9:55	046010	Normal	3/9/10	18:23	D2	00020593.Anl	2.77	0.88	0.93	Jcc	1.03	0.21	0.10	Jcc	0.34	n/a	0.34	Jcc	0.93	0.53	0.83	Jcc													1.46	0.28	0.07	1.03	0.23	0.06
0046SO01113	46	12 to 13	11/23/2009	9:56	046011	Normal	12/14/09	11:23	D2	00020135.Anl	3.10	0.52	0.49		0.86	0.10	0.11		0.17	n/a	0.17		1.71	0.30	0.58														1.40	0.27	0.06	0.97	0.22	0.05
0047SO00101	47	0 to 1	11/21/2009	11:30	047001	Normal	12/3/09	18:04	D2	00020120.Anl	3.32	0.59	0.51		0.89	0.11	0.08		0.14	n/a	0.14		1.58	0.43	0.53		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.88	0.38	0.07	0.97	0.26	0.08
0047SO00202	47	1 to 2	11/21/2009	11:31	047002	Normal	2/25/10	16:43	D2	00020571.Anl	2.90	0.72	0.73		1.06	0.20	0.17		0.20	n/a	0.20		1.64	0.45	0.95														1.60	0.29	0.05	0.99	0.22	0.05
0047SO01011	47	10 to 11	11/21/2009	12:04	047010	Normal	3/9/10	14:07	D2	00020586.Anl	2.99	0.71	0.71	Jcc	0.70	0.12	0.10	Jcc	0.28	n/a	0.28	Jcc	0.98	0.35	0.51	Jcc													1.62	0.30	0.05	0.54	0.16	0.05
0048SO00101	48	0 to 1	11/21/2009	14:25	048002	Normal	12/4/09	17:56	D1	00010160.Anl	4.15	0.60	0.49		0.75	0.10	0.10		0.22	0.11	0.13		2.08	0.29	0.53		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	3.02	0.46	0.06	1.02	0.24	0.07
0048SO00101	48	0 to 1	11/21/2009	14:25	048012	Dup	12/4/09	17:59	D2	00020122.Anl	3.60	0.48	0.47		0.75	0.12	0.09		0.18	0.10	0.13		1.75	0.27	0.61		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.48	0.40	0.05	1.05	0.24	0.03
0048SO00505	48	4 to 5	11/21/2009	14:29	048006	Normal	12/5/09	13:00	D2	00020123.Anl	3.36	0.62	0.56		1.03	0.10	0.09		0.14	n/a	0.14		1.65	0.59	0.69		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.59	0.34	0.07	1.16	0.28	0.07
0048SO00808	48	7 to 8	11/21/2009	14:47	048009	Normal	12/4/09	16:26	D1	00010159.Anl	2.15	0.49	0.45		0.73	0.09	0.07		0.12	n/a	0.12		1.17	0.22	0.47		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.82	0.32	0.07	0.77	0.19	0.03
0049SO00707	49	6 to 7	11/21/2009	9:25	049007	Normal	12/1/09	18:32	D2	00020116.Anl	2.56	0.53	0.50		0.93	0.14	0.10		0.15	n/a	0.15		1.41	0.27	0.51		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.79	0.33	0.05	0.83	0.21	0.06
0049SO00910	49	9 to 10	11/21/2009	9:27	049009	Normal	12/2/09	14:18	D1	00010152.Anl	2.52	0.42	0.39		0.72	0.10	0.07		0.11	n/a	0.11		1.49	0.24	0.45		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.64	0.32	0.07	0.65	0.19	0.07
0049SO01012	49	11 to 12	11/21/2009	9:28	049010	Normal	12/2/09	17:05	D2	00020117.Anl	2.42	0.47	0.44		0.63	0.10	0.09		0.14	n/a	0.14		1.64	0.28	0.51		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.77	0.32	0.05	0.46	0.15	0.05
0050SO00202	50	1 to 2	11/20/2009	14:36	050002	Normal	11/24/09	15:36	D2	00020109.Anl	4.14	0.65	0.59		1.39	0.18	0.13		0.12	0.14	0.23		2.32	0.68	0.79		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.11	0.39	0.09	0.81	0.23	0.08
0050SO00303	50	2 to 3	11/20/2009	14:37	050003	Normal	11/25/09	9:43	D2	00020112.Anl	3.69	0.65	0.57		0.98	0.12	0.08		0.16	n/a	0.16		1.83	0.54	0.63		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.20	0.38	0.08	1.02	0.24	0.06
0050SO00404	50	3 to 4	11/20/2009	14:38	050004	Normal	12/2/09	18:18	D1	00010154.Anl	2.82	0.50	0.46		1.02	0.13	0.08		0.12	n/a	0.12		1.56	0.42	0.50		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.82	0.38	0.11	1.26	0.30	0.09
0050SO00404	50	3 to 4	11/20/2009	14:38	050011	Dup	12/2/09	17:02	D1	00010153.Anl	3.02	0.49	0.44		1.00	0.13	0.09		0.15	n/a	0.15		1.69	0.28	0.52														1.81	0.31	0.06	0.96	0.21	0.03
0051SO10003	51	2 to 3	4/9/2010	---	---	Bounding	---	---	---	---																	2.43	0.66	0.68	1.02	0.21	0.15	0.27	n/a	0.27	0.72	0.36	0.72						
0051SO00808	51	7 to 8	12/11/2009	12:47	051008	Normal	3/9/10	12:00	D1	00010514.Anl	2.19	0.62	0.68		0.93	0.18	0.14		0.12	0.15	0.24		0.58	0.28	0.70														1.64	0.31	0.06	0.93	0.22	0.03
0051SO00914	51	13 to 14	12/11/2009	12:48	051009	Normal	2/5/10	11:41	D2	00020387.Anl	2.79	0.86	0.82		0.80	0.16	0.13		0.22	n/a	0.22		1.37	0.36	0.76														1.30	0.26	0.06	0.73	0.19	0.06
0051SO01118	51	17 to 18	12/11/2009	12:50	051011	Normal	2/5/10	10:37	D2	00020385.Anl	3.74	1.15	1.08		1.10	0.20	0.15		0.28	n/a	0.28		1.96	0.40	1.11														1.91	0.34	0.08	1.22	0.26	0.05
0052SO10007	52	6 to 7	4/9/2010	---	---	Bounding	---	---	---	---																	2.53	0.91	0.83	0.71	0.16	0.13	0.12	0.16	0.27	0.98	0.48	0.75						
0052SO00913	52	12 to 13	12/11/2009	14:18	052009	Normal	1/12/10	15:55	D1	00010224.Anl	2.52	0.43	0.41		0.89	0.12	0.09		0.13	n/a	0.13		1.43	0.27	0.51														1.46	0.25	0.05	0.88	0.18	0.02
0052SO00913	52	12 to 13	12/11/2009	14:18	052014	Dup	1/19/10	21:29	D1	00010255.Anl	2.72	0.55	0.50		0.93	0.09	0.08		0.11	n/a	0.11		1.52	0.27	0.51																			
0052SO01015	52	14 to 15	12/11/2009	14:19	052010	Normal	1/16/10	15:12	D2	00020187.Anl	2.26	0.48	0.48		0.84	0.13	0.09		0.11	n/a	0.11		1.35	0.25	0.51														1.34	0.27	0.07	0.97	0.22	0.06
0052SO01117	52	16 to 17	12/11/2009	14:20	052011	Normal	1/16/10	16:31	D2	00020188.Anl	3.00	0.53	0.51		0.89	0.13	0.11		0.19	n/a	0.19		2.04	0.33	0.64														1.86	0.33	0.07	1.05	0.24	0.06
0052SO01218	52	17 to 18	12/11/2009	14:21	052012	Normal	1/16/10	18:00	D2	00020189.Anl	3.38	0.70	0.64		1.03	0.15	0.10		0.15	n/a	0.15		1.59	0.26	0.57														2.07	0.32	0.06	1.06	0.21	0.04
0053SO10006	53	5 to 6	4/9/2010	---	---	Bounding	---	---	---	---																	2.78	0.65	0.60	0.81	0.14	0.13	0.09	0.14	0.23	1.08	0.35	0.48						
0053SO00714	53	13 to 14	12/11/2009	12:16	053007	Normal	2/3/10	17:41	D2	00020373.Anl	2.91	0.78	0.83		0.92	0.17	0.20		0.29	n/a	0.29		1.73	0.35	0.84														1.89	0.32	0.07	0.83	0.20	0.06
0053SO00818	53	17 to 18	12/11/2009	12:17	053008	Normal	1/14/10	15:51	D1	00010231.Anl	3.56	0.62	0.60		0.82	0.12	0.10		0.16	n/a	0.16		1.87	0.27	0.52														1.62	0.30	0.08	0.66	0.18	0.08
0053SO00919	53	18 to 19	12/11/2009	12:18	053009	Normal	1/15/10	12:59	D2	00020182.Anl	2.31	0.50	0.45		0.50	0.08	0.07		0.17	0.09	0.11		1.25	0.21	0.40														1.55	0.30	0.08	0.58	0.17	0.06
0054SO00606	54	5 to 6	11/24/2009	12:35	054006	Normal	12/19/09	12:29	D1	00010185.Anl	2.46	0.56	0.54		0.97	0.14	0.10		0.14	n/a	0.14		1.27	0.45	0.56														1.52	0.28	0.06	0.70	0.18	0.05
0054SO00606	54	5 to 6	11/24/2009	12:35	054013	Dup	12/19/09	16:01	D2	00020146.Anl	2.48	0.57	0.53		0.66	0.10	0.08		0.15	n/a	0.15		1.10	0.45	0.56																			
0054SO00910	54	9 to 10	11/24/2009	12:38	054009	Normal	12/23/09	10:24	D1	00010190.Anl	2.20	0.54	0.45	Jcc	0.94	0.13	0.09	Jcc	0.16	0.09	0.12	Jcc	1.42	0.26	0.57	Jcc													1.52	0.29	0.07	0.75	0.19	0.08
0054SO01011	54	10 to 11	11/24/2009	12:39	054010	Normal	2/3/10	15:51	D1	00010420.Anl	2.33	0.87	0.86		1.08	0.18	0.09		0.25	n/a	0.25		1.45	0.41	0.79														1.37	0.26	0.06	0.87	0.20	0.05
0055SO00303	55	2 to 3	11/24/2009	14:17	055003	Normal	2/3/10	15:53	D2	00020370.Anl	2.97	0.83	0.84		0.95	0.19	0.13		0.28	n/a	0.28		1.78	0.81	0.93														1.73	0.31	0.07	1.14	0.24	0.07
0055SO00404	55	3 to 4	11/24/2009	14:18	055004	Normal	12/20/09	13:32	D2	00020147.Anl	3.02	0.52	0.51		1.06	0.14	0.09		0.18	n/a	0.18		1.61	0.33	0.61		2.58	0.57	0.54	0.95	0.16	0.11	0.18	n/a	0.18	1.41	0.37	0.38	1.78	0.29	0.02	1.03	0.21	0.04
0055SO00912	55	11 to 12	11/24/2009	14:23	055009	Normal	2/2/10	16:40	D1	00010413.Anl	3.49	0.81	0.80		1.08	0.18	0.10		0.20	n/a	0.20		1.63	0.46	0.92														1.88	0.34	0.06	1.18	0.26	0.06
0056SO00202	56	1 to 2	12/2/2009	13:07	056002	Normal	2/13/10	14:38	D2	00020454.Anl	2.27	0.79	0.82		0.87	0.14	0.15		0.24	n/a	0.24		1.78	0.80	0.92														2.01	0.33	0.07	1.03	0.22	0.05
0056SO00606	56	5 to 6	12/2/2009	13:24	056006	Normal	2/16/10	11:37	D2	00020480.Anl	2.38	0.75	0.74		0.82	0.15	0.14		0.20	n/a	0.20		1.38	0.36	0.75														1.65	0.30	0.03	0.95	0.21	0.04
0056SO00912	56	11 to 12	12/2/2009	13:40	056009	Normal	2/16/10	11:11	D2	00020479.Anl	1.41	0.63	0.96		0.89	0.15	0.15		0.27	n/a	0.27		1.97	0.87	1.00														1.71	0.32	0.06	0.85	0.21	0.08
0057SO00202	57	1 to 2	12/11/2009	15:01	057002	Normal	1/27/10	14:04	D1	00010371.Anl	2.78	0.89	0.89		0.98	0.18	0.12		0.11	n/a	0.11		1.39	0.42	0.92														1.81	0.32	0.06	0.97	0.22	0.03
0057SO00811	57	10 to 11	12/11/2009	15:07	057008	Normal	3/16/10	10:21	D2	00020619.Anl	3.28	0.73	0.73		0.99	0.17	0.17		0.12	0.17	0.27		1.54	0.58	0.89														1.89	0.33	0.06	1.12	0.24	0.06
0057SO00912	57	11 to 12	12/11/2009	15:08	057009	Normal	1/26/10	9:44	D2	00020288.Anl	2.91	0.92	0.92		0.92	0.19	0.12		0.31	n/a	0.31		2.07	0.95	1.11		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.88	0.33	0.06	0.88	0.21	0.05
0058SO10004	58	3 to 4	4/9/2010	---	---	Bounding	---	---	---	---																	1.88	0.74	0.76	0.93	0.16	0.15	0.15	0.13	0.21	1.48	0.34	0.39						
0058SO00810	58	9 to 10	12/14/2009	11:07	058008	Normal	1/11/10	16:31	D2	00020174.Anl	2.91	0.59	0.53		0.94	0.14	0.10		0.15	0.08	0.12		1.54	0.29	0.53		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.71	0.29	0.07	0.88	0.20	0.05
0058SO01013	58	12 to 13	12/14/2009	11:09	058010	Normal	1/14/10	19:11	D2	00020181.Anl	3.34	0.59	0.56		1.09	0.16	0.11		0.20	0.12	0.15		1.57	0.26	0.59														1.98	0.33	0.06	0.92	0.21	0.06
0058SO01114	58	13 to 14	12/14/2009	11:10	058011	Normal	1/16/10	12:37	D1	00010237.Anl	3.79	0.64	0.57		1.12	0.14	0.11		0.17	n/a	0.17		1.91	0.32	0.60														1.94	0.32	0.04	0.99	0.22	0.04
0059SO10007	59	6 to 7	4/9/2010	---	---	Bounding	---	---	---	---																	2.40	0.77	0.72	0.71	0.14	0.13	0.22	n/a	0.22	0.49	0.26	0.62						
0059SO00608	59	7 to 8	12/9/2009	8:50	059006	Normal	3/10/10	10:13	D2	00020596.Anl	2.84	1.00	1.00		1.05	0.19	0.10		0.27	n/a	0.27		1.85	0.59	1.16														1.29	0.26	0.06	1.03	0.22	0.06
0059SO00608	59	7 to 8	12/9/2009	8:50	059010	Dup	3/9/10	16:55	D1	00010520.Anl	2.68	0.91	0.90		0.74	0.14	0.23		0.29	n/a	0.29		0.60	0.29	0.78																			
0059SO00709	59	8 to 9	12/9/2009	8:51	059007	Normal	1/9/10	17:12	D1	00010217.Anl	2.73	0.51	0.48		0.84	0.12	0.09		0.12	n/a	0.12		1.43	0.25	0.51		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.18	0.33	0.02	1.17	0.22	0.04
0059SO00813	59	12 to 13	12/9/2009	8:52	059008	Normal	2/2/10	17:33	D1	00010414.Anl	3.65	0.84	0.82		1.13	0.18	0.17		0.23	n/a	0.23		1.94	0.48	0.98														1.86	0.32	0.03	1.10	0.23	0.03
0060SO00707	60	6 to 7	12/8/2009	14:06	060007	Normal	2/11/10	11:16	D2	00020421.Anl	1.99	0.63	0.69		0.82	0.15	0.16		0.14	0.16	0.25		0.98	0.38	0.58														1.49	0.29	0.07	0.80	0.20	0.06
0060SO00909	60	8 to 9	12/8/2009	14:08	060009	Normal	2/15/10	16:24	D2	00020475.Anl	2.12	0.80	0.84		0.95	0.18	0.11		0.17	n/a	0.17		0.97	0.30	0.68														1.44	0.29	0.07	0.88	0.22	0.06
0060SO01112	60	11 to 12	12/8/2009	14:10	060011	Normal	2/17/10	7:53	D2	00020492.Anl	3.68	0.80	0.79		1.05	0.16	0.15		0.23	n/a	0.23		2.05	0.47	0.88														1.71	0.30	0.04	0.84	0.20	0.04
0061SO00202	61	1 to 2	12/8/2009	9:01	061002	Normal	2/15/10	10:08	D2	00020464.Anl	2.50	0.78	0.85		1.17	0.22	0.15		0.23	n/a	0.23		1.22	0.37	0.82														1.96	0.34	0.07	1.06	0.24	0.06
0061SO00708	61	7 to 8	12/8/2009	9:06	061007	Normal	3/10/10	13:56	D2	00020597.Anl	1.38	0.74	1.15		1.08	0.18	0.21		0.31	n/a	0.31		1.49	0.85	1.11														1.43	0.27	0.06	0.82	0.20	0.06
0061SO00809	61	8 to 9	12/8/2009	9:07	061008	Normal	2/11/10	12:38	D1	00010473.Anl	2.68	0.60	0.72		1.07	0.16	0.12		0.24	n/a	0.24		1.01	0.35	0.84														1.97	0.37	0.04	1.16	0.27	0.04
0062SO00303	62	2 to 3	12/8/2009	8:02	062003	Normal	2/18/10	15:20	D2	00020512.Anl	2.90	0.78	0.79		0.99	0.17	0.18		0.16	0.18	0.28		1.00	0.34	0.55														1.70	0.31	0.07	0.92	0.22	0.08
0062SO00303	62	2 to 3	12/8/2009	8:02	062011	Dup	2/17/10	9:33	D2	00020493.Anl	3.21	0.79	0.81		0.94	0.16	0.15		0.23	n/a	0.23		1.45	0.81	0.98																			
0062SO00810	62	9 to 10	12/8/2009	8:07	062008	Normal	2/15/10	12:00	D2	00020468.Anl	2.37	0.80	0.83		0.96	0.21	0.19		0.28	n/a	0.28		1.05	0.37	0.63														1.32	0.26	0.06	0.84	0.20	0.05
0062SO00914	62	13 to 14	12/8/2009	8:08	062009	Normal	2/8/10	17:08	D2	00020411.Anl	2.79	0.80	0.82		1.20	0.26	0.19		0.28	n/a	0.28		1.76	0.46	0.86														1.69	0.32	0.08	1.06	0.25	0.07
0063SO10006	63	5 to 6	4/9/2010	---	---	Bounding	---	---	---	---																	4.00	1.10	1.00	1.01	0.17	0.10	0.34	n/a	0.34	1.68	0.64	0.97						
0063SO00910	63	9 to 10	11/24/2009	15:18	063009	Normal	2/4/10	13:50	D1	00010429.Anl	2.83	0.74	0.72		0.76	0.11	0.09		0.18	n/a	0.18		1.19	0.35	0.74														1.16	0.35	0.05	0.95	0.22	0.05
0063SO01013	63	12 to 13	11/24/2009	15:30	063010	Normal	2/3/10	13:30	D1	00010418.Anl	2.51	0.63	0.65		0.82	0.17	0.13		0.13	n/a	0.13		1.69	0.72	0.84														1.59	0.29	0.04	0.51	0.15	0.04
0063SO01217	63	16 to 17	11/24/2009	15:45	063012	Normal	2/4/10	13:58	D2	00020378.Anl	2.45	0.58	0.73		0.83	0.14	0.12		0.21	n/a	0.21		1.32	0.40	0.72														1.50	0.28	0.03	0.88	0.20	0.03
0064SO00101	64	0 to 1	12/1/2009	12:00	064001	Normal	2/11/10	19:50	D1	00010480.Anl	3.09	0.73	0.64		0.11	0.10	0.15		0.17	n/a	0.17		1.04	0.32	0.42														1.36	0.27	0.03	0.11	0.07	0.06
0064SO00910	64	9 to 10	12/1/2009	13:32	064009	Normal	2/11/10	15:48	D1	00010476.Anl	4.09	0.91	0.89		0.54	0.19	0.38		0.23	n/a	0.23		1.91	0.47	0.96														1.16	0.25	0.05	0.95	0.22	0.05
0064SO01012	64	11 to 12	12/1/2009	13:47	064010	Normal	2/11/10	11:14	D1	00010471.Anl	3.56	1.00	1.04		1.59	0.31	0.22		0.35	n/a	0.35		1.90	0.55	1.13														1.99	0.34	0.06	1.09	0.24	0.03
0065SO00202	65	1 to 2	11/21/2009	9:03	065002	Normal	12/3/09	11:05	D1	00010155.Anl	4.60	0.63	0.51	Jcc	0.45	0.07	0.08	Jcc	0.24	0.11	0.14	Jcc	3.21	0.55	0.58	Jcc	4.78	0.87	0.79	0.39	0.11	0.12	0.21	0.16	0.25	2.53	0.46	0.52	1.93	0.41	0.09	0.49	0.19	0.08
0065SO00303	65	2 to 3	11/21/2009	9:10	065003	Normal	12/3/09	11:08	D2	00020119.Anl	2.32	0.38	0.44		0.98	0.12	0.12		0.13	n/a	0.13		1.33	0.45	0.56		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.72	0.34	0.07	1.07	0.26	0.07
0065SO00808	65	7 to 8	11/21/2009	9:44	065008	Normal	12/7/09	12:19	D1	00010164.Anl	2.55	0.49	0.47		0.89	0.11	0.07		0.12	n/a	0.12		1.54	0.23	0.45		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.60	0.31	0.05	1.02	0.24	0.06
0065SO00808	65	7 to 8	11/21/2009	9:44	065011	Dup	12/7/09	12:21	D2	00020125.Anl	2.90	0.61	0.57		0.89	0.13	0.11		0.15	n/a	0.15		1.79	0.31	0.58		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.74	0.32	0.08	0.77	0.20	0.06
0066SO00606	66	5 to 6	11/19/2009	14:05	066006	Normal	11/21/09	11:08	D1	00010139.Anl	1.36	0.26	0.32		0.62	0.08	0.08		0.01	n/a	0.01		0.87	0.20	0.41		2.75	0.83	0.86	0.77	0.18	0.16	0.03	0.20	0.34	1.50	0.53	0.78	1.03	0.23	0.09	0.70	0.18	0.06

Table 9-1
Radionuclides Analytical Results - Soil Samples

Sample ID	Boring/ Location No.	Depth Range (ft)	Collection Date	Collection Time	Tracking Number	Sample Type	Date Counted	Time Counted	Detector (D1 or D2)	Spectrum Name	On-Site Gamma Spectroscopy Results (gross activity)																Off-Site TestAmerica Analytical Results (gross activity)																	
											Ra-226 [pCi/g]				Th-232 (Ac-228 - γ Spec) [pCi/g]				U-235 [pCi/g]				U-238 (Th-234 - γ Spec) [pCi/g]				Ra-226 [pCi/g]			Th-232 (Ac-228 - γ Spec) [pCi/g]			U-235 [pCi/g]			U-238 (Th-234 - γ Spec) [pCi/g]			Th-230 (α Spec) [pCi/g]			Th-232 (α Spec) [pCi/g]		
											Conc.	$\pm2\sigma$	MDC	Qualifiers	Conc.	$\pm2\sigma$	MDC	Qualifiers	Conc.	$\pm2\sigma$	MDC	Qualifiers	Conc.	$\pm2\sigma$	MDC	Qualifiers	Conc.	$\pm2\sigma$	MDC	Conc.	$\pm2\sigma$	MDC	Conc.	$\pm2\sigma$	MDC	Conc.	$\pm2\sigma$	MDC	Conc.	$\pm2\sigma$	MDC	Conc.	$\pm2\sigma$	MDC
0066SO00707	66	6 to 7	11/19/2009	14:05	066007	Normal	11/21/09	9:45	D2	00020103.An1	1.76	0.42	0.43		0.68	0.11	0.09		0.13	n/a	0.13		1.12	0.23	0.13		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.28	0.25	0.06	0.57	0.16	0.06
0066SO00808	66	7 to 8	11/19/2009	14:05	066008	Normal	11/21/09	18:08	D1	00010142.An1	1.71	0.38	0.37		0.73	0.10	0.07		0.10	n/a	0.10		0.89	0.31	0.40		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.96	0.23	0.09	0.65	0.18	0.07
0066SO00808	66	7 to 8	11/19/2009	14:05	066011	Dup	11/21/09	18:06	D2	00020105.An1	1.66	0.45	0.47		0.79	0.12	0.09		0.14	n/a	0.14		1.05	0.45	0.54		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.04	0.22	0.50	0.70	0.17	0.06
0067SO10007	67	6 to 7	4/9/2010	---	---	Bounding	---	---	---	---																	2.29	0.69	0.67	0.82	0.14	0.10	0.22	n/a	0.22	0.59	n/a	0.59						
0067SO00812	67	11 to 12	12/9/2009	12:37	067008	Normal	3/10/10	14:22	D2	00020598.An1	3.86	0.99	0.95		1.09	0.23	0.18		0.28	n/a	0.28		1.94	0.58	1.17														2.16	0.37	0.03	1.12	0.25	0.03
0067SO00913	67	12 to 13	12/9/2009	12:38	067009	Normal	1/14/10	16:19	D1	00010230.An1	3.15	0.57	0.51		0.91	0.11	0.09		0.12	n/a	0.12		1.39	0.24	0.55														1.85	0.34	0.05	1.03	0.24	0.03
0067SO01014	67	13 to 14	12/9/2009	12:39	067010	Normal	3/15/10	14:19	D1	00010612.An1	2.91	0.60	0.59		0.83	0.12	0.12		0.12	0.13	0.20		0.49	0.19	0.52														1.95	0.33	0.05	1.05	0.23	0.06
0068SO10007	68	6 to 7	4/9/2010	---	---	Bounding	---	---	---	---																	3.07	83.00	0.79	0.95	0.17	0.16	0.25	n/a	0.25	0.49	0.21	0.69						
0068SO00808	68	7 to 8	12/9/2009	10:57	068008	Normal	1/24/10	14:17	D1	00010311.An1	3.96	0.84	0.79		0.86	0.15	0.11		0.21	n/a	0.21		2.12	0.46	0.89		2.39	0.59	0.61	0.97	0.14	0.11	0.23	n/a	0.23	1.36	0.46	0.54	1.46	0.28	0.08	1.06	0.23	0.05
0068SO00909	68	8 to 9	12/9/2009	10:58	068009	Normal	2/2/10	16:43	D2	00020364.An1	2.67	0.84	0.88		0.98	0.19	0.14		0.26	n/a	0.26		1.67	0.72	0.87														1.66	0.30	0.04	0.95	0.21	0.03
0068SO01012	68	11 to 12	12/9/2009	10:59	068010	Normal	1/11/10	15:00	D1	00010220.An1	2.57	0.48	0.47		0.93	0.15	0.11		0.13	n/a	0.13		1.56	0.24	0.49		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.76	0.28	0.04	1.08	0.21	0.02
0069SO00303	69	2 to 3	12/5/2009	13:57	069003	Normal	3/16/10	11:40	D1	00010619.An1	2.38	0.60	0.62		0.77	0.15	0.15		0.21	n/a	0.21		1.16	0.51	0.64														1.78	0.31	0.03	0.97	0.21	0.03
0069SO00303	69	2 to 3	12/5/2009	13:57	069012	Dup	2/11/10	18:28	D2	00020428.An1	3.37	0.96	0.92		0.98	0.16	0.19		0.29	n/a	0.29		1.45	0.51	0.76														1.78	0.31	0.03	0.97	0.21	0.03
0069SO00910	69	9 to 10	12/5/2009	14:03	069009	Normal	2/11/10	16:15	D1	00010477.An1	2.21	0.74	0.79		1.12	0.20	0.14		0.15	0.17	0.27		0.39	0.23	0.72														1.47	0.30	0.08	0.59	0.18	0.06
0069SO01015	69	14 to 15	12/5/2009	14:04	069010	Normal	2/12/10	19:40	D2	00020446.An1	2.43	0.65	0.87		1.06	0.18	0.05		0.28	n/a	0.28		1.53	0.50	1.04														1.72	0.31	0.03	1.01	0.23	0.05
0070SO10006	70	5 to 6	4/9/2010	---	---	Bounding	---	---	---	---																	3.51	0.81	0.78	0.97	0.17	0.11	0.31	n/a	0.31	1.83	0.56	0.69						
0070SO00808	70	7 to 8	12/5/2009	10:17	070008	Normal	2/2/10	14:07	D1	00010412.An1	2.80	0.70	0.69		0.84	0.18	0.14		0.21	n/a	0.21		1.49	0.42	0.91														1.87	0.34	0.06	1.08	0.24	0.06
0070SO00913	70	12 to 13	12/5/2009	10:18	070009	Normal	2/2/10	10:13	D1	00010408.An1	2.40	0.56	0.70		0.99	0.16	0.15		0.23	n/a	0.23		1.30	0.76	0.93														1.39	0.28	0.07	0.70	0.20	0.09
0070SO01015	70	14 to 15	12/5/2009	10:19	070010	Normal	2/2/10	9:17	D2	00020358.An1	2.80	0.81	0.84		0.83	0.15	0.12		0.29	n/a	0.29		1.40	0.35	0.80														1.81	0.31	0.05	0.80	0.19	0.05
0071SO00505	71	4 to 5	12/2/2009	15:24	071005	Normal	2/2/10	14:12	D2	00020363.An1	3.68	0.99	1.02		0.94	0.20	0.22		0.34	n/a	0.34		1.44	0.46	0.98														3.00	0.45	0.08	0.69	0.19	0.06
0071SO00909	71	8 to 9	12/2/2009	15:28	071009	Normal	2/11/10	14:54	D1	00010475.An1	2.09	0.70	0.75		1.18	0.21	0.14		0.27	n/a	0.27		0.75	n/a	0.75														1.61	0.32	0.07	1.00	0.24	0.06
0071SO01010	71	9 to 10	12/2/2009	15:29	071010	Normal	3/1/10	9:36	D2	00020575.An1	1.24	0.58	0.89		0.95	0.13	0.11		0.17	0.17	0.27		1.87	0.40	0.52														1.51	0.30	0.05	0.94	0.22	0.05
0072SO00505	72	4 to 5	12/3/2009	11:24	072005	Normal	2/6/10	16:29	D2	00020402.An1	**8.93**	1.39	1.09		1.32	0.26	0.16		0.58	0.19	0.27		6.49	0.91	0.15														**41.80**	3.80	0.06	1.19	0.26	0.03
0072SO00707	72	6 to 7	12/3/2009	11:26	072007	Normal	2/11/10	14:56	D2	00020425.An1	**63.96**	6.64	3.86		5.51	0.93	0.77		9.86	1.40	1.24		**42.88**	5.87	5.65														**362.00**	31.00	0.04	3.70	0.50	0.04
0072SO00707	72	6 to 7	12/3/2009	11:26	072012	Dup	2/13/10	18:36	D2	00020461.An1	**62.93**	5.71	2.38		5.60	0.58	0.39		9.84	1.01	0.77		**42.39**	4.04	3.25														**442.00**	37.00	0.05	4.39	0.56	0.06
0072SO10008	72	7 to 8	4/9/2010	---	---	Bounding	---	---	---	---																	3.98	0.92	0.79	0.58	0.14	0.12	0.15	0.17	0.27	2.04	0.46	0.61						
0072SO00913	72	12 to 13	12/3/2009	11:28	072009	Normal	1/29/10	19:58	D1	00010397.An1	**26.47**	2.86	1.68		2.37	0.28	0.23		2.64	0.54	0.53		23.51	2.74	2.43		**23.30**	2.60	1.70	2.12	0.32	0.26	2.36	0.60	0.56	21.20	2.30	1.30	2.86	0.44	0.07	0.62	0.18	0.05
0072SO10014	72	13 to 14	4/9/2010	---	---	Bounding	---	---	---	---																	2.32	0.69	0.68	1.00	0.16	0.11	0.22	n/a	0.22	0.85	0.34	0.52						
0073SO00101	73	0 to 1	12/3/2009	12:20	073001	Normal	2/9/10	11:53	D2	00020417.An1	**33.47**	3.80	2.51		1.60	0.29	0.38		1.44	0.46	0.55		17.25	1.79	2.72														**28.90**	2.70	0.05	0.87	0.21	0.03
0073SO00202	73	1 to 2	12/3/2009	12:21	073002	Normal	2/8/10	15:56	D1	00010460.An1	**6.55**	1.32	1.23		1.73	0.27	0.17		0.31	n/a	0.31		2.78	0.63	1.29																			
0073SO00303	73	2 to 3	12/3/2009	12:22	073003	Normal	2/2/10	10:15	D2	00020359.An1	4.68	1.08	1.00		1.30	0.24	0.13		0.29	n/a	0.29		1.86	0.50	0.96														2.94	0.44	0.05	1.23	0.25	0.06
0074SO00101	74	0 to 1	1/6/2010	14:00	074001	Normal	2/12/10	10:36	D2	00020432.An1	**10.06**	1.78	1.51		0.89	0.22	0.21		0.43	n/a	0.43		4.75	0.71	1.23														5.31	0.64	0.07	0.63	0.17	0.06
0074SO10002	74	1 to 2	4/9/2010	---	---	Bounding	---	---	---	---																	3.21	0.87	0.81	1.05	0.17	0.13	0.26	n/a	0.26	0.40	0.22	0.77						
0074SO00506	74	5 to 6	1/6/2010	14:04	074005	Normal	1/26/10	14:16	D1	00010352.An1	2.54	0.69	0.70		0.96	0.15	0.06		0.22	n/a	0.22		1.38	0.33	0.80														2.19	0.35	0.05	0.76	0.19	0.05
0074SO00607	74	6 to 7	1/6/2010	14:05	074006	Normal	2/12/10	11:20	D2	00020433.An1	2.12	0.82	0.83		0.96	0.20	0.13		0.28	n/a	0.28		1.08	0.40	0.60														1.23	0.25	0.06	1.13	0.24	0.06
0075SO00202	75	1 to 2	1/5/2010	14:31	075002	Normal	1/16/10	16:29	D1	00010239.An1	**19.27**	1.93	1.09		2.50	0.13	0.18		0.98	0.20	0.26		10.71	0.94	1.28														**45.40**	4.00	0.06	2.12	0.34	0.03
0075SO00303	75	2 to 3	1/5/2010	14:32	075003	Normal	2/2/10	13:03	D2	00020362.An1	**56.28**	5.55	2.97		0.44	n/a	0.44		2.09	0.58	0.70		23.25	1.91	2.39														**45.80**	4.10	0.09	1.00	0.24	0.06
0075SO10004	75	3 to 4	4/9/2010	---	---	Bounding	---	---	---	---																	2.61	0.71	0.65	0.76	0.13	0.11	0.18	n/a	0.18	1.01	0.30	0.44						
0075SO00808	75	7 to 8	1/5/2010	14:37	075008	Normal	3/9/10	16:57	D2	00020590.An1	3.33	1.09	1.06	Jcc	1.29	0.22	0.18	Jcc	0.31	n/a	0.31	Jcc	1.44	0.45	0.85	Jcc													1.68	0.30	0.04	1.02	0.22	0.04
0076SO00101	76	0 to 1	1/6/2010	13:00	076001	Normal	2/11/10	19:51	D2	00020430.An1	**8.78**	1.30	1.07		1.07	0.17	0.21		0.36	0.20	0.31		4.37	0.62	1.19														**13.40**	1.40	0.09	0.73	0.19	0.05
0076SO00202	76	1 to 2	1/6/2010	13:01	076002	Normal	2/2/10	12:35	D1	00010410.An1	**21.31**	2.47	1.64		1.78	0.29	0.18		1.65	0.46	0.49		14.19	2.12	2.14														**68.90**	6.00	0.08	1.43	0.26	0.04
0076SO00303	76	2 to 3	1/6/2010	13:02	076003	Normal	2/15/10	10:39	D2	00020465.An1	4.80	1.18	1.10		0.90	0.19	0.15		0.36	n/a	0.36		2.45	0.89	1.06														6.59	0.77	0.07	1.03	0.23	0.06
0076SO00303	76	2 to 3	1/6/2010	13:02	076010	Dup	2/19/10	16:39	D2	00020524.An1	4.71	1.09	1.07		1.07	0.19	0.19		0.41	0.22	0.26		2.05	0.56	0.82																			
0076SO10004	76	3 to 4	4/9/2010	---	---	Bounding	---	---	---	---																	2.68	0.67	0.65	0.90	0.17	0.15	0.14	0.14	0.23	1.16	0.39	0.57						
0077SO00101	77	0 to 1	1/7/2010	10:00	077001	Normal	2/2/10	8:18	D1	00010405.An1	**7.26**	7.11	3.79		0.59	n/a	0.59		2.39	0.80	0.96		**33.58**	4.09	4.09														3.67	0.52	0.08	0.81	0.21	0.07
0077SO00202	77	1 to 2	1/7/2010	10:01	077002	Normal	1/18/10	23:23	D1	00010250.An1	**9.90**	1.07	0.70		1.05	0.14	0.14		0.39	0.16	0.19		5.20	0.52	0.81														7.33	0.85	0.09	0.92	0.22	0.07
0077SO00303	77	2 to 3	1/7/2010	10:02	077003	Normal	1/17/10	10:27	D2	00020190.An1	**55.57**	5.08	2.16		0.42	n/a	0.42		1.59	0.39	0.48		22.65	2.34	2.11		**52.20**	5.30	3.10	0.43	0.23	0.56	1.88	0.80	0.87	20.30	2.50	1.90	7.34	0.85	0.06	0.16	0.09	0.06
0077SO10004	77	3 to 4	4/9/2010	---	---	Bounding	---	---	---	---																	**45.20**	5.90	2.60	0.37	0.37	0.61	1.28	0.62	0.76	16.60	1.90	1.40						
0078SO00101	78	0 to 1	12/2/2009	15:30	078001	Normal	2/2/10	9:13	D1	00010407.An1	**15.88**	2.07	1.58		1.03	0.23	0.24		0.44	n/a	0.44		7.37	1.60	1.84														**9.06**	1.00	0.08	0.78	0.20	0.05
0078SO10002	78	1 to 2	4/9/2010	---	---	Bounding	---	---	---	---																	3.83	0.73	0.78	0.99	0.18	0.12	0.20	0.17	0.28	1.62	0.42	0.60						
0078SO00810	78	9 to 10	12/2/2009	16:02	078008	Normal	2/2/10	10:51	D2	00020360.An1	2.55	0.69	0.77		0.89	0.15	0.15		0.28	n/a	0.28		0.61	n/a	0.61														1.65	0.30	0.06	0.91	0.21	0.05
0078SO00810	78	9 to 10	12/2/2009	16:02	078011	Dup	2/2/10	10:49	D1	00010409.An1	3.18	0.78	0.77		0.69	0.15	0.15		0.23	n/a	0.23		1.50	0.39	0.84																			
0078SO00915	78	14 to 15	12/2/2009	16:05	078009	Normal	2/11/10	16:17	D2	00020427.An1	1.37	0.56	0.84		0.78	0.15	0.14		0.25	n/a	0.25		0.95	0.38	0.58														1.31	0.27	0.06	0.91	0.22	0.03
0079SO00707	79	6 to 7	11/21/2009	12:17	079007	Normal	12/9/09	14:46	D1	00010169.An1	3.50	0.76	0.70		1.00	0.14	0.16		0.18	n/a	0.18		1.44	0.36	0.76		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.76	0.31	0.05	0.83	0.20	0.05
0079SO00808	79	7 to 8	11/21/2009	12:24	079008	Normal	12/3/09	16:39	D1	00010156.An1	2.39	0.45	0.43	Jcc	0.82	0.10	0.07	Jcc	0.12	n/a	0.12	Jcc	1.27	0.20	0.46	Jcc	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.75	0.31	0.05	0.89	0.21	0.05
0079SO00910	79	9 to 10	11/21/2009	12:30	079009	Normal	12/7/09	16:19	D2	00020126.An1	2.62	0.58	0.56		0.89	0.12	0.10		0.16	n/a	0.16		1.72	0.32	0.63		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.10	0.37	0.09	0.97	0.23	0.08
0080SO10007	80	6 to 7	4/9/2010	---	---	Bounding	---	---	---	---																	3.52	0.96	0.86	1.14	0.19	0.15	0.17	0.17	0.27	1.69	0.47	0.50						
0080SO00814	80	13 to 14	1/5/2010	13:27	080008	Normal	3/9/10	16:18	D1	00010519.An1	2.03	0.85	0.91		0.96	0.17	0.08		0.10	0.16	0.25		0.62	0.27	0.78														1.24	0.22	0.03	0.78	0.17	0.03
0080SO00915	80	14 to 15	1/5/2010	13:28	080009	Normal	1/25/10	17:37	D1	An111C2.An1	2.88	0.89	0.92		1.05	0.18	0.16		0.20	n/a	0.20		0.66	n/a	0.66														2.07	0.34	0.04	1.05	0.23	0.03
0080SO01019	80	18 to 19	1/5/2010	13:29	080010	Normal	1/26/10	11:50	D2	00020292.An1	2.30	0.55	0.70		0.30	n/a	0.30		0.19	n/a	0.19		1.31	0.36	0.74														1.25	0.23	0.02	0.63	0.15	0.02
0081SO10002	81	1 to 2	4/9/2010	---	---	Bounding	---	---	---	---																	4.30	1.20	1.00	0.83	0.17	0.13	0.32	n/a	0.32	2.65	0.72	0.69						
0081SO00910	81	9 to 10	12/18/2009	15:23	081009	Normal	12/30/09	8:19	D1	00010195.An1	2.22	0.48	0.47	Jcc	0.84	0.11	0.10	Jcc	0.14	n/a	0.14	Jcc	1.54	0.25	0.46	Jcc													1.18	0.25	0.05	0.83	0.20	0.03
0081SO01014	81	13 to 14	12/18/2009	15:24	081010	Normal	12/29/09	18:07	D2	00020150.An1	2.48	0.56	0.53		0.91	0.13	0.09		0.15	n/a	0.15		1.47	0.27	0.56																			
0081SO01014	81	13 to 14	12/18/2009	15:24	081013	Dup	12/30/09	15:43	D2	00020152.An1	2.09	0.50	0.50		0.93	0.15	0.11		0.13	n/a	0.13		1.59	0.30	0.58														1.20	0.25	0.05	0.85	0.20	0.03
0081SO01115	81	14 to 15	12/18/2009	15:25	081011	Normal	12/29/09	18:05	D1	00010194.An1	3.61	0.60	0.52		1.03	0.13	0.11		0.15	n/a	0.15		2.07	0.31	0.55		3.59	0.91	0.87	0.97	0.17	0.15	0.30	n/a	0.30	2.02	0.49	0.58	1.78	0.32	0.07	1.11	0.24	0.06
0082SO00303	82	2 to 3	1/5/2010	15:42	082003	Normal	1/26/10	18:47	D2	00020303.An1	3.73	0.99	1.01		1.24	0.20	0.14		0.37	n/a	0.37		1.78	0.78	1.19														2.36	0.37	0.03	1.14	0.24	0.04
0082SO00505	82	4 to 5	1/5/2010	15:44	082005	Normal	1/25/10	17:09	D2	00020280.An1	2.74	0.91	0.88		0.84	0.15	0.11		0.20	n/a	0.20		0.51	n/a	0.51														1.65	0.30	0.06	1.07	0.24	0.06
0082SO00606	82	5 to 6	1/5/2010	15:45	082006	Normal	1/26/10	7:45	D1	00010342.An1	2.66	0.74	0.76		1.04	0.17	0.16		0.19	n/a	0.19		1.04	0.34	0.87														1.88	0.30	0.02	0.88	0.19	0.02
0083SO00303	83	2 to 3	1/6/2010	10:32	083003	Normal	1/25/10	17:12	D1	00010338.An1	2.36	0.72	0.73	Jcc	0.95	0.16	0.09	Jcc	0.20	n/a	0.20	Jcc	1.33	0.30	0.64	Jcc													2.36	0.37	0.03	1.14	0.24	0.04
0083SO00608	83	7 to 8	1/6/2010	10:35	083006	Normal	2/5/10	12:45	D2	00020389.An1	2.06	0.60	0.66		0.85	0.14	0.12		0.20	n/a	0.20		1.16	0.32	0.78		2.37	0.60	0.55	0.81	0.12	0.06	0.20	n/a	0.20	0.72	0.28	0.42						
0083SO00709	83	8 to 9	1/6/2010	10:36	083007	Normal	1/25/10	17:40	D2	An111C4.An1	1.95	0.51	0.66		0.86	0.18	0.11		0.25	n/a	0.25		0.59	n/a	0.59														1.60	0.31	0.07	1.01	0.24	0.08
0084SO10003	84	2 to 3	4/9/2010	---	---	Bounding	---	---	---	---																	1.94	0.55	0.58	0.77	0.13	0.13	0.19	0.11	0.15	0.62	n/a	0.62						
0084SO00808	84	7 to 8	1/6/2010	9:06	084008	Normal	1/13/10	9:35	D1	00010226.An1	2.34	0.47	0.45		0.88	0.12	0.09		0.14	n/a	0.14		1.09	0.23	0.44														1.52	0.26	0.04	0.98	0.20	0.02
0084SO01015	84	14 to 15	1/6/2010	9:08	084010	Normal	3/15/10	15:18	D1	00010613.An1	2.90	0.62	0.61		0.95	0.15	0.11		0.13	0.13	0.21		0.62	0.21	0.53														1.75	0.31	0.06	0.87	0.21	0.06
0084SO01116	84	15 to 16	1/6/2010	9:09	084011	Normal	1/26/10	9:11	D1	00010346.An1	3.24	0.72	0.76		1.10	0.17	0.15		0.17	n/a	0.17		1.68	0.44	0.85		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.80	0.31	0.04	1.00	0.22	0.04
0085SO10001	85	0 to 1	4/9/2010	---	---	Bounding	---	---	---	---																	2.61	0.79	0.75	0.85	0.16	0.11	0.30	n/a	0.30	1.39	0.63	0.66						
0085SO00714	85	13 to 14	1/6/2010	8:06	085007	Normal	1/18/10	22:05	D2	00020197.An1	3.37	0.62	0.55		1.04	0.13	0.08		0.13	n/a	0.13		1.39	0.51	0.59														1.90	0.30	0.04	1.05	0.21	0.05
0085SO00714	85	13 to 14	1/6/2010	8:06	085011	Dup	3/11 0859	8:59	D1	00010535.An1	3.16	0.77	0.77		0.97	0.18	0.18		0.21	n/a	0.21		1.82	0.42	0.80																			
0085SO00919	85	18 to 19	1/6/2010	8:08	085009	Normal	1/19/10	10:57	D1	00010256.An1	3.54	0.57	0.53		1.11	0.14	0.11		0.13	n/a	0.13		1.98	0.32	0.59		3.39	0.79	0.76	1.14	0.20	0.18	0.30	n/a	0.30	1.83	0.39	0.54	1.67	0.30	0.05	1.16	0.24	0.03
0085SO00818	85	17 to 18	1/6/2010	8:07	085008	Normal	3/11/10	13:01	D1	00010411.An1	2.42	0.78	0.87		1.05	0.17	0.13		0.21	n/a	0.21		1.93	0.43	0.94														1.93	0.30	0.05	1.18	0.22	0.05
0086SO10005	86	4 to 5	4/9/2010	---	---	Bounding	---	---	---	---																	2.39	0.83	0.82	1.23	0.18	0.16	0.25	n/a	0.25	0.85	0.31	0.47						
0086SO00911	86	10 to 11	12/21/2009	12:28	086009	Normal	1/4/10	15:07	D2	00020160.An1	2.86	0.55	0.51		0.89	0.14	0.10		0.16	n/a	0.16		1.61	0.32	0.61		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.67	0.29	0.05	0.85	0.20	0.03
0086SO01012	86	11 to 12	12/21/2009	12:29	086010	Normal	12/31/09	15:00	D2	00020154.An1	3.73	0.71	0.64		1.05	0.16	0.13		0.16	n/a	0.16		2.22	0.37	0.67		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.00	0.33	0.06	1.05	0.22	0.03
0086SO01113	86	12 to 13	12/21/2009	12:30	086011	Normal	1/4/10	11:09	D1	00010202.An1	3.11	0.58	0.53	Jcc	0.87	0.12	0.10	Jcc	0.13	n/a	0.13	Jcc	1.81	0.28	0.53	Jcc	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.48	0.28	0.05	0.70	0.18	0.05
0087SO00202	87	1 to 2	1/7/2010	15:11	087002	Normal	2/1/10	18:56	D2	00020355.An1	**5.65**	1.16	1.11		1.01	0.19	0.15		0.36	n/a	0.36		3.46	0.67	1.26		**6.10**	1.20	0.90	1.01	0.16	0.11	0.32	n/a	0.32	1.21	0.47	0.73	**27.10**	2.50	0.06	0.39	0.14	0.03
0087SO00202	87	1 to 2	1/7/2010	15:11	087012	Dup	1/26/10	15:24	D1	00010354.An1	**6.78**	1.21	1.02		0.97	0.20	0.18		0.35	n/a	0.35		4.10	1.03	1.17														2.93	0.44	0.07	0.96	0.23	0.06
0087SO00404	87	3 to 4	1/7/2010	15:13	087004	Normal	1/26/10	11:49	D1	00010351.An1	3.59	0.95	0.95		1.15	0.19	0.17		0.25	n/a	0.25		1.91	0.48	1.00														1.70	0.30	0.07	1.21	0.24	0.03
0087SO00912	87	11 to 12	1/7/2010	15:18	087009	Normal	2/19/10	17:12	D2	00020525.An1	2.53	0.96	0.95		1.14	0.20	0.12		0.12	0.17	0.28		1.55	0.43	0.64														1.86	0.35	0.08	0.84	0.22	0.06
0088SO10007	88	6 to 7	4/9/2010	---	---	Bounding	---	---	---	---																	3.40	1.10	0.90	0.85	0.16	0.12	0.12	0.16	0.27	0.71	0.71	0.72						
0088SO00811	88	10 to 11	1/6/2010	16:07	088008	Normal	2/2/10	8:20	D2	00020356.An1	2.12	0.58	0.76		0.89	0.18	0.17		0.28	n/a	0.28		1.32	0.35	0.84		2.55	0.78	0.74	0.74	0.15	0.18	0.22	n/a	0.22	0.63	n/a	0.63						
0088SO00912	88	11 to 12	1/6/2010	16:08	088009	Normal	1/26/10	8:11	D1	00010343.An1	2.01	0.53	0.59		0.93	0.17	0.11		0.16	n/a	0.16		1.29	0.40	0.84														1.30	0.23	0.05	0.88	0.18	0.02
0088SO01118	88	17 to 18	1/6/2010	16:10	088011	Normal	1/26/10	9:12	D2	00020287.An1	3.10	0.74	0.75		0.92	0.16	0.15		0.23	n/a	0.23		1.49	0.38	0.91														2.01	0.34	0.07	1.02	0.22	0.03
0089SO10002	89	1 to 2	4/9/2010	---	---	Bounding	---	---	---	---																	4.20	1.20	1.00	1.06	0.18	0.14	0.30	n/a	0.30	2.51	0.68	0.68						
0089SO00709	89	8 to 9	1/8/2010	11:36	089007	Normal	2/4/10	10:36	D2	00020376.An1	2.22	0.68	0.70		0.73	0.14	0.18		0.21	n/a	0.21		1.04	0.34	0.75		2.63	0.67	0.63	0.96	0.15	0.07	0.24	n/a	0.24	0.92	0.38	0.58						
0089SO00813	89	12 to 13	1/8/2010	11:37	089008	Normal	3/10/10	8:20	D2	00020594.A1n	3.56	0.91	0.93		1.00	0.19	0.11		0.25	n/a	0.25		2.17	0.58	1.17		3.24	0.86	0.80	0.84	0.14	0.16	0.24	n/a	0.24	1.48	0.35	0.48	1.82	0.31	0.05	0.77	0.19	0.05
0089SO00914	89	13 to 14	1/8/2010	11:38	089009	Normal	1/26/10	14:18	D2	00020293.An1	3.19	0.89	0.85		0.84	0.15	0.15		0.23	n/a	0.23		1.87	0.42	0.83														2.01	0.34	0.05	0.75	0.19	0.05
0091SO00101	90	0 to 1	2/2/2010	11:30	091001	Normal	3/27/10	10:17	D1	00010682.An1	1.44	0.39	0.38		0.27	0.06	0.08		0.13	n/a	0.13		0.45	0.25	0.35														0.62	0.18	0.07	0.30	0.12	0.06
0090SO10003	90	2 to 3	4/9/2010	---	---	Bounding	---	---	---	---																	2.43	0.72	0.69	0.94	0.13	0.09	0.10	0.14	0.23	1.09	0.31	0.44						
0090SO00809	90	8 to 9	1/8/2010	10:37	090008	Normal	1/26/10	10:45	D1	00010349.An1	3.09	0.77	0.77		1.29	0.24	0.16		0.21	n/a	0.21		1.35	0.40	0.87														1.43	0.25	0.05	0.94	0.19	0.05
0090SO00912	90	11 to 12	1/8/2010	10:38	090009	Normal	2/4/10	10:34	D1	00010427.An1	3.38	0.88	0.88		1.11	0.19	0.19		0.27	n/a	0.27		2.07	0.42	0.87														2.24	0.38	0.06	1.06	0.24	0.07
0090SO01013	90	12 to 13	1/8/2010	10:39	090010	Normal	2/2/10	8:44	D1	00010406.An1	3.56	1.01	0.98		0.89	0.17	0.14		0.22	n/a	0.22		1.71	0.44	0.97		3.03	0.77	0.74	1.02	0.18	0.10	0.24	n/a	0.24	1.29	0.35	0.48						
0091SO00202	91	1 to 2	2/2/2010	11:31	091002	Normal	2/6/10	17:59	D1	00010454.An1	1.59	0.65	0.64		0.50	0.10	0.10		0.17	n/a	0.17		0.65	n/a	0.65														0.95	0.31	0.14	0.57	0.24	0.14
0091SO00303	91	2 to 3	2/2/2010	11:32	091003	Normal	2/6/10	15:22	D2	00020401.An1	0.93	0.50	0.59		0.48	0.11	0.07		0.15	n/a	0.15		0.45	n/a	0.45														0.86	0.21	0.07	0.41	0.14	0.05
0091SO00303	91	2 to 3	2/2/2010	11:32	091004	Dup	2/6/10	13:39	D2	00020399.An1	1.43	0.53	0.57		0.22	n/a	0.22		0.20	n/a	0.20		0.46	n/a	0.46		1.12	0.40	0.44	0.31	0.07	0.10	0.16	n/a	0.16	0.49	0.24	0.37						
0092SO10007	92	6 to 7	4/9/2010	---	---	Bounding	---	---	---	---																	2.22	0.69	0.70	0.78	0.16	0.16	0.23	na/	0.23	0.80	0.33	0.50						
0092SO00814	92	13 to 14	2/2/2010	16:07	092008	Normal	2/6/10	10:31	D2	00020395.An1	2.72	0.84	0.86		1.13	0.21	0.17		0.27	n/a	0.27		1.05	n/a	1.05		2.35	0.69	0.71	1.02	0.18	0.15	0.23	n/a	0.23	1.29	0.37	0.55						
0092SO01016	92	15 to 16	2/2/2010	16:09	092010	Normal	3/10/10	14:21	D1	00010529.An1	3.44	0.92	0.90		1.04	0.20	0.12		0.17	0.18	0.29		1.38	0.44	0.67														1.60	0.29	0.07	0.81	0.20	0.06
0092SO01117	92	16 to 17	2/2/2010	16:10	092011	Normal	2/6/10	14:27	D2	00020400.An1	2.51	0.83	0.87		0.97	0.17	0.13		0.27	n/a	0.27		2.50	0.86	0.94														1.55	0.30	0.09	0.96	0.22	0.07
0093SO10004	93	3 to 4	4/9/2010	---	---	Bounding	---	---	---	---																	3.07	0.91	0.80	1.06	0.22	0.17	0.25	n/a	0.25	0.73	0.39	0.62						
0093SO00913	93	12 to 13	2/2/2010	11:58	093009	Normal	2/9/10	12:28	D1	00010468.An1	2.73	0.72	0.75	Jcc	0.96	0.17	0.13	Jcc	0.27	n/a	0.27	Jcc	1.26	0.41	0.62	Jcc													1.87	0.29	0.05	0.81	0.17	0.05
0093SO01014	93	13 to 14	2/2/2010	11:59	093010	Normal	2/8/10	19:20	D2	00020394.An1	3.77	1.11	1.04	Jcc	1.13	0.17	0.20	Jcc	0.25	n/a	0.25	Jcc	1.72	0.56	1.05	Jcc													2.00	0.34	0.05	1.17	0.25	0.03
0093SO01116	93	15 to 16	2/2/2010	12:00	093011	Normal	2/9/10	10:07	D1	00010465.An1	3.83	1.17	1.13	Jcc	1.16	0.20	0.20	Jcc	0.30	n/a	0.30	Jcc	1.83	0.48	0.91	Jcc													1.78	0.31	0.05	0.98	0.22	0.04
0094SO00707	94	6 to 7	2/2/2010	13:06	094007	Normal	2/9/10	12:34	D2	00020418.An1	2.60	0.90	0.92		1.04	0.18	0.14		0.30	n/a	0.30		1.66	0.41	0.87														1.94	0.33	0.05	1.14	0.24	0.04
0094SO00808	94	7 to 8	2/2/2010	13:07	094008	Normal	2/5/10	18:03	D2	00020393.An1	2.34	0.76	0.79		1.04	0.16	0.11		0.22	n/a	0.22		0.64	n/a	0.64														1.50	0.30	0.05	0.90	0.22	0.03
0094SO00808	94	7 to 8	2/2/2010	13:07	094012	Dup	2/5/10	16:03	D2	00020392.An1	2.19	0.67	0.70		0.88	0.13	0.11		0.22	n/a	0.22		0.99	0.34	0.59																			
0094SO00909	94	8 to 9	2/2/2010	13:08	094009	Normal	2/9/10	13:28	D1	00010469.An1	3.19	0.81	0.83	Jcc	1.11	0.18	0.16	Jcc	0.19	n/a	0.19	Jcc	0.91	n/a	0.91	Jcc	2.65	0.74	0.71	1.04	0.20	0.14	0.23	n/a	0.23	0.68	n/a	0.68						
0095SO00202	95	1 to 2	2/3/2010	15:01	095002	Normal	2/8/10	18:21	D2	00020413.An1	1.66	0.60	0.86		0.77	0.14	0.11		0.25	n/a	0.25		1.04	0.38	0.55														1.70	0.30	0.04	0.94	0.21	0.04
0095SO00303	95	2 to 3	2/3/2010	15:02	095003	Normal	2/9/10	10:08	D2	00020415.An1	2.72	0.81	0.86		1.05	0.18	0.16		0.23	n/a	0.23		1.36	0.40	0.80														1.73	0.29	0.05	1.03	0.21	0.02
0095SO00915	95	14 to 15	2/3/2010	15:08	095009	Normal	2/9/10	11:24	D1	00010466.An1	3.26	0.76	0.77	Jcc	0.80	0.15	0.17	Jcc	0.25	n/a	0.25	Jcc	0.68	0.31	0.75	Jcc	2.31	0.71	0.70	0.87	0.16	0.10	0.23	n/a	0.23	1.38	0.32	0.41						
0096SO10005	96	4 to 5	4/9/2010	---	---	Bounding	---	---	---	---																	3.93	0.87	0.78	1.36	0.20	0.09	0.32	n/a	0.32	1.13	0.63	0.99						

Table 9-1
Radionuclides Analytical Results - Soil Samples

Sample Information											On-Site Gamma Spectroscopy Results (gross activity)																Off-Site TestAmerica Analytical Results (gross activity)																	
Sample ID	Boring/ Location No.	Depth Range (ft)	Collection Date	Collection Time	Tracking Number	Sample Type	Date Counted	Time Counted	Detector (D1 or D2)	Spectrum Name	Ra-226 [pCi/g]				Th-232 (Ac-228 - γ Spec) [pCi/g]				U-235 [pCi/g]				U-238 (Th-234 - γ Spec) [pCi/g]				Ra-226 [pCi/g]			Th-232 (Ac-228 - γ Spec) [pCi/g]			U-235 [pCi/g]			U-238 (Th-234 - γ Spec) [pCi/g]			Th-230 (α Spec) [pCi/g]			Th-232 (α Spec) [pCi/g]		
											Conc.	±2σ	MDC	Qualifiers	Conc.	±2σ	MDC	Qualifiers	Conc.	±2σ	MDC	Qualifiers	Conc.	±2σ	MDC	Qualifiers	Conc.	±2σ	MDC	Conc.	±2σ	MDC	Conc.	±2σ	MDC	Conc.	±2σ	MDC	Conc.	±2σ	MDC	Conc.	±2σ	MDC
0096SO00914	96	13 to 14	2/5/2010	15:08	096009	Normal	2/17/10	10:47	D2	00020495.Anl	3.43	0.94	0.92		0.92	0.18	0.13		0.28	n/a	0.28		1.68	0.52	1.05														1.99	0.30	0.04	0.88	0.18	0.02
0096SO01015	96	14 to 15	2/5/2010	15:09	096010	Normal	2/17/10	11:12	D2	00020496.Anl	3.19	0.79	0.77		0.87	0.14	0.14		0.13	0.16	0.27		0.90	0.35	0.61														1.22	0.25	0.07	0.83	0.20	0.05
0096SO01220	96	19 to 20	2/5/2010	15:11	096012	Normal	2/16/10	15:36	D2	00020487.Anl	2.95	0.99	0.97		0.92	0.17	0.16		0.25	n/a	0.25		1.59	0.49	0.90														1.98	0.33	0.06	0.79	0.19	0.06
0097SO10007	97	6 to 7	4/9/2010	---	---	Bounding	---	---	---	---																	2.27	0.79	0.79	0.99	0.16	0.12	0.12	0.15	0.24	0.59	0.34	0.54						
0097SO00709	97	8 to 9	2/5/2010	13:06	097007	Normal	2/17/10	11:44	D2	00020497.Anl	2.26	0.72	0.74		0.80	0.12	0.11		0.23	n/a	0.23		0.85	n/a	0.85														1.74	0.32	0.07	0.78	0.20	0.06
0097SO00816	97	15 to 16	2/5/2010	13:07	097008	Normal	2/16/10	16:05	D2	00020488.Anl	2.22	0.65	0.70		0.80	0.20	0.16		0.25	n/a	0.25		0.77	0.40	0.63														1.42	0.27	0.06	0.82	0.19	0.04
0097SO00919	97	18 to 19	2/5/2010	13:08	097009	Normal	3/10/10	8:18	D1	00010524.Anl	2.90	0.86	0.88		1.00	0.19	0.18		0.17	0.16	0.26		0.58	0.24	0.78														1.25	0.26	0.07	0.86	0.21	0.03
0098SO10007	98	6 to 7	4/9/2010	---	---	Bounding	---	---	---	---																	2.63	0.61	0.57	0.87	0.16	0.16	0.22	n/a	0.22	1.34	0.35	0.41						
0098SO01017	98	16 to 17	2/9/2010	9:49	098010	Normal	2/15/10	16:50	D2	00020476.Anl	3.09	1.05	1.06		1.05	0.19	0.19		0.24	n/a	0.24		1.38	0.40	0.97														1.93	0.33	0.06	0.99	0.22	0.06
0098SO01118	98	17 to 18	2/9/2010	9:50	098011	Normal	2/16/10	16:31	D2	00020489.Anl	3.20	0.90	0.90		0.99	0.20	0.14		0.24	n/a	0.24		1.76	0.47	1.00		3.16	0.76	0.72	0.90	0.15	0.13	0.23	n/a	0.23	0.71	0.32	0.50						
0098SO01219	98	18 to 19	2/9/2010	9:51	098012	Normal	2/16/10	16:56	D2	00020490.Anl	2.93	0.83	0.87		0.97	0.18	0.16		0.27	n/a	0.27		1.73	0.48	0.98														2.04	0.34	0.05	0.85	0.20	0.03
0099SO00606	99	5 to 6	2/4/2010	11:45	099006	Normal	2/15/10	14:33	D2	00020471.Anl	1.93	0.56	0.77		0.83	0.17	0.11		0.26	n/a	0.26		1.03	0.35	0.60														2.04	0.35	0.03	0.94	0.22	0.05
0099SO00707	99	6 to 7	2/4/2010	11:46	099007	Normal	2/15/10	15:00	D2	00020472.Anl	2.15	0.71	0.74		0.88	0.16	0.15		0.18	n/a	0.18		0.86	n/a	0.86														1.51	0.28	0.03	0.81	0.19	0.03
0099SO00912	99	11 to 12	2/4/2010	11:48	099009	Normal	2/15/10	11:07	D2	00020466.Anl	2.79	0.81	0.79		0.67	0.14	0.15		0.12	0.16	0.26		1.18	0.37	0.63														1.97	0.32	0.03	0.90	0.20	0.03
0100SO00303	100	2 to 3	2/4/2010	10:02	100003	Normal	3/2/10	11:13	D1	00010496.Anl	**28.36**	2.86	1.39		1.69	0.28	0.19		1.62	0.38	0.40		27.27	1.58	1.05														6.58	0.84	0.07	1.15	0.28	0.10
0100SO00404	100	3 to 4	2/4/2010	10:03	100004	Normal	2/24/10	10:57	D2	00020564.Anl	**87.72**	8.00	3.79		1.09	n/a	1.09		4.35	1.02	1.10		**65.23**	6.34	4.81														6.23	0.76	0.06	0.27	0.12	0.06
0100SO00505	100	4 to 5	2/4/2010	10:05	100005	Normal	3/8/10	17:52	D1	00010508.Anl	**121.46**	11.36	5.18		1.78	0.63	1.16		3.57	1.14	1.39		4.86	3.28	2.99														**19.10**	1.90	0.08	0.16	0.10	0.08
0100SO00505	100	4 to 5	2/4/2010	10:05	100011	Dup	2/24/10	12:59	D2	00020567.Anl	**108.69**	10.07	4.45		1.24	0.58	0.95		4.58	1.12	1.23		**47.22**	4.26	2.19														**17.80**	1.80	0.06	0.15	0.09	0.07
0101SO00606	101	5 to 6	2/3/2010	16:20	101006	Normal	2/18/10	17:50	D2	00020516.Anl	2.50	0.74	0.76		0.84	0.15	0.11		0.28	n/a	0.28		0.70	0.33	0.50														2.14	0.34	0.07	0.86	0.20	0.05
0101SO00910	101	9 to 10	2/3/2010	16:23	101009	Normal	2/19/10	9:21	D2	00020517.Anl	2.44	0.82	0.81		0.82	0.14	0.11		0.28	n/a	0.28		0.72	n/a	0.72														1.53	0.29	0.06	0.77	0.19	0.06
0101SO01016	101	15 to 16	2/3/2010	16:24	101010	Normal	2/17/10	9:50	D2	00020518.Anl	3.57	1.02	1.00		1.30	0.20	0.49		0.33	n/a	0.33		1.79	0.45	0.58														2.01	0.34	0.02	1.09	0.24	0.06
0102SO10007	102	6 to 7	4/9/2010	---	---	Bounding	---	---	---	---																	2.13	0.72	0.69	0.71	0.13	0.09	0.20	n/a	0.20	0.41	0.24	0.56						
0102SO00913	102	12 to 13	2/9/2010	8:38	102009	Normal	2/15/10	15:24	D2	00020473.Anl	2.10	0.53	0.68		0.78	0.16	0.11		0.23	n/a	0.23		1.17	0.33	0.80														1.82	0.33	0.06	0.96	0.23	0.06
0102SO01014	102	13 to 14	2/9/2010	8:39	102010	Normal	2/20/10	9:48	D2	00020528.Anl	3.54	0.94	0.90		0.96	0.17	0.13		0.14	0.18	0.29		1.40	0.38	0.52														1.41	0.27	0.03	0.81	0.20	0.03
0102SO01115	102	14 to 15	2/9/2010	8:40	102011	Normal	2/20/10	10:12	D2	00020529.Anl	2.67	0.72	0.78		1.05	0.18	0.10		0.14	0.18	0.30		1.47	0.37	0.54														1.79	0.32	0.07	0.92	0.22	0.06
0103SO00202	103	1 to 2	3/20/2010	8:57	103002	Normal	3/23/10	16:13	D2	00020672.Anl	2.42	0.65	0.90		1.12	0.20	0.15		0.27	n/a	0.27		1.65	0.77	0.93														1.90	0.32	0.06	1.04	0.23	0.07
0103SO00202	103	1 to 2	3/20/2010	8:57	103011	Dup	3/23/10	18:40	D1	00010673.Anl	2.79	0.67	0.67	Jcc	0.94	0.15	0.13	Jcc	0.21	n/a	0.21	Jcc	1.44	0.58	0.71	Jcc													1.90	0.32	0.06	1.04	0.23	0.07
0103SO00815	103	14 to 15	3/20/2010	10:06	103008	Normal	3/23/10	18:02	D2	00020673.Anl	2.65	0.68	0.94	Jcc	0.97	0.16	0.15	Jcc	0.29	n/a	0.29	Jcc	2.33	0.87	1.01	Jcc													2.03	0.35	0.07	1.08	0.24	0.06
0103SO00919	103	18 to 19	3/20/2010	10:07	103009	Normal	3/24/10	8:55	D1	00010674.Anl	1.89	0.46	0.47		0.43	0.08	0.08		0.16	n/a	0.16		0.95	0.24	0.46														1.32	0.27	0.05	0.34	0.13	0.05
0104SO10004	104	3 to 4	4/9/2010	---	---	Bounding	---	---	---	---																	2.85	0.87	0.80	1.14	0.19	0.10	0.27	n/a	0.27	1.83	0.43	0.45						
0104SO00808	104	7 to 8	2/4/2010	15:37	104008	Normal	2/20/10	10:40	D2	00020530.Anl	2.16	0.61	0.84		1.09	0.26	0.19		0.28	n/a	0.28		1.46	0.44	0.48														1.87	0.33	0.06	0.76	0.20	0.03
0104SO00913	104	12 to 13	2/4/2010	15:38	104009	Normal	2/20/10	12:02	D2	00020533.Anl	3.24	0.98	0.99		0.58	0.17	0.20		0.14	0.18	0.30		1.60	0.39	0.52														1.97	0.34	0.07	0.89	0.21	0.05
0104SO01015	104	14 to 15	2/4/2010	15:39	104010	Normal	2/20/10	13:05	D2	00020534.Anl	2.46	0.75	0.78		0.43	0.11	0.17		0.27	n/a	0.27		1.20	0.30	0.43														1.48	0.27	0.03	0.50	0.50	0.03
0105SO00606	105	5 to 6	2/5/2010	15:55	105006	Normal	2/19/10	17:42	D2	00020526.Anl	3.37	1.04	1.00		1.12	0.22	0.14		0.11	0.18	0.29		0.47	0.26	0.84														1.85	0.32	0.03	1.06	0.23	0.05
0105SO00707	105	6 to 7	2/5/2010	15:56	105007	Normal	2/19/10	18:19	D2	00020527.Anl	2.43	0.78	0.79		0.84	0.15	0.13		0.28	n/a	0.28		1.08	0.37	0.54														1.41	0.26	0.04	0.98	0.21	0.04
0105SO00707	105	6 to 7	2/5/2010	15:56	105012	Dup	2/17/10	13:26	D2	00020499.Anl	2.62	0.74	0.77		0.87	0.19	0.17		0.21	n/a	0.21		1.58	0.69	0.86																			
0105SO00911	105	10 to 11	2/5/2010	15:58	105009	Normal	2/15/10	11:32	D2	00020467.Anl	2.57	0.83	0.84		0.81	0.15	0.16		0.28	n/a	0.28		0.98	0.37	0.63														1.54	0.29	0.07	0.84	0.20	0.03
0106SO00202	106	1 to 2	2/4/2010	16:21	106002	Normal	2/20/10	14:09	D2	00020535.Anl	3.11	0.93	0.96		1.25	0.22	0.17		0.31	n/a	0.31		1.30	0.37	0.60														1.72	0.30	0.07	0.89	0.21	0.05
0106SO00911	106	10 to 11	2/4/2010	16:28	106009	Normal	2/20/10	14:54	D2	00020536.Anl	3.34	0.98	0.95		0.64	0.17	0.20		0.29	n/a	0.29		1.06	0.46	0.72														1.90	0.32	0.07	0.93	0.21	0.07
0106SO01012	106	11 to 12	2/4/2010	16:29	106010	Normal	2/20/10	15:58	D2	00020537.Anl	3.53	1.01	0.95		0.97	0.19	0.14		0.31	n/a	0.31		1.58	0.48	0.57														1.69	0.30	0.03	1.00	0.22	0.04
0107SO00202	107	1 to 2	2/5/2010	8:41	107002	Normal	2/22/10	10:07	D2	00020539.Anl	2.33	0.78	0.82		0.99	0.21	0.14		0.12	n/a	0.12		1.84	0.44	0.90														1.80	0.31	0.05	1.04	0.22	0.06
0107SO00303	107	2 to 3	2/5/2010	8:42	107003	Normal	2/22/10	10:33	D2	00020540.Anl	2.87	1.01	0.97		1.15	0.18	0.09		0.28	n/a	0.28		1.22	0.36	0.84														1.57	0.29	0.05	1.24	0.25	0.03
0107SO00707	107	6 to 7	2/5/2010	8:46	107007	Normal	2/22/10	11:02	D2	00020541.Anl	1.94	0.79	0.84		0.85	0.15	0.09		0.24	n/a	0.24		1.22	0.35	0.74														1.43	0.28	0.05	0.93	0.21	0.03
0108SO00607	108	6 to 7	3/9/2010	8:45	108006	Normal	3/11/10	9:39	D1	00010536.Anl	2.75	0.63	0.62		0.91	0.16	0.12		0.18	n/a	0.18		1.35	0.35	0.70														1.39	0.28	0.06	0.78	0.20	0.03
0108SO00607	108	6 to 7	3/9/2010	8:45	108012	Dup	3/10/10	16:36	D2	00020600.Anl	2.45	0.76	0.77		0.91	0.14	0.10		0.23	n/a	0.23		1.51	0.47	0.89																			
0108SO00811	108	10 to 11	3/9/2010	8:47	108008	Normal	3/10/10	16:33	D1	00010531.Anl	3.19	0.81	0.81		0.96	0.19	0.12		0.16	0.16	0.26		0.67	0.26	0.81														1.37	0.26	0.05	1.01	0.22	0.03
0108SO00912	108	11 to 12	3/9/2010	8:48	108009	Normal	3/11/10	9:22	D2	00020603.Anl	3.23	0.78	0.75		1.03	0.20	0.10		0.22	n/a	0.22		1.84	0.47	1.09														1.45	0.27	0.05	0.78	0.18	0.04
0109SO10007	109	6 to 7	4/9/2010	---	---	Bounding	---	---	---	---																	3.20	1.20	1.00	0.91	0.18	0.13	0.29	n/a	0.29	1.55	0.61	0.66						
0109SO00910	109	9 to 10	3/9/2010	9:58	109009	Normal	3/10/10	17:01	D2	00020601.Anl	2.73	0.75	0.80		1.00	0.18	0.18		0.29	n/a	0.29		1.54	0.88	1.07														1.68	0.29	0.04	0.97	0.21	0.04
0109SO01011	109	10 to 11	3/9/2010	9:59	109010	Normal	3/10/10	16:59	D1	00010532.Anl	3.34	0.89	0.83		0.82	0.14	0.12		0.26	n/a	0.26		1.28	0.36	0.58														1.66	0.30	0.03	0.87	0.21	0.05
0109SO01113	109	12 to 13	3/9/2010	10:00	109011	Normal	3/10/10	18:07	D1	00010534.Anl	2.60	0.78	0.79		0.93	0.17	0.11		0.15	0.16	0.26		1.21	0.38	0.63														1.41	0.27	0.05	0.78	0.19	0.05
0110SO10007	110	6 to 7	4/9/2010	---	---	Bounding	---	---	---	---																	2.52	0.67	0.64	0.95	0.15	0.10	0.12	0.14	0.23	0.41	0.22	0.44						
0110SO00812	110	11 to 12	3/10/2010	15:37	110008	Normal	3/13/10	15:08	D2	00020607.Anl	2.79	0.70	0.71		0.99	0.14	0.12		0.11	0.15	0.25		1.89	0.44	0.47														1.52	0.28	0.04	0.98	0.22	0.04
0110SO01018	110	17 to 18	3/10/2010	15:39	110010	Normal	3/15/10	17:42	D1	00010616.Anl	3.15	0.69	0.67		1.03	0.16	0.12		0.13	0.14	0.23		1.40	0.34	0.75														1.68	0.30	0.03	0.93	0.21	0.03
0110SO01119	110	18 to 19	3/10/2010	15:40	110011	Normal	3/13/10	11:59	D1	00010539.Anl	3.40	0.72	0.67		0.97	0.17	0.11		0.19	0.11	0.15		0.57	0.22	0.61														1.67	0.30	0.03	1.10	0.24	0.06
0111SO10007	111	6 to 7	4/9/2010	---	---	Bounding	---	---	---	---																	2.52	0.70	0.67	0.88	0.17	0.15	0.22	n/a	0.22	1.31	0.34	0.43						
0111SO00808	111	7 to 8	2/5/2010	10:57	111008	Normal	2/22/10	11:28	D2	00020542.Anl	2.79	1.04	1.04		0.97	0.17	0.15		0.26	n/a	0.26		1.49	0.44	0.90														1.98	0.33	0.06	1.02	0.22	0.04
0111SO00808	111	7 to 8	2/5/2010	10:57	111012	Dup	2/23/10	17:46	D2	00020560.Anl	2.28	0.48	0.47		0.84	0.10	0.08		0.10	0.09	0.15		1.35	0.22	0.29																			
0111SO00911	111	10 to 11	2/5/2010	10:58	111009	Normal	3/10/10	15:43	D2	00020599.Anl	2.64	0.67	0.85		0.97	0.19	0.17		0.30	n/a	0.30		1.41	0.46	0.61														1.53	0.28	0.04	1.10	0.23	0.04
0111SO01012	111	11 to 12	2/5/2010	10:59	111010	Normal	2/8/10	13:37	D2	00020585.Anl	2.36	0.54	0.65	Jcc	0.76	0.14	0.10	Jcc	0.26	n/a	0.26	Jcc	1.15	0.41	0.62	Jcc													1.28	0.25	0.03	0.80	0.19	0.05
0112SO00101	112	0 to 1	2/8/2010	16:00	112001	Normal	2/22/10	14:57	D2	00020544.Anl	**70.36**	7.24	4.25		0.83	n/a	0.83		1.77	0.98	1.17		**30.60**	4.76	4.80														**19.20**	1.80	0.06	0.30	0.11	0.03
0112SO00202	112	1 to 2	2/8/2010	16:01	112002	Normal	2/22/10	15:22	D2	00020545.Anl	**9.82**	1.63	1.45		1.35	0.32	0.24		0.52	0.28	0.36		4.43	0.80	1.51		**9.00**	1.50	1.10	1.01	0.19	0.16	0.36	n/a	0.36	3.08	0.56	0.73	1.97	0.33	0.06	0.74	0.19	0.04
0112SO10003	112	2 to 3	4/9/2010	---	---	Bounding	---	---	---	---																	2.58	0.79	0.79	1.11	0.17	0.11	0.27	n/a	0.27	0.73	0.30	0.70						
0112SO00910	112	9 to 10	2/8/2010	16:08	112009	Normal	2/22/10	16:20	D2	00020546.Anl	1.96	0.55	0.57		0.80	0.18	0.11		0.25	n/a	0.25		0.71	n/a	0.71														0.85	0.20	0.03	0.68	0.17	0.03
0113SO00101	113	0 to 1	2/8/2010	14:20	113001	Normal	2/23/10	9:53	D2	00020548.Anl	**6.32**	1.26	1.19		1.09	0.19	0.21		0.31	n/a	0.31		2.53	0.55	1.25																			
0113SO00101	113	0 to 1	2/8/2010	14:20	113013	Dup	2/23/10	10:20	D2	00020549.Anl	**8.82**	1.57	1.40		0.98	0.21	0.22		0.55	0.26	0.33		4.23	0.66	1.36														3.89	0.54	0.07	0.78	0.20	0.05
0113SO10002	113	1 to 2	4/9/2010	---	---	Bounding	---	---	---	---																	3.41	0.74	0.69	1.08	0.22	0.14	0.28	n/a	0.28	2.03	0.46	0.49						
0113SO00909	113	8 to 9	2/8/2010	14:28	113009	Normal	2/23/10	11:00	D2	00020550.Anl	3.30	0.90	0.86		1.13	0.19	0.11		0.27	n/a	0.27		1.59	0.44	0.83														1.67	0.29	0.06	0.95	0.21	0.03
0113SO01010	113	9 to 10	2/8/2010	14:29	113010	Normal	2/23/10	11:25	D2	00020551.Anl	3.60	0.96	0.90		0.90	0.16	0.13		0.25	n/a	0.25		1.60	0.49	0.96														1.17	0.26	0.08	0.64	0.18	0.07
0114SO00404	114	3 to 4	2/9/2010	10:53	114004	Normal	2/17/10	16:38	D2	00020503.Anl	2.94	0.92	0.93		0.82	0.14	0.16		0.26	n/a	0.26		1.54	0.37	0.80		2.68	0.67	0.65	0.88	0.15	0.11	0.25	n/a	0.25	0.68	n/a	0.68	1.66	0.30	0.03	1.21	0.25	0.03
0114SO00404	114	3 to 4	2/9/2010	10:53	114013	Dup	2/17/10	13:52	D2	00020500.Anl	1.10	0.63	0.98		0.90	0.17	0.12		0.25	n/a	0.25		1.66	0.74	0.90																			
0114SO00909	114	8 to 9	2/9/2010	10:58	114009	Normal	2/23/10	11:51	D2	00020552.Anl	2.80	0.71	0.77		0.95	0.15	0.13		0.27	n/a	0.27		1.54	0.46	1.02														1.76	0.31	0.07	1.03	0.22	0.05
0114SO01012	114	11 to 12	2/9/2010	10:59	114010	Normal	2/23/10	12:17	D2	00020553.Anl	3.37	0.92	0.86		0.89	0.14	0.16		0.28	n/a	0.28		1.43	0.49	1.00														1.50	0.28	0.05	0.74	0.18	0.06
0115SO00303	115	2 to 3	3/11/2010	9:42	115003	Normal	3/16/10	14:22	D2	00020623.Anl	3.50	0.78	0.76		1.08	0.16	0.13		0.15	0.17	0.27		2.24	0.88	0.99		3.22	0.89	0.83	1.05	0.17	0.15	0.24	n/a	0.24	0.59	n/a	0.59						
0115SO00303	115	2 to 3	3/11/2010	9:42	115012	Dup	3/16/10	10:15	D1	00010618.Anl	2.87	0.51	0.56		1.04	0.18	0.12		0.23	n/a	0.23		1.23	0.55	0.71																			
0115SO00809	115	8 to 9	3/11/2010	9:47	115008	Normal	3/16/10	9:08	D1	00010617.Anl	2.36	0.49	0.61		0.95	0.16	0.15		0.22	n/a	0.22		1.35	0.32	0.69														1.81	0.32	0.03	1.02	0.23	0.05
0115SO00913	115	12 to 13	3/11/2010	9:48	115009	Normal	3/16/10	9:10	D2	00020618.Anl	2.52	0.63	0.66		0.82	0.16	0.11		0.15	0.14	0.23		1.67	0.39	0.85														1.49	0.28	0.03	0.73	0.18	0.03
0116SO00606	116	5 to 6	3/11/2010	10:15	116006	Normal	3/16/10	15:05	D1	00010622.Anl	2.30	0.59	0.60		0.64	0.11	0.20		0.20	n/a	0.20		0.92	0.39	0.54														1.44	0.27	0.03	0.92	0.21	0.05
0116SO00707	116	6 to 7	3/11/2010	10:16	116007	Normal	3/16/10	15:06	D2	00020624.Anl	2.70	0.53	0.62		1.02	0.18	0.12		0.27	n/a	0.27		1.11	0.64	0.84														1.83	0.32	0.05	1.10	0.24	0.05
0116SO00808	116	7 to 8	3/11/2010	10:17	116008	Normal	3/16/10	15:43	D1	00010623.Anl	2.80	0.73	0.69		0.85	0.11	0.12		0.21	n/a	0.21		1.34	0.56	0.68														1.56	0.28	0.05	0.73	0.18	0.05
0117SO00810	117	9 to 10	3/11/2010	11:37	117008	Normal	3/20/10	15:28	D2	00020656.Anl	3.18	0.78	0.77		0.96	0.15	0.15		0.10	0.16	0.26		1.73	0.75	0.91														1.54	0.29	0.04	1.12	0.24	0.04
0117SO00911	117	10 to 11	3/11/2010	11:38	117009	Normal	3/20/10	16:09	D2	00020657.Anl	3.02	0.76	0.76		0.90	0.14	0.16		0.26	n/a	0.26		1.53	0.36	0.81														1.55	0.29	0.03	0.61	0.17	0.05
0117SO01014	117	13 to 14	3/11/2010	11:39	117010	Normal	3/20/10	16:08	D1	00010656.Anl	3.14	0.71	0.67		0.70	0.13	0.09		0.08	0.12	0.20		1.50	0.26	0.50														1.56	0.28	0.03	0.58	0.16	0.03
0118SO00506	118	5 to 6	3/10/2010	14:34	118005	Normal	3/13/10	16:08	D2	00020608.Anl	3.43	0.78	0.76		0.98	0.17	0.16		0.25	n/a	0.25		1.43	0.35	0.48														1.93	0.33	0.07	0.94	0.22	0.03
0118SO00506	118	5 to 6	3/10/2010	14:34	118012	Dup	3/11/10	18:54	D1	00010538.Anl	2.67	0.65	0.66		0.98	0.15	0.14		0.10	0.14	0.23		0.71	0.30	0.47																			
0118SO00917	118	16 to 17	3/10/2010	14:38	118009	Normal	3/13/10	16:06	D1	00010541.Anl	2.30	0.59	0.63		0.99	0.14	0.14		0.22	n/a	0.22		0.74	0.27	0.56														1.54	0.28	0.03	1.01	0.22	0.03
0118SO01018	118	17 to 18	3/10/2010	14:39	118010	Normal	3/13/10	15:18	D1	00010540.Anl	3.76	0.64	0.58		0.92	0.14	0.12		0.15	0.13	0.21		1.87	0.35	0.37														1.90	0.32	0.03	1.09	0.23	0.03
0119SO00811	119	10 to 11	3/10/2010	11:07	119008	Normal	3/13/10	17:46	D1	00010543.Anl	2.73	0.70	0.69		0.73	0.11	0.21		0.23	n/a	0.23		1.60	0.39	0.42														1.48	0.29	0.08	0.99	0.23	0.06
0119SO00912	119	11 to 12	3/10/2010	11:08	119009	Normal	3/13/10	17:04	D1	00010542.Anl	2.67	0.65	0.65		0.76	0.14	0.11		0.12	0.13	0.22		0.77	0.29	0.45														1.47	0.29	0.05	1.00	0.23	0.05
0119SO01114	119	13 to 14	3/10/2010	11:10	119011	Normal	3/13/10	17:19	D2	00020609.Anl	3.75	0.67	0.64		0.90	0.13	0.17		0.18	0.16	0.25		1.92	0.41	0.61														2.26	0.38	0.03	0.76	0.20	0.03
0120SO00101	120	0 to 1	3/10/2010	9:10	120001	Normal	3/15/10	11:31	D1	00010544.Anl	2.88	0.58	0.69		1.06	0.16	0.12		0.14	0.15	0.25		0.57	n/a	0.57														2.21	0.37	0.07	1.08	0.24	0.05
0120SO00707	120	6 to 7	3/10/2010	9:16	120007	Normal	3/16/10	11:43	D2	00020621.Anl	2.45	0.78	0.81		0.77	0.15	0.15		0.10	0.15	0.25		1.52	0.73	0.88														1.35	0.27	0.05	0.76	0.19	0.05
0120SO00808	120	7 to 8	3/10/2010	9:17	120008	Normal	3/13/10	18:00	D2	00020610.Anl	2.48	0.92	0.89		0.91	0.19	0.17		0.25	n/a	0.25		0.55	0.29	0.74														1.58	0.29	0.03	0.81	0.20	0.03
0121SO00506	121	5 to 6	3/10/2010	10:14	121005	Normal	3/16/10	13:42	D2	00020622.Anl	3.17	0.83	0.87		1.04	0.16	0.20		0.15	0.19	0.30		1.28	0.44	0.13														1.97	0.34	0.03	1.09	0.24	0.03
0121SO00607	121	6 to 7	3/10/2010	10:15	121006	Normal	3/15/10	16:55	D1	00010615.Anl	2.19	0.47	0.57		0.90	0.13	0.10		0.12	0.13	0.22		0.67	0.27	0.40														1.47	0.28	0.04	0.97	0.22	0.03
0121SO00708	121	7 to 8	3/10/2010	10:16	121007	Normal	3/11/10	18:55	D2	00020606.Anl	3.12	0.91	0.85		1.03	0.19	0.12		0.26	n/a	0.26		1.51	0.39	0.66														1.59	0.30	0.03	1.19	0.25	0.03
0122SO00101	122	0 to 1	3/12/2010	8:30	122001	Normal	3/16/10	15:45	D2	00020625.Anl	**22.94**	2.99	1.97		0.59	0.26	0.36		0.81	0.42	0.50		17.93	2.33	2.13		**19.80**	2.70	1.80	1.17	0.37	0.26	0.91	0.40	0.50	13.40	2.30	1.80						
0122SO00303	122	2 to 3	3/12/2010	8:32	122003	Normal	3/17/10	16:31	D1	00010635.Anl	3.43	0.78	0.74		1.09	0.13	0.14		0.09	0.14	0.23		0.87	0.29	0.72														2.13	0.36	0.06	0.98	0.22	0.05
0122SO00404	122	3 to 4	3/12/2010	8:33	122004	Normal	3/17/10	16:30	D2	00020636.Anl	2.87	0.73	0.74	Jcc	1.01	0.16	0.19	Jcc	0.29	n/a	0.29	Jcc	1.79	0.56	0.83	Jcc													2.05	0.35	0.05	1.01	0.23	0.03
0123SO00707	123	6 to 7	3/11/2010	8:06	123007	Normal	3/16/10	16:58	D1	00010625.Anl	1.97	0.45	0.57		0.88	0.12	0.10		0.21	n/a	0.21		0.52	0.25	0.80														1.24	0.25	0.05	0.87	0.20	0.03
0123SO01015	123	14 to 15	3/11/2010	8:09	123010	Normal	3/16/10	16:24	D1	00010624.Anl	2.54	0.47	0.46		0.79	0.15	0.10		0.08	0.12	0.19		1.34	0.28	0.59														1.40	0.27	0.03	0.54	0.15	0.03
0123SO01116	123	15 to 16	3/11/2010	8:10	123011	Normal	3/16/10	16:57	D2	00020626.Anl	2.27	0.61	0.60		0.57	0.10	0.09		0.21	n/a	0.21		1.32	0.33	0.67														1.37	0.26	0.04	0.42	0.13	0.03
0124SO00713	124	12 to 13	3/15/2010	15:26	124007	Normal	3/19/10	15:14	D1	00010649.Anl	2.66	0.57	0.58		0.76	0.13	0.10		0.12	0.13	0.21		1.63	0.33	0.58														1.80	0.32	0.05	0.08	0.20	0.06
0124SO00814	124	13 to 14	3/15/2010	15:27	124008	Normal	3/20/10	16:46	D1	00010657.Anl	2.64	0.66	0.67		0.93	0.13	0.09		0.10	0.14	0.22		1.42	0.30	0.63														1.80	0.31	0.04	0.91	0.21	0.03
0124SO00915	124	14 to 15	3/15/2010	15:28	124009	Normal	3/19/10	15:15	D2	00020650.Anl	3.01	0.66	0.64	Jcc	0.76	0.13	0.13	Jcc	0.13	0.16	0.26	Jcc	1.80	0.63	0.81	Jcc													1.71	0.31	0.06	0.98	0.22	0.06
0125SO00101	125	0 to 1	3/11/2010	15:00	125001	Normal	3/22/10	15:55	D1	00010664.Anl	**29.60**	3.04	1.74		1.09	0.18	0.25		1.10	0.36	0.44		11.75	1.77	1.83																			
0125SO00202	125	1 to 2	3/11/2010	15:01	125002	Normal	3/22/10	15:56	D2	00020665.Anl	4.94	1.16	1.06		1.35	0.22	0.13		0.10	0.20	0.32		2.50	0.51	1.12														2.12	0.34	0.06	1.23	0.24	0.03
0125SO00202	125	1 to 2	3/11/2010	15:01	125012	Dup	3/22/10	16:43	D1	00010665.Anl	4.61	0.84	0.76		1.09	0.15	0.14		0.13	0.16	0.25		1.61	0.52	0.79																			
0125SO00911	125	10 to 11	3/11/2010	15:08	125010	Normal	3/20/10	16:48	D2	00020658.Anl	3.35	0.72	0.71		1.01	0.16	0.12		0.15	0.16	0.27		2.20	0.79	0.93														1.95	0.33	0.06	0.82	0.20	0.06
0126SO00303	126	2 to 3	3/15/2010	10:02	126003	Normal	3/18/10	9:42	D1	00010636.Anl	2.95	0.68	0.68		1.09	0.14	0.11		0.23	n/a	0.23		1.16	0.55	0.69														1.94	0.33	0.06	1.09	0.24	0.06
0126SO00505	126	4 to 5	3/15/2010	10:04	126005	Normal	3/18/10	9:44	D2	00020637.Anl	2.69	0.63	0.63		0.86	0.14	0.17		0.12	0.15	0.25		1.15	0.35	0.90														1.46	0.28	0.06	0.77	0.19	0.06
0126SO00914	126	13 to 14	3/15/2010	10:08	126009	Normal	3/18/10	10:19	D1	00010637.Anl	2.73	0.67	0.65		0.75	0.16	0.12		0.11	0.12	0.19		1.55	0.31	0.58														1.48	0.27	0.06	0.67	0.17	0.03
0127SO00813	127	12 to 13	3/15/2010	10:57	127008	Normal	3/18/10	10:20	D2	00020638.Anl	3.39	0.72	0.72		0.97	0.17	0.13		0.12	0.18	0.29		2.65	0.86	0.99		2.92	0.67	0.62	0.90	0.17	0.13	0.23	n/a	0.23	1.72	0.48	0.52						
0127SO00914	127	13 to 14	3/15/2010	10:58	127009	Normal	3/18/10	12:16	D1	00010639.Anl	3.20	0.69	0.67		0.42	0.16	0.24		0.13	0.14	0.24		1.86	0.57	0.70														2.17	0.36	0.06	1.18	0.25	0.06
0127SO01015	127	14 to 15	3/15/2010	10:59	127010	Normal	3/20/10	17:22	D1	00010658.Anl	3.43	0.76	0.72		0.96	0.15	0.15		0.14	0.13	0.21		1.34	0.55	0.69														1.61	0.29	0.07	0.89	0.21	0.05
0128SO00303	128	2 to 3	3/15/2010	14:02	128003	Normal	3/19/10	13:55	D2	00020649.Anl	3.55	0.81	0.78		1.09	0.19	0.16		0.27	n/a	0.27		1.52	0.67	0.86														1.86	0.32	0.07	1.10	0.23	0.05
0128SO00404	128	3 to 4	3/15/2010	14:03	128004	Normal	3/18/10	14:33	D2	00020642.Anl	2.09	0.49	0.61		0.42	0.17	0.25		0.24	n/a	0.24		1.23	0.33	0.80														1.85	0.32	0.06	0.94	0.22	0.06
0128SO00404	128	3 to 4	3/15/2010	14:03	128011	Dup	3/18/10	13:43	D1	00010640.Anl	2.42	0.62	0.63		0.77	0.14	0.13		0.22	n/a	0.22		0.96	0.55	0.68																			
0128SO00915	128	14 to 15	3/15/2010	14:08	128009	Normal	3/19/10	13:53	D1	00010648.Anl	3.25	0.74	0.72		0.94	0.14	0.13		0.19	0.14	0.23		1.48	0.62	0.76														2.20	0.36	0.09	0.95	0.22	0.05
0129SO00505	129	4 to 5	3/12/2010	14:34	129005	Normal	3/18/10	14:35	D1	00010641.Anl	3.24	0.68	0.67		1.06	0.17	0.13		0.24	n/a	0.24		1.34	0.54	0.69														1.77	0.32	0.06	1.08	0.24	0.03

Table 9-1
Radionuclides Analytical Results - Soil Samples

Sample Information											On-Site Gamma Spectroscopy Results (gross activity)															
Sample ID	Boring/ Location No.	Depth Range (ft)	Collection Date	Collection Time	Tracking Number	Sample Type	Date Counted	Time Counted	Detector (D1 or D2)	Spectrum Name	Ra-226 [pCi/g]				Th-232 (Ac-228 - γ Spec) [pCi/g]				U-235 [pCi/g]				U-238 (Th-234 - γ Spec) [pCi/g]			
											Conc.	±2σ	MDC	Qualifiers	Conc.	±2σ	MDC	Qualifiers	Conc.	±2σ	MDC	Qualifiers	Conc.	±2σ	MDC	Qualifiers
0129SO00505	129	4 to 5	3/12/2010	14:34	129013	Dup	3/18/10	15:12	D2	00020643.Anl	2.86	0.92	0.92		1.01	0.17	0.12		0.13	0.16	0.26		1.59	0.63	0.83	
0129SO00910	129	9 to 10	3/12/2010	14:38	129009	Normal	3/18/10	15:13	D1	00010642.Anl	2.26	0.60	0.61		0.89	0.16	0.10		0.07	0.12	0.19		1.27	0.50	0.62	
0129SO01115	129	14 to 15	3/12/2010	14:40	129011	Normal	3/18/10	13:45	D2	00020641.Anl	2.64	0.65	0.62		0.56	0.10	0.10		0.21	n/a	0.21		1.62	0.37	0.72	
0130SO00303	130	2 to 3	3/15/2010	8:22	130003	Normal	3/22/10	11:43	D1	00010659.Anl	3.35	0.69	0.67		1.05	0.17	0.12		0.11	0.14	0.22		1.69	0.65	0.77	
0130SO00303	130	2 to 3	3/15/2010	8:22	130013	Dup	3/22/10	12:26	D2	00020661.Anl	4.11	0.85	0.78		0.97	0.17	0.12		0.10	0.18	0.29		2.63	0.85	0.99	
0130SO00813	130	12 to 13	3/15/2010	8:27	130008	Normal	3/20/10	17:23	D2	00020659.Anl	2.81	0.51	0.65		1.01	0.17	0.12		0.27	n/a	0.27		1.31	0.41	1.04	
0130SO00914	130	13 to 14	3/15/2010	8:28	130009	Normal	3/25/10	20:00	D1	00010676.Anl	2.61	0.83	0.91		1.17	0.22	0.15		0.13	0.18	0.30		1.50	0.35	0.80	
0130SO01116	130	15 to 16	3/15/2010	8:30	130011	Normal	3/22/10	17:37	D1	00010666.Anl	3.50	0.75	0.72		0.82	0.14	0.10		0.10	0.14	0.24		1.48	0.65	0.78	
0131SO00404	131	3 to 4	3/12/2010	10:43	131004	Normal	3/18/10	15:51	D1	00010643.Anl	2.67	0.69	0.69		1.00	0.12	0.12		0.23	n/a	0.23		1.15	0.52	0.67	
0131SO00707	131	6 to 7	3/12/2010	10:46	131007	Normal	3/19/10	16:09	D1	00010650.Anl	2.12	0.65	0.68		0.84	0.14	0.09		0.14	0.13	0.21		1.09	0.39	0.58	
0131SO00909	131	8 to 9	3/12/2010	10:28	131009	Normal	3/18/10	16:27	D2	00020645.Anl	2.58	0.64	0.65		0.93	0.18	0.13		0.24	n/a	0.24		1.30	0.68	0.84	
0132SO00505	132	4 to 5	3/12/2010	11:14	132005	Normal	3/18/10	15:49	D2	00020644.Anl	2.59	0.75	0.75		1.12	0.21	0.13		0.11	0.15	0.25		1.30	0.66	0.83	
0132SO00808	132	7 to 8	3/12/2010	11:17	132008	Normal	3/18/10	16:26	D1	00010644.Anl	2.33	0.53	0.51		0.41	0.12	0.16		0.07	0.11	0.18		0.60	0.20	0.51	
0132SO01016	132	15 to 16	3/12/2010	11:19	132010	Normal	3/18/10	17:17	D1	00010645.Anl	3.18	0.65	0.63		0.92	0.14	0.12		0.12	0.13	0.21		1.22	0.31	0.71	
0133SO00303	133	2 to 3	3/12/2010	16:32	133003	Normal	3/17/10	15:50	D1	00010634.Anl	**19.64**	2.13	1.26		0.81	0.17	0.18		0.78	0.28	0.35		12.38	1.59	1.46	
0133SO00707	133	6 to 7	3/12/2010	16:36	133007	Normal	3/18/10	17:18	D2	00020646.Anl	2.96	0.76	0.78		1.06	0.15	0.15		0.27	n/a	0.27		2.09	0.86	1.03	
0133SO00910	133	9 to 10	3/12/2010	16:38	133009	Normal	3/17/10	15:52	D2	00020635.Anl	2.19	0.67	0.70	Jcc	0.99	0.18	0.11	Jcc	0.10	0.15	0.24	Jcc	1.27	0.33	0.75	Jcc
0134SO00909	134	8 to 9	3/12/2010	16:08	134009	Normal	3/17/10	14:33	D2	00020633.Anl	2.38	0.71	0.68	Jcc	0.87	0.14	0.08	Jcc	0.21	n/a	0.21	Jcc	1.22	0.30	0.67	Jcc
0134SO01011	134	10 to 11	3/12/2010	16:09	134010	Normal	3/17/10	14:35	D1	00010632.Anl	1.84	0.61	0.64		0.83	0.14	0.10		0.20	n/a	0.20		0.85	0.24	0.59	
0134SO01113	134	12 to 13	3/12/2010	16:10	134011	Normal	3/18/10	17:52	D2	00020647.Anl	3.09	0.80	0.74		0.72	0.13	0.14		0.12	0.14	0.23		1.84	0.41	0.81	
0135SO00808	135	7 to 8	3/16/2010	8:27	135008	Normal	3/22/10	14:30	D2	00020663.Anl	3.55	0.88	0.86		1.11	0.17	0.11		0.12	0.17	0.28		1.85	0.42	0.90	
0135SO00808	135	7 to 8	3/16/2010	8:27	135013	Dup	3/22/10	15:08	D1	00010663.Anl	3.61	0.70	0.67		0.98	0.15	0.08		0.11	0.14	0.23		1.54	0.35	0.68	
0135SO00909	135	8 to 9	3/16/2010	8:28	135009	Normal	3/22/10	14:28	D1	00010662.Anl	2.56	0.70	0.72		0.92	0.14	0.10		0.21	n/a	0.21		1.17	0.46	0.61	
0135SO01011	135	10 to 11	3/16/2010	8:29	135010	Normal	3/22/10	15:10	D2	00020664.Anl	4.70	0.92	0.79		0.80	0.13	0.14		0.14	0.17	0.27		1.64	0.42	0.93	
0136SO00608	136	7 to 8	3/11/2010	16:35	136006	Normal	3/22/10	11:46	D2	00020660.Anl	2.80	0.82	0.76		0.67	0.15	0.13		0.24	n/a	0.24		1.51	0.72	0.86	
0136SO00608	136	7 to 8	3/11/2010	16:35	136011	Dup	3/22/10	13:47	D1	00010661.Anl	2.25	0.49	0.51		0.83	0.13	0.12		0.17	0.12	0.20		1.07	0.39	0.59	
0136SO00712	136	11 to 12	3/11/2010	16:36	136007	Normal	3/19/10	16:11	D2	00020651.Anl	3.15	0.88	0.86	Jcc	1.04	0.14	0.09	Jcc	0.30	n/a	0.30	Jcc	1.58	0.40	0.85	Jcc
0136SO00813	136	12 to 13	3/11/2010	16:37	136008	Normal	3/22/10	12:24	D1	00010660.Anl	3.58	0.81	0.76		1.02	0.19	0.14		0.27	0.15	0.19		1.17	0.44	0.61	
0137SO00303	137	2 to 3	3/11/2010	15:52	137003	Normal	3/19/10	17:03	D1	00010651.Anl	2.82	0.57	0.57		1.04	0.16	0.12		0.23	n/a	0.23		1.00	0.51	0.66	
0137SO00404	137	3 to 4	3/11/2010	15:15	137004	Normal	3/22/10	13:49	D2	00020662.Anl	2.83	0.82	0.81		1.01	0.17	0.11		0.16	0.17	0.27		1.76	0.75	0.91	
0137SO00809	137	8 to 9	3/11/2010	15:57	137008	Normal	3/19/10	17:04	D2	00020652.Anl	2.38	0.68	0.68	Jcc	0.91	0.17	0.10	Jcc	0.07	0.14	0.24	Jcc	1.31	0.50	0.76	Jcc
0138SO00101	138	0 to 1	3/12/2010	9:10	138001	Normal	3/18/10	10:59	D2	00020639.Anl	4.30	0.79	0.75		1.00	0.21	0.16		0.13	0.19	0.31		2.38	0.96	1.11	
0138SO00202	138	1 to 2	3/12/2010	9:11	138002	Normal	3/16/10	17:02	D2	00020627.Anl	**20.37**	2.21	1.21		0.81	0.18	0.15		0.92	0.33	0.37		16.51	1.44	1.66	
0138SO00607	138	6 to 7	3/12/2010	9:15	138006	Normal	3/18/10	10:57	D1	00010638.Anl	2.68	0.63	0.65		0.86	0.15	0.12		0.23	n/a	0.23		1.26	0.52	0.66	
0138SO00607	138	6 to 7	3/12/2010	9:15	138010	Dup	3/18/10	12:20	D2	00020640.Anl	1.97	0.60	0.87		1.05	0.17	0.14		0.13	0.16	0.27		1.68	0.75	0.91	
0139SO00303	139	2 to 3	3/20/2010	14:47	139003	Normal	3/23/10	18:00	D1	00010672.Anl	2.33	0.50	0.63		1.10	0.14	0.10		0.25	n/a	0.25		0.91	0.44	0.68	
0139SO00709	139	8 to 9	3/20/2010	14:51	139007	Normal	3/23/10	14:01	D2	00020671.Anl	2.90	0.56	0.65	Jcc	0.98	0.18	0.14	Jcc	0.07	0.15	0.25	Jcc	1.99	0.86	0.99	Jcc
0139SO00810	139	9 to 10	3/20/2010	14:52	139008	Normal	3/23/10	16:11	D1	00010671.Anl	3.10	0.73	0.72		1.03	0.14	0.07		0.23	n/a	0.23		1.58	0.66	0.79	
0200SO00101	200	0 to 1	12/8/2009	13:30	200001	Normal	3/9/10	15:03	D2	00020587.Anl	**7.24**	1.39	1.30	Jcc	1.16	0.22	0.27	Jcc	0.29	0.28	0.43	Jcc	3.78	0.92	0.89	Jcc
0200SO10002	200	1 to 2	4/9/2010	---	---	Bounding	---	---	---	---																
0200SO00709	200	8 to 9	12/8/2009	13:36	200007	Normal	2/23/10	14:52	D2	00020556.Anl	2.46	1.00	1.44		0.97	0.20	0.18		0.45	n/a	0.45		1.92	0.56	0.79	
0200SO00810	200	9 to 10	12/8/2009	13:37	200008	Normal	2/23/10	16:03	D2	00020557.Anl	3.06	0.82	0.82		0.97	0.22	0.17		0.14	0.18	0.28		1.88	0.48	0.58	
0201SO10007	201	6 to 7	4/9/2010	---	---	Bounding	---	---	---	---																
0201SO00808	201	7 to 8	12/8/2009	13:17	201008	Normal	2/23/10	17:09	D2	00020559.Anl	2.64	0.84	0.83		0.89	0.16	0.13		0.28	n/a	0.28		1.06	0.35	0.66	
0201SO00808	201	7 to 8	12/8/2009	13:17	201012	Dup	2/24/10	8:50	D2	00020561.Anl	2.59	0.74	0.78		0.86	0.16	0.13		0.23	n/a	0.23		1.46	0.43	0.85	
0201SO00913	201	12 to 13	12/8/2009	13:18	201009	Normal	2/15/10	13:35	D2	00020469.Anl	3.13	1.02	1.00		1.03	0.21	0.17		0.31	n/a	0.31		1.51	0.48	0.98	
0201SO01014	201	13 to 14	12/8/2009	13:19	201010	Normal	2/24/10	9:18	D2	00020562.Anl	3.51	0.87	0.85		1.11	0.21	0.14		0.23	n/a	0.23		1.31	0.36	0.85	
0202SO00202	202	1 to 2	12/14/2009	16:01	202002	Normal	1/18/10	16:32	D2	00020196.Anl	2.90	0.62	0.57		0.85	0.12	0.09		0.16	n/a	0.16		1.42	0.51	0.60	
0202SO00202	202	1 to 2	12/14/2009	16:01	202010	Dup	1/18/10	16:15	D1	00010248.Anl	3.12	0.57	0.54		0.96	0.12	0.11		0.20	0.11	0.14		2.56	0.58	0.65	
0202SO00303	202	2 to 3	12/14/2009	16:02	202003	Normal	1/10/10	11:56	D2	00020172.Anl	3.00	0.56	0.50		0.90	0.11	0.08		0.14	n/a	0.14		1.25	0.47	0.55	
0202SO00404	202	3 to 4	12/14/2009	16:03	202004	Normal	1/8/10	10:05	D1	00010213.Anl	3.21	0.54	0.49	Jcc	1.04	0.13	0.10	Jcc	0.19	0.10	0.13	Jcc	1.48	0.28	0.54	Jcc
0203SO00101	203	0 to 1	12/9/2009	9:30	203001	Normal	3/10/10	17:39	D1	00010533.Anl	**8.55**	1.36	1.15		1.03	0.17	0.20		0.37	0.25	0.39		3.52	0.60	0.69	
0203SO10002	203	1 to 2	4/9/2010	---	---	Bounding	---	---	---	---																
0203SO00812	203	11 to 12	12/9/2009	9:37	203008	Normal	3/11/10	10:26	D1	00010537.Anl	3.09	0.69	0.68		0.98	0.13	0.12		0.16	n/a	0.16		1.99	0.66	0.80	
0203SO01014	203	13 to 14	12/9/2009	9:39	203010	Normal	2/23/10	16:33	D2	00020558.Anl	3.35	0.84	0.83		1.05	0.23	0.15		0.13	0.19	0.31		1.82	0.46	0.53	
0204SO10001	204	0 to 1	4/9/2010	---	---	Bounding	---	---	---	---																
0204SO00909	204	8 to 9	12/9/2009	12:08	204009	Normal	12/31/09	16:04	D1	00010199.Anl	2.07	0.44	0.44		0.92	0.11	0.08		0.20	0.10	0.12		0.99	0.34	0.44	
0204SO01114	204	13 to 14	12/9/2009	12:10	204011	Normal	1/4/10	16:13	D2	00020161.Anl	4.03	0.70	0.61		0.95	0.14	0.11		0.19	n/a	0.19		2.16	0.35	0.63	
0204SO01215	204	14 to 15	12/9/2009	12:11	204012	Normal	1/1/10	14:34	D2	00020156.Anl	2.94	0.57	0.54	Jcc	0.79	0.12	0.09	Jcc	0.14	n/a	0.14	Jcc	1.75	0.32	0.58	Jcc
0204SO01215	204	14 to 15	12/9/2009	12:11	204014	Dup	1/1/10	14:32	D1	00010201.Anl	3.18	0.50	0.44		0.85	0.11	0.08		0.14	0.08	0.12		1.76	0.28	0.54	
0205so10001	205	0 to 1	4/9/2010	---	---	Bounding	---	---	---	---																
0205SO00708	205	7 to 8	12/10/2009	14:06	205007	Normal	1/12/10	8:39	D2	00020175.Anl	2.57	0.48	0.45		0.91	0.12	0.07		0.11	n/a	0.11		1.22	0.39	0.48	
0205SO00814	205	13 to 14	12/10/2009	14:07	205008	Normal	1/11/10	15:03	D2	00020173.Anl	3.24	0.59	0.54		0.86	0.11	0.08		0.20	0.12	0.15		1.59	0.30	0.58	
0205SO00915	205	14 to 15	12/10/2009	14:08	205009	Normal	1/14/10	17:54	D2	00020180.Anl	2.89	0.57	0.51		0.94	0.12	0.09		0.16	n/a	0.16		1.69	0.31	0.58	
0206SO00101	206	0 to 1	12/10/2009	10:30	206001	Normal	3/11/10	9:57	D2	00020604.Anl	**5.92**	1.19	1.12		1.16	0.20	0.14		0.27	0.23	0.35		2.81	0.60	0.80	
0206SO00202	206	1 to 2	12/10/2009	10:31	206002	Normal	1/4/10	15:06	D1	00010205.Anl	2.76	0.50	0.46	Jcc	1.04	0.11	0.08	Jcc	0.15	0.07	0.11	Jcc	1.39	0.24	0.50	Jcc
0206SO00303	206	2 to 3	12/10/2009	10:32	206003	Normal	1/4/10	13:58	D1	00010204.Anl	2.84	0.44	0.41	Jcc	0.88	0.11	0.08	Jcc	0.14	n/a	0.14	Jcc	1.41	0.25	0.51	Jcc
0207SO00303	207	2 to 3	12/4/2009	16:17	207003	Normal	2/6/10	11:13	D2	00020396.Anl	3.45	0.98	0.97		0.98	0.17	0.14		0.22	n/a	0.22		1.68	0.72	0.92	
0207SO00303	207	2 to 3	12/4/2009	16:17	207013	Dup	2/6/10	18:01	D2	00020403.Anl	3.97	1.01	0.99		1.19	0.24	0.15		0.27	n/a	0.27		1.77	0.44	1.00	
0207SO00912	207	11 to 12	12/4/2009	16:23	207009	Normal	2/8/10	15:27	D1	00010459.Anl	2.75	0.79	0.85		1.40	0.24	0.14		0.29	n/a	0.29		1.78	0.76	0.94	
0207SO01115	207	14 to 15	12/4/2009	16:25	207011	Normal	2/8/10	16:28	D1	00010461.Anl	2.10	0.55	0.61		0.62	0.15	0.18		0.10	0.15	0.23		0.74	0.36	0.57	
0208SO10007	208	6 to 7	4/9/2010	---	---	Bounding	---	---	---	---																
0208SO00708	208	7 to 8	12/10/2009	11:36	208007	Normal	1/7/10	14:55	D1	00010209.Anl	2.87	0.57	0.52		0.89	0.12	0.08		0.10	n/a	0.10		1.38	0.26	0.55	
0208SO00708	208	7 to 8	12/10/2009	11:36	208012	Dup	1/7/10	18:14	D1	00010211.Anl	2.99	0.53	0.48		0.80	0.11	0.11		0.13	n/a	0.13		1.72	0.26	0.49	
0208SO00809	208	8 to 9	12/10/2009	11:37	208008	Normal	1/7/10	11:08	D1	00010207.Anl	2.39	0.54	0.52		0.98	0.12	0.08		0.13	n/a	0.13		1.53	0.24	0.48	
0208SO00910	208	9 to 10	12/10/2009	11:38	208009	Normal	1/7/10	18:16	D2	00020167.Anl	2.54	0.57	0.54		0.79	0.13	0.11		0.15	n/a	0.15		1.57	0.29	0.51	
0209SO10007	209	6 to 7	4/9/2010	---	---	Bounding	---	---	---	---																
0209SO00814	209	13 to 14	12/10/2009	13:17	209008	Normal	1/7/10	13:42	D1	00010208.Anl	2.32	0.38	0.44		1.00	0.13	0.09		0.16	n/a	0.16		1.48	0.30	0.57	
0209SO00918	209	17 to 18	12/10/2009	13:18	209009	Normal	1/9/10	12:10	D1	00010214.Anl	2.97	0.46	0.43		0.96	0.11	0.09		0.15	n/a	0.15		1.37	0.23	0.54	
0209SO01019	209	18 to 19	12/10/2009	13:19	209010	Normal	1/7/10	13:45	D2	00020163.Anl	3.31	0.58	0.54		0.95	0.12	0.12		0.16	n/a	0.16		1.94	0.35	0.65	
0210SO00202	210	1 to 2	12/14/2009	15:01	210002	Normal	1/14/10	16:29	D2	00020179.Anl	2.65	0.55	0.51		0.94	0.13	0.09		0.13	n/a	0.13		0.96	0.40	0.50	
0210SO00303	210	2 to 3	12/14/2009	15:02	210003	Normal	1/4/10	11:12	D2	00020157.Anl	2.66	0.50	0.48		0.82	0.13	0.12		0.15	n/a	0.15		1.56	0.46	0.55	
0210SO00812	210	11 to 12	12/14/2009	15:07	210008	Normal	1/4/10	14:00	D2	00020159.Anl	2.49	0.47	0.47		0.95	0.15	0.11		0.16	n/a	0.16		1.71	0.32	0.62	
0211SO00303	211	2 to 3	12/10/2009	15:02	211003	Normal	1/16/10	17:57	D1	00010240.Anl	3.05	0.53	0.51		1.14	0.14	0.10		0.15	0.08	0.13		1.51	0.26	0.58	
0211SO00303	211	2 to 3	12/10/2009	15:02	211013	Dup	3/16/10	14:21	D1	00010621.Anl	2.72	0.60	0.64		0.97	0.12	0.12		0.12	0.15	0.23		1.15	0.43	0.66	
0211SO00912	211	11 to 12	12/10/2009	15:08	211009	Normal	1/12/10	8:34	D1	00010222.Anl	2.08	0.33	0.38		0.76	0.12	0.09		0.13	n/a	0.13		1.17	0.39	0.49	
0211SO01013	211	12 to 13	12/10/2009	15:09	211010	Normal	2/2/10	18:23	D2	00020366.Anl	2.20	0.64	0.72		0.82	0.15	0.09		0.23	n/a	0.23		1.43	0.40	0.80	
0212SO00202	212	1 to 2	12/14/2009	13:41	212002	Normal	1/12/10	16:04	D2	00020177.Anl	2.48	0.48	0.46		0.96	0.11	0.07		0.13	n/a	0.13		0.35	n/a	0.35	
0212SO00303	212	2 to 3	12/14/2009	13:42	212003	Normal	1/10/10	10:55	D1	00010219.Anl	2.55	0.45	0.44		0.99	0.12	0.08		0.16	n/a	0.16		1.42	0.26	0.51	
0212SO00809	212	8 to 9	12/14/2009	13:47	212008	Normal	1/8/10	8:43	D2	00020168.Anl	3.30	0.65	0.62		0.95	0.14	0.11		0.14	n/a	0.14		1.98	0.38	0.76	
0213SO00303	213	2 to 3	12/15/2009	12:52	213003	Normal	1/8/10	8:41	D1	00010212.Anl	3.14	0.56	0.52	Jcc	1.11	0.15	0.11	Jcc	0.13	n/a	0.13	Jcc	1.30	0.42	0.54	Jcc
0213SO00707	213	6 to 7	12/15/2009	12:56	213007	Normal	1/7/10	16:21	D1	00010210.Anl	2.15	0.47	0.47		0.91	0.12	0.09		0.12	n/a	0.12		1.31	0.23	0.53	
0213SO00912	213	11 to 12	12/15/2009	12:58	213009	Normal	1/7/10	15:00	D2	00020165.Anl	2.43	0.46	0.45		0.80	0.13	0.10		0.14	n/a	0.14		1.38	0.36	0.53	
0214SO10003	214	2 to 3	4/9/2010	---	---	Bounding	---	---	---	---																
0214SO00809	214	8 to 9	12/15/2009	9:57	214008	Normal	1/7/10	11:10	D2	00020162.Anl	2.88	0.64	0.60		0.91	0.15	0.11		0.15	n/a	0.15		1.52	0.26	0.56	
0214SO01019	214	18 to 19	12/15/2009	9:59	214010	Normal	1/7/10	16:29	D2	00020166.Anl	3.07	0.54	0.51		0.95	0.12	0.09		0.12	0.11	0.18		1.74	0.47	0.59	
0214SO01120	214	19 to 20	12/15/2009	10:00	214011	Normal	1/9/10	17:14	D2	00020170.Anl	3.02	0.46	0.51		1.11	0.15	0.12		0.20	n/a	0.20		1.71	0.27	0.64	
0215SO00303	215	2 to 3	12/15/2009	8:22	215003	Normal	1/4/10	16:23	D1	00010206.Anl	4.21	0.66	0.70		1.50	0.15	0.12		0.17	n/a	1.17		1.98	0.30	0.62	
0215SO00303	215	2 to 3	12/15/2009	8:22	215013	Dup	1/4/10	12:53	D2	00020158.Anl	3.16	0.67	0.62	Jcc	1.06	0.15	0.12	Jcc	0.16	n/a	0.16	Jcc	1.91	0.63	0.71	Jcc
0215SO01017	215	16 to 17	12/15/2009	8:29	215010	Normal	12/30/09	17:09	D1	00010197.Anl	2.76	0.54	0.51	Jcc	0.89	0.11	0.09	Jcc	0.12	n/a	0.12	Jcc	1.21	0.44	0.55	Jcc
0215SO01118	215	17 to 18	12/15/2009	8:30	215011	Normal	1/4/10	12:50	D1	00010203.Anl	3.33	0.65	0.59	Jcc	1.03	0.14	0.11	Jcc	0.12	n/a	0.12	Jcc	1.96	0.32	0.59	Jcc
0216SO00202	216	1 to 2	12/14/2009	12:31	216002	Normal	1/10/10	9:48	D2	00020171.Anl	2.42	0.50	0.49		0.91	0.11	0.10		0.14	n/a	0.14		0.95	0.22	0.53	
0216SO00202	216	1 to 2	12/14/2009	12:31	216013	Dup	3/11/10	10:37	D2	00020605.Anl	2.61	0.69	0.93		1.05	0.19	0.16		0.28	n/a	0.28		1.15	0.40	0.66	
0216SO01017	216	16 to 17	12/14/2009	12:39	216010	Normal	1/20/10	0:17	D1	00010257.Anl	2.99	0.46	0.43		0.91	0.13	0.11		0.16	n/a	0.16		1.74	0.29	0.57	
0216SO01118	216	17 to 18	12/14/2009	12:40	216011	Normal	1/10/10	9:46	D1	00010218.Anl	2.45	0.46	0.43		0.52	0.08	0.09		0.10	n/a	0.10		1.54	0.24	0.44	
0217SO00202	217	1 to 2	12/7/2009	15:01	217002	Normal	2/24/10	9:47	D2	00020563.Anl	2.83	0.74	0.75		1.03	0.18	0.19		0.21	n/a	0.21		1.69	0.46	0.95	
0217SO00508	217	7 to 8	12/7/2009	15:04	217005	Normal	2/11/10	15:48	D2	00020426.Anl	2.27	0.72	0.76		0.84	0.15	0.16		0.15	0.16	0.26		0.81	n/a	0.81	
0217SO00612	217	11 to 12	12/7/2009	15:05	217006	Normal	2/8/10	14:35	D1	00010457.Anl	3.01	0.74	0.77		0.41	n/a	0.41		0.28	n/a	0.28		1.87	0.67	0.84	
0218SO00303	218	2 to 3	12/11/2009	9:22	218003	Normal	1/15/10	18:20	D1	00010235.Anl	2.91	0.55	0.49		0.90	0.10	0.07		0.11	n/a	0.11		1.05	0.39	0.50	
0218SO00303	218	2 to 3	12/11/2009	9:22	218012	Dup	1/17/10	22:24	D1	00010241.Anl	2.91	0.47	0.45		1.13	0.17	0.12		0.16	n/a	0.16		1.71	0.49	0.59	
0218SO00809	218	8 to 9	12/11/2009	9:27	218008	Normal	1/9/10	15:04	D1	00010216.Anl	2.49	0.45	0.44		0.95	0.13	0.09		0.12	n/a	0.12		1.48	0.25	0.46	
0218SO00910	218	9 to 10	12/11/2009	9:28	218009	Normal	1/9/10	13:53	D1	00010215.Anl	2.28	0.45	0.42		0.83	0.09	0.09		0.11	n/a	0.11		1.29	0.22	0.50	
6A001SO00101	6A001	0 to 1	3/16/2010	15:20	6A0101	Normal	3/20/10	14:09	D2	00020655.Anl	2.82	0.91	0.90		1.04	0.17	0.11		0.28	n/a	0.28		2.00	0.85	0.99	
6A002SO00101	6A002	0 to 1	3/16/2010	15:10	6A0201	Normal	3/20/10	14:08	D1	00010654.Anl	2.92	0.82	0.81		1.22	0.17	0.10		0.09	0.15	0.24		1.40	0.62	0.75	
6A003SO00101	6A003	0 to 1	3/16/2010	16:30	6A0301	Normal	3/23/10	9:46	D2	00020669.Anl	**19.07**	2.47	1.72	Jcc	1.17	0.25	0.27	Jcc	0.72	0.35	0.43	Jcc	8.28	1.14	2.03	Jcc
6A004SO00101	6A004	0 to 1	3/16/2010	16:15	6A0401	Normal	3/23/10	9:44	D1	00010668.Anl	**8.29**	1.20	0.93		1.14	0.21	0.16		0.38	0.22	0.28		3.59	0.93	1.08	
6A005SO00101	6A005	0 to 1	3/16/2010	14:00	6A0501	Normal	3/20/10	15:26	D1	00010655.Anl	**10.49**	1.51	1.13		1.24	0.23	0.15		0.41	0.24	0.29		4.69	0.63	1.09	
6A006SO00101	6A006	0 to 1	3/16/2010	13:50	6A0601	Normal	3/23/10	8:39	D2	00020668.Anl	3.69	0.93	0.90		1.10	0.19	0.15		0.28	n/a	0.28		2.08	0.81	0.97	
6A007SO00101	6A007	0 to 1	3/16/2010	13:40	6A0701	Normal	3/23/10	10:28	D2	00020670.Anl	**41.89**	4.11	2.53	Jcc	0.85	0.31	0.45	Jcc	1.50	0.64	0.75	Jcc	19.30	2.38	2.85	Jcc
6A008SO00101	6A008	0 to 1	3/16/2010	16:45	6A0801	Normal	3/22/10	17:38	D2	00020667.Anl	**67.66**	6.75	3.60		1.17	0.68	0.69		1.77	0.86	1.02		26.31	3.67	3.87	

Sample ID	Off-Site TestAmerica Analytical Results (gross activity)																	
	Ra-226 [pCi/g]			Th-232 (Ac-228 - γ Spec) [pCi/g]			U-235 [pCi/g]			U-238 (Th-234 - γ Spec) [pCi/g]			Th-230 (α Spec) [pCi/g]			Th-232 (α Spec) [pCi/g]		
	Conc.	±2σ	MDC	Conc.	±2σ	MDC	Conc.	±2σ	MDC	Conc.	±2σ	MDC	Conc.	±2σ	MDC	Conc.	±2σ	MDC
0129SO00505																		
0129SO00910													1.47	0.27	0.03	0.99	0.21	0.04
0129SO01115													1.44	0.28	0.07	0.55	0.16	0.07
0130SO00303													1.64	0.29	0.05	0.77	0.19	0.04
0130SO00303																		
0130SO00813													1.63	0.31	0.05	0.89	0.22	0.05
0130SO00914													1.83	0.32	0.03	1.00	0.23	0.05
0130SO01116													2.54	0.39	0.03	0.92	0.21	0.03
0131SO00404													1.45	0.27	0.06	0.94	0.21	0.03
0131SO00707													1.46	0.27	0.03	0.82	0.19	0.03
0131SO00909													1.30	0.26	0.04	0.78	0.19	0.03
0132SO00505													1.53	0.30	0.03	1.03	0.24	0.05
0132SO00808													1.13	0.24	0.05	0.70	0.18	0.05
0132SO01016													1.83	0.32	0.03	0.82	0.20	0.05
0133SO00303	**19.20**	2.80	1.60	1.00	0.24	0.26	0.85	0.37	0.44	10.70	1.30	1.00						
0133SO00707													1.82	0.32	0.05	1.21	0.25	0.05
0133SO00910													1.35	0.27	0.03	0.83	0.20	0.03
0134SO00909													1.16	0.26	0.07	0.96	0.23	0.06
0134SO01011													1.22	0.26	0.03	0.91	0.22	0.03
0134SO01113													1.51	0.28	0.06	0.61	0.17	0.06
0135SO00808													1.93	0.34	0.08	0.73	0.19	0.06
0135SO00808																		
0135SO00909													1.53	0.29	0.07	1.04	0.23	0.05
0135SO01011													1.84	0.33	0.05	0.68	0.19	0.05
0136SO00608													1.24	0.26	0.07	1.01	0.23	0.06
0136SO00608													1.43	0.28	0.06	1.14	0.25	0.03
0136SO00712													1.73	0.32	0.06	1.16	0.25	0.05
0136SO00813													1.64	0.30	0.05	1.12	0.24	0.05
0137SO00303													1.79	0.32	0.05	1.33	0.26	0.06
0137SO00404													1.43					
0137SO00809													1.43	0.29	0.08	0.88	0.22	0.06
0138SO00101	4.40	1.00	0.90	0.97	0.20	0.14	0.27	n/a	0.27	1.59	0.43	0.63						
0138SO00202	**18.40**	2.80	1.40	0.73	0.32	0.41	1.06	0.45	0.50	13.50	1.90	1.40						
0138SO00607													1.62	0.31	0.05	0.91	0.22	0.03
0138SO00607																		
0139SO00303													1.63	0.29	0.04	0.93	0.21	0.03
0139SO00709													1.95	0.32	0.03	0.78	0.18	0.03
0139SO00810													2.27	0.38	0.06	1.07	0.25	0.07
0200SO00101													3.66	0.50	0.09	0.65	0.18	0.06
0200SO10002	3.62	0.97	0.90	1.15	0.21	0.13	0.32	n/a	0.32	3.22	0.98	0.85						
0200SO00709	3.39	0.76	0.67	0.86	0.17	0.14	0.25	n/a	0.25	1.47	0.39	0.44						
0200SO00810													1.65	0.30	0.06	0.95	0.22	0.07
0201SO10007	1.79	0.68	0.65	0.69	0.11	0.07	0.22	n/a	0.22	1.03	0.31	0.48						
0201SO00808													1.33	0.26	0.03	1.05	0.23	0.03
0201SO00808																		
0201SO00913													2.25	0.37	0.03	1.22	0.26	0.03
0201SO01014	3.09	0.69	0.59	0.99	0.17	0.11	0.24	n/a	0.24	0.67	0.32	0.49	1.70	0.29	0.03	0.77	0.18	0.03
0202SO00202													2.19	0.36	0.08	1.06	0.23	0.05
0202SO00202																		
0202SO00303	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.90	0.30	0.04	1.08	0.21	0.02
0202SO00404	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.15	0.32	0.05	0.80	0.17	0.04
0203SO00101													5.92	0.69	0.06	0.55	0.15	0.05
0203SO10002	**13.40**	2.10	1.50	1.22	0.24	0.24	0.51	0.26	0.35	4.95	0.79	0.80						
0203SO00812													1.90	0.33	0.06	0.84	0.21	0.07
0203SO01014													2.01	0.34	0.03	1.16	0.24	0.03
0204SO10001	**7.00**	1.30	1.00	1.07	0.21	0.24	0.24	0.20	0.33	2.63	0.51	0.59						
0204SO00909	2.07	0.48	0.62	1.00	0.19	0.12	0.24	n/a	0.24	0.94	0.39	0.60	1.63	0.29	0.06	0.86	0.20	0.05
0204SO01114	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.51	0.41	0.07	1.37	0.28	0.07
0204SO01215													1.92	0.33	0.07	0.89	0.21	0.06
0204SO01215																		
0205so10001	**8.90**	1.50	1.10	1.09	0.19	0.24	0.20	0.22	0.36	3.50	0.67	0.76						
0205SO00708													1.52	0.27	0.06	0.72	0.18	0.05
0205SO00814	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.78	0.28	0.03	0.89	0.18	0.03
0205SO00915													2.04	0.34	0.06	0.78	0.20	0.08
0206SO00101																		
0206SO00202	2.70	0.51	0.48	0.98	0.15	0.11	0.24	0.13	0.15	1.14	0.26	0.35	1.83	0.30	0.05	1.02	0.21	0.02
0206SO00303	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.82	0.29	0.04	0.98	0.20	0.04
0207SO00303													2.20	0.36	0.06	1.13	0.24	0.08
0207SO00303																		
0207SO00912													1.35	0.27	0.07	0.90	0.21	0.06
0207SO01115													1.18	0.25	0.05	0.79	0.20	0.03
0208SO10007	2.55	0.74	0.72	0.89	0.16	0.11	0.26	n/a	0.26	0.55	0.32	0.75						
0208SO00708	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.38	0.27	0.05	0.73	0.19	0.06
0208SO00708	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.13	0.38	0.07	0.87	0.23	0.07
0208SO00809	2.59	0.55	0.51	0.99	0.16	0.10	0.18	n/a	0.18	1.24	0.26	0.35	1.60	0.27	0.04	0.87	0.19	0.04
0208SO00910	1.69	0.46	0.45	0.72	0.11	0.09	0.15	n/a	0.15	1.34	0.29	0.33	1.58	0.29	0.05	0.92	0.21	0.05
0209SO10007	2.49	0.64	0.62	1.09	0.23	0.13	0.27	n/a	0.27	0.71	0.37	0.58						
0209SO00814	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.47	0.27	0.06	0.71	0.18	0.06
0209SO00918	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.78	0.28	0.04	1.04	0.20	0.04
0209SO01019	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.64	0.30	0.04	0.81	0.20	0.03
0210SO00202													2.04	0.35	0.08	1.18	0.25	0.06
0210SO00303	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.56	0.37	0.05	1.17	0.23	0.06
0210SO00812	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.64	0.27	0.04	0.88	0.18	0.04
0211SO00303													2.28	0.38	0.07	1.10	0.24	0.06
0211SO00303																		
0211SO00912													1.74	0.31	0.03	0.95	0.22	0.03
0211SO01013	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.34	0.26	0.07	0.91	0.21	0.06
0212SO00202													1.76	0.30	0.06	1.13	0.23	0.03
0212SO00303	2.67	0.71	0.71	0.87	0.15	0.16	0.25	n/a	0.25	0.86	0.39	0.61	1.82	0.32	0.05	0.95	0.22	0.06
0212SO00809	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.20	0.36	0.06	1.11	0.24	0.06
0213SO00303	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.01	0.31	0.07	1.03	0.20	0.06
0213SO00707	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.32	0.25	0.05	0.99	0.21	0.04
0213SO00912	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.60	0.29	0.07	0.76	0.19	0.05
0214SO10003	2.88	0.82	0.76	0.93	0.16	0.12	0.13	0.15	0.24	1.10	0.39	0.59						
0214SO00809	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.50	0.28	0.03	0.70	0.18	0.04
0214SO01019	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.98	0.34	0.05	1.19	0.25	0.05
0214SO01120	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.34	0.34	0.05	1.36	0.24	0.05
0215SO00303													1.97	0.34	0.06	1.30	0.27	0.06
0215SO00303	2.55	0.52	0.52	1.04	0.16	0.13	0.19	n/a	0.19	1.12	0.28	0.39	2.11	0.33	0.04	1.20	0.23	0.02
0215SO01017													1.40	0.26	0.07	0.89	0.20	0.05
0215SO01118	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.84	0.32	0.03	0.90	0.21	0.04
0216SO00202	2.46	0.46	0.47	0.93	0.15	0.11	0.17	n/a	0.17	1.32	0.30	0.35	1.89	0.30	0.02	1.02	0.21	0.05
0216SO00202																		
0216SO01017													1.64	0.30	0.06	0.79	0.19	0.06
0216SO01118	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.69	0.28	0.07	0.48	0.14	0.06
0217SO00202													2.15	0.35	0.03	1.06	0.23	0.04
0217SO00508													1.34	0.26	0.06	0.91	0.21	0.06
0217SO00612													1.88	0.33	0.06	1.03	0.23	0.03
0218SO00303													1.96	0.33	0.05	0.92	0.21	0.03
0218SO00303																		
0218SO00809	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.37	0.24	0.04	0.98	0.20	0.04
0218SO00910	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.51	0.26	0.05	0.93	0.19	0.04
6A001SO00101													2.10	0.36	0.07	0.63	0.18	0.06
6A002SO00101													1.93	0.32	0.03	0.80	0.19	0.03
6A003SO00101																		
6A004SO00101																		
6A005SO00101																		
6A006SO00101													2.18	0.36	0.07	1.03	0.23	0.08
6A007SO00101																		
6A008SO00101																		

Table 9-1
Radionuclides Analytical Results - Soil Samples

Sample Information											On-Site Gamma Spectroscopy Results (gross activity)																Off-Site TestAmerica Analytical Results (gross activity)																
Sample ID	Boring/ Location No.	Depth Range (ft)	Collection Date	Collection Time	Tracking Number	Sample Type	Date Counted	Time Counted	Detector (D1 or D2)	Spectrum Name	Ra-226 [pCi/g]				Th-232 (Ac-228 - γ Spec) [pCi/g]				U-235 [pCi/g]				U-238 (Th-234 - γ Spec) [pCi/g]				Ra-226 [pCi/g]			Th-232 (Ac-228 - γ Spec) [pCi/g]			U-235 [pCi/g]			U-238 (Th-234 - γ Spec) [pCi/g]			Th-230 (α Spec) [pCi/g]			Th-232 (α Spec) [pCi/g]		
											Conc.	±2σ	MDC	Qualifiers	Conc.	±2σ	MDC	Qualifiers	Conc.	±2σ	MDC	Qualifiers	Conc.	±2σ	MDC	Qualifiers	Conc.	±2σ	MDC	Conc.	±2σ	MDC	Conc.	±2σ	MDC	Conc.	±2σ	MDC	Conc.	±2σ	MDC	Conc.	±2σ	MDC
6A009SO00101	6A009	0 to 1	3/16/2010	16:50	6A0901	Normal	3/23/10	10:27	D1	00010669.Anl	**14.98**	2.14	1.64		1.02	0.25	0.28		0.38	0.32	0.52		9.20	1.63	1.71																		
6A010SO00101	6A010	0 to 1	3/16/2010	17:00	6A1001	Normal	3/20/10	11:38	D1	00010653.Anl	3.92	0.92	0.86		0.74	0.14	0.09		0.14	0.15	0.25		1.70	0.42	0.84													1.83	0.33	0.09	0.78	0.20	0.05
6A011SO00101	6A011	0 to 1	3/16/2010	17:20	6A1101	Normal	3/20/10	11:39	D2	00020654.Anl	4.73	0.82	0.87		0.39	0.10	0.17		0.14	0.18	0.30		2.20	0.43	1.14													2.26	0.36	0.06	0.36	0.13	0.05
6A012SO00101	6A012	0 to 1	3/16/2010	13:31	6A1201	Normal	3/20/10	10:37	D1	00010652.Anl	**66.80**	5.98	2.66		0.42	0.37	0.59		2.39	0.49	0.70		**28.97**	3.28	3.07																		
6A013SO00101	6A013	0 to 1	3/16/2010	13:29	6A1301	Normal	3/23/10	8:38	D1	00010667.Anl	**76.09**	7.14	3.30		1.00	0.30	0.63		2.25	0.71	0.84		**29.35**	3.24	3.09																		
6A014SO00101	6A014	0 to 1	3/16/2010	13:15	6A1401	Normal	3/20/10	10:39	D2	00020653.Anl	**95.70**	9.43	4.87		1.25	0.52	0.95		2.15	0.76	1.19		**41.33**	5.46	5.39																		
6A015SO00101	6A015	0 to 1	3/11/2010	16:30	6A1501	Normal	3/17/10	13:53	D1	00010631.Anl	**76.45**	7.12	3.24		0.57	0.40	0.65		2.08	0.71	0.85		26.44	2.93	2.90																		
6A016SO00101	6A016	0 to 1	3/11/2010	16:00	6A1601	Normal	3/17/10	13:51	D2	00020632.Anl	**26.49**	2.88	1.82	Jcc	1.14	0.40	0.36	Jcc	0.59	n/a	0.59	Jcc	10.79	1.36	2.35	Jcc																		
6A017SO00101	6A017	0 to 1	3/11/2010	15:30	6A1701	Normal	3/17/10	13:14	D1	00010630.Anl	**73.80**	6.62	2.88		0.69	0.26	0.66		2.74	0.78	0.89		26.21	3.27	3.29																		
6A018SO00101	6A018	0 to 1	3/11/2010	15:00	6A1801	Normal	3/17/10	13:13	D2	00020631.Anl	**105.65**	9.14	3.28		1.50	0.41	0.61		2.40	0.85	1.02		**28.76**	4.25	4.45													**27.00**	2.50	0.03	0.82	0.20	0.03
6A019SO00101	6A019	0 to 1	3/11/2010	14:30	6A1901	Normal	3/16/10	17:32	D1	00010626.Anl	**27.00**	2.75	1.51		1.03	0.20	0.24		1.35	0.34	0.40		10.75	1.44	1.49																		
6A020SO00101	6A020	0 to 1	3/11/2010	13:40	6A2001	Normal	3/17/10	11:25	D1	00010629.Anl	**6.81**	1.13	0.98		0.95	0.18	0.14		0.34	0.18	0.24		2.90	0.50	1.01																		
6A021SO00101	6A021	0 to 1	3/11/2010	14:15	6A2101	Normal	3/17/10	11:24	D2	00020630.Anl	**9.83**	1.36	1.07		1.58	0.29	0.17		0.28	0.27	0.43		4.22	1.28	1.49																		
6A022SO00101	6A022	0 to 1	3/11/2010	13:15	6A2201	Normal	3/19/10	10:20	D2	00020648.Anl	**15.03**	2.16	1.66	Jcc	1.06	0.22	0.26	Jcc	0.36	0.30	0.49	Jcc	6.69	0.96	1.77	Jcc																		
6A023SO00101	6A023	0 to 1	3/11/2010	13:00	6A2301	Normal	3/19/10	10:18	D1	00010647.Anl	**174.73**	14.89	4.13		1.04	0.50	0.79		5.90	0.93	1.05		**56.53**	5.02	4.06													**117.00**	10.00	0.04	1.09	0.23	0.03
6A024SO00101	6A024	0 to 1	3/11/2010	11:30	6A2401	Normal	3/17/10	10:46	D1	00010628.Anl	**129.91**	11.21	3.46		1.27	0.39	0.53		4.05	0.85	0.97		**42.00**	4.01	3.49													**100.00**	8.70	0.05	0.77	0.20	0.03
6A025SO00101	6A025	0 to 1	3/11/2010	11:00	6A2501	Normal	3/17/10	10:44	D2	00020629.Anl	**16.79**	2.03	1.43	Jcc	0.91	0.21	0.24	Jcc	0.30	0.33	0.54	Jcc	9.36	2.17	2.19	Jcc																		
6A026SO00101	6A026	0 to 1	3/11/2010	10:30	6A2601	Normal	3/17/10	10:07	D1	00010627.Anl	**26.20**	3.00	1.95		1.46	0.31	0.34		0.97	0.43	0.53		10.49	1.94	2.10																		
6A027SO00101	6A027	0 to 1	3/11/2010	10:15	6A2701	Normal	3/17/10	10:05	D2	00020628.Anl	2.00	0.60	0.58	Jcc	0.40	0.10	0.10	Jcc	0.20	n/a	0.20	Jcc	1.15	0.49	0.60	Jcc													0.67	0.17	0.05	0.31	0.11	0.03
6A028SO00101	6A028	0 to 1	3/11/2010	10:00	6A2801	Normal	3/17/10	15:11	D1	00010633.Anl	**6.90**	1.17	0.99		0.91	0.15	0.18		0.25	0.19	0.30		2.98	0.55	1.05																		
6A029SO00101	6A029	0 to 1	3/11/2010	9:45	6A2901	Normal	3/18/10	17:52	D1	00010646.Anl	**8.84**	1.24	0.97		0.68	0.14	0.15		0.19	0.19	0.32		3.31	0.93	1.07																		
6A030SO00101	6A030	0 to 1	3/11/2010	9:30	6A3001	Normal	3/17/10	15:10	D2	00020634.Anl	2.63	0.88	0.89	Jcc	1.04	0.18	0.13	Jcc	0.13	0.16	0.26	Jcc	1.41	0.42	1.17	Jcc													1.59	0.30	0.03	0.93	0.22	0.05
7G03SO00708	7G03	7 to 8	1/8/2010	15:06	7G03007	Normal	1/30/10	13:29	D1	00010399.Anl	2.51	0.58	0.61		1.00	0.16	0.11		0.26	n/a	0.26		1.93	0.76	0.89													1.63	0.29	0.05	0.83	0.19	0.05
7G03SO00708	7G03	7 to 8	1/8/2010	15:06	7G03011	Dup	1/30/10	13:30	D2	00020341.Anl	1.79	0.48	0.61		0.82	0.12	0.06		0.19	n/a	0.19		0.46	n/a	0.46													1.54	0.30	0.08	0.91	0.22	0.09
7G03SO00810	7G03	9 to 10	1/8/2010	15:07	7G03008	Normal	1/23/10	4:47	D2	00020242.Anl	2.22	0.63	0.65		0.75	0.11	0.07		0.19	n/a	0.19		1.10	0.29	0.70		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.30	0.26	0.04	0.92	0.21	0.05
7G03SO01020	7G03	19 to 20	1/8/2010	15:09	7G03010	Normal	1/24/10	11:45	D1	00010317.Anl	3.27	0.69	0.68		1.00	0.16	0.16		0.22	n/a	0.22		1.65	0.45	0.91		2.43	0.68	0.69	0.78	0.14	0.12	0.23	n/a	0.23	1.19	0.40	0.59	1.56	0.29	0.05	0.58	0.16	0.03
7G04SO01017	7G04	16 to 17	1/8/2010	9:09	7G04010	Normal	1/23/10	11:27	D1	00010303.Anl	2.59	0.63	0.64		0.91	0.14	0.14		0.15	n/a	0.15		1.47	0.34	0.68		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.68	0.30	0.06	0.95	0.22	0.06
7G04SO01118	7G04	17 to 18	1/8/2010	9:10	7G04011	Normal	1/24/10	15:25	D2	00020255.Anl	3.05	0.77	0.77		0.83	0.16	0.11		0.24	n/a	0.24		1.91	0.45	0.89		2.77	0.77	0.76	0.83	0.16	0.13	0.23	n/a	0.23	1.21	0.34	0.48	2.08	0.35	0.06	0.99	0.22	0.05
7G04SO01219	7G04	18 to 19	1/8/2010	9:11	7G04012	Normal	1/25/10	8:25	D1	00010330.Anl	3.14	0.79	0.77		0.82	0.15	0.15		0.25	0.14	0.18		1.73	0.35	0.78		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.91	0.34	0.06	0.55	0.16	0.06
7G05SO00202	7G05	1 to 2	1/7/2010	16:20	7G05002	Normal	1/23/10	9:54	D1	00010302.Anl	2.27	0.46	0.56		1.10	0.18	0.12		0.18	n/a	0.18		1.38	0.34	0.71													1.77	0.32	0.06	0.86	0.21	0.06
7G05SO00303	7G05	2 to 3	1/7/2010	16:22	7G05003	Normal	1/23/10	6:15	D1	00010301.Anl	2.96	0.59	0.58		1.01	0.14	0.10		0.15	n/a	0.15		1.46	0.34	0.72		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.58	0.29	0.04	0.98	0.22	0.04
7G05SO00710	7G05	9 to 10	1/7/2010	16:26	7G05007	Normal	1/23/10	11:35	D2	00020245.Anl	2.19	0.59	0.58		0.87	0.14	0.10		0.18	n/a	0.18		1.18	0.26	0.59		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.56	0.29	0.05	0.85	0.20	0.06
7G09SO00710	7G09	9 to 10	1/7/2010	11:36	7G09007	Normal	3/9/10	18:21	D1	00010523.Anl	3.31	0.97	0.92		0.95	0.13	0.13		0.28	n/a	0.28		0.66	0.31	0.70													1.66	0.31	0.05	0.92	0.22	0.05
7G09SO00916	7G09	15 to 16	1/7/2010	11:38	7G09009	Normal	1/23/10	13:59	D2	00020246.Anl	2.59	0.64	0.67		1.06	0.17	0.10		0.20	n/a	0.20		1.83	0.60	0.72		2.55	0.83	0.78	1.01	0.18	0.12	0.27	n/a	0.27	1.64	0.49	0.54	2.11	0.35	0.05	0.96	0.22	0.07
7G09SO01017	7G09	16 to 17	1/7/2010	11:39	7G09010	Normal	1/15/10	19:42	D1	00020185.Anl	3.50	0.59	0.53		1.03	0.14	0.12		0.16	n/a	0.16		1.62	0.26	0.67													2.07	0.32	0.02	0.98	0.20	0.04
7G11SO01018	7G11	17 to 18	12/21/2009	10:59	7G11010	Normal	12/30/09	17:12	D2	00020153.Anl	3.38	0.65	0.61		0.54	0.14	0.19		0.16	n/a	0.16		1.83	0.30	0.65													1.61	0.30	0.07	1.10	0.24	0.08
7G11SO01119	7G11	18 to 19	12/21/2009	11:00	7G11011	Normal	12/31/09	17:11	D1	00010200.Anl	3.49	0.57	0.51		0.92	0.11	0.10		0.13	n/a	0.13		1.80	0.30	0.56		3.22	0.58	0.54	0.96	0.16	0.13	0.20	n/a	0.20	1.52	0.31	0.40	2.05	0.31	0.04	0.96	0.19	0.05
7G11SO01220	7G11	19 to 20	12/21/2009	11:01	7G11012	Normal	12/31/09	16:09	D2	00020155.Anl	3.47	0.54	0.49		0.90	0.13	0.11		0.13	n/a	0.13		1.92	0.32	0.57																		
7G11SO01220	7G11	19 to 20	12/21/2009	11:01	7G11013	Dup	12/31/09	14:57	D1	00010198.Anl	3.54	0.59	0.52		0.90	0.11	0.10		0.14	0.08	0.11		1.77	0.29	0.57													1.76	0.30	0.05	0.71	0.18	0.04
7G16SO00712	7G16	11 to 12	1/8/2010	14:06	7G16007	Normal	1/23/10	13:53	D1	00010304.Anl	3.22	0.69	0.69		0.92	0.17	0.14		0.20	n/a	0.20		1.91	0.40	0.79		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.11	0.35	0.09	0.91	0.22	0.06
7G16SO00813	7G16	12 to 13	1/8/2010	14:07	7G16008	Normal	1/24/10	11:36	D2	00020258.Anl	3.38	0.80	0.76		0.86	0.16	0.10		0.26	n/a	0.26		0.49	n/a	0.49													1.81	0.32	0.03	0.96	0.22	0.06
7G16SO00914	7G16	13 to 14	1/8/2010	14:08	7G16009	Normal	1/26/10	9:43	D1	00010347.Anl	3.34	1.00	0.99		1.17	0.18	0.13		0.23	n/a	0.23		2.39	0.52	1.02		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.91	0.32	0.04	0.99	0.22	0.06
7G16SO01015	7G16	14 to 15	1/8/2010	14:09	7G16010	Normal																																						
7G23SO00404	7G23	3 to 4	1/7/2010	8:33	7G23004	Normal	1/23/10	15:04	D2	00020247.Anl	3.75	0.74	0.68		1.05	0.16	0.13		0.26	n/a	0.26		1.53	0.72	0.86		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.86	0.32	0.12	0.98	0.22	0.07
7G23SO00404	7G23	3 to 4	1/7/2010	8:33	7G23004	Dup	1/25/10	9:27	D2	00020273.Anl	2.73	0.79	0.81		0.87	0.18	0.13		0.21	n/a	0.21		1.31	0.33	0.74													1.75	0.27	0.03	1.14	0.21	0.02
7G23SO00909	7G23	8 to 9	1/7/2010	8:38	7G23009	Normal	1/27/10	12:58	D2	00020309.Anl	2.34	0.61	0.65	Jcc	0.87	0.17	0.11	Jcc	0.25	n/a	0.25	Jcc	1.34	0.66	0.79	Jcc	2.42	0.71	0.67	0.97	0.19	0.13	0.23	n/a	0.23	1.49	0.44	0.46	1.79	0.31	0.04	0.88	0.20	0.04
7G23SO01116	7G23	15 to 16	1/7/2010	8:40	7G23011	Normal	1/13/10	13:09	D2	00020178.Anl	3.20	0.68	0.61		0.94	0.14	0.10		0.12	n/a	0.12		1.49	0.22	0.51													1.96	0.30	0.05	1.05	0.21	0.02
7G43SO00713	7G43	12 to 13	1/7/2010	10:46	7G43007	Normal	1/15/10	16:15	D1	00010234.Anl	1.78	0.45	0.46		0.86	0.11	0.09		0.12	n/a	0.12		1.24	0.38	0.47													1.60	0.31	0.08	0.76	0.20	0.06
7G43SO00917	7G43	16 to 17	1/7/2010	10:48	7G43009	Normal	1/15/10	16:19	D2	00020183.Anl	3.13	0.61	0.59		1.07	0.15	0.10		0.14	n/a	0.14		1.48	0.23	0.56													1.82	0.31	0.06	0.89	0.21	0.07
7G43SO01018	7G43	17 to 18	1/7/2010	10:49	7G43010	Normal	1/25/10	12:14	D2	00020259.Anl	2.13	0.68	0.68		0.50	0.12	0.11		0.20	n/a	0.20		1.18	0.61	0.74		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.25	0.16	0.50	0.49	0.15	0.05
7G46SO00507	7G46	6 to 7	1/6/2010	15:04	7G46005	Normal	1/12/10	10:36	D2	00020176.Anl	2.27	0.48	0.47		0.23	n/a	0.23		0.16	n/a	0.16		1.05	0.20	0.49													1.71	0.33	0.09	0.86	0.22	0.07
7G46SO00507	7G46	6 to 7	1/6/2010	15:04	7G46009	Dup	1/12/10	10:34	D1	00010223.Anl	2.53	0.52	0.47		0.77	0.10	0.09		0.16	0.08	0.11		1.27	0.23	0.44																		
7G46SO00608	7G46	7 to 8	1/6/2010	15:05	7G46006	Normal	1/25/10	18:47	D1	00010340.Anl	2.47	0.75	0.76		0.93	0.17	0.12		0.20	n/a	0.20		1.35	0.35	0.75													2.10	0.28	0.08	0.95	0.23	0.09
7G46SO00713	7G46	12 to 13	1/6/2010	15:06	7G46007	Normal	3/9/10	17:54	D1	00010522.Anl	3.20	0.72	0.71		1.05	0.20	0.17		0.28	n/a	0.28		0.76	0.30	0.81													1.73	0.31	0.06	0.98	0.22	0.05
7G50SO00713	7G50	12 to 13	1/7/2010	14:16	7G50007	Normal	1/23/10	16:01	D1	00010306.Anl	2.95	0.66	0.66		1.00	0.18	0.13		0.16	n/a	0.16		1.73	0.34	0.70													1.56	0.29	0.05	0.85	0.20	0.06
7G50SO00814	7G50	13 to 14	1/7/2010	14:17	7G50008	Normal	1/23/10	16:04	D1	00020248.Anl	3.27	0.72	0.67		0.89	0.12	0.13		0.24	n/a	0.24		1.35	0.49	0.64													1.69	0.30	0.08	0.78	0.19	0.05
7G50SO00915	7G50	14 to 15	1/7/2010	14:18	7G50009	Normal	1/24/10	11:04	D1	00010316.Anl	3.16	0.77	0.73		0.86	0.13	0.11		0.25	n/a	0.25		1.63	0.42	0.83		2.99	0.70	0.65	0.87	0.15	0.16	0.24	n/a	0.24	1.37	0.37	0.47	1.23	0.25	0.08	0.51	0.15	0.07
0091ASO00808	91A	7 to 8	2/3/2010	10:37	91A008	Normal	2/9/10	11:58	D1	00010467.Anl	2.33	0.56	0.69	Jcc	1.05	0.18	0.17	Jcc	0.19	n/a	0.19	Jcc	1.30	0.38	0.76	Jcc													1.71	0.32	0.08	1.04	0.24	0.07
0091ASO00909	91A	8 to 9	2/3/2010	10:38	91A009	Normal	2/9/10	11:25	D2	00020416.Anl	2.72	0.72	0.73		0.40	n/a	0.40		0.25	n/a	0.25		1.21	0.36	0.81													1.62	0.31	0.06	0.96	0.22	0.03
0091ASO01013	91A	12 to 13	2/3/2010	10:39	91A010	Normal	2/8/10	18:19	D1	00010463.Anl	3.92	1.00	0.92		1.14	0.19	0.14		0.23	n/a	0.23		1.77	0.45	0.87													1.01	0.20	0.02	0.86	0.19	0.04
BKG1SO00101	BKG1	0 to 1	1/5/2010	10:30	BKG1001	Normal	1/25/10	8:47	D2	00020272.Anl	3.47	0.82	0.75		0.99	0.17	0.11		0.22	n/a	0.22		1.56	0.64	0.79		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.15	0.36	0.07	1.10	0.24	0.06
BKG1SO00202	BKG1	1 to 2	1/5/2010	10:31	BKG1002	Normal	1/25/10	0:33	D1	00010318.Anl	3.34	0.90	0.90	Jcc	1.05	0.19	0.14	Jcc	0.21	n/a	0.21	Jcc	1.79	0.47	0.98	Jcc													1.77	0.30	0.05	1.04	0.22	0.05
BKG1SO00303	BKG1	2 to 3	1/5/2010	10:32	BKG1003	Normal	1/15/10	18:22	D2	00020184.Anl	3.14	0.67	0.60		0.99	0.12	0.12		0.16	n/a	0.16		1.28	0.36	0.47													1.84	0.31	0.06	0.95	0.21	0.05
BKG1SO00404	BKG1	3 to 4	1/5/2010	10:33	BKG1004	Normal	1/17/10	23:51	D1	00010242.Anl	2.45	0.42	0.41		0.98	0.13	0.10		0.15	n/a	0.15		1.20	0.23	0.52		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.55	0.28	0.08	0.77	0.19	0.05
BKG1SO00505	BKG1	4 to 5	1/5/2010	10:34	BKG1005	Normal	1/25/10	1:17	D2	00020261.Anl	2.61	0.85	0.83		0.77	0.16	0.12		0.26	n/a	0.26		1.42	0.74	0.88													1.31	0.26	0.06	0.87	0.20	0.05
BKG1SO00606	BKG1	5 to 6	1/5/2010	10:35	BKG1006	Normal	1/16/10	15:07	D1	00010238.Anl	1.76	0.35	0.34		0.67	0.09	0.06		0.10	n/a	0.10		1.06	0.33	0.40													1.30	0.26	0.05	0.75	0.19	0.05
BKG1SO00707	BKG1	6 to 7	1/5/2010	10:36	BKG1007	Normal	1/25/10	12:41	D2	00020260.Anl	2.43	0.71	0.74		0.86	0.17	0.10		0.24	n/a	0.24		0.70	0.58	0.93													1.41	0.24	0.05	0.71	0.16	0.05
BKG1SO00808	BKG1	7 to 8	1/5/2010	10:37	BKG1008	Normal	1/17/10	11:53	D2	00020191.Anl	1.97	0.40	0.39		0.68	0.09	0.07		0.12	n/a	0.11		1.13	0.40	0.40													1.30	0.26	0.06	0.86	0.21	0.05
BKG1SO00909	BKG1	8 to 9	1/5/2010	10:38	BKG1009	Normal	1/21/10	18:42	D1	00010274.Anl	1.45	0.42	0.42	Jcc	0.57	0.10	0.08	Jcc	0.11	n/a	0.11	Jcc	0.96	0.18	0.42	Jcc													0.59	0.16	0.05	0.46	0.14	0.04
BKG1SO01010	BKG1	9 to 10	1/5/2010	10:39	BKG1010	Normal	1/20/10	18:38	D1	00010269.Anl	1.78	0.48	0.53		0.70	0.09	0.10		0.16	n/a	0.16		0.36	n/a	0.36													0.75	0.18	0.04	0.58	0.16	0.04
BKG1SO01111	BKG1	10 to 11	1/5/2010	10:40	BKG1011	Normal	1/19/10	11:01	D2	00020203.Anl	2.73	0.56	0.52		0.83	0.11	0.10		0.15	n/a	0.15		1.19	0.39	0.49													1.24	0.22	0.05	0.85	0.17	0.02
BKG1SO01212	BKG1	11 to 12	1/5/2010	10:41	BKG1012	Normal	1/20/10	11:03	D1	00010265.Anl	2.74	0.57	0.55		0.82	0.12	0.09		0.19	n/a	0.19		1.40	0.30	0.66													1.66	0.30	0.05	0.71	0.18	0.06
BKG1SO01212	BKG1	11 to 12	1/5/2010	10:41	BKG1021	Dup	1/20/10	11:05	D2	00020211.Anl	2.32	0.54	0.55		0.83	0.14	0.12		0.18	n/a	0.18		1.42	0.34	0.64																		
BKG1SO01313	BKG1	12 to 13	1/5/2010	10:42	BKG1013	Normal	1/20/10	12:09	D2	00020204.Anl	1.91	0.43	0.42		0.64	0.10	0.07		0.09	n/a	0.09		1.11	0.22	0.39		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.35	0.27	0.05	0.78	0.20	0.03
BKG1SO01414	BKG1	13 to 14	1/5/2010	10:43	BKG1014	Normal	1/20/10	1:34	D1	00010258.Anl	2.49	0.52	0.51		0.88	0.11	0.10		0.15	n/a	0.15		1.42	0.27	0.53													1.45	0.25	0.05	0.99	0.19	0.02
BKG1SO01515	BKG1	14 to 15	1/5/2010	10:44	BKG1015	Normal	1/25/10	9:57	D2	00020274.Anl	3.07	0.82	0.75		0.80	0.13	0.11		0.25	n/a	0.25		1.36	0.67	0.80													1.29	0.23	0.06	0.81	0.18	0.04
BKG1SO01616	BKG1	15 to 16	1/5/2010	10:45	BKG1016	Normal	1/19/10	13:09	D1	00010252.Anl	1.87	0.33	0.35		0.80	0.11	0.09		0.11	n/a	0.11		1.14	0.23	0.49													1.23	0.23	0.02	0.88	0.18	0.04
BKG1SO01717	BKG1	16 to 17	1/5/2010	10:46	BKG1017	Normal	1/25/10	19:13	D1	00010341.Anl	3.88	1.09	1.10	Jcc	1.30	0.25	0.19	Jcc	0.27	n/a	0.27	Jcc	2.34	0.53	1.07	Jcc													1.39	0.26	0.05	0.87	0.20	0.03
BKG1SO01818	BKG1	17 to 18	1/5/2010	10:47	BKG1018	Normal	1/20/10	6:27	D2	00020209.Anl	2.08	0.40	0.41		0.83	0.12	0.08		0.12	n/a	0.12		1.03	0.19	0.50		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.29	0.26	0.05	0.92	0.21	0.03
BKG1SO01919	BKG1	18 to 19	1/5/2010	10:48	BKG1019	Normal	1/18/10	2:33	D2	00020193.Anl	2.78	0.53	0.51		0.91	0.13	0.09		0.15	n/a	0.15		1.32	0.20	0.53													2.37	0.39	0.03	1.19	0.26	0.03
BKG1SO02020	BKG1	19 to 20	1/5/2010	10:49	BKG1020	Normal	1/20/10	6:40	D1	00010262.Anl	2.81	0.46	0.45		1.09	0.14	0.10		0.21	0.11	0.14		1.97	0.31	0.61													1.84	0.31	0.03	0.90	0.20	0.04
BKG2SO00101	BKG2	0 to 1	1/5/2010	9:20	BKG2001	Normal	1/26/10	14:51	D1	00010353.Anl	2.55	0.66	0.71		1.04	0.20	0.14		0.21	n/a	0.21		0.53	n/a	0.53		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.85	0.32	0.07	0.94	0.21	0.06
BKG2SO00202	BKG2	1 to 2	1/5/2010	9:21	BKG2002	Normal	1/27/10	19:12	D1	00010377.Anl	3.97	0.70	0.72	Jcc	1.42	0.17	0.13	Jcc	0.22	n/a	0.22	Jcc	2.22	0.38	0.74	Jcc													2.10	0.32	0.05	1.08	0.21	0.02
BKG2SO00202	BKG2	1 to 2	1/5/2010	9:21	BKG2021	Dup	1/27/10	19:14	D2	00020318.Anl	3.77	0.75	0.71		1.06	0.17	0.14		0.19	n/a	0.19		1.83	0.53	0.66																		
BKG2SO00303	BKG2	2 to 3	1/5/2010	9:22	BKG2003	Normal	1/26/10	16:49	D1	00010357.Anl	3.34	0.85	0.84		1.14	0.19	0.13		0.27	n/a	0.27		1.49	0.35	0.84		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.99	0.33	0.08	0.99	0.22	0.06
BKG2SO00404	BKG2	3 to 4	1/5/2010	9:23	BKG2004	Normal	1/26/10	14:52	D2	00020294.Anl	2.94	0.86	0.88		1.23	0.24	0.16		0.20	n/a	0.20		1.24	0.35	0.96													2.10	0.34	0.06	0.96	0.22	0.04
BKG2SO00505	BKG2	4 to 5	1/5/2010	9:24	BKG2005	Normal	N/A		N/A	N/A																	2.14	0.49	0.51	0.94	0.18	0.13	0.22	n/a	0.22	0.83	0.37	0.58	1.50	0.28	0.04	0.88	0.20	0.04
BKG2SO00606	BKG2	5 to 6	1/5/2010	9:25	BKG2006	Normal	1/26/10	17:48	D1	00010359.Anl	1.97	0.62	0.66		0.93	0.15	0.08		0.11	0.13	0.22		0.78	0.54	0.86		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.05	0.21	0.04	0.79	0.18	0.04
BKG2SO00707	BKG2	6 to 7	1/5/2010	9:26	BKG2007	Normal	1/28/10	9:39	D2	00020320.Anl	2.04	0.55	0.53		0.61	0.15	0.13		0.22	n/a	0.22		1.09	0.33	0.63		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.64	0.17	0.03	0.28	0.11	0.04
BKG2SO00808	BKG2	7 to 8	1/5/2010	9:27	BKG2008	Normal	2/19/10	15:15	D2	00020521,Anl	2.35	0.79	0.77		0.81	0.14	0.08		0.10	0.15	0.25		0.67	n/a	0.67													1.34	0.24	0.05	0.88	0.19	0.05
BKG2SO00808	BKG2	7 to 8	1/5/2010	9:27	BKG2008	Dup	3/26/10	11:23	D1	00010678.Anl	1.78	0.45	0.57		0.71	0.13	0.13		0.23	n/a	0.23		0.77	0.24	0.59																		
BKG2SO00909	BKG2	8 to 9	1/5/2010	9:28	BKG2009	Normal	1/26/10	17:16	D2	00020299.Anl	3.02	0.78	0.75		0.85	0.12	0.12		0.22	n/a	0.22		1.17	0.29	0.72		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.45	0.26	0.07	0.77	0.18	0.06
BKG2SO01010	BKG2	9 to 10	1/5/2010	9:29	BKG2010	Normal	1/28/10	13:12	D2	00020324.Anl	2.70	0.80	0.78		0.76	0.15	0.11		0.24	n/a	0.24		1.26	0.33	0.79		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.52	0.27	0.05	0.59	0.16	0.03
BKG2SO01111	BKG2	10 to 11	1/5/2010	9:30	BKG2011	Normal	1/26/10	17:48	D2	00020301.Anl	2.43	0.70	0.73		0.73	0.13	0.13		0.26	n/a	0.26		1.29	0.65	0.80		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.30	0.26	0.08	0.76	0.19	0.05
BKG2SO01212	BKG2	11 to 12	1/5/2010	9:31	BKG2012	Normal	1/26/10	17:15	D1	00010358.Anl	2.23	0.62	0.68		0.90	0.19	0.15		0.24	n/a	0.24		0.78	0.61	0.98		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.45	0.27	0.07	0.77	0.19	0.06
BKG2SO01313	BKG2	12 to 13	1/5/2010	9:32	BKG2013	Normal	1/26/10	16:19	D1	00010356.Anl	2.24	0.63	0.65		0.75	0.14	0.10		0.19	n/a	0.19		1.23	0.37	0.77		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.29	0.26	0.06	0.52	0.15	0.05
BKG2SO01414	BKG2	13 to 14	1/5/2010	9:33	BKG2014	Normal	1/26/10	15:25	D2	00020295.Anl	1.83	0.58	0.81		0.99	0.16	0.12		0.20	n/a	0.20		1.24	0.38	0.95													1.52	0.28	0.06	1.23	0.25	0.06
BKG2SO01515	BKG2	14 to 15	1/5/2010	9:34	BKG2015	Normal	1/26/10	18:45	D1	00010361.Anl	2.96	0.74	0.75		0.87	0.16	0.09		0.21	n/a	0.21		1.43	0.61	0.80		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.58	0.29	0.06	0.77	0.19	0.06
BKG2SO01616	BKG2	15 to 16	1/5/2010	9:35	BKG2016	Normal	1/26/10	18:21	D1	00010360.Anl	2.78	0.75	0.79		1.13	0.19	0.14		0.29	n/a	0.29		1.74	0.46	0.93													1.39	0.24	0.05	0.97	0.19	0.02
BKG2SO01717	BKG2	16 to 17	1/5/2010	9:36	BKG2017	Normal	1/26/10	16:50	D2	00020298.Anl	3.15	0.98	0.93		1.07	0.19	0.11		0.23	n/a	0.23		1.49	0.41	0.92		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.77	0.31	0.04	1.14	0.24	0.03
BKG2SO01818	BKG2	17 to 18	1/5/2010	9:37	BKG2018	Normal	1/26/10	16:21	D2	00020297.Anl	3.72	0.94	0.91		0.64	0.17	0.13		0.23	n/a	0.23		1.47	0.35	0.91													1.75	0.31	0.04	0.97	0.22	0.03
BKG2SO01919	BKG2	18 to 19	1/5/2010	9:38	BKG2019	Normal	1/24/10	14:14	D2	00020252.Anl	2.64	0.80	0.82		0.93	0.17	0.12		0.18	n/a	0.18		1.29	0.36	0.73		3.04	0.66	0.65	0.68	0.12	0.11	0.22	n/a	0.22	1.50	0.35	0.43	2.23	0.35	0.07	0.60	0.16	0.05
BKG2SO02020	BKG2	19 to 20	1/5/2010	9:39	BKG2020	Normal	1/28/10	17:44	D2	00020327.Anl	3.43	0.74	0.72		0.90	0.19	0.14		0.26	n/a	0.26		0.60	n/a	0.60		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.72	0.31	0.05	0.73	0.19	0.06
BKG3SO00101	BKG3	0 to 1	1/4/2010	16:00	BKG3001	Normal	1/18/10	3:48	D1	00010245.Anl	3.10	0.55	0.51		1.12	0.16	0.11		0.14	0.08	0.13		1.36	0.36	0.54													2.16	0.32	0.04	1.11	0.21	0.04
BKG3SO00202	BKG3	1 to 2	1/4/2010	16:01	BKG3002	Normal	1/25/10	1:15	D1	00010319.Anl	3.04	0.75	0.79	Jcc	1.34	0.18	0.13	Jcc	0.32	n/a	0.32	Jcc	1.69	0.95	1.15	Jcc													2.03	0.35	0.06	1.07	0.24	0.06
BKG3SO00303	BKG3	2 to 3	1/4/2010	16:02	BKG3003	Normal	1/25/10	9:13	D1	00010331.Anl	2.82	0.76	0.79	Jcc	1.12	0.19	0.11	Jcc	0.27	n/a	0.27	Jcc	1.06	n/a	1.06	Jcc													2.08	0.24	0.03	1.11	0.15	0.03
BKG3SO00404	BKG3	3 to 4	1/4/2010	16:03	BKG3004	Normal	1/25/10	1:45	D1	00010320.Anl	3.27	0.72	0.70	Jcc	1.18	0.18	0.17	Jcc	0.27	n/a	0.27	Jcc	1.80	0.51	1.01	Jcc	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.59	0.29	0.04	0.95	0.22	0.05
BKG3SO00505	BKG3	4 to 5	1/4/2010	16:04	BKG3005	Normal	1/26/10	8:39	D1	00010345.Anl	2.56	0.84	0.86		0.89	0.18	0.17		0.13	0.15	0.26		0.88	0.38	1.05		2.71	0.63	0.65	1.02	0.17	0.12	0.23	n/a	0.23	1.83	0.46	0.49	1.34	0.27	0.03	0.93	0.22	0.04
BKG3SO00606	BKG3	5 to 6	1/4/2010	16:05	BKG3006	Normal	1/25/10	1:47	D2	00020262.Anl	3.02	0.96	0.95		0.96	0.16	0.13		0.24	n/a	0.24		0.62	n/a	0.62													1.70	0.28	0.02	0.93	0.19	0.04
BKG3SO00707	BKG3	6 to 7	1/4/2010	16:06	BKG3007	Normal	3/10/10	9:33	D1	00010525.Anl	2.26	0.75	0.81		0.98	0.17	0.08		0.14	0.16	0.26		1.05	0.39	0.59													1.64	0.28	0.06	0.93	0.20	0.05
BKG3SO00808	BKG3	7 to 8	1/4/2010	16:07	BKG3008	Normal	1/20/10	13:14	D1	00010267.Anl	2.91	0.66	0.64		0.83	0.13	0.11		0.19	n/a	0.19		1.32	0.58	0.73													1.58	0.27	0.05	0.95	0.20	0.03
BKG3SO00808	BKG3	7 to 8	1/4/2010	16:07	BKG3021	Dup	1/20/10	9:26	D2	00020210.Anl	2.78	0.63	0.61		0.86	0.12	0.11		0.20	n/a	0.20		1.63	0.58	0.70													1.68	0.32	0.10	0.62	0.18	0.08
BKG3SO00909	BKG3	8 to 9	1/4/2010	16:08	BKG3009	Normal	1/20/10	13:15	D2	00020213.Anl	2.59	0.70	0.70		0.90	0.16	0.12		0.21	n/a	0.21		1.73	0.59	0.69		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.59	0.30	0.07	0.97	0.22	0.05
BKG3SO01010	BKG3	9 to 10	1/4/2010	16:09	BKG3010	Normal	1/25/10	2:15	D1	00010321.Anl	2.73	0.73	0.73	Jcc	1.04	0.18	0.11	Jcc	0.19	n/a	0.19	Jcc	0.53	n/a	0.53	Jcc													1.54	0.27	0.05	0.79	0.18	0.04
BKG3SO01111	BKG3	10 to 11	1/4/2010	16:10	BKG3011	Normal	1/20/10	12:18	D1	00010266.Anl	2.31	0.54	0.56		0.93	0.15	0.11		0.18	n/a	0.18		1.27	0.32	0.65		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.60	0.30	0.12	0.70	0.18	0.07
BKG3SO01212	BKG3	11 to 12	1/4/2010	16:11	BKG3012	Normal	1/20/10	9:22	D1	00010264.Anl	2.31	0.56	0.59		1.03	0.19	0.14		0.18	n/a	0.18		1.30	0.61	0.74													1.41	0.25	0.04	1.06	0.21	0.02
BKG3SO01313	BKG3	12 to 13	1/4/2010	16:12	BKG3013	Normal	1/21/10	13:48	D1	00010270.Anl	2.15	0.45	0.45		0.83	0.14	0.09		0.15	n/a	0.15		1.23	0.27	0.61		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.42	0.27	0.05	0.75	0.19	0.05
BKG3SO01414	BKG3	13 to 14	1/4/2010	16:13	BKG3014	Normal	1/20/10	12:21	D2	00020212.Anl	1.22	0.47	0.71		0.83	0.14	0.11		0.20	n/a	0.20		1.48	0.35	0.69													1.57	0.27	0.04	1.05	0.21	0.04
BKG3SO01515	BKG3	14 to 15	1/4/2010	16:14	BKG3015	Normal	1/20/10	2:49	D1	00010259.Anl	2.66	0.48	0.46		1.00	0.14	0.11		0.12	n/a	0.12		1.67	0.28	0.52													1.73	0.30	0.06	1.09	0.23	0.06
BKG3SO01616	BKG3	15 to 16	1/4/2010	16:15	BKG3016	Normal	1/21/10	13:51	D2	00020215.Anl	1.87	0.51	0.55		0.91	0.14	0.55		0.20	n/a	0.20		0.96	0.23	0.60													1.07	0.21	0.05	0.70	0.17	0.05

Table 9-1
Radionuclides Analytical Results - Soil Samples

Sample Information											On-Site Gamma Spectroscopy Results (gross activity)															
Sample ID	Boring/ Location No.	Depth Range (ft)	Collection Date	Collection Time	Tracking Number	Sample Type	Date Counted	Time Counted	Detector (D1 or D2)	Spectrum Name	Ra-226 [pCi/g] Conc.	Ra-226 ±2σ	Ra-226 MDC	Ra-226 Qualifiers	Th-232 (Ac-228 - γ Spec) [pCi/g] Conc.	Th-232 ±2σ	Th-232 MDC	Th-232 Qualifiers	U-235 [pCi/g] Conc.	U-235 ±2σ	U-235 MDC	U-235 Qualifiers	U-238 (Th-234 - γ Spec) [pCi/g] Conc.	U-238 ±2σ	U-238 MDC	U-238 Qualifiers
BKG3SO01717	BKG3	16 to 17	1/4/2010	16:16	BKG3017	Normal	2/19/10	15:39	D2	00020522.An1	2.77	0.84	0.84		0.84	0.20	0.17		0.13	0.17	0.27		0.95	0.34	0.49	
BKG3SO01717	BKG3	16 to 17	1/4/2010	16:16	BKG3017	Dup	3/26/10	10:13	D1	00010677.An1	2.68	0.72	0.70		0.93	0.16	0.13		0.26	n/a	0.26		1.31	0.62	0.75	
BKG3SO01818	BKG3	17 to 18	1/4/2010	16:17	BKG3018	Normal	1/20/10	1:29	D2	00020205.An1	2.60	0.49	0.46		0.81	0.13	0.10		0.15	n/a	0.15		1.28	0.43	0.52	
BKG3SO01919	BKG3	18 to 19	1/4/2010	16:18	BKG3019	Normal	1/19/10	13:11	D2	00020199.An1	2.60	0.50	0.47		0.78	0.12	0.08		0.13	n/a	0.13		1.37	0.22	0.53	
BKG3SO02020	BKG3	19 to 20	1/4/2010	16:19	BKG3020	Normal	1/21/10	15:42	D2	00020217.An1	2.65	0.66	0.63		0.87	0.16	0.12		0.17	n/a	0.17		1.23	0.30	0.67	
BKG4SO00101	BKG4	0 to 1	1/4/2010	15:00	BKG4001	Normal	1/21/10	15:40	D1	00010272.An1	3.36	0.79	0.78	Jcc	1.22	0.20	0.14	Jcc	0.18	n/a	0.18	Jcc	0.53	n/a	0.53	Jcc
BKG4SO00202	BKG4	1 to 2	1/4/2010	15:01	BKG4002	Normal	1/25/10	10:19	D1	00010333.An1	3.25	0.85	0.88	Jcc	1.33	0.20	0.17	Jcc	0.24	n/a	0.24	Jcc	1.85	0.51	1.07	Jcc
BKG4SO00303	BKG4	2 to 3	1/4/2010	15:02	BKG4003	Normal	3/27/10	9:29	D1	00010681.An1	2.85	0.66	0.62		0.95	0.15	0.10		0.19	n/a	0.19		1.33	0.43	0.53	
BKG4SO00404	BKG4	3 to 4	1/4/2010	15:03	BKG4004	Normal	1/24/10	15:20	D1	00010313.An1	3.40	0.91	0.91	Jcc	1.24	0.18	0.13	Jcc	0.28	n/a	0.28	Jcc	0.57	n/a	0.57	Jcc
BKG4SO00505	BKG4	4 to 5	1/4/2010	15:04	BKG4005	Normal	1/20/10	4:11	D1	00010260.An1	2.82	0.51	0.47		0.94	0.13	0.09		0.14	n/a	0.14		1.37	0.25	0.49	
BKG4SO00606	BKG4	5 to 6	1/4/2010	15:05	BKG4006	Normal	1/21/10	14:57	D1	00010271.An1	2.55	0.65	0.66	Jcc	0.96	0.14	0.12	Jcc	0.18	n/a	0.18	Jcc	1.47	0.31	0.68	Jcc
BKG4SO00707	BKG4	6 to 7	1/4/2010	15:06	BKG4007	Normal	1/19/10	15:55	D1	00010253.An1	2.42	0.48	0.46		0.88	0.12	0.08		0.11	n/a	0.11		1.40	0.25	0.50	
BKG4SO00808	BKG4	7 to 8	1/4/2010	15:07	BKG4008	Normal	1/19/10	21:31	D2	00020202.An1	2.28	0.53	0.49		0.67	0.09	0.08		0.10	n/a	0.10		1.38	0.40	0.46	
BKG4SO00909	BKG4	8 to 9	1/4/2010	15:08	BKG4009	Normal	1/18/10	6:28	D1	00010247.An1	2.33	0.47	0.46		0.82	0.09	0.08		0.14	n/a	0.14		1.37	0.23	0.49	
BKG4SO01010	BKG4	9 to 10	1/4/2010	15:09	BKG4010	Normal	1/25/10	3:00	D1	00010322.An1	2.77	0.82	0.81	Jcc	0.99	0.18	0.12	Jcc	0.21	n/a	0.21	Jcc	1.45	0.40	0.82	Jcc
BKG4SO01111	BKG4	10 to 11	1/4/2010	15:10	BKG4011	Normal	1/26/10	8:45	D2	00020286.An1	3.15	0.79	0.75		0.90	0.17	0.16		0.27	n/a	0.27		1.75	0.71	0.86	
BKG4SO01212	BKG4	11 to 12	1/4/2010	15:11	BKG4012	Normal	1/25/10	3:35	D2	00020265.An1	3.11	0.74	0.74		1.07	0.17	0.13		0.26	n/a	0.26		1.72	0.75	0.89	
BKG4SO01313	BKG4	12 to 13	1/4/2010	15:12	BKG4013	Normal	1/19/10	17:18	D2	00020201.An1	2.61	0.49	0.47		0.77	0.11	0.08		0.11	n/a	0.11		1.24	0.22	0.54	
BKG4SO01414	BKG4	13 to 14	1/4/2010	15:13	BKG4014	Normal	1/25/10	9:46	D1	00010332.An1	2.99	0.91	0.92	Jcc	0.99	0.20	0.17	Jcc	0.24	n/a	0.24	Jcc	1.84	0.44	0.87	Jcc
BKG4SO01414	BKG4	13 to 14	1/4/2010	15:13	BKG4021	Dup	1/25/10	3:02	D2	00020264.An1	3.56	0.94	0.89	Jcc	1.04	0.20	0.16	Jcc	0.23	n/a	0.23	Jcc	0.56	n/a	0.56	Jcc
BKG4SO01515	BKG4	14 to 15	1/4/2010	15:14	BKG4015	Normal	1/21/10	15:00	D2	00020216.An1	2.82	0.70	0.70		0.96	0.15	0.14		0.25	0.14	0.18		0.51	n/a	0.51	
BKG4SO01616	BKG4	15 to 16	1/4/2010	15:15	BKG4016	Normal	1/25/10	5:52	D2	00020269.An1	2.29	0.69	0.72		0.70	0.12	0.14		0.27	n/a	0.27		1.95	0.83	0.96	
BKG4SO01717	BKG4	16 to 17	1/4/2010	15:16	BKG4017	Normal	1/19/10	12:45	D1	00010251.An1	2.81	0.63	0.58		0.99	0.16	0.12		0.13	n/a	0.13		1.71	0.29	0.52	
BKG4SO01818	BKG4	17 to 18	1/4/2010	15:17	BKG4018	Normal	1/25/10	4:00	D1	00010324.An1	2.36	0.74	0.79	Jcc	0.94	0.16	0.10	Jcc	0.25	n/a	0.25	Jcc	1.65	0.46	0.93	Jcc
BKG4SO01919	BKG4	18 to 19	1/4/2010	15:18	BKG4019	Normal	1/25/10	3:34	D1	00010323.An1	2.25	0.68	0.72	Jcc	1.12	0.21	0.14	Jcc	0.22	n/a	0.22	Jcc	1.69	0.51	0.74	Jcc
BKG4SO02020	BKG4	19 to 20	1/4/2010	15:19	BKG4020	Normal	1/18/10	6:31	D2	00020195.An1	2.62	0.54	0.51		0.91	0.12	0.09		0.16	n/a	0.16		1.31	0.30	0.56	
BKG5SO00101	BKG5	0 to 1	1/4/2010	11:40	BKG5001	Normal	1/25/10	4:02	D2	00020266.An1	1.74	0.52	0.55		0.92	0.18	0.11		0.22	n/a	0.22		1.13	0.57	0.68	
BKG5SO00202	BKG5	1 to 2	1/4/2010	11:41	BKG5002	Normal	1/22/10	4:40	D2	00020225.An1	3.92	0.86	0.77		1.16	0.18	0.17		0.18	n/a	0.18		0.58	n/a	0.58	
BKG5SO00303	BKG5	2 to 3	1/4/2010	11:42	BKG5003	Normal	1/21/10	18:55	D2	00020219.An1	3.07	0.76	0.75		0.96	0.15	0.12		0.20	n/a	0.20		0.52	n/a	0.52	
BKG5SO00404	BKG5	3 to 4	1/4/2010	11:43	BKG5004	Normal	1/20/10	5:05	D2	00020208.An1	2.77	0.55	0.51		0.86	0.14	0.10		0.13	n/a	0.13		1.37	0.34	0.50	
BKG5SO00404	BKG5	3 to 4	1/4/2010	11:43	BKG5004	Dup	3/26/10	11:50	D2	00020677.An1	3.03	0.72	0.74		0.86	0.15	0.13		0.33	n/a	0.33		1.17	0.82	1.31	
BKG5SO00505	BKG5	4 to 5	1/4/2010	11:44	BKG5005	Normal	1/23/10	15:06	D1	00010305.An1	2.54	0.65	0.69	Jcc	0.95	0.15	0.13	Jcc	0.20	n/a	0.20	Jcc	1.69	0.37	0.78	Jcc
BKG5SO00505	BKG5	4 to 5	1/4/2010	11:44	BKG5021	Dup	1/25/10	5:50	D1	00010328.An1	2.67	0.73	0.72	Jcc	0.99	0.17	0.14	Jcc	0.22	n/a	0.22	Jcc	1.05	0.58	0.93	Jcc
BKG5SO00606	BKG5	5 to 6	1/4/2010	11:45	BKG5006	Normal	1/25/10	4:33	D1	00010325.An1	2.28	0.66	0.70	Jcc	0.86	0.15	0.13	Jcc	0.21	n/a	0.21	Jcc	1.15	0.40	0.82	Jcc
BKG5SO00707	BKG5	6 to 7	1/4/2010	11:46	BKG5007	Normal	3/10/10	12:57	D1	00010527.An1	1.83	0.39	0.49		0.72	0.10	0.10		0.09	0.11	0.18		0.34	0.17	0.52	
BKG5SO00808	BKG5	7 to 8	1/4/2010	11:47	BKG5008	Normal	1/21/10	17:35	D2	00020218.An1	2.52	0.55	0.54		0.85	0.17	0.12		0.18	n/a	0.18		0.45	n/a	0.45	
BKG5SO00909	BKG5	8 to 9	1/4/2010	11:48	BKG5009	Normal	1/21/10	22:26	D2	00020221.An1	1.85	0.64	0.61		0.72	0.13	0.09		0.15	n/a	0.15		0.40	n/a	0.40	
BKG5SO01010	BKG5	9 to 10	1/4/2010	11:49	BKG5010	Normal	1/19/10	15:57	D2	00020200.An1	2.45	0.50	0.49		0.83	0.11	0.07		0.15	n/a	0.15		1.24	0.22	0.50	
BKG5SO01111	BKG5	10 to 11	1/4/2010	11:50	BKG5011	Normal	1/21/10	17:33	D1	00010273.An1	2.45	0.58	0.62		0.94	0.16	0.12		0.15	n/a	0.15		1.51	0.33	0.68	
BKG5SO01111	BKG5	10 to 11	1/4/2010	11:50	BKG5011	Dup	3/26/10	14:13	D1	00010679.An1	2.65	0.77	0.79	Jcc	1.16	0.19	0.10	Jcc	0.25	n/a	0.25	Jcc	1.15	0.58	0.75	Jcc
BKG5SO01212	BKG5	11 to 12	1/4/2010	11:51	BKG5012	Normal	1/28/10	9:36	D1	00010378.An1	2.08	0.78	0.86		1.00	0.16	0.15		0.21	n/a	0.21		0.58	n/a	0.58	
BKG5SO01313	BKG5	12 to 13	1/4/2010	11:52	BKG5013	Normal	1/26/10	8:14	D2	00020285.An1	2.70	0.84	0.84		0.87	0.16	0.12		0.10	0.15	0.25		0.97	0.46	0.71	
BKG5SO01414	BKG5	13 to 14	1/4/2010	11:53	BKG5014	Normal	2/19/10	16:04	D2	00020523.An1	2.76	0.82	0.83		0.77	0.14	0.11		0.27	n/a	0.27		1.15	0.41	0.61	
BKG5SO01515	BKG5	14 to 15	1/4/2010	11:54	BKG5015	Normal	1/20/10	3:52	D2	00020207.An1	2.15	0.40	0.41		0.87	0.13	0.09		0.16	n/a	0.16		1.50	0.27	0.51	
BKG5SO01616	BKG5	15 to 16	1/4/2010	11:55	BKG5016	Normal	1/22/10	3:56	D2	00020224.An1	2.14	0.54	0.57		0.89	0.17	0.10		0.20	n/a	0.20		1.21	0.28	0.69	
BKG5SO01717	BKG5	16 to 17	1/4/2010	11:56	BKG5017	Normal	1/21/10	21:42	D2	00020220.An1	2.49	0.64	0.67		0.82	0.15	0.12		0.18	n/a	0.18		1.31	0.31	0.78	
BKG5SO01818	BKG5	17 to 18	1/4/2010	11:57	BKG5018	Normal	1/25/10	4:38	D2	00020267.An1	1.52	0.56	0.82		0.77	0.14	0.12		0.11	0.14	0.23		1.04	0.32	0.77	
BKG5SO01919	BKG5	18 to 19	1/4/2010	11:58	BKG5019	Normal	1/20/10	5:27	D1	00010261.An1	3.28	0.54	0.49		0.97	0.12	0.08		0.14	n/a	0.14		1.74	0.25	0.50	
BKG5SO02020	BKG5	19 to 20	1/4/2010	11:59	BKG5020	Normal	1/19/10	17:16	D1	00010254.An1	2.71	0.48	0.47		0.96	0.11	0.10		0.15	n/a	0.15		1.81	0.28	0.52	
MH01SE00106	MH01	5 to 6	1/23/2010	9:45	MH01001	Normal	2/8/10	14:06	D1	00010456.An1	1.76	0.61	0.63		0.52	0.11	0.09		0.09	n/a	0.09		0.80	0.26	0.49	
MH02SE00105	MH02	4 to 5	1/23/2010	10:45	MH02001	Normal	2/8/10	18:47	D1	00010464.An1	3.58	0.66	0.59		0.93	0.15	0.09		0.15	n/a	0.15		1.94	0.54	0.59	
MH03SE00106	MH03	5 to 6	1/23/2010	12:00	MH03001	Normal	2/23/10	13:42	D2	00020554.An1	2.15	0.49	0.41		0.19	n/a	0.19		0.15	n/a	0.15		1.32	0.29	0.49	
MH04SE00106	MH04	5 to 6	1/23/2010	14:45	MH04001	Normal	2/23/10	14:14	D2	00020555.An1	2.24	0.56	0.50		0.20	0.06	0.07		0.19	n/a	0.19		1.55	0.28	0.42	
MH06SE00107	MH06	6 to 7	1/23/2010	16:30	MH06001	Normal	2/8/10	18:48	D2	00020414.An1	3.85	1.03	1.07		1.12	0.21	0.21		0.33	n/a	0.33		2.60	0.99	1.14	
MH20SE00107	MH20	6 to 7	1/23/2010	11:15	MH20001	Normal	2/6/10	12:20	D2	00020398.An1	2.30	0.78	0.81		0.69	0.17	0.14		0.14	0.14	0.23		1.04	0.38	0.64	
MH23SE00103	MH23	2 to 3	1/23/2010	15:50	MH23001	Normal	2/8/10		D2	00020405.An1	2.70	0.68	0.84		0.76	0.16	0.21		0.13	0.17	0.29		1.04	0.46	0.69	
MH24SE00106	MH24	5 to 6	1/25/2010	9:40	MH24001	Normal	3/23/10		D2	00020674.An1	2.08	0.59	0.57		0.34	0.09	0.09		0.19	n/a	0.19		1.24	0.34	0.64	
TR01SO01100	TR01	0	1/16/2010	14:40	TR01011	Normal	1/28/10	17:46	D1	00010385.An1	2.03	0.73	0.78	Jcc	0.74	0.14	0.15	Jcc	0.23	n/a	0.23	Jcc	0.48	n/a	0.48	Jcc
TR01SO00301	TR01	0 to 1	1/16/2010	13:50	TR01003	Normal	2/1/10	14:16	D2	00020351.An1	2.77	0.86	1.24		1.08	0.23	0.25		0.46	n/a	0.46		1.03	n/a	1.03	
TR01SO00301	TR01	0 to 1	1/16/2010	13:52	TR01015	Dup	2/1/10	15:31	D2	00020352.An1	2.71	1.12	1.27		1.17	0.23	0.27		0.30	n/a	0.30		1.62	n/a	1.62	
TR01SO00202	TR01	1 to 2	1/16/2010	13:40	TR01002	Normal	1/22/10	6:02	D1	00010283.An1	2.80	0.59	0.58	Jcc	1.05	0.18	0.13	Jcc	0.15	n/a	0.15	Jcc	1.25	0.31	0.66	Jcc
TR01SO00102	TR01	1 to 2	1/16/2010	13:30	TR01001	Normal	1/28/10	12:08	D1	00010380.An1	3.35	0.74	0.72	Jcc	1.00	0.15	0.12	Jcc	0.22	n/a	0.22	Jcc	1.85	0.39	0.87	Jcc
TR01SO00502	TR01	1 to 2	1/16/2010	14:00	TR01005	Normal	1/27/10	17:21	D1	00010375.An1	2.79	0.86	0.92		1.20	0.18	0.13		0.30	n/a	0.30		1.66	0.44	0.98	
TR01SO00603	TR01	2 to 3	1/16/2010	14:05	TR01006	Normal	1/25/10	10:26	D2	00020275.An1	3.08	0.81	0.78		0.91	0.16	0.10		0.23	n/a	0.23		0.65	n/a	0.65	
TR01SO00803	TR01	2 to 3	1/16/2010	14:15	TR01008	Normal	1/22/10	16:32	D1	00010282.An1	2.79	0.64	0.63	Jcc	0.99	0.15	0.11	Jcc	0.16	n/a	0.16	Jcc	0.46	n/a	0.46	Jcc
TR01SO00403	TR01	2 to 3	1/16/2010	13:55	TR01004	Normal	3/9/10	17:57	D2	00020592.An1	2.66	0.63	0.78	Jcc	1.08	0.19	0.13	Jcc	0.30	n/a	0.30	Jcc	1.26	0.45	0.74	Jcc
TR01SO00703	TR01	2 to 3	1/16/2010	14:10	TR01007	Normal	1/28/10	18:59	D1	00010386.An1	2.91	0.80	0.84	Jcc	1.11	0.21	0.14	Jcc	0.24	n/a	0.24	Jcc	0.58	n/a	0.58	Jcc
TR01SO00904	TR01	3 to 4	1/16/2010	14:30	TR01009	Normal	1/22/10	3:45	D1	00010281.An1	2.81	0.67	0.64	Jcc	0.78	0.13	0.09	Jcc	0.18	n/a	0.18	Jcc	0.91	0.27	0.65	Jcc
TR01SO01005	TR01	4 to 5	1/16/2010	14:35	TR01010	Normal	1/28/10	13:10	D1	00010382.An1	3.32	0.80	0.76	Jcc	0.95	0.17	0.17	Jcc	0.18	n/a	0.18	Jcc	1.22	0.35	0.80	Jcc
TR02SO00401	TR02	0 to 1	1/16/2010	9:50	TR02004	Normal	1/30/10	14:24	D1	00010400.An1	3.63	0.93	0.87		1.24	0.21	0.14		0.22	n/a	0.21		0.57	n/a	0.57	
TR02SO00304	TR02	3 to 4	1/16/2010	9:40	TR02003	Normal	2/1/10	11:53	D1	00020347.An1	2.39	0.76	0.79		0.86	0.13	0.12		0.27	n/a	0.27		1.78	0.70	0.83	
TR02SO01005	TR02	4 to 5	1/16/2010	10:50	TR02010	Normal	2/1/10	10:24	D2	00020346.An1	1.67	0.54	0.75		0.95	0.17	0.11		0.19	n/a	0.19		0.59	n/a	0.59	
TR02SO00505	TR02	4 to 5	1/16/2010	10:00	TR02005	Normal	1/22/10	13:28	D2	00020229.An1	2.29	0.68	0.66		0.88	0.13	0.10		0.17	n/a	0.17		0.99	0.25	0.58	
TR02SO00105	TR02	4 to 5	1/16/2010	9:30	TR02001	Normal	1/29/10	16:35	D1	00010392.An1	2.26	0.51	0.66	Jcc	0.93	0.16	0.14	Jcc	0.17	n/a	0.16	Jcc	0.51	n/a	0.51	Jcc
TR02SO00205	TR02	4 to 5	1/16/2010	9:35	TR02002	Normal	1/28/10	19:01	D2	00020328.An1	1.34	0.54	0.79		0.91	0.15	0.12		0.24	n/a	0.24		1.26	0.36	0.86	
TR02SO00707	TR02	6 to 7	1/16/2010	10:20	TR02007	Normal	1/22/10	12:44	D1	00010285.An1	2.35	0.60	0.60	Jcc	0.80	0.13	0.12	Jcc	0.15	n/a	0.15	Jcc	0.44	n/a	0.44	Jcc
TR02SO00807	TR02	6 to 7	1/16/2010	10:35	TR02008	Normal	1/22/10	12:46	D2	00020228.An1	1.77	0.51	0.55		0.80	0.13	0.74		0.18	n/a	0.18		1.00	0.27	0.64	
TR02SO00907	TR02	6 to 7	1/16/2010	10:40	TR02009	Normal	1/22/10	17:13	D2	00020231.An1	2.42	0.72	0.72		0.94	0.15	0.15		0.20	n/a	0.20		1.00	0.52	0.67	
TR02SO00607	TR02	6 to 7	1/16/2010	10:10	TR02006	Normal	1/29/10	18:49	D1	00010395.An1	2.15	0.51	0.64	Jcc	0.90	0.15	0.11	Jcc	0.20	n/a	0.20	Jcc	1.19	0.35	0.70	Jcc
TR02SO00607	TR02	6 to 7	1/16/2010	10:10	TR02015	Dup	1/22/10	22:40	D1	00010291.An1	2.19	0.65	0.62		0.81	0.14	0.11		0.15	n/a	0.15		1.22	0.33	0.66	
TR03SO00702	TR03	1 to 2	1/14/2010	12:00	TR03007	Normal	1/27/10	11:48	D2	00020307.An1	**12.40**	1.79	1.38		0.69	0.13	0.18		0.35	n/a	0.35		7.34	1.53	1.57	
TR03SO00302	TR03	1 to 2	1/14/2010	11:30	TR03003	Normal	2/1/10	13:16	D2	00020349.An1	**13.50**	2.19	1.77		1.02	0.20	0.25		0.42	n/a	0.42		7.21	0.94	1.52	
TR03SO00204	TR03	3 to 4	1/14/2010	11:20	TR03002	Normal	1/27/10	7:41	D1	00010365.An1	2.76	0.61	0.76		1.21	0.20	0.13		0.19	n/a	0.19		1.61	0.43	0.94	
TR03SO00104	TR03	3 to 4	1/14/2010	10:20	TR03001	Normal	1/27/10	9:30	D1	00010366.An1	2.61	0.78	0.82		1.19	0.20	0.12		0.18	n/a	0.18		0.58	n/a	0.58	
TR03SO00805	TR03	4 to 5	1/14/2010	14:55	TR03008	Normal	1/27/10	7:43	D2	00020305.An1	3.46	0.83	0.85	Jcc	1.50	0.25	0.13	Jcc	0.25	n/a	0.25	Jcc	2.25	0.57	1.17	Jcc
TR03SO00607	TR03	6 to 7	1/14/2010	11:50	TR03006	Normal	1/26/10	19:18	D1	00010364.An1	2.82	0.52	0.49		0.86	0.11	0.08		0.15	n/a	0.15		1.47	0.26	0.54	
TR03SO00407	TR03	6 to 7	1/14/2010	11:40	TR03004	Normal	1/28/10	19:50	D1	00010387.An1	2.64	0.89	0.90	Jcc	0.85	0.15	0.14	Jcc	0.21	n/a	0.21	Jcc	1.61	0.39	0.88	Jcc
TR03SO00507	TR03	6 to 7	1/14/2010	11:45	TR03005	Normal	1/28/10	19:52	D2	00020329.An1	2.90	0.69	0.71		0.99	0.15	0.15		0.23	n/a	0.23		1.67	0.48	0.93	
TR03SO00407	TR03	6 to 7	1/14/2010	11:40	TR03011	Dup	1/29/10	18:52	D2	00020337.An1	2.28	0.74	0.77		0.96	0.18	0.08		0.21	n/a	0.21		1.23	0.37	0.87	
TR04SO00601	TR04	0 to 1	1/14/2010	16:35	TR04006	Normal	1/22/10	21:39	D1	00010290.An1	**6.90**	1.16	0.98	Jcc	1.05	0.16	0.13	Jcc	0.27	n/a	0.27	Jcc	3.39	0.55	1.01	Jcc
TR04SO00402	TR04	1 to 2	1/14/2010	16:25	TR04004	Normal	1/22/10	15:42	D2	00020230.An1	2.42	0.53	0.67		1.17	0.20	0.13		0.21	n/a	0.21		1.43	0.64	0.79	
TR04SO00502	TR04	1 to 2	1/14/2010	16:30	TR04005	Normal	1/26/10	19:20	D2	00020304.An1	3.91	0.66	0.57		1.09	0.15	0.10		0.18	n/a	0.18		2.35	0.38	0.69	
TR04SO00703	TR04	2 to 3	1/14/2010	16:40	TR04007	Normal	1/22/10	21:46	D2	00020233.An1	3.28	0.62	0.59		1.16	0.18	0.12		0.22	n/a	0.22		1.69	0.42	0.84	
TR04SO00803	TR04	2 to 3	1/14/2010	16:50	TR04008	Normal	1/23/10	0:13	D1	00010294.An1	3.05	0.66	0.65		1.09	0.17	0.11		0.20	n/a	0.20		1.27	0.35	0.72	
TR04SO00903	TR04	2 to 3	1/14/2010	17:05	TR04009	Normal	1/25/10	12:52	D1	00010337.An1	**112.92**	10.47	4.63	Jcc	0.83	n/a	0.83	Jcc	3.14	0.81	1.04	Jcc	**45.23**	5.62	5.42	Jcc
TR04SO00106	TR04	5 to 6	1/14/2010	15:50	TR04001	Normal	1/22/10	11:50	D1	00010284.An1	4.68	0.86	0.77	Jcc	0.91	0.16	0.13	Jcc	0.22	n/a	0.22	Jcc	2.22	0.65	0.79	Jcc
TR04SO00206	TR04	5 to 6	1/14/2010	16:00	TR04002	Normal	1/22/10	11:51	D2	00020227.An1	2.95	0.69	0.66		0.92	0.15	0.10		0.16	n/a	0.16		1.28	0.30	0.70	
TR04SO00306	TR04	5 to 6	1/14/2010	16:15	TR04011	Dup	1/22/10	22:44	D2	00020234.An1	3.14	0.65	0.60		0.92	0.15	0.10		0.22	n/a	0.22		1.19	0.27	0.75	
TR04SO00306	TR04	5 to 6	1/14/2010	16:15	TR04003	Normal	1/30/10	14:27	D2	00020342.An1	2.46	0.87	0.91		0.93	0.17	0.08		0.23	n/a	0.23		1.10	0.33	0.91	
TR05SO01100	TR05	0	1/16/2010	17:00	TR05011	Normal	1/22/10	18:29	D2	00020232.An1	**38.14**	3.45	1.29		0.52	0.13	0.20		1.47	0.31	0.33		23.85	1.93	1.25	
TR05SO00502	TR05	1 to 2	1/16/2010	16:25	TR05005	Normal	1/23/10	2:11	D1	00010297.An1	4.17	0.76	0.70		1.16	0.18	0.12		0.23	n/a	0.23		2.61	0.43	0.82	
TR05SO00502	TR05	1 to 2	1/16/2010	16:25	TR05015	Dup	1/23/10	15:49	D1	00010299.An1	4.21	0.84	0.79		1.22	0.20	0.16		0.20	n/a	0.20		2.79	0.47	0.85	
TR05SO00303	TR05	2 to 3	1/16/2010	16:10	TR05003	Normal	1/23/10	1:02	D1	00010295.An1	**12.81**	1.58	1.11		1.00	0.19	0.15		0.50	0.24	0.29		7.61	0.80	1.25	
TR05SO00403	TR05	2 to 3	1/16/2010	16:20	TR05004	Normal	1/23/10	1:03	D2	00020237.An1	**9.20**	1.27	0.98		0.89	0.16	0.13		0.34	0.20	0.25		5.18	0.56	0.95	
TR05SO00103	TR05	2 to 3	1/16/2010	16:00	TR05001	Normal	1/24/10	16:42	D1	00010315.An1	**43.26**	3.63	0.82		0.61	0.11	0.16		1.57	0.17	0.20		27.93	2.01	0.98	
TR05SO00603	TR05	2 to 3	1/16/2010	16:30	TR05006	Normal	1/29/10	17:27	D1	00010393.An1	3.16	0.98	0.95	Jcc	1.11	0.22	0.16	Jcc	0.25	n/a	0.25	Jcc	1.60	0.48	1.00	Jcc
TR05SO00203	TR05	2 to 3	1/16/2010	16:05	TR05002	Normal	1/30/10	18:59	D1	00010403.An1	**16.03**	1.89	1.13		0.30	n/a	0.30		0.80	0.25	0.29		11.54	1.05	1.17	
TR05SO00805	TR05	4 to 5	1/16/2010	16:40	TR05008	Normal	1/23/10	2:13	D2	00020239.An1	2.98	0.78	0.78		0.98	0.16	0.12		0.27	0.14	0.17		1.77	0.37	0.74	
TR05SO01005	TR05	4 to 5	1/16/2010	16:50	TR05010	Normal	1/23/10	12:16	D2	00020236.An1	3.38	0.69	0.67		1.04	0.16	0.14		0.24	n/a	0.24		0.53	n/a	0.53	
TR05SO00905	TR05	4 to 5	1/16/2010	16:45	TR05009	Normal	1/25/10	10:50	D2	00020276.An1	2.86	0.73	0.73		0.93	0.18	0.14		0.20	n/a	0.20		0.56	n/a	0.56	
TR05SO00705	TR05	4 to 5	1/16/2010	16:35	TR05007	Normal	1/25/10	11:10	D1	00010335.An1	4.04	0.66	0.74	Jcc	1.10	0.18	0.13	Jcc	0.23	n/a	0.23	Jcc	2.50	0.47	0.94	Jcc
TR06ASO00702	TR06	1 to 2	1/15/2010	12:55	TR06A007	Normal	1/27/10	12:31	D2	00020308.An1	2.92	0.73	0.73	Jcc	0.94	0.17	0.16	Jcc	0.26	n/a	0.26	Jcc	0.60	n/a	0.60	Jcc
TR06SO00203	TR06	2 to 3	1/15/2010	9:30	TR06002	Normal	1/27/10	9:33	D2	00020306.An1	2.20	0.76	0.81	Jcc	0.39	n/a	0.39	Jcc	0.24	n/a	0.24	Jcc	0.55	n/a	0.55	Jcc
TR06SO00103	TR06	2 to 3	1/15/2010	9:20	TR06001	Normal	3/26/10	14:29	D2	00020678.An1	0.30	0.15	0.17		0.01	0.02	0.04		0.06	n/a	0.06		0.24	0.07	0.16	
TR06ASO00204	TR06	3 to 4	1/15/2010	11:45	TR06A002	Normal	1/28/10	12:40	D2	00020323.An1	2.91	0.83	0.79		0.95	0.18	0.16		0.20	n/a	0.20		1.22	0.36	0.88	
TR06ASO00407	TR06	6 to 7	1/15/2010	11:55	TR06A004	Normal	1/27/10	15:29	D2	00020314.An1	0.97	n/a	0.97		0.84	0.16	0.10		0.24	n/a	0.24		1.48	0.82	0.97	
TR06ASO00407	TR06	6 to 7	1/15/2010	11:55	TR06A011	Dup	1/27/10	11:46	D1	00010367.An1	2.45	0.71	0.76	Jcc	0.83	0.13	0.14	Jcc	0.23	n/a	0.23	Jcc	0.48	n/a	0.48	Jcc
TR06ASO00307	TR06	6 to 7	1/15/2010	11:50	TR06A003	Normal	1/28/10	12:38	D1	00010381.An1	3.36	0.77	0.73	Jcc	1.00	0.17	0.11	Jcc	0.22	n/a	0.22	Jcc	1.84	0.43	0.89	Jcc
TR06ASO00507	TR06	6 to 7	1/15/2010	12:00	TR06A005	Normal	1/28/10	20:35	D2	00020330.An1	2.78	0.89	0.93		1.02	0.19	0.09		0.30	n/a	0.30		1.12	0.34	0.81	
TR06ASO00108	TR06	7 to 8	1/15/2010	11:40	TR06A001	Normal	1/30/10	10:01	D1	00010398.An1	2.73	0.83	0.85		1.13	0.20	0.12		0.24	n/a	0.24		1.62	0.42	0.84	

Sample ID	Off-Site TestAmerica Analytical Results (gross activity)																	
	Ra-226 [pCi/g] Conc.	Ra-226 ±2σ	Ra-226 MDC	Th-232 (Ac-228 - γ Spec) [pCi/g] Conc.	Th-232 ±2σ	Th-232 MDC	U-235 [pCi/g] Conc.	U-235 ±2σ	U-235 MDC	U-238 (Th-234 - γ Spec) [pCi/g] Conc.	U-238 ±2σ	U-238 MDC	Th-230 (α Spec) [pCi/g] Conc.	Th-230 ±2σ	Th-230 MDC	Th-232 (α Spec) [pCi/g] Conc.	Th-232 ±2σ	Th-232 MDC
BKG3SO01717	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.21	0.27	0.05	1.03	0.24	0.05
BKG3SO01717													1.40	0.26	0.06	0.86	0.19	0.02
BKG3SO01818													1.68	0.29	0.07	0.95	0.21	0.06
BKG3SO01919													1.82	0.29	0.08	0.79	0.18	0.05
BKG3SO02020													1.58	0.26	0.03	0.86	0.18	0.04
BKG4SO00101	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.09	0.36	0.05	1.16	0.25	0.03
BKG4SO00202													2.04	0.32	0.05	1.07	0.21	0.02
BKG4SO00303	2.29	0.68	0.75	1.20	0.22	0.15	0.25	n/a	0.25	1.53	0.37	0.45	2.48	0.39	0.05	0.93	0.22	0.05
BKG4SO00404	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.70	0.31	0.07	0.99	0.23	0.06
BKG4SO00505													1.48	0.26	0.04	0.93	0.19	0.04
BKG4SO00606													1.57	0.29	0.05	0.86	0.21	0.05
BKG4SO00707													1.60	0.27	0.05	0.86	0.18	0.02
BKG4SO00808													1.32	0.26	0.05	0.89	0.21	0.05
BKG4SO00909													1.37	0.26	0.04	0.83	0.19	0.06
BKG4SO01010	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.70	0.31	0.05	0.68	0.18	0.05
BKG4SO01111	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.63	0.30	0.06	0.89	0.21	0.07
BKG4SO01212													1.71	0.28	0.06	1.05	0.21	0.04
BKG4SO01313													1.81	0.29	0.05	0.96	0.20	0.02
BKG4SO01414	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.59	0.29	0.06	0.81	0.20	0.05
BKG4SO01414																		
BKG4SO01515	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.72	0.31	0.06	1.04	0.23	0.05
BKG4SO01616													1.36	0.24	0.05	0.76	0.17	0.04
BKG4SO01717													1.59	0.27	0.05	0.88	0.19	0.03
BKG4SO01818	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.48	0.28	0.03	0.82	0.20	0.06
BKG4SO01919													1.39	0.17	0.03	0.81	0.12	0.03
BKG4SO02020													1.54	0.29	0.03	0.96	0.22	0.05
BKG5SO00101	2.06	0.63	0.58	0.84	0.13	0.05	0.19	n/a	0.19	0.96	0.31	0.45						
BKG5SO00202													1.83	0.29	0.02	1.01	0.20	0.04
BKG5SO00303													1.91	0.22	0.03	1.04	0.14	0.02
BKG5SO00404													1.70	0.21	0.02	0.93	0.13	0.01
BKG5SO00404																		
BKG5SO00505	2.76	0.61	0.63	0.82	0.20	0.16	0.24	n/a	0.24	1.58	0.43	0.48	1.66	0.30	0.06	0.92	0.21	0.05
BKG5SO00505													1.64	0.21	0.02	1.02	0.15	0.02
BKG5SO00606													1.74	0.32	0.05	0.70	0.19	0.05
BKG5SO00707													1.27	0.17	0.02	0.74	0.11	0.02
BKG5SO00808													1.33	0.17	0.03	0.80	0.12	0.01
BKG5SO00909													1.05	0.15	0.03	0.72	0.11	0.02
BKG5SO01010													1.56	0.20	0.01	0.96	0.14	0.02
BKG5SO01111	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.42	0.28	0.05	0.72	0.19	0.05
BKG5SO01111																		
BKG5SO01212	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.89	0.35	0.05	1.06	0.25	0.05
BKG5SO01313	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.53	0.28	0.03	0.63	0.17	0.04
BKG5SO01414													1.37	0.27	0.70	0.65	0.18	0.05
BKG5SO01515													1.44	0.19	0.02	0.84	0.13	0.01
BKG5SO01616													1.49	0.19	0.03	0.91	0.13	0.01
BKG5SO01717													1.29	0.17	0.02	0.84	0.13	0.01
BKG5SO01818													1.32	0.17	0.03	1.15	0.16	0.03
BKG5SO01919													1.63	0.20	0.02	0.99	0.14	0.02
BKG5SO02020	2.76	0.77	0.73	1.08	0.19	0.12	0.25	n/a	0.25	1.30	0.39	0.48	1.77	0.34	0.07	1.11	0.25	0.06
MH01SE00106													0.72	0.19	0.07	0.32	0.12	0.06
MH02SE00105													0.45	0.12	0.04	0.19	0.08	0.04
MH03SE00106													0.37	0.12	0.02	0.07	0.05	0.02
MH04SE00106													0.33	0.14	0.09	0.06	0.06	0.07
MH06SE00107													2.20	0.32	0.04	0.69	0.16	0.02
MH20SE00107													1.56	0.26	0.04	0.52	0.14	0.02
MH23SE00103													2.22	0.32	0.04	0.63	0.15	0.05
MH24SE00106													0.55	0.16	0.06	0.17	0.09	0.07
TR01SO01100													1.05	0.21	0.02	0.60	0.15	0.02
TR01SO00301													1.83	0.29	0.06	0.84	0.18	0.02
TR01SO00301																		
TR01SO00202													1.57	0.26	0.04	0.77	0.17	0.02
TR01SO00102	2.84	0.70	0.72	0.88	0.16	0.15	0.25	n/a	0.25	1.24	0.34	0.45	1.66	0.31	0.08	1.04	0.23	0.05
TR01SO00502													2.51	0.37	0.06	1.44	0.26	0.02
TR01SO00603	2.72	0.65	0.64	0.88	0.14	0.13	0.25	n/a	0.25	0.93	0.40	0.62	2.11	0.35	0.07	1.10	0.24	0.06
TR01SO00803													1.60	0.28	0.06	0.99	0.21	0.05
TR01SO00403	3.20	0.73	0.70	1.05	0.15	0.15	0.26	n/a	0.26	1.34	0.38	0.60	1.77	0.29	0.06	0.94	0.20	0.06
TR01SO00703													1.93	0.31	0.05	1.17	0.22	0.05
TR01SO00904													1.67	0.28	0.06	0.95	0.20	0.04
TR01SO01005													2.10	0.49	0.11	1.01	0.33	0.11
TR02SO00401	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.93	0.34	0.09	1.16	0.25	0.09
TR02SO00304	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.42	0.27	0.05	0.87	0.21	0.07
TR02SO01005	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.39	0.27	0.06	0.98	0.22	0.04
TR02SO00505	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.55	0.28	0.08	0.67	0.17	0.05
TR02SO00105													1.56	0.30	0.08	0.85	0.21	0.06
TR02SO00205													1.43	0.27	0.03	1.00	0.22	0.03
TR02SO00707													1.48	0.28	0.03	0.73	0.18	0.04
TR02SO00807	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.44	0.28	0.06	0.66	0.18	0.06
TR02SO00907	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.60	0.28	0.05	0.90	0.20	0.05
TR02SO00607	2.00	0.57	0.60	0.49	0.13	0.14	0.20	n/a	0.20	1.56	0.41	0.45	1.44	0.28	0.06	0.82	0.20	0.06
TR02SO00607																		
TR03SO00702	**11.60**	2.00	1.50	0.72	0.24	0.28	0.44	0.23	0.29	6.65	0.98	0.80	6.19	0.77	0.04	0.60	0.19	0.06
TR03SO00302													7.97	0.89	0.06	0.51	0.15	0.05
TR03SO00204													1.78	0.31	0.03	1.06	0.22	0.04
TR03SO00104													1.73	0.31	0.03	0.82	0.20	0.03
TR03SO00805													1.56	0.28	0.03	1.15	0.23	0.03
TR03SO00607													2.14	0.35	0.06	1.01	0.22	0.03
TR03SO00407													1.60	0.30	0.05	1.04	0.23	0.05
TR03SO00507													1.53	0.28	0.03	0.81	0.19	0.03
TR03SO00407	2.49	0.70	0.69	0.90	0.18	0.11	0.12	0.13	0.22	1.31	0.43	0.53						
TR04SO00601	**5.50**	1.10	1.00	0.95	0.19	0.15	0.25	0.20	0.33	2.89	0.51	0.61						
TR04SO00402													3.47	0.47	0.04	0.79	0.19	0.03
TR04SO00502													2.54	0.41	0.06	1.25	0.26	0.03
TR04SO00703													2.14	0.36	0.06	1.29	0.27	0.05
TR04SO00803													2.17	0.36	0.03	1.24	0.26	0.05
TR04SO00903	**94.00**	8.30	4.10	0.79	0.32	1.00	3.27	0.91	1.10	**32.80**	3.20	2.20	**29.80**	2.70	0.05	0.27	0.10	0.03
TR04SO00106	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	3.66	0.50	0.05	0.73	0.18	0.05
TR04SO00206													3.24	0.47	0.06	0.82	0.21	0.06
TR04SO00306													1.98	0.34	0.05	0.98	0.23	0.03
TR04SO00306													1.69	0.30	0.04	0.87	0.20	0.04
TR05SO01100	**36.00**	4.00	2.60	0.65	0.33	0.65	1.88	0.60	0.71	22.90	2.50	1.70	**11.20**	1.40	0.06	0.39	0.14	0.03
TR05SO00502	3.47	0.73	0.74	0.94	0.18	0.18	0.26	n/a	0.26	2.69	0.55	0.57	2.73	0.41	0.05	1.39	0.27	0.04
TR05SO00502													1.99	0.34	0.06	0.83	0.20	0.03
TR05SO00303													8.02	0.88	0.06	0.66	0.17	0.05
TR05SO00403													5.21	0.65	0.07	0.93	0.22	0.07
TR05SO00103													**13.50**	1.40	0.06	0.39	0.14	0.03
TR05SO00603													1.60	0.30	0.05	1.32	0.27	0.05
TR05SO00203	**27.80**	2.70	2.00	0.25	0.27	0.43	1.55	0.47	0.51	23.90	2.70	1.90	4.33	0.60	0.08	0.53	0.17	0.06
TR05SO00805													1.72	0.31	0.03	1.12	0.24	0.03
TR05SO01005	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.88	0.31	0.05	1.03	0.22	0.05
TR05SO00905	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.05	0.38	0.04	0.72	0.21	0.05
TR05SO00705													2.67	0.40	0.04	0.98	0.22	0.04
TR06ASO00702													1.79	0.32	0.07	1.03	0.23	0.06
TR06SO00203													1.75	0.30	0.05	0.85	0.20	0.03
TR06SO00103													0.17	0.09	0.06	0.01	0.02	0.03
TR06ASO00204													1.60	0.29	0.06	1.00	0.22	0.06
TR06ASO00407													1.22	0.24	0.04	0.78	0.19	0.04
TR06ASO00407																		
TR06ASO00307													1.50	0.28	0.06	0.97	0.21	0.05
TR06ASO00507													1.67	0.31	0.06	0.89	0.21	0.03
TR06ASO00108													1.42	0.27	0.03	0.85	0.20	0.05

Table 9-1
Radionuclides Analytical Results - Soil Samples

Sample Information											On-Site Gamma Spectroscopy Results (gross activity)																Off-Site TestAmerica Analytical Results (gross activity)																	
Sample ID	Boring/ Location No.	Depth Range (ft)	Collection Date	Collection Time	Tracking Number	Sample Type	Date Counted	Time Counted	Detector (D1 or D2)	Spectrum Name	Ra-226 [pCi/g]				Th-232 (Ac-228 - γ Spec) [pCi/g]				U-235 [pCi/g]				U-238 (Th-234 - γ Spec) [pCi/g]				Ra-226 [pCi/g]			Th-232 (Ac-228 - γ Spec) [pCi/g]			U-235 [pCi/g]			U-238 (Th-234 - γ Spec) [pCi/g]			Th-230 (α Spec) [pCi/g]			Th-232 (α Spec) [pCi/g]		
											Conc.	±2σ	MDC	Qualifiers	Conc.	±2σ	MDC	Qualifiers	Conc.	±2σ	MDC	Qualifiers	Conc.	±2σ	MDC	Qualifiers	Conc.	±2σ	MDC	Conc.	±2σ	MDC	Conc.	±2σ	MDC	Conc.	±2σ	MDC	Conc.	±2σ	MDC	Conc.	±2σ	MDC
TR06ASO00609	TR06	8 to 9	1/15/2010	12:50	TR06A006	Normal	1/30/10	17:18	D1	00010401.Anl	3.08	0.70	0.69		0.91	0.16	0.12		0.18	n/a	0.18		1.43	0.39	0.81														1.50	0.28	0.05	0.76	0.19	0.05
TR07SO01002	TR07	1 to 2	1/17/2010	14:30	TR07010	Normal	1/17/10	12:28	D1	00010368.Anl	2.39	0.67	0.70		1.13	0.19	0.10		0.24	n/a	0.24		0.55	n/a	0.55														1.57	0.29	0.07	0.98	0.22	0.08
TR07SO00202	TR07	1 to 2	1/17/2010	11:25	TR07002	Normal	1/25/10	11:16	D2	00020277.Anl	2.21	0.73	0.76		0.80	0.14	0.14		0.25	n/a	0.25		0.83	n/a	0.83		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.31	0.26	0.06	0.79	0.19	0.04
TR07SO01102	TR07	1 to 2	1/17/2010	14:35	TR07011	Normal	1/29/10	17:08	D2	00020335.Anl	3.06	0.84	0.82		1.05	0.18	0.15		0.23	n/a	0.23		1.10	0.36	0.85														1.85	0.33	0.06	1.18	0.25	0.05
TR07SO01203	TR07	2 to 3	1/17/2010	14:45	TR07012	Normal	1/30/10	17:20	D2	00020343.Anl	2.13	0.72	0.73		0.74	0.13	0.10		0.20	n/a	0.20		0.39	n/a	0.39														1.30	0.26	0.05	0.84	0.21	0.05
TR07SO00704	TR07	3 to 4	1/17/2010	11:50	TR07007	Normal	1/23/10	3:52	D2	00020241.Anl	2.95	0.58	0.58		1.05	0.18	0.11		0.22	n/a	0.22		1.00	0.54	0.70														2.26	0.36	0.06	0.99	0.22	0.04
TR07SO00304	TR07	3 to 4	1/17/2010	11:30	TR07003	Normal	1/27/10	17:23	D2	00020316.Anl	3.07	0.69	0.67		0.89	0.15	0.13		0.24	n/a	0.24		1.29	0.35	0.76														1.71	0.31	0.07	1.02	0.23	0.06
TR07SO00304	TR07	3 to 4	1/17/2010	11:30	TR07015	Normal	1/28/10	13:49	D2	00020325.Anl	2.88	0.87	0.88	Jcc	1.08	0.18	0.13	Jcc	0.21	n/a	0.21	Jcc	0.73	n/a	0.73	Jcc																		
TR07SO00806	TR07	5 to 6	1/17/2010	14:20	TR07008	Normal	1/23/10	3:09	D2	00020240.Anl	2.40	0.65	0.63		0.85	0.13	0.08		0.13	n/a	0.13		0.44	n/a	0.44		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.40	0.27	0.05	0.76	0.19	0.05
TR07SO00507	TR07	6 to 7	1/17/2010	11:40	TR07005	Normal	1/23/10	2:56	D1	00010298.Anl	2.74	0.60	0.59		0.99	0.13	0.12		0.16	n/a	0.16		1.49	0.54	0.67		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.36	0.27	0.08	1.02	0.23	0.07
TR07SO00407	TR07	6 to 7	1/17/2010	11:35	TR07004	Normal	1/25/10	11:41	D2	00020278.Anl	1.13	0.48	0.72		0.73	0.13	0.12		0.23	n/a	0.23		0.83	0.26	0.60														1.20	0.25	0.08	0.94	0.22	0.06
TR07SO00607	TR07	6 to 7	1/17/2010	11:45	TR07006	Normal	1/29/10	15:07	D1	00010391.Anl	1.99	0.54	0.73	Jcc	0.93	0.17	0.14	Jcc	0.22	n/a	0.22	Jcc	1.51	0.42	0.88	Jcc													1.43	0.28	0.05	0.70	0.18	0.05
TR07SO00908	TR07	7 to 8	1/17/2010	14:25	TR07009	Normal	1/28/10	10:59	D1	00010379.Anl	2.22	0.55	0.71	Jcc	0.96	0.17	0.10	Jcc	0.22	n/a	0.22	Jcc	1.69	0.40	0.91	Jcc													1.78	0.32	0.07	1.11	0.24	0.05
TR07SO00109	TR07	8 to 9	1/17/2010	11:06	TR07001	Normal	1/28/10	13:45	D1	00010383.Anl	3.01	0.82	0.82	Jcc	1.10	0.22	0.15	Jcc	0.25	n/a	0.25	Jcc	0.64	n/a	0.64	Jcc													1.86	0.33	0.07	0.97	0.22	0.06
TR08SO01002	TR08	1 to 2	1/18/2010	13:50	TR08010	Normal	1/28/10	11:01	D2	00020321.Anl	2.93	0.78	0.79		1.16	0.20	0.13		0.26	n/a	0.26		1.75	0.83	0.98														2.52	0.40	0.06	0.86	0.21	0.03
TR08SO00302	TR08	1 to 2	1/18/2010	12:25	TR08003	Normal	1/29/10	11:31	D1	00010389.Anl	3.82	0.97	0.95	Jcc	1.32	0.21	0.25	Jcc	0.31	n/a	0.31	Jcc	1.79	1.04	1.26	Jcc													1.33	0.26	0.03	1.04	0.22	0.05
TR08SO00603	TR08	2 to 3	1/18/2010	13:30	TR08006	Normal	1/29/10	16:34	D2	00020334.Anl	2.61	0.72	0.77		1.21	0.25	0.18		0.27	n/a	0.27		1.62	0.70	0.89														1.92	0.34	0.07	1.20	0.25	0.03
TR08SO00703	TR08	2 to 3	1/18/2010	13:35	TR08007	Normal	1/30/10	10:53	D2	00020340.Anl	1.62	0.47	0.51		0.47	0.08	0.10		0.16	n/a	0.16		0.74	n/a	0.74		1.80	0.51	0.46	0.42	0.10	0.08	0.17	n/a	0.17	0.62	0.27	0.41	1.12	0.24	0.05	0.31	0.12	0.05
TR08SO00204	TR08	3 to 4	1/18/2010	12:20	TR08002	Normal	1/27/10	13:26	D1	00010370.Anl	2.79	0.73	0.75		1.00	0.19	0.14		0.24	n/a	0.24		0.57	n/a	0.57		2.32	0.66	0.67	1.00	0.16	0.12	0.22	n/a	0.22	1.23	0.44	0.52	1.69	0.31	0.05	1.04	0.23	0.06
TR08SO01105	TR08	4 to 5	1/19/2010	15:15	TR08011	Dup	1/27/10	12:56	D1	00010369.Anl	2.01	0.60	0.61		0.59	0.10	0.09		0.19	n/a	0.19		1.21	0.34	0.79														1.17	0.24	0.04	0.56	0.16	0.03
TR08SO00105	TR08	4 to 5	1/18/2010	12:15	TR08001	Normal	1/27/10	18:43	D2	00020317.Anl	2.76	0.84	0.87	Jcc	1.03	0.19	0.13	Jcc	0.15	n/a	0.15	Jcc	0.71	n/a	0.71	Jcc													1.83	0.32	0.06	1.22	0.25	0.05
TR08SO00509	TR08	8 to 9	1/18/2010	12:50	TR08005	Normal	1/23/10	16:46	D1	00010300.Anl	2.26	0.57	0.60		0.96	0.14	0.09		0.16	n/a	0.16		1.41	0.34	0.68														1.35	0.28	0.06	1.05	0.24	0.07
TR08SO00409	TR08	8 to 9	1/18/2010	12:40	TR08004	Normal	1/27/10	16:25	D1	00010374.Anl	2.36	0.66	0.71		0.35	n/a	0.35		0.16	n/a	0.16		1.19	0.41	0.84														1.84	0.31	0.03	0.75	0.18	0.03
TR08SO00809	TR08	8 to 9	1/18/2010	13:40	TR08008	Normal	1/28/10	12:10	D2	00020322.Anl	2.40	0.78	0.79		0.76	0.12	0.10		0.26	n/a	0.26		1.11	0.32	0.71														1.67	0.30	0.03	0.84	0.20	0.03
TR08SO00909	TR08	8 to 9	1/18/2010	13:45	TR08009	Normal	1/29/10	11:32	D2	00020331.Anl	2.79	0.77	0.80		0.63	0.17	0.14		0.24	n/a	0.24		0.73	n/a	0.73														1.60	0.29	0.03	0.90	0.20	0.03
TR09SO00602	TR09	1 to 2	1/19/2010	12:55	TR09015	Dup	1/29/10	15:10	D2	00020333.Anl	3.47	0.90	0.88		1.10	0.19	0.19		0.31	n/a	0.31		0.64	n/a	0.64																			
TR09SO00602	TR09	1 to 2	1/19/2010	12:55	TR09006	Normal	1/29/10	18:03	D1	00010394.Anl	3.23	0.95	0.95	Jcc	1.21	0.21	0.14	Jcc	0.26	n/a	0.26	Jcc	1.07	0.33	0.84	Jcc													1.62	0.29	0.04	0.96	0.21	0.03
TR09SO00103	TR09	2 to 3	1/18/2010	8:45	TR09001	Normal	1/27/10	13:28	D2	00020310.Anl	0.97	0.40	0.43	Jcc	0.26	0.08	0.12	Jcc	0.14	n/a	0.14	Jcc	0.43	0.24	0.37	Jcc													0.28	0.11	0.07	0.16	0.08	0.03
TR09SO00303	TR09	2 to 3	1/18/2010	9:15	TR09003	Normal	1/27/10	16:28	D2	00020315.Anl	0.34	n/a	0.34	Jcc	0.39	0.10	0.05	Jcc	0.18	n/a	0.18	Jcc	0.63	n/a	0.63	Jcc	1.00	0.35	0.37	0.30	0.08	0.07	0.14	n/a	0.14	0.62	0.24	0.28	0.30	0.12	0.08	0.27	0.11	0.06
TR09SO00204	TR09	3 to 4	1/18/2010	9:08	TR09002	Normal	1/22/10	11:31	D2	00020235.Anl	2.33	0.69	0.70		0.79	0.15	0.12		0.18	n/a	0.18		0.45	n/a	0.45		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.99	0.34	0.05	1.01	0.23	0.05
TR09SO00504	TR09	3 to 4	1/19/2010	12:50	TR09005	Normal	2/1/10	17:11	D2	00020353.Anl	0.82	0.32	0.38		0.40	0.10	0.04		0.18	n/a	0.18		0.37	0.23	0.32														0.57	0.17	0.03	0.33	0.13	0.03
TR09SO01005	TR09	4 to 5	1/19/2010	13:15	TR09010	Normal	1/22/10	23:28	D1	00010293.Anl	2.70	0.68	0.66	Jcc	0.93	0.18	0.14	Jcc	0.18	n/a	0.18	Jcc	0.99	0.30	0.74	Jcc	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.70	0.30	0.06	0.81	0.20	0.06
TR09SO00905	TR09	4 to 5	1/19/2010	13:10	TR09009	Normal	1/25/10	11:48	D1	00010336.Anl	2.55	0.63	0.65	Jcc	0.96	0.17	0.16	Jcc	0.21	n/a	0.21	Jcc	0.47	n/a	0.47	Jcc	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.54	0.28	0.04	0.76	0.18	0.03
TR09SO00705	TR09	4 to 5	1/19/2010	13:00	TR09007	Normal	1/25/10	12:53	D2	00020279.Anl	2.59	0.89	0.90		0.89	0.15	0.12		0.24	n/a	0.24		1.96	0.81	0.92														1.83	0.31	0.04	0.63	0.16	0.05
TR09SO00805	TR09	4 to 5	1/19/2010	13:05	TR09008	Normal	1/29/10	18:05	D2	00020336.Anl	1.12	0.59	0.90		1.08	0.19	0.19		0.26	n/a	0.26		1.29	0.36	0.83		2.71	0.82	0.80	1.00	0.19	0.12	0.15	0.14	0.23	0.99	0.42	0.64	1.36	0.27	0.07	0.86	0.21	0.06
TR09SO00406	TR09	5 to 6	1/19/2010	12:45	TR09004	Normal	3/8/10	18:25	D1	00010509.Anl	0.46	0.31	0.48		0.26	0.07	0.03		0.13	n/a	0.13		0.30	0.19	0.30														0.48	0.15	0.05	0.14	0.08	0.05

Notes:

Jcc	Estimated results obtained when daily control chart limit was exceeded for peak activity
MDC	minimum detectable concentration
n/a	not applicable
pCi/g	picocuries per gram
±2σ	± 2 standard deviations
##	value exceeds Site cleanup level (cleanup goal + background concentration)
	Cleanup goals:

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
0001so00101	1	1	0 to 1	11/24/2009	Normal	1/28/2010	**558.40**	D	
0001so00202	1	2	1 to 2	11/24/2009	Normal	1/28/2010	**180.84**		
0001so00303	1	3	2 to 3	11/24/2009	Normal	1/28/2010	0.88		
0001so00404	1	4	3 to 4	11/24/2009	Normal	3/8/2010	127.48		
0001so10004	1	---	3 to 4	4/9/2010	Verification	---			126.00
0001so00505	1	5	4 to 5	11/24/2009	Normal	3/9/2010	107.54		
0001so10005	1	---	4 to 5	4/9/2010	Verification	---			0.38
0001so00606	1	6	5 to 6	11/24/2009	Normal	1/28/2010	39.12		
0001so00707	1	7	6 to 7	11/24/2009	Normal	1/28/2010	49.60		
0001so00808	1	8	7 to 8	11/24/2009	Normal	1/28/2010	**167.52**		
0001so10010	1	---	9 to 10	4/9/2010	Bounding	---			0.56
0001so01013	1	10	12 to 13	11/24/2009	Normal	1/28/2010	0.62		
0001so01118	1	11	17 to 18	11/24/2009	Normal	3/30/2010	0.52		
0001so01118DUP	1	11	17 to 18	11/24/2009	Duplicate	3/30/2010	0.42		
0002so00101	2	1	0 to 1	11/24/2009	Normal	1/28/2010	2.78		
0002so00202	2	2	1 to 2	11/24/2009	Normal	1/28/2010	11.10		
0002so00303	2	3	2 to 3	11/24/2009	Normal	1/28/2010	1.08		
0002so00404	2	4	3 to 4	11/24/2009	Normal	1/28/2010	0.84		
0002so00505	2	5	4 to 5	11/24/2009	Normal	1/28/2010	1.42		
0002so00606	2	6	5 to 6	11/24/2009	Normal	1/30/2010	0.10		
0002so00707	2	7	6 to 7	11/24/2009	Normal	1/28/2010	0.34		
0002so00808	2	8	7 to 8	11/24/2009	Normal	1/28/2010	0.90		
0002so00910	2	9	9 to 10	11/24/2009	Normal	1/28/2010	11.68		
0002so01214	2	12	13 to 14	11/24/2009	Normal	3/8/2010	0.00		
0003so00101	3	1	0 to 1	11/24/2009	Normal	1/28/2010	40.10		
0003so10001	3	---	0 to 1	4/9/2010	Verification	---			2.78
0003so00202	3	2	1 to 2	11/24/2009	Normal	1/28/2010	1.50		
0003so00303	3	3	2 to 3	11/24/2009	Normal	1/28/2010	0.60		
0003so00404	3	4	3 to 4	11/24/2009	Normal	1/28/2010	0.40		
0003so00505	3	5	4 to 5	11/24/2009	Normal	1/28/2010	0.64		
0003so00606	3	6	5 to 6	11/24/2009	Normal	1/28/2010	0.68		
0003so00707	3	7	6 to 7	11/24/2009	Normal	1/28/2010	0.54		
0003so00808	3	8	7 to 8	11/24/2009	Normal	1/28/2010	0.32		
0003so00912	3	9	11 to 12	11/24/2009	Normal	3/8/2010	0.36		
0003so01220	3	12	19 to 20	11/24/2009	Normal	12/23/2009	0.32		
0003so01220DUP	3	12	19 to 20	11/24/2009	Duplicate	3/8/2010	0.16		
0004so00101	4	1	0 to 1	12/2/2009	Normal	2/1/2010	23.94	N	
0004so00202	4	2	1 to 2	12/2/2009	Normal	2/1/2010	**2,806.80**	D,N	
0004so00303	4	3	2 to 3	12/2/2009	Normal	2/1/2010	**170.62**	E	
0004so00303DUP	4	3	2 to 3	12/2/2009	Duplicate	2/1/2010	116.32	E	
0004so00406	4	4	5 to 6	12/2/2009	Normal	2/1/2010	**348.06**	E	
0004so00511	4	5	10 to 11	12/2/2009	Normal	2/1/2010	**261.30**	E	**383.00**
0004so00612	4	6	11 to 12	12/2/2009	Normal	2/1/2010	**1,410.40**	D,N	
0004so00716	4	7	15 to 16	12/2/2009	Normal	2/1/2010	55.94	N	
0004so00817	4	8	16 to 17	12/2/2009	Normal	2/1/2010	52.92	N	
0004so00918	4	9	17 to 18	12/2/2009	Normal	2/1/2010	17.38	N	
0005so00101	5	1	0 to 1	12/1/2009	Normal	3/4/2010	**719.60**	D	**1,200.00**
0005so00202	5	2	1 to 2	12/1/2009	Normal	2/1/2010	**2,337.20**	D,N	**1,660.00**
0005so00303	5	3	2 to 3	12/1/2009	Normal	2/1/2010	**2,956.00**	D,N	
0005so00404	5	4	3 to 4	12/1/2009	Normal	2/1/2010	**1,218.80**	D,N	**3,500.00**
0005so00404DUP	5	4	3 to 4	12/1/2009	Duplicate	2/1/2010	**1,006.00**	D,N	
0005so00505	5	5	4 to 5	12/1/2009	Normal	2/2/2010	**1,312.00**	D	**3,130.00**
0005so00606	5	6	5 to 6	12/1/2009	Normal	2/1/2010	40.14	N	
0005so10006	5	---	5 to 6	4/9/2010	Verification	---			82.20
0005so00707	5	7	6 to 7	12/1/2009	Normal	2/1/2010	18.92	N	
0005so00808	5	8	7 to 8	12/1/2009	Normal	2/2/2010	1.68		
0005so00912	5	9	11 to 12	12/1/2009	Normal	2/1/2010	0.30	N	
0006so00101	6	1	0 to 1	12/1/2009	Normal	1/26/2010	48.54		
0006so10001	6	---	0 to 1	4/9/2010	Verification	---			34.80
0006so00202	6	2	1 to 2	12/1/2009	Normal	1/26/2010	1.48		
0006so00303	6	3	2 to 3	12/1/2009	Normal	1/26/2010	2.58		
0006so00404	6	4	3 to 4	12/1/2009	Normal	1/26/2010	0.52		
0006so00505	6	5	4 to 5	12/1/2009	Normal	1/28/2010	1.00		
0006so00606	6	6	5 to 6	12/1/2009	Normal	1/28/2010	0.54		
0006so00707	6	7	6 to 7	12/1/2009	Normal	1/26/2010	0.24		
0006so00808	6	8	7 to 8	12/1/2009	Normal	1/30/2010	0.38		
0006so00912	6	9	11 to 12	12/1/2009	Normal	1/26/2010	1.42		

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
0006so00912DUP	6	9	11 to 12	12/1/2009	Duplicate	3/5/2010	1.14		
0006so01120	6	11	19 to 20	12/1/2009	Normal	1/26/2010	0.18		
0007so00101	7	1	0 to 1	12/1/2009	Normal	1/28/2010	40.74		
0007so10001	7	---	0 to 1	4/9/2010	Verification	---			25.10
0007so00202	7	2	1 to 2	12/1/2009	Normal	1/28/2010	19.54		
0007so00303	7	3	2 to 3	12/1/2009	Normal	1/27/2010	1.20		
0007so00404	7	4	3 to 4	12/1/2009	Normal	1/28/2010	0.68		
0007so00505	7	5	4 to 5	12/1/2009	Normal	1/28/2010	0.70		
0007so00606	7	6	5 to 6	12/1/2009	Normal	1/28/2010	0.54		
0007so00707	7	7	6 to 7	12/1/2009	Normal	1/27/2010	0.52		
0007so00707DUP	7	7	6 to 7	12/1/2009	Duplicate	1/27/2010	0.68		
0007so00808	7	8	7 to 8	12/1/2009	Normal	1/27/2010	0.68		
0007so01120	7	11	19 to 20	12/1/2009	Normal	1/28/2010	0.54		
0008so00101	8	1	0 to 1	12/1/2009	Normal	1/26/2010	27.60		
0008so00202	8	2	1 to 2	12/1/2009	Normal	1/27/2010	29.16		
0008so00303	8	3	2 to 3	12/1/2009	Normal	1/28/2010	29.56		
0008so00404	8	4	3 to 4	12/1/2009	Normal	1/27/2010	0.74		
0008so00505	8	5	4 to 5	12/1/2009	Normal	1/27/2010	0.96		
0008so00606	8	6	5 to 6	12/1/2009	Normal	1/26/2010	0.50		
0008so00707	8	7	6 to 7	12/1/2009	Normal	1/26/2010	48.28		
0008so00808	8	8	7 to 8	12/1/2009	Normal	1/29/2010	0.18		
0008so00912	8	9	11 to 12	12/1/2009	Normal	4/11/2010	0.52		
0008so01220	8	12	19 to 20	12/1/2009	Normal	1/27/2010	0.30		
0008so01220DUP	8	12	19 to 20	12/1/2009	Duplicate	1/27/2010	0.56		
0009so00101	9	1	0 to 1	12/2/2009	Normal	2/2/2010	5.54		
0009so00202	9	2	1 to 2	12/2/2009	Normal	2/2/2010	53.50		
0009so10002	9	---	1 to 2	4/9/2010	Verification	---			**139.00**
0009so00303	9	3	2 to 3	12/2/2009	Normal	2/3/2010	5.52		
0009so00404	9	4	3 to 4	12/2/2009	Normal	2/2/2010	36.96		
0009so00505	9	5	4 to 5	12/2/2009	Normal	2/2/2010	54.28		
0009so00606	9	6	5 to 6	12/2/2009	Normal	2/2/2010	20.50		
0009so00707	9	7	6 to 7	12/2/2009	Normal	2/3/2010	0.54		
0009so00707DUP	9	7	6 to 7	12/2/2009	Duplicate	2/3/2010	0.54		
0009so00808	9	8	7 to 8	12/2/2009	Normal	2/2/2010	0.18		
0009so01012	9	10	11 to 12	12/2/2009	Normal	2/2/2010	0.32		
0009so01120	9	11	19 to 20	12/2/2009	Normal	2/3/2010	15.20		
0010so00101	10	1	0 to 1	12/2/2009	Normal	2/2/2010	4.62		
0010so00202	10	2	1 to 2	12/2/2009	Normal	2/2/2010	7.40		
0010so00303	10	3	2 to 3	12/2/2009	Normal	2/2/2010	35.30		
0010so00404	10	4	3 to 4	12/2/2009	Normal	2/2/2010	18.84	*	
0010so00505	10	5	4 to 5	12/2/2009	Normal	2/3/2010	40.08		
0010so10005	10	---	4 to 5	4/9/2010	Verification	---			62.20
0010so00611	10	6	10 to 11	12/2/2009	Normal	2/2/2010	**132.22**		
0010so00712	10	7	11 to 12	12/2/2009	Normal	2/2/2010	**906.40**	D	
0010so00813	10	8	12 to 13	12/2/2009	Normal	2/2/2010	13.84		
0010so00916	10	9	15 to 16	12/2/2009	Normal	2/3/2010	**1,473.60**	D	
0010so01020	10	10	19 to 20	12/2/2009	Normal	2/2/2010	12.68		
0010so01020DUP	10	10	19 to 20	12/2/2009	Duplicate	2/2/2010	8.10		
0011so00101	11	1	0 to 1	12/2/2009	Normal	2/3/2010	5.00		
0011so00202	11	2	1 to 2	12/2/2009	Normal	2/2/2010	3.60		
0011so00303	11	3	2 to 3	12/2/2009	Normal	2/3/2010	0.52		
0011so00303DUP	11	3	2 to 3	12/2/2009	Duplicate	2/3/2010	0.78		
0011so00404	11	4	3 to 4	12/2/2009	Normal	2/2/2010	0.26		
0011so00505	11	5	4 to 5	12/2/2009	Normal	2/2/2010	0.20		
0011so00606	11	6	5 to 6	12/2/2009	Normal	2/2/2010	0.52		
0011so00707	11	7	6 to 7	12/2/2009	Normal	2/3/2010	0.50		
0011so00808	11	8	7 to 8	12/2/2009	Normal	2/2/2010	0.22		
0011so01012	11	10	11 to 12	12/2/2009	Normal	3/4/2010	16.16		
0011so01120	11	11	19 to 20	12/2/2009	Normal	2/2/2010	0.14		
0015so00101	15	1	0 to 1	12/1/2009	Normal	1/26/2010	45.62		
0015so10001	15	---	0 to 1	4/9/2010	Verification	---			28.20
0015so00202	15	2	1 to 2	12/1/2009	Normal	1/26/2010	8.80		
0015so00303	15	3	2 to 3	12/1/2009	Normal	1/27/2010	1.10		
0015so00404	15	4	3 to 4	12/1/2009	Normal	1/27/2010	1.04		
0015so00505	15	5	4 to 5	12/1/2009	Normal	1/26/2010	0.86		
0015so00606	15	6	5 to 6	12/1/2009	Normal	1/26/2010	0.50		
0015so00707	15	7	6 to 7	12/1/2009	Normal	1/26/2010	0.30		

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
0015so00808	15	8	7 to 8	12/1/2009	Normal	1/26/2010	0.58		
0015so00915	15	9	14 to 15	12/1/2009	Normal	12/29/2009	0.20	N	
0015so01220	15	12	19 to 20	12/1/2009	Normal	1/26/2010	0.10		
0015so01220DUP	15	12	19 to 20	12/1/2009	Duplicate	3/5/2010	0.18		
0016so00101	16	1	0 to 1	12/1/2009	Normal	1/29/2010	107.86		
0016so10001	16	---	0 to 1	4/9/2010	Verification	---			**136.00**
0016so00202	16	2	1 to 2	12/1/2009	Normal	1/27/2010	7.08		
0016so00303	16	3	2 to 3	12/1/2009	Normal	1/28/2010	29.48		
0016so00404	16	4	3 to 4	12/1/2009	Normal	1/27/2010	0.62		
0016so00505	16	5	4 to 5	12/1/2009	Normal	1/26/2010	0.38		
0016so00606	16	6	5 to 6	12/1/2009	Normal	1/26/2010	0.24		
0016so00606DUP	16	6	5 to 6	12/1/2009	Duplicate	1/26/2010	0.22		
0016so00707	16	7	6 to 7	12/1/2009	Normal	1/26/2010	0.30		
0016so00808	16	8	7 to 8	12/1/2009	Normal	1/26/2010	0.28		
0016so01020	16	10	19 to 20	12/1/2009	Normal	1/26/2010	0.34		
0017so00101	17	1	0 to 1	11/24/2009	Normal	1/28/2010	1.82		
0017so00202	17	2	1 to 2	11/24/2009	Normal	1/26/2010	1.22		
0017so00303	17	3	2 to 3	11/24/2009	Normal	12/23/2009	0.62		
0017so00303DUP	17	3	2 to 3	11/24/2009	Duplicate	3/5/2010	0.46		
0017so00404	17	4	3 to 4	11/24/2009	Normal	1/27/2010	0.60		
0017so00505	17	5	4 to 5	11/24/2009	Normal	1/26/2010	0.26		
0017so00606	17	6	5 to 6	11/24/2009	Normal	1/28/2010	0.76		
0017so00707	17	7	6 to 7	11/24/2009	Normal	3/5/2010	0.40		
0017so00808	17	8	7 to 8	11/24/2009	Normal	3/5/2010	0.30		
0017so00912	17	9	11 to 12	11/24/2009	Normal	1/26/2010	0.70		
0017so01220	17	12	19 to 20	11/24/2009	Normal	3/6/2010	0.46		
0018so00101	18	1	0 to 1	12/18/2009	Normal	1/30/2010	1.82		
0018so00202	18	2	1 to 2	12/18/2009	Normal	2/1/2010	0.98	N	
0018so00303	18	3	2 to 3	12/18/2009	Normal	2/2/2010	0.86		
0018so00404	18	4	3 to 4	12/18/2009	Normal	1/30/2010	0.84		
0018so00506	18	5	5 to 6	12/18/2009	Normal	2/2/2010	0.42		
0018so00607	18	6	6 to 7	12/18/2009	Normal	1/30/2010	0.40		
0018so00708	18	7	7 to 8	12/18/2009	Normal	1/30/2010	0.24		
0018so00815	18	8	14 to 15	12/18/2009	Normal	1/30/2010	0.08		
0018so00815DUP	18	8	14 to 15	12/18/2009	Duplicate	1/30/2010	0.16		
0018so00918	18	9	17 to 18	12/18/2009	Normal	2/2/2010	0.32		
0019so00101	19	1	0 to 1	12/15/2009	Normal	1/12/2010	41.42		
0019so00202	19	2	1 to 2	12/15/2009	Normal	3/8/2010	125.16		
0019so10002	19	---	1 to 2	4/9/2010	Verification	---			**404.00**
0019so00303	19	3	2 to 3	12/15/2009	Normal	3/8/2010	1.12		
0019so00404	19	4	3 to 4	12/15/2009	Normal	1/12/2010	4.96		
0019so00505	19	5	4 to 5	12/15/2009	Normal	1/20/2010	1.30		
0019so00505DUP	19	5	4 to 5	12/15/2009	Duplicate	1/20/2010	1.00		
0019so00606	19	6	5 to 6	12/15/2009	Normal	1/20/2010	1.00		
0019so00707	19	7	6 to 7	12/15/2009	Normal	1/20/2010	0.82		
0019so00808	19	8	7 to 8	12/15/2009	Normal	1/12/2010	0.48		
0019so00914	19	9	13 to 14	12/15/2009	Normal	1/12/2010	3.54		
0019so01120	19	11	19 to 20	12/15/2009	Normal	1/12/2010	ND	U	
0020so00101	20	1	0 to 1	11/21/2009	Normal	12/9/2009	8.70		
0020so00202	20	2	1 to 2	11/21/2009	Normal	12/9/2009	1.34		
0020so00303	20	3	2 to 3	11/21/2009	Normal	12/10/2009	2.20		
0020so00404	20	4	3 to 4	11/21/2009	Normal	12/10/2009	1.06		
0020so00505	20	5	4 to 5	11/21/2009	Normal	1/26/2010	1.20		
0020so00606	20	6	5 to 6	11/21/2009	Normal	12/8/2009	0.70		
0020so00707	20	7	6 to 7	11/21/2009	Normal	12/10/2009	0.48		
0020so00808	20	8	7 to 8	11/21/2009	Normal	12/10/2009	0.58		
0020so01114	20	11	13 to 14	11/21/2009	Normal	12/7/2009	0.40		
0020so01215	20	12	14 to 15	11/21/2009	Normal	12/9/2009	0.32	*	
0020so01215DUP	20	12	14 to 15	11/21/2009	Duplicate	12/9/2009	0.32		
0021so00101	21	1	0 to 1	11/21/2009	Normal	4/10/2010	**180.52**	*	
0021so10001	21	---	0 to 1	4/9/2010	Verification	---			**185.00**
0021so00202	21	2	1 to 2	11/21/2009	Normal	12/7/2009	**740.40**	E	
0021so00202REP1	21	2	1 to 2	11/21/2009	Duplicate	12/10/2009	**342.48**		
0021so00202REP2	21	2	1 to 2	11/21/2009	Replicate	1/25/2009	**204.30**		
0021so00303	21	3	2 to 3	11/21/2009	Normal	12/8/2009	119.76		**21,800.00**
0021so00303BS1	21	3	2 to 3	---	Homogeneity	---	**796.40**		**470.00**
0021so00303BS1(f)	21	3	2 to 3	---	Homogeneity	---	**310.50**		**510.00**

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
0021so00303BS2	21	3	2 to 3	---	Homogeneity	---	**1,533.60**		**649.00**
0021so00303BS2(f)	21	3	2 to 3	---	Homogeneity	---	**371.40**		**313.00**
0021so00404	21	4	3 to 4	11/21/2009	Normal	12/7/2009	3.48		
0021so00505	21	5	4 to 5	11/21/2009	Normal	1/25/2010	7.88		
0021so00505REP	21	5	4 to 5	11/21/2009	Replicate	12/10/2009	5.62		
0021so00606	21	6	5 to 6	11/21/2009	Normal	12/7/2009	0.52		
0021so00606DUP	21	6	5 to 6	11/21/2009	Duplicate	12/7/2009	0.38		
0021so00707	21	7	6 to 7	11/21/2009	Normal	12/7/2009	1.52		
0021so00808	21	8	7 to 8	11/21/2009	Normal	12/9/2009	0.92		
0021so00808REP	21	8	7 to 8	11/21/2009	Replicate	1/25/2010	0.92		
0021so00910	21	9	9 to 10	11/21/2009	Normal	12/7/2009	0.54		
0021so01011	21	10	10 to 11	11/21/2009	Normal	12/8/2009	3.96		
0022so00101	22	1	0 to 1	11/20/2009	Normal	12/1/2009	44.58		
0022so00202	22	2	1 to 2	11/20/2009	Normal	1/28/2010	52.84		
0022so00303	22	3	2 to 3	11/20/2009	Normal	12/3/2009	4.14		
0022so00404	22	4	3 to 4	11/20/2009	Normal	12/2/2009	2.10		
0022so00404REP	22	4	3 to 4	11/20/2009	Replicate	12/3/2009	0.70		
0022so00505	22	5	4 to 5	11/20/2009	Normal	12/1/2009	0.78		
0022so00606	22	6	5 to 6	11/20/2009	Normal	1/28/2010	45.06		
0022so00707	22	7	6 to 7	11/20/2009	Normal	12/3/2009	1.12		
0022so00808	22	8	7 to 8	11/20/2009	Normal	1/28/2010	1.48		
0022so00909	22	9	8 to 9	11/20/2009	Normal	12/2/2009	0.46		
0022so01011	22	10	10 to 11	11/20/2009	Normal	12/8/2009	10.36		
0022so01011DUP	22	10	10 to 11	11/20/2009	Duplicate	3/8/2010	1.52		
0023so00101	23	1	0 to 1	11/20/2009	Normal	1/28/2010	**1,485.60**	D	
0023so00202	23	2	1 to 2	11/20/2009	Normal	12/1/2009	**711.94**	E	
0023so00202BS1(f)	23	2	1 to 2	---	Homogeneity	---	**1,227.20**		**527.00**
0023so00202BS2(f)	23	2	1 to 2	---	Homogeneity	---	**704.40**		**420.00**
0023so00303	23	3	2 to 3	11/20/2009	Normal	12/3/2009	93.06		
0023so00303BS1	23	3	2 to 3	---	Homogeneity	---	**5,209.60**		**3,190.00**
0023so00303BS1(f)	23	3	2 to 3	---	Homogeneity	---	**4,690.80**		**2,050.00**
0023so00303BS2	23	3	2 to 3	---	Homogeneity	---	**2,643.20**		**3,280.00**
0023so00303BS2(f)	23	3	2 to 3	---	Homogeneity	---	**3,348.80**		**2,770.00**
0023so00404	23	4	3 to 4	11/20/2009	Normal	12/2/2009	16.50		
0023so10004	23	---	3 to 4	4/9/2010	Verification	---			4.06
0023so00505	23	5	4 to 5	11/20/2009	Normal	12/3/2009	4.62		
0023so00606	23	6	5 to 6	11/20/2009	Normal	1/28/2010	3.84		
0023so00707	23	7	6 to 7	11/20/2009	Normal	12/2/2009	0.66		
0023so00808	23	8	7 to 8	11/20/2009	Normal	1/28/2010	0.56		
0023so00909	23	9	8 to 9	11/20/2009	Normal	12/2/2009	0.44		
0023so00909REP	23	9	8 to 9	11/20/2009	Replicate	1/28/2010	0.36		
0023so00909DUP	23	9	8 to 9	11/20/2009	Duplicate	12/2/2009	0.26		
0023so01011	23	10	10 to 11	11/20/2009	Normal	12/3/2009	2.34		
0024so00101	24	1	0 to 1	11/19/2009	Normal	1/27/2010	97.96		
0024so00101REP	24	1	0 to 1	11/19/2009	Duplicate	11/21/2009	97.66		
0024so10001	24	---	0 to 1	4/9/2010	Verification	---			57.20
0024so00202	24	2	1 to 2	11/19/2009	Normal	11/21/2009	79.10		
0024so00202REP1	24	2	1 to 2	11/19/2009	Replicate	12/2/2009	11.30		
0024so00202REP2	24	2	1 to 2	11/19/2009	Replicate	1/26/2010	5.18		
0024so00202BS1	24	2	1 to 2	11/19/2009	Homogeneity	---	35.20		29.30
0024so00202BS2	24	2	1 to 2	11/19/2009	Homogeneity	---	34.40		31.50
0024so00303	24	3	2 to 3	11/19/2009	Normal	1/28/2010	3.62		
0024so00303BS1(f)	24	3	2 to 3	---	Homogeneity	---	52.10		78.90
0024so00303BS2(f)	24	3	2 to 3	---	Homogeneity	---	42.10		80.60
0024so00404	24	4	3 to 4	11/19/2009	Normal	1/27/2010	67.60		
0024so00404REP	24	4	3 to 4	11/19/2009	Replicate	11/21/2009	18.88		
0024so00505	24	5	4 to 5	11/19/2009	Normal	1/28/2010	1.46		
0024so00505REP	24	5	4 to 5	11/19/2009	Replicate	11/21/2009	0.26		
0024so00606	24	6	5 to 6	11/19/2009	Normal	11/21/2009	1.28		
0024so00606REP	24	6	5 to 6	11/19/2009	Replicate	1/27/2009	0.60		
0024so00707	24	7	6 to 7	11/19/2009	Normal	1/27/2010	0.76		
0024so00808	24	8	7 to 8	11/19/2009	Normal	1/27/2010	0.50		
0024so00909	24	9	8 to 9	11/19/2009	Normal	1/28/2010	0.46		
0024so00909REP	24	9	8 to 9	11/19/2009	Replicate	12/2/2009	0.32		
0024so01010	24	10	9 to 10	11/19/2009	Normal	12/2/2009	0.40		
0024so01010DUP	24	10	9 to 10	11/19/2009	Duplicate	12/7/2009	0.34		
0025so00101	25	1	0 to 1	12/8/2009	Normal	1/30/2010	1.02		

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
0025so00202	25	2	1 to 2	12/8/2009	Normal	1/30/2010	0.50		
0025so00303	25	3	2 to 3	12/8/2009	Normal	1/30/2010	0.18		
0025so00404	25	4	3 to 4	12/8/2009	Normal	1/30/2010	ND	U	
0025so00506	25	5	5 to 6	12/8/2009	Normal	1/30/2010	0.60		
0025so00607	25	6	6 to 7	12/8/2009	Normal	1/30/2010	0.18		
0025so00708	25	7	7 to 8	12/8/2009	Normal	1/30/2010	0.30		
0025so01014	25	10	13 to 14	12/8/2009	Normal	1/30/2010	0.28		
0025so01014DUP	25	10	13 to 14	12/8/2009	Duplicate	1/30/2010	0.40		
0026so00101	26	1	0 to 1	12/5/2009	Normal	1/29/2010	1.40		
0026so00202	26	2	1 to 2	12/5/2009	Normal	1/28/2010	95.16		
0026so10002	26	---	1 to 2	4/9/2010	Verification	---			0.68
0026so00303	26	3	2 to 3	12/5/2009	Normal	2/2/2010	0.84		
0026so00404	26	4	3 to 4	12/5/2009	Normal	1/29/2010	0.68		
0026so00506	26	5	5 to 6	12/5/2009	Normal	1/28/2010	2.26		
0026so00607	26	6	6 to 7	12/5/2009	Normal	1/28/2010	0.36		
0026so00708	26	7	7 to 8	12/5/2009	Normal	2/2/2010	0.88		
0026so00914	26	9	13 to 14	12/5/2009	Normal	1/29/2010	0.28		
0026so01120	26	11	19 to 20	12/5/2009	Normal	1/29/2010	0.10		
0026so01120DUP	26	11	19 to 20	12/5/2009	Duplicate	3/6/2010	0.28		
0027so00101	27	1	0 to 1	12/7/2009	Normal	2/1/2010	28.02	N	
0027so00202	27	2	1 to 2	12/7/2009	Normal	2/2/2010	0.78		
0027so00303	27	3	2 to 3	12/7/2009	Normal	1/29/2010	0.56		
0027so00404	27	4	3 to 4	12/7/2009	Normal	1/29/2010	0.68		
0027so00506	27	5	5 to 6	12/7/2009	Normal	2/1/2010	0.24	N	
0027so00506DUP	27	5	5 to 6	12/7/2009	Duplicate	2/1/2010	0.38	N	
0027so00607	27	6	6 to 7	12/7/2009	Normal	1/29/2010	0.20		
0027so00708	27	7	7 to 8	12/7/2009	Normal	2/2/2010	0.34		
0027so10009	27	---	8 to 9	4/9/2010	Bounding	---			0.40
0027so10010	27	---	9 to 10	4/9/2010	Bounding	---			0.36
0027so10011	27	---	10 to 11	4/9/2010	Bounding	---			0.42
0027so10012	27	---	11 to 12	4/9/2010	Bounding	---			0.34
0027so10013	27	---	12 to 13	4/9/2010	Bounding	---			0.39
0027so10014	27	---	13 to 14	4/9/2010	Bounding	---			0.38
0027so01015	27	10	14 to 15	12/7/2009	Normal	2/2/2010	**224.40**		
0027so01119	27	11	18 to 19	12/7/2009	Normal	2/2/2010	0.18		
0028so00101	28	1	0 to 1	12/4/2009	Normal	1/28/2010	32.02		
0028so00202	28	2	1 to 2	12/4/2009	Normal	1/28/2010	2.90		
0028so00303	28	3	2 to 3	12/4/2009	Normal	1/28/2010	1.50		
0028so00404	28	4	3 to 4	12/4/2009	Normal	1/28/2010	1.12		
0028so00505	28	5	4 to 5	12/4/2009	Normal	1/28/2010	0.72		
0028so00505DUP	28	5	4 to 5	12/4/2009	Duplicate	1/28/2010	0.98		
0028so00606	28	6	5 to 6	12/4/2009	Normal	2/1/2010	0.52	N	
0028so00707	28	7	6 to 7	12/4/2009	Normal	1/28/2010	1.08		
0028so00808	28	8	7 to 8	12/4/2009	Normal	1/28/2010	0.64		
0028so01117	28	11	16 to 17	12/4/2009	Normal	1/28/2010	0.42		
0029so00101	29	1	0 to 1	12/4/2009	Normal	2/1/2010	9.90	N	
0029so00202	29	2	1 to 2	12/4/2009	Normal	2/1/2010	3.10	N	
0029so00303	29	3	2 to 3	12/4/2009	Normal	2/1/2010	0.64	N	
0029so00404	29	4	3 to 4	12/4/2009	Normal	2/1/2010	1.26	N	
0029so00505	29	5	4 to 5	12/4/2009	Normal	2/1/2010	1.04	N	
0029so00606	29	6	5 to 6	12/4/2009	Normal	2/2/2010	0.88		
0029so00707	29	7	6 to 7	12/4/2009	Normal	2/2/2010	0.44		
0029so00707DUP	29	7	6 to 7	12/4/2009	Duplicate	2/2/2010	0.60		
0029so00813	29	8	12 to 13	12/4/2009	Normal	2/1/2010	0.34	N	
0029so01015	29	10	14 to 15	12/4/2009	Normal	3/5/2010	0.40		
0029so01218	29	12	17 to 18	12/4/2009	Normal	2/1/2010	0.28	N	
0030so00101	30	1	0 to 1	12/7/2009	Normal	1/29/2010	34.32		
0030so00202	30	2	1 to 2	12/7/2009	Normal	1/29/2010	0.62		
0030so00303	30	3	2 to 3	12/7/2009	Normal	1/29/2010	1.96		
0030so00404	30	4	3 to 4	12/7/2009	Normal	1/29/2010	0.88		
0030so00505	30	5	4 to 5	12/7/2009	Normal	1/29/2010	1.06		
0030so00606	30	6	5 to 6	12/7/2009	Normal	1/29/2010	0.90		
0030so00707	30	7	6 to 7	12/7/2009	Normal	1/29/2010	0.22		
0030so00808	30	8	7 to 8	12/7/2009	Normal	1/30/2010	0.40		
0030so01215	30	12	14 to 15	12/7/2009	Normal	1/29/2010	0.26		
0030so01215DUP	30	12	14 to 15	12/7/2009	Duplicate	1/29/2010	0.20		
0030so01317	30	13	16 to 17	12/7/2009	Normal	1/29/2010	0.10		

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
0031so00101	31	1	0 to 1	12/7/2009	Normal	1/29/2010	28.56		
0031so00202	31	2	1 to 2	12/7/2009	Normal	1/29/2010	22.44		
0031so00202DUP	31	2	1 to 2	12/7/2009	Duplicate	1/29/2010	20.18		
0031so00303	31	3	2 to 3	12/7/2009	Normal	1/29/2010	0.86		
0031so00404	31	4	3 to 4	12/7/2009	Normal	1/30/2010	1.20		
0031so00505	31	5	4 to 5	12/7/2009	Normal	1/29/2010	0.48		
0031so00606	31	6	5 to 6	12/7/2009	Normal	1/29/2010	0.30		
0031so00707	31	7	6 to 7	12/7/2009	Normal	1/30/2010	0.70		
0031so00808	31	8	7 to 8	12/7/2009	Normal	1/29/2010	0.20		
0031so01215	31	12	14 to 15	12/7/2009	Normal	1/29/2010	0.24		
0031so01316	31	13	15 to 16	12/7/2009	Normal	1/29/2010	0.12		
0032so00101	32	1	0 to 1	12/7/2009	Normal	1/28/2010	127.86		
0032so10001	32	---	0 to 1	4/9/2010	Verification	---			45.60
0032so00202	32	2	1 to 2	12/7/2009	Normal	1/29/2010	0.08		
0032so00303	32	3	2 to 3	12/7/2009	Normal	2/2/2010	0.40		
0032so00404	32	4	3 to 4	12/7/2009	Normal	1/28/2010	1.16		
0032so00505	32	5	4 to 5	12/7/2009	Normal	1/28/2010	4.64		
0032so00606	32	6	5 to 6	12/7/2009	Normal	1/28/2010	113.32		
0032so10006	32	---	5 to 6	4/9/2010	Verification	---			0.81
0032so00707	32	7	6 to 7	12/7/2009	Normal	1/28/2010	0.10		
0032so00808	32	8	7 to 8	12/7/2009	Normal	2/2/2010	0.28		
0032so00910	32	9	9 to 10	12/7/2009	Normal	1/29/2010	2.20		
0032so00910DUP	32	9	9 to 10	12/7/2009	Duplicate	1/29/2010	0.16		0.19
0032so01216	32	12	15 to 16	12/7/2009	Normal	3/5/2010	0.26		
0032so01317	32	13	16 to 17	12/7/2009	Normal	1/30/2010	ND	U	
0033so00101	33	1	0 to 1	11/24/2009	Normal	1/28/2010	**171.52**		
0033so00202	33	2	1 to 2	11/24/2009	Normal	1/28/2010	ND	U	
0033so00303	33	3	2 to 3	11/24/2009	Normal	1/26/2010	24.02		
0033so00404	33	4	3 to 4	11/24/2009	Normal	1/26/2010	72.96		
0033so00505	33	5	4 to 5	11/24/2009	Normal	1/26/2010	0.24		
0033so00606	33	6	5 to 6	11/24/2009	Normal	1/28/2010	129.62		
0033so00606DUP	33	6	5 to 6	11/24/2009	Duplicate	1/28/2010	22.10		
0033so10006	33	---	5 to 6	4/9/2010	Verification	---			44.50
0033so10006DUP	33	---	5 to 6	4/9/2010	Verification	---			55.30
0033so00707	33	7	6 to 7	11/24/2009	Normal	1/26/2010	0.26		
0033so00808	33	8	7 to 8	11/24/2009	Normal	1/27/2010	0.46		
0033so01114	33	11	13 to 14	11/24/2009	Normal	1/26/2010	0.58		
0033so01220	33	12	19 to 20	11/24/2009	Normal	1/26/2010	0.68		
0034so00101	34	1	0 to 1	11/24/2009	Normal	1/26/2010	74.64		
0034so10001	34	---	0 to 1	4/9/2010	Verification	---			61.10
0034so00202	34	2	1 to 2	11/24/2009	Normal	1/26/2010	72.12		
0034so00303	34	3	2 to 3	11/24/2009	Normal	1/26/2010	31.08		54.60
0034so00404	34	4	3 to 4	11/24/2009	Normal	1/26/2010	10.36		
0034so00505	34	5	4 to 5	11/24/2009	Normal	3/6/2010	4.02		
0034so00505DUP	34	5	4 to 5	11/24/2009	Duplicate	3/6/2010	9.00		
0034so00606	34	6	5 to 6	11/24/2009	Normal	1/26/2010	0.78		
0034so00707	34	7	6 to 7	11/24/2009	Normal	1/26/2010	0.20		
0034so00808	34	8	7 to 8	11/24/2009	Normal	1/26/2010	0.34		
0034so00912	34	9	11 to 12	11/24/2009	Normal	1/26/2010	0.66		
0034so01220	34	12	19 to 20	11/24/2009	Normal	1/26/2010	0.10		
0035so00101	35	1	0 to 1	12/1/2009	Normal	1/27/2010	1.90		
0035so00202	35	2	1 to 2	12/1/2009	Normal	1/27/2010	1.32		
0035so00303	35	3	2 to 3	12/1/2009	Normal	1/27/2010	1.44		
0035so00404	35	4	3 to 4	12/1/2009	Normal	1/27/2010	1.60		
0035so00505	35	5	4 to 5	12/1/2009	Normal	1/27/2010	0.54		
0035so00606	35	6	5 to 6	12/1/2009	Normal	1/27/2010	1.14		
0035so00707	35	7	6 to 7	12/1/2009	Normal	1/28/2010	0.60		
0035so00808	35	8	7 to 8	12/1/2009	Normal	1/27/2010	0.46		
0035so01014	35	10	13 to 14	12/1/2009	Normal	1/28/2010	0.46		
0035so01115	35	11	14 to 15	12/1/2009	Normal	1/28/2010	0.52		
0035so01115DUP	35	11	14 to 15	12/1/2009	Duplicate	1/28/2010	0.94		
0035so01219	35	12	18 to 19	12/1/2009	Normal	1/27/2010	0.34		
0036so00101	36	1	0 to 1	11/23/2009	Normal	12/29/2009	**745.12**	N	
0036so00101REP	36	1	0 to 1	11/23/2009	Replicate	2/2/2010	**595.20**		
0036so00202	36	2	1 to 2	11/23/2009	Normal	12/29/2009	0.66		
0036so00303	36	3	2 to 3	11/23/2009	Normal	1/25/2010	1.30		
0036so00303REP	36	3	2 to 3	11/23/2009	Replicate	12/14/2009	0.80		

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
0036so00404	36	4	3 to 4	11/23/2009	Normal	12/29/2009	**624.58**	N	
0036so00505	36	5	4 to 5	11/23/2009	Normal	12/28/2009	0.74		
0036so00505REP	36	5	4 to 5	11/23/2009	Replicate	12/30/2009	0.36		
0036so00606	36	6	5 to 6	11/23/2009	Normal	12/29/2009	0.54		
0036so00707	36	7	6 to 7	11/23/2009	Normal	12/29/2009	0.56		
0036so00808	36	8	7 to 8	11/23/2009	Normal	1/25/2010	0.82		
0036so00915	36	9	14 to 15	11/23/2009	Normal	12/21/2009	0.70		
0036so00915DUP	36	9	14 to 15	11/23/2009	Duplicate	12/21/2009	1.56		
0036so01016	36	10	15 to 16	11/23/2009	Normal	12/21/2009	0.96		
0036so01016REP	36	10	15 to 16	11/23/2009	Replicate	12/23/2009	0.48		
0036so01117	36	11	16 to 17	11/23/2009	Normal	12/23/2009	0.40		
0036so01117REP	36	11	16 to 17	11/23/2009	Replicate	12/29/2009	0.34		
0037so00101	37	1	0 to 1	11/23/2009	Normal	12/29/2009	6.70		
0037so00202	37	2	1 to 2	11/23/2009	Normal	12/21/2009	1.64		
0037so00303	37	3	2 to 3	11/23/2009	Normal	12/29/2009	**171.72**		
0037so00303REP1	37	3	2 to 3	11/23/2009	Replicate	12/28/2009	**152.70**		
0037so00303REP2	37	3	2 to 3	11/23/2009	Replicate	12/30/2009	**163.70**		
0037so00404	37	4	3 to 4	11/23/2009	Normal	12/29/2009	0.84		
0037so00505	37	5	4 to 5	11/23/2009	Normal	1/26/2010	0.96		
0037so00505REP	37	5	4 to 5	11/23/2009	Replicate	12/14/2009	0.66		
0037so00606	37	6	5 to 6	11/23/2009	Normal	12/14/2009	0.74		
0037so00606REP	37	6	5 to 6	11/23/2009	Replicate	1/25/2010	0.64		
0037so00707	37	7	6 to 7	11/23/2009	Normal	12/29/2009	0.98		
0037so00707REP	37	7	6 to 7	11/23/2009	Replicate	12/14/2009	0.40		
0037so00808	37	8	7 to 8	11/23/2009	Normal	1/25/2010	0.76		
0037so00808REP	37	8	7 to 8	11/23/2009	Replicate	12/14/2009	0.44		
0037so01112	37	11	11 to 12	11/23/2009	Normal	1/26/2010	0.82		
0037so01112REP	37	11	11 to 12	11/23/2009	Replicate	12/14/2009	0.58		
0037so01215	37	12	14 to 15	11/23/2009	Normal	12/14/2009	0.46		
0037so01215DUP	37	12	14 to 15	11/23/2009	Duplicate	3/6/2010	0.30		
0038so00101	38	1	0 to 1	11/23/2009	Normal	12/14/2009	55.08		
0038so00101REP	38	1	0 to 1	11/23/2009	Replicate	1/26/2010	48.10		
0038so00202	38	2	1 to 2	11/23/2009	Normal	12/28/2009	1.16		
0038so00202REP	38	2	1 to 2	11/23/2009	Replicate	12/30/2009	0.62		
0038so00303	38	3	2 to 3	11/23/2009	Normal	12/21/2009	0.86		
0038so00303REP	38	3	2 to 3	11/23/2009	Replicate	12/14/2009	0.84		
0038so00404	38	4	3 to 4	11/23/2009	Normal	1/25/2010	0.98		
0038so00404REP	38	4	3 to 4	11/23/2009	Replicate	12/9/2009	0.46		
0038so00505	38	5	4 to 5	11/23/2009	Normal	12/29/2009	0.30		
0038so00606	38	6	5 to 6	11/23/2009	Normal	1/26/2010	0.62		
0038so00707	38	7	6 to 7	11/23/2009	Normal	12/14/2009	0.46		
0038so00808	38	8	7 to 8	11/23/2009	Normal	1/26/2010	0.30		
0038so01115	38	11	14 to 15	11/23/2009	Normal	1/25/2010	0.54		
0039so00101	39	1	0 to 1	12/15/2009	Normal	1/12/2010	25.42		
0039so00202	39	2	1 to 2	12/15/2009	Normal	3/30/2010	21.60		
0039so00303	39	3	2 to 3	12/15/2009	Normal	1/26/2010	0.88		
0039so00404	39	4	3 to 4	12/15/2009	Normal	3/8/2010	1.44		
0039so00505	39	5	4 to 5	12/15/2009	Normal	1/12/2010	0.36		
0039so00606	39	6	5 to 6	12/15/2009	Normal	1/26/2010	0.74		
0039so00606DUP	39	6	5 to 6	12/15/2009	Duplicate	1/26/2010	48.88		
0039so00707	39	7	6 to 7	12/15/2009	Normal	1/12/2010	ND	U	
0039so00808	39	8	7 to 8	12/15/2009	Normal	1/20/2010	0.40		
0039so00913	39	9	12 to 13	12/15/2009	Normal	1/15/2010	1.94		
0039so01018	39	10	17 to 18	12/15/2009	Normal	1/12/2010	ND	U	
0040so00101	40	1	0 to 1	12/2/2009	Normal	2/1/2010	**171.78**	N	
0040so00202	40	2	1 to 2	12/2/2009	Normal	2/1/2010	5.06	N	
0040so00303	40	3	2 to 3	12/2/2009	Normal	2/1/2010	2.40	N	
0040so00404	40	4	3 to 4	12/2/2009	Normal	2/1/2010	36.78	N	
0040so00505	40	5	4 to 5	12/2/2009	Normal	2/1/2010	0.64	N	
0040so00606	40	6	5 to 6	12/2/2009	Normal	2/1/2010	1.06	N	
0040so00707	40	7	6 to 7	12/2/2009	Normal	2/1/2010	0.54	N	
0040so00808	40	8	7 to 8	12/2/2009	Normal	2/1/2010	0.42	N	
0040so00913	40	9	12 to 13	12/2/2009	Normal	2/1/2010	0.70	N	
0040so00913DUP	40	9	12 to 13	12/2/2009	Duplicate	2/1/2010	0.68	N	
0040so01219	40	12	18 to 19	12/2/2009	Normal	2/1/2010	0.46	N	
0041so00101	41	1	0 to 1	12/15/2009	Normal	1/30/2010	107.24		
0041so10001	41	---	0 to 1	4/9/2010	Verification	---			**202.00**

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
0041so00202	41	2	1 to 2	12/15/2009	Normal	1/30/2010	ND	U	
0041so00303	41	3	2 to 3	12/15/2009	Normal	1/30/2010	2.24		
0041so00303DUP	41	3	2 to 3	12/15/2009	Duplicate	1/30/2010	1.08		
0041so00404	41	4	3 to 4	12/15/2009	Normal	1/30/2010	0.20		
0041so00505	41	5	4 to 5	12/15/2009	Normal	1/30/2010	0.30		
0041so00606	41	6	5 to 6	12/15/2009	Normal	1/30/2010	0.16		
0041so00707	41	7	6 to 7	12/15/2009	Normal	1/30/2010	0.24		
0041so00808	41	8	7 to 8	12/15/2009	Normal	1/30/2010	0.14		
0041so00912	41	9	11 to 12	12/15/2009	Normal	1/30/2010	1.28		
0041so01018	41	10	17 to 18	12/15/2009	Normal	1/30/2010	0.22		
0042so00101	42	1	0 to 1	12/1/2009	Normal	1/27/2010	**143.00**		
0042so00202	42	2	1 to 2	12/1/2009	Normal	1/27/2010	1.36		
0042so00303	42	3	2 to 3	12/1/2009	Normal	1/28/2010	1.68		
0042so00404	42	4	3 to 4	12/1/2009	Normal	1/28/2010	0.72		
0042so00505	42	5	4 to 5	12/1/2009	Normal	1/28/2010	0.88		
0042so00606	42	6	5 to 6	12/1/2009	Normal	1/26/2010	0.48		
0042so00606DUP	42	6	5 to 6	12/1/2009	Duplicate	1/26/2010	0.44		
0042so00707	42	7	6 to 7	12/1/2009	Normal	1/28/2010	0.40		
0042so00808	42	8	7 to 8	12/1/2009	Normal	1/28/2010	0.54		
0042so00912	42	9	11 to 12	12/1/2009	Normal	2/2/2010	0.26		
0042so01020	42	10	19 to 20	12/1/2009	Normal	1/27/2010	0.34		
0043so00101	43	1	0 to 1	11/23/2009	Normal	12/28/2009	**132.94**		
0043so00202	43	2	1 to 2	11/23/2009	Normal	12/30/2009	4.74		
0043so00202REP	43	2	1 to 2	11/23/2009	Replicate	12/29/2009	0.18		
0043so00303	43	3	2 to 3	11/23/2009	Normal	1/26/2010	1.36		
0043so00303REP	43	3	2 to 3	11/23/2009	Replicate	12/14/2009	0.86		
0043so00404	43	4	3 to 4	11/23/2009	Normal	1/28/2010	1.08		
0043so00505	43	5	4 to 5	11/23/2009	Normal	1/25/2010	1.20		
0043so00505REP	43	5	4 to 5	11/23/2009	Replicate	12/14/2009	0.60		
0043so00606	43	6	5 to 6	11/23/2009	Normal	12/23/2009	1.04		
0043so00606REP1	43	6	5 to 6	11/23/2009	Replicate	12/28/2009	0.66		
0043so00606REP2	43	6	5 to 6	11/23/2009	Replicate	12/30/2009	0.28		
0043so00707	43	7	6 to 7	11/23/2009	Normal	12/23/2009	0.46		
0043so00707DUP	43	7	6 to 7	11/23/2009	Duplicate	12/23/2009	0.24		
0043so00707REP	43	7	6 to 7	11/23/2009	Replicate	12/14/2009	0.34		
0043so00808	43	8	7 to 8	11/23/2009	Normal	12/14/2009	0.44		
0043so00913	43	9	12 to 13	11/23/2009	Normal	1/26/2010	0.70		
0043so01115	43	11	14 to 15	11/23/2009	Normal	1/27/2010	0.72		
0043so01115REP	43	11	14 to 15	11/23/2009	Replicate	12/14/2009	0.64		
0044so00101	44	1	0 to 1	11/23/2009	Normal	12/14/2009	3.02		
0044so00202	44	2	1 to 2	11/23/2009	Normal	12/28/2009	0.62		
0044so00303	44	3	2 to 3	11/23/2009	Normal	2/2/2010	**2,444.00**	D	
0044so10003	44	---	2 to 3	4/9/2010	Verification	---			**374.00**
0044so00303BS1(f)	44	3	2 to 3	---	Homogeneity	---	**2,341.20**		**1,200.00**
0044so00303BS2(f)	44	3	2 to 3	---	Homogeneity	---	**2,700.40**		**1,010.00**
0044so00404	44	4	3 to 4	11/23/2009	Normal	12/29/2009	20.50		
0044so00505	44	5	4 to 5	11/23/2009	Normal	12/29/2009	1.44		
0044so00606	44	6	5 to 6	11/23/2009	Normal	1/26/2010	0.90		
0044so00707	44	7	6 to 7	11/23/2009	Normal	12/29/2009	0.52		
0044so00808	44	8	7 to 8	11/23/2009	Normal	12/29/2009	0.32		
0044so00915	44	9	14 to 15	11/23/2009	Normal	12/29/2009	0.34		
0044so01017	44	10	16 to 17	11/23/2009	Normal	12/21/2009	1.12		
0044so01017DUP	44	10	16 to 17	11/23/2009	Duplicate	12/21/2009	0.80		
0045so00101	45	1	0 to 1	11/23/2009	Normal	12/29/2009	7.10		
0045so00202	45	2	1 to 2	11/23/2009	Normal	12/29/2009	0.62		
0045so00303	45	3	2 to 3	11/23/2009	Normal	12/28/2009	0.72		
0045so00303REP	45	3	2 to 3	11/23/2009	Replicate	12/30/2009	0.28		
0045so00404	45	4	3 to 4	11/23/2009	Normal	12/9/2009	1.66		
0045so00505	45	5	4 to 5	11/23/2009	Normal	12/9/2009	22.70		
0045so00505BS1(f)	45	5	4 to 5	---	Homogeneity	---	**2,092.40**		**402.00**
0045so00505BS2(f)	45	5	4 to 5	---	Homogeneity	---	**1,678.40**		**289.00**
0045so00606	45	6	5 to 6	11/23/2009	Normal	1/26/2010	**232.86**		
0045so10006	45	---	5 to 6	4/9/2010	Verification	---			**336.00**
0045so00707	45	7	6 to 7	11/23/2009	Normal	12/14/2009	29.36		
0045so00808	45	8	7 to 8	11/23/2009	Normal	12/29/2009	3.62		
0045so00914	45	9	13 to 14	11/23/2009	Normal	12/14/2009	0.44		
0045so00914 REP1	45	9	13 to 14	11/23/2009	Replicate	12/14/2009	0.40		

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
0045so00914 REP2	45	9	13 to 14	11/23/2009	Replicate	12/29/2009	0.30		
0045so00914DUP	45	9	13 to 14	11/23/2009	Duplicate	12/30/2009	0.26		
0045so01015	45	10	14 to 15	11/23/2009	Normal	12/23/2009	0.56		
0046so00101	46	1	0 to 1	11/23/2009	Normal	1/25/2010	0.70		
0046so00101REP1	46	1	0 to 1	11/23/2009	Replicate	12/14/2009	0.58		
0046so00101REP2	46	1	0 to 1	11/23/2009	Replicate	12/14/2009	0.56		
0046so00202	46	2	1 to 2	11/23/2009	Normal	12/14/2009	19.12		
0046so00303	46	3	2 to 3	11/23/2009	Normal	12/14/2009	1.58		
0046so00303DUP	46	3	2 to 3	11/23/2009	Duplicate	12/14/2009	1.72		
0046so00404	46	4	3 to 4	11/23/2009	Normal	12/28/2009	1.08		
0046so00404REP	46	4	3 to 4	11/23/2009	Replicate	12/30/2009	0.78		
0046so00505	46	5	4 to 5	11/23/2009	Normal	12/28/2009	0.92		
0046so00505REP	46	5	4 to 5	11/23/2009	Replicate	12/30/2009	0.48		
0046so00606	46	6	5 to 6	11/23/2009	Normal	1/26/2010	0.90		
0046so00707	46	7	6 to 7	11/23/2009	Normal	1/25/2010	0.84		
0046so00707REP	46	7	6 to 7	11/23/2009	Replicate	12/14/2009	0.36		
0046so00808	46	8	7 to 8	11/23/2009	Normal	12/14/2009	0.42		
0046so00808REP	46	8	7 to 8	11/23/2009	Replicate	12/14/2009	0.42		
0046so01113	46	11	12 to 13	11/23/2009	Normal	12/21/2009	1.24		
0046so01113REP	46	11	12 to 13	11/23/2009	Replicate	12/28/2009	0.72		
0046so01215	46	12	14 to 15	11/23/2009	Normal	12/28/2009	0.62		
0047so00101	47	1	0 to 1	11/21/2009	Normal	12/7/2009	14.06		
0047so00202	47	2	1 to 2	11/21/2009	Normal	1/26/2010	5.18		
0047so00303	47	3	2 to 3	11/21/2009	Normal	1/26/2010	0.66		
0047so00404	47	4	3 to 4	11/21/2009	Normal	12/9/2009	0.36		
0047so00505	47	5	4 to 5	11/21/2009	Normal	12/29/2009	0.58		
0047so00505DUP	47	5	4 to 5	11/21/2009	Duplicate	2/1/2010	0.50	N	
0047so00606	47	6	5 to 6	11/21/2009	Normal	3/30/2010	0.64		
0047so00707	47	7	6 to 7	11/21/2009	Normal	12/2/2009	1.08		
0047so00808	47	8	7 to 8	11/21/2009	Normal	12/7/2009	0.32		
0047so00910	47	9	9 to 10	11/21/2009	Normal	12/7/2009	0.58		
0047so01011	47	10	10 to 11	11/21/2009	Normal	12/2/2009	0.38		
0047so01112	47	11	11 to 12	11/21/2009	Normal	12/8/2009	0.62		
0048so00101	48	1	0 to 1	11/21/2009	Normal	12/7/2009	75.40		
0048so00101DUP	48	1	0 to 1	11/21/2009	Duplicate	12/7/2009	61.44		
0048so10001	48	---	0 to 1	4/9/2010	Verification	---			**152.00**
0048so00202	48	2	1 to 2	11/21/2009	Normal	12/9/2009	11.00		
0048so00202REP1	48	2	1 to 2	11/21/2009	Replicate	12/7/2009	0.40		
0048so00202REP2	48	2	1 to 2	11/21/2009	Replicate	12/7/2009	7.56		
0048so00303	48	3	2 to 3	11/21/2009	Normal	1/26/2010	0.86		
0048so00404	48	4	3 to 4	11/21/2009	Normal	12/9/2009	0.70		
0048so00505	48	5	4 to 5	11/21/2009	Normal	12/7/2009	0.66		
0048so00606	48	6	5 to 6	11/21/2009	Normal	12/9/2009	0.44		
0048so00707	48	7	6 to 7	11/21/2009	Normal	12/9/2009	0.58		
0048so00808	48	8	7 to 8	11/21/2009	Normal	12/9/2009	0.32		
0048so00914	48	9	13 to 14	11/21/2009	Normal	1/26/2010	1.18		
0048so00914REP	48	9	13 to 14	11/21/2009	Replicate	12/9/2009	0.26		
0048so01015	48	10	14 to 15	11/21/2009	Normal	12/9/2009	0.28		
0049so00101	49	1	0 to 1	11/21/2009	Normal	12/1/2009	0.54		
0049so00202	49	2	1 to 2	11/21/2009	Normal	12/2/2009	0.58		
0049so00303	49	3	2 to 3	11/21/2009	Normal	12/3/2009	0.60		
0049so00404	49	4	3 to 4	11/21/2009	Normal	12/8/2009	0.74		
0049so00404DUP	49	4	3 to 4	11/21/2009	Duplicate	1/30/2010	0.36		
0049so00505	49	5	4 to 5	11/21/2009	Normal	12/2/2009	0.44		
0049so00606	49	6	5 to 6	11/21/2009	Normal	12/1/2009	0.88		
0049so00707	49	7	6 to 7	11/21/2009	Normal	12/2/2009	0.26		
0049so00808	49	8	7 to 8	11/21/2009	Normal	12/3/2009	0.50		
0049so00910	49	9	9 to 10	11/21/2009	Normal	12/3/2009	0.40		
0049so00910REP	49	9	9 to 10	11/21/2009	Replicate	12/2/2009	0.20		
0049so01012	49	10	11 to 12	11/21/2009	Normal	12/1/2009	1.10		
0050so00101	50	1	0 to 1	11/20/2009	Normal	12/2/2009	1.20		
0050so00202	50	2	1 to 2	11/20/2009	Normal	12/2/2009	0.58		
0050so00303	50	3	2 to 3	11/20/2009	Normal	1/28/2010	1.04		
0050so00404	50	4	3 to 4	11/20/2009	Normal	12/7/2009	0.48		
0050so00404DUP	50	4	3 to 4	11/20/2009	Duplicate	12/8/2009	0.44	*	
0050so00505	50	5	4 to 5	11/20/2009	Normal	1/28/2010	0.50		
0050so00606	50	6	5 to 6	11/20/2009	Normal	12/1/2009	0.40		

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
0050so00707	50	7	6 to 7	11/20/2009	Normal	12/2/2009	1.92		
0050so00808	50	8	7 to 8	11/20/2009	Normal	1/28/2010	0.72		
0050so00909	50	9	8 to 9	11/20/2009	Normal	12/2/2009	0.22		
0050so01010	50	10	9 to 10	11/20/2009	Normal	12/2/2009	0.60		
0051so00101	51	1	0 to 1	12/11/2009	Normal	1/15/2010	4.60		
0051so00202	51	2	1 to 2	12/11/2009	Normal	1/12/2010	1.16		
0051so00303	51	3	2 to 3	12/11/2009	Normal	1/12/2010	0.34		
0051so00404	51	4	3 to 4	12/11/2009	Normal	1/12/2010	ND	U	
0051so00505	51	5	4 to 5	12/11/2009	Normal	1/12/2010	ND	U	
0051so00606	51	6	5 to 6	12/11/2009	Normal	1/26/2010	0.78		
0051so00707	51	7	6 to 7	12/11/2009	Normal	1/12/2010	ND	U	
0051so00808	51	8	7 to 8	12/11/2009	Normal	3/6/2010	0.34		
0051so01015	51	10	14 to 15	12/11/2009	Normal	1/20/2010	0.30		
0051so01015DUP	51	10	14 to 15	12/11/2009	Duplicate	1/20/2010	0.32		
0051so01220	51	12	19 to 20	12/11/2009	Normal	1/15/2010	1.08		
0052so00101	52	1	0 to 1	12/11/2009	Normal	1/8/2010	1.22		
0052so00202	52	2	1 to 2	12/11/2009	Normal	1/12/2010	ND	U	
0052so00303	52	3	2 to 3	12/11/2009	Normal	1/12/2010	0.24		
0052so00404	52	4	3 to 4	12/11/2009	Normal	1/8/2010	83.66		
0052so10004	52	---	3 to 4	4/9/2010	Verification	---			0.54
0052so00505	52	5	4 to 5	12/11/2009	Normal	1/8/2010	0.46		
0052so00606	52	6	5 to 6	12/11/2009	Normal	1/11/2010	0.46		
0052so00707	52	7	6 to 7	12/11/2009	Normal	1/12/2010	ND	U	
0052so00808	52	8	7 to 8	12/11/2009	Normal	1/8/2010	0.46		
0052so00913	52	9	12 to 13	12/11/2009	Normal	1/11/2010	0.50		
0052so00913DUP	52	9	12 to 13	12/11/2009	Duplicate	1/11/2010	0.42		
0052so01320	52	13	19 to 20	12/11/2009	Normal	1/12/2010	ND	U	
0053so00101	53	1	0 to 1	12/11/2009	Normal	1/12/2010	7.98		
0053so00202	53	2	1 to 2	12/11/2009	Normal	1/12/2010	0.00		
0053so00303	53	3	2 to 3	12/11/2009	Normal	1/12/2010	ND	U	
0053so00406	53	4	5 to 6	12/11/2009	Normal	1/20/2010	0.28		
0053so00507	53	5	6 to 7	12/11/2009	Normal	1/15/2010	1.62		
0053so00608	53	6	7 to 8	12/11/2009	Normal	1/15/2010	1.18		
0053so01020	53	10	19 to 20	12/11/2009	Normal	1/20/2010	0.12		
0053so01020DUP	53	10	19 to 20	12/11/2009	Duplicate	1/20/2010	0.24		
0054so00101	54	1	0 to 1	11/24/2009	Normal	1/26/2010	59.38		
0054so00202	54	2	1 to 2	11/24/2009	Normal	1/26/2010	9.10		
0054so00303	54	3	2 to 3	11/24/2009	Normal	1/26/2010	12.56		
0054so00404	54	4	3 to 4	11/24/2009	Normal	1/25/2010	2.96		
0054so00505	54	5	4 to 5	11/24/2009	Normal	1/26/2010	0.56		
0054so00606	54	6	5 to 6	11/24/2009	Normal	12/23/2009	0.42		
0054so00606DUP	54	6	5 to 6	11/24/2009	Duplicate	12/23/2009	0.46		
0054so00707	54	7	6 to 7	11/24/2009	Normal	1/26/2010	0.64		
0054so00808	54	8	7 to 8	11/24/2009	Normal	1/26/2010	0.64		
0054so01112	54	11	11 to 12	11/24/2009	Normal	1/26/2010	0.24		
0054so01220	54	12	19 to 20	11/24/2009	Normal	1/26/2010	0.12		
0055so00101	55	1	0 to 1	11/24/2009	Normal	1/26/2010	1.36		
0055so00202	55	2	1 to 2	11/24/2009	Normal	1/27/2010	0.72		
0055so00303	55	3	2 to 3	11/24/2009	Normal	1/26/2010	0.82		
0055so00404	55	4	3 to 4	11/24/2009	Normal	1/27/2010	0.60		0.73
0055so00505	55	5	4 to 5	11/24/2009	Normal	1/26/2010	0.62		
0055so00606	55	6	5 to 6	11/24/2009	Normal	1/26/2010	0.22		
0055so00707	55	7	6 to 7	11/24/2009	Normal	1/25/2010	0.88		
0055so00808	55	8	7 to 8	11/24/2009	Normal	1/26/2010	0.34		
0055so00912	55	9	11 to 12	11/24/2009	Normal	1/26/2010	0.34		
0055so01020	55	10	19 to 20	11/24/2009	Normal	1/26/2010	0.18		
0055so01020DUP	55	10	19 to 20	11/24/2009	Duplicate	1/26/2010	0.10		
0056so00101	56	1	0 to 1	12/2/2009	Normal	2/1/2010	3.42	N	
0056so00202	56	2	1 to 2	12/2/2009	Normal	2/1/2010	1.30	N	
0056so00303	56	3	2 to 3	12/2/2009	Normal	2/1/2010	0.54	N	
0056so00404	56	4	3 to 4	12/2/2009	Normal	2/1/2010	0.86	N	
0056so00505	56	5	4 to 5	12/2/2009	Normal	2/1/2010	0.62	N	
0056so00606	56	6	5 to 6	12/2/2009	Normal	2/1/2010	0.42	N	
0056so00707	56	7	6 to 7	12/2/2009	Normal	2/1/2010	0.44	N	
0056so00707DUP	56	7	6 to 7	12/2/2009	Duplicate	2/1/2010	0.50	N	
0056so00808	56	8	7 to 8	12/2/2009	Normal	2/1/2010	0.56	N	
0056so01013	56	10	12 to 13	12/2/2009	Normal	2/1/2010	36.10	N	

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
0056so01120	56	11	19 to 20	12/2/2009	Normal	2/1/2010	10.54	N	
0057so00101	57	1	0 to 1	12/11/2009	Normal	1/11/2010	0.70		
0057so00202	57	2	1 to 2	12/11/2009	Normal	1/8/2010	0.50		
0057so00303	57	3	2 to 3	12/11/2009	Normal	1/8/2010	0.32		
0057so00404	57	4	3 to 4	12/11/2009	Normal	1/12/2010	4.00		
0057so00506	57	5	5 to 6	12/11/2009	Normal	1/11/2010	1.20		
0057so00506DUP	57	5	5 to 6	12/11/2009	Duplicate	1/11/2010	4.84		
0057so00607	57	6	6 to 7	12/11/2009	Normal	1/12/2010	13.30		
0057so00708	57	7	7 to 8	12/11/2009	Normal	1/8/2010	0.42		
0057so01017	57	10	16 to 17	12/11/2009	Normal	1/12/2010	1.08		
0058so00101	58	1	0 to 1	12/14/2009	Normal	1/12/2010	2.10		
0058so00202	58	2	1 to 2	12/14/2009	Normal	1/12/2010	0.10		
0058so00303	58	3	2 to 3	12/14/2009	Normal	1/12/2010	ND	U	
0058so00404	58	4	3 to 4	12/14/2009	Normal	1/15/2010	1.12		
0058so00506	58	5	5 to 6	12/14/2009	Normal	1/15/2010	1.18		
0058so00607	58	6	6 to 7	12/14/2009	Normal	1/12/2010	ND	U	
0058so00708	58	7	7 to 8	12/14/2009	Normal	1/12/2010	ND	U	
0058so00911	58	9	10 to 11	12/14/2009	Normal	1/12/2010	0.36		
0058so01217	58	12	16 to 17	12/14/2009	Normal	1/20/2010	0.22		
0058so01217DUP	58	12	16 to 17	12/14/2009	Duplicate	1/20/2010	0.16		
0059so00101	59	1	0 to 1	12/8/2009	Normal	1/3/2010	33.92		
0059so00202	59	2	1 to 2	12/8/2009	Normal	1/3/2010	0.86		
0059so00303	59	3	2 to 3	12/8/2009	Normal	1/3/2010	0.74		
0059so00406	59	4	5 to 6	12/8/2009	Normal	1/3/2010	3.08		
0059so00507	59	5	6 to 7	12/8/2009	Normal	1/3/2010	0.70		
0059so00608	59	6	7 to 8	12/8/2009	Normal	1/3/2010	0.68		
0059so00608DUP	59	6	7 to 8	12/8/2009	Duplicate	1/3/2010	0.48		
0059so00709	59	7	8 to 9	12/8/2009	Normal	1/3/2010	0.40		
0059so00813	59	8	12 to 13	12/8/2009	Normal	1/3/2010	1.96		
0059so00914	59	9	13 to 14	12/8/2009	Normal	1/30/2010	0.36		
0060so00101	60	1	0 to 1	12/8/2009	Normal	2/1/2010	22.02	N	
0060so00202	60	2	1 to 2	12/8/2009	Normal	1/30/2010	9.46		
0060so00303	60	3	2 to 3	12/8/2009	Normal	1/30/2010	0.60		
0060so00404	60	4	3 to 4	12/8/2009	Normal	2/1/2010	0.32	N	
0060so00505	60	5	4 to 5	12/8/2009	Normal	1/30/2010	0.26		
0060so00606	60	6	5 to 6	12/8/2009	Normal	2/2/2010	0.72		
0060so00707	60	7	6 to 7	12/8/2009	Normal	1/28/2010	1.18		
0060so00707REP	60	7	6 to 7	12/8/2009	Replicate	1/30/2010	0.26		
0060so00808	60	8	7 to 8	12/8/2009	Normal	1/30/2010	0.00		
0060so01010	60	10	9 to 10	12/8/2009	Normal	2/1/2010	0.50	N	
0060so01112	60	11	11 to 12	12/8/2009	Normal	1/30/2010	ND	U	
0060so01215	60	12	14 to 15	12/8/2009	Normal	1/30/2010	0.04		
0060so01215DUP	60	12	14 to 15	12/8/2009	Duplicate	1/30/2010	0.12		
0061so00101	61	1	0 to 1	12/7/2009	Normal	2/2/2010	22.40		
0061so00202	61	2	1 to 2	12/7/2009	Normal	1/30/2010	0.72		
0061so00303	61	3	2 to 3	12/7/2009	Normal	2/2/2010	0.52		
0061so00404	61	4	3 to 4	12/7/2009	Normal	1/30/2010	7.90		
0061so00506	61	5	5 to 6	12/7/2009	Normal	2/1/2010	9.34	N	
0061so00607	61	6	6 to 7	12/7/2009	Normal	1/30/2010	0.48		
0061so00708	61	7	7 to 8	12/7/2009	Normal	1/30/2010	2.62		
0061so00913	61	9	12 to 13	12/7/2009	Normal	1/30/2010	0.26		
0061so00913DUP	61	9	12 to 13	12/7/2009	Duplicate	1/30/2010	0.44		
0061so01015	61	10	14 to 15	12/7/2009	Normal	1/30/2010	0.32		
0062so00101	62	1	0 to 1	12/7/2009	Normal	2/1/2010	20.18	N	
0062so00202	62	2	1 to 2	12/7/2009	Normal	2/2/2010	0.78		
0062so00303	62	3	2 to 3	12/7/2009	Normal	1/30/2010	ND	U	
0062so00303DUP	62	3	2 to 3	12/7/2009	Duplicate	1/30/2010	0.66		
0062so00404	62	4	3 to 4	12/7/2009	Normal	2/1/2010	0.70	N	
0062so00506	62	5	5 to 6	12/7/2009	Normal	2/1/2010	0.78	N	
0062so00607	62	6	6 to 7	12/7/2009	Normal	1/30/2010	0.48		
0062so00708	62	7	7 to 8	12/7/2009	Normal	2/2/2010	0.48		
0062so00810	62	8	9 to 10	12/7/2009	Normal	2/1/2010	0.30	N	
0062so01015	62	10	14 to 15	12/7/2009	Normal	1/30/2010	0.56		
0063so00101	63	1	0 to 1	11/24/2009	Normal	1/27/2010	1.70		
0063so00202	63	2	1 to 2	11/24/2009	Normal	1/25/2010	9.78		
0063so00303	63	3	2 to 3	11/24/2009	Normal	1/26/2010	0.10		
0063so00404	63	4	3 to 4	11/24/2009	Normal	1/26/2010	1.14		

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
0063so00505	63	5	4 to 5	11/24/2009	Normal	1/26/2010	0.58		
0063so00606	63	6	5 to 6	11/24/2009	Normal	1/26/2010	0.38		
0063so00707	63	7	6 to 7	11/24/2009	Normal	1/25/2010	0.72		
0063so00808	63	8	7 to 8	11/24/2009	Normal	1/26/2010	0.22		
0063so01116	63	11	15 to 16	11/24/2009	Normal	3/8/2010	0.06		
0063so01116DUP	63	11	15 to 16	11/24/2009	Duplicate	3/8/2010	0.22		
0063so01320	63	13	19 to 20	11/24/2009	Normal	1/25/2010	0.72		
0064so00101	64	1	0 to 1	12/1/2009	Normal	1/29/2010	5.42		
0064so00202	64	2	1 to 2	12/1/2009	Normal	1/28/2010	1.12		
0064so00303	64	3	2 to 3	12/1/2009	Normal	1/28/2010	0.70		
0064so00303DUP	64	3	2 to 3	12/1/2009	Duplicate	1/28/2010	1.14		
0064so00404	64	4	3 to 4	12/1/2009	Normal	1/28/2010	2.40		
0064so00505	64	5	4 to 5	12/1/2009	Normal	12/29/2009	0.36		
0064so00606	64	6	5 to 6	12/1/2009	Normal	1/28/2010	1.14		
0064so00707	64	7	6 to 7	12/1/2009	Normal	1/28/2010	0.32		
0064so00808	64	8	7 to 8	12/1/2009	Normal	1/28/2010	0.42		
0064so00910	64	9	9 to 10	12/1/2009	Normal	1/29/2010	0.24		
0064so01113	64	11	12 to 13	12/1/2009	Normal	1/28/2010	0.18		
0064so01220	64	12	19 to 20	12/1/2009	Normal	1/27/2010	0.40		
0065so00101	65	1	0 to 1	11/21/2009	Normal	12/3/2009	86.98		
0065so00202	65	2	1 to 2	11/21/2009	Normal	12/2/2009	**1,027.86**	E	**13,000.00**
0065so00202BS1	65	2	1 to 2	---	Homogeneity	---	**1,260.00**		**1,210.00**
0065so00202BS2	65	2	1 to 2	---	Homogeneity	---	**1,527.20**		**1,350.00**
0065so00303	65	3	2 to 3	11/21/2009	Normal	12/2/2009	51.42		
0065so10003	65	---	2 to 3	4/9/2010	Verification	---			8.73
0065so00404	65	4	3 to 4	11/21/2009	Normal	12/2/2009	3.06		
0065so00505	65	5	4 to 5	11/21/2009	Normal	12/1/2009	9.50		
0065so00606	65	6	5 to 6	11/21/2009	Normal	3/9/2010	14.36		
0065so00707	65	7	6 to 7	11/21/2009	Normal	12/7/2009	0.32		
0065so00808	65	8	7 to 8	11/21/2009	Normal	12/8/2009	0.12		
0065so00808DUP	65	8	7 to 8	11/21/2009	Duplicate	12/8/2009	0.30		
0065so00910	65	9	9 to 10	11/21/2009	Normal	12/9/2009	0.62		
0065so01012	65	10	11 to 12	11/21/2009	Normal	12/2/2009	12.04		
0066so00101	66	1	0 to 1	11/19/2009	Normal	12/2/2009	0.50		
0066so00202	66	2	1 to 2	11/19/2009	Normal	12/3/2009	1.90		
0066so00303	66	3	2 to 3	11/19/2009	Normal	11/21/2009	0.82		
0066so00404	66	4	3 to 4	11/19/2009	Normal	11/21/2009	11.74		
0066so00505	66	5	4 to 5	11/19/2009	Normal	12/1/2009	1.58		
0066so00606	66	6	5 to 6	11/19/2009	Normal	12/2/2009	0.36		
0066so00707	66	7	6 to 7	11/19/2009	Normal	11/21/2009	2.52		
0066so00707REP	66	7	6 to 7	11/19/2009	Replicate	12/3/2009	0.50		
0066so00808	66	8	7 to 8	11/19/2009	Normal	12/10/2009	0.36		
0066so00808DUP	66	8	7 to 8	11/19/2009	Duplicate	12/3/2009	0.50		
0066so00808REP1	66	8	7 to 8	11/19/2009	Replicate	12/2/2009	0.26		
0066so00808REP2	66	8	7 to 8	11/19/2009	Replicate	12/7/2009	0.28		
0066so00808REP3	66	8	7 to 8	11/19/2009	Replicate	12/7/2009	0.34		
0066so00910	66	9	9 to 10	11/19/2009	Normal	12/1/2009	0.42		
0066so01014	66	10	13 to 14	11/19/2009	Normal	1/28/2010	1.82		
0067so00101	67	1	0 to 1	12/8/2009	Normal	1/3/2010	2.78		
0067so00202	67	2	1 to 2	12/8/2009	Normal	1/5/2010	0.74		
0067so00303	67	3	2 to 3	12/8/2009	Normal	1/7/2010	0.54		
0067so00404	67	4	3 to 4	12/8/2009	Normal	1/3/2010	1.84		
0067so00506	67	5	5 to 6	12/8/2009	Normal	1/7/2010	0.30		
0067so00607	67	6	6 to 7	12/8/2009	Normal	1/3/2010	0.34		
0067so00708	67	7	7 to 8	12/8/2009	Normal	1/7/2010	0.22		
0067so01115	67	11	14 to 15	12/8/2009	Normal	1/7/2010	0.32		
0067so01115DUP	67	11	14 to 15	12/8/2009	Duplicate	1/7/2010	0.42		
0067so01220	67	12	19 to 20	12/8/2009	Normal	1/3/2010	4.68		
0068so00101	68	1	0 to 1	12/8/2009	Normal	1/11/2010	2.54		
0068so00202	68	2	1 to 2	12/8/2009	Normal	1/8/2010	3.20		
0068so00303	68	3	2 to 3	12/8/2009	Normal	1/12/2010	0.22		
0068so00404	68	4	3 to 4	12/8/2009	Normal	1/3/2010	1.44		
0068so00505	68	5	4 to 5	12/8/2009	Normal	1/7/2010	0.50		
0068so00606	68	6	5 to 6	12/8/2009	Normal	1/12/2010	0.94		
0068so00707	68	7	6 to 7	12/8/2009	Normal	1/12/2010	0.78		
0068so00707DUP	68	7	6 to 7	12/8/2009	Duplicate	1/12/2010	1.54		
0068so00808	68	8	7 to 8	12/8/2009	Normal	1/8/2010	0.22		0.67

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
0068so01116	68	11	15 to 16	12/8/2009	Normal	1/12/2010	ND	U	
0069so00101	69	1	0 to 1	12/5/2009	Normal	1/29/2010	30.78		
0069so00202	69	2	1 to 2	12/5/2009	Normal	1/28/2010	2.28		
0069so00303	69	3	2 to 3	12/5/2009	Normal	1/28/2010	74.02		
0069so00303DUP	69	3	2 to 3	12/5/2009	Duplicate	1/28/2010	65.30		
0069so10003	69	---	2 to 3	4/9/2010	Verification	---			0.51
0069so00404	69	4	3 to 4	12/5/2009	Normal	1/28/2010	39.30		
0069so00505	69	5	4 to 5	12/5/2009	Normal	1/29/2010	0.32		
0069so00606	69	6	5 to 6	12/5/2009	Normal	1/28/2010	0.50		
0069so00707	69	7	6 to 7	12/5/2009	Normal	1/28/2010	3.42		
0069so00808	69	8	7 to 8	12/5/2009	Normal	1/29/2010	0.52		
0069so01120	69	11	19 to 20	12/5/2009	Normal	1/29/2010	0.04		
0070so00101	70	1	0 to 1	12/4/2009	Normal	1/28/2010	1.94		
0070so00202	70	2	1 to 2	12/4/2009	Normal	1/28/2010	0.66		
0070so00303	70	3	2 to 3	12/4/2009	Normal	1/28/2010	1.16		
0070so00404	70	4	3 to 4	12/4/2009	Normal	1/28/2010	1.18		
0070so00505	70	5	4 to 5	12/4/2009	Normal	1/28/2010	0.72		
0070so00606	70	6	5 to 6	12/4/2009	Normal	1/28/2010	6.14		
0070so00707	70	7	6 to 7	12/4/2009	Normal	1/28/2010	21.68		
0070so00808	70	8	7 to 8	12/4/2009	Normal	1/28/2010	0.70		
0070so01015	70	10	14 to 15	12/4/2009	Normal	1/28/2010	0.20		
0070so01116	70	11	15 to 16	12/4/2009	Normal	1/28/2010	0.66		
0070so01116DUP	70	11	15 to 16	12/4/2009	Duplicate	1/28/2010	0.26		
0071so00101	71	1	0 to 1	12/2/2009	Normal	1/28/2010	**268.20**		
0071so00202	71	2	1 to 2	12/2/2009	Normal	2/1/2010	41.22	N	
0071so00303	71	3	2 to 3	12/2/2009	Normal	1/28/2010	76.18		
0071so10003	71	---	2 to 3	4/9/2010	Verification	---			40.80
0071so00404	71	4	3 to 4	12/2/2009	Normal	2/2/2010	18.98		
0071so00505	71	5	4 to 5	12/2/2009	Normal	1/28/2010	0.06		
0071so00606	71	6	5 to 6	12/2/2009	Normal	2/2/2010	9.28		
0071so00707	71	7	6 to 7	12/2/2009	Normal	2/2/2010	10.46		
0071so00808	71	8	7 to 8	12/2/2009	Normal	1/28/2010	84.40		
0071so01115	71	11	14 to 15	12/2/2009	Normal	1/30/2010	4.10		
0071so01115DUP	71	11	14 to 15	12/2/2009	Duplicate	1/30/2010	40.64		
0072so00101	72	1	0 to 1	12/2/2009	Normal	2/2/2010	**724.80**	D	
0072so00101REP	72	1	0 to 1	12/2/2009	Replicate	3/9/2010	**322.58**		
0072so00202	72	2	1 to 2	12/2/2009	Normal	2/2/2010	**1,774.00**	D	
0072so00303	72	3	2 to 3	12/2/2009	Normal	1/28/2010	**939.20**	D	
0072so00404	72	4	3 to 4	12/2/2009	Normal	1/28/2010	**680.00**	D	
0072so00505	72	5	4 to 5	12/2/2009	Normal	3/9/2010	**1,185.60**	D	**1,990.00**
0072so00505REP	72	5	4 to 5	12/2/2009	Replicate	2/2/2010	**1,063.20**		
0072so00606	72	6	5 to 6	12/2/2009	Normal	1/28/2010	**955.20**	D	
0072so00707	72	7	6 to 7	12/2/2009	Normal	1/28/2010	**948.00**	D	**2,900.00**
0072so00707DUP	72	7	6 to 7	12/2/2009	Duplicate	1/28/2010	**322.00**		**3,050.00**
0072so00808	72	8	7 to 8	12/2/2009	Normal	1/28/2010	**2,757.20**	D	
0072so10009	72	---	8 to 9	4/9/2010	Bounding	---			**526.00**
0072so10010	72	---	9 to 10	4/9/2010	Bounding	---			**131.00**
0072so10011	72	---	10 to 11	4/9/2010	Bounding	---			**1,220.00**
0072so10012	72	---	11 to 12	4/9/2010	Bounding	---			**1,360.00**
0072so10013	72	---	12 to 13	4/9/2010	Bounding	---			31.70
0072so00913	72	9	12 to 13	12/2/2009	Normal	3/4/2010	**908.80**	D	**1,100.00**
0072so01016	72	10	15 to 16	12/2/2009	Normal	1/28/2010	9.40		
0072so01120	72	11	19 to 20	12/2/2009	Normal	2/2/2010	1.68		
0073so00101	73	1	0 to 1	12/2/2009	Normal	2/2/2010	0.36		**3,620.00**
0073so00202	73	2	1 to 2	12/2/2009	Normal	2/2/2010	24.88		
0073so00303	73	3	2 to 3	12/2/2009	Normal	3/30/2010	60.30		
0073so00404	73	4	3 to 4	12/2/2009	Normal	1/28/2010	2.80		
0073so00404DUP	73	4	3 to 4	12/2/2009	Duplicate	1/28/2010	9.96		
0073so00505	73	5	4 to 5	12/2/2009	Normal	1/28/2010	37.04		
0073so00606	73	6	5 to 6	12/2/2009	Normal	1/28/2010	**7,558.40**	D	
0073so10006	73	---	5 to 6	4/9/2010	Verification	---			**3,500.00**
0073so00707	73	7	6 to 7	12/2/2009	Normal	1/28/2010	1.52		
0073so00808	73	8	7 to 8	12/2/2009	Normal	1/28/2010	10.08		
0073so00914	73	9	13 to 14	12/2/2009	Normal	1/28/2010	10.72		
0073so01020	73	10	19 to 20	12/2/2009	Normal	1/28/2010	0.42		
0074so00101	74	1	0 to 1	1/6/2010	Normal	1/29/2010	**3,683.20**	D	**642.00**
0074so00202	74	2	1 to 2	1/6/2010	Normal	1/21/2010	47.32		

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
0074so10002	74	---	1 to 2	4/9/2010	Verification	---			14.80
0074so00303	74	3	2 to 3	1/6/2010	Normal	1/21/2010	1.64		
0074so00404	74	4	3 to 4	1/6/2010	Normal	1/21/2010	0.78		
0074so00506	74	5	5 to 6	1/6/2010	Normal	1/21/2010	33.24		
0074so00607	74	6	6 to 7	1/6/2010	Normal	1/28/2010	79.90		
0074so00708	74	7	7 to 8	1/6/2010	Normal	1/12/2010	0.30		
0074so00708DUP	74	7	7 to 8	1/6/2010	Duplicate	1/12/2010	0.10		
0074so00814	74	8	13 to 14	1/6/2010	Normal	1/22/2010	0.34		
0074so00915	74	9	14 to 15	1/6/2010	Normal	1/21/2010	0.84		
0075so00101	75	1	0 to 1	1/5/2010	Normal	1/28/2010	**1,411.60**	D	
0075so00202	75	2	1 to 2	1/5/2010	Normal	1/8/2010	**733.10**	E	
0075so00303	75	3	2 to 3	1/5/2010	Normal	1/8/2010	**410.44**	E	
0075so00404	75	4	3 to 4	1/5/2010	Normal	1/28/2010	95.42		
0075so00404DUP	75	4	3 to 4	1/5/2010	Duplicate	1/28/2010	**1,628.00**	D	
0075so00505	75	5	4 to 5	1/5/2010	Normal	2/2/2010	22.76		
0075so00606	75	6	5 to 6	1/5/2010	Normal	1/21/2010	64.90		
0075so10006	75	---	5 to 6	4/9/2010	Verification	---			**158.00**
0075so00707	75	7	6 to 7	1/5/2010	Normal	1/22/2010	3.08		
0075so00808	75	8	7 to 8	1/5/2010	Normal	1/21/2010	1.44		
0075so00915	75	9	14 to 15	1/5/2010	Normal	1/28/2010	0.76		
0076so00101	76	1	0 to 1	1/6/2010	Normal	1/29/2010	**3,137.20**	D	**1,580.00**
0076so00202	76	2	1 to 2	1/6/2010	Normal	1/28/2010	**3,428.80**	D	
0076so00303	76	3	2 to 3	1/6/2010	Normal	2/2/2010	**144.24**		
0076so00303DUP	76	3	2 to 3	1/6/2010	Duplicate	2/2/2010	90.16		
0076so10003	76	---	2 to 3	4/9/2010	Verification	---			**189.00**
0076so00404	76	4	3 to 4	1/6/2010	Normal	1/21/2010	7.28		
0076so00505	76	5	4 to 5	1/6/2010	Normal	1/21/2010	1.06		
0076so00606	76	6	5 to 6	1/6/2010	Normal	3/10/2010	**2,593.60**	D	
0076so00707	76	7	6 to 7	1/6/2010	Normal	1/21/2010	0.78		
0076so00808	76	8	7 to 8	1/6/2010	Normal	1/21/2010	0.34		
0076so00915	76	9	14 to 15	1/6/2010	Normal	1/21/2010	0.62		
0077so00101	77	1	0 to 1	1/6/2010	Normal	3/30/2010	**3,956.40**	D	
0077so00202	77	2	1 to 2	1/6/2010	Normal	3/30/2010	**660.00**	D	
0077so00202BS1(f)	77	2	1 to 2	---	Homogeneity	---	**3,792.00**		**1,590.00**
0077so00202BS2(f)	77	2	1 to 2	---	Homogeneity	---	**3,184.00**		**1,410.00**
0077so00303	77	3	2 to 3	1/6/2010	Normal	3/9/2010	**3,310.80**	D	**1,450.00**
0077so00303BS1	77	3	2 to 3	---	Homogeneity	---	**1,715.20**		**1,230.00**
0077so00303BS2	77	3	2 to 3	---	Homogeneity	---	**2,375.60**		**1,140.00**
0077so00404	77	4	3 to 4	1/6/2010	Normal	1/22/2010	**1,128.00**	D	
0077so00506	77	5	5 to 6	1/6/2010	Normal	2/2/2010	113.60		
0077so00506DUP	77	5	5 to 6	1/6/2010	Duplicate	2/2/2010	45.80		
0077so10006	77	---	5 to 6	4/9/2010	Verification	---			35.50
0077so00607	77	6	6 to 7	1/6/2010	Normal	1/22/2010	17.94		
0077so00708	77	7	7 to 8	1/6/2010	Normal	2/2/2010	11.20		
0077so00815	77	8	14 to 15	1/6/2010	Normal	1/21/2010	0.94		
0077so00920	77	9	19 to 20	1/6/2010	Normal	1/22/2010	0.50		
0078so00101	78	1	0 to 1	1/6/2010	Normal	1/28/2010	**184.52**		
0078so00202	78	2	1 to 2	1/6/2010	Normal	1/28/2010	23.90		
0078so00303	78	3	2 to 3	1/6/2010	Normal	1/29/2010	**285.82**		
0078so00404	78	4	3 to 4	1/6/2010	Normal	1/29/2010	2.48		
0078so00506	78	5	5 to 6	1/6/2010	Normal	1/28/2010	2.34		
0078so00607	78	6	6 to 7	1/6/2010	Normal	1/28/2010	0.36		
0078so00708	78	7	7 to 8	1/6/2010	Normal	2/1/2010	0.40	N	
0078so00810	78	8	9 to 10	1/6/2010	Normal	1/28/2010	0.88		
0078so00810DUP	78	8	9 to 10	1/6/2010	Duplicate	1/28/2010	0.34		
0078so00915	78	9	14 to 15	1/6/2010	Normal	1/29/2010	0.24		
0078so01017	78	10	16 to 17	1/6/2010	Normal	1/28/2010	1.80		
0079so00101	79	1	0 to 1	11/21/2009	Normal	12/7/2009	0.02		
0079so00202	79	2	1 to 2	11/21/2009	Normal	12/7/2009	**225.92**		
0079so00303	79	3	2 to 3	11/21/2009	Normal	12/7/2009	49.98		
0079so00404	79	4	3 to 4	11/21/2009	Normal	12/7/2009	5.06		
0079so00505	79	5	4 to 5	11/21/2009	Normal	12/7/2009	0.70		
0079so00505DUP	79	5	4 to 5	11/21/2009	Duplicate	4/11/2010	0.98		
0079so00606	79	6	5 to 6	11/21/2009	Normal	12/2/2009	0.32		
0079so00707	79	7	6 to 7	11/21/2009	Normal	12/7/2009	0.60		
0079so00707REP	79	7	6 to 7	11/21/2009	Replicate	12/8/2009	0.32		
0079so00808	79	8	7 to 8	11/21/2009	Normal	12/7/2009	0.26		

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
0079so00910	79	9	9 to 10	11/21/2009	Normal	12/8/2009	0.34		
0079so01011	79	10	10 to 11	11/21/2009	Normal	12/2/2009	0.54		
0080so00101	80	1	0 to 1	1/5/2010	Normal	1/21/2010	3.96		
0080so00202	80	2	1 to 2	1/5/2010	Normal	1/22/2010	2.64		
0080so00202DUP	80	2	1 to 2	1/5/2010	Duplicate	1/22/2010	0.52		
0080so00303	80	3	2 to 3	1/5/2010	Normal	1/22/2010	0.76		
0079so10003	79	---	2 to 3	4/9/2010	Verification	---			0.98
0080so00404	80	4	3 to 4	1/5/2010	Normal	1/25/2010	2.06		
0080so00505	80	5	4 to 5	1/5/2010	Normal	1/21/2010	0.98		
0080so00607	80	6	6 to 7	1/5/2010	Normal	1/22/2010	1.46		
0080so00708	80	7	7 to 8	1/5/2010	Normal	1/21/2010	1.02		
0080so00915	80	9	14 to 15	1/5/2010	Normal	1/25/2010	0.58		
0080so01120	80	11	19 to 20	1/5/2010	Normal	1/22/2010	0.16		
0081so00101	81	1	0 to 1	12/18/2009	Normal	1/2/2010	11.82		
0081so00202	81	2	1 to 2	12/18/2009	Normal	1/2/2010	35.10		
0081so00303	81	3	2 to 3	12/18/2009	Normal	1/2/2010	**192.12**		
0081so00404	81	4	3 to 4	12/18/2009	Normal	1/3/2010	**593.28**	E	
0081so00505	81	5	4 to 5	12/18/2009	Normal	1/3/2010	12.70		
0081so00606	81	6	5 to 6	12/18/2009	Normal	1/2/2010	**168.74**		
0081so00707	81	7	6 to 7	12/18/2009	Normal	1/2/2010	0.52		
0081so00808	81	8	7 to 8	12/18/2009	Normal	1/2/2010	2.14		
0081so01014	81	10	13 to 14	12/18/2009	Normal	1/2/2010	0.88		
0081so01014DUP	81	10	13 to 14	12/18/2009	Duplicate	1/2/2010	0.40		
0081so01219	81	12	18 to 19	12/18/2009	Normal	1/5/2010	0.16		
0082so00101	82	1	0 to 1	1/5/2010	Normal	1/8/2010	**215.52**		
0082so00202	82	2	1 to 2	1/5/2010	Normal	1/21/2010	2.70		
0082so00303	82	3	2 to 3	1/5/2010	Normal	1/26/2010	0.74		
0082so00404	82	4	3 to 4	1/5/2010	Normal	1/22/2010	0.62		
0082so00404DUP	82	4	3 to 4	1/5/2010	Duplicate	1/22/2010	1.06		
0082so00505	82	5	4 to 5	1/5/2010	Normal	1/8/2010	0.62		
0082so00606	82	6	5 to 6	1/5/2010	Normal	1/8/2010	34.10		
0082so00707	82	7	6 to 7	1/5/2010	Normal	1/21/2010	0.84		
0082so00808	82	8	7 to 8	1/5/2010	Normal	1/21/2010	0.74		
0082so00914	82	9	13 to 14	1/5/2010	Normal	1/21/2010	1.06		
0082so01018	82	10	17 to 18	1/5/2010	Normal	1/21/2010	1.42		
0083so00101	83	1	0 to 1	1/5/2010	Normal	1/22/2010	0.32		
0083so00202	83	2	1 to 2	1/5/2010	Normal	1/22/2010	1.06		
0083so00303	83	3	2 to 3	1/5/2010	Normal	1/12/2010	1.50		
0083so00406	83	4	5 to 6	1/5/2010	Normal	1/21/2010	1.12		
0083so00406DUP	83	4	5 to 6	1/5/2010	Duplicate	1/21/2010	1.14		
0083so00507	83	5	6 to 7	1/5/2010	Normal	1/22/2010	0.30		
0083so00608	83	6	7 to 8	1/5/2010	Normal	1/12/2010	0.62		0.43
0083so00815	83	8	14 to 15	1/5/2010	Normal	1/22/2010	0.00		
0083so00920	83	9	19 to 20	1/5/2010	Normal	1/21/2010	0.44		
0084so00201	84	2	0 to 1	1/5/2010	Normal	1/12/2010	13.88		
0084so00302	84	3	1 to 2	1/5/2010	Normal	1/11/2010	13.76		
0084so00302DUP	84	3	1 to 2	1/5/2010	Duplicate	1/11/2010	13.78		
0084so00403	84	4	2 to 3	1/5/2010	Normal	1/12/2010	1.02		
0084so00504	84	5	3 to 4	1/5/2010	Normal	1/12/2010	0.32		
0084so00606	84	6	5 to 6	1/5/2010	Normal	3/9/2010	0.48		
0084so00707	84	7	6 to 7	1/5/2010	Normal	1/12/2010	0.32		
0084so00808	84	8	7 to 8	1/5/2010	Normal	1/12/2010	ND	U	
0084so00914	84	9	13 to 14	1/5/2010	Normal	1/12/2010	ND	U	
0084so01219	84	12	18 to 19	1/5/2010	Normal	1/12/2010	0.00		
0085so00101	85	1	0 to 1	1/5/2010	Normal	1/12/2010	17.70		
0085so00202	85	2	1 to 2	1/5/2010	Normal	1/12/2010	36.78		
0085so00303	85	3	2 to 3	1/5/2010	Normal	1/12/2010	27.70		
0085so00406	85	4	5 to 6	1/5/2010	Normal	1/12/2010	18.16		
0085so00507	85	5	6 to 7	1/5/2010	Normal	1/12/2010	12.22		
0085so00608	85	6	7 to 8	1/5/2010	Normal	1/12/2010	14.18		
0085so00714	85	7	13 to 14	1/5/2010	Normal	3/30/2010	0.56		
0085so00714DUP	85	7	13 to 14	1/5/2010	Duplicate	3/30/2010	0.52		
0085so01020	85	10	19 to 20	1/5/2010	Normal	1/12/2010	0.94		
0086so00101	86	1	0 to 1	12/21/2009	Normal	12/29/2009	6.88	N	
0086so00202	86	2	1 to 2	12/21/2009	Normal	12/29/2009	0.92	N	
0086so00303	86	3	2 to 3	12/21/2009	Normal	12/29/2009	0.66	N	
0086so00404	86	4	3 to 4	12/21/2009	Normal	12/29/2009	0.40	N	

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
0086so00505	86	5	4 to 5	12/21/2009	Normal	12/29/2009	0.38	N	
0086so00505REP	86	5	4 to 5	12/21/2009	Replicate	1/22/2010	0.30		
0086so00606	86	6	5 to 6	12/21/2009	Normal	1/21/2010	1.04		
0086so00606REP	86	6	5 to 6	12/21/2009	Replicate	12/29/2009	0.16		
0086so00707	86	7	6 to 7	12/21/2009	Normal	12/29/2009	0.12	N	
0086so00808	86	8	7 to 8	12/21/2009	Normal	12/29/2009	0.18	N	
0086so00808DUP	86	8	7 to 8	12/21/2009	Duplicate	12/29/2009	0.84	N	
0086so01113	86	11	12 to 13	12/21/2009	Normal	12/30/2009	0.34		
0086so01218	86	12	17 to 18	12/21/2009	Normal	12/29/2009	0.08	N	
0087so00101	87	1	0 to 1	1/7/2010	Normal	2/1/2010	82.86	N	
0087so00101REP	87	1	0 to 1	1/7/2010	Replicate	1/25/2010	36.24		
0087so00202	87	2	1 to 2	1/7/2010	Normal	1/25/2010	**3,813.20**	D	**573.00**
0087so00202DUP	87	2	1 to 2	1/7/2010	Duplicate	1/25/2010	19.18		
0087so10002	87	---	1 to 2	4/9/2010	Verification	---			54.30
0087so00303	87	3	2 to 3	1/7/2010	Normal	1/26/2010	4.78		
0087so00404	87	4	3 to 4	1/7/2010	Normal	1/25/2010	1.28		
0087so00505	87	5	4 to 5	1/7/2010	Normal	1/25/2010	1.16		
0087so00606	87	6	5 to 6	1/7/2010	Normal	1/22/2010	4.92		
0087so00707	87	7	6 to 7	1/7/2010	Normal	1/25/2010	1.42		
0087so00808	87	8	7 to 8	1/7/2010	Normal	1/21/2010	0.38		
0087so01013	87	10	12 to 13	1/7/2010	Normal	1/25/2010	0.64		
0087so01114	87	11	13 to 14	1/7/2010	Normal	1/21/2010	0.84		
0088so00101	88	1	0 to 1	1/6/2010	Normal	1/21/2010	12.26		
0088so00202	88	2	1 to 2	1/6/2010	Normal	1/22/2010	2.12		
0088so00303	88	3	2 to 3	1/6/2010	Normal	1/21/2010	0.08		
0088so00404	88	4	3 to 4	1/6/2010	Normal	1/21/2010	0.90		
0088so00506	88	5	5 to 6	1/6/2010	Normal	1/21/2010	0.56		
0088so00607	88	6	6 to 7	1/6/2010	Normal	1/21/2010	0.36		
0088so00607DUP	88	6	6 to 7	1/6/2010	Duplicate	1/21/2010	0.42		
0088so00708	88	7	7 to 8	1/6/2010	Normal	1/21/2010	0.62		
0088so01016	88	10	15 to 16	1/6/2010	Normal	1/21/2010	0.38		
0088so01220	88	12	19 to 20	1/6/2010	Normal	1/21/2010	0.30		
0089so00101	89	1	0 to 1	1/7/2010	Normal	1/25/2010	1.02		
0089so00202	89	2	1 to 2	1/7/2010	Normal	1/26/2010	1.02		
0089so00303	89	3	2 to 3	1/7/2010	Normal	1/25/2010	0.64		
0089so00406	89	4	5 to 6	1/7/2010	Normal	1/25/2010	0.74		
0089so00507	89	5	6 to 7	1/7/2010	Normal	1/25/2010	0.90		
0089so00608	89	6	7 to 8	1/7/2010	Normal	1/25/2010	0.66		
0089so00608DUP	89	6	7 to 8	1/7/2010	Duplicate	1/25/2010	0.88		
0089so00813	89	8	12 to 13	1/7/2010	Normal	1/26/2010	0.72		
0089so01019	89	10	18 to 19	1/7/2010	Normal	1/25/2010	0.34		
0090so00101	90	1	0 to 1	1/7/2010	Normal	1/25/2010	19.50		
0090so00202	90	2	1 to 2	1/7/2010	Normal	1/25/2010	83.24		
0090so10002	90	---	1 to 2	4/9/2010	Verification	---			63.50
0090so00303	90	3	2 to 3	1/7/2010	Normal	1/25/2010	1.16		
0090so00404	90	4	3 to 4	1/7/2010	Normal	1/25/2010	0.98		
0090so00506	90	5	5 to 6	1/7/2010	Normal	1/25/2010	11.40		
0090so00607	90	6	6 to 7	1/7/2010	Normal	1/25/2010	0.96		
0090so00607DUP	90	6	6 to 7	1/7/2010	Duplicate	1/26/2010	0.66		
0090so00708	90	7	7 to 8	1/7/2010	Normal	1/25/2010	0.42		
0090so00912	90	9	11 to 12	1/7/2010	Normal	1/26/2010	0.90		
0090so01118	90	11	17 to 18	1/7/2010	Normal	1/25/2010	0.28		
0091so00101	91	1	0 to 1	2/2/2010	Normal	2/5/2010	**1,394.40**	D	
0091so00202	91	2	1 to 2	2/2/2010	Normal	2/3/2010	57.92		
0091so00303	91	3	2 to 3	2/2/2010	Normal	2/3/2010	97.96		
0091so00303DUP	91	3	2 to 3	2/2/2010	Duplicate	2/3/2010	67.36		70.30
0092so00101	92	1	0 to 1	3/2/2010	Normal	2/5/2010	**153.18**		
0092so10001	92	---	0 to 1	4/9/2010	Verification	---			**234.00**
0092so00202	92	2	1 to 2	3/2/2010	Normal	2/5/2010	83.22		
0092so00303	92	3	2 to 3	3/2/2010	Normal	2/5/2010	1.72		
0092so00404	92	4	3 to 4	3/2/2010	Normal	2/5/2010	0.22		
0092so00506	92	5	5 to 6	3/2/2010	Normal	2/5/2010	**142.62**		
0092so10006	92	---	5 to 6	4/9/2010	Verification	---			**134.00**
0092so00607	92	6	6 to 7	3/2/2010	Normal	2/5/2010	96.74		
0092so00708	92	7	7 to 8	3/2/2010	Normal	2/5/2010	105.08		
0092so10008	92	---	7 to 8	4/9/2010	Verification	---			**139.00**
0092so00915	92	9	14 to 15	3/2/2010	Normal	2/5/2010	0.40		

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
0092so00915DUP	92	9	14 to 15	3/2/2010	Duplicate	2/5/2010	0.38		
0092so01117	92	11	16 to 17	3/2/2010	Normal	2/5/2010	0.38		
0093so00101	93	1	0 to 1	2/2/2010	Normal	2/3/2010	1.46		
0093so00202	93	2	1 to 2	2/2/2010	Normal	2/3/2010	0.74		
0093so00303	93	3	2 to 3	2/2/2010	Normal	2/3/2010	1.50		
0093so00404	93	4	3 to 4	2/2/2010	Normal	2/3/2010	0.84		
0093so00505	93	5	4 to 5	2/2/2010	Normal	2/5/2010	0.52		
0093so00606	93	6	5 to 6	2/2/2010	Normal	2/3/2010	1.54		
0093so00707	93	7	6 to 7	2/2/2010	Normal	2/3/2010	1.26		
0093so00808	93	8	7 to 8	2/2/2010	Normal	2/3/2010	0.60		
0093so00808DUP	93	8	7 to 8	2/2/2010	Duplicate	2/3/2010	0.32		
0093so00913	93	9	12 to 13	2/2/2010	Normal	2/5/2010	0.78		
0093so01218	93	12	17 to 18	2/2/2010	Normal	2/3/2010	3.46		
0094so00101	94	1	0 to 1	3/3/2010	Normal	3/4/2010	**1,878.00**	D	
0094so00202	94	2	1 to 2	3/3/2010	Normal	2/5/2010	**2,740.00**	D	
0094so00303	94	3	2 to 3	3/3/2010	Normal	2/5/2010	**1,667.20**	D	
0094so00404	94	4	3 to 4	3/3/2010	Normal	2/5/2010	86.20		
0094so10004	94	---	3 to 4	4/9/2010	Verification	---			25.10
0094so00505	94	5	4 to 5	3/3/2010	Normal	2/5/2010	0.94		
0094so00606	94	6	5 to 6	3/3/2010	Normal	2/5/2010	0.64		
0094so00707	94	7	6 to 7	3/3/2010	Normal	2/5/2010	0.76		
0094so00808	94	8	7 to 8	3/3/2010	Normal	2/5/2010	0.44		
0094so00808DUP	94	8	7 to 8	3/3/2010	Duplicate	2/5/2010	0.78		
0094so01016	94	10	15 to 16	3/3/2010	Normal	2/5/2010	0.60		
0094so10017	94	---	16 to 17	4/9/2010	Bounding	---			1.00
0094so10018	94	---	17 to 18	4/9/2010	Bounding	---			0.24
0094so10019	94	---	18 to 19	4/9/2010	Bounding	---			ND
0094so01120	94	11	19 to 20	3/3/2010	Normal	2/5/2010	**162.96**		
0095so00101	95	1	0 to 1	3/3/2010	Normal	2/5/2010	111.68		
0095so10001	95	---	0 to 1	4/9/2010	Verification	---			108.00
0095so00202	95	2	1 to 2	3/3/2010	Normal	2/5/2010	23.62		
0095so00303	95	3	2 to 3	3/3/2010	Normal	2/5/2010	0.84		
0095so00404	95	4	3 to 4	3/3/2010	Normal	2/5/2010	12.62		
0095so00404DUP	95	4	3 to 4	3/3/2010	Duplicate	2/5/2010	5.24		
0095so00505	95	5	4 to 5	3/3/2010	Normal	2/5/2010	2.82		
0095so00606	95	6	5 to 6	3/3/2010	Normal	2/5/2010	1.24		
0095so00707	95	7	6 to 7	3/3/2010	Normal	2/5/2010	0.34		
0095so00808	95	8	7 to 8	3/3/2010	Normal	2/5/2010	0.32		
0095so00915	95	9	14 to 15	3/3/2010	Normal	2/5/2010	1.24		0.12
0095so01020	95	10	19 to 20	3/3/2010	Normal	2/5/2010	0.72		
0096so00101	96	1	0 to 1	2/5/2010	Normal	2/9/2010	3.48		
0096so00202	96	2	1 to 2	2/5/2010	Normal	2/11/2010	82.26		
0096so00202DUP	96	2	1 to 2	2/5/2010	Duplicate	2/11/2010	90.46		
0096so10002	96	---	1 to 2	4/9/2010	Verification	---			106.00
0096so00303	96	3	2 to 3	2/5/2010	Normal	2/11/2010	25.52		
0096so00404	96	4	3 to 4	2/5/2010	Normal	2/9/2010	21.02		
0096so00505	96	5	4 to 5	2/5/2010	Normal	2/9/2010	3.58		
0096so00606	96	6	5 to 6	2/5/2010	Normal	2/9/2010	2.28		
0096so00707	96	7	6 to 7	2/5/2010	Normal	2/11/2010	0.68		
0096so00808	96	8	7 to 8	2/5/2010	Normal	2/9/2010	0.78		
0096so01119	96	11	18 to 19	2/5/2010	Normal	2/9/2010	1.18		
0096so01220	96	12	19 to 20	2/5/2010	Normal	2/11/2010	0.74		
0097so00101	97	1	0 to 1	2/5/2010	Normal	2/9/2010	10.68		
0097so00202	97	2	1 to 2	2/5/2010	Normal	2/9/2010	12.56		
0097so00303	97	3	2 to 3	2/5/2010	Normal	2/11/2010	27.56		
0097so00406	97	4	5 to 6	2/5/2010	Normal	2/9/2010	17.42		
0097so00507	97	5	6 to 7	2/5/2010	Normal	2/11/2010	2.12		
0097so00507DUP	97	5	6 to 7	2/5/2010	Duplicate	2/11/2010	2.66		
0097so00608	97	6	7 to 8	2/5/2010	Normal	2/9/2010	1.16		
0097so01020	97	10	19 to 20	2/5/2010	Normal	2/9/2010	0.44		
0098so00101	98	1	0 to 1	2/8/2010	Normal	2/11/2010	6.14		
0098so00202	98	2	1 to 2	2/8/2010	Normal	2/11/2010	1.10		
0098so00303	98	3	2 to 3	2/8/2010	Normal	2/11/2010	0.56		
0098so00404	98	4	3 to 4	2/8/2010	Normal	2/11/2010	0.52		
0098so00505	98	5	4 to 5	2/8/2010	Normal	2/11/2010	0.68		
0098so00606	98	6	5 to 6	2/8/2010	Normal	2/11/2010	0.70		
0098so00707	98	7	6 to 7	2/8/2010	Normal	2/11/2010	0.40		

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
0098so00808	98	8	7 to 8	2/8/2010	Normal	2/11/2010	0.48		
0098so00808DUP	98	8	7 to 8	2/8/2010	Duplicate	2/11/2010	0.40		0.50
0098so00914	98	9	13 to 14	2/8/2010	Normal	2/11/2010	0.04		
0098so01320	98	13	19 to 20	2/8/2010	Normal	2/11/2010	0.40		
0099so00101	99	1	0 to 1	2/4/2010	Normal	2/9/2010	29.72		
0099so00202	99	2	1 to 2	2/4/2010	Normal	2/9/2010	0.90		
0099so00303	99	3	2 to 3	2/4/2010	Normal	2/9/2010	0.40		
0099so00404	99	4	3 to 4	2/4/2010	Normal	2/9/2010	0.52		
0099so00505	99	5	4 to 5	2/4/2010	Normal	2/9/2010	0.34		
0099so00505DUP	99	5	4 to 5	2/4/2010	Duplicate	2/9/2010	0.34		
0099so00606	99	6	5 to 6	2/4/2010	Normal	2/9/2010	2.82		
0099so00707	99	7	6 to 7	2/4/2010	Normal	2/9/2010	0.50		
0099so00808	99	8	7 to 8	2/4/2010	Normal	2/9/2010	0.26		
0099so00912	99	9	11 to 12	2/4/2010	Normal	2/9/2010	1.78		
0099so01020	99	10	19 to 20	2/4/2010	Normal	2/9/2010	0.28		
0100so00101	100	1	0 to 1	2/4/2010	Normal	2/8/2010	1.84		
0100so00202	100	2	1 to 2	2/4/2010	Normal	2/8/2010	7.66		
0100so00303	100	3	2 to 3	2/4/2010	Normal	2/8/2010	**2,266.80**	D	**3,200.00**
0100so00404	100	4	3 to 4	2/4/2010	Normal	2/8/2010	**10,134.40**	D	**6,810.00**
0100so00505	100	5	4 to 5	2/4/2010	Normal	2/8/2010	**9,596.00**	D	**6,230.00**
0100so00505DUP	100	5	4 to 5	2/4/2010	Duplicate	2/8/2010	**8,544.80**	D	**5,590.00**
0100so00606	100	6	5 to 6	2/4/2010	Normal	2/8/2010	69.48		
0100so10006	100	---	5 to 6	4/9/2010	Verification	---			36.20
0100so00707	100	7	6 to 7	2/4/2010	Normal	2/8/2010	21.04		
0100so00808	100	8	7 to 8	2/4/2010	Normal	2/8/2010	14.68		
0100so00915	100	9	14 to 15	2/4/2010	Normal	2/8/2010	1.88		
0100so01020	100	10	19 to 20	2/4/2010	Normal	2/8/2010	0.64		
0101so00101	101	1	0 to 1	2/3/2010	Normal	2/5/2010	35.12		
0101so00202	101	2	1 to 2	2/3/2010	Normal	2/5/2010	**291.60**		
0101so00303	101	3	2 to 3	2/3/2010	Normal	2/5/2010	**1,804.00**	D	
0101so00404	101	4	3 to 4	2/3/2010	Normal	3/4/2010	60.56		
0101so10004	101	---	3 to 4	4/9/2010	Verification	---			46.50
0101so00505	101	5	4 to 5	2/3/2010	Normal	2/5/2010	2.38		
0101so00606	101	6	5 to 6	2/3/2010	Normal	2/5/2010	2.62		
0101so00707	101	7	6 to 7	2/3/2010	Normal	2/5/2010	8.56		
0101so00808	101	8	7 to 8	2/3/2010	Normal	2/5/2010	2.38		
0101so01016	101	10	15 to 16	2/3/2010	Normal	2/5/2010	8.68		
0101so01120	101	11	19 to 20	2/3/2010	Normal	2/5/2010	0.32		
0101so01120DUP	101	11	19 to 20	2/3/2010	Duplicate	2/5/2010	0.30		
0102so00101	102	1	0 to 1	2/8/2010	Normal	2/11/2010	**838.80**	D	
0102so00202	102	2	1 to 2	2/8/2010	Normal	2/11/2010	29.32		
0102so10002	102	---	1 to 2	4/9/2010	Verification	---			31.60
0102so00303	102	3	2 to 3	2/8/2010	Normal	2/11/2010	2.86		
0102so00404	102	4	3 to 4	2/8/2010	Normal	2/11/2010	2.36		
0102so00505	102	5	4 to 5	2/8/2010	Normal	2/11/2010	2.56		
0102so00606	102	6	5 to 6	2/8/2010	Normal	2/11/2010	1.90		
0102so00707	102	7	6 to 7	2/8/2010	Normal	2/11/2010	0.46		
0102so00808	102	8	7 to 8	2/8/2010	Normal	2/11/2010	0.04		
0102so01014	102	10	13 to 14	2/8/2010	Normal	2/11/2010	0.28		
0102so01220	102	12	19 to 20	2/8/2010	Normal	2/11/2010	0.12		
0102so01220DUP	102	12	19 to 20	2/8/2010	Duplicate	2/11/2010	0.34		
0103so00101	103	1	0 to 1	3/19/2010	Normal	3/23/2010	3.92		
0103so00202	103	2	1 to 2	3/19/2010	Normal	3/23/2010	0.90		
0103so00202DUP	103	2	1 to 2	3/19/2010	Duplicate	3/23/2010	0.88		
0103so00303	103	3	2 to 3	3/19/2010	Normal	3/23/2010	0.80		
0103so00406	103	4	5 to 6	3/19/2010	Normal	3/23/2010	0.88		
0103so00507	103	5	6 to 7	3/19/2010	Normal	3/23/2010	0.72		
0103so00608	103	6	7 to 8	3/19/2010	Normal	3/23/2010	0.56		
0103so00713	103	7	12 to 13	3/19/2010	Normal	3/23/2010	0.66		
0103so01020	103	10	19 to 20	3/19/2010	Normal	3/23/2010	0.70		
0104so00101	104	1	0 to 1	2/4/2010	Normal	2/8/2010	21.88		
0104so00202	104	2	1 to 2	2/4/2010	Normal	2/8/2010	2.36		
0104so00303	104	3	2 to 3	2/4/2010	Normal	2/8/2010	1.22		
0104so00404	104	4	3 to 4	2/4/2010	Normal	2/8/2010	0.56		
0104so00505	104	5	4 to 5	2/4/2010	Normal	2/8/2010	0.50		
0104so00606	104	6	5 to 6	2/4/2010	Normal	2/8/2010	4.92		
0104so00606DUP	104	6	5 to 6	2/4/2010	Duplicate	2/8/2010	4.18		

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
0104so00707	104	7	6 to 7	2/4/2010	Normal	2/8/2010	0.56		
0104so00808	104	8	7 to 8	2/4/2010	Normal	2/8/2010	0.34		
0104so00913	104	9	12 to 13	2/4/2010	Normal	2/8/2010	0.48		
0104so01117	104	11	16 to 17	2/4/2010	Normal	2/8/2010	0.22		
0105so00101	105	1	0 to 1	2/5/2010	Normal	2/11/2010	124.96		
0105so10001	105	---	0 to 1	4/9/2010	Verification	---			109.00
0105so00202	105	2	1 to 2	2/5/2010	Normal	2/9/2010	23.02		
0105so00303	105	3	2 to 3	2/5/2010	Normal	2/9/2010	12.04		
0105so00404	105	4	3 to 4	2/5/2010	Normal	2/9/2010	1.52		
0105so00505	105	5	4 to 5	2/5/2010	Normal	2/11/2010	0.70		
0105so00606	105	6	5 to 6	2/5/2010	Normal	2/11/2010	2.58		
0105so00707	105	7	6 to 7	2/5/2010	Normal	2/11/2010	0.86		
0105so00707DUP	105	7	6 to 7	2/5/2010	Duplicate	2/11/2010	0.72		
0105so00808	105	8	7 to 8	2/5/2010	Normal	2/9/2010	0.92		
0105so01014	105	10	13 to 14	2/5/2010	Normal	2/9/2010	0.84		
0105so01120	105	11	19 to 20	2/5/2010	Normal	2/9/2010	0.70		
0106so00101	106	1	0 to 1	2/4/2010	Normal	2/8/2010	20.08		
0106so00202	106	2	1 to 2	2/4/2010	Normal	2/8/2010	10.26		
0106so00303	106	3	2 to 3	2/4/2010	Normal	2/8/2010	0.84		
0106so00404	106	4	3 to 4	2/4/2010	Normal	2/8/2010	0.56		
0106so00505	106	5	4 to 5	2/4/2010	Normal	2/8/2010	0.84		
0106so00606	106	6	5 to 6	2/4/2010	Normal	2/8/2010	0.46		
0106so00707	106	7	6 to 7	2/4/2010	Normal	2/5/2010	0.94		
0106so00808	106	8	7 to 8	2/4/2010	Normal	2/8/2010	0.36		
0106so01113	106	11	12 to 13	2/4/2010	Normal	2/8/2010	0.50		
0106so01216	106	12	15 to 16	2/4/2010	Normal	2/8/2010	0.36		
0106so01216DUP	106	12	15 to 16	2/4/2010	Duplicate	2/8/2010	0.36		
0107so00101	107	1	0 to 1	2/4/2010	Normal	2/8/2010	2.10		
0107so00202	107	2	1 to 2	2/4/2010	Normal	2/8/2010	12.46		
0107so00303	107	3	2 to 3	2/4/2010	Normal	2/8/2010	4.14		
0107so00404	107	4	3 to 4	2/4/2010	Normal	2/8/2010	0.94		
0107so00505	107	5	4 to 5	2/4/2010	Normal	2/8/2010	0.68		
0107so00606	107	6	5 to 6	2/4/2010	Normal	2/8/2010	0.36		
0107so00707	107	7	6 to 7	2/4/2010	Normal	2/8/2010	0.26		
0107so00808	107	8	7 to 8	2/4/2010	Normal	2/8/2010	0.36		
0107so00808DUP	107	8	7 to 8	2/4/2010	Duplicate	2/8/2010	0.34		
0107so00914	107	9	13 to 14	2/4/2010	Normal	2/8/2010	0.38		
0107so01015	107	10	14 to 15	2/4/2010	Normal	2/8/2010	0.32		
0108so00101	108	1	0 to 1	3/8/2010	Normal	3/10/2010	5.82		
0108so00202	108	2	1 to 2	3/8/2010	Normal	3/10/2010	2.34		
0108so00303	108	3	2 to 3	3/8/2010	Normal	3/10/2010	0.38		
0108so00404	108	4	3 to 4	3/8/2010	Normal	3/10/2010	0.36		
0108so00506	108	5	5 to 6	3/8/2010	Normal	3/10/2010	0.68		
0108so00607	108	6	6 to 7	3/8/2010	Normal	3/10/2010	0.42		
0108so00607DUP	108	6	6 to 7	3/8/2010	Duplicate	3/10/2010	0.36		
0108so00708	108	7	7 to 8	3/8/2010	Normal	3/10/2010	0.36		
0108so01016	108	10	15 to 16	3/8/2010	Normal	3/10/2010	0.40		
0108so01120	108	11	19 to 20	3/8/2010	Normal	3/10/2010	0.52		
0109so00101	109	1	0 to 1	3/9/2010	Normal	3/10/2010	2.46		
0109so00202	109	2	1 to 2	3/9/2010	Normal	3/10/2010	1.58		
0109so00303	109	3	2 to 3	3/9/2010	Normal	3/10/2010	1.06		
0109so00404	109	4	3 to 4	3/9/2010	Normal	3/10/2010	0.68		
0109so00505	109	5	4 to 5	3/9/2010	Normal	3/10/2010	0.52		
0109so00606	109	6	5 to 6	3/9/2010	Normal	3/10/2010	0.42		
0109so00606DUP	109	6	5 to 6	3/9/2010	Duplicate	3/10/2010	0.40		
0109so00707	109	7	6 to 7	3/9/2010	Normal	3/10/2010	0.38		
0109so00808	109	8	7 to 8	3/9/2010	Normal	3/10/2010	0.44		
0109so01215	109	12	14 to 15	3/9/2010	Normal	3/10/2010	0.50		
0109so01320	109	13	19 to 20	3/9/2010	Normal	3/10/2010	0.34		
0110so00101	110	1	0 to 1	3/10/2010	Normal	3/13/2010	7.40		
0110so00202	110	2	1 to 2	3/10/2010	Normal	3/13/2010	5.64		
0110so00303	110	3	2 to 3	3/10/2010	Normal	3/13/2010	0.84		
0110so00404	110	4	3 to 4	3/10/2010	Normal	3/13/2010	1.12		
0110so00506	110	5	5 to 6	3/10/2010	Normal	3/13/2010	0.32		
0110so00607	110	6	6 to 7	3/10/2010	Normal	3/13/2010	0.68		
0110so00708	110	7	7 to 8	3/10/2010	Normal	3/13/2010	0.28		
0110so00708DUP	110	7	7 to 8	3/10/2010	Duplicate	3/13/2010	0.10		

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
0110so00916	110	9	15 to 16	3/10/2010	Normal	3/13/2010	0.42		
0110so01220	110	12	19 to 20	3/10/2010	Normal	3/13/2010	0.34		
0111so00101	111	1	0 to 1	2/5/2010	Normal	2/9/2010	4.34		
0111so00202	111	2	1 to 2	2/5/2010	Normal	2/9/2010	1.80		
0111so00303	111	3	2 to 3	2/5/2010	Normal	2/9/2010	0.84		
0111so00404	111	4	3 to 4	2/5/2010	Normal	2/9/2010	0.62		
0111so00505	111	5	4 to 5	2/5/2010	Normal	2/9/2010	0.62		
0111so00606	111	6	5 to 6	2/5/2010	Normal	2/9/2010	0.68		
0111so00707	111	7	6 to 7	2/5/2010	Normal	2/9/2010	0.46		
0111so00808	111	8	7 to 8	2/5/2010	Normal	2/9/2010	0.46		
0111so00808DUP	111	8	7 to 8	2/5/2010	Duplicate	2/9/2010	0.44		
0111so00911	111	9	10 to 11	2/5/2010	Normal	2/9/2010	0.70		
0111so01115	111	11	14 to 15	2/5/2010	Normal	2/11/2010	0.46		
0112so00101	112	1	0 to 1	2/8/2010	Normal	2/11/2010	**4,332.00**	D	**2,420.00**
0112so00202	112	2	1 to 2	2/8/2010	Normal	2/11/2010	**310.44**		**382.00**
0112so00303	112	3	2 to 3	2/8/2010	Normal	2/11/2010	28.82		
0112so00303DUP	112	3	2 to 3	2/8/2010	Duplicate	2/11/2010	6.44		
0112so10003	112	---	2 to 3	4/9/2010	Verification	---			5.76
0112so00404	112	4	3 to 4	2/8/2010	Normal	2/11/2010	0.06		
0112so00505	112	5	4 to 5	2/8/2010	Normal	2/11/2010	1.36		
0112so00606	112	6	5 to 6	2/8/2010	Normal	2/11/2010	0.70		
0112so00707	112	7	6 to 7	2/8/2010	Normal	2/11/2010	2.98		
0112so00808	112	8	7 to 8	2/8/2010	Normal	2/11/2010	0.88		
0112so01013	112	10	12 to 13	2/8/2010	Normal	2/11/2010	1.46		
0112so01120	112	11	19 to 20	2/8/2010	Normal	2/11/2010	127.96		
0113so00101	113	1	0 to 1	2/8/2010	Normal	2/11/2010	29.44		
0113so00101DUP	113	1	0 to 1	2/8/2010	Duplicate	2/11/2010	30.52		**284.00**
0113so00202	113	2	1 to 2	2/8/2010	Normal	2/11/2010	44.20		
0113so00303	113	3	2 to 3	2/8/2010	Normal	2/11/2010	8.56		
0113so00404	113	4	3 to 4	2/8/2010	Normal	2/11/2010	6.86		
0113so00505	113	5	4 to 5	2/8/2010	Normal	2/11/2010	3.90		
0113so00606	113	6	5 to 6	2/8/2010	Normal	2/11/2010	33.04		
0113so00707	113	7	6 to 7	2/8/2010	Normal	2/11/2010	9.24		
0113so00808	113	8	7 to 8	2/8/2010	Normal	2/11/2010	1.64		
0113so01112	113	11	11 to 12	2/8/2010	Normal	2/11/2010	1.84		
0113so01217	113	12	16 to 17	2/8/2010	Normal	2/11/2010	1.20		
0114so00101	114	1	0 to 1	2/9/2010	Normal	2/11/2010	11.66		
0114so00202	114	2	1 to 2	2/9/2010	Normal	2/11/2010	5.90		
0114so00303	114	3	2 to 3	2/9/2010	Normal	2/11/2010	3.08		
0114so00404	114	4	3 to 4	2/9/2010	Normal	2/11/2010	0.78		0.75
0114so00404DUP	114	4	3 to 4	2/9/2010	Duplicate	2/11/2010	0.82		
0114so00505	114	5	4 to 5	2/9/2010	Normal	2/11/2010	0.58		
0114so00606	114	6	5 to 6	2/9/2010	Normal	2/11/2010	0.36		
0114so00707	114	7	6 to 7	2/9/2010	Normal	2/11/2010	0.28		
0114so00808	114	8	7 to 8	2/9/2010	Normal	2/11/2010	0.24		
0114so01113	114	11	12 to 13	2/9/2010	Normal	2/11/2010	0.48		
0114so01217	114	12	16 to 17	2/9/2010	Normal	2/11/2010	0.40		
0115so00101	115	1	0 to 1	3/11/2010	Normal	3/13/2010	8.70		
0115so00202	115	2	1 to 2	3/11/2010	Normal	3/13/2010	3.04		
0115so00303	115	3	2 to 3	3/11/2010	Normal	3/13/2010	0.74		2.84
0115so00303DUP	115	3	2 to 3	3/11/2010	Duplicate	3/13/2010	1.06		
0115so00404	115	4	3 to 4	3/11/2010	Normal	3/13/2010	0.42		
0115so00506	115	5	5 to 6	3/11/2010	Normal	3/13/2010	0.54		
0115so00607	115	6	6 to 7	3/11/2010	Normal	3/13/2010	0.34		
0115so00708	115	7	7 to 8	3/11/2010	Normal	3/13/2010	0.22		
0115so01014	115	10	13 to 14	3/11/2010	Normal	3/13/2010	0.30		
0115so01115	115	11	14 to 15	3/11/2010	Normal	3/13/2010	0.24		
0116so00101	116	1	0 to 1	3/11/2010	Normal	3/13/2010	5.14		
0116so00202	116	2	1 to 2	3/11/2010	Normal	3/13/2010	2.36		
0116so00303	116	3	2 to 3	3/11/2010	Normal	3/13/2010	0.64		
0116so00404	116	4	3 to 4	3/11/2010	Normal	3/13/2010	0.46		
0116so00505	116	5	4 to 5	3/11/2010	Normal	3/13/2010	0.68		
0116so00505DUP	116	5	4 to 5	3/11/2010	Duplicate	3/13/2010	0.58		
0116so00606	116	6	5 to 6	3/11/2010	Normal	3/13/2010	0.56		
0116so00707	116	7	6 to 7	3/11/2010	Normal	3/13/2010	0.42		
0116so00808	116	8	7 to 8	3/11/2010	Normal	3/13/2010	0.46		
0116so00915	116	9	14 to 15	3/11/2010	Normal	3/13/2010	0.42		

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
0116so01020	116	10	19 to 20	3/11/2010	Normal	3/13/2010	0.24		
0117so00101	117	1	0 to 1	3/11/2010	Normal	3/19/2010	5.48		
0117so00202	117	2	1 to 2	3/11/2010	Normal	3/19/2010	1.18		
0117so00303	117	3	2 to 3	3/11/2010	Normal	3/19/2010	0.96		
0117so00404	117	4	3 to 4	3/11/2010	Normal	3/19/2010	0.96		
0117so00506	117	5	5 to 6	3/11/2010	Normal	3/19/2010	0.52		
0117so00506DUP	117	5	5 to 6	3/11/2010	Duplicate	3/19/2010	0.50		
0117so00607	117	6	6 to 7	3/11/2010	Normal	3/19/2010	0.42		
0117so00708	117	7	7 to 8	3/11/2010	Normal	3/19/2010	0.36		
0117so01014	117	10	13 to 14	3/11/2010	Normal	3/19/2010	0.42		
0117so01117	117	11	16 to 17	3/11/2010	Normal	3/19/2010	0.14		
0118so00101	118	1	0 to 1	3/10/2010	Normal	3/13/2010	3.82		
0118so00202	118	2	1 to 2	3/10/2010	Normal	3/13/2010	1.12		
0118so00303	118	3	2 to 3	3/10/2010	Normal	3/13/2010	0.64		
0118so00404	118	4	3 to 4	3/10/2010	Normal	3/13/2010	0.46		
0118so00506	118	5	5 to 6	3/10/2010	Normal	3/13/2010	0.50		
0118so00506DUP	118	5	5 to 6	3/10/2010	Duplicate	3/13/2010	0.52		
0118so00607	118	6	6 to 7	3/10/2010	Normal	3/13/2010	0.42		
0118so00708	118	7	7 to 8	3/10/2010	Normal	3/13/2010	0.36		
0118so00815	118	8	14 to 15	3/10/2010	Normal	3/13/2010	0.80		
0118so01120	118	11	19 to 20	3/10/2010	Normal	3/13/2010	1.00		
0119so00101	119	1	0 to 1	3/10/2010	Normal	3/13/2010	0.76		
0119so00202	119	2	1 to 2	3/10/2010	Normal	3/13/2010	1.78		
0119so00303	119	3	2 to 3	3/10/2010	Normal	3/13/2010	0.36		
0119so00404	119	4	3 to 4	3/10/2010	Normal	3/13/2010	0.18		
0119so00506	119	5	5 to 6	3/10/2010	Normal	3/13/2010	0.58		
0119so00506DUP	119	5	5 to 6	3/10/2010	Duplicate	3/13/2010	0.38		
0119so00607	119	6	6 to 7	3/10/2010	Normal	3/13/2010	0.28		
0119so00708	119	7	7 to 8	3/10/2010	Normal	3/13/2010	0.36		
0119so01013	119	10	12 to 13	3/10/2010	Normal	3/13/2010	0.10		
0119so01218	119	12	17 to 18	3/10/2010	Normal	3/13/2010	0.14		
0120so00101	120	1	0 to 1	3/10/2010	Normal	3/13/2010	2.46		
0120so00202	120	2	1 to 2	3/10/2010	Normal	3/13/2010	0.92		
0120so00202DUP	120	2	1 to 2	3/10/2010	Duplicate	3/13/2010	0.90		
0120so00303	120	3	2 to 3	3/10/2010	Normal	3/13/2010	0.56		
0120so00404	120	4	3 to 4	3/10/2010	Normal	3/13/2010	0.62		
0120so00505	120	5	4 to 5	3/10/2010	Normal	3/13/2010	0.32		
0120so00606	120	6	5 to 6	3/10/2010	Normal	3/13/2010	0.78		
0120so00707	120	7	6 to 7	3/10/2010	Normal	3/13/2010	0.22		
0120so00808	120	8	7 to 8	3/10/2010	Normal	3/13/2010	0.24		
0120so00913	120	9	12 to 13	3/10/2010	Normal	3/13/2010	0.30		
0120so01014	120	10	13 to 14	3/10/2010	Normal	3/13/2010	0.50		
0121so00101	121	1	0 to 1	3/10/2010	Normal	3/13/2010	2.96		
0121so00202	121	2	1 to 2	3/10/2010	Normal	3/13/2010	1.86		
0121so00303	121	3	2 to 3	3/10/2010	Normal	3/13/2010	0.54		
0121so00404	121	4	3 to 4	3/10/2010	Normal	3/13/2010	0.32		
0121so00404DUP	121	4	3 to 4	3/10/2010	Duplicate	3/13/2010	0.38		
0121so00506	121	5	5 to 6	3/10/2010	Normal	3/13/2010	0.48		
0121so00607	121	6	6 to 7	3/10/2010	Normal	3/13/2010	0.84		
0121so00708	121	7	7 to 8	3/10/2010	Normal	3/13/2010	0.36		
0121so00814	121	8	13 to 14	3/10/2010	Normal	3/13/2010	0.28		
0121so00918	121	9	17 to 18	3/10/2010	Normal	3/13/2010	0.10		
0122so00101	122	1	0 to 1	3/11/2010	Normal	3/18/2010	**2,096.40**	D	**2,760.00**
0122so00202	122	2	1 to 2	3/11/2010	Normal	3/18/2010	48.88		
0122so00202DUP	122	2	1 to 2	3/11/2010	Duplicate	3/18/2010	39.30		
0122so10002	122	---	1 to 2	4/9/2010	Verification	---			66.70
0122so00303	122	3	2 to 3	3/11/2010	Normal	3/18/2010	20.72		
0122so00404	122	4	3 to 4	3/11/2010	Normal	3/18/2010	1.38		
0122so00506	122	5	5 to 6	3/11/2010	Normal	3/18/2010	2.44		
0122so00607	122	6	6 to 7	3/11/2010	Normal	3/18/2010	13.96		
0122so00708	122	7	7 to 8	3/11/2010	Normal	3/18/2010	6.60		
0122so00809	122	8	8 to 9	3/11/2010	Normal	3/18/2010	0.64		
0122so00910	122	9	9 to 10	3/11/2010	Normal	3/18/2010	3.42		
0122so01011	122	10	10 to 11	3/11/2010	Normal	3/18/2010	1.32		
0123so00101	123	1	0 to 1	3/10/2010	Normal	3/13/2010	19.44		
0123so00202	123	2	1 to 2	3/10/2010	Normal	3/13/2010	4.58		
0123so00303	123	3	2 to 3	3/10/2010	Normal	3/13/2010	1.36		

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
0123so00404	123	4	3 to 4	3/10/2010	Normal	3/13/2010	0.54		
0123so00505	123	5	4 to 5	3/10/2010	Normal	3/13/2010	0.64		
0123so00606	123	6	5 to 6	3/10/2010	Normal	3/13/2010	0.38		
0123so00707	123	7	6 to 7	3/10/2010	Normal	3/13/2010	0.30		
0123so00808	123	8	7 to 8	3/10/2010	Normal	3/13/2010	0.40		
0123so00808DUP	123	8	7 to 8	3/10/2010	Duplicate	3/13/2010	0.34		
0123so00912	123	9	11 to 12	3/10/2010	Normal	3/13/2010	0.38		
0123so01217	123	12	16 to 17	3/10/2010	Normal	3/13/2010	0.30		
0124so00101	124	1	0 to 1	3/15/2010	Normal	3/19/2010	**213.92**		
0124so00202	124	2	1 to 2	3/15/2010	Normal	3/19/2010	8.18		
0124so00303	124	3	2 to 3	3/15/2010	Normal	3/19/2010	0.80		
0124so00406	124	4	5 to 6	3/15/2010	Normal	3/19/2010	18.02		
0124so00507	124	5	6 to 7	3/15/2010	Normal	3/19/2010	0.76		
0124so00608	124	6	7 to 8	3/15/2010	Normal	3/19/2010	0.64		
0124so00713	124	7	12 to 13	3/15/2010	Normal	3/19/2010	0.58		
0124so01018	124	10	17 to 18	3/15/2010	Normal	3/19/2010	0.18		
0124so01018DUP	124	10	17 to 18	3/15/2010	Duplicate	3/19/2010	0.12		
0125so00101	125	1	0 to 1	3/11/2010	Normal	3/19/2010	**1,471.60**	D	
0125so00202	125	2	1 to 2	3/11/2010	Normal	3/19/2010	48.54		
0125so00202DUP	125	2	1 to 2	3/11/2010	Duplicate	3/19/2010	47.48		
0125so10002	125	---	1 to 2	4/9/2010	Verification	---			37.20
0125so00303	125	3	2 to 3	3/11/2010	Normal	3/19/2010	22.68		
0125so00404	125	4	3 to 4	3/11/2010	Normal	3/19/2010	11.36		
0125so00505	125	5	4 to 5	3/11/2010	Normal	3/19/2010	5.16		
0125so00606	125	6	5 to 6	3/11/2010	Normal	3/19/2010	0.62		
0125so00707	125	7	6 to 7	3/11/2010	Normal	3/19/2010	0.40		
0125so00808	125	8	7 to 8	3/11/2010	Normal	3/19/2010	0.20		
0125so01012	125	10	11 to 12	3/11/2010	Normal	3/19/2010	0.72		
0125so01120	125	11	19 to 20	3/11/2010	Normal	3/19/2010	ND	U	
0126so00101	126	1	0 to 1	3/15/2010	Normal	3/18/2010	21.40		
0126so00202	126	2	1 to 2	3/15/2010	Normal	3/18/2010	3.50		
0126so00303	126	3	2 to 3	3/15/2010	Normal	3/18/2010	10.14		
0126so00404	126	4	3 to 4	3/15/2010	Normal	3/18/2010	9.20		
0126so00505	126	5	4 to 5	3/15/2010	Normal	3/18/2010	3.26		
0126so00606	126	6	5 to 6	3/15/2010	Normal	3/18/2010	1.64		
0126so00707	126	7	6 to 7	3/15/2010	Normal	3/18/2010	0.78		
0126so00808	126	8	7 to 8	3/15/2010	Normal	3/18/2010	0.38		
0126so00914	126	9	13 to 14	3/15/2010	Normal	3/18/2010	0.60		
0126so01019	126	10	18 to 19	3/15/2010	Normal	3/18/2010	0.28		
0126so01019DUP	126	10	18 to 19	3/15/2010	Duplicate	3/18/2010	0.26		
0127so00101	127	1	0 to 1	3/15/2010	Normal	3/18/2010	63.62		
0127so10001	127	---	0 to 1	4/9/2010	Verification	---			72.70
0127so00202	127	2	1 to 2	3/15/2010	Normal	3/18/2010	46.46		
0127so00303	127	3	2 to 3	3/15/2010	Normal	3/18/2010	7.72		
0127so00404	127	4	3 to 4	3/15/2010	Normal	3/18/2010	3.10		
0127so00506	127	5	5 to 6	3/15/2010	Normal	3/18/2010	2.88		
0127so00607	127	6	6 to 7	3/15/2010	Normal	3/18/2010	0.40		
0127so00708	127	7	7 to 8	3/15/2010	Normal	3/18/2010	0.30		
0127so00708DUP	127	7	7 to 8	3/15/2010	Duplicate	3/18/2010	0.28		
0127so00914	127	9	13 to 14	3/15/2010	Normal	3/18/2010	0.48		
0127so01120	127	11	19 to 20	3/15/2010	Normal	3/18/2010	0.26		
0128so00101	128	1	0 to 1	3/15/2010	Normal	3/19/2010	5.76		
0128so00202	128	2	1 to 2	3/15/2010	Normal	3/19/2010	1.00		
0128so00303	128	3	2 to 3	3/15/2010	Normal	3/19/2010	0.66		
0128so00404	128	4	3 to 4	3/15/2010	Normal	3/19/2010	0.60		
0128so00404DUP	128	4	3 to 4	3/15/2010	Duplicate	3/19/2010	0.62		
0128so00506	128	5	5 to 6	3/15/2010	Normal	3/19/2010	1.08		
0128so00607	128	6	6 to 7	3/15/2010	Normal	3/19/2010	1.02		
0128so00708	128	7	7 to 8	3/15/2010	Normal	3/19/2010	0.42		
0128so00813	128	8	12 to 13	3/15/2010	Normal	3/19/2010	0.32		
0128so01020	128	10	19 to 20	3/15/2010	Normal	3/19/2010	0.16		
0129so00101	129	1	0 to 1	3/12/2010	Normal	3/18/2010	36.38		
0129so00202	129	2	1 to 2	3/12/2010	Normal	3/18/2010	1.28		
0129so00303	129	3	2 to 3	3/12/2010	Normal	3/18/2010	0.82		
0129so00404	129	4	3 to 4	3/12/2010	Normal	3/18/2010	0.66		
0129so00505	129	5	4 to 5	3/12/2010	Normal	3/18/2010	0.78		
0129so00505DUP	129	5	4 to 5	3/12/2010	Duplicate	3/18/2010	0.84		

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
0129so00606	129	6	5 to 6	3/12/2010	Normal	3/18/2010	0.60		
0129so00707	129	7	6 to 7	3/12/2010	Normal	3/18/2010	0.40		
0129so00808	129	8	7 to 8	3/12/2010	Normal	3/18/2010	0.36		
0129so01012	129	10	11 to 12	3/12/2010	Normal	3/18/2010	0.58		
0129so01220	129	12	19 to 20	3/12/2010	Normal	3/18/2010	0.16		
0130so00101	130	1	0 to 1	3/12/2010	Normal	3/19/2010	3.08		
0130so00202	130	2	1 to 2	3/12/2010	Normal	3/19/2010	4.66		
0130so00303	130	3	2 to 3	3/12/2010	Normal	3/19/2010	1.80		
0130so00303DUP	130	3	2 to 3	3/12/2010	Duplicate	3/19/2010	1.68		
0130so00404	130	4	3 to 4	3/12/2010	Normal	3/19/2010	0.66		
0130so00506	130	5	5 to 6	3/12/2010	Normal	3/19/2010	0.40		
0130so00607	130	6	6 to 7	3/12/2010	Normal	3/19/2010	0.92		
0130so00708	130	7	7 to 8	3/12/2010	Normal	3/19/2010	0.32		
0130so01015	130	10	14 to 15	3/12/2010	Normal	3/19/2010	0.36		
0130so01218	130	12	17 to 18	3/12/2010	Normal	3/19/2010	0.24		
0131so00101	131	1	0 to 1	3/12/2010	Normal	3/18/2010	1.40		
0131so00202	131	2	1 to 2	3/12/2010	Normal	3/18/2010	1.70		
0131so00303	131	3	2 to 3	3/12/2010	Normal	3/18/2010	1.48		
0131so00303DUP	131	3	2 to 3	3/12/2010	Duplicate	3/18/2010	1.06		
0131so00404	131	4	3 to 4	3/12/2010	Normal	3/18/2010	0.94		
0131so00505	131	5	4 to 5	3/12/2010	Normal	3/18/2010	0.94		
0131so00606	131	6	5 to 6	3/12/2010	Normal	3/18/2010	0.44		
0131so00707	131	7	6 to 7	3/12/2010	Normal	3/18/2010	3.22		
0131so00808	131	8	7 to 8	3/12/2010	Normal	3/18/2010	2.38		
0131so00909	131	9	8 to 9	3/12/2010	Normal	3/18/2010	1.84		
0132so00101	132	1	0 to 1	3/12/2010	Normal	3/18/2010	**936.80**	D	
0132so00202	132	2	1 to 2	3/12/2010	Normal	3/18/2010	**205.60**		
0132so00303	132	3	2 to 3	3/12/2010	Normal	3/18/2010	94.20		
0132so10003	132	---	2 to 3	4/9/2010	Verification	---			**157.00**
0132so00404	132	4	3 to 4	3/12/2010	Normal	3/18/2010	3.62		
0132so00505	132	5	4 to 5	3/12/2010	Normal	3/18/2010	2.88		
0132so00606	132	6	5 to 6	3/12/2010	Normal	3/18/2010	33.30		
0132so00707	132	7	6 to 7	3/12/2010	Normal	3/18/2010	63.78		
0132so00707DUP	132	7	6 to 7	3/12/2010	Duplicate	3/18/2010	67.58		
0132so00808	132	8	7 to 8	3/12/2010	Normal	3/18/2010	86.10		
0132so00913	132	9	12 to 13	3/12/2010	Normal	3/18/2010	18.48		
0132so01016	132	10	15 to 16	3/12/2010	Normal	3/18/2010	1.38		
0133so00101	133	1	0 to 1	3/11/2010	Normal	3/18/2010	16.26		
0133so00202	133	2	1 to 2	3/11/2010	Normal	3/18/2010	**2,852.40**	D	
0133so00303	133	3	2 to 3	3/11/2010	Normal	3/18/2010	**1,767.20**	D	**2,210.00**
0133so00404	133	4	3 to 4	3/11/2010	Normal	3/18/2010	66.00		
0133so10004	133	---	3 to 4	4/9/2010	Verification	---			90.30
0133so00505	133	5	4 to 5	3/11/2010	Normal	3/18/2010	13.90		
0133so00606	133	6	5 to 6	3/11/2010	Normal	3/18/2010	98.00		
0133so00606DUP	133	6	5 to 6	3/11/2010	Duplicate	3/18/2010	108.22		
0133so00707	133	7	6 to 7	3/11/2010	Normal	3/18/2010	51.24		
0133so00808	133	8	7 to 8	3/11/2010	Normal	3/18/2010	16.32		
0133so01016	133	10	15 to 16	3/11/2010	Normal	3/18/2010	25.46		
0133so01118	133	11	17 to 18	3/11/2010	Normal	3/18/2010	2.66		
0134so00101	134	1	0 to 1	3/11/2010	Normal	3/18/2010	40.84		
0134so00202	134	2	1 to 2	3/11/2010	Normal	3/18/2010	5.90		
0134so00303	134	3	2 to 3	3/11/2010	Normal	3/18/2010	2.80		
0134so00404	134	4	3 to 4	3/11/2010	Normal	3/18/2010	1.92		
0134so00505	134	5	4 to 5	3/11/2010	Normal	3/18/2010	0.54		
0134so00606	134	6	5 to 6	3/11/2010	Normal	3/18/2010	2.62		
0134so00707	134	7	6 to 7	3/11/2010	Normal	3/18/2010	1.78		
0134so00808	134	8	7 to 8	3/11/2010	Normal	3/18/2010	0.94		
0134so00808DUP	134	8	7 to 8	3/11/2010	Duplicate	3/18/2010	1.06		
0134so01113	134	11	12 to 13	3/11/2010	Normal	3/18/2010	0.54		
0134so01214	134	12	13 to 14	3/11/2010	Normal	3/18/2010	0.52		
0135so00101	135	1	0 to 1	3/15/2010	Normal	3/19/2010	2.58		
0135so00202	135	2	1 to 2	3/15/2010	Normal	3/19/2010	87.20		
0135so00303	135	3	2 to 3	3/15/2010	Normal	3/19/2010	12.02		
0135so00404	135	4	3 to 4	3/15/2010	Normal	3/19/2010	0.14		
0135so00505	135	5	4 to 5	3/15/2010	Normal	3/19/2010	0.48		
0135so10002	135	---	4 to 5	4/9/2010	Verification	---			57.60
0135so00606	135	6	5 to 6	3/15/2010	Normal	3/19/2010	0.30		

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
0135so00707	135	7	6 to 7	3/15/2010	Normal	3/19/2010	0.74		
0135so00808	135	8	7 to 8	3/15/2010	Normal	3/19/2010	0.28		
0135so00808DUP	135	8	7 to 8	3/15/2010	Duplicate	3/19/2010	0.54		
0135so01113	135	11	12 to 13	3/15/2010	Normal	3/19/2010	0.56		
0135so01215	135	12	14 to 15	3/15/2010	Normal	3/19/2010	ND	U	
0136so00101	136	1	0 to 1	3/11/2010	Normal	3/19/2010	110.68		
0136so10001	136	---	0 to 1	4/9/2010	Verification	---			112.00
0136so00202	136	2	1 to 2	3/11/2010	Normal	3/19/2010	1.80		
0136so00303	136	3	2 to 3	3/11/2010	Normal	3/19/2010	0.90		
0136so00404	136	4	3 to 4	3/11/2010	Normal	3/19/2010	0.54		
0136so00507	136	5	6 to 7	3/11/2010	Normal	3/19/2010	0.40		
0136so00608	136	6	7 to 8	3/11/2010	Normal	3/19/2010	0.38		
0136so00608DUP	136	6	7 to 8	3/11/2010	Duplicate	3/19/2010	0.26		
0136so00914	136	9	13 to 14	3/11/2010	Normal	3/19/2010	0.30		
0136so01015	136	10	14 to 15	3/11/2010	Normal	3/19/2010	0.34		
0137so00101	137	1	0 to 1	3/11/2010	Normal	3/19/2010	6.74		
0137so00202	137	2	1 to 2	3/11/2010	Normal	3/19/2010	1.12		
0137so00303	137	3	2 to 3	3/11/2010	Normal	3/19/2010	0.62		
0137so00404	137	4	3 to 4	3/11/2010	Normal	3/19/2010	0.46		
0137so00506	137	5	5 to 6	3/11/2010	Normal	3/19/2010	0.36		
0137so00506 DUP	137	5	5 to 6	3/11/2010	Duplicate	3/19/2010	0.38		
0137so00607	137	6	6 to 7	3/11/2010	Normal	3/19/2010	0.34		
0137so00708	137	7	7 to 8	3/11/2010	Normal	3/19/2010	0.32		
0137so00913	137	9	12 to 13	3/11/2010	Normal	3/19/2010	0.40		
0137so01017	137	10	16 to 17	3/11/2010	Normal	3/19/2010	0.22		
0138so00101	138	1	0 to 1	3/11/2010	Normal	3/18/2010	**1,100.80**	D	**317.00**
0138so00202	138	2	1 to 2	3/11/2010	Normal	3/18/2010	**1,858.40**	D	**2,970.00**
0138so00303	138	3	2 to 3	3/11/2010	Normal	3/18/2010	11.86		
0138so00404	138	4	3 to 4	3/11/2010	Normal	3/18/2010	1.46		
0138so00506	138	5	5 to 6	3/11/2010	Normal	3/18/2010	29.78		
0138so00607	138	6	6 to 7	3/11/2010	Normal	3/18/2010	11.26		
0138so00607DUP	138	6	6 to 7	3/11/2010	Duplicate	3/18/2010	5.00		
0138so00708	138	7	7 to 8	3/11/2010	Normal	3/18/2010	1.86		
0138so00812	138	8	11 to 12	3/11/2010	Normal	3/18/2010	10.10		
0138so00914	138	9	13 to 14	3/11/2010	Normal	3/18/2010	1.48		
0139so00101	139	1	0 to 1	3/20/2010	Normal	3/23/2010	3.04		
0139so00202	139	2	1 to 2	3/20/2010	Normal	3/23/2010	1.44		
0139so00303	139	3	2 to 3	3/20/2010	Normal	3/23/2010	0.94		
0139so00406	139	4	5 to 6	3/20/2010	Normal	3/23/2010	0.62		
0139so00406DUP	139	4	5 to 6	3/20/2010	Duplicate	3/23/2010	0.60		
0139so00507	139	5	6 to 7	3/20/2010	Normal	3/23/2010	0.64		
0139so00608	139	6	7 to 8	3/20/2010	Normal	3/23/2010	0.64		
0139so00709	139	7	8 to 9	3/20/2010	Normal	3/23/2010	0.54		
0139so00810	139	8	9 to 10	3/20/2010	Normal	3/23/2010	0.42		
0139so00914	139	9	13 to 14	3/20/2010	Normal	3/23/2010	0.50		
0139so01015	139	10	14 to 15	3/20/2010	Normal	3/23/2010	0.48		
0200so00101	200	1	0 to 1	12/8/2009	Normal	3/5/2010	**585.60**	D	**232.00**
0200so00202	200	2	1 to 2	12/8/2009	Normal	1/30/2010	40.42		
0200so10002	200	---	1 to 2	4/9/2010	Verification	---			25.20
0200so00303	200	3	2 to 3	12/8/2009	Normal	1/30/2010	1.46		
0200so00406	200	4	5 to 6	12/8/2009	Normal	1/30/2010	0.72		
0200so00507	200	5	6 to 7	12/8/2009	Normal	2/2/2010	0.24		
0200so00608	200	6	7 to 8	12/8/2009	Normal	1/30/2010	0.22		
0200so00915	200	9	14 to 15	12/8/2009	Normal	1/30/2010	0.12		
0200so00915DUP	200	9	14 to 15	12/8/2009	Duplicate	3/5/2010	0.42		
0201so00101	201	1	0 to 1	12/8/2009	Normal	1/30/2010	7.68		
0201so00202	201	2	1 to 2	12/8/2009	Normal	1/30/2010	1.10		
0201so00303	201	3	2 to 3	12/8/2009	Normal	1/30/2010	0.56		
0201so00404	201	4	3 to 4	12/8/2009	Normal	1/30/2010	0.38		
0201so00505	201	5	4 to 5	12/8/2009	Normal	1/30/2010	0.28		
0201so00606	201	6	5 to 6	12/8/2009	Normal	1/30/2010	1.02		
0201so00707	201	7	6 to 7	12/8/2009	Normal	1/30/2010	0.36		
0201so00808	201	8	7 to 8	12/8/2009	Normal	1/30/2010	0.04		
0201so00808DUP	201	8	7 to 8	12/8/2009	Duplicate	1/30/2010	0.14		
0201so01014	201	10	13 to 14	12/8/2009	Normal	1/30/2010	0.70		0.12
0201so01115	201	11	14 to 15	12/8/2009	Normal	1/30/2010	0.16		
0202so00101	202	1	0 to 1	12/14/2009	Normal	1/5/2010	2.78		

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
0202so00202	202	2	1 to 2	12/14/2009	Normal	1/7/2010	1.30		
0202so00202DUP	202	2	1 to 2	12/14/2009	Duplicate	1/7/2010	1.00		
0202so00303	202	3	2 to 3	12/14/2009	Normal	1/3/2010	1.00		0.93
0202so00404	202	4	3 to 4	12/14/2009	Normal	3/5/2010	0.46		
0202so00506	202	5	5 to 6	12/14/2009	Normal	1/5/2010	0.54		
0202so00607	202	6	6 to 7	12/14/2009	Normal	1/5/2010	0.36		
0202so00708	202	7	7 to 8	12/14/2009	Normal	1/5/2010	0.24		
0202so00813	202	8	12 to 13	12/14/2009	Normal	1/5/2010	0.18		
0202so00915	202	9	14 to 15	12/14/2009	Normal	1/5/2010	0.36		
0203so00101	203	1	0 to 1	12/8/2009	Normal	3/8/2010	**3,340.80**	D	**1,040.00**
0203so00202	203	2	1 to 2	12/8/2009	Normal	3/5/2010	5.46		
0203so00202REP	203	2	1 to 2	12/8/2009	Replicate	1/12/2010	3.34		
0203so00202DUP	203	2	1 to 2	12/8/2009	Duplicate	3/8/2010	0.22		
0203so00303	203	3	2 to 3	12/8/2009	Normal	1/12/2010	3.22		
0203so00404	203	4	3 to 4	12/8/2009	Normal	1/8/2010	0.48		
0203so00506	203	5	5 to 6	12/8/2009	Normal	1/8/2010	0.28		
0203so00607	203	6	6 to 7	12/8/2009	Normal	1/12/2010	0.20		
0203so00708	203	7	7 to 8	12/8/2009	Normal	1/12/2010	0.26		
0203so00913	203	9	12 to 13	12/8/2009	Normal	1/3/2010	0.62		
0203so01115	203	11	14 to 15	12/8/2009	Normal	3/5/2010	0.24		
0203so01115REP	203	11	14 to 15	12/8/2009	Replicate	3/8/2010	0.18		
0204so00101	204	1	0 to 1	12/8/2009	Normal	2/1/2010	**329.36**	N	
0204so00101REP	204	1	0 to 1	12/8/2009	Replicate	1/3/2010	**490.58**		
0204so00202	204	2	1 to 2	12/8/2009	Normal	1/2/2010	6.08		
0204so00303	204	3	2 to 3	12/8/2009	Normal	1/2/2010	4.28		
0204so00404	204	4	3 to 4	12/8/2009	Normal	1/3/2010	0.94		
0204so00505	204	5	4 to 5	12/8/2009	Normal	3/31/2010	**1,403.20**	D	
0204so00505REP	204	5	4 to 5	12/8/2009	Replicate	1/3/2010	0.42		
0204so00606	204	6	5 to 6	12/8/2009	Normal	1/2/2010	0.88		
0204so00707	204	7	6 to 7	12/8/2009	Normal	1/2/2010	0.54		
0204so00808	204	8	7 to 8	12/8/2009	Normal	1/2/2010	2.34		
0204so00909	204	9	8 to 9	12/8/2009	Normal	3/6/2010	0.32		
0204so01013	204	10	12 to 13	12/8/2009	Normal	1/3/2010	1.30		
0204so01215	204	12	14 to 15	12/8/2009	Normal	1/2/2010	0.16		
0204so01215DUP	204	12	14 to 15	12/8/2009	Duplicate	1/2/2010	1.28		
0204so01316	204	13	15 to 16	12/8/2009	Normal	3/5/2010	17.66		
0205so00101	205	1	0 to 1	12/9/2009	Normal	1/3/2010	**378.04**		
0205so00202	205	2	1 to 2	12/9/2009	Normal	3/6/2010	14.08		
0205so00202DUP	205	2	1 to 2	12/9/2009	Duplicate	1/2/2010	68.20		
0205so00303	205	3	2 to 3	12/9/2009	Normal	1/2/2010	4.22		
0205so00404	205	4	3 to 4	12/9/2009	Normal	1/3/2010	3.44		
0205so00506	205	5	5 to 6	12/9/2009	Normal	1/3/2010	45.70		
0205so00607	205	6	6 to 7	12/9/2009	Normal	1/2/2010	1.62		
0205so00708	205	7	7 to 8	12/9/2009	Normal	1/2/2010	0.78		
0205so00814	205	8	13 to 14	12/9/2009	Normal	1/2/2010	0.72		
0205so01018	205	10	17 to 18	12/9/2009	Normal	1/2/2010	0.22		
0206so00101	206	1	0 to 1	12/9/2009	Normal	1/3/2010	**486.50**	E	
0206so00202	206	2	1 to 2	12/9/2009	Normal	1/2/2010	6.36		6.74
0206so00303	206	3	2 to 3	12/9/2009	Normal	1/2/2010	1.38		
0206so00404	206	4	3 to 4	12/9/2009	Normal	1/2/2010	0.34		
0206so00506	206	5	5 to 6	12/9/2009	Normal	1/2/2010	71.58		
0206so00607	206	6	6 to 7	12/9/2009	Normal	1/3/2010	0.70		
0206so00708	206	7	7 to 8	12/9/2009	Normal	1/2/2010	0.60		
0206so00814	206	8	13 to 14	12/9/2009	Normal	1/2/2010	0.22		
0206so00915	206	9	14 to 15	12/9/2009	Normal	1/3/2010	2.22		
0206so00915DUP	206	9	14 to 15	12/9/2009	Duplicate	1/3/2010	0.40		
0207so00101	207	1	0 to 1	12/4/2009	Normal	2/2/2010	**187.00**	*	
0207so00202	207	2	1 to 2	12/4/2009	Normal	2/2/2010	8.90		
0207so00303	207	3	2 to 3	12/4/2009	Normal	2/2/2010	0.80		
0207so00303DUP	207	3	2 to 3	12/4/2009	Duplicate	3/4/2010	1.28		
0207so00404	207	4	3 to 4	12/4/2009	Normal	2/2/2010	2.10		
0207so00505	207	5	4 to 5	12/4/2009	Normal	2/3/2010	0.76		
0207so00606	207	6	5 to 6	12/4/2009	Normal	2/2/2010	0.52		
0207so00707	207	7	6 to 7	12/4/2009	Normal	2/2/2010	0.22		
0207so00808	207	8	7 to 8	12/4/2009	Normal	2/2/2010	0.24		
0207so01014	207	10	13 to 14	12/4/2009	Normal	2/3/2010	0.48		
0207so01220	207	12	19 to 20	12/4/2009	Normal	2/2/2010	0.18		

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
0208so00101	208	1	0 to 1	12/9/2009	Normal	1/5/2010	31.70		
0208so00202	208	2	1 to 2	12/9/2009	Normal	1/7/2010	0.98		
0208so00303	208	3	2 to 3	12/9/2009	Normal	1/7/2010	2.44		
0208so00404	208	4	3 to 4	12/9/2009	Normal	1/5/2010	1.60		
0208so00506	208	5	5 to 6	12/9/2009	Normal	1/5/2010	0.24		
0208so00607	208	6	6 to 7	12/9/2009	Normal	1/7/2010	0.48		
0208so00708	208	7	7 to 8	12/9/2009	Normal	3/5/2010	0.36		
0208so00708DUP	208	7	7 to 8	12/9/2009	Duplicate	1/3/2010	0.66		
0208so01014	208	10	13 to 14	12/9/2009	Normal	3/8/2010	0.36		
0208so01120	208	11	19 to 20	12/9/2009	Normal	1/7/2010	0.18		
0209so00101	209	1	0 to 1	12/9/2009	Normal	1/5/2010	28.46		
0209so00202	209	2	1 to 2	12/9/2009	Normal	1/5/2010	0.54		
0209so00303	209	3	2 to 3	12/9/2009	Normal	1/5/2010	0.56		
0209so00404	209	4	3 to 4	12/9/2009	Normal	1/5/2010	0.54		
0209so00506	209	5	5 to 6	12/9/2009	Normal	1/5/2010	0.30		
0209so00607	209	6	6 to 7	12/9/2009	Normal	1/5/2010	0.34		
0209so00708	209	7	7 to 8	12/9/2009	Normal	1/7/2010	0.44		
0209so00708DUP	209	7	7 to 8	12/9/2009	Duplicate	1/7/2010	0.52		
0209so00814	209	8	13 to 14	12/9/2009	Normal	1/3/2010	0.42		
0209so01120	209	11	19 to 20	12/9/2009	Normal	1/5/2010	0.20		
0210so00101	210	1	0 to 1	12/14/2009	Normal	1/5/2010	0.92		
0210so00202	210	2	1 to 2	12/14/2009	Normal	1/2/2010	1.24		
0210so00303	210	3	2 to 3	12/14/2009	Normal	1/3/2010	0.66		
0210so00404	210	4	3 to 4	12/14/2009	Normal	1/5/2010	0.44		
0210so00506	210	5	5 to 6	12/14/2009	Normal	1/5/2010	0.36		
0210so00607	210	6	6 to 7	12/14/2009	Normal	1/5/2010	0.60		
0210so00708	210	7	7 to 8	12/14/2009	Normal	1/5/2010	0.20		
0210so00708DUP	210	7	7 to 8	12/14/2009	Duplicate	3/6/2010	0.32		
0210so00812	210	8	11 to 12	12/14/2009	Normal	1/3/2010	0.42		
0210so00920	210	9	19 to 20	12/14/2009	Normal	1/5/2010	0.26		
0211so00101	211	1	0 to 1	12/10/2009	Normal	1/2/2010	**239.64**		
0211so00202	211	2	1 to 2	12/10/2009	Normal	3/5/2010	5.78		
0211so00202REP	211	2	1 to 2	12/10/2009	Replicate	1/3/2010	3.44		
0211so00303	211	3	2 to 3	12/10/2009	Normal	1/7/2010	2.56		
0211so00303DUP	211	3	2 to 3	12/10/2009	Duplicate	3/30/2010	0.76		
0211so00404	211	4	3 to 4	12/10/2009	Normal	1/3/2010	1.34		
0211so00505	211	5	4 to 5	12/10/2009	Normal	1/2/2010	2.34		
0211so00606	211	6	5 to 6	12/10/2009	Normal	1/2/2010	1.92		
0211so00707	211	7	6 to 7	12/10/2009	Normal	3/6/2010	0.32		
0211so00808	211	8	7 to 8	12/10/2009	Normal	1/2/2010	1.20		
0211so01114	211	11	13 to 14	12/10/2009	Normal	3/5/2010	0.40		
0211so01114REP	211	11	13 to 14	12/10/2009	Replicate	3/8/2010	0.34		
0211so01220	211	12	19 to 20	12/10/2009	Normal	1/2/2010	2.32		
0212so00101	212	1	0 to 1	12/14/2009	Normal	1/7/2010	3.04		
0212so00202	212	2	1 to 2	12/14/2009	Normal	1/3/2010	2.32		
0212so00303	212	3	2 to 3	12/14/2009	Normal	1/7/2010	0.44		0.68
0212so00303REP	212	3	2 to 3	12/14/2009	Replicate	1/12/2010	0.22		
0212so00404	212	4	3 to 4	12/14/2009	Normal	1/7/2010	0.58		
0212so00404DUP	212	4	3 to 4	12/14/2009	Duplicate	1/7/2010	0.52		
0212so00506	212	5	5 to 6	12/14/2009	Normal	1/7/2010	0.60		
0212so00607	212	6	6 to 7	12/14/2009	Normal	1/7/2010	0.54		
0212so00708	212	7	7 to 8	12/14/2009	Normal	1/5/2010	0.26		
0212so00910	212	9	9 to 10	12/14/2009	Normal	1/5/2010	0.30		
0212so01015	212	10	14 to 15	12/14/2009	Normal	1/7/2010	0.40		
0213so00101	213	1	0 to 1	12/14/2009	Normal	1/7/2010	1.50		
0213so00101REP	213	1	0 to 1	12/14/2009	Replicate	1/5/2010	0.38		
0213so00202	213	2	1 to 2	12/14/2009	Normal	1/5/2010	1.08		
0213so00303	213	3	2 to 3	12/14/2009	Normal	1/7/2010	0.70		
0213so00404	213	4	3 to 4	12/14/2009	Normal	1/11/2010	0.48		
0213so00404REP	213	4	3 to 4	12/14/2009	Replicate	1/5/2010	0.36		
0213so00505	213	5	4 to 5	12/14/2009	Normal	1/7/2010	0.38		
0213so00606	213	6	5 to 6	12/14/2009	Normal	1/5/2010	0.56		
0213so00707	213	7	6 to 7	12/14/2009	Normal	1/3/2010	0.86		
0213so00808	213	8	7 to 8	12/14/2009	Normal	1/11/2010	0.48		
0213so00808DUP	213	8	7 to 8	12/14/2009	Duplicate	1/11/2010	0.42		
0213so01013	213	10	12 to 13	12/14/2009	Normal	1/5/2010	0.24		
0213so01115	213	11	14 to 15	12/14/2009	Normal	1/7/2010	0.56		

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
0213so01115REP	213	11	14 to 15	12/14/2009	Replicate	1/8/2010	0.22		
0214so00101	214	1	0 to 1	12/14/2009	Normal	1/5/2010	1.06		
0214so00202	214	2	1 to 2	12/14/2009	Normal	1/5/2010	0.68		
0214so00303	214	3	2 to 3	12/14/2009	Normal	1/5/2010	0.44		
0214so00404	214	4	3 to 4	12/14/2009	Normal	1/5/2010	0.46		
0214so00506	214	5	5 to 6	12/14/2009	Normal	1/5/2010	0.28		
0214so00607	214	6	6 to 7	12/14/2009	Normal	1/7/2010	0.70		
0214so00607DUP	214	6	6 to 7	12/14/2009	Duplicate	1/7/2010	0.50		
0214so00708	214	7	7 to 8	12/14/2009	Normal	1/5/2010	0.20		
0214so00915	214	9	14 to 15	12/14/2009	Normal	1/7/2010	0.48		
0214so01120	214	11	19 to 20	12/14/2009	Normal	1/7/2010	0.70		
0215so00101	215	1	0 to 1	12/14/2009	Normal	1/2/2010	0.98		
0215so00202	215	2	1 to 2	12/14/2009	Normal	1/2/2010	0.80		
0215so00303	215	3	2 to 3	12/14/2009	Normal	1/3/2010	0.64		
0215so00303 DUP	215	3	2 to 3	12/14/2009	Duplicate	1/3/2010	2.20		0.77
0215so00404	215	4	3 to 4	12/14/2009	Normal	1/2/2010	0.74		
0215so00505	215	5	4 to 5	12/14/2009	Normal	1/2/2010	62.34		
0215so00606	215	6	5 to 6	12/14/2009	Normal	1/2/2010	0.52		
0215so00707	215	7	6 to 7	12/14/2009	Normal	1/3/2010	0.96		
0215so00707REP	215	7	6 to 7	12/14/2009	Replicate	1/2/2010	0.20		
0215so00808	215	8	7 to 8	12/14/2009	Normal	1/2/2010	0.80		
0215so00912	215	9	11 to 12	12/14/2009	Normal	1/2/2010	0.24		
0215so01220	215	12	19 to 20	12/14/2009	Normal	1/3/2010	0.76		
0216so00101	216	1	0 to 1	12/14/2009	Normal	1/5/2010	1.92		
0216so00202	216	2	1 to 2	12/14/2009	Normal	1/2/2010	1.56		0.93
0216so00202DUP	216	2	1 to 2	12/14/2009	Duplicate	4/11/2010	2.66		
0216so00303	216	3	2 to 3	12/14/2009	Normal	1/8/2010	1.42		
0216so00404	216	4	3 to 4	12/14/2009	Normal	1/8/2010	0.74		
0216so00505	216	5	4 to 5	12/14/2009	Normal	1/7/2010	0.54		
0216so00606	216	6	5 to 6	12/14/2009	Normal	1/7/2010	0.70		
0216so00707	216	7	6 to 7	12/14/2009	Normal	1/7/2010	0.54		
0216so00808	216	8	7 to 8	12/14/2009	Normal	1/7/2010	0.50		
0216so00912	216	9	11 to 12	12/14/2009	Normal	1/7/2010	0.48		
0216so01220	216	12	19 to 20	12/14/2009	Normal	1/5/2010	0.24		
0217so00101	217	1	0 to 1	12/7/2009	Normal	1/29/2010	1.38		
0217so00202	217	2	1 to 2	12/7/2009	Normal	2/2/2010	0.52		
0217so00306	217	3	5 to 6	12/7/2009	Normal	1/29/2010	0.34		
0217so00407	217	4	6 to 7	12/7/2009	Normal	1/30/2010	0.22		
0217so00508	217	5	7 to 8	12/7/2009	Normal	1/30/2010	0.40		
0217so00713	217	7	12 to 13	12/7/2009	Normal	1/29/2010	0.24		
0217so00713DUP	217	7	12 to 13	12/7/2009	Duplicate	1/29/2010	0.34		
0217so00815	217	8	14 to 15	12/7/2009	Normal	1/29/2010	0.14		
0218so00101	218	1	0 to 1	12/10/2009	Normal	1/7/2010	2.96		
0218so00202	218	2	1 to 2	12/10/2009	Normal	1/5/2010	0.96		
0218so00303	218	3	2 to 3	12/10/2009	Normal	3/5/2010	0.48		
0218so00303DUP	218	3	2 to 3	12/10/2009	Duplicate	1/3/2010	0.60		
0218so00404	218	4	3 to 4	12/10/2009	Normal	1/8/2010	0.46		
0218so00506	218	5	5 to 6	12/10/2009	Normal	1/7/2010	0.52		
0218so00607	218	6	6 to 7	12/10/2009	Normal	1/7/2010	0.46		
0218so00708	218	7	7 to 8	12/10/2009	Normal	1/5/2010	0.38		
0218so01014	218	10	13 to 14	12/10/2009	Normal	1/7/2010	0.40		
0218so01117	218	11	16 to 17	12/10/2009	Normal	1/7/2010	0.38		
091Aso00101	91A	1	0 to 1	2/3/2010	Normal	2/5/2010	**1,980.00**	D	
091Aso00202	91A	2	1 to 2	2/3/2010	Normal	2/5/2010	32.68		
091Aso00202DUP	91A	2	1 to 2	2/3/2010	Duplicate	2/5/2010	60.76		
091Aso10002	91A	---	1 to 2	4/9/2010	Verification	---			65.40
091Aso00303	91A	3	2 to 3	2/3/2010	Normal	2/5/2010	17.56		
091Aso00404	91A	4	3 to 4	2/3/2010	Normal	2/5/2010	1.90		
091Aso00505	91A	5	4 to 5	2/3/2010	Normal	2/5/2010	2.10		
091Aso00606	91A	6	5 to 6	2/3/2010	Normal	2/5/2010	0.48		
091Aso00707	91A	7	6 to 7	2/3/2010	Normal	2/5/2010	0.48		
091Aso00808	91A	8	7 to 8	2/3/2010	Normal	2/5/2010	0.88		
091Aso01114	91A	11	13 to 14	2/3/2010	Normal	2/5/2010	0.52		
091Aso01217	91A	12	16 to 17	2/3/2010	Normal	2/5/2010	0.46		
6a001so00101	6a001	1	0 to 1	3/16/2010	Normal	3/19/2010	1.46		
6a002so00101	6a002	1	0 to 1	3/16/2010	Normal	3/19/2010	2.00		
6a003so00101	6a003	1	0 to 1	3/16/2010	Normal	3/19/2010	**299.06**		

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
6a004so00101	6a004	1	0 to 1	3/16/2010	Normal	3/19/2010	**169.62**		
6a005so00101	6a005	1	0 to 1	3/16/2010	Normal	3/19/2010	**177.90**		
6a006so00101	6a006	1	0 to 1	3/16/2010	Normal	3/19/2010	26.80		
6a007so00101	6a007	1	0 to 1	3/16/2010	Normal	3/19/2010	**2,507.20**	D	
6a008so00101	6a008	1	0 to 1	3/16/2010	Normal	3/19/2010	**2,864.00**	D	
6a009so00101	6a009	1	0 to 1	3/16/2010	Normal	3/19/2010	**321.86**		
6a010so00101	6a010	1	0 to 1	3/16/2010	Normal	3/19/2010	67.02		
6a011so00101	6a011	1	0 to 1	3/16/2010	Normal	3/19/2010	**138.00**		
6a012so00101	6a012	1	0 to 1	3/16/2010	Normal	3/19/2010	**3,481.60**	D	
6a013so00101	6a013	1	0 to 1	3/16/2010	Normal	3/19/2010	**1,891.20**	D	
6a014so00101	6a014	1	0 to 1	3/16/2010	Normal	3/19/2010	**2,425.60**	D	
6a015so00101	6a015	1	0 to 1	3/11/2010	Normal	3/18/2010	**3,103.60**	D	
6a016so00101	6a016	1	0 to 1	3/11/2010	Normal	3/18/2010	**252.42**		
6a017so00101	6a017	1	0 to 1	3/11/2010	Normal	3/18/2010	**3,775.60**	D	
6a018so00101	6a018	1	0 to 1	3/11/2010	Normal	3/18/2010	48.00		
6a019so00101	6a019	1	0 to 1	3/11/2010	Normal	3/18/2010	117.46		
6a020so00101	6a020	1	0 to 1	3/11/2010	Normal	3/18/2010	**350.66**		
6a021so00101	6a021	1	0 to 1	3/11/2010	Normal	3/18/2010	3.34		
6a022so00101	6a022	1	0 to 1	3/11/2010	Normal	3/18/2010	**1,606.00**	D	
6a023so00101	6a023	1	0 to 1	3/11/2010	Normal	3/18/2010	**628.00**	D	
6a024so00101	6a024	1	0 to 1	3/11/2010	Normal	3/18/2010	**135.36**		
6a025so00101	6a025	1	0 to 1	3/11/2010	Normal	3/18/2010	**311.90**		
6a026so00101	6a026	1	0 to 1	3/11/2010	Normal	3/18/2010	**1,452.00**	D	
6a027so00101	6a027	1	0 to 1	3/11/2010	Normal	3/18/2010	3.14		
6a028so00101	6a028	1	0 to 1	3/11/2010	Normal	3/18/2010	91.02		
6a029so00101	6a029	1	0 to 1	3/11/2010	Normal	3/18/2010	54.78		
6a030so00101	6a030	1	0 to 1	3/11/2010	Normal	3/19/2010	5.48		
7G03so00101	7G03	1	0 to 1	1/7/2010	Normal	1/21/2010	1.08		
7G03so00202	7G03	2	1 to 2	1/7/2010	Normal	1/22/2010	0.56		
7G03so00303	7G03	3	2 to 3	1/7/2010	Normal	1/22/2010	0.38		
7G03so00404	7G03	4	3 to 4	1/7/2010	Normal	1/21/2010	0.44		
7G03so00506	7G03	5	5 to 6	1/7/2010	Normal	1/22/2010	0.36		
7G03so00607	7G03	6	6 to 7	1/7/2010	Normal	1/22/2010	0.44		
7G03so00708	7G03	7	7 to 8	1/7/2010	Normal	1/22/2010	0.36		
7G03so00708DUP	7G03	7	7 to 8	1/7/2010	Duplicate	1/22/2010	0.34		
7G03so00915	7G03	9	14 to 15	1/7/2010	Normal	1/21/2010	0.38		
7G03so01020	7G03	10	19 to 20	1/7/2010	Normal	1/22/2010	0.58		0.58
7G04so00101	7G04	1	0 to 1	1/7/2010	Normal	1/22/2010	1.86		
7G04so00202	7G04	2	1 to 2	1/7/2010	Normal	1/22/2010	0.54		
7G04so00303	7G04	3	2 to 3	1/7/2010	Normal	1/22/2010	0.66		
7G04so00303DUP	7G04	3	2 to 3	1/7/2010	Duplicate	1/22/2010	0.64		
7G04so00404	7G04	4	3 to 4	1/7/2010	Normal	1/22/2010	0.48		
7G04so00505	7G04	5	4 to 5	1/7/2010	Normal	1/22/2010	0.28		
7G04so00606	7G04	6	5 to 6	1/7/2010	Normal	1/22/2010	0.38		
7G04so00707	7G04	7	6 to 7	1/7/2010	Normal	1/22/2010	0.68		
7G04so00808	7G04	8	7 to 8	1/7/2010	Normal	1/22/2010	0.20		
7G04so00913	7G04	9	12 to 13	1/7/2010	Normal	1/22/2010	0.26		
7G04so01320	7G04	13	19 to 20	1/7/2010	Normal	1/22/2010	0.56		
7G05so00101	7G05	1	0 to 1	1/7/2010	Normal	1/22/2010	1.64		
7G05so00202	7G05	2	1 to 2	1/7/2010	Normal	1/22/2010	1.28		
7G05so00303	7G05	3	2 to 3	1/7/2010	Normal	1/22/2010	0.60		
7G05so00406	7G05	4	5 to 6	1/7/2010	Normal	1/22/2010	2.96		
7G05so00406DUP	7G05	4	5 to 6	1/7/2010	Duplicate	1/22/2010	1.18		
7G05so00507	7G05	5	6 to 7	1/7/2010	Normal	1/22/2010	1.20		
7G05so00608	7G05	6	7 to 8	1/7/2010	Normal	1/22/2010	0.44		
7G05so00816	7G05	8	15 to 16	1/7/2010	Normal	3/9/2010	0.58		
7G05so00919	7G05	9	18 to 19	1/7/2010	Normal	1/22/2010	0.36		
7G09so00101	7G09	1	0 to 1	1/6/2010	Normal	1/21/2010	1.18		
7G09so00202	7G09	2	1 to 2	1/6/2010	Normal	1/21/2010	0.76		
7G09so00303	7G09	3	2 to 3	1/6/2010	Normal	1/21/2010	0.58		
7G09so00406	7G09	4	5 to 6	1/6/2010	Normal	1/21/2010	0.82		
7G09so00507	7G09	5	6 to 7	1/6/2010	Normal	1/21/2010	0.30		
7G09so00608	7G09	6	7 to 8	1/6/2010	Normal	1/21/2010	0.32		
7G09so00814	7G09	8	13 to 14	1/6/2010	Normal	1/21/2010	0.28		
7G09so01119	7G09	11	18 to 19	1/6/2010	Normal	1/21/2010	0.40		
7G09so01119DUP	7G09	11	18 to 19	1/6/2010	Duplicate	1/21/2010	0.40		
7G11so00101	7G11	1	0 to 1	12/21/2009	Normal	12/29/2009	3.96	N	

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
7G11so00202	7G11	2	1 to 2	12/21/2009	Normal	12/29/2009	0.62	N	
7G11so00303	7G11	3	2 to 3	12/21/2009	Normal	12/29/2009	0.40	N	
7G11so00404	7G11	4	3 to 4	12/21/2009	Normal	12/29/2009	0.54	N	
7G11so00505	7G11	5	4 to 5	12/21/2009	Normal	12/29/2009	0.46	N	
7G11so00606	7G11	6	5 to 6	12/21/2009	Normal	12/29/2009	0.12	N	
7G11so00707	7G11	7	6 to 7	12/21/2009	Normal	12/29/2009	0.20	N	
7G11so00808	7G11	8	7 to 8	12/21/2009	Normal	12/29/2009	0.14	N	
7G11so00916	7G11	9	15 to 16	12/21/2009	Normal	12/29/2009	0.16	N	
7G11so01018	7G11	10	17 to 18	12/21/2009	Normal	12/29/2009	0.34	N	
7G11so01220	7G11	12	19 to 20	12/21/2009	Normal	1/5/2010	0.22		
7G11so01220DUP	7G11	12	19 to 20	12/21/2009	Duplicate	1/5/2010	0.16		
7G16so00106	7G16	1	5 to 6	1/7/2010	Normal	1/22/2010	1.36		
7G16so00207	7G16	2	6 to 7	1/7/2010	Normal	1/22/2010	63.54		
7G16so00308	7G16	3	7 to 8	1/7/2010	Normal	1/22/2010	1.02		
7G16so00409	7G16	4	8 to 9	1/7/2010	Normal	1/22/2010	0.34		
7G16so00510	7G16	5	9 to 10	1/7/2010	Normal	1/22/2010	0.22		
7G16so00611	7G16	6	10 to 11	1/7/2010	Normal	1/22/2010	34.62		
7G16so00611DUP	7G16	6	10 to 11	1/7/2010	Duplicate	1/22/2010	13.52		
7G16so00712	7G16	7	11 to 12	1/7/2010	Normal	1/22/2010	0.66		
7G16so00813	7G16	8	12 to 13	1/7/2010	Normal	1/22/2010	0.26		
7G16so00914	7G16	9	13 to 14	1/7/2010	Normal	1/22/2010	0.46		
7G16so01015	7G16	10	14 to 15	1/7/2010	Normal	1/22/2010	0.38		
7G23so00101	7G23	1	0 to 1	1/6/2010	Normal	1/21/2010	3.14		
7G23so00202	7G23	2	1 to 2	1/6/2010	Normal	1/21/2010	1.14		
7G23so00303	7G23	3	2 to 3	1/6/2010	Normal	1/22/2010	1.16		
7G23so00404	7G23	4	3 to 4	1/6/2010	Normal	1/26/2010	0.60		
7G23so00404DUP	7G23	4	3 to 4	1/6/2010	Duplicate	1/26/2010	1.04		
7G23so00505	7G23	5	4 to 5	1/6/2010	Normal	1/22/2010	0.58		
7G23so00606	7G23	6	5 to 6	1/6/2010	Normal	1/21/2010	1.20		
7G23so00707	7G23	7	6 to 7	1/6/2010	Normal	1/22/2010	0.38		
7G23so00808	7G23	8	7 to 8	1/6/2010	Normal	1/21/2010	0.26		
7G23so01014	7G23	10	13 to 14	1/6/2010	Normal	1/22/2010	0.24		
7G23so01220	7G23	12	19 to 20	1/6/2010	Normal	1/22/2010	0.44		
7G43so00101	7G43	1	0 to 1	1/6/2010	Normal	1/22/2010	17.78		
7G43so00202	7G43	2	1 to 2	1/6/2010	Normal	1/22/2010	0.10		
7G43so00303	7G43	3	2 to 3	1/6/2010	Normal	1/22/2010	0.58		
7G43so00406	7G43	4	5 to 6	1/6/2010	Normal	1/22/2010	1.24		
7G43so00507	7G43	5	6 to 7	1/6/2010	Normal	1/22/2010	0.34		
7G43so00608	7G43	6	7 to 8	1/6/2010	Normal	1/22/2010	0.48		
7G43so00608DUP	7G43	6	7 to 8	1/6/2010	Duplicate	1/22/2010	0.32		
7G43so00815	7G43	8	14 to 15	1/6/2010	Normal	1/22/2010	0.76		
7G43so01119	7G43	11	18 to 19	1/6/2010	Normal	1/22/2010	0.80		
7G46so00101	7G46	1	0 to 1	1/6/2010	Normal	1/21/2010	7.16		
7G46so00202	7G46	2	1 to 2	1/6/2010	Normal	1/21/2010	0.72		
7G46so00303	7G46	3	2 to 3	1/6/2010	Normal	1/21/2010	0.60		
7G46so00406	7G46	4	5 to 6	1/6/2010	Normal	1/21/2010	0.46		
7G46so00507	7G46	5	6 to 7	1/6/2010	Normal	1/12/2010	0.12		
7G46so00507DUP	7G46	5	6 to 7	1/6/2010	Duplicate	1/30/2010	0.76		
7G46so00608	7G46	6	7 to 8	1/6/2010	Normal	3/6/2010	0.36		
7G46so00820	7G46	8	19 to 20	1/6/2010	Normal	1/21/2010	0.30		
7G50so00101	7G50	1	0 to 1	1/7/2010	Normal	1/21/2010	61.40		
7G50so10001	7G50	---	0 to 1	4/9/2010	Verification	---			61.10
7G50so00202	7G50	2	1 to 2	1/7/2010	Normal	1/21/2010	15.52		
7G50so00306	7G50	3	5 to 6	1/7/2010	Normal	1/21/2010	1.14		
7G50so00407	7G50	4	6 to 7	1/7/2010	Normal	1/22/2010	1.62		
7G50so00407DUP	7G50	4	6 to 7	1/7/2010	Duplicate	1/22/2010	1.22		
7G50so00511	7G50	5	10 to 11	1/7/2010	Normal	1/21/2010	6.38		
7G50so00612	7G50	6	11 to 12	1/7/2010	Normal	1/21/2010	1.26		
7G50so01019	7G50	10	18 to 19	1/7/2010	Normal	1/21/2010	1.12		
BKG1so00101	BKG1	1	0 to 1	1/4/2010	Normal	1/15/2010	2.08		
BKG1so00202	BKG1	2	1 to 2	1/4/2010	Normal	1/17/2010	1.02		
BKG1so00303	BKG1	3	2 to 3	1/4/2010	Normal	1/15/2010	0.74		
BKG1so00404	BKG1	4	3 to 4	1/4/2010	Normal	1/15/2010	3.44		
BKG1so00505	BKG1	5	4 to 5	1/4/2010	Normal	1/17/2010	1.06		
BKG1so00606	BKG1	6	5 to 6	1/4/2010	Normal	1/15/2010	1.02		
BKG1so00707	BKG1	7	6 to 7	1/4/2010	Normal	1/18/2010	0.38		
BKG1so00808	BKG1	8	7 to 8	1/4/2010	Normal	1/15/2010	1.16		

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
BKG1so00909	BKG1	9	8 to 9	1/4/2010	Normal	1/15/2010	0.38		
BKG1so01010	BKG1	10	9 to 10	1/4/2010	Normal	1/15/2010	0.92		
BKG1so01111	BKG1	11	10 to 11	1/4/2010	Normal	1/17/2010	0.14		
BKG1so01212	BKG1	12	11 to 12	1/4/2010	Normal	1/18/2010	0.42		
BKG1so01212DUP	BKG1	12	11 to 12	1/4/2010	Duplicate	1/18/2010	0.30		
BKG1so01313	BKG1	13	12 to 13	1/4/2010	Normal	1/15/2010	0.56		
BKG1so01414	BKG1	14	13 to 14	1/4/2010	Normal	3/5/2010	0.36		
BKG1so01515	BKG1	15	14 to 15	1/4/2010	Normal	1/17/2010	1.14		
BKG1so01616	BKG1	16	15 to 16	1/4/2010	Normal	1/15/2010	0.76		
BKG1so01717	BKG1	17	16 to 17	1/4/2010	Normal	1/17/2010	1.14		
BKG1so01818	BKG1	18	17 to 18	1/4/2010	Normal	1/15/2010	0.76		
BKG1so01919	BKG1	19	18 to 19	1/4/2010	Normal	1/15/2010	1.30		
BKG1so02020	BKG1	20	19 to 20	1/4/2010	Normal	1/17/2010	0.32		
BKG2so00101	BKG2	1	0 to 1	1/4/2010	Normal	1/23/2010	1.04		
BKG2so00202	BKG2	2	1 to 2	1/4/2010	Normal	1/23/2010	0.78		
BKG2so00202DUP	BKG2	2	1 to 2	1/4/2010	Duplicate	1/23/2010	0.52		
BKG2so00303	BKG2	3	2 to 3	1/4/2010	Normal	1/23/2010	0.44		
BKG2so00404	BKG2	4	3 to 4	1/4/2010	Normal	1/23/2010	0.32		
BKG2so00505	BKG2	5	4 to 5	1/4/2010	Normal	1/23/2010	0.44		0.56
BKG2so00606	BKG2	6	5 to 6	1/4/2010	Normal	1/23/2010	0.42		
BKG2so00707	BKG2	7	6 to 7	1/4/2010	Normal	1/23/2010	0.04		
BKG2so00808	BKG2	8	7 to 8	1/4/2010	Normal	1/23/2010	0.20		
BKG2so00909	BKG2	9	8 to 9	1/4/2010	Normal	1/23/2010	0.26		
BKG2so01010	BKG2	10	9 to 10	1/4/2010	Normal	1/23/2010	0.20		
BKG2so01111	BKG2	11	10 to 11	1/4/2010	Normal	1/23/2010	0.20		
BKG2so01212	BKG2	12	11 to 12	1/4/2010	Normal	1/23/2010	0.42		
BKG2so01313	BKG2	13	12 to 13	1/4/2010	Normal	1/23/2010	0.34		
BKG2so01414	BKG2	14	13 to 14	1/4/2010	Normal	1/23/2010	0.24		
BKG2so01515	BKG2	15	14 to 15	1/4/2010	Normal	1/23/2010	0.22		
BKG2so01616	BKG2	16	15 to 16	1/4/2010	Normal	1/23/2010	0.22		
BKG2so01717	BKG2	17	16 to 17	1/4/2010	Normal	1/23/2010	0.20		
BKG2so01818	BKG2	18	17 to 18	1/4/2010	Normal	1/23/2010	0.28		
BKG2so01919	BKG2	19	18 to 19	1/4/2010	Normal	1/23/2010	0.24		0.34
BKG2so02020	BKG2	20	19 to 20	1/4/2010	Normal	1/23/2010	0.26		
BKG3so00101	BKG3	1	0 to 1	1/4/2010	Normal	1/17/2010	2.32		
BKG3so00202	BKG3	2	1 to 2	1/4/2010	Normal	1/17/2010	0.92		
BKG3so00303	BKG3	3	2 to 3	1/4/2010	Normal	1/18/2010	0.50		
BKG3so00404	BKG3	4	3 to 4	1/4/2010	Normal	1/17/2010	0.48		
BKG3so00505	BKG3	5	4 to 5	1/4/2010	Normal	1/14/2010	1.60	N	1.00
BKG3so00606	BKG3	6	5 to 6	1/4/2010	Normal	1/17/2010	0.16		
BKG3so00707	BKG3	7	6 to 7	1/4/2010	Normal	1/17/2010	0.88		
BKG3so00808	BKG3	8	7 to 8	1/4/2010	Normal	1/18/2010	0.42		
BKG3so00808DUP	BKG3	8	7 to 8	1/4/2010	Duplicate	1/18/2010	0.36		
BKG3so00808REP	BKG3	8	7 to 8	1/4/2010	Replicate	1/18/2010	0.40		
BKG3so00909	BKG3	9	8 to 9	1/4/2010	Normal	1/17/2010	1.12		
BKG3so01010	BKG3	10	9 to 10	1/4/2010	Normal	1/17/2010	0.58		
BKG3so01111	BKG3	11	10 to 11	1/4/2010	Normal	1/17/2010	0.70		
BKG3so01212	BKG3	12	11 to 12	1/4/2010	Normal	1/17/2010	0.14		
BKG3so01313	BKG3	13	12 to 13	1/4/2010	Normal	1/17/2010	0.92		
BKG3so01414	BKG3	14	13 to 14	1/4/2010	Normal	1/17/2010	0.88		
BKG3so01515	BKG3	15	14 to 15	1/4/2010	Normal	1/17/2010	1.08		
BKG3so01616	BKG3	16	15 to 16	1/4/2010	Normal	1/17/2010	0.96		
BKG3so01717	BKG3	17	16 to 17	1/4/2010	Normal	1/18/2010	0.46		
BKG3so01818	BKG3	18	17 to 18	1/4/2010	Normal	1/15/2010	0.82		
BKG3so01919	BKG3	19	18 to 19	1/4/2010	Normal	1/17/2010	0.82		
BKG3so02020	BKG3	20	19 to 20	1/4/2010	Normal	1/17/2010	0.14		
BKG4so00101	BKG4	1	0 to 1	1/4/2010	Normal	1/17/2010	0.94		
BKG4so00202	BKG4	2	1 to 2	1/4/2010	Normal	1/14/2010	2.70	N	
BKG4so00303	BKG4	3	2 to 3	1/4/2010	Normal	1/14/2010	2.44	N	1.04
BKG4so00404	BKG4	4	3 to 4	1/4/2010	Normal	1/14/2010	1.60	N	
BKG4so00505	BKG4	5	4 to 5	1/4/2010	Normal	1/17/2010	0.16		
BKG4so00606	BKG4	6	5 to 6	1/4/2010	Normal	1/17/2010	0.92		
BKG4so00707	BKG4	7	6 to 7	1/4/2010	Normal	1/17/2010	1.16		
BKG4so00808	BKG4	8	7 to 8	1/4/2010	Normal	1/17/2010	0.16		
BKG4so00909	BKG4	9	8 to 9	1/4/2010	Normal	1/15/2010	1.02		
BKG4so01010	BKG4	10	9 to 10	1/4/2010	Normal	1/15/2010	1.14		
BKG4so01111	BKG4	11	10 to 11	1/4/2010	Normal	1/14/2010	1.42	N	

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
BKG4so01212	BKG4	12	11 to 12	1/4/2010	Normal	1/14/2010	1.52	N	
BKG4so01313	BKG4	13	12 to 13	1/4/2010	Normal	1/15/2010	1.10		
BKG4so01414	BKG4	14	13 to 14	1/4/2010	Normal	1/18/2010	0.56		
BKG4so01414DUP	BKG4	14	13 to 14	1/4/2010	Duplicate	1/18/2010	0.42		
BKG4so01515	BKG4	15	14 to 15	1/4/2010	Normal	1/14/2010	1.50	N	
BKG4so01616	BKG4	16	15 to 16	1/4/2010	Normal	1/18/2010	0.20		
BKG4so01717	BKG4	17	16 to 17	1/4/2010	Normal	1/17/2010	0.70		
BKG4so01818	BKG4	18	17 to 18	1/4/2010	Normal	1/15/2010	1.10		
BKG4so01919	BKG4	19	18 to 19	1/4/2010	Normal	1/14/2010	1.54	N	
BKG4so02020	BKG4	20	19 to 20	1/4/2010	Normal	1/15/2010	0.82		
BKG5so00101	BKG5	1	0 to 1	1/4/2010	Normal	1/15/2010	1.74		1.13
BKG5so00202	BKG5	2	1 to 2	1/4/2010	Normal	1/15/2010	1.06		
BKG5so00303	BKG5	3	2 to 3	1/4/2010	Normal	1/17/2010	0.88		
BKG5so00404	BKG5	4	3 to 4	1/4/2010	Normal	1/15/2010	1.08		
BKG5so00505	BKG5	5	4 to 5	1/4/2010	Normal	1/18/2010	0.46		0.65
BKG5so00505DUP	BKG5	5	4 to 5	1/4/2010	Duplicate	1/18/2010	0.40		
BKG5so00606	BKG5	6	5 to 6	1/4/2010	Normal	1/17/2010	1.20		
BKG5so00707	BKG5	7	6 to 7	1/4/2010	Normal	1/17/2010	0.24		
BKG5so00808	BKG5	8	7 to 8	1/4/2010	Normal	1/17/2010	0.00		
BKG5so00909	BKG5	9	8 to 9	1/4/2010	Normal	1/17/2010	0.08		
BKG5so01010	BKG5	10	9 to 10	1/4/2010	Normal	1/17/2010	0.94		
BKG5so01111	BKG5	11	10 to 11	1/4/2010	Normal	1/15/2010	0.68		
BKG5so01212	BKG5	12	11 to 12	1/4/2010	Normal	1/15/2010	0.64		
BKG5so01313	BKG5	13	12 to 13	1/4/2010	Normal	1/15/2010	0.98		
BKG5so01414	BKG5	14	13 to 14	1/4/2010	Normal	1/17/2010	0.54		
BKG5so01515	BKG5	15	14 to 15	1/4/2010	Normal	1/17/2010	1.10		
BKG5so01616	BKG5	16	15 to 16	1/4/2010	Normal	1/15/2010	0.80		
BKG5so01717	BKG5	17	16 to 17	1/4/2010	Normal	1/18/2010	0.60		
BKG5so01818	BKG5	18	17 to 18	1/4/2010	Normal	1/14/2010	1.62	N	
BKG5so01919	BKG5	19	18 to 19	1/4/2010	Normal	1/15/2010	1.20		
BKG5so02020	BKG5	20	19 to 20	1/4/2010	Normal	1/14/2010	1.96	N	0.44
MH01se00106	MH01	1	5 to 6	1/23/2010	Normal	2/2/2010	15.00		
MH02se00105	MH02	1	4 to 5	1/23/2010	Normal	2/2/2010	4.78		
MH03se00106	MH03	1	5 to 6	1/23/2010	Normal	3/9/2010	4.48		
MH04se00106	MH04	1	5 to 6	1/23/2010	Normal	2/2/2010	4.86		
MH06se00107	MH06	1	6 to 7	1/23/2010	Normal	2/2/2010	5.50		
MH08se00107	MH08	1	6 to 7	1/25/2010	Normal	3/23/2010	44.06		
MH09se00107	MH09	1	6 to 7	1/25/2010	Normal	3/23/2010	**213.06**		
MH11se00109	MH11	1	8 to 9	1/25/2010	Normal	3/23/2010	**158.08**		
MH20se00107	MH20	1	6 to 7	1/23/2010	Normal	2/2/2010	21.66		
MH21se00104	MH21	1	3 to 4	1/23/2010	Normal	2/2/2010	8.54		
MH23se00103	MH23	1	2 to 3	1/23/2010	Normal	2/2/2010	29.64		
MH24se00106	MH24	1	5 to 6	1/25/2010	Normal	3/23/2010	4.14		
MH25se00107	MH25	1	6 to 7	1/25/2010	Normal	3/23/2010	45.06		
MH26se00108	MH26	1	7 to 8	1/30/2010	Normal	3/23/2010	11.06		
MH27se00103	MH27	1	2 to 3	1/25/2010	Normal	3/23/2010	0.84		
MH28se00106	MH28	1	5 to 6	1/30/2010	Normal	3/23/2010	130.80		
MH29se00107	MH29	1	6 to 7	1/30/2010	Normal	3/23/2010	24.16		
MH30se00106	MH30	1	5 to 6	1/30/2010	Normal	3/23/2010	0.70		
MH37se00107	MH37	1	6 to 7	1/26/2010	Normal	3/23/2010	22.98		
MW50so00101	MW50	1	0 to 1	4/2/2010	Normal	4/14/2010	64.12		
MW50so00202	MW50	2	1 to 2	4/2/2010	Normal	4/14/2010	75.60		
MW50so00303	MW50	3	2 to 3	4/2/2010	Normal	4/14/2010	1.28		
MW50so00404	MW50	4	3 to 4	4/2/2010	Normal	4/14/2010	1.14		
MW50so00505	MW50	5	4 to 5	4/2/2010	Normal	4/14/2010	0.82		
MW50so00505DUP	MW50	5	4 to 5	4/2/2010	Duplicate	4/14/2010	0.94		
MW50so00606	MW50	6	5 to 6	4/2/2010	Normal	4/14/2010	0.92		
MW50so00707	MW50	7	6 to 7	4/2/2010	Normal	4/14/2010	0.70		
MW50so00808	MW50	8	7 to 8	4/2/2010	Normal	4/14/2010	0.80		
MW50so01114	MW50	11	13 to 14	4/2/2010	Normal	4/14/2010	0.40		
MW53so00101	MW53	1	0 to 1	3/22/2010	Normal	3/31/2010	19.24		
MW53so00202	MW53	2	1 to 2	3/22/2010	Normal	3/31/2010	2.84		
MW53so00303	MW53	3	2 to 3	3/22/2010	Normal	3/31/2010	22.68		
MW53so00303DUP	MW53	3	2 to 3	3/22/2010	Duplicate	3/31/2010	24.02		
MW53so00404	MW53	4	3 to 4	3/22/2010	Normal	3/31/2010	5.84		
MW53so00506	MW53	5	5 to 6	3/22/2010	Normal	3/31/2010	19.78		

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
MW53so00607	MW53	6	6 to 7	3/22/2010	Normal	3/31/2010	4.80		
MW53so00708	MW53	7	7 to 8	3/22/2010	Normal	3/31/2010	5.20		
MW53so00812	MW53	8	11 to 12	3/22/2010	Normal	3/31/2010	1.90		
MW53so00917	MW53	9	16 to 17	3/22/2010	Normal	3/31/2010	1.86		
MW54so00101	MW54	1	0 to 1	3/24/2010	Normal	3/31/2010	17.90		
MW54so00202	MW54	2	1 to 2	3/24/2010	Normal	3/31/2010	3.96		
MW54so00303	MW54	3	2 to 3	3/24/2010	Normal	3/31/2010	3.66		
MW54so00404	MW54	4	3 to 4	3/24/2010	Normal	3/31/2010	0.62		
MW54so00506	MW54	5	5 to 6	3/24/2010	Normal	3/31/2010	0.46		
MW54so00607	MW54	6	6 to 7	3/24/2010	Normal	3/31/2010	0.32		
MW54so00708	MW54	7	7 to 8	3/24/2010	Normal	3/31/2010	0.32		
MW54so00708DUP	MW54	7	7 to 8	3/24/2010	Duplicate	3/31/2010	0.32		
MW54so00912	MW54	9	11 to 12	3/24/2010	Normal	3/31/2010	3.74		
MW54so01013	MW54	10	12 to 13	3/24/2010	Normal	3/31/2010	0.54		
MW55so00101	MW55	1	0 to 1	3/23/2010	Normal	3/31/2010	117.56		
MW55so00202	MW55	2	1 to 2	3/23/2010	Normal	3/31/2010	4.60		
MW55so00303	MW55	3	2 to 3	3/23/2010	Normal	3/31/2010	2.36		
MW55so00404	MW55	4	3 to 4	3/23/2010	Normal	3/31/2010	2.30		
MW55so00505	MW55	5	4 to 5	3/23/2010	Normal	3/31/2010	1.00		
MW55so00505DUP	MW55	5	4 to 5	3/23/2010	Duplicate	3/31/2010	1.18		
MW55so00606	MW55	6	5 to 6	3/23/2010	Normal	3/31/2010	0.82		
MW55so00707	MW55	7	6 to 7	3/23/2010	Normal	3/31/2010	0.52		
MW55so00808	MW55	8	7 to 8	3/23/2010	Normal	3/31/2010	0.48		
MW55so00912	MW55	9	11 to 12	3/23/2010	Normal	3/31/2010	0.64		
MW55so01013	MW55	10	12 to 13	3/23/2010	Normal	3/31/2010	0.32		
TR01so00102	TR01	1	1 to 2	1/16/2010	Normal	1/23/2010	0.60		0.98
TR01so00202	TR01	2	1 to 2	1/16/2010	Normal	1/18/2010	0.30		
TR01so00301	TR01	3	0 to 1	1/16/2010	Normal	1/18/2010	0.80		
TR01so00301DUP	TR01	3	0 to 1	1/16/2010	Duplicate	1/18/2010	1.26		
TR01so00403	TR01	4	2 to 3	1/16/2010	Normal	1/19/2010	0.62		0.73
TR01so00502	TR01	5	1 to 2	1/16/2010	Normal	1/18/2010	2.46		
TR01so00603	TR01	6	2 to 3	1/16/2010	Normal	1/18/2010	3.44		0.85
TR01so00703	TR01	7	2 to 3	1/16/2010	Normal	1/19/2010	0.12		
TR01so00803	TR01	8	2 to 3	1/16/2010	Normal	1/18/2010	2.02		
TR01so00904	TR01	9	3 to 4	1/16/2010	Normal	1/19/2010	0.24		
TR01so01005	TR01	10	4 to 5	1/16/2010	Normal	1/19/2010	0.34		
TR01so01100	TR01	11	0	1/16/2010	Normal	1/19/2010	0.32		
TR02so00105	TR02	1	4 to 5	1/16/2010	Normal	1/19/2010	0.14		
TR02so00205	TR02	2	4 to 5	1/16/2010	Normal	1/19/2010	1.16		
TR02so00304	TR02	3	3 to 4	1/16/2010	Normal	1/18/2010	0.32		
TR02so00401	TR02	4	0 to 1	1/16/2010	Normal	1/18/2010	2.54		
TR02so00505	TR02	5	4 to 5	1/16/2010	Normal	1/19/2010	4.70		
TR02so00607	TR02	6	6 to 7	1/16/2010	Normal	1/19/2010	0.08		0.66
TR02so00607REP	TR02	6	6 to 7	1/16/2010	Replicate	1/19/2010	0.10		
TR02so00607DUP	TR02	6	6 to 7	1/16/2010	Duplicate	3/30/2010	0.50		
TR02so00707	TR02	7	6 to 7	1/16/2010	Normal	1/19/2010	0.00		
TR02so00807	TR02	8	6 to 7	1/16/2010	Normal	1/18/2010	0.56		
TR02so00907	TR02	9	6 to 7	1/16/2010	Normal	1/18/2010	1.04		
TR02so01005	TR02	10	4 to 5	1/16/2010	Normal	1/18/2010	0.24		
TR03so00104	TR03	1	3 to 4	1/14/2010	Normal	3/5/2010	4.36		
TR03so00204	TR03	2	3 to 4	1/14/2010	Normal	1/26/2010	1.90		
TR03so00302	TR03	3	1 to 2	1/14/2010	Normal	3/31/2010	0.48		
TR03so00407	TR03	4	6 to 7	1/14/2010	Normal	1/23/2010	0.44		
TR03so00407DUP	TR03	4	6 to 7	1/14/2010	Duplicate	1/23/2010	0.36		
TR03so00507	TR03	5	6 to 7	1/14/2010	Normal	1/23/2010	0.32		
TR03so00607	TR03	6	6 to 7	1/14/2010	Normal	1/25/2010	129.80		
TR03so00702	TR03	7	1 to 2	1/14/2010	Normal	1/25/2010	**1,787.60**	D	**1,030.00**
TR03so00805	TR03	8	4 to 5	1/14/2010	Normal	1/25/2010	4.12		
TR04so00106	TR04	1	5 to 6	1/14/2010	Normal	1/18/2010	9.50		
TR04so00206	TR04	2	5 to 6	1/14/2010	Normal	1/18/2010	14.26		
TR04so00306	TR04	3	5 to 6	1/14/2010	Normal	1/18/2010	9.32		
TR04so00306DUP	TR04	3	5 to 6	1/14/2010	Duplicate	1/18/2010	6.86		
TR04so00402	TR04	4	1 to 2	1/14/2010	Normal	1/18/2010	33.62		
TR04so00502	TR04	5	1 to 2	1/14/2010	Normal	1/25/2010	14.78		
TR04so00601	TR04	6	0 to 1	1/14/2010	Normal	1/18/2010	45.72		48.90
TR04so00601BS1(f)	TR04	6	0 to 1	---	Homogeneity	---	**308.70**		**215.00**
TR04so00601BS2(f)	TR04	6	0 to 1	---	Homogeneity	---	**231.90**		**273.00**

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)
TR04so00703	TR04	7	2 to 3	1/14/2010	Normal	1/18/2010	17.62		
TR04so00803	TR04	8	2 to 3	1/14/2010	Normal	1/18/2010	5.40		
TR04so00903	TR04	9	2 to 3	1/14/2010	Normal	1/22/2010	**1,230.44**	D	**1,860.00**
TR04so00903BS1	TR04	9	2 to 3	---	Homogeneity	---	**6,628.00**		**1,850.00**
TR04so00903BS2	TR04	9	2 to 3	---	Homogeneity	---	**472,102.00**		**1,760.00**
TR05so00103	TR05	1	2 to 3	1/16/2010	Normal	1/18/2010	**5,108.80**	D	
TR05so00203	TR05	2	2 to 3	1/16/2010	Normal	3/9/2010	**3,466.00**	D	**2,460.00**
TR05so00303	TR05	3	2 to 3	1/16/2010	Normal	1/18/2010	**1,630.80**	D	
TR05so00303BS1(f)	TR05	3	2 to 3	1/16/2010	Homogeneity	---	**1,680.40**		**674.00**
TR05so00303BS2(f)	TR05	3	2 to 3	1/16/2010	Homogeneity	---	**1,286.80**		**674.00**
TR05so00403	TR05	4	2 to 3	1/16/2010	Normal	1/18/2010	**1,179.20**	D	
TR05so00502	TR05	5	1 to 2	1/16/2010	Normal	1/20/2010	**223.74**		**243.00**
TR05so00502REP	TR05	5	1 to 2	1/16/2010	Replicate	1/20/2010	98.90		
TR05so00502DUP	TR05	5	1 to 2	1/16/2010	Duplicate	1/18/2010	**207.38**		**573.00**
TR05so00502BS1	TR05	5	1 to 2	1/16/2010	Homogeneity	---	**271.90**		**348.00**
TR05so00502BS2	TR05	5	1 to 2	1/16/2010	Homogeneity	---	**264.70**		**339.00**
TR05so00603	TR05	6	2 to 3	1/16/2010	Normal	1/19/2010	12.82		
TR05so00705	TR05	7	4 to 5	1/16/2010	Normal	1/18/2010	**137.46**		
TR05so00805	TR05	8	4 to 5	1/16/2010	Normal	1/18/2010	**180.88**		
TR05so00905	TR05	9	4 to 5	1/16/2010	Normal	1/18/2010	0.70		
TR05so01005	TR05	10	4 to 5	1/16/2010	Normal	1/18/2010	2.78		
TR05so01100	TR05	11	0	1/16/2010	Normal	1/18/2010	**4,847.60**	D	
TR06Aso00108	TR06	1	7 to 8	1/15/2010	Normal	1/23/2010	0.28		
TR06Aso00204	TR06	2	3 to 4	1/15/2010	Normal	1/23/2010	0.54		
TR06Aso00307	TR06	3	6 to 7	1/15/2010	Normal	1/23/2010	0.18		
TR06Aso00407	TR06	4	6 to 7	1/15/2010	Normal	1/23/2010	0.48		
TR06Aso00407DUP	TR06	4	6 to 7	1/15/2010	Duplicate	1/23/2010	0.34		
TR06Aso00507	TR06	5	6 to 7	1/15/2010	Normal	1/23/2010	0.68		
TR06Aso00609	TR06	6	8 to 9	1/15/2010	Normal	1/23/2010	0.24		
TR06Aso00702	TR06	7	1 to 2	1/15/2010	Normal	1/25/2010	2.96		
TR06so00103	TR06	1	2 to 3	1/15/2010	Normal	1/25/2010	0.06		
TR06so00203	TR06	2	2 to 3	1/15/2010	Normal	1/25/2010	1.00		
TR07so00109	TR07	1	8 to 9	1/17/2010	Normal	1/19/2010	0.42		
TR07so00202	TR07	2	1 to 2	1/17/2010	Normal	1/19/2010	0.30		
TR07so00304	TR07	3	3 to 4	1/17/2010	Normal	1/19/2010	0.42		
TR07so00304DUP	TR07	3	3 to 4	1/17/2010	Duplicate	1/19/2010	0.20		
TR07so00407	TR07	4	6 to 7	1/17/2010	Normal	1/19/2010	0.12		
TR07so00507	TR07	5	6 to 7	1/17/2010	Normal	1/19/2010	0.12		
TR07so00607	TR07	6	6 to 7	1/17/2010	Normal	1/19/2010	0.16		
TR07so00704	TR07	7	3 to 4	1/17/2010	Normal	1/19/2010	0.34		
TR07so00806	TR07	8	5 to 6	1/17/2010	Normal	1/19/2010	0.22		
TR07so00908	TR07	9	7 to 8	1/17/2010	Normal	1/19/2010	0.12		
TR07so01002	TR07	10	1 to 2	1/17/2010	Normal	1/19/2010	0.34		
TR07so01102	TR07	11	1 to 2	1/17/2010	Normal	1/19/2010	0.26		
TR07so01203	TR07	12	2 to 3	1/17/2010	Normal	1/19/2010	0.92		
TR08so00105	TR08	1	4 to 5	1/18/2010	Normal	1/23/2010	1.00		
TR08so00204	TR08	2	3 to 4	1/18/2010	Normal	1/25/2010	1.04		2.01
TR08so00302	TR08	3	1 to 2	1/18/2010	Normal	1/19/2010	0.36		
TR08so00409	TR08	4	8 to 9	1/18/2010	Normal	1/19/2010	0.06		
TR08so00509	TR08	5	8 to 9	1/18/2010	Normal	1/19/2010	0.12		
TR08so00603	TR08	6	2 to 3	1/18/2010	Normal	1/19/2010	0.10		
TR08so00703	TR08	7	2 to 3	1/18/2010	Normal	1/19/2010	2.52		2.99
TR08so00809	TR08	8	8 to 9	1/18/2010	Normal	1/19/2010	0.28		
TR08so00909	TR08	9	8 to 9	1/18/2010	Normal	1/19/2010	0.06		
TR08so01002	TR08	10	1 to 2	1/19/2010	Normal	1/19/2010	0.30		
TR08so01105	TR08	11	4 to 5	1/18/2010	Normal	1/25/2010	2.62		
TR09so00103	TR09	1	2 to 3	1/19/2010	Normal	1/26/2010	1.02		
TR09so00204	TR09	2	3 to 4	1/19/2010	Normal	1/19/2010	0.96		
TR09so00303	TR09	3	2 to 3	1/19/2010	Normal	1/25/2010	0.68		0.11
TR09so00406	TR09	4	5 to 6	1/19/2010	Normal	1/25/2010	0.10		
TR09so00504	TR09	5	3 to 4	1/19/2010	Normal	1/26/2010	1.28		
TR09so00602	TR09	6	1 to 2	1/18/2010	Normal	1/19/2010	0.52		
TR09so00602DUP	TR09	6	1 to 2	1/19/2010	Duplicate	1/19/2010	0.40		
TR09so00705	TR09	7	4 to 5	1/18/2010	Normal	1/19/2010	8.52		
TR09so00805	TR09	8	4 to 5	1/19/2010	Normal	1/19/2010	ND	U	1.10
TR09so00905	TR09	9	4 to 5	1/19/2010	Normal	1/19/2010	7.10		
TR09so01005	TR09	10	4 to 5	1/18/2010	Normal	1/19/2010	0.22		

Table 9-5
Beryllium Analytical Results - Soil Samples

Sample Information							Be Finder Results		TestAmerica Results
Sample ID	Boring/ Location No.	Sample No.	Depth Range (ft)	Collection Date	Sample Type	Analysis Date	Be (mg/kg)	Qual.	Be (mg/kg)

Notes:

U	Not Detected (ND)
D	Reported value is from a dilution
E	Reported result is outside of instrument calibration range
N	Calibration chart inconsistencies
*	Reported value could not be varified from the original Befinder™ result files.
mg/kg	milligrams per kilogram
##	Value exceeds Site cleanup goal

Appendix B

Topographic and Geophysical Survey Results

(Provided in Electronic Files)

Geophysical Survey Report

Topographic Survey

Wellhead Survey Data

DRAFT
GEOPHYSICAL SURVEY REPORT
FUSRAP LUCKEY SITE
GEOPHYSICAL INVESTIGATION

Revision 0

Master Services Contract No.: 187967
Prime Contract No.: W912P4-07-0010

May 2010

Prepared for:

TPMC - EnergySolutions Environmental Services, LLC

On behalf of:

U.S. Army Corps of Engineers - Buffalo District

Prepared by:

Science Applications International Corporation
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Harrisburg, PA 17112

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ACRONYMS

AEC	Atomic Energy Commission
ANL	Argonne National Laboratory
ARRA	American Recovery and Reinvestment Act
BBC	Brush Beryllium Company
cm	centimeter
COTS	commercial off-the-shelf
DGPS	differential global positioning system
DQOs	data quality objectives
EM	Electromagnetic
FUSRAP	Formerly Utilized Sites Remedial Action Program
GIS	geographic information system
GPS	global positioning system
Hz	Hertz
ID	integrated designation
MSEMS	Man-portable Simultaneous EMI and Magnetometer System
mS/m	milliSiemen per meter
mV	milliVolts
NAD	North American Datum
nT	nanoTesla
ppt	parts per thousand
PVC	polyvinyl chloride
RTK	Real-time Kinematic
SAIC	Science Applications International Corporation
TES	TPMC-Energy*Solutions* Environmental Services, LLC
USACE	U.S. Army Corps of Engineers
UTV	utility terrain vehicle
VLF	very low frequency
VSEMS	Vehicular Simultaneous EMI and Magnetometer System

1.0 INTRODUCTION

Science Applications International Corporation (SAIC) has been contracted by TPMC-Energy*Solutions* Environmental Services, LLC (TES) in support of the U.S. Army Corps of Engineers (USACE) - Buffalo District to perform geophysical surveys at the Luckey Formerly Utilized Sites Remedial Action Program (FUSRAP) site. The objective of the geophysical surveys was to provide a cost-effective means of locating subsurface utilities and other historic disposal activities that may warrant additional investigation using intrusive means to characterize the site for future remedial actions at the site. Technical oversight was provided by USACE and Argonne National Laboratory (ANL). The SAIC activities are being performed as a subcontract to TES, under Master Services Contract 187967.

The 40-acre Luckey site is located at 21200 Luckey Road in Luckey, Ohio, which is a village of approximately 1,500 people located 22 miles southeast of Toledo (Figure 1). SAIC was contracted by TES to perform a geophysical investigation over approximately 15 acres of the property, using funds received through the American Recovery and Reinvestment Act (ARRA).

SAIC conducted a nonintrusive field investigation of the area of concern using four geophysical methods to determine the lateral extent of buried waste on-site. Work was performed in a fashion described in the *Luckey Sampling And Analysis Plan, dated October 2009.*

This report has been prepared to summarize data collection activities and results associated with the geophysical investigation conducted in November and December 2009.

2.0 SITE DESCRIPTION

This section presents site background information, including a description of the site, and a summary of previous site investigations.

2.1 Site Background

The Luckey site is located at 21200 Luckey Road in Luckey, Ohio, which is a village of approximately 1,500 people located 22 miles southeast of Toledo (Figure 1). Figure 1 displays an aerial view of the site, which is surrounded by predominantly agricultural fields to the north, east, and west. Patches of forests and fallow fields are present throughout the area.

The property covers approximately 40 acres with Luckey Road bounding the site to the west. A private residence and farm are located across Luckey Road from the site. A privately owned farm bounds the site to the north. The site is bounded on the east by the abandoned rail bed of the New York Central Railroad. East of the former rail bed is another private farm. Gilbert Road bounds the site to the south. The only surface water near the site is Toussaint Creek which is located approximately 1,200 feet to the north and flows generally to the northeast toward Lake Erie.

The Luckey site consisted of 13 buildings (including the production building and annex), some of which have been demolished. There also are two production wells (east production well and west production well); an inactive sewage disposal system (consisting of a septic tank, pump house, and two exposed filter beds); parking lots; and two abandoned railroad spurs. The site is currently vacant. Also, demolition debris from the production building's annex is still on-site piled up in its former location.

From 1949 to the early 1960s, the Brush Beryllium Company (BBC), as a contractor to the Atomic Energy Commission (AEC), used the Luckey site for beryllium processing to support the national defense program. Beryllium production activities brought different types of source media or potential contaminants to the site. Primary source media at the Luckey site included

materials delivered for processing or preprocessing, beryl ore, scrap beryllium, and radiologically contaminated scrap steel.

2.2 Site Topography and Setting

The main geophysical survey area is located in the northeastern quadrant of the property and encompasses approximately 15 acres. The geophysical survey area is bound to the north and east by the property boundary fence. The survey limits to the south terminate near an abandoned railroad spur. The western boundary is located east of a former ball field in the area of a partial fence line.

The geophysical survey area was bisected by a series of east-west trending abandoned railroad spurs that exited the property to the east. Other physical boundaries included a north-south trending drainage ditch, several debris piles, and/or soil mounds located east of this drainage ditch.

Prior to initiating geophysical and gamma walkover field investigations, TES conducted brush clearing and grubbing over the planned study area. A brush-clearing subcontractor utilized a Hydro-Ax and other mechanical methods to clear trees and brush from the geophysical and gamma walkover investigation. After brush-clearing activities concluded, the ground cover that remained consisted of ankle-high grass, wood chips, and other small debris resulting from brush-clearing activities.

3.0 GEOPHYSICAL DATA OBJECTIVES SUMMARY

This section summarizes the geophysical data objectives (DQOs) outlined in the work plan and identifies associated data collection activities completed during fieldwork.

3.1 Project Overview

The geophysical survey results were used to help guide the concurrent characterization activities on-site. These data were shared with project team members as data were collected to make informed decisions about placement of soil borings and trench locations.

The primary geophysical objectives stated in the work plan include:

- Improving the understanding of the buried trenches.
- Mapping shallow buried metallic objects.
- Delineating buried utilities and appurtenances.
- Determining subsurface characteristics of lagoon D.
- Identifying potentially buried material in the area of devoid of vegetation.

In addition to the objectives listed above, geophysics was also used to assess the boundaries of a sludge disposal pit in the northeast and detect the scrap metal pit reportedly north of the filer beds.

An integration of geophysical methods was desired to ensure the methods cross-correlate and provide a robust dataset under one mobilization. The following geophysical methods were initially identified as minimum project requirements:

- EM31 terrain conductivity survey.
- EM61 high sensitivity metal detector survey.
- Magnetometer survey.

After further review of project objectives, SAIC recommended the additional survey methods listed below that would be appropriate to map underground utilities, particularly adjacent to buildings where other methods may have interference or masking effects from cultural features. These methods include:

- Utility/line locator survey (conductive and inductive utility locating).
- Global positioning system (GPS) mapping and cross reference of cultural features.

SAIC complied with the following guidance documents, as well as standard industry practice, to plan and perform geophysical surveys:

- USACE, EM 1110-1-1802 (August 31, 1995), *Geophysical Exploration for Engineering and Environmental Investigations.*
- USACE, EM 1110-1-1003 (July 1, 2003), *NAVSTAR Global Positioning System Surveying.*
- USACE, ETL 1110-1-184 (April 1, 1998), *Use of the U.S. Coast Guard Differential Global Positioning System and the Continuously Operating Reference Station System.*
- SAIC, GP-002, *Geophysical Procedure for Surface Electromagnetic Surveys.*
- SAIC, GP-004, *Geophysical Procedure for Surface Magnetic Surveys*.
- SAIC, GP-007, *Geophysical Procedure for Mapping with Global Positioning Systems.*

3.1.1 Data Collection Program

The data collection program describes how data collection options were implemented and describes how field data were collected during the field activities.

Generally, the data collection option technologies were conducted in the following order during field activities:

1. **Utility/Line Locator** - Used to locate subsurface utilities by inductive, conductive, or passive tracing (used in selected areas).

2. **EM31 Terrain Conductivity** - Sensitive to metals and conductivity, limited horizontal and vertical resolution (conducted over entire geophysical survey area of interest).

3. **EM61 High Sensitivity Metal Detector** - Provides high lateral resolution, metals only (conducted over entire geophysical survey area of interest and around building footprints).

4. **G882 Magnetometer Detector** - Provides high lateral resolution, ferrous metals only (conducted over entire geophysical survey area of interest and around building footprints).

5. **Trimble Real-time Kinematic (RTK) or Differential Global Positioning System (DGPS)** - Integrated with geophysical equipment to identify measurement locations and for location surveys of specific site features as needed. All data for this project are geo-referenced to North American Datum (NAD) 1983, Ohio North State Plane, U.S. survey feet coordinates.

During the investigation, neither the data collection options nor the data collection procedures differed from those described in the work plan, with the exception of supplemental EM31 surveys. The work plan called for EM31 surveys to be conducted around building footprints to locate utilities. Initial surveys revealed that EM61 and magnetometer more completely represented the subsurface utilities, particularly around buildings where there are cultural interferences that affect EM31 data. After consultation with the TES project manager, as well as USACE and ANL, it was concluded that EM61 and magnetometer surveys around buildings were more appropriate than EM31 surveys to locate subsurface utilities. USACE granted a work plan modification. SAIC also supplemented these data with a line locator survey. The implementation of the above data collection procedures allowed for the generation of quality data suitable for the identified project objectives and data end-users.

4.0 FIELD DATA COLLECTION SUMMARY

The following sections summarize general and data collection activities conducted during the field investigation.

4.1 Field Activities Overview

Field data collection activities were conducted in accordance with the Work Plan, from November 22 through December 11, 2009.

4.2 Site Preparation

Prior to initiating geophysical field investigations, TES conducted brush clearing and grubbing over the planned study area. A brush-clearing subcontractor utilized a Hydro-Ax and other mechanical methods to clear the geophysical investigation area of trees and brush. In general, the ground cover that remained consisted of ankle-high grass and wood chips and other small debris resulting from brush-clearing activities.

The brush-clearing activities exposed surface metallic debris that had the potential to mask features at depth. To ensure this masking effect was minimized and recorded data were representative of subsurface conditions, efforts were made to remove or consolidate surface metallic debris where possible.

Several utility poles lying on the ground or other obstructions were also present in the middle of open areas. These obstructions, where possible, were removed or consolidated to minimize access limitations or cultural interferences.

Prior to initiating the geophysical investigation, SAIC's geophysical field personnel reviewed the proposed survey footprint and verified the limits of the geophysical investigation with the TES site supervisor. In order to manage data acquisition and ensure proper coverage, SAIC established a 200-foot-by-200-foot reference grid across the geophysical survey area of interest

using a submeter PRO-XRS DGPS manufactured by Trimble Limited® of Sunnyvale, California. Once the basic grid was established with DGPS, SAIC established 10-foot survey traverses between reference stakes using polyvinyl chloride (PVC) pin flags.

A GPS base station was established over a control point (CP-6) located at the northwest corner of the perimeter fence that surrounded the facility. This survey monument was established by Kleingers & Associates, TES's professionally licensed land surveyor subcontractor. SAIC used a Trimble TrimMark III base radio in a high-power mode (30 watts) to broadcast RTK GPS corrections during the geophysical surveys. Coordinates in WGS84 for CP-6 survey monument are as follows: Latitude of 41°27'35.15469, Longitude 83°29'28.75757, and elevation 530.510.

During the investigation, range poles and/or onboard visual data track display were used to maintain correct survey lanes throughout data collection and ensure adequate data coverage.

4.3 Geophysical Investigation

Field data collection activities were conducted in a manner consistent with the project Work Plan and included the following:

- Utility/line locator surveys.
- EM31 survey.
- Concurrent EM61 and magnetometer survey.
- Site location surveys.
- Field observations.

The following sections describe each type of data collection method utilized during the project.

4.3.1 Phase 1 - Utility/Line Locator Survey

In the first phase of the investigation, SAIC utilized CAT Plus and RadioDetection 4000 pipe and cable locators to screen for underground utilities that were within the open area between

buildings and a 50-foot perimeter of the building to identify possible waste, storm sewer, and discharge piping exiting the building.

The CAT Plus 3 line locator was used to screen the subsurface in two separate modes (60 Hertz [Hz] search mode and radio mode) to reduce the likelihood of missing an electrical utility. The 60 Hz mode was used to screen for loaded (active) underground power lines and other conductive utilities. Radio mode was used to screen the subsurface for very low frequency (VLF) radio signals re-radiated by buried metallic pipes and cables.

A RadioDetection 4000 line locator was utilized to perform inductive and conductive tracing. Inductive utility tracing was used in areas without a means of clamping onto a utility. This method involved using a strong signal source in the area of a utility or suspected utility. By saturating the area, part of the signal was induced to transmit on the utility where it was followed. Features characteristic of pipes or cables were marked with paint and pin flagging. Inductive methods were used in open areas adjacent to the main building.

Conductive utility tracing was performed by transmitting a signal directly onto a conductive utility, such as exposed piping or conduits. Since access to the building was prohibited, conductive tracing was performed on the exterior of the building at standpipe locations.

All identified features were marked on the ground with marking paint and/or pin flagging. These mark-outs served as a starting point to substantiate utility trends using electromagnetic (EM) and magnetic methods. Tracing pipes with internal sondes were not part of this scope. All work was performed outside the buildings as interior access was not permitted.

4.3.2 Phase 2 - EM31 Survey

Terrain conductivity surveying is a reconnaissance method of determining the EM properties of subsurface materials. The conductivity measurement is dependent upon the density, porosity, moisture content, and the presence or absence of electrolytes or colloids of the subsurface materials. Typically, clay soils have a high conductivity due to the presence of colloids.

Bedrock typically has a lower conductivity because of high density and the generally lower porosity present within the rock matrix. The irregular nature of landfilled material and the frequent presence of ferrous metals provide for an EM response that typically contrasts the more homogeneous natural materials in an area. Because of the variety of factors that affect terrain conductivity measurements, the actual magnitude of the terrain conductivity values measured is less important than the trends and anomalies in the measurements.

The EM31 survey was conducted using a terrain conductivity meter manufactured by Geonics Limited of Mississauga, Canada (Exhibit A). Data were acquired by carrying the EM31 along the pre-marked survey lines at a normal walking speed following SAIC Geophysical Procedure GP-002 *Surface Electromagnetic Surveys*. During the investigation, quadrature-phase (conductivity) and in-phase (magnetic susceptibility) vertical dipole data were recorded along east-west oriented traverses nominally space every 10 feet (3.0 meters). EM31 data were recorded at a rate of 2 Hz (2 times per second) as the operator walked along traverses. These data were integrated real time with DGPS data collected at a rate of 1 Hz. A total 97,048 EM31 measurements were recorded representing approximately 15 acres of data. An EM31 data track map is presented as Figure 2.

Exhibit A: EM31-MK2 Terrain Conductivity Meter integrated with DGPS

Data were periodically downloaded to a field computer for verification of the data quality and to ensure an accurate representation of the site. As a quality check, the nominal traverse spacing and data density results were reviewed during the investigation. Based on this review, it was determined that data density DQOs were met as defined in the Work Plan.

As part of the infield data quality control, SAIC reviewed daily static test data to verify calibration results, data repeatability, and reliability. SAIC utilized a Geonics DAT31W software package to integrate EM and DGPS data. During data preprocessing, SAIC performed lag adjustment as appropriate and normalized data results to a consistent background response. SAIC generated color-enhanced contour maps of quadrature-phase (terrain conductivity) and in-phase (magnetic susceptibility) datasets using the Surfer© contour and mapping software package. In order to differentiate anomalies associated with surface debris or other potential interferences, a site features map highlighting debris piles was superimposed on the contour map to aid in data interpretation.

Throughout the project, SAIC made available electronic data files (raw and preprocessed DGPS, EM and magnetometer data) to TES for upload to the project Dellshare web-based data share site so information could be exchanged by ANL and USACE. These periodic updates served as a decision-making tool to help guide subsequent geophysical surveys and guide intrusive investigations.

4.3.3 Phase 3 - Concurrent Electromagnetic and Magnetometer Survey

Focused high-sensitivity EM61 metal detector and magnetometer surveys were required per the work plan. The EM61 high-sensitivity metal detector is a time-domain EM instrument that is able to discriminate between electrically conductive earth materials and highly conductive metallic targets such as buried drums, metallic pipes, utilities, metallic debris, or other metallic waste. Due to the way the EM survey senses the subsurface, ferrous and nonferrous metallic material are detected.

A magnetometer survey measures natural variations in the earth's magnetic field due to the presence of ferrous metals. No transmitted signals are created by magnetic methods. The cesium magnetometer used at this site provides greater sensitivity than the EM methods. Therefore, the magnetometer survey is able to sense ferrous metals at depths greater than EM methods. Magnetic surveys are typically conducted to determine the location of buried drums, metallic pipes, utilities, metallic debris, or other subsurface metallic objects of ferrous composition.

To accomplish this phase of the project, SAIC deployed a Vehicular Simultaneous EMI and Magnetometer System (VSEMS) over open areas where access permitted and Man-portable Simultaneous EMI and Magnetometer System (MSEMS) in areas that where man-portable surveys were required. Both systems, developed by SAIC, are capable of simultaneously acquiring low-noise magnetometer and EM61MK2 data, effectively providing the two sensor streams in a single survey pass.

SAIC's VSEMS equipment (Exhibit B) consists of an aluminum-framed commercial off-the-shelf (COTS) side-by-side utility terrain vehicle (UTV) (Club Car) with a low magnetic self-signature towing a nonmetallic tow platform configured with:

- Five EM61-MK2 electronics in a master-slave configuration driving five EM61 1 x ½ meter coils spaced 1.6 feet (0.5 meters) apart.
- Five Geometrics 822 magnetometers spaced 1.6 feet (0.5 meters) apart.
- Interleaving electronics developed under ESTC project MM-0208 allowing magnetometer data to be collected between EM61 pulses.
- Three Trimble MS750 RTK receivers for 2 centimeters (cm) accuracy in real time.
- Data acquisition hardware and software that simultaneously acquire magnetometer and EM61-MK2 data, time-stamping all readings with GPS times.

Exhibit B: Vehicular Simultaneous EMI and Magnetometer System (VSEMS)

SAIC's MSEMS equipment (Exhibit C) consists of:

- Single EM61-MK2A electronics 1 x ½ meter coil.
- Single Geometrics 822 magnetometers offset 1.6 feet (0.5 meters) from the EM coil.
- Interleaving electronics allowing magnetometer data to be collected between EM61 pulses.
- A single Trimble MS750 RTK receiver mounted between sensors for 2 cm accuracy in real time.
- Data acquisition hardware and software that simultaneously acquire magnetometer and EM61-MK2 data, time-stamping all readings with GPS times.

Exhibit C: Man-portable Simultaneous EMI and Magnetometer System (VSEMS)

Preprocessing of VSEMS and MSEMS Data

VSEMS and MSEMS data preprocessing was performed on both the GPS data and the sensor data. All GPS data were displayed graphically and examined by a trained analyst and spurious data points removed. On the vehicular VSEMS system, heading was obtained directly from the two GPS antennas (one over the center of the EM61 array, the other over the center of the magnetometer array). On the man-portable MSEMS system, because there is only one GPS, heading is obtained by first temporarily smoothing the GPS values and then using adjacent GPS readings to calculate platform heading. Positions were then calculated for each sensor normal to the platform's heading and relative offset. The sensor data were viewed by an analyst to flag any noisy data that made it through the real-time quality check in the vehicle. Spurious spikes are removed via a median filter.

The EM61 data were latency-corrected using a nominal 0.37-second latency value that accounts for the fact that the data were 0.37 seconds old when they were output by the EM61 electronics.

Normally, both the magnetometer data and the EM61 data are background-leveled with a de-median filter with a six-second window. However, because one of the goals of the Luckey site survey was to detect pipelines coming out of buildings, and because background leveling can cause the signatures from pipelines to vanish, no background leveling was performed on the Luckey data.

The magnetometer data and the geo-location data were then combined. Both VSEMS and MSEMS utilize the GPS' 1PPS output to trigger the acquisition of one second's worth of magnetometer data. This created perfectly synchronized magnetometer/GPS data that did not need to be latency-corrected.

During the investigation, a total 1,426,538 EM61-MK2 measurements and 3,412,438 magnetometer measurements were recorded representing approximately 18.7 acres of data. A VSEMS and MSESM data track map is presented as Figure 5.

Data were periodically transferred to a field computer for verification of the data quality and to ensure an accurate representation of the site. As a quality check, nominal traverse spacing and data density results were reviewed during the investigation. Based on this review, it was determined that data density DQOs were met as defined in the work plan except in those areas that had limited site access, could not be surveyed in a safe manor, or contained other site obstacles.

As part of the infield data quality control, SAIC reviewed daily static test data to verify calibration results, data repeatability, and reliability. SAIC utilized Linux—based to integrate EM and DGPS data. The data were then written out in an ASCII comma-delimited format and read into the Surfer© contour and mapping software package. During data preprocessing, SAIC performed lag adjustment as appropriate and normalized data results. SAIC generated color-enhanced contour maps of the EM61-MK2 data using the Surfer© contour and mapping software package. Subsequently, a site features map was superimposed on the contour maps to aid in the interpretation.

During the project, electronic data files (raw GPS and EM data) were provided to ANL and USACE. These periodic updates served as a decision-making tool to help guide subsequent geophysical surveys. As a result of conversations with the USACE project manager and engineer, refined surveys were suggested and performed to address all stakeholder concerns and potential data gaps.

4.3.4 Site Location Surveys

Site location surveys were completed using a submeter accurate PRO-XRS DGPS manufactured by Trimble Limited® of Sunnyvale, California. As mentioned previously, the DGPS was used to locate the site boundary corners and various survey traverse endpoints in the field. The GPS was also used to locate miscellaneous site features including monitoring wells, surficial metal debris, etc. These data were integrated into the geophysical data presentation to provide a more accurate data interpretation.

Results of the line locator surveys were also mapped with DGPS. All interpreted utility mark-outs that were identified in the field and marked with paint and wooden stakes were mapped at the conclusion of the line locator surveys. In the event a utility corridor was present but the lateral location of individual utilities could not be distinguished, the corridor centerline was mapped.

GPS was integrated directly into the EM31, VSEMS, and MSEMS surveys resulting in the collection of location coordinate data concurrent with the collection of geophysical survey data. All site location survey data were generated in Ohio North, State Plane, NAD 83, U.S. survey feet.

4.3.5 Field Observations

Field observations regarding general site conditions and features of interest were recorded during field data collection activities. Digital photographs were taken to document geophysical survey methods and illustrate site conditions during the field activities. These digital photographs are presented in Appendix A.

5.0 FIELD INVESTIGATION RESULTS

The following sections present the results of the field data collection activities completed for each geophysical survey method.

5.1 Utility/Line Locator Results

Results of the utility/line locator survey are presented in Figure 2 and subsequent figures. Over 40 individual interpreted utility sets or corridors were identified via line locating methods. Four additional linear segments were identified via EM and/or magnetometer methods. During the surveys, these features were marked on the ground with paint. To ensure that the location of these features could be readily located for future phases of site investigation, painted wooden stakes were added. All identified features consistent with underground utilities were subsequently mapped with DGPS. A geographic information system (GIS) layer was generated and presented on the geophysical data results to aid in the overall data interpretation.

5.2 EM31 Survey Results

Results of the EM31 survey are presented in Figure 3 (quadrature) and Figure 4 (in-phase). The quadrature (conductivity) background response was interpreted to range between 10 and 20 millisiemen per meter (mS/m). Areas with conductivity response ranging between 20 and 30 mS/m may be interpreted to represent areas of nonnative fill, increased clay content, and/or areas of increased moisture. Areas with conductivity responses above 30 mS/m may be interpreted to represent more conductive nonhomogeneous fill materials, underground utilities, or surficial anthropogenic interference (monitoring wells, metallic fence posts, etc). The rate of change in conductivity measurements across an area (gradient) is generally greater in the vicinity of nonnative materials and slowly varying in areas of native materials. Per the EM31 methodology, off-scale (extremely high) measurements indicative of very conductive conditions are represented by negative values. Several of these areas are noted across the area of investigation.

The in-phase (magnetic susceptibility) results are representative of metallic masses. In-phase responses greater than 1.6 parts per thousand (ppt) of the total field strength are interpreted to represent metal masses. Nineteen regional anomalous areas have been highlighted (Figure 4) and are summarized in more detail in table form (Table 1) and in the integrated results section of this report. These anomalies coincide to off-scale conductivity anomalies identified in the quadrature data. A number of linear in-phase anomalies cross the site. These are coincident with buried utilities marked in the field.

5.3 VSEMS and MSEMS EM61-MK2 Survey Results

An EM61-MK2 survey was performed over the targeted geophysical investigation areas as described above, as well as around building footprints to identify utilities. Linear features interpreted to represent buried utilities were identified, marked in the field, subsequently mapped with DGPS, and are represented on the attached figures. Only those utilities that trended into the geophysical investigation area were traced to their terminus where possible.

Results of the EM61-MK2 high-sensitivity metal detector collected during VSEMS and MSEMS surveys are presented in Figure 6. Responses greater than 40 millivolts (mV) are interpreted to represent nominal amounts of subsurface metal mass at depth. Responses greater than 160 mV are interpreted to represent moderate amounts of subsurface metal. Responses greater than 1,500 mV are interpreted to represent a significant amount of metallic mass.

5.4 VSEMS and MSEMS Magnetometer Survey Results

A magnetometer survey was performed concurrently with the EM61 and encompassed the same survey footprint. Figure 7 presents the results of total field magnetometer data.

In general, raw data suggested background magnetic total field for this site ranged between 50760 and 50770 nanoTesla (nT). This range is typical for magnetic field value for the Luckey area. As noted earlier, during the data processing, diurnal drift was removed using a moving filter which essentially baselines all background response to virtually 0 nT. This process was

completed so that the amplitude or wavelength of anomalous responses was not altered relative to background.

Due to the nature of magnetic method, magnetic anomalies arising from buried metallic objects generally have dimensions much greater than the objects themselves. The magnetic response of discrete metallic objects generally is represented as dipoles whereby there is a negative and positive peak (North Pole and South Pole) centered on the object location.

Magnetometer data were influenced more by cultural interferences which resulted in a masking effect around building structures. Therefore, linear features consistent with underground utilities were not as readily defined as compared to the EM61 results. However, the magnetometer survey was very useful in identifying metal masses at depth within the open areas of the site.

In general, the limits of the magnetometer anomalies correlated well to the EM61 results. Responses greater than +/-40 nT are interpreted to represent small amounts of metal mass. Responses greater than +/-300 mV are interpreted to represent moderate amounts of metal. Responses greater than +/-1200 nT are interpreted to represent a significant amount of metallic mass.

5.5 Integrated Survey Results

Integrated data results of EM31 and EM61-MK2 are presented in Figure 8 and Table 1. Figure 8 represents the interpreted anomalies identified by geophysical methods. Annotations are color-coded to reflect the interpreted origin of identified anomalies. Geophysical results suggest good correlation between the EM61 and magnetometer data. The EM61 and magnetometer data appear to show more variability than the EM31 results. This is attributed to greater sensitivity of the EM61-MK2 and magnetometer to smaller metallic targets and increased data resolution as a result of survey design and the instrument measurement methods. All three data sets appropriately define the lateral limits of suspected trenches. While there is evidence of isolated metallic objects across the site, these interpreted data appear to suggest that waste disposal activities are confined to specific locations at the site.

Table 1 provides the integrated designation (ID), location, EM or magnetic anomaly reference, comments, and interpretation for the features found on Figures 3, 4, 6, and 7. Figure 8 shows the integrated anomaly limits superimposed on a 1969 aerial photograph. A narrative of each anomalous feature is summarized below:

Anomalies A and B

Anomalies A and B exhibit wide linear EM61 responses greater than 1,500 mV. These features are also consistent with linear magnetic dipole features observed in the magnetometer results. The same areal extent is also represented by EM31 anomalies with conductivity responses of 160 mS/m and magnetic susceptibility greater than 10 ppt. However, the northernmost features within anomalies A and B do not exhibit a continuous EM31 response, suggesting the homogeneity of metal mass may vary in these areas. In general, anomalies A and B are wide linear features that are consistent with trenches. There is no surface expression or cultural features in this area that would explain the origin of these features.

Anomaly C

Anomaly C exhibits a broad anomalous EM61 response greater than 1,500 mV. Magnetometer results reveal a long linear dipole, suggesting the amount of metal mass at depth is fairly consistent throughout. This area also exhibits an EM31 conductivity anomaly greater than 65 mV and an in-phase response greater than 10 ppt consistent with metal masses at depth. The origin of this feature could not be substantiated. This feature is approximately 25 feet wide and 250 feet long and is in the area identified as former railroad sidings on historic drawings. No surface expression of the features is present.

Anomalies D and E

Anomalies D and E exhibit EM61 anomalous responses greater than 1,500 mV, suggesting large metal masses are present at depth. Magnetometer results depict numerous large dipole

responses, suggesting the amount of metal mass at depth varies across this area. The general limits of this anomalous area are fairly consistent with EM61 and EM31; however, the intensity of the responses is more variable in the EM31 data results, also supporting the idea that the amount of metal mass at depth varies across the area of interest. In general, these features cover a broad area and are consistent with debris or waste pits containing metallic debris. While some cultural effects are present on the surface, the lateral extent of this feature extends well beyond the localized surficial features.

Anomaly F

Anomaly F exhibits EM61 anomalous responses greater than 320 mV, suggesting metal masses are present at depth. This feature tends north to south and parallels the perimeter fence. Magnetometer results depict large dipole responses scattered across this area, suggesting the amount of metal mass at depth varies across this area. The EM31 conductivity and magnetic susceptibility response are anomalous in this general area; however, the limits are not clearly defined and extend into other adjacent anomalous areas. This suggests the amount of metal mass at depth varies across the area and may represent metallic debris commingled in emplaced fill materials.

The eastern limit of this feature is located at the edge of a two- to three-foot topographical slope that drops down to the fence line. The margin of this slope most likely represents the limit of the metallic debris and overburden soil cover.

Anomaly G

Anomaly G is located in an open field east of the former melting, alloying, and shipping building. This feature is a localized anomaly that exhibits an EM61 anomalous response greater than 1,500 mV and a very large magnetic dipole response, suggesting a large metal mass or concentration of metal masses is present at depth. This feature is also represented in the EM31 conductivity and magnetic susceptibility data with anomalous responses of greater than 52 mS/m and 5.2 ppt, respectively. This feature is in an area absent of surface debris or surficial

expression. This feature is interpreted to represent a localized buried metallic object or waste pit filled with metallic debris.

Anomaly H

Anomaly H is represented in the EM61, magnetometer, and EM31 data sets. This feature is associated with the concrete-encased structure of the former filter beds located immediately east of the wastewater treatment vault and sewage disposal system pump house.

Anomaly I

Anomaly I is located near the northeast quadrant of the property. This feature is in an area west of a series of soil mounds in an area devoid of vegetation. This feature exhibits an EM61 response greater than 160 mV, and the lateral extent is mirrored in the magnetometer, as well as both the EM31 conductivity and magnetic susceptibility data. The entire area exhibits an anomalous response; however, the most intense signature appears to follow a north-to-south trend that generally parallels the perimeter fence and linear anomaly F. This area may represent multiple fill emplacement of metallic debris-laden material or represent a shallow trench filled with metallic debris. No surficial debris or evidence of disposal is noted at the surface.

Anomaly J

Anomaly J is located east of the filter beds. This feature is due south of trench-like anomalies associated with anomaly A. An EM61 response of greater than 160 mV is observed; however, anomalous response in the magnetic and terrain conductivity data is not as evident. This feature is located northwest of the north-south trending debris mound; however, it is not represented by a surficial expression.

Anomaly K

Anomaly K is located near the southeast corner of the geophysical survey area. This linear feature curves across that area and is most pronounced in the EM61 and magnetometer data. A subtle anomalous response is observed in the EM31 in-phase data; however, it is less pronounced in the EM31 conductivity data. A review of historical aerial photographs reveals this feature coincides with a historic railroad grade. The fact that this feature is not as pronounced in the EM31 data results suggests that the subsurface debris are near-surface only and residual metallic debris is present.

Anomaly L

Anomaly L is located southeast of the former melting, alloying, and shipping building. This linear feature is represented in all data sets and trends southwest to northeast and terminates at the mouth of the drainage ditch. This feature is a result of a two-foot-diameter corrugated drain pipe.

Anomaly M

Anomaly M is located east of the former melting, alloying, and shipping building with the limits best defined in the EM61 results. This feature covers a broad area and is represented by a large number of isolated magnetic dipoles. The limits are poorly defined by the EM31 data results which suggest limited metal masses at depth and may represent demolition debris. Review of historical drawings suggests this feature is in the area of the former Lagoon D and may be indicative of metallic debris commingled with fill materials.

Anomaly N

Anomaly N is located south of the sewage disposal system and filter beds and is observed in all data sets to some degree. This feature covers a broad area and is represented by a large number of isolated magnetic dipoles. The limits of this area coincide with debris piles containing reinforced

concrete and demolition material. It is anticipated that the anomalous response is a result of the surficial debris and may mask any objects that may be buried below grade level.

Anomaly O

Anomaly O is located east of the filter beds and is observed primarily in the EM61 and magnetometer data results. This feature trends south-north and contains a number of isolated magnetic dipoles. The limits of this area coincide with a three-foot-high soil mound. It is anticipated that the anomalous response is a result of subsurface metallic debris beneath or within the soil mound.

Anomaly P

Anomaly P is located east of the filter beds and immediately west of the north-south drainage ditch. This feature trends south-north, is represented in all data sets, and contains a fair number of isolated magnetic dipoles. The limits of this area coincide with a three- to four-foot-high debris pile. Metallic demolition debris is comingled throughout. It is anticipated that the anomalous response is a result of the surficial debris and may mask any objects that may be buried below grade level.

Anomaly Q

Anomaly Q is located southeast of the former propane tanks. This feature is arc shaped and generally trends west to east and is only represented in the EM61 and magnetometer data sets. This feature is located immediately north of an access road that is visible on historical aerial photographs and generally follows the arc of the road. While this area did not present a definitive magnetic anomaly, EM61 data suggest conductive metallic debris is present. Due to the proximity of this anomaly to the former access road, this feature may be a result of scattered/discarded or disposed metallic debris that may have been associated with historic disposal or transportation activities.

Anomaly R

Anomaly R is located north of the sewage disposal system and is represented on all data sets. This feature appears to be localized and is adjacent to the southern slope of a soil mound. It is anticipated that this feature is a result of a metal mass buried along the southern slope of the soil mound. Based on these data, it cannot be determined if this debris is within the soil mound or below the original grade level.

Anomaly S

Anomaly S is located northwest of the sewage disposal system and is represented in EM61 and magnetometer data sets. This feature appears in the area of a two-foot-high soil mound. It is anticipated that this feature is a result of a metal mass buried beneath the soil mound. The EM61 data suggest that this feature also extends beyond the limits of the soil mound. The inhomogeneous nature of the EM61 response suggests that a limited amount of metallic debris is present in this area.

Additional localized anomalies are noted on the periphery of the primary disposal area. These features represent metallic objects that were commingled with fill materials and generally do not appear to be a well-defined debris pit.

The area outside the security fence was not investigated to confirm whether or not the elevated EM31 response extends beyond the property boundary.

5.6 Site Location Survey Results

Field-generated DGPS location coordinate data are incorporated into the EM and magnetometer survey data and also are included in many of the figures presented in this document. Location coordinates for the geophysical measurements; the locations of cultural features such as fence line, road edges, railroad spurs, and topographic features; and the location surficial metallic debris were mapped with DGPS. The DGPS base map was utilized as an overlay on geophysical data contour maps to provide a cross-reference for anomalies related to surface features and to

help with visual orientation. This will also assist in relocating anomalous areas at a later time when the survey reference stakes may not be present.

5.7 Field Observation Results

Many debris piles were noted across the area of interest, particularly south of the filter beds and immediately west of the north-south drainage ditch. Many of these debris piles contained metallic objects (rebar, scrap metal, etc.) that resulted in anomalous geophysical response. Other nonnative features included debris piles and soil mounds west of the north-south drainage ditch.

Other notable features included areas of non-vegetated ground cover, the sandy area between the propane tank stands, and the sewage disposal system. Other barren ground cover (clay or sandy fill) was obvious in the area west of the eastern perimeter fence.

Where possible, features of interest were given a unique line pattern and described in the legend of figures as appropriate. Photographs of remarkable features across the geophysical survey area are provided as Appendix A. An index map is also provided for frame of reference and cross correlation with geophysical anomalies of interest.

6.0 CONCLUSIONS AND RECOMMENDATIONS

This section presents conclusions based on currently available data and recommendations for further investigation of the site. General limitations associated with the nonintrusive geophysical methods utilized during this investigation also are discussed.

6.1 Limitations of Nonintrusive Geophysical Investigation

The proposed investigation work scope includes standard and/or routinely accepted practices of the geophysical industry. However, by its nature, no subsurface survey is completely accurate, and SAIC cannot accept responsibility for inherent survey limitations or unforeseen, site-specific conditions. The geophysical survey uses physical principles; however, interpretation of the data to represent geologic or landfilling activities is less prescriptive. As such, the interpretations of subsurface features may differ from interpretations based on other methods.

6.2 Conclusions

Overall, the geophysical investigation was successful at identifying the lateral limits of trenches associated with historical debris disposal activities at the site. While many anomalies coincide with surficial metallic debris piles, several elongated anomalies consistent with trenches were identified (anomalies A and B). Two additional anomalous areas were identified that were consistent with metallic debris pits or emplaced metallic debris (anomalies E and D). Lesser amounts of metal masses were interpreted to be present in the area of Anomaly I (an area devoid of vegetation) and Anomaly F.

Anomaly Q is adjacent to a former access road. While this area did not present a definitive magnetic anomaly, EM61 data suggest conductive metallic debris is present. Due to the proximity of this anomaly to that former access road, this feature may be a result of scattered/discarded or disposed metallic debris that may have been associated with historic disposal or transportation activities. The area immediately north of anomaly Q is another area devoid of

vegetation. While the data suggest some metallic debris is present at depth, the limits of this debris extended beyond the limits of the area devoid of vegetation.

Finally, the area of Lagoon D appears to contain metal masses at depth. It appears that the fill materials used to fill the lagoon contained metallic debris. A large metal mass is present within the lagoon limits in the area of Anomaly G. This feature exhibited a very large magnetic dipole response, suggesting a large metal mass or concentration of metal masses is present at depth.

These final results represent satisfactory implementation of the geophysical investigation to meet the DQOs proposed for this project and in meeting the characterization expectations of the USACE. Throughout the project, SAIC consulted with TES and the USACE/ANL project team to develop informed decisions to define areas warranting further investigation via intrusive means.

Utility and line locator surveys were useful in identify major utility trends in the area of the buildings and trending toward the main geophysical investigation area. These trends were substantiated by EM and magnetometer methods.

The EM31 terrain conductivity survey identified conductivity variations across the site that appeared to be related to changes in nonhomogeneous fill materials. The large amount of surficial and subsurface metal at site limited the ability to map the location and limits of nonnative, nonmetallic fill materials, if present.

The EM61 and magnetometer datasets best represent the location of metallic debris at the site. These anomalous zones are consistent with the magnetic susceptibility anomalies identified in the EM31 data. While the magnetometer data mirrored the EM61 data, the EM61 high-sensitivity metal detector survey results provide better lateral resolution of subsurface metallic debris.

Overall, the geophysical investigation was successful at identifying the lateral limits of historical debris activities at the site, and the work plan objectives have been met.

6.3 Recommendations

Geophysical data results suggest that subsurface metal is present across a wide area within the limits of the geophysical survey area. Many of these anomalies are interpreted to represent smaller, localized metallic debris; however, several features consistent with waste pits and/or trenches were identified.

In order to substantiate the nature of the interpreted trenches, investigation via intrusive methods would be necessary. Due to the nature of the debris that was reportedly buried at the site and results of this geophysical investigation, a soil boring program was planned. Optimally located soil borings were sited using the results of this investigation in consultation with USACE and TES project team to better characterize any adverse environmental impact associated with historical disposal activities. Trench locations over utility intersections were requested to interrogate linear features. Additionally, boring locations were requested in and around anomalies of interest. Locations for the proposed intrusive investigation were provided. Several conference calls were held with the TES project team and representatives of USACE and ANL to refine these locations. The data represented on the attached map and in the tables contained within this report reflect the actual trench locations (Table 2) and supplementary boring locations (Table 3). Results of confirmatory trenching and soil borings are disused in project deliverables provided by others.

7.0 REFERENCES

SAIC, GP-002, *Geophysical Procedure for Surface Electromagnetic Surveys.*

SAIC, GP-004, *Geophysical Procedure for Surface Magnetic Surveys*.

SAIC, GP-007, *Geophysical Procedure for Mapping with Global Positioning Systems*.

USACE, EM 1110-1-1802 (August 31, 1995), *Geophysical Exploration for Engineering and Environmental Investigations.*

USACE, EM 1110-1-1003 (July 1, 2003), *NAVSTAR Global Positioning System Surveying.*

USACE, ETL 1110-1-184 (April 1, 1998), *Use of the U.S. Coast Guard Differential Global Positioning System and the Continuously Operating Reference Station System.*

TABLES

Table 1
Integrated Geophysical Survey Results

Easting (US Ft)	Northing (US Ft)	Anomaly ID	Photo	Map Location	Comment	Interpretation
1697690.0	654749.6	A	Photo 06	Northeast	Broad. linear area of conductivity with a large ferrous signature. No surficial evidence.	Consistent with trenches filled with metallic debris.
1697906.1	654730.9	B	Photo 23	Northeast	Broad, linear area of conductivity with a large ferrous signature. No surficial evidence	Consistent with trenches filled with metallic debris.
1698001.8	654302.7	C		Southeast	Broad area of conductivity with a large ferrous signature. Feature is approximately 25 feet wide and 250 feet long. No surficial evidence	This area identified as former railroad sidings on historic drawings
1697904.1	654506.5	D	Photo 21	Central East	Broad area of conductivity with some significant ferrous features. Other debris is scattered around the surface, however no other surface evidence is present to explain the aerial extent of this feature.	The anomalous extent is consistent with debris or waste pit containing metallic debris
1697900.7	654580.1	E	Photo 21	Central East	Broad area of conductivity with some significant ferrous features. A large metallic debris pile was present in the center of this anomalous area and other debris is scattered around the surface, however no other surface evidence is present to explain the aerial extent of this feature.	The anomalous extent is consistent with debris or waste pit containing metallic debris
1698131.9	654561.3	F	Photo 24 and 25	Eastern	Broad area of conductivity with some variability. The eastern limit of this feature is located at the edge of a two- to three-foot topographical slope which probably defines the limit of the debris.	Varying amounts of metallic debris present at depth. Probably a result of metallic debris comingled in emplaced fill materials.
1697681.4	654297.6	G	Photo 7, 17	South Central	Small area of high conductivity with a significant ferrous signature	This feature is interpreted to represent a localized buried metallic object or waste pit filled with metallic debris
1697595.8	654626.6	H	Photo 11	North Central	Rectangular anomaly of ferrous origin	Structure associated with sewage disposal system filter beds
1698034.3	654664.0	I		Northeast	Located in an area devoid of vegetation. Large area of varying conductivity with ferrous signature	May represent episodes of placement of metallic debris-laden material or represent a shallow trench filled with metallic debris
1697708.8	654679.4	J		North Central	Area of elevated conductivity with a poorly defined magnetic response. This area is due south of trench-like anomalies associated with anomalous area A.	May represent an area of emplaced fill materials with metallic component.
1698062.2	654228.4	K		Southeast	Linear feature suggesting ferrous metal at depth.	The shape of this anomaly is consistent with an old railroad spur visible on historic aerial photos.
1697685.0	654164.0	L	Photo 15	Southeast	Linear anomaly located at the mouth of a drainage ditch. High ferrous content.	This anomaly is consistent with a buried metallic pipe which is part of the drainage trench
1697635.1	654310.5	M	Photo 12, 17	Central	Area of high conductivity, with isolated ferrous signatures throughout	This anomaly is consistent with Lagoon D. Scattered magnetometer anomalies throughout may be from metallic debris comingled with fill materials.
1697656.9	654499.1	N	Photo 8, 9, 10, 13	Central	Area of high conductivity, with varying ferrous content throughout. Coincides with reinforced concrete debris piles.	This response is most likely associated with reinforce concrete debris at the surface. Features at depth if present are masked.
1697741.1	654603.6	O		Central	Area of higher conductivity, with varying ferrous content throughout. The limits of this area coincide with a three foot high soil mound	This anomaly is most likely associated with subsurface metallic debris beneath or within the soil mound.
1697795.7	654605.1	P	Photo 20	Central	Area of high conductivity, with varying ferrous content throughout. Coincides with reinforced concrete and other metallic debris piles.	This response is most likely associated with reinforce concrete debris at the surface. Features at depth if present are masked.
1697296.7	65580.2	Q	Photo 01	Northeast	Broad, conductive anomaly located immediately north of a former access road that is visible on historical aerial photo. Magnetic signature is less pronounced.	May be a result of scattered/discard or disposed metallic debris that may have been associated with historic disposal or transportation activities.
1697522.8	654740.7	R		North Central	Localized conductivity anomaly adjacent to a slope of a soil mound	May be associated with metallic debris within the soil mound or below original grade level.
1697413.6	654773.5	S		North Central	Area of high conductivity that extends beyond the limits of a soil mound. Varying amounts of metal.	Metallic debris at depth. The inhomogeneous nature does not lend to a well defined debris pit.
1697976.7	654152.3	T		Southeast	Area of high conductivity that extends southward out of survey area	This area is consistent with the northeast corner of Lagoon C. Scattered EM and magnetometer anomalies throughout may be from metallic debris comingled with fill materials.

Coordinates in US State Plane, 1983, Ohio North 3401, US Survey Feet

Table 2. Proposed Boring Locations

Proposed 7G Borings near Utilities		
Easting (US Ft)	Northing (US Ft)	Proposed Boring ID
1696670.2	653957.4	7G-1
1696688.9	653951.1	7G-2
1696696.1	654089.9	7G-3
1696710.8	654087.9	7G-4
1696747.9	654345.5	7G-5
1696748.9	654077.8	7G-6
1696762.7	654276.9	7G-7
1696779.4	654086.3	7G-8
1696780.4	654328.7	7G-9
1696806.3	653947.2	7G-10
1696812.6	654461.3	7G-11
1696826.7	654024.3	7G-12
1696827.6	654311.4	7G-13
1696830.3	654092.5	7G-14
1696841.4	654345.5	7G-15
1696842.4	654452.8	7G-16
1696858.8	654343.5	7G-17
1696873.6	654470.5	7G-18
1696908.0	654327.8	7G-19
1696930.0	654461.9	7G-20
1696939.5	654345.5	7G-21
1696955.3	654014.8	7G-22
1696975.6	654462.9	7G-23
1697001.5	654346.5	7G-24
1697010.7	654014.1	7G-25
1697020.9	654345.5	7G-26
1697057.6	654442.6	7G-27
1697059.6	654342.5	7G-28
1697123.6	654325.1	7G-29
1697136.4	654018.7	7G-30
1697142.9	654353.7	7G-31
1697148.5	654517.7	7G-32
1697242.7	654344.5	7G-33
1697272.5	654435.4	7G-34
1697285.3	654510.2	7G-35
1697354.5	654322.2	7G-36
1697429.7	654009.5	7G-37
1697459.2	654016.7	7G-38
1697473.0	654131.6	7G-39
1697483.2	654445.5	7G-40
1697498.9	654147.3	7G-41
Coordinates in US State Plane, 1983, Ohio North 3401, US Survey Feet		

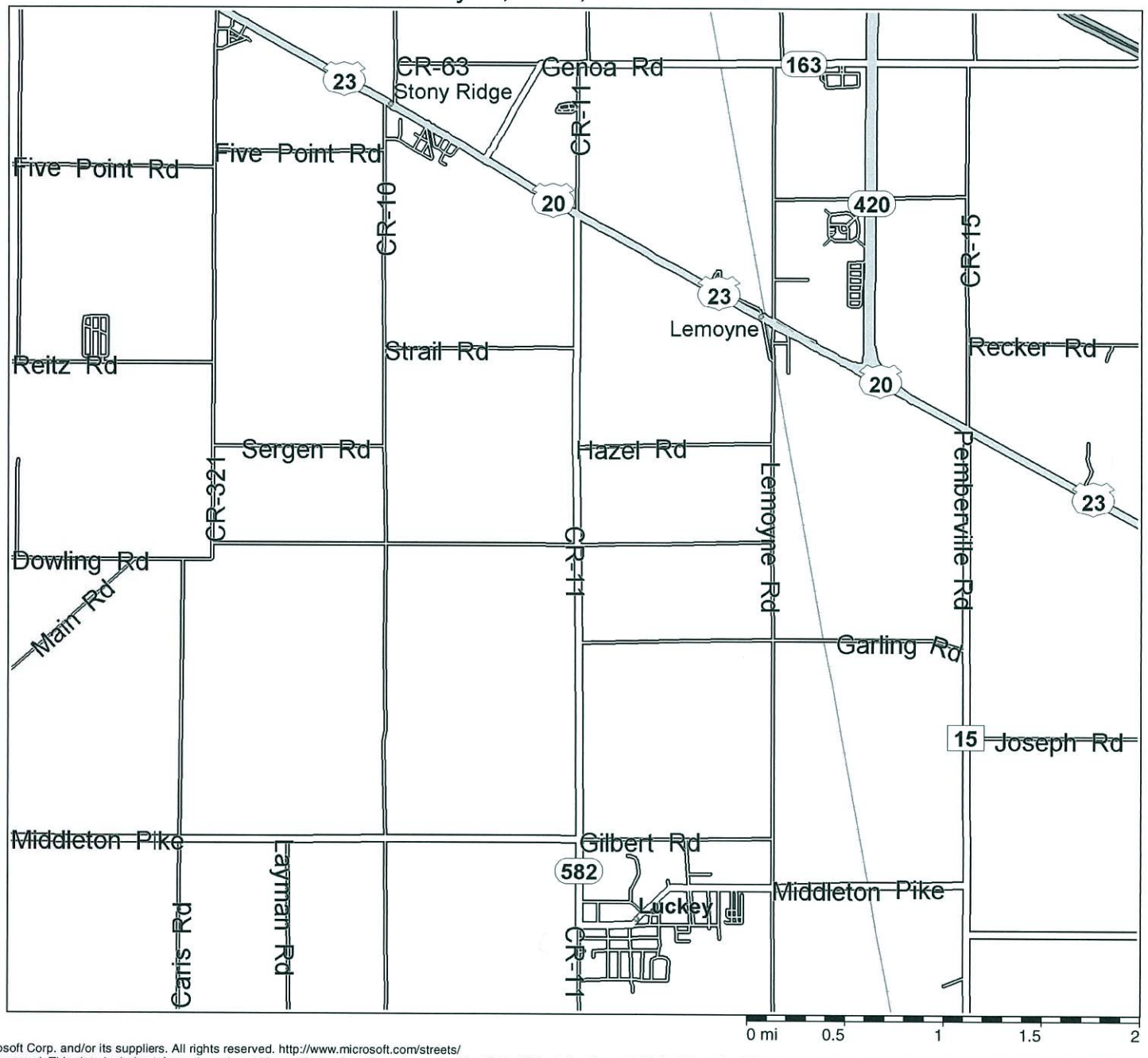
Proposed Supplemental Borings		
Easting (US Ft)	Northing (US Ft)	Proposed Boring ID
1696827.0	654027.9	A
1697615.0	654222.8	B
1698109.8	654239.2	C
1697565.8	654318.6	D
1697739.1	654325.1	E
1697975.0	654318.6	F
1698049.8	654316.9	G
1697132.4	654354.0	H
1697901.1	654449.5	I
1697846.7	654490.5	J
1697962.5	654494.4	K
1697852.2	654584.6	L
1697908.0	654646.0	M
1697883.4	654699.2	N
1697959.9	654725.1	O
1697953.0	654778.2	P
1697860.4	654801.5	Q
1698137.0	654783.8	R
1698156.4	654681.4	S
1698171.1	654595.5	T
1698188.9	654502.6	U
1698213.5	654381.2	V

Table 3. Trench Locations

Easting (US Ft)	Northing (US Ft)	Proposed Boring ID
1696613.374	654003.0796	Trench 01
1696716.517	654075.5674	Trench 02
1697172.841	653992.3454	Trench 03
1697442.426	653995.4355	Trench 04
1697674.605	654021.586	Trench 05
1697021.575	654329.9662	Trench 06
1696995.834	654334.0356	Trench 06a
1697162.205	654322.7569	Trench 07
1697472.826	654329.0366	Trench 08
1697479.359	654200.4131	Trench 09

Coordinates in US State Plane, 1983, Ohio North 3401, US Survey Feet

Lemoyne, Ohio, United States



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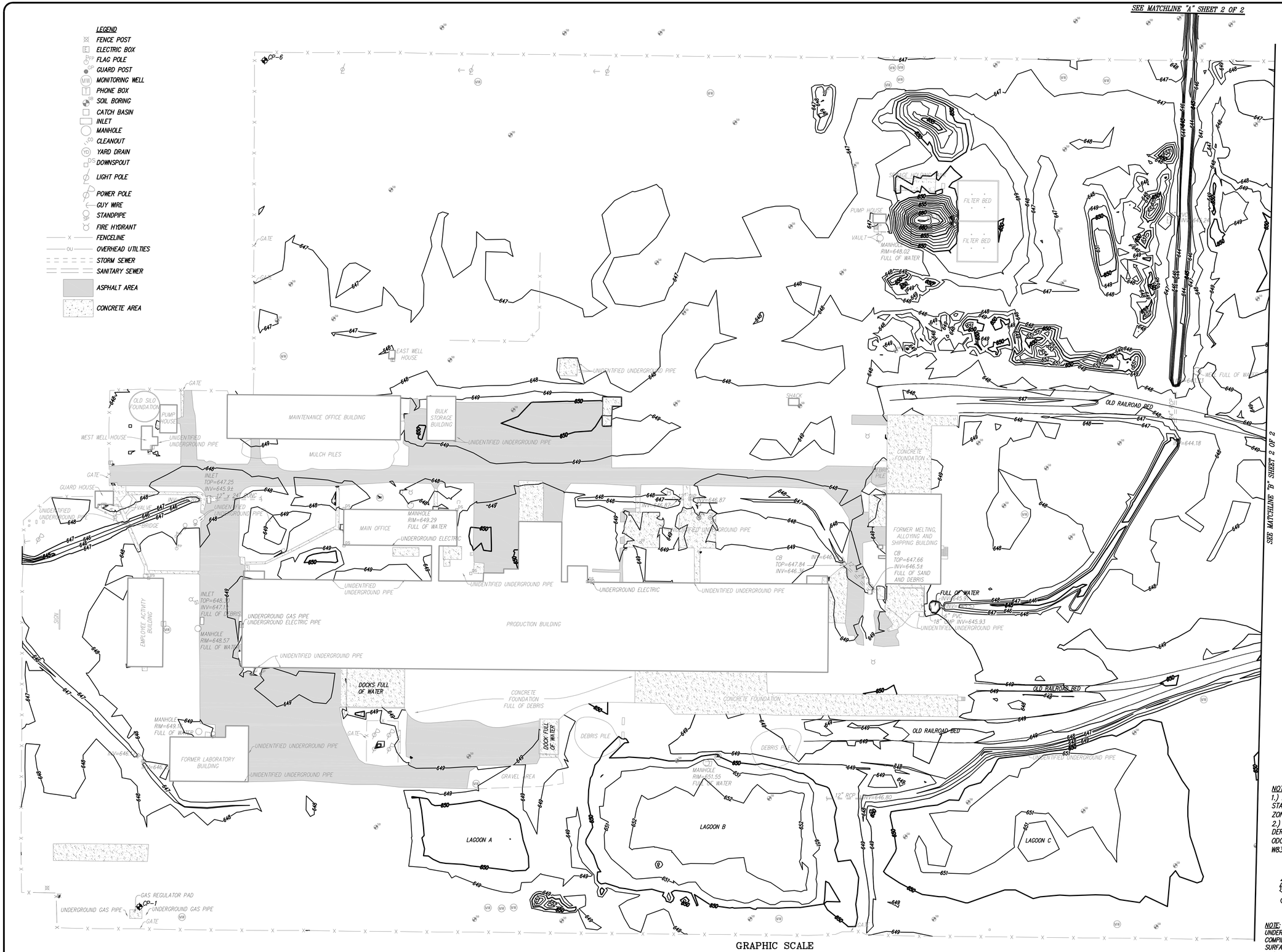

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

NOTES:
1.) HORIZONTAL DATUM IS BASED ON THE OHIO STATE PLANE COORDINATE SYSTEM – NORTH ZONE (NAD 83).
2.) VERTICAL DATUM IS BASED ON NAVD 88 AS DERIVED FROM GPS OBSERVATIONS UTILIZING ODOT VRS (OHLU BASE – N41°43'16.40586", W83°31'34.58804").

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REVISIONS

TOPOGRAPHIC SURVEY OF THE FORMER BERYLLIUM PLANT
TROY TOWNSHIP
WOOD COUNTY, OHIO
FOR: TES, LLC

SCALE: 1"=50'
DATE: 12/01/09
DRAWN: BME
DESIGNED:
CHECKED: BME
XREF:
JOB NO.: 090353VA001

LUCKEY SITE

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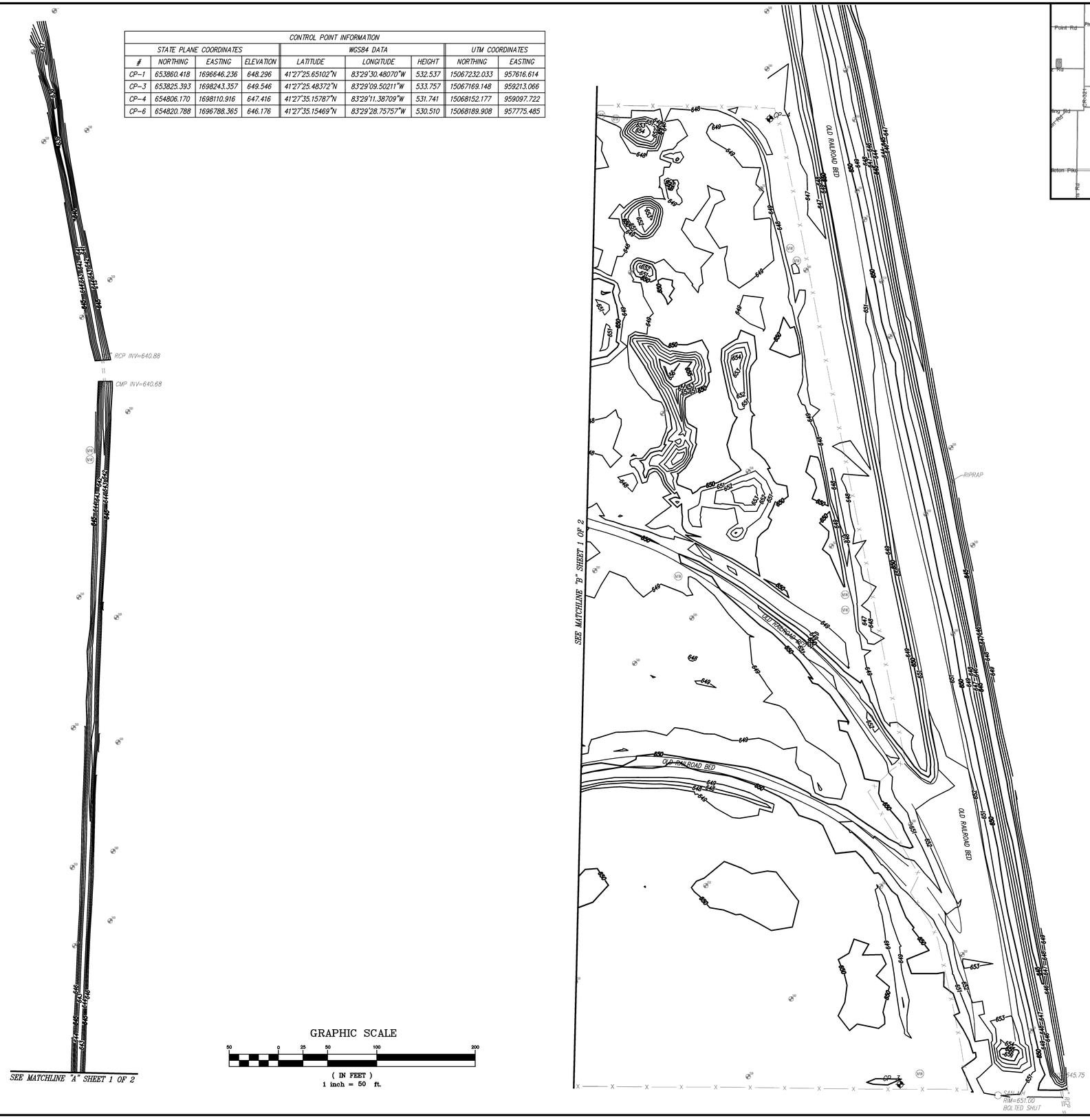
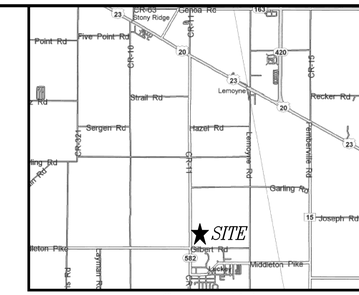
LEGEND

- FENCE POST
- ELECTRIC BOX
- FLAG POLE
- GUARD POST
- MONITORING WELL
- PHONE BOX
- SOIL BORING
- CATCH BASIN
- INLET
- MANHOLE
- CLEANOUT
- YARD DRAIN
- DOWNSPOUT
- LIGHT POLE
- POWER POLE
- GUY WIRE
- STANDPIPE
- FIRE HYDRANT
- FENCELINE
- OVERHEAD UTILTIES
- STORM SEWER
- SANITARY SEWER
- ASPHALT AREA
- CONCRETE AREA

CONTROL POINT INFORMATION

STATE PLANE COORDINATES				WGS84 DATA			UTM COORDINATES	
#	NORTHING	EASTING	ELEVATION	LATITUDE	LONGITUDE	HEIGHT	NORTHING	EASTING
CP-1	653860.418	1696646.236	648.296	41°27'25.65102"N	83°29'30.48070"W	532.537	15067232.033	957616.614
CP-3	653825.393	1698243.357	649.546	41°27'25.48372"N	83°29'09.50211"W	533.757	15067169.148	959213.066
CP-4	654806.170	1698110.916	647.416	41°27'35.15787"N	83°29'11.38709"W	531.741	15068152.177	959097.722
CP-6	654820.788	1696788.365	646.176	41°27'35.15469"N	83°29'28.75757"W	530.510	15068189.908	957775.485





VICINITY MAP
NOT TO SCALE

NORTH

NOTES:
1.) HORIZONTAL DATUM IS BASED ON THE OHIO STATE PLANE COORDINATE SYSTEM – NORTH ZONE (NAD 83).
2.) VERTICAL DATUM IS BASED ON NAVD 88 AS DERIVED FROM GPS OBSERVATIONS UTILIZING ODOT VRS (OHLU BASE – N41°43'16.40586", W83°31'34.58804").

2 WORKING DAYS
BEFORE YOU DIG
CALL TOLL FREE 800-362-2764
OHIO UTILITIES PROTECTION SERVICE

NOTE:
UNDERGROUND UTILITIES ARE PLOTTED FROM A COMPILATION OF AVAILABLE RECORD INFORMATION AND SURFACE INDICATIONS OF UNDERGROUND STRUCTURES AND MAY NOT BE INCLUSIVE. PRECISE LOCATIONS AND THE EXISTENCE OR NON EXISTENCE OF UNDERGROUND UTILITIES CANNOT BE VERIFIED. PLEASE NOTIFY THE OHIO UTILITY PROTECTION SERVICE AT 1-800-362-2764 BEFORE ANY PERIOD OF EXCAVATION OR CONSTRUCTION ACTIVITY.

STATE OF OHIO
BRIAN M. ELBE
8321
REGISTERED
PROFESSIONAL SURVEYOR

KLEINGERS & ASSOCIATES
6305 Centre Park Drive, West Chester, OH 45069
(513) 779-7851 Fax (513) 779-7852
www.KLEINGERS.com

REVISIONS

TOPOGRAPHIC SURVEY OF THE FORMER BERYLLIUM PLANT
TROY TOWNSHIP
WOOD COUNTY, OHIO
FOR: TES, LLC

SCALE: 1"=50'
DATE: 12/01/09
DRAWN: BME
DESIGNED:
CHECKED: BME
XREF:
JOB NO.: 090353VA001

LUCKEY SITE

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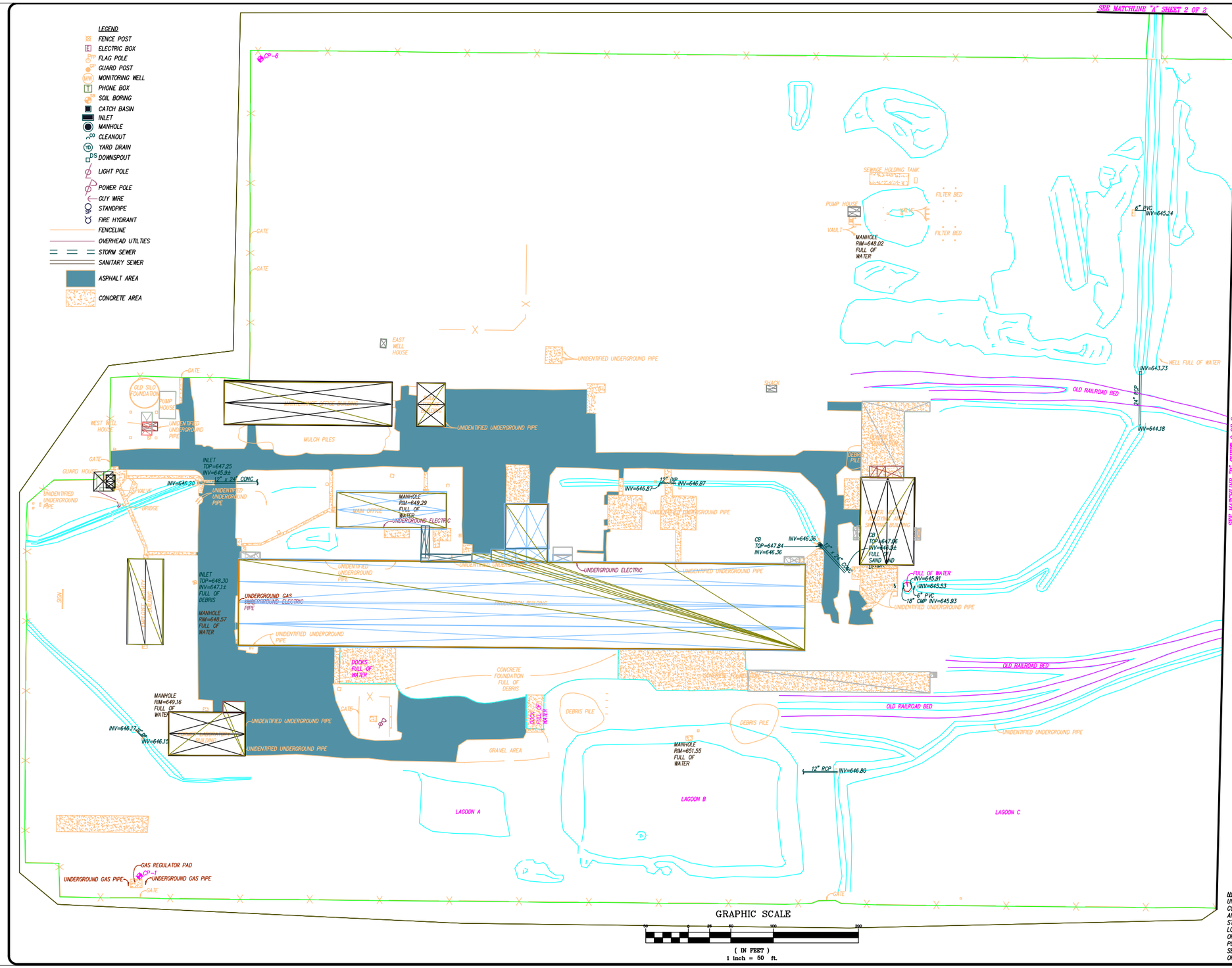
S:\Temp\090353VA001\090353VA001.dwg, PAGE2, 12/21/2010 3:43:08 PM, brianelbe



NORTH

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KLEINGERS & ASSOCIATES
176[illegible]
(810) 985-3994 Fax (810) 985-3983
www.KLEINGERS.com

REVISIONS

TOPOGRAPHIC SURVEY OF THE FORMER BERYLLIUM PLANT
TROY TOWNSHIP
WOOD COUNTY, OHIO
FOR: TES, LLC

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DATE: 12/01/09
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CHECKED: BME
XREF:
JOB NO.: 090353VA001

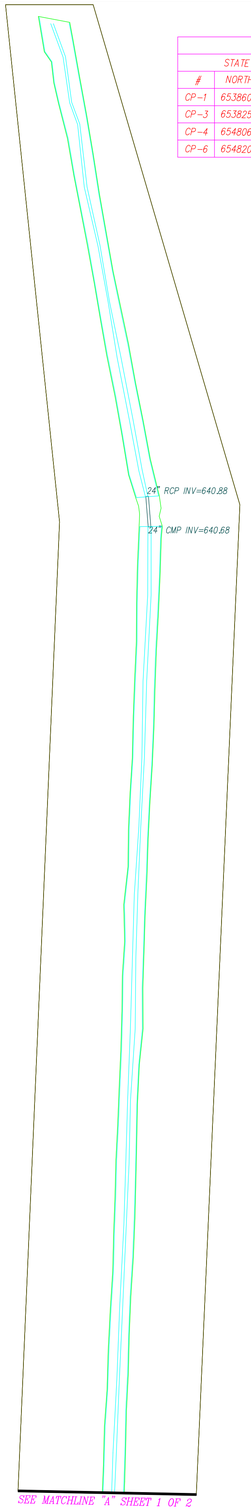
LUCKEY SITE

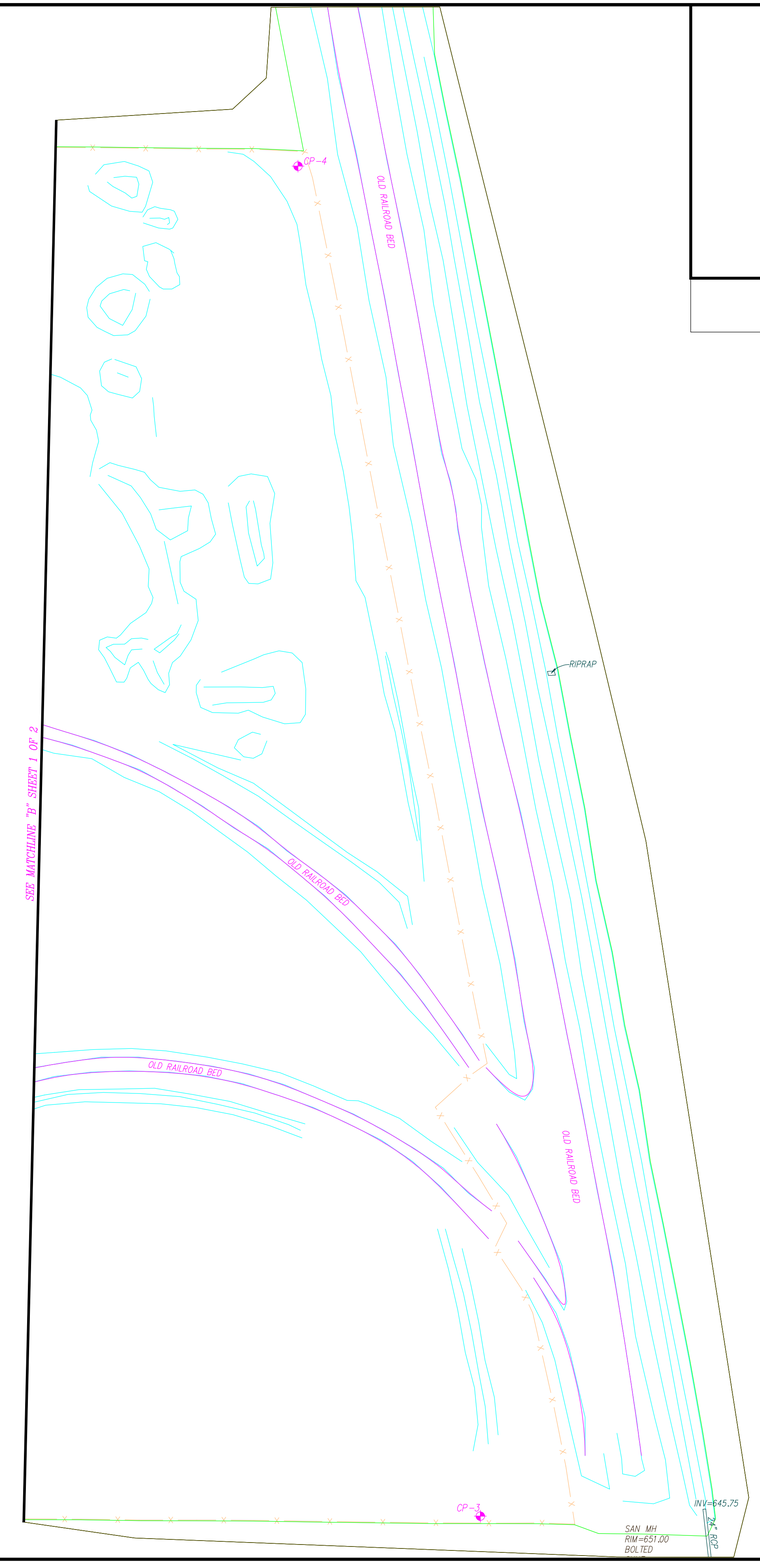
LEGEND

- FENCE POST
- ELECTRIC BOX
- FLAG POLE
- GUARD POST
- MONITORING WELL
- PHONE BOX
- SOIL BORING
- CATCH BASIN
- INLET
- MANHOLE
- CLEANOUT
- YARD DRAIN
- DOWNSPOUT
- LIGHT POLE
- POWER POLE
- GUY WIRE
- STANDPIPE
- FIRE HYDRANT
- FENCELINE
- OVERHEAD UTILTIES
- STORM SEWER
- SANITARY SEWER
- ASPHALT AREA
- CONCRETE AREA

CONTROL POINT INFORMATION

STATE PLANE COORDINATES				WGS84 DATA			UTM COORDINATES	
#	NORTHING	EASTING	ELEVATION	LATITUDE	LONGITUDE	HEIGHT	NORTHING	EASTING
CP-1	653860.418	1696646.236	648.296	41°27'25.65102"N	83°29'30.48070"W	532.537	15067232.033	957616.614
CP-3	653825.393	1698243.357	649.546	41°27'25.48372"N	83°29'09.50211"W	533.757	15067169.148	959213.066
CP-4	654806.170	1698110.916	647.416	41°27'35.15787"N	83°29'11.38709"W	531.741	15068152.177	959097.722
CP-6	654820.788	1696788.365	646.176	41°27'35.15469"N	83°29'28.75757"W	530.510	15068189.908	957775.485

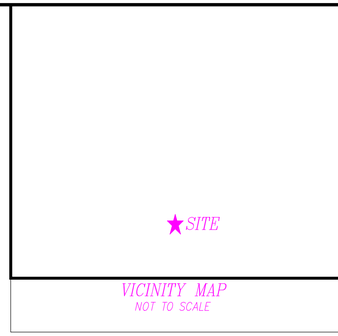




GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.



VICINITY MAP
NOT TO SCALE

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KLEINGERS & ASSOCIATES
17075 SCHAEFER HIGHWAY, DETROIT, MICHIGAN 48235
(313) 935-3899 Fax (313) 935-3931
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REVISIONS

TOPOGRAPHIC SURVEY OF THE FORMER BERYLLIUM PLANT
TROY TOWNSHIP
WOOD COUNTY, OHIO
FOR: TES, LLC

SCALE: 1"=50'
DATE: 12/01/09
DRAWN: BME
DESIGNED:
CHECKED: BME
XREF:
JOB NO.: 090353VA001

LUCKEY SITE

MONITORING WELL LOCATIONS

Former Brush-Wellman Site
21200 Luckey Road
in the SW 1/4 of Sec. 21, T6N, R12E
Wood County, Ohio

Pt. No.	***Northing***	***Easting***	***Level Elev.***	***Designation***	***Adj. ELEV.***
	Ohio (zone 3401) SPC ~ NAD 83 (NSRS 2007		***NAVD 88***		****SEE NOTE***
					(+0.39')
Monitoring Wells					
1002	655223.118	1697191.251	648.23	MW 31 I PVC	***648.62***
1006	654974.135	1697561.476	649.60	MW 51 S PVC	***649.99***
1008	654974.030	1697572.217	649.72	MW 52 I PVC	***650.11***
1012	654971.754	1697889.011	649.21	MW 53 I PVC	***649.60***
1014	654819.529	1698132.118	649.80	MW 54 S PVC	***650.19***
1018	654801.750	1698135.232	649.72	MW 55 I PVC	***650.11***
1021	654025.726	1697310.951	653.45	MW 24 RS PVC	***653.84***
1022	654025.704	1697331.013	653.03	MW 56 I PVC	***653.42***
1026	654304.991	1697031.647	652.56	MW 50 I PVC	***652.95***
1029	654793.139	1697495.608	649.90	MW 2 S PVC	***650.29***
1033	654799.136	1697509.436	650.13	MW 1 I PVC	***650.52***
1035	654801.573	1697694.778	not shot	MW 26 S PVC	
1038	654800.646	1697729.795	649.62	MW 22 RS PVC	***650.01***
1042	654512.831	1697394.459	651.07	MW 21 I PVC	***651.46***
1045	654806.061	1697954.291	650.88	MW 19 I PVC	***651.27***
1047	654796.777	1697030.357	648.90	MW 25 I PVC	***649.29***

PVC = Top of PVC tube inside of steel well casing.
* Note: Elevations are based on SBM being the top of MV-01(I) being 650.52 as per 1998 survey, supplied by U.S.A.S.E.
(added 0.39' to original elevations)

2/21/2011

Dennis J. Pritscher, P.S. #7190 Date
Waterville Survey Company
419-215-0632

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
DATABASE =  ,PROGRAM = datasheet, VERSION = 7.85
1        National Geodetic Survey,   Retrieval Date = DECEMBER 23, 2010
 MC1022 ***********************************************************************
 MC1022  DESIGNATION -  N 316
 MC1022  PID         -  MC1022
 MC1022  STATE/COUNTY-  OH/OTTAWA
 MC1022  USGS QUAD   -  GENOA (1988)
 MC1022
 MC1022                        *CURRENT SURVEY CONTROL
 MC1022  ___________________________________________________________________
 MC1022* NAD 83(1986)-  41 33 32.     (N)    083 20 20.     (W)     SCALED
 MC1022* NAVD 88     -       182.920  (meters)     600.13   (feet)  ADJUSTED
 MC1022  ___________________________________________________________________
 MC1022  GEOID HEIGHT-         -35.46  (meters)                     GEOID09
 MC1022  DYNAMIC HT  -         182.847 (meters)     599.89  (feet)  COMP
 MC1022  MODELED GRAV-     980,218.8   (mgal)                       NAVD 88
 MC1022
 MC1022  VERT ORDER  -  FIRST     CLASS II
 MC1022
 MC1022.The horizontal coordinates were scaled from a topographic map and have
 MC1022.an estimated accuracy of +/- 6 seconds.
 MC1022
 MC1022.The orthometric height was determined by differential leveling and
 MC1022.adjusted in June 1991.
 MC1022
 MC1022.The geoid height was determined by GEOID09.
 MC1022
 MC1022.The dynamic height is computed by dividing the NAVD 88
 MC1022.geopotential number by the normal gravity value computed on the
 MC1022.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 MC1022.degrees latitude (g = 980.6199 gals.).
 MC1022
 MC1022.The modeled gravity was interpolated from observed gravity values.
 MC1022
 MC1022;                    North         East    Units  Estimated Accuracy
 MC1022;SPC OH N     -   210,460.      530,020.      MT  (+/- 180 meters Scaled)
 MC1022
 MC1022                          SUPERSEDED SURVEY CONTROL
 MC1022
 MC1022  NGVD 29 (06/03/92)  183.119  (m)          600.78   (f) ADJUSTED    1 2
 MC1022
 MC1022.Superseded values are not recommended for survey control.
 MC1022.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 MC1022.See file dsdata.txt to determine how the superseded data were derived.
 MC1022
 MC1022_U.S. NATIONAL GRID SPATIAL ADDRESS: 17TLG049034(NAD 83)
 MC1022_MARKER: I = METAL ROD
 MC1022_SETTING: 49 = STAINLESS STEEL ROD W/O SLEEVE (10 FT.+)
 MC1022_SP_SET: STAINLESS STEEL ROD
 MC1022_STAMPING: N 316 1980
 MC1022_PROJECTION: FLUSH
 MC1022_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
 MC1022_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 MC1022+SATELLITE: SATELLITE OBSERVATIONS - July 28, 2004
 MC1022_ROD/PIPE-DEPTH: 4.0  meters
```

```
MC1022
MC1022  HISTORY     - Date     Condition        Report By
MC1022  HISTORY     - 1980     MONUMENTED       NGS
MC1022  HISTORY     - 20040728 GOOD             OHDT
MC1022
MC1022                          STATION DESCRIPTION
MC1022
MC1022'DESCRIBED BY NATIONAL GEODETIC SURVEY 1980
MC1022'1.7 KM SE FROM CLAY CENTER.
MC1022'1.7 KILOMETERS (1.05 MILES) SOUTHEAST ALONG THE PENN CENTRAL RAILROAD
MC1022'FROM THE CROSSING OF CLAY ROAD AT CLAY CENTER, AT THE JUNCTION OF
MC1022'MARTIN-WILLISTON ROAD, 41.8 METERS (137.0 FEET) SOUTHEAST OF THE
MC1022'CENTER OF MARTIN-WILLISTON ROAD, 28.4 METERS (93.0 FEET) SOUTHWEST
MC1022'OF THE SOUTHWEST RAIL OF THE TRACKS, 25.5 METERS (83.5 FEET)
MC1022'WEST-NORTHWEST OF THE WEST END OF A BRIDGE OVER SOUTH BRANCH TURTLE
MC1022'CREEK, 3.35 METERS (11.0 FEET) NORTHEAST OF A POWER POLE.
MC1022'NOTE--ROD DRIVEN TO REFUSAL AT 4.0 METERS.
MC1022'THE MARK IS 0.3 METERS  SW FROM A WITNESS POST.
MC1022'THE MARK IS 2.0 M BELOW TRACKS.
MC1022
MC1022                          STATION RECOVERY (2004)
MC1022
MC1022'RECOVERY NOTE BY OHIO DEPARTMENT OF TRANSPORTATION 2004 (JS)
MC1022'RECOVERED IN GOOD CONDITION.

*** retrieval complete.
Elapsed Time = 00:00:00
```

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
DATABASE =  ,PROGRAM = datasheet, VERSION = 7.85
1        National Geodetic Survey,   Retrieval Date = DECEMBER 23, 2010
 MC1836 ***********************************************************************
 MC1836  DESIGNATION -  WYNN
 MC1836  PID         -  MC1836
 MC1836  STATE/COUNTY-  OH/LUCAS
 MC1836  USGS QUAD   -  WALBRIDGE (1994)
 MC1836
 MC1836                        *CURRENT SURVEY CONTROL
 MC1836  ___________________________________________________________________
 MC1836* NAD 83(2007)-  41 37 23.72523(N)    083 25 39.59133(W)     ADJUSTED
 MC1836* NAVD 88     -       183.3    (meters)     601.     (feet)  GPS OBS
 MC1836  ___________________________________________________________________
 MC1836  EPOCH DATE  -        2002.00
 MC1836  X           -     546,535.345 (meters)                     COMP
 MC1836  Y           -  -4,743,625.992 (meters)                     COMP
 MC1836  Z           -   4,214,513.554 (meters)                     COMP
 MC1836  LAPLACE CORR-          -1.87  (seconds)                    DEFLEC09
 MC1836  ELLIP HEIGHT-         147.873 (meters)          (02/10/07) ADJUSTED
 MC1836  GEOID HEIGHT-         -35.41  (meters)                     GEOID09
 MC1836
 MC1836  ------- Accuracy Estimates (at 95% Confidence Level in cm) --------
 MC1836  Type    PID    Designation                     North   East  Ellip
 MC1836  ------------------------------------------------------------------
 MC1836  NETWORK MC1836 WYNN                              1.16   0.74   2.18
 MC1836  ------------------------------------------------------------------
 MC1836
 MC1836.The horizontal coordinates were established by GPS observations
 MC1836.and adjusted by the National Geodetic Survey in February 2007.
 MC1836
 MC1836.The datum tag of NAD 83(2007) is equivalent to NAD 83(NSRS2007).
 MC1836.See National Readjustment for more information.
 MC1836.The horizontal coordinates are valid at the epoch date displayed above.
 MC1836.The epoch date for horizontal control is a decimal equivalence
 MC1836.of Year/Month/Day.
 MC1836
 MC1836.The orthometric height was determined by GPS observations and a
 MC1836.high-resolution geoid model.
 MC1836
 MC1836.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 MC1836
 MC1836.The Laplace correction was computed from DEFLEC09 derived deflections.
 MC1836
 MC1836.The ellipsoidal height was determined by GPS observations
 MC1836.and is referenced to NAD 83.
 MC1836
 MC1836.The geoid height was determined by GEOID09.
 MC1836
 MC1836;                    North         East     Units Scale Factor Converg.
 MC1836;SPC OH N     -   217,687.870   522,693.165   MT  0.99998610   -0 36 33.9
 MC1836;SPC OH N     -   714,197.62  1,714,869.16   sFT  0.99998610   -0 36 33.9
 MC1836;UTM  17      - 4,610,795.109   297,757.843   MT  1.00010336   -1 36 47.1
 MC1836
 MC1836!             -  Elev Factor  x  Scale Factor =   Combined Factor
 MC1836!SPC OH N     -   0.99997681  x   0.99998610  =   0.99996291
```

```
MC1836!UTM  17      -   0.99997681  x   1.00010336  =   1.00008016
MC1836
MC1836:                Primary Azimuth Mark                     Grid Az
MC1836:SPC OH N     -  KAUFMAN                                  180 02 04.2
MC1836:UTM  17      -  KAUFMAN                                  181 02 17.4
MC1836
MC1836|---------------------------------------------------------------------|
MC1836| PID    Reference Object                     Distance      Geod. Az  |
MC1836|                                                           dddmmss.s |
MC1836| MC1760 KAUFMAN                            418.230 METERS 1792530.3 |
MC1836|---------------------------------------------------------------------|
MC1836
MC1836                          SUPERSEDED SURVEY CONTROL
MC1836
MC1836  ELLIP H (10/07/05)  147.869  (m)                        GP(       ) 4 1
MC1836  NAD 83(1995)-  41 37 23.72505(N)    083 25 39.59117(W) AD(       ) 1
MC1836  ELLIP H (04/01/98)  147.929  (m)                        GP(       ) 4 1
MC1836  NAD 83(1994)-  41 37 23.72501(N)    083 25 39.59113(W) AD(       ) 1
MC1836  NAD 83(1986)-  41 37 23.73769(N)    083 25 39.60739(W) AD(       ) 1
MC1836
MC1836.Superseded values are not recommended for survey control.
MC1836.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
MC1836.See file dsdata.txt to determine how the superseded data were derived.
MC1836
MC1836_U.S. NATIONAL GRID SPATIAL ADDRESS: 17TKG9775710795(NAD 83)
MC1836_MARKER: DD = SURVEY DISK
MC1836_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
MC1836_SP_SET: CONCRETE POST
MC1836_STAMPING: WYNN 1993
MC1836_MARK LOGO: OH-095
MC1836_MAGNETIC: R = STEEL ROD IMBEDDED IN MONUMENT
MC1836_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
MC1836+STABILITY: SURFACE MOTION
MC1836_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
MC1836+SATELLITE: SATELLITE OBSERVATIONS - 1993
MC1836
MC1836  HISTORY     - Date     Condition        Report By
MC1836  HISTORY     - 1993     MONUMENTED       OH-095
MC1836
MC1836                           STATION DESCRIPTION
MC1836
MC1836'DESCRIBED BY LUCAS COUNTY OHIO 1993
MC1836'THE STATION IS LOCATED IN LUCAS COUNTY, OHIO IN THE CITY OF OREGON.
MC1836'TO REACH THE STATION FROM SAINT CHARLES HOSPITAL AT THE INTERSECTION
MC1836'OF NAVARRE AVENUE (STATE ROUTE 2) AND WHEELING ROAD PROCEED EAST
MC1836'ALONG NAVARRE AVENUE 3.0 MILES TO ITS INTERSECTION WITH WYNN ROAD.
MC1836'TURN RIGHT AND PROCEED SOUTH ALONG WYNN ROAD 1.0 MILES TO ITS
MC1836'INTERSECTION WITH BROWN ROAD AND THE STATION ON THE LEFT IN THE
MC1836'SOUTHEAST CORNER OF THE INTERSECTION.
MC1836'THE STATION IS A 3.5 INCH BRASS LUCAS COUNTY ENGINEER DISK SET IN THE
MC1836'TOP OF A 12 INCH DIAMETER CONCRETE MONUMENT 0.3 FEET BELOW GROUND
MC1836'SURFACE AND IS STAMPED --WYNN 1993--.
MC1836'THE STATION IS 24.4 FEET SOUTH FROM THE CENTERLINE OF BROWN ROAD, 54.0
MC1836'FEET SOUTHEAST FROM A RAIL ROAD SPIKE AT THE INTERSECTION, 13.9 FEET
MC1836'EAST FROM A STORM DRAIN, AND 19.4 FEET EAST FROM A POWER POLE.

*** retrieval complete.
Elapsed Time = 00:00:00
```

Summary of the Monitoring Well Location Survey at the former Brush-Wellman site at 21200 Luckey Road, near Luckey, Ohio in Wood County.

Using a Trimble R8 GPS unit, connected to the Ohio Department of Transportation's V.R.S. network, we shot a N.G.S. vertical control point to calibrate our survey the required NAVD 88 datum. The NGS point shot has the designation "N 316", (P.I.D. MC1022). The elevation of this point is 600.13 feet on NAVD 88 Datum, as per the NGS data sheet. This point is located in Ottawa County, about 10.5 miles from the Brush-Wellman site.

After we calibrated to "MC1022", we took a second shot on it to verify the elevation. The second shot we called "1022CK", this elevation checked 0.02 feet off. We then checked into another NGS point to verify the horizontal control. The NGS point we used was "WYNN" (P.I.D. MC1836) in Lucas County, located about 6.5 miles from "MC1022" and about 12 miles from the Brush-Wellman site. We were 0.02 of a foot off on the horizontal coordinates [NAD 83 (NSRS 20007)] shown on the NGS data sheet. We were 0.13 of a foot off the record NAVD 88 elevation as shown in the Lucas County Engineers Office GIS database on this point.

We then shot two PK nails found at section corners near the Brush-Wellman site so that we would have local points, on the ground, on the same coordinate system if need later. We also shot two corners of the chain link fence to double-check the aerial photo that the well shots are superimposed on.

Then we set a R.R. Spike in a power pole near the N.W. corner or the Brush-Wellman site. We shot this with GPS to establish our site bench mark (SBM) on the NAVD 88 Datum.

We went through the site, with Carl the onsite rep from Terranear PMC, and shot with the GPS unit, all the wells that he specified. We then went back through the site a second time, again with Carl, and shot all the wells specified using a Leitz auto level to get the required vertical accuracy.

An aerial photo has been added to the site CAD drawing to aid in visualizing the well locations.

Included with this summary are the final deliverables (both in digital form and hard copy);

1. CAD Drawing with well locations shown on an aerial photo. (2 Hard Copies)
2. An Excel file with the well locations.
3. Copies of field notes.
4. Copies of NGS data sheets
5. Signed "Task Order Attachment D"
6. Invoice for our services. (Service Agreement No. "WATERVILLE92002.60")

Dennis J. Pritscher, P.S. 7190

Waterville Survey Company

419-215-0632

Appendix C

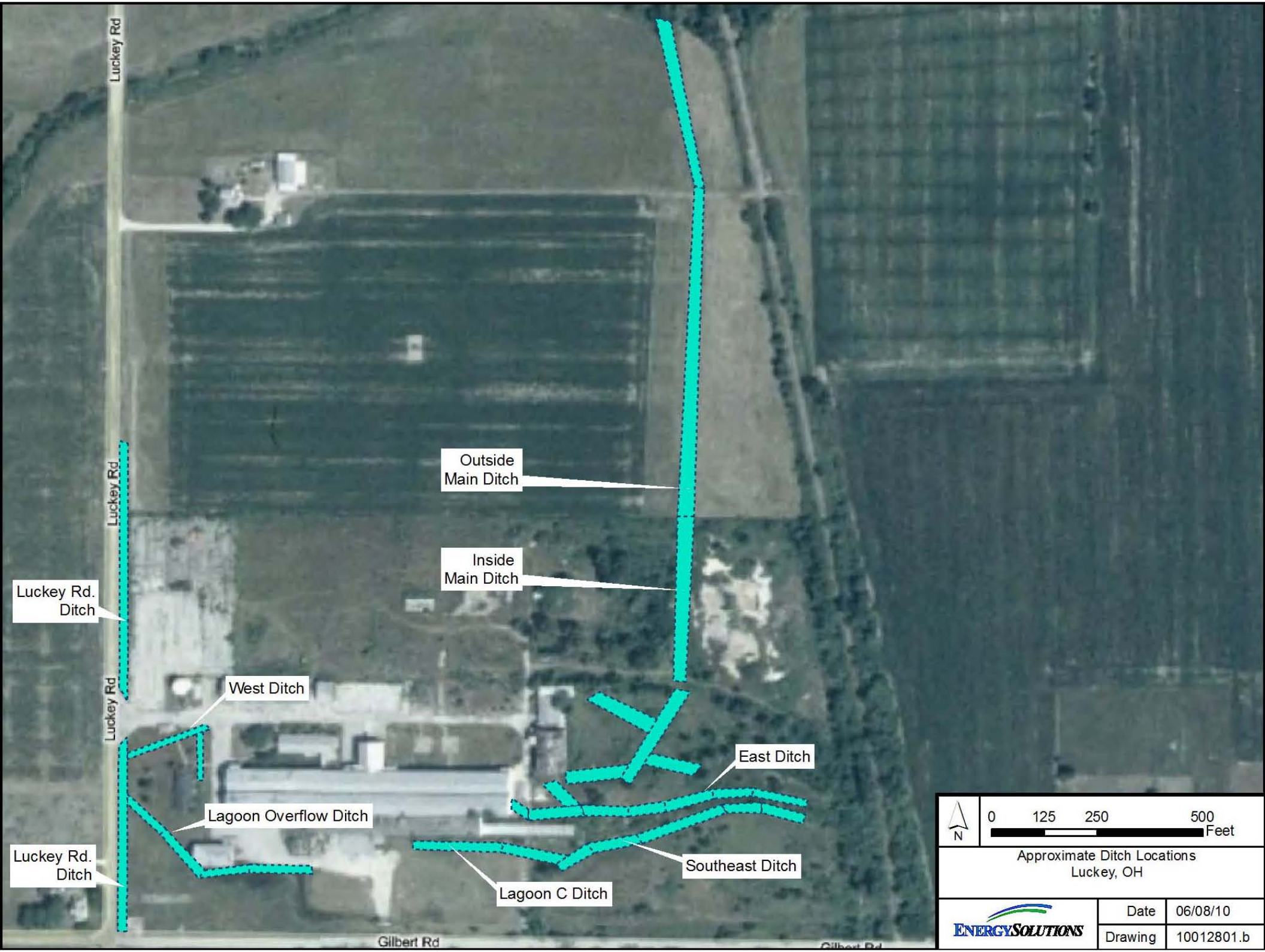
Additional Figures

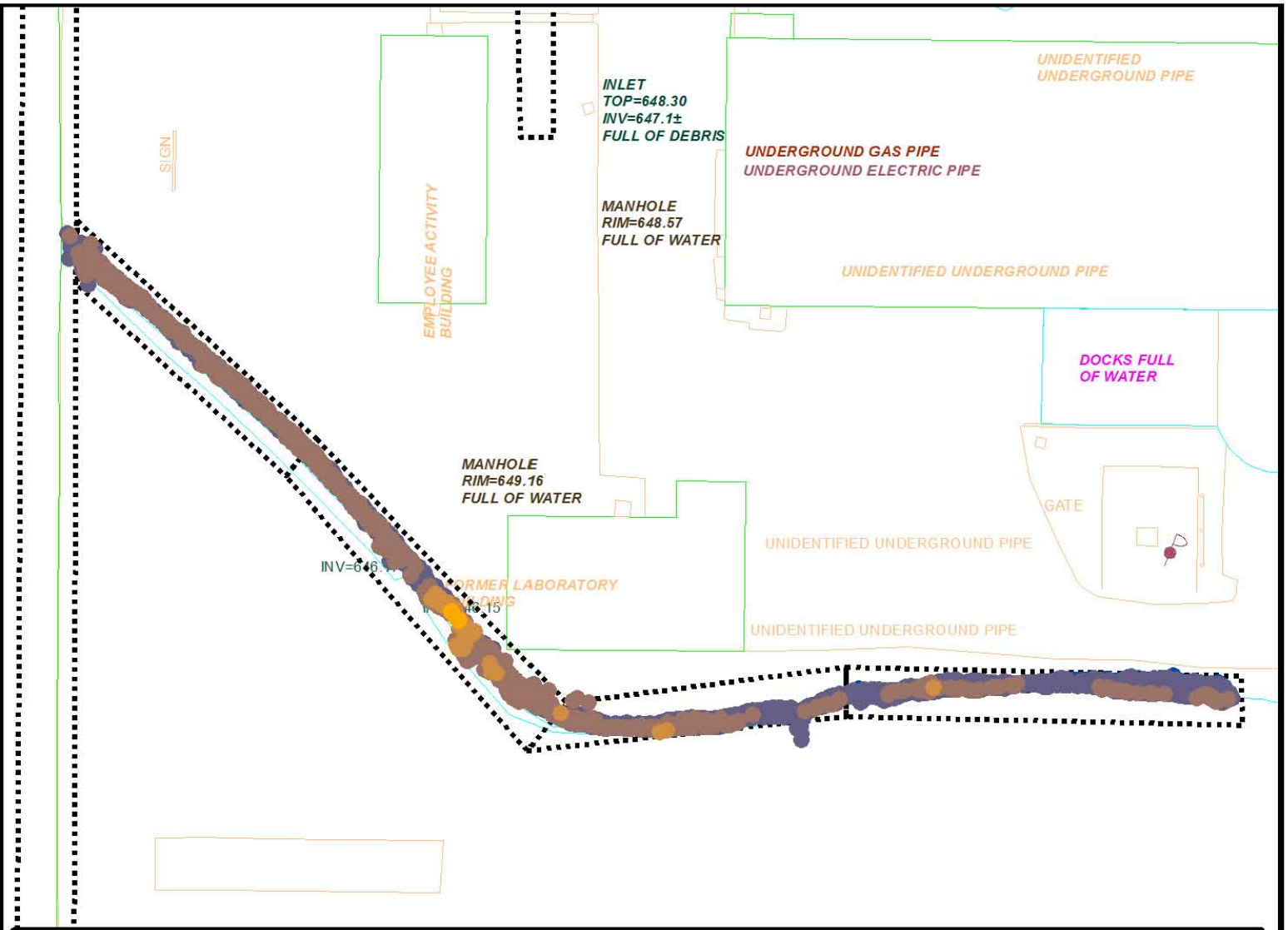
(Provided in Electronic Files)

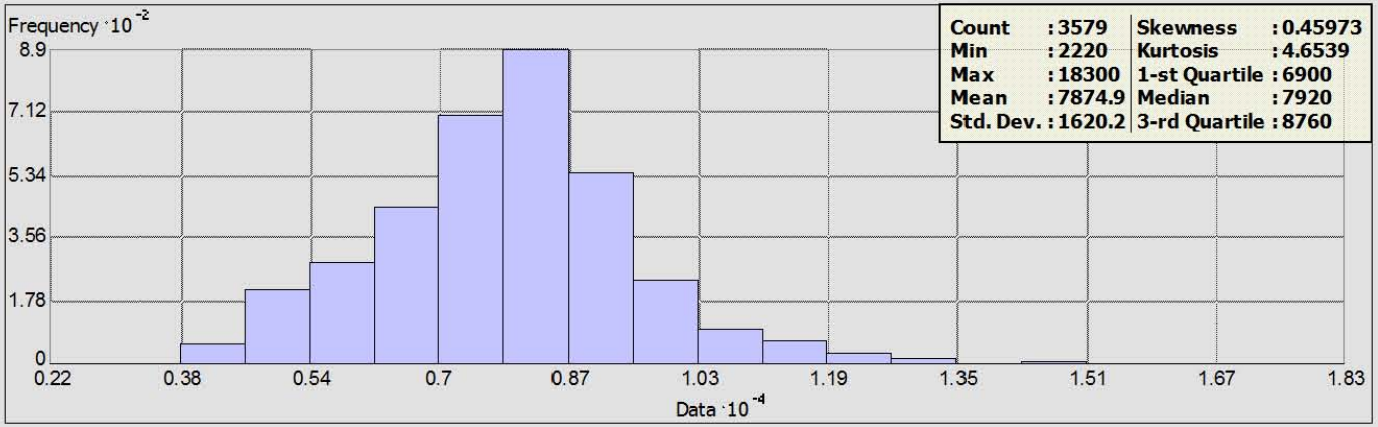
Ditches

Manholes

Trenches


Luckey Rd
Luckey Rd
Luckey Rd
Outside
Main Ditch
Inside
Main Ditch
Luckey Rd.
Ditch
West Ditch
East Ditch
Lagoon Overflow Ditch
Luckey Rd.
Ditch
Southeast Ditch
Lagoon C Ditch
Gilbert Rd
N
0 125 250 500
Feet
Approximate Ditch Locations
Luckey, OH
ENERGYSOLUTIONS
Date 06/08/10
Drawing 10012801.b





Count	: 3579	Skewness	: 0.45973
Min	: 2220	Kurtosis	: 4.6539
Max	: 18300	1-st Quartile	: 6900
Mean	: 7874.9	Median	: 7920
Std. Dev.	: 1620.2	3-rd Quartile	: 8760

NaI Data Gross CPM

- 2,220 - 5,436
- 5,437 - 8,652
- 8,653 - 11,868
- 11,869 - 15,084
- 15,085 - 18,300
- Ditches

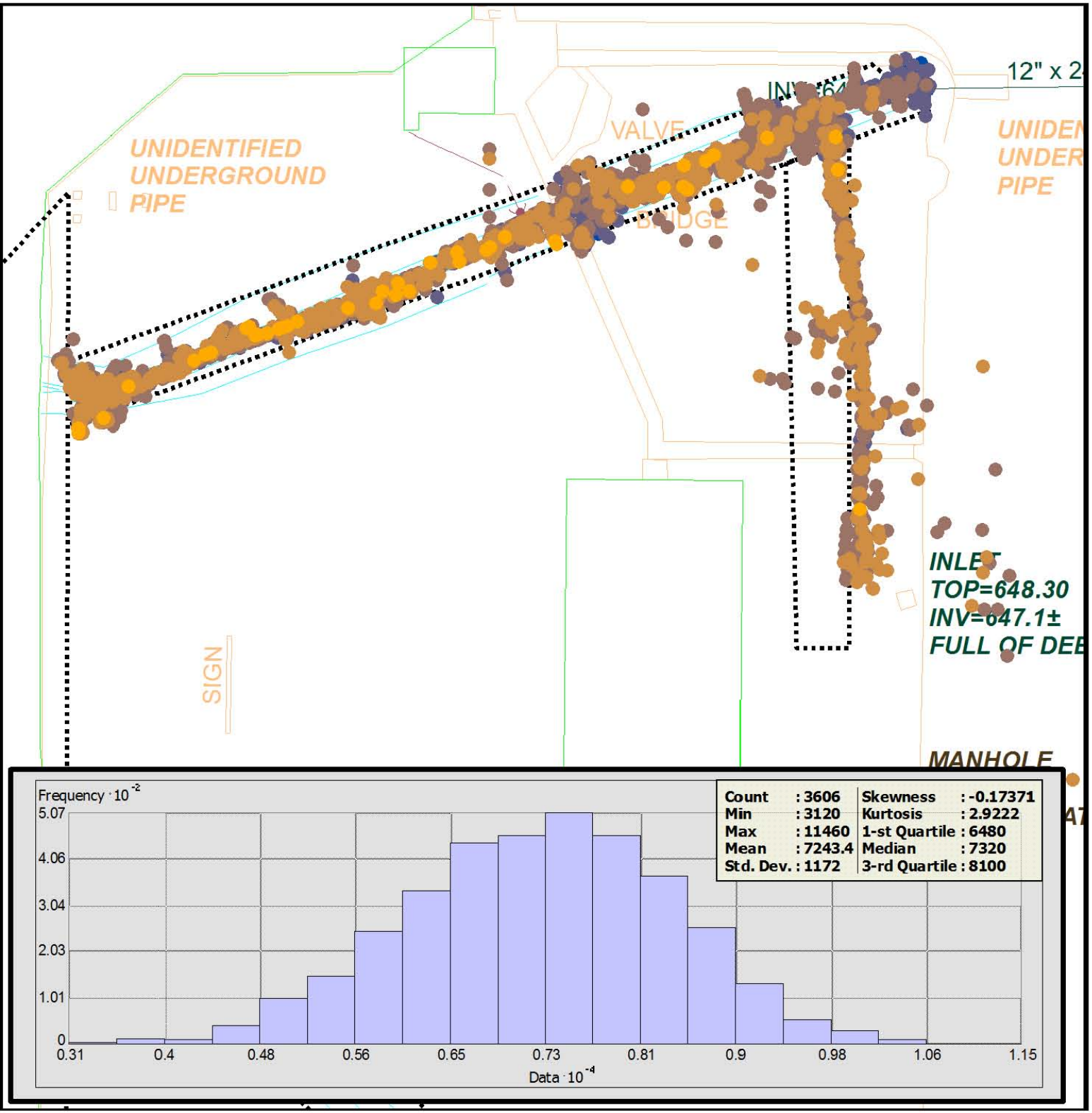
N

0 30 60 120 Feet

Lagoon Overflow Ditch
Luckey, OH

ENERGYSOLUTIONS

Date	06/08/10
Drawing	10020503.b



Nal Data Gross CPM

- 3,120 - 4,788
- 4,789 - 6,456
- 6,457 - 8,124
- 8,125 - 9,792
- 9,793 - 11,460
- Ditches

N

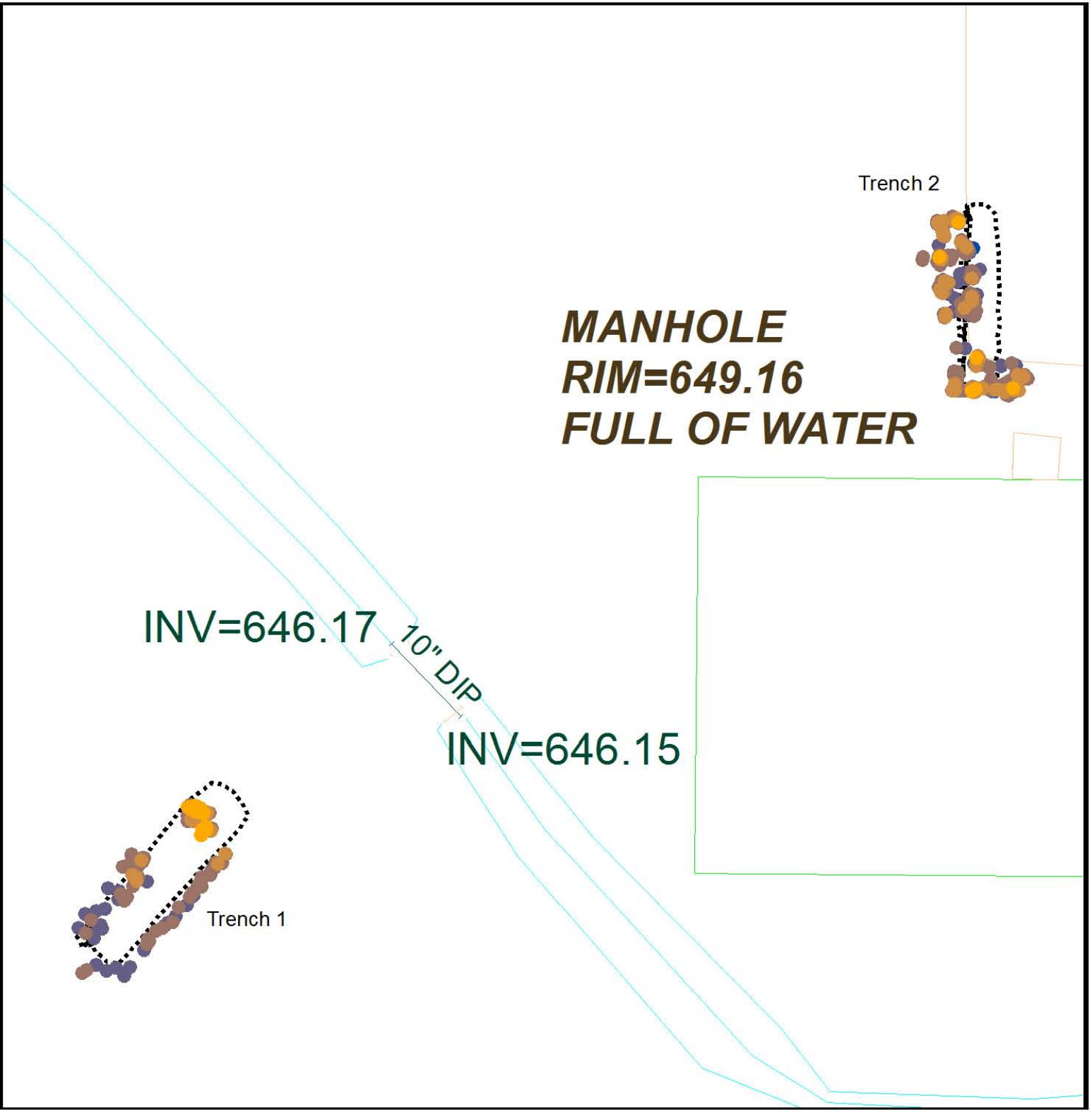
0 15 30 60 Feet

West Ditch
Luckey, OH

ENERGYSOLUTIONS

Date	06/08/10
Drawing	10020502.b

MH33
MH34
MH35
MH36
MH32
MH37
MH30
MH31
MH29
MH39
MH38
MH28
MH11
MH27
MH23
MH05
MH21
MH25
MH26
MH04
MH22
MH24
MH07
MH08
MH09
MH06
MH03
MH02
MH20
MH01
Luckey Rd
Gilbert Rd
N
0
50
100
200
Feet
Manhole Locations
Luckey, OH
ENERGYSOLUTIONS
Date
06/08/10
Drawing
10020301.b



NaI Data Gross CPM

- 4,980 - 6,948
- 6,949 - 8,916
- 8,917 - 10,884
- 10,885 - 12,852
- 12,853 - 14,820
- Trenches

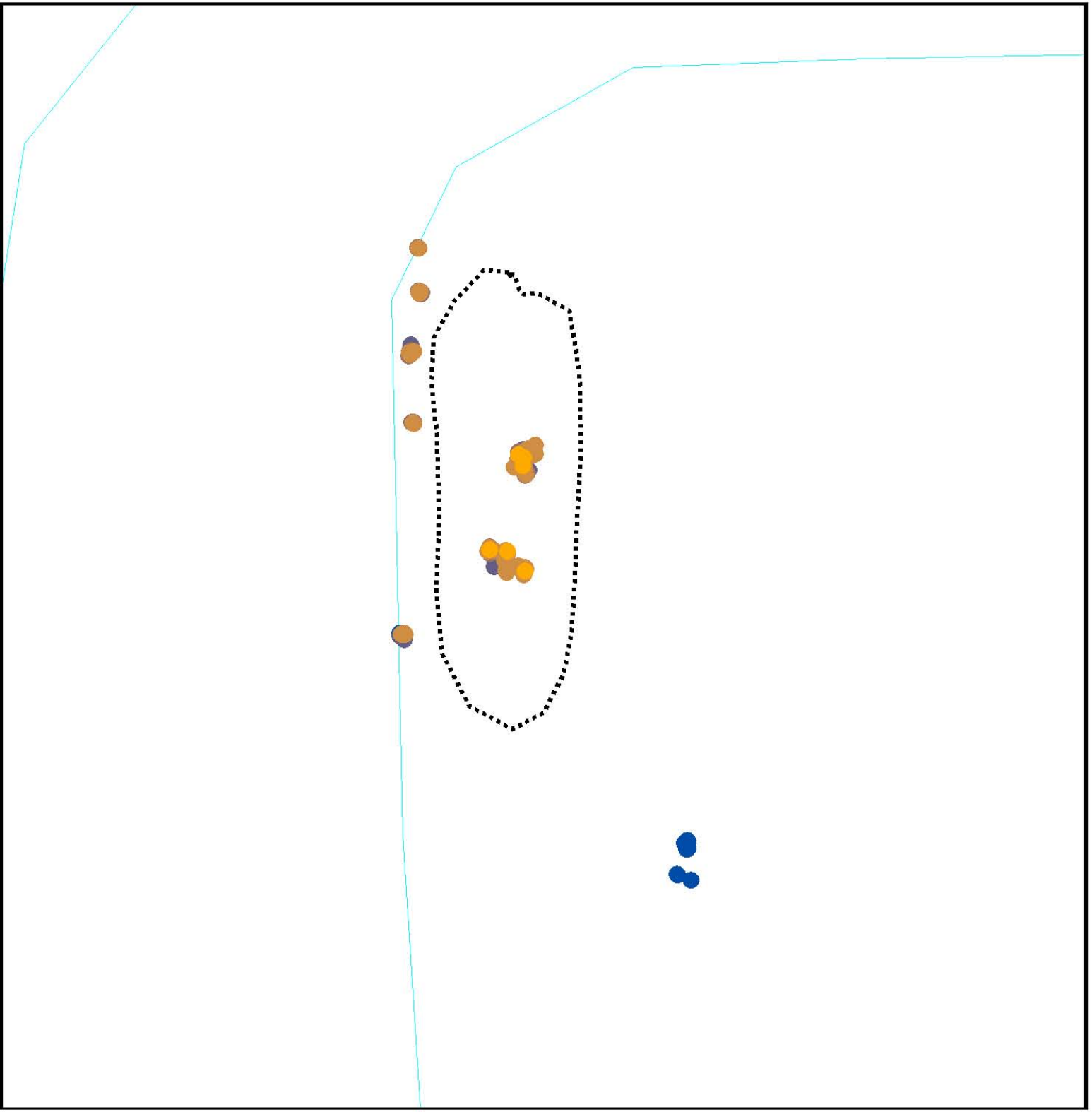
N

0 4 8 16 24 32 Feet

Scans for Trenches 1 & 2
Luckey, OH

ENERGYSOLUTIONS

Date	06/08/10
Drawing	10060801.a



NaI Data Gross CPM

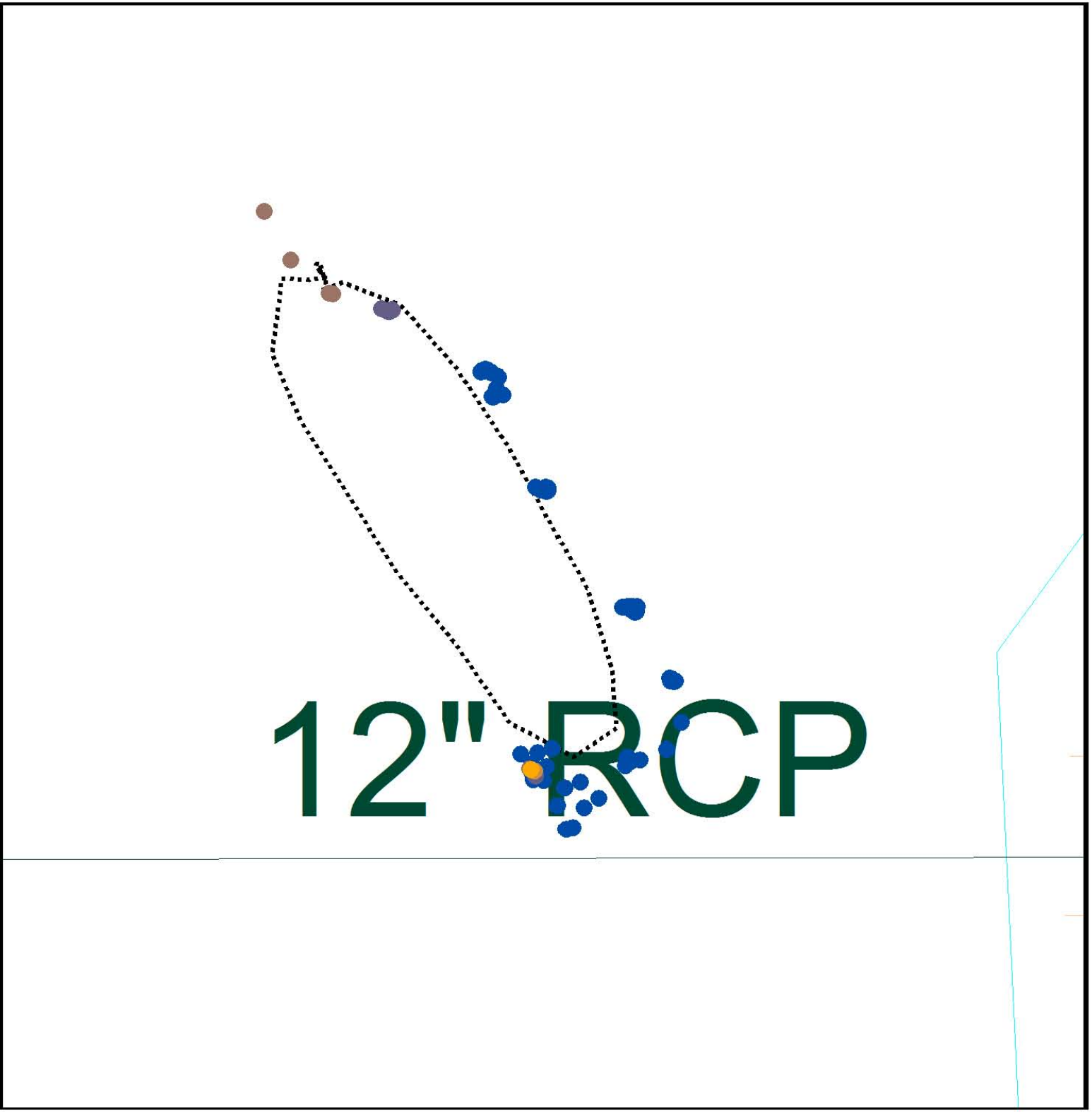
- 3,240 - 6,840
- 6,841 - 10,440
- 10,441 - 14,040
- 14,041 - 17,640
- 17,641 - 21,240
- Trenches

N

0 2 4 8 12 Feet

Scan for Trench 3
Luckey, OH

ENERGYSOLUTIONS	Date	06/08/10
	Drawing	10060802.a



NaI Data Gross CPM

- 9,780 - 18,096
- 18,097 - 26,412
- 26,413 - 34,728
- 34,729 - 43,044
- 43,045 - 51,360
- Trenches

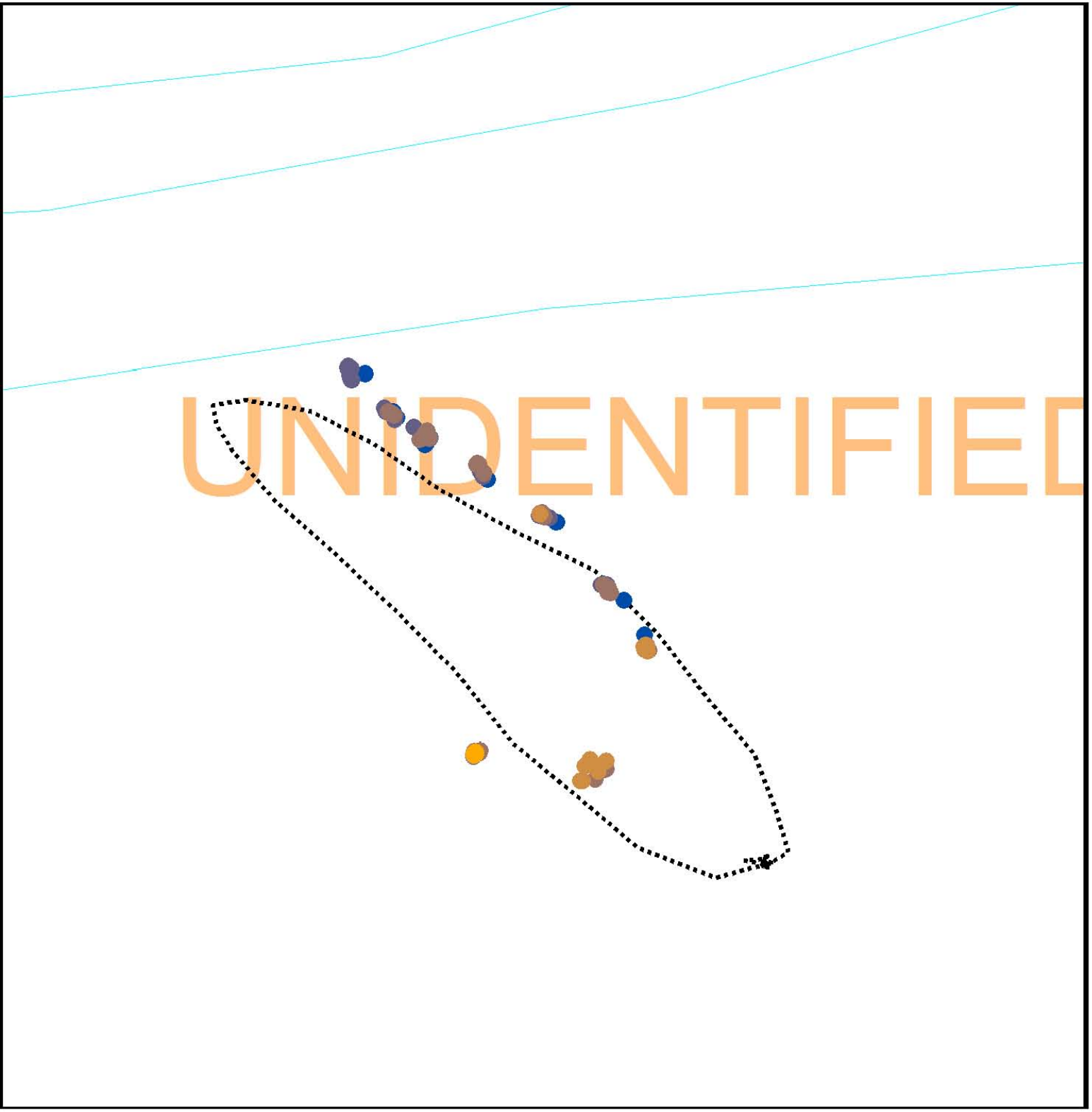
N

0 1 2 4 6 8 Feet

Scan for Trench 4
Luckey, OH

ENERGYSOLUTIONS

Date	06/08/10
Drawing	10060803.a



NaI Data Gross CPM

- 8,760 - 11,832
- 11,833 - 14,904
- 14,905 - 17,976
- 17,977 - 21,048
- 21,049 - 24,120
- Trenches

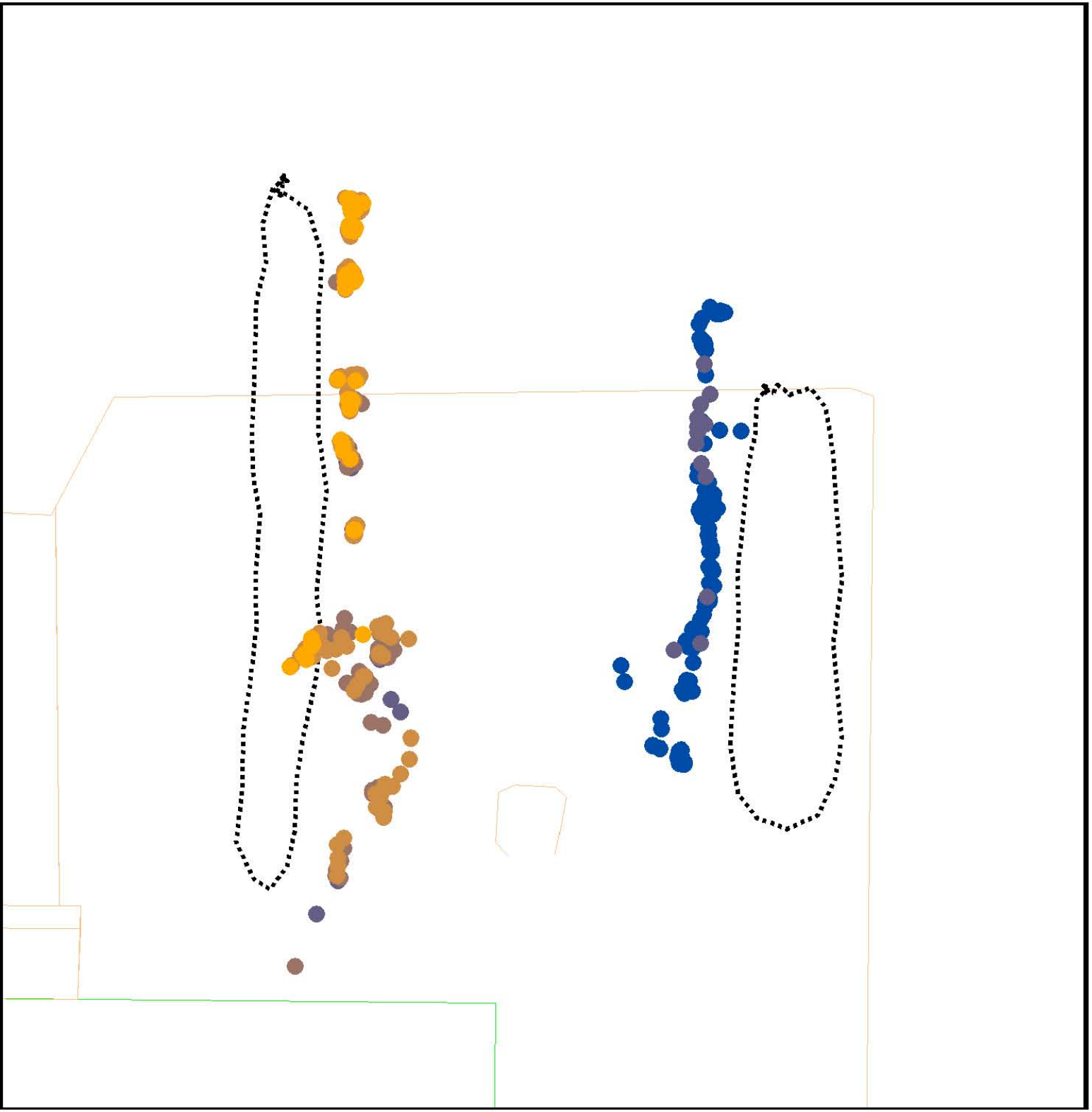
N

0 1 2 4 6 8 Feet

Scan for Trench 5
Luckey, OH

ENERGYSOLUTIONS

Date	06/08/10
Drawing	10060804.a



NaI Data Gross CPM

- 2,160 - 5,088
- 5,089 - 8,016
- 8,017 - 10,944
- 10,945 - 13,872
- 13,873 - 16,800
- Trenches

N

0 1 2 4 6 8 10 Feet

Scans for Trenches 6 & 6a
Luckey, OH

ENERGYSOLUTIONS

Date	06/08/10
Drawing	10060805.a

Appendix D

Field Data and Notes

(Provided in Electronic Files)

Boring Logs

Trench Logs

Gamma Data Logs

Field Logs

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: LUCKEY FUSRAP	Boring/Well #: SB 02
Geologist: CARL PIDRE P.G.	Driller/Company: DAVE SCHREECENGOST FRONTZ	
Drilling Equip.: VERSA SONIC	Date Start: 24NOV09	Date Completed: 24NOV09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 14 FT BGS	Well Depth: —

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	~~PID Reading (ppm)~~ CPM	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(in)	USCS Class	Contact-Depth	Descriptions and Comments
10	CONE 3,635 3,731 3,971 3,726			DOWNHOLE CAVE				5/4			8.8 - 11.7 CLAY WITH SILT, MOIST, NO DILATANCY, HIGH TOUGHNESS, HIGH PLASTICITY, 10YR 4/1
											11.7 - 14 CLAY W/MEDIUM SAND, MOIST, NO DILATANCY LOW TOUGHNESS, LOW PLASTICITY 10YR 3/2
15	REFUSAL 14 FT BGS										LIMESTONE FRAGMENTS IN END OF SHOE.

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Lully FUSRAP	Boring/Well #: SB003	
Geologist: SDeeten	Driller/Company: Kris Lauer / Frontier		
Drilling Equip.: Versa Sonic		Date Start: 11/24/09	Date Completed: 11/24/09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 20.0 ft	Well Depth: —

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	PID Reading (ppm) Rad (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-~~in~~ ft	USCS Class	Contact-Depth	Descriptions and Comments
10											1.0 – 12.2
	3554	16965									gravelly silt/clay,
	3766	14381						5/5			s. moist to dry. v.
	3608	(ND)									stiff, high dry strength,
	3682										no dilatancy, med
15	3783										toughness, med plasticity
	3316							5/5			5YR 4/2 (dark reddish
	3329										gray), mottled. Silt/
	2971										and sand lenses through-
	2835										out. Gravel is subrounded
20	2789										to rounded (<1.5" D).
											Some secondary mineralization
											(bleach) in breaks.
											12.2 – 20.0
											Gravelly silt and clay
											Some zones <2" T of
											clay. Dry to moist/wet
											at depth, slow to no
											dilatancy, med toughness,
											med plasticity. 3/2 (dark
											gray). Gravel to 25%
											subangular to subrounded
											to <3" D. Limestone frags.

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB004
Geologist: C. Pidge	Driller/Company: DAVE SCHRECENGOST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 20 DEC 09	Date Completed: 20 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 18 FT BLS / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6-INCH

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/ below surface: _____

Diameter: _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets _____ Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

☐ _____

Method of Instal. GRAVITY

Depth: from _____ ft. to _____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial 8 ft

Development _____ ft.

24 hr. _____ ft.

DRILLING	SAMPLE								GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	VERY POOR RECOVERY Descriptions and Comments
0	3,393 Cons 2,879	GROUND DOWNAGE	27,552			0-5 FT BLS		3/3			0-0.5 WOOD CHIPS FROM GRUBBING TASK
	3,021		46,549								0.5-1.4 SILTY CLAY, MEDIUM STRENGTH, DRY 10YR 3/3 TRACE CAPILLARY ROOTS.
	3,085		19,794								
	NO RECOVERY		12,161								
	NO RECOVERY		12,721								1.4-3 APPEARS TO BE FILL RUSTED METAL, SLAG, FIRE BRICK EROSE DRY MULTIPLE COLORS. WIRE
5	3,315		14,169			5-10 FT BLS		5/1			
	NO RECOVERY		19,481								5-6 SAME
	NO RECOVERY		19,055								
	NO RECOVERY		WATER								
10	NO RECOVERY					10-15 FT BLS		5/2			

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB004	
Geologist: C. Pidge	Driller/Company: DAVE SCHREECENGOST / Frontz		
Drilling Equip.: Versa-Sonic	Date Start: 2 DEC 09	Date Completed: 2 DEC 09	
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 18 FT BGS	Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	3,327				10-15 FT BGS WATER			5/2			10-11.2 SILTY CLAY WITH WOOD AND SHEET METAL WET, SLOW DILATANCY LOW TOUGHNESS, MEDIUM PLASTICITY, 10YR 2/1 WITH 10YR 4/1
	3,343										
	NO RECOVERY										
	NO RECOVERY										
	NO RECOVERY										
15	3,246				15-20 FT BGS			5/3			11.2-12 SILT LITTLE CLAY WET SLOW DILATANCY, MEDIUM TOUGHNESS LOW PLASTICITY 10YR 3/2
	2,871										
	2,846										
	REFUSAL @ 18 FT BGS										15-18 CLAYEY SILT, LITTLE FINE GRAVEL, MOIST, NO DILATANCY, NON PLASTIC 10YR 4/1
20											
											NOTE TRANSITION SOMEWHERE IN LOST RECOVERY

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB005
Geologist: C. Pidge	Driller/Company: DAVE SCHREECENGOST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 1 DEC 09	Date Completed: 1 DEC 09
Surface Elev.: / Top of Casing Elev.: NA	Total Depth: REFUSAL 12.5 FT BGS	Well Depth: NA

Method of Drilling	Casing/Riser Type	Screen Portion of Well
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 8-inch	☐ Steel ☐ Threaded ☐ Galv ☐ Welded ☐ PVC ☐ Solvent ☐ SS ☐ Welded Drive Shoe? ☐ Yes ☐ No Height above/ below surface Diameter	Material Diameter / Length Set between ft and ft Slot size
Filter Pack	**Annulus Seal**	**Grout**
Size Method of Install Composition Volume Used Depth to top of f.p.	☐ Bentonite Pellets Chips ☐ Volume Used? Method of Instal. Depth: from ft. to ft.	Used? ☒ Yes ☐ No Volume ☐ Neat Cement ☒ Bentonite ☐ Method of Instal. GRAVITY Depth: from ft. to ft.
Well Head Completion	**Development**	**Static Water Level**
☐ Flushmount ☐ Stand Up Cap Type Lock # Volume Used	Method Gallons Evacuated Date Odor	Initial DRY ft Development ft. 24 hr. ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	4591	GROUND CORE	DOWN HOLE					5/5			0-1.8 SILT LITTLE CLAY DRY MEDIUM STRENGTH 10YR 5/3
	3,989		20,245								1.8-4.8 CLAY TRACE SILT, MOIST,
	3,581		19,010								NO DILATANCY, HIGH TOUGHNESS
	3,532		22,552								MEDIUM PLASTICITY 10YR 5/8
	4,083		19,493								4.8-5 APPEARS AS THOUGH
	3,458		17,507								FIBROUS WET GYPSUM N 8/1
5	3,441		16,826					5/5			5-10.8 SILT TRACE CLAY DRY MEDIUM STRENGTH 10YR 4/2
	3,452		16,730								MOTTLED 10YR 5/8
	3,524		16,701								10.8-12.5 CLAY TRACE SILT
	3,300		16,187								MOIST MEDIUM TOUGHNESS
	3,400		18,551								MEDIUM PLASTICITY 10YR 3/1
10											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB005
Geologist: C. Pidge	Driller/Company: DAVE SCHREEN GOST / Frontz	
Drilling Equip.: Versa-Sonic	Date Start: 1 DEC 09	Date Completed: 1 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 12.5 FT BGS / Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWN HOLE								
	3,563		18,234								
	3,472		15,698								
	3,280		CAVE								
	REFUSAL 12.5 FT BGS										
15											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB0006
Geologist: S. Deeter	Driller/Company: Kris Lauch Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 12/1/09	Date Completed: 12/1/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20.0 ft / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6"/8"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface: ____

Diameter: ____

Screen Portion of Well

Material ____

Diameter ____ Length ____

Set between ____ ft and ____ ft

Slot size ____

Filter Pack

Size ____

Method of Install ____

Composition ____

Volume Used ____

Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ ____

Volume Used? ____

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume ____

☐ Neat Cement ☒ Bentonite

☐ ____

Method of Instal. Gravity

Depth: from ____ ft. to ____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____

Lock # ____

Volume Used ____

Development

Method ____

Gallons Evacuated ____

Date ____

Odor ____

Static Water Level

Initial ~15 ft

Development — ft.

24 hr. — ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm) Case	Sample Type Base (cpm)	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	6353							—			0-0.8
	5789	18655									Silt/clay. Dry. Med
	5427	19874						5/5			to low dry strength (fractured)
	5496	19136									no to slow dilatancy, low
	5234	18775									to med toughness, med
5	5473	18240						—			plasticity 10R4/1 (dark
	5705	18012									reddish gray), rootlets
	5902	17330						5/5			
	5440	16677									
	5227	CANC									
10	5638	↓						—			

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB006	
Geologist: S. Deeter	Driller/Company: Kris Lowen / Frontz		
Drilling Equip.: Versa-Sonic	Date Start: 12/1/09	Date Completed: 12/1/09	
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20.0 ft	Well Depth: NA

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10		CAME									0.8 – 11.5
	5404										Clay/silt, dry. Some
	5339							5/5			sand/silt lenses (mottled).
	5189										high dry strength, med to
	5069										low dilatancy, med toughness,
15	5086										med to slow dilatancy,
	6185							5/5			med toughness, med to
	5409										low plasticity, 5YR 4/2
	5248										(dark reddish gray).
	5013										~5% subrounded gravel to <0.5" D
20	4624										
											11.5 – 20.0
											Clay/Silt Dry to moist,
											grading to gravelly clay
											at 20.0 feet. Slow to
											no dilatancy, med to
											high toughness, v. hard to
											hard, very plastic,
											3/N (dark gray).
											Some limestone
											cobbles at 20.0 ft.

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SS06R
Geologist: S. Deeter	Driller/Company: Kris Lowe / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 12/1/09	Date Completed: 12/1/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20.0 ft	Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6/8

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface: _____

Diameter: _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets _____ Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

☐ _____

Method of Instal. GRAVITY

Depth: from _____ ft. to _____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial ~15 ft

Development — ft.

24 hr. — ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm) Gross	Sample Type Bone (cpm)	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	4717										0-0.5
	4402	13884									Silt/Clay, dry to moist. Mod to low dry strength, no dilatancy, low to med toughness, med plasticity, 10R 4/1 (dark reddish gray), rootlets, some (<5%) sub rounded gravel
	4330	18070						5/5			
	4291	18729									
	4418	18351									
5	4372	17781									
	4384	17421									
	4565	16763									
	4317	17815						5/5			
	4466	19736									
10	4767	12995									

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB047	
Geologist: S. Deeter	Driller/Company: Kris Louen / Frontz		
Drilling Equip.: Versa-Sonic		Date Start: 12/1/09	Date Completed: 12/1/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20.0 ft	Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10											0.5 – 11.5
	4944	CMRE									Clay/Silt, dry to
	4799	↓						5/5			moist, some clay
	4560										and sand lenses throughout,
	4531										mottled, high dry
15	4335										strength, med to
	4641										low dilatancy, med
	4264							5/5			toughness, med to no
	4055										plasticity, 5YR 4/2 (dark
	4054										reddish gray)
20	4232										
											11.5 – 20.0
											Clay/Silt. Dry w/
											sand seams (wet). Some
											clay/sand lensed to 4"T.
											Slow to no dilatancy,
											med to high toughness,
											v. hard to soft where wet.
											3/N (dark gray). Some
											gravel/sand layers at depth
											gravel subangular to <3"D

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SBP08
Geologist: S. Deeter	Driller/Company: Kris Lowen / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 12/1/09	Date Completed: 12/1/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20.0 ft / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6"/8"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface: ____

Diameter: ____

Screen Portion of Well

Material ____

Diameter ____ Length ____

Set between ____ ft and ____ ft

Slot size ____

Filter Pack

Size ____

Method of Install ____

Composition ____

Volume Used ____

Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ ____

Volume Used? ____

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume ____

☐ Neat Cement ☒ Bentonite

☐ ____

Method of Instal. GRAVITY

Depth: from ____ ft. to ____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____

Lock # ____

Volume Used ____

Development

Method ____

Gallons Evacuated ____

Date ____

Odor ____

Static Water Level

Initial ~17 ft

Development — ft.

24 hr. — ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm) Core	Sample Type Bore (cpm)	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	4824							—			0–0.8
	4722	14425						5/5			Silt/Clay. Dry to s. moist. med to low dry strength. no to slow dilatancy, low to med toughness, med plasticity 10R4/1 (dark reddish gray), rootlets
	4839	17249									
	4616	18472									
	4777	17774									
5	4785	17130						—			
	4825	17347									
	4747	17662						5/5			
	4905	16989									
	4882	16557									
10	4800	CAVE						—			

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB008	
Geologist: S. Deeter	Driller/Company: Kris Lower / Frontz		
Drilling Equip.: Versa-Sonic	Date Start: 12/1/09	Date Completed: 12/1/09	
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20.0 ft	Well Depth: NA

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10		CAVE									0.8 – 11.5
	4686										Clay/Silt. Dry to s. moist.
	4904							5/5			Some silt/sand lenses
	5047										(mottled). high dry
	4713										strength, no to
15	4722										slow dilatancy, med
	4915										toughness, med to low
	4591							5/5			plasticity, 5YR 4/2
	4424										(dark reddish gray)
	4290										~5% subround gravel to 0.5"D
20	4768										11.5 – 20.0
											Clay/Silt Dry to
											moist. Grading to gravelly
											clay at 20.0 ft. slow to
											no dilatancy, med to
											high toughness, v. hard to
											hard, very plastic. 3/N
											(dark gray). Gravel
											subangular to < 3" D.

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB009
Geologist: S. Deeter	Driller/Company: Kris Lauer / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 12/2/09	Date Completed: 12/2/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20.0 ft / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6"/8"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Height above/below surface: ____

Diameter: ____

Drive Shoe? ☐ Yes ☐ No

Screen Portion of Well

Material ____

Diameter ____ Length ____

Set between ____ ft and ____ ft

Slot size ____

Filter Pack

Size ____

Method of Install ____

Composition ____

Volume Used ____

Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ ____

Volume Used? ____

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume ____

☐ Neat Cement ☒ Bentonite

☐ ____

Method of Instal. Gravity

Depth: from ____ ft. to ____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____

Lock # ____

Volume Used ____

Development

Method ____

Gallons Evacuated ____

Date ____

Odor ____

Static Water Level

Initial ~15 ft

Development — ft.

24 hr. — ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm) (Base)	Sample Type core (cpm)	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	5828	5828						—			0 – 1.5
	21884	5519									Silt/Clay, s. moist,
	21891	5635						5/5			med to low dry strength,
	20694	5432									no dilatancy, low
	19283	5471									toughness, and plasticity,
5	18497	5348						—			10R4/1 (dark reddish gray)
	19973	5638									
	20950	5615						5/5			rootlets, trace gravel.
	20752	5614									
	20307	5534									
10	18591	5565						—			

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB009	
Geologist: S. Deeter	Driller/Company: Kris Lauen / Frontz		
Drilling Equip.: Versa-Sonic		Date Start: 12/2/09	Date Completed: 12/2/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20.0 ft	Well Depth: NA

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10											1.5 – 11.8
	17157	5657									clay / silt. Dry.
	16418	5740						5/5			Fractured. Some sand/
	13009	5524									silt lenses (mottled),
	12414	5525									
15	10537	5281									high dry strength, no
	7994	5357									
	7919	5776						5/5			dilatancy, med toughness,
	CNK	5109									
		4708									med toughness, med
20	↓	4536									plasticity, 5YR 4/2
											(dark reddish gray)
											Piece of metal @ 1.6 ft.
											11.8 – 20.0
											Sandy clay. moist.
											stiff. med dry strength
											no dilatancy, med to low
											toughness, low plasticity,
											5YR 2.5/1 (black). well
											graded (glacial till?)
											some subround gravel
											approaching subangular
											cobbles @ 20.0.

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB010
Geologist: S. Deeter	Driller/Company: Kris Lowen / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 12/2/09	Date Completed: 12/2/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20.0 ft / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6"/8"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface: ____

Diameter: ____

Screen Portion of Well

Material ____

Diameter ____ Length ____

Set between ____ ft and ____ ft

Slot size ____

Filter Pack

Size ____

Method of Install ____

Composition ____

Volume Used ____

Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ ____

Volume Used? ____

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume ____

☐ Neat Cement ☑ Bentonite

☒ Bentonite Chips

Method of Instal. Gravity

Depth: from 0 ft. to 20 ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____

Lock # ____

Volume Used ____

Development

Method ____

Gallons Evacuated ____

Date ____

Odor ____

Static Water Level

Initial ~4.0 ft

Development — ft.

24 hr. — ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm) (core)	Sample Type base (cpm)	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ift	USCS Class	Contact-Depth	Descriptions and Comments
0	4834							—			0-3.5 silt/clay, moist, med dry strength, no dilatancy, low toughness, med to low plasticity. 10R4/1 (dark reddish gray), rootlets.
	5025	ND									
	5231	(NAE)						3/5			
	5372										
	5278										
5	5483							—			
	VOID										(VOID)
	VOID							0/5			
	VOID										
	VOID										
10	VOID							—			

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB010	
Geologist: S. Deeter	Driller/Company: Kris Louer / Frontz		
Drilling Equip.: Versa-Sonic		Date Start: 12/2/09	Date Completed: 12/2/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20.0 ft	Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10		CNVE									3.5 - 11.8
	5127										Saturated gravel. loose.
	5604							5/5			some metal scrap.
	5278										gloves present.
	5199										
15	4925										Gravel 0.5" to 2.0"D, sub
	5721										rounded to subangular.
	5468							5/5			
	5455										
	5220										
20	5277										
											11.8 - 20.0
											Sandy Clay. moist.
											stiff, med dry strength,
											no dilatancy, med to
											low toughness, low
											plasticity. 5YR 2.5/1 (black)
											well graded, (glacial till?)
											some subround gravel
											to 0.5"D (<5%)

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB 011
Geologist: S. Deeter	Driller/Company: Eric Lauer / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 12/2/09	Date Completed: 12/2/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20.0 ft / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6"/8"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface: ____

Diameter: ____

Screen Portion of Well

Material ____

Diameter ____ Length ____

Set between ____ ft and ____ ft

Slot size ____

Filter Pack

Size ____

Method of Install ____

Composition ____

Volume Used ____

Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ ____

Volume Used? ____

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume ____

☐ Neat Cement ☒ Bentonite

☐ ____

Method of Instal. Gravity

Depth: from ____ ft. to ____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____

Lock # ____

Volume Used ____

Development

Method ____

Gallons Evacuated ____

Date ____

Odor ____

Static Water Level

Initial ~15 ft

Development — ft.

24 hr. — ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm) Core	~~Sample Type~~ Bore (cm)	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	6360										0 - 1.5
	6288	18152						5/5			Slag or ash, black.
	5470	14780									
	5506	17132									1.5 - 11.8
	5478	17046									Clay / Silt, Dry. Fractured.
5	5488	17860									
	5418	16000									Some sand/silt Dense (mottled).
	5317	15862						5/5			
	5355	19066									Some slag present @ 11.0-11.8
	5272	20041									feet, high dry strength, no
10	5203	19353									to slow dilatancy, med toughness
											med plasticity 5YR 4/2 (dk reddish gray)
											some coarse subround sand (<10%)

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: 58011	
Geologist: S. Deeter	Driller/Company: Kris Lauer / Frontz		
Drilling Equip.: Versa-Sonic		Date Start: 12/2/09	Date Completed: 12/2/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20.0 ft	Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10											11.8 – 20.0
	5540	16885						5/5			Sandy Clay. moist to v. moist. Stiff. med dry strength, no dilatancy, med to low toughness, low plasticity, 2.5/1 5YR (black) well graded (glacial till?) Some sub-round gravel approaching subangular cobbles @ 20.0.
	5313	12894									
	5246	12626									
	5006	11659									
15	4909	8588									
	4922	8293						5/5			
	4930	CAVE									
	5093	↓									
	5121										
20	4908										

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB015
Geologist: S. Deeter	Driller/Company: Kris Lower / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 12/1/09	Date Completed: 12/1/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 26.0 ft / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6"/8"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface: _____

Diameter: _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets _____ Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

☐ _____

Method of Instal. Gravity

Depth: from _____ ft. to _____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial — ft

Development NA ft.

24 hr. NA ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	~~Sample Type~~ Base (cpm)	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	4468							—			0-0.8
	4016	15674						5/5			Silt/clay s. moist to
	3900	16553									most. med to low
	4126	20501									dry strength, no dilatancy,
	4155	20201									low to med toughness,
5	4072	19090						—			med plasticity, 10R4/1
	4563	18024						5/5			(dark reddish gray),
	4415	17330									rootlets, some gravel
	4365	17376									
	4446	16126									
10	4263	16785						—			

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB015	
Geologist: S. Deeter	Driller/Company: Kris Lower / Frontz		
Drilling Equip.: Versa-Sonic	Date Start: 12/1/09	Date Completed: 12/1/09	
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20.0 ft	Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	4490	16589						5/5			0.8-2.5 Some gravel, crushed concrete?
	4576	18782									
	4629	20487									
	4497	CAVE									
15	4753	↓						5/5			2.5-14.3 silt/clay. s. moist stiff, high dry strength, no to low dilatancy, med toughness, med to no plasticity, mottled, 5YR 4/2 (dark reddish gray) some silt/sand lenses throughout
	4680										
	4752										
	4236										
	4715										
20	4193							ROCK			14.3-20.0 Clay/silt. dry to moist some clay and sand lenses 7 4"T. slow to no dilatancy med to high toughness, v. hard to hard, 3/10 (dark gray). Some gravel (limestone) <25%, subangular, <3"D, rock in shoe (limestone) @ 20.0'

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB016
Geologist: S. Deeter	Driller/Company: Kris Lowen / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 12/1/07	Date Completed: 12/1/07
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20.0 FT / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6" / 8"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/ below surface: ____

Diameter: ____

Screen Portion of Well

Material ____

Diameter ____ Length ____

Set between ____ ft and ____ ft

Slot size ____

Filter Pack

Size ____

Method of Install ____

Composition ____

Volume Used ____

Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ ____

Volume Used? ____

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume ____

☐ Neat Cement ☒ Bentonite

☐ ____

Method of Instal. Gravity

Depth: from ____ ft. to ____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____

Lock # ____

Volume Used ____

Development

Method ____

Gallons Evacuated ____

Date ____

Odor ____

Static Water Level

Initial NE ft

Development — ft.

24 hr. — ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	5324							—			0 – 11.5 Clay/Silt, dry to s. moist fractured. Some clay and sand lenses throughout. mottled. med dry strength, slow dilatancy, med to low toughness, med plasticity 5YR 4/2 (dark reddish gray), Some (<5%) sub-round gravel (<0.5"D)
	4966	15437									
	4877	19431						5/5			
	4927	18153									
	4760	17578									
5	4795	16471						—			
	4672	16528									
	4695	16034						5/5			
	4594	17834									
	4587	19662									
10	4921	18781						—			

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB016	
Geologist: S. Deeter	Driller/Company: Kris Lower / Frontz		
Drilling Equip.: Versa-Sonic		Date Start: 12/1/09	Date Completed: 12/1/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20.0 ft	Well Depth: NA

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10											11.5 – 20.0
	4944	15566									
	4799	12950						5/5			Clay / silt Dry to moist. Some clay seams to <2"T. slow to no dilatancy, med to high toughness, v. hard to hard. 3/N (dark gray)
	4560	13262									
	4531	12095									
15	4335	9364									
	4641	8348						5/5			
	4264	8573									
	4055	CAVE									
	4054	↓									
20	4232										Some subround gravel at depth (sub angular, <2"D, limestone)

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Lucky FUSRAP	Boring/Well #: SB017
Geologist: S. Deeter	Driller/Company: Kris Lowen / Fronte	
Drilling Equip.: Venga - Sonic	Date Start: 11/24/09	Date Completed: 11/24/09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 20.0 ft	Well Depth: —

Method of Drilling

- ☐ Hollow Stem ☐ Direct Rotary
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger
- SONIC
- Hole Diameter: 6"/8"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded
- Drive Shoe? ☐ Yes ☐ No
- Height above/below surface
- Diameter

Screen Portion of Well

- Material
- Diameter Length
- Set between ft and ft
- Slot size

Filter Pack

- Size
- Method of Install
- Composition
- Volume Used
- Depth to top of f.p.

Annulus Seal

- ☐ Bentonite Pellets Chips
- ☐
- Volume Used?
- Method of Instal.
- Depth: from ft. to ft.

Grout

- Used? ☒ Yes ☐ No Volume 250#s
- ☐ Neat Cement ☐ Bentonite
- ☒ Bentonite Chips
- Method of Instal. Gravity
- Depth: from 0 ft. to 20.0 ft.

Well Head Completion

- ☐ Flushmount ☐ Stand Up
- Cap Type
- Lock #
- Volume Used

Development

- Method
- Gallons Evacuated
- Date
- Odor

Static Water Level

- Initial 18.0 ft
- Development — ft.
- 24 hr. — ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	PID Reading (ppm) Core (ppm)	Sample Type Bore (cpm)	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery (in) %	USCS Class	Contact-Depth	Descriptions and Comments
0	4559	~~17922~~									0 - 1.2
	4626	~~19726~~	17922					4/5			silt/clay, s. moist,
	4548	~~17461~~	19726								med to low dry strength,
	4614	~~15992~~	17461								no dilatancy, low
	4488	~~16360~~	15992								toughness, med plasticity,
5	4460	~~16046~~	16360								10R 4/1 (dark reddish
	4556	~~16258~~	16046								gray), rootlets.
	4457	—	16258					5/5			
	4529	15382									
	4559	13736									
10	45[illegible]	14156									

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Lucky FUSRAP	Boring/Well #: SB017	
Geologist: S Deetm	Driller/Company: Kris Lower / Fronte		
Drilling Equip.: Versa-Sonic		Date Start: 11/24/09	Date Completed: 11/24/09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 20.0 ft	Well Depth: —

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	~~PID Reading (ppm)~~ RAD (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-~~(in)~~ ft	USCS Class	Contact-Depth	Descriptions and Comments
10								—			1.2 – 11.8
	4470	15861									Silt/clay. s. moist to
	4228	15487						5/5			wet at depth. stiff,
	4477	14785									high dry strength,
	4449	15374									no to low dilatancy,
15	4437	ND						—			med toughness, med
	4423	↓									plasticity. 5YR 4/2 (dark
	4606							5/5			reddish gray), mottled.
	4713										Some silt/clay lenses.
	4539										some gravel (<10%) to
20	4236							—			<1"D subangular.
											11.8 – 20.0
											Clay/silt. dry to wet
											at depth. Some clay
											zones to >4"T. slow
											dilatancy. med to
											high toughness, v. hard to
											soft (where wet). 3/N
											(dark gray). Some
											gravel <5% subangular
											to subround (<2"D). Some
											clay nodules 10R5/1 (reddish gray).
											cobble at termination (limestone)

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB8 18
Geologist: C. Pidge	Driller/Company: DAVE SCHREECENGOST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 8 DEC 09	Date Completed: 8 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: REFUSAL 18 FT BGS / Well Depth: NA

Method of Drilling	Casing/Riser Type	Screen Portion of Well
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter:	☐ Steel ☐ Threaded ☐ Galv ☐ Welded ☐ PVC ☐ Solvent ☐ SS ☐ Welded Drive Shoe? ☐ Yes ☐ No Height above/ below surface Diameter	Material Diameter Length Set between ft and ft Slot size
Filter Pack	**Annulus Seal**	**Grout**
Size Method of Install Composition Volume Used Depth to top of f.p.	☐ Bentonite Pellets Chips ☐ Volume Used? Method of Instal. Depth: from ft. to ft.	Used? ☒ Yes ☐ No Volume ☐ Neat Cement ☒ Bentonite ☐ Method of Instal. TREMIE Depth: from ft. to ft.
Well Head Completion	**Development**	**Static Water Level**
☐ Flushmount ☐ Stand Up Cap Type Lock # Volume Used	Method Gallons Evacuated Date Odor	Initial 11 ft Development ft. 24 hr. ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	4,407	GROUND CORE	DOWNHOLE			0-5 FT BGS		5/5			0 - 1.4 SILT TRACE CLAY CAPILLARY ROOTS DRY, MEDIUM STRENGTH, 10YR 3/2
	3,185		15,228								
	3,329		18,130								
	3,178		18,185								
	3,051		18,347								1.4-13.5 SILT LITTLE CLAY DRY FEW COARSE SAND MEDIUM STRENGTH 10YR 4/2 MOTTLED 10YR 5/8, 10YR 3/2
5	3,030		16,871								
	3,219		19,050			5-10 FT BGS		5/5			
	3,421		22,361								
	3,325		20,149								
	3,241		18,705								11 COBBLE ≈ 4-INCH & ~~SAND STONE~~ FINE GRAINED GRANITIC
	3,011		19,764								
10											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB218
Geologist: C. Pidge	Driller/Company: DAVE SCHRECENGOST / Frontz	
Drilling Equip.: Versa-Sonic	Date Start: 8 DEC 09	Date Completed: 8 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: REFUSAL 18 FT BGS / Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWNHOLE								13.5-18 CLAY LITTLE COARSE SAND SOME COARSE GRAVEL GRANITIC CRYSTALLINE FINE GRAIN 10YR 3/1
	2,973		19,473			10-15 FT BGS		5/5			
	3,151		WATER								
	3,229										
	3,120										
	2,972					15-20 FT BGS		5/3			
15	2,915										
	2,919										
	2,062										
	REFUSAL 18 FT BGS										
20											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB419
Geologist: S. Deeter	Driller/Company: D. Jnaeckengost / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 12/15/09	Date Completed: 12/15/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20.0 ft / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6" / 8"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/ below surface _____

Diameter _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets _____ Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

☐ _____

Method of Instal. Tremie

Depth: from _____ ft. to _____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial 11 ft

Development _____ ft.

24 hr. _____ ft.

DRILLING	SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm) (core)	Sample Type (base (cpm)	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	1559										0-2.0
	1601	7,195						4.5			Silt/Clay, dry. stiff.
	2588	18,654									med dry strength, no
	2531	20,010						5			dilatancy, med to high
	2406	19,581									toughness, med to high
5	2143	17,442									plasticity, 5YR 2.5/2 to 5YR 2.5/1
	2007	16,295									(dark reddish brown to black)
	2027	16,154						5			(Concrete on top)
	2176	16,036						5			
	2141	16,765									
10	2047	17,074									

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB019	
Geologist: S. Deeter	Driller/Company: D Shreckengost / Frontz		
Drilling Equip.: Versa-Sonic		Date Start: 12/15/09	Date Completed: 12/15/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20.0 ft	Well Depth: NA

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10											2.0 – 5.0
	2345	16928									Clay. moist. stiff.
	2352	WATER						5/5			high dry strength, no
	2442										dilatancy, high toughness,
	2424										high plasticity, Gley 10Y 2.5/1
15	1522										(greenish black)
	2713										
	2483							5/5			5.0 – 13.8
	2364										Clay/Silt. moist to dry.
	2239										stiff, high to med dry
20	1866										strength, no dilatancy,
											high to med toughness, high to
											med plasticity, 5YR 4/2 (dark
											reddish gray). mottled, Trace
											subround coarse sand.
											trace subangular gravel @
											10.0 feet.
											13.8 – 20.0
											Clay. s. moist, stiff,
											high dry strength, no
											dilatancy, high toughness,
											high plasticity, 2.5YR 3/1
											(reddish brown), some
											rounded coarse sand (<10%)
											• grade to soft at 17.0 ft
											• grade to wet at 18.5 ft
											• grade to 50% subangular gravel
											at 19.8 ft.

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Lucky FUSRAP	Boring/Well #: SB02Ø
Geologist: S. Deeter	Driller/Company: KRIS LOWER / FRONTR	
Drilling Equip.: Versa-Sonic	Date Start: 11/21/09	Date Completed: 11/21/09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 15.0 ft / Well Depth: —

Method of Drilling

- ☐ Hollow Stem ☐ Direct Rotary
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger
- Hole Diameter: Sonic 6"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded
- Drive Shoe? ☐ Yes ☐ No
- Height above/below surface: ____
- Diameter: ____

Screen Portion of Well

- Material ____
- Diameter ____ Length ____
- Set between ____ ft and ____ ft
- Slot size ____

Filter Pack

- Size ____
- Method of Install ____
- Composition ____
- Volume Used ____
- Depth to top of f.p. ____

Annulus Seal

- ☐ Bentonite Pellets ☐ Chips
- ☐ ____
- Volume Used? ____
- Method of Instal. ____
- Depth: from ____ ft. to ____ ft.

Grout

- Used? ☑ Yes ☐ No Volume 200 #s
- ☐ Neat Cement ☐ Bentonite
- ☒ Bentonite Chips
- Method of Instal. Gravity
- Depth: from 0 ft. to 15.0 ft.

Well Head Completion

- ☐ Flushmount ☐ Stand Up
- Cap Type ____
- Lock # ____
- Volume Used ____

Development

- Method ____
- Gallons Evacuated ____
- Date ____
- Odor ____

Static Water Level

- Initial NE ft
- Development NA ft.
- 24 hr. NA ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	~~PID Reading (ppm)~~ Rad (cpm)	Sample Type	Sample ID Dose (cpm)	Blow Count 0-6"	6-12"	12-18"	18-24"	~~Recovery (in)~~ ft	USCS Class	Contact-Depth	Descriptions and Comments
0	5825 cpm										0.0 – 1.0
	5446		18800					3'/5'			Silt w/ clay. S. moist
	5115		19611								to dry, very stiff, med
	5220		15998								dry strength, no dilatancy,
	5062		15248								Low to med toughness, med
5	4979	(6" core)	14116					5'/5'			to low plasticity. 2.5YR 2.5/1
	6999		13365								(reddish black), rootlets.
	6623		13854								Some gravel (<10%) to <2" D
	6525		15562								
	5774		16379								
10	5661		13828								

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB0204	
Geologist: S. Deeten	Driller/Company: KRIS LOWER / FRONTIER		
Drilling Equip.: Versa-Sonic	Date Start: 11/21/09	Date Completed: 11/21/09	
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 15.0 FT	Well Depth: —

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	~~PID Reading (ppm)~~ RAD (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery (ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	5661										1.0 – 12.0
	7487	(6" core)	11632					5'/5'			silt w/clay. S. moist.
	7031		11312								some sand/silt lenses
	6744		15127								throughout (10R 4/6, red),
	6200		ND								very stiff, med. dry
15	5904		↓							TD = 12'	strength, low to no dilatancy,
											low toughness, med to low
											plasticity. 10YR 3/2 (very
											dark grayish brown),
											mottled. Some gravel (<10%)
											to 2"D.
											12.0 – 15.0
											gravelly silt/clay.
											s. moist to dry, very
											stiff, low to no dilatancy,
											low to med dry strength,
											med to low toughness, non-
											to low plasticity. 7.5YR 3/1
											(very dark gray), some
											sub angular to sub round
											gravel to < 2"D.

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: LUCKEY FUSRAP	Boring/Well #: SB021
Geologist: CARL PIDGE P.G.	Driller/Company: DAVE SCHRECENGOST / FRONTZ	
Drilling Equip.: VERSA SONIC	Date Start: 21 NOV 09	Date Completed: 21 NOV 09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 15 FT BGS / Well Depth: —

Method of Drilling	Casing/Riser Type	Screen Portion of Well
☐ Hollow Stem ☐ Direct Rotary ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger ROTASONIC Hole Diameter: 8-INCH	☐ Steel ☐ Threaded ☐ Galv ☐ Welded ☐ PVC ☐ Solvent ☐ SS ☐ Welded Drive Shoe? ☐ Yes ☐ No Height above/ below surface Diameter	Material Diameter Length Set between ft and ft Slot size
Filter Pack	**Annulus Seal**	**Grout**
Size Method of Install Composition Volume Used Depth to top of f.p.	☐ Bentonite Pellets Chips ☐ Volume Used? Method of Instal. Depth: from ft. to ft.	Used? ☒ Yes ☐ No Volume ☐ Neat Cement ☐ Bentonite ☒ BENTONITE CHIPS Method of Instal. GRAVITY Depth: from ft. to ft.
Well Head Completion	**Development**	**Static Water Level**
☐ Flushmount ☐ Stand Up Cap Type Lock # Volume Used	Method Gallons Evacuated Date Odor	Initial DRY ft Development ft. 24 hr. ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	~~PID Reading (ppm)~~ CPM	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(in)	USCS Class	Contact-Depth	Descriptions and Comments
	GRAB 2,792 CPM DOWN HOLE										(FT BGS)
0	CORE							5/5			0 - 2.8 CLAYEY SILT MOIST NO DILATANCY, HIGH TOUGHNESS HIGH PLASTICITY, 10YR 3/2
	2,736		18,088								
	3,033		37,467								
	3,701		28,491								
	3,041		20,424								2.8-10.5 SILTY CLAY WITH FINE GRAVEL, MOIST, NO DILATANCY, MEDIUM TOUGHNESS HIGH PLASTICITY 10YR 3/2 MOTTLED 10YR 4/6
	2,957		17,004								
5	3,031		16,108					5/5			
	3,226		18,446								
	3,214		19,215								
	3,254		19,483								
	3,364		17,504								
10											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: LUCKEY FUSRAP	Boring/Well #: SB021
Geologist: CARL PIDGE P.G.	Driller/Company: DAVE SCHREENGOST FRONTIER	
Drilling Equip.: VERSA SONIC	Date Start: 21 NOV 09	Date Completed: 21 NOV 09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 15 FT BGS / Well Depth: —

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	~~PID Reading (ppm)~~ CPM	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(in)	USCS Class	Contact-Depth	Descriptions and Comments (FT BGS)
10	CORE		DOWN HOLE								10.5-15 SILTY CLAY TRACE FINE GRAVEL, MOIST, NO DILATANCY, HIGH TOUGHNESS, HIGH PLASTICITY 10YR 3/1
	3,438		14,833					5/5			
	3,134		13,834								
	2,888		CAVE								
	2,733										
	2,856										
15	TERMINATED 15 FT BGS										

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: LUCKEY FRUSRAP	Boring/Well #: SB22
Geologist: CARL PIDAE P.G.	Driller/Company: SCHRECENGOST DANZ / FRONTZ	
Drilling Equip.: VERSA SONIC	Date Start: 20NOV09	Date Completed: 20NOV09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 25 FT BGS / Well Depth: —

Method of Drilling	Casing/Riser Type	Screen Portion of Well
☐ Hollow Stem ☐ Direct Rotary ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger ROTASONIC Hole Diameter: 8-INCH	☐ Steel ☐ Threaded ☐ Galv ☐ Welded ☐ PVC ☐ Solvent ☐ SS ☐ Welded Drive Shoe? ☐ Yes ☐ No Height above/ below surface ____ Diameter ____	Material ____ Diameter ____ Length ____ Set between ____ ft and ____ ft Slot size ____
Filter Pack	**Annulus Seal**	**Grout**
Size ____ Method of Install ____ Composition ____ Volume Used ____ Depth to top of f.p. ____	☐ Bentonite Pellets ____ Chips ____ ☐ ____ Volume Used? ____ Method of Instal. ____ Depth: from ____ ft. to ____ ft.	Used? ☒ Yes ☐ No Volume ____ ☐ Neat Cement ☐ Bentonite ☒ BENTONITE CHIPS Method of Instal. GRAVITY Depth: from ____ ft. to ____ ft.
Well Head Completion	**Development**	**Static Water Level**
☐ Flushmount ☐ Stand Up Cap Type ____ Lock # ____ Volume Used ____	Method ____ Gallons Evacuated ____ Date ____ Odor ____	Initial 10 ft Development ____ ft. 24 hr. ____ ft.

DRILLING	SAMPLE								GEOLOGIC LOG		
Depth	~~PID Reading (ppm)~~ CPM	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(in)	USCS Class	Contact-Depth	Descriptions and Comments
	CORE	CPM		DOWNHOLE							
0	3,079	GRAND		CPM				5/5			0-1.3 SILTY CLAY, MOIST, NO DILATANCY, LOW TOUGHNESS, HIGH PLASTICITY 10YR 3/1 VERY DARK GRAY
	2,814			17,207							
	3,038			20,433							
	3,026			19,492							1.3-5 SILT W/CLAY, MOIST NO DILATANCY, MEDIUM TOUGHNESS, LOW PLASTICITY, 10YR 5/1 GRAY MOTTLED 10YR 5/8 YELLOWISH BROWN
	2,904			18,849							
	2,937			19,630							
5	3,122			19,057				5/5			5-5.8 SAME
	3,135			18,679							5.8-9.2 SAME TRACE FINE GRAVEL
	3,167			19,180							
	3,206			17,629							9.2-13.4 CLAYEY SILT, MOIST, NO DILATANCY, MEDIUM TOUGHNESS, HIGH PLASTICITY, 10YR 4/1
10	3,038			16,159							
				WATER							

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: LUCKEY FUSRAP	Boring/Well #: SB022
Geologist: CARL PIDGE P.G.	Driller/Company: SCHRECENGOST DANK / FRONTZ	
Drilling Equip.: VERSA SONIC	Date Start: 20NOV09	Date Completed: 20NOV09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 15 FT BGS / Well Depth: —

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	~~PID Reading (ppm)~~ CPM	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(in)	USCS Class	Contact-Depth	Descriptions and Comments
10	(CPM) CORE 2,659			DOWNHOLE WATER				5/5			13.4-15 COBBLES & GRAVEL WITH FINES, WET 10YR 5/1
	2,752										
	2,260										
	2,260										
15	1,769										
											TERMINATED 15 FT BGS

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: LUCKEY FUSRAP	Boring/Well #: SB023
Geologist: CARL PIDGE P.G.	Driller/Company: DAVE SCHREENGOST / FRONTZ	
Drilling Equip.: VERSA SONIC	Date Start: 20 NOV 09	Date Completed: 20 NOV 09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 13 FT BGS / Well Depth: —

Method of Drilling	Casing/Riser Type	Screen Portion of Well
☐ Hollow Stem ☐ Direct Rotary ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger ROTASONIC Hole Diameter: 8-INCH	☐ Steel ☐ Threaded ☐ Galv ☐ Welded ☐ PVC ☐ Solvent ☐ SS ☐ Welded Drive Shoe? ☐ Yes ☐ No Height above/ below surface Diameter	Material Diameter Length Set between ft and ft Slot size
Filter Pack	**Annulus Seal**	**Grout**
Size Method of Install Composition Volume Used Depth to top of f.p.	☐ Bentonite Pellets Chips ☐ Volume Used? Method of Instal. Depth: from ft. to ft.	Used? ☒ Yes ☐ No Volume ☐ Neat Cement ☐ Bentonite ☒ BENTONITE CHIPS Method of Instal. GRAVITY Depth: from ft. to ft.
Well Head Completion	**Development**	**Static Water Level**
☐ Flushmount ☐ Stand Up Cap Type Lock # Volume Used	Method Gallons Evacuated Date Odor	Initial DRY ft Development ft. 24 hr. ft.

DRILLING	SAMPLE								GEOLOGIC LOG		
Depth	~~PID Reading (ppm)~~ CPM	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(in)	USCS Class	Contact-Depth	Descriptions and Comments
0	(CPM) GROUND CORE			4,086 DOWNHOLE				5/5			0-1.5 CLAYEY SILT, MOIST, MEDIUM STRENGTH, NO DILATANCY, HIGH TOUGHNESS, LOW PLASTICITY, CAPILLARY ROOTS 10YR 4/2 DARK GRAYISH BROWN
	3,217			22,337							
	3,929			26,844							
	3,804			21,283							
	3,420			18,830							1.5-9.8 CLAYEY SILT, MOIST MEDIUM STRENGTH, NO DILATANCY, HIGH TOUGHNESS, LOW PLASTICITY 10YR 5/1 GRAY MOTTED 10YR 5/6 YELLOWISH BROWN
5	3,234			16,584							
	3,140			15,640				5/5			
	3,001			15,794							
	3,092			18,588							9.8-13 SILTY CLAY, MOIST, MEDIUM STRENGTH, NO DILATANCY MEDIUM TOUGHNESS, MEDIUM PLASTICITY, FEW COBBLES (CRYSTALLINE LIMESTONE DARK GRAY) 2.5Y 3/1
	3,440			17,298							
10	3,238			16,496							

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: LUKEY FUSRAP	Boring/Well #: SB023
Geologist: CARL PIDGE P.G.	Driller/Company: SCHREECKGOST / DAVE FRONTZ	
Drilling Equip.: VERSA SONIC	Date Start: 20 NOV 09	Date Completed: 20 NOV 09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 13 FT BGS / Well Depth: —

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	~~PID Reading (ppm)~~ CPM	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(in)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE			DOWN HOLE				3/3			
	3,217			15,530							
	2,996			12,849							
	2,897			CAVE							
	REFUSAL			13 FT BGS							13 FT BGS REFUSAL
15											CRYSTALLINE LIMESTONE DARK GRAY/BLUE

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Lucky FUSRAP	Boring/Well #: SB024
Geologist: S Deeter	Driller/Company: DAVE SCHRECKNOST / FRONTIER	
Drilling Equip.: VersaSonic (Rotosonic)	Date Start: 11/19/09	Date Completed: 11/20/09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 10.0 ft / Well Depth: —

Method of Drilling

- ☐ Hollow Stem ☐ Direct Rotary
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger
- Rotosonic

Hole Diameter: 6"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded
- Drive Shoe? ☐ Yes ☐ No

Height above/below surface: ____

Diameter: ____

Screen Portion of Well

Material ____ Diameter ____ Length ____ Set between ____ ft and ____ ft Slot size ____

Filter Pack

Size ____ Method of Install ____ Composition ____ Volume Used ____ Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____ ☐ ____ Volume Used? ____ Method of Instal. ____ Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume 150#

☐ Neat Cement ☐ Bentonite

☒ Bentonite Chips

Method of Instal. Gravity

Depth: from 0 ft. to 10 ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____ Lock # ____ Volume Used ____

Development

Method ____ Gallons Evacuated ____ Date ____ Odor ____

Static Water Level

Initial NE ft

Development — ft.

24 hr. — ft.

DRILLING	SAMPLE							GEOLOGIC LOG		
Depth	~~PID Reading (ppm)~~ core LAD (cpm)	Sample Type base (cpm)	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery ~~(in)~~ ft	USCS Class	Contact-Depth	Descriptions and Comments
0	~~2951~~ 4102 cpm										0 – 1.5 Silt + clay, moist, soft medium dry strength, no dilatancy, high toughness, high plasticity, 10YR 2/1 (black), organic
	~~10415~~										
	3937		16605								
	4034		11445					3ft			
	4160		10716								
	3862	6" core	12142					5ft			
5	3771		12545								
	3761		13067								
	4011		13508								
	3954		13631					5ft			1.5 – 7.4 Silt w/clay, s. moist, very stiff, high dry strength no dilatancy, medium toughness
	3995		17618					5ft			
10	4030		CAVE							TD = 10.0	

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Lucky FUSRAP	Boring/Well #: SB024
Geologist: J. Deeter	Driller/Company: DAVE SCHRECKENGOST / FRONTIER	
Drilling Equip.: Versa-Sonic	Date Start: 11/19/09	Date Completed: 11/20/09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 10.0 ft / Well Depth: —

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	~~PID Reading (ppm)~~ Rad (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery ~~(in)~~ ft	USCS Class	Contact-Depth	Descriptions and Comments
											medium plasticity, 10YR 2/2 (very dark grayish brown), mottled.
											7.4 – 10.0 Clay and silt w/ sand, gravel. Dry. Very stiff to hard, high dry strength, no dilatancy, medium toughness, medium plasticity 2.5Y 2.5/1 Black, lime stone fragments, coarse sub-rounded sand to gravel <3"D.

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB025
Geologist: C. Pidge	Driller/Company: DAVE SCHREENGOST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 8DEC09	Date Completed: 8DEC09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: REFUSAL 14FTBGS	Well Depth: NA

Method of Drilling	Casing/Riser Type	Screen Portion of Well
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter:	☐ Steel ☐ Threaded ☐ Galv ☐ Welded ☐ PVC ☐ Solvent ☐ SS ☐ Welded Drive Shoe? ☐ Yes ☐ No Height above/below surface Diameter	Material Diameter Length Set between ft and ft Slot size
Filter Pack	**Annulus Seal**	**Grout**
Size Method of Install Composition Volume Used Depth to top of f.p.	☐ Bentonite Pellets Chips ☐ Volume Used? Method of Instal. Depth: from ft. to ft.	Used? ☒ Yes ☐ No Volume ☐ Neat Cement ☒ Bentonite ☐ Method of Instal. TREMIE Depth: from ft. to ft.
Well Head Completion	**Development**	**Static Water Level**
☐ Flushmount ☐ Stand-Up Cap Type Lock # Volume Used	Method Gallons Evacuated Date Odor	Initial DRY ft Development ft. 24 hr. ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ift	USCS Class	Contact-Depth	Descriptions and Comments
0	3.2	13	Ground								0-1 SILT LITTLE COARSE
	CORE		DOWNHOLE								SAND CAPILLARY
	2.2	88	13,371			0-5		5/5			ROOTS 10YR 2/1
						FTBGS					
	2.5	65	16,878								1-2.2 SAME (NO ROOTS)
	2.3	79	17,681								DRY, LOOSE 10YR 4/3
	2.3	87	18,745								
	2.7	60	20,202								2.2-13 SILT LITTLE CLAY
5											DRY MEDIUM STRENGTH
	2.7	72	20,008			5-10		5/5			LITTLE FINE GRAVEL
						FTBGS					
	3.0	77	20,180								10YR 4/2 MOTTLED
	2.9	72	20,792								10YR 5/6
	3.0	19	20,465								
10	2.7	62	18,176								

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP		Boring/Well #: SB025
Geologist: C. Pidge	Driller/Company: DAVE SCHREENGOST / Frontz		
Drilling Equip.: Versa-Sonic		Date Start: 8 DEC 09	Date Completed: 8 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: REFUSAL 14 FT BGS	Well Depth: NA

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWNHOLE			10-15 FT BGS		4/4			13-14 CLAY, FEW COARSE SAND AND FINE GRAVEL, HIGH PLASTICITY 10YR3/1
	3.0	13	16.998								
	2.9	53	16.853								
	2.8	75	CAVE								
	2.5	84	↓								
15	REFUSAL 14 FT BGS										
20											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB26
Geologist: C. Pidge	Driller/Company: KNIRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 5DEC09	Date Completed: 5DEC09
Surface Elev.: / Top of Casing Elev.: NA	Total Depth: 20 FT BGS	Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 8-INCH

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface: _____

Diameter: _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets ☐ Chips

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

☐ _____

Method of Instal. TREMIE

Depth: from _____ ft. to _____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial DRY ft

Development _____ ft.

24 hr. _____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	4,840 CORE	Grab	DOWN HOLE			0-5 FT BGS		5/4			0-2.6 RAILROAD BED COARSE GRAVEL & COARSE SAND DRY LOOSE 10YR 2/1
	2,386		15,908								
	2,633		17,530								
	2,755		17,563								
	2,699		18,867								2.6-5.8 CLAYEY SILT FEW COARSE SAND MOIST, HIGH TOUGHNESS 10YR 4/2 MOTTLED 10YR 5/8
	NO RECOVERY		19,129								
5	2,807		19,402			5-10 FT BGS		5/5			
	3,053		18,620								
	3,134		18,215								5.8-13 10YR 4/3 MOTTLED 10YR 4/2 & 10YR 5/8
	3,169		17,786								
	2,842		18,509								
10											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB026	
Geologist: C. Pidge	Driller/Company: KHILS KAUER / Frontz		
Drilling Equip.: Versa-Sonic		Date Start: 5 DEC 09	Date Completed: 5 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS	Well Depth: NA

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWNHOLE			10-15 FT BGS		5/5			13-20 CLAY FEW SILT, MOIST HIGH TOUGHNESS 10YR 3/1
	2,970		19,951								
	2,986		20,742								
	3,257		20,845								
	3,340		18,768								
	3,200		17,403								
15	2,864		13,582			15-20 FT BGS		5/5			
	3,010		13,104								
	3,085		12,040								
	2,915		CAVE								
	3,104		↓								
20	TERMINATED						20 FT BGS				

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SBQ27
Geologist: C. Pidge	Driller/Company: DAVE SCHAEFER-GOST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 7 DEC 09	Date Completed: 7 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: _____

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface _____

Diameter _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets _____ Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

☐ _____

Method of Instal. TREMIE

Depth: from _____ ft. to _____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial DRY ft

Development _____ ft.

24 hr. _____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
											DRILLED 7 DEC 09 LOGGED/SAMPLED 8 DEC 09
0	5,283	GROUND CORE	DOWN HOLE			0-5 FT BGS		5/5	OL		0 - 0.9 SILT LITTLE CLAY DRY ORGANIC, LOW LOOSE PLASTICITY
	2,294		15,991								
	2,497		18,161								
	2,465		18,917								0.9-1.8 SILT LITTLE CLAY MOIST, HIGH PLASTICITY ~~FEW~~
	2,590		18,966								
5	2,631		18,017								
	2,645		17,755			5-10 FT BGS		5/5			1.8-13.5 SILT FEW CLAY MOIST FEW FINE GRAVEL 10YR 4/2 MOTTLED 10YR 5/8
	2,824		16,483								
	2,754		16,300								
	2,691		18,463								
10	2,749		20,015								

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: BD27	
Geologist: C. Pidge	Driller/Company: DAVE SCHREEVROST / Frontz		
Drilling Equip.: Versa-Sonic	Date Start: 7 DEC 09	Date Completed: 7 DEC 09	
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS	Well Depth: NA

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWNHOLE								13.5-19 CLAY FEW SILT MOIST LITTLE FINE GRAVEL MEDIUM TOUGHNESS 10YR 3/1
	2,793		20,910			10-15 FT BGS		5/5			
	2,987		20,661								
	3,038		17,326								
	3,044		13,518								
15	3,057		CAVE			15-20 FT BGS		5/4			
	2,754										
	2,716										
	2,552										
	2,376										
20	NO RECOVERY										
	TERMINATED 20 FT BGS										

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB028
Geologist: C. Pidge	Driller/Company: DAN SCHREEWGOST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 4DEC09	Date Completed: 4DEC09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 17FTBGS / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: _____

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface _____

Diameter _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets _____ Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

☐ _____

Method of Instal. TREMIE

Depth: from _____ ft. to _____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial DRY ft

Development _____ ft.

24 hr. _____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
											NOTE: CORE FROZEN WHEN SAMPLED 5DEC09 DRILLED 4DEC09 LOGGED/SAMPLED 5DEC09
0	3,837 GRAMS CORE		DOWNHOLE			0-5 FTBGS		5/5			0-2.1 RAILROAD BED COARSE GRAVEL & ~~FINE~~ SAND & COARSE DRY LOOSE 10YR2/1
	2,392		9,688								
	2,452		15,796								
	2,771		17,913								2.1-13.1 SILT LITTLE CLAY MEDIUM STRENGTH DRY 10YR 3/3
	2,790		18,963								
5	3,008		18,433								
	2,791		17,477			5-10 FTBGS		5/5			7.6-13.1 MOIST
	2,791		17,382								
	2,916		17,386								
	2,915		17,793								
10	2,900		17,967								

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB&28	
Geologist: C. Pidge	Driller/Company: DAVE SCHWERWOST / Frontz		
Drilling Equip.: Versa-Sonic	Date Start: 4DEC09	Date Completed: 4DEC09	
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 17FT BGS	Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWNHOLE								13.1-17 CLAY FEW SILT FEW COARSE SAND MOIST 10YR 3/1
	2,693		20.603		10-15 FT BGS			5/5			
	2,823		20.618								
	3,218		CAVE								
	3,173										17 LIMESTONE GRAVEL
15	2,923										
	2,734										
	2,594				15-17 FT BGS			2/2			
	REFUSAL				17 FT BGS						
20											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB229
Geologist: C. Pidge	Driller/Company: DAVE SCHREECENGOST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 4 DEC 09	Date Completed: 4 DEC 09
Surface Elev.: / Top of Casing Elev.: NA	Total Depth: 18 FT BGS	Well Depth: NA

Method of Drilling	Casing/Riser Type	Screen Portion of Well
☐ Hollow Stem ☒ Sonic	☐ Steel ☐ Threaded	Material
☐ Air Rotary ☐ Bucket Auger	☐ Galv ☐ Welded	Diameter / Length
☐ MUD Rotary ☐ Flight Auger	☐ PVC ☐ Solvent	Set between ft and ft
Hole Diameter:	☐ SS ☐ Welded	Slot size
	Drive Shoe? ☐ Yes ☐ No	
	Height above/ below surface	
	Diameter	

Filter Pack	Annulus Seal	Grout
Size	☐ Bentonite Pellets Chips	Used? ☒ Yes ☐ No Volume
Method of Install	☐	☐ Neat Cement ☒ Bentonite
Composition	Volume Used?	☐
Volume Used	Method of Instal.	Method of Instal. TREMIE
Depth to top of f.p.	Depth: from ft. to ft.	Depth: from ft. to ft.

Well Head Completion	Development	Static Water Level
☐ Flushmount ☐ Stand Up	Method	Initial DRY ft
Cap Type	Gallons Evacuated	Development ft.
Lock #	Date	24 hr. ft.
Volume Used	Odor	

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	3,303	Core	0			0-5 FT BGS		5/5			0-0.9 CLAY LITTLE SILT, MOIST LOW TOUGHNESS, MEDIUM PLASTICITY 10YR 2/2
	2,309		13,400								
	2,439		16,436								0.9-2 PEAT, ORGANIC, LOOSE DRY 10YR 2/2
	2,561		18,808								
	2,534		18,998								2-14.2 SILT LITTLE CLAY DRY MEDIUM STRENGTH FEW COARSE SAND 10YR 3/4 MOTTLED 10YR 5/8
5	2,405		18,291			5-10 FT BGS		5/2			
	2,607		17,176								
	2,789		17,471								
	NO RECOVERY		17,698								
	NO RECOVERY		17,016								
	NO RECOVERY		17,787								
10											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP		Boring/Well #: SB029
Geologist: C. Pidge	Driller/Company: SCHREECENGOST DANE / Frontz		
Drilling Equip.: Versa-Sonic		Date Start: 4/1/2009	Date Completed: 4/1/2009
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 18 FT BGS	Well Depth: NA

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWN HOLE								
	2.487		18.462			10-15 FT BGS		5/5			14.2 - 17.5 CLAY FEW SILT FEW COARSE SAND, MOIST 10YR 3/1
	2.919		19.869								
	2.973		20.533								
	2.948		20.381								
15	2.590		9.433					5/3			17.5-18 FOSSILIFEROUS LIMESTONE
	2.896		CAVE			15-20 FT BGS					
	2.952										
	2.357										
	REFUSAL 18 FT BGS										
20											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB030
Geologist: C. Pidge	Driller/Company: DAVE SCHNEEGANOST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 7 DEC 09	Date Completed: 7 DEC 09
Surface Elev.: / Top of Casing Elev.: NA	Total Depth: 17 FT BGS	Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6 inch

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface: ____

Diameter: ____

Screen Portion of Well

Material ____

Diameter ____ Length ____

Set between ____ ft and ____ ft

Slot size ____

Filter Pack

Size ____

Method of Install ____

Composition ____

Volume Used ____

Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ ____

Volume Used? ____

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume ____

☐ Neat Cement ☒ Bentonite

☐ ____

Method of Instal. Tremie

Depth: from ____ ft. to ____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____

Lock # ____

Volume Used ____

Development

Method ____

Gallons Evacuated ____

Date ____

Odor ____

Static Water Level

Initial 9 ft

Development ____ ft.

24 hr. ____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	5,675	Grab				0-5		5/5			0-1.6 RAILROAD BED; DRY COARSE GRAVEL LITTLE COARSE SAND
	CORE		DOWNHOLE			FT BGS					
	2,069		10,807								
	2,311		17,510								
	2,726		18,101								
	2,536		18,217								
	2,640		18,217			5-10		5/5			1.6-~~14.7~~ 13.7 SILT LITTLE CLAY MOIST, MEDIUM STRENGTH 10YR 4/2 MOTTLED 10YR 5/8
5	2,431		17,255			FT BGS					
	2,631		17,562								
	2,855		16,898								
	2,977		16,454								
	2,921		WATER								
10			↓								

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP		Boring/Well #: SB23Q
Geologist: C. Pidge	Driller/Company: DAVE SCHREENGOST / Frontz		
Drilling Equip.: Versa-Sonic		Date Start: 7 DEC 09	Date Completed: 7 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 17 FT BGS	Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CONE		DOWNHOLE								
	2,358		WATER			10-15 FT BGS		5/5			13.7-17 CLAY TRACE COARSE SAND MOIST 10YR3/1
	2,562										
	2,911										
	2,073										
	2,819										
15	2,340					15-20 FT BGS		2/2			
	2,212										
	REFUSAL 17 FT BGS										
20											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB231
Geologist: C. Pidge	Driller/Company: DAVE SCHRECENGOST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 7 DEC 07	Date Completed: 7 DEC 07
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 16 FT BGS / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6-inch

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface: _____

Diameter: _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets _____ Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

☐ _____

Method of Instal. TREMIE

Depth: from _____ ft. to _____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial 13 ft

Development _____ ft.

24 hr. _____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	4,536	GROUND CORE	BOUNDARY			0-5 FT BGS		5/5			0-1.3 ORGANIC PEAT DRY LOOSE 10YR 3/2
	2,463		12,568								
	2,632		18,160								1.3-4.9 SILT LITTLE CLAY TRACE COARSE SAND MOIST, MEDIUM STRENGTH, HIGH TOUGHNESS 10YR 4/2 MOTTLED 10YR 2/1 & 10YR 5/8
	2,840		18,688								
	2,842		19,047								
5	2,655		17,573								
	2,584		18,210			5-10 FT BGS		5/5			
	3,001		16,802								4.9-13.5 ~~SAME~~ SILT SOME COARSE GRAVEL DRY LOOSE 10YR 4/2 MOTTLED 10YR 5/8
	2,981		15,979								
	2,961		18,409								
10	2,814		20,352								

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB031
Geologist: C. Pidge	Driller/Company: DAVE SCHREEVLOST / Frontz	
Drilling Equip.: Versa-Sonic	Date Start: 7DEC09	Date Completed: 7DEC09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 16FTBLS / Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10											13.5-16 CLAY FEW SILT MEDIUM TOUGHNESS 10YR 3/1
	2,737		20,826			10-15 FT BLS		5/5			
	3,054		19,966								
	3,215		16,629								
	3,151		WATER								
15	2,831		↓								
	2,530					15-20 FT BLS		1/1			
	REFUSAL			16 FT BLS							
20											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB032
Geologist: C. Pidge	Driller/Company: DAVE SCHREECKBOST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 7 DEC 09	Date Completed: 7 DEC 09
Surface Elev.: / Top of Casing Elev.: NA	Total Depth: 17 FT BGS	Well Depth: NA

Method of Drilling

- ☐ Hollow Stem
- ☒ Sonic
- ☐ Air Rotary
- ☐ Bucket Auger
- ☐ MUD Rotary
- ☐ Flight Auger

Hole Diameter: _____

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/ below surface _____

Diameter _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets _____ Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

☐ _____

Method of Instal. TREMIE

Depth: from _____ ft. to _____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial 8 FT BGS ft

Development _____ ft.

24 hr. _____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	4,711	CORE	GRAB DOWNHOLE			0-5 FT BGS		5/5			0-2.4 RAILROAD BED; COARSE GRAVEL FEW COARSE SAND, DRY LOOSE 10YR 2/1
	3,319		14,555								
	3,854		18,066								
	3,956		19,156								
	4,219		19,572								2.4-4.6 SILT LITTLE CLAY, DRY, MEDIUM ~~TOUGHNESS~~ STRENGTH, HIGH PLASTICITY ~~MOTTLED~~ 10YR 4/2
5	4,386		20,250								
	4,109		19,022			5-10 FT BGS		5/5			
	4,215		18,433								
	4,315		WATER								15.2
	4,511										4.6-~~6.5~~ CLAY FEW SILT, MOIST MEDIUM STRENGTH HIGH TOUGHNESS HIGH PLASTICITY 10YR 4/2
10	4,567										

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB&32	
Geologist: C. Pidge	Driller/Company: DAVE SCHREEWGOOT / Frontz		
Drilling Equip.: Versa-Sonic	Date Start: 7 DEC 09	Date Completed: 7 DEC 09	
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 17 FT BGS	Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWN HOLE WATER			10-15 FT BGS		5/5			15.2-16 CLAY, MOIST HIGH TOUGHNESS, HIGH PLASTICITY 10YR 3/1
	4.322										
	4.428										
	4.516										
	4.564										
15	4.625					15-20 FT BGS		5/2			16-17 LIMESTONE, COARSE GRAVEL LITTLE COARSE SAND N 7/1
	4.426										
	NO READING										
	REFUSAL				17 FT BGS						
20											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: LUCKEY FUSRAP	Boring/Well #: SB033
Geologist: CARL PIDGE P.G.	Driller/Company: DAVE SCHNEEGOST / FRONTZ	
Drilling Equip.: VERSA SONIC	Date Start: 24 NOV 09	Date Completed: 24 NOV 09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 20 FT BGS / Well Depth: —

Method of Drilling	Casing/Riser Type	Screen Portion of Well
☐ Hollow Stem ☐ Direct Rotary ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger ROTASONIC Hole Diameter: 8-INCH	☐ Steel ☐ Threaded Height above/ below surface ☐ Galv ☐ Welded ☐ PVC ☐ Solvent ☐ SS ☐ Welded Diameter Drive Shoe? ☐ Yes ☐ No	Material Diameter Length Set between ft and ft Slot size
Filter Pack	**Annulus Seal**	**Grout**
Size Method of Install Composition Volume Used Depth to top of f.p.	☐ Bentonite Pellets Chips ☐ Volume Used? Method of Instal. Depth: from ft. to ft.	Used? ☒ Yes ☐ No Volume ☐ Neat Cement ☐ Bentonite ☒ BENTONITE CHIPS Method of Instal. GRAVITY Depth: from ft. to ft.
Well Head Completion	**Development**	**Static Water Level**
☐ Flushmount ☐ Stand Up Cap Type Lock # Volume Used	Method Gallons Evacuated Date Odor	Initial DRY ft Development ft. 24 hr. ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	~~PID Reading (ppm)~~ CPM	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(in)	USCS Class	Contact-Depth	Descriptions and Comments
0	3,240	Grab	Dave Hole					5/5			0-1.3 CLAYEY SILT MOIST
	core										MEDIUM STRENGTH 10YR 3/2
	2,603		16,770								1.3-12.9 SILT TRACE CLAY
	2,741		17,856								MEDIUM STRENGTH, 10YR 4/3
	2,891		16,499								MOTTED 10YR 5/8 TRACE FINE
	2,560		16,168								GRAVEL
5	2,678		17,697								12.9-20 CLAY TRACE SILT, MOIST
	3,706		17,630					5/5			HIGH TOUGHNESS, HIGH
	3,120		17,538								PLASTICITY 10YR 3/1
	3,241		18,109								
	3,141		18,504								
10	3,055		17,868								

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: LUCKEY FUSRAP	Boring/Well #: SB 033
Geologist: CARL PIDGE P.G.	Driller/Company: DAVE SCHNEENGOOS FRONTIER	
Drilling Equip.: VERSA SONIC	Date Start: 24 NOV 09	Date Completed: 24 NOV 09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 20 FT BGS / Well Depth: —

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	~~PID Reading (ppm)~~ CPM	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(in)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DAWHOLE					5/5			12.9.20 CLAY TRACE SILT MOIST HIGH TOUGHNESS HIGH PLASTICITY, 10YR 3/1
	3,208		18.859								
	3,360		19,046								
	3,370		18,151								
	3,270		CAVE								
15	3284							5/5			
	3,072										
	2,988										
	2,704										
	2,471										
20	2,800										
	TERMINATED 20 FT BGS										

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Lucky FUSRAP	Boring/Well #: SB0J4
Geologist: S. Deaton	Driller/Company: Kris Lowen / Fronte	
Drilling Equip.: Versa - Sonic	Date Start: 11/24/05	Date Completed: 11/24/05
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 20.0 ft / Well Depth: —

Method of Drilling

☐ Hollow Stem ☐ Direct Rotary
☐ Air Rotary ☐ Bucket Auger
☐ MUD Rotary ☐ Flight Auger
Hole Diameter: SONIC 6"/8"

Casing/Riser Type

☐ Steel ☐ Threaded
☐ Galv ☐ Welded
☐ PVC ☐ Solvent
☐ SS ☐ Welded
Drive Shoe? ☐ Yes ☐ No
Height above/below surface: ____
Diameter: ____

Screen Portion of Well

Material ____
Diameter ____ Length ____
Set between ____ ft and ____ ft
Slot size ____

Filter Pack

Size ____
Method of Install ____
Composition ____
Volume Used ____
Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____
☐ ____
Volume Used? ____
Method of Instal. ____
Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume 250#
☐ Neat Cement ☐ Bentonite
☒ Bentonite Chips
Method of Instal. Gravity
Depth: from 0 ft. to 20 ft.

Well Head Completion

☐ Flushmount ☐ Stand Up
Cap Type ____
Lock # ____
Volume Used ____

Development

Method ____
Gallons Evacuated ____
Date ____
Odor ____

Static Water Level

Initial 18.0 ft
Development — ft.
24 hr. — ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	~~PID Reading (ppm)~~ RKS cpm Core	~~Sample Type~~ Bore (cpm)	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery (ft)	USCS Class	Contact-Depth	Descriptions and Comments
0	4900	4900						—			0 – 0.8
	4617	17049									Silt / Clay. S. moist,
	4573	18790						4/5			med to low dry strength,
	4702	17448									no dilatancy, low
	4584	16557									toughness, med plasticity
5	4551	15266						—			10R 4/1 (dark reddish gray)
	4385	16282									
	4446	16611						5/5			
	4561	ND									
	4548	↓									
10	4553							—			

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB074	
Geologist: S. Deeter	Driller/Company: Kris Lowen / Frontier		
Drilling Equip.: Vensa - Sonic		Date Start: 11/24/09	Date Completed: 11/24/09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 20.0 ft	Well Depth: —

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	~~PID Reading (ppm)~~ RAD (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery ~~(in/ft)~~	USCS Class	Contact-Depth	Descriptions and Comments
10											0.8 - 11.8
	4571	ND (water)									Silt/Clay. S. moist to
	4608							5/5			dry. Stiff, high dry
	4602										strength, no to slow
	4647										dilatancy, med toughness,
15	4712										med to high plasticity.
	4429										5YR 4/2 (dark reddish gray),
	4316							5/5			mottled. Some sand/silt
	4176										lenses. One sand layer
	4124										>2" T @ 3.0 ft. Gravel
20	3744										to <5%, 2" D, subangular.
											11.8 - 20.0
											Clay w/silt. Dry to wet
											at depth. Some zones 76"
											thickness. no dilatancy, med
											toughness, high plasticity,
											high dry strength. 3/N
											(dark gray). Some
											gravel >25% at depth.
											Some red nodules between
											14.0 and 18.0 ft (10R5/1 reddish
											gray). Boulders/Cobbles >5" D
											at 19.5 to 20.0 ft (limestone).

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SBQ35
Geologist: C. Pidge	Driller/Company: DAVE SCHMEENDT / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 1 DEC 09	Date Completed: 1 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 19 FT BGS / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem
- ☒ Sonic
- ☐ Air Rotary
- ☐ Bucket Auger
- ☐ MUD Rotary
- ☐ Flight Auger

Hole Diameter: 8-inch

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface: _____

Diameter: _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets _____ Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

☐ _____

Method of Instal. GRAVITY

Depth: from _____ ft. to _____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial DRY ft

Development _____ ft.

24 hr. _____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	1,299 core		Ground down here					5/5			0-1.2 GRAVEL & GRAVELLY SOIL COARSE DRY LOOSE 10YR 4/2
	1,781		9,704								1.2-3.7 SILT WITH CLAY DRY, MEDIUM STRENGTH NO DILATANCY 10YR 3/1 MOTTLING 10YR 4/6
	2,486		17,182								
	2,502		18,613								
	2,272		16,475								
	2,203		16,098								3.7-5.8 SILT TRACE CLAY TRACE FINE GRAVEL DRY MEDIUM STRENGTH NO DILATANCY, 10YR 4/4 MOTTLING 10YR 4/6
5	2,206		17,100					5/5			
	2,340		17,586								
	2,143		17,437								
	2,241		17,487								5.8-10.1 SILT TRACE CLAY WITH LITTLE FINE TO COARSE GRAVEL DRY MEDIUM TOUGHNESS 10YR 3/2
	2,250		17,400								
10											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB035	
Geologist: C. Pidge	Driller/Company: SCHNEEWEIST DANE / Frontz		
Drilling Equip.: Versa-Sonic	Date Start: 1DEC09	Date Completed: 1DEC09	
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 19FT BGS	Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWNHOLE					5/5			10.1 - 13.7 SILT SOME CLAY TRACE GRAVEL FINE DRY MEDIUM STRENGTH, NO DILATANCY, NO PLASTICITY 10YR 5/8 MOTTLED WITH 10YR 4/1
	2,442		16,986								
	2,503		17,148								
	2,466		19,728								
	2,559		19,851								13.7 - 19 CLAY TRACE SILT MOIST, NO DILATANCY, LOW TOUGHNESS MEDIUM PLASTICITY, 10YR 4/1
	2,599		19,083								
15	2,360		11,975					5/4			
	2,118		10,521								
	1,933		9,762								
	1,847		CAVE								
20	REFUSAL 19FT BGS										

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: LUCKEY FUSRAP	Boring/Well #: SB036
Geologist: CARL PIDGE P.G.	Driller/Company: SCHREECKGOST DAVE FRONTZ	
Drilling Equip.: VERSA SONIC	Date Start: 23 NOV 09	Date Completed: 23 NOV 09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 17 FT BGS / Well Depth: —

Method of Drilling	Casing/Riser Type	Screen Portion of Well
☐ Hollow Stem ☐ Direct Rotary ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger ROTASONIC Hole Diameter: 8 INCH	☐ Steel ☐ Threaded ☐ Galv ☐ Welded ☐ PVC ☐ Solvent ☐ SS ☐ Welded Drive Shoe? ☐ Yes ☐ No Height above/ below surface Diameter	Material Diameter Length Set between ft and ft Slot size
Filter Pack	**Annulus Seal**	**Grout**
Size Method of Install Composition Volume Used Depth to top of f.p.	☐ Bentonite Pellets Chips ☐ Volume Used? Method of Instal. Depth: from ft. to ft.	Used? ☑ Yes ☐ No Volume ☐ Neat Cement ☐ Bentonite ☒ BENTONITE CHIPS Method of Instal. GRAVITY Depth: from ft. to ft.
Well Head Completion	**Development**	**Static Water Level**
☐ Flushmount ☐ Stand Up Cap Type Lock # Volume Used	Method Gallons Evacuated Date Odor	Initial DRY ft Development ft. 24 hr. ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth (FT BGS)	~~PID Reading (ppm)~~ CPM	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(in)	USCS Class	Contact-Depth	Descriptions and Comments
0	GROUND	CORE	898 DOWNHOLE	CPM				5/5			0-0.7 ASPHALT 0.7-1.2 SUB BASE COARSE GRAVEL
	1,141		5,887								
	1,945		16,498								
	2,051		18,932								1.2-3.5 SILT TRACE CLAY DRY MEDIUM STRENGTH NO DILATANCY HIGH PLASTICITY 10YR 2/1 BLACK
	2,096		19,129								
	2,135		18,204								
5	2,121		17,400					5/5			3.5-4.2 CLAY BROWN, NO DILATANCY, HIGH TOUGHNESS HIGH PLASTICITY, MOTTLED 10YR 4/1, 5GY 4/1, 10YR 4/6
	1,987		16,706								
	1,865		16,409								
	2,073		15,986								
	2,044		14,593								4.2-13.5 AMA MOTTLED 10YR 4/1 10YR 5/6
10											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: LUCKEY FUSRAP	Boring/Well #: SB 036
Geologist: CARL PIDGE P.G.	Driller/Company: SCHREEN GOST / DANE FRONTZ	
Drilling Equip.: VERSA SONIC	Date Start: 23 NOV 09	Date Completed: 23 NOV 09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 17 FT BGS / Well Depth: —

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth (FT BGS)	~~PID Reading (ppm)~~ CPM	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(in)	USCS Class	Contact-Depth	Descriptions and Comments
10	(CPM) CORE		DOWNHOLE					5/5			13.8-17 CLAY TRACE SILT TRACE COARSE SAND MOIST NO DILATANCY, MEDIUM TOUGHNESS, HIGH PLASTICITY 10YR 4/1
	1,806		14.648								
	2,140		14.956								
	2,243		CAVE								
	2,387										
15	2,402							2/2			
	2,387										
	2,390										
											TERMINATED 17 FT BGS
20											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Lucky FUSRAP	Boring/Well #: SB 037
Geologist: S Deeter	Driller/Company: Kris Lauer / Fronte	
Drilling Equip.: Vease - Sonic	Date Start: 11/23/08	Date Completed: 11/23/08
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 15.0 ft / Well Depth: —

Method of Drilling

- ☐ Hollow Stem ☐ Direct Rotary
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger
- Sonic

Hole Diameter: 6"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Height above/ below surface: ____

Diameter: ____

Drive Shoe? ☐ Yes ☐ No

Screen Portion of Well

Material ____

Diameter ____ Length ____

Set between ____ ft and ____ ft

Slot size ____

Filter Pack

Size ____

Method of Install ____

Composition ____

Volume Used ____

Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ ____

Volume Used? ____

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume 200 #s

☐ Neat Cement ☐ Bentonite

☒ Bentonite Chips

Method of Instal. Gravity

Depth: from 0 ft. to 15.0 ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____

Lock # ____

Volume Used ____

Development

Method ____

Gallons Evacuated ____

Date ____

Odor ____

Static Water Level

Initial 8.0 ft

Development — ft.

24 hr. — ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	~~HD Reading (ppm)~~ Lab Rad (cpm)	Sample Type Bobl (cpm)	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-~~(in)~~ ft	USCS Class	Contact-Depth	Descriptions and Comments
0	3835										0 - 2.0
	3734	20602						4'/5'			Silt/Clay s. moist.
	3914	18801									Very stiff, med dry
	3959	14561									strength, slow dilatancy,
	4003	19103									low to med toughness, med
5	3827	15766									to low plasticity, 2.5YR 2.5/1
	3956	15702						5'/5'			(reddish black), ~~rootlets~~
	3903	16445									rootlets.
	4104	14996									
	4176	ND									
10	4192	ND									

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Lackey FUSRAP	Boring/Well #: SB037	
Geologist: S. Dexter	Driller/Company: Kais Lower / Fronty		
Drilling Equip.: Versa-Sonic		Date Start: 11/23/09	Date Completed: 11/23/09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 15.0 ft	Well Depth: —

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	~~PID Reading (ppm)~~ Rad (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(in) ft	USCS Class	Contact-Depth	Descriptions and Comments
10								—			2.0 – 11.5
	4102	ND						5/5			Silt/clay S. moist to wet. Some sand/silt lenses throughout. (mottled 10R 4/8, red) V. stiff to soft. high dry strength, no dilatancy, low to med toughness, low to med plasticity. 10YR 3/2 (very dark grayish brown)
	4252										
	4104										
	3927										
15	4040							—			11.5 – 15.0
											Gravelly silt/clay. Dry to wet at depth. no dilatancy, high dry strength, med toughness, med plasticity 7.5YR 3/1 (very dark gray) Gravel is sub-round to sub angular to <1" D.

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Lucky FUSRAP	Boring/Well #: SB078
Geologist: SDeaton	Driller/Company: Kris Lowen / Fugro	
Drilling Equip.: Versa-Sonic	Date Start: 11/23/09	Date Completed: 11/23/09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 15.0 ft / Well Depth: —

Method of Drilling

- ☐ Hollow Stem ☐ Direct Rotary
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: Sonic 6"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface: ____

Diameter: ____

Screen Portion of Well

Material ____

Diameter ____ Length ____

Set between ____ ft and ____ ft

Slot size ____

Filter Pack

Size ____

Method of Install ____

Composition ____

Volume Used ____

Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ ____

Volume Used? ____

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume 250#

☐ Neat Cement ☐ Bentonite

☒ Bentonite Chips

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____

Lock # ____

Volume Used ____

Development

Method ____

Gallons Evacuated ____

Date ____

Odor ____

Static Water Level

Initial [redacted] NA ft

Development — ft.

24 hr. — ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	~~PID Reading (ppm)~~ Cont Rel (cpm)	~~Sample type~~ (cpm)	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery (in)	USCS Class	Contact-Depth	Descriptions and Comments
0	4150							—			0-1.2
	3878	21198						5/5			Silt/clay S. moist.
	4263	20623									Stiff. Med dry strength,
	4316	14394									slow dilatancy, low to
	4163	12258									med toughness, med to
5	3880	11699						—			low plasticity. 2.5YR 2.5/1
	4266	11727									(reddish black), rootlets.
	4089	15547						5/5			
	4044	15819									
	4062	14566									
10	4371	11118						—			

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB038
Geologist: S. Dexter	Driller/Company: Kris Lowen / Fronte	
Drilling Equip.: Versa-Sonic	Date Start: 11/23/09	Date Completed: 11/23/09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 15.0 ft / Well Depth: —

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	PID Reading (ppm) RPD (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery (%)	USCS Class	Contact-Depth	Descriptions and Comments
10								—			1.2 – 12.0
	4269	10930									Silt w/ clay. S moist
	4341	10708						5/5			to dry. Some sand/silt
	4133	17721									lenses throughout. (mottled,
	3940	ND									10R 4/8, red). V. stiff, high
15	4110	↓						—			dry strength, no dilatancy,
											low toughness, med to
											low plasticity.
											gravel layer @ 8.5'
											10YR 3/2 (very dark grayish brown)
											12.0 – 15.0
											Gravelly silt/clay.
											Dry to moist. No dilatancy,
											high dry strength, med
											toughness, med plasticity
											7.5YR 3/1 (very dark gray)
											Some sub angular to
											sub rounded gravel
											to <2" @ 14-15.0 ft.

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB039
Geologist: S. Deeter	Driller/Company: D Schneckenpost / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 12/15/09	Date Completed: 12/15/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 18.0 ft / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6" / 8"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface _____

Diameter _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets _____ Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

☐ _____

Method of Instal. Gravity

Depth: from _____ ft. to _____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial 5 ft

Development _____ ft.

24 hr. _____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Core Radiological Scan Reading (cpm)	~~Sample Type~~ Core (cpm)	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	2958										0 – 1.8
	2549	16,246						5/5			Clay / Silt. Dry to s. moist.
	2622	20,380									Stiff, Med Dry strength,
	2580	19,184									no dilatancy, low to med
	2658	17,441									toughness, med plasticity,
5	2472	water									7.5YR 3/1 (very dark gray)
	2634										mottled, some rootlets
	2371							5/5			
	2471										
	2377										
10	2552										

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB039	
Geologist: S. Deeter	Driller/Company: D. Shreckengost / Frontz		
Drilling Equip.: Versa-Sonic		Date Start: 12/15/09	Date Completed: 12/15/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 18.0 ft	Well Depth: NA

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10		WATER									1.8 - 12.2
	2283		↓								Silt / Clay. moist. med
	2419							5/5			stiff, med to high dry strength,
	2447										no dilatancy, med to high toughness,
	2566										med to high plasticity 7.5YR 5/3
15	2473										(brown) mottled w 7.5YR 5/8
	2257							4/3			(strong brown) silt ~~seams~~. seams.
	2085										Some (<10%) sub-rounded gravel
	1677										(<0.5"D) and coarse sand.
								Refusal			
20											12.2 - 18.0
											Sandy clay. moist to
											wet. v. stiff to med stiff,
											no dilatancy, med to high plasticity,
											7.5YR 5/1 (reddish gray). Trace
											sub-round to subangular gravel
											(<5%) to 0.5"D). Coarse
											sand (<25%), subangular
											to subrounded. Some
											mottling throughout (7.5YR
											5/4, weak red). Limestone
											cobble @ 17.0 ft (<3"D)

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB0408
Geologist: C. Pidge	Driller/Company: DAVE SCHRECENGOST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 2 DEC 09	Date Completed: 2 DEC 09
Surface Elev.: / Top of Casing Elev.: NA	Total Depth: 19 FT BGS	Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6-INCH

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/ below surface: ____

Diameter: ____

Screen Portion of Well

Material ____

Diameter ____ Length ____

Set between ____ ft and ____ ft

Slot size ____

Filter Pack

Size ____

Method of Install ____

Composition ____

Volume Used ____

Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ ____

Volume Used? ____

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume ____

☐ Neat Cement ☒ Bentonite

☐ ____

Method of Instal. GRAVITY

Depth: from ____ ft. to ____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____

Lock # ____

Volume Used ____

Development

Method ____

Gallons Evacuated ____

Date ____

Odor ____

Static Water Level

Initial 13 ft

Development ____ ft.

24 hr. ____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	3,370	GROUND CONE	DOWN HOLE			0-5 FT BGS		5/5	SP		0-0.7 COARSE CLEAN SAND LITTLE SILT, DRY LOOSE 10YR 3/2
	3,787		15,258								0.7-2.8' CLAY LITTLE SILT LITTLE COARSE SAND, MOIST, HIGH TOUGHNESS, HIGH PLASTICITY 10YR 3/2
	3,667		17,324								
	3,533		16,751								
	3,487		16,025								2.8-8.4 SILT LITTLE CLAY, DRY MEDIUM STRENGTH 10YR 4/2 MOTTLED 10YR 5/8 & 10YR 6/1 INCREASED 10YR 5/1 W/DEPTH
5	3,720		16,362			5-10 FT BGS		5/5			
	3,420		16,520								
	3,346		17,411								8.4-11.3 SILT LITTLE CLAY LITTLE FINE GRAVEL MEDIUM STRENGTH 10YR 3/2 MOTTLED 10YR 5/8
	3,285		16,988								
	3,440		16,904								
10	3,360		17,169								

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB040
Geologist: C. Pidge	Driller/Company: DAVE SCHREEVE GOST / Frontz	
Drilling Equip.: Versa-Sonic	Date Start: 2 DEC 09	Date Completed: 2 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 19 FT BGS / Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DAN HOLE		10-15 FT BGS			5/5			11.3-19 CLAY TRACE SILT MOIST LITTLE COARSE SAND, HIGH TOUGHNESS HIGH PLASTICITY. 10YR 4/1
	3,447		18,900								
	3,589		18,859								
	3,953		13,774								
	3,970		WATER								
15	4,004				15-20 FT BGS			5/4			
	3,657										
	3,684										
	3,614										
	3,858										
20	REFUSAL				19 FT BGS						NOTE: WHEN CORE ADVANCED TO 19 FT BGS BOREHOLE BEGAN RELEASE OF PRESSURE OFF GASSING

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB041
Geologist: C. Pidge	Driller/Company: DAVE SCHREEWGOST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 15DEC09	Date Completed: 15DEC09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 18FTBGS / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: _____

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface _____

Diameter _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets _____ Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

☐ _____

Method of Instal. GRAVITY

Depth: from _____ ft. to _____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial ≈ 7 ft

Development _____ ft.

24 hr. _____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ift	USCS Class	Contact-Depth	Descriptions and Comments
	4,077	GROUND									DRILLED 15 DEC 09 LOGGED/SAMPLED 16 DEC 09
0		CORE	DOWNHOLE					5/5			0-1.4 SILT SOME CLAY SOME FINE GRAVEL TO COBBLES DRY 10YR 3/2 ROCK FRAGS SPB 0/1 CRYSTALLINE LIMESTONE
	1,905		11,862								
	2,263		19,583								
	2,654		19,749								
	2,805		17,973								1.4-4.3 SILT LITTLE CLAY LITTLE FINE GRAVEL MOIST 10YR 3/3 MEDIUM TOUGHNESS HIGH PLASTICITY
5	2,691		16,675								
	1,817		17,356					5/5			
	2,177		17,527								4.3-10.7 SAME 10YR 4/3 MOTTLED 10YR 5/8
	2,160		WATER								
	2,190		↓								
10	2,153										

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB241
Geologist: C. Pidge	Driller/Company: DAVE SCHREEN GOS / Frontz	
Drilling Equip.: Versa-Sonic	Date Start: 15DEC09	Date Completed: 15DEC09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 18 FT BGS / Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE			DOWNHOLE				5/5			10.7-18 CLAY FEW SILT FEW FINE GRAVEL MOIST NO DILATANCY HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/1 INCREASE TO SOME FINE GRAVEL WITH DEPTH
	2025			WATER							
	2365										
	2274										
	2160										
15	1984							3/3			
	1409										
	1424										
	1413										
	REFUSAL @ 18 FT BGS										
20											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB042
Geologist: C. Pidge	Driller/Company: DAVE SCREENGOST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 1 DEC 09	Date Completed: 1 DEC 09
Surface Elev.: / Top of Casing Elev.: NA	Total Depth: 20 FT BGS	Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6-INCH

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☒ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface: ____

Diameter: ____

Screen Portion of Well

Material ____

Diameter ____ Length ____

Set between ____ ft and ____ ft

Slot size ____

Filter Pack

Size ____

Method of Install ____

Composition ____

Volume Used ____

Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ ____

Volume Used? ____

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume ____

☐ Neat Cement ☒ Bentonite

☐ ____

Method of Instal. GRAVITY

Depth: from ____ ft. to ____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____

Lock # ____

Volume Used ____

Development

Method ____

Gallons Evacuated ____

Date ____

Odor ____

Static Water Level

Initial 16 ft

Development ____ ft.

24 hr. ____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	5,150 Grams CORE		DOWNHOLE					5/5			0-1.2 FIRE BRICK (?) SAND COARSE W/SILT, DRY 2.5Y 8/6 AND 10YR 4/3 LOOSE
	3,949		19,895								1.2-4.8 SILT WITH CLAY DRY, MEDIUM STRENGTH 10YR 4/2 MOTTLED 10YR 5/8
	3,622		18,874								4.8-10.8 SAME FINE GRAVEL LITTLE
	3,586		17,774								
	3,504		17,702								
5	3,728		17,511					5/5			
	4,036		17,567								10.8-11.5 SILTY CLAY MOIST NO DILATANCY, HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/1
	4,335		17,299								
	4,255		17,148								11.5-20 CLAY WITH LITTLE COARSE GRAVEL, WET, SLOW TO NO DILATANCY, MEDIUM TOUGHNESS HIGH PLASTICITY, 10YR 3/1
	4,051		16,992								
10	4,013		16,884								

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB842
Geologist: C. Pidge	Driller/Company: DAVE SCHREEGHOST / Frontz	
Drilling Equip.: Versa-Sonic	Date Start: 1 DEC 09	Date Completed: 1 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWNHOLE					5/5			11.5-20 CLAY, MOIST, MEDIUM TOUGHNESS, HIGH PLASTICITY 10YR 3/1
	4.234		18.354								
	4.393		19.054								
	4.199		17.985								
	4.201		13.377								
	4.148		10.441								
15	4.055		10.097					5/5			
	3.905		WATER								
	3.811										
	3.708										
	4.250										
20	TERMINATED 20 FT BGS										

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Lucky FUSRAP	Boring/Well #: SB043
Geologist: S. Deeter	Driller/Company: Kris Lower / Fronty	
Drilling Equip.: Versa-Sonic	Date Start: 11/23/09	Date Completed: 11/23/09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 15.0 ft / Well Depth: —

Method of Drilling

- ☐ Hollow Stem ☐ Direct Rotary
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: Sonic 6"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Height above/below surface: ____

Diameter: ____

Drive Shoe? ☐ Yes ☐ No

Screen Portion of Well

Material ____

Diameter ____ Length ____

Set between ____ ft and ____ ft

Slot size ____

Filter Pack

Size ____

Method of Install ____

Composition ____

Volume Used ____

Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ ____

Volume Used? ____

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume 200#

☐ Neat Cement ☐ Bentonite

☒ Bentonite Chips

Method of Instal. Gravity

Depth: from 0 ft. to 15.0 ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____

Lock # ____

Volume Used ____

Development

Method ____

Gallons Evacuated ____

Date ____

Odor ____

Static Water Level

Initial NE ft

Development — ft.

24 hr. — ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	PID Reading (ppm) Core PID (ppm)	Sample Core (ppm)	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery (in) ft	USCS Class	Contact-Depth	Descriptions and Comments
0	3723							—			0 – 2.0
	3770	16880									silt/clay s. moist to wet
	3946	15782						3/5			(low spot in topography)
	3957	17722									soft, med. dry strength,
	3988	13881									no dilatancy, med
5	4011	14036						—			toughness, med plasticity,
	4086	13851									2.5 8.5/ (reddish black)
	4135	13410						5/5			rootlets.
	4090	12880									
	3968	13153									
10	3943	16900						—			

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Lucky FUSRAP	Boring/Well #: SB043
Geologist: S. Deeton	Driller/Company: Kris Lower / Fronty	
Drilling Equip.: Versa-Sonic	Date Start: 11/23/09	Date Completed: 11/23/09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 15.0 ft / Well Depth: —

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	~~PID Reading (ppm)~~ Rad (CPM)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft) ft	USCS Class	Contact-Depth	Descriptions and Comments
10											2.0 - 12.5
	3989	16115						5/5			silt/clay. v. moist.
	4034	17062									Some sand/silt lenses
	4026	ND									throughout (mottled
	4295	↓									10YR 4/8, red). stiff to
15	4040										v. stiff, no dilatancy,
											low toughness, med
											plasticity. 10YR 3/2
											(very dark grayish brown)
											<1% rounded gravel to <1"Δ
											12.5 - 15.0
											gravelly silt/clay.
											Dry to moist. no
											dilitancy, high dry
											strength, med toughness,
											med to high plasticity
											7.5YR 3/1 (very dark gray)
											gravel 7 1/2" to <3".
											Clay layer @ 14.0 feet.
											soft / wet.

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: LUCKEY FUSRAP	Boring/Well #: SB044
Geologist: CARL PIDGE P.G.	Driller/Company: DAVE SCHREECENGOST / FRONTZ	
Drilling Equip.: VERSA SONIC	Date Start: 23 NOV 09	Date Completed: 23 NOV 09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 17 FT BGS / Well Depth: —

Method of Drilling	Casing/Riser Type	Screen Portion of Well
☐ Hollow Stem ☐ Direct Rotary ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger ROTASONIC Hole Diameter: 8-INCH	☐ Steel ☐ Threaded ☐ Galv ☐ Welded ☐ PVC ☐ Solvent ☐ SS ☐ Welded Drive Shoe? ☐ Yes ☐ No Height above/ below surface Diameter	Material Diameter Length Set between ft and ft Slot size
Filter Pack	**Annulus Seal**	**Grout**
Size Method of Install Composition Volume Used Depth to top of f.p.	☐ Bentonite Pellets Chips ☐ Volume Used? Method of Instal. Depth: from ft. to ft.	Used? ☒ Yes ☐ No Volume ☐ Neat Cement ☐ Bentonite ☒ BENTONITE CHIPS Method of Instal. GRAVITY Depth: from ft. to ft.
Well Head Completion	**Development**	**Static Water Level** NO WATER
☐ Flushmount ☐ Stand Up Cap Type Lock # Volume Used	Method Gallons Evacuated Date Odor	Initial DRY ft Development ft. 24 hr. ft.

DRILLING	SAMPLE								GEOLOGIC LOG		
Depth (FT BGS)	PID Reading (ppm) CPM	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(in)	USCS Class	Contact-Depth	Descriptions and Comments
0	GRAVEL (CPM)	3,397 CPM DAVE USE						5/5			0-1.5 SILTY CLAY, MOIST, MEDIUM STRENGTH, NO DILATANCY 10YR 4/1
	3,001	24,083									1.5-2.1 COARSE GRAVEL W/ COARSE SAND 10YR 4/1 DRY
	4,160	43,913									2.1-3.4 SILT W/CLAY, DRY MEDIUM STRENGTH, NO DILATANCY 10YR 4/1 MOTTLED 10YR 5/8
	5,142	29,525									
	2,968	19,422									
5	3,166	19,731						5/5			
	3,175	18,015									3.4-4.8 CLAYEY SILT, MOIST NO DILATANCY, HIGH TOUGHNESS HIGH PLASTICITY, 10YR 4/2 10YR 5/8 MOTTLED
	3,052	16,537									
	3,075	16,582									
	3,138	17,419									
10	3,279	17,418									

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: LUCKEY FUSRAP	Boring/Well #: SB 44
Geologist: CARL RIDLE P.G.	Driller/Company: DAVE SCHLECWOOST / FRONTZ	
Drilling Equip.: VERSA SONIC	Date Start: 23 NOV 09	Date Completed: 23 NOV 09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 17 FT BGS / Well Depth: —

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth (FT BGS)	~~PID Reading (ppm)~~ CPM	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(in)	USCS Class	Contact-Depth	Descriptions and Comments
10	(CPM)	(CORE)	DOWN HOLE								
	3,489		16,867					5/5			4.8 - 5.3 SAME AS 3.4-4.8 10 YR 3/1 MOTTLES ~~10 YR~~ 10 YR 5/6 10 YR 5/2
	3,213		17,457								
	3,295		20,150								5.3 - 13.7 SILTY CLAY, DRY, MEDIUM STRENGTH, NO DILATANCY, HIGH TOUGHNESS MOTTLES 10 YR 3/1, 10 YR 5/8
	3,441		19,152								
	3,600		15,305								
15	2,998		15,200					2/2			
	3,637		CAVE								13.7 - 17 CLAY w/ SILT TRACE COARSE SAND, DRY, MEDIUM STRENGTH NO DILATANCY 10 YR 4/1
	TERMINATED 17 FT BGS										
20											TERMINATED 17 FT BGS

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: LUCKEY FUSRAP	Boring/Well #: SB045
Geologist: CARL PIDGE P.G.	Driller/Company: DAVE SCHREGENGUST / FRONTZ	
Drilling Equip.: VERSA SONIC	Date Start 23 NOV 09	Date Completed 23 NOV 09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 15 FT BGS / Well Depth: —

Method of Drilling	Casing/Riser Type	Screen Portion of Well
☐ Hollow Stem ☐ Direct Rotary ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger ROTASONIC Hole Diameter: 8 INCH	☐ Steel ☐ Threaded ☐ Galv ☐ Welded ☐ PVC ☐ Solvent ☐ SS ☐ Welded Drive Shoe? ☐ Yes ☐ No Height above/ below surface Diameter	Material Diameter Length Set between ft and ft Slot size
Filter Pack	**Annulus Seal**	**Grout**
Size Method of Install Composition Volume Used Depth to top of f.p.	☐ Bentonite Pellets Chips ☐ Volume Used? Method of Instal. Depth: from ft. to ft.	Used? ☒ Yes ☐ No Volume ☐ Neat Cement ☐ Bentonite ☒ BENTONITE CHIPS Method of Instal. GRAVITY Depth: from ft. to ft.
Well Head Completion	**Development**	**Static Water Level**
☐ Flushmount ☐ Stand Up Cap Type Lock # Volume Used	Method Gallons Evacuated Date Odor	Initial DRY ft ~~WET~~ Development ft. 24 hr. ft.

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							BE DUPLICATE
Depth (FT BGS)	~~PID Reading (ppm)~~ CPM	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(in)	USCS Class	Contact-Depth	Descriptions and Comments (FT BGS)
0 GRAVEL	2,957	CORE	DOWNHOLE					5/5			0-1.7 CLAYEY SILT MOIST NO DILATANCY HIGH TOUGHNESS 10YR 4/1
	2,737		15,956								1.7-~~4.2~~ 3.2 SILT W/CLAY TRACE COARSE GRAVEL DRY HIGH STRENGTH NO DILATANCY, HIGH TOUGHNESS 10YR 4/1
	2,928		20,401								
	2,926		31,215								
	3,629		66,900								
5	7,006		48,105								~~4.2~~ 3.2-3.7 SILT DRY, NO STRENGTH, NO DILATANCY, 10YR 7/1
	3,235		17,065					5/5			
	2,854		18,610								3.7-4.2 SAME AS 1.7-3.2 FT BGS
	2,761		17,651								
	2,774		16,584								4.2-5.6 COARSE GRAVEL WET TRACE FINES AND COARSE SAND 10YR 4/1
10	3,070		16,271								

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: LUCKEY FUSRAP	Boring/Well #: SB 45
Geologist: CARL PIDGE P.G.	Driller/Company: DAN SCHREENGOST / FRONTIER	
Drilling Equip.: VERSA SONIC	Date Start: 23NOV09	Date Completed: 23NOV09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 15FT BLS / Well Depth: —

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	~~PID Reading (ppm)~~ ppm	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(in)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DAN HOLE					5/5			5.6-7.8 CLAY WITH SILT MOIST NO DILATANCY HIGH TOUGHNESS HIGH PLASTICITY MOTTLED 10YR 2/1 10YR 5/6 10YR 5/1
	2.9	06	17.077								
	3.0	76	20.003								
	3.2	34	20.412								7.8-14.3 SAME MOTTLED 10YR 5/1 + 10YR 5/6
	3.2	70	CAVE								
15	3.2	95	↓								14.3-15 CLAY TRACE SILT TRACE COARSE SAND, MOIST, NO DILATANCY HIGH TOUGHNESS, HIGH PLASTICITY 10YR 4/1
		TERMINATED 15FT BLS									

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB046
Geologist: S. Deeten	Driller/Company: Kris Lowen / Fronte	
Drilling Equip.: Versa-Sonic	Date Start: 11/23/09	Date Completed: 11/23/09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 15.0 FT / Well Depth: —

Method of Drilling

- ☐ Hollow Stem ☐ Direct Rotary
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger
- Sonic

Hole Diameter: 6"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Height above/below surface: ____

Diameter: ____

Drive Shoe? ☐ Yes ☐ No

Screen Portion of Well

Material ____

Diameter ____ Length ____

Set between ____ ft and ____ ft

Slot size ____

Filter Pack

Size ____

Method of Install ____

Composition ____

Volume Used ____

Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ ____

Volume Used? ____

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume 250#s

☐ Neat Cement ☐ Bentonite

☒ Bentonite Chips

Method of Instal. Gravity

Depth: from 0 ft. to 15 ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____

Lock # ____

Volume Used ____

Development

Method ____

Gallons Evacuated ____

Date ____

Odor ____

Static Water Level

Initial NF ft

Development — ft.

24 hr. — ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	~~PID Reading (ppm)~~ Gross RAD (cpm)	Sample Type Bore (cpm)	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(in) Feet	USCS Class	Contact-Depth	Descriptions and Comments
0	4108							—			0-1.8
	3907	19208						4/5			Silt/Clay. S. moist to dry. Very stiff, med dry strength, no dilatancy, low to med toughness, med to low plasticity. 2.5YR 2.5/1 (reddish black), rootlets. Some gravel (<10%) to 2'D.
	4089	19153									
	4058	14426									
	4155	12434									
5	4037	12343						—			
	4148	12572									
	4028	12815						5/5			
	4054	14776									
	4178	12742									
10	4232	10742						—			

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB046
Geologist: S. Deetman	Driller/Company: KNS Lowen / Frentz	
Drilling Equip.: Versa-Sonic	Date Start: 4/23/09	Date Completed: 4/23/09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 15.0 ft / Well Depth: —

DRILLING	SAMPLE								GEOLOGIC LOG		
Depth	~~PID Reading (ppm)~~ Rad (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-~~(in)~~ %	USCS Class	Contact-Depth	Descriptions and Comments
10		10742						—			1.8 – 12.5
	4360	10139									Silt w/clay. S. moist to dry. Some sand/silt lenses throughout. (mottled) (10R 4/8, red). very stiff, med to high dry strength, slow to no dilatancy, low toughness, med to low plasticity. 10YR 3/2 (very dark grayish brown. Some gravel to <2"D
	4266	11417						5/5			
	4385	NA									
	3857	↓									
15	4089	↓						—			12.5 – 15.0
											Gravelly silt/clay. dry very stiff. no dilatancy low to med dry strength, med to low toughness, low plasticity. 7.5YR 3/1 (very dark gray) Some sub rounded gravel to <2".
											Cobble >5" @ 15.0.

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB047
Geologist: S Deeter	Driller/Company: Kris Louer / Frontier	
Drilling Equip.: Versa Sonic	Date Start: 11/21/09	Date Completed: 11/21/09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 12.0 ft	Well Depth: —

Method of Drilling

- ☐ Hollow Stem ☐ Direct Rotary
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger
- Sonic

Hole Diameter: 6"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Height above/below surface: ____

Diameter: ____

Drive Shoe? ☐ Yes ☐ No

Screen Portion of Well

Material ____

Diameter ____ Length ____

Set between ____ ft and ____ ft

Slot size ____

Filter Pack

Size ____

Method of Install ____

Composition ____

Volume Used ____

Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ ____

Volume Used? ____

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume 200#

☐ Neat Cement ☐ Bentonite

☒ Bentonite Chips

Method of Instal. grav

Depth: from 0 ft. to 12.0 ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____

Lock # ____

Volume Used ____

Development

Method ____

Gallons Evacuated ____

Date ____

Odor ____

Static Water Level

Initial NR ft

Development — ft.

24 hr. — ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	~~PID Reading (ppm)~~ RID (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	~~Recovery (in)~~ Rec	USCS Class	Contact-Depth	Descriptions and Comments
0	4098 cpm										0-1.4
	4198 20814							5'			Silt w/ clay, s. moist to
	4217 19108										dry, very stiff, med dry
	4152 13269							5'			strength, no dilatancy,
	3941 12945										low toughness,
5	3738 13836										med to low plasticity,
	3998 13507										2.5YR 2.5/1 (Reddish black),
	3990 13535							5			
	4018 11351							5			
	3772 10320										Rootlets present.
10	3915 10614										

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Lucky Fusar	Boring/Well #: SB047
Geologist: S. Deeton	Driller/Company: D. Schaeckengast / Frontz	
Drilling Equip.: Versasonic	Date Start: 11/21/09	Date Completed: 11/21/09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 12.0 ft Well Depth: —

DRILLING	SAMPLE								GEOLOGIC LOG		
Depth	~~PID Reading (ppm)~~ Rad (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-~~(in)~~ ft	USCS Class	Contact-Depth	Descriptions and Comments
10	4339	ND						3'/2'			1.4 – 9.5 Silt w/clay, s. moist, some sand/silt lenses throughout (10R 4/8, red), very stiff, medium dry strength, low to no dilatancy, low toughness, med to low plasticity, 10YR 3/2 (very dark grayish brown) mottled. Some coarse rounded gravel and sub angular coarse sand.
	3958	↓								TD = 12.0	
15											9.5 – 12.0 gravelly clayey silt, s. moist to dry, very stiff, low dry strength, no to slow dilatancy, low toughness, non-to low plasticity, 7.5YR 3/1 (very dark gray), gravel (subrounded) to cobbles. Some subangular sand.

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB04B
Geologist: S Deeten	Driller/Company: Kris Lowen / Frontz	
Drilling Equip.: Versa - Sonic	Date Start: 11/21/09	Date Completed: 11/21/09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 15.0ft / Well Depth: —

Method of Drilling

- ☐ Hollow Stem ☐ Direct Rotary
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: Sonic 6"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface: _____

Diameter: _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume 200 lbs

☐ Neat Cement ☐ Bentonite

☒ Bentonite Chips

Method of Instal. Gravity

Depth: from _____ ft. to _____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial NA ft

Development — ft.

24 hr. — ft.

DRILLING	SAMPLE								GEOLOGIC LOG		
Depth	~~PID Reading (ppm)~~ Soil RAD (cpm)	Sample Type / Base (cpm)	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery ~~(ft)~~ ft	USCS Class	Contact-Depth	Descriptions and Comments
0	4457										0-1.2
	5454	20165						4'/5'			Silt w/clay. S. moist to dry, very stiff. med ~~tense~~ dry strength, no dilatancy, low to med toughness, med to low plasticity, 2.5YR 2.5/1 (reddish black), rootlets present.
	5346	22037									
	5288	16823									
	5166	15947									
5	5703	15730									
	5189	14755									
	5221	17351						5'/5'			
	5128	13248									
	5102	13154									
10	4767	13528									

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB048
Geologist: S Deeter	Driller/Company: Kris Lower / Frontz	
Drilling Equip.: Versa - Sonic	Date Start: 11/21/09	Date Completed: 11/21/09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 15.0 ft / Well Depth: —

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	~~PID Reading (ppm)~~ PID (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery ~~(in)~~ ft	USCS Class	Contact-Depth	Descriptions and Comments
10	4767	13528									1.2 - 13.2
	4851	14285									Silt w/ clay, s. moist,
	4568	19912						5/5			some sand/silt lenses throughout.
	4547	GWE									(10R 4/8, red), very stiff.
	4325										med dry strength, low
15	4463	↓								TD = 15.0	to no dilatancy, low
											toughness, med to low
											plasticity, 10YR 3/2 (very dark
											grayish brown), mottled.
											13.2 - 15.0
											gravelly, clayey, silt
											and clay. s. moist to
											dry, very stiff, low to
											med dry strength, no to
											slow dilatancy, med to
											low toughness; non- to
											low plasticity. 7.5YR 3/1
											(very dark gray), gravel
											to <3"D and some coarse
											subrounded sand.

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FCSRW	Boring/Well #: SB049
Geologist: S. Deeter	Driller/Company: KRIS LOWER / FRONTIER	
Drilling Equip.: Versa-Drill	Date Start: 11/20/09	Date Completed: 11/21/09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 12.0 ft. / Well Depth: —

Method of Drilling

- ☐ Hollow Stem ☐ Direct Rotary
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger
- Sonic

Hole Diameter: 6"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☑ Welded

Height above/below surface: ____

Diameter: ____

Drive Shoe? ☐ Yes ☐ No

Screen Portion of Well

Material ____

Diameter ____ Length ____

Set between ____ ft and ____ ft

Slot size ____

Filter Pack

Size ____

Method of Install ____

Composition ____

Volume Used ____

Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ ____

Volume Used? ____

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Grout

Used? ☑ Yes. ☐ No Volume 150#

☐ Neat Cement ☐ Bentonite

☒ Bentonite Chips

Method of Instal. Gravity

Depth: from ____ ft. to ____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____

Lock # ____

Volume Used ____

Development

Method ____

Gallons Evacuated ____

Date ____

Odor ____

Static Water Level

Initial NE ft

Development — ft.

24 hr. — ft.

DRILLING	SAMPLE								GEOLOGIC LOG		
Depth	PID Reading (ppm) (core) RAD (cpm)	Sample Type Bore (cpm)	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(in) ft	USCS Class	Contact-Depth	Descriptions and Comments
0	2219										0 – 0.8
	3279	19991									Silt and Clay, moist,
	3568	14953						4'/5'			soft, medium dry strength,
	3630	14675									Low dilatancy, med
	3561	13902									toughness, med plasticity
5	3145	13515									10YR 2/1 (black), organic,
	3023	12643						5'/5'			root zone, single gravel >3"
	3618	11356									
	3572	11917									
	3812	14068									
10	3659	ND									

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Lucky FUSRAP	Boring/Well #: SB049	
Geologist: J. Dexter	Driller/Company: Kris Lowe / Prontz		
Drilling Equip.: Versa-drill		Date Start: 11/21/09	Date Completed: 11/21/09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 12.0 ft	Well Depth: —

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	~~PID Reading (ppm)~~ RAD (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery ~~(in)~~ ft	USCS Class	Contact-Depth	Descriptions and Comments
10	~~4490~~										0.8 - 9.5
	~~4187~~	4490	ND					2'/2'	Z/Z		silt w/clay, s. moist,
	4187		ND								some sand/silt lenses
										TD = 12.0	throughout (10R 4/8, red)
15											very stiff, medium
											dry strength, low to
											no dilatancy, low
											toughness, med to
											Low plasticity, 10YR 3/2
											(very dark grayish brown),
											mottled, some coarse gravel
											(sub angular)
											9.5 - 12.0
											gravelly CLAY w/silt and
											sands (well graded).
											sand subround to rounded,
											Dry. Very stiff, ~~very~~ med
											dry strength, low dilatancy,
											low toughness. Med plasticity
											2.5Y 2.5/1, Black, Limestone
											fragments.

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB050
Geologist: S. Deeten	Driller/Company: Kills Lower / Fronitz	
Drilling Equip.: Versa-Sonic	Date Start: 11/20/09	Date Completed: 11/20/09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 15.0 FT / Well Depth: —

Method of Drilling

- ☐ Hollow Stem ☐ Direct Rotary
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger
- Hole Diameter: Rotosonic 6"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded
- Drive Shoe? ☐ Yes ☐ No

Height above/below surface: ____

Diameter: ____

Screen Portion of Well

Material ____

Diameter ____ Length ____

Set between ____ ft and ____ ft

Slot size ____

Filter Pack

Size ____

Method of Install ____

Composition ____

Volume Used ____

Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ ____

Volume Used? ____

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume 200 #s

☐ Neat Cement ☐ Bentonite

☒ Bentonite Chips

Method of Instal. Gravity

Depth: from 0 ft. to 15 ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____

Lock # ____

Volume Used ____

Development

Method ____

Gallons Evacuated ____

Date ____

Odor ____

Static Water Level

Initial 9.8 ft

Development — ft.

24 hr. — ft.

DRILLING	SAMPLE								GEOLOGIC LOG		
Depth	~~PID Reading (ppm)~~ (Core) RAD (cpm)	Sample Type Base (cpm)	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-~~Lin ft~~ ft	USCS Class	Contact-Depth	Descriptions and Comments
0	2483	cpm									0-1.2 silt and clay, moist, soft, medium dry strength, no dilatancy, high toughness, high plasticity. 10 YR 2/1 (black) organic, root zones
	2707	21979									
	3468	17408						5'/5'			
	3575	15836									
	3500	14920									
5	3360	14438									
	3358	13822						5'/5'			
	3270	13862									
	3170	13756									
	3327	13882									
10	3275	12861									

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB050	
Geologist: S. Deaton	Driller/Company: KRIS LOUFIK / FRONTZ		
Drilling Equip.: Vensa - Sonic		Date Start: 11/20/09	Date Completed: 11/20/09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 15.0 ft	Well Depth: —

DRILLING	SAMPLE								GEOLOGIC LOG		
Depth	~~PID Reading (ppm)~~ RSP (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(in) ft	USCS Class	Contact-Depth	Descriptions and Comments
10	ND	12861						5'			1.2 - 9.6 Silt w/clay, s. moist some sand/silt lenses throughout (10R 4/8 Red) very stiff, high dry strength, no dilatancy, medium toughness, med plasticity, 10YR 3/2 (very dark grayish brown), mottled.
		12262									
		8982									
		7834									
		ND									
15		ND						5'		TD= 15.0	
											9.6 - 15.0 Clay (gravelly) w/ silt and sand. Sand subround to round, gravel subround. Dry to wet @ 9.8 seam. Very stiff to soft, high dry strength, no dilatancy, medium toughness and plasticity 2.5Y 2.5/1 Black, limestone fragment to >3".

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB051
Geologist: C. Pidge	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 11DEC09	Date Completed: 11DEC09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FTBGS / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6-INCH

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☑ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/ below surface: ____

Diameter: ____

Screen Portion of Well

Material ____

Diameter ____ Length ____

Set between ____ ft and ____ ft

Slot size ____

Filter Pack

Size ____

Method of Install ____

Composition ____

Volume Used ____

Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ ____

Volume Used? ____

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume ____

☐ Neat Cement ☑ Bentonite

☐ ____

Method of Instal. TREMIE

Depth: from ____ ft. to ____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____

Lock # ____

Volume Used ____

Development

Method ____

Gallons Evacuated ____

Date ____

Odor ____

Static Water Level

Initial DRY ft

Development ____ ft.

24 hr. ____ ft.

DRILLING	SAMPLE								GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	4,132	CORE	GRAMMA DOWN HOLE					5/5			0-0.6 SILT SOME CLAY CAPILLARY ROOTS, DRY MEDIUM STRENGTH, HIGH TOUGHNESS 10YR 3/3
	1,814		18429								
	2,291		20,693								
	2,439		18,491								
	2,128		17,011								0.6-13.8 CLAY LITTLE SILT, FEW FINE GRAVEL, MOIST MEDIUM TOUGHNESS, MEDIUM PLASTICITY 10YR 5/1 MOTTLES 10YR 5/8
5	2,030		17,179								
	2,155		17,097					5/5			
	2,382		16,549								
	2,541		15,602								
	2,492		15,795								11-12 COBBLES
10	2,118		16,889								

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB05 1
Geologist: C. Pidge	Driller/Company: KRD / Lauck / Frontz	
Drilling Equip.: Versa-Sonic	Date Start: 1 DEC 09	Date Completed: 11 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWNHOLE								13.8-20 CLAY, MOIST MEDIUM TOUGHNESS HIGH PLASTICITY 10YR3/1 TO MEDIUM PLASTICITY W/ DEPTH FEW FINE GRAVEL
	2,323		17,347					5/5			
	2,249		17,555								
	2,509		19,969								
	2,523		19,304								
15	2,277		12,495								
	2,440		10,312					5/5			
	2,478		9,219								
	2,618		CAVE								
	2,461		↓								
20	2,134										
	TERMINATED 20 FT BGS										

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB052
Geologist: C. Pidge	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 11 DEC 09	Date Completed: 11 DEC 09
Surface Elev.: / Top of Casing Elev.: NA	Total Depth: 20 FT BGS	Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6-INCH

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface: _____

Diameter: _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets _____ Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

☐ _____

Method of Instal. TREMIE

Depth: from _____ ft. to _____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial 14 ft

Development _____ ft.

24 hr. _____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ift	USCS Class	Contact-Depth	Descriptions and Comments
0	4,609	CORE	GROUND DOWNHOLE								0-0.3 SILT SOME CLAY CAPILLARY ROOTS DRY MEDIUM STRENGTH HIGH TOUGHNESS 10YR 3/3
	2,165		15,186					5/5			
	2,260		18,987								0.3-1.1 MEDIUM SAME NO ROOTS 10YR 3/3
	2,257		18,062								
	2,164		16,022								
5	1,905		17,026								1.1-13.5 CLAY SOME SILT FEW FINE TO COARSE GRAVEL MEDIUM TOUGHNESS MEDIUM PLASTICITY 10YR 5/1 MOTTLES 10YR 5/8
	2,356		17,273					5/5			
	2,435		17,358								
	2,402		17,062								
	2,401		17,847								
10	2,256		17,672								

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB052
Geologist: C. Pidge	Driller/Company: KNDLauer / Frontz	
Drilling Equip.: Versa-Sonic	Date Start: 11DEC09	Date Completed: 11DEC09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWNHOLE								13.5-18.5 CLAY MOIST LOW TOUGHNESS, MEDIUM PLASTICITY 10YR3/1
	2,396		17,060					5/5			
	2,539		18,288								
	2,586		19,669								
	2,459		19,228								
15	2,183		WATER								
	2,481							5/5			18.5-20 CLAY SOME FINE TO COARSE GRAVEL WET LOW TOUGHNESS MEDIUM PLASTICITY 10YR3/1
	2,682										
	2,596										
	2,311										
20	1,961										
	TERMINATED 20 FT BGS										

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB053
Geologist: C. Pidge	Driller/Company: DAVE SCHREECENGOST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 11 DEC 09	Date Completed: 11 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6-INCH

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface: _____

Diameter: _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets _____ Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

☐ _____

Method of Instal. THREE

Depth: from _____ ft. to _____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial DRY ft

Development _____ ft.

24 hr. _____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	4,681	GRAB	DOWNHOLE					5/3			0-0.5 SILT SOME CLAY, CAPILLARY ROOTS, ~~MOIST~~ DRY, MEDIUM STRENGTH, HIGH TOUGHNESS 10YR 3/3
	1,792		17,041								
	1,808		18,836								
	1,755		18,059								0.5-12.5 CLAY LITTLE SILT, MOIST MEDIUM TOUGHNESS, MEDIUM PLASTICITY 10YR 5/1 MOTTLED 10YR 5/8
	NO RECOVERY		17,549								
	NO RECOVERY		17,007								
5	1,938		17,463					5/5			
	1,858		17,640								2.5 ONE (1) COARSE GRAVEL
	1,926		17,332								
	1,983		17,316								
10	1,865		17,432								

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SBQ53
Geologist: C. Pidge	Driller/Company: DAVE SCHNECKENGOLTS / Frontz	
Drilling Equip.: Versa-Sonic	Date Start: 11 DEC 09	Date Completed: 11 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CONE		DOWNHOLE					5/5			12.5-17 CLAY, MOIST LOW TOUGHNESS MEDIUM PLASTICITY 10 YR 3/1
	2,230		19,654								
	2,067		20,242								
	2,206		20,225								
	2,355		CAVE								
15	2,248										
	2,135							5/5			17-20 CLAY SOME FINE TO COARSE GRAVEL MOIST MEDIUM TOUGHNESS 10 YR 3/1
	2,318										
	2,348										
	2,419										
20	2,305										
	TERMINATED 20 FT BGS										

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Lucky FUSRAP	Boring/Well #: SB054
Geologist: S. Deaton	Driller/Company: Kris Lower / Fronte	
Drilling Equip.: Versa-Sonic	Date Start: 11/24/09	Date Completed: 11/24/09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 20.0 ft / Well Depth: —

Method of Drilling

- ☐ Hollow Stem ☐ Direct Rotary
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger
- Sonic

Hole Diameter: 6"/8"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface: _____

Diameter: _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets _____ Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

☒ Bentonite Chips

Method of Instal. Gravity

Depth: from 0 ft. to 20.0 ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial NE ft

Development — ft.

24 hr. — ft.

DRILLING	SAMPLE							GEOLOGIC LOG		
Depth	PID Reading (ppm) Lab Rad (cpm)	Sample Type Lab (cpm)	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery ~~(in)~~ ft	USCS Class	Contact-Depth	Descriptions and Comments
0	4564							—			0 – 1.0
	4518	19112									Silt/Clay s. moist,
	4483	19504						5/5			stiff, low dry strength,
	4477	18385									no to slow dilatancy,
	4664	15759									low toughness, med
5	4388	14316						—			plasticity 10R4/1 (dark
	4397	14377									reddish gray).
	4419	14999						5/5			
	4589	15516									
	4499	16034									
10	4771	15780						—			

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Cuthey FUSRAP	Boring/Well #: SB054
Geologist: S. Decker	Driller/Company: Kris Cowen / Frontier.	
Drilling Equip.: Versa-Sonic	Date Start: 11/24/08	Date Completed: 11/24/08
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 20.0	Well Depth: —

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	~~PID Reading (ppm)~~ Rad Scan	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-~~(in)~~ ft	USCS Class	Contact-Depth	Descriptions and Comments
10											1.0 – 11.5
	4795	15222									gravelly silt/clay,
	4726	13107						5/5			moist, stiff, high dry
	4658	12268									strength, no dilatancy,
	4723	10925									med toughness, med plasticity,
15	4543	9524									5YR 4/2 (dark reddish gray),
	4793	10905									mottled. Silt/sand lenses
	4387	(core)						5/5			throughout. Gravel is subround
	4278	↓									to subangular (<1.0"D)
	4090										
20	4204										
											11.5 – 20.0
											Gravelly clay/silt.
											Some zones <2"T of
											clay. Dry to wet at
											depth. slow to no
											dilatancy, med toughness,
											med plasticity. 3/1 (dark
											gray) Gravel approaching
											25% at depth. subround to
											subangular to <1"D, limestone.

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB055
Geologist: S. Deeken	Driller/Company: Kris Lowen / Frontz	
Drilling Equip.: Vibra - Sonic	Date Start: 11/24/09	Date Completed: 11/24/09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 20.0 FT / Well Depth: —

Method of Drilling

- ☐ Hollow Stem ☐ Direct Rotary
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6"/8"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface: _____

Diameter: _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets _____ Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume 250#

☐ Neat Cement ☐ Bentonite

☒ Bentonite Chips

Method of Instal. Gravity

Depth: from 0 ft. to 20.0 ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial ~18 ft

Development — ft.

24 hr. — ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	~~PID Reading (ppm)~~ Core Head (cpm)	~~Sample Type~~ Bore (cpm)	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery ~~(in)~~ ft	USCS Class	Contact-Depth	Descriptions and Comments
0	4567							—			0 - 1.2
	4275	17243						5/5			Silt/Clay, s. moist, med to low dry strength, no dilatancy, low toughness, med plasticity, 10 R 4/1 (dark reddish gray)
	4559	19391									
	4675	20033									
	4741	17645									
5	4644	16411						—			
	4551	16811									
	4542	16302						5/5			
	4631	15846									
	4454	15615									
10	4592	16329						—			

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Lookout FUSRAP	Boring/Well #: SB055
Geologist: S. Decker	Driller/Company: Kris Lowen / Fronte	
Drilling Equip.: Vensa Sonic	Date Start: 11/24/09	Date Completed: 11/24/09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 20.0 ft / Well Depth: —

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	~~PID Reading (ppm)~~ Rad (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-~~in~~ ft	USCS Class	Contact-Depth	Descriptions and Comments
10											1.2 - 11.5
	4578	18138									Silt/clay, s. moist to
	4690	17874						5/5			wet @ 10.0 ft. stiff,
	9624	13209									high dry strength, mod to
	4510	11403									slow dilatancy, med
15	4284	9081									toughness, med plasticity
	4612	8382									5YR 4/2 (dark reddish
	4371	7877						5/5			gray), mottled, some
	3957	ND									silt/sand lenses. Gravel
	3848	Water									lense @ 2.0 feet (subangular;
20	4464	↓									<2"D)
											11.5 - 20.0
											clay/silt. dry to
											wet at depth. Some
											zones >2"T of clay.
											Slow to no dilatancy,
											med toughness, med plasticity
											7/N. (dark gray). Some
											gravel <10% at depth.
											may have encountered
											bedrock @ 20.0 ft.

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB056
Geologist: C. Pidge	Driller/Company: DAVE SCHREGGER GOST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 2 DEC 09	Date Completed: 2 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6-INCH

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface: ____

Diameter: ____

Screen Portion of Well

Material ____

Diameter ____ Length ____

Set between ____ ft and ____ ft

Slot size ____

Filter Pack

Size ____

Method of Install ____

Composition ____

Volume Used ____

Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ ____

Volume Used? ____

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume ____

☐ Neat Cement ☒ Bentonite

☐ ____

Method of Instal. GRAVITY

Depth: from ____ ft. to ____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____

Lock # ____

Volume Used ____

Development

Method ____

Gallons Evacuated ____

Date ____

Odor ____

Static Water Level

Initial 6 ft

Development ____ ft.

24 hr. ____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	3,544 CPM COLE	GROUND DOWNHOLE						5/5			0-1.7 SILT TRACE CLAY MOIST NO DILATANCY, MEDIUM STRENGTH, 10YR 3/2
	3,311	16,090									
	3,366	18,088									
	3,349	17,634									1.7-11.25 SILT TRACE CLAY DRY FEW COARSE SAND MEDIUM STRENGTH 10YR 5/2 MOTTLED 10YR 5/8
	3,217	17,143									
5	3,268	16,852						5/5			
	3,368	16,210									
	3,339	WATER									
	3,331										
	3,242										
10	3,018										
	3,264										

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP		Boring/Well #: SB056
Geologist: C. Pidge	Driller/Company: DAVE SCHNEGGENOST / Frontz		
Drilling Equip.: Versa-Sonic		Date Start: 2DEC09	Date Completed: 2DEC09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20FT BGS	Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWNHOLE WATER					5/5			11.2-16.8 CLAY TRACE SILT MOIST, LITTLE COARSE SAND, HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/2
	3,264										
	3,488										
	3,336										
	3,236										16.8-20 GRAVEL SAND & SILT COARSE WET 10YR 7/1
15	2,763							5/5			
	3,224										
	3,055										
	2,519										
	2,492										
20	2,036										
	BOREHOLE TERMINATED 20 FT BGS										

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB057
Geologist: C. Pidge	Driller/Company: DAVE SCHREENGOST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 11 DEC 09	Date Completed: 11 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 17 FT BGS / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6-INCH

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface: ____

Diameter: ____

Screen Portion of Well

Material ____

Diameter ____ Length ____

Set between ____ ft and ____ ft

Slot size ____

Filter Pack

Size ____

Method of Install ____

Composition ____

Volume Used ____

Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ ____

Volume Used? ____

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume ____

☐ Neat Cement ☒ Bentonite

☐ ____

Method of Instal. TREMIE

Depth: from ____ ft. to ____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____

Lock # ____

Volume Used ____

Development

Method ____

Gallons Evacuated ____

Date ____

Odor ____

Static Water Level

Initial 5 ft

Development ____ ft.

24 hr. ____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ift	USCS Class	Contact-Depth	Descriptions and Comments
0	5,441	Grab	Dominic					5/4			0-0.3 SILT SOME CLAY, CAPILLARY ROOTS DRY MEDIUM STRENGTH, HIGH TOUGHNESS 10YR 3/3
	2,059	core	18,673								
	2,423		20,687								
	2,190		18,677								
	2,201		17,783								
5	NORECOVERY		17,499								0.3-10.5 CLAY LITTLE SILT FEW FINE GRAVEL MOIST MEDIUM TOUGHNESS MEDIUM PLASTICITY 10YR 4/2 MOTTLED 10YR 5/8 & 10YR 4/1
	2,181		WATER					5/5			
	2,258										
	2,324										
	2,335										
10	2,328										

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB057
Geologist: C. Pidge	Driller/Company: DAVE SCHNEEGOST / Frontz	
Drilling Equip.: Versa-Sonic	Date Start: 11 DEC 09	Date Completed: 11 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 17 FT BGS / Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWN HOLE					5/5			10.5-16.2 CLAY MOSTLY COARSE GRAVEL MOIST TO WET, MEDIUM TOUGHNESS, HIGH PLASTICITY 2.5YR/1 TO 10YR 3/1 W/DEPTH
	2,358		WATER								
	2,529										
	2,141										
	2,033										
15	1,904										
	2,221							2/2			16.2-17 LIMESTONE COARSE GRAVEL WET 5PB7/1
	1,725										
	REFUSAL 17 FT BGS										
20											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB058
Geologist: S. Deeter	Driller/Company: Kris Lauer / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 12/14/09	Date Completed: 12/14/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 17.0 ft / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6" / 8"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/ below surface: _____

Diameter: _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets _____ Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

☐ _____

Method of Instal. pressure tremie

Depth: from 0 ft. to 17.0 ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial NE ~6 ft

Development — ft.

24 hr. — ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	(cpm) Radiological Scan Reading (cpm)	~~Sample Type~~ Bale (cpm)	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	5687										0-1.0
	4602	17067						4/5			Silt and Clay, moist, med stiff, med dry strength, no dilatancy, med toughness, med to high plasticity, 7.5YR4/1 (dark reddish gray), rootlets.
	4875	19674									
	4938	19090									
	4842	18465									
5	—	17270						—			
	4867	WATER									
	4637	↓						5/5			
	4893										
	5072										
10	5134							—			

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB058	
Geologist: S. Deeter	Driller/Company: Kris Lauer / Frontz		
Drilling Equip.: Versa-Sonic	Date Start: 12/14/09	Date Completed: 12/14/09	
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 17.0 FT	Well Depth: NA

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	~~Sample Type~~ Base (cpm)	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10											1.0 – 11.0
	4868	WATER						5/5			silt/clay, s.moist to dry. Stiff, med to high dry strength, med toughness, med plasticity, 7.5YR 5/1 (brown), mottled w/ some silt lenses 2.5YR 4/6 (dark red), trace sub angular sand.
	4959										
	5226										
	5265										
15	4996							3/2			
	4880										
	4705							Refusal 17 ft			• grade in some sub angular gravel @ 10.0
20											11.0 – 17.0
											gravelly clay. S. moist to dry. Stiff, med to high dry strength, med to high toughness, med to high plasticity, 2.5YR 5/1 (dark reddish gray). Gravel is < 1.0"ø, sub-angular to sub rounded, appears to be limestone.

Cobbles @ 17.0 ft.

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB059
Geologist: C. Pidge	Driller/Company: KRIS LANER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 8 DEC 09	Date Completed: 8 DEC 09
Surface Elev.: / Top of Casing Elev.: NA	Total Depth: 14 FT BGS	Well Depth: NA

Method of Drilling	Casing/Riser Type	Screen Portion of Well
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter:	☐ Steel ☐ Threaded ☐ Galv ☐ Welded ☐ PVC ☐ Solvent ☐ SS ☑ Welded Drive Shoe? ☐ Yes ☐ No Height above/below surface Diameter	Material Diameter Length Set between ft and ft Slot size
Filter Pack	**Annulus Seal**	**Grout**
Size Method of Install Composition Volume Used Depth to top of f.p.	☐ Bentonite Pellets Chips ☐ Volume Used? Method of Instal. Depth: from ft. to ft.	Used? ☒ Yes ☐ No Volume ☐ Neat Cement ☒ Bentonite ☐ Method of Instal. TREMIE Depth: from ft. to ft.
Well Head Completion	**Development**	**Static Water Level**
☐ Flushmount ☐ Stand Up Cap Type Lock # Volume Used	Method Gallons Evacuated Date Odor	Initial DRY ft Development ft. 24 hr. ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	DRILLED 8 DEC 09 LOGGED/SAMPLED 9 DEC 09 Descriptions and Comments
0	5,423 CORE	GRAB DOWNHOLE						5/5			0-1.3 SILT SOME CLAY MOIST HIGH TOUGHNESS HIGH PLASTICITY GRASS ROOTS 10YR 4/2
	2,724	17,982									
	2,664	19,916									
	2,588	18,257									1.3-9.6 SILT SOME CLAY MOIST HIGH TOUGHNESS HIGH PLASTICITY FEW FINE GRAVEL CAPILLARY ROOTS TO ≈ 3.5 FT BGS 10YR 4/2 MOTTLED 10YR 5/8
	2,469	17,708									
5	2,377	17,024									
	2,466	17,014									
	2,747	17,123						5/5			9.6-12 SILT LITTLE CLAY DRY MEDIUM ~~TOUGHNESS~~ TO STRENGTH HIGH TOUGHNESS 10YR 3/2
	2,951	16,926									
	2,754	13,531									
10	2,742	16,480									

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB059	
Geologist: C. Pidge	Driller/Company: KRIS LAUER / Frontz		
Drilling Equip.: Versa-Sonic	Date Start: 8 DEC 09	Date Completed: 8 DEC 09	
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 14 FT BGS	Well Depth: NA

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CAVE		DOWNHOLE								12 - 14 CLAY LITTLE SILT MOST LITTLE FINE GRAVEL HIGH TOUGHNESS 10YR 3/1
	2,444		15,148			10-15 FT BGS		4/4			DRILLER REPORTS ROCK IN END OF CORE BARREL
	2,659		CAVE								
	2,867		↓								
	2,462										
15	REFUSAL			14 FT BGS							
20											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB060
Geologist: C. Pidge	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 8 DEC 09	Date Completed: 8 DEC 09
Surface Elev.: / Top of Casing Elev.: NA	Total Depth: REFUSAL 15 FT BGS	Well Depth: NA

Method of Drilling	Casing/Riser Type	Screen Portion of Well
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter:	☐ Steel ☐ Threaded ☐ Galv ☐ Welded ☐ PVC ☐ Solvent ☐ SS ☐ Welded Drive Shoe? ☐ Yes ☐ No Height above/below surface Diameter	Material Diameter Length Set between ft and ft Slot size
Filter Pack	**Annulus Seal**	**Grout**
Size Method of Install Composition Volume Used Depth to top of f.p.	☐ Bentonite Pellets Chips ☐ Volume Used? Method of Instal. Depth: from ft. to ft.	Used? ☒ Yes ☐ No Volume ☐ Neat Cement ☒ Bentonite ☐ Method of Instal. TREMIE Depth: from ft. to ft.
Well Head Completion	**Development**	**Static Water Level**
☐ Flushmount ☐ Stand Up Cap Type Lock # Volume Used	Method Gallons Evacuated Date Odor	Initial DRY ft Development ft. 24 hr. ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	5,532	CORE	GROUND DOWNHOLE			0-5 FT BGS		5/5			0-0.9 SILTY CLAY, CARBONAC ROOTS, MOIST HIGH PLASTICITY 10YR 4/1
	2,520		17,562								
	2,900		19,826								0.9-4.6 CLAY SOME SILT FEW FINE GRAVEL HIGH PLASTICITY MOIST 10YR 5/3 MOTTLED 10YR 5/8
	2,825		18,519								
	2,785		17,656								
5	2,725		17,225								
	2,918		17,003			5-10 FT BGS		5/5			4.6-11' SILT LITTLE CLAY FEW FINE GRAVEL DRY 10YR 5/3 MOTTLED 10YR 5/8
	2,965		17,879								
	2,921		19,087								
	2,941		20,938								
10	2,841		20,377								

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: S B 06 8
Geologist: C. Pidge	Driller/Company: KRIS LAUER / Frontz	
Drilling Equip.: Versa-Sonic	Date Start: 8 DEC 09	Date Completed: 8 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 15 FT BGS / Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWN HOLE			10-15 FT BGS		5/5			11-15 CLAY LITTLE FINE GRAVEL MOIST 10YR 3/1
	2,827		17,814								
	2,922		CAVE								
	2,873										
	2,687										
15	2,596										
	REFUSAL 15 FT BGS										
20											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB061
Geologist: C. Pidge	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 7DEC09	Date Completed: 7DEC09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 15FT BGS / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: _____

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface _____

Diameter _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets _____ Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

☐ _____

Method of Instal. TREMIE

Depth: from _____ ft. to _____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial DRY ft

Development _____ ft.

24 hr. _____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							DRILLED 7DEC09 LOGGED/SAMPLED 8DEC09
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	5,465	CORE	GROUND DOWN HOLE			0-5 FT BGS		5/5			0-1.2 ORGANIC, PEAT-LIKE SILT LITTLE CLAY 10YR 3/2
	2,572		17,525								
	2,776		19,175								
	2,636		18,153								1.2-11.7 SILT FEW CLAY, FINE GRAVEL FEW, HIGH TOUGHNESS 10YR 4/2 MOTTLED 10YR 5/8
	2,582		17,860								
	2,594		16,774								
5	2,710		18,008			5-10 FT BGS		5/5			
	2,606		18,120								
	2,833		17,846								
	2,768		17,733								
	2,647		18,860								
10											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB061
Geologist: C. Pidge	Driller/Company: KRIS LAUER / Frontz	
Drilling Equip.: Versa-Sonic	Date Start: 7DEC09	Date Completed: 7DEC09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 15FTBGS / Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWN HOLE								11.7-15 CLAY LITTLE FINE GRAVEL, MEDIUM TOUGHNESS 10YR3/1
	2,407		20,383			10-15 FTBGS		5/5			
	2,514		20,795								
	2,505		21,028								
	2,545		CAVE								
15	2,423		↓								
	REFUSAL 15FTBGS										
20											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB062
Geologist: C. Pidge	Driller/Company: KNS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 7DEC09	Date Completed: 7 DEC09
Surface Elev.: / Top of Casing Elev.: NA	Total Depth: 15FT BGS	Well Depth: NA

Method of Drilling	Casing/Riser Type	Screen Portion of Well
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter:	☐ Steel ☐ Threaded ☐ Galv ☐ Welded ☐ PVC ☐ Solvent ☐ SS ☐ Welded Drive Shoe? ☐ Yes ☐ No Height above/below surface Diameter	Material Diameter / Length Set between ft and ft Slot size
Filter Pack	**Annulus Seal**	**Grout**
Size Method of Install Composition Volume Used Depth to top of f.p.	☐ Bentonite Pellets Chips ☐ Volume Used? Method of Instal. Depth: from ft. to ft.	Used? ☒ Yes ☐ No Volume ☐ Neat Cement ☒ Bentonite ☐ Method of Instal. Tremie Depth: from ft. to ft.
Well Head Completion	**Development**	**Static Water Level**
☐ Flushmount ☐ Stand Up Cap Type Lock # Volume Used	Method Gallons Evacuated Date Odor	Initial DRY ft Development ft. 24 hr. ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	DRILLED 7 DEC09 LOGGED/SAMPLED 8 DEC09 Descriptions and Comments
0	5.1	87	GROUND DOWNHOLE			0-5 FT BGS		5/4			0-1 ORGANIC, PEAT-LIKE, SILT LITTLE CLAY, 10YR 3/2
	2.7	64	15,308								
	3.1	41	18,125								1-13.7 SILT FEW CLAY, FEW FINE GRAVEL, HIGH TOUGHNESS 10YR 4/2. MOTTLED 10YR 5/8
	3.3	17	18,040								
	2.8	18	17,771								
	NO RECOVERY		17,598								
5	2.7	76	17,809			5-10 FT BGS		5/5			
	2.8	74	17,791								
	2.9	76	17,829								
	3.1	05	19,668								
10	3.1	93	20,673								

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB062
Geologist: C. Pidge	Driller/Company: Kris Lauer / Frontz	
Drilling Equip.: Versa-Sonic	Date Start: 7DEC09	Date Completed: 7DEC09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 15 FT BGS / Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWN HOLE			10-15 FT BGS		5/5			13.7-15 CLAY FEW SILT FEW FINE GRAVEL MOIST MEDIUM TOUGHNESS 10YR 3/1
	2,730		20,407								
	2,944		19,423								
	2,953		CAVE								
	3,191										
15	3,141										
	REFUSAL			15 FT BGS							
20											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: LUCKEY FUSRAP	Boring/Well #: SB063
Geologist: CARL PIDGE P.G.	Driller/Company: DAVE SCHREGARDUST / FRONTZ	
Drilling Equip.: VERSA SONIC	Date Start: 24NOV09	Date Completed: 24NOV09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 20FT BGS / Well Depth: —

Method of Drilling

- ☐ Hollow Stem ☐ Direct Rotary
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger
- ROTASONIC

Hole Diameter: 8 INCH

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface: ____

Diameter: ____

Screen Portion of Well

Material ____

Diameter ____ Length ____

Set between ____ ft and ____ ft

Slot size ____

Filter Pack

Size ____

Method of Install ____

Composition ____

Volume Used ____

Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ ____

Volume Used? ____

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume ____

☐ Neat Cement ☐ Bentonite

☒ BENTONITE CHIPS

Method of Instal. GRAVITY

Depth: from ____ ft. to ____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____

Lock # ____

Volume Used ____

Development

Method ____

Gallons Evacuated ____

Date ____

Odor ____

Static Water Level

Initial DRY ft

Development ____ ft.

24 hr. ____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	~~PID Reading (ppm)~~ CPM	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(in)	USCS Class	Contact-Depth	Descriptions and Comments
0	803	GROUND						5/5			0-1.5' COARSE GRAVEL DRY FINES 10YR 6/3
	CORE	DOWNHOLE									
	941		4,012								
	1,012		9,987								1.5-2.2 COARSE GRAVEL w/ ASPHALT OR PITCH BLACK GLASSY APPEARANCE
	1,114		18,291								
	1,856		19,529								2.2-3.1 COARSE GRAVEL, DRY W/FINES 10YR 5/1
	1,865		18,025								3.1-6.5 CLAY MOIST NO DILATANCY HIGH TOUGHNESS, HIGH PLASTICITY 10YR 3/1 MOTTLED 5GY 3/2
5	1,884		17,272					5/5			
	1,870		16,483								6.5-14.8 SILT TRACE CLAY DRY MEDIUM STRENGTH 10YR 4/6 MOTTLED 10YR 3/1
	1,951		15,093								
	1,678		15,291								
	2,000		15,914								
10											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: LUCKEY FUSRAP	Boring/Well #: SB 063
Geologist: CARL PIDUE P.G.	Driller/Company: DAVE SCHREENGOST / FRONTIER	
Drilling Equip.: VERSA SONIC	Date Start: 24NOV09	Date Completed: 24NOV09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 20 FT BGS / Well Depth: —

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	~~PID Reading (ppm)~~ CPM	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(in)	USCS Class	Contact-Depth	Descriptions and Comments
	CORE		DOWNHOLE								
10	1,687		16.977					5/5			14.8-20 CLAY TRACE SILT ~~DRY~~ TRACE FINE GRAVEL MOIST NO DILATANCY HIGH TOUGHNESS, MEDIUM PLASTICITY 10YR 3/1
	1,797		16.443								
	2,001		18.826								
	1,991		13.637								
15	1,901		12.219								
	1,821		9.399					5/5			
	2,027		7.949								
	1,828		CAVE								
	1,863		↓								
20	1,590										
	TERMINATED AT 20 FT BGS										

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB064
Geologist: C. Pidge	Driller/Company: DAVE SCHRECENGOST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 1 DEC 09	Date Completed: 1 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6-INCH

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface: _____

Diameter: _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets _____ Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

☐ _____

Method of Instal. GRAVITY

Depth: from _____ ft. to _____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial 8 ft

Development _____ ft.

24 hr. _____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	1,079	CORE	GRAVEL DOWNHOLE					5/5	GM		0-1.3 GRAVEL WITH FINES SILTY GRAVEL, DRY LOOSE, 10YR 4/2 FINE TO COARSE GRAVEL
	2,496		12,580								
	1,788		16,090						GC		1.3-3.4 GRAVEL WITH FINES CLAYEY SILT, FINE TO COARSE GRAVEL DRY, MEDIUM STRENGTH 10YR 4/4 MOTTLED 10YR 4/2
	1,832		17,448								
	1,913		17,279								
5	1,837		17,185								3.4-7.8 CLAYEY SILT SOME FINE GRAVEL, DRY, MEDIUM STRENGTH 10YR 3/2 MOTTLED 10YR 4/6
	1,924		16,907					5/5			
	1,935		16,795								
	1,867		15,325								
	2,065		WATER								7.8-9.5 SAME TRACE FINE GRAVEL 10YR 3/2
10	2,172		↓								9.5-13.4 SAME 10YR 4/3 MOTTLED 10YR 4/6

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB064	
Geologist: C. Pidge	Driller/Company: DAVE SCHREEN GOST / Frontz		
Drilling Equip.: Versa-Sonic	Date Start: 1DEC09	Date Completed: 1DEC09	
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS	Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWN HOLE WATER					5/5			13.4-14.8 CLAY MOIST NO DILATANCY, MEDIUM TOUGHNESS, HIGH PLASTICITY 10YR 3/1
	2,000										
	2,231										
	2,058										
	2,106										14.8-15.1 SAME TRACE COARSE GRAVEL
15	1,907							5/5			15.1-20 FINE SAND TRACE SILT WET, SLOW DILATANCY, LOW STRENGTH 10YR 3/1
	1,976										
	1,863										
	1,964										
	1,589										
20	1,653										
	TERMINATED 20 FT BGS										

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: LUCKEY FUSRAP	Boring/Well #: SB 065
Geologist: CARL PIDGE P.G.	Driller/Company: DAVE SCHRECENGOST / FRONTIER	
Drilling Equip.: VERSA SONIC	Date Start: 21 NOV 09	Date Completed: 21 NOV 09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 12 FT BGS / Well Depth: —

Method of Drilling	Casing/Riser Type	Screen Portion of Well
☐ Hollow Stem ☐ Direct Rotary ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger ROTO SONIC Hole Diameter: 8-INCH	☐ Steel ☐ Threaded Height above/below surface ☐ Galv ☐ Welded ☐ PVC ☐ Solvent ☐ SS ☐ Welded Diameter Drive Shoe? ☐ Yes ☐ No	Material Diameter Length Set between ft and ft Slot size
Filter Pack	**Annulus Seal**	**Grout**
Size Method of Install Composition Volume Used Depth to top of f.p.	☐ Bentonite Pellets Chips ☐ Volume Used? Method of Instal. Depth: from ft. to ft.	Used? ☒ Yes ☐ No Volume ☐ Neat Cement ☐ Bentonite ☒ BENTONITE CHIPS Method of Instal. GRAVITY Depth: from ft. to ft.
Well Head Completion	**Development**	**Static Water Level**
☐ Flushmount ☐ Stand Up Cap Type Lock # Volume Used	Method Gallons Evacuated Date Odor	Initial DRY ft Development ft. 24 hr. ft.

DRILLING	SAMPLE								GEOLOGIC LOG		
Depth	~~PID Reading (ppm)~~ CPM	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(in)	USCS Class	Contact-Depth	Descriptions and Comments
	(CPM)		DOWN HOLE								
0	3,235		20,503					5/5			0-1.5 SILT TRACE CLAY, DRY, LOW STRENGTH, NO DILATANCY, 10YR 5/1
	2,938		23,488								
	3,169		19,488								1.5-6.8 SILTY CLAY, MOIST, NO DILATANCY, MEDIUM TOUGHNESS, HIGH PLASTICITY, 10YR 6/1 MOTTLED 10YR 6/8
	3,168		18,283								
	3,117		17,293								
5	2,971		17,405					5/5			
	3,038		18,523								6.5-9.6 CLAYEY SILT, MOIST NO DILATANCY, HIGH TOUGHNESS HIGH PLASTICITY, 10YR 6/1 MOTTLED 10YR 6/8
	2,923		18,715								
	3,138		CAVE								
	3,130		↓								
10	3,125										

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: LUCKEY FUSRAP	Boring/Well #: SBQ65
Geologist: CARL PIDAL P.G.	Driller/Company: DAVE SCHREECKNOST / FRONTZ	
Drilling Equip.: VERSA SONIC	Date Start: 2/NOV09	Date Completed: 2/NOV09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 12 FT BGS / Well Depth: —

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	PID Reading (ppm) CPM	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(in)	USCS Class	Contact-Depth	Descriptions and Comments
10	(CPM) 2,941 3,053		CAVE ↓					5/2			9.6-12 CLAYEY SILT, MOIST NO DILATANCY, MEDIUM TOUGHNESS HIGH PLASTICITY 10YR 4/1 TRACE FINE GRAVEL
											TERMINATED 12 FT BGS
15											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB66
Geologist: S Decker	Driller/Company: DAVE SHREKENDOST / FRONTIER	
Drilling Equip.: Versa-Sonic (Rotosonic)	Date Start: 11/19/09	Date Completed: 11/19/09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 15.0 FT / Well Depth: —

Method of Drilling

☐ Hollow Stem ☐ Direct Rotary
☐ Air Rotary ☐ Bucket Auger
☐ MUD Rotary ☐ Flight Auger
Hole Diameter: Roto Sonic 8"

Casing/Riser Type

☐ Steel ☐ Threaded
☐ Galv ☐ Welded
☐ PVC ☐ Solvent
☐ SS ☐ Welded
Drive Shoe? ☐ Yes ☐ No
Height above/below surface: ____
Diameter: ____

Screen Portion of Well

Material ____
Diameter ____ Length ____
Set between ____ ft and ____ ft
Slot size ____

Filter Pack

Size ____
Method of Install ____
Composition ____
Volume Used ____
Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____
☐ ____
Volume Used? ____
Method of Instal. ____
Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume 200 #s
☐ Neat Cement ☐ Bentonite SED
☒ Bentonite ~~Pellets~~ Chips
Method of Instal. gravity
Depth: from 0 ft. to 15 ft.

Well Head Completion

☐ Flushmount ☐ Stand Up
Cap Type ____
Lock # ____
Volume Used ____

Development

Method ____
Gallons Evacuated ____
Date ____
Odor ____

Static Water Level

Initial NE ft
Development — ft.
24 hr. — ft.

DRILLING	SAMPLE									GEOLOGIC LOG		
Depth	~~PID~~ Core Reading (ppm) Rel. (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(in) ft	USCS Class	Contact-Depth	Descriptions and Comments
bore 0	12,381	~~13390~~	—	0				—			12,381 cpm
13390	10,144	~~13258~~	~~13390~~								
13258	10,217	~~11995~~	~~13258~~					60/60			0-1
11995	10,212	~~11157~~	~~11995~~	~~11157~~							silt + clay, moist, soft
11157	9,953	~~11~~	~~11822~~								medium dry strength, no
11822	9,910	~~11822~~	~~14675~~					—			dilatancy, high toughness,
14675		~~14675~~	—	6							high plasticity 10YR 2/1
14415	~~14415~~	~~14415~~	~~13300~~ —	7				60/60			(Black), organic.
13300		~~13300~~									
11978		~~11978~~	~~11183~~								
11183	10							—			

GEOLOGIC BORING/WELL LOG

Project #: 9200Z	Project Name: Luckey FUSRAP	Boring/Well #: SB066
Geologist: S. Deeten	Driller/Company: DAVE SCHRECKENGOST / FRONTZ	
Drilling Equip.: Vensa - Sonic	Date Start: 11/19/09	Date Completed: 11/19/09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 15.0 FT / Well Depth: —

DRILLING	SAMPLE								GEOLOGIC LOG		
Depth	~~PID Reading (ppm)~~ RAD (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(in) ft	USCS Class	Contact-Depth	Descriptions and Comments
10											1 - 10 silt w/ clay, s. moist, very stiff, high dry strength, no dilatancy, medium toughness, medium plasticity, 10YR 2/2 (very dark greyish brown) mottled.
9013	~~9013~~	6" core						24"/60"			
6103	~~6103~~										
15											Refusal @ 15 ft.
20											10 - 15 Clay and Silt, Dry, very stiff, high dry strength, no dilatancy, high toughness, high plasticity, 2.5Y 2.5/1 (Black), (granite boulder fragment in shoe)
25											

bore

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB2067
Geologist: C. Pidge	Driller/Company: DAVE SOUTHSOUTHEAST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 9 DEC 09	Date Completed: 8 DEC 09
Surface Elev.: / Top of Casing Elev.: NA	Total Depth: 20 FT BGS	Well Depth: NA

Method of Drilling	Casing/Riser Type	Screen Portion of Well
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter:	☐ Steel ☐ Threaded Height above/below surface ☐ Galv ☐ Welded ☐ PVC ☐ Solvent ☐ SS ☐ Welded Diameter Drive Shoe? ☐ Yes ☐ No	Material Diameter Length Set between ft and ft Slot size
Filter Pack	**Annulus Seal**	**Grout**
Size Method of Install Composition Volume Used Depth to top of f.p.	☐ Bentonite Pellets Chips ☐ Volume Used? Method of Instal. Depth: from ft. to ft.	Used? ☒ Yes ☐ No Volume ☐ Neat Cement ☒ Bentonite ☐ Method of Instal. TREMIE Depth: from ft. to ft.
Well Head Completion	**Development**	**Static Water Level**
☐ Flushmount ☐ Stand Up Cap Type Lock # Volume Used	Method Gallons Evacuated Date Odor	Initial DRY ft Development ft. 24 hr. ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							DRILLED 8 DEC 09 LOGGED/SAMPLED 9 DEC 09
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	5,371	CORE	GROUND DOWNHOLE			0-5 FT BGS		3/4			0-1.4 SILT SOME CLAY MOIST HIGH TOUGHNESS HIGH PLASTICITY CAPILLARY ROOTS 10 YR 4/2
	3,024		17,374								
	3,342		18,604								
	3,320		18,794								
	3,073		19,097								1.4-13.2 SAME NO ROOTS 10 YR 4/2 MOTTLES 10 YR 5/8
5	3,005		16,895								
	3,104		15,019			5-10 FT BGS		5/5			
	3,402		13,878								
	3,295		14,562								
	3,226		19,116								
10	3,067		20,108								

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB867	
Geologist: C. Pidge	Driller/Company: DAVE SCHREIBER / Frontz		
Drilling Equip.: Versa-Sonic	Date Start: 8 DEC 09	Date Completed: 8 DEC 09	
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS	Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWNHOLE			10-15 FT BGS		5/5			13.2 – 20 CLAY FEW FINE MOIST GRAVEL HIGH PLASTICITY 10 YR 3/1 INCREASE GRAVEL WITH DEPTH
	3,439		19,974								
	3,637		19,864								
	3,489		20,249								
	3,627		CAVE								
15	3,407										
	3,305					15-20 FT BGS		5/5			
	3,360										
	3,415										
	3,399										
20	2,875										
	TERMINATED										
			20 FT BGS								

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB&6B
Geologist: C. Pidge	Driller/Company: DAVE SCHREGARDOST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 8 DEC 09	Date Completed: 8 DEC 09
Surface Elev.: / Top of Casing Elev.: NA	Total Depth: 16 FT BGS	Well Depth: NA

Method of Drilling

- ☐ Hollow Stem
- ☒ Sonic
- ☐ Air Rotary
- ☐ Bucket Auger
- ☐ MUD Rotary
- ☐ Flight Auger

Hole Diameter: _____

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/ below surface _____

Diameter _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets _____ Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

☐ _____

Method of Instal. TREMIE

Depth: from _____ ft. to _____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial DRY ft

Development _____ ft.

24 hr. _____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	DRILLED 8 DEC 09 LOGGED/SAMPLED 9 DEC 09 Descriptions and Comments
0	2,404	GRAB DOWN HOLE				0-5 FT BGS		5/5			0 - 1.8 COARSE GRAVEL SOME SILT DRY LOOSE 10YR 3/2
	CORE 1,872	12,388									
	2,922	20,105									1.8-4.5 SILT SOME CLAY FEW FINE GRAVEL MOIST HIGH TOUGHNESS HIGH PLASTICITY 10YR 4/2 MOTTLED 10YR 5/8 CAPILLARY ROOTS TO ≈ 3.5 FT BGS
	2,857	12,621									
	2,699	17,794									
5	2,701	19,134									
	2,599	19,348				5-10 FT BGS		5/5			
	3,009	20,918									
	3,139	20,995									
	3,099	20,045									4.5 COBBLE ≈ 5 INCH WELL ROUNDED GRANITIC IN APPEARANCE
	2,877	19,389									14.5-15 SAME 10YR 3/1 MOTTLED 10YR 5/8
10											

1050

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP		Boring/Well #: SB06B
Geologist: C. Pidge	Driller/Company: DAVE SCHREECENGOST / Frontz		
Drilling Equip.: Versa-Sonic		Date Start: 8 DEC 09	Date Completed: 8 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 16 FT BGS	Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWNHOLE					5/5			15-16 CLAY FEW SILT DRY HIGH TOUGHNESS FEW FINE GRAVEL 10 YR 3/1
	2,577		16,158								
	3,025		14,861								
	3,021		15,134								
	2,915		CAVE								
15	2,728		↓								
	2,831							1/1			
	REFUSAL 16 FT BGS										
20											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB069
Geologist: C. Pidge	Driller/Company: KHALIS LAUGA / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 5 DEC 09	Date Completed: 5 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: _____

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/ below surface _____

Diameter _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets _____ Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

☐ _____

Method of Instal. TREMIE

Depth: from _____ ft. to _____ ft.

Well Head Completion

☐ Flushmount ☒ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial DRY ft

Development _____ ft.

24 hr. _____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ift	USCS Class	Contact-Depth	Descriptions and Comments
0	3,906	Grab CORE	DOWN HOLE			0-5 FT BGS		5/5			0-2.7 RAILROAD BED, DRY COARSE GRAVEL W/ COARSE SAND 10YR 2/1
	2,760		13,056								
	2,749		16,322								
	3,148		17,320								
	2,955		19,544								2.7-13.8 CLAYEY SILT FEW COARSE SAND MOIST HIGH TOUGHNESS 10YR 4/2 MOTTLED 10YR 5/8
5	3,006		19,778								
	3,067		19,090			5-10 FT BGS		5/5			
	2,896		18,401								
	3,117		17,014								
	3,086		16,179								
	3,199		17,934								
10											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB069	
Geologist: C. Pidge	Driller/Company: KRIS LAUER / Frontz		
Drilling Equip.: Versa-Sonic	Date Start: 5 DEC 09	Date Completed: 5 DEC 09	
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS	Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWN HOLE								
	2,736		20,830			10-15 FT BGS		5/5			13.8-20 CLAY LITTLE SILT FEW COARSE SAND MOIST HIGH TOUGHNESS 10YR 3/1
	2,597		21,027								
	3,078		20,966								
	3,033		19,446								
	3,087		14,130								
15	2,599		11,740			15-20 FT BGS		5/5			
	2,345		9,537								
	2,609		10,040								
	2,380		CAVE								
	2,458		↓								
20	TERMINATED					20 FT BGS					

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB07A
Geologist: C. Pidge	Driller/Company: SCHREECENGOST DANE / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 4 DEC 09	Date Completed: 4 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 16 FT BGS / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: _____

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface _____

Diameter _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets _____ Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

☐ _____

Method of Instal. TREMIE

Depth: from _____ ft. to _____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial 9 ft

Development _____ ft.

24 hr. _____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	4,043	CORE	GROUND DOWN HOLE			0-5 FT BGS		5/5			0-2.5 RAILROAD BED COARSE GRAVEL & COARSE SAND, DRY, LOOSE 10YR 2/1
	2,287		13,122								
	2,621		16,882								
	2,913		17,095								
	2,845		19,494								2.5-7.1 SILT LITTLE CLAY DRY MEDIUM STRENGTH 10YR 4/3
5	2,970		19,146								
	3,020		18,232			5-10 FT BGS		5/5			7.1-13.8 SILT LITTLE CLAY MOIST MEDIUM STRENGTH FEW ~~COARS SAND~~ & FINE GRAVEL 10YR 3/3 MOTTLED 10YR 5/8
	2,908		17,634								
	3,142		17,372								
	2,982		16,164								
10	2,894		WATER ↓								

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB 70	
Geologist: C. Pidge	Driller/Company: SCHREENROST / Frontz		
Drilling Equip.: Versa-Sonic		Date Start: 4 DEC 09	Date Completed: 4 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 16 FT BGS	Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWNHOLE WATER			10-15 FT BGS		5/5			13.8-16 CLAY FEW SILT FEW COARSE SAND MOIST 10 YR 3/1
	2,644										
	2,949										
	3,152										
	2,921										
15	3,055										15-16 LIMESTONE, COARSE GRAVEL DRY N 7/1
	1,906					15-20 FT BGS		1/1			
	REFUSAL 16 FT BGS										
20											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB071
Geologist: S. Deeter	Driller/Company: Kris Lauer / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 12/2/09	Date Completed: 12/2/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 15.0 ft / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6"/8"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface: ____

Diameter: ____

Screen Portion of Well

Material ____

Diameter ____ Length ____

Set between ____ ft and ____ ft

Slot size ____

Filter Pack

Size ____

Method of Install ____

Composition ____

Volume Used ____

Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ ____

Volume Used? ____

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume ____

☐ Neat Cement ☐ Bentonite

☒ Bentonite Chips/Cuttings

Method of Instal. Gravity

Depth: from 0 ft. to 15.0 ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____

Lock # ____

Volume Used ____

Development

Method ____

Gallons Evacuated ____

Date ____

Odor ____

Static Water Level

Initial 7.0 ft

Development ~ ft.

24 hr. ~ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm) (core)	Sample Type Bore (cpm)	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	9454										0 – 8.5
	9048	20213									Clay / Silt, Dry to wet.
	7937	21112						5/5			Fractured. Some silt/sand
	8220	20867									lenses (mottled). Some Slag
	8751	CAVE									present @ 5.0 ft (0.3 ft thick)
5	10262										and saturated. High dry
	8782										strength, no to slow
	8803							5/5			dilatancy, med toughness,
	8791										med plasticity. 5YR 4/2
	9431										(dk reddish gray) Some coarse
10	9953										subround sand (<5%).

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB071	
Geologist: S. Deeter	Driller/Company: Kris Lauer / Frontz		
Drilling Equip.: Versa-Sonic		Date Start: 12/2/09	Date Completed: 12/2/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 15.0 ft	Well Depth: NA

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10		CAVE									@ 7.0 feet encountered metal plate, water in hole.
	7836										
	8553							5/5			
	8705										
	8521										
15	7679							Refusal			8.5 – 12.0
											Silt, moist to wet. stiff, high to med dry strength, no dilatancy, med toughness, high plasticity, (dusky red).
20											
											12.0 – 15.0
											Sandy clay. moist. stiff, med dry strength, no dilatancy, med to low toughness, low to high plasticity. 5YR 2.5/1 (black), well graded, (glacial till?) some subround gravel to 0.5" grading to angular cobbles at 15.0 feet. (limestone)

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB072
Geologist: C. Pidge	Driller/Company: LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start 3 DEC 09	Date Completed: 3 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

SONIC

Hole Diameter: 8-INCH

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface: _____

Diameter: _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets _____ Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

☒ BENTONITE

Method of Instal. GRAVITY

Depth: from _____ ft. to _____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial 13 ft

Development _____ ft.

24 hr. _____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							DRILLED 2 DEC 09 LOGGED/SAMPLED 3 DEC 09
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	6,785	CROWN CORE	DOWNHOLE			0-5 FT BGS		5/5			0-1.6 CLAY LITTLE SILT LITTLE COARSE SAND, MOIST HIGH TOUGHNESS, HIGH PLASTICITY 10YR 3/2
	10,630		47,238								
	11,149		33,225								1.6-14.5 SILT LITTLE CLAY, LITTLE FINE GRAVEL MEDIUM STRENGTH, 10YR 3/2 MOTTLED 10YR 5/8
	10,615		27,166								
	9,907		33,364								
5	12,425		31,532								
	11,660		30,713			5-10 FT BGS		5/5			
	13,675		19,089								
	10,353		18,048								
	9,903		17,438								
10	10,344		18,840								

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB072
Geologist: C. Pidge	Driller/Company: LAUER / Frontz	
Drilling Equip.: Versa-Sonic	Date Start: 2 DEC 09	Date Completed: 2 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS	Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
	CORE		DAM HOLE								
10	11,436		20.171			10-15 FT BGS		5/5			
	12,241		19.046								
	12,898		17.029								
	11,227		WATER								
15	10,835										
	10,927					15-20 FT BGS		5/5			14.5-20 CLAY LITTLE SILT WET, MEDIUM TOUGHNESS, HIGH PLASTICITY 10YR 4/1
	10,460										
	10,047										
	9,776										
20	9,586										
	TERMINATED @ 20 FT BGS										

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB073
Geologist: C. Pidge	Driller/Company: LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 2 DEC 09	Date Completed: 2 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☐ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger
- SONIC

Hole Diameter: 8-INCH

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/ below surface _____

Diameter _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets _____ Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

☒ BENTONITE

Method of Instal. GRAVITY

Depth: from _____ ft. to _____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial 8 ft

Development _____ ft.

24 hr. _____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	DRILLED 2 DEC 09 LOGGED/SAMPLED 3 DEC 09 Descriptions and Comments
0	5,889	GROUND SURFACE	0-5 FT BGS					5			0-7.2 DEBRIS W/ GRAVEL COARSE, BRICK, METAL, SILT FINES 10YR 3/2
	9,945		60,234								
	10,321		24,095								
	9,278		21,402								
	8,453		19,950								
5	7,517		18,075								7.2-12.2 SILT LITTLE CLAY DRY, MEDIUM TOUGHNESS, 10 YR 3/2 MOTTLED 10YR 5/8
	8,245		17,564	5-10 FT BGS				5			
	7,181		18,381								
	7,035		19,312								
	7,126		WATER								
10	7,295		↓								

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB073	
Geologist: C. Pidge	Driller/Company: LAUER / Frontz		
Drilling Equip.: Versa-Sonic	Date Start: 2 DEC 09	Date Completed: 2 DEC 09	
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS	Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWNHOLE								
	7,024		WATER		10-15 FT BGS			5			
	6,660										12.2-20 CLAY TRACE SILT WET LITTLE COARSE SAND, HIGH TOUGHNESS, HIGH PLASTICITY 10 YR 4/1
	6,319										
	6,545										
	6,718										
15	5,515				15-20 FT BGS			5			
	5,023										
	4,879										
	5,539										
20	5,707										
	TERMINATED @ 20 FT BGS										

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB074
Geologist: CARL PIDRE P.G.	Driller/Company: KRIS LAUER	/ Frontz Drilling
Drilling Equip.: Versa-Sonic	Date Start: 6 JAN 10	Date Completed: 6 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 15 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☑ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial DRY ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation GRAVITY	24 hr. _____ ft.
Hole Diameter: 8/6 inch	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
0	GRAND	24,690 CPM	5/4			0-0.6 CLAYEY SILT WITH COARSE SAND AND LITTLE FINE GRAVEL MOIST HIGH TOUGHNESS AND PLASTICITY 10YR 4/2
	5,351	130,759				
	3,075	37,242				
	2,867	21,717				0.6-13.1 SILT SOME CLAY LITTLE FINE GRAVEL AND COARSE SAND MOIST HIGH TOUGHNESS AND PLASTICITY 10YR 4/2 MOTTLED 10YR 6/6 AND 10YR 5/1
	2,607	19,291				
5	WORKERKNOW	17,290	5/5			
	3,135	16,326				
	3,529	16,720				
	2,990	16,980				13.1-15 CLAY LITTLE FINE GRAVEL MOIST HIGH TOUGHNESS AND PLASTICITY 10YR 3/1
	2,772	16,912				
10	2,217	18,752	5/5			
	2,646	20,384				15 LIMESTONE COARSE GRAVEL DRY
	2,774	21,518				
	2,677	CAVE				
	2,578	↓				
15	2,301					
	REFUSAL @ 15 FT BGS					
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB075
Geologist: CARL PIDGE, P.G.	Driller/Company: KRIS LAUER	/ Frontz Drilling
Drilling Equip.: Versa-Sonic	Date Start: 5 JAN 10	Date Completed: 5 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 15 FT BGS	Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 8/6-INCH	Used? ☒ Yes ☐ No Volume _____ ☐ Neat Cement ☒ Bentonite Method of Installation GRAVITY Depth: from _____ ft. to _____ ft.	Initial DRY ft Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	GROUND	6,915 CPM	5/5			0-3.6 CLAYEY SILT WITH SOME BRICK (10R3/6) AND FIRE BRICK (10YR8/8) DRY, TO MOIST W/ DEPTH MATRIX ~~10YR3/2~~ 10YR 2/2
	2,639	36,336				
	4,393	72,137				
	9,604	65,676				
	3,716	28,480				3.6-13.6 CLAYEY SILT, MOIST, HIGH TOUGHNESS, HIGH PLASTICITY LITTLE FINE GRAVEL TO COARSE SAND 10YR 4/4 MOTTLED 10YR5/6
5	2,553	22,245				
	2,762	19,761	5/5			
	3,289	18,670				13.6-14.9 CLAY FEW COARSE SAND MOIST, HIGH TOUGHNESS, HIGH PLASTICITY 10YR 3/1
	3,930	17,976				
	2,665	17,968				
10	2,906	18,252				14.9-15 COBBLE > 6-INCH GRANITIC 10YR3/1
	3,084	17,405	5/5			
	2,280	18,834				
	2,269	18,134				
	2,337	CAVE				
15	2,815	↓				
	REFUSAL	15 FT BGS				
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB076
Geologist: CARL PIDAL P.G.	Driller/Company: KRIS WALLER	/ Frontz Drilling
Drilling Equip.: Versa-Sonic	Date Start: 6 JAN 10	Date Completed: 6 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 15 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial DRY ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation GRAVITY	24 hr. _____ ft.
Hole Diameter: 8/6 inch	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	RADIOLOGICAL SCAN (CPM) DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	GROUND 7,721 CPM		5/5			0-1.3 CLAYEY SILT WITH COARSE SAND, WET, MUSHY 10YR 4/2
	3,584	28,579				
	3,018	23,023				1.3-3.2 SILT SOME CLAY, MOIST LITTLE COARSE SAND AND FINE GRAVEL, HIGH TOUGHNESS AND PLASTICITY 10YR 4/2 WITH 10YR 5/1
	2,913	19,891				
	2,614	18,761				
5	2,535	17,781				3.2-13.8 SILT LITTLE CLAY WITH LITTLE COARSE SAND TO FINE GRAVEL MOIST, HIGH TOUGHNESS AND PLASTICITY, 10YR 4/2 MOTTLED 10YR 5/6
	2,540	17,265	5/5			
	2,535	16,232				
	2,689	16,595				
	2,460	17,491				
10	2,465	17,671				13.8-15 CLAY LITTLE COARSE SAND MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 3/1
	2,367	18,489	5/5			
	2,239	CAVE				
	2,303					
	2,247					
15	2,060					
	REFUSAL	15 FT BGS				
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB077
Geologist: Carl Pidge P.G.	Driller/Company: Kris Lauer	/ Frontz Drilling
Drilling Equip.: Versa-Sonic	Date Start: 6 Jan 10	Date Completed: 6 Jan 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 ft BGS	Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial DRY ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation GRAVITY	24 hr. _____ ft.
Hole Diameter: 8/6 inch	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	RADIOLOGICAL SCAN (CPM) DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
						DRILLED 6 JAN 10 LOG/SAMPLE 7 JAN 10
0	GRAVEL	26,464 CPM				0-1.2 GRAVEL RUBBLE COARSE TO FINE LOOSE LITTLE SILT
	4,883	128,856	5/4			
	3,807	88,840				
	8,386	63,501				
	3,785	100,394				1.2-5.5 CLAY SOME SILT LITTLE GRAVEL FINE TO COARSE MOIST HIGH TOUGHNESS AND PLASTICITY 10YR 4/2 MOTTLED 10YR 4/6
5	NORMALLY	57,868	5/5			
	2,737	22,917				
	3,104	19,326				
	3,341	18,362				5.5-9.3 SILT LITTLE CLAY FEW FINE GRAVEL, MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 4/4 MOTTLED 10YR 4/6
	3,672	18,199				
10	3,518	17,837	5/5			
	3,404	17,603				
	2,884	18,065				9.3-13.7 SILT SOME CLAY FEW FINE GRAVEL MOIST, HIGH TOUGHNESS HIGH PLASTICITY, 10YR 4/4 MOTTLED 10YR 4/6 AND 10YR 5/1
	2,830	18,805				
	2,705	20,389				
15	2,624	CAVE	5/5			13.7-20 CLAY LITTLE TO SOME GRAVEL FINE TO COARSE WITH DEPTH MOIST, HIGH PLASTICITY HIGH TOUGHNESS 10YR 3/1
	3,501					
	2,385					
	2,322					
	2,272					
20	1,908					
	TERMINATED @ 20 FT BGS					

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB078
Geologist: C. Pidge	Driller/Company: ~~Schreeon Corp~~ Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 2 DEC 09	Date Completed: 2 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 18 ft BGS / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☑ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6-inch

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☑ Solvent
- ☐ SS ☐ Welded

Height above/below surface: ____

Diameter: ____

Drive Shoe? ☐ Yes ☐ No

Screen Portion of Well

Material ____

Diameter ____ Length ____

Set between ____ ft and ____ ft

Slot size ____

Filter Pack

Size ____

Method of Install ____

Composition ____

Volume Used ____

Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ ____

Volume Used? ____

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Grout

Used? ☑ Yes ☐ No Volume ____

☐ Neat Cement ☑ Bentonite

☐ ____

Method of Instal. Gravity

Depth: from ____ ft. to ____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____

Lock # ____

Volume Used ____

Development

Method ____

Gallons Evacuated ____

Date ____

Odor ____

Static Water Level

Initial 11 ft

Development ____ ft.

24 hr. ____ ft.

DRILLING	SAMPLE								GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	10,865	Grab						4/5			0-1.6 CLAYEY SILT MOIST HIGH TOUGHNESS HIGH PLASTICITY 10YR
	CORE		DOCUMENT								
	10,911		31,820								
	7,919		26,358								
	7,967		21,233								1.6-13.25 SILT LITTLE CLAY LITTLE COARSE SAND MOIST HIGH TOUGHNESS. 10YR 5/2 MOTTLED 10YR 5/8
	8,412		19,695								
5	NO RECOVERY		17,533					5/5			
	5,806		16,551								
	6,334		15,261								
	6,734		14,945								
	7,509		15,140								
10	8,938		16,355								
	5,704		19,085								

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB078	
Geologist: C. Pidge	Driller/Company: SCHLECHLOST / Frontz		
Drilling Equip.: Versa-Sonic		Date Start: 2 DEC 09	Date Completed: 2 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 18 FT BGS	Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWNHOLE					5/5			13.2 - 17.6 CLAY LITTLE SILT FEW COARSE SAND, HIGH TOUGHNESS MOIST HIGH PLASTICITY 10YR 3/2
	5,704		19,085								
	5,669		WATER								
	6,513										
	7,073										
15	8,698							2.5/5			
	6,167										
	7,738										17.6 - 18 FOSSILIFEROUS LIMESTONE CRYSTALLINE
	REFUSAL 18 FT BGS										
20											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: LUCKEY FUSRAP	Boring/Well #: SB 79
Geologist: CARL PIDGE P.G.	Driller/Company: DAVE SCHRECENGOST / FRONTZ	
Drilling Equip.: VERSA SONIC	Date Start: 21 NOV 09	Date Completed: 21 NOV 09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 13 FT BGS / Well Depth: —

Method of Drilling

☐ Hollow Stem ☐ Direct Rotary
☐ Air Rotary ☐ Bucket Auger
☐ MUD Rotary ☐ Flight Auger
ROTASONIC
Hole Diameter: 8-INCH

Casing/Riser Type

☐ Steel ☐ Threaded
☐ Galv ☐ Welded
☐ PVC ☐ Solvent
☐ SS ☐ Welded
Drive Shoe? ☐ Yes ☐ No
Height above/ below surface
Diameter

Screen Portion of Well

Material
Diameter Length
Set between ft and ft
Slot size

Filter Pack

Size
Method of Install
Composition
Volume Used
Depth to top of f.p.

Annulus Seal

☐ Bentonite Pellets Chips
☐
Volume Used?
Method of Instal.
Depth: from ft. to ft.

Grout

Used? ☒ Yes ☐ No Volume
☐ Neat Cement ☐ Bentonite
☒ BENTONITE CHIPS
Method of Instal. GRAVITY
Depth: from ft. to ft.

Well Head Completion

☐ Flushmount ☐ Stand Up
Cap Type
Lock #
Volume Used

Development

Method
Gallons Evacuated
Date
Odor

Static Water Level

Initial DRY ft
Development ft.
24 hr. ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	~~PID Reading (ppm)~~ CPM	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(in)	USCS Class	Contact-Depth	Descriptions and Comments
0	GROUND (CPM) 2,482		2,418 CPM DOWNHOLE 10,967					5/5			0-2.3 CLAYEY SILT, TRACE COARSE SAND, DRY, MEDIUM STRENGTH NO DILATANCY, HIGH TOUGHNESS 10YR 4/2 MOTTLED 10 YR 6/8
	2,681		8,737								
	2,164		10,053								
	2,136		19,219								2.3-3.4 CLAYEY SILT MATRIX W/ 70% GRAVEL COARSE (CRYSTALLINE LIMESTONE) (GLEY1 7/1 LIGHT GREY) DRY, MEDIUM STRENGTH NO DILATANCY, HIGH TOUGHNESS 10YR 4/2 MOTTLED 10YR 6/8
	2,881		18,474								
5	3,003		18,691					5/5			
	3,289		19,468								
	3,191		19,198								3.4-~~5.5~~ 9.8 CLAYEY SILT TRACE COARSE GRAVEL, MOIST, NO DILATANCY HIGH TOUGHNESS 10YR 4/2 MOTTLED 10 YR 6/8
	3,164		18,619								
10	3,183		15,001								

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: LUCKEY FUSRAP	Boring/Well #: SB079
Geologist: CARL PIDGE P.G.	Driller/Company: DAVE SCHRECENGOST / FRONTZ	
Drilling Equip.: VERSA SONIC	Date Start: 21 NOV 09	Date Completed: 21 NOV 09
Surface Elev.:	Top of Casing Elev.: —	Total Depth: 13 FT BGS / Well Depth: —

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	~~PID Reading (ppm)~~ CPM	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(in)	USCS Class	Contact-Depth	Descriptions and Comments
10	(CPM) CORE 2,741		DOWNHOLE 13,885					3/3			9.8-13 SILTY CLAY, DRY, MEDIUM STRENGTH NO DILATANCY HIGH TOUGHNESS, TRACE COBBLES 7.5YR 3/1
	2,898		14,008								
	2,887		CAVE								
											TERMINATED 13 FT BGS
15											

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB 080
Geologist: CARL PIDGE P.G.	Driller/Company: DAVE SCHNEEWGOST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 5 JAN 10	Date Completed: 5 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 8/6-INCH	Used? ☒ Yes ☐ No Volume _____ ☐ Neat Cement ☒ Bentonite Method of Installation GRAVITY Depth: from _____ ft. to _____ ft.	Initial 8 ft Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	GRAND	3,038 CPM	5/5			0-3.4 GRAVEL FINE TO SAND COARSE AND SOME SILT, DRY, MEDIUM DRY STRENGTH 10YR 3/6 W/ 10YR 4/6
	1,480	11,519				
	2,071	13,524				
	1,813	13,658				
	1,803	18,670				3.4-7.6 SILT W/ LITTLE FINE GRAVEL MOIST 10YR 3/3
5	2,001	19,342				
	NORMALLY	18,165	5/4			7.6-13.8 CLAYEY SILT W/ LITTLE FINE GRAVEL MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/3 MOTTLED 10YR 4/6
	2,281	17,472				
	2,384	17,213				
	2,441	WATER				13.8-16.1 CLAY LITTLE SILT FEW COARSE SAND, MOIST, HIGH TOUGHNESS, HIGH PLASTICITY 10YR 3/1
10	2,274					
	2,211		5/5			
	2,499					
	2,526					16.1-17.5 GRAVEL FINE TO COARSE SAND LOOSE, WET LITTLE SILT 10YR 3/1
	2,644					
15	2,617					
	2,294		5/5			
	2,331					17.5-20 CLAY LITTLE FINE GRAVEL MOIST, HIGH TOUGHNESS, HIGH PLASTICITY 10YR 3/1
	2,572					
	2,660					
20	2,301					
	TERMINATED @ 20 FT BGS		~~5/5~~			

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB08 1
Geologist: S. Deeter	Driller/Company: D. Shreckengost / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 12/18/09	Date Completed: 12/18/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 19.0 FT / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6" / 8"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface: _____

Diameter: _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets _____ Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☐ Yes ☒ No Volume 50#

☐ Neat Cement ☐ Bentonite

☒ Bentonite Chips w/ soil.

Method of Instal. Gravity

Depth: from 0 ft. to 19.0 ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial DRY ft

Development _____ ft.

24 hr. _____ ft.

DRILLING	SAMPLE								GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
	CORE		DOWNHOLE								
0	3,373							—			0 - ~~0.2~~ 2.2
	3,742		17,772								Sandy Silt. moist to
	4,182		17,230					5/5			dry. Med dense to dense,
	3,890		18,395								5YR 5/2 (reddish gray),
	3,849		19,651								5YR 2.5/2 (dark reddish
5	3,341		19,184					—			brown), to 5YR 3/3
	3,735		18,156								(dark reddish brown)
	4,060		17,588					5/5			75% silt, 25% fine/med
	4,023		17,186								sand. Rootlets.
	4,172		17,204								
10	4,346		17,909					—			

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: 50481	
Geologist: S. Deeter	Driller/Company: D. Shreckengost / Frontz		
Drilling Equip.: Versa-Sonic		Date Start: 12/18/09	Date Completed: 12/18/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 19.0 Ft	Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWN HOLE								2.2 - 13.6
	4,084		17,827								Silt/Clay. s.moist to dry.
	4,176		17,441					5/5			stiff to v. stiff. med dry
	4,166		20,073								strength, no dilatancy,
	4,230		19,895								med toughness, med
15	4,443		10,753								plasticity, 5YR 4/1 (dark
	4,133		10,016					5/4			gray), mottled w/ 5YR 4/6
	3,869		CAVE								(yellowish red) silt lenses.
	3,499		↓								trace (<5%) coarse
	3,431										subrounded sand. 3"D
20											Cobble @ 6ft, Some gravel
											at 7ft.
											13.6 - 19.0
											Gravelly Clay. s.moist
											to wet @ 18.0, stiff to hard,
											high dry strength, no
											dilatancy, high toughness,
											high plasticity, 10R 5/1
											(reddish gray), mottled
											w/ 10R 6/4 (pale red).
											Gravel to <0.5"D, <25%.
											Cobbles @ 19.0 feet.

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB082
Geologist: CARL PIDAL P.G.	Driller/Company: DAVE SCHREECENGOST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 5 JAN 10	Date Completed: 5 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 18 FT BGS	Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial 6 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation GRAVITY	24 hr. _____ ft.
Hole Diameter: 8/6-INCH	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
0	GROUND	4,270 CPM	5/5			0-1.8 CLAY W/SOME SILT AND FINE GRAVEL, MOIST, MEDIUM TOUGHNESS, HIGH PLASTICITY 10 YR 3/2
	2,325	14,304				
	2,592	17,833				
	2,617	18,762				1.8-12.8 SILT LITTLE CLAY, LITTLE FINE GRAVEL, DRY TO MOIST, MEDIUM DRY STRENGTH, HIGH TOUGHNESS, 10YR 4/6 MOTTLED 10YR 3/4 AND 10 YR 5/8
	2,542	18,385				
5	2,676	18,404				
	2,612	16,640	5/5			
	2,453	WATER				12.8-17.8 CLAY FEW FINE GRAVEL MOIST HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/1
	2,501					
	2,609					
10	2,447					
	2,424		5/5			17.8-18 LIMESTONE CRYSTALLINE 10YR 7/1
	2,231					
	2,371					
	2,538					
15	2,431		3/3			
	1,860					
	1,795					
	1,826					
	REFUSAL @ 18 FT BGS					
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB083
Geologist: Carl Pidge P.G.	Driller/Company: DAVE SCHECHER/GOST	/ Frontz Drilling
Drilling Equip.: Versa-Sonic	Date Start: 5JAN10	Date Completed: 5JAN10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FTBGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial 9 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation GRAVITY	24 hr. _____ ft.
Hole Diameter: 8/6-INCH	Depth: from _____ ft. to _____ ft.	

DRILLED 5JAN10
LOG/SAMPLE 6JAN10

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
0	GROUND	3,677 CPM				0-0.7 SILT SOME CLAY LITTLE COARSE SAND & FINE GRAVEL DRY 10YR 3/3
	2,292	14,235	5/3			
	2,463	15,376				0.7-13.8 CLAYEY SILT LITTLE FINE GRAVEL AND COARSE SAND HIGH TOUGHNESS AND PLASTICITY MOIST 10YR 4/6 MOTTLED 10YR 5/8
	2,619	19,125				
	NO RECOVERY	18,121				
5	NO RECOVERY	16,879	5/5			
	2,238	17,057				
	2,344	16,817				13.8-20 CLAY LITTLE COARSE SAND TO FINE GRAVEL, MOIST HIGH TOUGHNESS AND PLASTICITY 10YR 3/1
	2,540	16,607				
	2,527	16,334				
10	2,429	WATER	5/5			
	2,357					
	2,319					
	2,473					
	2,225					
15	2,514		5/5			
	2,324					
	2,260					
	2,176					
	1,860					
20	1,824					
	TERMINATED @ 20 FT BGS					

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB084
Geologist: CARL PIDGE P.G.	Driller/Company: DAVE SCHREGENGOST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 5 JAN 10	Date Completed: 5 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 19 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial 12 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation GRAVITY	24 hr. _____ ft.
Hole Diameter: 8/6-INCH	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
						DRILLED 5 JAN 10 LOG/SAMPLE 6 JAN 10
0	GROUND	3,022 CPM				0-2.6 CLAYEY SILT SOME FINE GRAVEL, MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/3
	1,948	12,015	5/4			
	1,803	16,562				2.6-2.9 GRAVEL FINE WITH SOME COARSE SAND LITTLE SILT, DRY LOOSE. 10YR 3/3
	2,365	17,789				
	2,243	16,611				
5	NO RECOVERY	16,261				2.9-13 SILT LITTLE CLAY WITH SOME COARSE SAND TO FINE GRAVEL, MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 4/4 MOTTLED 10YR 5/6 AND 10YR 5/1
	1,980	17,118	5/5			
	2,334	17,695				
	2,508	17,604				
	2,435	16,770				
10	2,400	16,309	5/5			13-19 CLAY WITH SOME COARSE SAND TO FINE GRAVEL, MOIST HIGH TO MEDIUM TOUGHNESS AND PLASTICITY W/ DEPTH 10YR 3/1
	1,934	15,543				
	2,505	14,892				
	2,478	WATER				
	2,171					
15	2,515		4/4			
	2,762					
	2,411					
	2,293					
	1,814					
20	REFUSAL	@ 19 FT BGS				

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB085
Geologist: CARL PIDGE, P.G.	Driller/Company: DAVE SCHREEN GOST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 5 JAN 10	Date Completed: 5 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial 3 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation GRAVITY	24 hr. _____ ft.
Hole Diameter: 8/6 INCH	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
						DRILLED 5 JAN 10 LOG/SAMPLED 6 JAN 10
0	GROUND	4,188 CPM	5/5			0-1.3 CLAYEY SILT WITH SOME FINE GRAVEL DRY, MEDIUM STRENGTH 10YR 3/2
	2,160	13,089				
	2,063	12,817				1.3-3 SILT LITTLE CLAY, SOME FINE GRAVEL, MOIST, HIGH TOUGHNESS 10YR 3/2
	1,950	WATER				
	NORECOVERY					
5	NORECOVERY					3-5.8 GRAVEL FINE TO COARSE, WET LITTLE SILT W/ CLAY, LOOSE, 10YR 4/3
	1,648		5/5			
	1,812					5.8-12.8 SILT LITTLE CLAY LITTLE COARSE SAND FEW FINE GRAVEL MOIST 10YR 4/3 MOTTLED 10YR 5/6
	1,950					
	2,169					
10	1,895					12.8-20 CLAY LITTLE COARSE SAND TO FINE GRAVEL MOIST, HIGH TOUGHNESS, HIGH PLASTICITY 10YR 3/1
	1,980		5/5			
	2,042					
	2,249					
	2,298					NOTE: UPON OPENING CORE 15-20 FT BGS, SLOUGH FROM 3-5.8 FT BGS FILLED THE 15-17 FT BGS PORTION OF CORE BORE CPM DATA VERIFY SLOUGH 15-17 FT BGS DATA <2,000 CPM BUT INCREASES TO >2,000 CPM FROM 17-20 FT BGS
15	2,177					
	1,897		5/5			
	1,782					
	2,291					
	2,323					
20	2,082					
	TERMINATED 20 FT BGS					

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB086
Geologist: C. Pidge	Driller/Company: Schlecht and T / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 21 DEC 09	Date Completed: 21 DEC 09
Surface Elev.: / Top of Casing Elev.: NA	Total Depth: 18 FT BGS	Well Depth: NA

Method of Drilling	Casing/Riser Type	Screen Portion of Well
☐ Hollow Stem ☒ Sonic	☐ Steel ☐ Threaded	Height above/ below surface
☐ Air Rotary ☐ Bucket Auger	☐ Galv ☐ Welded	Material
☐ MUD Rotary ☐ Flight Auger	☐ PVC ☐ Solvent	Diameter / Length
Hole Diameter: 8-inch	☐ SS ☐ Welded	Set between ft and ft
	Drive Shoe? ☐ Yes ☐ No	Diameter / Slot size

Filter Pack	Annulus Seal	Grout
Size	☐ Bentonite Pellets Chips	Used? ☒ Yes ☐ No Volume
Method of Install	☐	☐ Neat Cement ☒ Bentonite
Composition	Volume Used?	☐
Volume Used	Method of Instal.	Method of Instal. Gravity
Depth to top of f.p.	Depth: from ft. to ft.	Depth: from ft. to ft.

Well Head Completion	Development	Static Water Level
☐ Flushmount ☐ Stand Up	Method	Initial 10 ft
Cap Type	Gallons Evacuated	Development ft.
Lock #	Date	24 hr. ft.
Volume Used	Odor	

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	2,371	Grab Core		Downhole				5/5			0-0.5 Asphalt & Gravel sub-base
	2,588			11,634							0.5-4.6 Silt little clay little fine gravel dry medium strength high toughness 10YR 5/1 mottled 10YR 5/4
	2,865			18,069							
	3,117			20,862							
	3,016			20,122							
5	3,170			17,977							
	3,144			16,465				5/5			4.6-4.8 Coarse to fine sand slight wetness
	3,064			15,125							
	3,291			14,719							4.8-12.1 Same as at 0.5-4.6 ft BGS 10YR 4/3 mottled 10YR 5/8
	3,144			16,496							
10	3,202			19,255							

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB 86
Geologist: C. Pidge	Driller/Company: SCHREWGOST / Frontz	
Drilling Equip.: Versa-Sonic	Date Start: 21 DEC 09	Date Completed: 21 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 18 FT BGS / Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE			DOWNHOLE				5/5			12.1-17.8 CLAY LITTLE FINE GRAVEL, MOIST HIGH TOUGHNESS, MEDIUM PLASTICITY 10YR3/1
	3,456			WATER							
	3,633										
	3,489										
	3,155										
15	2,962										17.8-18 CRYSTALLINE LIMESTONE GRAVEL
	3,059							3/3			
	2,806										
	2,487										
	REFUSAL @ 18 FT BGS										
20											

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB087
Geologist: CARL PIDGE P.G.	Driller/Company: DAVE SCHREENGOST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 7 JAN 10	Date Completed: 7 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 14 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial 9 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation GRAVITY	24 hr. _____ ft.
Hole Diameter: 8/6 inch	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	GROUND	4,220 CPM	5/5			0-1.1 CLAY SOME SILT LITTLE FINE GRAVEL MOIST, MEDIUM TOUGHNESS AND PLASTICITY 10YR 3/2
	2,520	16,232				
	3,112	20,722				
	2,960	20,679				
	2,980	19,767				1.1-11.4 SILT LITTLE CLAY LITTLE FINE GRAVEL, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 4/2 MOTTLED 10YR 5/6
5	2,790	17,554	5/5			
	2,189	16,384				
	2,480	16,983				
	2,678	18,490				11.4-14 CLAY LITTLE COARSE GRAVEL MOIST, HIGH TOUGHNESS, HIGH PLASTICITY 10YR 3/1
	2,641	19,657				
10	2,784	WATER	4/4			
	2,930	↓				
	3,107					
	2,854					
	2,599					
15	REFUSAL @ 14 FT BGS					
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB08B
Geologist: CARL PIDGE P.G.	Driller/Company: DAVE SCHRECKENGAST	/ Frontz Drilling
Drilling Equip.: Versa-Sonic	Date Start: 6 JAN 10	Date Completed: 6 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FTBGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial 3 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation GRAVITY	24 hr. _____ ft.
Hole Diameter: 8/6 INCH	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
0	GROUND	2,774 CPM	5/4			0-3.4 GRAVEL FINE TO COARSE SAND WITH LITTLE SILT LITTLE CLAY, LOOSE, DRY 10 YR 4/2
	1,868	8,457				
	2,097	10,870				3.4-11.4 SILT SOME CLAY LITTLE COARSE SAND, MOIST, MEDIUM TOUGHNESS HIGH PLASTICITY 10 YR 4/4 MOTTLED 10 YR 4/2 AND 10 YR 5/6
	1,631	11,064				
	1,819	WATER				
5	NO RECOVERY					
	2,118		5/5			11.4- SEE NOTE SILT SOME CLAY LITTLE COARSE SAND, MOIST HIGH TOUGHNESS HIGH PLASTICITY 10YR 4/4 MOTTLED 10YR 5/6
	2,276					
	2,318					
	2,218					
10	2,145					
	2,784		5/4			16-20 CLAY LITTLE COARSE SAND MOIST HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/1
	2,825					
	2,454					
	2,550					NOTE: LOST RECOVERY 14-15 FTBGS TRANSITION IN THAT ZONE
15	NO RECOVERY					
	2,218		5/5			
	2,586					
	2,727					
	2,496					
20	2,256					
	TERMINATED @ 20 FTBGS					

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: S 0089
Geologist: CARL PIOAE P.G.	Driller/Company: DAVE SCHNECKENGOST	/ Frontz Drilling
Drilling Equip.: Versa-Sonic	Date Start: 7 JAN 10	Date Completed: 7 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 19 FT BGS	Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume.	Initial 11 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation GRAVITY	24 hr. ft.
Hole Diameter: 8/6 INCH	Depth: from ft. to ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
						DRILLED 7 JAN 10 LOG/SAMPLE 8 JAN 10
0	GROUND	4,346 CPM	5/3			0-1.6 GRAVEL FINE TO COARSE LITTLE SILT DRY LOOSE 10YR 5/1 WITH 10YR 4/4
	2,289	5,286				
	2,391	14,306				1.6-3. CLAY SOME SILT LITTLE FINE GRAVEL, MOIST HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/2
	2,269	19,541				
	NO RECOVERY	18,952				
5	NO RECOVERY	17,956	5/5			
	1,362	16,060				5-11.8 SILT SOME CLAY LITTLE FINE GRAVEL, MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 4/4 MOTTLED 10YR 5/6 LITTLE 10YR 5/1
	2,110	15,473				
	2,359	15,409				
	2,610	12,879				
10	2,428	14,378				
	1,994	17,070	5/5			11.8-19 CLAY LITTLE FINE GRAVEL MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/1
	2,417	WATER				
	2,570	↓				
	2,739					
15	2,460		4/4			
	1,867					
	2,183					
	2,245					
	1,997					
20	REFUSAL	@ 18FT BGS				

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: S 8 & 9 Q
Geologist: Carl Pidac P.G.	Driller/Company: DAVE SCHREGARDOST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 7 JAN 10	Date Completed: 7 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 18 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial DRY ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation GRAVITY	24 hr. _____ ft.
Hole Diameter: 8/6 INCH	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
						DRILLED 7 JAN 10 LOG/SAMPLE 8 JAN 10
0	GROUND	1,682 CPM	5/4			0-1.2 CLAY SOME SILT LITTLE FINE GRAVEL, MOIST, MEDIUM TOUGHNESS HIGH PLASTICITY 10YR 3/3
	1,775	3,135				
	1,984	9,145				
	2,485	17,229				
	2,382	17,490				1.2-2.5 GRAVEL FINE TO COARSE SOME COARSE SAND AND SILT LOOSE DRY 10YR 4/1 WITH 10YR 4/3
5	NORMAL	16,843				
	2,061	16,186	5/5			
	2,296	16,537				2.5-10.8 SILT SOME CLAY LITTLE FINE GRAVEL MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 4/4 MOTTLED 10YR 5/6 AND 10YR 5/1
	2,437	17,082				
	2,508	17,457				
10	2,441	19,934				
	1,960	19,963	5/5			10.8-18 CLAY LITTLE FINE GRAVEL MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 3/1
	2,655	17,888				
	2,669	13,939				
	2,433	13,400				
15	2,378	13,314				
	2,156	14,292	3/3			
	2,246	CAVE				
	1,943	↓				
	REFUSAL @ 18 FT BGS					
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB91
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 2 FEB 10	Date Completed: 2 FEB 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 7 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume _____ ☐ Neat Cement ☒ Bentonite Method of Installation GRAVITY Depth: from _____ ft. to _____ ft.	Initial 2 ft Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments (FT BGS)
0	GROUND	5,285 CPM	5/3			0-0.7 CONCRETE
	2,636	6,490				0.7-1.4 SAND COARSE TO FINE SOME SILT, HIGH MOISTURE, STICKY, NO DILATANCY NO TOUGHNESS, NO PLASTICITY 10YR 4/4
	3,073	6,758				
	3,164	WATER				
	NORECOVERY					
5			2/2			1.4-3 CLAY LITTLE SILT, MOIST, HIGH TOUGHNESS, HIGH PLASTICITY 10YR 4/1 MOTTLED 10YR 4/6
	REFUSAL	7 FT BGS				7. LIMESTONE, CRYSTALLINE, 10YR 7/3
10						
15						
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB91A
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 3 FEB 10	Date Completed: 3 FEB 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 17 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial DRY ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation GRAVITY	24 hr. _____ ft.
Hole Diameter: 6/8-INCH	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
						DRILLED 20FT SOUTHEAST OF SB91 DUE TO REFUSAL 7FT BGS AT SB91 PER USACE MARK GRAHAM
0	GROUND	2,626 CPM				0-0.7 CONCRETE
	3,150	6,440	5/5			0.7-1.1 CONCRETE RUBBLE
	3,150	13,906				1.1-2.5 GRAVEL FINE IN MATRIX OF SILT LITTLE CLAY, MOIST MEDIUM TOUGHNESS MEDIUM PLASTICITY 5Y 5/2 MOTTLED 10YR 5/4 AND 10YR 2/1
	3,424	16,789				
	3,416	13,000				
5	3,344	15,040				
	3,107	17,647	5/5			2.5-5.3 CLAY LITTLE SILT LITTLE FINE GRAVEL, MOIST, MEDIUM TOUGHNESS AND PLASTICITY 5YR 5/2 MOTTLED 10YR 5/4 AND 10YR 2/1
	3,358	17,598				
	3,519	17,205				
	3,499	17,423				
10	3,312	15,731				5.3-10.2 CLAY LITTLE SILT, MOIST FEW FINE GRAVEL, HIGH TOUGHNESS AND PLASTICITY 10YR 4/3 MOTTLED 10YR 5/4
	2,879	16,644	5/5			
	3,179	19,791				
	3,448	18,442				
	3,441	16,056				10.2-13.1 SILT SOME CLAY FEW FINE GRAVEL, MOIST, MEDIUM STRENGTH, HIGH TOUGHNESS AND PLASTICITY 10YR 4/3 MOTTLED 10YR 5/4
15	3,387	14,107				
	3,315	CAVE	2/2			
	3,148	↓				
	REFUSAL	17FT BGS				13.1-14.7 CLAY LITTLE SILT FEW FINE GRAVEL, MOIST HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/1
20						14.7-17 MEDIUM SAND LITTLE CLAY FEW FINE GRAVEL, WET, SLOW DILATANCY, WILL NOT ROLL TO THREAD 10YR 3/1

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB 92
Geologist: CARL PIDAL PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 2 FEB 10	Date Completed: 2 FEB 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 17 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume _____ ☐ Neat Cement ☒ Bentonite Method of Installation GRAVITY Depth: from _____ ft. to _____ ft.	Initial DRY ft Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
0	GROUND	4,710 CPM				0-0.7 CONCRETE
	2,515	6,440	5/4			0.7-4 MIX OF CONCRETE FRAGMENTS AND CLAY LITTLE SILT, MOIST MEDIUM TOUGHNESS AND PLASTICITY 10YR 4/3
	2,586	10,002				
	2,749	11,612				
	2,651	14,224				
5	NOREKOVERY	16,294	5/5			5-13.6 SILT SOME CLAY LITTLE FINE GRAVEL, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 4/3 MOTTLED 10YR 5/1 AND 10YR 5/8
	3,061	16,917				
	3,129	17,042				
	3,037	17,294				
	3,101	16,665				
10	3,130	15,743	5/5			13.6-16.9 CLAY LITTLE SILT FEW FINE GRAVEL, MOIST HIGH TOUGHNESS, HIGH PLASTICITY 10YR 3/1
	3,044	15,104				
	3,049	18,889				
	3,101	16,457				
	3,546	13,228				16.9-17 CRYSTALLINE LIMESTONE
15	3,539	CAVE	2/2			
	3,754	↓				
	3,615					
	REFUSAL	17 FT BGS				
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB93
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER	/ Frontz Drilling
Drilling Equip.: Versa-Sonic	Date Start: 2 FEB 10	Date Completed: 2 FEB 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 18 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial 4 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation GRAVITY	24 hr. _____ ft.
Hole Diameter: 6/8-INCH	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments (FT BGS)
0	GROUND	4,916 CPM	5/5			0-0.7 CONCRETE
	2,725	8,958				0.7-1.8 SILT SOME FINE GRAVEL, LITTLE CLAY, MOIST, MEDIUM TOUGHNESS AND PLASTICITY 10YR 4/4
	3,106	12,532				
	3,239	17,306				
	3,492	18,430				
5	3,412	WATER				1.8-11.9 CLAY LITTLE SILT LITTLE COARSE SAND, MOIST, MOTTLED 10YR 4/1, 10YR 5/6, 10YR 4/3
	3,114		5/5			
	3,298					
	3,314					11.9-17.8 CLAY LITTLE SILT LITTLE FINE GRAVEL, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 3/1
	3,412					
10	3,463					
	3,285		5/5			17.8-18 FOSSILIFEROUS LIMESTONE 2.5Y 5/1
	3,355					
	3,761					
	3,700					
15	3,635					
	3,642		3/3			
	3,332					
	3,403					
	REFUSAL	18 FT BGS				
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB94
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 3 FEB 10	Date Completed: 3 FEB 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial 6 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation GRAVITY	24 hr. _____ ft.
Hole Diameter: 6/8-INCH	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	GROUND	5,984 CPM				
	2,459	6,180	5/5			0-1.3 CONCRETE GRAVEL FINE TO COARSE WITH LITTLE WOOD CHIPS (GRUBBING DEBRIS) LOOSE DRY
	3,416	17,247				
	2,254	19,438				1.3-2.2 SILT LITTLE CLAY LITTLE FINE GRAVEL, MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 4/3
	3,487	19,741				
5	3,375	18,564	5/5			
	3,414	17,604				2.2-15.1 CLAY LITTLE SILT FEW FINE GRAVEL, MOIST, HIGH TOUGHNESS AND PLASTICITY 5Y 4/2 MOTTLED 10YR 3/1 AND 10YR 5/6
	3,589	WATER				
	3,590					
	3,586					
10	3,555		5/5			15.1-17.4 CLAY LITTLE SILT FEW FINE GRAVEL MOIST MEDIUM TOUGHNESS AND PLASTICITY 10YR 3/1
	3,081					
	3,422					
	3,484					17.4-20 CLAY LITTLE SILT SOME FINE GRAVEL, MOIST, MEDIUM TOUGHNESS AND MEDIUM PLASTICITY 10YR 3/1
	3,443					
15	3,386					
	3,204		5/5			
	3,277					
	3,286					
	2,928					
20	2,763					
	TERMINATED 20 FT BGS					

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB95
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 3 FEB 10	Date Completed: 3 FEB 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial DRY ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation GRAVITY	24 hr. _____ ft.
Hole Diameter: 6/8-INCH	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
0	GROUND	6,244 CPM				0-1.2 CONCRETE RUBBLE, FINE TO COARSE GRAVEL SIZED, DRY LOOSE.
	3,174	19,429	5/5			
	3,687	19,660				1.2-5.8 SILT LITTLE CLAY LITTLE FINE GRAVEL, MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 4/3 MOTTLED 10YR 5/6
	3,764	18,072				
	3,575	16,758				
5	3,512	17,362	5/4			
	2,991	17,114				5.8-13.8 SILT SOME CLAY, FEW FINE GRAVEL, MOIST, HIGH TOUGHNESS, HIGH PLASTICITY 10YR 4/3 MOTTLED 10YR 5/4 AND 5Y 5/1
	3,037	16,591				
	3,352	15,529				
	3,342	16,385				
10	SLOUGH	18,814				
	3,278	18,442	5/5			13.8-19.8 CLAY LITTLE SILT FEW FINE GRAVEL, MOIST TO WET 10YR 3/1
	3,431	16,921				
	3,560	15,204				
	3,668	13,317				13.8-16.1 HIGH TOUGHNESS AND PLASTICITY MOIST
15	3,780	9,288				
	3,113	9,341	5/5			16.1-18 MEDIUM TOUGHNESS AND PLASTICITY WET
	3,268	8,739				
	3,511	CAVE				18-19.8 HIGH TOUGHNESS AND PLASTICITY MOIST
	3,103					
20	2,387					19.8-20 LIMESTONE CRYSTALLINE
	TERMINATED 20 FT BGS					

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB96
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 5 FEB 10	Date Completed: 5 FEB 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume Method of Installation GRAVITY Depth: from ____ ft. to ____ ft.	Initial DRY ft. 24 hr. ____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG: FILTER BED — Descriptions and Comments (FT BGS)
0	GROUND	6,511 CPM				0-4.1 GRAVEL FINE TO SAND COARSE, DRY, LOOSE 10YR4/3
	3,183	11,790	5/5			
	3,525	10,568				4.1-4.3 BRICK FRAGMENTS AS GRAVEL COARSE, MOIST, 10R 3/6
	3,090	10,626				
	3,156	15,464				
5	3,787	20,235				4.3-5 SILT LITTLE CLAY, LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY, 10YR 4/3 MOTTLED 10YR 5/6
	2,929	18,083				
	3,569	17,203				
	3,817	CAVE	5/4.5			5-5.5 SLOUGH AS 0-4.1 FT BGS
	3,578					5.5-10 SILT LITTLE CLAY LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 4/3 MOTTLED 10YR 5/6
10	3,718					
	2,902		5/2.7			10-12.3 SLOUGH
	3,131					12.3-15 SILT LITTLE CLAY, LITTLE GRAVEL FINE, MOIST, HIGH PLASTICITY 10YR 4/3 MOTTLED 10YR 5/6
	3,778					
	4,086					
15	7,010		5/1.6			15-18.4 SLOUGH
	2,844					18.4-20 CLAY, LITTLE SILT, FEW GRAVEL FINE, MOIST, HIGH TOUGHNESS AND HIGH PLASTICITY 10YR 3/1
	2,994					
	2,964					
	3,720					
20	3,894					
	TERMINATED 20 FT BGS					
						TRANSITION LOST IN SLOUGH

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB97	
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling		
Drilling Equip.: Versa-Sonic	Date Start: 5 FEB 10	Date Completed: 5 FEB 10	
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS	Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume Method of Installation GRAVITY Depth: from ____ ft. to ____ ft.	Initial DRY ft 24 hr. ____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
0	GROUND	6,267 CPM				FILTER BED
	2,938	14,800	5/5			0-2.1 GRAVEL FINE TO SAND COARSE, DRY, LOOSE 10YR 4/3
	3,210	10,069				
	2,921	9,432				2.1-5.6 SAND COARSE TO MEDIUM, DRY, LOOSE 10YR 4/3
	NO RECOVERY	14,673				
5	NO RECOVERY	19,855				5.6-10.1 SILT LITTLE CLAY FEW GRAVEL FINE, MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 4/3 MOTTLED 10YR 5/6
	3,051	17,360	5/5			
	3,376	16,299				8 COBBLE, QUARTZITE, 4-INCH 10YR 6/1
	3,355	16,581				
	3,588	16,866				10.1-14.2 SLOUGH, SAND COARSE TO MEDIUM, DRY, LOOSE 10YR 4/3
10	3,407	17,360				
	3,250	16,727	5/0.9			14.2-15.2 GRAVEL COARSE TO FINE IN MATRIX OF CLAY LITTLE SILT, MOIST, HIGH TOUGHNESS AND PLASTICITY, 10YR 4/2
	3,293	CAVE				
	3,223					
	3,144					
15	3,075					GRAVEL FINE, MOIST, HIGH TOUGHNESS, HIGH PLASTICITY 10YR 4/3 MOTTLED 10YR 5/4
	3,458		5/5			
	3,382					
	3,404					17-20 CLAY SOME SILT LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS, HIGH PLASTICITY, 10YR 3/2 MOTTLED 10YR 5/6
	3,498					
20	3,443					
	TERMINATED 20 FT BGS					

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB98
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 8 FEB 10	Date Completed: 8 FEB 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume _____ ☐ Neat Cement ☒ Bentonite Method of Installation GRAVITY Depth: from _____ ft. to _____ ft.	Initial — ft Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	RADIOLOGICAL SCAN (CPM) DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
						DRILLED 8 FEB 10 LOG/SAMPLE 9 FEB 10
0	GROUND	CPM				
	2,431		5/5			0-0.8 GRASS OVER CLAY SOME SILT, LITTLE GRAVEL, FINE, MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 4/2
	2,828	NO DOWNHOLE READINGS BOREHOLE WAS BACKFILLED WITH BENTONITE PRIOR TO READINGS				
	2,807					
	2,735					0.8-11.5 SILT LITTLE CLAY, LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY, 10YR 4/3 MOTTLED 10YR 5/6
5	2,690					
	2,841		5/5			
	3,050					
	3,053					11.5-13.1 SILT SOME CLAY, LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS, HIGH PLASTICITY 10YR 4/3 MOTTLED 10YR 5/6 AND 10YR 5/1
	3,044					
10	3,119					
	3,116		6/5			
	3,085					
	3,179					13.1-20 CLAY, LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS, HIGH PLASTICITY 10YR 3/1
	3,174					
15	3,103					
	3,099		5/5			
	3,336					
	3,374					
	3,381					
20	2,984					
	TERMINATED 20 FT BGS					

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB99	
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling		
Drilling Equip.: Versa-Sonic	Date Start: 4 FEB 10	Date Completed: 4 FEB 10	
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS	Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Mud Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume _____ Method of Installation GRAVITY Depth: from _____ ft. to _____ ft.	Initial 9 ft 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
0	GROUND	3,647 CPM	5/5			0-1.2 GRASS OVER CLAY SOME SILT FEW FINE GRAVEL, MOIST, MEDIUM TOUGHNESS AND PLASTICITY 10YR 3/2
	3,769	14,879				
	3,880	17,990				
	3,582	16,269				1.2-11.1 SILT LITTLE CLAY, LITTLE FINE GRAVEL, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 5/6 MOTTLED 10YR 5/1
	3,808	16,725				
5	3,777	16,721	5/5			
	4,070	16,758				7.5 5-INCH COBBLE WELL-ROUNDED GRANITIC
	4,322	16,856				
	3,863	15,794				11.1-15.4 CLAY LITTLE SILT FEW COARSE GRAVEL MOIST, HIGH TOUGHNESS, HIGH PLASTICITY 10YR 3/1
	3,730	WATER				
10	3,707		5/5			
	3,674					15.4-16.5 SAND MEDIUM TO COARSE, LITTLE CLAY, WET, 10YR 3/1
	3,884					
	3,851					
	3,826					16.5-20 CLAY LITTLE SILT, TOUGHNESS AND PLASTICITY HIGH 10YR 3/1 MOIST
15	3,[illegible]					
	3,133		5/5			
	3,256					
	3,323					
	3,389					
20	3,535					
	TERMINATED 20 FT BGS					

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: S8100
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 4 FEB 10	Date Completed: 4 FEB 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Mud Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume _____ Method of Installation GRAVITY Depth: from _____ ft. to _____ ft.	Initial 12 ft 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	RADIOLOGICAL SCAN (CPM) DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
						NOTE: NON-TYPICAL MATERIAL IN 3-5 FT BGS BORE; SIGNIFICANT RAD ON CORE SCAN
0	GROUND	3,921 CPM				0-3 SILT LITTLE CLAY FEW FINE GRAVEL MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 4/2 MOTTLED 10YR 3/1
	3,527	16,157	5/5			
	3,793	19,334				
	4,832	28,590				
	7,359	103,726				3-5 VERY SOFT, CLAY-LIKE, APPEARS FIBROUS, 10YR 8/1 WITH 10YR 7/2 AND 10YR 6/8
5	9,390	55,250	5/5			
	3,860	20,385				5-14.1 SILT LITTLE CLAY FEW FINE GRAVEL, MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 4/2 MOTTLED 10YR 5/6 AND 10YR 4/1
	3,843	18,231				
	4,223	16,989				
	4,803	17,166				
10	4,739	17,788				
	4,079	18,365	5/5			14.1-16.4 CLAY LITTLE SILT FEW FINE GRAVEL, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 3/1
	3,904	17,649				
	3,876	WATER				
	4,013					16.4-17.9 MOSTLY SAND MEDIUM WITH SOME SILT, MOIST TO WET, LOW PLASTICITY 10YR 3/1
	4,180		5/5			
	3,599					
	3,649					17.9-20 CLAY LITTLE SILT FEW FINE GRAVEL, MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/1
	3,617					
20	3,575					
	TERMINATED 20 FT BGS					

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB101
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 3 FEB 10	Date Completed: 3 FEB 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS	Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial 11 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation GRAVITY	24 hr. _____ ft.
Hole Diameter: 6/8-INCH	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	GROUND	3,271 CPM	5/5			0-0.6 GRASS OVER CLAY LITTLE SILT, MOIST, MEDIUM TOUGHNESS AND PLASTICITY 10YR 4/3
	3,362	10,562				
	3,429	12,773				0.6-3.1 CONCRETE RUBBLE LITTLE SILT SOME CLAY, FINE TO COARSE GRAVEL SIZED, DRY LOOSE
	3,272	16,918				
	3,634	17,255				
5	3,686	16,673				3.1-15 SILT LITTLE CLAY LITTLE FINE GRAVEL, MOIST, HIGH TOUGHNESS HIGH PLASTICITY
	3,732	15,668	5/5			
	3,441	16,683				
	3,603	17,335				15-20 CLAY LITTLE SILT FEW FINE GRAVEL MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/1
	3,656	16,306				
10	3,772	14,115				
	3,595	14,662	5/5			
	3,490	WATER				
	3,591					
	3,457					
15	3,528					
	4,011		5/5			
	3,647					
	3,390					
	3,562					
20	3,705					
	TERMINATED AT 20 FT BGS					

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB102	
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAMER / Frontz Drilling		
Drilling Equip.: Versa-Sonic	Date Start: 8 FEB 10	Date Completed: 8 FEB 10	
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS	Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume _____ ☐ Neat Cement ☒ Bentonite Method of Installation GRAVITY Depth: from _____ ft. to _____ ft.	Initial DRY ft Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
						DRILLED 8 FEB 10 LOG/SAMPLE 9 FEB 10
0	GROUND	2,837 CPM				0-1 GRAVEL FINE TO COARSE WITH SILT LITTLE CLAY, DRY, LOOSE, 10YR 4/2
	2,560	13,867	5/5			
	3,216	20,356				
	3,539	19,211				1-2.4 CLAY SOME SILT LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 4/2
	3,344	16,037				
5	3,271	17,321				
	3,253	17,173	5/5			2.4-13.1 SILT LITTLE CLAY, LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY, 10YR 4/3 MOTTLED 10YR 5/6
	3,620	17,909				
	3,507	18,133				
	3,740	17,486				13.1-19.2 CLAY LITTLE GRAVEL, MOIST, HIGH TOUGHNESS, HIGH PLASTICITY, 10YR 3/1
10	3,603	18,117				
	3,602	19,921	5/5			
	3,697	20,866				19.2-20 CLAY SOME SILT, LITTLE GRAVEL FINE, MOIST TO DRY, MEDIUM DRY STRENGTH, 10YR 3/1
	3,865	20,316				
	4,038	18,958				
15	3,962	15,164				20 LIMESTONE GRAVEL FINE TO COARSE
	3,604	10,974	5/5			
	3,736	CAVE				
	3,636					
	3,637					
20	3,536					
	TERMINATED 20 FT BGS					

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB103
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 19 MAR 10	Date Completed: 19 MAR 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth 20 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume _____ ☐ Neat Cement ☒ Bentonite Method of Installation TREMIE Depth: from _____ ft. to _____ ft.	Initial 17 ft Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
						DRILLED 19 MAR 10 LOGGED 19 MAR 10 SAMPLED 20 MAR 10
0	GROUND 4,420 CPM		5/3			0-1.2 CLAY LITTLE SILT, FEW GRAVEL FINE, MOIST, MEDIUM TOUGHNESS AND MEDIUM PLASTICITY 10YR 3/2
	3,621	18,511				
	4,145	19,053				
	4,106	18,182				
	NO RECOVERY	17,152				1.2-4.8 SILT SOME CLAY, LITTLE GRAVEL FINE, MOIST HIGH TOUGHNESS AND PLASTICITY 10YR 4/3 MOTTLED 10YR 5/6
5	NO RECOVERY	17,035				
	3,993	16,930	5/5			
	3,700	16,144				4.8-11.4 SILT LITTLE CLAY LITTLE GRAVEL FINE, DRY, MEDIUM DRY STRENGTH, 10YR 4/3 MOTTLED 10YR 5/6
	3,614	15,540				
	3,563	16,541				
10	3,987	16,596				11.4-12 CLAY LITTLE SILT, LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 3/1
	4,093	15,922	5/5			
	4,137	17,220				
	3,951	18,480				
	4,027	17,649				12-15.4 CLAY FEW SILT, LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/1
15	4,273	10,891				
	4,028	8,753	5/5			
	3,604	8,794				
	3,663	WATER				15.4-20 CLAY MOSTLY GRAVEL FINE TO COARSE WITH FEW COBBLES ≤ 5-INCH, WET AT ≈ 16.4 FT BGS, SLOW DILATANCY MEDIUM TOUGHNESS AND PLASTICITY 10YR 3/1
	4,583					
20	3,897					
	TERMINATED 20 FT BGS					

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB104	
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER	/ Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 4 FEB 10	Date Completed: 4 FEB 10	
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 17 FT BGS	Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Air Rotary ☐ [illegible]	Used? ☒ Yes ☐ No Volume _____	Initial 8 ft
☐ MUD Rotary ☐ Flight Auger	Method of Installation GRAVITY	24 hr. _____ ft.
Hole Diameter: 6/8-INCH	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	RADIOLOGICAL SCAN (CPM) DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
0	GROUND	1,624 CPM	5/5			0-1.5 GRAVEL COARSE TO COARSE SAND, DRY, LOOSE
	1,889	7,309				1.5-2.3 CLAY LITTLE SILT, MOIST LITTLE GRAVEL FINE, HIGH TOUGHNESS AND PLASTICITY 10YR 2/2
	3,062	19,689				
	3,246	20,289				
	3,377	18,671				
5	3,211	17,083	6/5			2.3-4.5 CLAY LITTLE SILT FEW FINE GRAVEL MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 4/4 MOTTLED 10YR 4/1 AND 10YR 5/6
	3,087	17,572				
	3,365	15,213				
	3,527	17,287				
	3,480	WATER				
10	2,711		5/5			4.5-11.6 SILT LITTLE CLAY FEW FINE GRAVEL, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 4/1 MOTTLED 10YR 4/1 AND 10YR 5/6
	3,487					
	3,494					
	3,662					
	3,483					
15	3,740		2/2			11.6-14.9 [illegible] SILT LITTLE FINE GRAVEL MOIST HIGH TOUGHNESS AND PLASTICITY 10YR 3/1
	3,227					
	2,487					
	REFUSAL 17 FT BGS					14.9-17 GRAVEL FINE WITH SAND COARSE, MOIST LITTLE SILT MEDIUM DENSE, 10YR 3/1
20						17 LIMESTONE CRYSTALLINE REGOLITH

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB105
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 5 FEB 10	Date Completed: 5 FEB 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume Method of Installation GRAVITY Depth: from ____ ft. to ____ ft.	Initial DRY ____ ft. 24 hr. ____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	GROUND	4,463 CPM				0-2.5 GRAVEL FINE TO COARSE IN MATRIX OF SILT LITTLE CLAY DRY, 10YR 4/2
	4,373	14,382	5/5			
	3,939	12,588				2.5-4.9 CLAY SOME SILT LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 4/3 MOTTLED 10YR 5/6
	4,112	20,562				
	4,292	19,635				
5	4,070	19,254				
	4,499	18,310	5/5			4.9-13.1 SILT LITTLE CLAY LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 4/3 MOTTLED 10YR 5/6
	4,417	18,546				
	4,238	18,050				
	4,384	17,713				13.1-15.8 CLAY SOME SILT, LITTLE GRAVEL FINE, MOIST, MEDIUM TOUGHNESS MEDIUM PLASTICITY 10YR 3/1
10	4,179	17,557				
	4,428	17,676	5/5			
	4,231	19,064				15.8-18.2 CLAY AND GRAVEL FINE, MOIST TO WET, LOW TOUGHNESS, MEDIUM PLASTICITY 10YR 3/1
	4,024	CAVE				
	4,138					18.2-20 CLAY LITTLE SILT LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 3/1
15	7,[illegible]					
	4,298		5/5			
	3,830					
	3,709					
	3,686					
20	3,575					
	TERMINATED 20 FT BGS					

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB106	
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling		
Drilling Equip.: Versa-Sonic	Date Start: 4 FEB 10	Date Completed: 4 FEB 10	
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 16 FT BGS	Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume _____ Method of Installation GRAVITY Depth: from _____ ft. to _____ ft.	Initial 10 ft 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
0	GROUND	5,241 CPM				0-2 GRASS OVER CLAY LITTLE SILT FEW FINE GRAVEL MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 2/2
	4,553	18,282	5/5			
	4,850	19,804				
	4,804	19,447				
	4,781	18,580				2-4.8 CLAY LITTLE SILT FEW GRAVEL FINE, MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 4/3 MOTTLED 10YR 5/6 AND 10YR 5/1
5	4,811	17,405	5/5			
	4,781	17,885				
	4,660	18,169				
	4,803	19,192				4.8-11.8 SILT LITTLE CLAY LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 4/4 MOTTLED 10YR 5/6 AND 10YR 5/1
	4,670	20,254				
10	4,789	18,458				
	4,854	WATER	5/5			
	4,899					11.8-16 CLAY LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/1
	4,776					
	4,409					
	4,449					
	4,338		4/1			16 LIMESTONE CRYSTALLINE
	REFUSAL	16 FT BGS				
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB107
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAMER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 4 FEB 10	Date Completed: 4 FEB 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 15 FT BGS
Well Depth: NA		

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume _____ Method of Installation GRAVITY Depth: from _____ ft. to _____ ft.	Initial DRY ft 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
						DRILLED 4 FEB 10 LOGGED / SAMPLED 5 FEB 10
0	GROUND	4,711 CPM				0-0.8 GRASS OVER SILT FEW CLAY LITTLE GRAVEL FINE DRY, MEDIUM DRY STRENGTH, 10YR 4/2
	4,698	17,977	5/5			
	4,924	19,604				
	4,932	19,967				0.8-12.5 SILT LITTLE CLAY LITTLE FINE TO COARSE GRAVEL, MOIST HIGH TOUGHNESS AND PLASTICITY 10YR 4/3 MOTTLES 10YR 5/6
	4,634	19,226				
5	4,696	18,684	5/5			
	4,743	18,507				12.5-15 CLAY SOME GRAVEL FINE TO COARSE, MOIST MEDIUM TOUGHNESS, MEDIUM PLASTICITY, 10YR 3/1
	4,831	18,157				
	4,790	17,503				
	4,730	16,091				
10	4,368	17,064	5/5			
	4,790	CAVE				
	4,688					
	4,678					
	4,503					
	[illegible]					
	REFUSAL 15 FT BGS					
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB108
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 8 MAR 10	Date Completed: 8 MAR 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume _____ ☐ Neat Cement ☒ Bentonite Method of Installation TREMIE Depth: from _____ ft. to _____ ft.	Initial DRY ft Development _____ ft. 24 hr. _____ ft.

DRILLED 8 MARCH 10
LOG/GAUGE 9 MARCH 10

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
						GRASS OVER
0	GROUND 5,024 CPM		5/4			0-1.6 CLAY LITTLE SILT, LITTLE GRAVEL FINE, CAPILLARY ROOTS, MOIST, LOW TOUGHNESS, MEDIUM PLASTICITY, 10YR 4/6 MOTTLED 10YR 4/1 AND 10YR 5/6
	3,836	17,896				
	3,901	17,547				
	3,860	16,506				
	3,473	16,613				1.6-4 CLAY SOME SILT, LITTLE GRAVEL FINE, MOIST, MEDIUM TOUGHNESS MEDIUM PLASTICITY, 10YR 4/6 MOTTLED 10YR 4/1 AND 10YR 5/6
5	NO RECOVERY	16,786				
	4,194	17,184	5/5			
	4,325	17,939				4-5 NO RECOVERY
	4,040	17,838				5-12.6 SILT LITTLE CLAY, LITTLE GRAVEL FINE, DRY CRUMBLES MEDIUM DRY STRENGTH, 10YR 4/4 MOTTLED 10YR 5/6
	3,733	17,228				
10	3,677	16,934	5/5			
	4,623	16,509				12.6-15.1 SILT SOME CLAY, LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 4/2 MOTTLED 10YR 4/4
	4,613	16,560				
	4,277	17,348				
	4,049	16,695				
15	3,628	13,592	5/5			15.1-20 CLAY LITTLE GRAVEL FINE, FEW SILT, MOIST, MEDIUM TOUGHNESS AND PLASTICITY 10YR 4/1
	3,971	CAVE				
	3,951					
	3,935					
	3,588					
20	3,580					
	TERMINATED 20 FT BGS					

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB109
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 9 MAR 10	Date Completed: 9 MAR 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial DRY ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation: TREMIE	24 hr. _____ ft.
Hole Diameter: 6/8-INCH	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	RADIOLOGICAL SCAN (CPM) DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	GROUND 4,987 CPM		5/5			0-1.6 GRASS OVER CLAY, LITTLE SILT, LITTLE GRAVEL FINE, CAPILLARY ROOTS, MOIST, MEDIUM TOUGHNESS MEDIUM PLASTICITY 10YR 4/3
	3,850	15,824				
	4,000	19,800				
	3,866	20,939				1.6-2.3 CLAY LITTLE SILT, LITTLE GRAVEL FINE, MOIST, MEDIUM TOUGHNESS AND PLASTICITY 10YR 4/3
	4,001	20,040				
5	3,726	18,888				
	4,084	18,482	5/5			2.3-8.3 CLAY, SOME SILT, LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 4/3 MOTTLED 10YR 5/4
	4,204	17,920				
	4,173	17,345				
	4,181	16,748				8.3-9.6 SILT SOME CLAY, LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY, 10YR 5/6 MOTTLED 10YR 4/4
10	4,464	17,072				
	4,370	19,018	5/5			
	4,194	19,528				9.6-13.4 SILT, LITTLE CLAY, LITTLE GRAVEL FINE, DRY, MEDIUM DRY STRENGTH, 10YR 4/4 MOTTLED 10YR 5/6 AND 10YR 5/1
	4,263	18,613				
	4,062	15,448				
15	4,039	14,770				
	4,222	14,841	5/5			13.4-16 CLAY, LITTLE SILT, LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS, HIGH PLASTICITY 10YR 4/1
	4,186	14,072				
	4,183	CAVE				16-17.4 GRAVEL COARSE TO FINE, SOME CLAY, LITTLE SAND COARSE, MOIST TO WET, 10YR 4/1
	4,097					
20	3,890					17.4-20 CLAY, FEW GRAVEL FINE, HIGH TOUGHNESS, HIGH PLASTICITY, MOIST 10YR 4/1
	TERMINATED 20 FT BGS					

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB110
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 10 MAR 10	Date Completed: 10 MAR 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth 20 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume _____ ☐ Neat Cement ☒ Bentonite Method of Installation TREMIE Depth: from _____ ft. to _____ ft.	Initial 16 ft Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	GROUND	5,042 CPM	5/4			0-2.1 CLAY LITTLE SILT, FEW GRAVEL FINE, CAPILLARY ROOTS, MOIST MEDIUM TOUGHNESS MEDIUM PLASTICITY 10YR 4/2
	3,965	18,557				
	4,170	20,234				
	4,136	19,434				
	4,196	17,213				2.1-14.3 SILT LITTLE CLAY, LITTLE GRAVEL FINE, DRY TO MOIST, MEDIUM DRY STRENGTH, 10YR 4/4 MOTTLED 10YR 5/6
5	NO RECOVERY	17,358				
	4,384	16,771	5/5			
	4,155	15,766				14.3-15.2 SILT SOME CLAY FEW GRAVEL FINE MOIST HIGH TOUGHNESS AND PLASTICITY 10YR 3/2 MOTTLED 10YR 5/3
	4,146	17,895				
	4,092	17,681				
10	3,999	16,429	5/5			
	4,363	16,694				15.2-20 CLAY LITTLE GRAVEL FINE MOIST, LOW TOUGHNESS, MEDIUM PLASTICITY 10YR 3/1
	4,505	17,247				
	4,226	18,326				
	4,190	19,678				
15	4,010	19,710	5/5			
	4,380	18,518				
	4,468	WATER				
	4,610					
	4,477					
20	4,370		5/5			
	TERMINATED 20 FT BGS					

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB111
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 5 FEB 10	Date Completed: 5 FEB 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 15 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Mud Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume _____ Method of Installation GRAVITY Depth: from _____ ft. to _____ ft.	Initial _____ ft 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
0	GROUND	4,198 CPM				0-1.1 SILT LITTLE CLAY LITTLE FINE GRAVEL, DRY, MEDIUM DRY STRENGTH, HIGH TOUGHNESS AND PLASTICITY 10YR 3/2
	4,360					
	4,588					
	4,681					1.1-2.7 CLAY SOME SILT FEW FINE GRAVEL, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 3/2
	4,584					
5	4,416					
	4,534					2.7-10.1 SILT LITTLE CLAY, LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS, HIGH PLASTICITY 10YR 4/4 MOTTLED 10YR 5/6
	4,824					
	4,843					
	4,831					
10	4,511					10.1-15 CLAY LITTLE GRAVEL FINE, MOIST, MEDIUM TOUGHNESS AND MEDIUM PLASTICITY, 10YR 3/1
	4,911					
	5,125					
	4,746					
	4,681					
	REFUSAL	15 FT BGS				
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB112
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAMER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 8 FEB 10	Date Completed: 8 FEB 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 16 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial 6 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation GRAVITY	24 hr. _____ ft.
Hole Diameter: 6/8-INCH	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	GROUND	27,812 CPM				0-1 CLAY SOME SILT LITTLE GRAVEL FINE, MOIST, MEDIUM TOUGHNESS AND PLASTICITY, 10YR 4/2
	15,667	94,527	5/5			
	15,313	28,557				1-7.3 CLAY SOME SILT LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY, 10YR 4/3 MOTTLED 10YR 5/1 AND 10YR 5/6
	10,826	20,269				
	10,518	18,396				
5	10,009	17,272				
	12,044	16,663	5/5			7.3-11.6 SILT LITTLE CLAY LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS, HIGH PLASTICITY 10YR 4/3 MOTTLED 10YR 5/6
	9,647	WATER				
	9,584					
	9,502					
10	14,725					11.6-15.2 CLAY, LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY, 10YR 3/1
	11,237		5/5			
	10,427					15.2-16 CLAY WITH MOSTLY GRAVEL FINE, MOIST TO WET, HIGH TOUGHNESS, HIGH PLASTICITY 10YR 3/1
	10,048					
	9,307					
15	9,305					
	10,289		1/1			
	REFUSAL	16 FT BGS				
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB113
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 8 FEB 10	Date Completed: 8 FEB 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 17 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume _____ ☐ Neat Cement ☒ Bentonite Method of Installation GRAVITY Depth: from _____ ft. to _____ ft.	Initial 13 ft Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	GROUND	6,981 CPM				0-0.7 GRASS OVER GRAVEL FINE WITH SILT LITTLE CLAY, LOOSE DRY, 10YR 3/2
	8,859	49,194	5/5			
	6,601	25,009				
	5,983	21,661				0.7-1.8 CLAY SOME SILT LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 3/2
	6,460	18,772				
5	6,672	17,861				
	6,154	16,456	5/5			1.8-11.1 SILT LITTLE CLAY, LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS, HIGH PLASTICITY 10YR 4/3 MOTTLED 10YR 5/6
	6,204	16,962				
	6,811	19,881				
	7,610	20,150				
10	8,839	19,581				
	5,843	17,354	5/5			11.1-16.6 CLAY SOME GRAVEL FINE MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 3/1
	5,664	14,885				
	5,996	12,430				
	6,311	WATER				16.6-17 SAND MEDIUM TO COARSE WITH FEW FINE GRAVEL MOIST LITTLE CLAY, SOMEWHAT LOOSE 10YR 3/1
15	7,444					
	6,065		2/2			
	7,536					
	REFUSAL 17 FT BGS					
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB114
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER	/ Frontz Drilling
Drilling Equip.: Versa-Sonic	Date Start: 9 FEB 10	Date Completed: 9 FEB 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 17 FT BGS	Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume _____ ☐ Neat Cement ☒ Bentonite Method of Installation GRAVITY Depth: from _____ ft. to _____ ft.	Initial 8 ft Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	GROUND	4,969 CPM	5/5			0-0.6 GRAVEL FINE WITH SILT LITTLE CLAY, DRY, LOOSE 10YR 4/2
	2,313	18,300				
	2,527	19,809				
	2,473	19,713				0.6-2.4 CLAY SOME SILT, LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND HIGH PLASTICITY 10YR 4/2
	2,688	18,913				
5	2,465	17,114	5/5			
	2,276	16,434				2.4-12.1 SILT LITTLE CLAY, LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 4/3 MOTTLED 10YR 5/6
	2,360	18,512				
	2,675	WATER				
	2,684					
10	2,494		5/5			12.1-14.6 CLAY, LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY, 10YR 3/1
	2,664					
	2,685					
	2,656					14.6-16.7 CLAY, SOME GRAVEL FINE TO COARSE, MOIST, MEDIUM TOUGHNESS, MEDIUM PLASTICITY 10YR 3/1
	2,567					
15	2,321		2/2			
	2,275					16.7-17 LIMESTONE, CRYSTALLINE 10YR 7/1
	2,073					
	REFUSAL 17 FT BGS					
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB115
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 11 MAR 10	Date Completed: 11 MAR 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 15 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume _____ ☐ Neat Cement ☒ Bentonite Method of Installation TREMIE Depth: from _____ ft. to _____ ft.	Initial DRY ft Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	RADIOLOGICAL SCAN (CPM) DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	GROUND 4,069 CPM		5/4			0-1.2 GRASS OVER CLAY SOME SILT LITTLE GRAVEL FINE, CAPILLARY ROOTS, MEDIUM TOUGHNESS AND MEDIUM PLASTICITY 10YR 3/2
	3,729	13,276				
	4,051	18,685				
	5,999	18,142				1.2-6.4 CLAY LITTLE SILT, LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 4/2
	3,434	15,848				
5	NO RECOVERY	CAVE				
	3,868		5/5			6.4-11.1 SILT LITTLE CLAY LITTLE GRAVEL FINE, DRY, MEDIUM DRY STRENGTH 10YR 4/3 MOTTLED 10YR 5/6
	4,007					
	4,082					
	4,178					
10	4,121		5/5			11.1-12.9 SILT SOME CLAY FEW GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 3/2 MOTTLED 10YR 5/4
	4,170					
	4,076					
	4,211					
	4,161					12.9-15 CLAY LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 3/1
15	3,911					
	REFUSAL 15 FT BGS					
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB116
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 11 MAR 10	Date Completed: 11 MAR 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS	Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume _____ ☐ Neat Cement ☒ Bentonite Method of Installation TREMIE Depth: from _____ ft. to _____ ft.	Initial DRY ft Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	GROUND 6.2	60 CPM	5/5			0-1.1 RAILROAD GRAVEL COARSE TO FINE, LITTLE SILT, DRY, LOOSE 10YR 2/1
	4.675	21.887				
	4.664	19.708				
	4.434	17.037				1.1-2 GRAVEL FINE, LITTLE SILT DRY, LOOSE 10YR 4/6
	4.285	16.644				
5	4.193	16.970	5/5			2-14.1 SILT LITTLE CLAY, LITTLE GRAVEL FINE, MOIST TO DRY, MEDIUM DRY STRENGH 10YR 4/3 MOTTLED 10YR 5/6
	4.830	18.707				
	5.032	17.391				
	4.679	16.121				
	4.298	15.598				14.1-20 CLAY LITTLE SILT, LITTLE GRAVEL COARSE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 3/1
10	3.684	16.774	5/5			
	4.290	18.705				
	4.447	19.105				
	4.267	18.662				
	4.424	15.289				
15	4.122	12.465				
	4.664	12.216	5/5			
	4.585	CAVE				
	4.420					
	4.034					
20	3.582					
	TERMINATION 20 FT BGS					

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB117
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 11 MAR 10	Date Completed: 11 MAR 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 17 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial 12 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation TREMIE	24 hr. _____ ft.
Hole Diameter: 6/8-INCH	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	RADIOLOGICAL SCAN (CPM) DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	GROUND 4,488 CPM		5/4			0-1.5 RAILROAD GRAVEL FINE TO COARSE, SOME SILT DRY LOOSE 10YR2/1
	2,716	7,400				
	3,372	13,809				
	3,883	17,465				1.5-8.7 SILT LITTLE CLAY LITTLE GRAVEL FINE, MOIST TO DRY, MEDIUM DRY STRENGTH 10YR 4/3 MOTTLED 10YR 5/6
	3,635	18,561				
5	NO RECOVERY	18,533	5/5			
	3,650	18,110				
	3,650	16,520				8.7-13.2 SILT SOME CLAY, LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 4/3 MOTTLED 10YR 5/6
	3,373	18,550				
	3,868	19,089				
10	4,038	17,296	5/5			13.2-17 CLAY FEW SILT FEW COBBLES, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 3/1
	4,183	17,875				
	3,958	13,497				
	3,701	WATER				
	3,997					
15	3,756		2/2			
	2,925					
	3,524					
	REFUSAL 17 FT BGS					
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB118
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 10 MAR 10	Date Completed: 10 MAR 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume _____ ☐ Neat Cement ☒ Bentonite Method of Installation TREMIE Depth: from _____ ft. to _____ ft.	Initial DRY ft Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	GROUND 5,002 CPM		5/4			0-1 CLAY LITTLE SILT FEW GRAVEL FINE, CAPILLARY ROOTS MOIST HIGH TOUGHNESS AND PLASTICITY 10YR 4/2
	3,999	17,386				
	3,999	19,987				
	4,264	19,952				
	4,234	18,441				1-2.1 CLAY LITTLE SILT, FEW GRAVEL FINE, CAPILLARY ROOTS MOIST HIGH TOUGHNESS HIGH PLASTICITY 10YR 5/4
5	NORECOVERY	16,392				
	4,603	16,020	5/5			
	4,099	15,498				
	3,960	16,897				2.1-13.8 SILT LITTLE CLAY LITTLE GRAVEL FINE, MOIST TO DRY, MEDIUM DRY STRENGTH 10 YR 5/4 AND 10YR 4/2 TO 10YR 4/1 MOTTLES 10YR 5/6 WITH DEPTH
	3,885	17,527				
10	3,915	17,594				
	4,289	17,149	5/5			
	4,322	17,560				
	4,094	19,190				13.8-17.4 CLAY LITTLE SILT LITTLE GRAVEL FINE MOIST HIGH TOUGHNESS AND PLASTICITY 10YR 4/1
	4,014	19,354				
15	4,031	19,551				
	4,443	CAVE	5/5			17.4-20 CLAY LITTLE GRAVEL FINE FEW SILT, MOIST, 10YR 3/1 HIGH TOUGHNESS HIGH PLASTICITY
	4,567					
	4,446					
	4,375					
20	4,099					
	TERMINATED 20 FT BGS					

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB 119
Geologist: CARL PIDGE PG	Driller/Company: KRIS CALLER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 10 MAR 10	Date Completed: 10 MAR 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 18 FT BGS	Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume _____ ☐ Neat Cement ☒ Bentonite Method of Installation TREMIE Depth: from _____ ft. to _____ ft.	Initial 9 ft Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
0	GROUND 4,774 CPM		5/4			0-1.8 CLAY LITTLE SILT FEW GRAVEL FINE, CAPILLARY ROOTS, MOIST 10YR 3/3
	4,111	16,299				
	4,721	20,774				
	4,383	20,647				
	4,271	17,874				1.8-12 SILT LITTLE CLAY, LITTLE GRAVEL FINE, DRY, MEDIUM DRY STRENGTH, 10YR 4/3 MOTTLED 10YR 4/6
5	NO RECOVERY	17,241	5/5			
	4,465	17,620				
	4,425	17,942				
	4,621	17,608				12-14.7 CLAY SOME SILT LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 3/1
	4,587	17,387				
10	4,328	WATER	5/5			14.7-16.8 GRAVEL FINE AND SAND COARSE TO FINE WITH LITTLE CLAY, WET, LOOSE, 10YR 3/1
	4,749					
	4,843					
	4,640					16.8-18 CLAY LITTLE GRAVEL FINE MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 3/1
	4,846					
15	4,666		3/3			
	4,526					
	4,649					
	4,275					
	REFUSAL					
20	18 FT BGS					

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB120
Geologist: CARL PIDGE PG	Driller/Company: KRIS CAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 10 MAR 10	Date Completed: 10 MAR 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 14 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume _____ ☐ Neat Cement ☒ Bentonite Method of Installation TREMIE Depth: from _____ ft. to _____ ft.	Initial DRY ft Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
0	GROUND 5,974 CPM					
	4,377	17,100	5/5			0-1.4 CLAY SOME SILT FEW GRAVEL FINE, CAPILLARY ROOTS MOIST HIGH TOUGHNESS AND PLASTICITY 10YR 4/4
	4,293	26,060				
	4,135	19,779				
	4,067	17,966				1.4-6.5 CLAY LITTLE SILT LITTLE GRAVEL FINE MOIST, MEDIUM TOUGHNESS AND PLASTICITY 10YR 4/3
5	3,715	17,068				
	4,246	17,397	5/5			
	4,420	17,258				6.5-11.8 SILT SOME CLAY LITTLE GRAVEL FINE, HIGH TOUGHNESS AND PLASTICITY MOIST, 10YR 4/3 MOTTLED 10YR 5/6
	4,397	17,812				
	4,352	19,486				
10	3,836	19,795	4/4			
	4,358	20,031				11.8-14 CLAY FEW SILT FEW GRAVEL FINE MOIST, HIGH TOUGHNESS HIGH PLASTICITY
	4,204	16,579				
	4,383	CAVE				
	4,083					14 APPEARS TO BE LIMESTONE DUST AS THOUGH OVERBURDEN BEDROCK INTERFACE 5PB 7/1
15	REFUSAL 14 FT BGS					
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB121
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 10 MAR 10	Date Completed: 10 MAR 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 17.5 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume _____ ☐ Neat Cement ☒ Bentonite Method of Installation TREMIE Depth: from _____ ft. to _____ ft.	Initial DRY ft Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	GROUND 5,014 CPM		5/4			0-1.4 GRASS OVER CLAY LITTLE SILT FEW GRAVEL FINE MOIST CAPILLARY ROOTS, HIGH TOUGHNESS AND PLASTICITY, 10YR 3/3
	4,340	17,944				
	4,290	20,204				
	4,552	2,8054				
	4,289	17,802				1.4-5.6 CLAY SOME SILT, FEW GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 4/2 MOTTLED 10YR 5/4
5	NO RECOVERY	17,301				
	4,725	17,573	5/5			
	4,701	17,943				5.6-12.5 SILT LITTLE CLAY FEW GRAVEL FINE MOIST TO DRY, MEDIUM DRY STRENGTH, 10YR 4/2 MOTTLED 10YR 5/4
	4,622	17,762				
	4,468	18,569				
10	4,560	19,759				
	4,437	19,963	5/5			12.5-17.5 CLAY, LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS, HIGH PLASTICITY 10YR 3/1
	4,580	15,378				
	4,570	10,565				
	4,518	10,433				
15	4,519	10,101				
	3,889	CAVE	2.5/			
	4,041		2.5			
	3,769					
	REFUSAL 17.5 FT BGS					
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB122
Geologist: CARL PIDGE P6	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 11 MAR 10	Date Completed: 11 MAR 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 11.5 FT BGS	Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume _____ ☐ Neat Cement ☒ Bentonite Method of Installation GRAVITY Depth: from _____ ft. to _____ ft.	Initial 0 SURFACE Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	RADIOLOGICAL SCAN (CPM) DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
						DRILLED 11 MARCH 10 LOG/SAMPLE 12 MARCH 10
0	GROUND 4,829 CPM		5/4			0-0.8 GRASS OVER CLAY SOME SILT FEW GRAVEL FINE, MOIST, MEDIUM TOUGHNESS AND PLASTICITY 10YR 3/2
	5,188	WATER				
	4,976					
	5,639					0.8-9.6 SILT SOME CLAY, LITTLE GRAVEL FINE, MOIST, MEDIUM TOUGHNESS AND PLASTICITY 10YR 4/3 MOTTLED 10YR 5/6
	5,796					
5	NO RECOVERY		5/5			
	5,038					
	4,960					9.6-11 CLAY SOME SILT, MOIST MEDIUM TOUGHNESS AND PLASTICITY 10YR 3/2 DISTINCT PARTING PLANES
	4,823					
	4,947					
10	4,865		1.5/1			11 GRAVEL COARSE EMBEDDED AT CLAY CONTACT, SUB ROUNDED GRANITIC 10YR 2/1
	4,821					
	REFUSAL 11.5 FT BGS					NO TRANSITION ZONE AT REFUSAL
15						
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB123
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 10 MAR 10	Date Completed: 10 MAR 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 17 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume _____ ☐ Neat Cement ☒ Bentonite Method of Installation TREMIE Depth: from _____ ft. to _____ ft.	Initial DRY ft Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
						DRILLED 10 MARCH 10 LOG/SAMPLE 11 MARCH 10
0	GROUND 5,347 CPM					
	5,055	16,435	5/5			0-0.7 CLAY SOME SILT FEW GRAVEL FINE, MOIST, MEDIUM TOUGHNESS AND PLASTICITY 10YR 3/2
	4,813	20,428				
	5,127	18,996				
	4,743	16,782				0.7-11.7 SILT LITTLE CLAY, LITTLE GRAVEL FINE, MOIST TO DRY, HIGH TOUGHNESS HIGH PLASTICITY 10YR 4/4 MOTTLED 10YR 5/4
5	4,632	17,176				
	5,157	16,397	5/5			
	5,283	16,414				
	5,042	17,827				11.7-13.3 CLAY LITTLE SILT FEW GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 3/1
	5,223	19,950				
10	4,896	18,812				
	4,688	14,296	5/5			13.3-14.5 SAND COARSE, LITTLE GRAVEL FEW CLAY, LOOSE, WET 10YR 3/1
	4,994	16,342				
	4,503	CAVE				
	4,710					14.5-17 CLAY FEW GRAVEL FINE, MOIST, MEDIUM TOUGHNESS MEDIUM PLASTICITY 10YR 3/1
15	5,554					
	5,447		2/2			
	4,398					
	REFUSAL 17 FT BGS					
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB124
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 15 MAR 10	Date Completed: 15 MAR 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 18 FT BGS / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem
- ☒ Sonic
- ☐ Air Rotary
- ☐ Bucket Auger
- ☐ MUD Rotary
- ☐ Flight Auger

Hole Diameter: 6/8-INCH

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

Method of Installation GRAVITY

Depth: from _____ ft. to _____ ft.

Static Water Level

Initial DRY ft

Development _____ ft.

24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	RADIOLOGICAL SCAN (CPM) DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	GROUND 5,274 CPM		5/3			0-0.4 CLAY LITTLE SILT, SOME GRAVEL FINE, MOIST, MEDIUM TOUGHNESS AND PLASTICITY, 10YR 4/2
	3,902	17,637				0.4-12.2 SILT LITTLE CLAY LITTLE GRAVEL FINE DRY TO MOIST MEDIUM DRY STRENGTH, 10YR 4/3 MOTTLED 10YR 5/6
	3,874	19,294				
	3,865	20,251				
	NO RECOVERY	20,106				
5	NO RECOVERY	18,652				
	4,842	17,953	5/5			12.2-16.8 CLAY LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS HIGH PLASTICITY, 10YR 3/1
	4,647	17,807				
	4,372	17,705				
	4,499	20,466				
	4,421	CAVE				16.8-18 CLAY SOME SAND COARSE TO FINE, WET TO MOIST, MEDIUM TOUGHNESS MEDIUM PLASTICITY 10YR 3/1
10	3,855		5/5			
	3,990					
	5,132					
	5,223					
15	5,112					
	4,829		3/3			
	3,473					
	3,026					
	REFUSAL 18 FT BGS					
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB125
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 11 MAR 10	Date Completed: 11 MAR 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume _____ ☐ Neat Cement ☒ Bentonite Method of Installation GRAVITY Depth: from _____ ft. to _____ ft.	Initial 6 ft Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
0	GROUND 5,663 CPM		5/5			0-0.5 WOOD CHIPS
	7,160	26,442				0.5-1.4 CLAY SOME SILT LITTLE GRAVEL FINE, MOIST, HIGH PLASTICITY AND TOUGHNESS 10YR 3/2
	4,974	31,013				
	4,309	22,383				
	3,929	19,657				
5	4,245	17,618				1.4-5.3 SILT SOME CLAY, SOME GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY, 10YR 4/3 MOTTLED 10YR 5/6
	4,271	16,465				
	4,332	WATER	5/5			5.3-9.2 SILT LITTLE CLAY, LITTLE GRAVEL FINE DRY, MEDIUM DRY STRENGTH 10YR 4/4 MOTTLED 10YR 5/6
	4,749					
	4,456					
10	4,652					9.2-10.8 SILT SOME CLAY, LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY, 10YR 4/3 MOTTLED 10YR 5/6
	4,865		5/5			
	4,775					
	4,708					
	4,483					10.8-14.5 CLAY FEW GRAVEL FINE MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 3/1
15	4,596		5/5			
	3,805					14.5-15.7 CLAY AND SAND FINE TO COARSE, LITTLE GRAVEL FINE, WET, LOOSE 10YR 3/1
	3,577					
	3,716					
	3,614					
20	4,179					15.7-20 GRAVEL FINE TO COARSE WITH COBBLES (>4 INCH) LITTLE CLAY, LOOSE, WET, 10YR 6/1
	TERMINATED 20 FT BGS					

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB126
Geologist: CARL PIDGE PG	Driller/Company: KRIS CAUSER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 15 MAR 10	Date Completed: 15 MAR 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 19 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial 9 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation GRAVITY	24 hr. _____ ft.
Hole Diameter: 6/8-INCH	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	GROUND 4,404 CPM		5/5			0-0.8 CLAY LITTLE SILT LITTLE GRAVEL FINE, MOIST, MEDIUM TOUGHNESS AND PLASTICITY 10YR 3/2
	2,965	16,943				0.8-4.4 CLAY SOME SILT LITTLE GRAVEL FINE MOIST, 10YR 4/2 HIGH TOUGHNESS AND PLASTICITY
	3,875	20,390				4.4-11.6 SILT LITTLE CLAY LITTLE GRAVEL, DRY TO MOIST, HIGH TOUGHNESS HIGH PLASTICITY, 10YR 4/3 MOTTLED 10YR 5/6
	4,300	18,192				11.6-13.4 CLAY SOME SILT, LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 4/2 MOTTLED 10YR 5/8
	4,118	17,011				13.4-19 CLAY LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/1
5	4,427	16,233				
	3,923	16,782	5/5			
	4,157	17,087				
	4,281	17,258				
	4,131	18,318				
10	4,221	WATER	5/5			
	4,060					
	4,205					
	4,241					
	4,501					
15	4,066					
	4,022		4/4			
	4,109					
	3,862					
	3,833					
20	REFUSAL 19 FT BGS					

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB127
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 15 MAR 10	Date Completed: 15 MAR 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial 9 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation GRAVITY	24 hr. _____ ft.
Hole Diameter: 6/8-INCH	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	GROUND 4,570 CPM		5/4			0-0.8 CLAY SOME SILT, MOIST, MEDIUM TOUGHNESS AND PLASTICITY 10YR 3/3
	3,834	18,407				
	4,290	19,852				
	4,487	17,658				0.8-6.3 SILT SOME CLAY, LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 4/2 MOTTLED 10YR 5/6
	3,496	16,449				
5	NO RECOVERY	16,176				
	4,038	15,771	5/5			6.3-11.5 SILT LITTLE CLAY LITTLE GRAVEL FINE, DRY TO MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 4/3 MOTTLED 10YR 5/6
	4,198	16,095				
	4,537	15,858				
	4,418	WATER				11.5-12.6 SILT SOME CLAY LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 4/2 MOTTLED 10YR 5/6
10	4,344					
	4,120		5/5			12.6-17.1 CLAY SOME GRAVEL, MOIST HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/1
	4,172					
	4,987					
	4,762					
15	4,927					17.1-20 CLAY AND GRAVEL FINE, SOME SAND COARSE TO MEDIUM MOIST, SLIGHTLY LOOSE, 10YR 3/1
	3,934		5/5			
	4,001					
	4,385					
	4,249					
20	4,341					
	TERMINATION 20 FT BGS					

13 14/15 DB

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB128
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAMER	/ Frontz Drilling
Drilling Equip.: Versa-Sonic	Date Start: 15 MAR 10	Date Completed: 15 MAR 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial 9 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation GRAVITY	24 hr. _____ ft.
Hole Diameter: 6/8-INCH	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	GROUND 4,252 CPM		5/4			0-1.4 CLAY LITTLE SILT FEW GRAVEL FINE, MOIST, MEDIUM TOUGHNESS, MEDIUM PLASTICITY 10YR 4/2 CAPILLARY ROOTS
	3,543	16,930				
	3,686	19,963				
	4,427	18,944				
	4,346	17,895				1.4-10.7 SILT SOME CLAY, LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 4/3 MOTTLED 10YR 5/6 AND 10YR 5/1
5	NO RECOVERY	17,430	5/5			
	3,350	17,931				
	3,716	17,915				10.7-12.1 SILT LITTLE CLAY, LITTLE GRAVEL FINE, DRY TO MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 4/3 MOTTLED 10YR 5/6
	4,111	17,637				
	4,155	16,387				
10	4,219	WATER	5/5			12.1-15.5 CLAY LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 3/1
	3,658					
	3,634					
	4,017					15.5-20 CLAY, SOME GRAVEL MOSTLY FINE SOME COARSE MOIST TO WET, 10YR 3/1
	3,913					
15	4,300		5/5			
	3,387					
	3,431					
	3,656					
	3,737					
20	3,842					
	TERMINATED 20 FT BGS					

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB129
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 12MAR10	Date Completed: 12MAR10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume _____ ☐ Neat Cement ☒ Bentonite Method of Installation GRAVITY Depth: from _____ ft. to _____ ft.	Initial 7 ft Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	GROUND 3,846 CPM		5/5			0-1 CLAY LITTLE SILT LITTLE GRAVEL FINE, MOIST, MEDIUM TOUGHNESS AND PLASTICITY 10YR 3/2
	4,014	9,781				
	3,595	15,717				
	4,191	19,025				1-2 LIMESTONE COBBLES (2) > 4 INCH LITTLE CLAY, 10YR 5/1
	4,467	19,248				
5	4,689	17,788				2-11.2 SILT LITTLE CLAY, LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 4/3 MOTTLED 10YR 5/6
	4,106	16,036	5/5			
	3,952	15,238				
	4,003	WATER				
	4,209					7.5 WET ZONE ≈ 0.3 FOOT THICK
10	4,658					11.2-14.3 CLAY LITTLE GRAVEL FINE, MOIST, MEDIUM PLASTICITY AND TOUGHNESS 10YR 3/1
	4,262		5/5			
	4,147					
	4,157					14.3-19.2 GRAVEL FINE, SAND COARSE TO FINE, LITTLE CLAY WET, LOOSE, 10YR 3/1
	4,085					
15	4,562					19.2-20 CLAY, LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/1
	3,947					
	3,999		5/5			
	3,697					
	3,642					
20	3,626					
	TERMINATED 20 FT BGS					

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB130
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 12 MAR 10	Date Completed: 12 MAR 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 18 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume _____ ☐ Neat Cement ☒ Bentonite Method of Installation GRAVITY Depth: from _____ ft. to _____ ft.	Initial 8 ft Development _____ ft. 24 hr. _____ ft.

DRILLED 12 MARCH 10
LOG/SAMPLE 15 MARCH 10

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
0	GROUND 2,900 CPM		5/4			0-0.3 GRASS OVER CLAY SOME SILT, CAPILLARY ROOTS, MOIST HIGH TOUGHNESS, HIGH PLASTICITY 10YR 3/2
	2,652	6,264				0.3-1.6 SAND MEDIUM TO COARSE LITTLE SILT, LOOSE, MOIST, 10YR 3/2
	3,406	14,974				1.6-12.7 SILT, LITTLE CLAY, LITTLE GRAVEL FINE, DRY TO MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 4/3 MOTTLED 10YR 5/6 AND 10YR 4/1
	3,716	19,763				
	3,654	17,903				
5	NO RECOVERY	17,384				
	2,448	17,059	5/5			12.7-13.8 SILT SOME CLAY LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/2 MOTTLED 10YR 5/6
	2,778	17,345				
	3,339	16,674				
	3,435	WATER				
10	3,590		5/5			13.8-18 CLAY LITTLE SILT, LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 3/1
	3,064					
	3,568					
	3,716					
	3,861					
15	3,313					
	3,851		3/3			
	3,681					
	3,527					
	REFUSAL 18 FT BGS					
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB131
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 12 MAR 10	Date Completed: 12 MAR 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 13 FT BGS / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem
- ☒ Sonic
- ☐ Air Rotary
- ☐ Bucket Auger
- ☐ MUD Rotary
- ☐ Flight Auger

Hole Diameter: 6/8-INCH

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

Method of Installation GRAVITY

Depth: from _____ ft. to _____ ft.

Static Water Level

Initial 0-SURFACE ft

Development _____ ft.

24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	RADIOLOGICAL SCAN (CPM) DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
0	GROUND	CPM				
	2,182	WATER	5/5			0-1.1 CONCRETE GRAVEL FINE TO COARSE, SAND COARSE, WET, LOOSE 10YR 5/1
	3,088					
	3,134					1.1-2.4 CLAY LITTLE SILT FEW GRAVEL, MOIST, MEDIUM TOUGHNESS MEDIUM PLASTICITY 10YR 2/1
	3,322					
5	3,178					2.4-7.3 CLAY LITTLE SILT, FEW GRAVEL, FINE, MOIST, MEDIUM TOUGHNESS AND PLASTICITY, 10YR 4/3 MOTTLED 10YR 4/1 AND 10YR 5/6
	2,872		5/5			
	3,340					
	3,100					7.3-10 SILT LITTLE CLAY, LITTLE GRAVEL FINE, MOIST, 10YR 4/3 MOTTLED 10YR 5/6
	3,192					
10	3,143		3/3			
	2,535					10-13 SLOUGH; GRAVEL FROM SURFACE
	2,391					
	2,561					
	REFUSAL 13 FT BGS					
15						
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB132
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 12 MAR 10	Date Completed: 12 MAR 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 16 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial 0-SURFACE ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation GRAVITY	24 hr. _____ ft.
Hole Diameter: 6/8-INCH	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
0	GROUND	CPM				
	2,634	WATER	5/5			0-1.2 GRAVEL FINE, SAND COARSE TO FINE, WET, LOOSE, 10YR 5/1
	3,398					1.2-1.9 CLAY LITTLE SILT, LITTLE GRAVEL FINE, CAPILLARY ROOTS, MOIST, HIGH TOUGHNESS AND PLASTICITY, 10YR 3/2
	3,344					
	3,490					
5	3,709		5/5			1.9-3.4 CLAY SOME SILT, LITTLE GRAVEL FINE, MOIST, MEDIUM TOUGHNESS AND PLASTICITY 10YR 4/3 MOTTLED 10YR 4/1 AND 10YR 5/6
	2,913					
	3,566					
	3,742					
	3,394					
10	3,246		5/3			3.4-10 SILT LITTLE CLAY, FEW GRAVEL COARSE, MOIST, HIGH TOUGHNESS AND HIGH PLASTICITY, 10YR 4/3 MOTTLED 10YR 5/6
	2,713 SLOUGH					
	SLOUGH					
	3,469					
	3,435					10-12 SLOUGH; GRAVEL FROM 0-1.2 FT BGS ZONE
15	3,533		1/1			
	3,676					12-16 CLAY LITTLE GRAVEL, FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 3/1
	REFUSAL 16 FT BGS					
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB 133
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 11 MAR 10	Date Completed: 11 MAR 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 18 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial DRY ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation GRAVITY	24 hr. _____ ft.
Hole Diameter: 6/8-INCH	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	RADIOLOGICAL SCAN (CPM) DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
						DRILLED 11 MAR 10 LOG/SAMPLE 12 MAR 10
0	GROUND	5,327 CPM	5/5			0-1.6 CLAY SOME SILT FEW GRAVEL FINE, CAPILLARY ROOTS MOIST, MEDIUM TOUGHNESS AND PLASTICITY 10YR 3/2
	2,684	14,501				
	2,536	14,566				
	3,652	25,046				
	2,914	18,000				1.6-2.7 GRAVEL COARSE TO FINE SAND COARSE, CLAY LITTLE SILT,
	2,773	18,737				
5	3,130	18,485	5/5			2.7-12.3 SILT SOME CLAY LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 4/3 MOTTLES 10YR 5/6
	3,322	16,193				
	3,248	16,967				
	3,153	15,480				
10	3,826	16,939	5/5			12.3-14.8 CLAY SOME SILT LITTLE GRAVEL FINE, MOIST HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/2 MOTTLES 10YR 5/6
	2,702	20,042				
	3,115	20,333				
	3,300	19,565				14.8-18 CLAY LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 3/1
	3,295	17,165				
15	3,308	CAVE	3/3			
	2,762					
	3,080					
	2,427					
	REFUSAL 18 FT BGS					
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB134
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 11 MAR 10	Date Completed: 11 MAR 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 14 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial 5 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation GRAVITY	24 hr. _____ ft.
Hole Diameter: 6/8-INCH	Depth: from _____ ft. to _____ ft.	

DRILLED 11 MAR 10
LOG/SAMPLE 12 MAR 10

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
0	GROUND 5,229 CPM		5/5			0-2 CONCRETE GRAVEL COARSE TO FINE, SAND COARSE TO FINE, LOOSE, WET 10YR 5/1
	2,447	2,446				
	2,352	6,056				
	3,480	17,660				2-3 CLAY SOME SILT, MOIST, MEDIUM TOUGHNESS AND PLASTICITY 10YR 3/2
	3,453	17,365				
5	3,337	15,547				2-4.1 CLAY SOME SILT, COBBLE > 5 INCHES, ≈ 3.4 FT BGS, MOIST, MEDIUM TOUGHNESS AND PLASTICITY 10YR 4/2
	3,039	WATER	5/5			
	3,470					
	3,304					
	3,578					4.1-12.1 SILT LITTLE CLAY, LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 4/3 MOTTLES 10YR 5/6
10	3,440		4/4			
	3,522					
	3,444					
	3,634					12.1-14 CLAY LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/1
	3,499					
15	REFUSAL 14 FT BGS					
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB 135
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAMER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 15 MAR 10	Date Completed: 15 MAR 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume _____ ☐ Neat Cement ☒ Bentonite Method of Installation GRAVITY Depth: from _____ ft. to _____ ft.	Initial 7 ft Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
						DRILLED 15 MARCH 10 LOGGED/SAMPLED 16 MARCH 10
0	GROUND	4,040 CPM	5/5			0-0.5 CLAY LITTLE SILT LITTLE GRAVEL FINE, CAPILLARY ROOTS MOIST, MEDIUM TOUGHNESS AND PLASTICITY, 10YR 3/2
	2,905	17,821				
	2,826	20,069				
	3,144	18,923				0.5-5.7 CLAY SOME SILT, LITTLE GRAVEL FINE, MOIST, CAPILLARY ROOTS TO ≈ 1.7 FT BGS HIGH TOUGHNESS HIGH PLASTICITY 10YR 4/3 MOTTLED 10YR 5/6
	3,150	17,456				
5	3,041	17,849				
	3,527	18,731	5/5			
	3,578	19,382				5.7-10 SILT LITTLE CLAY, LITTLE GRAVEL FINE, DRY, MEDIUM DRY STRENGTH, 10YR 4/4 MOTTLED 10YR 5/6 AND 10YR 4/1
	3,835	WATER				
	3,848					
10	3,403		5/4.4			10-10.6 SLOUGH
	3,704					10.6-11.8 CLAY SOME GRAVEL FINE TO COARSE, LITTLE SAND MEDIUM TO COARSE, MOIST TO WET, HIGH TOUGHNESS AND PLASTICITY 10YR 3/2
	3,318					
	3,430					
	3,410					
15	3,444					11.8-15 CLAY SOME GRAVEL FINE TO COARSE, LITTLE SAND MEDIUM TO COARSE, MOIST HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/1
	REFUSAL 15 FT BGS					
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB136
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 11 MAR 10	Date Completed: 11 MAR 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 15 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial DRY ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation GRAVITY	24 hr. _____ ft.
Hole Diameter: 6/8-INCH	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	GROUND 1,948 CPM		5/4			0-0.3 GRAVEL/CONCRETE, COARSE TO SAND FINE, DRY 10YR 4/1
	2,460	9,380				0.3-3.5 CLAY SOME SILT, LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS, HIGH PLASTICITY, 10YR 4/4 MOTTLES 10YR 5/6
	2,987	18,135				
	2,761	19,493				
	2,812	16,246				
5	NORECOVERY	15,842	5/4			3.5-12.9 SILT LITTLE CLAY LITTLE GRAVEL FINE, DRY TO MOIST MEDIUM DRY STRENGTH 10YR 4/3 MOTTLES 10YR 5/6
	SLOUGH	14,839				
	3,394	16,093				
	3,810	19,967				
	3,652	19,723				12.9-14.8 CLAY LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/1
10	3,473	CAVE	5/5			
	2,058					14.8-15 LIMESTONE, FOSSILIFEROUS 10YR 5/1 DRY
	3,806					
	4,025					
	3,684					
15	3,494					
	REFUSAL 15 FT BGS					
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB 137
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 11 MAR 10	Date Completed: 11 MAR 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 17 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial 6 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation GRAVITY	24 hr. _____ ft.
Hole Diameter: 6/8-INCH	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	GROUND 5,111	CPM	5/4			0-1 CLAY SOME SILT FEW GRAVEL FINE, MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/2
	4,880	16,848				
	5,062	18,016				1-1.8 GRAVEL FINE, SOME SAND COARSE LITTLE SILT, DRY LOOSE, 10YR 3/2
	5,259	19,909				
	5,245	17,868				1.8-5.3 CLAY LITTLE SILT LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 4/4
5	NO RECOVERY	16,576				
	4,984	15,727	5/5			
	5,737	WATER				5.3-11.8 SILT LITTLE CLAY LITTLE GRAVEL FINE, DRY, MEDIUM DRY STRENGTH, 10YR 4/3 MOTTLED 10YR 4/6
	5,146					
	5,369					
10	4,898					
	4,985		5/5			11.8-14.6 CLAY FEW SILT LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 3/1
	5,084					
	4,942					
	4,782					
15	4,784					14.6-17 CLAY SOME GRAVEL FINE LITTLE SAND COARSE, MOIST TO WET, HIGH TOUGHNESS AND PLASTICITY 10YR 3/1
	4,960		3/3			
	4,729					
	REFUSAL 17 FT BGS					
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB138
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 11 MAR 10	Date Completed: 11 MAR 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 14 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume _____ ☐ Neat Cement ☒ Bentonite Method of Installation GRAVITY Depth: from _____ ft. to _____ ft.	Initial 9 ft Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	RADIOLOGICAL SCAN (CPM) DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
						DRILLED 11 MARCH 10 LOG/SAMPLE 12 MARCH 10
0	GROUND 5,271 CPM					0-1.2 GRASS OVER CLAY LITTLE SILT, FEW GRAVEL FINE, CAPILLARY ROOTS, MOIST, MEDIUM TOUGHNESS MEDIUM PLASTICITY 10YR 4/2
	6,349	10,449	5/4			
	5,652	22,062				
	5,631	10,454				
	5,341	16,591				1.2-10.6 SILT LITTLE CLAY LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 4/3 MOTTLED 10YR 5/6 AND 10YR 4/1
5	NO RECOVERY	17,446				
	5,346	18,452	5/5			
	5,748	18,779				10.6-14 CLAY FEW GRAVEL FINE, MOIST, HIGH TOUGHNESS, HIGH PLASTICITY 10YR 3/1
	5,599	19,104				
	5,512	19,575				
10	5,431	WATER				
	5,276		4/4			
	5,193					
	5,196					
	5,061					
15	REFUSAL 14 FT BGS					
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: SB139
Geologist: CARL PIDGE PG	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 20 MAR 10	Date Completed: 20 MAR 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 15 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 6/8-INCH	Used? ☒ Yes ☐ No Volume _____ ☐ Neat Cement ☒ Bentonite Method of Installation TREMIE Depth: from _____ ft. to _____ ft.	Initial DRY ft Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	RADIOLOGICAL SCAN (CPM) DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	GROUND 4,403 CPM		5/5			0-0.5 RAILROAD GRAVEL COARSE, DRY LOOSE 10YR 2/1
	2,895	6,931				0.5-1.1 DRILLED THROUGH WOOD/ROOT
	3,406	14,842				1.1-10 CLAY, SOME SILT, LITTLE GRAVEL,
	3,742	18,505				10-11.5 SLOUGH
	NORECOVERY	18,944				
5	NORECOVERY	18,890				11.5-15 SILT LITTLE CLAY LITTLE GRAVEL FINE, DRY, MEDIUM DRY STRENGTH, 10YR 4/4 MOTTLES 10YR 5/6 AND 10YR 5/1
	2,663	19,141	5/5			
	3,131	19,650				
	3,301	19,511				
	3,733	15,132				NO TRANSITION ZONE TO BOREHOLE REFUSAL
10	3,810	CAVE	5/3.5			INCREASED GRAY 10YR 3/2 AT DEPTH STILL MOTTLES 10YR 5/6
	2,338					
	2,734					
	3,692					
	3,260					
15	3,147					
	REFUSAL 15 FT BGS					
20						

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB 200
Geologist: C. Pidge	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 8 DEC 09	Date Completed: 8 DEC 09
Surface Elev.: / Top of Casing Elev.: NA	Total Depth: REFUSAL 15 FT BGS	Well Depth: NA

Method of Drilling	Casing/Riser Type	Screen Portion of Well
☐ Hollow Stem ☒ Sonic	☐ Steel ☐ Threaded	Height above/ below surface
☐ Air Rotary ☐ Bucket Auger	☐ Galv ☐ Welded	Material
☐ MUD Rotary ☐ Flight Auger	☐ PVC ☐ Solvent	Diameter / Length
Hole Diameter:	☐ SS ☒ Welded	Set between ft and ft
	Drive Shoe? ☐ Yes ☐ No	Diameter / Slot size

Filter Pack	Annulus Seal	Grout
Size	☐ Bentonite Pellets / Chips	Used? ☒ Yes ☐ No Volume
Method of Install	☐	☐ Neat Cement ☒ Bentonite
Composition	Volume Used?	☐
Volume Used	Method of Instal.	Method of Instal. TREMIE
Depth to top of f.p.	Depth: from ft. to ft.	Depth: from ft. to ft.

Well Head Completion	Development	Static Water Level
☐ Flushmount ☐ Stand Up	Method	Initial 7 ft
Cap Type	Gallons Evacuated	Development ft.
Lock #	Date	24 hr. ft.
Volume Used	Odor	

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	9,072	GROUND CORE	DOWN HOLE			0-5 FT BGS		5/5			0-1.4 SILT LITTLE CLAY DRY MEDIUM STRENGTH 10YR 4/2
	3,239		25,501								
	2,990		20,708								1.4-9.9 SILT LITTLE CLAY DRY, FEW FINE GRAVEL. MEDIUM STRENGTH 10YR 4/3
	3,091		20,338								
	NO RECOVERY		19,118								
	NO RECOVERY		17,321								
5	2,400		18,736			5-10 FT BGS		5/5			9.9-13.6 FINE SAND FEW SILT, POORLY GRADED COBBLES TO FINE SAND WET, SLOW DILATANCY 10YR 4/1
	2,712		20,299								
	2,986		WATER								
	3,277										
10	3,284										

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB2000	
Geologist: C. Pidge	Driller/Company: KRIS LAUER / Frontz		
Drilling Equip.: Versa-Sonic		Date Start: 8 DEC 09	Date Completed: 8 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: REFUSAL 15 FT BGS	Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWNHOLE WATER			10-15 FT BGS		5/5			13.6-15 CLAY FEW FINE GRAVEL MOIST, MEDIUM TOUGHNESS 10YR 3/1
	2,136										
	2,469										
	2,837										
	2,815										
15	2,830										
	REFUSAL 15 FT BGS										
20											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB201
Geologist: C. Pidge	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 8 DEC 09	Date Completed: 8 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 15 FT BGS REFUSAL	Well Depth: NA

Method of Drilling	Casing/Riser Type	Screen Portion of Well
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 6-inch	☐ Steel ☐ Threaded ☐ Galv ☐ Welded ☐ PVC ☐ Solvent ☐ SS ☐ Welded Drive Shoe? ☐ Yes ☐ No Height above/ below surface Diameter	Material Diameter Length Set between ft and ft Slot size
Filter Pack	**Annulus Seal**	**Grout**
Size Method of Install Composition Volume Used Depth to top of f.p.	☐ Bentonite Pellets Chips ☐ Volume Used? Method of Instal. Depth: from ft. to ft.	Used? ☒ Yes ☐ No Volume ☐ Neat Cement ☒ Bentonite ☐ Method of Instal. MEMIE Depth: from ft. to ft.
Well Head Completion	**Development**	**Static Water Level**
☐ Flushmount ☐ Stand Up Cap Type Lock # Volume Used	Method Gallons Evacuated Date Odor	Initial DRY ft Development ft. 24 hr. ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	5,190 GROUND	CORE	DOWNHOLE			0-5 FT BGS		5/5			0-1.1 SILT LITTLE CLAY DRY MEDIUM STRENGTH 10YR 4/2 ~~MOTTLED 10YR 5/6~~
	2,579		17,679								
	2,624		19,226								1.1-9.4 SILT LITTLE CLAY DRY MEDIUM STRENGTH 10YR 4/2 MOTTLED 10YR 5/6
	2,946		19,420								
	2,970		17,988								
5	2,780		17,282			5-10 FT BGS		5/5			
	2,731		17,335								9.4-10.2 MEDIUM SAND FEW SILT DRY, LOOSE. LOW STRENGTH, 10YR 6/8
	2,972		16,041								
	3,147		17,162								
	2,954		19,158								
	2,922		20,459								
10											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB 2021
Geologist: C. Pidge	Driller/Company: KRIS LAUER / Frontz	
Drilling Equip.: Versa-Sonic	Date Start: 8 DEC 09	Date Completed: 8 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: REFUSAL 15 FT BGS / Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWNHOLE			10-15 FT BGS		5/5			10.2- 12.4 CLAYEY SILT LITTLE FINE GRAVEL MOIST, HIGH PLASTICITY 10YR 4/2 MOTTLED 10YR 5/6
	2,828		17,991								
	3,009		13,802								
	3,232		CAVE								
	3,255		↓								12.4-15 CLAY LITTLE FINE GRAVEL 10YR 3/1
15	2,932										
	REFUSAL 15 FT BGS										
20											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB202
Geologist: S. Deeter	Driller/Company: K. Lower / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 12/14/09	Date Completed: 12/14/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 15.0 / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6" / 8"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface: ____

Diameter: ____

Screen Portion of Well

Material ____

Diameter ____ Length ____

Set between ____ ft and ____ ft

Slot size ____

Filter Pack

Size ____

Method of Install ____

Composition ____

Volume Used ____

Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ ____

Volume Used? ____

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume ____

☐ Neat Cement ☒ Bentonite

☐ ____

Method of Instal. Pressure Tremie

Depth: from 0 ft. to 20.0 ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____

Lock # ____

Volume Used ____

Development

Method ____

Gallons Evacuated ____

Date ____

Odor ____

Static Water Level

Initial NE ft

Development — ft.

24 hr. — ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	6084							—			0-1.0
	2583		18050					4/5			Silt / Clay moist. med stiff, med dry strength, no dilatancy, med toughness, med to high plasticity, 7.5YR 4/1 (dark reddish gray), rootlets.
	2838		19833								
	2839		20202								
	2751		18989								
5	—		17817					—			
	2179		17487					5/5			
	2650		17528								
	2519		19255								
	2563		15578								
10	2506		12082					—			

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SD202	
Geologist: S. Deeter	Driller/Company: K. Lauen / Frontz		
Drilling Equip.: Versa-Sonic		Date Start: 12/14/09	Date Completed: 12/14/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 15.0	Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type Rope (spoon)	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10											1.0 – 12.3
	2141	CAVE									silt/clay. s. moist to
	2255							5/5			dry, stiff, med to
	2148										high dry strength, med
	2100										toughness, no dilatancy,
15	2034										med plasticity. 7.5YR 5/3
								refusal			(brown). Mottled w/ some
											2.5YR 4/6 (dark red) silt
20											lenses. Some subangular
											sand and gravel (<25%)
											some bedding/joints.
											12.3 – 15.0
											Sandy Clay w/ Gravel
											Dry to wet @ depth. med
											stiff to med dense, low
											dry strength, no to slow
											dilatancy, low toughness,
											low plasticity, 2.5YR 6/1
											(reddish gray). Estimate
											50% Sand, 10% Gravel, 40%
											Clay, Poorly Sorted/Well graded.
											Gravel to <0.5", subangular

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB 203
Geologist: C. Pidge	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 8 DEC 09	Date Completed: 8 DEC 09
Surface Elev.: / Top of Casing Elev.: NA	Total Depth: 15 FT BGS	Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☑ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: _____

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☑ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface _____

Diameter _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets _____ Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☑ Yes ☐ No Volume _____

☐ Neat Cement ☑ Bentonite

☐ _____

Method of Instal. TREMIE

Depth: from _____ ft. to _____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial DRY ft

Development _____ ft.

24 hr. _____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	6,593	CORE	GROUND POUNDER			0-5 FT BGS		5/4			DRILLED 8 DEC 09 LOGGED/SAMPLED 9 DEC 09
	3,289		24,362								0-0.9 SILT SOME CLAY MOIST HIGH TOUGHNESS HIGH PLASTICITY GRASS ROOTS 10YR 4/2
	2,967		20,909								
	3,087		19,613								0.9-11.8 SILT SOME CLAY FEW FINE GRAVEL MOIST HIGH TOUGHNESS HIGH PLASTICITY 10YR 4/2 MOTTLED 10YR 5/8
	2,933		18,606								
5	NO RECOVERY		17,819								
	2,626		17,765			5-10 FT BGS		5/5			
	2,983		17,937								
	3,114		17,731								
	3,130		19,503								
10	2,985		20,322								

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB 203
Geologist: C. Pidge	Driller/Company: KRIS LAMAR / Frontz	
Drilling Equip.: Versa-Sonic	Date Start: 8 DEC 09	Date Completed: 8 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 15 FT BGS / Well Depth: NA

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWNHOLE								11.8-15 CLAY FEW SILT FEW FINE GRAVEL MOIST HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/1
	2.8	39	18,244			10-15 FT BGS		5			
	3.1	44	13,550								
	3.1	19	13,575								
	3.1	35	CAVE								
15	2.8	45	↓								
	REFUSAL 15 FT BGS										
20											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB-2X04
Geologist: C. Pidge	Driller/Company: DAVE SCHREECKOST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 8 DEC 09	Date Completed: 8 DEC 09
Surface Elev.: / Top of Casing Elev.: NA	Total Depth: 16 FT BGS	Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: _____

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface _____

Diameter _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets _____ Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

☐ _____

Method of Instal. Tremie

Depth: from _____ ft. to _____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial 5 ft

Development _____ ft.

24 hr. _____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	DRILLED 8 DEC 09 LOGGED/SAMPLED 9 DEC 09 Descriptions and Comments
0	6,155	CONC	GROUND DOWN HOLE					5/5			0-1.2 SILT SOME CLAY MOIST HIGH TOUGHNESS HIGH PLASTICITY 10YR 4/2 CAPILLARY ROOTS
	3,235		22,369								
	3,007		20,497								
	3,065		19,578								1.2-11.5 SAME NO ROOTS 10YR 4/2 MOTTLED 10YR 5/8
	3,138		18,000								
5	3,033		15,782								
	3,024		WATER								
	3,115		↓					5/5			
	3,340										
	3,398										
10	3,139										

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP		Boring/Well #: SB 204
Geologist: C. Pidge	Driller/Company: DAVE SCHREEUBOST / Frontz		
Drilling Equip.: Versa-Sonic		Date Start: 8 DEC 09	Date Completed: 8 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 16 FT BGS	Well Depth: NA

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CONE		DOWNHOLE					5/5		11.5 – 16	CLAY FEW COARSE GRAVEL HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/1
	3,119		WATER								
	3,371										
	3,323										
	3,399										
	3,386										
15	~~NO READING~~							1/1			
	~~REFUSAL 16 FT BGS~~										

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB205
Geologist: C. Pidge	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 9 DEC 09	Date Completed: 9 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 17.5 FT BGS / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem
- ☒ Sonic
- ☐ Air Rotary
- ☐ Bucket Auger
- ☐ MUD Rotary
- ☐ Flight Auger

Hole Diameter: 6-inch

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Height above/below surface: ____

Diameter: ____

Drive Shoe? ☐ Yes ☐ No

Screen Portion of Well

Material ____

Diameter ____ Length ____

Set between ____ ft and ____ ft

Slot size ____

Filter Pack

Size ____

Method of Install ____

Composition ____

Volume Used ____

Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ ____

Volume Used? ____

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume ____

☐ Neat Cement ☒ Bentonite

☐ ____

Method of Instal. TREMIE

Depth: from ____ ft. to ____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____

Lock # ____

Volume Used ____

Development

Method ____

Gallons Evacuated ____

Date ____

Odor ____

Static Water Level

Initial 10 ft

Development ____ ft.

24 hr. ____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	DRILLED 9 DEC 09 LOGGED/SAMPLED 10 DEC 09 Descriptions and Comments
0	5,988	GRAB						4/5			0-1.6 SILT LITTLE CLAY CAPILLARY ROOTS DRY MEDIUM STRENGTH HIGH PLASTICITY 10YR 3/2
	CORE	DOWNHOLE									
	3,177	21,047									
	2,862	19,768									
	3,050	17,961									
	2,956	18,226									1.6-12.7 SILT LITTLE CLAY, FEW TO LITTLE FINE GRAVEL WITH DEPTH MOIST 10YR 4/3 MOTTLED 10YR 5/8
5	NO RECOVERY	17,836									
	2,866	18,043						5/5			
	3,077	17,888									
	3,275	17,571									
	3,158	17,432									
10	3,188	16,921									

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB205	
Geologist: C. Pidge	Driller/Company: KRIS LAUER / Frontz		
Drilling Equip.: Versa-Sonic	Date Start: 9 DEC 09	Date Completed: 9 DEC 09	
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 17.5 FT BGS	Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWNHOLE								12.7 - 17.5 CLAY LITTLE FINE TO COARSE GRAVEL MOIST, HIGH PLASTICITY 10YR 3/1
	2,876		WATER				2.5/2.5				
	3,027										
	3,194										
	3,260										
15	3,220										
	3,157										
	2,902										
	1,660										
	REFUSAL 17.5 FT BGS										
20											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB206
Geologist: C. Pidge	Driller/Company: KRIS LAWAL / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 9 DEC 09	Date Completed: 9 DEC 09
Surface Elev.: / Top of Casing Elev.: NA	Total Depth: 15 FT BGS	Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6-inch

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/ below surface: _____

Diameter: _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets _____ Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

☐ _____

Method of Instal. TREMIE

Depth: from _____ ft. to _____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial DRY ft

Development _____ ft.

24 hr. _____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	DRILLED 9 DEC 09 LOGGED/SAMPLED 10 DEC 09 Descriptions and Comments
0	5,670	GRAB COAL	GRAB DOWNHOLE			0-5 FT BGS		5/4			0-1.1 SILT LITTLE CLAY FEW COARSE SAND, 1 CAPILLARY ROOTS, DRY, MEDIUM STRENGTH MEDIUM TOUGHNESS 10YR 3/3 12.6
	2,421		19,881								
	2,436		19,901								
	2,552		18,483								
	2,242		17,730								
5	NO RECOVERY		17,961								
	1,926		18,033			5-10 FT BGS		5/5			1.1-13.6 SILT LITTLE CLAY, FEW FINE GRAVEL, DRY, ST 10YR 4/3 MOTTLED 10YR 5/8 MEDIUM TOUGHNESS
	2,155		18,026								
	2,272		17,983								
	2,186		17,753								
10	2,156		17,397								

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB2Q6	
Geologist: C. Pidge	Driller/Company: KRUSLAND / Frontz		
Drilling Equip.: Versa-Sonic	Date Start: 9 DEC 09	Date Completed: 9 DEC 09	
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 15 FT BGS	Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWNHOLE			10-15 FT BGS		5/5			~~13.6~~ 15 CLAY FEW FINE
	2,103		17,423								12.6 GRAVEL MOIST
	2,000		CANE								HIGH TOUGHNESS HIGH
	2,102										PLASTICITY 10YR 3/1
	2,246										
15	2,146										
	REFUSAL 15 FT BGS										
20											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB207
Geologist: C. Pidge	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 4 DEC 09	Date Completed: 4 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem
- ☒ Sonic
- ☐ Air Rotary
- ☐ Bucket Auger
- ☐ MUD Rotary
- ☐ Flight Auger

Hole Diameter: _____

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/ below surface _____

Diameter _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets _____ Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

☐ _____

Method of Instal. TREMIE

Depth: from _____ ft. to _____ ft.

Well Head Completion

- ☐ Flushmount
- ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial 16 ft

Development _____ ft.

24 hr. _____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	Grams 5,209 clay					0-5 FT BGS		5/5			0-2.7 SILT LITTLE CLAY DRY, MEDIUM STRENGTH 10YR 2/2
	cont 2,852		20,524								
	2,970		20,278								
	3,113		18,363								2.7-13.2 SILT LITTLE CLAY DRY, MEDIUM STRENGTH, LITTLE FINE GRAVEL 10YR 4/2 MOTTLED 10YR 5/8
	3,074		18,430								
	2,823		18,096								
5	2,848		18,036			5-10 FT BGS		5/5			
	3,026		18,306								
	3,088		18,377								
	3,094		18,612								
	3,023		17,918								
10											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB207	
Geologist: C. Pidge	Driller/Company: KRIS LAUER / Frontz		
Drilling Equip.: Versa-Sonic	Date Start: 4DEC09	Date Completed: 4DEC09	
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS	Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWNHOLE			10-15 FT BGS		5			13.2-20 CLAY TRACE SILT WET TO MOIST COARSE SAND 10YR 3/1
	2,910		17,461								
	3,126		17,891								
	2,971		18,946								
	3,107		19,046								
	3,109		19,143								
15	2,703		13,622			15-20 FT BGS		5			
	2,762		WATER								
	2,681										
	2,871										
20	2,837										
	TERMINATED 20 FT BGS										

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB 208
Geologist: C. Pidge	Driller/Company: DAVE SCHREECENROST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 9DEC09	Date Completed: 9DEC08
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem
- ☒ Sonic
- ☐ Air Rotary
- ☐ Bucket Auger
- ☐ MUD Rotary
- ☐ Flight Auger

Hole Diameter: 6 inch

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface: _____

Diameter: _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets _____ Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

☐ _____

Method of Instal. Tremie

Depth: from _____ ft. to _____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial 15 ft

Development _____ ft.

24 hr. _____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
											DRILLED 9DEC09 LOGGED / SAMPLED 10 DEC09
0	4,654	CORE	GROUND DOWNHOLE			0-5 FT BGS		3/4			0-1.3 SILT LITTLE CLAY, FEW COARSE SAND, CAPILLARY ROOTS, DRY MEDIUM STRENGTH MEDIUM TOUGHNESS 10YR 3/3
	1,960		16,042								
	2,029		18,595								
	1,971		18,945								
	2,008		16,990								
	NORMALLY		17,926								
5	2,767		18,561			5-10 FT BGS		5/5			1.3-13.6 SILT LITTLE CLAY FEW FINE GRAVEL MOIST, 10YR 4/3 MOTTLED 10YR 5/8
	2,924		18,540								
	3,072		16,657								
	3,144		13,700								
10	3,145		14,252								

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP		Boring/Well #: SB 208
Geologist: C. Pidge	Driller/Company: DAVE SCHNEEBERGER / Frontz		
Drilling Equip.: Versa-Sonic		Date Start: 9 DEC 09	Date Completed: 9 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS	Well Depth: NA

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWNHOLE			10-15 FT BGS		5/5			13.6-20 CLAY FROM COARSE GRAVEL MOIST HIGH TOUGHNESS HIGH PLASTICITY 10 YR 3/1
	2,869		17,429								
	2,822		17,823								
	3,030		19,431								
	2,946		16,06								
15	2,474		WATER			15-20 FT BGS		5/5			
	2,063										
	1,899										
	1,684										
	1,773										
20	1,899										
	TERMINATED					20 FT BGS					

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB209
Geologist: C. Pidge	Driller/Company: DAVE SCHREGENGOST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 9DEC09	Date Completed: 9DEC09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6-inch

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/below surface: ____

Diameter: ____

Screen Portion of Well

Material ____

Diameter ____ Length ____

Set between ____ ft and ____ ft

Slot size ____

Filter Pack

Size ____

Method of Install ____

Composition ____

Volume Used ____

Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ ____

Volume Used? ____

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume ____

☐ Neat Cement ☒ Bentonite

☐ ____

Method of Instal. TREMIE

Depth: from ____ ft. to ____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____

Lock # ____

Volume Used ____

Development

Method ____

Gallons Evacuated ____

Date ____

Odor ____

Static Water Level

Initial 5 ft

Development ____ ft.

24 hr. ____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
											DRILLED 9 DEC 09 LOGGED/SAMPLED 10 DEC 09
0	4,737	CORE	GROUND DOWNHOLE			0-5 FT BGS		5/4			0-1.5 SILT LITTLE CLAY, SOME COARSE SAND, CAPILLARY ROOTS DRY, MAXIMUM STRENGTH, HIGH TOUGHNESS 10YR 3/2
	2,151		18,142								
	2,375		19,359								
	2,407		18,310								
	2,135		18,014								
5	NO RECOVERY WATER										1.5-12.9 SILT LITTLE CLAY, LITTLE FINE GRAVEL MOIST 10YR 4/3 MOTTLED 10YR 5/8
	2,279					5-10 FT BGS		5/5			
	2,609										
	2,622										
	2,357										
10	2,194										

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB289
Geologist: C. Pidge	Driller/Company: DAVE SCHNEGGOST / Frontz	
Drilling Equip.: Versa-Sonic	Date Start: 9 DEC 09	Date Completed: 9 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWNHOLE								12.9-20 CLAY, FEW COARSE GRAVEL MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/1
	2,465		WATER			10-15 FT BGS		5/5			
	2,574										
	2,622										
	2,749										
15	2,478										
	2,390					15-20 FT BGS		5/5			
	2,596										
	2,759										
	2,773										
20	2,404										
	TERMINATED 20 FT BGS										

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB210
Geologist: S. Deeter	Driller/Company: D Shreckengost / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 12/14/09	Date Completed: 12/14/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20.0 / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6" / 8"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/ below surface: ____

Diameter: ____

Screen Portion of Well

Material ____

Diameter ____ Length ____

Set between ____ ft and ____ ft

Slot size ____

Filter Pack

Size ____

Method of Install ____

Composition ____

Volume Used ____

Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ ____

Volume Used? ____

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume ____

☐ Neat Cement ☒ Bentonite

☐ ____

Method of Instal. pressure tremie

Depth: from 0 ft. to 20.0 ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____

Lock # ____

Volume Used ____

Development

Method ____

Gallons Evacuated ____

Date ____

Odor ____

Static Water Level

Initial NE ft

Development — ft.

24 hr. — ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	~~Radiological Scan Reading (cpm)~~ Core	~~Sample Type~~ Bgr (cpm)	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	4786	—						—			0 – 1.0
	2519	18452						4/5			Silt/Clay. moist. med stiff, med dry strength, no dilatancy, med toughness, med to high plasticity, 7.5YR 4/1 (dark reddish gray), rootlets
	2775	20411									
	2827	19430									
	2696	18435									
5	—	18298						—			
	2550	17970									
	2483	17919						5/5			
	2595	17841									
	2699	18115									
10	2416	17896						—			

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB210	
Geologist: S. Deeter	Driller/Company: D. Shreckengost / Frontz		
Drilling Equip.: Versa-Sonic		Date Start: 12/14/09	Date Completed: 12/14/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20.0	Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10											1.0 – 11.8
	2704	16775									Silt / Clay. S. moist to
	2717	17549						5/5			dry, stiff, med to high
	2672	18934									dry strength, med toughness,
	2522	18182									no dilatancy, med plasticity,
15	2321	17622									7.5YR 5/3 (brown), mottled
	2706	16729						5/5			w/ some 2.5YR 4/6 (dark
	2696	11523									red) silt lenses. Some
	2478	CAVE									sub angular sand and
	2301	↓									gravel (<25%), some
20	2386										Bedding / Joints.
											11.8 – 20.0
											Sandy Clay. S. moist
											to dry. med to high dry
											strength, med to high toughness,
											no dilatancy, med to high
											plasticity. 2.5YR 5/1 (dark
											reddish gray). Sand is
											sub angular to subrounded,
											fine to coarse.
											Subangular gravel @ 19.8, wet.

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB211
Geologist: C. Pidge	Driller/Company: SCHMECKENBOST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 10 DEC 09	Date Completed: 10 DEC 09
Surface Elev.: / Top of Casing Elev.: NA	Total Depth: 20 FT BLS	Well Depth: NA

Method of Drilling	Casing/Riser Type	Screen Portion of Well
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 6-inch	☐ Steel ☐ Threaded ☐ Galv ☐ Welded ☐ PVC ☐ Solvent ☐ SS ☐ Welded Drive Shoe? ☐ Yes ☐ No Height above/below surface Diameter	Material Diameter / Length Set between ft and ft Slot size
Filter Pack	**Annulus Seal**	**Grout**
Size Method of Install Composition Volume Used Depth to top of f.p.	☐ Bentonite Pellets Chips ☐ Volume Used? Method of Instal. Depth: from ft. to ft.	Used? ☒ Yes ☐ No Volume ☐ Neat Cement ☒ Bentonite ☐ Method of Instal. TREMIE Depth: from ft. to ft.
Well Head Completion	**Development**	**Static Water Level**
☐ Flushmount ☐ Stand Up Cap Type Lock # Volume Used	Method Gallons Evacuated Date Odor	Initial DRY ft Development ft. 24 hr. ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	5,277	CORE	Grouns Down Hole					5/5			0-1.5 SILT LITTLE CLAY CAPILLARY ROOTS DRY MEDIUM STRENGTH HIGH PLASTICITY 10YR 3/2
	2,506		17,990								
	2,625		19,379								
	2,815		18,240								
	2,570		17,539								1.5-12.6 SILT LITTLE CLAY, LITTLE FINE GRAVEL, MOIST 10YR 4/3 MOTTLED 10YR 5/8
5	2,451		17,732								
	2,438		18,168					5/5			
	2,488		17,857								
	2,424		17,053								
	2,105		17,742								
10	2,289		17,697								

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB 211
Geologist: C. Pidge	Driller/Company: SCHREECENGOST / Frontz	
Drilling Equip.: Versa-Sonic	Date Start: 10 DEC 09	Date Completed: 10 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWNHOLE								12.6-20 CLAY LITTLE COARSE GRAVEL MOIST HIGH PLASTICITY 10YR 3/1
	2,286		18,399					5/5			
	2,678		20,147								
	2,728										
	2,578										
	2,452										
15	2,329							5/5			
	2,421										
	2,392										
	2,177										
	1,991										
20	TERMINATED 20 FT BGS										

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB212
Geologist: S. Deeter	Driller/Company: Kris Lauer / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 12/14/09	Date Completed: 12/14/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 15.0 / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6" / 8"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/ below surface: ____

Diameter: ____

Screen Portion of Well

Material ____

Diameter ____ Length ____

Set between ____ ft and ____ ft

Slot size ____

Filter Pack

Size ____

Method of Install ____

Composition ____

Volume Used ____

Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ ____

Volume Used? ____

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume ____

☐ Neat Cement ☒ Bentonite

☐ ____

Method of Instal. Pressure Tremie

Depth: from 0 ft. to 15.0 ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____

Lock # ____

Volume Used ____

Development

Method ____

Gallons Evacuated ____

Date ____

Odor ____

Static Water Level

Initial ~8 ft

Development — ft.

24 hr. — ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	~~Sample Type~~ Bore (cpm)	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ift	USCS Class	Contact-Depth	Descriptions and Comments
0	5285	—						—			0-1.0
	2532	18172						4/5			Silt / Clay. moist.
	2684	19470									med stiff, med dry strength,
	2811	19141									no dilatancy, med toughness,
	2680	18521									med to high plasticity, 7.5YR 4/1
5	—	18347						—			(dark reddish gray), rootlets
	2136	17682									
	2247	20397						5/5			
	2958	water									
	2707	↓									
10	2568							—			

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB 212	
Geologist: S. Deeter	Driller/Company: Kais Lauer / Frontz		
Drilling Equip.: Versa-Sonic		Date Start: 12/14/09	Date Completed: 12/14/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 15.0	Well Depth: NA

DRILLING	SAMPLE							GEOLOGIC LOG			
				Blow Count							
Depth	Core Radiological Scan Reading (cpm)	~~Sample Type~~ Core (cpm)	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10		WATER									1.0 - 9.8
	2181	↓									Silt/clay. S. moist to dry,
	2362							5/5			stiff, med to high dry
	2324										strength, med toughness,
	2351										med plasticity, 7.5YR 5/3
15	2140										(brown), mottled w/
								Refusal			some 2.5YR 4/6 (dark red)
											silt lenses. Trace sub
20											angular sand.
											9.8 - 15.0
											Sandy Clay. S. moist.
											stiff, med to high dry
											strength, med to high
											toughness, no dilatancy,
											med to high plasticity.
											2.5YR 5/1 (dark reddish
											gray) Sand is subangular
											to subrounded (< 10%),
											fine to med. Trace of
											angular gravel (< 1.0D) @ 15.0 ft.
											Sand Seam @ 14.8-14.9.

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB213
Geologist: S. Deeter	Driller/Company: Kris Lauer / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 12/14/09	Date Completed: 12/14/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 15.0	Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6" / 8"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☒ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/ below surface: ____

Diameter: ____

Screen Portion of Well

Material ____

Diameter ____ Length ____

Set between ____ ft and ____ ft

Slot size ____

Filter Pack

Size ____

Method of Install ____

Composition ____

Volume Used ____

Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ ____

Volume Used? ____

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume ____

☐ Neat Cement ☒ Bentonite

☐ ____

Method of Instal. tremie

Depth: from 0 ft. to ____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____

Lock # ____

Volume Used ____

Development

Method ____

Gallons Evacuated ____

Date ____

Odor ____

Static Water Level

Initial NE ft

Development — ft.

24 hr. — ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	~~Sample Type~~ Core Bore (cpm)	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	5984	1						—			0 – 1.2
	2213	17272						4.5			Clay/Silt. s. moist. stiff med to high dry strength, no dilatancy, med toughness, med to high plasticity. 2.5YR 7/1 (reddish brown), Rootlets
	2477	20079									
	2601	19172						5			
	2527	17905									
5	2312	17543						—			
	2461	17157						4.5			
	2599	16338						5			
	2409	16968						5			
	2497	18351									
10	2081	20019						—			

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB213	
Geologist: S. Deeter	Driller/Company: Kris Lauer / Frontz		
Drilling Equip.: Versa-Sonic	Date Start: 12/14/09	Date Completed: 12/14/09	
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 15.0	Well Depth: NA

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm) core	~~Sample Type~~ Base (cpm)	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10											12.0 – 12.3
	2267	CAVE									Silt/clay. S. moist to dry, stiff to v. stiff, med to high dry strength, no dilatancy, med to high toughness, med to high plasticity. 7.5YR5/3 (brown). Mottled w/ 2.5YR4/8 (dark red) silt seams. Trace (<5%) fine to med subrounded sand.
	2543	↓						5/5			
	2265										
	2284										
15	2055										
								Refusal @ 15.0 ft.			
20											
		Drilled 12/14/09									12.3 – 15.0
		Sampled 12/15/09									Clay. Dry to moist. Stiff to v. stiff. High dry strength, no dilatancy, high toughness, high plasticity (2.5YR4/1, dark reddish gray). Fat clay. trace (<5%) subangular med sand. Limestone cobble @ 14 feet (3"D)

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB214
Geologist: S. Deeter	Driller/Company: D. Shreckengost / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 12/14/09	Date Completed: 12/14/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20.0 / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☒ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: 6" / 8"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/ below surface: ____

Diameter: ____

Screen Portion of Well

Material ____

Diameter ____ Length ____

Set between ____ ft and ____ ft

Slot size ____

Filter Pack

Size ____

Method of Install ____

Composition ____

Volume Used ____

Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ ____

Volume Used? ____

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume 20 gals

☐ Neat Cement ☒ Bentonite 75#s

☐ ____

Method of Instal. tremie

Depth: from 0 ft. to 2 ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____

Lock # ____

Volume Used ____

Development

Method ____

Gallons Evacuated ____

Date ____

Odor ____

Static Water Level

Initial ~10 ft

Development — ft.

24 hr. — ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm) (Core)	Sample Type (Bore (cpm))	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	5029							—			0 – 1.8
	2174	19942									Clay / silt, s. moist, stiff,
	2269	19654						4/5			med to high dry strength,
	2318	17265									no dilatancy, med toughness,
	2130	17750									med to high plasticity.
5	—	17876						—			2.5YR 3/1 (reddish brown),
	2137	17791									rootlets
	2162	15740						5/5			
	2013	WATER									
	2452	↓									
10	2230							—			

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB214	
Geologist: S. Deeter	Driller/Company: D. Shneckengost / Frontz		
Drilling Equip.: Versa-Sonic	Date Start: 12/14/09	Date Completed: 12/14/09	
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20.0	Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm) Core	Sample Type Bore (cpm)	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10		WATER									1.8 – 14.5
	2215							5/5			Silt / Clay. s. moist to dry, stiff to very stiff, med to high dry strength, no dilatancy, med to high toughness, med to high plasticity. 7.5YR5/1 (brown) mottled w/ 2.5YR4/8 (dark red) silt seams. Trace (<5%) sand (fine to coarse) subrounded.
	2215										
	2125										
	2434										
15	2327										
	2279							5/5			
	2345										
	2125										
	2550										
20	2517										
~~20~~											
				Drilled 12/14/09							14.5 – 20.0
				Sampled 12/15/09							Sandy Gravelly Clay. s. moist to moist @ 20.0 ft. v. stiff to soft @ 20.0 ft. no dilatancy, med to high toughness, med to high plasticity, 7.5YR5/1 (reddish gray). Grades from <25% subangular to subrounded (fine to coarse) sand and gravel (<0.5"D) to <5% sand at 20.0 ft. Some mottling at ~16 feet (7.5YR5/4, weak red)

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB215
Geologist: S. Deeter	Driller/Company: D. Shreckengost / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 12/14/09	Date Completed: 12/14/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20.0 / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem
- ☒ Sonic
- ☐ Air Rotary
- ☐ Bucket Auger
- ☐ MUD Rotary
- ☐ Flight Auger

Hole Diameter: 6" / 8"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/ below surface: _____

Diameter: _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

☐ _____

Method of Instal. Pressure Tremie

Depth: from 0 ft. to _____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial NE ft

Development — ft.

24 hr. — ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	~~Radiological Scan Reading (cpm)~~ core	~~Sample Type~~ Base (cpm)	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	4852										0 – 1.8
	2111	18720						5/5			Clay / Silt, s.moist,
	2440	19681									stiff, med to high dry
	2669	18762									strength, no dilatancy,
	2549	17411									med toughness, med to
5	2280	17132						—			high plasticity, 2.5YR3/1
	1870	17269									(reddish brown), rootlets.
	2206	18159						5/5			
	2302	17956									
	2370	17495									
10	2186	16053						—			

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB215	
Geologist: S. Deeter	Driller/Company: D. Shreckengost / Frontz		
Drilling Equip.: Versa-Sonic	Date Start: 12/14/09	Date Completed: 12/14/09	
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20.0	Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm) (core)	Sample Type (base (cpm))	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10		~~1631~~									1.8 – 11.8
	2216	16313									Silt / Clay, s. moist to dry, stiff, med to high dry strength, no dilatancy, med toughness, med to high plasticity, 7.5YR 5/3 (brown). Mottled w/ 2.5YR 4/8 (dark red) silt seams.
	2193	16893						5/5			
	2261	CAVE									
	2227										
15	2183										
	2438										
	2637							5/5			
	2703										
	2617										
20	2557										
		Drilled 12/14/09, sampled 12/15/09									11.8 – 20.0
											Sandy, gravelly clay. s. moist to moist @ 20.0. ~~hard to~~ v. stiff to soft @ 20.0 ft. no dilatancy, med to high toughness, med to high plasticity, 7.5YR 5/1 (reddish gray). Grades from <25% subangular sand and gravel (<0.5" D) to <5% sand @ 20.0 feet. Some mottling at 15.0 – 18.0 (7.5YR 5/4, weak red)

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB216
Geologist: S. Deeter	Driller/Company: D Smedkengost / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 12/14/09	Date Completed: 12/14/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20.0 / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem
- ☒ Sonic
- ☐ Air Rotary
- ☐ Bucket Auger
- ☐ MUD Rotary
- ☐ Flight Auger

Hole Diameter: 6" / 8"

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/ below surface: ____

Diameter: ____

Screen Portion of Well

Material ____

Diameter ____ Length ____

Set between ____ ft and ____ ft

Slot size ____

Filter Pack

Size ____

Method of Install ____

Composition ____

Volume Used ____

Depth to top of f.p. ____

Annulus Seal

☐ Bentonite Pellets ____ Chips ____

☐ ____

Volume Used? ____

Method of Instal. ____

Depth: from ____ ft. to ____ ft.

Grout

Used? ☒ Yes ☐ No Volume ____

☐ Neat Cement ☒ Bentonite

☐ ____

Method of Instal. pressure tremie

Depth: from 0 ft. to 20.0 ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type ____

Lock # ____

Volume Used ____

Development

Method ____

Gallons Evacuated ____

Date ____

Odor ____

Static Water Level

Initial ~16 ft

Development — ft.

24 hr. — ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	~~Sample Type~~ Rad (cpm)	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ift	USCS Class	Contact-Depth	Descriptions and Comments
0	4909	—						—			0 - 1.5
	2484	18880									Silt / Clay - moist.
	2643	20023						5/5			med stiff, med dry
	2625	20084									strength, no dilatancy,
	2556	19196									med toughness, med to
5	2310	18683						—			high plasticity, 7.5YR4/1
	2555	18072						5/5			(dark reddish gray),
	2535	17545									rootlets.
	2478	16926									
	2531	16722									
10	2157	16935						—			

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB 216	
Geologist: S. Deeter	Driller/Company: D. Schreckengost / Frontz		
Drilling Equip.: Versa-Sonic		Date Start: 12/14/09	Date Completed: 12/14/09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20.0	Well Depth: NA

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	~~Core~~ Radiological Scan Reading (cpm)	~~Sample Type~~ Bore (cpm)	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10								—			1.5 - 11.8
	2325	17349									Silt/Clay. s. moist to
	2392	17007						5/5			dry. stiff, med to high
	2443	12952									dry strength, med toughness,
	2404	14318									med plasticity, 7.5YR5/3
15	2378	WATER						—			(brown), mottled w/
	2147										some silt lenses, 2.5YR4/6
	2708							5/5			(dark red). trace sub
	2707										angular sand.
	2323										
20	2136							—			11.8 - 20.0
											Sandy clay. s. moist.
											stiff, med to high dry
											strength, med to high
											toughness, no dilatancy,
											med to high plasticity,
											2.5YR5/1 (dark reddish
											gray) Sand is subangular
											to subrounded, <10%,
											fine to med. trace angular
											gravel to <1.0"D at 20.0 ft.

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB217
Geologist: C. Pidge	Driller/Company: Kris Lauer / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 7 Dec 09	Date Completed: 7 Dec 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 15 FT BGS / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem ☐ Sonic
- ☐ Air Rotary ☐ Bucket Auger
- ☐ MUD Rotary ☐ Flight Auger

Hole Diameter: _____

Casing/Riser Type

- ☐ Steel ☐ Threaded
- ☐ Galv ☐ Welded
- ☐ PVC ☐ Solvent
- ☐ SS ☐ Welded

Drive Shoe? ☐ Yes ☐ No

Height above/ below surface _____

Diameter _____

Screen Portion of Well

Material _____

Diameter _____ Length _____

Set between _____ ft and _____ ft

Slot size _____

Filter Pack

Size _____

Method of Install _____

Composition _____

Volume Used _____

Depth to top of f.p. _____

Annulus Seal

☐ Bentonite Pellets _____ Chips _____

☐ _____

Volume Used? _____

Method of Instal. _____

Depth: from _____ ft. to _____ ft.

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

☐ _____

Method of Instal. TREMIE

Depth: from _____ ft. to _____ ft.

Well Head Completion

☐ Flushmount ☐ Stand Up

Cap Type _____

Lock # _____

Volume Used _____

Development

Method _____

Gallons Evacuated _____

Date _____

Odor _____

Static Water Level

Initial DRY ft

Development _____ ft.

24 hr. _____ ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	4,205	Grab CORE	DOWNHOLE			0-5 FT BGS		3/2			0-1.1 ORGANIC APPEARS AS PEAT, DRY LOOSE 10YR 3/2
	2,965		17,666								
	3,025		19,950								1.1-11.8 SILT LITTLE CLAY MOIST MEDIUM STRENGTH TRACE COARSE SAND 10YR 4/3 MOTTLED 10YR 5/8
	NO RECOVERY		18,829								
	NO RECOVERY		17,968								
	NO RECOVERY		17,452								
5	2,946		17,180			5-10 FT BGS		5/5			
	2,877		17,871								
	3,083		17,613								
	2,993		18,662								
10	2,994		19,964								

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB217	
Geologist: C. Pidge	Driller/Company: KRIS LAUER / Frontz		
Drilling Equip.: Versa-Sonic	Date Start: 7 DEC 09	Date Completed: 7 DEC 09	
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 15 FT BGS	Well Depth: NA

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWNHOLE			10-15 FT BGS		5/5			11.8-15 CLAY FEW ~~GRAVEL~~ ~~SAND~~ FINE GRAVEL MOIST 10YR 3/1
	2,787		20606								
	3,041		20364								
	2,950		18,057								
	2,895		CAVE								
	2,868		↓								
15	REFUSAL				15 FT BGS						
20											

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB218
Geologist: C. Pidge	Driller/Company: Kris Lauer / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 10 DEC 09	Date Completed: 10 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 17 FT BGS	Well Depth: NA

Method of Drilling	Casing/Riser Type	Screen Portion of Well
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter:	☐ Steel ☐ Threaded ☐ Galv ☐ Welded ☐ PVC ☐ Solvent ☐ SS ☐ Welded Drive Shoe? ☐ Yes ☐ No Height above/below surface Diameter	Material Diameter Length Set between ft and ft Slot size
Filter Pack	**Annulus Seal**	**Grout**
Size Method of Install Composition Volume Used Depth to top of f.p.	☐ Bentonite Pellets Chips ☐ Volume Used? Method of Instal. Depth: from ft. to ft.	Used? ☒ Yes ☐ No Volume ☐ Neat Cement ☒ Bentonite ☐ Method of Instal. TREMIE Depth: from ft. to ft.
Well Head Completion	**Development**	**Static Water Level**
☐ Flushmount ☐ Stand Up Cap Type Lock # Volume Used	Method Gallons Evacuated Date Odor	Initial 10 ft Development ft. 24 hr. ft.

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	DRILLED 10 DECEMBER 2009 LOGGED/SAMPLED 11 DECEMBER 2009 Descriptions and Comments
0	5,050 COR	GRAVEL DOWNHOLE						5/4			0 - 1.4 SILT LITTLE CLAY FEW COARSE SAND DRY CAPILLARY ROOTS MEDIUM STRENGTH 10YR 4/2
	2,501	18,828									
	2,544	20,059									
	2,605	18,600									
	2,452	17,647									
	NO RECOVERY	17,379									1.4-13.4 SILT LITTLE CLAY LITTLE COARSE SAND MOIST HIGH PLASTICITY 10YR 4/2 MOTTLED 10YR 5/8 & 10YR 2/2
5	2,232	16,977									
	2,336	17,776						5/5			
	2,511	17,701									
	2,590	17,753									
10	2,604	15,894									

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: SB218	
Geologist: C. Pidge	Driller/Company: Kris Lauer / Frontz		
Drilling Equip.: Versa-Sonic		Date Start: 10 DEC 09	Date Completed: 10 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 17 FT BGS	Well Depth: NA

DRILLING	SAMPLE								GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
10	CORE		DOWNHOLE					5/5			13.4-17 CLAY LITTLE SILT LITTLE FINE GRAVEL MOIST TO WET WITH DEPTH 10YR 3/1 HIGH PLASTICITY
	2,420		WATER								
	2,471										
	2,269										
	2,419										
	2,213										
15	2,290							2/2			
	2,418										
	REFUSAL 17 FT BGS										
20											

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: 7G23
Geologist: CARL PIDRE P.G.	Driller/Company: KRIS LAUER	/ Frontz Drilling
Drilling Equip.: Versa-Sonic	Date Start: 7 JAN 10	Date Completed: 7 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling

- ☐ Hollow Stem
- ☒ Sonic
- ☐ Air Rotary
- ☐ Bucket Auger
- ☐ MUD Rotary
- ☐ Flight Auger

Hole Diameter: 8/6 INCH

Grout

Used? ☒ Yes ☐ No Volume _____

☐ Neat Cement ☒ Bentonite

Method of Installation GRAVITY

Depth: from _____ ft. to _____ ft.

Static Water Level

Initial DRY ft

Development _____ ft.

24 hr. _____ ft.

DRILLED 7 JAN 10
LOG/SAMPLE 8 JAN 10

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	GROUND	3,382 CPM	5/4			0-0.9 CLAY SOME SILT WITH LITTLE FINE GRAVEL, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 4/6 WITH 10YR 5/1
	1,914	13,747				
	2,280	19,858				
	2,288	19,407				
	2,356	18,007				0.9-13.9 SILT SOME CLAY LITTLE COARSE TO FINE GRAVEL, MOIST HIGH TOUGHNESS HIGH PLASTICITY 10YR 4/4 MOTTLED 10YR 5/8 AND 10YR 5/1
5	NO RECOVERY	16,790	5/5			
	1,766	16,685				
	2,148	16,862				
	2,479	16,668				
	2,475	15,733				13.9-20 CLAY LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 3/1
10	2,485	15,082	5/5			
	2,132	13,448				
	2,372	14,064				
	2,298	15,552				
	2,238	18,724				
15	2,354	17,196	5/5			
	2,467	17,985				
	2,418	16,853				
	2,330	17,484				
	2,424	↓				
20	2,498					
	TERMINATED @ 20 FT BGS					

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: 7G & 4
Geologist: CARL PIDGE P.G.	Driller/Company: KRIS LAUER	/ Frontz Drilling
Drilling Equip.: Versa-Sonic	Date Start: 7 JAN 10	Date Completed: 7 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial 8 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☑ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation GRAVITY	24 hr. _____ ft.
Hole Diameter: 8/6 INCH	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
						DRILLED 7 JAN 10 LOG/SAMPLE 8 JAN 10
0	GRAMS	3,342 CPM				0-0.8 GRAVEL FINE TO COARSE LITTLE CLAY LITTLE SILT DRY 10YR 4/4
	1,840	12,427	5/5			
	2,483	19,463				0.8-12.1 SILT SOME CLAY LITTLE FINE GRAVEL MOIST. HIGH TOUGHNESS AND PLASTICITY 10YR 4/3 MOTTLED 10YR 5/6 AND 10YR 5/1
	2,539	18,704				
	2,419	17,095				
5	2,400	17,171				
	2,415	17,200	5/5			
	2,638	17,289				12.1-20 CLAY LITTLE FINE GRAVEL MOIST HIGH TOUGHNESS AND PLASTICITY 10YR 3/1
	2,393	16,607				
	2,737	WATER				
10	2,523		5/5			
	2,415					
	2,700					
	2,730					
	2,631					
15	2,331					
	2,726		5/5			
	2,771					
	2,997					
	2,885					
20	2,283					
	TERMINATED @ 20 FT BGS					

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: 7G25
Geologist: CARL PIDGE P.G.	Driller/Company: DAVE SCHMELCENKOST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 7 JAN 10	Date Completed: 7 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 19 FT BGS	Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 8/6 INCH	Used? ☒ Yes ☐ No Volume _____ ☐ Neat Cement ☒ Bentonite Method of Installation GRAVITY Depth: from _____ ft. to _____ ft.	Initial DRY ft Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	Grams	3,019 cpm				0-1.5 GRAVEL FINE TO COARSE AND COARSE SAND SOME CLAYEY SILT, MOIST, HIGH TOUGHNESS, HIGH PLASTICITY 10YR 3/2
	2,545	11,489	5/3			
	2,901	14,982				
	2,870	19,394				
	NO RECOVERY	19,994				1.5-14.4 SILT SOME CLAY, SOME FINE GRAVEL MOIST, HIGH TOUGHNESS, HIGH PLASTICITY 10YR 4/6 MOTTLED 10YR 4/2, 10YR 5/6, 10YR 5/1
5	NO RECOVERY	19,260				
	2,492	18,723	5/5			
	2,674	17,541				
	2,690	17,453				
	2,729	17,706				14.4-19 CLAY LITTLE FINE GRAVEL, MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/1
10	2,928	17,545	5/5			
	2,647	17,202				
	2,693	16,749				
	2,611	16,835				
	2,672	CAVE				
15	2,674	↓	4/4			
	2,495					
	2,644					
	2,763					
	2,371					
20	REFUSAL @ 19 FT BGS					

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: 7G09
Geologist: CARL PIDAL P.G.	Driller/Company: DAVE SCHREECKROST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 6 JAN 10	Date Completed: 6 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 19 FT BGS	Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 8/6 INCH	Used? ☒ Yes ☐ No Volume _____ ☐ Neat Cement ☒ Bentonite Method of Installation GRAVITY Depth: from _____ ft. to _____ ft.	Initial 13 ft Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
						DRILLED 6 JAN 10 LOG/SAMPLE 7 JAN 10
0	GAMMA	1,619 CPM				0-1.4 GRAVEL COARSE TO FINE AND SAND COARSE TO FINE LITTLE SILT 10YR 4/4 DRY
	1,580	10,328	5/3			
	2,207	19,737				
	2,383	20,295				1.4-13 SILT SOME CLAY LITTLE GRAVEL FINE, MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 4/3 MOTTLED 10YR 5/6 & 10YR 5/1
	NO RECOVERY	17,953				
5	NO RECOVERY	17,301				
	2,069	17,373	5/5			13-19 CLAY LITTLE COARSE SAND TO FINE GRAVEL, MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/1
	2,409	17,696				
	2,532	17,427				
	2,623	17,644				
10	2,791	16,687	5/5			
	2,511	15,801				
	2,645	15,613				
	2,513	15,527				
	2,595	WATER				
15	2,386		4/4			
	2,856					
	2,873					
	2,561					
	2,512					
20	REFUSAL	@ 19 FT BGS				

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: 76 111
Geologist: C. Pidge	Driller/Company: DAVE SCHREEN COST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 21 DEC 09	Date Completed: 21 DEC 09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling	Casing/Riser Type	Screen Portion of Well
☐ Hollow Stem ☒ Sonic	☐ Steel ☐ Threaded	Height above/ below surface
☐ Air Rotary ☐ Bucket Auger	☐ Galv ☐ Welded	Material
☐ MUD Rotary ☐ Flight Auger	☐ PVC ☐ Solvent	Diameter Length
Hole Diameter: 8-INCH	☐ SS ☐ Welded	Set between ft and ft
	Drive Shoe? ☐ Yes ☐ No	Diameter
		Slot size

Filter Pack	Annulus Seal	Grout
Size	☐ Bentonite Pellets Chips	Used? ☒ Yes ☐ No Volume
Method of Install	☐	☐ Neat Cement ☒ Bentonite
Composition	Volume Used?	☐
Volume Used	Method of Instal.	Method of Instal. GRAVITY
Depth to top of f.p.	Depth: from ft. to ft.	Depth: from ft. to ft.

Well Head Completion	Development	Static Water Level
☐ Flushmount ☐ Stand Up	Method	Initial 17 ft
Cap Type	Gallons Evacuated	Development ft.
Lock #	Date	24 hr. ft.
Volume Used	Odor	

DRILLING		SAMPLE							GEOLOGIC LOG		
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	Blow Count 0-6"	6-12"	12-18"	18-24"	Recovery-(ft	USCS Class	Contact-Depth	Descriptions and Comments
0	2,489 GROUND CORE			DOWNHOLE				5/5			0-1.1 FINE TO COARSE GRAVEL AND SOME SILT, DRY MEDIUM STRENGTH, 10YR 3/3
	2,010			10,911							
	2,056			11,468							
	2,428			17,056							
	2,725			18,402							1.1-3.2 SILT LITTLE CLAY & LITTLE FINE GRAVEL 10YR 3/3
5	2,853			16,072							
	2,878			16,615				5/5			3 COBBLE ≈ 5-INCH
	3,068			16,713							
	3,006			16,699							3.2-4.7 CLAY LITTLE SILT LITTLE FINE GRAVEL HIGH TOUGHNESS, HIGH PLASTICITY 10YR 5/1 MOTTLED 10YR 5/4
	3,179			16,900							
10	3,004			17,996							

GEOLOGIC BORING/WELL LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring/Well #: 7G11
Geologist: C. Pidge	Driller/Company: DAVE ~~Schreckengast~~ / Frontz	
Drilling Equip.: Versa-Sonic	Date Start: 2/DEC09	Date Completed: 2/DEC09
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

DRILLING		SAMPLE							GEOLOGIC LOG		
				Blow Count							
Depth	Radiological Scan Reading (cpm)	Sample Type	Sample ID	0-6"	6-12"	12-18"	18-24"	Recovery-(ft)	USCS Class	Contact-Depth	Descriptions and Comments
	CORE			DOWNHOLE							
10	3,925			19,582				5/5			4.7-14.5 SAME 10YR 3/3 MOIST MOTTLED 10YR 5/6
	3,790			17,514							14.5-18.1 CLAY FEW SILT MOIST LITTLE FINE GRAVEL MEDIUM TOUGHNESS, HIGH PLASTICITY 10YR 3/1
	3,506			16,288							
	3,331			15,516							
15	3,017			16,500							
	3,771			19,350				5/5			18.1-20 SAME, NOT WET BUT INCREASED MOISTURE NO DILATANCY, SLIGHTLY STICKY TO THE TOUCH 10YR 3/1
	3,739			18,135							
	4,006			WATER							
	4,088			↓							
20	4,101										
	TERMINATED AT 20 FT BGS										

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: 7G16
Geologist: Cam Pirae P.G.	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 7 JAN 10	Date Completed: 7 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 15 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial DRY ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation GRAVITY	24 hr. _____ ft.
Hole Diameter: 8/6 inch	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	RADIOLOGICAL SCAN (CPM) DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
						DRILLED 7 JAN 10 LOG/SAMPLE 8 JAN 10
0	Ground	3,700 cpm				0-5 NO RECOVERY IN CORE
	NO RECOVERY	15,444	5/0			6-12.1 SILT LITTLE CLAY LITTLE FINE GRAVEL, MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 4/3 MOTTLED 10YR 5/6
		18,014				
		17,505				
		17,143				
5		CAVE	5/5			12.1-15 CLAY LITTLE FINE GRAVEL, MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10 YR 3/1
	2,432					
	2,428					
	2,407					
	2,387					
10	2,388		5/5			
	2,387					
	2,606					
	2,685					
	2,648					
15	2,549					
	REFUSAL @ 15 FT BGS					
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: 7G23
Geologist: CARL PIDGE P.G.	Driller/Company: DAVE SCHRECENGOST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 6 JAN 10	Date Completed 6 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☑ Yes ☐ No Volume _____	Initial 7 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☑ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation GRAVITY	24 hr. _____ ft.
Hole Diameter: 8/6 inch	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
						DRILLED 6 JAN 10 LOG/SAMPLE 7 JAN 10
0	GROUND	2,099 CPM	5/5			0-1.2 CONCRETE RUBBLE W/ COARSE GRAVEL TO COARSE SAND AND SILT DRY LOOSE
	1,908	7,248				
	1,925	18,251				1.2-7.5 SILT LITTLE CLAY LITTLE FINE GRAVEL, MOIST HIGH TOUGHNESS HIGH PLASTICITY, 10YR 3/3 MOTTLED 10YR 5/6
	2,677	20,312				
	2,735	19,107				
5	2,486	17,962				7.5-12.8 10YR 4/4 MOTTLED 10YR 5/6
	2,624	17,698	5/5			
	2,703	16,320				12.8-20 CLAY LITTLE FINE GRAVEL MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/1
	2,700	WATER				
	2,704					END OF CORE LIMESTONE GRAVEL 10YR 7/2
10	2,622					
	2,566		5/5			
	2,632					
	2,444					
	2,226					
15	2,183					
	2,715		5/5			
	2,609					
	2,112					
	1,703					
20	1,693					
	TERMINATED @ 20 FT BGS					

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: 7G43
Geologist: CARL PIDGE P.G.	Driller/Company: DAVE SCHREECUGOST / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 6 JAN 10	Date Completed: 6 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 19 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial 7 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation GRAVITY	24 hr. _____ ft.
Hole Diameter: 8/6 INCH	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
						DRILLED 6 JAN 10 LOG/SAMPLE 7 JAN 10
0	GROUND	1,524 CPM				0-2.6 GRAVEL FINE TO COARSE LITTLE SILT, DRY LOOSE.
	1,366	4,751	5/3			
	2,043	16,290				2.6-13.8 SILT LITTLE CLAY FEW TO LITTLE FINE GRAVEL, MOIST HIGH TOUGHNESS HIGH PLASTICITY 10 YR 4/4 MOTTLED 10 YR 5/6
	2,142	19,461				
	NO RECOVERY	17,718				
5	NO RECOVERY	16,416	5/5			
	2,048	16,430				13.8-19 CLAY LITTLE FINE GRAVEL MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10 YR 3/1
	2,186	17,083				
	2,401	WATER				
	2,588					
10	2,570		5/5			
	2,308					
	2,491					
	2,759					
	2,756					
15	2,684		4/4			
	2,272					
	3,018					
	2,773					
	2,366					
20	REFUSAL 19 FT BGS	@				

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: 7G46
Geologist: Carl Rodal P.G.	Driller/Company: Dave Schreckengost / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 6 Jan 10	Date Completed: 6 Jan 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 ft bgs / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial Dry ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation Gravity	24 hr. _____ ft.
Hole Diameter: 8/6 inch	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
0	Gamma	3,336 cpm				0-1.1 CLAY LITTLE SILT FEW COARSE SAND MOIST HIGH TOUGHNESS AND PLASTICITY 10YR 4/2
	2,260	14,774	5/3			
	2,386	16,532				
	2,520	16,402				1.1-3 SILT SOME CLAY LITTLE FINE GRAVEL, MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 4/2 MOTTLED 10YR 4/1 AND 10YR 5/6
	No Recovery	16,157				
5	No Recovery	16,114	5/4			
	2,160	15,833				5-7.8 CLAY LITTLE SILT SOME COARSE SAND, WET, MUSHY, STICKY, 10YR 4/1
	2,612	15,516				
	2,586	13,946				
	2,509	CAVE				7.8-11.5 SILT SOME CLAY LITTLE FINE GRAVEL AND COARSE SAND. MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 4/3 MOTTLED 10YR 4/6
10	No Recovery		5/5			
	2,235					
	2,458					
	2,788					
	2,578					11.5-14.3 CLAY LITTLE FINE GRAVEL MOIST, LOW TOUGHNESS MEDIUM PLASTICITY 10YR 3/1
15	2,254					
	1,943		5/5			
	2,352					
	2,401					14.3-16.4 GRAVEL COARSE TO SAND COARSE LITTLE CLAY, WET LOOSE, 10YR 3/1
	2,138					
20	2,006					16.4-20 CLAY LITTLE FINE GRAVEL MOIST, HIGH TOUGHNESS AND PLASTICITY 10YR 3/1
	Terminated @ 20 ft bgs					

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: 7G50
Geologist: Cam Pidge P.G.	Driller/Company: Kris Lauer / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 7 JAN 10	Date Completed: 7 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 19 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: 8/6 inch	Used? ☒ Yes ☐ No Volume _____ ☐ Neat Cement ☒ Bentonite Method of Installation GRAVITY Depth: from _____ ft. to _____ ft.	Initial 2 ft Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	Ground	3,341 CPM				0-2 GRAVEL FINE TO COARSE WITH COARSE SAND AND LITTLE SILT 10YR 4/4 LOOSE WET
	2,115	15,256	5/2			
	2,159	18,437				
	NO RECOVERY	WATER				
	NO RECOVERY					5-7 SILT SOME CLAY LITTLE FINE GRAVEL, MOIST, MEDIUM TOUGHNESS MEDIUM PLASTICITY 10YR 4/4 MOTTLED 10YR 5/6 AND 10YR 5/1
5	NO RECOVERY					
	2,148		5/2			
	2,134					
	NO RECOVERY					
	NO RECOVERY					
10	NO RECOVERY					10-10.8 GRAVEL FINE LITTLE SILT WET LOOSE, 10YR 3/3
	2,055		5/5			
	2,123					10.8-15 CLAY LITTLE FINE GRAVEL MOIST, MEDIUM TOUGHNESS MEDIUM PLASTICITY, STICKY
	2,409					
	2,246					
15	2,204					15-18.2 SLOUGH FROM HIGHER ZONE, GRAVEL, SAND, SILT WET AND LOOSE
	2,140		4/4			
	1,996					
	2,185					18.2-19 CLAY LITTLE FINE GRAVEL MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/1
	1,975					
20	REFUSAL @ 19 FT BGS					NOTE: NO TRANSITION ZONE DISCERNABLE

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: BKG1
Geologist: CARL PIDGE P.G.	Driller/Company: KRIS LAUER	/ Frontz Drilling
Drilling Equip.: Versa-Sonic	Date Start: 4 JAN 10	Date Completed: 4 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial DRY ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation TREMIE	24 hr. _____ ft.
Hole Diameter: 8/6-INCH	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
						DRILLED 4 JAN 10 LOG/SAMPLE 5 JAN 10
0	GRAND 11,633 CPM					0-1.9 GRASS OVER SILT LITTLE CLAY LITTLE COARSE SAND FEW CAPILLARY ROOTS MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/3
	2,216	17,971	5/5			
	2,346	19,154				
	2,257	18,562				
	1,979	16,536				1.9-13.8 SILT SOME CLAY LITTLE COARSE SAND LITTLE FINE GRAVEL HIGH TOUGHNESS, HIGH PLASTICITY, MOIST 10YR 4/3 MOTTLED 10YR 5/6
5	1,745	15,973				
	2,151	16,636	5/5			
	2,185	13,904				
	2,251	18,903				
	1,826	16,061				13.8-20 CLAY LITTLE SILT FEW COARSE SAND FEW FINE GRAVEL MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/1
10	1,737	15,849				
	2,194	17,252	5/5			
	2,368	16,666				
	2,255	16,542				
	2,232	16,696				
15	2,201	16,331				
	2,118	16,834	5/5			
	2,145	18,332				
	2,207	18,539				
	2,302	CAVE				
20	2,338	↓				
	TERMINATED 20 FT BGS					

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: BKG2
Geologist: CARL PIDGE P.G.	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 4JAN10	Date Completed: 4JAN10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20FTBGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial 15 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation TREMIE	24 hr. _____ ft.
Hole Diameter: 8/6-INCH	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
						DRILLED 4JAN10 LOG/SAMPLE 5JAN10
0	GRUND	12,109 CPM	5/5			0-1.9 GRASS OVER SILT LITTLE CLAY FEW COARSE SAND FEW CAPILLARY ROOTS MOIST HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/3
	2,291	18,130				
	2,571	20,016				
	2,506	19,244				1.9-13 SILT SOME CLAY FEW COARSE SAND LITTLE FINE GRAVEL HIGH TOUGHNESS HIGH PLASTICITY MOIST 10YR 4/3 MOTTLED 10YR 5/6
	2,509	18,230				
5	2,377	16,653				
	1,999	13,138	5/5			
	1,810	15,428				
	1,997	16,625				13-20 CLAY LITTLE COARSE SAND FEW FINE GRAVEL, MOIST, HIGH TOUGHNESS, HIGH PLASTICITY 10YR 3/1
	2,204	17,417				
10	2,102	17,522	6/5			
	2,194	17,037				
	2,128	17,790				
	1,995	16,812				
	2,110	16,562				
15	1,898	15,165				
	1,877	WATER	5/5			
	2,330	↓				
	2,627					
	2,473					
20	2,547					
	TERMINATED 20 FT BGS					

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: BKG 3
Geologist: Cam Pidar. P.G.	Driller/Company: Kris Lauer / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 4 JAN 10	Date Completed: 4 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial DRY ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation TREMIE	24 hr. _____ ft.
Hole Diameter: 8/6-INCH	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
0	GAMMA	11,919 CPM	5/5			0-2.1 GRASS OVER SILT LITTLE CLAY FEW COARSE SAND FEW CAPILLARY ROOTS MOIST, HIGH TOUGHNESS HIGH PLASTICITY 10YR 3/3
	2,040	18,692				
	2,446	20,421				
	2,368	20,490				2.1-14.2 SILT SOME CLAY FEW COARSE SAND TO FINE GRAVEL HIGH TOUGHNESS HIGH PLASTICITY MOIST. 10YR 4/3 MOTTLED 10YR 5/6
	2,418	18,681				
5	2,204	17,952	5/5			
	2,490	17,345				
	2,615	17,160				14.2-20 CLAY, LITTLE COARSE SAND, MOIST, HIGH TOUGHNESS, HIGH PLASTICITY 10YR 3/1
	2,689	17,282				
	2,502	17,058				
10	2,488	16,736	5/5			
	2,054	17,172				
	2,480	17,352				
	2,522	17,198				
	2,606	16,869				
15	2,484	16,691	5/5			
	2,503	16,745				
	2,293	16,112				
	2,247	15,761				
	2,419	CAVE ↓				
20	2,107					
	TERMINATED @ 20 FT BGS					

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	Boring #: BKG4
Geologist: CARL PIDAL P.G.	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 4 JAN 10	Date Completed: 4 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial DRY ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation TREMIE	24 hr. _____ ft.
Hole Diameter: 8/6-INCH	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	GROUND 12,165 CPM		5/5			0-2.2 GRASS OVER SILT LITTLE CLAY FEW COARSE SAND, FEW CAPILLARY ROOTS MOIST, HIGH TOUGHNESS HIGH PLASTICITY, 10YR 3/3
	1,877	17,771				
	2,073	21,075				
	2,115	21,717				2.2-13.8 SILT SOME CLAY, FEW COARSE SAND MOIST HIGH TOUGHNESS HIGH PLASTICITY 10YR 4/3 MOTTLED 10YR 5/6 AND 10YR 6/1
	1,987	18,840				
5	2,118	18,115	5/5			
	2,383	17,455				13.8-20 CLAY LITTLE SILT LITTLE COARSE SAND TO FINE GRAVEL MOIST HIGH TOUGHNESS, HIGH PLASTICITY 10YR 3/1
	2,517	17,472				
	2,363	17,412				
	2,202	17,288				
10	2,307	18,864	5/5			
	2,428	19,199				
	2,601	19,039				
	2,585	17,740				
	2,623	16,658				
15	2,404	17,378				
	2,195	17,009	5/5			
	2,238	17,011				
	2,225	CAVE				
	2,238	↓				
20	2,155					
	TERMINATED @ 20 FT BGS					

GEOLOGIC BORING LOG

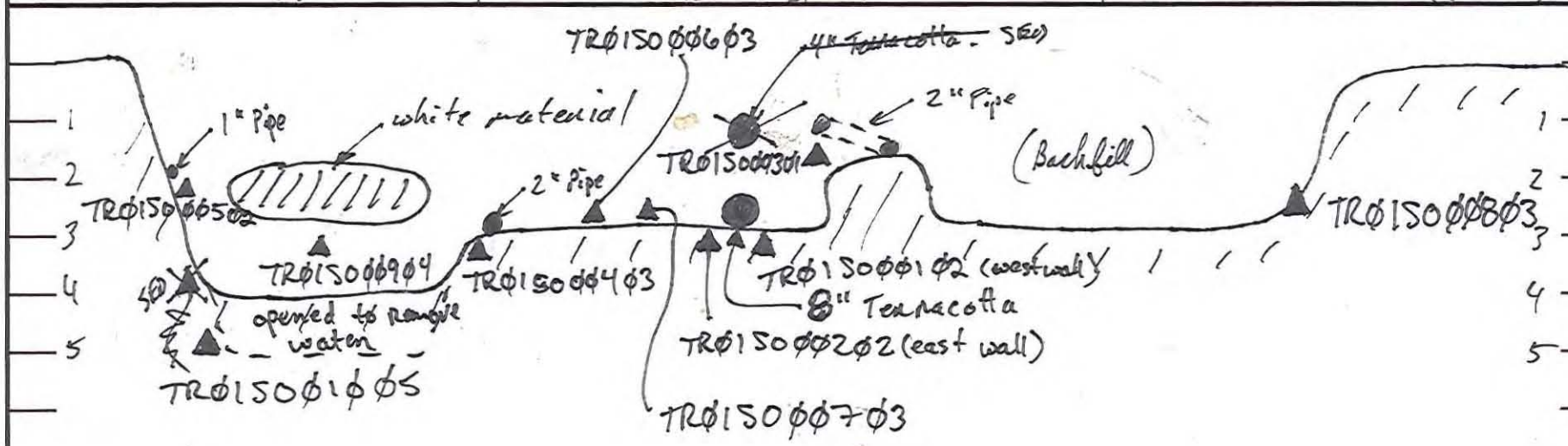
Project #: 92002	Project Name: Luckey FUSRAP	Boring #: BKG5
Geologist: CARL PIDGE P.G.	Driller/Company: KRIS LAUER / Frontz Drilling	
Drilling Equip.: Versa-Sonic	Date Start: 4/JAN10	Date Completed: 4 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 20 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☒ Sonic	Used? ☒ Yes ☐ No Volume _____	Initial 10 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☒ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation TREMIE	24 hr. _____ ft.
Hole Diameter: 8/6-INCH	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
0	GROUND	11,822 CPM				
	1,961	19,187	5/5			0-1.2 SILT LITTLE CLAY FEW CARBONAM ROOTS, MOIST FEW COARSE SAND. HIGH TOUGHNESS, HIGH PLASTICITY, 10YR 3/3
	2,123	21,061				
	2,105	21,146				1.2-10.1 SILT SOME CLAY FEW COARSE SAND MOIST, HIGH TOUGHNESS, HIGH PLASTICITY 10YR 4/3 MOTTLED 10YR 5/6
	2,031	19,164				
5	1,861	17,720	5/5			
	1,668	16,551				
	1,606	15,996				10.1-13.6 SILT LITTLE CLAY LITTLE COARSE SAND TO FINE GRAVEL, HIGH TOUGHNESS HIGH PLASTICITY, MOIST 10YR 4/3 MOTTLED 10YR 5/6
	1,620	17,037				
	1,693	17,738				
10	1,836	17,795	5/5			13.6-19.2 CLAY LITTLE SILT LITTLE COARSE SAND TO FINE GRAVEL MOIST, LITTLE COARSE SAND 10YR 4/1 HIGH TOUGHNESS, HIGH PLASTICITY INCREASED TO SOME COARSE SAND FINE GRAVEL WITH DEPTH
	1,895	WATER				
	2,021					
	2,003					
	1,910					
15	1,896					19.2-20 CLAY WITH LITTLE COARSE SAND WET, MEDIUM TOUGHNESS MEDIUM PLASTICITY 10YR 3/1
	1,894		5/5			
	NORMAL					
	1,773					
	1,830					
20	1,895					
	TERMINATED @ 20 FT BGS					

Field Test Trench Log

Project No.: 92002	Project Name: LUCKLEY FUSRAP	Trench ID: TRØ1	
Logged By: S Deeten	Operator/Company: Nerone		
Excavator: PC 200 LC	Date Started: 1/13/10	Date Completed: 1/16/10	
Surface Elevation:	Total Depth: ~4.0	Total Length: ~24 ft	
Total Width: ~5.0	Backfill: Excavated material	Initial Water Level: NE (surface runoff)	

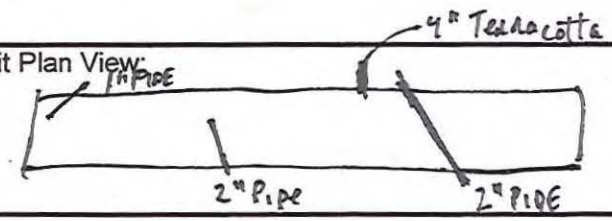


TRØ150Ø11ØØ
from white material in spoil pile

Remarks:
water from surface runoff

North:

Test Pit Plan View:



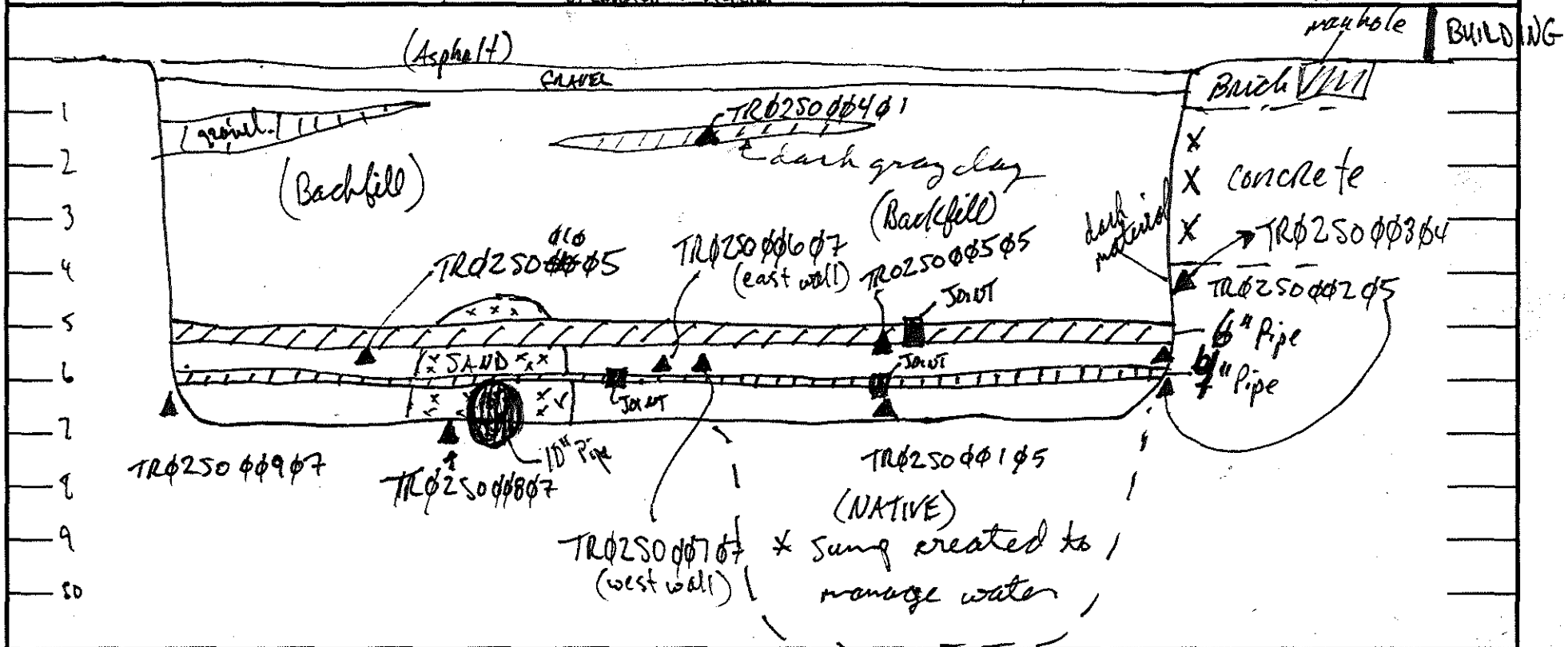
Field Test Trench Log

Project No.: 92002	Project Name: Luckey FUSRAP	Trench ID: TR01
Logged By: S. Deaton	Operator/Company: Nenone	
Excavator: Komatsu PC200LC	Date Started: 1/13/10	Date Completed: 1/16/10
Surface Elevation:	Total Depth: ~4.0	Total Length: ~24.0
Total Width: ~5.0	Backfill: Excavated material	Initial Water Level: NE (surface infiltration)

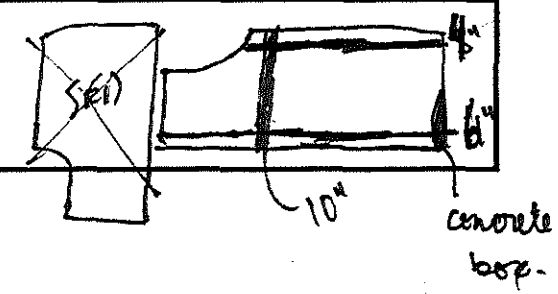
Depth (feet bgs)	Sample Depth (feet bgs)	PID Reading (ppm)	Lithology	Description
				Backfill - Silt/clay, moist, stiff, brown to reddish brown

Field Test Trench Log

Project No.: 92002	Project Name: LUCKEY FUSRAP		Trench ID: TR Ø2
Logged By: S Deeken		Operator/Company: Nerone	
Excavator: PC200LC	Date Started: 1/14/00		Date Completed: 1/14/00
Surface Elevation:	Total Depth: ~ 7.0 ft		Total Length: ~ 24 ft
Total Width: ~ 10.0 ft	Backfill: Excavated Material		Initial Water Level: ~ 6ft



Remarks: WATER @ 6 feet, may be snowmelt.	North:	Test Pit Plan View:



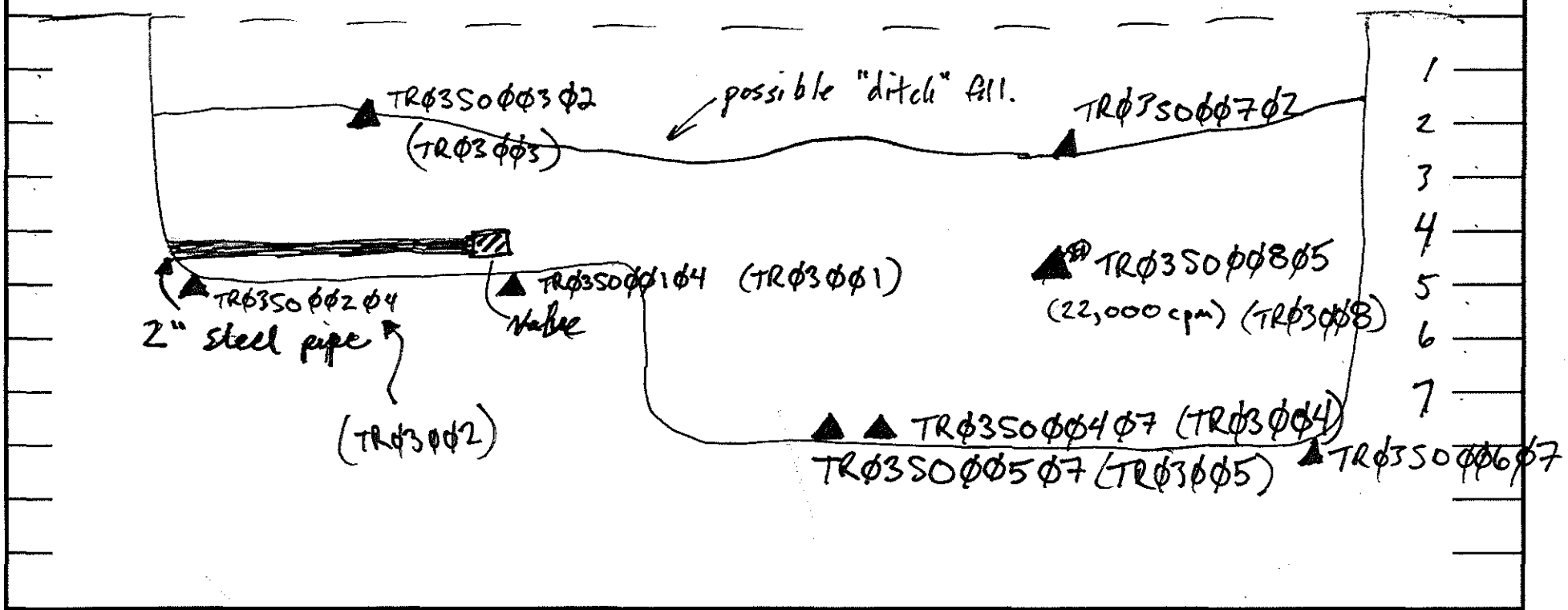
Field Test Trench Log

Project No.: 92002	Project Name: Lucky FUSRAP	Trench ID: TR02	
Logged By:	Operator/Company: Veone		
Excavator: Komatsu PC200LC	Date Started: 1/14/10	Date Completed: 1/14/10	
Surface Elevation:	Total Depth: ~7.0 ft	Total Length: ~24.0 ft	
Total Width: ~10.0 ft	Backfill: Excavated Material	Initial Water Level: ~6.0 ft	

Depth (feet bgs)	Sample Depth (feet bgs)	PID Reading (ppm)	Lithology	Description
				dark clay - reddish black, moist, stiff. seam ~ 5 feet long by 6 inches thick.
				Sand - tan coarse sand, wet, loose. Backfill around 10" pipe.
				Backfill is silt/clay, brown to gray, stiff, moist.
				(encountered native material @ 7 feet, brown to reddish brown clay, hard to v. hard, dry to moist.)

Field Test Trench Log

Project No.: 92002	Project Name:	Luckey FUSRAP		Trench ID:	TRØ3
Logged By: Schecter		Operator/Company: Neacone			
Excavator: Komatsu PC220 LC	Date Started: 1/13/09			Date Completed: 1/13/09	
Surface Elevation:	Total Depth: 7.0 ft			Total Length: 20 feet	
Total Width: 2.0 feet	Backfill: Excavated material			Initial Water Level: NE	



Remarks:
Below 2.0 ft, readings generally 2 x Background.

North:

Test Pit Plan View:

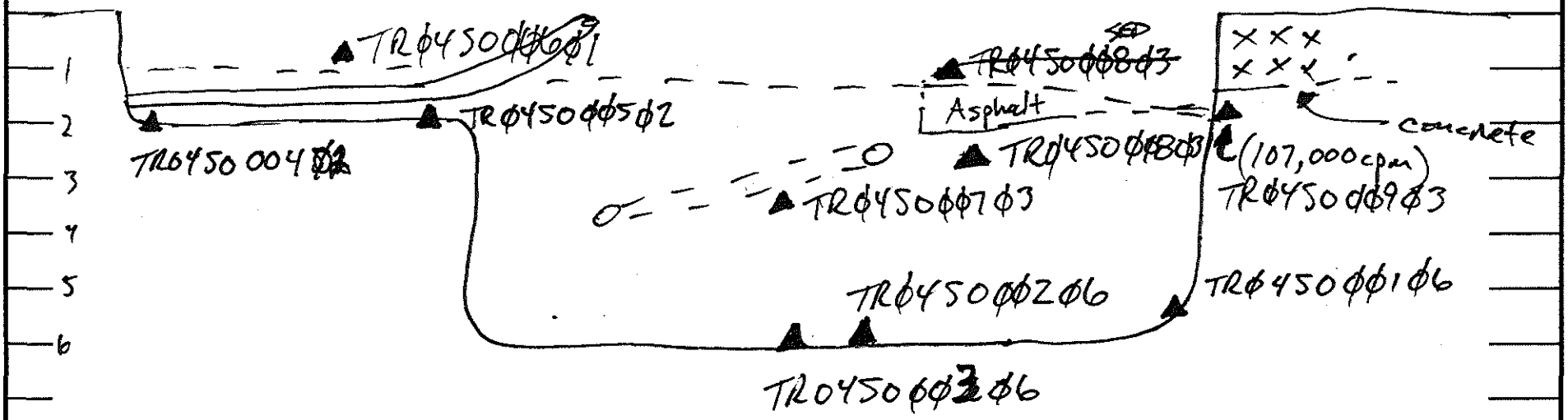
Field Test Trench Log

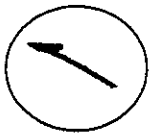
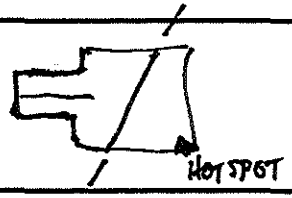
Project No.: 92002		Project Name: Lucky FUSRAP		Trench ID: TRØ3	
Logged By: J. Deeten			Operator/Company: Nenone		
Excavator: Komatsu PC200LC		Date Started: 1/13/10		Date Completed: 1/13/10	
Surface Elevation:		Total Depth: 7.0 ft		Total Length: 20.0 ft.	
Total Width: 2.0 ft.		Backfill: Excavated material		Initial Water Level: NE	

Depth (feet bgs)	Sample Depth (feet bgs)	PID Reading (ppm)	Lithology	Description
				0 – 2.0 Gravelly Clay, 25% gravel, dark gray, stiff moist. 2.0-7.0 Clay/Silt, mottled, reddish brown to brown. stiff, moist. (some minor water in trench over night, <1 gal)

Field Test Trench Log

Project No.: 92002	Project Name: Lucky, FUSRAP			Trench ID: TRØY	
Logged By: S. Deeton		Operator/Company: Nerone			
Excavator: Komatsu PC200LC	Date Started: 1/13/10			Date Completed: 1/14/10	
Surface Elevation:	Total Depth: 6.0 ft			Total Length: 19.0 ft	
Total Width: 6.0 ft	Backfill: Excavated material			Initial Water Level: ~6.0 ft	



Remarks:	North: 	Test Pit Plan View: 

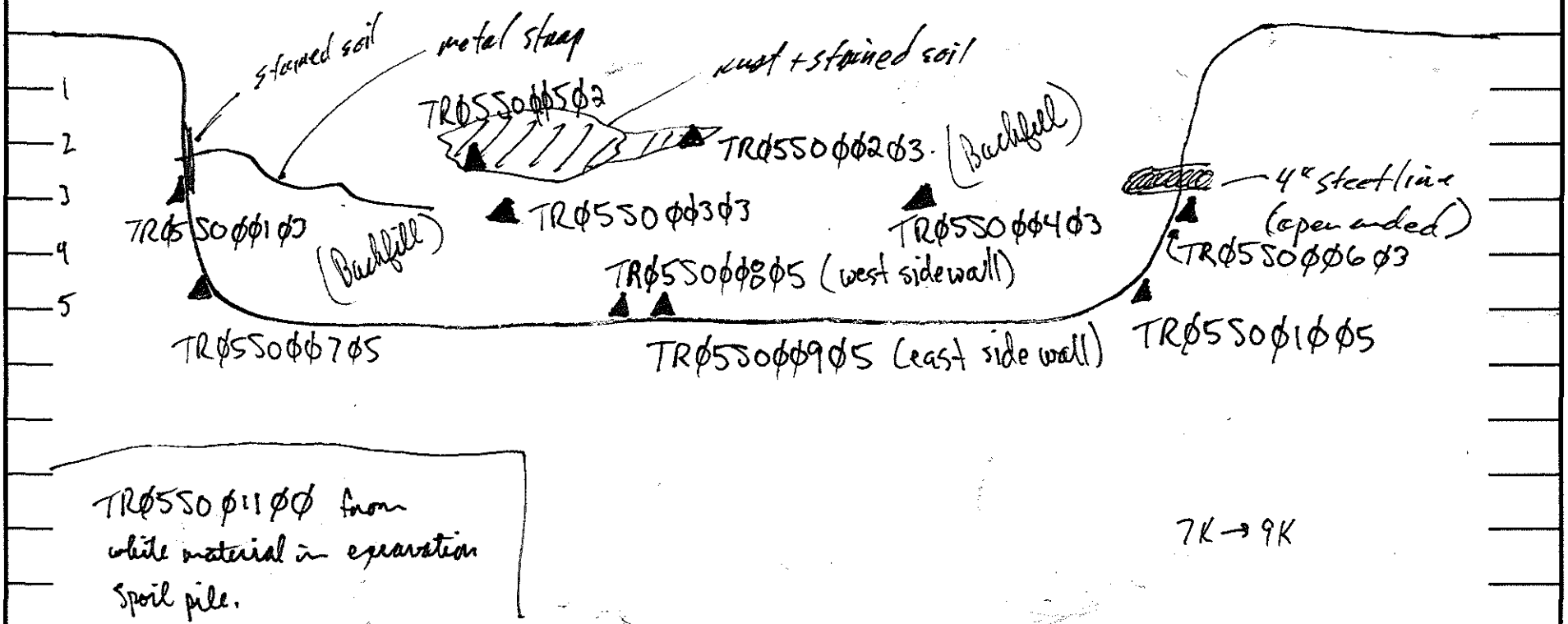
Field Test Trench Log

Project No.: 92002	Project Name: Luckey FUSRAP	Trench ID: TR04
Logged By: S. Deeter	Operator/Company: Denone	
Excavator: Komatsu PC200LC	Date Started: 1/13/10	Date Completed: 1/14/10
Surface Elevation:	Total Depth: 6.0 ft	Total Length: 19.0 ft
Total Width: 6.0 feet	Backfill: Excavated material	Initial Water Level: ~6.0 ft

Depth (feet bgs)	Sample Depth (feet bgs)	PID Reading (ppm)	Lithology	Description
				0 - 2.0 Gravelly clay, 25% gravel, dark gray to v. dark gray. Stiff, s. moist. 2.0 - 6.0 clay/silt, mottled, reddish brown to brown. Stiff, moist to v. moist (water present in trench). - Some concrete on south side (culvert?) - two pipes - one 2" steel, one 1.5" galv. conduit - some minor water in trench overnight, less than 10 gallons.

Field Test Trench Log

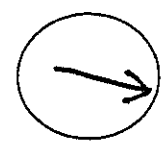
Project No.: 92002	Project Name: Lucky FUSRAP			Trench ID: TRØ5	
Logged By: S. Deeter		Operator/Company: Nemone			
Excavator: Komatsu PC200LC	Date Started: 1/13/10			Date Completed: 1/16/10	
Surface Elevation:	Total Depth: ~5.0 ft			Total Length: ~18.0 ft	
Total Width: ~3.0 ft	Backfill: Excavated Material			Initial Water Level: NE	

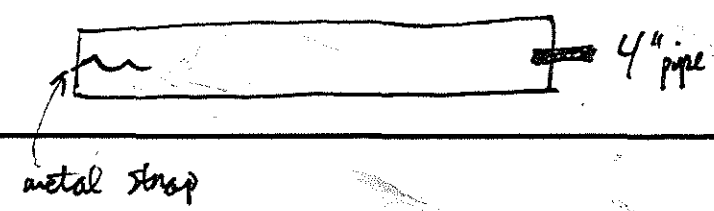


TRØ550Ø11ØØ from white material in excavation spoil pile.

7K → 9K

Remarks:	North:	Test Pit Plan View:





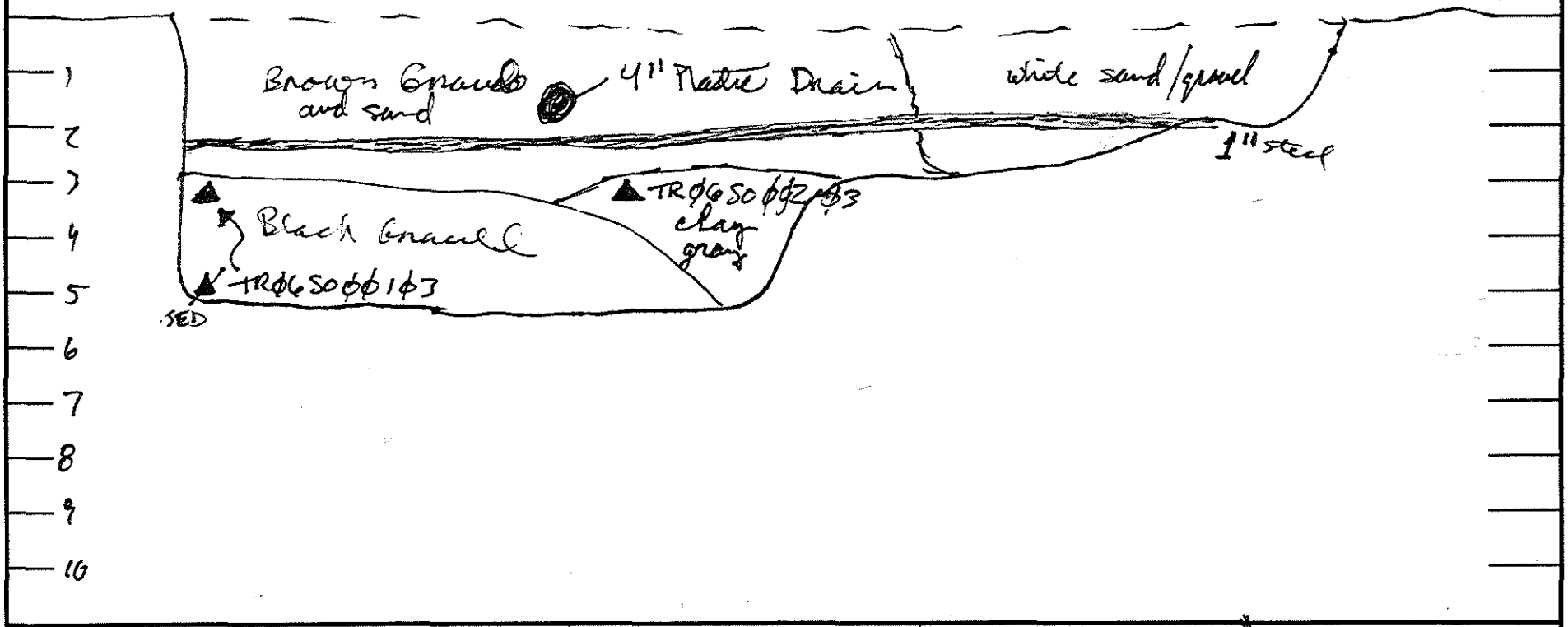
Field Test Trench Log

Project No.: 92002	Project Name: Luckey FUSRAP	Trench ID: TR05	
Logged By: S. Deeter		Operator/Company: Nenone	
Excavator: Komatsu PC200LC	Date Started: 1/13/10	Date Completed: 1/15/10	
Surface Elevation:	Total Depth: ~5.0 ft	Total Length: ~19.0 ft	
Total Width: ~3.0 ft	Backfill: Excavated Material	Initial Water Level: NE	

Depth (feet bgs)	Sample Depth (feet bgs)	PID Reading (ppm)	Lithology	Description
				Backfill - Silts and Clays ranging from black to brown. S. moist, stiff to hard, plastic. Some rust-colored deposits in sidewalls @ 3ft.
				- 4" pipe protruding north endwall, pipe appears open-ended.
				- metal strap protruding south endwall
				- large chunk of concrete (2'D x 5 ft L)
				- White material excavated and sampled.

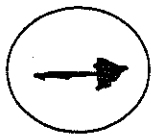
Field Test Trench Log

Project No.: 92002	Project Name:	Lucky FUSRAP		Trench ID:	TRØ6
Logged By: S Deeten		Operator/Company:	Nenone		
Excavator: TC200 LC	Date Started:	1/14/10		Date Completed:	1/14/10
Surface Elevation:	Total Depth:	~5.0 ft		Total Length:	~20.0ft
Total Width: ~7.0 ft	Backfill:			Initial Water Level:	Surface runoff

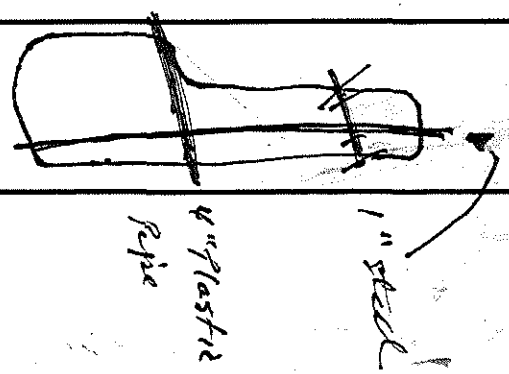


Remarks:
surface runoff filling samples

North:



Test Pit Plan View:



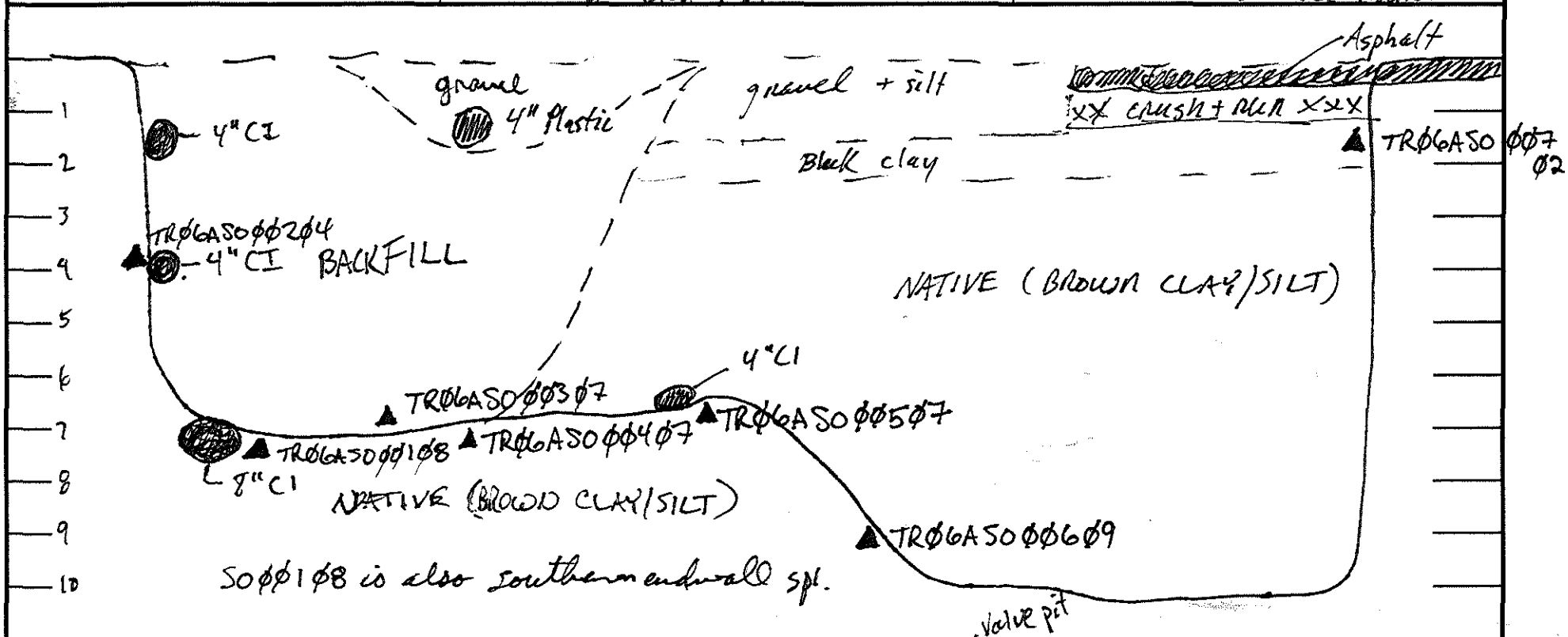
Field Test Trench Log

Project No.: 92002	Project Name: Luchey FUSRAP			Trench ID: TR06	
Logged By: 9Deeter		Operator/Company: Nonone			
Excavator: Komatsu PC200LC		Date Started: 1/14/10		Date Completed: 1/14/10	
Surface Elevation:		Total Depth: ~5.0 ft		Total Length: ~20.0 ft	
Total Width: ~7.0 ft		Backfill:		Initial Water Level: Surface Runoff	

Depth (feet bgs)	Sample Depth (feet bgs)	PID Reading (ppm)	Lithology	Description
				0 – 5 ft (east side) – Sand brown, light brown, to gray, moist to wet.
				0 – 3 ft (west side) – gravel w/ sand black to dk brown. moist to wet
				3-5 ft pocket of gray clay, at center. moist to wet. end (south) is gravel brown, grades to black at depth. Black under 4" Plastic pipe.

Field Test Trench Log

Project No.: 92002	Project Name:	Luckey FUSRAP		Trench ID:	TRØ6A
Logged By: SDeeken		Operator/Company:	Nenone		
Excavator: PC 200LC	Date Started:	1/15/10		Date Completed:	1/15/10
Surface Elevation:	Total Depth:	~ 10.0		Total Length:	~ 36.0
Total Width: ~ 5.0	Backfill:	Excavated material		Initial Water Level:	surface runoff

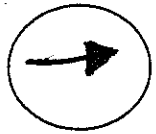


Remarks:

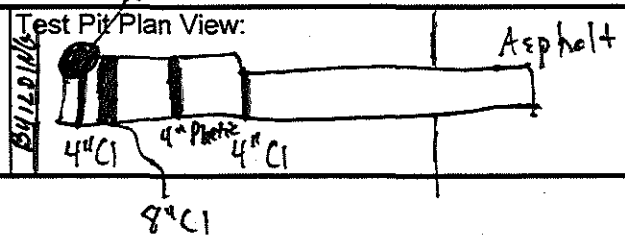
WATER FROM SURFACE

ALL FOUR CAST IRON (CI) LINES PUNCTURED

North:



Test Pit Plan View:



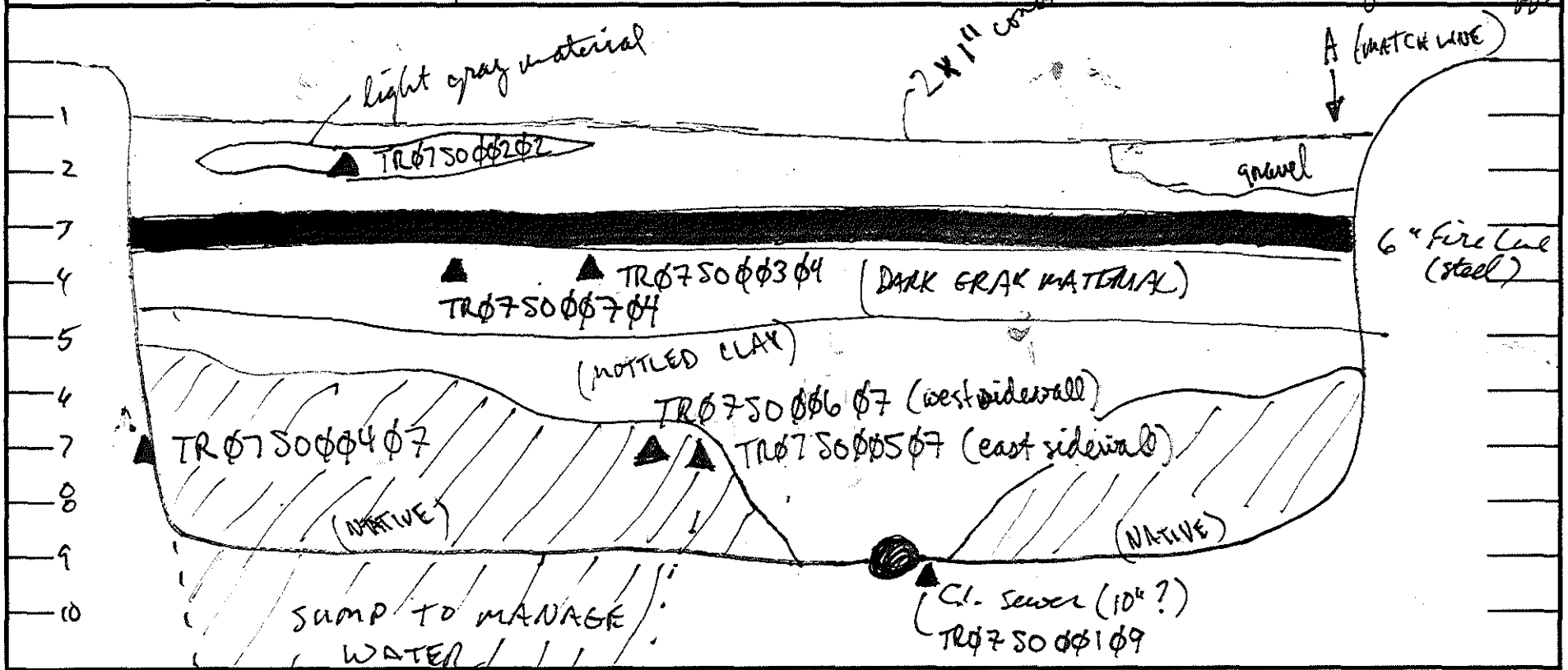
Field Test Trench Log

Project No.: 92002		Project Name: Luckey FUSRAP		Trench ID: TR Ø6A	
Logged By: SDeeter		Operator/Company: Weldone			
Excavator: PC200LC		Date Started: 1/15/10		Date Completed: 1/15/10	
Surface Elevation:		Total Depth: ~10.0 ft		Total Length: ~36.0 feet	
Total Width: ~5.0 ft.		Backfill: Excavated Material		Initial Water Level: surface Runoff	

Depth (feet bgs)	Sample Depth (feet bgs)	PID Reading (ppm)	Lithology	Description
				0 – 7.0 BACKFILL (GRAVEL + SOIL), saturated
				7.0 – 2.0 BLACK CLAY, BLACK, STIFF, MOIST.
				2.0 – 10.0 BROWN CLAY/SILT, BROWN, STIFF, MOIST

Field Test Trench Log

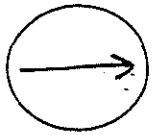
Project No.: 92002	Project Name: Luchey FUSRAP	Trench ID: TRØ7	
Logged By: S. Deeter	Operator/Company: Nenone		
Excavator: PC200LC	Date Started: 11/17/10	Date Completed:	
Surface Elevation:	Total Depth: ~ 10.0 ft	Total Length: ~19.0 (first section)	
Total Width: ~ 7.0 ft	Backfill:	Initial Water Level: NE (surface runoff)	



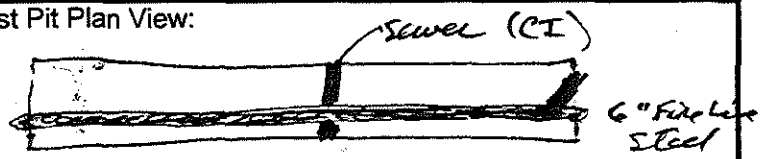
Remarks:

continued to north on page 2

North:

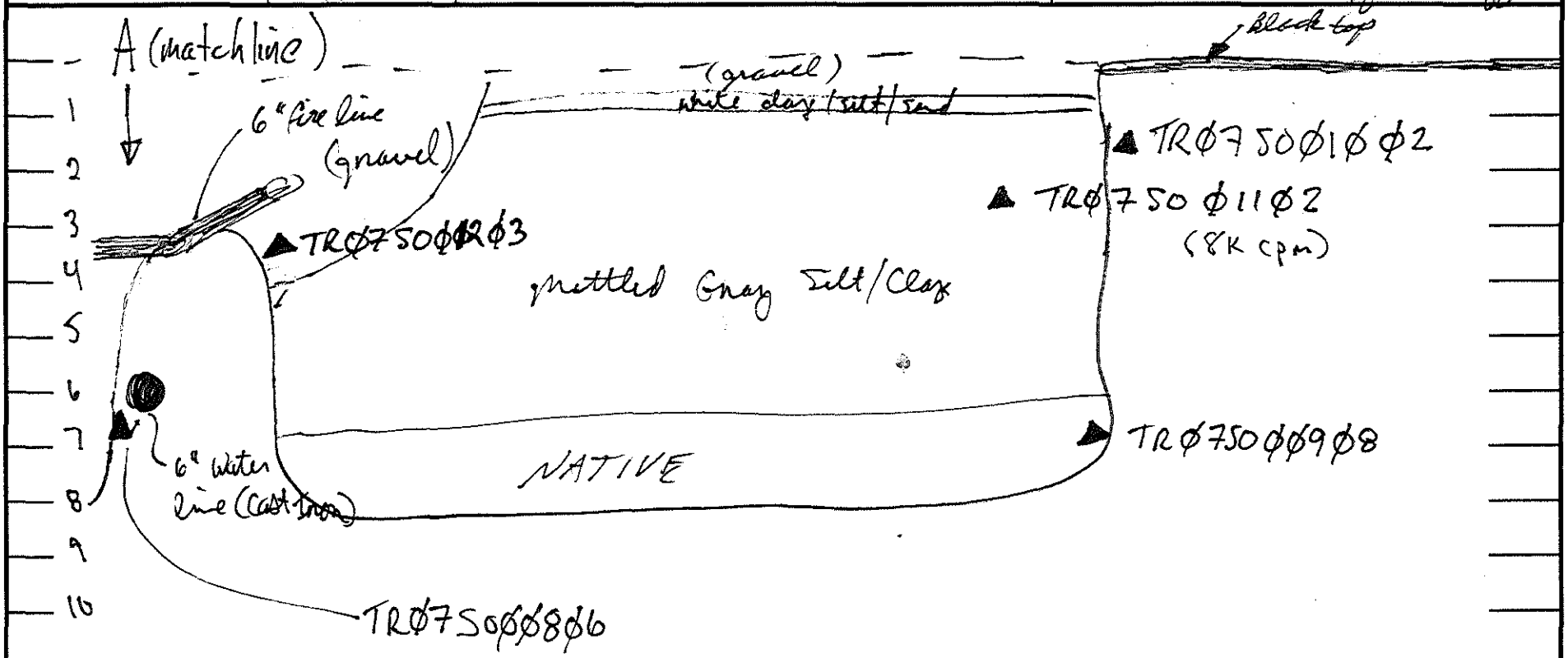


Test Pit Plan View:



Field Test Trench Log

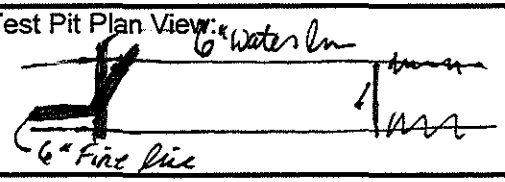
Project No.: 92002	Project Name: Luckey FUSRAP	Trench ID: TR07	
Logged By: ~~Kon~~ J. Decker	Operator/Company: Nenone		
Excavator: Komatsu PC200LC	Date Started: 1/17/10	Date Completed: 1/17/10	
Surface Elevation:	Total Depth: ~8.0 ft	Total Length: ~15 ft	
Total Width: ~4.0 ft	Backfill:	Initial Water Level: NE (surface runoff)	



Remarks:
Continued from "A" on Sheet 1 of 3.

North:

Test Pit Plan View:



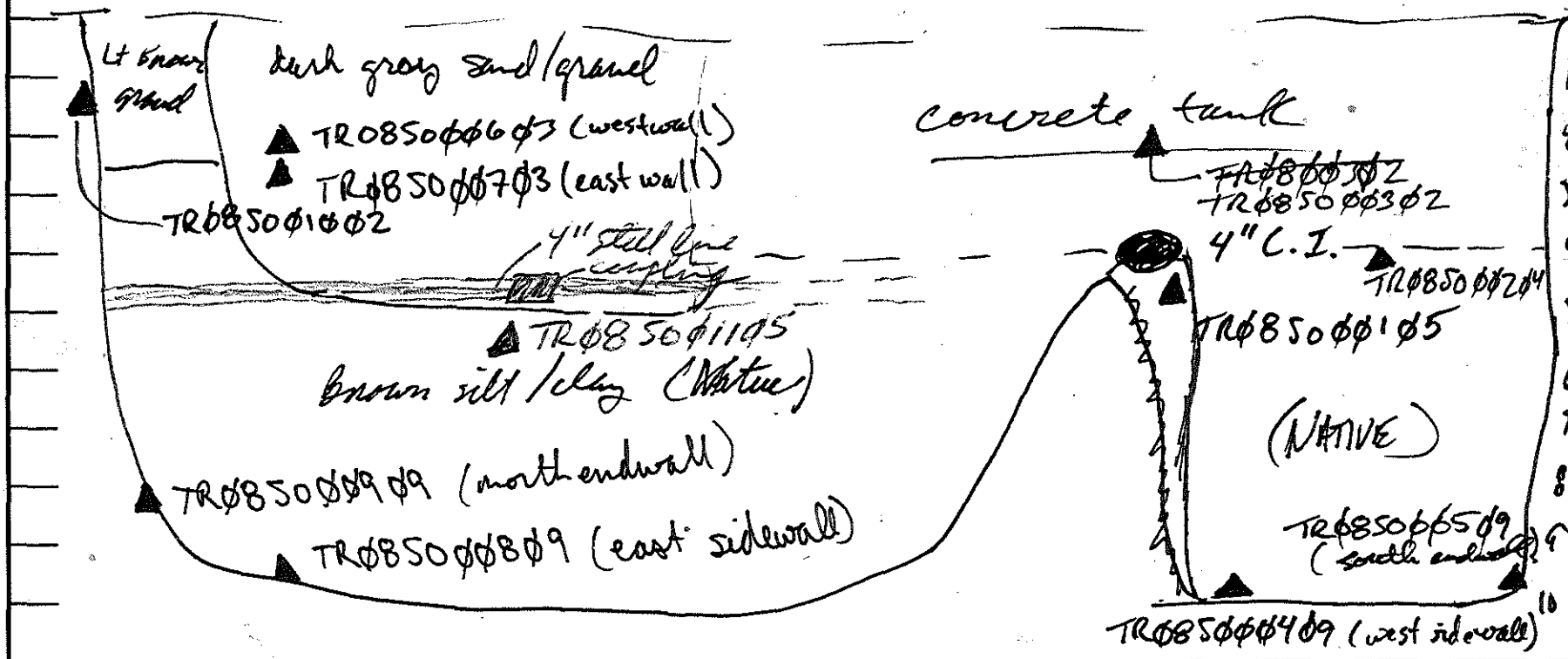
Field Test Trench Log

Project No.: 92002	Project Name: Lucky FUSRAP	Trench ID: TR07
Logged By: JDeeter	Operator/Company: Nevone	
Excavator: Komatsu PC200LC	Date Started: 1/17/10	Date Completed: 1/17/10
Surface Elevation:	Total Depth: ~10.0	Total Length: ~34.0 ft
Total Width: ~7.0 ft	Backfill: excavated material.	Initial Water Level: NE (surface runoff)

Depth (feet bgs)	Sample Depth (feet bgs)	PID Reading (ppm)	Lithology	Description
				Gravel - loose, wet, angular, lt brown
				Light Gray material - gray, gravel/sand, loose, moist
				Dark Gray material - Dark Gray, clay/silt, stiff, moist
				mottled clay - gray to reddish brown, clay/silt, moist, stiff
				native - reddish brown to brown, silt/clay, dry to s.moist, v.hard
				Some rock to < 12" D throughout.
				white clay/silt/sand - moist, loose
				Total length = 34.0 ft.

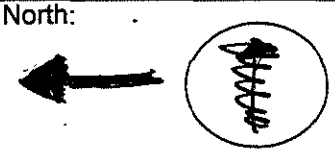
Field Test Trench Log

Project No.: 92002	Project Name: Luckey FUSRAP	Trench ID: TRØ8
Logged By: S. Deeter	Operator/Company: Unknown.	
Excavator: Komatsu PC200LC	Date Started: 1/18/10	Date Completed: 1/18/10
Surface Elevation:	Total Depth: ~10.0 ft	Total Length: ~28.0 ft
Total Width: ~5.0 ft	Backfill: Excavated material	Initial Water Level: NE (surface Runoff)

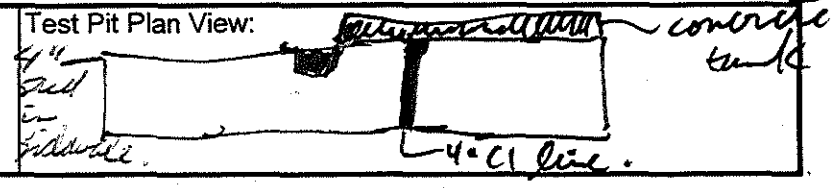


Remarks: water infiltration from surface.

North:



Test Pit Plan View:



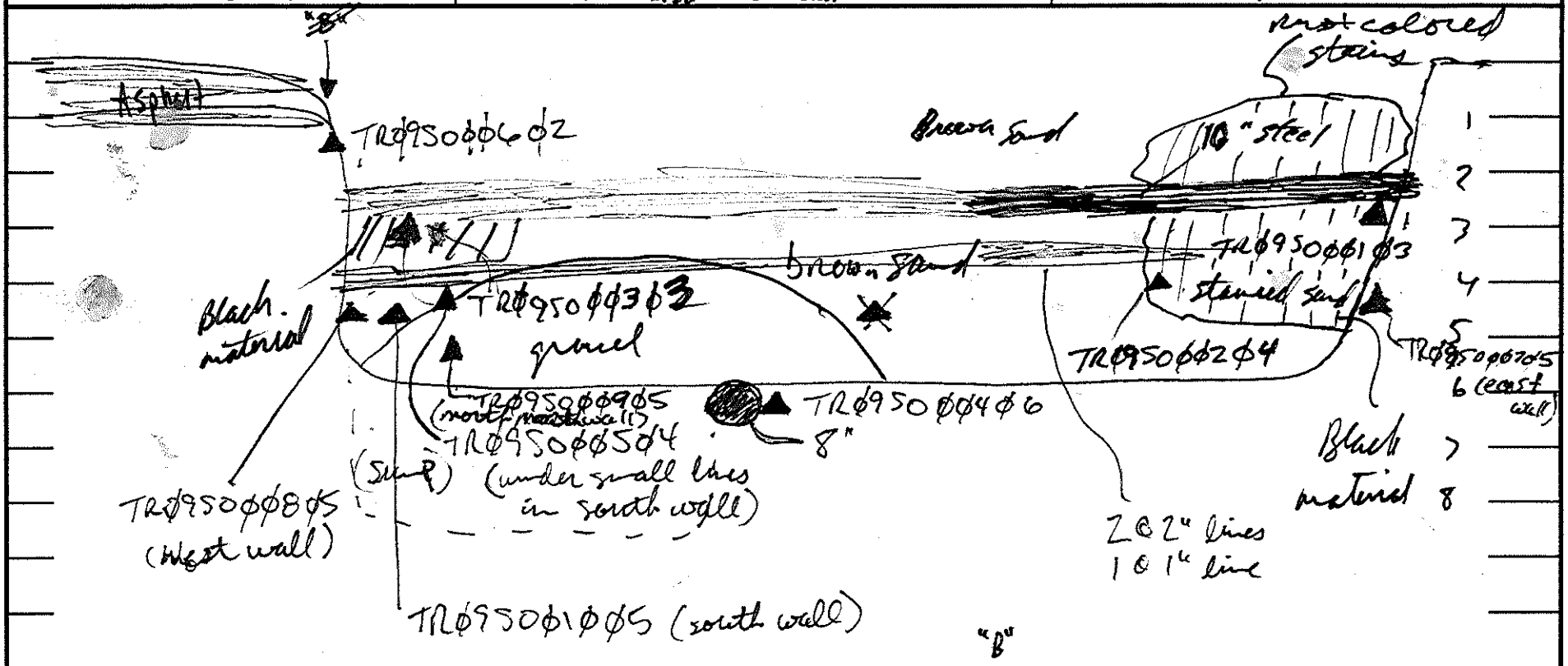
Field Test Trench Log

Project No.: 92002	Project Name: Lucky FUSRAP	Trench ID: TR08	
Logged By: S Deaton		Operator/Company: Nkone	
Excavator: Komatsu PC200LC	Date Started: 1/18/10	Date Completed: 1/18/10	
Surface Elevation:	Total Depth: ~10.0 ft	Total Length: ~ 28.0 ft	
Total Width: ~5.0 ft	Backfill:	Initial Water Level:	

Depth (feet bgs)	Sample Depth (feet bgs)	PID Reading (ppm)	Lithology	Description
				• Light Brown Gravel, Saturated, Loose
				• Dark Gray Gravel/Sand, Saturated, Loose
				• Brown Silt/Clay, mottled reddish brown to brown v. hard to stiff, v. plastic
				Some concrete in backfill
				Some brick in backfill
				4" Cast Iron line (east/west) into concrete vault/tank.

Field Test Trench Log

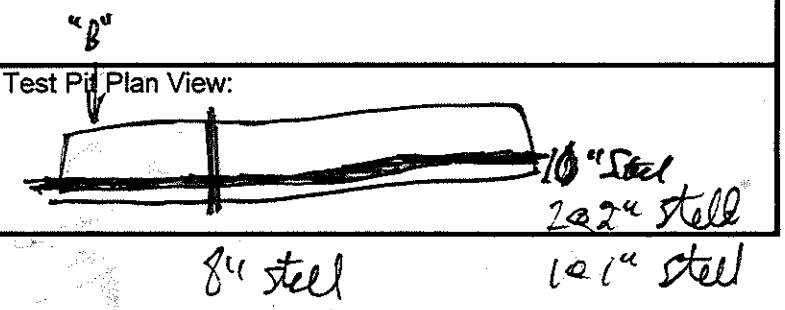
Project No.: 92002	Project Name: Lucky FUSRAP			Trench ID: TR09	
Logged By: S. Deeten		Operator/Company: Nemore			
Excavator: Komatsu PC200LC	Date Started: 1/18/10			Date Completed: 1/19/10	
Surface Elevation:	Total Depth: ~6.0 ft			Total Length: ~20.0 ft	
Total Width: ~5.0 ft	Backfill: Excavated Material			Initial Water Level: 2.5 ft	



Remarks:
Trench filled w/ water from pipe trench to ~2.5 ft bgs.

North:

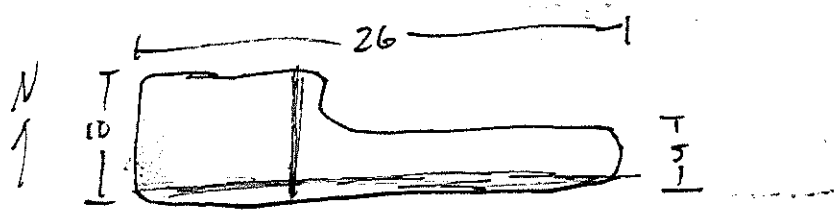
Test Pit Plan View:



Field Test Trench Log

Project No.: 92002	Project Name: Lucher FUSRAP	Trench ID: TR#9	
Logged By: S. Deetal	Operator/Company: Veneme		
Excavator: Komatsu PC200LC	Date Started: 1/18/10	Date Completed: 1/19/10	
Surface Elevation:	Total Depth: ~ 6.0 ft	Total Length: ~ 20.0	
Total Width: ~ 5.0 ft	Backfill: Excavated material	Initial Water Level: 2.5 ft	

Depth (feet bgs)	Sample Depth (feet bgs)	PID Reading (ppm)	Lithology	Description
				Sand - Brown, wet, stratified. Loose,
				Gravel - Saturated, Light Brown, Saturated, Loose
				Black material - sand, stained, saturated.
				• Concrete Pieces, > 2'x2'.
				• Brick (Fire Brick?)
				• A lot (>50%) brick/concrete debris.
				Trench Dimensions w/ Sump = ~26'x10'



5 feet deep @ west end

Appendix E

Chain of Custody Records

(Provided in Electronic Files)

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGEN / KEVIN BEYER

Page 1 of 2

SB001

NOVEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
24	1040	0001 S000101	001	G	1		X							
24	1045	0001 S000202	002	G	1		X							
24	1052	0001 S000303	003	G	1		X							
24	1100	0001 S000404	004	G	1	X	X							
24	1103	0001 S000505	005	G	1	X	X							
24	1230	0001 S000606	006	G	1		X							
24	1235	0001 S000707	007	G	1		X							
24	1240	0001 S000808	008	G	1		X							
24	1242	0001 S000910	009	G	1	X	~~X~~ G							RAD ONLY
24	1256	0001 S001013	010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	24 NOV 09 1330	[redacted]	11/24/09 1330

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL ROAZ / KEVIN BEYER

Page 2 of 2

5B01

Date (November 2009)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Parameters for Analysis: Plutonium	Parameters for Analysis: Be							Comments
24	1320	QQ150Q1118	Q01 Q11	G	1		X							DUPLICATE Q01 Q12

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	24 NOV 09 1330	[redacted]	11/24/09 1330

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

Page 1 of 2

SB002

Date (November 2009)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be							Comments
24	0844	00025000101	002 001	G	1		X							
24	0845	00025000202	002 002	G	1		X							
24	0847	00025000303	002 003	G	1		X							
24	0850	00025000404	002 004	G	1		X							
24	0852	00025000505	002 005	G	1		X							
24	0910	00025000606	002 006	G	1		X							
24	0914	00025000707	002 007	G	1		X							
24	0925	00025000808	002 008	G	1		X							
24	0930	00025000910	002 009	G	1		X							
24	0950	00025000 10 12	002 010	G	1	X	~~X~~	NO	BERYLLIUM	TEST				ONLY RAD

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
ES	24 NOV 09 1000 HRS	[redacted]	11/24/09 1000

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PAGE / KEVIN BEYER

Page 2 of 2

SB002

November 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
~~24~~		~~0002S001112~~	~~002 011~~	~~G~~	~~1~~	~~X~~		~~X~~						~~DUPLICATE 002 014~~
24	0947	0002S001213	002 013	G	1	X							←	DUPLICATE ~~002 013~~
24	0945	0002S001314	002 013	G	1	X	X							002013

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	24 NOV 09 1000	[redacted]	11/24/09 1020	PRISM APPL
				Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Lucky FUSRAP

QA Contact: Stan Stevens QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: K. Sheff

Page 1 of 2

SB03

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Be	Rad							Comments
11/24/09	0807	RNSW043	043013	←	1	X								Rinse
11/24/09	0906	00350 0001 01	003001		1	X								
	0907	00350 0002 02	003002		1	X								
	0908	00350 0003 03	003003		1	X								
	0909	00350 0004 04	003004		1	X								
	0910	00350 0005 05	003005		1	X								
	0911	00350 0006 06	003006		1	X								
	0912	00350 0007 07	003007		1	X								
	0913	00350 0008 08	003008		1	X								
↓	0914	00350 0009 09	003009	↓	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]		[redacted]	11/24/09 0950

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Tom Stevens QA Contact Phone: —

Work Order #: 97002 Sample Program: —

Samplers: K Shroff

Page 2 of 2

5B03

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Be	RAD							Comments
11/24/09	0915	FUSS0010014	003010	G	1		X							
↓	0916	FUSS0011115	003011	↓	1		X							
↓	0917	FUSS0012220	003012	↓	1	X								Dup for Be TA 003013

Relinquished by (signature):	Date/Time:	[redacted]ignature):	Date/Time:
[illegible]			11/24/09 0930

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: SEAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

Page 1 of 1

SBQQ4

Date (DECEMBER 2009)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
2	1040	QQQ4 5000101	QQ4 001	G	1		X							
2	1100	QQQ4 5000202	QQ4 002	G	1		X							
2	1050	QQQ4 5000303	QQ4 003	G	1		X							DUPLICATE QQ4012
2	1101	QQQ4 5000~~404~~ Q6	QQ4 004	G	1	X	X							NOTE: CROSS OUT COLLECTION
2	1105	QQQ4 5000~~505~~ 118	QQ4 005	G	1	X	X							FROM QQ4006 TO QQ4017 BY
2	1110	QQQ4 5000~~606~~ 12	QQ4 006	G	1	X	X							SAMPLER CARL PIDGE
2	1127	QQQ4 5000~~707~~ 16	QQ4 007	G	1		X							
2	1121	QQQ4 5000~~808~~ 17	QQ4 008	G	1		X							
2	1116	QQQ4 5000718	QQ4 009	G	1		X							
~~2~~	~~1~~	~~QQ~~ 5000~~10~~ 8	~~QQ10~~	~~G~~	~~1~~		~~X~~							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
	2 DEC 09 1145	[redacted]	12/02/09 1145

Shipped To (circle one): PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

Page 1 of 1

SB005

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be	PB						Comments
1	1655	0005S00001 01	001	G	1	X	X							
1	1656	0005S00002 02	002	G	1	X	X							
1	1707	0005S00003 03	003	G	1		X							
1	1702	0005S00004 04	004	G	1	X	X							DUPLICATE 005010
1	1658	0005S00005 05	005	G	1		X							
1	1715	0005S00006 06	006	G	1		X							
1	1716	0005S00007 07	007	G	1		X							
1	1718	0005S00008 08	008	G	1		X							
1	1725	0005S00009 12	009	G	1		X							
			~~010~~	G	1									

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
G	12/9/09 1540 hr	[redacted]	12/9/09 1540

Shipped To (circle one):

PRISM APPL

Test America Other:_____

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client:

Project Name:

QA Contact: QA Contact Phone:

Work Order #: Sample Program:

Samplers:

Page 1 of 2

5B06

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Be	Cd							Comments
	1411	[illegible]	[illegible]	G	1	X	X							
	1412	[illegible]	[illegible]	↓	1	X								
	1413	[illegible]	[illegible]	↓	1	X								
	1414	[illegible]	[illegible]	↓	1	X								
	1415	[illegible]	[illegible]	↓	1	X								
	1416	[illegible]	[illegible]	↓	1	X								
	1417	[illegible]	[illegible]	↓	1	X	X							
	1418	[illegible]	[illegible]	↓	1	X								
	1419	[illegible]	[illegible]	↓	1	X								[illegible]
	1420	[illegible]	[illegible]	↓	1		X							

Relinquished by (signature):	Date/Time:	[redacted] nature):	Date/Time:	Shipped To (circle one):
	[illegible]		12/1/09 1552	PRISM APPL
				Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey

QA Contact: [illegible] QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: K Shrotb

Page 2 of 2

SB06

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RE								Comments
12/1/09	1121	0650/1120	006011	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
		[redacted]	12/1/09 1557

Shipped To (circle one):

PRISM APPL

Test America Other: TTOES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USAF

Project Name: [illegible]

QA Contact: [illegible] QA Contact Phone: —

Work Order #: [illegible] Sample Program: —

Samplers: K [illegible]

Page ____ of ____

5307

Parameters for Analysis

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	[illegible]	[illegible]							Comments
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	X								
	[illegible]	[illegible]	[illegible]	[illegible]	1	X								
	[illegible]	[illegible]	[illegible]		1	X								
	[illegible]	[illegible]	[illegible]		1	X								
	[illegible]	[illegible]	[illegible]		1	X								
		[illegible]	[illegible]		1	X								
		[illegible]	[illegible]		1	X	X							[illegible]
		[illegible]	[illegible]		1	X								
					1		X							
	[illegible]	12			1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]		[redacted]	12/1/09 1307

Shipped To (circle one):

PRISM APPL

Test America Other:_____

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: U-ARE

Project Name: Lutey Fulbright

QA Contact: QA Contact Phone: —

Work Order #: Sample Program: —

Samplers:

Page ____ of ____

5B07

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Be	Rad							Comments
		1120		G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
		[redacted]	12/1/15 1207

Shipped To (circle one):

PRISM APPL

Test America Other:_____

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: [illegible] QA Contact Phone: —

Work Order #: 92007 Sample Program: —

Samplers: K Shroff

Page 1 of 2

5308

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	VOC	RAD							Comments
12/1/09	1640	0008500101	008001	C	1	X								
	1641	0008500202	008002		1	X								
	1647	0008500303	008003		1	X								
	1643	0008500404	008004		1	X								
	1644	0008500505	008005		1	X								
	1645	0008500606	008006		1	X								
	1646	0008500704	008007		1	X								
	1647	0008500808	008008		1	X	X							
	1648	0008500912	008009		1	X								
	1649	0008501013	008010		1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	[illegible]	[redacted]	12/1/09 1704

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: US DOE

Project Name: Luckey FUSRAP

QA Contact: [illegible] QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: K Shrum

Page 4 of 7

SB08

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	BK	RAD							Comments
12/1/09	1650	0008-01116	008011	G	1		X							
12/1/09	1651	0008-01220	008012	G	1	X								Dup for the [illegible]

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
		[redacted]	12/1/09 1704

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PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client:

Project Name:

QA Contact: QA Contact Phone:

Work Order #: Sample Program:

Samplers:

Page 1 of 2

SB09

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Be	Rad							Comments
	1115				1	X								
	1116				1	X								
	1117				1	X	X							
	1119				1	X								
	1119				1	X								
	1150				1	X								
	1151				1	X								Duplicate for Be (009012)
	1152				1	X								
	1153		10		1		X							
	1154		12		1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
		[redacted]	12/2/09 1236	PRISM APPL
				Test America Other:

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client:

Project Name:

QA Contact: QA Contact Phone:

Work Order #: Sample Program:

Samplers:

Page ____ of ____

5B09

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Parameters for Analysis								Comments
		ØØØ950Ø11Ø2Ø	ØØ911											

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
		[redacted]	12/2/09 1303

Shipped To (circle one):

PRISM APPL

Test America Other:_____

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: Lucy

Project Name:

QA Contact: QA Contact Phone:

Work Order #: Sample Program:

Samplers:

Page 1 of 2

SB10

Parameters for Analysis

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Be	Rad							Comments
12/2/09	0850	KNSW010	010 001	G	1	X								
	1008	[illegible]	[illegible]		1	X								
	1009	[illegible]	[illegible]		1	X								
	1010	[illegible]	010004		1	X								
	1011	[illegible]	010005		1	X								
	1012	[illegible]	010006		1	X	X							
	1013	[illegible] 11	010007		1	X								
	1014	[illegible] 12	010008		1	X	X							
	1015	[illegible] 13	010009		1	X								
	1016	601050009 16	010010		1	X	X							

Relinquished by (signature):	Date/Time:	[redacted] signature):	Date/Time:	Shipped To (circle one):
			12/2/09 1250	PRISM APPL
				Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Lawley FUSRAP

QA Contact: Jim Stevens QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: K Shirrell

Page 2 of 2

SB10

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Be								Comments
12/7/05	1017	0010S0010204	010011	G	1	X								Collect Duplicate for Be (010012)

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
		[redacted]	12/7/05 1250

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Lucheny FUSRAP

QA Contact: John Hawkins QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: K Throff

Page 1 of 2

SB11

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Be	RAD							Comments
12/2/09	1252	CON50G0101	011001	G	1	X	X							
	1253	CON50G0202	011002		1	X								Rad
	1254	CON50G0303	011003		1	X	X							Collect Rad/Be Duplicate (011012)
	1255	CON50G0404	011004		1	X								
	1256	CON50G0505	011005		1	X								
	1257	CON50G0606	011006		1	X								
	1258	CON50G0707	011007		1	X								
	1259	CON50G0808	011008		1	X								
	1300	CON50G0911	011009		1		X							
	1301	CON50G1012	011010		1									

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
		[redacted]	12/2/09 1443

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Jim Stevens QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: K Shroff

Page 2 of 2

SB11

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Pb								Comments
12/2/09	1302	0011 30 01120	011011	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
		[redacted]	12/2/09 1443

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Jim Stevens QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: K Shiroff

Page 1 of 2

SBLS

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	be	kad							Comments
12/1/09	1020	0015 5000101	015001	G	1	X								
	1021	001550 00207	015 002		1	X								
	1022	00550 00303	015 003		1	X								
	1023	001550 00404	015004		1	X								
	1024	00550 00505	015005		1	X								
	1025	00550 00606	015 006		1	X								
	1026	001550 00707	015 007		1	X								
	1027	001550 00808	015008		1	X								
	1028	00550 00915	015009		1	X	X							
	1029	001550 01017 (SEV)	015010		1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
		[redacted]	12/1/09 1050

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Lucky FUSRAP

QA Contact: Tom Stevens QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: K. Shinoff

Page 2 of 2

SDLS

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Be	~~[illegible]~~ (SED)	Rad						Comments
12/1/09	1030	00155001119	015011	G				X						
↓	1031	0015500220	015012	↓		X								
↓	1031	001550 01320	015013	↓		X								Duplicate
	0850	RNSW017	017015	G		X								Rinse BLK

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
		[redacted]	12/1/09 1050

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Linden FUSRAP

QA Contact: Steve Stevens QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: K. Shroff

Page 1 of 2

SB16

Parameters for Analysis

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RAD	BE							Comments
12/1/09	1250	RVSW016	016015	G	2	X	X							
	1340	0016SO00101	016001	G	1	X	X							
	1341	0016SO00202	016002		1		X							
	1342	0016SO00303	016003		1	X	X							
	1343	0016SO00404	016004		1		X							
	1344	0016SO00505	016005		1		X							
	1345	0016SO00606	016006		1		X							Collect duplicate for the 1/12 016011
	1346	0016SO00707	016007		1		X							
	1347	0016SO00808	016008		1		X							
	1348	0016SO00911	016009		1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
		[redacted]	12/1/09 1550

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Stan Stanen QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: K Shiroff

Page 2 of 2

SB16

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Be								Comments
12/1/09	1349	0016 50 01020	016010	G	1	1								

Parameters for Analysis

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
		[redacted]	12/1/09 1550

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Lucky ~~[illegible]~~ FUSRAP

QA Contact: Tom Stevens QA Contact Phone: —

Work Order #: 17602 Sample Program: —

Samplers: K Sheoff

Page 1 of 2

SB17

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Be	Rad							Comments
11/24/09	1650	0017500001	017001	F	1	X								
	1651	0017500202	017002		1	X								
	1652	0017500303	017003		1	X	X							DUP for Be Rad TK 017013
	1653	0017500404	017004		1	X								
	1654	0017500505	017005		1	X								
	1655	0017500606	017006		1	X								
	1656	0017500707	017007		1	X								
	1657	0017500808	017008		1	X								
	1658	0017500912	017009		1	X								
	1659	0017501017	017010		1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
	11/24/09 1726	[redacted]	11/24/09 1728

Shipped To (circle one):

PRISM APPL

Test America Other: FES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Jim Stevens QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: K. Shroff

Page 2 of 2

SB17

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Be	Rad							Comments
11/24/09	1706	dd17S0d1#18	017011	G	1		X							
11/24/09	1701	dd17S0d122d	017012	↓	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
	11/24/09 17[redacted]		11/24/09 1718

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / STEVE DEETER

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SBQ18

Parameters for Analysis

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
8	1500	0018 S000101	018 001	G	1		X							SITE ID HS CHANGED BY SAMPLER CARL PIDGE
8	1501	0018 S000202	018 002	G	1	X	X							
8	1502	0018 S000303	018 003	G	1		X							
8	1503	0018 S000404	018 004	G	1		X							
8	1504	0018 S000505	018 005	G	1		X							00506
8	1505	0018 S000607	018 006	G	1	X	X							00607
8	1506	0018 S000708	018 007	G	1	X	X							00708
8	1507	0018 S000909	018 009	G	1		X							00815 DUPLICATE / 00815A
8	1509	0018 S000918	018 009	G	1		X							
~~8~~		~~0018 S0010~~	~~018 010~~	~~G~~	~~1~~									

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	8 DEC 09 1515	[redacted]	[illegible]

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Jim Stevens QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: K Shroff / K Beyer

Page 1 of 1

5B19

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	(LAI)	Be							Comments
12/15/09	1500	0019 S0 00101	019001	G	1		X							
	1501	0019 S0 00207	019 002		1	X	X							
	1502	0019 S0 00303	019 003		1	X	X							
	1503	0019 S0 00404	019 004		1		X							
	1504	0019 S0 00505	019 005		1		X							Duplicate ~~of~~ Be (SL 019 012)
	1505	0019 S0 00606	019 006		1		X							
	1506	0019 S0 00707	019 007		1		X							
	1507	0019 S0 00808	019 008		1		X							
	1508	0019 S0 00919	019 009		1		X							
	1509	0019 S0 01017	019 010		1	X								
	1510	0019 S0 01120	019 011		1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
	12/15/09 1500	[redacted]	12/15/09 1550	PRISM APPL
				Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Lowry FUSRAP

QA Contact: Tom Stevens QA Contact Phone:

Work Order #: 72002 Sample Program:

Samplers: K Shuff

Page 2 of 3

SB48 SB20

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	BE	Pbd							Comments
11/22/01	1449	0450 010015	TK018011	G	1	X								
	1601	0070500 010001	020001		1	X								
	1602	0070500 010002	020002		1	X								
	1603	0070500 010003	020003		1	X								
	1604	0070500 010004	020004		1	X								
	1605	0070500 010005	020005		1	X								
	1606	0070500 010006	020006		1	X	X							
	1607	0070500 010007	020007		1	X								
	1608	0070500 010008	020008		1	X								
	1609	0070500 010011	020009		1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
		[redacted]	11/22/01 1450

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Mickey FUSRAP

QA Contact: Jan Stevens QA Contact Phone:

Work Order #: 77002 Sample Program:

Samplers: K Shroff

Page 3 of 3

SB 20 NOT SB 200

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Rad	Be							Comments
11/21/09	1610	020050 01012	020010	G	1	X								
↓	1611	020050 01114	020011	↓	1		X							
↓	1612	020050 01215	020012	↓	1		X							Dup Be → 020013

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[redacted]		[redacted]	11/21/09 1650

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL ADGE / KEVIN BEYER

Page 1 of 1

SB Q21

NOVEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
21	1451	0021 5000101	Q21 001	G	1		X							
21	1453	0021 5000202	Q21 002	G	1		X							
21	1456	0021 5000303	Q21 003	G	1	X	X							
21	1459	0021 5000404	Q21 004	G	1		X							
21	1503	0021 5000505	Q21 005	G	1		X							
21	1531	0021 5000606	Q21 006	G	1		X							DUPLICATE Q21Q11
21	1533	0021 5000707	Q21 007	G	1		X							
21	1535	0021 5000808	Q21 008	G	1		X							
21	1539	0021 5000910	Q21 009	G	1	X	X							
21	1545	0021 5001011	Q21 010	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	21 NOV 09 1553 hrs	[redacted]	[illegible] 1122

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

Page 1 of 1

SBQ22

November 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Radiological	Be	Pb						Comments
20	1515	002250001001	022 001	G	1		X							
20	1519	002250002002	022 002	G	1		X							
20	1522	002250003003	022 003	G	1		X							
20	1525	002250004004	022 004	G	1		X							
20	1529	002250005005	022 005	G	1		X							
20	1546	002250006006	022 006	G	1		X							
20	1549	002250007007	022 007	G	1	X	X							
20	1554	002250008008	022 008	G	1	X	X							
20	1602	002250009009	022 009	G	1	X	X							
20	1630	002250010011	022 010	G	1		X							DUPLICATE ~~002250011~~ G

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[signature]	20 NOV 09 1715	[redacted]	11/20/09 1717

Shipped To (circle one): 02211

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

Page 1 of 1

SB023

November 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be	PB						Comments
20	1045	002350001001	023 001	G	1		X							
20	1045	002350002002	023 002	G	1	X	X							
20	1045	002350003003	023 003	G	1	X	X							
20	1050	002350004004	023 004	G	1		X							
20	1050	002350005005	023 005	G	1		X							
20	1113	002350006006	023 006	G	1		X							
20	1113	002350007007	023 007	G	1		X							
20	1117	002350008008	023 008	G	1		X							
20	1131	002350009009	023 009	G	1	X	X							DUPLICATE 023011
20	1118	002350010011	023 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	20 NOV 09 [illegible]	[redacted]	20 NOV 09 1250

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: LISAC E

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 97002 Sample Program:

Samplers: K. Shroff

Page 1 of 1

SB24

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Rad	Be							Comments
11/20/09	1025	0024500001 01	024001	G	1		X							
	1026	0024500002 02	024002	G	1	X	X							
	1027	0024500003 03	024003	G	1	X	X							
	1028	0024500004 04	024004	G	1		X							
	1029	0024500005 05	024005	G	1		X							
	1045	0024500006 06	024006	G	1		X							
	1046	0024500007 07	024007	G	1		X							
	1047	0024500008 08	024008	G	1		X							
	1048	0024500009 09	024009	G	1		X							
	1049	0024500010 10	024010	G	1	X	X							DUPLICATE 024011

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	[illegible]	[redacted]	11/20/09 1140

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDKE / STEVE DEETER

Page 1 of 1

SB025

Date (DECEMBER 2009)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be	Pb						Comments
8	1540	0025S0000101	025 001	G	1		X							
8	1541	0025S0000202	025 002	G	1		X							
8	1542	0025S0000303	025 003	G	1		X							
8	1543	0025S0000404	025 004	G	1		X							
8	1544	0025S0000506	025 005	G	1		X							
8	1545	0025S0000607	025 006	G	1	X	X							
8	1546	0025S0000709	025 007	G	1		X							
8	1547	0025S0000809	025 008	G	1	X								
8	1548	0025S0000911	025 009	G	1	X								
8	1549	0025S0001014	025 010	G	1		X							DUPLICATE 025011

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	8 DEC 09 1600	[redacted]	[illegible]

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Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEVER

Page 1 of 2

SB026

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be	PB						Comments
5	1310	0026500001	026 001	G	1		X							
5	1311	0026500002	026 002	G	1		X							
5	1312	0026500003	026 003	G	1		X							
5	1313	0026500004	026 004	G	1		X							
5	1314	0026500005	026 005	G	1		X							0506
5	1315	0026500006	026 006	G	1		X							
5	1316	0026500007	026 007	G	1		X							
5	1317	0026500008	026 008	G	1	X	X							RAP ONLY 00813
5	1318	0026500009	026 009	G	1	X	X							
5	1319	0026500010	026 010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	5 DEC 09 1340	[redacted]	12/05/09 1330

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDINE / KEVIN BEYER

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SB026

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
5	1320	QQ26500112D	Q26 K11	G	1		X							DUPLICATE Q26Q12

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[redacted]	5 DEC 09 1340	[redacted]	12/5/09 1430	PRISM APPL Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

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SBQ27

Parameters for Analysis

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
8	1000	0027500001 01	Q27 Q01	G	1		X							
8	1001	0027500002 02	Q27 Q02	G	1		X							
8	1002	0027500003 03	Q27 Q03	G	1		X							
8	1003	0027500004 04	Q27 Q04	G	1		X							
8	1004	0027500005 06	Q27 Q05	G	1		X							DUPLICATE Q27Q12
8	1005	0027500006 07	Q27 Q06	G	1		X							
8	1006	0027500007 08	Q27 Q07	G	1		X							
8	1007	0027500008 13	Q27 Q08	G	1	X								
8	1008	0027500009 14	Q27 Q09	G	1	X								
8	1009	0027500010 15	Q27 Q10	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	8 DEC 09	[redacted]	12/8/09 1130

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL RIDGE / KEVIN BEYER

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SBQ27

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be	PB						Comments
8	1010	SBQ27S0011 19	Q27 Q11	G	1		X							

Parameters for Analysis

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	8 DEC 09 1050	[redacted]	12/8/09 1130

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Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDLE / STEVE DEETER

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SB028

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
5	0840	0028500101	028 001	G	1		X							
5	0841	0028500202	028 002	G	1		X							
5	0842	0028500303	028 003	G	1		X							
5	0843	0028500404	028 004	G	1		X							
5	0844	0028500505	028 005	G	1	X	X							DUPLICATE 028017
5	0845	0028500606	028 006	G	1		X							
5	0846	0028500707	028 007	G	1		X							
5	0847	0028500808	028 008	G	1		X							
5	0848	0028500913	028 009	G	1	X	/							RAD ONLY
5	0849	0028500014	028 010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	5 DEC 09 1000	[redacted]	12/5/09 1400

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Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

Page 2 of 2

SBQ28

Date (DECEMBER 2009)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Parameters for Analysis: RADIOLOGICAL	Be	PB						Comments
5		~~SOO~~ 0028500Q1117	028 Q11	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	5 DEC 09 1000	[redacted]	12/5/09 1432

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Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / STEVE DEETER

Page 1 of 2

SB029

Parameters for Analysis

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
4	1530	002950001 01	029 001	G	1		X							
4	1531	002950002 02	029 002	G	1		X							
4	1532	002950003 03	029 003	G	1		X							
4	1533	002950004 04	029 004	G	1		X							
4	1534	002950005 05	029 005	G	1		X							
4	1535	002950006 06	029 006	G	1		X							
4	1536	002950007 07	029 007	G	1		X							DUPLICATE 029013
4	1537	002950008 13	029 008	G	1	X	X							
4	1538	002950009 14	029 009	G	1	X								
4	1539	002950010 15	029 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	4 DEC 09 1620		

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92007 Sample Program:

Samplers: CALL PIDGE / KEVIN BEYER

Page 2 of 2

SB029

Date (DECEMBER 2009)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
4	1540	02950011 17	029 011	G		X								
4	1541	02950012 18	029 012	G			X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	4 DEC 09 1620		

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PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

Page 1 of 2

SB030

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
7	1400	0030500101	030 001	G	1		X							
7	1401	0030500202	030 002	G	1		X							
7	1402	0030500303	030 003	G	1		X							
7	1403	0030500404	030 004	G	1		X							
7	1404	0030500505	030 005	G	1		X							
7	1405	0030500606	030 006	G	1		X							
7	1406	0030500707	030 007	G	1		X							
7	1407	0030500808	030 008	G	1		X							
7	1408	0030500909	030 009	G	1	X								
7	1409	0030501010	030 010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	7 DEC 09 1430	[redacted]	12/7/09 1710

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

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SB038.

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
7	1410	0030S0011 13	038 011	G		X								
7	1411	0030S0012 15	030 012	G			X							DUPLICATE 030 014
7	1412	0030S0013 17	030 013	G			X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	7 DEC 09 1430	[redacted]	12/7/09 1710

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

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SBQ31

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
7	1600	0031S000101	031 001	G	1		X							
7	1601	0031S000202	031 002	G	1		X							DUPLICATE 031814
7	1602	0031S000303	031 003	G	1		X							
7	1603	0031S000404	031 004	G	1		X							
7	1604	0031S000505	031 005	G	1		X							
7	1605	0031S000606	031 006	G	1		X							
7	1606	0031S000707	031 007	G	1		X							
7	1607	0031S000808	031 008	G	1		X							
7	1608	0031S000902	031 009	G	1	X								
7	1609	0031S001013	031 010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[redacted]	7 DEC 09 1635	[redacted]	12/7/09 1710

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / STEVE DEETER

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SBQ31

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
7	1610	0031SD01114	Q31 Q11	G	1	X								
7	1611	0031SD01215	031 012	G			X							
7	1612	0031SD01316	031 013	G			X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	7 DEC 09 1633	[redacted]	12/7/09 1710

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PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

Page 1 of 2

SBQ32

Date (DECEMBER 2009)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
7	1245	0032S000101	032 001	G	1		X							
7	1246	0032S000202	032 002	G	1		X							
7	1247	0032S000303	032 003	G	1		X							
7	1248	0032S000404	032 004	G	1		X							
7	1249	0032S000505	032 005	G	1		X							
7	1250	0032S000606	032 006	G	1		X							
7	1251	0032S000707	032 007	G	1		X							
7	1252	0032S000808	032 008	G	1		X							
7	1253	0032S000910	032 009	G	1	X	X							032 014 DUPLICATE
7	1254	0032S001014	032 010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	7 DEC 09 1300	[redacted]	12/7/09 1300

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

Page 2 of 2

SBQ32

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
7	1255	00325001115	Q32 Q11	G	1	X								
7	1256	00325001216	Q32 Q12	G	1		X							
7	1257	00325001317	032 Q13	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	7 DEC 09 1300	[redacted]	12/7/09 1326

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

Page 1 of 2

SBQ33

Parameters for Analysis

Date (NOVEMBER 2008)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
24	1637	0033500101	033 001	G	1		X							
24	1640	0033500202	033 002	G	1		X							
24	1645	0033500303	033 003	G	1		X							
24	1648	0033500404	033 004	G	1		X							
24	1650	0033500505	033 005	G	1		X							
24	1702	0033500606	033 006	G	1	X	X							DUPLICAT 033013
24	1704	0033500707	033 007	G	1		X							
24	1705	0033500808	033 008	G	1		X							
24	1735	0033500912	033 009	G	1	X	~~X~~	⊘						RAD ONLY
24	1738	0033501013	033 010	G	1	X	~~X~~	⊘						

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
⊘	24 NOV 08 [illegible]	[redacted]	11/24/08 1800

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Test America Other: ES

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TPMC Sample Chain of Custody

Client: LSACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

Page 2 of 2

SB033

November 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Radiochem	Be							Comments
24	1740	0033SD01114	033 011	G	1		X							
24	1742	0033SD01220	033 012	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	24 NOV 09 1800	[redacted]	11/24/09 1800	PRISM APPL
				Test America Other:

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TPMC Sample Chain of Custody

Client: USACE

Project Name: Lindsay FUSRAP

QA Contact: Jim Stevens QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: K Shroff

Page 1 of 2

SB34

Parameters for Analysis

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Be	Lead							Comments
11/24/09	1540	0034SO0001	034001	C	1	X								
	1541	0034SO0002	034002		1	X								
	1542	0034SO0003	034003		1	X	X							
	1543	0034SO0004	034004		1	X								
	1544	0034SO0005	034005		1	X								Dup for Be TR 034013
	1545	0034SO0006	034006		1	X								
	1546	0034SO0007	034007		1	X								
	1547	0034SO0008	034008		1	X								
	1548	0034SO0012	034009		1	X								
	1549	0034SO0014	034010		1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
K Shroff	[illegible]	[redacted]	11/24/09 [illegible]

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Jim Stevens QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: K Shroff

Page 2 of 2

5034

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Be	Rad							Comments
11/24/09	1550	00345001115	034011	G	1		X							
11/24/09	1551	00345001220	034012	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
K Shroff	[illegible]	[redacted]	11/24/09 [illegible]

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

Page 1 of 2

SB035

Parameters for Analysis

Date (December 2009)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
1	0928	K035500101	035 001	G	1		X							
1	0931	0035500202	035 002	G	1		X							
1	0932	0035500303	035 003	G	1		X							
1	0933	0035500404	035 004	G	1		X							
1	0935	0035500505	035 005	G	1		X							
1	0950	0035500606	035 006	G	1		X							
1	0953	0035500707	035 007	G	1		X							
1	0955	0035500808	035 008	G	1		X							
1	1032	0035500912	035 009	G	1	X	~~X~~							RAD ONLY
1	1037	0035500101	035 010	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	12-1-09 1112	[redacted]	12/1/09 1112

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PRISM APPL

Test America Other:_____

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL ADKE / KEVIN BEVER

Page 2 of 2

SBQ35

DEC 09 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BC	PB						Comments
1	1040	QD35500111 5	Q35 Q11	G	1	X	X							DUPLICATE 035013
1	1050	QD35500121 9	035 Q12	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	1 DEC 09 1100 hrs	[redacted]	12/1/09 1112	PRISM APPL
				Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIGGE / KEVIN BEYER

Page 1 of 2

SB036

NOVEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
23	1437	00365000101	036 001	G	1		X							
23	1440	00365000202	036 002	G	1		X							
23	1445	00365000303	036 003	G	1		X							
23	1453	00365000404	036 004	G	1		X							
23	1500	00365000505	036 005	G	1		X							
23	1520	00365000606	036 006	G	1		X							
23	1525	00365000707	036 007	G	1		X							
23	1530	00365000808	036 008	G	1		X							
23	1545	00365000905	036 009	G	1	X	X							DUPLICATE 036012
23	1555	00365000016	036 010	G		X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	1620 hrs 23 Nov 09	[redacted]	11/23/09 1620	PRISM APPL
				Test America Other:

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

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SB036

Parameters for Analysis

Date (NOVEMBER 2009)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
23	1600	SB036-50 Q1117	036 001	G	1	X	X							
		~~00 5000202~~	~~002~~	~~G~~	~~1~~		~~X~~		~~Ø~~					
		~~00 5000303~~	~~003~~	~~G~~	~~1~~		~~X~~		~~Ø~~					
		~~00 5000404~~	~~004~~	~~G~~	~~1~~		~~X~~		~~Ø~~					
		~~00 5000505~~	~~005~~	~~G~~	~~1~~		~~X~~		~~Ø~~					
		~~00 5000606~~	~~006~~	~~G~~	~~1~~		~~X~~		~~Ø~~					
		~~00 5000707~~	~~007~~	~~G~~	~~1~~		~~X~~		~~Ø~~					
		~~00 5000808~~	~~008~~	~~G~~	~~1~~		~~X~~		~~Ø~~					
		~~00 50009~~	~~009~~	~~G~~	~~1~~		~~X~~		~~Ø~~					
		~~00 50010~~	~~010~~	~~G~~	~~1~~		~~X~~		~~Ø~~					

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
Ø	23 Nov 09 1620	[redacted]	11/23/09 1620

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Linden FUSRAP

QA Contact: Jim Stelling QA Contact Phone: —

Work Order #: 97007 Sample Program: —

Samplers: K Shoff

Page 1 of 2

SB37

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Cs	Rad							Comments
11/13/19	1410	003750 00101	037001		1	X								
	1411	003750 00202	037002		1	X								
	1417	003750 00303	037003		1	X								
	1413	003750 00404	037004		1	X								
	1414	003750 00505	037005		1	X								
	1415	003750 00606	037006		1	X								
	1416	003750 00707	037007		1	X								
	1417	003750 00808	037008		1	X								
	1417	003750 00909	037009		1		X							
	1419	003750 01010	037010		1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
		[redacted]	11/23/19 1438

Shipped To (circle one):

PRISM APPL

Test America Other: EX

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luchin FUSRAP

QA Contact: Stan Stevens QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: K Shroff

Page 2 of 2

SB37

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Re	Pud							Comments
11/23/09	1420	003750 01112	037011	G	1	X	X							
11/23/09	1421	003750 01215	037017	G	1	X								037017 – Dup

Relinquished by (signature):	Date/Time:	[redacted]ignature):	Date/Time:	Shipped To (circle one):
[illegible]		X [redacted]	11/23/09 1438	PRISM APPL
				Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Stan Stevens QA Contact Phone:

Work Order #: 92002 Sample Program: ——

Samplers: K Shinoff

Page 1 of 2

5B38

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Rad	Be							Comments
11/23/04	1120	0038500001 01	038001	G	1		X							
	1121	0038500002 02	038002		1		X							
	1122	0038500003 03	038003		1	X	X							DUP for Rad/Be TA038012
	1123	0038500004 04	038004		1		X							
	1124	0038500005 05	038005		1		X							
	1125	0038500006 06	038006		1		X							
	1126	0038500007 07	038007		1		X							
	1127	0038500008 08	038008		1		X							
	1128	0038500009 10	038009		1	X								
	1129	0038500010 12	038010		1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[redacted]			

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Lucky FUSRAP

QA Contact: Stan Stocking QA Contact Phone:

Work Order #: 97002 Sample Program: —

Samplers: K Shuff

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SB38

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Rad	Be							Comments
11/23/09	1130	0038500011015	038011	G	1		X							~~D.of for Be 038012~~
↓	1155	RNSW038	038013	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
K Shuff	[illegible]	[redacted]	11/23/09 12:[illegible]

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: LISACE

Project Name: Luckey FUSRAP

QA Contact: Stan Strungis QA Contact Phone: —

Work Order #: 97002 Sample Program: —

Samplers: K Shnoff / K. Beyers

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5039

Parameters for Analysis

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Rad	Be							Comments
12/15/09	1340	0039 50 00100	039001	G	1		X							
	1341	0039 50 00202	039002		1		X							
	1342	0039 50 00303	039003		1	X	X							
	1343	0039 50 00404	039004		1	X	X							
	1344	0039 50 00505	039005		1		X							
	1345	0039 50 00606	039006		1	X	X							Collect Duplicate for Be/Rad (039011)
	1346	0039 50 00707	039007		1		X							
	1347	0039 50 00808	039008		1		X							
	1348	0039 50 00913	039009		1		X							
	1349	0039 50 01018	039010		1		X							

Relinquished by (signature):	Date/Time:	[redacted] signature):	Date/Time:	Shipped To (circle one):
	12/15/09 1350		12/15/09 1555	PRISM APPL
				Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL ADAE / KEVIN BEYER

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SB040

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Radiological	Be	Pb						Comments
2	0830	0040 5000101	040 001	G	1		X							
2	0832	0040 5000202	040 002	G	1		X							
2	0835	0040 5000303	040 003	G	1		X							
2	0843	0040 5000404	040 004	G	1		X							
2	0840	0040 5000505	040 005	G	1		X							
2	0930	0040 5000606	040 006	G	1		X							
2	0932	0040 5000707	040 007	G	1		X							
2	0935	0040 5000909	040 009	G	1		X							
2	0952	0040 5000913	040 009	G	1	X	X							DUPLICATE 040013
2	1000	0040 5001014	040 010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	2 DEC 09 1025	[redacted]	12/2/09 1025	PRISM APPL
				Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEVER

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SB040

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
2	1005	040S001115	040 011	G	1	X								
2	1010	040S001219	040 012	G	1		X							
2	1000	RNSW040	040 014	G	1		X							RINSATE

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	2 DEC 09 1025 HRS	[redacted]	12/2/09 1025	PRISM APPL
				Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / STEVE DEETER

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SBQ41

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
16	0950	004150001 01	Q41 001	G	1		X							
16	0951	004150002 02	Q41 002	G	1		X							
16	0952	004150003 03	Q41 003	G	1	X	X							DUPLICATE Q41Q11
16	0953	004150004 04	Q41 004	G	1	X	X							
16	0954	004150005 05	Q41 005	G	1	X	X							
16	0955	004150006 06	Q41 006	G	1		X							
16	0956	004150007 07	Q41 007	G	1		X							
16	0957	004150008 08	Q41 008	G	1		X							
16	0958	004150009 12	Q41 009	G	1		X							
16	0959	004150010 18	Q41 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	16 DEC 09 1030	[redacted]	12/16/09 1438	PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

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SB042

DECEMBER ~~NOVEMBER~~ 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
1	1505	004250001001	042 001	G	1		X							
1	1510	004250002002	042 002	G	1		X							
1	1513	004250003003	042 003	G	1		X							
1	1520	004250004004	042 004	G	1		X							
1	1516	004250005005	042 005	G	1		X							
1	1537	004250006006	042 006	G	1		X							DUPLICATE 042 011
1	1540	004250007007	042 007	G	1	X	X							
1	1545	004250008008	042 008	G	1	X	X							
1	1600	004250009012	042 009	G	1	X	X							
1	1607	004250010020	042 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	1 DEC 09 1620 hrs	[redacted]	12/1/09 1620	PRISM APPL
				Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Lindsay FUSRAP

QA Contact: Tony Stevens QA Contact Phone: —

Work Order #: 72007 Sample Program: —

Samplers: K Shoell

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SB 43

Parameters for Analysis

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Be	Red							Comments
11/13/09	1535	0043500001 01	043001	G	1	X								
	1536	0043500002 02	043002	G	1	X								
	1537	0043500003 03	043003	G	1	X								
	1538	0043500004 04	043004		1	X								
	1539	0043500005 05	043005		1	X								
	1540	0043500006 06	043006		1	X	X							
	1541	0043500007 07	043007		1	X	X							Dup for Red/Be TR 043012
	1542	0043500008 08	043008		1	X								
	1543	0043500009 13	043009		1	X								
	1544	0043500010 14	043010		1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]		[redacted]	11/23/09 1612

Shipped To (circle one):

PRISM APPL

Test America Other: FS

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Stan Stewart QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: K Stroff

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SB43

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Pf	Rad							Comments
11/23/06	1545	00135C01115	045C11	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
		[redacted]	11/23/06 1612

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

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SBQ44

November 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Radiological	Be							Comments
23	1125	0044500001 01	Q44 001	G	1		X							
23	1127	0044500002 02	Q44 002	G	1	X	X							
23	1130	0044500003 03	Q44 003	G	1	X	X							
23	1133	0044500004 04	Q44 004	G	1		X							
23	1135	0044500005 05	Q44 005	G	1		X							
23	1205	0044500006 06	Q44 006	G	1		X							
23	1207	0044500007 07	Q44 007	G	1		X							
23	1213	0044500008 08	Q44 008	G	1		X							
23	1230	0044500009 15	Q44 009	G	1		X							
23	1238	0044500010 17	Q44 010	G	1	X	X							DUPLICATE Q44Q11

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	23 Nov 09 1330	[redacted]	11/23/09 1320	PRISM APPL
				Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PAGE / KEVIN BEYER

Page 1 of 1

SBQ45

November 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Radiological	Be							Comments
23	0922	0045S000101	045 001	G			X							
23	0924	0045S000202	045 002	G			X							
23	0925	0045S000303	045 003	G			X							
23	0926	0045S000404	045 004	G		X	X							
23	0928	0045S000505	045 005	G		X	X							
23	0938	0045S000606	045 006	G			X							
23	0947	0045S000707	045 007	G			X							
23	0950	0045S000808	045 008	G			X							
23	1020	0045S000914	045 009	G			X							DUPLICATE 045011
23	1027	0045S001015	045 010	G		X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	23 NOV 09 1045	[redacted]	[illegible] 1045

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Stan Stevens QA Contact Phone:

Work Order #: 92002 Sample Program: —

Samplers: K Shmoll

Page 1 of 2

5B46

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Pu	Be							Comments
11/13/09	0946	004650 00101	046001	C	1		X							
	0947	004650 00202	046002		1		X							
	0948	004650 00303	046003		1		X							Dup for Be T/L 046013
	0949	004650 00404	046004		1		X							
	0950	004650 00505	046005		1		X							
	0951	004650 00606	046006		1		X							
	0952	004650 00707	046007		1		X							
	0953	004650 00808	046008		1		X							
	0954	004650 00911	046009		1	X								
	0955	004650 01012	046010		1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]		[redacted]	11/23/09 1023

Shipped To (circle one):

PRISM APPL

Test America Other: CS

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Lucky FUSRAP

QA Contact: Stan Flowers QA Contact Phone:

Work Order #: 92002 Sample Program: —

Samplers: K Smuff

Page 2 of 2

SB46

Parameters for Analysis

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Rad	Be							Comments
11/13	0956	004650011113	046011	G	1	X	X							
	0957	004650012 15	046012	G	1		X							
	1005	RNSW046	046014				X							Rinse Blk

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
		[redacted]	11/23/07 1603

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: CISACE

Project Name: Linden FUSRAP

QA Contact: [illegible] QA Contact Phone:

Work Order #: 12002 Sample Program: —

Samplers: K Thrift

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5B47

Parameters for Analysis

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RAD	BE							Comments
11/21/09	1130	004750 00101	047001	F	1	X	X							
	1131	004750 00202	047002	F	1	X	X							
	1132	004750 00303	047003	F	1		X							
	1133	004750 00404	047004	F	1		X							
	1134	004750 00505	047005	F	1		X							Dup for BE TR 047012
	1200	004750 00606	047006	F	1		X							
	1201	004750 00707	047007	F	1		X							
	1202	004750 00808	047008	F	1		X							
	1203	004750 00900	047009	F	1		X							
	1204	004750 01001	047010	F	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]		[redacted]	11/23/09 1210

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Lushing FUSRAP

QA Contact: Sam Stevens QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: K Shuff

Page 2 of 2

58 47

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Be								Comments
11/21/09	1205	0047 50 011012	047011 ~~011012~~	G	1	X								

Parameters for Analysis

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
		[redacted]	11/21/09 1219

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Fran Stevens QA Contact Phone:

Work Order #: 92002 Sample Program: —

Samplers: K Shiloff

Page 1 of 3

SB48

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Rad	Be							Comments
11/21/09	1320	RNSW048	048001	G	2	1	1							Rinse BLK
11/21/09	1425	004850001 01	048002	G	1	X	X							Dup from Rad/Be TR 048012
	1426	004850 00202	048003		1		X							
	1427	004850 00203	048004		1		X							
	1428	004850 00404	048005		1		X							
	1429	004850 00505	048006		1	X	X							
	1445	004850 00606	048007		1		X							
	1446	004850 00707	048008		1		X							
	1447	004850 00808	048009		1	X	X							
	1448	004850 00914	048010		1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
		[redacted]	11/24/09 1056

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Linden FUSRAP

QA Contact: Stan Stevens QA Contact Phone:

Work Order #: 72002 Sample Program:

Samplers: K Shurtleff

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SB48
SB20

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	BE	Rad							Comments
11/22/09	1449	04850 041015	TK048011	G	1	X								
	1601	07050 071011	020001		1	X								
	1602	07050 070202	020002		1	X								
	1603	07050 070303	020003		1	X								
	1604	07050 070404	020004		1	X								
	1605	07050 070505	020005		1	X								
	1606	07050 070606	020006		1	X	X							
	1607	07050 070707	020007		1	X								
	1608	07050 070805	020008		1	X								
	1609	07050 070911	020009		1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
		[redacted]	11/24/2009

Shipped To (circle one):

PRISM APPL

Test America Other: FS

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Jan Stevens QA Contact Phone:

Work Order #: 72002 Sample Program:

Samplers: K Shroff

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SB 20 NOT SB 200

Parameters for Analysis

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Rad	Be							Comments
11/21/09	1610	02DE50 01012	020010	G	1	X								
↓	1611	02DE50 01114	020011	↓	1		X							
↓	1612	02DE50 01215	020012	↓	1		X							Dup of 020012

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]		[redacted]	11/21/09 1050

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Lucky FUSRAP

QA Contact: Stan Stevens QA Contact Phone:

Work Order #: 92002 Sample Program: —

Samplers: K Shroff

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SB49

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RAD	Be							Comments
11/21/09	904	004950001 01	049001	G	1		X							
	905	004950 00202	049002		1		X							
	906	004950 00303	049003		1		X							
	907	004950 00404	049004		1		X							DUPLICATE TR 049011
	908	004950 00505	049005		1		X							
	924	004950 00606	049006		1		X							
	925	004950 00707	049007		1	X	X							
	926	004950 00808	049008		1	~~X~~ ND	X							
	927	004950 00910	049009		1	X	X							
	928	004950 00012	049010		1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
		[redacted]	11/21/09 1030

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Lucky FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program: —

Samplers: Kristal Shoff / Ken Bryant

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5B50

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Be	Rad							Comments
11/20/09	1410	~~Base~~ RNS10024	024002	G	1	X								(Send to Lab)
11/20/09	1435	005050001 01	050001	G	1	X								
11/20/09	1436	005050 00702	050002	G	1	X	X							
11/20/09	1437	005050 00303	050003	G	1	X	X							
11/20/09	1438	005050 00404	050004	G	1	X	X							collect ... 050011 TR
11/20/09	1439	005050 00505	050005	G	1	X								
11/20/09	1510	005050 00606	050006	G	1	X								
11/20/09	1511	005050 00707	050007	G	1	X								
11/20/09	1512	005050 00808	050008	G	1	X								
11/20/09	1513	005050 00909	050009 ~~5000~~	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	[illegible]	[redacted]	11/20/09 1402

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Jim Stevens QA Contact Phone:

Work Order #: 92007 Sample Program: —

Samplers: Kurchak Staff

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SB50

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Be	Rad							Comments
11/20/09	1511	050SC0010	050010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	[illegible]	[redacted]	11/20/09 1457

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDLE / STEVE DEETER

Page 1 of 2

SB051

Date (DECEMBER 2009)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
11	1240	005150001 01	051 001	G	1		X							
11	1241	005150002 02	051 002	G	1		X							
11	1242	005150003 03	051 003	G	1		X							
11	1243	005150004 04	051 004	G	1		X							
11	1244	005150005 05	051 005	G	1		X							
11	1245	005150006 06	051 006	G	1		X							
11	1246	005150007 07	051 007	G	1		X							
11	1247	005150008 08	051 008	G	1	X	X							
11	1248	005150009 14	051 009	G	1	X								
11	1249	005150010 15	051 010	G	1		X							DUPLICATE 051013

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	11 DEC 09 1300	[redacted]	12/11/09 1547	PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / STEVE DEETER

Page 2 of 2

SB051

Date (DECEMBER 2009)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
11	1250	005150011118	051 011	~~CH~~	1	X								
11	1251	005150012020	051 012	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	11 DEC 09 1300	[redacted]	12/4/09 1547	PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / STEVE DEETER

Page 1 of 2

SB052

Date (DECEMBER 2009)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
11	1410	0052500001 01	052 001	G	1		X							
11	1411	0052500002 02	052 002	G	1		X							
11	1412	0052500003 03	052 003	G	1		X							
11	1413	0052500004 04	052 004	G	1		X							
11	1414	0052500005 05	052 005	G	1		X							
11	1415	0052500006 06	052 006	G	1		X							
11	1416	0052500007 07	052 007	G	1		X							
11	1417	0052500008 08	052 008	G	1		X							
11	1418	0052500009 13	052 009	G	1	X	X							DUPLICATE 052 014
11	1419	0052500010 15	052 010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	11 DEC 09 1440	[redacted]	12/11/09 1547	PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CAM ADAE / STEVE DEETER ~~STAN STEVENS~~

Page 2 of 2

SB&52

Date (DECEMBER 2009)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
11	1420	0052500[illegible]1 17	017	052 011	1	X								
11	1421	0052500 12 18	012	052 012	1	X								
11	1422	0052500 1320	013	052 013	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	11/12/09 11:16	[redacted]	12/11/09 1547	PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / STEVE DEETER

Page 1 of 1

SBQ53

Parameters for Analysis

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
11	1210	00535000101	Q53 001	G	1		X							
11	1211	00535000202	Q53 002	G	1		X							
11	1212	00535000303	Q53 003	G	1		X							
11	1213	00535000406	Q53 004	G	1		X							
11	1214	00535000507	Q53 005	G	1		X							
11	1215	00535000609	Q53 006	G	1		X							
11	1216	00535000714	Q53 007	G	1	X								
11	1217	00535000818	Q53 008	G	1	X								
11	1218	00535000919	Q53 009	G	1	X								
11	1219	00535001020	Q53 010	G	1		X							DUPLICATE Q53011

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	11 DEC 09 1250	[redacted]	12/11/09 1547	PRISM APPL Test America Other: CS

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Linden FUSRAP

QA Contact: Tom Stevens QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: K Schoff

Page 1 of 2

SB54

Parameters for Analysis

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Cs	Rad							Comments
8/24/09	1230	0054300001	054001	G		X								
	1231	0054300002	054002			X								
	1232	0054300003	054003			X								
	1233	0054300004	054004			X								
	1234	0054300005	054005			X								
	1235	0054300006	054006			X	X							Duplicate Rad — Id be 054013
	1236	0054300007	054007			X								
	1237	0054300008	054008			X								
	1238	0054300091	054009				X							
	1239	0054300011	054010				X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	[illegible]	[redacted]	[illegible] 1153

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Jim Stewart QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: K Shroff

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5054

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Ra	Rad							Comments
11/24/09	1240	0054501112	054011 ~~[illegible]~~	G	1	X								
↓	1241	0054501220	054012	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
		[redacted]	11/24/09 1153

Shipped To (circle one):

PRISM APPL

Test America Other: E2

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TPMC Sample Chain of Custody

Client: USACE

Project Name: Lake Key FUSRAP

QA Contact: [illegible] QA Contact Phone: —

Work Order #: [illegible] Sample Program: —

Samplers: [illegible]

Page 1 of 2

SB55

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Be	Rad							Comments
11/24/09	1305	RNS1055 ~~[illegible]~~ SEA	055015	E	1	X	X							
	1415	055500101	055001		1	X								
	1416	055500202	055002		1	X								
	1417	055500303	055003		1	X	X							
	1418	055500404	055004		1	X	X							
	1419	055500505	055005		1	X								
	1420	055500606	055006		1	X								
	1421	055500707	055007		1	X								
	1422	055500808	055008		1	X								
	1423	055500912	055009		1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]		[redacted]	11/24/09 1445	PRISM APPL
				Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Jim Stevens QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: K Shroff

Page 2 of 2

SBSS

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Be	Rad							Comments
11/24/09	1124	0055 30 0020	055010	G	1	X								Collect Lab Dup TL 055011
	~~1125~~ SEP													

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
		[redacted]	11/24/09 1445

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

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SBQ56

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
2	1302	0056 5000101	Q56 001	G	1		X							
2	1307	0056 5000202	Q56 002	G	1	X	X							
2	1310	0056 5000303	Q56 003	G	1		X							
2	1312	0056 5000404	Q56 004	G	1		X							
2	1315	0056 5000505	Q56 005	G	1		X							
2	1324	0056 5000606	Q56 006	G	1	X	X							
2	1327	0056 5000707	Q56 007	G	1		X							DUPLICATE Q56Q12
2	1330	0056 5000909	Q56 008	G	1		X							
2	1340	0056 5000912	Q56 009	G	1	X								
2	1342	0056 5001013	Q56 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	2 DEC 09 1400	[redacted]	[illegible]

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

Page 2 of 2

SBQ56

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
DECEMBER 2009 2	1350	Q056S0Q112Q	Q56 Q11	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	2 DEC 09 1400	[redacted]	[illegible] 1413

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / STEVE DEETER

Page 1 of 1

SB057

Date (December)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
11	1500	0057500 0161	057 001	G	1		X							
11	1501	0057500 0202	057 002	G	1	X	X							
11	1502	0057500 0303	057 003	G	1		X							
11	1503	0057500 0404	057 004	G	1		X							
11	1504	0057500 0506	057 005	G	1		X							DUPLICATE 057011
11	1505	0057500 0607	057 006	G	1		X							
11	1506	0057500 0708	057 007	G	1		X							
11	1507	0057500 0811	057 008	G	1	X								
11	1508	0057500 0912	057 009			X								
11	1509	0057500 1017	057 010											

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[signature]	11 DEC 09 1530	[redacted]	12/11/09 1547

Shipped To (circle one): PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Steve Stevens QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: K Shroff / K Bergen

Page 1 of 2

SBSB

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RAD	Be							Comments
12/14/09	1100	0058S0000101	058001	G	1		X							
	1101	0058S0000202	058002		1		X							
	1102	0058S0000303	058003		1		X							
	1103	0058S0000404	058004		1		X							
	1104	0058S0000504	058005		1		X							
	1105	0058S0000607	058006		1		X							
	1106	0058S0000708	058007		1		X							
	1107	0058S0000808	058008		1	X								
	1108	0058S0000911	058009		1		X							
	1109	0058S0001013	058010		1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
	12/14/09 1530	[redacted]	12/14/09 1534

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Lucky FUSRAP

QA Contact: Steve Stevens QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: K Shinoff / K Beyer

Page 2 of 2

5058

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Rad	Be							Comments
12/14/09	1110	05850011	058011	G	1	X								
12/14/09	1111	05850012	058012	↓	1		X							Collect Dup 058013
12/14/09	1035	RNSW058	058015	G	2	X	X							RNSW058

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
	12/14/09 1540	[redacted]	12/14/09 1544

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / STEVE DEETER

Page 1 of 1

SB059

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
9	0845	005950002101	059 001	G	1		X							
9	0846	005950002202	059 002	G	1		X							
9	0847	005950002303	059 003	G	1		X							
9	0848	005950024~~04~~ 06	059 004	G	1		X							
9	0849	005950025~~05~~ 07	059 005	G	1		X							
9	0850	005950026~~06~~ 08	059 006	G	1	X	X							DUPLICATE 059~~00~~ 10
9	0851	005950027~~07~~ 09	059 007	G	1	X	X							
9	0852	005950028~~08~~ 13	059 008	G	1	X	X							
9	0853	005950029~~09~~ 14	059 009	G	1	~~X~~	X							BE ONLY
9			059 010											

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	9 DEC 09 0930	[redacted]	[illegible]

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: ~~LUCKEY~~ USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL ADLE / STEVE DEETER

Page 1 of 2

SB06Q

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	B4	P3						Comments
8	1400	0060S000101	Q60 001	G	1		X							
8	1401	0060S000202	Q60 002	G	1		X							
8	1402	0060S000303	Q60 003	G	1		X							
8	1403	0060S000404	Q60 004	G	1		X							
8	1404	0060S000505	Q60 005	G	1		X							
8	1405	0060S000606	Q60 006	G	1		X							
8	1406	0060S000707	Q60 007	G	1	X	X							
8	1407	0060S000809	Q60 009	G	1		X							
8	1409	0060S000909	Q60 009	G	1	X								
8	1409	0060S0010 1D	Q60 010	G	1	~~X~~	X							BE ONLY

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	8 DEC 09 1445	[redacted]	[illegible]

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVELS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / STEVE DEETER

Page 2 of 2

SBQ6Q

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
DECEMBER 2009 8	1410	QQ6Q50011 ~~15~~ 12	Q6Q Q11	G	1	X	X							
8	1411	QQ6Q50012 15	Q6Q Q12	G	1									DUPLICATE Q6QQ13

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	8 DEC 09 1445	[redacted]	[illegible] 1620

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92007 Sample Program:

Samplers: CARL PIDGE / STEVE DEFTER

Page 1 of 1

SB061

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
8	0900	006150000101	061 001	G	1		X							
8	0901	006150000202	061 002	G	1	X	X							
8	0902	006150000303	061 003	G	1		X							
8	0903	006150000404	061 004	G	1		X							
8	0904	006150000506	061 005	G	1		X							
8	0905	006150000607	061 006	G	1		X							
8	0906	006150000708	061 007	G	1	X	X							
8	0907	006150000809	061 008	G	1	X								
8	0909	006150000913	061 009	G	1		X							DUPLICATE 061011
8	0909	006150001015	061 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	8 DEC 09 1000	[redacted]	12/8/09 1130

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

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SBQ62

Date (DECEMBER 2009)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
8	0800	0062 5000101	062 001	G	1		X							
8	0801	0062 5000202	062 002	G	1		X							
8	0802	0062 5000303	062 003	G	1	X	X							DUPLICATE 062011
8	0803	0062 5000404	062 004	G	1		X							
8	0804	0062 5000506	062 005	G	1		X							00506
8	0805	0062 5000607	062 006	G	1		X							00607
8	0806	0062 5000708	062 007	G	1		X							
8	0807	0062 5000809	062 008	G	1	X	X							00810
8	0808	0062 5000914	062 009	G	1	X								
8	0809	0062 5001015	062 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	8 DEC 09 0730	[redacted]	12/8/09 1730

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDLE / KEVIN BEYER

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SBQ63

Date (November 2009)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Parameters for Analysis: Radiological	Be	Pb						Comments
24	1410	006350 00101	063 001	G	1		X							
24	1415	006350 00202	063 002	G	1		X							
24	1420	006350 00303	063 003	G	1		X							
24	1422	006350 00404	063 004	G	1		X							
24	1427	006350 00505	063 005	G	1		X							
24	1455	006350 00606	063 006	G	1		X							
24	1447	006350 00707	063 007	G	1		X							
24	1440	006350 00808	063 008	G	1		X							
24	1518	006350 00910	063 009	G	1	X	~~X~~							RAD ONLY
24	1530	006350 01013	063 010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	27 Nov 09 1600	[redacted]	11/27/09 1600

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Lucky Fusrap

QA Contact: Stan Stevens QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: Carl Pidge / Kevin Beyer

Page 2 of 2

SBQ63

Date (November 2009)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Radiological	BZ							Comments
24	1532	0063501116	063 011	G	1		X							DUPLICATE 063014
24	1545	0063501217	063 012	G	1	X								
24	1555	0063501320	063 013	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	24 nov 09 1600	[redacted]	11/24/09 [illegible]

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

Page 1 of 2

SB064

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
1	1200	064S00001	064 001	G	1	X	X							
1	1205	064 S00002	064 002	G	1		X							
1	1206	064 S00003	064 003	G	1		X							DUPLICATE 064~~S~~ G013
1	1207	064 S00004	064 004	G	1		X							
1	1215	064 S00005	064 005	G	1		X							
1	1320	064 S00006	064 006	G	1		X							
1	1325	064 S00007	064 007	G	1		X							
1	1327	064 S00008	064 008	G	1		X							
1	1332	064 S00010	064 009	G	1	X	X							
1	1347	064 S00012	064 010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	12/01/09 [illegible]	[redacted]	12/1/09 1415

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Tim Stevens QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: Carl Ridge / Kevin Beyer

Page 2 of 2

SB064

Date (DEC 09)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Radionuclides	Be	Pb						Comments
1	1350	0064S0Q1113	Q64 Q11	G	1		X							
1	1315	RNSWQ64	Q64 Q14	G	1		X							
1	1350 ~~1400~~	0064S0Q12 20	Q64 Q12	G	1		X							

Relinquished by (signature):	Date/Time:	[redacted] ignature):	Date/Time:	Shipped To (circle one):
[illegible]	1 DEC 09 1415	[redacted]	12/1/09 1415	PRISM APPL
				Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

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SB065

NOVEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
21	0857	0065S000101	0065 001	G	1		X							
21	0903	0065S000202	0065 002	G	1	X	X							
21	0910	0065S000303	0065 003	G	1	X	X							
21	0915	0065S000404	0065 004	G	1		X							
21	0917	0065S000505	0065 005	G	1		X							
21	0926	0065S000606	0065 006	G	1		X							
21	0945	0065S000707	0065 007	G	1		X							
21	0944	0065S000808	0065 008	G	1	X	X							DUPLICATE 0065[illegible]
21	0956	0065S000910	0065 009	G	1		X							
21	1005	0065S001012	0065 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
ES	21 NOV 09 1030 hrs	[redacted]	11/21/09 1530

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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PMC Sample Chain of Custody

Client: USACE | Project Name: LUCKEY FUSRAP | Page ___ of ___

Work Order Number: 92002 | QA Contact: STAN STEVENS

Installation Code: — | QA Contact Phone:

Samplers: K Thrift, K Beyer | Sample Program:

Date	Time	Site Id	Depth (feet)	T.R. Number	Sample Tech	Media Type	Site Type	Number of Containers	Radiologicals	Be	Pb						Comments
11/19/09	1320	~~066150~~ 0066500001 01	01	066 001	G	CSO	BORE	1	X	X							
11/19/09	1325	0066500002 02	02	066 002	G	CSO	BORE	1		X							
11/19/09	1325	0066500003 03	03	066 003	G	CSO	BORE	1		X							
11/19/09	1330	0066500004 04	04	066 004	G	CSO	BORE	1		X							
11/19/09	1330	0066500005 05	05	066 005	G	CSO	BORE	1		X							
11/19/09	1405	0066500006 06	06	066 006	G	CSO	BORE	1	X	X							
11/19/09	1405	0066500007 07	07	066 007	G	CSO	BORE	1	X	X							
11/19/09	1405	0066500008 08	08	066 008	G	CSO	BORE	1	X	X							Full Duplicate TR 066011
11/19/09	1410	0066500010 10	10	066 009	G	CSO	BORE	1		X							
11/19/09	1425	0066500010 14	14	066 010	G	CSO	BORE	1		X							

Relinquished by (signature):	Date/Time:	[redacted]):	Date/Time:
KMcroff	1450 11/19/09	[redacted]	11/19/09 1451

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FedEx Airbill Number: _____

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

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SB067

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
9	1230	006750001 01	067 Q01	G	1		X	X						
9	1231	006750002 02	067 Q02	G	1		X	X						
9	1232	006750003 03	067 Q03	G	1		X	X						
9	1233 ~~1230~~	006750004 04	067 Q04	G	1		X	X						
9	1234 ~~1230~~	006750005 06	067 Q05	G	1		X	X						
9	1235 ~~1230~~	006750006 07	067 Q06	G	1		X	X						
9	1236 ~~1230~~	006750007 08	067 Q07	G	1		X	X						
9	1237 ~~1230~~	006750008 12	067 Q08	G	1	X								
9	1238 ~~1230~~	006750009 13	067 Q09	G	1	X								
9	1239 ~~1230~~	006750010 14	067 Q10	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	9 DEC 09 1300	[redacted]	12/9/09 1536

Shipped To (circle one): PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

Page 2 of 2

SBQ67

Date (DECEMBER 2009)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
9	1240	0067S001115	Q67 Q11	G	1		X							DUPLICATE Q67Q13
9	1241	0067S0012 20	Q67 Q12	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	9 [illegible]	[redacted]	12/9/09 1532

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

Page 1 of 2

5BQ68

Date (DECEMBER 2009)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
9	1050	~~0068500001 01~~	068 001	G	1		X							
9	1051	~~0068500002 02~~	068 002	G	1		X							
9	1052	~~0068500003 03~~	068 003	G	1		X							
9	1053	~~0068500004 04~~	068 004	G	1		X							
9	1054	~~0068500005 05~~	068 005	G	1		X							
9	1055	~~0068500006 06~~	068 006	G	1		X							
9	1056	~~0068500007 07~~	068 007	G	1		X							DUPLICATE 068012
9	1057	~~0068500008 08~~	068 008	G	1	X	X							
9	1058	~~0068500009 09~~	068 009	G	1	X								
9	1059	~~0068500010 12~~	068 010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	9 DEC 09 1130	[redacted]	12/9/09 1834	PRISM APPL
				Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

Page 2 of 2

SBQ68

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be	Pb						Comments
9	1100	~~SB68~~ SOIL1116	Q68 ~~Q40~~ Q11	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	9 DEC 09 1130	[redacted]	12/9/09 1530	PRISM APPL
				Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KELLY BEYER

Page 1 of 2

SBQ69

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be	Pb						Comments
5	1355	00 69 5000101	069 001	G	1		X							
5	1356	00 69 5000202	069 002	G	1		X							
5	1357	00 69 5000303	069 003	G	1	X	X							DUPLICATE 069012
5	1358	00 69 5000404	069 004	G	1		X							
5	1359	00 69 5000505	069 005	G	1		X							
5	1400	00 69 5000606	069 006	G	1		X							
5	1401	00 69 5000707	069 007	G	1		X							
5	1402	00 69 5000809	069 008	G	1		X							
5	1403	00 69 5000910	069 009	G	1	X								
5	1404	00 69 5001015	069 010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	5 DEC 09 1430	[redacted]	12/05/09 1430

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

Page 2 of 2

SBQ69

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
5	1405	006950011 20	Q69 Q11	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	5 DEC 09 1430	[redacted]	12/05/09 1430

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92007 Sample Program:

Samplers: CARL PIDCE / KEVIN BEYER

Page 1 of 2

SB07Q

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
5	1010	0070500101	070 001	G	1		X							
5	1011	0070500202	070 002	G	1		X							
5	1012	0070500303	070 003	G	1		X							
5	1013	0070500404	070 004	G	1		X							
5	1014	0070500505	070 005	G	1		X							
5	1015	0070500606	070 006	G	1		X							
5	1016	0070500707	070 007	G	1		X							
5	1017	0070500908	070 008	G	1	X	X							
5	1018	0070500913	070 009	G	1	X								
5	1019	0070501015	070 010	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	5 DEC 09 1645	[redacted]	12/05/09 1637

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEVER

Page 2 of 2

SBQ7Q

Date (DECEMBER 2009)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
5	1020	0070500116	070 011	G	1		X							DUPLICATE 070012

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	5 DEC 09 1045	[redacted]	12/05/09 1438

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client:

Project Name:

QA Contact: QA Contact Phone:

Work Order #: Sample Program:

Samplers:

Page 1 of 2

5B71

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Be	Rad							Comments
12/2/09	1520	7	071 01		1	X								
	1521	7	072 02		1	X								
	1522	7	073 03		1	X								
	1523	7	074 04		1	X								
	1524	7	074 05		1	X	X							
	1525	7	074 06		1	X								
	1526	7	074 07		1	X								
	1527	7	074 08		1	X								
	1528	071	074 09		1		X							
	1529	071	074 10		1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	[illegible]	[redacted]	12/2/09 1757	PRISM APPL
				Test America Other:

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey

QA Contact: Steve Stevens QA Contact Phone: —

Work Order #: 12004 Sample Program: —

Samplers: R Shell

Page 2 of 2

5871

Parameters for Analysis: Be Rad

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Be Rad								Comments
6/1/04	1530	0071 SW 011 15	[illegible]	[illegible]	1	X								Duplicate (07412)
6/1/04	1500 ~~1530~~	DNSW071	071015		1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
R Shell	[illegible]	[redacted]	6/2/04 1157

Shipped To (circle one):

PRISM APPL

Test America Other: _____

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

Page 1 of 2

SB072

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
3	1120	0072 S000101	072 001	G	1		X							
3	1121	0072 S000202	072 002	G	1		X							
3	1122	0072 S000303	072 003	G	1		X							
3	1123	0072 S000404	072 004	G	1		X							
3	1124	0072 S000505	072 005	G	1	X	X							
3	1125	0072 S000606	072 006	G	1		X							
3	1126	0072 S000707	072 007	G	1	X	X							DUPLICATE 072012
3	1127	0072 S000808	072 008	G	1		X							
3	1128	0072 S000913	072 009	G	1	X	X							
3	1129	0072 S001016	072 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	30 DEC 09 1410	[redacted]	12/03/09 [illegible]

Shipped To (circle one): PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

Page 2 of 2

SBQ72

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
3	1130	0072500 1120	072 011	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	3DEC09 1410	[redacted]	[illegible] 1410

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

Page 1 of 1

SB073

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be	PB						Comments
3	1220	0073 5000101	073 001	G	1	X	X							
3	1221	0073 5000202	073 002	G	1	X	X							
3	1222	0073 5000303	073 003	G	1	X	X							
3	1223	0073 5000404	073 004	G	1		X							DUPLICATE 073011
3	1224	0073 5000505	073 005	G	1		X							
3	1225	0073 5000606	073 006	G	1		X							
3	1226	0073 5000707	073 007	G	1		X							
3	1227	0073 5000808	073 008	G	1		X							
3	1228	0073 5000914	073 009	G	1		X							
3	1229	0073 5001020	073 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[signature]	3DEC09 1415 HRS	[redacted]	12/3/09 1415

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

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SB074

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
6	1400	0074500001	074 001	G	1	X	X							
6	1401	0074500002	074 002	G	1		X							
6	1402	0074500003	074 003	G	1		X							
6	1403	0074500004	074 004	G	1		X							
6	1404	0074500005	074 005	G	1	X	X							
6	1405	0074500006	074 006	G	1	X	X							
6	1406	0074500008	074 007	G	1		X							DUPLICATE 074010
6	1407	0074500008 M	074 008	G	1									
6	1408	0074500009 15	074 009	G	1									
			074 010	G	1									

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
	6 JAN 10 1645	[redacted]	1/6/10 1649

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

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SB075

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
5	1430	0075000101	075 001	G	1		X							
5	1431	0075000202	075 002	G	1	X	X							
5	1432	0075000303	075 003	G	1	X	X							
5	1433	0075000404	075 004	G	1		X							DUPLICATE 075010
5	1434	0075000505	075 005	G	1		X							
5	1435	0075000606	075 006	G	1		X							
5	1436	0075000707	075 007	G	1		X							
5	1437	0075000808	075 008	G	1	X	X							
5	1438	0075000915	075 009	G	1		X							
~~5~~		~~0075000~~	~~075 010~~	~~G~~	~~1~~									

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	5 Jan 10 1628	[redacted]	1/5/10 1628	PRISM APPL Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

Page 1 of 1

SB076

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
6	1300	0076500010 1	076 001	G	1	X	X							
6	1301	0076500020 2	076 002	G	1	X	X							
6	1302	0076500030 3	076 003	G	1	X	X							DUPLICATE 076010
6	1303	0076500040 4	076 004	G	1		X							
6	1304	0076500050 5	076 005	G	1		X							
6	1305	0076500060 6	076 006	G	1		X							
6	1306	0076500070 7	076 007	G	1		X							
6	1307	0076500080 8	076 008	G	1		X							
6	1308	0076500090 9	076 009	G	1		X							
		~~0076500010~~												

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	6 JAN 10 1645	[redacted]	1/6/10 1651

Shipped To (circle one): PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / RIDGE

Page 1 of 1

SB077

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
7	1000	0077S000101	077 001	G	1	X	X							
7	1001	0077S000202	077 002	G	1	X	X							
7	1002	0077S000303	077 003	G	1	X	X							
7	1003	0077S000404	077 004	G	1		X							
7	1004	0077S000506	077 005	G	1		X							DUPLICATE 077010
7	1005	0077S000607	077 006	G	1		X							
7	1006	0077S000708	077 007	G	1		X							
7	1007	0077S000815	077 008	G	1		X							
7	1008	0077S000928	077 009	G	1		X							
	~~1009~~													

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
	7Jan10		
	1240		

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PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDLE / KEVIN BEYER

Page 1 of 1

SB078

Date (DECEMBER 2009)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
2	1530	0078500001 01	078 001	G	1	X	X							
2	1531	0078 5000702	078 002	G	1		X							
2	1532	0078 5000303	078 003	G	1		X							
2	1537	0078 5000404	078 004	G	1		X							
2	1545	0078 5000~~505~~ 06	078 005	G	1		X							
2	1550	0078 5000~~606~~ 07	078 006	G	1		X							
2	1556	0078 5000708	078 007	G	1		X							
2	1602	0078 5000~~908~~ 10	078 008	G	1	X	X							DUPLICATE 078811
2	1605	0078 5000915	078 009	G	1	X	X							
2	1612	0078 5001017	078 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	2 DEC 09 1730	[redacted]	[illegible]

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

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SBQ79

NOVEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
21	1103	QQ79SOQQ1Q1	Q79 QQ1	G	1		X							
21	1106	QQ79SOQQ2Q2	Q79 QQ2	G	1		X							
21	1110	QQ79SOQQ3Q3	Q79 QQ3	G	1		X							
21	1115	QQ79SOQQ4Q4	Q79 QQ4	G	1		X							
21	1120	QQ79SOQQ5Q5	Q79 QQ5	G	1		X							DUPLICATE Q79QQ11
21	1207	QQ79SOQQ6Q6	Q79 QQ6	G	1		X							
21	1217	QQ79SOQQ7Q7	Q79 QQ7	G	1	X	X	~~X~~						
21	1224	QQ79SOQQ8Q8	Q79 QQ8	G	1	X	X	~~X~~						
21	1230	QQ79SOQQ9Q9	Q79 QQ9	G	1	X	X	~~X~~						
21	1301	QQ79SOQ10Q11	Q79 Q10	G	1									

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[signature]	21 NOV 09 1315 hrs	[redacted]	11/21/09 1319

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PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92 002 Sample Program:

Samplers: DEETER / PIDGE

Page 1 of 2

SB080

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
5	1320	0080500001 01	080 001	G	1		X							
5	1321	0080500002 02	080 002	G	1		X							DUPLICATE 080012
5	1322	0080500003 03	080 003	G	1		X							
5	1323	0080500004 04	080 004	G	1		X							
5	1324	0080500005 05	080 005	G	1		X							
5	1325	0080500006 07	080 006	G	1		X							
5	1326	0080500007 08	080 007	G	1		X							
5	1327	0080500008 ~~09~~ 14	080 008	G	1	X								
5	1328	0080500009 ~~10~~ 15	080 009	G	1	X	X							
5	1329	0080500010 19	080 010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[signature]	5 JAN 10 1624	[redacted]	1/5/10 1624	PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / RIDLE

Page 2 of 2

SB080

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be	PB						Comments
5	1330	~~080500~~1120	080 011	G	1		X							
		~~080500012~~	~~080 012~~	~~G~~	~~1~~									

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	5 JAN 10 1624	[redacted]	1/5/10 1624	PRISM APPL
				Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Stan Stevens QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: K Shuoff / Kevin Beyer

Page 1 of 2

SB81

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RAD	Be							Comments
12/18/09	1515	0081500001	081001	G	1		X							
	1516	0081500002	081002		1		X							
	1517	0081500003	081003		1		X							
	1518	0081500004	081004		1		X							
	1519	0081500005	081005		1		X							
	1520	0081500006	081006		1		X							
	1521	0081500007	081007		1		X							
	1522	0081500008	081008		1		X							
	1523	0081500010	081009		1	X								
	1524	0081500014	081010		1	X	X							Duplicate for K/Lad (081013)

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
	12/18/09 1612	[redacted]	12/18/09 1613

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Lucky FUSRAP

QA Contact: Stan Stevens QA Contact Phone: —

Work Order #: 92007 Sample Program: —

Samplers: K. Shiff / K. Beyer

Page 2 of 2

SB81

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Rad	Be							Comments
12/18/09	1525	ØØ81 SØØ1115	081011	G	1	X								
12/18/09	1526	ØØ81 SØØ1219	081012	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
	12/18/09 1612	[redacted]	12/18/09 1613

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STIVALS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDAE

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SB082

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
5	1540	0092500001 01	082 001	G	1		X							
5	1541	0092500002 02	082 002	G	1		X							
5	1542	0092500003 03	082 003	G	1	X	X							
5	1543	0092500004 04	082 004	G	1		X							DUPLICATE 082011
5	1544	0092500005 05	082 005	G	1	X	X							
5	1545	0092500006 06	082 006	G	1	X	X							
5	1546	0092500007 07	082 007	G	1		X							
5	1547	0092500008 08	082 008	G	1		X							
5	1548	0092500009 14	082 009	G	1		X							
5	1549	0092500010 18	082 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	5 JAN 10 1635	[redacted]	1/5/10 1635	PRISM APPL Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

Page 1 of 1

SB083

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
6	1030	0083500010 1	083 001	G	1		X							
6	1031	0083500020 2	083 002	G	1		X							
6	1032	0083500030 3	083 003	G	1	X	X							
6	1033	0083500040 6	083 004	G	1		X							DUPLICATE 083010
6	1034	0083500050 7	083 005	G	1		X							
6	1035	0083500060 8	083 006	G	1	X	X							
6	1036	0083500070 9	083 007	G	1	X								
6	1037	0083500080 15	083 008	G	1		X							
6	1038	0083500090 20	083 009				X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	6 JAN 10 1110	[redacted]	1/6/10 1110	PRISM APPL Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92007 Sample Program:

Samplers: DEETER / PIDGE

Page 1 of 2

SB084

084001 IS RINSATE SAMPLE COLLECTED 5 JAN 10 STEVE DEETER

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
JAN 2010 6	0900	008450002 01	084 002	G	1		X							
6	0901	008450003 02	084 003	G	1		X							DUPLICATE 084013
6	0902	008450004 03	084 004	G	1		X							
6	0903	008450005 04	084 005	G	1		X							
6	0904	008450006 06	084 006	G	1		X							
6	0905	008450007 07	084 007	G	1		X							
6	0906	008450008 08	084 008	G	1	X	X							
6	0907	008450009 14	084 009	G	1		X							
6	0908	008450010 15	084 010	G		X								
6	0909	008450011 16	084 011	G		X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	6 JAN 10 1110	[redacted]	1/6/10 1112	PRISM APPL Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

Page 2 of 2

SBQ84

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
6	0910	00845001219	Q84 Q12	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	6 JAN 10 1110	[redacted]	1/6/10 1112

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PEETER / PIDGE

Page 1 of 1

SB085

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be	Pb						Comments
6	0800	~~0085500101~~	~~085~~ 001	G	1		X							
6	0801	~~0085500202~~	~~085~~ 002	G	1		X							
6	0802	~~0085500303~~	~~085~~ 003	G	1		X							
6	0803	~~0085500406~~	~~085~~ 004	G	1		X							
6	0804	~~0085500507~~	~~085~~ 005	G	1		X							
6	0805	~~0085500608~~	~~085~~ 006	G	1		X							
6	0806	~~0085500714~~	~~085~~ 007	G	1	X	X							DUPLICATE 085011
6	0807	~~0085500818~~	~~085~~ 008	G	1	X								
6	0808	~~0085500919~~	~~085~~ 009	G	1	X								
6	0809	~~0085501020~~	~~085~~ 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	6 JAN 10 1110	[redacted]	1/6/10 1111

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL RIDGE / STEVE DEETER

Page 1 of 2

SBQ86

Date (DECEMBER 2009)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
21	1220	0086500001	086 001	G	1		X							
21	1221	0086500002	086 002	G	1		X							
21	1222	0086500003	086 003	G	1		X							
21	1223	0086500004	086 004	G	1		X							
21	1224	0086500005	086 005	G	1		X							
21	1225	0086500006	086 006	G	1		X							
21	1226	0086500007	086 007	G	1		X							
21	1227	0086500008	086 008	G	1		X							DUPLICATE 0816013
21	1228	0086500011	086 009	G	1	X								
21	1229	0086500012	086 012	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	21 DEC 09 1300	[redacted]	12/21/09 1311

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CALL PIDLE / STEVE DEETER

Page 2 of 2

SBQ86

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
21	1230	0086500113	086 011	G	1	X	X							
21	1231	0086500212	086 012	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	21 DECEMBER 1205	[redacted]	12/21/09 1311

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDKE

Page 1 of 2

SBQ87

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
7	1510	00875000101	087 001	G	1		X							
7	1511	00875000202	087 002	G	1	X	X							DUPLICATE 087012
7	1512	00875000303	087 003	G	1		X							
7	1513	00875000404	087 004	G	1	X	X							
7	1514	00875000505	087 005	G	1		X							
7	1515	00875000606	087 006	G	1		X							
7	1516	00875000707	087 007	G	1		X							
7	1517	00875000808	087 008	G	1		X							
7	1518	00875000912	087 009	G	1	X								
7	1519	00875001013	087 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	7 JAN 10 1650	[redacted]	1/7/10 1650

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

Page 2 of 2

SB087

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
7	1520	0087502114	087 211	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	7 JAN 10 1650	[redacted]	1/7/10 1650

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

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SB088

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
6	1600	0088S000101	088 001	G	1		X							
6	1601	0088S000202	088 002	G	1		X							
6	1602	0088S000303	088 003	G	1		X							
6	1603	0088S000404	088 004	G	1		X							
6	1604	0088S000506	088 005	G	1		X							
6	1605	0088S000607	088 006	G	1		X							DUPLICATE 088013
6	1606	0088S000708	088 007	G	1		X							
6	1607	0088S000811	088 008	G	1	X								
6	1608	0088S000912	088 009	G	1	X								
6	1609	0088S001016	088 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[signature]	6 JAN 10 1645	[redacted]	11/6/10 1654

Shipped To (circle one): PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

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SBQ88

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
1610	6	00885001118	088 011	G	1	X								
1611	6	00885001220	088 012	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[signature]	6 JAN 10 1645	[redacted]	1/6/10 1654

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

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SBQ89

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
8	1130	0089500 0101	089 001	G	1		X							
8	1131	0089500 0202	089 002	G	1		X							
8	1132	0089500 0303	089 003	G	1		X							
8	1133	0089500 0406	089 004	G	1		X							
8	1134	0089500 0507	089 005	G	1		X							
8	1135	0089500 0609	089 006	G	1		X							DUPLICATE 089011
8	1136	0089500 0709	089 007	G	1	X								
8	1137	0089500 0813	089 008	G	1	X	X							
8	1138	0089500 0914	089 009	G	1	X								
8	1139	0089500 1019	089 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	8 JAN 10	[redacted]	1-8-10/1600
1600			

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

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SB090

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
8	1030	0090500001 01	090 001	G	1		X							
8	1031	0090500002 02	090 002	G	1		X							
8	1032	0090500003 03	090 003	G	1		X							
8	1033	0090500004 04	090 004	G	1		X							
8	1034	0090500005 06	090 005	G	1		X							
8	1035	0090500006 07	090 006	G	1		X							DUPLICATE 090012
8	1036	0090500007 08	090 007	G	1		X							
8	1037	0090500008 09	090 008	G	1	X								
8	1038	0090500009 12	090 009	G	1	X	X							
8	1039	0090500010 13	090 010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	8 JAN 10	[redacted]	1-8-10/1600
1600			

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

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SB090

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
8	1040	~~20090500~~1118	090 011	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	8 JAN 10	[redacted]	1-8-10/1600
1600			

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

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SB91

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
2	1130	009150001 01	091 001	G	1	X	X							
2	1131	009150002 02	091 002	G	1	X	X							
2	1132	009150003 03	091 003	G	1	X	X							DUPLICATE 091004

Relinquished by (signature):	Date/Time:	[redacted]):	Date/Time:	Shipped To (circle one):
	2 FEB 10 1420		2-2-10 1420	PRISM APPL Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 2

SB91A

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
3	1030	091A000101	91A 001	G	1		X							
3	1031	091A000202	91A 002	G	1		X							DUPLICATE ~~091~~ 91A013
3	1032	091A000303	91A 003	G	1		X							
3	1033	091A000404	91A 004	G	1		X							
3	1034	091A000505	91A 005	G	1		X							
3	1035	091A000606	91A 006	G	1		X							
3	1036	091A000707	91A 007	G	1		X							
3	1037	091A000808	91A 008	G	1	X	X							
3	1038	091A000909	91A 009	G	1	X								
3	1039	091A001013	91A 010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	3 FEB 10 1110	[redacted]	2-3-10 1110	PRISM APPL Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDUS

Page 2 of 2

SB91A

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
3	1040	Q91AS0011 14	91A 011	G	1		X							
3	1041	Q91AS0012 17	091 012	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
Ø	3/9/10 1110	[redacted]	3-9-10 1110	PRISM APPL Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: [illegible] STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

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SB 92

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
2	1600	0092500001 01	092 001	G	1		X							
2	1601	0092500002 02	092 002	G	1		X							
2	1602	0092500003 03	092 003	G	1		X							
2	1603	0092500004 04	092 004	G	1		X							
2	1604	0092500005 06	092 005	G	1		X							~~DUPLICATE 09201~~
2	1605	0092500006 07	092 006	G	1		X							
2	1606	0092500007 08	092 007	G	1		X							
2	1607	0092500008 14	092 008	G	1	X								
2	1608	0092500009 15	092 009	G	1		*	BE ONLY						DUPLICATE 092012
2	1609	0092500010 16	092 010	G	1	X	*							RAD ONLY

Relinquished by (signature):	Date/Time:	[redacted] ure):	Date/Time:	Shipped To (circle one):
	2-4-10		2-2-10	PRISM APPL
	1645		1645	Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 2 of 2

SB92

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
2	1610	0092502 1117	92 17	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	2 FEB 10 1645	[redacted]	2-2-10 1645

Shipped To (circle one): PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEWART QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDLE

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SB93

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Pb							Comments
2	1150	009350001 01	093 001	G	1		X							
2	1151	009350002 02	093 002	G	1		X							
2	1152	009350003 03	093 003	G	1		X							
2	1153	009350004 04	093 004	G	1		X							
2	1154	009350005 05	093 005	G	1		X							
2	1155	009350006 06	093 006	G	1		X							
2	1156	009350007 07	093 007	G	1		X							
2	1157	009350008 08	093 008	G	1		X							DUPLICATE 093013
2	1158	009350009 13	093 009	G	1	X	X							
2	1159	009350010 14	093 010	G	1	X	~~X~~							RAD ONLY

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[signature]	2 FEB 10	[redacted]	2-2-10
	1420		1420

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDAL

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SB93

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
2	1200	~~093500~~1116	093 011	G	1	X								
2	1201	~~093500~~1218	093 012	G	1		X							

Relinquished by (signature):	Date/Time:	[redacted]	Date/Time:
[illegible]	2 FEB 10 1420		2-2-10 1420

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

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SB94

Parameters for Analysis

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
3	1300	00945000101	094 001	G	1		X						✓	
3	1301	00945000202	094 002	G	1		X						✓	
3	1302	00945000303	094 003	G	1		X						✓	
3	1303	00945000404	094 004	G	1		X						✓	
3	1304	00945000505	094 005	G	1		X						✓	
3	1305	00945000606	094 006	G	1		X						✓	
3	1306	00945000707	094 007	G	1	X	X						✓	
3	1307	00945000808	094 008	G	1	X	X						✓	DUPLICATE 094012
3	1308	00945000909	094 009	G	1	X							✓	
3	1309	00945001016	094 010	G	1		X						✓	

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	3 FEB 10 1400	[redacted]	2-3-10 1400

Shipped To (circle one): PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

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SB94

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
7 FEB 2010 3	1310	0094S0011 20	894 011	G	1		X							

Parameters for Analysis

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	3 FEB 10 1400	[redacted]	2-3-10 1400

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDEE

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SB 95

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
3	1500	00955000101 01	095 001	G	1		X							
3	1501	00955000202 02	095 002	G	1	X	X							
3	1502	00955000303 03	095 003	G	1	X	X							
3	1503	00955000404 04	095 004	G	1		X							DUPLICATE 095011
3	1504	00955000505 05	095 005	G	1		X							
3	1505	00955000606 06	095 006	G	1		X							
3	1506	00955000707 07	095 007	G	1		X							
3	1507	00955000808 08	095 008	G	1		X							
3	1508	00955000915 09	095 009	G	1	X	X							
3	1509	00955001020 20	095 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	3 FEB 10 1550	[redacted]	2 3 10 1550	PRISM APPL Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 2

SB96

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
5	1500	0096500001 01	096 001	G	1		X							
5	1501	0096500002 02	096 002	G	1		X							DUPLICATE 096013
5	1502	0096500003 03	096 003	G	1		X							
5	1503	0096500004 04	096 004	G	1		X							
5	1504	0096500005 05	096 005	G	1		X							
5	1505	0096500006 06	096 006	G	1		X							
5	1506	0096500007 07	096 007	G	1		X							
5	1507	0096500008 08	096 008	G	1		X							
5	1508	0096500009 14	096 009	G	1	X								
5	1509	0096500010 15	096 010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	5 FEB 10 1635	[redacted]	[illegible] 1635

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

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SB96

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
5	1510	0096500 1119	Q96 Q11	G	1		X							
5	1511	0096500 1220	Q96 Q12	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	5 FEB 10	[illegible]	[illegible]
	1635		[illegible]

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STEVE STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDLE

Page 1 of 1

SB97

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
5	1300	0097500001001	097 001	G	1		X							
5	1301	0097500002002	097 002	G	1		X							
5	1302	0097500003003	097 003	G	1		X							
5	1303	0097500004006	097 004	G	1		X							
5	1304	0097500005007	097 005	G	1		X							DUPLICATE 097011
5	1305	0097500006008	097 006	G	1		X							
5	1306	0097500007009	097 007	G	1	X								
5	1307	0097500008016	097 008	G	1	X	X	Ø	→					RAD ONLY
5	1308	0097500009019	097 009	G	1	X								
5	1309	0097500010020	097 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
Ø	5 FEB 10	[redacted]	2-5-10
	1355		1355

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDAE

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SB98

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
9	0940	0098500010 1	098 001	G	1		X							
9	0941	0098500002 02	098 002	G	1		X							
9	0942	0098500003 03	098 003	G	1		X							
9	0943	0098500004 04	098 004	G	1		X							
9	0944	0098500005 05	098 005	G	1		X							
9	0945	0098500006 06	098 006	G	1		X							
9	0946	0098500007 07	098 007	G	1		X							
9	0947	0098500008 08	098 008	G	1		X							DUPLICATE 098014
9	0948	0098500009 14	098 009	G	1		X							
9	0949	0098500010 17	098 010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[redacted]	9 FEB 10 1020	[redacted]	2-9-10 1020

Shipped To (circle one): PRISM APPL Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STEVE STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 2 of 2

SB98

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
9	0950	0098500111 8	098 011	G	1	X								
9	0951	0098500121 9	098 012	G	1	X								
9	0952	0098500132 0	098 013	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	9 FEB 10 1020	[redacted]	2-9-10 1020

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

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SB99

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
4	1140	00995000101	099 001	G	1		X							
4	1141	00995000202	099 002	G	1		X							
4	1142	00995000303	099 003	G	1		X							
4	1143	00995000404	099 004	G	1		X							
4	1144	00995000505	099 005	G	1		X							DUPLICATE 099011
4	1145	00995000606	099 006	G	1	X	X							
4	1146	00995000707	099 007	G	1	X	X							
4	1147	00995000808	099 008	G	1		X							
4	1148	00995000912	099 009	G	1	X	X							
4	1149	00995001020	099 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	4 FEB 10 1350	[redacted]	

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: Stan Stiles QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

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SB100

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be						*	Comments
FEB 10														
4	1000	0100500010 01	100 001	G	1		X							
4	1001	0100500022 02	100 002	G	1		X							
4	1002	0100500033 03	100 003	G	1	X	X						*	
4	1003	0100500044 04	100 004	G	1	X	X						*	
4	1004	0100500055 05	100 005	G	1	X	X						*	DUPLICATE 100011
4	1005	0100500066 06	100 006	G	1		X							
4	1006	0100500077 07	100 007	G	1		X							
4	1007	0100500088 08	100 008	G	1		X							
4	1008	0100500099 15	100 009	G	1		X							
4	1009	0100500010 20	100 010	G	1		X							

NOTE: RAD SPIKE IN CORE 3-5 FT 100003-100005

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
	4 FEB 10	[redacted]	4 10
	1055		1055

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Lucky Fusap

QA Contact: Stan Stevens QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: Pines

Page 1 of 2

SB101

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Parameters for Analysis: RADIOLOGICAL	BE							Comments
3	1615	01015000101	101 001	G	1		X							
3	1616	01015000202	101 002	G	1		X							
3	1617	01015000303	101 003	G	1		X							
3	1618	01015000404	101 004	G	1		X							
3	1619	01015000505	101 005	G	1		X							
3	1620	01015000606	101 006	G	1	X	X							
3	1621	01015000707	101 007	G	1		X							
3	1622	01015000808	101 008	G	1		X							
3	1623	01015000910	101 009	G	1	X								
3	1624	01015001016	101 010	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	3-2-10 1645	[redacted]	2-3-10 1645

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Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 2 of 2

SB101

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be							Comments
3	1625	010150011 20	101 011	G	1		X							DUPLICATE 101012

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	3 FEB 10 1645	[redacted]	2-3-10 1645	PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 2

SB102

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be							Comments
9	0830	0102500001 01	102 001	G	1		X							
9	0831	0102500002 02	102 002	G	1		X							
9	0832	0102500003 03	102 003	G	1		X							
9	0833	0102500004 04	102 004	G	1		X							
9	0834	0102500005 05	102 005	G	1		X							
9	0835	0102500006 06	102 006	G	1		X							
9	0836	0102500007 07	102 007	G	1		X							
9	0837	0102500008 08	102 008	G	1		X							
9	0838	0102500009 13	102 009	G	1	X								
9	0839	0102500010 14	102 010	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	9 FEB 10 0940	[redacted]	2-9-10 0940

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 2 of 2

SB102

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be							Comments
9	0840	0182500 1115	102 011	G	1	X								
9	0841	0182500 1222	102 012	G	1		X							DUPLICATE 102013

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	9 FEB 10 0940	[redacted]	2 9 10 0940

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PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDLE

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SB103

Date (20 MAR 10)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Parameters for Analysis: RADIOLOGICAL	Parameters for Analysis: BE							Comments
20	0850	0103500010 1	103 001	G	1		X							
20	0851	0103500020 2	103 002	G	1	X	X							DUPLICATE 103011
20	0852	0103500030 3	103 003	G	1		X							
20	0853	0103500040 6	103 004	G	1		X							
20	0854	0103500050 7	103 005	G	1		X							
20	0855	0103500060 9	103 006	G	1		X							
20	1005	0103500070 13	103 007	G	1		X							
20	1006	0103500080 15	103 008	G	1	X								
20	1007	0103500090 19	103 009	G	1	X								
20	1008	0103500100 20	103 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[signature]	20 MAR 10 1101	[redacted]	3-20-10 1101

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: [illegible] STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

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SB104

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
4	1530	0104500001 01	104 001	G	1		X							
4	1531	0104500002 02	104 002	G	1		X							
4	1532	0104500003 03	104 003	G	1		X							
4	1533	0104500004 04	104 004	G	1		X							
4	1534	0104500005 05	104 005	G	1		X							
4	1535	0104500006 06	104 006	G	1		X							DUPLICATE 104012
4	1536	0104500007 07	104 007	G	1		X							
4	1537	0104500008 08	104 008	G	1	X	X							
4	1538	0104500009 13	104 009	G	1	X	X							
4	1539	0104500010 15	104 010	G	1	X								

Relinquished by (signature):	Date/Time:	[redacted]):	Date/Time:	Shipped To (circle one):
[illegible]	4 FEB 10 1620		2-4-10 1620	PRISM APPL Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 2 of 2

SB104

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
4	1540	01045001117	104 011	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	4 FEB 10 1620	[redacted]	2-4-10 1620

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDAE

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SB105

Parameters for Analysis

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
5	1550	0105500001 01	105 001	G	1		X							
5	1551	0105500002 02	105 002	G	1		X							
5	1552	0105500003 03	105 003	G	1		X							
5	1553	0105500004 04	105 004	G	1		X							
5	1554	0105500005 05	105 005	G	1		X							
5	1555	0105500006 06	105 006	G	1	X	X							
5	1556	0105500007 07	105 007	G	1	X	X							DUPLICATE 105012
5	1557	0105500008 08	105 008	G	1		X							
5	1558	0105500009 11	105 009	G	1	X								
5	1559	0105500010 14	105 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	5 FEB 10 1635	[redacted]	2-5-10 1635

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Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDLE

Page 2 of 2

SB105

Date (FEB 2010)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be							Comments
5	1600	01055001120	105 011	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	5 Feb 10 1635		1635 2-5-10

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PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

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SB106

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
4	1620	0106S0000101	~~01~~ 106 001	G	1		X							
4	1621	0106S0000202	106 002	G	1	X	X							
4	1622	0106S0000303	106 003	G	1		X							
4	1623	0106S0000404	106 004	G	1		X							
4	1624	0106S0000505	106 005	G	1		X							
4	1625	0106S0000606	106 006	G	1		X							
4	1626	0106S0000707	106 007	G	1		X							
4	1627	0106S0000808	106 008	G	1		X							
4	1628	0106S0000911	106 009	G	1	X								
4	1629	0106S0001012	106 010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	5 FEB 10 0810	[redacted]	2-5-10 0810	PRISM APPL Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDLE

Page 2 of 2

SB106

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
4	1630	0106500111 3	106 011	G	1		X							
4	1631	0106500121 6	106 012	G	1		X							DUPLICATE 106013

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	5 FEB 10 0810	[redacted]	[illegible] 0810	PRISM APPL Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

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SB107

Parameters for Analysis

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be							Comments
5	0840	0107500001 01	107 001	G	1		X							
5	0841	0107500002 02	107 002	G	1	X	X							
5	0842	0107500003 03	107 003	G	1	X	X							
5	0843	0107500004 04	107 004	G	1		X							
5	0844	0107500005 05	107 005	G	1		X							
5	0845	0107500006 06	107 006	G	1		X							
5	0846	0107500007 07	107 007	G	1	X	X							
5	0847	0107500008 08	107 008	G	1		X							DUPLICATE 107011
5	0848	0107500009 14	107 009	G	1		X							
5	0849	0107500010 15	107 010	G	1		X							

Relinquished by (signature):	Date/Time:	[redacted]:	Date/Time:
[illegible]	5 FEB 10 0911		2 [illegible] 0911

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Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 2

SB108

Date (~~FEB~~ MAR 2010)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
9	0840	0108500001 01	108 001	G	1		X							
9	0841	0108500002 02	108 002	G	1		X							
9	0842	0108500003 03	108 003	G	1		X							
9	0843	0108500004 04	108 004	G	1		X							
9	0844	0108500005 06	108 005	G	1		X							
9	0845	0108500006 07	108 006	G	1	X	X							DUPLICATE 108012
9	0846	0108500007 08	108 007	G	1		X							
9	0847	0108500008 11	108 008	G	1	X								
9	0848	0108500009 12	108 009	G	1	X								
9	0849	0108500010 16	108 010				X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[signature]	9 MAR 10 0925	[redacted]	3-9-10 0925

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 2 of 2

SB108

~~FEB~~ 2010 MAR Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
9	0850	A108S0011220	108 011	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	9 MAR 10 0925	[redacted]	3-9-10 0925

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 2

SB109

~~FEB~~ MAR 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be							Comments
9	0950	0109500001 01	109 001	G	1		X							
9	0951	0109500002 02	109 002	G	1		X							
9	0952	0109500003 03	109 003	G	1		X							
9	0953	0109500004 04	109 004	G	1		X							
9	0954	0109500005 05	109 005	G	1		X							
9	0955	0109500006 06	109 006	G	1		X							DUPLICATE 109014
9	0956	0109500007 07	109 007	G	1		X							
9	0957	0109500008 08	109 008	G	1		X							
9	0958	0109500009 10	109 009	G	1	X								
9	0959	0109500010 11	109 010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	9 MAR 10	[redacted]	3-9-10
	1025		1025

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STEVE STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 2 of 2

SB109

~~FEB~~ 2010 MAR Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
9	1000	0109500111 3	109 011	G	1	X								
9	1001	0109500121 5	109 012	G	1		X							
9	1002	0109501372	109 013	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	9 MAR 10	[redacted]	3-9-10
	1025		1025

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: RIDGE

Page 1 of 2

SB110

~~FEB~~ MAR 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
10	1530	011050000101	110 001	G	1		X							
10	1531	011050000202	110 002	G	1		X							
10	1532	011050000303	110 003	G	1		X							
10	1533	011050000404	110 004	G	1		X							
10	1534	011050000506	110 005	G	1		X							
10	1535	011050000607	110 006	G	1		X							
10	1536	011050000709	110 007	G	1		X							DUPLICATE 110013
10	1537	011050000812	110 008	G	1	X								
10	1538	011050000916	110 009	G	1		X							
10	1539	011050001018	110 010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	10 Mar 10 1605	[redacted]	3-10-10 1605

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 2 of 2

SB110

2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Parameters for Analysis: RADIOLOGICAL	Parameters for Analysis: BE							Comments
10	1540	011250211119	110211	G	1	X								
10	1541	011250212222	110212	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	10 Mar 10 1605	[redacted]	3/10/10 1605

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STEVE STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDAE

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SB111

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIONUCLIDE	Be							Comments
5	1050	01115000101	111 001	G	1		X							
5	1051	01115000202	111 002	G	1		X							
5	1052	01115000303	111 003	G	1		X							
5	1053	01115000404	111 004	G	1		X							
5	1054	01115000505	111 005	G	1		X							
5	1055	01115000606	111 006	G	1		X							
5	1056	01115000707	111 007	G	1		X							
5	1057	01115000808	111 008	G	1	X	X							DUPLICATE 111012
5	1058	01115000911	111 009	G	1	X	X							
5	1059	01115001012	111 010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
	5 FEB 10 1115	[redacted]	

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 2 of 2

SB111

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be							Comments
5	1100	011150011 15	111 011	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	5 FEB 10 1115	[redacted]	2 5 10 1115

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: RIDGE

Page 1 of 2

SB112

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be							Comments
8	1600	011250001 01	112 001	G	1	X	X							
8	1601	011250002 02	112 002	G	1	X	X							
8	1602	011250003 03	112 003	G	1		X							DUPLICATE 112012
8	1603	011250004 04	112 004	G	1		X							
8	1604	011250005 05	112 005	G	1		X							
8	1605	011250006 06	112 006	G	1		X							
8	1606	011250007 07	112 007	G	1		X							
8	1607	011250008 08	112 008	G	1		X							
8	1608	011250009 10	112 009	G	1	X								
8	1609	011250010 13	112 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	8 FEB 10	[redacted]	2-9-10
	1625		1625

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDAE

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SB 112

Date (FEB 2010)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
8	1610	Q112 S0Q1120	112 Q11	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[signature]	8 FEB 10 1625	[redacted]	2-8-10 1625

Shipped To (circle one): PRISM APPL Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

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SB113

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
8	1420	01135000101	113 001	G	1	X	X							DUPLICATE 113013
8	1421	01135000202	113 002	G	1		X							
8	1422	01135000303	113 003	G	1		X							
8	1423	01135000404	113 004	G	1		X							
8	1424	01135000505	113 005	G	1		X							
8	1425	01135000606	113 006	G	1		X							
8	1426	01135000707	113 007	G	1		X							
8	1427	01135000808	113 008	G	1		X							
8	1428	01135000909	113 009	G	1	X								
8	1429	01135001010	113 010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[signature]	8 FEB 10 1455	[redacted]	2-8-10 1455	PRISM APPL Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDLE

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SB113

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
8	1430	011350011 12	113 011	G	1		X							
8	1431	011350012 17	113 012	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	8 FEB 10 1455	[redacted]	2-8-10 1455	PRISM APPL Test America Other: ES

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TPMC Sample Chain of Custody

Client: LUCKEY FUSRAP

Project Name: USACE

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

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SB114

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIONUCLIDE	Be							Comments
9	1050	0114S000101	114 001	G	1		X							
9	1051	0114S000202	114 002	G	1		X							
9	1052	0114S000303	114 003	G	1		X							
9	1053	0114S000404	114 004	G	1	X	X							DUPLICATE 114Q13
9	1054	0114S000505	114 005	G	1		X							
9	1055	0114S000606	114 006	G	1		X							
9	1056	0114S000707	114 007	G	1		X							
9	1057	0114S000809	114 008	G	1		X							
9	1058	0114S000909	114 009	G	1	X								
9	1059	0114S001012	114 010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	9 FEB 10 1140	[redacted]	2-9-10 1140

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDAE

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SB114

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
9	1100	Q114500 1113	114 Q11	G	1		X							
9	1101	Q114500 12 17	114 Q12	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	9 FEB 10	[redacted]	2-9-10
	1140		1140

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PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: [illegible] STEVENS QA Contact Phone:

Work Order #: 92007 Sample Program:

Samplers: PIDGE

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SB115

Date (~~FEB~~ MAR 2010)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Parameters for Analysis: RADIOLOGICAL	Parameters for Analysis: BE							Comments
11	0940	011550000101	115 001	G	1		X							
11	0941	011550000202	115 002	G	1		X							
11	0942	011550000303	115 003	G	1	X	X							DUPLICATE 115012
11	0943	011550000404	115 004	G	1		X							
11	0944	011550000506	115 005	G	1		X							
11	0945	011550000607	115 006	G	1		X							
11	0946	011550000708	115 007	G	1		X							
11	0947	011550000908 (09)	115 008	G	1	X								
11	0948	011550000913	115 009	G	1	X								
11	0949	011550001014	115 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[signature]	11 MAR 10 0942	[redacted]	3-11-10 0942

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEIGER QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

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SB115

MAR 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
11	0950	0115S0011115	115 011	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	11 June 10 0942	[redacted]	3-11-10 0942	PRISM APPL Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STEVE STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDHE

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SB116

~~FEB~~ 2010 MAR Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	116							Comments
11	1010	01165000101	116 ~~000~~1	~~116~~ G	1		X							
11	1011	01165000202	116 ~~000~~2	G	1		X							
11	1012	01165000303	116 ~~000~~3	G	1		X							
11	1013	01165000404	116 ~~000~~4	G	1		X							
11	1014	01165000505	116 ~~000~~5	G	1		X							DUPLICATE 116011
11	1015	01165000606	116 ~~000~~6	G	1	X	X							
11	1016	01165000707	116 ~~000~~7	G	1	X	X							
11	1017	01165000808	116 ~~000~~8	G	1	X	X							
11	1018	01165000915	116 ~~000~~9	G	1		X							
11	1019	01165001020	116 ~~000~~10	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	11 MAR 10	[redacted]	3-11-10
1051			1051

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PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: MIDKE

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SB117

~~FEB~~ 2010 MAR Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
11	1130	011750001 01	117 001	G	1		X							
11	1131	011750002 02	117 002	G	1		X							
11	1132	011750003 03	117 003	G	1		X							
11	1133	011750004 04	117 004	G	1		X							
11	1134	011750005 06	117 005	G	1		X							DUPLICATE 117212
11	1135	011750006 07	117 006	G	1		X							
11	1136	011750007 08	117 007	G	1		X							
11	1137	011750008 10	117 008	G	1	X								
11	1138	011750009 11	117 009	G	1	X								
11	1139	011750010 14	117 010	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	11 MAR 10 1206	[redacted]	3-11-10 0800

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Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: SHAW STEVENS QA Contact Phone:

Work Order #: 92007 Sample Program:

Samplers: PIDAL

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SB117

MAR 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Parameters for Analysis: RADIOLOGICAL	Parameters for Analysis: BE							Comments
11	1140	0117S0001117	117 011	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	11 MAR 10 1200	[redacted]	3-11-10 1200

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Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDKE

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SB118

~~FEB~~ 2010 MAR Date	MAR 2010 Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be							Comments
1430	10	01185000101 01	118 001	G	1		X							
1431	10	01185000202 02	118 002	G	1		X							
1432	10	01185000303 03	118 003	G	1		X							
1433	10	01185000404 04	118 004	G	1		X							
1434	10	01185000505 06	118 005	G	1	X	X							DUPLICATE 118012
1435	10	01185000606 07	118 006	G	1		X							
1436	10	01185000708 08	118 007	G	1		X							
1437	10	01185000815	118 008	G	1		X							
1438	10	01185000917	118 009	G	1	X								
1439	10	01185001018	118 010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	10 MAR 10 1512	[redacted]	3-10-10 1512

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PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: SHAN STEVENS QA Contact Phone:

Work Order #: 920002 Sample Program:

Samplers: PIDGE

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SB118

2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Parameters for Analysis: RADIOLOGICAL	BE							Comments
10	1440	0118500011202	118 811	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[signature]	10 Mar 10 1512	[redacted]	3-10-10 1512

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PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

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SB119

~~FEB~~ 2010 MAR Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
10	1100	01195000101	119 ~~000~~1	G	1		X							
10	1101	01195000202	119 ~~000~~2	G	1		X							
10	1102	01195000303	119 ~~000~~3	G	1		X							
10	1103	01195000404	119 ~~000~~4	G	1		X							
10	1104	01195000506	119 ~~000~~5	G	1		X							DUPLICATE 119013
10	1105	01195000607	119 ~~000~~6	G	1		X							
10	1106	01195000709	119 ~~000~~7	G	1		X							
10	1107	01195000811	119 ~~000~~8	G	1	X								
10	1108	01195000912	119 ~~000~~9	G	1	X								
10	1109	01195001013	119 ~~000~~10	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	10 MAR 10 1321	[redacted]	3-10-10 1321

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: SAM STEVENS QA Contact Phone:

Work Order #: 92007 Sample Program:

Samplers: PIDLE

Page 2 of 2

SB119

2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
10	1110	D11950011 14	119 011	G	1	X								
10	1111	D11950011218	119 012	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	10 MAR 10 1321	[redacted]	3-10-10 1321	PRISM APPL Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDAL

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SB120

Date (~~FEB~~ MAR 2010)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
10	0910	01205000101	120 001	G	1	X	X							
10	0911	01205000202	120 002	G	1		X							DUPLICATE 120211
10	0912	01205000303	120 003	G	1		X							
10	0913	01205000404	120 004	G	1		X							
10	0914	01205000505	120 005	G	1		X							
10	0915	01205000606	120 006	G	1		X							
10	0916	01205000707	120 007	G	1	X	X							
10	0917	01205000808	120 008	G	1	X	X							
10	0918	01205000913	120 009	G	1		X							
10	0919	01205001014	120 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[signature]	10 MAR 10	[redacted]	3-10-10
	0934		0934

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PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92007 Sample Program:

Samplers: PIDGE

Page 1 of 1

SB121

~~FEB~~ MAR 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
10	1010	0121500001 01	121 001	G	1		X							
10	1011	0121500002 02	121 002	G	1		X							
10	1012	0121500003 03	121 003	G	1		X							
10	1013	0121500004 04	121 004	G	1		X							DUPLICATE 121010
10	1014	0121500005 06	121 005	G	1	X	X							
10	1015	0121500006 07	121 006	G	1	X	X							
10	1016	0121500007 09	121 007	G	1	X	X							
10	1017	0121500008 14	121 008	G	1		X							
10	1018	0121500009 18	121 009	G	1		X							
~~10~~	~~1019~~	~~0121500010~~	~~121 010~~	~~G~~	~~1~~									

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
	10 MAR 10 1046	[redacted]	3-10-10 1046

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEIGERS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDAE

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SB122

~~FEB~~ MAR 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
12	0830	0122500001 01	122 001	G	1	X	X							
12	0831	0122500002 02	122 002	G	1		X							DUPLICATE 122011
12	0832	0122500003 03	122 003	G	1	X	X							
12	0833	0122500004 04	122 004	G	1	X	X							
12	0834	0122500005 06	122 005	G	1		X							
12	0835	0122500006 07	122 006	G	1		X							
12	0836	0122500007 08	122 007	G	1		X							
12	0837	0122500008 09	122 008	G	1		X							
12	0838	0122500009 10	122 009	G	1		X							
12	0839	0122500010 11	122 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[signature]	12 MAR 10 0955	[redacted]	3-12-10 0955

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: SEAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

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SB123

Parameters for Analysis

Date (FEB MAR 2010)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
11	0800	012350001 01	123 001	G	1		X							
11	0801	012350002 02	123 002	G	1		X							
11	0802	012350003 03	123 003	G	1		X							
11	0803	012350004 04	123 004	G	1		X							
11	0804	012350005 05	123 005	G	1		X							
11	0805	012350006 06	123 006	G	1		X							
11	0806	012350007 07	123 007	G	1	X	X							
11	0807	012350008 08	123 008	G	1		X							DUPLICATE 123013
11	0808	012350009 12	123 009	G	1		X						→	BE ONLY CAL
11	0809	012350010 15	123 010	G	1	X							→	RAD ONLY CAL

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	11 MAR 10 0942	[redacted]	3-11-10 0942

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: SAM STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 2 of 2

SB123

Parameters for Analysis

2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
11	0810	01235001116	123 011	G	1	X	~~X~~						→	RADONLY/CANL
11	0811	01235001217	123 012	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	11 Mar 10 0942	[redacted]	3-11-10 0942	PRISM APPL Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STAUGS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

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SB124

~~FEB~~ MAR 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
15	1520	01245000101	124 001	G	1		X							
15	1521	01245000202	124 002	G	1		X							
15	1522	01245000303	124 003	G	1		X							
15	1523	01245000406	124 004	G	1		X							
15	1524	01245000507	124 005	G	1		X							
15	1525	01245000608	124 006	G	1		X							
15	1526	01245000713	124 007	G	1	X	X							
15	1527	01245000814	124 008	G	1	X								
15	1528	01245000915	124 009	G	1	X								
15	1529	01245001018	124 010	G	1		X							DUPLICATE 124011

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[signature]	16 MAR 10 0930	[redacted]	3-16-10 0930	PRISM APPL Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 2

SB125

Date (~~FEB~~ MAR 2010)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be							Comments
11	1500	0125000101	125 001	G	1	X	X							~~DUPLICATE 125001~~
11	1501	0125000202	125 002	G	1	X	X							DUPLICATE 125012
11	1502	0125000303	125 003	G	1		X							
11	1503	0125000404	125 004	G	1		X							
11	1504	0125000505	125 005	G	1		X							
11	1505	0125000606	125 006	G	1		X							
11	1506	0125000707	125 007	G	1		X							
11	1507	0125000808	125 008	G	1		X							
11	1508	0125000911	125 009	G	1	X								
11	1509	0125001012	125 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
	11 mar 10 1540	[redacted]	3-11-10 1540

Shipped To (circle one): PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: Jim STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDAE

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SB125

MAR 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
11	1510	0125S0211 20	125 211	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	11 MAR 10 1540	[redacted]	3-11-10 1540	PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: RIDLE

Page 1 of 1

SB126

~~FEB~~ MAR 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	RE							Comments
15	1000	0126500001 01	126 001	G	1		X							
15	1001	0126500002 02	126 002	G	1		X							
15	1002	0126500003 03	126 003	G	1	X	X							
15	1003	0126500004 04	126 004	G	1		X							
15	1004	0126500005 05	126 005	G	1	X	X							
15	1005	0126500006 06	126 006	G	1		X							
15	1006	0126500007 07	126 007	G	1		X							
15	1007	0126500008 08	126 008	G	1		X							
15	1008	0126500009 14	126 009	G	1	X	X							
15	1009	0126500010 19	126 010	G	1		X							DUPLICATE 126011

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[redacted]	15 MAR 10 1448	[redacted]	10-15-10 1448

Shipped To (circle one): PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

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SB127

MAR 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be							Comments
15	1050	0127S000101	127 001	G	1		X							
15	1051	0127S000202	127 002	G	1		X							
15	1052	0127S000303	127 003	G	1		X							
15	1053	0127S000404	127 004	G	1		X							
15	1054	0127S000506	127 005	G	1		X							
15	1055	0127S000607	127 006	G	1		X							
15	1056	0127S000708	127 007	G	1		X							DUPLICATE 127012
15	1057	0127S000813	127 008	G	1	X								
15	1058	0127S000914	127 009	G	1	X	X							
15	1059	0127S001015	127 010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	15 MAR 10 1448	[redacted]	3-15-10 1448

Shipped To (circle one): PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STEVE STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 2 of 2

SB127

MAR 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
15	1100	X127S0211 20	127 Q11	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	15 MAR 10 1448	[redacted]	3-15-10 1448

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Stan Stokes QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: Pinge

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SB128

Date (~~FEB~~ MAR 2010)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Parameters for Analysis: RADIOLOGICAL	BE							Comments
15	1400	0128S0001 01	128 001	G	1		X							
15	1401	0128S0002 02	128 002	G	1		X							
15	1402	0128S0003 03	128 003	G	1	X	X							
15	1403	0128S0004 04	128 004	G	1	X	X							DUPLICATE 128011
15	1404	0128S0005 06	128 005	G	1		X							
15	1405	0128S0006 07	128 006	G	1		X							
15	1406	0128S0007 08	128 007	G	1		X							
15	1407	0128S0008 13	128 008	G	1		X							
15	1408	0128S0009 15	128 009	G	1	X								
15	1409	0128S0010 20	128 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	16 MAR 10 0930	[redacted]	3-16-10 0930

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDES

Page 1 of 2

SB129

~~FASM~~ 2010A R Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be							Comments
12	1430	012950001 01	129 001	G	1		X							
12	1431	012950002 02	129 002	G	1		X							
12	1432	012950003 03	129 003	G	1		X							
12	1433	012950004 04	129 004	G	1		X							
12	1434	012950005 05	129 005	G	1	X	X							DUPLICATE 129013
12	1435	012950006 06	129 006	G	1		X							
12	1436	012950007 07	129 007	G	1		X							
12	1437	012950008 08	129 008	G	1		X							
12	1438	012950009 10	129 009	G	1	X								
12	1439	012950010 12	129 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[signature]	12 MAR 10 1520	[redacted]	3-12-10 1520

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 2 of 2

SB129

MAR 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
12	1440	012950011115	129 011	G	1	X								
12	1441	012950012220	129 012	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[signature]	12 MAR 10	[redacted]	3-12-10
	1520		1520

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCASVILLE FUSRAP

QA Contact: STEVE STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDLE

Page 1 of 2

SB130

MAR 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Parameters for Analysis: RADIOLOGICAL	BE							Comments
15	0820	013050001 01	130 001	G	1		X							
15	0821	013050002 02	130 002	G	1		X							
15	0822	013050003 03	130 003	G	1	X	X							DUPLICATE 130013
15	0823	013050004 04	130 004	G	1		X							
15	0824	013050005 06	130 005	G	1		X							
15	0825	013050006 07	130 006	G	1		X							
15	0826	013050007 08	130 007	G	1		X							
15	0827	013050008 13	130 008	G	1	X								
15	0828	013050009 14	130 009	G	1	X								
15	0829	013050010 15	130 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[redacted]	15 MAR 10 0930	[redacted]	3-16-10 0130

Shipped To (circle one): PRISM APPL Test America Other: LS

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STIVALS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDUE

Page 2 of 2

SB130

MAR 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be							Comments
15	0830	013050001116	130 Q11	G	1	X								
15	0831	013050001218	130 Q12	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	16 MAR 10 0930	[redacted]	[illegible]

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STIVERS QA Contact Phone:

Work Order #: 92007 Sample Program:

Samplers: RIDGE

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SB131

2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
12	1040	013150001 01	131 001	G	1		X							
12	1041	013150002 02	131 002	G	1		X							
12	1042	013150003 03	131 003	G	1		X							DUPLICATE 131010
12	1043	013150004 04	131 004	G	1	X	X							
12	1044	013150005 05	131 005	G	1		X							
12	1045	013150006 06	131 006	G	1		X							
12	1046	013150007 07	131 007	G	1	X	X							
12	1047	013150008 08	131 008	G	1		X							
12	1048	013150009 09	131 009	G	1	X	X							
~~12~~	~~1049~~	~~013150010~~	~~131 010~~	~~G~~	~~1~~		~~X~~							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	12 MAR 10 1430	[redacted]	3-12-10 1430

Shipped To (circle one): PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEKLIS QA Contact Phone:

Work Order #: 92007 Sample Program:

Samplers: PINGE

Page 1 of 1

SB132

2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be							Comments
12	1110	0132500001 01	132 001	G	1		X							
12	1111	0132500002 02	132 002	G	1		X							
12	1112	0132500003 03	132 003	G	1		X							
12	1113	0132500004 04	132 004	G	1		X							
12	1114	0132500005 05	132 005	G	1	X	X							
12	1115	0132500006 06	132 006	G	1		X							
12	1116	0132500007 07	132 007	G	1		X							DUPLICATE 132011
12	1117	0132500008 08	132 008	G	1	X	X							
12	1118	0132500009 13	132 009	G	1		X							
12	1119	0132500010 16	132 010	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	12 MAR 10 1430	[redacted]	3-12-10 1430

Shipped To (circle one): PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: [illegible] STUCKLE QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDAE

Page 1 of 2

SB133

2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
12	1630	013350001 01	133 001	G	1		X							
12	1631	013350002 02	133 002	G	1		X							
12	1632	013350003 03	133 003	G	1	X	X							
12	1633	013350004 04	133 004	G	1		X							
12	1634	013350005 05	133 005	G	1		X							
12	1635	013350006 06	133 006	G	1		X							DUPLICATE 133012
12	1636	013350007 07	133 007	G	1	X	X							
12	1637	013350008 08	133 008	G	1		X							
12	1638	013350009 10	133 009	G	1	X								
12	1639	013350010 16	133 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	[illegible]	[redacted]	3-13-10	PRISM APPL
	1240		1240	Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 2 of 2

SB133

2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
12	1640	Q133500111 8	133 Q11	G	1	X	X							BE ONLY

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[redacted]	B MAED 1240	[redacted]	3-13-10 1240	PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDLE

Page 1 of 2

SB134

MAR 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
12	1600	0134S0001Q1	134 001	G	1		X							
12	1601	0134S0002Q2	134 002	G	1		X							
12	1602	0134S0003Q3	134 003	G	1		X							
12	1603	0134S0004Q4	134 004	G	1		X							
12	1604	0134S0005Q5	134 005	G	1		X							
12	1605	0134S0006Q6	134 006	G	1		X							
12	1606	0134S0007Q7	134 007	G	1		X							
12	1607	0134S0008Q8	134 008	G	1		X							DUPLICATE 134Q13
12	1608	0134S0009Q9	134 009	G	1	X								
12	1609	0134S0010Q11	134 010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	13 MAR 10	[redacted]	3-13-10
	1240		1240

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: SAM STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: A DOGE

Page 2 of 2

SB134

MAR 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
12	1610	0134502 1113	134 011	G	1	X	X							
12	1611	0134502 1214	134 012	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[signature]	12 MAR 10 1240	[redacted]	3-13-10 1240

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: SIAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 2

SB135

2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be							Comments
16	0820	01350001 01	135 001	G	1		X							
16	0821	01350002 02	135 002	G	1		X							
16	0822	01350003 03	135 003	G	1		X							
16	0823	01350004 04	135 004	G	1		X							
16	0824	01350005 05	135 005	G	1		X							
16	0825	01350006 06	135 006	G	1		X							
16	0826	01350007 07	135 007	G	1		X							
16	0827	01350008 08	135 008	G	1	X	X							DUPLICATE 135D13
16	0828	01350009 09	135 009	G	1	X								
16	0829	01350010 11	135 010	G	1	X								

Parameters for Analysis

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	16 JAN 10 0930	[redacted]	3-16-10 [illegible]

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDAE

Page 2 of 2

SB135

2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
16	0830	0135S001113	135 011	G	1		X							
16	0831	0135S001215	135 012	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	16 MAR 10 0930	[redacted]	[illegible]	PRISM APPL
				Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 1

SB136

2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be							Comments
11	1630	01365000101	136 001	G	1		X							
11	1631	01365000202	136 002	G	1		X							
11	1632	01365000303	136 003	G	1		X							
11	1633	01365000404	136 004	G	1		X							
11	1634	01365000507	136 005	G	1		X							
11	1635	01365000608	136 006	G	1	X	X							DUPLICATE 136011
11	1636	01365000712	136 007	G	1	X								
11	1637	01365000813	136 008	G	1	X								
11	1638	01365000914	136 009	G	1		X							
11	1639	01365001015	136 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
ES	11 MAR 10 1715	[redacted]	3-11-10 1715	PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FLUSAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 1

SB137

2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIONUCLIDES	Be							Comments
11	1550	01375000101	137 001	G	1		X							
11	1551	01375000202	137 002	G	1		X							
11	1552	01375000303	137 003	G	1	X	X							
11	1553	01375000404	137 004	G	1	X	X							
11	1554	01375000506	137 005	G	1		X							DUPLICATE 137011
11	1555	01375000607	137 006	G	1		X							
11	1556	01375000708	137 007	G	1		X							
11	1557	01375000809	137 008	G	1	X								
11	1558	01375000913	137 009	G	1		X							
11	1559	01375001017	137 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[redacted]	11MAR10	[redacted]	3-11-10
	1620		1620

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 1

SB138

2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
12	0910	0138500001 01	138 001	G	1	X	X							
12	0911	0138500002 02	138 002	G	1	X	X							
12	0912	0138500003 03	138 003	G	1		X							
12	0913	0138500004 04	138 004	G	1		X							
12	0914	0138500005 06	138 005	G	1		X							
12	0915	0138500006 07	138 006	G	1	X	X							DUPLICATE 138010
12	0916	0138500007 09	138 007	G	1		X							
12	0917	0138500008 12	138 008	G	1		X							
12	0918	0138500009 14	138 009	G	1		X							
		~~0138500010~~	~~138 010~~	~~G~~	~~1~~									

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[signature]	12 MAR 10 0942	[redacted]	3-12-10 0942

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: Steve Stevens QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 1

SB139

MAR 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
20	1445	013950001 01	139 001	G	1		X							
20	1446	013950002 02	139 002	G	1		X							
20	1447	013950003 03	139 003	G	1	X	X							
20	1448	013950004 06	139 004	G	1		X							DUPLICATE 139011
20	1449	013950005 07	139 005	G	1		X							
20	1450	013950006 08	139 006	G	1		X							
20	1451	013950007 09	139 007	G	1	X	X							
20	1452	013950008 10	139 008	G	1	X	X							
20	1453	013950009 14	139 009	G	1		X							
20	1454	013950010 15	139 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[signature]	20 MAR 10 1530	[redacted]	3-20-10 1530

Shipped To (circle one): PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92007 Sample Program:

Samplers: CARL PIDKE / STEVE DEETER

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SB2XX

Date (DECEMBER 2009)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
8	1330	020050000101	G	200 001	1	X	X							
8	1331	020050000202	G	200 002	1		X							
8	1332	020050000303	G	200 003	1		X							
8	1333	020050000406	G	200 004	1		X							
8	1334	020050000507	G	200 005	1		X							
8	1335	020050000608	G	200 006	1		X							
8	1336	020050000709	G	200 007	1	X								
8	1337	020050000810	G	200 008	1	X								
8	1338	020050000915	G	200 009	1		X							DUPLICATE 200010
~~8~~			~~G~~	~~200 010~~	~~1~~		~~X~~							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	8DEC09 1400	[redacted]	12/8/09 16:22

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / STEVE DEETH

Page 1 of 2

~~SBQ~~ SB201

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
8	1310	Q201 ~~001~~ S000101	201 001	G	1		X							SITE ID #S CHANGED BY SAMPLER CARL PIDGE
8	1311	Q201 ~~002~~ S000202	201 002	G	1		X							
8	1312	Q201 ~~003~~ S000303	201 003	G	1		X							
8	1313	Q201 ~~004~~ S000404	201 004	G	1		X							
8	1314	Q201 ~~005~~ S000505	201 005	G	1		X							
8	1315	Q201 ~~006~~ S000606	201 006	G	1		X							
8	1316	Q201 ~~007~~ S000707	201 007	G	1		X							
8	1317	Q201 ~~008~~ S000808	201 008	G	1	X	X							DUPICAR 201012
8	1318	Q201 ~~009~~ S000913	201 009	G	1	X								
8	1319	Q201 ~~010~~ S001014	201 010	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	8 DEC 09	[redacted]	12/9/09 16:20	PRISM APPL
				Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL ADAMS / STEVE DEETER

Page 2 of 2

SB201

Date (DECEMBER 2009)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
8	1320	02201500 1115	201 011	G	1	EA	X							BE ONLY

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	8DEC09 1330	[redacted]	[illegible]

Shipped To (circle one):

PRISM APPL

Test America Other:_____

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Lucky FUSRAP

QA Contact: Sam Stevens QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: K Shiroff / K Beyer

Page 1 of 1

SB202

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Ra-1	Be							Comments
12/14/09	1600	02ff250 00101	202001	E			X							
	1601	0202 50 00202	202002			X	X							collect dup for Ra-1 Be (202010)
	1602	0202 50 00303	202003			X	X							
	1603	0202 50 00404	202004			X	X							
	1604	0202 50 00506	202005				X							
	1605	0202 50 00607	202006				X							
	1606	0202 50 00708	202007				X							
	1607	0202 50 00813	202008				X							
	1608	0202 50 00915	202009				X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[signature]	12/14/09/1630	[redacted]	12/14/09	PRISM APPL
				Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / STEVE DEETER

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SB203

Parameters for Analysis

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be	Pb						Comments
9	0930	020350001101	203 001	G	1	X	X							~~DUPLICATE 203013~~
9	0931	020350002202	203 002	G	1		X							DUPLICATE 203012
9	0932	020350003303	203 003	G	1		X							
9	0933	020350004404	203 004	G	1		X							
9	0934	020350005506	203 005	G	1		X							
9	0935	020350006607	203 006	G	1		X							
9	0936	020350007708	203 007	G	1		X							
9	0937	020350008812	203 008	G	1	X								
9	0938	020350009913	203 009	G	1		X							
9	0939	020350010014	203 010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	9 DEC 09 1000	[redacted]	12/9/09 1500

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STAVELS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGEY / KEVIN BEVER

Page 2 of 2

~~SB8~~ SB203

Date (DECEMBER 2009)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
9	0940	020350011 15	203 011	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	9 DEC 09 1000	[redacted]	12/9/09 1556

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STIVERS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / STEVE DEETER

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SB204

Parameters for Analysis

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
9	1200	0204S000101	204 001	G	1		X							
9	1201	0204S000202	204 002	G	1		X							
9	1202	0204S000303	204 003	G	1		X							
9	1203	0204S000404	204 004	G	1		X							
9	1204	0204S000505	204 005	G	1		X							
9	1205	0204S000606	204 006	G	1		X							
9	1206	0204S000707	204 007	G	1		X							
9	1207	0204S000808	204 008	G	1		X							
9	1208	0204S0009 ~~13~~ 09	204 009	G	1	X	X							
9	1209	0204S0010 ~~14~~ 13	204 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	9 DEC 09 1230	[redacted]	12/9/09 1530	PRISM APPL
				Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDLE / KEVIN BEYER

Page 2 of 2

~~SB204~~ SB204

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
9	1210	0204500 1114	011	G	1	X								
9	1211	0204500 1215	012	G	1	X	X							DUPLICATE 0204 0134
9	1212	0204500 1316	013											

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	9 DEC 09 1230	[redacted]	12/9/09 1530	PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEWARD QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / STEVE DEETER

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SB 205

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
10	1400	0205000101	205 001	G	1		X							
10	1401	0205000202	205 002	G	1		X							DUPLICATE 205811
10	1402	0205000303	205 003	G	1		X							
10	1403	0205000404	205 004	G	1		X							
10	1404	0205000506	205 005	G	1		X							
10	1405	0205000607	205 006	G	1		X							
10	1406	0205000708	205 007	G	1	X	X							
10	1407	0205000814	205 008	G	1	X	X							
10	1408	0205000915	205 009	G	1	X								
10	1409	0205001018	205 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	10 DEC 09 1430	[redacted]	12/10/09 1405

Shipped To (circle one):

PRISM APPL

Test America Other: CS

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDLE / STEVE DEETER

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SB 206

Date (DECEMBER 2009)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
10	1030 Q	206500101	206 001	G	1	X	X							
10	1031 Q	206500202	206 002	G	1	X	X							
10	1032 Q	206500303	206 003	G	1	X	X							
10	1033 Q	206500404	206 004	G	1		X							
10	1034 Q	206500506	206 005	G	1		X							
10	1035 Q	206500607	206 006	G	1		X							
10	1036 Q	206500708	206 007	G	1		X							
10	1037 Q	206500814	206 008	G	1		X							
10	1038 Q	206500915	206 009	G	1		X							DUPLICATE 206010
~~10~~	~~Q~~	~~206500810~~	~~206 010~~	~~G~~	~~1~~		~~X~~							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	10 DEC 09 1115	[redacted]	12/10/09 1510

Shipped To (circle one):

PRISM APPL

Test America Other: CS

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / STEVE DEETER

Page 1 of 2

SB207

Date (December 2009)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
4	1615	0207500001 01	207 001	G	1		X							
4	1616	0207500002 02	207 002	G	1		X							
4	1617	0207500003 03	207 003	G	1	X	X							DUPLICATE 207013
4	1618	0207500004 04	207 004	G	1		X							
4	1619	0207500005 05	207 005	G	1		X							
4	1620	0207500006 06	207 006	G	1		X							
4	1621	0207500007 07	207 007	G	1		X							
4	1622	0207500008 08	207 008	G	1		X							
4	1623	0207500009 12	207 009	G	1	X								
4	1624	0207500010 14	207 010	G	1									

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
G			

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDLE / STEVE DEETER

Page 2 of 2

SB207

Date (DECEMBER 2009)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be	Pb						Comments
4	1625	0207500 1115	207 011	G	1	X								
4	1626	0207500 12 20	207 012	G	1									

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	4 DEC 09 1700		

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVES QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / STEVE DEETER

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SB208

Parameters for Analysis

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE PB							Comments
10	1130	0208500010 1	208 001	G	1		X							
10	1131	0208500002 2	208 002	G	1		X							
10	1132	0208500003 3	208 003	G	1		X							
10	1133	0208500004 4	208 004	G	1		X							
10	1134	0208500005 5	208 005	G	1		X							
10	1135	0208500006 6 7	208 006	G	1		X							
10	1136	0208500007 7 8	208 007	G	1	X	X							DUPLICATE 208 8+3 12
10	1137	0208500008 8 9	208 008	G	1	X								
10	1138	0208500009 9 10	208 009	G	1	X								
10	1139	0208500010 10 14	208 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	10 DEC 09 1200	[redacted]	12/10/09 1610

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STEW STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / STEVE DEETER

Page 2 of 2

SB 208

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
DECEMBER 2009														
10	1140	208S0811208	208 811	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	10 DEC 09 1200	[redacted]	12/10/09 1400

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKY FUSRAP

QA Contact: STEW STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CAL RIDGE / STEVE DEETA

Page 1 of 2

SB209

Date (DECEMBER 2009)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	BIOLOGICAL	Be	Pb						Comments
10	1310	020950001 01	209 001	G	1		X							
10	1311	020950002 02	209 002	G	1		X							
10	1312	020950003 03	209 003	G	1		X							
10	1313	020950004 04	209 004	G	1		X							
10	1314	020950005 06	209 005	G	1		X							
10	1315	020950006 07	209 006	G	1		X							
10	1316	020950007 09	209 007	G	1		X							DUPLICATE 209012
10	1317	020950008 14	209 008	G	1	X	X							
10	1318	020950009 18	209 009	G	1	X								
10	1319	020950010 19	209 010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	10 DEC 09 1400	[redacted]	12/10/09 1607

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Stan Stevens QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: Carl Pidge / Steve Deeter

Page 2 of 2

SB2009

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Radiological	Be	Pb						Comments
December 2009														
10	1320	0209S001120	2009 011	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	10 Dec 09 1400	[redacted]	12/10/09 1600

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Jim Stevens QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: K Shinoff / K Beyer

Page 1 of 1

SB210

Parameters for Analysis

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Rad	Be							Comments
12/14/09	1500	0210500001 01	210001	G	1		X							
	1501	0210500002 02	210002		1	X	X							
	1502	0210500003 03	210003		1	X	X							
	1503	0210500004 04	210004		1		X							
	1504	0210500005 06	210005		1		X							
	1505	0210500006 07	210006		1		X							
	1506	0210500007 08	210007		1		X							Collect Duplicate 210019
	1507	0210500008 12	210008		1	X	X							
	1508	0210500009 20	210009		1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
	12/14/09 1540	[redacted]	12/14/09 1540	PRISM APPL
				Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / STEVE DEETER

Page 1 of 2

SB211

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
10	1500	021150000101	211 001	G	1		X							
10	1501	021150000202	211 002	G	1		X							
10	1502	021150000303	211 003	G	1	X	X							DUPLICATE 211013
10	1503	021150000404	211 004	G	1		X							
10	1504	021150000505	211 005	G	1		X							
10	1505	021150000606	211 006	G	1		X							
10	1506	021150000707	211 007	G	1		X							
10	1507	021150000808	211 008	G	1		X							
10	1508	021150000912	211 009	G	1	X								
10	1509	021150001013	211 010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	10 DEC 09 1545	[redacted]	12/10/09 1600	PRISM APPL
				Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVELS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL RIDGE / STEVE DEETER

Page 2 of 2

~~SB0~~ SB211

Date (DECEMBER 2009)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
10	1510	Q21150Q11 14	211 Q11	G	1		X							
10	1511	Q21150Q12 20	211 Q12	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	10 DEC 09 1505	[redacted]	12/10/09 1600

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Lucky FUSRAP

QA Contact: Sam Fields QA Contact Phone: —

Work Order #: 97002 Sample Program: —

Samplers: K Shuff / K Beyer

Page 1 of 1

SB212

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Rad	Rx							Comments
12/11/09	1340	0212S000101	212001	E			X							
	1341	0212S000202	212002			X	X							
	1342	0212S000303	212003			X	X							
	1343	0212S000404	212004				X							Duplicate for 212011
	1344	0212S000506	212005				X							
	1345	0212S000607	212006				X							
	1346	0212S000706	212007				X							
	1347	0212S000809	212008			X								
	1348	0212S000910	212009				X							
	1349	0212S001015	212010				X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
	12/10/09 1540	[redacted]	12/14/09 1540

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Lucky Peak FUSRAP

QA Contact: Jim Stevens QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: K. Shiloff / K. Beyer

Page 1 of 1

SB213

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Rad	Be							Comments
12/15/09	12 50	0213S000101	213001	E	1		X							
	12 51	0213S000202	213002		1		X							
	12 52	0213S000303	213003		1	X	X							
	12 53	0213S000404	213004		1		X							
	12 54	0213S000505	213005		1		X							
	12 55	0213S000606	213006		1		X							
	12 56	0213S000707	213007		1	X	X							
	12 57	0213S000808	213008		1		X							Collect Duplicate (FIL 213012)
	12 58	0213S000912	213009		1	X								
	12 59	0213S001013	213010		1		X							
	1300	0213S001115	213011		1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
	12/15/09 1750	[redacted]	12/15/09 1550

Shipped To (circle one): PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Lucky FUSRAP

QA Contact: Stan Stevens QA Contact Phone: —

Work Order #: 97002 Sample Program: —

Samplers: K. Smith / K. Beyer

Page 1 of 1

SB214

Parameters for Analysis

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Rad	Be							Comments
12/15/09	0950	0214 S0 00101	214001	G			X							
	0951	0214 S0 00207	214002				X							
	0952	0214 S0 00303	214003				X							
	0954	0214 S0 00404	214004				X							
	0954	0214 S0 00506	214005				X							
	0955	0214 S0 00607	214006				X							duplicate for Be (to 214010)
	0956	0214 S0 00708	214007				X							
	0957	0214 S0 00809	214008		*	X								
	0958	0214 S0 00915	214009				X							
	0959	0214 S0 01019	214010		*	X								
	1000	0214 S0 01120	214011		*	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
	12/15/09 1550	[redacted]	12/15/09 1550

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Lucky FUSRAP

QA Contact: Stan Stencil QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: K. Shuoff / K. Byrnes

Page 1 of 2

SB215

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Rad	Be							Comments
12/15/09	0820	021550 00101	215001	G	1		X							
	0821	021550 00202	215002		1		X							
	0822	021550 00303	215003		1	X	X							Duplicate Collected (Tag 215013)
	0823	021550 00404	215004		1		X							
	0824	021550 00505	215005		1		X							
	0825	021550 00606	215006		1		X							
	0826	021550 00707	215007		1		X							
	0827	021550 00808	215008		1		X							
	0828	021550 00912	215009		1		X							
	0829	021550 01017	215010		1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
	12/15/09 1550	[redacted]	12/15/09 1556	PRISM APPL
				Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Lucky FUSRAP

QA Contact: Stan Stevens QA Contact Phone: —

Work Order #: 97002 Sample Program: —

Samplers: K. Shmoff / K. Reyens

Page 2 of 2

SB215

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Rad	Be							Comments
12/15/09	0830	02155001118	215011	G	1	X								
12/15/09	0831	02155001220	215012	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
	12/15/09 1550	[redacted]	12/15/09 1550	PRISM APPL
				Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Stan Stevens QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: K Stinoff / K Beyer

Page 1 of 2

SB216

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Rad	Be							Comments
12/14/09	1230	021650 00101	216001	G	1		X							
	1231	021650 00202	216002		1	X	X							Collect Dup for Kelly (QA1013)
	1232	021650 00301	216003		1		X							
	1233	021650 00404	216004		1		X							
	1234	021650 00505	216005		1		X							
	1235	021650 00606	216006		1		X							
	1236	021650 00707	216007		1		X							
	1237	021650 00808	216008		1		X							
	1238	021650 00912	216009		1									
	1239	021650 01017	216010		1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
	12/14/09 1540	[redacted]	12/14/09 1544	PRISM APPL
				Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Lucky FUSRAP

QA Contact: Stan Stevens QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: K Shuoff / K Beyer

Page 2 of 2

SB216

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	BAD	BK							Comments
12/14/09	1240	02LK50 01 B	2LK011	G	1	X								
↓	1241	02LK50 01220	2LK012	↓	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	12/14/09 1540	[redacted]	12/14/09 1544

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL PIDGE / KEVIN BEYER

Page 1 of 1

~~SBQ~~ SB217

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
7	1500	0217S00001 01	001	G	1		X							
7	1501	0217S00002 02	002	G	1	X	X							
7	1502	0217S00003 06	003	G	1		X							
7	1503	0217S00004 07	004	G	1		X							
7	1504	0217S00005 08	005	G	1	X	X							
7	1505	0217S00006 12	006	G	1	X								~~DUPLICATE~~ ~~0217009~~ 6
7	1506	0217S00007 13	007	G	1		X							DUPLICATE 217009
7	1507	0217S00008 15	008	G	1		X							
~~7~~		~~0217S00009~~	~~009~~	~~G~~	~~1~~			~~X~~						
~~7~~		~~0217S00010~~	~~010~~	~~G~~	~~1~~			~~X~~						

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
~~X~~	7 DEC 09 1600	[redacted]	12/7/09 1700

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEELE QA Contact Phone:

Work Order #: 92007 Sample Program:

Samplers: CARL PIDGE / STEVE DEETER

Page 1 of 2

SB218

DECEMBER 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
11	0920	021850001 01	218 001	G	1		X							
11	0921	021850002 02	218 002	G	1		X							
11	0922	021850003 03	218 003	G	1	X	X							DUPLICATE 218012
11	0923	021850004 04	218 004	G	1		X							
11	0924	021850005 06	218 005	G	1		X							
11	0925	021850006 07	218 006	G	1		X							
11	0926	021850007 08	218 007	G	1		X							
11	0927	021850008 09	218 008	G	1	X								
11	0928	021850009 10	218 009	G	1	X								
11	0929	021850010 14	218 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	11 DEC 09 0945	[redacted]	12/11/09 1545

Shipped To (circle one): PRISM APPL Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL ADAE / STEVE DEETER

Page 2 of 2

SB 218

Parameters for Analysis

Date (December)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
11	0930	02185001117	218 011	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[signature]	11 DEC 09 0945	[redacted]	12/4/09 1547	PRISM APPL Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

Page 1 of 1

7G03

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
8	1500	7G03S000101	7G03 001	G	1		X							
8	1501	7G03S000202	7G03 002	G	1		X							
8	1502	7G03S000303	7G03 003	G	1		X							
8	1503	7G03S000404	7G03 004	G	1		X							
8	1504	7G03S000506	7G03 005	G	1		X							
8	1505	7G03S000607	7G03 006	G	1		X							
8	1506	7G03S000708	7G03 007	G	1	X	X							DUPLICATE 7G03011
8	1507	7G03S000810	7G03 008	G	1	X								
8	1508	7G03S000915	7G03 009	G	1		X							
8	1509	7G03S001020	7G03 010	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[signature]	8 JAN 10	[redacted]	1-8-10/1400
1600			

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Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

Page 1 of 2

7GQ4

Parameters for Analysis

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
8	0900	7G04S000101	7GQ4 001	G	1		X							
8	0901	7G04S000202	7GQ4 002	G	1		X							
8	0902	7G04S000303	7GQ4 003	G	1		X							DUPLICATE 7G04014
8	0903	7G04S000404	7GQ4 004	G	1		X							
8	0904	7G04S000505	7GQ4 005	G	1		X							
8	0905	7G04S000606	7GQ4 006	G	1		X							
8	0906	7G04S000707	7GQ4 007	G	1		X							
8	0907	7G04S000808	7GQ4 008	G	1		X							
8	0908	7G04S000913	7GQ4 009	G	1									
8	0909	7G04S001017	7GQ4 010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	8 JAN 10	[redacted]	[illegible]

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

Page 2 of 2

7G Q4

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Parameters for Analysis: RADIOLOGICAL	BE	PB						Comments
8	0910	7G04S0Q1118	7G04 Q11	G	1	X								
8	0911	7G04S0Q12 19	7G04 Q12	G	1	X								
8	0912	7G04S0Q1320	7G05 Q13	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	8 JAN 10	[redacted]	1-8-10 1600

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PEETER / PIDGE

Page 1 of 1

7605

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
7	1620	7605500001 01	7605 001	G	1		X							
7	1621	7605500002 02	7605 002	G	1	X	X							
7	1622	7605500003 03	7605 003	G	1	X	X							
7	1623	7605500004 06	7605 004	G	1		X							
7	1624	7605500005 07	7605 005	G	1		X							
7	1625	7605500006 08	7605 006	G	1		X							
7	1626	7605500007 10	7605 007	G	1	X								
7	1627	7605500008 16	7605 008	G	1		X							
7	1628	7605500009 19	7605 009	G	1	~~X~~	X							BE ONLY

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	7 JAN 10 1650	[redacted]	1/7/10 1650	PRISM APPL Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEWARD QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETH / PIDGE

Page 1 of 2

7G09

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
7	1130	7G09500001	7G09 001	G	1		X							
7	1131	7G09500002	7G09 002	G	1		X							
7	1132	7G09500003	7G09 003	G	1		X							
7	1133	7G09500004	7G09 004	G	1		X							
7	1134	7G09500005	7G09 005	G	1		X							
7	1135	7G09500006	7G09 006	G	1		X							
7	1136	7G09500007	7G09 007	G	1	X								
7	1137	7G09500008	7G09 008	G	1		X							
7	1138	7G09500009	7G09 009	G	1	X								
7	1139	7G09500010	7G09 010	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[signature]	7 JAN 10		

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

Page 2 of 2

7G09

Parameters for Analysis

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
7	1140	7G09S0Q1119	7G09Q011	G	1		X							DUPLICATE 7G09Q12

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[signature]	7 JAN 10		

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: CARL ADAE / STEVE DEETERS

Page 1 of 2

~~SB~~ 7611

Date (DECEMBER 2009)	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
21	1050	761150000101	7611 001	G	1		X							
21	1051	761150000202	7611 002	G	1		X							
21	1052	761150000303	7611 003	G	1		X							
21	1053	761150000404	7611 004	G	1		X							
21	1054	761150000505	7611 005	G	1		X							
21	1055	761150000606	7611 006	G	1		X							
21	1056	761150000707	7611 007	G	1		X							
21	1057	761150000808	7611 008	G	1		X							
21	1058	761150000916	7611 009	G	1		X							
21	1059	761150001019	7611 010	G	1	X	X							~~DUPLICATE~~ ~~7611 013~~

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	21 DEC 09 1200	[redacted]	12/21/09 1311

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92052 Sample Program:

Samplers: CARL PIDAS / STEVE DEETZ

Page 2 of 2

SB
7G11

December 2009 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be	Pb						Comments
21	1100	7G1150011 19	7G11 011	G	1	X								
21	1101	7G1150012 20	7G11 012	G	1	X	X							DUPLICATE 7G11013

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	21 DEC 09	[redacted]	12/21/09 1311

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

Page 1 of 1

7G16

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be	Pb						Comments
8	1400	7G16500001 06	7G16 001	G	1		X							
8	1401	7G16500002 07	7G16 002	G	1		X							
8	1402	7G16500003 08	7G16 003	G	1		X							
8	1403	7G16500004 09	7G16 004	G	1		X							
8	1404	7G16500005 10	7G16 005	G	1		X							
8	1405	7G16500006 11	7G16 006	G	1		X							DUPLICATE 7G16011
8	1406	7G16500007 12	7G16 007	G	1	X	X							
8	1407	7G16500008 13	7G16 008	G	1	X	X							
8	1408	7G16500009 14	7G16 009	G	1	X	X							
8	1409	7G16500010 15	7G16 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	8 JAN 10	[redacted]	1-8-10/1600
1600			

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

Page 1 of 2

7G23

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
7	0830	7G23500001 01	7G23 001	G	1		X							
7	0831	7G23500002 02	7G23 002	G	1		X							
7	0832	7G23500003 03	7G23 003	G	1		X							
7	0833	7G23500004 04	7G23 004	G	1	X	X							DUPLICAT 7G23013
7	0834	7G23500005 05	7G23 005	G	1		X							
7	0835	7G23500006 06	7G23 006	G	1		X							
7	0836	7G23500007 07	7G23 007	G	1		X							
7	0837	7G23500008 08	7G23 008	G	1		X							
7	0838	7G23500009 09	7G23 009	G	1	X								
7	0839	7G23500010 14	7G23 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	7 JAN 10	[illegible]	

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PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

Page 2 of 2

7G23

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
7	0840	7G23S0Q1116	7G23 Q11	G	1	X	~~X~~	~~X~~						RAD ONLY
7	0841	7G23S0Q1228	7G23 Q12	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	7 JAN 10	[illegible]	

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

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7G43

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
7	1040	7G43500101	7G43 001	G	1		X							
7	1041	7G43500202	7G43 002	G	1		X							
7	1042	7G43500303	7G43 003	G	1		X							
7	1043	7G43500406	7G43 004	G	1		X							
7	1044	7G43500507	7G43 005	G	1		X							
7	1045	7G43500608	7G43 006	G	1		X							DUPLICATE 7G43X12
7	1046	7G43500713	7G43 007	G	1	X								
7	1047	7G43500815	7G43 008	G	1		X							
7	1048	7G43500917	7G43 009	G	1	X								
7	1049	7G43501018	7G43 010	G	1	X								

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[illegible]	7 Jan 10 1246	[illegible]	

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PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDAE

Page 2 of 2

7643

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
7	1050	7643S0001119	7643 ~~S0~~01 8	G	1		X							

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[illegible]	7 JAN 10		

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PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

Page 1 of 1

7G46

Parameters for Analysis

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
6	1500	7G46500001 01	7G46 001	G	1		X							
6	1501	7G46500002 02	7G46 002	G	1		X							
6	1502	7G46500003 03	7G46 003	G	1		X							
6	1503	7G46500004 06	7G46 004	G	1		X							
6	1504	7G46500005 07	7G46 005	G	1	X	X							DUPLICATE 7G46009
6	1505	7G46500006 08	7G46 006	G	1	X	X							
6	1506	7G46500007 13	7G46 007	G	1	X								
6	1507	7G46500008 20	7G46 008	G	1		X							

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[illegible]	6 JAN 10 1645	[redacted]	1/6/10 1653	PRISM APPL Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

Page 1 of 1

7G50

Parameters for Analysis

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
7	1410	7G50500001Q1	7G50 001	G	1		X							
7	1411	7G50500002Q2	7G50 002	G	1		X							
7	1412	7G50500003Q6	7G50 003	G	1		X							
7	1413	7G50500004Q7	7G50 004	G	1		X							DUPLICATE 7G50Q11
7	1414	7G50500005 11	7G50 005	G	1		X							
7	1415	7G50500006 12	7G50 006	G	1		X							
7	1416	7G50500007 13	7G50 007	G	1	X								
7	1417	7G50500008 14	7G50 008	G	1	X								
7	1418	7G50500009 15	7G50 009	G	1	X								
7	1419	7G50500010 19	7G50 010	G	1		X							

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[illegible]	7 JAN 10 1650	[redacted]	1/7/10 1650

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Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDAE

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BKG1

Parameters for Analysis

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
5	1030	BKG1S000101	BKG1 001	G	1	X	X	X						
5	1031	BKG1S000202	BKG1 002	G	1	X	X	X						
5	1032	BKG1S000303	BKG1 003	G	1	X	X	X						
5	1033	BKG1S000404	BKG1 004	G	1	X	X	X						
5	1034	BKG1S000505	BKG1 005	G	1	X	X	X						
5	1035	BKG1S000606	BKG1 006	G	1	X	X	X						
5	1036	BKG1S000707	BKG1 007	G	1	X	X	X						
5	1037	BKG1S000808	BKG1 008	G	1	X	X	X						
5	1038	BKG1S000909	BKG1 009	G	1	X	X	X						
5	1039	BKG1S001010	BKG1 010	G	1	X	X	X						

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[illegible]	5 JAN 10 1620	[redacted]	1/5/10 1620

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

Page 2 of 2

BKG1

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
5	1040	BKG1S001111	BKG1 011	G	1	X	X	X						
5	1041	BKG1S001212	BKG1 012	G	1	X	X	X						DUPLICATE BKG1021
5	1042	BKG1S001313	BKG1 013	G	1	X	X	X						
5	1043	BKG1S001414	BKG1 014	G	1	X	X	X						
5	1044	BKG1S001515	BKG1 015	G	1	X	X	X						
5	1045	BKG1S001616	BKG1 016	G	1	X	X	X						
5	1046	BKG1S001717	BKG1 017	G	1	X	X	X						
5	1047	BKG1S001818	BKG1 018	G	1	X	X	X						
5	1048	BKG1S001919	BKG1 019	G	1	X	X	X						
5	1049	BKG1S002020	BKG1 020	G	1	X	X	X						

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[illegible]	5 JAN 10 1620	[redacted]	1/6/10 1620

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

Page 1 of 2

BKG2

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
5	0920	BKG2S000101	BKG2 001	G	1	X	X	X						
5	0921	BKG2S000202	BKG2 002	G	1	X	X	X						DUPLICATE BKG2S021
5	0922	BKG2S000303	BKG2 003	G	1	X	X	X						
5	0923	BKG2S000404	BKG2 004	G	1	X	X	X						
5	0924	BKG2S000505	BKG2 005	G	1	X	X	X						
5	0925	BKG2S000606	BKG2 006	G	1	X	X	X						
5	0926	BKG2S000707	BKG2 007	G	1	X	X	X						
5	0927	BKG2S000808	BKG2 008	G	1	X	X	X						
5	0928	BKG2S000909	BKG2 009	G	1	X	X	X						
5	0929	BKG2S001010	BKG2 010	G	1	X	X	X						

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[signature]	5 JAN 10 1633	[redacted]	1/5/10 1633

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PRISM APPL

Test America Other: CS

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PEETER / RIDGE

Page 2 of 2

BKG2

Parameters for Analysis

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
5	0930	BKG2S0011 11	BKG2 011	G	1	X	X	X						
5	0931	BKG2 S0012 12	BKG2 012	G	1	X	X	X						
5	0932	BKG2S0013 13	BKG2 013	G	1	X	X	X						
5	0933	BKG2S0014 14	BKG2 014	G	1	X	X	X						
5	0934	BKG2S0015 15	BKG2 015	G	1	X	X	X						
5	0935	BKG2S0016 16	BKG2 016	G	1	X	X	X						
5	0936	BKG2S0017 17	BKG2 017	G	1	X	X	X						
5	0937	BKG2S0018 18	BKG2 018	G	1	X	X	X						
5	0938	BKG2S0019 19	BKG2 019	G	1	X	X	X						
5	0939	BKG2S0020 20	BKG2 020	G	1	X	X	X						

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	5JAN10 1633	[redacted]	1/5/10 1633

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Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEEM / PIDGE

Page 1 of 2

BKG3

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
4	1600	BKG350001Q1	BKG3 001	G	1	X	X	X						
4	1601	BKG350002Q2	BKG3 002	G	1	X	X	X						
4	1602	BKG350003Q3	BKG3 003	G	1	X	X	X						
4	1603	BKG350004Q4	BKG3 004	G	1	X	X	X						
4	1604	BKG350005Q5	BKG3 005	G	1	X	X	X						
4	1605	BKG350006Q6	BKG3 006	G	1	X	X	X						
4	1606	BKG350007Q7	BKG3 007	G	1	X	X	X						
4	1607	BKG350008Q8	BKG3 008	G	1	X	X	X						DUPLICATE BKG3 021
4	1608	BKG350009Q9	BKG3 009	G	1	X	X	X						
4	1609	BKG350010Q10	BKG3 010	G	1	X	X	X						

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[illegible]	4 JAN 10 1715 HRS	[redacted]	1/4/10 1715

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Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

Page 2 of 2

BKG3

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
4	1610	BKG350001111	BKG3 011	G	1	X	X	X						
4	1611	BKG350001212	BKG3 012	G	1	X	X	X						
4	1612	BKG350001313	BKG3 013	G	1	X	X	X						
4	1613	BKG350001414	BKG3 014	G	1	X	X	X						
4	1614	BKG350001515	BKG3 015	G	1	X	X	X						
4	1615	BKG350001616	BKG3 016	G	1	X	X	X						
4	1616	BKG350001717	BKG3 017	G	1	X	X	X						
4	1617	BKG350001818	BKG3 018	G	1	X	X	X						
4	1618	BKG350001919	BKG3 019	G	1	X	X	X						
4	1619	BKG350002020	BKG3 020	G	1	X	X	X						

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	4 JAN 10 MISHAS.	[redacted]	1/4/10 1715

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / RIDGE

Page 1 of 2

BKG4

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be	Pu						Comments
4	1500	BKG450001 01	BKG4 001	G	1	X	X	X						
4	1501	BKG450002 02	BKG4 002	G	1	X	X	X						
4	1502	BKG450003 03	BKG4 003	G	1	X	X	X						
4	1503	BKG450004 04	BKG4 004	G	1	X	X	X						
4	1504	BKG450005 05	BKG4 005	G	1	X	X	X						
4	1505	BKG450006 06	BKG4 006	G	1	X	X	X						
4	1506	BKG450007 07	BKG4 007	G	1	X	X	X						
4	1507	BKG450008 08	BKG4 008	G	1	X	X	X						
4	1508	BKG450009 09	BKG4 009	G	1	X	X	X						
4	1509	BKG450010 10	BKG4 010	G	1	X	X	X						

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[illegible]	4 JAN 10 1715 HRS.	[redacted]	1/4/10 1712

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

Page 2 of 2

BKG4

Parameters for Analysis

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
4	1510	BKG4S0011 11	BKG4 011	G	1	X	X	X						
4	1511	BKG4S0012 12	BKG4 012	G	1	X	X	X						
4	1512	BKG4S0013 13	BKG4 013	G	1	X	X	X						
4	1513	BKG4S0014 14	BKG4 014	G	1	X	X	X						DUPLICATE BKG4~~S0~~ 021
4	1514	BKG4S0015 15	BKG4 015	G	1	X	X	X						
4	1515	BKG4S0016 16	BKG4 016	G	1	X	X	X						
4	1516	BKG4S0017 17	BKG4 017	G	1	X	X	X						
4	1517	BKG4S0018 18	BKG4 018	G	1	X	X	X						
4	1518	BKG4S0019 19	BKG4 019	G	1	X	X	X						
4	1519	BKG4S0020 20	BKG4 020	G	1	X	X	X						

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	4 JAN 10 1715HRS.	[redacted]	1/4/10 1712

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

Page 1 of 2

BKG5

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
4	1140	BKG5 50001 01	BKG5 001	G	1	X	X	X						
4	1141	BKG5 50002 02	BKG5 002	G	1	X	X	X						
4	1142	BKG5 50003 03	BKG5 003	G	1	X	X	X						
4	1143	BKG5 50004 04	BKG5 004	G	1	X	X	X						
4	1144	BKG5 50005 05	BKG5 005	G	1	X	X	X						DUPLICATE BKG5 021
4	1145	BKG5 50006 06	BKG5 006	G	1	X	X	X						
4	1146	BKG5 50007 07	BKG5 007	G	1	X	X	X						
4	1147	BKG5 50008 08	BKG5 008	G	1	X	X	X						
4	1148	BKG5 50009 09	BKG5 009	G	1	X	X	X						
4	1149	BKG5 50010 10	BKG5 010	G	1	X	X	X						

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[signature]	4 JAN 10 1715 hrs.	[redacted]	1/4/10 1720

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

Page 2 of 2

BKG5

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be	Pb						Comments
4	1150	BKG5501111	BKG5 011	G	1	X	X	X						
4	1151	BKG5501212	BKG5 012	G	1	X	X	X						
4	1152	BKG5501313	BKG5 013	G	1	X	X	X						
4	1153	BKG5501414	BKG5 014	G	1	X	X	X						
4	1154	BKG5501515	BKG5 015	G	1	X	X	X						
4	1155	BKG5501616	BKG5 016	G	1	X	X	X						
4	1156	BKG5501717	BKG5 017	G	1	X	X	X						
4	1157	BKG5501818	BKG5 018	G	1	X	X	X						
4	1158	BKG5501919	BKG5 019	G	1	X	X	X						
4	1159	BKG5502020	BKG5 020	G	1	X	X	X						

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	4 JAN 10	[redacted]	1/4/10 1720
	1715 HRS		

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

Page 1 of 2

TR01

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
1/12/10	1330	TR01S0001 02	TR01001	G		X	X							
	1340	TR01S0002 02	TR01002			X	X							
	1350	TR01S0003 01	TR01003			X	X							DUPLICATE TR01015
	1355	TR01S0004 03	TR01004			X	X							
	1400	TR01S0005 02	TR01005			X	X							
	1405	TR01S0006 03	TR01006			X	X							
	1410	TR01S0007 03	TR01007			X	X							
	1415	TR01S0008 03	TR01008			X	X							
	1420	TR01S0009 04	TR01009			X	X							
	1435	TR01S0010 05	TR01010			X	X							

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	1/12/10 1454		

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

Page 1 of 2

TR01

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
1/16/10	1440	TR01S0011 00	TR01011	E	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
	1/16/10 1500	[redacted]	1/16/10 1500

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Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

Page 1 of 1

TR02

Parameters for Analysis

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
1/14/10	0930	TR02500105	TR02001	G	1	X	X							
	0935	TR02500205	TR02002		1	X	X							
	0940	TR02500304	TR02003		1	X	X							
	0950	TR02500401	TR02004		1	X	X							
	1000	TR02500505	TR02005		1	X	X							
	1010	TR02500607	TR02006		1	X	X							(DUPLICATE TR02015)
	1020	TR02500707	TR02007		1	X	X							
	1035	TR02500807	TR02008		1	X	X							
	1040	TR02500907	TR02009		1	X	X							
	1050	TR02501005	TR02010		1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	1/14/10 1454		

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

Page 1 of 1

TR03

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
1/14/10	1020	TR03500010 4	TR03001	G	1	X	X							
1/14/10	1120	TR03500020 4	TR03002		1	X	X							
1/14/10	1130	TR03500030 2	TR03003		1	X	X							
1/14/10	1140	TR03500040 7	TR03004		1	X	X							(Duplicate TR03011)
1/14/10	1145	TR03500050 7	TR03005		1	X	X							
1/14/10	1150	TR03500060 7	TR03006		1	X	X							
1/14/10	1200	TR03500070 2	TR03007		1	X	X							
1/14/10	1455	TR03500080 5	TR03008		1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
	1/15/10/1110	[redacted]	1/15/10 1711

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

Page 1 of 1

TR04

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
1/14/10	1550	TR0450 0001 06	TR04001	G	1	X	X							
1/14/10	1600	TR0450 0002 06	TR04002	G	1	X	X							
1/14/10	1615	TR0450 0003 06	TR04003	G	1	X	X							(Duplicate TR04014 RADIO)
1/14/10	1625	TR0450 0402	TR04004	G	1	X	X							
1/14/10	1630	TR0450 0502	TR04005	G	1	X	X							
	1635	TR0450 0601	TR04006	G	1	X	X							
	1640	TR0450 0703	TR04007	G	1	X	X							
	1650	TR0450 0803	TR04008	G	1	X	X							
	1705	TR0450 0903	TR04009	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
	1/15/10/1710	[redacted]	1/15/10/1710

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Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: DEETER / PIDGE

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TROS

Parameters for Analysis

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
1/16/10	1600	TR05S0001 03	TR05001	G	1	X	X							
	1605	TR05 S0002 03	TR05002		1	X	X							
	1610	TR05 S0004 03	TR05003		1	X	X							
	1670	TR05 S0004 03	TR05004		1	X	X							
	1675	TR05 S0005 12	TR05005		1	X	X							Duplicate TR05015
	1670	TR05 S0006 03	TR05006		1	X	X							
	1675	TR05 S0007 05	TR05007		1	X	X							
	1640	TR05 S0008 05	TR05008		1	X	X							
	1645	TR05 S0009 05	TR05009		1	X	X							
	1650	TR05 S0010 05	TR05010		1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
	1/16/10 / 1100	[redacted]	1/16/2010

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Page 2 of 2

TROS

Client: USACE

Project Name: LUCKY FLUSH AP

QA Contact: Jim Stevens QA Contact Phone: —

Work Order #: 92062 Sample Program: —

Samplers: S Dexter / Bill Rigby

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RAD	BE							Comments
1/16/10	1700	TW5S0011ØØ	TR05011	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
	1/16/10/1701	[redacted]	

Shipped To (circle one):

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Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92007 Sample Program:

Samplers: DEETER / PIDGE

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TR06

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE	PB						Comments
1/15/10	0920	TR06 50 00103	TR06001	G	1	X	X		X					
1/15/10	0930	TR06 50 00203	TR06002	G	1	X	X		X					
	1140	TR06A50001 08	TR06A001	G	1	X	X		X					
	1145	TR06A50002 04	TR06A002	G	1	X	X		X					
	1150	TR06A50003 07	TR06A003	G	1	X	X		X					
	1155	TR06A50004 07	TR06A004	G	1	X	X		X					DUPLICATE (TR06A011)
	1200	TR06A50005 07	TR06A005	G	1	X	X		X					
	1250	TR06A50006 09	TR06A006	G	1	X	X		X					
	1255	TR06A50007 02	TR06A007	G	1	X	X		X					

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
	1/15/10 1702	[redacted]	1/15/10 1702

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: Jim [illegible] QA Contact Phone: –

Work Order #: 97002 Sample Program: –

Samplers: [illegible]

Page 1 of 2

TR07

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	BF	RAD							Comments
1/07/10	1104	TR0750001 07	TR07001		1	X	X							
	1125	TR 0750002 07	TR07002		1	X	X							
	1130	TR 0750003 04	TR07003		1	X	X							DUPLICATE TR07015
	1125	TR 0750004 07	TR07004		1	X	X							
	1140	TR 0750005 07	TR07005		1	X	X							
	1145	TR 0750006 07	TR07006		1	X	X							
	1150	TR 0750007 04	TR07007		1	X	X							
	1470	TR 0750008 06	TR07008		1	X	X							
	1475	TR 0750009 08	TR07009		1	X	X							
	1430	TR 0750010 02	TR07010		1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
	1/07/10 1510	[redacted]	1/07/10 1510

Shipped To (circle one):

PRISM APPL

Test America Other: (17)

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKY FLUSH

QA Contact: T. Stevens QA Contact Phone: —

Work Order #: 52002 Sample Program: —

Samplers: B. Kirby

Page 2 of 2

TR07

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	BE	RAD							Comments
1/17/10	1435	TR0750011Ø2	TR07011	G	1	X	X							
1/17/10	1445	TR0750012Ø3	TR07012	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	1/18/10 1500	[redacted]	1/18/10 1500

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Lucky FUSRAP

QA Contact: Jim Stevens QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: B. Kirby / D. Gotland.

Page 1 of 2

TR08

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	BE	RAD							Comments
1/18/10	1215	TR08500001 05	TR08001	G	1	X	X							
	1220	TR08500002 04	TR08002		1	X	X							
	1225	TR08500003 02	TR08003		1	X	X							
	1240	TR08500004 09	TR08004		1	X	X							
	1250	TR08500005 09	TR08005		1	X	X							
1330	~~1255~~ SEP	TR08500006 03	TR08006		1	X	X							
	1335	TR08500007 03	TR08007		1	X	X							
	1340	TR08500008 09	TR08008		1	X	X							
	1345	TR08500009 09	TR08009		1	X	X							
	1350	TR08500010 02	TR08010		1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
	1/18/10 1155	[redacted]	1/18/10 [illegible]

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Stan Stevens QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: Sketon

Page 1 of 2

TROB

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	BE	RAD							Comments
1/19/10	1515	TRØ8S0Ø11Ø5	TRØ8Ø11	G	1	X	X							

Parameters for Analysis

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	1/19/10 1555	[redacted]	[illegible]

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PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Stan Stevens QA Contact Phone: —

Work Order #: 92007 Sample Program: —

Samplers: B. Rigby, D. Goddard

Page 1 of 1

TR09

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RAD	RE							Comments
1/18/10	0845	TR0950001Ø3	TR09ØØ1	G	1	X	X							
1/18/10	0908	TRØ950ØØ2Ø4	TRØ9ØØ2	G	1	X	X							
1/18/10	0915	TR0950ØØ3Ø3	TRØ9ØØ3	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
—	1/18/10 1020	[redacted]	1/19/10 0930

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Test America Other: FS

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TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Stan Hewitt QA Contact Phone: —

Work Order #: 92002 Sample Program: —

Samplers: Stewart

Page 1 of 1

TR09

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	BE	RAD							Comments
1/19/10	1245	TR0950004 06	TR09004	G	1	X	X							
	1250	TR0950005 04	TR09005		1	X	X							
	1255	TR0950006 02	TR09006		1	X	X							DUPLICATE TR09005
	1300	TR0950007 05	TR09007		1	X	X							
	1305	TR0950008 05	TR09008		1	X	X							
	1310	TR0950009 05	TR09009		1	X	X							
	1315	TR0950010 05	TR09010		1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
	1/19/10 1255	[redacted]	1/19/10 [illegible]

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Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: TIM STEVENS QA Contact Phone:

Work Order #: 9202 Sample Program:

Samplers: PIDGE

Page 1 of 2

MW-50(I)

APR 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
7	0825	MW50500001Q1	MW50 Q01	G	1		X							
7	0826	MW50500002Q2	MW50 Q02	G	1		X							
7	0827	MW50500003Q3	MW50 Q03	G	1		X							
7	0828	MW50500004Q4	MW50 Q04	G	1		X							
7	0829	MW50500005Q5	MW50 Q05	G	1	X	X							DUPLICATE MW50Q12
7	0830	MW50500006Q6	MW50 Q06	G	1		X							
7	0831	MW50500007Q7	MW50 Q07	G	1		X							
7	0832	MW50500008Q8	MW50 Q08	G	1		X							
7	0833	MW50500009Q2	MW50 Q09	G	1	X								
7	0834	MW50500010Q3	MW50 Q10	G	1	X								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[signature]	7 APR 10 1315	[redacted]	4-7-10 1315

Shipped To (circle one): PRISM APPL Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STEVENS QA Contact Phone:

Work Order #: 92007 Sample Program:

Samplers: PIDGE

Page 2 of 2

MW-50(I)

APR 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
7	0935	MW50X0011 14	MW50 011	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[signature]	7 APR 10 1315	[redacted]	4-7-10 13:15

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STEVE STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 1

MW-53(I)

MAR 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
23	0940	MW53500001	MW53 001	G	1		X							
23	0941	MW53500002	MW53 002	G	1	X	X							
23	0942	MW53500003	MW53 003	G	1	X	X							DUPLICATE MW53010
23	0943	MW53500004	MW53 004	G	1	X	X							
23	0944	MW53500005	MW53 005	G	1		X							
23	0945	MW53500006	MW53 006	G	1		X							
23	0946	MW53500007	MW53 007	G	1		X							
23	0947	MW53500008	MW53 008	G	1		X							
23	0948	MW53500009	MW53 009	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	23 MAR 10 1040	[redacted]	3-23-10 1040

Shipped To (circle one):

PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: JIM STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDAF

Page 1 of 1

MW-54(S)

Parameters for Analysis

2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
26	1430	MW54S000101	MW54 001	G	1		X							
26	1431	MW54S000202	MW54 002	G	1		X							
26	1432	MW54S000303	MW54 003	G	1		X							
26	1433	MW54S000404	MW54 004	G	1		X							
26	1434	MW54S000506	MW54 005	G	1		X							
26	1435	MW54S000607	MW54 006	G	1		X							
26	1436	MW54S000708	MW54 007	G	1		X							DUPLICATE MW54011
26	1437	MW54S000809	MW54 008	G	1	X								
26	1438	MW54S000912	MW54 009	G	1	X	X							
26	1439	MW54S001013	MW54 010	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[signature]	26 MAR 10 1540	[redacted]	3-26-10 1540

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDAE

Page 1 of 1

MW-55(I)

Parameters for Analysis

MAR 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
26	0930	MW55500001001	MW55 001	G	1		X							
26	0931	MW55500002002	MW55 002	G	1	X	X							
26	0932	MW55500003003	MW55 003	G	1	X	X							
26	0933	MW55500004004	MW55 004	G	1		X							
26	0934	MW55500005005	MW55 005	G	1	X	X							DUPLICATE MW55011
26	0935	MW55500006006	MW55 006	G	1		X							
26	0936	MW55500007007	MW55 007	G	1		X							
26	0937	MW55500008008	MW55 008	G	1		X							
26	0938	MW55500009002	MW55 009	G	1		X							
26	0939	MW55500010013	MW55 010	G	1		X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	26 MAR 10 1030	[redacted]	3-26-10 1030

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PRISM APPL

Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 1

MHQ1

Parameters for Analysis

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
23	0945	MHQ1SE00106	MHQ1 001	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	23 JAN 10 1215 HM	[redacted]	1/23/10 1215	PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 1

MHQ2

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	TSE							Comments
23	1045	MHQ2SE0001QS	MHQ2 001	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	23JAN10 1215	[redacted]	1/23/10 12:16	PRISM APPL Test America Other: ES

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TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 1

MH03

Parameters for Analysis

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be							Comments
23	1200	MH03SE00106	MH03 001	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	23JAN10 1215	[redacted]	1/23/10 1215

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 1

MHQ4

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
23	1445	MHQ4SE0021	MHQ4 Q01	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	23 JAN 10 1710	[redacted]	1/23/10 1710	PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 1

MH05

Parameters for Analysis

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
25		MH05SE001	MH05 001	G	1	X	X							

MANHOLE CANNOT BE ACCESSED DUE TO ASPHALT COVER

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 1

MH06

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
23	1630	MH06SE0001 07	MH06 0001	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	23 JAN 10 1710	[redacted]	1/23/10 1710	PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 1

MH07 NO SAMPLE

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
25		MH07SE001	MH07 001	G	1	X	X							CANNOT LOCATE
														LIKELY UNDER DEBRIS MUD/OR RUBBLE

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 1

MH08

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
25	1055	MH08SE001107	MH08 001	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	25 JAN 10 1730	[redacted]	1/25/10 1730

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDLE

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MHQ9

Parameters for Analysis

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
25	1125	MHQ9SE00107	MHQ9 001	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
G	25JAN10 1730	[redacted]	1/25/10 1730	PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 1

MH 1Q NO SAMPLE

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BC							Comments
25		MH1QSE001	MH1Q 001	G	1	X	X							CANNOT LOCATE
														LIKEY UNDER DEBRIS AND/OR
														RUBBLE

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:

Shipped To (circle one):

PRISM APPL

Test America Other: CS

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 1

~~MH108~~ MH11

Parameters for Analysis

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be							Comments
JAN 2010 25	1530	MH[redacted]SE[redacted]1[redacted]9	MH[redacted] 001	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
ES	25 JAN 10 1730	[redacted]	1/25/10 1730

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STUMS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

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MH2Q

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
23	1115	MH2QSE00107	MH2Q 001	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	23 JAN 10 1215	[redacted]	1/23/10 1215	PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 1

MH21

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
23	1505	MH21SE00104	MH21 0001	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	23 JAN 10 1710	[redacted]	1/23/10 1710	PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: R002 Sample Program:

Samplers: PIDGE

Page 1 of 1

MH22

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIUM 226/228	Pb							Comments
JAN 2010 23	~~1500~~	MH22SE000106	MH22 001	G	1	X	X							

NO SEDIMENT
NO SAMPLE

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STRAUS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 1

MH23

Parameters for Analysis

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIONUCLIDES	Be							Comments
	~~[illegible]~~	~~23 MH23SE001~~	~~MH23 001~~	~~G~~	~~1~~	~~X~~	~~X~~							
23	1550	MH23SE00103	MH23 001	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	23JAN10 1710	[redacted]	1/23/10 1710

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEWS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDAE

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MH24

Parameters for Analysis

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be							Comments
25	0940	MH24SE00006	MH24 001	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	25JAN10 1730	[redacted]	1/25/10 1730	PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 1

MH25

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be							Comments
25	1015	MH25SE~~00107~~	MH25 ~~00156~~ 001	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	25 JAN 10 1730	[redacted]	1/25/10 1730	PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: ~~PIDGE~~ PROCTOR & GODDARD

Page 1 of 1

MH26

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	B6							Comments
1/30	1500	MH26SE001	MH26 001	G	1	X	X							

Parameters for Analysis

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[signature]	6 FEB 10 1600	[redacted]	2-[illegible] 1[illegible]00

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 1

MH26

NO SAMPLE

Parameters for Analysis

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
25		MH26SE001	MH26 001	G	1	X	X							

NO SAMPLE
LIQUID LEVEL
IN PIT BELOW
CONCRETE TOP
OILY YELLOW
LIKE OIL CUTTING

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92007 Sample Program:

Samplers: PIDGE

Page 1 of 1

MH27

Parameters for Analysis

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be							Comments
25	1650	MH27SE001Q3	MH27 001	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[illegible]	25 Jan 10 1730	[redacted]	1/25/10 1730	PRISM APPL Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: SAM STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: ~~PAUL~~ PROCTOR & GODDARD

Page 1 of 1

MH28

~~7/28~~ 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be							Comments
1/30	1415	MH28SE001	MH28 001	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	1/29/10 1600	[redacted]	2-6-10 1600

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: JOHN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIXIE

Page 1 of 1

MH28 NO SAMPLE

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	PARHOCCUR KCAL	Be							Comments
26		MH28SE001	MH28 001	G	1	X	X							OILY, GREASY WATER

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: ~~RIDGE~~ PROCTOR + GODDARD

Page 1 of 1

MH29

~~FEB~~ 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be							Comments
1/30	1430	MH29SE001	MH29 001	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	1/30/10 1600	[redacted]	[illegible] 1600

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92007 Sample Program:

Samplers: PIDGE

Page 1 of 1

MH29 NO SAMPLE

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
26		MH29SE001	MH29 001	G	1	X	X							OIL & GREASY WATER

Parameters for Analysis

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: USACE

QA Contact: Tim Stevens QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: ~~D Pidal~~ Proctor & Goddard

Page 1 of 1

MH30

~~Feb~~ 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Radiological	Be							Comments
1/30	1445	MH30SE001	MH30 001	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	6 Feb 10 1600	[redacted]	[illegible]

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 1

MH3Q NO SAMPLE

Parameters for Analysis

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
JAN 2010 26		MH3QSE001	MH3Q 001	G	1	X	X							OILY GREASY WATER

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 1

MH31 NO SAMPLE

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
26		MH31SE001	MH31 001	G	1	X	X							OIL & GREASY WATER

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 1

MH32 NO SAMPLE

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
26		MH32SE00110	MH32 001	G	1	X	X							SOLID BOTTOM
														NO SEDIMENT
														OR SLUDGE

Parameters for Analysis

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 1

MH33 NO SAMPLE

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
26		MH33SE001	MH33 001	G	1	X	X							SOLID BOTTOM
														NO SEDIMENT
														OR SLUDGE

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 1

MH34 NO SAMPLE

Parameters for Analysis

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Ba							Comments
26		MH34SE001	MH34 001	G	1	X	X							SOLID BOTTOM
														NO SEDIMENT
														OR SLUDGE

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDLE

Page 1 of 1

MH35 NO SAMPLE

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
26		MH35SE001	MH35 001	G	1	X	X							SOLID BOTTOM
														NO SEDIMENT
														OR SLUDGE

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 1

MH36 NO SAMPLE

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be							Comments
		MH36SE0001	MH36 0001	C	1	X	X							SOLID BOTTOM
														NO SEDIMENT
														OR SLUDGE

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDLE

Page 1 of 1

MH37

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	Be							Comments
26	1145	MH37SE001Q7	MH37 001	G	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
	26 JAN 10	[redacted]	1/26/10 1655
	1655		

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 1

MH38 NO SAMPLE

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
26		MH38SE001	MH38 001	G	1	X	X							FROZEN
														SOIL
														POSSIBLY
														ON ICE
														DOSE TANK

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: PIDGE

Page 1 of 1

MH39 NO SAMPLE

JAN 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
26		MH39SE0001	MH39 001	G	1	X	X							FROZEN
														SOIL
														POSSIBLY
														ON ICE
														DOSE
														TANK

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP

QA Contact: STAN STEVENS QA Contact Phone:

Work Order #: 92002 Sample Program:

Samplers: ~~PIDLE~~ BEYER, MCCOY, SUTHERLAND

Page 1 of 1

WASTE DISPOSAL COMPOSITES

FEB 2010 Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RADIOLOGICAL	BE							Comments
6	0945	WD00050000001	WD 001	C	1	X	X							
6	1000	WD00050000002	WD 002	C	1	X	X							
6	1015	WD00050000003	WD 003	C	1	X	X							
6	1030	WD00050000004	WD 004	C	1	X	X							
6	1045	WD00050000005	WD 005	C	1	X	X							
6	1100	WD00050000006	WD 006	C	1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:

Shipped To (circle one):

PRISM APPL

Test America Other: ES

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP SITE

QA Contact: KEVIN BEYER QA Contact Phone: 740-717-2271

Work Order #: Sample Program:

Samplers: KEVIN BEYER / MIKE MCCOY

Page 1 of 2

Parameters for Analysis

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	RAD	RE							Comments
2-19-10	1030	WDØØDSØØØØ1	[illegible]		1	X	X							
2-19-10	1055	WDØØDSØØØØ2	[illegible]		1	X	X							
2-19-10	1417	WDØØDSØØØØ3	[illegible]		1	X	X							
2-19-10	1505	WDØØDSØØØØ4	[illegible]		1	X	X							
2-19-10	1527	WDØØDSØØØØ5	[illegible]		1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
Michael O'Mly	3-3-10 1110	[redacted]	3-3-10/1105

Shipped To (circle one):

PRISM APPL

Test America Other:_____

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: LUCKEY FUSRAP SITE

QA Contact: KEVIN FEYER QA Contact Phone: 610-717-7271

Work Order #: Sample Program:

Samplers: KEVIN FEYER / MIKE MCCOY

Page 2 of 2

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	KAD	RE							Comments
2-20-10	1000	WD ØØ DS ØØØØ6			1	X	X							
2-20-10	1015	WD ØØ DS ØØØØ7			1	X	X							
2-20-10	1030	WD ØØ DS ØØØØ8			1	X	X							
2-20-10	1045	WD ØØ DS ØØØØ9			1	X	X							
2-20-10	1100	WD ØØ DS ØØØØ10			1	X	X							
2-20-10	1115	WD ØØ DS ØØØØ11			1	X	X							
2-20-10	1130	WD ØØ DS ØØØØ12			1	X	X							
2-20-10	1145	WD ØØ DS ØØØØ13			1	X	X							
2-20-10	1200	WD ØØ DS ØØØØ14			1	X	X							
2-20-10	1215	WD ØØ DS ØØØØ15			1	X	X							

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[illegible]	1710 3-3-10	[redacted]	3-3-10/1700

Shipped To (circle one):

PRISM APPL

Test America Other:_____

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

Appendix F

Quality Control Data

(Provided in Electronic Files)

Gamma Standard Sources

HPGe Calibrations

HPGe Calibrations Verifications

HPGe Blanks

D1 & D2 QC Spreadsheets

D1 & D2 Detector Logbook

Ludlum 2929 CCs

FIDLER CCs

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
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www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

80992-857

1.0 Liter Sand in 133N GA-MA Beaker

Customer: Energy Solutions, LLC/Luckey, OH (FUSRAP)
P.O. No.: PO-008826, Item 2
Reference Date: 01-Oct-2009 12:00 PM EST **Grams of Master Source:** 0.011375

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Nuclide	Gamma-Ray Energy (keV)	Half-Life, Days	Master Source* γps/gram	This Source γps	Uncertainty, % Type u_A	u_B	U	Calibration Method
Am-241	59.5	1.580E+05	———	1.340E+03	0.1	1.7	3.5	4π LS
Cd-109	88.0	4.626E+02	1.657E+05	1.885E+03	0.5	2.3	4.7	HPGe
Co-57	122.1	2.718E+02	9.041E+04	1.028E+03	0.6	2.0	4.2	HPGe
Ce-139	165.9	1.376E+02	1.238E+05	1.408E+03	0.5	1.9	3.9	HPGe
Hg-203	279.2	4.661E+01	2.860E+05	3.253E+03	0.4	1.9	3.9	HPGe
Sn-113	391.7	1.151E+02	1.748E+05	1.988E+03	0.5	1.9	3.9	HPGe
Cs-137	661.7	1.098E+04	1.126E+05	1.281E+03	0.6	1.9	4.0	HPGe
Y-88	898.0	1.066E+02	4.148E+05	4.718E+03	0.4	1.9	3.9	HPGe
Co-60	1173.2	1.925E+03	2.064E+05	2.348E+03	0.5	1.9	4.0	HPGe
Co-60	1332.5	1.925E+03	2.064E+05	2.348E+03	0.5	1.9	3.9	HPGe
Y-88	1836.1	1.066E+02	4.387E+05	4.990E+03	0.5	1.9	3.9	HPGe

* Master Source refers to Analytics' 8-isotope mixture which is calibrated quarterly.

Calibration Methods: 4π LS - 4 pi Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber. **Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1955

Comments:
1600 grams of sand.
This standard will expire one year after the reference date.

Source Prepared by: [redacted]
W. Mao, Radiochemist

QA Approved: [redacted] Date: 11-10-09
D. M. Montgomery, QA Manager

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CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

80971-857

1.0 Liter Solid in 133N GA-MA Beaker

Customer: Energy Solutions, LLC/FUSRAP
P.O. No.: PO-008826, Item 2
Reference Date: 01-Oct-2009 12:00 PM EST **Grams of Master Source:** 0.015694

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101. Density of solid matrix 1.15 g/cc.

Nuclide	Gamma-Ray Energy (keV)	Half-Life, Days	Master Source* γps/gram	This Source γps	Uncertainty, % Type u_A	u_B	U	Calibration Method
Am-241	59.5	1.580E+05	———	1.849E+03	0.1	1.7	3.5	4π LS
Cd-109	88.0	4.626E+02	1.657E+05	2.600E+03	0.5	2.3	4.7	HPGe
Co-57	122.1	2.718E+02	9.041E+04	1.419E+03	0.6	2.0	4.2	HPGe
Ce-139	165.9	1.376E+02	1.238E+05	1.943E+03	0.5	1.9	3.9	HPGe
Hg-203	279.2	4.661E+01	2.860E+05	4.488E+03	0.4	1.9	3.9	HPGe
Sn-113	391.7	1.151E+02	1.748E+05	2.743E+03	0.5	1.9	3.9	HPGe
Cs-137	661.7	1.098E+04	1.126E+05	1.767E+03	0.6	1.9	4.0	HPGe
Y-88	898.0	1.066E+02	4.148E+05	6.510E+03	0.4	1.9	3.9	HPGe
Co-60	1173.2	1.925E+03	2.064E+05	3.239E+03	0.5	1.9	4.0	HPGe
Co-60	1332.5	1.925E+03	2.064E+05	3.239E+03	0.5	1.9	3.9	HPGe
Y-88	1836.1	1.066E+02	4.387E+05	6.885E+03	0.5	1.9	3.9	HPGe

* Master Source refers to Analytics' 8-isotope mixture which is calibrated quarterly.

Calibration Methods: 4π LS - 4 pi Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber. **Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1955

This standard will expire one year after the reference date.

Source Prepared by: [redacted]
M. I. Taskaeva, Radiochemist

QA Approved: [redacted] Date: 10-28-09
D. M. Montgomery, QA Manager

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CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

80991-857

500 mL Sand in 533N GA-MA Beaker

Customer: Energy Solutions, LLC/Luckey, OH (FUSRAP)
P.O. No.: PO-008826, Item 1
Reference Date: 01-Oct-2009 12:00 PM EST **Grams of Master Source:** 0.011344

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Nuclide	Gamma-Ray Energy (keV)	Half-Life, Days	Master Source* γps/gram	This Source γps	Uncertainty, % Type u_A	u_B	U	Calibration Method
Am-241	59.5	1.580E+05	———	1.336E+03	0.1	1.7	3.5	4π LS
Cd-109	88.0	4.626E+02	1.657E+05	1.880E+03	0.5	2.3	4.7	HPGe
Co-57	122.1	2.718E+02	9.041E+04	1.026E+03	0.6	2.0	4.2	HPGe
Ce-139	165.9	1.376E+02	1.238E+05	1.404E+03	0.5	1.9	3.9	HPGe
Hg-203	279.2	4.661E+01	2.860E+05	3.244E+03	0.4	1.9	3.9	HPGe
Sn-113	391.7	1.151E+02	1.748E+05	1.983E+03	0.5	1.9	3.9	HPGe
Cs-137	661.7	1.098E+04	1.126E+05	1.277E+03	0.6	1.9	4.0	HPGe
Y-88	898.0	1.066E+02	4.148E+05	4.705E+03	0.4	1.9	3.9	HPGe
Co-60	1173.2	1.925E+03	2.064E+05	2.341E+03	0.5	1.9	4.0	HPGe
Co-60	1332.5	1.925E+03	2.064E+05	2.341E+03	0.5	1.9	3.9	HPGe
Y-88	1836.1	1.066E+02	4.387E+05	4.977E+03	0.5	1.9	3.9	HPGe

* Master Source refers to Analytics' 8-isotope mixture which is calibrated quarterly.

Calibration Methods: 4π LS - 4 pi Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber. **Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1955

ANA Form005 Rev. ---

Comments:
800 grams of sand.
This standard will expire one year after the reference date.

Source Prepared by: [redacted]
W. Mao, Radiochemist

QA Approved: [redacted] Date: 11-10-09
D. M. Montgomery, QA Manager

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CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

80970-857

500 mL Solid in 533N GA-MA Beaker

Customer: Energy Solutions, LLC/FUSRAP
P.O. No.: PO-008826, Item 1
Reference Date: 01-Oct-2009 12:00 PM EST **Grams of Master Source:** 0.015517

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101. Density of solid matrix 1.15 g/cc.

Nuclide	Gamma-Ray Energy (keV)	Half-Life, Days	Master Source* γps/gram	This Source γps	Uncertainty, % Type u_A	u_B	U	Calibration Method
Am-241	59.5	1.580E+05	———	1.828E+03	0.1	1.7	3.5	4π LS
Cd-109	88.0	4.626E+02	1.657E+05	2.571E+03	0.5	2.3	4.7	HPGe
Co-57	122.1	2.718E+02	9.041E+04	1.403E+03	0.6	2.0	4.2	HPGe
Ce-139	165.9	1.376E+02	1.238E+05	1.921E+03	0.5	1.9	3.9	HPGe
Hg-203	279.2	4.661E+01	2.860E+05	4.438E+03	0.4	1.9	3.9	HPGe
Sn-113	391.7	1.151E+02	1.748E+05	2.712E+03	0.5	1.9	3.9	HPGe
Cs-137	661.7	1.098E+04	1.126E+05	1.747E+03	0.6	1.9	4.0	HPGe
Y-88	898.0	1.066E+02	4.148E+05	6.436E+03	0.4	1.9	3.9	HPGe
Co-60	1173.2	1.925E+03	2.064E+05	3.203E+03	0.5	1.9	4.0	HPGe
Co-60	1332.5	1.925E+03	2.064E+05	3.203E+03	0.5	1.9	3.9	HPGe
Y-88	1836.1	1.066E+02	4.387E+05	6.807E+03	0.5	1.9	3.9	HPGe

* Master Source refers to Analytics' 8-isotope mixture which is calibrated quarterly.

Calibration Methods: 4π LS - 4 pi Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber. **Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

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This standard will expire one year after the reference date.

Source Prepared by: [redacted]
M. I. Taskaeva, Radiochemist

QA Approved: [redacted] Date: 10-29-09
D. M. Montgomery, QA Manager

ACCREDITED SOURCE CALIBRATION LABORATORY
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060903

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CERTIFICATE OF CALIBRATION
Standard Radionuclide Source

79779-466
Sand in 250 mL Marinelli Beaker Filled to Top

Customer: Energy Solutions, LLC/Duratek
P.O. No.: PO-00708, Item 1

This standard radionuclide source was prepared gravimetrically from calibrated master solutions. The master solutions were calibrated with an ionization chamber that was calibrated by the National Physical Laboratory, Teddington, U.K., and is directly traceable to national standards.

Radionuclide purity and calibration were checked with a germanium gamma spectrometer system. The nuclear decay rate and assay date for this source are given below.

Analytics maintains traceability to the National Institute of Standards and Technology through Measurements Assurance Programs as described in USNRC Reg. 4.15, Revision 1, February 1979.

Reference Date: 6/1/2009 12:00 PM EST

Isotope	Half-Life, Days	Activity (Bq)	Uncertainty*, % Type u_A	u_B	U
Am-241	158007	1.63E+03	0.10	1.70	3.50
Cd-109	462.6	2.4474 E4	0.10	2.30	4.70
Co-57	271.79	5.47E+02	0.10	1.70	3.50
Ce-139	137.6	1.66E+03	0.10	1.80	3.60
Sn-113	115.1	2.80E+03	0.10	1.70	3.50
Cs-137	10983	6.85E+02	0.10	1.70	3.50
Y-88	106.6	4.91E+03	0.10	1.70	3.30
Co-60	1925.2	1.10E+03	0.10	1.60	3.20

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

Comments:
310 mL/496 grams of sand.

Source Prepared by: [redacted]
M.I. Taskaeva, Radiochemist

QA Approved: [redacted] Date: 6-8-09
D. M. Montgomery, QA Manager

End of Certificate

ANA Form005 Rev. ---

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060905

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CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

79781-466

47 mm Diameter Simulated Filter in Petri

Customer: Energy Solutions, LLC/Duratek
P.O. No.: PO-007088, Item 3

This standard radionuclide source was prepared gravimetrically from calibrated master solutions. The master solutions were calibrated with an ionization chamber that was calibrated by the National Phyhical Laboratory, Teddington, U.K., and are directly traceable to national standards.

Radionuclide purity and calibration were checked with a germanium gamma spectrometer system. The nuclear decay rate and assay date for this source are given below.

Analytics maintains traceability to the National Institute of Standards and Technology through Measurements Assurance Programs as described in USNRC Reg. 4.15, Revision 1, February 1979.

Reference Date: 6/1/2009 12:00 PM EST

Isotope	Half-Life, Days	Activity (Bq)	Uncertainty*, % Type u_A	u_B	U
Am-241	158007	1.66E+03	0.10	1.70	3.50
Cd-109	462.6	2.50E+04	0.10	2.30	4.70
Co-57	271.79	5.57E+02	0.10	1.70	3.50
Ce-139	137.6	1.69E+03	0.10	1.80	3.60
Sn-113	115.1	2.85E+03	0.10	1.70	3.50
Cs-137	10983	6.99E+02	0.10	1.70	3.50
Y-88	106.6	5.00E+03	0.10	1.70	3.30
Co-60	1925.2	1.13E+03	0.10	1.60	3.20

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

Comments:
Diameter of active area: 47 mm. Tall loose petri.

Source Prepared by: [redacted]
M.I. Taskaeva, Radiochemist

QA Approved: [redacted] Date: 6-8-09
D. M. Montgomery, QA Manager

End of Certificate

Calibration Data from file: D1_1L_Sand_80992_857.Clb
Energy Calibration Date: 11/15/2009 Time: 4:13:00 PM
Efficiency Calibration Date: 11/15/2009 Time: 4:15:12 PM

Calibration Description:
D1 1L Sand Marinelli 80992-857

Energy Calibration Fit
Energy = 0.1895 +0.255827*Channel -8.36842e-009*Channel**2
FWHM (ch) = 3.1416 +0.000979*Channel -2.11983e-008*Channel**2

Energy/FWHM Table

Channel	Energy(keV)	Fit(keV)	Delta	FWHM(keV)	Fit(keV)	Delta
232.12	59.54	59.57	-0.05%	0.84	0.86	-3.10%
343.38	88.03	88.04	-0.00%	0.89	0.89	0.52%
476.30	122.07	122.04	0.03%	0.93	0.92	1.11%
532.81	136.43	136.49	-0.05%	0.93	0.94	-0.79%
647.51	165.85	165.84	0.01%	0.98	0.96	1.20%
1090.25	279.17	279.10	0.03%	1.08	1.07	1.00%
1530.36	391.69	391.68	0.00%	1.19	1.17	0.99%
2585.91	661.66	661.68	-0.00%	1.39	1.41	-1.57%
3510.06	898.02	898.05	-0.00%	1.62	1.62	0.25%
4585.99	1173.24	1173.23	0.00%	1.85	1.84	0.45%
5208.70	1332.50	1332.49	0.00%	1.95	1.96	-0.46%
7177.71	1836.01	1836.01	0.00%	2.32	2.32	0.10%

Efficiency Calibration Fit
Knee Energy = 160.00 keV
Above the Knee: Quadratic Uncertainty = 1.2584 %
Ln(Eff) = -0.9625 -0.228570*Ln(Eng) -0.0418331*(Ln(Eng))**2
Below the Knee: Quadratic Uncertainty = 1.0532 %
Ln(Eff) = -17.4685 +6.167419*Ln(Eng) -0.661535*(Ln(Eng))**2

Efficiency Table

Energy	Efficiency	Fit	Delta
59.54	3.6301E-002	3.6423E-002	-0.34%
88.03	4.5305E-002	4.4320E-002	2.17%
122.07	4.3777E-002	4.4710E-002	-2.13%
160.00	========== Knee	==========	
165.85	3.8901E-002	3.9815E-002	-2.35%
279.17	2.9060E-002	2.7972E-002	3.74%
391.69	2.2026E-002	2.1965E-002	0.28%
661.66	1.5028E-002	1.4823E-002	1.36%
898.02	1.1263E-002	1.1664E-002	-3.56%
1173.24	9.2754E-003	9.3963E-003	-1.30%
1332.50	8.3779E-003	8.4594E-003	-0.97%
1836.01	6.6260E-003	6.4544E-003	2.59%

Calibration Certificate Table

Isotope	Energy	Pct	Halflife	Activity	GPS	Error	Date & Time
Am-241	88.17	35.90	1.58E+005	3721.45	1336.00	3.50%	10/1/2009 12:00:00 PM
Co-57	122.16	85.60	2.72E+002	1200.93	1028.00	4.20%	10/1/2009 12:00:00 PM
Co-57	136.41	10.60	2.72E+002	585.80	62.09	3.30%	4/1/2007 12:00:00 PM
Ce-139	165.91	79.95	1.38E+002	1761.10	1408.00	3.90%	10/1/2009 12:00:00 PM
Sn-113	391.60	64.16	1.15E+002	3098.50	1988.00	3.90%	10/1/2009 12:00:00 PM
Cs-137	661.77	85.21	1.10E+004	1503.34	1281.00	4.00%	10/1/2009 12:00:00 PM
Y-88	897.92	95.00	1.07E+002	4966.32	4718.00	3.90%	10/1/2009 12:00:00 PM

Co-60	1173.30	99.90	1.93E+003	2350.35	2348.00	4.00%	10/1/2009 12:00:00 PM
Co-60	1332.47	99.98	1.93E+003	2348.42	2348.00	3.90%	10/1/2009 12:00:00 PM
Y-88	1836.16	99.35	1.07E+002	5022.65	4990.00	3.90%	10/1/2009 12:00:00 PM
Am-241	59.68	36.30	1.58E+005	3691.46	1340.00	3.50%	10/1/2009 12:00:00 PM
Y-88	1836.19	99.35	1.07E+002	4910.00	4878.08	3.30%	6/1/2009 12:00:00 PM
Cd-109	87.93	3.61	4.63E+002	52216.07	1885.00	4.70%	10/1/2009 12:00:00 PM
Hg-203	278.98	81.50	4.66E+001	3991.41	3253.00	3.90%	10/1/2009 12:00:00 PM

Calibration Data from file: D1_500mL_Sand_80991_857.Clb
Energy Calibration Date: 11/15/2009 Time: 4:21:11 PM
Efficiency Calibration Date: 11/15/2009 Time: 4:24:57 PM

Calibration Description:
D1 500 mL Sand Marinelli 80991_857

Energy Calibration Fit
Energy = 0.1960 +0.255783*Channel -7.4704e-009*Channel**2
FWHM (ch) = 3.1731 +0.000963*Channel -1.66709e-008*Channel**2

Energy/FWHM Table

Channel	Energy(keV)	Fit(keV)	Delta	FWHM(keV)	Fit(keV)	Delta
232.17	59.54	59.58	-0.07%	0.84	0.87	-3.75%
343.42	88.03	88.04	-0.00%	0.90	0.90	0.78%
476.40	122.07	122.05	0.02%	0.94	0.93	1.31%
532.77	136.43	136.47	-0.03%	0.93	0.94	-1.72%
647.59	165.85	165.84	0.01%	0.97	0.97	0.10%
1090.41	279.17	279.09	0.03%	1.10	1.07	1.97%
1530.61	391.69	391.68	0.00%	1.18	1.18	0.33%
2586.33	661.66	661.69	-0.00%	1.45	1.42	2.18%
3510.57	898.02	898.05	-0.00%	1.61	1.62	-0.69%
4586.68	1173.24	1173.23	0.00%	1.84	1.85	-0.32%
5209.49	1332.50	1332.49	0.00%	1.95	1.98	-1.46%
7178.74	1836.01	1836.01	0.00%	2.37	2.36	0.65%

Efficiency Calibration Fit
Knee Energy = 150.00 keV
Above the Knee: Quadratic Uncertainty = 1.1050 %
Ln(Eff) = -0.2885 -0.236621*Ln(Eng) -0.045167*(Ln(Eng))**2
Below the Knee: Quadratic Uncertainty = 1.0327 %
Ln(Eff) = -14.7288 +5.265938*Ln(Eng) -0.568538*(Ln(Eng))**2

Efficiency Table

Energy	Efficiency	Fit	Delta
59.54	6.6765E-002	6.6954E-002	-0.28%
88.03	7.9727E-002	7.8193E-002	1.92%
122.07	7.6216E-002	7.7901E-002	-2.21%
150.00	========== Knee	==========	
165.85	6.7240E-002	6.8715E-002	-2.19%
279.17	4.8771E-002	4.7185E-002	3.25%
391.69	3.6558E-002	3.6470E-002	0.24%
661.66	2.4585E-002	2.3980E-002	2.46%
898.02	1.7915E-002	1.8570E-002	-3.65%
1173.24	1.4494E-002	1.4744E-002	-1.73%
1332.50	1.2922E-002	1.3180E-002	-2.00%
1836.01	1.0208E-002	9.8741E-003	3.27%

Calibration Certificate Table

Isotope	Energy	Pct	Halflife	Activity	GPS	Error	Date & Time
Cd-109	88.17	3.61	4.63E+002	52078.00	1880.00	4.70%	10/1/2009 12:00:00 PM
Co-57	122.16	85.60	2.72E+002	1198.60	1026.00	4.20%	10/1/2009 12:00:00 PM
Co-57	136.41	10.60	2.72E+002	585.80	62.09	3.30%	4/1/2007 12:00:00 PM
Ce-139	165.91	79.95	1.38E+002	1756.10	1404.00	3.90%	10/1/2009 12:00:00 PM
Sn-113	391.60	64.16	1.15E+002	3090.70	1983.00	3.90%	10/1/2009 12:00:00 PM
Cs-137	661.77	85.21	1.10E+004	1498.70	1277.00	3.90%	10/1/2009 12:00:00 PM
Y-88	897.92	95.00	1.07E+002	4952.60	4705.00	3.90%	10/1/2009 12:00:00 PM

Co-60	1173.30	99.90	1.93E+003	2343.30	2341.00	4.00%	10/1/2009 12:00:00 PM
Co-60	1332.47	99.98	1.93E+003	2341.40	2341.00	3.90%	10/1/2009 12:00:00 PM
Y-88	1836.16	99.35	1.07E+002	5029.70	4997.00	3.90%	10/1/2009 12:00:00 PM
Am-241	59.68	36.30	1.58E+005	3680.40	1336.00	3.50%	10/1/2009 12:00:00 PM
Y-88	1836.19	99.35	1.07E+002	4910.00	4878.08	3.30%	6/1/2009 12:00:00 PM
Hg-203	279.17	81.50	4.66E+001	3980.40	3244.00	3.90%	10/1/2009 12:00:00 PM

Calibration Data from file: D2_250mL_Sand_060903.Clb
Energy Calibration Date: 11/15/2009 Time: 4:52:36 PM
Efficiency Calibration Date: 11/15/2009 Time: 4:54:00 PM

Calibration Description:
D2 250 mL Sand Marinelli 060903

Energy Calibration Fit
Energy = 0.2254 +0.250592*Channel -1.49875e-008*Channel**2
FWHM (ch) = 3.4126 +0.000811*Channel -2.88779e-008*Channel**2

Energy/FWHM Table

Channel	Energy(keV)	Fit(keV)	Delta	FWHM(keV)	Fit(keV)	Delta
237.02	59.54	59.62	-0.13%	0.87	0.90	-3.49%
350.55	88.03	88.07	-0.04%	0.93	0.93	0.96%
486.14	122.07	122.04	0.02%	0.91	0.95	-4.46%
543.52	136.43	136.42	0.00%	1.01	0.96	4.27%
660.70	165.85	165.79	0.04%	1.00	0.99	0.95%
1562.05	391.69	391.63	0.02%	1.18	1.15	2.08%
2639.97	661.66	661.68	-0.00%	1.33	1.34	-0.54%
3583.49	898.02	898.03	-0.00%	1.50	1.49	0.39%
4682.35	1173.24	1173.26	-0.00%	1.63	1.65	-1.31%
5318.26	1332.50	1332.52	-0.00%	1.73	1.73	0.10%
7328.93	1836.01	1835.99	0.00%	1.96	1.95	0.31%

Efficiency Calibration Fit
Knee Energy = 150.00 keV
Above the Knee: Quadratic Uncertainty = 2.0169 %
Ln(Eff) = 0.1969 -0.525491*Ln(Eng) -0.0222297*(Ln(Eng))**2
Below the Knee: Quadratic Uncertainty = 0.4886 %
Ln(Eff) = -13.1075 +4.438087*Ln(Eng) -0.483093*(Ln(Eng))**2

Efficiency Table

Energy	Efficiency	Fit	Delta
59.54	4.7829E-002	4.7905E-002	-0.16%
88.03	5.4477E-002	5.3883E-002	1.09%
122.07	5.2624E-002	5.3077E-002	-0.86%
150.00	========== Knee ==========		
165.85	4.5944E-002	4.6438E-002	-1.08%
391.69	2.4793E-002	2.3923E-002	3.51%
661.66	1.5731E-002	1.5706E-002	0.16%
898.02	1.1526E-002	1.2222E-002	-6.04%
1173.24	9.9145E-003	9.7803E-003	1.35%
1332.50	8.9765E-003	8.7857E-003	2.13%
1836.01	6.6741E-003	6.6850E-003	-0.16%

Calibration Certificate Table

Isotope	Energy	Pct	Halflife	Activity	GPS	Error	Date & Time
Am-241	59.54	36.30	1.58E+005	1630.00	591.69	3.50%	6/1/2009 12:00:00 PM
Cd-109	88.15	3.61	4.63E+002	24474.00	883.51	4.70%	6/1/2009 12:00:00 PM
Co-57	122.14	85.60	2.72E+002	547.00	468.23	3.50%	6/1/2009 12:00:00 PM
Ce-139	165.88	79.95	1.38E+002	1660.00	1327.17	3.60%	6/1/2009 12:00:00 PM
Cs-137	661.70	85.21	1.10E+004	685.00	583.69	4.00%	6/1/2009 12:00:00 PM
Co-60	1173.22	99.90	1.93E+003	1100.00	1098.90	3.30%	6/1/2009 12:00:00 PM
Am-241	1332.39	36.30	1.58E+005	1660.00	602.58	3.50%	6/1/2009 12:00:00 PM
Sn-113	391.70	64.16	1.15E+002	2800.00	1796.48	3.50%	6/1/2009 12:00:00 PM
Y-88	898.00	95.00	1.07E+002	4910.00	4664.50	3.30%	6/1/2009 12:00:00 PM

Co-60	1332.50	99.98	1.93E+003	1100.00	1099.80	3.20%	6/1/2009 12:00:00 PM
Y-88	1836.10	99.35	1.07E+002	4910.00	4878.09	3.30%	6/1/2009 12:00:00 PM

Calibration Data from file: D2_500mL_Sand_80991_857.Clb
Energy Calibration Date: 11/15/2009 Time: 4:48:36 PM
Efficiency Calibration Date: 11/15/2009 Time: 4:49:47 PM

Calibration Description:
D2 500 mL Sand Marinelli 80991_857

Energy Calibration Fit
Energy = 0.1137 +0.250726*Channel -1.74083e-008*Channel**2
FWHM (ch) = 3.4702 +0.000832*Channel -2.973e-008*Channel**2

Energy/FWHM Table

Channel	Energy(keV)	Fit(keV)	Delta	FWHM(keV)	Fit(keV)	Delta
237.33	59.54	59.62	-0.13%	0.92	0.92	0.59%
350.89	88.03	88.09	-0.06%	0.91	0.94	-3.12%
486.42	122.07	122.07	0.00%	0.99	0.97	1.58%
543.83	136.43	136.46	-0.02%	0.98	0.98	0.22%
660.86	165.85	165.80	0.03%	1.00	1.00	-0.27%
1112.62	279.17	279.05	0.04%	1.10	1.09	0.95%
1561.69	391.69	391.63	0.02%	1.18	1.18	0.64%
2639.09	661.66	661.68	-0.00%	1.35	1.37	-1.45%
3582.18	898.02	898.04	-0.00%	1.53	1.52	0.88%
4680.57	1173.24	1173.27	-0.00%	1.69	1.68	0.47%
5316.21	1332.50	1332.53	-0.00%	1.75	1.77	-0.88%
7325.93	1836.01	1835.98	0.00%	2.00	2.00	0.18%

Efficiency Calibration Fit
Knee Energy = 150.00 keV
Above the Knee: Quadratic Uncertainty = 1.0902 %
Ln(Eff) = 0.0488 -0.391387*Ln(Eng) -0.0358787*(Ln(Eng))**2
Below the Knee: Quadratic Uncertainty = 0.7277 %
Ln(Eff) = -13.5888 +4.676951*Ln(Eng) -0.504456*(Ln(Eng))**2

Efficiency Table

Energy	Efficiency	Fit	Delta
59.54	5.4883E-002	5.4993E-002	-0.20%
88.03	6.4094E-002	6.3223E-002	1.36%
122.07	6.2144E-002	6.3108E-002	-1.55%
150.00	========== Knee ==========		
165.85	5.4484E-002	5.5636E-002	-2.12%
279.17	3.8508E-002	3.7126E-002	3.59%
391.69	2.8191E-002	2.8242E-002	-0.18%
661.66	1.8416E-002	1.8195E-002	1.20%
898.02	1.3608E-002	1.3956E-002	-2.56%
1173.24	1.0834E-002	1.1004E-002	-1.57%
1332.50	9.7056E-003	9.8089E-003	-1.06%
1836.01	7.4886E-003	7.3057E-003	2.44%

Calibration Certificate Table

Isotope	Energy	Pct	Halflife	Activity	GPS	Error	Date & Time
Cd-109	88.17	3.61	4.63E+002	52078.00	1880.00	4.70%	10/1/2009 12:00:00 PM
Co-57	122.16	85.60	2.72E+002	1198.60	1026.00	4.20%	10/1/2009 12:00:00 PM
Co-57	136.41	10.60	2.72E+002	585.80	62.09	3.30%	4/1/2007 12:00:00 PM
Ce-139	165.91	79.95	1.38E+002	1756.10	1404.00	3.90%	10/1/2009 12:00:00 PM
Sn-113	391.60	64.16	1.15E+002	3090.70	1983.00	3.90%	10/1/2009 12:00:00 PM
Cs-137	661.77	85.21	1.10E+004	1498.70	1277.00	3.90%	10/1/2009 12:00:00 PM
Y-88	897.92	95.00	1.07E+002	4952.60	4705.00	3.90%	10/1/2009 12:00:00 PM

Co-60	1173.30	99.90	1.93E+003	2343.30	2341.00	4.00%	10/1/2009 12:00:00 PM
Co-60	1332.47	99.98	1.93E+003	2341.40	2341.00	3.90%	10/1/2009 12:00:00 PM
Y-88	1836.16	99.35	1.07E+002	5029.70	4997.00	3.90%	10/1/2009 12:00:00 PM
Am-241	59.68	36.30	1.58E+005	3680.40	1336.00	3.50%	10/1/2009 12:00:00 PM
Am-241	1836.19	36.30	1.58E+005	1630.00	591.69	3.50%	6/1/2009 12:00:00 PM
Hg-203	279.17	81.50	4.66E+001	3980.40	3244.00	3.90%	10/1/2009 12:00:00 PM

Eckert & Ziegler Source: 79779-466 **Energy Solutions Source: 060903**
250 mL Soil in 250 Marinelli Beaker
Detector: D1 (35-TN20863A)

Source Activity as of 6/01/2009

Nuclide	Half-Life (days)	Energy (keV)	Yield (gammas/d)	Activity (Bq)	Activity (pCi)	Total Source Uncertainty (%)	11/16/2009 Count Quantified Decay 6/1/2009 Activity (pCi)	% Difference
Am-241	157861.1	59.53	0.359	1630	4.4054E+04	3.50	4.3258E+04	1.81
Cd-109	462.6	88	0.0361	24474	6.6146E+05	4.70	6.4865E+05	1.94
Co-57	271.79	122.1	0.856	547	1.4784E+04	3.50	1.4531E+04	1.71
Ce-139	137.64	165.9	0.8	1660	4.4865E+04	3.60	4.5459E+04	-1.32
Hg-203	46.6	279.2	0.81	0	0.0000E+00	3.90	0.0000E+00	#DIV/0!
Sn-113	115.08	391.7	0.64	2800	7.5676E+04	3.50	7.9152E+04	-4.59
Cs-137	10957.5	661.7	0.8521	685	1.8513E+04	3.50	1.9605E+04	-5.90
Y-88	106.63	898	0.95	4910	1.3270E+05	3.30	1.2673E+05	4.50
Co-60	1925.379	1173.2	0.9997	1100	2.9730E+04	3.20	3.0782E+04	-3.54
Co-60	1925.379	1332.5	0.9998	1100	2.9730E+04	3.20	3.0782E+04	-3.54
Y-88	106.63	1836.1	0.9935	4910	1.3270E+05	3.30	1.2673E+05	4.50

1. Gamma ray yields obtained from "Radioactive Decay Data Tables" D.C. Kocher
2. Source % uncertainty is at the 99% confidence level

Performed by: [redacted] / [redacted] , 11/16/09
Name Date

D1 250mL SOIL
V&V

DB Analysis ID: 7

Sample Description: D1 250 mL Soil Efficiency #060903 Verification

Spectrum Filename: NT1-0124.An1

Acquisition Information

Start Time:	16-Nov-2009 1:19:26PM		
Live Time:	600.00	Real Time:	625.06
Dead Time:	4.01 %		
Detector ID:	1		

Detector System: MCB 07044698

Calibration

Description:	D1 47 mm Filter 060905		
Filename:	C:\User\Luckey\D1 Calibrations\D1_250mL_Sand_060903.Clb		
Energy Created:	16-Nov-2009 12:57:17PM	Efficiency Created:	16-Nov-2009 1:15:49PM
Zero Offset:	0.203 keV	Gain:	0.256 keV/Channel

Library 1 File: Calib.Lib
Library 2 File: Null.Lib
Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	200 for an energy of 51.36 keV
Stop Channel:	8,144 for an energy of 2082.81 keV
Peak rejection level:	100.000 %
Activity Scaling Factor:	1000000.0000 / 1.0000 = 1000000.0000
Detection Limit Method:	MDA - EG&G ORTEC method
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Best method (based on spectrum)

Corrections

	Status	Comments
Decay Correct to Date:	YES	01-Jun-2009 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	NO	
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Difference: 0.0217

UNIDENTIFIED PEAK SUMMARY

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 2 Sigma%	FWHM keV	Suspected Nuclide	Code
777.95	199.17	1942.50	508.50	0.848	33.62	1.173		s
996.57	255.08	1620.67	673.33	1.122	24.65	1.036		s
1130.26	289.27	790.17	106.83	0.178	90.67	0.715		s
1149.76	294.26	920.83	120.17	0.200	91.71	0.514		s
1289.10	329.90	537.00	48.00	0.080	155.37	0.357		s
1307.97	334.72	744.00	123.00	0.205	78.91	0.684		s
1695.01	433.71	564.67	68.33	0.114	119.54	0.339		s
1752.41	448.39	650.00	79.00	0.132	114.04	0.323		s
2075.71	531.07	352.00	56.00	0.093	105.79	0.331		s
2199.31	562.68	266.00	37.00	0.062	133.87	0.456		s
2407.45	615.91	536.00	48.00	0.080	195.08	0.332		s
2658.03	679.99	644.47	89.53	0.149	96.39	0.474		s
2708.33	692.85	573.83	48.17	0.080	194.76	0.322		s
3360.94	859.74	278.67	76.33	0.127	87.74	0.429		s
3879.61	992.38	169.87	50.13	0.084	78.77	0.749		s
3924.94	1003.98	305.00	101.00	0.168	67.69	0.319		s

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

Nuclide	Library Used	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 2 Sigma%	FWHM keV	Code
AM-241	1	232.23	59.60	5850.83	22722.17	37.870	1.87	0.834	
CD-109	1	343.50	88.06	4345.00	31187.00	51.978	1.38	0.875	
CO-57	1	476.44	122.06	3840.00	13911.00	23.185	2.51	0.933	
CO-57	1	532.71	136.45	2125.50	1643.50	2.739	11.14	0.893	
CE-139	1	647.65	165.84	2661.00	21855.00	36.425	1.65	0.955	
HG-203	1	1090.00	278.98	726.00	26.00	0.043	330.05	0.000	s
SN-113	1	1530.60	391.66	1224.67	14045.33	23.409	1.93	1.192	
CS-137	1	2586.36	661.66	1309.83	8448.17	14.080	3.00	1.437	
Y-88	1	3510.61	898.02	915.30	15890.70	26.485	1.78	1.583	
CO-60	1	4586.60	1173.17	489.50	9373.50	15.623	2.33	1.872	
CO-60	1	5209.47	1332.45	396.33	8443.67	14.073	2.47	1.985	
Y-88	1	7178.67	1835.98	122.50	9604.50	16.008	2.16	2.466	

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Nuclide Code	Library Used	Average Activity microCuries	Peak Energy keV	Peak Activity microCuries	Peak Analysis Code	Peak MDA Value microCuries	Peak Code	Peak Comments	
CO-57		1	9.466E-003	122.07	9.438E-003	(	5.979E-005	G	2.7E+002	85.60
			9.466E-003	136.43	9.694E-003	(	3.875E-004	G	2.7E+002	10.60
CD-109		1	5.043E-001	88.03	5.043E-001	(	1.515E-003	G	4.6E+002	3.61
AM-241		1	4.323E-002	59.54	4.323E-002	(	2.067E-004	G	1.6E+005	36.30
Y-88		1	4.252E-002	1836.01	4.336E-002	(	7.296E-005	G	1.1E+002	99.35
			4.252E-002	898.02	4.163E-002	(	1.134E-004	G	1.1E+002	95.00
CO-60		1	2.898E-002	1173.24	2.899E-002	(	9.831E-005	G	1.9E+003	99.90
			2.898E-002	1332.50	2.896E-002	(	9.831E-005	G	1.9E+003	99.98
SN-113		1	2.877E-002	391.69	2.877E-002	(	1.024E-004	G	1.2E+002	64.16
CE-139		1	1.950E-002	165.85	1.950E-002	(	6.553E-005	G	1.4E+002	79.95
CS-137		1	1.940E-002	661.66	1.940E-002	(	1.187E-004	G	1.1E+004	85.21
HG-203		1	0.000E+000	279.17	0.000E+000	%	4.948E-005	G	4.7E+001	81.50

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

- = Peak activity lower than counting uncertainty range

= = Peak outside analysis energy range

(= This peak is used in the nuclide activity average

P = Peakbackround subtraction

* = Peak is too wide, but only one peak in library

@ = Peak is too wide at FW25M, but OK at FWHM

A = Derived Average Activity

E = Energy Duplication

+ = Peak activity higher than counting uncertainty range

! = Peak is part of a multiplet and this area went negative during deconvolution

$ = Peak identified, but first peak of this nuclide failed one or more qualification tests

& = Calculated peak centroid is not close enough to the library energy centroid for positive identification

Nuclide Codes:

T = Thermal Neutron Activation

F = Fast Neutron Activation

I = Fission Product

P = Photon Reaction

N = Naturally Occurring Isotope

C = Charged Particle Reaction

M = No MDA Calculation

Peak Codes:

G = Gamma Ray

X = X-Ray

P = Positron Decay

S = Single - Escape

D = Double - Escape

K = Key Line

A = Not in Average

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide		Time of Count Activity pCi/g	Time Corrected Activity pCi/g	Uncertainty Counts 2 Sigma %	Uncertainty Total 2 Sigma %	Minimum Detectable Activity
CD-109		5.043E+005	6.486E+005	1.38	10.38	1.515E+003
CE-139		1.950E+004	4.546E+004	1.65	6.24	6.553E+001
CO-57		9.466E+003	1.453E+004	2.51	7.58	5.979E+001
CO-60		2.898E+004	3.078E+004	1.70	5.19	9.831E+001
CS-137		1.940E+004	1.961E+004	3.00	6.41	1.187E+002
SN-113		2.877E+004	7.915E+004	1.93	6.29	1.024E+002
Y-88		4.252E+004	1.267E+005	1.40	6.72	7.296E+001
HG-203	<				6.84	4.948E+001
AM-241		4.323E+004	4.326E+004	1.87	8.37	2.067E+002

= All peaks for activity calculation had bad shape

Total Activity (51.36 to 2,082.81 keV) 696,103.63 pCi/g

Analyzed by: [redacted]

EnergySolutions

Reviewed by: _____

Supervisor

Laboratory: Luckey Mobile Lab

Eckert & Ziegler Source 80991-857
500 mL Soil in 500 mL Marinelli Beaker
Detector: D1 (35-TN20863A)

Source Activity as of 10/01/2009

Nuclide	Half-Life (days)	Energy (keV)	Yield (gammas/d)	Activity (gammas/s)	Activity (pCi)	Total Source Uncertainty (%)	2/26/2010 Count Quantified Decay 10/1/2009 Activity (pCi)	% Difference
Am-241	157861.1	59.53	0.359	1336	1.0058E+05	3.50	1.0027E+05	0.31
Cd-109	462.6	88	0.0361	1880	1.4075E+06	4.70	1.4115E+06	-0.28
Co-57	271.79	122.1	0.856	1026	3.2395E+04	4.20	3.2010E+04	1.19
Ce-139	137.64	165.9	0.8	1404	4.7432E+04	3.90	4.6663E+04	1.62
Hg-203	46.6	279.2	0.81	3244	1.0824E+05	3.90	1.1148E+05	-2.99
Sn-113	115.08	391.7	0.64	1983	8.3742E+04	3.90	8.3109E+04	0.76
Cs-137	10957.5	661.7	0.8521	1277	4.0504E+04	4.00	4.1077E+04	-1.41
Y-88	106.63	898	0.95	4705	1.3385E+05	3.90	1.4009E+05	-4.66
Co-60	1925.379	1173.2	0.9997	2341	6.3289E+04	4.00	6.2053E+04	1.95
Co-60	1925.379	1332.5	0.9998	2341	6.3283E+04	3.90	6.2053E+04	1.94
Y-88	106.63	1836.1	0.9935	4977	1.3539E+05	3.90	1.4009E+05	-3.47

1. Gamma ray yields obtained from "Radioactive Decay Data Tables" D.C. Kocher
2. Source % uncertainty is at the 99% confidence level

Performed by: [redacted] 2/26/10
Date

DB Analysis ID: 1,101

Sample Description: D1 500 mL Soil Marinelli Efficiency Verification

Spectrum Filename: 00010489.An1

Acquisition Information

Start Time:	26-Feb-2010 9:21:21AM		
Live Time:	1200.00	Real Time:	1293.06
Dead Time:	7.20 %		
Detector ID:	1		

Detector System: MCB 07044698

Calibration

Description:	D1 500mL Soil Marinelli Efficiency 80991-857		
Filename:	C:\User\Luckey\D1 Calibrations\D1_500mL_Sand_80991_857.Clb		
Energy Created:	26-Feb-2010 8:08:22AM	Efficiency Created:	26-Feb-2010 8:26:44AM
Zero Offset:	0.201 keV	Gain:	0.256 keV/Channel

Library 1 File:	Calib.Lib	Library based peak stripping used.
Library 2 File:	Null.Lib	
Library 3 File:	Null.Lib	

Analysis Parameters

Start Channel:	200 for an energy of 51.36 keV
Stop Channel:	8,144 for an energy of 2083.22 keV
Peak rejection level:	30.000 %
Activity Scaling Factor:	1000000.0000 / 1.0000 = 1000000.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections

	Status	Comments
Decay Correct to Date:	YES	01-Oct-2009 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	NO	
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Difference: 0.0238

UNIDENTIFIED PEAK SUMMARY

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 2 Sigma%	FWHM keV	Suspected Nuclide	Code
224.29	57.50	19001.74	2595.26	2.163	15.53	0.842		D
275.95	70.79	16718.33	1567.67	1.306	27.41	0.760		
284.45	72.97	17502.83	1961.17	1.634	23.15	0.867		
321.48	82.44	19201.00	1451.00	1.209	34.39	1.270		s
777.66	199.14	5626.83	1266.17	1.055	21.82	1.258		s
931.66	238.53	5119.83	443.17	0.369	58.24	0.872		
996.27	255.06	5770.67	1531.33	1.276	19.67	1.068		
1998.02	511.30	3313.33	572.67	0.477	42.67	1.672		s
3181.43	814.01	2200.00	654.00	0.545	31.96	0.711		s
5178.84	1324.82	1105.02	506.98	0.422	20.56	1.936		D
7343.29	1878.45	66.67	73.33	0.061	55.74	0.473		s
7793.24	1993.52	110.83	110.17	0.092	53.47	0.298		s

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

Nuclide	Library Used	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 2 Sigma%	FWHM keV	Code
AM-241	1	231.96	59.54	14069.44	108591.56	90.493	0.68	0.844	D
CD-109	1	343.34	88.03	24386.50	141198.50	117.665	0.70	0.898	
CO-57	1	476.29	122.04	13098.00	64937.00	54.114	1.06	0.930	
CO-57	1	532.68	136.47	10268.00	8021.00	6.684	5.43	0.983	
CE-139	1	647.45	165.82	9737.50	54265.50	45.221	1.14	0.991	
HG-203	1	1090.22	279.09	5719.00	21203.00	17.669	2.00	1.080	
SN-113	1	1530.37	391.68	4856.83	35536.17	29.613	1.37	1.205	
CS-137	1	2585.88	661.67	3683.83	36958.17	30.798	1.27	1.400	
Y-88	1	3509.97	898.04	3704.50	38380.50	31.984	1.29	1.588	
CO-60	1	4585.81	1173.21	2208.00	38428.00	32.023	1.21	1.854	
CO-60	1	5208.54	1332.48	1469.33	34301.67	28.585	1.24	1.942	
Y-88	1	7177.39	1836.02	485.83	23218.17	19.348	1.44	2.296	

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Nuclide Code	Library Used	Average Activity microCuries	Peak Energy keV	Peak Activity microCuries	Peak Analysis Code	Peak MDA Value microCuries	Peak Code	Peak Comments	
CO-60		1	5.884E-002	1173.24	5.888E-002	(	3.397E-004	G	1.9E+003	99.90
			5.884E-002	1332.50	5.879E-002	(	3.108E-004	G	1.9E+003	99.98
Y-88		1	5.358E-002	1836.01	5.358E-002	(	2.433E-004	G	1.1E+002	99.35
			5.358E-002	898.02	4.902E-002	-	3.657E-004	G	1.1E+002	95.00
CS-137		1	4.070E-002	661.66	4.070E-002	(	3.144E-004	G	1.1E+004	85.21
SN-113		1	3.411E-002	391.69	3.411E-002	(	3.143E-004	G	1.2E+002	64.16
CE-139		1	2.215E-002	165.85	2.215E-002	(	1.888E-004	G	1.4E+002	79.95
CO-57		1	2.195E-002	122.07	2.190E-002	(	1.808E-004	G	2.7E+002	85.60
			2.195E-002	136.43	2.239E-002	(	1.326E-003	G	2.7E+002	10.60
HG-203		1	1.237E-002	279.17	1.237E-002	(	2.072E-004	G	4.7E+001	81.50
CD-109		1	1.131E+000	88.03	1.131E+000	(	5.850E-003	G	4.6E+002	3.61
AM-241		1	1.002E-001	59.54	1.002E-001	(	5.126E-004	G	1.6E+005	36.30

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

- = Peak activity lower than counting uncertainty range

= = Peak outside analysis energy range

(= This peak is used in the nuclide activity average

P = Peakbackround subtraction

* = Peak is too wide, but only one peak in library

@ = Peak is too wide at FW25M, but OK at FWHM

A = Derived Average Activity

E = Energy Duplication

+ = Peak activity higher than counting uncertainty range

! = Peak is part of a multiplet and this area went negative during deconvolution

$ = Peak identified, but first peak of this nuclide failed one or more qualification tests

& = Calculated peak centroid is not close enough to the library energy centroid for positive identification

Nuclide Codes:

T = Thermal Neutron Activation

F = Fast Neutron Activation

I = Fission Product

P = Photon Reaction

N = Naturally Occurring Isotope

C = Charged Particle Reaction

M = No MDA Calculation

Peak Codes:

G = Gamma Ray

X = X-Ray

P = Positron Decay

S = Single - Escape

D = Double - Escape

K = Key Line

A = Not in Average

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide	Time of Count Activity pCi/g	Time Corrected Activity pCi/g	Uncertainty Counts 2 Sigma %	Uncertainty Total 2 Sigma %	Minimum Detectable Activity
CS-137	4.070E+004	4.108E+004	1.27	6.12	3.144E+002
SN-113	3.411E+004	8.311E+004	1.37	6.15	3.143E+002
Y-88	5.358E+004	1.401E+005	1.44	7.58	2.433E+002
HG-203	1.237E+004	1.115E+005	2.00	7.18	2.072E+002
AM-241	1.002E+005	1.003E+005	0.68	8.12	5.126E+002
CD-109	1.131E+006	1.411E+006	0.70	5.16	5.850E+003
CE-139	2.215E+004	4.666E+004	1.14	8.35	1.888E+002
CO-57	2.195E+004	3.201E+004	1.06	5.86	1.808E+002
CO-60	5.884E+004	6.205E+004	0.86	5.36	3.397E+002

= All peaks for activity calculation had bad shape

Total Activity (51.36 to 2,083.22 keV) 1,474,830.50 pCi/g

Analyzed by: [redacted]

EnergySolutions

Reviewed by: _____

Supervisor

Laboratory: Luckey Mobile Lab

```
     ORTEC g v - i (3135) Env32  G53W4.24  2/26/2010 9:43:00 AM    Page  1
Luckey Mobile Lab                Spectrum name: 00010489.An1

Sample description
     D1 500 mL Soil Marinelli Efficiency Verification


Spectrum Filename: C:\User\Luckey\Luckey Spectra\00010489.An1

Acquisition information
       Start time:                 2/26/2010 9:21:21 AM
       Live time:               1200
       Real time:               1293
       Dead time:                  7.20 %
       Detector ID:                    1

Detector system
     MCB 07044698


Calibration
       Filename:                   D1_500mL_Sand_80991_857.Clb
     D1 500mL Soil Marinelli Efficiency 80991-857


       Energy Calibration
            Created:               2/26/2010 8:08:22 AM
            Zero offset:           0.201 keV
            Gain:                  0.256 keV/channel
            Quadratic:            -5.087E-09 keV/channel^2

       Efficiency Calibration
            Created:               2/26/2010 8:26:44 AM
            Knee Energy:         150.00 keV
            Above the Knee:        Quadratic        Uncertainty =   1.52 %
            Log(Eff):             -3.226796E-01 + (-2.213429E-01*Log(E) ) +
                                   ( -4.668514E-02*Log(E)^2 )
            Below the Knee:        Quadratic        Uncertainty =  57.53 %
            Log(Eff):             -1.369582E+01 + ( 4.803227E+00*Log(E) ) +
                                   ( -5.169132E-01*Log(E)^2 )

Library Files
       Main analysis library:      Calib.Lib
       Library Match Width:        0.500
       Peak stripping:             Library based

Analysis parameters
       Analysis engine:            Env32   G53W4.24
       Start channel:            200 (    51.36keV )
       Stop channel:            8144 (  2083.22keV )
       Peak rejection level:      30.000%
       Peak search sensitivity:    1
       Sample Size:                1.0000E+00
       Activity scaling factor:    1.0000E+06/(  1.0000E+00*  1.0000E+00) =
                                   1.0000E+06
       Detection limit method:     Reg. Guide 4.16 Method

□

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Luckey Mobile Lab                Spectrum name: 00010489.An1

       Random error:               1.0000000E+00
       Systematic error:           1.0000000E+00
       Fraction Limit:             0.000%
       Background width:           average of three points.

       Half lives decay limit:    12.000
       Activity range factor:      2.000
       Min. step backg. energy     0.000
       Multiplet shift channel     2.000
```

Corrections	Status	Comments
Decay correct to date:	YES	10/1/2009 12:00:00 PM
Decay during acquisition:	NO	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	NO	
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 12 cutoff 20.00000 %

Energy Calibration

Normalized diff: 0.0238

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. pCi/g	Nuc
57.53	2514.	8.02	0.84	6.586E-02				
59.61	108592.	0.34	0.84	6.727E-02	59.54	36.300	1.003E+05	AM241
65.97	1753.	9.48	0.85	7.095E-02				
68.19	2336.	8.08	0.85	7.203E-02				
70.81	3005.	6.39	0.85	7.317E-02				
72.99	2663.	7.19	0.86	7.403E-02				
82.61	1203.	19.52	1.23	7.684E-02				
88.03	141198.	0.35	0.90	7.789E-02	88.03	3.610	1.411E+06	CD109
122.04	64937.	0.53	0.93	7.803E-02	122.07	85.600	3.193E+04	CO57
136.47	8021.	2.71	0.98	7.612E-02	136.43	10.600	3.264E+04	CO57
165.82	54266.	0.57	0.99	6.901E-02	165.85	79.950	4.666E+04	CE139
199.17	1187.	9.46	0.98	6.064E-02				
238.53	443.	29.12	0.87	5.321E-02				
255.07	1560.	6.68	1.03	5.065E-02				
279.11	21074.	0.81	1.05	4.737E-02	279.17	81.500	1.108E+05	HG203
391.70	35190.	0.58	1.16	3.658E-02	391.69	64.160	8.230E+04	SN113
511.30	573.	21.34	1.67	2.962E-02				
661.70	36456.	0.57	1.40	2.400E-02	661.66	85.210	4.052E+04	CS137
814.01	654.	15.98	0.71	2.018E-02				
898.04	38380.	0.64	1.59	1.856E-02	898.02	95.000	1.282E+05	Y88
1173.21	38428.	0.60	1.85	1.471E-02	1173.24	99.900	6.210E+04	CO60
1324.89	507.	10.28	1.94	1.321E-02				
1332.48	34302.	0.62	1.94	1.314E-02	1332.50	99.982	6.201E+04	CO60
1836.02	23218.	0.72	2.30	9.824E-03	1836.01	99.350	1.401E+05	Y88
1878.45	73.	27.87	0.47	9.619E-03				
1993.52	110.	26.74	0.30	9.102E-03				

********** U N I D E N T I F I E D P E A K S U M M A R Y **********

Peak Centroid Channel	Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM keV	Suspected Nuclide	
224.29	57.50	19002.	2595.	2.163	15.53	0.842	-	D
257.08	65.94	12915.	1753.	1.461	18.95	0.850	-	lD
265.76	68.17	16625.	2336.	1.946	16.15	0.852	-	lD
275.95	70.79	16718.	1568.	1.306	27.41	0.760	-	

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Luckey Mobile Lab Spectrum name: 00010489.An1

Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	Suspected	
284.45	72.97	17503.	1961.	1.634	23.15	0.867	-	
321.48	82.44	19201.	1451.	1.209	34.39	1.270	-	s
777.66	199.14	5627.	1266.	1.055	21.82	1.258	-	s
931.66	238.53	5120.	443.	0.369	58.24	0.872	-	
996.27	255.06	5771.	1531.	1.276	19.67	1.068	-	
1998.02	511.30	3313.	573.	0.477	42.67	1.672	-	s
3181.43	814.01	2200.	654.	0.545	31.96	0.711	-	s
178.84	1324.82	1105.	507.	0.422	20.56	1.936	-	D
7343.29	1878.45	67.	73.	0.061	55.74	0.473	-	s
7793.24	1993.52	111.	110.	0.092	53.47	0.298	-	s

s - Peak fails shape tests.
D - Peak area deconvoluted.

L - Peak written from unknown list.
C - Area < Critical level.

This section based on library: Calib.Lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM keV
AM-241	231.96	59.54	14069.	108592.	90.493	0.68	0.844D
CD-109	343.34	88.03	24386.	141198.	117.665	0.70	0.898
CO-57	476.29	122.04	13098.	64937.	54.114	1.05	0.930
CO-57	532.68	136.47	10268.	8021.	6.684	5.43	0.983
CE-139	647.45	165.82	9738.	54266.	45.221	1.14	0.991
HG-203	1090.22	279.09	5719.	21203.	17.669	2.00	1.080
SN-113	1530.37	391.68	4857.	35536.	29.613	1.37	1.205
CS-137	2585.88	661.67	3684.	36958.	30.798	1.27	1.400
Y-88	3509.97	898.04	3704.	38380.	31.984	1.29	1.588
CO-60	4585.81	1173.21	2208.	38428.	32.023	1.21	1.854
CO-60	5208.54	1332.48	1469.	34302.	28.585	1.24	1.942
Y-88	7177.39	1836.02	486.	23218.	19.348	1.44	2.296

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity pCi/g	Peak Energy keV	Peak Activity pCi/g	Code	MDA Value pCi/g	COMMENTS
CD-109		1.4115E+06					
			88.03	1.411E+06	(	7.302E+03	3.49E-01 G

Nuclide	Ave activity	Energy	Activity	Code	Peak MDA	Comments
CE-139	4.6663E+04					
		165.85	4.666E+04	(	3.977E+02	5.68E-01 G
CO-57	3.2010E+04					
		122.07	3.193E+04	(	2.636E+02	5.27E-01 G
		136.43	3.264E+04	(	1.933E+03	2.71E+00 G
CO-60	6.2053E+04					
		1173.24	6.210E+04	(	3.582E+02	6.04E-01 G
		1332.50	6.201E+04	(	3.278E+02	6.19E-01 G
CS-137	4.1077E+04					
		661.66	4.108E+04	(	3.174E+02	6.33E-01 G
SN-113	8.3109E+04					
		391.69	8.311E+04	(	7.659E+02	6.84E-01 G
Y-88	1.4009E+05					
		1836.01	1.401E+05	(	6.361E+02	7.21E-01 G
		898.02	1.282E+05	-	9.562E+02	6.45E-01 G
HG-203	1.1148E+05					
		279.17	1.115E+05	(	1.867E+03	1.00E+00 G
241	1.0027E+05					
		59.54	1.003E+05	(	5.129E+02	3.41E-01 G

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went

negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
+ - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:
T - Thermal Neutron Activation

Peak Codes:
G - Gamma Ray

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Luckey Mobile Lab Spectrum name: 00010489.An1

F - Fast Neutron Activation
I - Fission Product
N - Naturally Occurring Isotope
P - Photon Reaction
C - Charged Particle Reaction
M - No MDA Calculation
R - Coincidence Corrected
H - Halflife limit exceeded

X - X-Ray
P - Positron Decay
S - Single-Escape
D - Double-Escape
K - Key Line
A - Not in Average
C - Coincidence Peak

- -

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity pCi/g	Time Corrected Activity pCi/g	Uncertainty Counting pCi/g	2 Sigma Total pCi/g	MDA pCi/g
CD-109	1.1309E+06	1.4115E+06	9.8516E+03	7.2830E+04	
CE-139	2.2153E+04	4.6663E+04	5.2962E+02	3.8963E+03	
CO-57	2.1952E+04	3.2010E+04	3.3769E+02	1.8751E+03	
CO-60	5.8836E+04	6.2053E+04	5.3668E+02	3.3229E+03	
CS-137	4.0695E+04	4.1077E+04	5.2019E+02	2.5126E+03	
SN-113	3.4106E+04	8.3109E+04	1.1362E+03	5.1125E+03	
Y-88	5.3579E+04	1.4009E+05	2.0190E+03	1.0620E+04	
HG-203	1.2372E+04	1.1148E+05	2.2314E+03	8.0061E+03	
AM-241	1.0021E+05	1.0027E+05	6.8288E+02	8.1396E+03	

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (1332.3 to 2083.2 keV) 1.475E+06 pCi/g
Total Decayed Activity (1332.3 to 2083.2 keV) 2.0282185E+06 pCi/g

Analyzed by: [redacted]
EnergySolutions

Reviewed by: _____
Supervisor

Laboratory: Luckey Mobile Lab

Eckert & Ziegler Source 80991-857
500 mL Soil in 500 mL Marinelli Beaker
Detector: D1 (35-TN20863A)

Source Activity as of 10/01/2009

Nuclide	Half-Life (days)	Energy (keV)	Yield (gammas/d)	Activity (gammas/s)	Activity (pCi)	Total Source Uncertainty (%)	2/26/2010 Count Quantified Decay 10/1/2009 Activity (pCi)	% Difference
Am-241	157861.1	59.53	0.359	1336	1.0058E+05	3.50	1.0027E+05	0.31
Cd-109	462.6	88	0.0361	1880	1.4075E+06	4.70	1.4115E+06	-0.28
Co-57	271.79	122.1	0.856	1026	3.2395E+04	4.20	3.2010E+04	1.19
Ce-139	137.64	165.9	0.8	1404	4.7432E+04	3.90	4.6663E+04	1.62
Hg-203	46.6	279.2	0.81	3244	1.0824E+05	3.90	1.1148E+05	-2.99
Sn-113	115.08	391.7	0.64	1983	8.3742E+04	3.90	8.3109E+04	0.76
Cs-137	10957.5	661.7	0.8521	1277	4.0504E+04	4.00	4.1077E+04	-1.41
Y-88	106.63	898	0.95	4705	1.3385E+05	3.90	1.4009E+05	-4.66
Co-60	1925.379	1173.2	0.9997	2341	6.3289E+04	4.00	6.2053E+04	1.95
Co-60	1925.379	1332.5	0.9998	2341	6.3283E+04	3.90	6.2053E+04	1.94
Y-88	106.63	1836.1	0.9935	4977	1.3539E+05	3.90	1.4009E+05	-3.47

1. Gamma ray yields obtained from "Radioactive Decay Data Tables" D.C. Kocher
2. Source % uncertainty is at the 99% confidence level

Performed by: [redacted] 2/26/10
Date

DB Analysis ID: 1,101

Sample Description: D1 500 mL Soil Marinelli Efficiency Verification

Spectrum Filename: 00010489.An1

Acquisition Information

Start Time:	26-Feb-2010 9:21:21AM		
Live Time:	1200.00	Real Time:	1293.06
Dead Time:	7.20 %		
Detector ID:	1		

Detector System: MCB 07044698

Calibration

Description:	D1 500mL Soil Marinelli Efficiency 80991-857		
Filename:	C:\User\Luckey\D1 Calibrations\D1_500mL_Sand_80991_857.Clb		
Energy Created:	26-Feb-2010 8:08:22AM	Efficiency Created:	26-Feb-2010 8:26:44AM
Zero Offset:	0.201 keV	Gain:	0.256 keV/Channel

Library 1 File:	Calib.Lib	Library based peak stripping used.
Library 2 File:	Null.Lib	
Library 3 File:	Null.Lib	

Analysis Parameters

Start Channel:	200 for an energy of 51.36 keV
Stop Channel:	8,144 for an energy of 2083.22 keV
Peak rejection level:	30.000 %
Activity Scaling Factor:	1000000.0000 / 1.0000 = 1000000.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections

	Status	Comments
Decay Correct to Date:	YES	01-Oct-2009 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	NO	
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Difference: 0.0238

UNIDENTIFIED PEAK SUMMARY

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 2 Sigma%	FWHM keV	Suspected Nuclide	Code
224.29	57.50	19001.74	2595.26	2.163	15.53	0.842		D
275.95	70.79	16718.33	1567.67	1.306	27.41	0.760		
284.45	72.97	17502.83	1961.17	1.634	23.15	0.867		
321.48	82.44	19201.00	1451.00	1.209	34.39	1.270		s
777.66	199.14	5626.83	1266.17	1.055	21.82	1.258		s
931.66	238.53	5119.83	443.17	0.369	58.24	0.872		
996.27	255.06	5770.67	1531.33	1.276	19.67	1.068		
1998.02	511.30	3313.33	572.67	0.477	42.67	1.672		s
3181.43	814.01	2200.00	654.00	0.545	31.96	0.711		s
5178.84	1324.82	1105.02	506.98	0.422	20.56	1.936		D
7343.29	1878.45	66.67	73.33	0.061	55.74	0.473		s
7793.24	1993.52	110.83	110.17	0.092	53.47	0.298		s

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

Nuclide	Library Used	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 2 Sigma%	FWHM keV	Code
AM-241	1	231.96	59.54	14069.44	108591.56	90.493	0.68	0.844	D
CD-109	1	343.34	88.03	24386.50	141198.50	117.665	0.70	0.898	
CO-57	1	476.29	122.04	13098.00	64937.00	54.114	1.06	0.930	
CO-57	1	532.68	136.47	10268.00	8021.00	6.684	5.43	0.983	
CE-139	1	647.45	165.82	9737.50	54265.50	45.221	1.14	0.991	
HG-203	1	1090.22	279.09	5719.00	21203.00	17.669	2.00	1.080	
SN-113	1	1530.37	391.68	4856.83	35536.17	29.613	1.37	1.205	
CS-137	1	2585.88	661.67	3683.83	36958.17	30.798	1.27	1.400	
Y-88	1	3509.97	898.04	3704.50	38380.50	31.984	1.29	1.588	
CO-60	1	4585.81	1173.21	2208.00	38428.00	32.023	1.21	1.854	
CO-60	1	5208.54	1332.48	1469.33	34301.67	28.585	1.24	1.942	
Y-88	1	7177.39	1836.02	485.83	23218.17	19.348	1.44	2.296	

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Nuclide Code	Library Used	Average Activity microCuries	Peak Energy keV	Peak Activity microCuries	Peak Analysis Code	Peak MDA Value microCuries	Peak Code	Peak Comments	
CO-60		1	5.884E-002	1173.24	5.888E-002	(	3.397E-004	G	1.9E+003	99.90
			5.884E-002	1332.50	5.879E-002	(	3.108E-004	G	1.9E+003	99.98
Y-88		1	5.358E-002	1836.01	5.358E-002	(	2.433E-004	G	1.1E+002	99.35
			5.358E-002	898.02	4.902E-002	-	3.657E-004	G	1.1E+002	95.00
CS-137		1	4.070E-002	661.66	4.070E-002	(	3.144E-004	G	1.1E+004	85.21
SN-113		1	3.411E-002	391.69	3.411E-002	(	3.143E-004	G	1.2E+002	64.16
CE-139		1	2.215E-002	165.85	2.215E-002	(	1.888E-004	G	1.4E+002	79.95
CO-57		1	2.195E-002	122.07	2.190E-002	(	1.808E-004	G	2.7E+002	85.60
			2.195E-002	136.43	2.239E-002	(	1.326E-003	G	2.7E+002	10.60
HG-203		1	1.237E-002	279.17	1.237E-002	(	2.072E-004	G	4.7E+001	81.50
CD-109		1	1.131E+000	88.03	1.131E+000	(	5.850E-003	G	4.6E+002	3.61
AM-241		1	1.002E-001	59.54	1.002E-001	(	5.126E-004	G	1.6E+005	36.30

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

- = Peak activity lower than counting uncertainty range

= = Peak outside analysis energy range

(= This peak is used in the nuclide activity average

P = Peakbackround subtraction

* = Peak is too wide, but only one peak in library

@ = Peak is too wide at FW25M, but OK at FWHM

A = Derived Average Activity

E = Energy Duplication

+ = Peak activity higher than counting uncertainty range

! = Peak is part of a multiplet and this area went negative during deconvolution

$ = Peak identified, but first peak of this nuclide failed one or more qualification tests

& = Calculated peak centroid is not close enough to the library energy centroid for positive identification

Nuclide Codes:

T = Thermal Neutron Activation

F = Fast Neutron Activation

I = Fission Product

P = Photon Reaction

N = Naturally Occurring Isotope

C = Charged Particle Reaction

M = No MDA Calculation

Peak Codes:

G = Gamma Ray

X = X-Ray

P = Positron Decay

S = Single - Escape

D = Double - Escape

K = Key Line

A = Not in Average

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide	Time of Count Activity pCi/g	Time Corrected Activity pCi/g	Uncertainty Counts 2 Sigma %	Uncertainty Total 2 Sigma %	Minimum Detectable Activity
CS-137	4.070E+004	4.108E+004	1.27	6.12	3.144E+002
SN-113	3.411E+004	8.311E+004	1.37	6.15	3.143E+002
Y-88	5.358E+004	1.401E+005	1.44	7.58	2.433E+002
HG-203	1.237E+004	1.115E+005	2.00	7.18	2.072E+002
AM-241	1.002E+005	1.003E+005	0.68	8.12	5.126E+002
CD-109	1.131E+006	1.411E+006	0.70	5.16	5.850E+003
CE-139	2.215E+004	4.666E+004	1.14	8.35	1.888E+002
CO-57	2.195E+004	3.201E+004	1.06	5.86	1.808E+002
CO-60	5.884E+004	6.205E+004	0.86	5.36	3.397E+002

= All peaks for activity calculation had bad shape

Total Activity (51.36 to 2,083.22 keV) 1,474,830.50 pCi/g

Analyzed by: [redacted]

EnergySolutions

Reviewed by: _____

Supervisor

Laboratory: Luckey Mobile Lab

```
     ORTEC g v - i (3135) Env32  G53W4.24  2/26/2010 9:43:00 AM    Page  1
Luckey Mobile Lab                Spectrum name: 00010489.An1

Sample description
     D1 500 mL Soil Marinelli Efficiency Verification


Spectrum Filename: C:\User\Luckey\Luckey Spectra\00010489.An1

Acquisition information
       Start time:                 2/26/2010 9:21:21 AM
       Live time:               1200
       Real time:               1293
       Dead time:                  7.20 %
       Detector ID:                    1

Detector system
     MCB 07044698


Calibration
       Filename:                   D1_500mL_Sand_80991_857.Clb
     D1 500mL Soil Marinelli Efficiency 80991-857


       Energy Calibration
            Created:               2/26/2010 8:08:22 AM
            Zero offset:           0.201 keV
            Gain:                  0.256 keV/channel
            Quadratic:            -5.087E-09 keV/channel^2

       Efficiency Calibration
            Created:               2/26/2010 8:26:44 AM
            Knee Energy:         150.00 keV
            Above the Knee:        Quadratic        Uncertainty =   1.52 %
            Log(Eff):             -3.226796E-01 + (-2.213429E-01*Log(E) ) +
                                   ( -4.668514E-02*Log(E)^2 )
            Below the Knee:        Quadratic        Uncertainty =  57.53 %
            Log(Eff):             -1.369582E+01 + ( 4.803227E+00*Log(E) ) +
                                   ( -5.169132E-01*Log(E)^2 )

Library Files
       Main analysis library:      Calib.Lib
       Library Match Width:        0.500
       Peak stripping:             Library based

Analysis parameters
       Analysis engine:            Env32   G53W4.24
       Start channel:            200 (    51.36keV )
       Stop channel:            8144 (  2083.22keV )
       Peak rejection level:      30.000%
       Peak search sensitivity:    1
       Sample Size:                1.0000E+00
       Activity scaling factor:    1.0000E+06/(  1.0000E+00*  1.0000E+00) =
                                   1.0000E+06
       Detection limit method:     Reg. Guide 4.16 Method

□

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Luckey Mobile Lab                Spectrum name: 00010489.An1

       Random error:               1.0000000E+00
       Systematic error:           1.0000000E+00
       Fraction Limit:             0.000%
       Background width:           average of three points.

       Half lives decay limit:    12.000
       Activity range factor:      2.000
       Min. step backg. energy     0.000
       Multiplet shift channel     2.000
```

Corrections	Status	Comments
Decay correct to date:	YES	10/1/2009 12:00:00 PM
Decay during acquisition:	NO	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	NO	
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 12 cutoff 20.00000 %

Energy Calibration

Normalized diff: 0.0238

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. pCi/g	Nuc
57.53	2514.	8.02	0.84	6.586E-02				
59.61	108592.	0.34	0.84	6.727E-02	59.54	36.300	1.003E+05	AM241
65.97	1753.	9.48	0.85	7.095E-02				
68.19	2336.	8.08	0.85	7.203E-02				
70.81	3005.	6.39	0.85	7.317E-02				
72.99	2663.	7.19	0.86	7.403E-02				
82.61	1203.	19.52	1.23	7.684E-02				
88.03	141198.	0.35	0.90	7.789E-02	88.03	3.610	1.411E+06	CD109
122.04	64937.	0.53	0.93	7.803E-02	122.07	85.600	3.193E+04	CO57
136.47	8021.	2.71	0.98	7.612E-02	136.43	10.600	3.264E+04	CO57
165.82	54266.	0.57	0.99	6.901E-02	165.85	79.950	4.666E+04	CE139
199.17	1187.	9.46	0.98	6.064E-02				
238.53	443.	29.12	0.87	5.321E-02				
255.07	1560.	6.68	1.03	5.065E-02				
279.11	21074.	0.81	1.05	4.737E-02	279.17	81.500	1.108E+05	HG203
391.70	35190.	0.58	1.16	3.658E-02	391.69	64.160	8.230E+04	SN113
511.30	573.	21.34	1.67	2.962E-02				
661.70	36456.	0.57	1.40	2.400E-02	661.66	85.210	4.052E+04	CS137
814.01	654.	15.98	0.71	2.018E-02				
898.04	38380.	0.64	1.59	1.856E-02	898.02	95.000	1.282E+05	Y88
1173.21	38428.	0.60	1.85	1.471E-02	1173.24	99.900	6.210E+04	CO60
1324.89	507.	10.28	1.94	1.321E-02				
1332.48	34302.	0.62	1.94	1.314E-02	1332.50	99.982	6.201E+04	CO60
1836.02	23218.	0.72	2.30	9.824E-03	1836.01	99.350	1.401E+05	Y88
1878.45	73.	27.87	0.47	9.619E-03				
1993.52	110.	26.74	0.30	9.102E-03				

********** U N I D E N T I F I E D P E A K S U M M A R Y **********

Peak Centroid Channel	Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM keV	Suspected Nuclide	
224.29	57.50	19002.	2595.	2.163	15.53	0.842	-	D
257.08	65.94	12915.	1753.	1.461	18.95	0.850	-	lD
265.76	68.17	16625.	2336.	1.946	16.15	0.852	-	lD
275.95	70.79	16718.	1568.	1.306	27.41	0.760	-	

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Luckey Mobile Lab Spectrum name: 00010489.An1

Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	Suspected	
284.45	72.97	17503.	1961.	1.634	23.15	0.867	-	
321.48	82.44	19201.	1451.	1.209	34.39	1.270	-	s
777.66	199.14	5627.	1266.	1.055	21.82	1.258	-	s
931.66	238.53	5120.	443.	0.369	58.24	0.872	-	
996.27	255.06	5771.	1531.	1.276	19.67	1.068	-	
1998.02	511.30	3313.	573.	0.477	42.67	1.672	-	s
3181.43	814.01	2200.	654.	0.545	31.96	0.711	-	s
178.84	1324.82	1105.	507.	0.422	20.56	1.936	-	D
7343.29	1878.45	67.	73.	0.061	55.74	0.473	-	s
7793.24	1993.52	111.	110.	0.092	53.47	0.298	-	s

s - Peak fails shape tests.
D - Peak area deconvoluted.

L - Peak written from unknown list.
C - Area < Critical level.

This section based on library: Calib.Lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM keV
AM-241	231.96	59.54	14069.	108592.	90.493	0.68	0.844D
CD-109	343.34	88.03	24386.	141198.	117.665	0.70	0.898
CO-57	476.29	122.04	13098.	64937.	54.114	1.05	0.930
CO-57	532.68	136.47	10268.	8021.	6.684	5.43	0.983
CE-139	647.45	165.82	9738.	54266.	45.221	1.14	0.991
HG-203	1090.22	279.09	5719.	21203.	17.669	2.00	1.080
SN-113	1530.37	391.68	4857.	35536.	29.613	1.37	1.205
CS-137	2585.88	661.67	3684.	36958.	30.798	1.27	1.400
Y-88	3509.97	898.04	3704.	38380.	31.984	1.29	1.588
CO-60	4585.81	1173.21	2208.	38428.	32.023	1.21	1.854
CO-60	5208.54	1332.48	1469.	34302.	28.585	1.24	1.942
Y-88	7177.39	1836.02	486.	23218.	19.348	1.44	2.296

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity pCi/g	Peak Energy keV	Peak Activity pCi/g	Code	MDA Value pCi/g	COMMENTS
CD-109		1.4115E+06					
			88.03	1.411E+06	(	7.302E+03	3.49E-01 G

Nuclide	Ave activity	Energy	Activity	Code	Peak MDA	Comments
CE-139	4.6663E+04					
		165.85	4.666E+04	(	3.977E+02	5.68E-01 G
CO-57	3.2010E+04					
		122.07	3.193E+04	(	2.636E+02	5.27E-01 G
		136.43	3.264E+04	(	1.933E+03	2.71E+00 G
CO-60	6.2053E+04					
		1173.24	6.210E+04	(	3.582E+02	6.04E-01 G
		1332.50	6.201E+04	(	3.278E+02	6.19E-01 G
CS-137	4.1077E+04					
		661.66	4.108E+04	(	3.174E+02	6.33E-01 G
SN-113	8.3109E+04					
		391.69	8.311E+04	(	7.659E+02	6.84E-01 G
Y-88	1.4009E+05					
		1836.01	1.401E+05	(	6.361E+02	7.21E-01 G
		898.02	1.282E+05	-	9.562E+02	6.45E-01 G
HG-203	1.1148E+05					
		279.17	1.115E+05	(	1.867E+03	1.00E+00 G
241	1.0027E+05					
		59.54	1.003E+05	(	5.129E+02	3.41E-01 G

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went

negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
+ - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:
T - Thermal Neutron Activation

Peak Codes:
G - Gamma Ray

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Luckey Mobile Lab Spectrum name: 00010489.An1

F - Fast Neutron Activation
I - Fission Product
N - Naturally Occurring Isotope
P - Photon Reaction
C - Charged Particle Reaction
M - No MDA Calculation
R - Coincidence Corrected
H - Halflife limit exceeded

X - X-Ray
P - Positron Decay
S - Single-Escape
D - Double-Escape
K - Key Line
A - Not in Average
C - Coincidence Peak

- -

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity pCi/g	Time Corrected Activity pCi/g	Uncertainty Counting pCi/g	2 Sigma Total pCi/g	MDA pCi/g
CD-109	1.1309E+06	1.4115E+06	9.8516E+03	7.2830E+04	
CE-139	2.2153E+04	4.6663E+04	5.2962E+02	3.8963E+03	
CO-57	2.1952E+04	3.2010E+04	3.3769E+02	1.8751E+03	
CO-60	5.8836E+04	6.2053E+04	5.3668E+02	3.3229E+03	
CS-137	4.0695E+04	4.1077E+04	5.2019E+02	2.5126E+03	
SN-113	3.4106E+04	8.3109E+04	1.1362E+03	5.1125E+03	
Y-88	5.3579E+04	1.4009E+05	2.0190E+03	1.0620E+04	
HG-203	1.2372E+04	1.1148E+05	2.2314E+03	8.0061E+03	
AM-241	1.0021E+05	1.0027E+05	6.8288E+02	8.1396E+03	

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (1332.3 to 2083.2 keV) 1.475E+06 pCi/g
Total Decayed Activity (1332.3 to 2083.2 keV) 2.0282185E+06 pCi/g

Analyzed by: [redacted]
EnergySolutions

Reviewed by: _____
Supervisor

Laboratory: Luckey Mobile Lab

Eckert & Ziegler Source 80991-857
500 mL Soil in 500 mL Marinelli Beaker
Detector: D1 (35-TN20863A)

Source Activity as of 10/01/2009

Nuclide	Half-Life (days)	Energy (keV)	Yield (gammas/d)	Activity (gammas/s)	Activity (pCi)	Total Source Uncertainty (%)	11/15/2009 Count Quantified Decay 10/1/2009 Activity (pCi)	% Difference
Am-241	157861.1	59.53	0.359	1336	1.0058E+05	3.50	9.8965E+04	1.61
Cd-109	462.6	88	0.0361	1880	1.4075E+06	4.70	1.4352E+06	-1.97
Co-57	271.79	122.1	0.856	1026	3.2395E+04	4.20	3.1722E+04	2.08
Ce-139	137.64	165.9	0.8	1404	4.7432E+04	3.90	4.6027E+04	2.96
Hg-203	46.6	279.2	0.81	3244	1.0824E+05	3.90	1.1138E+05	-2.90
Sn-113	115.08	391.7	0.64	1983	8.3742E+04	3.90	8.4758E+04	-1.21
Cs-137	10957.5	661.7	0.8521	1277	4.0504E+04	4.00	4.1065E+04	-1.38
Y-88	106.63	898	0.95	4705	1.3385E+05	3.90	1.4094E+05	-5.29
Co-60	1925.379	1173.2	0.9997	2341	6.3289E+04	4.00	6.3140E+04	0.24
Co-60	1925.379	1332.5	0.9998	2341	6.3283E+04	3.90	6.3140E+04	0.23
Y-88	106.63	1836.1	0.9935	4977	1.3539E+05	3.90	1.4094E+05	-4.10

1. Gamma ray yields obtained from "Radioactive Decay Data Tables" D.C. Kocher
2. Source % uncertainty is at the 99% confidence level

Performed by: [redacted] / 11/15/09
Date

D1 500mL Soil
V&V

DB Analysis ID: 9

Sample Description: D1 500 mL Soil Efficiency Verification

Spectrum Filename: NT1-0117.An1

Acquisition Information

Start Time:	15-Nov-2009 8:30:38PM		
Live Time:	600.00	Real Time:	669.06
Dead Time:	10.32 %		
Detector ID:	1		

Detector System: MCB 07044698

Calibration

Description:	D1 500 mL Sand Marinelli 80991_857		
Filename:	C:\User\Luckey\D1 Calibrations\D1_500mL_Sand_80991_857.Clb		
Energy Created:	15-Nov-2009 4:21:11PM	Efficiency Created:	15-Nov-2009 4:24:57PM
Zero Offset:	0.196 keV	Gain:	0.256 keV/Channel

Library 1 File: Calib.Lib
Library 2 File: Null.Lib
Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	200 for an energy of 51.35 keV
Stop Channel:	8,144 for an energy of 2082.80 keV
Peak rejection level:	100.000 %
Activity Scaling Factor:	1000000.0000 / 1.0000 = 1000000.0000
Detection Limit Method:	MDA - EG&G ORTEC method
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Best method (based on spectrum)

Corrections

	Status	Comments
Decay Correct to Date:	YES	01-Oct-2009 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	NO	
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Difference: 0.0240

UNIDENTIFIED PEAK SUMMARY

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 2 Sigma%	FWHM keV	Suspected Nuclide	Code
193.54	49.70	11936.00	1302.00	2.170	29.59	1.460		s
276.32	70.87	12552.02	3356.98	5.595	10.05	0.879		D
284.41	72.94	12025.23	5634.77	9.391	6.12	0.881		D
321.86	82.51	12184.14	2253.86	3.756	14.48	0.890		D
331.58	84.99	10969.89	1898.11	3.164	16.27	0.893		D
519.56	133.05	6586.75	225.25	0.375	102.78	0.938		D
698.46	178.85	3141.00	158.00	0.263	113.29	0.652		s
777.41	199.04	5452.50	902.50	1.504	31.33	1.333		s
813.24	208.20	3375.00	206.00	0.343	93.15	0.685		s
996.08	254.97	5247.17	1639.83	2.733	18.70	1.084		
1296.83	331.89	1080.33	68.67	0.114	142.97	0.510		s
1568.44	401.36	845.83	107.17	0.179	82.20	0.735		s
1679.44	429.75	1343.83	113.17	0.189	110.66	0.602		s
1826.29	467.31	2403.50	187.50	0.313	107.74	0.681		s
1962.92	502.25	2107.00	209.00	0.348	94.20	0.694		s
2419.94	619.13	1313.00	129.00	0.215	101.51	0.365		s
3060.76	783.02	959.00	85.00	0.142	125.44	0.498		s
3691.33	944.27	658.33	84.67	0.141	101.33	0.854		s
6135.36	1569.23	897.60	92.40	0.154	117.86	0.511		s
6247.95	1598.02	224.70	62.30	0.104	75.23	0.755		s
6401.12	1637.19	408.50	111.50	0.186	76.39	0.734		s

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

Nuclide	Library Used	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 2 Sigma%	FWHM keV	Code
AM-241	1	232.14	59.57	19351.50	53386.50	88.978	1.37	0.847	
CD-109	1	343.41	88.03	8212.37	83679.27	139.465	0.76	0.896	D
CO-57	1	476.39	122.05	9461.33	41704.66	69.508	1.33	0.941	
CO-57	1	532.62	136.43	6932.61	5166.39	8.611	5.34	0.942	D
CE-139	1	647.55	165.83	9296.70	44677.30	74.462	1.21	0.962	
HG-203	1	1090.38	279.09	5134.80	48451.20	80.752	1.05	1.096	
SN-113	1	1530.60	391.68	3310.00	33504.00	55.840	1.30	1.202	
CS-137	1	2586.28	661.67	3332.00	18575.00	30.958	1.90	1.424	
Y-88	1	3510.46	898.02	2361.60	37787.40	62.979	1.18	1.613	
CO-60	1	4586.53	1173.19	1407.67	20507.33	34.179	1.86	1.831	
CO-60	1	5209.27	1332.43	811.17	17997.83	29.996	1.76	1.958	
Y-88	1	7178.44	1835.93	426.30	22858.70	38.098	1.43	2.371	

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Nuclide Code	Library Used	Average Activity microCuries	Peak Energy keV	Peak Activity microCuries	Peak Analysis Code	Peak MDA Value microCuries	Peak Code	Peak Comments
AM-241		1	9.895E-002	59.54	9.895E-002	(	3.655E-004G	1.6E+005	36.30
SN-113		1	6.450E-002	391.69	6.450E-002	(	1.576E-004G	1.2E+002	64.16
CO-60		1	6.212E-002	1173.24	6.271E-002	(	1.638E-004G	1.9E+003	99.90
			6.212E-002	1332.50	6.152E-002	(	1.394E-004G	1.9E+003	99.98
HG-203		1	5.675E-002	279.17	5.675E-002	(	1.193E-004G	4.7E+001	81.50
CS-137		1	4.095E-002	661.66	4.095E-002	(	1.811E-004G	1.1E+004	85.21
CE-139		1	3.663E-002	165.85	3.663E-002	(	1.122E-004G	1.4E+002	79.95
CO-57		1	2.826E-002	122.07	2.817E-002	(	9.326E-005G	2.7E+002	85.60
			2.826E-002	136.43	2.901E-002	(	6.640E-004G	2.7E+002	10.60
CD-109		1	1.335E+000	88.03	1.335E+000	(	2.053E-003G	4.4E+002	3.61
Y-88		1	1.050E-001	1836.01	1.050E-001	(	1.364E-004G	1.1E+002	99.35
			1.050E-001	898.02	9.648E-002	-	7.248E-004G	1.1E+002	95.00

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

- = Peak activity lower than counting uncertainty range

= = Peak outside analysis energy range

(= This peak is used in the nuclide activity average

P = Peakbackround subtraction

* = Peak is too wide, but only one peak in library

@ = Peak is too wide at FW25M, but OK at FWHM

A = Derived Average Activity

E = Energy Duplication

+ = Peak activity higher than counting uncertainty range

! = Peak is part of a multiplet and this area went negative during deconvolution

$ = Peak identified, but first peak of this nuclide failed one or more qualification tests

& = Calculated peak centroid is not close enough to the library energy centroid for positive identification

Nuclide Codes:

T = Thermal Neutron Activation

F = Fast Neutron Activation

I = Fission Product

P = Photon Reaction

N = Naturally Occurring Isotope

C = Charged Particle Reaction

M = No MDA Calculation

Peak Codes:

G = Gamma Ray

X = X-Ray

P = Positron Decay

S = Single - Escape

D = Double - Escape

K = Key Line

A = Not in Average

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide	Time of Count Activity pCi/g	Time Corrected Activity pCi/g	Uncertainty Counts 2 Sigma %	Uncertainty Total 2 Sigma %	Minimum Detectable Activity
CD-109	1.335E+006	1.435E+006	0.76	9.66	2.053E+003
CE-139	3.663E+004	4.603E+004	1.21	8.83	1.122E+002
CO-57	2.826E+004	3.172E+004	1.33	8.03	9.326E+001
CO-60	6.212E+004	6.314E+004	1.28	4.39	1.638E+002
CS-137	4.095E+004	4.106E+004	1.90	5.35	1.811E+002
SN-113	6.450E+004	8.476E+004	1.30	7.90	1.576E+002
Y-88	1.050E+005	1.409E+005	1.43	6.85	1.364E+002
HG-203	5.675E+004	1.114E+005	1.05	6.97	1.193E+002
AM-241	9.895E+004	9.896E+004	1.37	8.98	3.655E+002

= All peaks for activity calculation had bad shape

Total Activity (51.35 to 2,082.80 keV) 1,828,461.88 pCi/g

Analyzed by: [redacted]

EnergySolutions

Reviewed by: _____

Supervisor

Laboratory: Luckey Mobile Lab

Eckert & Ziegler Source: 79779-466 **Energy Solutions Source: 060903**
250 mL Soil in 250 Marinelli Beaker
Detector: D2 (39-TN21408A)

Source Activity as of 6/01/2009

Nuclide	Half-Life (days)	Energy (keV)	Yield (gammas/d)	Activity (Bq)	Activity (pCi)	Total Source Uncertainty (%)	11/15/2009 Count Quantified Decay 6/1/2009 Activity (pCi)	% Difference
Am-241	157861.1	59.53	0.359	1630	4.4054E+04	3.50	4.3773E+04	0.64
Cd-109	462.6	88	0.0361	24474	6.6146E+05	4.70	6.8877E+05	-4.13
Co-57	271.79	122.1	0.856	547	1.4784E+04	3.50	1.5141E+04	-2.42
Ce-139	137.64	165.9	0.8	1660	4.4865E+04	3.60	4.5169E+04	-0.68
Hg-203	46.6	279.2	0.81	0	0.0000E+00	3.90	0.0000E+00	#DIV/0!
Sn-113	115.08	391.7	0.64	2800	7.5676E+04	3.50	7.7608E+04	-2.55
Cs-137	10957.5	661.7	0.8521	685	1.8513E+04	3.50	1.8343E+04	0.92
Y-88	106.63	898	0.95	4910	1.3270E+05	3.30	1.3162E+05	0.82
Co-60	1925.379	1173.2	0.9997	1100	2.9730E+04	3.20	3.0802E+04	-3.61
Co-60	1925.379	1332.5	0.9998	1100	2.9730E+04	3.20	3.0802E+04	-3.61
Y-88	106.63	1836.1	0.9935	4910	1.3270E+05	3.30	1.3162E+05	0.82

1. Gamma ray yields obtained from "Radioactive Decay Data Tables" D.C. Kocher
2. Source % uncer[redacted] at the 99% confidence level

Performed by: [redacted] 11/15/09
Date

D2 250 mL SOIL
VEV

DB Analysis ID: 8

Sample Description: D2 250 mL Soil Efficiency Verification

Spectrum Filename: 00020086.An1

Acquisition Information

Start Time:	15-Nov-2009 9:34:12PM		
Live Time:	600.00	Real Time:	633.74
Dead Time:	5.32 %		
Detector ID:	2		

Detector System: MCB 06325561

Calibration

Description:	D2 250 mL Sand Marinelli 060903		
Filename:	C:\User\Luckey\D2 Calibrations\D2_250mL_Sand_060903.Clb		
Energy Created:	15-Nov-2009 4:52:36PM	Efficiency Created:	15-Nov-2009 4:54:00PM
Zero Offset:	0.225 keV	Gain:	0.251 keV/Channel

Library 1 File: Calib.Lib
Library 2 File: Null.Lib
Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	200 for an energy of 50.34 keV
Stop Channel:	8,144 for an energy of 2040.05 keV
Peak rejection level:	100.000 %
Activity Scaling Factor:	1000000.0000 / 1.0000 = 1000000.0000
Detection Limit Method:	MDA - EG&G ORTEC method
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Best method (based on spectrum)

Corrections

	Status	Comments
Decay Correct to Date:	YES	01-Jun-2009 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	NO	
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Difference: 0.1587

UNIDENTIFIED PEAK SUMMARY

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 2 Sigma%	FWHM keV	Suspected Nuclide	Code
199.13	50.12	4200.00	453.00	0.755	54.35	0.998		s
631.62	158.50	1316.33	124.67	0.208	99.60	0.627		s
743.83	186.62	430.00	47.00	0.078	122.99	0.268		s
772.80	193.88	590.33	51.67	0.086	141.21	0.663		s
793.61	199.09	1456.00	251.00	0.418	56.93	1.008		
1016.06	254.83	1299.00	573.00	0.955	26.51	1.020		s
1140.80	286.08	317.00	50.00	0.083	104.61	0.599		s
2918.05	731.34	554.17	171.83	0.286	64.12	0.807		s
3245.33	813.32	584.00	212.00	0.353	61.86	1.103		s
3296.39	826.11	295.20	121.80	0.203	59.26	0.570		s
3647.22	913.99	256.67	89.33	0.149	78.97	0.386		s
6013.95	1506.73	52.50	18.50	0.031	124.32	0.486		s
6758.97	1693.29	53.67	80.33	0.134	45.89	0.475		s

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

Nuclide	Library Used	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 2 Sigma%	FWHM keV	Code
AM-241	1	237.08	59.64	4689.00	16886.00	28.143	2.24	0.890	
CD-109	1	350.60	88.08	4735.50	22793.50	37.989	1.84	0.925	
CO-57	1	486.11	122.04	3215.10	9948.90	16.582	2.84	0.916	
CO-57	1	543.42	136.40	1594.67	1225.33	2.042	12.93	1.015	
CE-139	1	660.57	165.75	2291.10	16029.90	26.717	1.95	1.005	
HG-203	1	1113.00	279.12	219.33	-1.33	-0.002	2873.13	0.000	s
SN-113	1	1561.59	391.51	1212.00	9649.00	16.082	3.30	1.120	
CS-137	1	2639.10	661.46	871.20	5392.80	8.988	3.35	1.340	
Y-88	1	3582.14	897.69	714.67	11264.33	18.774	2.16	1.460	
CO-60	1	4680.59	1172.82	285.00	6187.00	10.312	2.74	1.609	
CO-60	1	5316.30	1332.03	195.83	5748.17	9.580	2.86	1.794	
Y-88	1	7326.12	1835.29	48.00	6630.00	11.050	2.52	2.012	

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Nuclide Code	Library Used	Average Activity microCuries	Peak Energy keV	Peak Activity microCuries	Peak Analysis Code	Peak MDA Value microCuries	Peak Code	Peak Comments	
CO-57		1	9.889E-003	122.07	9.864E-003	(	8.000E-005	G	2.7E+002	85.60
			9.889E-003	136.43	1.010E-002	(	4.694E-004	G	2.7E+002	10.60
CD-109		1	5.278E-001	88.03	5.278E-001	(	2.265E-003	G	4.4E+002	3.61
Y-88		1	4.435E-002	1836.01	4.497E-002	(	6.993E-005	G	1.1E+002	99.35
			4.435E-002	898.02	4.370E-002	(	1.486E-004	G	1.1E+002	95.00
AM-241		1	4.374E-002	59.54	4.374E-002	(	2.521E-004	G	1.6E+005	36.30
CO-60		1	2.900E-002	1173.24	2.852E-002	(	1.124E-004	G	1.9E+003	99.90
			2.900E-002	1332.50	2.948E-002	(	1.041E-004	G	1.9E+003	99.98
SN-113		1	2.832E-002	391.69	2.832E-002	(	1.460E-004	G	1.2E+002	64.16
CE-139		1	1.945E-002	165.85	1.945E-002	(	8.274E-005	G	1.4E+002	79.95
CS-137		1	1.815E-002	661.66	1.815E-002	(	1.422E-004	G	1.1E+004	85.21
HG-203		1	0.000E+000	279.17	0.000E+000	%	3.812E-005	G	4.7E+001	81.50

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

- = Peak activity lower than counting uncertainty range

= = Peak outside analysis energy range

(= This peak is used in the nuclide activity average

P = Peakbackround subtraction

* = Peak is too wide, but only one peak in library

@ = Peak is too wide at FW25M, but OK at FWHM

A = Derived Average Activity

E = Energy Duplication

+ = Peak activity higher than counting uncertainty range

! = Peak is part of a multiplet and this area went negative during deconvolution

$ = Peak identified, but first peak of this nuclide failed one or more qualification tests

& = Calculated peak centroid is not close enough to the library energy centroid for positive identification

Nuclide Codes:

T = Thermal Neutron Activation

F = Fast Neutron Activation

I = Fission Product

P = Photon Reaction

N = Naturally Occurring Isotope

C = Charged Particle Reaction

M = No MDA Calculation

Peak Codes:

G = Gamma Ray

X = X-Ray

P = Positron Decay

S = Single - Escape

D = Double - Escape

K = Key Line

A = Not in Average

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide		Time of Count Activity pCi/g	Time Corrected Activity pCi/g	Uncertainty Counts 2 Sigma %	Uncertainty Total 2 Sigma %	Minimum Detectable Activity
CD-109		5.278E+005	6.888E+005	1.84	9.46	2.265E+003
CE-139		1.945E+004	4.517E+004	1.95	8.89	8.274E+001
CO-57		9.889E+003	1.514E+004	2.84	8.06	8.000E+001
CO-60		2.900E+004	3.080E+004	1.98	4.28	1.124E+002
CS-137		1.815E+004	1.834E+004	3.35	5.93	1.422E+002
SN-113		2.832E+004	7.761E+004	3.30	8.55	1.460E+002
Y-88		4.435E+004	1.316E+005	1.66	6.12	6.993E+001
HG-203	<				7.10	3.812E+001
AM-241		4.374E+004	4.377E+004	2.24	9.14	2.521E+002

= All peaks for activity calculation had bad shape

Total Activity (50.34 to 2,040.05 keV) 720,728.75 pCi/g

Analyzed by: [redacted]

EnergySolutions

Reviewed by: _____

Supervisor

Laboratory: Luckey Mobile Lab

Eckert & Ziegler Source 80991-857
500 mL Soil in 500 mL Marinelli Beaker
Detector: D2 (39-TN21408A)

Source Activity as of 10/01/2009

Nuclide	Half-Life (days)	Energy (keV)	Yield (gammas/d)	Activity (gammas/s)	Activity (pCi)	Total Source Uncertainty (%)	3/09/2010 Count Quantified Decay 10/1/2009 Activity (pCi)	% Difference
Am-241	157861.1	59.53	0.359	1336	1.0058E+05	3.50	1.0006E+05	0.52
Cd-109	462.6	88	0.0361	1880	1.4075E+06	4.70	1.4302E+06	-1.61
Co-57	271.79	122.1	0.856	1026	3.2395E+04	4.20	3.2161E+04	0.72
Ce-139	137.64	165.9	0.8	1404	4.7432E+04	3.90	4.6428E+04	2.12
Hg-203	46.6	279.2	0.81	3244	1.0824E+05	3.90	1.1012E+05	-1.74
Sn-113	115.08	391.7	0.64	1983	8.3742E+04	3.90	8.1622E+04	2.53
Cs-137	10957.5	661.7	0.8521	1227	3.8918E+04	4.00	4.0530E+04	-4.14
Y-88	106.63	898	0.95	4705	1.3385E+05	3.90	1.4128E+05	-5.55
Co-60	1925.379	1173.2	0.9997	2341	6.3289E+04	4.00	6.2692E+04	0.94
Co-60	1925.379	1332.5	0.9998	2341	6.3283E+04	3.90	6.2692E+04	0.93
Y-88	106.63	1836.1	0.9935	4977	1.3539E+05	3.90	1.4128E+05	-4.35

1. Gamma ray yields obtained from "Radioactive Decay Data Tables" D.C. Kocher
2. Source % uncertainty is at the 99% confidence level

Performed by: [redacted] / 3-09-10
Name Date

D2 500 mL Soil
V&V
UPDATE 3/9/10

DB Analysis ID: 1,177

Sample Description: D2 500 mL Soil Marinelli Efficiency Efficiency Verification

Spectrum Filename: 00020583.An1

Acquisition Information

Start Time:	09-Mar-2010 11:00:16AM		
Live Time:	1800.00	Real Time:	1989.12
Dead Time:	9.51 %		
Detector ID:	2		

Detector System: MCB 06325561

Calibration

Description:	D2 500mL Sand Marinelli		
Filename:	C:\User\Luckey\D2 Calibrations\D2_500mL_Sand_80991_857.Clb		
Energy Created:	09-Mar-2010 10:32:32AM	Efficiency Created:	09-Mar-2010 10:57:39AM
Zero Offset:	0.210 keV	Gain:	0.251 keV/Channel

Library 1 File: Calib.Lib Library based peak stripping used.
Library 2 File: Null.Lib
Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	200 for an energy of 50.45 keV
Stop Channel:	8,144 for an energy of 2045.33 keV
Peak rejection level:	30.000 %
Activity Scaling Factor:	1000000.0000 / 1.0000 = 1000000.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Average of three points

Corrections

	Status	Comments
Decay Correct to Date:	YES	01-Oct-2009 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	NO	
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Difference: 0.0427

UNIDENTIFIED PEAK SUMMARY

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 2 Sigma%	FWHM keV	Suspected Nuclide	Code
196.45	49.56	29432.50	3727.50	2.071	17.53	1.577		s
281.36	70.86	24716.63	1620.37	0.900	27.89	0.929		D
289.70	72.95	23348.13	2505.87	1.392	17.70	0.931		D
791.83	199.13	8252.50	1069.50	0.594	32.36	1.025		
1014.17	254.94	5918.41	1904.59	1.058	12.31	1.084		D
1400.33	351.98	2893.00	311.00	0.173	59.32	0.820		s
3240.67	814.20	2717.00	798.00	0.443	29.10	1.527		
5274.86	1325.02	1369.33	677.67	0.376	26.37	2.006		s

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

Nuclide	Library Used	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 2 Sigma%	FWHM keV	Code
AM-241	1	236.59	59.65	38390.00	131728.00	73.182	0.83	0.942	
CD-109	1	349.86	88.10	34987.33	170983.67	94.991	0.68	0.952	
CO-57	1	485.08	122.07	20159.50	77658.50	43.144	1.08	0.966	
CO-57	1	542.35	136.46	13005.00	9476.00	5.264	5.23	1.053	
CE-139	1	659.21	165.81	13819.67	62900.34	34.945	1.13	1.020	
HG-203	1	1110.02	279.06	8584.00	21428.00	11.904	2.37	1.102	
SN-113	1	1558.22	391.64	7266.00	38859.00	21.588	1.46	1.213	
CS-137	1	2633.44	661.70	5575.00	42533.00	23.629	1.30	1.390	
Y-88	1	3574.45	898.03	5352.00	41377.00	22.987	1.36	1.584	
CO-60	1	4670.57	1173.28	2658.00	43636.00	24.242	1.14	1.715	
CO-60	1	5304.87	1332.55	1572.00	39853.00	22.141	1.13	1.792	
Y-88	1	7310.35	1836.06	416.50	24563.50	13.646	1.37	2.059	

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Nuclide Code	Library Used	Average Activity microCuries	Peak Energy keV	Peak Activity microCuries	Peak Analysis Code	Peak MDA Value microCuries	Peak Code	Peak Comments	
AM-241		1	9.999E-002	59.54	9.999E-002	(	6.951E-004	G	1.6E+005	36.30
CO-60		1	5.920E-002	1173.24	5.844E-002	(	3.254E-004	G	1.9E+003	99.90
			5.920E-002	1332.50	5.997E-002	(	2.821E-004	G	1.9E+003	99.98
Y-88		1	5.029E-002	1836.01	5.029E-002	(	2.002E-004	G	1.1E+002	99.35
			5.029E-002	898.02	4.578E-002	-	3.802E-004	G	1.1E+002	95.00
CS-137		1	4.013E-002	661.66	4.013E-002	(	3.308E-004	G	1.1E+004	85.21
SN-113		1	3.134E-002	391.69	3.134E-002	(	3.225E-004	G	1.2E+002	64.16
CO-57		1	2.144E-002	122.07	2.143E-002	(	1.833E-004	G	2.7E+002	85.60
			2.144E-002	136.43	2.157E-002	(	1.216E-003	G	2.7E+002	10.60
CE-139		1	2.085E-002	165.85	2.085E-002	(	1.825E-004	G	1.4E+002	79.95
CD-109		1	1.127E+000	88.03	1.127E+000	(	5.764E-003	G	4.6E+002	3.61
HG-203		1	1.037E-002	279.17	1.037E-002	(	2.102E-004	G	4.7E+001	81.50

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

- = Peak activity lower than counting uncertainty range

= = Peak outside analysis energy range

(= This peak is used in the nuclide activity average

P = Peakbackround subtraction

* = Peak is too wide, but only one peak in library

@ = Peak is too wide at FW25M, but OK at FWHM

A = Derived Average Activity

E = Energy Duplication

+ = Peak activity higher than counting uncertainty range

! = Peak is part of a multiplet and this area went negative during deconvolution

$ = Peak identified, but first peak of this nuclide failed one or more qualification tests

& = Calculated peak centroid is not close enough to the library energy centroid for positive identification

Nuclide Codes:

T = Thermal Neutron Activation

F = Fast Neutron Activation

I = Fission Product

P = Photon Reaction

N = Naturally Occurring Isotope

C = Charged Particle Reaction

M = No MDA Calculation

Peak Codes:

G = Gamma Ray

X = X-Ray

P = Positron Decay

S = Single - Escape

D = Double - Escape

K = Key Line

A = Not in Average

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide	Time of Count Activity pCi/g	Time Corrected Activity pCi/g	Uncertainty Counts 2 Sigma %	Uncertainty Total 2 Sigma %	Minimum Detectable Activity
CD-109	1.127E+006	1.430E+006	0.68	8.74	5.764E+003
CE-139	2.085E+004	4.643E+004	1.13	8.34	1.825E+002
CO-57	2.144E+004	3.216E+004	1.08	7.15	1.833E+002
CO-60	5.920E+004	6.269E+004	0.80	5.35	3.254E+002
CS-137	4.013E+004	4.053E+004	1.30	6.12	3.308E+002
SN-113	3.134E+004	8.162E+004	1.46	6.17	3.225E+002
Y-88	5.029E+004	1.413E+005	1.37	7.57	2.002E+002
HG-203	1.037E+004	1.101E+005	2.37	7.29	2.102E+002
AM-241	9.999E+004	1.001E+005	0.83	8.15	6.951E+002

= All peaks for activity calculation had bad shape

Total Activity (50.45 to 2,045.33 keV) 1,460,713.50 pCi/g

Analyzed by: [redacted]

EnergySolutions

Reviewed by: _____

Supervisor

Laboratory: Luckey Mobile Lab

```
     ORTEC g v - i (3135) Env32  G53W4.24  3/9/2010 11:33:32 AM    Page  1
Luckey Mobile Lab                Spectrum name: 00020583.An1

Sample description
     D2 500 mL Soil Marinelli Efficiency Efficiency Verification


Spectrum Filename: C:\User\Luckey\Luckey Spectra\00020583.An1

Acquisition information
       Start time:                 3/9/2010 11:00:16 AM
       Live time:               1800
       Real time:               1989
       Dead time:                  9.51 %
       Detector ID:                   2

Detector system
     MCB 06325561


Calibration
       Filename:                   D2_500mL_Sand_80991_857.Clb
     D2 500mL Sand Marinelli


       Energy Calibration
            Created:               3/9/2010 10:32:32 AM
            Zero offset:           0.210 keV
            Gain:                  0.251 keV/channel
            Quadratic:            -1.259E-08 keV/channel^2

       Efficiency Calibration
            Created:               3/9/2010 10:57:39 AM
            Knee Energy:         150.00 keV
            Above the Knee:        Quadratic        Uncertainty =   1.73 %
            Log(Eff):             -2.545371E-01 + (-2.834022E-01*Log(E) ) +
                                   ( -4.469274E-02*Log(E)^2 )
            Below the Knee:        Quadratic        Uncertainty =   0.90 %
            Log(Eff):             -1.340279E+01 + ( 4.569043E+00*Log(E) ) +
                                   ( -4.897360E-01*Log(E)^2 )

Library Files
       Main analysis library:      Calib.Lib
       Library Match Width:        0.500
       Peak stripping:             Library based

Analysis parameters
       Analysis engine:            Env32   G53W4.24
       Start channel:            200 (    50.45keV )
       Stop channel:            8144 (  2045.33keV )
       Peak rejection level:      30.000%
       Peak search sensitivity:    1
       Sample Size:                1.0000E+00
       Activity scaling factor:    1.0000E+06/(  1.0000E+00*  1.0000E+00) =
                                   1.0000E+06
       Detection limit method:     Reg. Guide 4.16 Method

□

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Luckey Mobile Lab                Spectrum name: 00020583.An1

       Random error:               1.0000000E+00
       Systematic error:           1.0000000E+00
       Fraction Limit:             0.000%
       Background width:           average of three points.

       Half lives decay limit:    12.000
       Activity range factor:      2.000
       Min. step backg. energy     0.000
       Multiplet shift channel     2.000
```

Corrections	Status	Comments
Decay correct to date:	YES	10/1/2009 12:00:00 PM
Decay during acquisition:	NO	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	NO	
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 12 cutoff 20.00000 %

Energy Calibration

Normalized diff: 0.0427

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. pCi/g	Nuc
49.56	3728.	8.76	1.58	4.832E-02				
59.65	131728.	0.41	0.94	5.455E-02	59.54	36.300	1.001E+05	AM241
70.89	1620.	13.94	0.93	5.925E-02				
72.99	2506.	8.85	0.93	5.992E-02				
85.11	1982.	11.14	0.94	6.267E-02				
88.09	168411.	0.27	0.94	6.311E-02	88.03	3.610	1.409E+06	CD109
122.07	77658.	0.54	0.97	6.358E-02	122.07	85.600	3.214E+04	CO57
136.45	9087.	1.86	0.99	6.223E-02	136.43	10.600	3.102E+04	CO57
165.81	62900.	0.57	1.02	5.668E-02	165.85	79.950	4.643E+04	CE139
199.13	1070.	16.18	1.03	4.942E-02				
254.98	1905.	6.15	1.08	4.088E-02				
279.06	20912.	0.85	1.10	3.809E-02	279.17	81.500	1.075E+05	HG203
351.98	311.	29.66	0.82	3.165E-02				
391.64	38859.	0.73	1.21	2.902E-02	391.69	64.160	8.162E+04	SN113
661.70	42533.	0.65	1.39	1.868E-02	661.66	85.210	4.053E+04	CS137
814.01	740.	9.99	1.49	1.558E-02				
898.03	41377.	0.68	1.58	1.429E-02	898.02	95.000	1.286E+05	Y88
1173.29	43241.	0.50	1.71	1.122E-02	1173.24	99.900	6.133E+04	CO60
1325.02	678.	13.18	2.01	1.003E-02				
1332.56	39413.	0.52	1.79	9.980E-03	1332.50	99.982	6.280E+04	CO60
1836.06	24564.	0.69	2.06	7.382E-03	1836.01	99.350	1.413E+05	Y88

********** U N I D E N T I F I E D P E A K S U M M A R Y **********

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM keV	Suspected Nuclide	
196.45	49.56	29432.	3728.	2.071	17.53	1.577	-	s
281.36	70.86	24717.	1620.	0.900	27.89	0.929	-	D
289.70	72.95	23348.	2506.	1.392	17.70	0.931	-	D
337.97	85.12	23373.	1982.	1.101	22.27	0.942	-	lD

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Luckey Mobile Lab Spectrum name: 00020583.An1

Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	Suspected	
791.83	199.13	8252.	1070.	0.594	32.36	1.025	-	
1014.17	254.94	5918.	1905.	1.058	12.31	1.084	-	D
1400.33	351.98	2893.	311.	0.173	59.32	0.820	-	s
3240.67	814.20	2717.	798.	0.443	29.10	1.527	-	
5274.86	1325.02	1369.	678.	0.376	26.37	2.006	-	s

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.

This section based on library: Calib.Lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM keV

AM-241	236.59	59.65	38390.	131728.	73.182	0.83	0.942
CD-109	349.86	88.10	34987.	170984.	94.991	0.68	0.952
CO-57	485.08	122.07	20160.	77658.	43.144	1.08	0.966
CO-57	542.35	136.46	13005.	9476.	5.264	5.23	1.053
CE-139	659.21	165.81	13820.	62900.	34.945	1.13	1.020
HG-203	1110.02	279.06	8584.	21428.	11.904	2.37	1.102
SN-113	1558.22	391.64	7266.	38859.	21.588	1.46	1.212
CS-137	2633.44	661.70	5575.	42533.	23.629	1.30	1.391
Y-88	3574.45	898.03	5352.	41377.	22.987	1.36	1.584
CO-60	4670.57	1173.28	2658.	43636.	24.242	1.14	1.715
CO-60	5304.87	1332.55	1572.	39853.	22.141	1.13	1.792
Y-88	7310.35	1836.06	416.	24564.	13.646	1.37	2.059

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity pCi/g	Peak Energy keV	Activity pCi/g	Code	MDA Value pCi/g		COMMENTS
CD-109		1.4302E+06						
			88.03	1.430E+06	(	7.314E+03	3.38E-01	G
CE-139		4.6428E+04						
			165.85	4.643E+04	(	4.064E+02	5.67E-01	G

Nuclide	Ave activity	Energy	Activity	Code	Peak MDA		Comments
CO-57	3.2161E+04						
		122.07	3.214E+04	(	2.749E+02	5.39E-01	G
		136.43	3.235E+04	(	1.823E+03	2.62E+00	G
CO-60	6.2692E+04						
		1173.24	6.189E+04	(	3.446E+02	5.72E-01	G
		1332.50	6.350E+04	(	2.987E+02	5.66E-01	G
CS-137	4.0530E+04						
		661.66	4.053E+04	(	3.341E+02	6.48E-01	G
SN-113	8.1622E+04						
		391.69	8.162E+04	(	8.400E+02	7.28E-01	G
Y-88	1.4128E+05						
		1836.01	1.413E+05	(	5.626E+02	6.86E-01	G
		898.02	1.286E+05	-	1.068E+03	6.79E-01	G
HG-203	1.1012E+05						
		279.17	1.101E+05	(	2.233E+03	1.18E+00	G
AM-241	1.0006E+05						
		59.54	1.001E+05	(	6.956E+02	4.14E-01	G

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
\+ - Peak activity higher than counting uncertainty range.
\- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the

library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:	Peak Codes:
T - Thermal Neutron Activation	G - Gamma Ray
F - Fast Neutron Activation	X - X-Ray
I - Fission Product	P - Positron Decay
N - Naturally Occurring Isotope	S - Single-Escape

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Luckey Mobile Lab Spectrum name: 00020583.An1

P - Photon Reaction	D - Double-Escape
C - Charged Particle Reaction	K - Key Line
M - No MDA Calculation	A - Not in Average
R - Coincidence Corrected	C - Coincidence Peak
H - Halflife limit exceeded	

- -

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity pCi/g	Time Corrected Activity pCi/g	Uncertainty Counting pCi/g	2 Sigma Total pCi/g	MDA pCi/g
CD-109	1.1271E+06	1.4302E+06	9.6722E+03	1.2498E+05	
CE-139	2.0846E+04	4.6428E+04	5.2690E+02	3.8734E+03	
CO-57	2.1442E+04	3.2161E+04	3.4658E+02	2.3009E+03	
CO-60	5.9205E+04	6.2692E+04	5.0431E+02	3.3512E+03	
CS-137	4.0125E+04	4.0530E+04	5.2534E+02	2.4816E+03	
SN-113	3.1335E+04	8.1622E+04	1.1884E+03	5.0382E+03	
Y-88	5.0287E+04	1.4128E+05	1.9380E+03	1.0692E+04	
HG-203	1.0368E+04	1.1012E+05	2.6073E+03	8.0305E+03	
AM-241	9.9987E+04	1.0006E+05	8.2941E+02	8.1545E+03	

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (261.7 to 2045.3 keV) 1.461E+06 pCi/g
Total Decayed Activity (261.7 to 2045.3 keV) 2.0451366E+06 pCi/g

Analyzed by: [redacted]
EnergySolutions

Reviewed by: _____
Supervisor

Laboratory: Luckey Mobile Lab

Eckert & Ziegler Source 80991-857
500 mL Soil in 500 mL Marinelli Beaker
Detector: D2 (39-TN21408A)

Source Activity as of 10/01/2009

Nuclide	Half-Life (days)	Energy (keV)	Yield (gammas/d)	Activity (gammas/s)	Activity (pCi)	Total Source Uncertainty (%)	11/15/2009 Count Quantified Decay 10/1/2009 Activity (pCi)	% Difference
Am-241	157861.1	59.53	0.359	1336	1.0058E+05	3.50	9.9283E+04	1.29
Cd-109	462.6	88	0.0361	1880	1.4075E+06	4.70	1.4105E+06	-0.21
Co-57	271.79	122.1	0.856	1026	3.2395E+04	4.20	3.1554E+04	2.59
Ce-139	137.64	165.9	0.8	1404	4.7432E+04	3.90	4.7103E+04	0.69
Hg-203	46.6	279.2	0.81	3244	1.0824E+05	3.90	1.1179E+05	-3.28
Sn-113	115.08	391.7	0.64	1983	8.3742E+04	3.90	8.4164E+04	-0.50
Cs-137	10957.5	661.7	0.8521	1227	3.8918E+04	4.00	4.1786E+04	-7.37
Y-88	106.63	898	0.95	4705	1.3385E+05	3.90	1.4000E+05	-4.59
Co-60	1925.379	1173.2	0.9997	2341	6.3289E+04	4.00	6.3553E+04	-0.42
Co-60	1925.379	1332.5	0.9998	2341	6.3283E+04	3.90	6.3553E+04	-0.43
Y-88	106.63	1836.1	0.9935	4977	1.3539E+05	3.90	1.4000E+05	-3.40

1. Gamma ray yields obtained from "Radioactive Decay Data Tables" D.C. Kocher
2. Source % uncertainty is at the 99% confidence level

Performed by: [redacted] / 11/15/09
Name Date

D2 500mL SOIL
VEV

DB Analysis ID: 10

Sample Description: 500 mL Soil Efficiency Verification

Spectrum Filename: NT2-0081.An1

Acquisition Information

Start Time:	15-Nov-2009 5:16:44PM		
Live Time:	600.00	Real Time:	676.96
Dead Time:	11.37 %		
Detector ID:	2		

Detector System: MCB 06325561

Calibration

Description:	D2 500 mL Sand Marinelli 80991_857		
Filename:	C:\User\Luckey\D2 Calibrations\D2_500mL_Sand_80991_857.Clb		
Energy Created:	15-Nov-2009 4:48:36PM	Efficiency Created:	15-Nov-2009 4:49:47PM
Zero Offset:	0.114 keV	Gain:	0.251 keV/Channel

Library 1 File: Calib.Lib
Library 2 File: Null.Lib
Library 3 File: Null.Lib

Analysis Parameters

Start Channel:	200 for an energy of 50.26 keV
Stop Channel:	8,144 for an energy of 2040.87 keV
Peak rejection level:	100.000 %
Activity Scaling Factor:	1000000.0000 / 1.0000 = 1000000.0000
Detection Limit Method:	MDA - EG&G ORTEC method
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Best method (based on spectrum)

Corrections

	Status	Comments
Decay Correct to Date:	YES	01-Oct-2009 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	NO	
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Difference: 0.0503

UNIDENTIFIED PEAK SUMMARY

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 2 Sigma%	FWHM keV	Suspected Nuclide	Code
197.52	49.64	12095.00	1607.00	2.678	26.09	1.588		s
281.89	70.81	11795.97	2536.03	4.227	12.75	0.928		D
290.36	72.94	12499.61	4539.39	7.566	7.57	0.930		D
328.03	82.36	12161.33	1416.67	2.361	28.92	1.046		s
560.80	140.72	4995.83	189.17	0.315	126.63	0.406		s
793.67	199.10	4225.67	601.33	1.002	40.31	1.015		s
885.90	222.22	3067.17	168.83	0.281	111.50	0.603		s
941.42	236.14	2133.33	118.67	0.198	120.32	0.460		s
1016.18	254.88	3445.33	1285.67	2.143	18.35	1.147		s
1082.49	271.50	1846.67	156.33	0.261	91.19	0.780		s
1166.73	292.62	1618.83	113.17	0.189	121.16	0.815		s
1955.70	490.39	511.00	44.00	0.073	148.41	0.457		s
1984.37	497.58	895.00	76.00	0.127	130.59	0.482		s
3062.92	767.90	361.67	51.33	0.086	112.58	0.478		s
3223.95	808.26	322.00	69.00	0.115	80.26	0.658		s
3247.82	814.24	981.00	527.00	0.878	38.58	1.471		
3712.61	930.72	407.47	46.53	0.078	126.15	0.592		s
3968.95	994.96	341.07	54.93	0.092	98.84	0.434		s
4074.25	1021.34	254.00	42.00	0.070	111.68	0.547		s
4117.52	1032.19	435.00	47.00	0.078	147.84	0.513		s
4358.96	1092.69	562.33	81.67	0.136	98.82	0.547		s
5285.49	1324.84	683.20	560.80	0.935	20.04	2.133		s
5502.01	1379.08	321.10	74.90	0.125	90.89	0.461		s

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

Nuclide	Library Used	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 2 Sigma%	FWHM keV	Code
AM-241	1	237.08	59.55	17976.00	43990.00	73.317	1.61	0.898	
CD-109	1	350.62	88.02	14943.33	66511.66	110.853	1.09	0.953	
CO-57	1	486.10	121.99	9826.17	33606.84	56.011	1.79	0.952	
CO-57	1	543.50	136.38	8739.00	4191.00	6.985	9.44	1.016	
CE-139	1	660.56	165.73	8191.83	37044.17	61.740	1.49	1.038	
HG-203	1	1112.39	279.00	4291.03	38339.97	63.900	1.22	1.117	
SN-113	1	1561.53	391.59	2957.50	25784.50	42.974	1.47	1.183	
CS-137	1	2638.92	661.64	2852.00	14341.00	23.902	2.49	1.345	
Y-88	1	3581.99	897.99	1764.00	28780.00	47.967	1.34	1.564	
CO-60	1	4680.45	1173.24	848.00	15124.00	25.207	1.83	1.708	
CO-60	1	5316.09	1332.50	771.40	13733.60	22.889	2.03	1.734	
Y-88	1	7325.84	1835.96	148.50	16814.50	28.024	1.59	2.019	

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Nuclide Code	Library Used	Average Activity microCuries	Peak Energy keV	Peak Activity microCuries	Peak Analysis Code	Peak MDA Value microCuries	Peak Code	Peak Comments
AM-241		1	9.926E-002	59.54	9.926E-002	(	4.290E-004G	1.6E+005	36.30
SN-113		1	6.410E-002	391.69	6.410E-002	(	1.924E-004G	1.2E+002	64.16
CO-60		1	6.253E-002	1173.24	6.197E-002	(	1.708E-004G	1.9E+003	99.90
			6.253E-002	1332.50	6.308E-002	(	1.827E-004G	1.9E+003	99.98
HG-203		1	5.708E-002	279.17	5.708E-002	(	1.387E-004G	4.7E+001	81.50
CS-137		1	4.167E-002	661.66	4.167E-002	(	2.209E-004G	1.1E+004	85.21
CE-139		1	3.751E-002	165.85	3.751E-002	(	1.301E-004G	1.4E+002	79.95
CO-57		1	2.812E-002	122.07	2.802E-002	(	1.173E-004G	2.7E+002	85.60
			2.812E-002	136.43	2.894E-002	(	9.164E-004G	2.7E+002	10.60
CD-109		1	1.313E+000	88.03	1.313E+000	(	3.422E-003G	4.4E+002	3.61
Y-88		1	1.044E-001	1836.01	1.044E-001	(	1.101E-004G	1.1E+002	99.35
			1.044E-001	898.02	9.778E-002	-	8.415E-004G	1.1E+002	95.00

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

- = Peak activity lower than counting uncertainty range

= = Peak outside analysis energy range

(= This peak is used in the nuclide activity average

P = Peakbackround subtraction

* = Peak is too wide, but only one peak in library

@ = Peak is too wide at FW25M, but OK at FWHM

A = Derived Average Activity

E = Energy Duplication

+ = Peak activity higher than counting uncertainty range

! = Peak is part of a multiplet and this area went negative during deconvolution

$ = Peak identified, but first peak of this nuclide failed one or more qualification tests

& = Calculated peak centroid is not close enough to the library energy centroid for positive identification

Nuclide Codes:

T = Thermal Neutron Activation

F = Fast Neutron Activation

I = Fission Product

P = Photon Reaction

N = Naturally Occurring Isotope

C = Charged Particle Reaction

M = No MDA Calculation

Peak Codes:

G = Gamma Ray

X = X-Ray

P = Positron Decay

S = Single - Escape

D = Double - Escape

K = Key Line

A = Not in Average

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide	Time of Count Activity pCi/g	Time Corrected Activity pCi/g	Uncertainty Counts 2 Sigma %	Uncertainty Total 2 Sigma %	Minimum Detectable Activity
CD-109	1.313E+006	1.411E+006	1.09	9.69	3.422E+003
CE-139	3.751E+004	4.710E+004	1.49	8.88	1.301E+002
CO-57	2.812E+004	3.155E+004	1.79	8.12	1.173E+002
CO-60	6.253E+004	6.355E+004	1.37	4.41	1.708E+002
CS-137	4.167E+004	4.179E+004	2.49	5.59	2.209E+002
SN-113	6.410E+004	8.416E+004	1.47	7.93	1.924E+002
Y-88	1.044E+005	1.400E+005	1.59	6.88	1.101E+002
HG-203	5.708E+004	1.118E+005	1.22	7.00	1.387E+002
AM-241	9.926E+004	9.928E+004	1.61	9.02	4.290E+002

= All peaks for activity calculation had bad shape

Total Activity (50.26 to 2,040.87 keV) 1,807,323.13 pCi/g

Analyzed by: [redacted]

EnergySolutions

Reviewed by: _____

Supervisor

Laboratory: Luckey Mobile Lab

Eckert & Ziegler Source 80991-857
500 mL Soil in 500 mL Marinelli Beaker
Detector: D2 (39-TN21408A)

Source Activity as of 10/01/2009

Nuclide	Half-Life (days)	Energy (keV)	Yield (gammas/d)	Activity (gammas/s)	Activity (pCi)	Total Source Uncertainty (%)	12/14/2009 Count Quantified Decay 10/1/2009 Activity (pCi)	% Difference
Am-241	157861.1	59.53	0.359	1336	1.0058E+05	3.50	9.8441E+04	2.13
Cd-109	462.6	88	0.0361	1880	1.4075E+06	4.70	1.4257E+06	-1.29
Co-57	271.79	122.1	0.856	1026	3.2395E+04	4.20	3.2638E+04	-0.75
Ce-139	137.64	165.9	0.8	1404	4.7432E+04	3.90	4.6418E+04	2.14
Hg-203	46.6	279.2	0.81	3244	1.0824E+05	3.90	1.1048E+05	-2.07
Sn-113	115.08	391.7	0.64	1983	8.3742E+04	3.90	8.2278E+04	1.75
Cs-137	10957.5	661.7	0.8521	1227	3.8918E+04	4.00	4.0451E+04	-3.94
Y-88	106.63	898	0.95	4705	1.3385E+05	3.90	1.4061E+05	-5.05
Co-60	1925.379	1173.2	0.9997	2341	6.3289E+04	4.00	6.2170E+04	1.77
Co-60	1925.379	1332.5	0.9998	2341	6.3283E+04	3.90	6.2170E+04	1.76
Y-88	106.63	1836.1	0.9935	4977	1.3539E+05	3.90	1.4061E+05	-3.85

1. Gamma ray yields obtained from "Radioactive Decay Data Tables" D.C. Kocher
2. Source % uncertainty is at the 99% confidence level

Performed by: [redacted] / 12/14/09
Name Date

D2 500mL soil
VEV
UPDATE

DB Analysis ID: 133

mple Description: D2 500 mL Soil Efficiency Verification

Spectrum Filename: 00020136.An1

Acquisition Information

Start Time:	14-Dec-2009 12:46:53PM		
Live Time:	3600.00	Real Time:	3925.20
Dead Time:	8.28 %		
Detector ID:	2		

Detector System: MCB 06325561

Calibration

Description:	D2 500 mL Sand Marinelli 80991_857		
Filename:	C:\User\Luckey\D2 Calibrations\D2_500mL_Sand_80991_857.Clb		
Energy Created:	14-Dec-2009 9:40:24AM	Efficiency Created:	14-Dec-2009 9:53:57AM
Zero Offset:	0.142 keV	Gain:	0.251 keV/Channel

Library 1 File: Luckey.Lib
Library 2 File: Null.Lib
Library 3 File: Null.Lib

alysis Parameters

Start Channel:	200 for an energy of 50.33 keV
Stop Channel:	8,144 for an energy of 2043.08 keV
Peak rejection level:	100.000 %
Activity Scaling Factor:	1000000.0000 / 1.0000 = 1000000.0000
Detection Limit Method:	Nureg method 4.16
Sample Size:	1.00E+000
Additional random error:	0.0000
Additional systematic error:	0.0000
Fraction Limit:	0.0000%
Background Width:	Best method (based on spectrum)

Corrections

	Status	Comments
Decay Correct to Date:	YES	01-Oct-2009 12:00:00PM
Decay During Acquisition:	NO	
Peaked Background Correction:	NO	
Absorption:	NO	
Geometry Correction:	NO	
Random Summing:	NO	

Energy Calibration Normalized Difference: 0.0495

UNIDENTIFIED PEAK SUMMARY

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 2 Sigma%	FWHM keV	Suspected Nuclide	Code
197.87	49.80	68750.00	8184.00	2.273	12.19	1.452		s
262.31	65.99	49090.46	5214.54	1.448	12.33	0.923		D
281.65	70.85	56442.93	16515.07	4.588	4.36	0.927		D
290.13	72.97	56314.89	21410.11	5.947	3.42	0.929		D
328.21	82.51	53458.41	8304.59	2.307	8.17	0.937		D
338.57	85.11	59812.91	9790.08	2.719	7.35	0.939		D
350.43	88.09	60190.97	374394.03	103.998	0.38	0.941	CD-109	D
485.81	122.06	54754.00	189545.00	52.651	0.77	0.972	CO-57	
543.10	136.44	44368.16	23582.84	6.551	3.87	0.976	CO-57	
660.09	165.79	40257.00	187116.00	51.977	0.62	1.002	CE-139	
792.68	199.07	26253.67	3491.33	0.970	18.49	1.206		s
810.45	203.53	23155.00	999.00	0.278	57.34	0.846		s
1015.65	255.02	20805.00	6059.00	1.683	9.86	1.065		s
1111.42	279.05	25366.67	147600.33	41.000	0.78	1.126	HG-203	
1559.98	391.61	17411.33	127084.66	35.301	0.80	1.211	SN-113	
1798.82	451.54	7384.00	283.00	0.079	108.72	0.507		s
2231.66	560.18	6620.66	203.34	0.056	114.05	1.309		D
2238.19	561.81	7037.46	165.54	0.046	144.18	1.310		D
2483.37	623.30	4575.00	197.00	0.055	113.04	0.472		s
2881.81	723.26	5899.00	595.00	0.165	59.72	0.904		s
3049.95	766.70	3168.33	263.67	0.073	80.82	1.515		
3145.02	789.36	5209.77	203.23	0.056	101.43	1.468		D
3206.01	804.59	2312.00	148.00	0.041	100.61	0.929		s
3243.82	814.08	6978.97	2233.03	0.620	15.32	1.544		s
3578.32	898.00	12368.40	140597.59	39.055	0.65	1.553	Y-88	
3893.86	977.15	4209.00	190.00	0.053	108.95	0.656		s
3978.43	998.37	2915.00	135.00	0.038	135.73	0.371		s
4498.55	1128.84	3394.90	149.10	0.041	129.46	0.283		s
4749.19	1191.71	1544.77	100.23	0.028	122.50	0.376		s
5280.89	1325.07	4205.00	2228.00	0.619	14.68	2.282		s
5616.30	1409.20	2311.50	223.50	0.062	95.53	0.912		s
5753.36	1443.57	1862.40	254.60	0.071	62.39	0.368		s
6372.17	1598.77	3603.60	317.40	0.088	72.89	0.443		s
7223.07	1812.15	458.67	68.33	0.019	111.23	0.801		s
7318.10	1835.98	1153.83	83330.16	23.147	0.73	2.039	Y-88	

s = Peak fails shape tests.

D = Peak area deconvoluted.

IDENTIFIED PEAK SUMMARY

Nuclide	Library Used	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncertainty 2 Sigma%	FWHM keV	Code
AM-241	1	237.02	59.63	99638.00	257487.00	71.524	0.65	0.903	
U-238	1	251.62	63.29	21445.00	0.00	0.000	219.63	0.363	s D
Th-234	1	251.62	63.29	35915.36	562.64	0.156	95.64	0.920	D
Th-230	1	269.08	67.67	53828.64	8380.36	2.328	8.13	0.924	D
Pb-214	1	297.53	74.81	64439.89	3361.10	0.934	21.64	0.930	D
Pb-212	1	297.55	74.81	27670.00	0.00	0.000	457.21	0.725	D
Pb-212	1	306.68	77.11	52834.59	2150.41	0.597	30.54	0.932	D
Pb-214	1	306.68	77.11	41086.50	0.00	0.000	149.21	0.000	s D
Pb-214	1	347.30	87.30	387746.50	8998.51	2.500	19.69	0.941	D
Th-234	1	367.42	92.35	22577.33	0.00	0.000	243.74	0.619	s D
U-238	1	367.42	92.35	22623.12	142.88	0.040	298.22	0.945	D
Ac-228	1	379.37	95.35	25269.85	34.15	0.009	1317.06	0.947	D
U-235	1	570.84	143.40	19800.00	226.00	0.063	197.34	0.279	s
Ra-226	1	742.14	186.38	22562.50	687.50	0.191	82.10	1.112	
Ac-228	1	832.20	208.99	20927.67	421.33	0.117	125.75	0.312	s
Pb-212	1	950.31	238.63	17924.22	745.69	0.207	51.31	1.064	D
Pb-214	1	963.68	241.98	16998.11	155.92	0.043	237.05	1.067	D
Ac-228	1	1075.35	270.00	15862.50	362.50	0.101	130.42	0.325	s
Pb-214	1	1177.38	295.61	15247.50	757.50	0.210	66.94	1.010	s
Ac-228	1	1305.10	327.65	7848.50	179.50	0.050	166.82	0.673	s
Ac-228	1	1347.57	338.31	12047.33	259.67	0.072	165.98	1.047	
Pb-214	1	1401.37	351.81	10741.33	701.67	0.195	57.07	0.935	
Ac-228	1	1842.97	462.62	11020.00	322.00	0.089	133.56	0.324	s
Bi-214	1	2428.35	609.49	8267.40	562.60	0.156	65.19	1.483	s
CS-137	1	2636.29	661.66	15911.27	83230.73	23.120	0.96	1.376	
Bi-214	1	3061.57	768.36	6584.00	0.00	0.000	2000.00	1.454	
Ac-228	1	3166.57	794.70	5846.56	135.44	0.038	160.60	1.472	D
Ac-228	1	3629.51	910.84	4736.00	370.00	0.103	63.93	0.432	s
Bi-214	1	3722.47	934.16	7083.30	259.70	0.072	114.79	0.269	s
Ac-228	1	3843.82	964.60	3684.52	69.48	0.019	248.27	1.582	D
Ac-228	1	3861.80	969.11	5936.61	126.39	0.035	173.34	1.585	D
Bi-214	1	4456.73	1118.35	4290.83	283.17	0.079	95.18	0.563	s
Co-60	1	4675.55	1173.24	7263.83	88004.16	24.446	0.87	1.711	
Bi-214	1	4933.22	1237.87	1987.80	147.20	0.041	110.44	0.721	s
Co-60	1	5310.53	1332.51	4338.00	79179.00	21.994	0.84	1.773	
Bi-214	1	5492.98	1378.27	1803.00	113.00	0.031	151.48	0.241	s
K-40	1	5818.73	1459.97	1042.50	60.50	0.017	170.71	0.537	s
Ac-228	1	6330.17	1588.23	2901.90	125.10	0.035	169.56	0.616	s
Bi-214	1	7034.41	1764.84	666.67	466.33	0.130	34.49	0.647	s

s = Peak fails shape tests.

D = Peak area deconvoluted.

A = Derived Aveage Activity.

SUMMARY OF LIBRARY PEAK USAGE

Nuclide Name	Nuclide Code	Library Used	Average Activity microCuries	Peak Energy keV	Peak Activity microCuries	Peak Analysis Code	Peak MDA Value microCuries	Peak Code	Peak Comments	
AM-241		1	9.951E-002	59.54	9.951E-002	(	5.695E-004G		1.6E+005	35.90
Ac-228	N	1	9.623E-004	911.20	7.816E-004	? (	6.831E-004G	K	2.6E-001	25.80
			9.623E-004	969.11	4.383E-004	-	1.255E-003G		2.6E-001	16.60
			9.623E-004	327.64	1.292E-003	? (	2.991E-003G		2.6E-001	3.20
			9.623E-004	338.32	5.383E-004	(	1.066E-003G		2.6E-001	11.40
			9.623E-004	964.60	0.000E+000	%	3.148E-003G		2.6E-001	5.20
			9.623E-004	794.70	1.423E-003	(	3.771E-003G		2.6E-001	4.60
			9.623E-004	463.00	2.233E-003	+	3.410E-003G		2.6E-001	4.40
			9.623E-004	209.28	1.557E-003	? (	2.500E-003G		2.6E-001	4.40
			9.623E-004	270.23	1.992E-003	* (	3.241E-003G		2.6E-001	3.60
			9.623E-004	1588.00	3.231E-003	+	6.553E-003G		2.6E-001	3.50
			9.623E-004	95.35	0.000E+000	%	2.566E-003X		2.6E-001	3.50
			7.537E-004	1120.29	1.230E-003	& (	1.337E-003G		1.4E-002	15.10
			7.537E-004	1238.11	1.780E-003	? (	2.545E-003G		1.4E-002	5.94
			7.537E-004	768.36	0.000E+000	%	3.545E-003G		1.4E-002	5.04
			7.537E-004	1377.67	2.178E-003	+	3.866E-003G		1.4E-002	4.11
			7.537E-004	934.06	4.507E-003	+	6.854E-003G		1.4E-002	3.21
Bi-214	N	1	7.537E-004	609.31	4.668E-004	(	3.538E-004G	K	1.4E-002	46.30
			7.537E-004	1764.49	2.945E-003	*	7.771E-004G		1.4E-002	15.80
			6.051E-002	1173.23	6.019E-002	(	2.735E-004G		1.9E+003	99.97
Co-60	F	1	6.051E-002	1332.50	6.083E-002	(	2.379E-004G	K	1.9E+003	99.99
Pb-214	N	1	5.883E-004	351.92	4.601E-004	(	3.184E-004G	K	1.9E-002	37.20
			5.883E-004	295.21	8.367E-004	* (	6.386E-004G		1.9E-002	19.20
			5.883E-004	77.11	0.000E+000	? E	1.132E-003X		1.9E-002	10.50
			5.883E-004	241.98	0.000E+000	%	1.480E-003G		1.9E-002	7.49
			5.883E-004	74.81	6.847E-003	+ E	2.415E-003X		1.9E-002	6.21
			5.883E-004	87.30	2.352E-002	+	7.593E-003X		1.9E-002	4.67
K-40	N	1	4.742E-004	1460.81	4.742E-004	? (	1.200E-003G		4.7E+011	10.67
CS-137		1	4.026E-002	661.66	4.026E-002	(	2.857E-004G		1.1E+004	85.21
Pb-212	N	1	3.004E-004	238.63	3.004E-004	(	2.524E-004G	K	4.4E-001	44.60
			3.004E-004	77.11	1.498E-003	+ E	7.482E-004X		4.4E-001	18.00
			3.004E-004	74.81	0.000E+000	% E	9.197E-004X		4.4E-001	10.70
Th-230	N	1	2.912E-001	67.67	2.912E-001	(	3.766E-002G		2.8E+007	.38
Ra-226	N	1	2.851E-003	186.24	2.851E-003	(	2.914E-003G	K	5.8E+005	3.59
U-235	N	1	2.599E-004	143.76	2.599E-004	? (	7.573E-004G	K	1.4E+003	10.96
Th-234	N	1	1.995E-003	92.35	0.000E+000	% E	1.574E-003G		2.4E+001	5.41
			1.995E-003	63.29	1.995E-003	(E	3.141E-003G	K	2.4E+001	3.80
U-238	N	1	0.000E+000	92.35	0.000E+000	% E	1.576E-003G		1.6E+003	5.41
			0.000E+000	63.29	0.000E+000	% E	2.429E-003G	K	1.6E+003	3.80

Analysis Codes:

% = Peak fails sensitivity test

? = Peak is too narrow

- = Peak activity lower than counting uncertainty range

= = Peak outside analysis energy range

(= This peak is used in the nuclide activity average

P = Peakbackround subtraction

* = Peak is too wide, but only one peak in library
@ = Peak is too wide at FW25M, but OK at FWHM
A = Derived Average Activity
E = Energy Duplication
\+ = Peak activity higher than counting uncertainty range
! = Peak is part of a multiplet and this area went negative during deconvolution
$ = Peak identified, but first peak of this nuclide failed one or more qualification tests
& = Calculated peak centroid is not close enough to the library energy centroid for positive identification

Nuclide Codes:

T = Thermal Neutron Activation
F = Fast Neutron Activation
I = Fission Product
P = Photon Reaction
N = Naturally Occurring Isotope
C = Charged Particle Reaction
M = No MDA Calculation

Peak Codes:

G = Gamma Ray
X = X-Ray
P = Positron Decay
S = Single - Escape
D = Double - Escape
K = Key Line
A = Not in Average

SUMMARY OF NUCLIDES IN SAMPLE

Nuclide		Time of Count Activity pCi/g	Time Corrected Activity pCi/g	Uncertainty Counts 2 Sigma %	Uncertainty Total 2 Sigma %	Minimum Detectable Activity
K-40	#	4.742E+002	4.742E+002	170.71	170.78	1.200E+003
Ac-228		9.623E+002		57.27	57.44	6.831E+002
Pb-212		3.004E+002		51.31	51.56	2.524E+002
CS-137		4.026E+004	4.045E+004	0.96	5.12	2.857E+002
Th-234		1.995E+003	1.677E+004	95.64	95.86	3.141E+003
Pb-214		5.883E+002		43.98	44.24	3.184E+002
Th-230		2.912E+005	2.912E+005	8.13	11.41	3.766E+004
U-235	#	2.599E+002	2.697E+002	197.34	197.45	7.573E+002
U-238	<				6.41	2.429E+003
Bi-214	#	7.537E+002		53.24	53.47	3.538E+002
AM-241		9.951E+004	9.954E+004	0.65	8.88	5.695E+002
Ra-226		2.851E+003	2.851E+003	82.10	82.51	2.914E+003
Co-60		6.051E+004	6.215E+004	0.60	6.74	2.379E+002

= All peaks for activity calculation had bad shape

Total Activity (50.33 to 2,043.08 keV) 496,762.06 pCi/g

Analyzed by: [redacted]

EnergySolutions

Reviewed by: _____

Supervisor

Laboratory: Luckey Mobile Lab

```
     ORTEC g v - i (  63) Wan32  G53W2.12  12/14/2009 1:52:27 PM   Page  1
Luckey Mobile Lab                Spectrum name: 00020136.An1

Sample description
     D2 500 mL Soil Efficiency Verification


Spectrum Filename: C:\User\Luckey\Luckey Spectra\00020136.An1

Acquisition information
       Start time:                 12/14/2009 12:46:53 PM
       Live time:               3600
       Real time:               3925
       Dead time:                  8.28 %
       Detector ID:                    2

Detector system
     MCB 06325561


Calibration
       Filename:                   D2_500mL_Sand_80991_857.Clb
     D2 500 mL Sand Marinelli 80991_857


       Energy Calibration
            Created:               12/14/2009 9:40:24 AM
            Zero offset:           0.142 keV
            Gain:                  0.251 keV/channel
            Quadratic:            -1.407E-08 keV/channel^2

       Efficiency Calibration
            Created:               12/14/2009 9:53:57 AM
            Knee Energy:         150.00 keV
            Above the Knee:        Quadratic        Uncertainty =   1.18 %
            Log(Eff):             -2.701978E-01 + (-2.916479E-01*Log(E) ) +
                                   ( -4.364983E-02*Log(E)^2 )
            Below the Knee:        Quadratic        Uncertainty =   0.74 %
            Log(Eff):             -1.253430E+01 + ( 4.199811E+00*Log(E) ) +
                                   ( -4.518083E-01*Log(E)^2 )

Library Files
       Main analysis library:      Luckey.Lib
       Library Match Width:        0.500

Analysis parameters
       Analysis engine:            Wan32   G53W2.12
       Start channel:            200 (    50.33keV )
       Stop channel:            8144 (  2043.07keV )
       Peak rejection level:     100.000%
       Peak search sensitivity:    3
       Sample Size:                1.0000E+00
       Activity scaling factor:    1.0000E+06/(  1.0000E+00*  1.0000E+00) =
                                   1.0000E+06
       Detection limit method:     Reg. Guide 4.16 Method

       Random error:               1.0000000E+00
```

```
     ORTEC g v - i (  63) Wan32  G53W2.12  12/14/2009 1:52:27 PM   Page  2
Luckey Mobile Lab                Spectrum name: 00020136.An1
```

Systematic error: 1.0000000E+00
Fraction Limit: 0.000%
Background width: best method (based on spectrum).

Half lives decay limit: 12.000
Activity range factor: 2.000
Min. step backg. energy 0.000
Multiplet shift channel 2.000

Corrections	Status	Comments
Decay correct to date:	YES	10/1/2009 12:00:00 PM
Decay during acquisition:	NO	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	NO	
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

Energy Calibration
Normalized diff: 0.0495

********** U N I D E N T I F I E D P E A K S U M M A R Y **********

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM keV	Suspected Nuclide	
197.87	49.80	68750.	8184.	2.273	12.19	1.452	-	s
262.31	65.99	49090.	5215.	1.448	12.33	0.923	-	D
281.65	70.85	56443.	16515.	4.588	4.36	0.927	-	D
290.13	72.97	56315.	21410.	5.947	3.42	0.929	-	D
328.21	82.51	53458.	8305.	2.307	8.17	0.937	-	D
338.57	85.11	59813.	9790.	2.719	7.35	0.939	-	D
350.43	88.09	60191.	374394.	103.998	0.38	0.941	CD-109	D
485.81	122.06	54754.	189545.	52.651	0.77	0.972	CO-57	
543.10	136.44	44368.	23583.	6.551	3.87	0.976	CO-57	
660.09	165.79	40257.	187116.	51.977	0.62	1.002	CE-139	
792.68	199.07	26254.	3491.	0.970	18.49	1.206	-	s
810.45	203.53	23155.	999.	0.278	57.34	0.846	-	s
1015.65	255.02	20805.	6059.	1.683	9.86	1.065	-	s
1111.42	279.05	25367.	147600.	41.000	0.78	1.126	HG-203	
1559.98	391.61	17411.	127085.	35.301	0.80	1.211	SN-113	
1798.82	451.54	7384.	283.	0.079	108.72	0.507	-	s
2231.66	560.18	6621.	203.	0.056	114.05	1.309	-	D
2238.19	561.81	7037.	166.	0.046	144.17	1.310	-	D
2483.37	623.30	4575.	197.	0.055	113.04	0.472	-	s
2881.81	723.26	5899.	595.	0.165	59.72	0.904	-	s
3049.95	766.70	3168.	264.	0.073	80.82	1.515	-	s
3145.02	789.36	5210.	203.	0.056	101.43	1.468	-	D

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Luckey Mobile Lab Spectrum name: 00020136.An1

Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	Suspected	
3206.01	804.59	2312.	148.	0.041	100.61	0.929	-	s
3243.82	814.08	6979.	2233.	0.620	15.32	1.544	-	s
3578.32	898.00	12368.	140598.	39.055	0.65	1.553	Y-88	
3893.86	977.15	4209.	190.	0.053	108.95	0.656	-	s
3978.43	998.37	2915.	135.	0.038	135.73	0.371	-	s
4498.55	1128.84	3395.	149.	0.041	129.46	0.282	-	s

4749.19	1191.71	1545.	100.	0.028	122.50	0.376	-	s
5280.89	1325.07	4205.	2228.	0.619	14.68	2.281	-	s
5616.30	1409.20	2312.	224.	0.062	95.53	0.912	-	s
5753.36	1443.57	1862.	255.	0.071	62.39	0.368	-	s
6372.17	1598.77	3604.	317.	0.088	72.89	0.443	-	s
7223.07	1812.15	459.	68.	0.019	111.23	0.801	-	s
7318.10	1835.98	1154.	83330.	23.147	0.73	2.039	Y-88	

s - Peak fails shape tests.
D - Peak area deconvoluted.

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 2 Sigma %	FWHM keV
AM-241	237.02	59.63	99638.	257487.	71.524	0.65	0.903
Th-234	251.62	63.29	35915.	563.	0.156	95.64	0.920D
U-238	251.62	63.29	21445.	0.	0.000	219.63	0.363D
Th-230	269.08	67.67	53829.	8380.	2.328	8.13	0.924D
Pb-214	297.53	74.81	64440.	3361.	0.934	21.64	0.930D
Pb-212	297.55	74.81	27670.	0.	0.000	457.21	0.725D
Pb-212	306.68	77.11	52835.	2150.	0.597	30.54	0.932D
Pb-214	306.68	77.11	41086.	0.	0.000	149.21	0.000D
Pb-214	347.30	87.30	387746.	8999.	2.500	19.69	0.940D
U-238	367.42	92.35	22623.	143.	0.040	298.22	0.945D
Th-234	367.42	92.35	22577.	0.	0.000	243.74	0.619D
Ac-228	379.37	95.35	25270.	34.	0.009	1317.06	0.947D
U-235	570.84	143.40	19800.	226.	0.063	197.34	0.279s
Ra-226	742.14	186.38	22562.	688.	0.191	82.10	1.112
Ac-228	832.20	208.99	20928.	421.	0.117	125.75	0.312s
Pb-212	950.31	238.62	17924.	746.	0.207	51.31	1.064D
Pb-214	963.68	241.98	16998.	156.	0.043	237.05	1.066D
Ac-228	1075.35	270.00	15862.	362.	0.101	130.42	0.325s
Pb-214	1177.38	295.61	15248.	758.	0.210	66.94	1.010s
Ac-228	1305.10	327.65	7848.	180.	0.050	166.82	0.673s
Ac-228	1347.57	338.31	12047.	260.	0.072	165.98	1.047
Pb-214	1401.37	351.81	10741.	702.	0.195	57.07	0.935
Ac-228	1842.97	462.62	11020.	322.	0.089	133.56	0.324s
Bi-214	2428.35	609.49	8267.	563.	0.156	65.19	1.483s
CS-137	2636.29	661.66	15911.	83231.	23.120	0.96	1.376
Bi-214	3061.57	768.36	6584.	0.	0.000	2000.00	1.454
Ac-228	3166.57	794.70	5847.	135.	0.038	160.60	1.472D

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Ac-228	3629.51	910.84	4736.	370.	0.103	63.93	0.432s
Bi-214	3722.47	934.16	7083.	260.	0.072	114.79	0.269s
Ac-228	3843.82	964.60	3685.	69.	0.019	248.27	1.582D
Ac-228	3861.80	969.11	5937.	126.	0.035	173.34	1.585D
Bi-214	4456.73	1118.35	4291.	283.	0.079	95.18	0.563s
Co-60	4675.55	1173.24	7264.	88004.	24.446	0.87	1.711
Bi-214	4933.22	1237.87	1988.	147.	0.041	110.44	0.721s
Co-60	5310.53	1332.51	4338.	79179.	21.994	0.84	1.773
Bi-214	5492.98	1378.27	1803.	113.	0.031	151.48	0.241s
K-40	5818.73	1459.97	1042.	60.	0.017	170.71	0.537s
Ac-228	6330.17	1588.23	2902.	125.	0.035	169.56	0.616s
Bi-214	7034.41	1764.84	667.	466.	0.130	34.49	0.647s

s - Peak fails shape tests.

D - Peak area deconvoluted.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity microCi	Peak Energy keV	Peak Activity microCi	Code	MDA Value microCi	Comments
Bi-214	N	7.5366E-04	609.31	4.668E-04	(	3.538E-04	G K
			1764.49	2.945E-03	+	7.771E-04	G
			1120.29	1.230E-03	&(	1.337E-03	G
			1238.11	1.780E-03	?(	2.545E-03	G
			768.36	0.000E+00	%	3.545E-03	G
			2204.20	0.000E+00	=	0.000E+00	G
			1377.67	2.178E-03	+	3.866E-03	G
			934.06	4.507E-03	+	6.854E-03	G
K-40	N	4.7416E-04	1460.81	4.742E-04	?(	1.200E-03	G
Ac-228	N	9.6228E-04	911.20	7.816E-04	?(	6.831E-04	G K
			969.11	4.383E-04	-	1.255E-03	G
			338.32	5.383E-04	(	1.066E-03	G
			964.60	0.000E+00	%	3.148E-03	G
			794.70	1.423E-03	(	3.771E-03	G
			463.00	2.233E-03	+	3.410E-03	G
			209.28	1.557E-03	?(	2.500E-03	G
			270.23	1.992E-03	*(	3.241E-03	G
			1588.00	3.231E-03	+	6.553E-03	G
			95.35	0.000E+00	%	2.566E-03	X
			327.64	1.292E-03	?(	2.991E-03	G
Pb-212	N	3.0043E-04	238.62	3.004E-04	(	2.524E-04	G K
			77.11	1.498E-03	+	7.482E-04	Energy duplication
			74.81	0.000E+00	%	9.197E-04	Energy duplication

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Luckey Mobile Lab Spectrum name: 00020136.An1

Nuclide	Ave	activity	Energy	Activity	Code	Peak MDA	Comments
CS-137		4.0263E-02	661.66	4.026E-02	(	2.857E-04	G
Th-234	N	1.9949E-03	92.35	0.000E+00	%	1.574E-03	G
			63.29	1.995E-03	(	3.141E-03	Energy duplication
Pb-214	N	5.8829E-04	351.92	4.601E-04	(	3.184E-04	G K
			295.21	8.367E-04	*(	6.386E-04	G
			77.11	0.000E+00	?	1.132E-03	Energy duplication
			241.98	0.000E+00	%	1.480E-03	G
			74.81	6.847E-03	+	2.415E-03	Energy duplication
			87.30	2.352E-02	+	7.593E-03	X
AM-241		9.9505E-02	59.54	9.951E-02	(	5.695E-04	G
Ra-226	N	2.8511E-03	186.24	2.851E-03	(	2.914E-03	G K
Co-60	F	6.0511E-02	1332.50	6.083E-02	(	2.379E-04	G K
			1173.23	6.019E-02	(	2.735E-04	G
Th-230	N	2.9116E-01	67.67	2.912E-01	(	3.766E-02	G
U-235	N	2.5992E-04	143.76	2.599E-04	?(	7.573E-04	G K

```
U-238    N   0.0000E+00     92.35 0.000E+00 %   1.576E-03         G
                           63.29 0.000E+00 %   2.429E-03Energy duplication
   ( - This peak used in the nuclide activity average.

   * - Peak is too wide, but only one peak in library.
   ! - Peak is part of a multiplet and this area went
       negative during deconvolution.
   ? - Peak is too narrow.
   @ - Peak is too wide at FW25M, but ok at FWHM.
   % - Peak fails sensitivity test.
   $ - Peak identified, but first peak of this nuclide
       failed one or more qualification tests.
   + - Peak activity higher than counting uncertainty range.
   - - Peak activity lower than counting uncertainty range.
   = - Peak outside analysis energy range.
   & - Calculated peak centroid is not close enough to the
       library energy centroid for positive identification.
   P - Peakbackground subtraction

   Nuclide Codes:                        Peak Codes:
   T - Thermal Neutron Activation        G - Gamma Ray
   F - Fast Neutron Activation           X - X-Ray
   I - Fission Product                   P - Positron Decay
   N - Naturally Occurring Isotope       S - Single-Escape
   P - Photon Reaction                   D - Double-Escape
```



```
   C - Charged Particle Reaction         K - Key Line
   M - No MDA Calculation                A - Not in Average
   R - Coincidence Corrected             C - Coincidence Peak
   H - Halflife limit exceeded
```

- -

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide		Time of Count Activity pCi/g	Time Corrected Activity pCi/g	Uncertainty Counting pCi/g	2 Sigma Total pCi/g
Bi-214	#	7.5366E+02	>12 Halflives	4.0123E+02	4.0295E+02
K-40	#A	4.7416E+02	4.7416E+02	8.0945E+02	8.0979E+02
Ac-228		9.6228E+02	>12 Halflives	5.5112E+02	5.5271E+02
Pb-212		3.0043E+02	>12 Halflives	1.5414E+02	1.5489E+02
CS-137		4.0263E+04	4.0451E+04	3.8978E+02	2.0698E+03
Th-234	A	1.9949E+03	1.6774E+04	1.6043E+04	1.6079E+04
Pb-214		5.8829E+02	>12 Halflives	2.5875E+02	2.6028E+02
Pb-210		No in-range peaks			
AM-241		9.9505E+04	9.9538E+04	6.4956E+02	8.8420E+03
Ra-226	A	2.8511E+03	2.8514E+03	2.3411E+03	2.3526E+03
Co-60		6.0511E+04	6.2146E+04	3.7382E+02	4.1889E+03
Th-230		2.9116E+05	2.9116E+05	2.3670E+04	3.3214E+04
U-235	<	7.5725E+02	7.8577E+02		
U-238	B<	2.4291E+03	2.5069E+03		

- All peaks for activity calculation had bad shape.
* - Activity omitted from total
& - Activity omitted from total and all peaks had bad shape.
< - MDA value printed.

A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (50.3 to 2043.1 keV) 4.968E+05 pCi/g
Total Decayed Activity (50.3 to 2043.1 keV) 5.1339825E+05 pCi/g

The library has ene[redacted]separable.

Analyzed by: _____
EnergySolutions

Reviewed by: _____
Supervisor

Laboratory: Luckey Mobile Lab

Appendix G

Data Summary Tables

(Provided in Electronic Files)

Data Summary Tables

Boring and Sampling Locations by Task and GPS Location

Summary Figures

Location Identifier	Easting (feet) *	Northing (feet) *	Task	Location Type
BKG1	1696595.749000	655079.392000	7	Background Boring
BKG2	1696596.030000	655154.526000	7	Background Boring
BKG3	1696596.245000	655230.993000	7	Background Boring
BKG4	1696595.330000	655303.300000	7	Background Boring
BKG5	1696593.505000	655384.940000	7	Background Boring
98	1696907.206000	654584.378000	7a	Boring
99	1696951.067000	653847.123000	7a	Boring
100	1697046.896000	653962.019000	7a	Boring
101	1697204.377000	654033.992000	7a	Boring
102	1697303.466000	654649.493000	7a	Boring
103	1697138.355000	654920.124000	7a	Boring
104	1697595.259000	654070.077000	7a	Boring
105	1697657.075000	654470.166000	7a	Boring
106	1697815.061000	654231.717000	7a	Boring
107	1697912.311000	654327.305000	7a	Boring
108	1697877.149000	655884.282000	7a	Boring
109	1697901.364000	655716.435000	7a	Boring
110	1697945.166000	655569.822000	7a	Boring
111	1698076.229000	654204.259000	7a	Boring
112	1698153.606000	654607.801000	7a	Boring
113	1698181.985000	654494.451000	7a	Boring
114	1698219.830000	654288.999000	7a	Boring
115	1698259.302000	654198.451000	7a	Boring
116	1698243.615000	654362.094000	7a	Boring
117	1698350.988000	654058.124000	7a	Boring

* North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System

Location Identifier	Easting (feet) *	Northing (feet) *	Task	Location Type
1	1697387.445000	654634.492000	7c	Boring
2	1697446.238000	654580.116000	7c	Boring
3	1697459.189000	654701.588000	7c	Boring
4	1697707.460000	654721.283000	7c	Boring
5	1697736.173000	654498.366000	7c	Boring
6	1697704.562000	654278.578000	7c	Boring
7	1697679.414000	654360.234000	7c	Boring
8	1697629.410000	654315.122000	7c	Boring
9	1698043.948000	654304.044000	7c	Boring
10	1697937.105000	654347.415000	7c	Boring
11	1697976.373000	654255.357000	7c	Boring
15	1697601.855000	654388.897000	7c	Boring
16	1697760.209000	654387.440000	7c	Boring
17	1696935.336000	654674.301000	7c	Boring
18	1698300.365000	654282.749000	7c	Boring
19	1697073.504000	654424.810000	7c	Boring
20	1697588.498000	653979.230000	7c	Boring
21	1697718.747000	653970.819000	7c	Boring
22	1697917.272000	653931.445000	7c	Boring
23	1698050.145000	654028.606000	7c	Boring
24	1698135.067000	653914.332000	7c	Boring
25	1698368.195000	653883.844000	7c	Boring
26	1698317.100000	654372.900000	7c	Boring
27	1698260.525000	654465.876000	7c	Boring
28	1698193.491000	654804.283000	7c	Boring
29	1698186.335000	654858.428000	7c	Boring
30	1698225.598000	654648.272000	7c	Boring
31	1698239.702000	654576.005000	7c	Boring
32	1698210.677000	654703.055000	7c	Boring
33	1697236.256000	654593.867000	7c	Boring
34	1697069.562000	654737.239000	7c	Boring
35	1697266.405000	654536.627000	7c	Boring
36	1697024.456000	654031.010000	7c	Boring
37	1697030.454000	653846.241000	7c	Boring
38	1697128.609000	653845.458000	7c	Boring
39	1697000.820000	654482.685000	7c	Boring
40	1697691.288000	654628.350000	7c	Boring
41	1697509.694000	654484.565000	7c	Boring
42	1697695.194000	654568.413000	7c	Boring
43	1696918.464000	653952.618000	7c	Boring
44	1697257.987000	654023.541000	7c	Boring
45	1697364.561000	653985.951000	7c	Boring
46	1697338.255000	653856.834000	7c	Boring
47	1697552.283000	653847.162000	7c	Boring
48	1697518.706000	653942.155000	7c	Boring
49	1697802.903000	653839.659000	7c	Boring

* North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System

Location Identifier	Easting (feet) *	Northing (feet) *	Task	Location Type
50	1698092.507000	653833.513000	7c	Boring
51	1696995.363000	654859.289000	7c	Boring
52	1697132.328000	654853.011000	7c	Boring
53	1697240.791000	654852.728000	7c	Boring
54	1697323.828000	654751.376000	7c	Boring
55	1697428.176000	654802.187000	7c	Boring
56	1697622.175000	654802.704000	7c	Boring
57	1697708.500000	654865.500000	7c	Boring
58	1697794.528000	654865.771000	7c	Boring
59	1697887.975000	654861.885000	7c	Boring
60	1697962.098000	654857.794000	7c	Boring
61	1698031.963000	654861.438000	7c	Boring
62	1698111.550000	654858.622000	7c	Boring
63	1697256.717000	654433.396000	7c	Boring
64	1697398.711000	654425.049000	7c	Boring
65	1697823.900000	653908.400000	7c	Boring
66	1698223.544000	654027.005000	7c	Boring
67	1698257.305000	654087.132000	7c	Boring
68	1698310.958000	653956.310000	7c	Boring
69	1698272.485000	654403.323000	7c	Boring
70	1698202.803000	654732.956000	7c	Boring
71	1697913.249000	654750.949000	7c	Boring
72	1698106.691000	654735.348000	7c	Boring
73	1697964.008000	654656.923000	7c	Boring
74	1698147.183000	654650.213000	7c	Boring
75	1697916.252000	654548.974000	7c	Boring
76	1698003.437000	654515.485000	7c	Boring
77	1698092.240000	654443.439000	7c	Boring
78	1698174.558000	654373.381000	7c	Boring
79	1697778.894000	654059.601000	7c	Boring
200	1697861.744000	654836.726000	7c	Boring
201	1697974.642000	654898.995000	7c	Boring
202	1697830.179000	655006.309000	7c	Boring
203	1697876.484000	655028.674000	7c	Boring
204	1697880.578000	655098.594000	7c	Boring
205	1697884.256000	655210.430000	7c	Boring
206	1697884.257000	655337.003000	7c	Boring
207	1697894.444000	655544.939000	7c	Boring
208	1697824.099000	655952.408000	7c	Boring
209	1697854.262000	655834.740000	7c	Boring
210	1697806.857000	655822.904000	7c	Boring
211	1697876.630000	655682.067000	7c	Boring
212	1697826.334000	654869.530000	7c	Boring
213	1697830.524000	655085.019000	7c	Boring
214	1697843.364000	655359.826000	7c	Boring
215	1697841.963000	655640.985000	7c	Boring
216	1697788.440000	655910.101000	7c	Boring
217	1698108.000000	654916.200000	7c	Boring
218	1697837.693000	655226.255000	7c	Boring

* North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System

Location Identifier	Easting (feet) *	Northing (feet) *	Task	Location Type
80	1697568.860000	654680.085000	7g	Boring
81	1697643.485000	654618.942000	7g	Boring
82	1697628.495000	654546.620000	7g	Boring
83	1697626.586000	654546.953000	7g	Boring
84	1697246.668000	654311.767000	7g	Boring
85	1697481.882000	654390.280000	7g	Boring
86	1697548.114000	654144.357000	7g	Boring
87	1697889.548000	654105.246000	7g	Boring
88	1697024.382000	654256.961000	7g	Boring
89	1697403.684000	654110.780000	7g	Boring
90	1697444.406000	654111.084000	7g	Boring
91	1696988.850000	654110.391000	7g	Boring
92	1697057.920000	654104.909000	7g	Boring
93	1697172.843000	654104.659000	7g	Boring
94	1697257.932000	654075.955000	7g	Boring
95	1697345.023000	654075.797000	7g	Boring
96	1697603.561000	654663.015000	7g	Boring
97	1697602.856000	654616.413000	7g	Boring
118	1697923.889000	655379.126000	7g	Boring
119	1697922.184000	655228.395000	7g	Boring
120	1697921.468000	655077.987000	7g	Boring
121	1697917.848000	654968.021000	7g	Boring
122	1697895.117000	654023.075000	7g	Boring
123	1698210.352000	654435.568000	7g	Boring
124	1697823.060000	654813.644000	7g	Boring
125	1697841.694000	654451.153000	7g	Boring
126	1697387.618000	654767.496000	7g	Boring
127	1697232.278000	654686.057000	7g	Boring
128	1697121.787000	654589.887000	7g	Boring
129	1697368.740000	654533.310000	7g	Boring
130	1697524.882000	654568.640000	7g	Boring
131	1696879.949000	654118.207000	7g	Boring
132	1696923.766000	654027.451000	7g	Boring
133	1697201.336000	653914.111000	7g	Boring
134	1697447.585000	653848.401000	7g	Boring
135	1697669.777000	653845.834000	7g	Boring
136	1697647.214000	654051.680000	7g	Boring
137	1697901.767000	654260.440000	7g	Boring
138	1698117.628000	654091.709000	7g	Boring
139	1698321.791000	653825.331000	7g	Boring
91A	1697007.720000	654101.005000	7g	Boring

* North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System

Location Identifier	Easting (feet) *	Northing (feet) *	Task	Location Type
MW22R	1697729.795000	654800.646000	Mod3-Replacement Well	Monitoring Well
MW24R	1697310.951000	654025.704000	Mod3-Replacement Well	Monitoring Well
MW50	1697031.647000	654304.991000	Mod3-New Well	Monitoring Well
MW51	1697561.476000	654974.135000	Mod6-New Well	Monitoring Well
MW52	1697572.217000	654974.030000	Mod6-New Well	Monitoring Well
MW53	1697889.011000	654971.754000	Mod3-New Well	Monitoring Well
MW54	1698132.118000	654819.529000	Mod3-New Well	Monitoring Well
MW55	1698135.232000	654801.750000	Mod3-New Well	Monitoring Well
6a001	1697501.249880	654845.325795	6a	Surface Sample
6a002	1697699.258550	654849.394466	6a	Surface Sample
6a003	1697851.976830	654855.669644	6a	Surface Sample
6a004	1697858.347600	654833.371960	6a	Surface Sample
6a005	1697879.371130	654795.147360	6a	Surface Sample
6a006	1697989.585390	654810.437200	6a	Surface Sample
6a007	1698004.238160	654792.599054	6a	Surface Sample
6a008	1698126.556880	654763.293527	6a	Surface Sample
6a009	1698155.707500	654728.997333	6a	Surface Sample
6a010	1698187.732090	654696.142035	6a	Surface Sample
6a011	1698196.586350	654648.503548	6a	Surface Sample
6a012	1698153.314100	654596.379439	6a	Surface Sample
6a013	1698157.773640	654554.969456	6a	Surface Sample
6a014	1698163.873490	654516.723080	6a	Surface Sample
6a015	1698178.527140	654474.673481	6a	Surface Sample
6a016	1698189.995210	654418.607348	6a	Surface Sample
6a017	1698204.011750	654320.491616	6a	Surface Sample
6a018	1698069.580450	654295.644126	6a	Surface Sample
6a019	1698033.902000	654286.724514	6a	Surface Sample
6a020	1697873.348990	654457.369051	6a	Surface Sample
6a021	1697803.726260	654576.718001	6a	Surface Sample
6a022	1697857.421110	654647.331684	6a	Surface Sample
6a023	1697712.158860	654496.972511	6a	Surface Sample
6a024	1697562.436800	654496.972511	6a	Surface Sample
6a025	1697529.306810	654502.069432	6a	Surface Sample
6a026	1697497.451050	654454.285796	6a	Surface Sample
6a027	1697533.747720	654582.060919	6a	Surface Sample
6a028	1697631.433620	654571.666639	6a	Surface Sample
6a029	1697486.668080	654559.187187	6a	Surface Sample
6a030	1697506.400780	654645.615048	6a	Surface Sample
TR01	1696613.374180	654003.079617	7g, centroid of trench	Trench Sample
TR02	1696716.517230	654075.567399	7g, centroid of trench	Trench Sample
TR03	1697172.841230	653992.345404	7g, centroid of trench	Trench Sample
TR04	1697442.425560	653995.435451	7g, centroid of trench	Trench Sample
TR05	1697674.605310	654021.586047	7g, centroid of trench	Trench Sample
TR06	1697021.575340	654329.966159	7g, centroid of trench	Trench Sample
TR06A	1696995.833620	654334.035570	7g, centroid of trench	Trench Sample
TR07	1697162.204950	654322.756853	7g, centroid of trench	Trench Sample
TR08	1697472.825830	654329.036556	7g, centroid of trench	Trench Sample
TR09	1697479.359460	654200.413120	7g, centroid of trench	Trench Sample

* North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System

Location Identifier	Easting (feet) *	Northing (feet) *	Task	Location Type
MH01	1696719.488000	654062.979000	7g, manhole	Manhole Sample
MH02	1696710.058000	654222.230000	7g, manhole	Manhole Sample
MH03	1696810.835000	654265.156000	7g, manhole	Manhole Sample
MH04	1696867.973000	654320.802000	7g, manhole	Manhole Sample
MH05	1697013.426000	654362.264000	7g, manhole	Manhole Sample
MH06	1697012.067000	654323.888000	7g, manhole	Manhole Sample
MH07	1697156.159000	654316.323000	7g, manhole	Manhole Sample
MH08	1697284.294000	654317.186000	7g, manhole	Manhole Sample
MH09	1697424.718000	654317.806000	7g, manhole	Manhole Sample
MH11	1697490.152000	654602.797000	7g, manhole	Manhole Sample
MH20	1696703.151000	654178.529000	7g, manhole	Manhole Sample
MH21	1696921.229000	654326.993000	7g, manhole	Manhole Sample
MH22	1696957.714000	654321.952000	7g, manhole	Manhole Sample
MH23	1696989.717000	654325.295000	7g, manhole	Manhole Sample
MH24	1697080.802000	654330.209000	7g, manhole	Manhole Sample
MH25	1697255.798000	654331.199000	7g, manhole	Manhole Sample
MH26	1697474.232000	654320.146000	7g, manhole	Manhole Sample
MH27	1697399.780000	654432.526000	7g, manhole	Manhole Sample
MH28	1697490.455000	654614.970000	7g, manhole	Manhole Sample
MH29	1697490.898000	654619.866000	7g, manhole	Manhole Sample
MH30	1697490.431000	654625.657000	7g, manhole	Manhole Sample
MH31	1697490.189000	654634.086000	7g, manhole	Manhole Sample
MH32	1697512.453000	654688.968000	7g, manhole	Manhole Sample
MH33	1697518.652000	654688.770000	7g, manhole	Manhole Sample
MH34	1697526.144000	654689.218000	7g, manhole	Manhole Sample
MH35	1697532.276000	654688.875000	7g, manhole	Manhole Sample
MH36	1697549.152000	654688.476000	7g, manhole	Manhole Sample
MH37	1697564.696000	654680.225000	7g, manhole	Manhole Sample
MH38	1697530.074000	654638.167000	7g, manhole	Manhole Sample
MH39	1697543.388000	654637.811000	7g, manhole	Manhole Sample
7G03	1696668.202000	653949.173000	7g, Utility	Utility Outfall Sample
7G04	1696684.996000	653941.584000	7g, Utility	Utility Outfall Sample
7G05	1696677.004000	654268.677000	7g, Utility	Utility Outfall Sample
7G09	1696748.721000	654337.725000	7g, Utility	Utility Outfall Sample
7G11	1696770.945000	654248.407000	7g, Utility	Utility Outfall Sample
7G16	1696804.992000	653941.938000	7g, Utility	Utility Outfall Sample
7G23	1696859.240000	654339.337000	7g, Utility	Utility Outfall Sample
7G43	1697241.811000	654340.326000	7g, Utility	Utility Outfall Sample
7G46	1697354.101000	654319.985000	7g, Utility	Utility Outfall Sample
7G50	1697485.106000	654444.351000	7g, Utility	Utility Outfall Sample

* North American Datum 1983 (NAD83) Ohio North State Plane Coordinate System

Appendix H

Well Decommissioning Forms

(Provided in Electronic Files)

Well Sealing Logs

DNR 7810.09

WATER WELL SEALING REPORT
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Water
2045 Morse Rd., Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0187741

LOCATION

County WOOD Township TROY Section/Lot Number (Circle One or Both)

Owner/Builder (Circle One or Both) ARMY CORP OF ENGINEERS

Address of Well Location 21200 (Number) LUCKEY ROAD (Street Name)

City LUCKEY Zip Code 43433

Property Location Description: ____ miles SOUTH (n, e, s, w) of US RT 20 (nearest intersection)

on the EAST (n, e, s, w) side of LUCKEY ROAD (road name)

Location of Well in either: State Plane N ☐ S ☐ X ____ +/- ____ ft. or m Y ____ +/- ____ ft. or m

OR Latitude/Longitude (Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.) Latitude 654798.4389 Longitude 1697743.1427

Elevation of Well 647.82 +/- ____ ft. or m Datum Plain: ☐ NAD27 ☐ NAD83

Source of Coordinates: ☒ GPS ☐ Survey ☐ Other ____

ORIGINAL WELL ODNR Well Log Number MW-22 Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS

Date of measurements 4-6-10

Depth of Well 27.5 FT. Static Water Level 11.2 FT.

Size of Casing 2 INCH Length of casing 25 FT.

Well Condition POOR

SEALING PROCEDURE

Method of Placement PRESSURE GROUT THRU TREMIE

			Sealing Material	Volume
Placement: From 27.5 FT.	To SURFACE		QUICK GROUT	100 LBS
From	To			
From	To			

Was Casing Removed? Yes or No (circle one)

Condition of Casing POOR

Perforations: From ____ To ____

From ____ To ____

Date Sealing Performed 4-6-10

Reason(s) for Sealing NO LONGER NEEDED FOR ENVIRONMENTAL MONITORING PURPOSES

CONTRACTOR

Name FRONTZ DRILLING, INC. ODH Registration # 120

Address 2031 MILLERSBURG RD.

City/State/Zip WOOSTER, OHIO 44691

Signature [redacted]

I hereby certify the information given is accurate and correct to the best of my knowledge.

Completion of this form is required by section 1521.05 (B) (9), Ohio Revised Code - file within 30 days after completion of sealing.

MAIL ORIGINAL COPY TO - ODNR, DIVISION OF WATER, 2045 MORSE ROAD, COLS., OHIO 43229-6693

Blue - Customer's copy Pink - Driller's copy Green - Local Health Dept. copy

DNR 7810.09

WATER WELL SEALING REPORT
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Water
2045 Morse Rd., Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0187742

LOCATION

County WOOD Township TROY Circle One or Both Section/Lot Number

Owner/Builder (Circle One or Both) ARMY CORP OF ENGINEERS

Address of Well Location 21200 LUCKEY ROAD (Number / Street Name)

City LUCKEY Zip Code 43433

Property Location Description: ____ miles SOUTH (n, e, s, w) of US RT 20 (nearest intersection)

on the EAST (n, e, s, w) side of LUCKEY ROAD (road name)

Location of Well in either: State Plane N ☐ S ☐ X ____ +/- ____ ft. or m Y ____ +/- ____ ft. or m

OR Latitude/Longitude (Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.) Latitude 654031.3995 Longitude 1697302.9030

Elevation of Well 650.91 +/- ____ ft. or m Datum Plain: ☐ NAD27 ☐ NAD83

Source of Coordinates: ☒ GPS ☐ Survey ☐ Other

ORIGINAL WELL ~~ODNR Well Log Number~~ MW-24 Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS Date of measurements 2-22-10

Depth of Well 23 FT. Static Water Level 6 FT.

Size of Casing 2 INCH Length of casing 21 FT.

Well Condition POOR

SEALING PROCEDURE

Method of Placement PRESSURE GROUT THRU TREMIE

Placement:	From	To	Sealing Material	Volume
	23 F.T	SURFACE	QUICK GROUT	100 LBS
	From	To		
	From	To		

Was Casing Removed? Yes or No (circle one)

Condition of Casing POOR

Perforations: From ____ To ____

From ____ To ____

Date Sealing Performed 2-22-10

Reason(s) for Sealing NO LONGER NEEDED FOR ENVIRONMENTAL MONITORING PURPOSES

CONTRACTOR

Name FRONTZ DRILLING, INC. ODH Registration # 120

Address 2031 MILLERSBURG RD.

City/State/Zip WOOSTER, OHIO 44691

Signature [redacted]

I hereby certify the information given is accurate and correct to the best of my knowledge.

Completion of this form is required by section 1521.05 (B) (9), Ohio Revised Code - file within 30 days after completion of sealing.

MAIL ORIGINAL COPY TO - ODNR, DIVISION OF WATER, 2045 MORSE ROAD, COLS., OHIO 43229-6693

Blue - Customer's copy Pink - Driller's copy Green - Local Health Dept. copy

DNR 7810.09

WATER WELL SEALING REPORT
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Water
2045 Morse Rd., Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0187739

LOCATION

County WOOD Township TROY Section/Lot Number (Circle One or Both)

Owner/Builder (Circle One or Both) ARMY CORP OF ENGINEERS

Address of Well Location 21200 LUCKEY ROAD (Number / Street Name)

City LUCKEY Zip Code 43433

Property Location Description: miles SOUTH (n, e, s, w) of US RT 20 (nearest intersection)

on the EAST (n, e, s, w) side of LUCKEY ROAD (road name)

Location of Well in either: State Plane N ☐ S ☐ X ____ +/- ____ ft. or m Y ____ +/- ____ ft. or m

OR Latitude/Longitude (Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.) Latitude 655130.6620 Longitude 1696546.9202

Elevation of Well 646.85 +/- ____ ft. or m Datum Plain: ☐ NAD27 ☐ NAD83

Source of Coordinates: ☒ GPS ☐ Survey ☐ Other

ORIGINAL WELL ODNR Well Log Number MW-29 Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS Date of measurements 3-25-10

Depth of Well 36 FT. Static Water Level 1.0 FT.

Size of Casing 2 INCH Length of casing 28.5 FT.

Well Condition PLUGGED

SEALING PROCEDURE

Method of Placement PRESSURE GROUT THRU TREMIE

Placement:	From	To	Sealing Material	Volume
	36 FT.	SURFACE	QUICK GROUT	150 LBS

Was Casing Removed? Yes or No (circle one) top 5 ft

Condition of Casing GOOD

Perforations: From ____ To ____

From ____ To ____

Date Sealing Performed 3-25-10

Reason(s) for Sealing NO LONGER NEEDED FOR ENVIRONMENTAL MONITORING PURPOSES

CONTRACTOR

Name FRONTZ DRILLING, INC. ODH Registration # 120

Address 2031 MILLERSBURG RD.

City/State/Zip WOOSTER, OHIO 44691

Signature [redacted]

I hereby certify the information given is accurate and correct to the best of my knowledge.

Completion of this form is required by section 1521.05 (B) (9), Ohio Revised Code - file within 30 days after completion of sealing.

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DNR 7810.09

0187738

WATER WELL SEALING REPORT
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Water
2045 Morse Rd., Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

LOCATION

County WOOD Township TROY Section/Lot Number (Circle One or Both)

Owner/Builder (Circle One or Both) ARMY CORP OF ENGINEERS

Address of Well Location 21200 (Number) LUCKEY ROAD (Street Name)

City LUCKEY Zip Code 43433

Property Location Description: ____ miles SOUTH (n, e, s, w) of US RT 20 (nearest intersection)

on the EAST (n, e, s, w) side of LUCKEY ROAD (road name)

Location of Well in either: State Plane N ☐ S ☐ X ____ +/- ____ ft. or m Y ____ +/- ____ ft. or m

OR Latitude/Longitude (Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.) Latitude 655139.7640 Longitude 1696547.0502

Elevation of Well 646.73 +/- ____ ft. or m Datum Plain: ☐ NAD27 ☐ NAD83

Source of Coordinates: ☒ GPS ☐ Survey ☐ Other ____

ORIGINAL WELL ODNR Well Log Number MW-30 Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS Date of measurements 3-23-10

Depth of Well 57 FT. Static Water Level 6.3 FT.

Size of Casing 2 INCH Length of casing 53 FT.

Well Condition GOOD

SEALING PROCEDURE

Method of Placement PRESSURE GROUT THRU TREMIE

Placement:	From	To	Sealing Material	Volume
	57 FT.	SURFACE	QUICK GROUT	200 LBS

Was Casing Removed? Yes or No (circle one) top 5ft

Condition of Casing GOOD

Perforations: From ____ To ____
From ____ To ____

Date Sealing Performed 3-23-10

Reason(s) for Sealing NO LONGER NEEDED FOR ENVIRONMENTAL MONITORING PURPOSES

CONTRACTOR

Name FRONTZ DRILLING, INC. ODH Registration # 120

Address 2031 MILLERSBURG RD.

City/State/Zip WOOSTER, OHIO 44691

Signature [redacted]

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DNR 7810.09

WATER WELL SEALING REPORT
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Water
2045 Morse Rd., Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0187743

LOCATION

County WOOD Township TROY Section/Lot Number (Circle One or Both)

Owner/Builder (Circle One or Both) ARMY CORP OF ENGINEERS

Address of Well Location 21200 LUCKEY ROAD (Number / Street Name)

City LUCKEY Zip Code 43433

Property Location Description: ____ miles SOUTH (n, e, s, w) of US RT 20 (nearest intersection)

on the EAST (n, e, s, w) side of LUCKEY ROAD (road name)

Location of Well in either: State Plane N ☐ S ☐ X ____ +/- ____ ft. or m Y ____ +/- ____ ft. or m

OR Latitude/Longitude (Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.) Latitude 655512.8327 Longitude 1696857.1905

Elevation of Well 645.99 +/- ____ ft. or m Datum Plain: ☐ NAD27 ☐ NAD83

Source of Coordinates: ☒ GPS ☐ Survey ☐ Other ____

ORIGINAL WELL ODNR Well Log Number MW-33 Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS

Date of measurements 3-31-10

Depth of Well 56 FT. Static Water Level 11 FT.

Size of Casing 2 INCH Length of casing 52 FT.

Well Condition POOR

SEALING PROCEDURE

Method of Placement PRESSURE GROUT THRU TREMIE

	From	To	Sealing Material	Volume
Placement:	56 FT.	SURFACE	QUICK GROUT	150 LBS

Was Casing Removed? Yes or No (circle one) Top 3 ft

Condition of Casing POOR

Perforations: From ____ To ____

From ____ To ____

Date Sealing Performed 3-31-10

Reason(s) for Sealing NO LONGER NEEDED FOR ENVIRONMENTAL MONITORING PURPOSES

CONTRACTOR

Name FRONTZ DRILLING, INC. ODH Registration # 120

Address 2031 MILLERSBURG RD.

City/State/Zip WOOSTER, OHIO 44691

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OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Water
2045 Morse Rd., Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0187740

LOCATION

County WOOD Township TROY Circle One or Both Section/Lot Number

Owner/Builder (Circle One or Both) ARMY CORP OF ENGINEERS

Address of Well Location 21200 LUCKEY ROAD (Number / Street Name)

City LUCKEY Zip Code 43433

Property Location Description: ____ miles SOUTH (n, e, s, w) of US RT 20 (nearest intersection)

on the EAST (n, e, s, w) side of LUCKEY ROAD (road name)

Location of Well in either: State Plane N ☐ S ☐ X ____ +/- ____ ft. or m Y ____ +/- ____ ft. or m

OR Latitude/Longitude (Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.) Latitude 65512.4257 Longitude 1696865.5605

Elevation of Well 645.98 +/- ____ ft. or m Datum Plain: ☐ NAD27 ☐ NAD83

Source of Coordinates: ☒ GPS ☐ Survey ☐ Other

ORIGINAL WELL ODNR Well Log Number MW-34 Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS

Date of measurements 3-26-10

Depth of Well 88 FT. Static Water Level 1.5 FT.

Size of Casing 2 INCH Length of casing 83 FT.

Well Condition GOOD

SEALING PROCEDURE

Method of Placement PRESSURE GROUT THRU TREMIE

	From	To	Sealing Material	Volume
Placement:	88 FT.	SURFACE	QUICK GROUT	200 LBS

Was Casing Removed? Yes or No (circle one) top 5 ft.

Condition of Casing GOOD

Perforations: From ____ To ____

From ____ To ____

Date Sealing Performed 3-26-10

Reason(s) for Sealing NO LONGER NEEDED FOR ENVIRONMENTAL MONITORING PURPOSES

CONTRACTOR

Name FRONTZ DRILLING, INC. ODH Registration # 120

Address 2031 MILLERSBURG RD.

City/State/Zip WOOSTER, OHIO 44691

Signature [redacted]

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OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Water
2045 Morse Rd., Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0187744

LOCATION

County WOOD Township TROY Section/Lot Number (Circle One or Both)

Owner/Builder (Circle One or Both) ARMY CORP OF ENGINEERS

Address of Well Location 21200 (Number) LUCKEY ROAD (Street Name)

City LUCKEY Zip Code 43433

Property Location Description: ____ miles SOUTH (n, e, s, w) of US RT 20 (nearest intersection)

on the EAST (n, e, s, w) side of LUCKEY ROAD (road name)

Location of Well in either: State Plane N ☐ S ☐ X ____ +/- ____ ft. or m Y ____ +/- ____ ft. or m

OR Latitude/Longitude (Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.) Latitude 655497.0959 Longitude 1697852.2105

Elevation of Well 646.38 +/- ____ ft. or m Datum Plain: ☐ NAD27 ☐ NAD83

Source of Coordinates: ☒ GPS ☐ Survey ☐ Other ____

ORIGINAL WELL ODNR Well Log Number MW-35 Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS Date of measurements 3-25-10

Depth of Well 30.5 FT. Static Water Level 8.3 FT.

Size of Casing 2 INCH Length of casing 29 FT.

Well Condition POOR

SEALING PROCEDURE

Method of Placement PRESSURE GROUT THRU TREMIE

	From	To	Sealing Material	Volume
Placement:	30.5 FT.	SURFACE	QUICK GROUT	100 LBS

Was Casing Removed? Yes or No (circle one)

Condition of Casing POOR

Perforations: From ____ To ____

From ____ To ____

Date Sealing Performed 3-25-10

Reason(s) for Sealing NO LONGER NEEDED FOR ENVIRONMENTAL MONITORING PURPOSES

CONTRACTOR

Name FRONTZ DRILLING, INC. ODH Registration # 120

Address 2031 MILLERSBURG RD.

City/State/Zip WOOSTER, OHIO 44691

Signature [redacted]

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WATER WELL SEALING REPORT
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Water
2045 Morse Rd., Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0187745

LOCATION

County: WOOD Township: TROY Circle One or Both Section/Lot Number:

Owner/Builder (Circle One or Both): ARMY CORP OF ENGINEERS

Address of Well Location: 21200 LUCKEY ROAD (Number / Street Name)

City: LUCKEY Zip Code: 43433

Property Location Description: ____ miles SOUTH (n, e, s, w) of US RT 20 (nearest intersection)

on the EAST (n, e, s, w) side of LUCKEY ROAD (road name)

Location of Well in either: State Plane N ☐ S ☐ X ____ +/- ____ ft. or m Y ____ +/- ____ ft. or m

OR Latitude/Longitude (Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.) Latitude 655506.3229 Longitude 1697852.1905

Elevation of Well 646.42 +/- ____ ft. or m Datum Plain: ☐ NAD27 ☐ NAD83

Source of Coordinates: ☒ GPS ☐ Survey ☐ Other

ORIGINAL WELL ODNR Well Log Number MW-36 Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS Date of measurements 3-25-10

Depth of Well 53 FT. Static Water Level 2.3 FT.

Size of Casing 2 INCH Length of casing 52 FT.

Well Condition POOR

SEALING PROCEDURE

Method of Placement: PRESSURE GROUT THRU TREMIE

Placement:	From	To	Sealing Material	Volume
	53 FT.	SURFACE	QUICK GROUT	100 LBS

Was Casing Removed? Yes or No (circle one) top 5 ft

Condition of Casing: GOOD

Perforations: From ____ To ____
From ____ To ____

Date Sealing Performed: 3-25-10

Reason(s) for Sealing: NO LONGER NEEDED FOR ENVIRONMENTAL MONITORING PURPOSES

CONTRACTOR

Name: FRONTZ DRILLING, INC. ODH Registration #: 120

Address: 2031 MILLERSBURG RD.

City/State/Zip: WOOSTER, OHIO 44691

Signature: [redacted]

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DNR 7810.09

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OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Water
2045 Morse Rd., Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0187746

LOCATION

County WOOD Township TROY Section/Lot Number (Circle One or Both)

Owner/Builder (Circle One or Both) ARMY CORP OF ENGINEERS

Address of Well Location 21200 LUCKEY ROAD (Number / Street Name)

City LUCKEY Zip Code 43433

Property Location Description: ____ miles SOUTH (n, e, s, w) of US RT 20 (nearest intersection)

on the EAST (n, e, s, w) side of LUCKEY ROAD (road name)

Location of Well in either: State Plane N ☐ S ☐ X ____ +/- ____ ft. or m Y ____ +/- ____ ft. or m

OR Latitude/Longitude (Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.) Latitude 655884.6585 Longitude 1696779.3508

Elevation of Well 641.34 +/- ____ ft. or m Datum Plain: ☐ NAD27 ☐ NAD83

Source of Coordinates: ☒ GPS ☐ Survey ☐ Other ____

ORIGINAL WELL ODNR Well Log Number MW-37 Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS

Date of measurements 3-30-10

Depth of Well 35 FT. Static Water Level 2 FT.

Size of Casing 2 INCH Length of casing 38 FT.

Well Condition GOOD

SEALING PROCEDURE

Method of Placement PRESSURE GROUT THRU TREMIE

Placement:	From	To	Sealing Material	Volume
	35 FT.	SURFACE	QUICK GROUT	100 LBS

Was Casing Removed? Yes or No (circle one)

Condition of Casing GOOD

Perforations: From ____ To ____

From ____ To ____

Date Sealing Performed 3-30-10

Reason(s) for Sealing NO LONGER NEEDED FOR ENVIRONMENTAL MONITORING PURPOSES

CONTRACTOR

Name FRONTZ DRILLING, INC. ODH Registration # 120

Address 2031 MILLERSBURG RD.

City/State/Zip WOOSTER, OHIO 44691

Signature [redacted]

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WATER WELL SEALING REPORT
OHIO DEPARTMENT OF NATURAL RESOURCES

0187747

Division of Water
2045 Morse Rd., Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

LOCATION

County WOOD Township TROY Section/Lot Number (Circle One or Both)

Owner/Builder (Circle One or Both) ARMY CORP OF ENGINEERS

Address of Well Location 21200 LUCKEY ROAD (Number / Street Name)

City LUCKEY Zip Code 43433

Property Location Description: miles SOUTH (n, e, s, w) of US RT 20 (nearest intersection)

on the EAST (n, e, s, w) side of LUCKEY ROAD (road name)

Location of Well in either: State Plane N ☐ S ☐ X ____ +/- ____ ft. or m Y ____ +/- ____ ft. or m

OR Latitude/Longitude (Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.) Latitude 655886.9478 Longitude 1696786.3308

Elevation of Well 641.37 +/- ____ ft. or m Datum Plain: ☐ NAD27 ☐ NAD83

Source of Coordinates: ☒ GPS ☐ Survey ☐ Other

ORIGINAL WELL ODNR Well Log Number MW-38 Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS Date of measurements 3-26-10

Depth of Well 57 FT. Static Water Level 11.6 FT.
Size of Casing 2 INCH Length of casing 55 FT.
Well Condition GOOD

SEALING PROCEDURE

Method of Placement PRESSURE GROUT THRU TREMIE

			Sealing Material	Volume
Placement: From 57 FT.	To SURFACE		QUICK GROUT	100 LBS
From	To			
From	To			

Was Casing Removed? Yes or No (circle one) top 5 ft.

Condition of Casing GOOD
Perforations: From ____ To ____
From ____ To ____

Date Sealing Performed 3-26-10
Reason(s) for Sealing NO LONGER NEEDED FOR ENVIRONMENTAL MONITORING PURPOSES

CONTRACTOR

Name FRONTZ DRILLING, INC. ODH Registration # 120
Address 2031 MILLERSBURG RD.
City/State/Zip WOOSTER, OHIO 44691

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WATER WELL SEALING REPORT
OHIO DEPARTMENT OF NATURAL RESOURCES

0187748

Division of Water
2045 Morse Rd., Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

LOCATION

County WOOD Township TROY Section/Lot Number (Circle One or Both)

Owner/Builder (Circle One or Both) ARMY CORP OF ENGINEERS

Address of Well Location 21200 LUCKEY ROAD (Number / Street Name)

City LUCKEY Zip Code 43433

Property Location Description: ____ miles SOUTH (n, e, s, w) of US RT 20 (nearest intersection)

on the EAST (n, e, s, w) side of LUCKEY ROAD (road name)

Location of Well in either: State Plane N ☐ S ☐ X ____ +/- ____ ft. or m Y ____ +/- ____ ft. or m

OR Latitude/Longitude (Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.) Latitude 41.4600 Longitude 83.4923

Elevation of Well 650.00 +/- ____ ft. or m Datum Plain: ☐ NAD27 ☐ NAD83

Source of Coordinates: ☑ GPS ☐ Survey ☐ Other ____

ORIGINAL WELL ODNR Well Log Number MW-45 Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS Date of measurements 3-20-10

Depth of Well 20 FT. Static Water Level 7.1 FT.

Size of Casing 2 INCH Length of casing 18 FT.

Well Condition GOOD

SEALING PROCEDURE

Method of Placement PRESSURE GROUT THRU TREMIE

Placement:	From	To	Sealing Material	Volume
	20 FT.	SURFACE	QUICK GROUT	100 LBS

Was Casing Removed? Yes or No (circle one)

Condition of Casing GOOD

Perforations: From ____ To ____
From ____ To ____

Date Sealing Performed 3-20-10

Reason(s) for Sealing NO LONGER NEEDED FOR ENVIRONMENTAL MONITORING PURPOSES

CONTRACTOR

Name FRONTZ DRILLING, INC. ODH Registration # 120

Address 2031 MILLERSBURG RD.

City/State/Zip WOOSTER, OHIO 44691

Signature [redacted]

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Division of Water
2045 Morse Rd., Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0187749

LOCATION

County WOOD Township TROY Section/Lot Number (Circle One or Both)

Owner/Builder (Circle One or Both) ARMY CORP OF ENGINEERS

Address of Well Location 21200 (Number) LUCKEY ROAD (Street Name)

City LUCKEY Zip Code 43433

Property Location Description: miles SOUTH (n, e, s, w) of US RT 20 (nearest intersection)

on the EAST (n, e, s, w) side of LUCKEY ROAD (road name)

Location of Well in either: State Plane N ☐ S ☐ X ____ +/- ____ ft. or m Y ____ +/- ____ ft. or m

OR Latitude/Longitude (Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.) Latitude 41.4600 Longitude 83.4923

Elevation of Well 641.00 +/- ____ ft. or m Datum Plain: ☐ NAD27 ☐ NAD83

Source of Coordinates: ☒ GPS ☐ Survey ☐ Other

ORIGINAL WELL ODNR Well Log Number MW-46 Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS

Date of measurements 3-30-10

Depth of Well 24 FT. Static Water Level 6.9 FT.

Size of Casing 2 INCH Length of casing 22 FT.

Well Condition GOOD

SEALING PROCEDURE

Method of Placement PRESSURE GROUT THRU TREMIE

	From	To	Sealing Material	Volume
Placement:	24 FT.	SURFACE	QUICK GROUT	100 LBS

Was Casing Removed? Yes or No (circle one)

Condition of Casing GOOD

Perforations: From ____ To ____

From ____ To ____

Date Sealing Performed 3-30-10

Reason(s) for Sealing NO LONGER NEEDED FOR ENVIRONMENTAL MONITORING PURPOSES

CONTRACTOR

Name FRONTZ DRILLING, INC. ODH Registration # 120

Address 2031 MILLERSBURG RD.

City/State/Zip WOOSTER, OHIO 44691

Signature [redacted]

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Appendix I

Well Installation and Development Forms

(Provided in Electronic Files)

Well Development Logs

Well Construction Logs

TPMC
USACE LUCKEY FUSRAP
92002

RE- WELL DEVELOPMENT RECORD

WELL DESIGNATION: MW-1 (I) DATE(S) OF INSTALLATION: 6-22-98

SITE GEOLOGIST: CARL PIDGE P.G. DATE(S) OF DEVELOPMENT: 3-31-10

STATIC WATER LEVELS: (FROM TOP OF CASING)	BEFORE DEVELOPMENT	7.93 FT	DATE	3-31-10
	24 HRS. AFTER DEVEL.		DATE	
DEPTH TO SEDIMENT: (FROM TOP OF CASING)	BEFORE DEVELOPMENT	32.69 FT	DATE	3-31-10
	24 HRS. AFTER DEVEL.		DATE	

DEPTH TO WELL BOTTOM: (FROM TOP OF CASING) 32.7 FT TOC SOFT BOTTOM

QUANTITY OF MUD/WATER (gallons):

SONIC DRILLING

LOST DURING DRILLING

REMOVED PRIOR TO WELL INSERTION

LOST d/THICK FLUID DISPLACEMENT

ADDED d/FILTER PACK REPLACEMENT

(a) water column (ft.) 24.77 FEET (b) well diameter (in.) 2-INCH

(c) screen length (ft.) 5 FEET (d) borehole diameter (in.) 6-INCH

(e) annulus space/length (ft) 7.4 FEET

QUANTITY OF FLUID STANDING IN WELL gallons

QUANTITY OF FLUID IN ANNULUS gallons

TOTAL QTY. (5 equivalent volumes)

TOTAL QTY. (5 times losses)

TOTAL DEVEL. VOLUME REQ'D gallons

TYPE AND SIZE OF PUMP: 1.8-INCH TORNADO SUBMERSIBLE

TYPE AND SIZE OF BAILER: —

DESCRIPTION OF SURGE TECHNIQUE, IF ANY: OSCILLATE PUMP ACROSS SCREEN

TYPICAL PUMPING RATE 1 GPM GAL/HR EST. RECHARGE RATE

TOTAL QUANTITY OF WATER REMOVED 55 GALS TIME REQUIRED

SIGNATURE OF SITE GEOLOGIST

RE-DEVELOPED BY FRONTIER DRILLING CREW DAVE SCHREENGOST
CHAD WHITMAN

USACE
Project: Luckey Fusrap 92002
Well: MW-1 (I)
Geologist: Carl Pierce P.G.
TPMC

RE-DEVELOPED BY FRONTIER DRILL CREW DAVE + CHAD 31 MARCH 10

Soft bottom

Date	Time	Pump On/Off	Flow Rate (gal/min)	Quantity Removed (gallons)	Depth to Water (ft TOC)	pH	Cond (µS/cm)	DO (mg/L)	Temp (°C)	Turbidity (NTU)	Redox Potential (Eh) (mV)	Appearance	Comments
3-31	1245	on	1	1	7.93	6.86	1.22	2.89	11.29	325		Cloudy Gray	Surged
	12:55		1	10		6.60	1.21	0.82	11.22	119			Surged
	1:05		1			6.52	1.21	0.43	11.24	202			Surged
	1:15		1			6.62	1.21	0.01	11.29	27.4			
	1:25		1			6.46	1.21	0.01	11.21	445			Surged
	1:35		1		8.50	6.56	1.19	0.00	11.26	21.7			

TPMC
USACE LUCKEY FUSRAP
92002

RE-WELL DEVELOPMENT RECORD

WELL DESIGNATION: MW-2 (S) DATE(S) OF INSTALLATION: 6-23-98

SITE GEOLOGIST: CARL PIDGE P.G. DATE(S) OF DEVELOPMENT: 3-31-10

STATIC WATER LEVELS: (FROM TOP OF CASING)
BEFORE DEVELOPMENT 7.75 FT DATE 3-31-10
24 HRS. AFTER DEVEL. _____ DATE _____

DEPTH TO SEDIMENT: (FROM TOP OF CASING)
BEFORE DEVELOPMENT 21.8 FT DATE 3-31-10
24 HRS. AFTER DEVEL. _____ DATE _____

DEPTH TO WELL BOTTOM: (FROM TOP OF CASING) 21.8 FT TOC HARD BOTTOM

QUANTITY OF MUD/WATER (gallons):

SONIC DRILLING

LOST DURING DRILLING _____
REMOVED PRIOR TO WELL INSERTION _____
LOST d/THICK FLUID DISPLACEMENT _____
ADDED d/FILTER PACK REPLACEMENT _____

(a) water column (ft.) 14.05 FEET (b) well diameter (in.) 2-INCH
(c) screen length (ft.) 5 FEET (d) borehole diameter (in.) 6-INCH
(e) annulus space/length (ft) LOG READS 5.3 FEET

QUANTITY OF FLUID STANDING IN WELL _____ gallons
QUANTITY OF FLUID IN ANNULUS _____ gallons
TOTAL QTY. (5 equivalent volumes) _____
TOTAL QTY. (5 times losses) _____
TOTAL DEVEL. VOLUME REQ'D _____ gallons

TYPE AND SIZE OF PUMP: 1.8-INCH TORNADO SUBMERSIBLE
TYPE AND SIZE OF BAILER: —
DESCRIPTION OF SURGE TECHNIQUE, IF ANY: OSCILLATE PUMP ACROSS SCREEN

TYPICAL PUMPING RATE 1 GPM GAL/HR EST. RECHARGE RATE _____
TOTAL QUANTITY OF WATER REMOVED 55 GALS TIME REQUIRED _____

SIGNATURE OF SITE GEOLOGIST _____

RE-DEVELOPED BY FRONTIER DRILLING CREW DAVE SCHAECHNOST
CHAD WHITMAN

USACE
Project: Luckey Fusrap 92002
Well: MW 2(S)
Geologist: Carl Pierce P.G.
TPMC

31 MARCH 10
RE-DEVELOPMENT BY FRONTIER
DRILLING CREW DAVE SCHREEVOGEL
CHAD WHITMAN

Hard bottom

Date	Time	Pump On/Off	Flow Rate (gal/min)	Quantity Removed (gallons)	Depth to Water (ft TOC)	pH	Cond (µS/cm)	DO (mg/L)	Temp (°C)	Turbidity (NTU)	Redox Potential (Eh) (mV)	Appearance	Comments
3-31	10:00	on	1		7.75	6.62	0.99	1.99	9.94	84.9		Brn.	Surged
	10:10		1			6.55	1.00	0.08	10.17	168			
	10:20		1			6.51	0.99	0.00	10.24	48.7			
	10:30		1			6.52	0.99	0.00	10.31	13.2			Surged
	10:40		1			6.48	0.98	0.00	10.34	2.3			Surged
	10:50		1			6.52	0.98	0.00	10.35	0.1			
	11:00		1		8.72	6.48	0.98	0.00	10.39	0.0			

TPMC
USACE LUCKEY FUSRAP
92002

RE-WELL DEVELOPMENT RECORD

WELL DESIGNATION: MW-19 (I) DATE(S) OF INSTALLATION: 8-4-98

SITE GEOLOGIST: CARL PIDGE P.G. DATE(S) OF DEVELOPMENT: 3-31-10

STATIC WATER LEVELS: (FROM TOP OF CASING)
BEFORE DEVELOPMENT 8.53 FT DATE 3-31-10
24 HRS. AFTER DEVEL. _____ DATE _____

DEPTH TO SEDIMENT: (FROM TOP OF CASING)
BEFORE DEVELOPMENT 31.48 FT DATE 3-31-10
24 HRS. AFTER DEVEL. _____ DATE _____

DEPTH TO WELL BOTTOM: (FROM TOP OF CASING) 31.5 FT TOC HARD BOTTOM

QUANTITY OF MUD/WATER (gallons):

SONIC DRILLING

LOST DURING DRILLING _____
REMOVED PRIOR TO WELL INSERTION _____
LOST d/THICK FLUID DISPLACEMENT _____
ADDED d/FILTER PACK REPLACEMENT _____

(a) water column (ft.) 22.97 FT (b) well diameter (in.) 2-INCH
(c) screen length (ft.) 5 FEET (d) borehole diameter (in.) 6-INCH
(e) annulus space/length (ft) 7.6 FEET

QUANTITY OF FLUID STANDING IN WELL _____ gallons
QUANTITY OF FLUID IN ANNULUS _____ gallons
TOTAL QTY. (5 equivalent volumes) _____
TOTAL QTY. (5 times losses) _____
TOTAL DEVEL. VOLUME REQ'D _____ gallons

TYPE AND SIZE OF PUMP: 1.8-INCH TORNADO SUBMERSIBLE
TYPE AND SIZE OF BAILER: —
DESCRIPTION OF SURGE TECHNIQUE, IF ANY: OSCILLATE PUMP ACROSS SCREEN

TYPICAL PUMPING RATE 1.5 GPM GAL/HR EST. RECHARGE RATE _____
TOTAL QUANTITY OF WATER REMOVED 55 GALS TIME REQUIRED _____
SIGNATURE OF SITE GEOLOGIST _____

RE-DEVELOPMENT BY FRONTZ DRILLING CREW PAUL SCHUERENKOST
CHAD WHITMAN

USACE
Project: Luckey Fusrap 92002
Well: MW-19 (I)
Geologist: Carl Pierce P.G.
TPMC

31 March 10
Re-Development by Fronte
Drilling Crew Dave Schreckengost
Chad Whitman

Hard bottom

Date	Time	Pump On/Off	Flow Rate (gal/min)	Quantity Removed (gallons)	Depth to Water (ft TOC)	pH	Cond (µS/cm)	DO (mg/L)	Temp (°C)	Turbidity (NTU)	Redox Potential (Eh) (mV)	Appearance	Comments
3-31	3:25	on	1.5		8.53	6.61	1.19	0.53	10.99	446		Rusty Brn	Surged
	3:35		1.5			6.46	1.35	0.38	11.39	268			Surged
	3:45		1.5			6.42	1.44	0.33	11.54	67.8			Surged
	3:55		1.5			6.46	1.44	0.13	11.48	171			Surged
	4:05		1.5			6.40	1.45	0.11	11.47	38.9			Surged
	4:15		1.5			6.38	1.48	0.08	11.55	30.8			
	4:25		1.5		24.55	6.52	1.30	0.74	11.87	631			Surged

TPMC
USACE LUCKEY FUSRAP
92002

RE-WELL DEVELOPMENT RECORD

WELL DESIGNATION: MW-21(I) DATE(S) OF INSTALLATION: 8-6-98

SITE GEOLOGIST: CARL RIDGE P.G. DATE(S) OF DEVELOPMENT: 3-30-10

STATIC WATER LEVELS: (FROM TOP OF CASING)
BEFORE DEVELOPMENT 8.96 FT DATE 3-30-10
24 HRS. AFTER DEVEL. _____ DATE _____

DEPTH TO SEDIMENT: (FROM TOP OF CASING)
BEFORE DEVELOPMENT 30.31 FT DATE 3-30-10
24 HRS. AFTER DEVEL. _____ DATE _____

DEPTH TO WELL BOTTOM: (FROM TOP OF CASING) 30.3 FT TOC HARD BOTTOM

QUANTITY OF MUD/WATER (gallons):

SONIC DRILLING

LOST DURING DRILLING _____
REMOVED PRIOR TO WELL INSERTION _____
LOST d/THICK FLUID DISPLACEMENT _____
ADDED d/FILTER PACK REPLACEMENT _____

(a) water column (ft.) 21.34 FEET (b) well diameter (in.) 2-inch
(c) screen length (ft.) 5 FEET (d) borehole diameter (in.) 6-inch
(e) annulus space/length (ft) 7.8 FEET

QUANTITY OF FLUID STANDING IN WELL _____ gallons
QUANTITY OF FLUID IN ANNULUS _____ gallons
TOTAL QTY. (5 equivalent volumes) _____
TOTAL QTY. (5 times losses) _____
TOTAL DEVEL. VOLUME REQ'D _____ gallons

TYPE AND SIZE OF PUMP: 1.8-inch TORNADO SUBMERSIBLE
TYPE AND SIZE OF BAILER: —
DESCRIPTION OF SURGE TECHNIQUE, IF ANY: OSCILLATE PUMP ACROSS SCREEN

TYPICAL PUMPING RATE 0.5 GPM GAL/HR EST. RECHARGE RATE _____
TOTAL QUANTITY OF WATER REMOVED 55 GALS TIME REQUIRED _____

SIGNATURE OF SITE GEOLOGIST _____
RE-DEVELOPMENT BY FRONTZ DRILLING CREW DAVE SCHRECENGOST
CHAD WHITMAN

USACE
Project: Luckey Fusrap 92002
Well: MW 21(I)
Geologist: Carl Pierce P.G.
TPMC

RE-DEVELOPMENT BY
FRONTIER DRILLING CREW
DAVE SCHMECKENGOST
CHAD WHITMAN

Page 1 of 1

Hard bottom

Date	Time	Pump On/Off	Flow Rate (gal/min)	Quantity Removed (gallons)	Depth to Water (ft TOC)	pH	Cond (µS/cm)	DO (mg/L)	Temp (°C)	Turbidity (NTU)	Redox Potential (Eh) (mV)	Appearance	Comments
3-30	2:25	on			8.96								
	2:35	off	1	10		6.31	3.37	0.46	11.56	-5.0		Cloudy	Dry @ 2:36
	2:50	on	~~1~~ ½									Sandy	Surged
	3:00			5.0		6.42	3.39	0.67	11.41	209			Surged
	3:10			5		6.43	3.36	0.50	11.44	146			
	3:20			5		6.44	3.34	0.44	11.44	109			
	3:30		1/2	5		6.45	3.34	0.39	11.44	58.6			Surged
	3:40			5		6.46	3.36	0.53	11.45	143			Surged
	3:50			5		6.45	3.36	0.37	11.43	28.0			
	4:00			5		6.45	3.35	0.33	11.36	15.9			
	4:10		1/2	5		6.46	3.36	0.30	11.40	30.4			
	4:20			5		6.46	3.35	1.85	11.49	24.8		Clear	
	4:25				18.0								

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92002

RE- WELL DEVELOPMENT RECORD

WELL DESIGNATION: MW-25(I)

DATE(S) OF INSTALLATION: 8-8-98

SITE GEOLOGIST: CARL PIDGE P.G.

DATE(S) OF DEVELOPMENT: 3-31-10 3-30-10

STATIC WATER LEVELS: (FROM TOP OF CASING)
BEFORE DEVELOPMENT 6.81 FT DATE 3-30-10
24 HRS. AFTER DEVEL. _____ DATE _____

DEPTH TO SEDIMENT: (FROM TOP OF CASING)
BEFORE DEVELOPMENT 32.84 FT DATE 3 30-10
24 HRS. AFTER DEVEL. _____ DATE _____

DEPTH TO WELL BOTTOM: (FROM TOP OF CASING) 32.8 FT TOC HARD BOTTOM

QUANTITY OF MUD/WATER (gallons):

SONIC DRILLING

LOST DURING DRILLING _____

REMOVED PRIOR TO WELL INSERTION _____

LOST d/THICK FLUID DISPLACEMENT _____

ADDED d/FILTER PACK REPLACEMENT _____

(a) water column (ft.) 25.99 FEET (b) well diameter (in.) 2-INCH

(c) screen length (ft.) 5 FEET (d) borehole diameter (in.) 8-INCH

(e) annulus space/length (ft) 7.8 FEET

QUANTITY OF FLUID STANDING IN WELL _____ gallons

QUANTITY OF FLUID IN ANNULUS _____ gallons

TOTAL QTY. (5 equivalent volumes) _____

TOTAL QTY. (5 times losses) _____

TOTAL DEVEL. VOLUME REQ'D _____ gallons

TYPE AND SIZE OF PUMP: 1.8-INCH TORNADO SUBMERSIBLE

TYPE AND SIZE OF BAILER: —

DESCRIPTION OF SURGE TECHNIQUE, IF ANY: OSCILLATE PUMP ACROSS SCREEN

TYPICAL PUMPING RATE 1/4 - 1/2 GPM GAL/HR EST. RECHARGE RATE _____

TOTAL QUANTITY OF WATER REMOVED 50 GALS TIME REQUIRED _____

SIGNATURE OF SITE GEOLOGIST _____

RE-DEVELOPMENT BY FRONTZ DRILLING CREW DAVE SCHNECENGOST
CHAD WHITMAN

USACE

Project: Luckey Fusrap 92002

Well: MW-25(I)

Geologist: Carl Pidge P.G. TPMC

RE-DEVELOPED BY FLOATE DRILLING CREW DAVE SCHREEGOST CHAD WHITMAN

hard bottom no sediment

Date	Time	Pump On/Off	Flow Rate (gal/min)	Quantity Removed (gallons)	Depth to Water (ft TOC)	pH	Cond (µS/cm)	DO (mg/L)	Temp (°C)	Turbidity (NTU)	Redox Potential (Eh) (mV)	Appearance	Comments
3-30	4:45	on	1		6.81								Surged
	4:55		0.5			6.82	0.958	2.69	10.77	107			went dry @ 4:59
	5:05	off				6.73	0.98	2.40	11.17	187			went dry @ 5:07
	5:15	on				6.67	0.98	1.00	11.45	220			
	5:20					6.66	0.98	0.91	11.68	150			went dry @ 5:21
3-31	8:00				6.81								
	8:15	on	0.5										
	8:20			2.5		6.77	1.04	0.46	10.33	48.4		Clear	
	8:25			2.5		6.64	1.02	0.24	10.16	185			surged
	8:30		0.25	1.25		6.62	1.01	0.10	10.20	139			
	8:35					6.59	1.00	0.02	10.89	31.6			
	8:40		1			6.56	1.05	0.13	10.89	325			
	8:44	off	Dry										
	[illegible]	on	1										Pump off for 30 min
	9:25				15.0	6.78	1.03	5.19	10.98	117			Horiba battery chang
	9:30		1	25.0 Total		6.71	0.98	0.52	11.15	562			Dry @ 9:30

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RE- WELL DEVELOPMENT RECORD

WELL DESIGNATION: MW-26(S) DATE(S) OF INSTALLATION: 8-10-98

SITE GEOLOGIST: CARL PIDGE P.G. DATE(S) OF RE-DEVELOPMENT: 3-31-10

STATIC WATER LEVELS: (FROM TOP OF CASING)
BEFORE DEVELOPMENT 7.86 FT DATE 3-31-10
24 HRS. AFTER DEVEL. ~~0~~ DATE

DEPTH TO SEDIMENT: (FROM TOP OF CASING)
BEFORE DEVELOPMENT 17.7 FT DATE 3-31-10
24 HRS. AFTER DEVEL. DATE

DEPTH TO WELL BOTTOM: (FROM TOP OF CASING) 17.7 FT TOC HARD BOTTOM

QUANTITY OF MUD/WATER (gallons):

SONIC DRILLING

LOST DURING DRILLING
REMOVED PRIOR TO WELL INSERTION
LOST d/THICK FLUID DISPLACEMENT
ADDED d/FILTER PACK REPLACEMENT

(a) water column (ft.) 9.84 FEET (b) well diameter (in.) 2-INCH
(c) screen length (ft.) 5 FEET (d) borehole diameter (in.) 8-INCH
(e) annulus space/length (ft) 8.2 FEET

QUANTITY OF FLUID STANDING IN WELL gallons
QUANTITY OF FLUID IN ANNULUS gallons
TOTAL QTY. (5 equivalent volumes)
TOTAL QTY. (5 times losses)
TOTAL DEVEL. VOLUME REQ'D gallons

TYPE AND SIZE OF PUMP: 1.8-INCH TORNADO SUBMERSIBLE
TYPE AND SIZE OF BAILER: —
DESCRIPTION OF SURGE TECHNIQUE, IF ANY: OSCILLATE ACROSS SCREEN WITH PUMP

TYPICAL PUMPING RATE 1.5 GPM GAL/HR EST. RECHARGE RATE
TOTAL QUANTITY OF WATER REMOVED 55 GALS TIME REQUIRED

SIGNATURE OF SITE GEOLOGIST

RE-DEVELOPMENT BY FRONTZ DRILLING CREW
DAVE SCHREECENGOST
CHAD WHITMAN

USACE

Project: Luckey Fusrap 92002

Well: MW-26 (S)

Geologist: Cam Pierce P.G. TPMC

RE-DEVELOPMENT BY FRONTIER DRILLING CREW DAVE SCHREEGHOST CHAD WHITMAN

Hard bottom

Date	Time	Pump On/Off	Flow Rate (gal/min)	Quantity Removed (gallons)	Depth to Water (ft TOC)	pH	Cond (µS/cm)	DO (mg/L)	Temp (°C)	Turbidity (NTU)	Redox Potential (Eh) (mV)	Appearance	Comments
3-31	2:05	on	1.5	2	7.86	6.66	1.31	0.82	9.78	-5.0		Silty	Surged
	2:15		1.5			6.63	1.24	0.36	9.90	474			Surged
	2:25		1.5			6.65	1.23	0.00	9.94	670			Surged
	2:35		1.5			6.59	1.22	0.00	9.99	365			
	2:45		1.5		11.93	6.56	1.22	0.00	10.01	138			
				55 gallons									

TPMC
USACE LUCKEY FUSRAP
92002

RE- WELL DEVELOPMENT RECORD

WELL DESIGNATION: MW-27(I) DATE(S) OF INSTALLATION: 10-29-98

SITE GEOLOGIST: CARL PIDGE P.G. DATE(S) OF DEVELOPMENT: 4-1-10

STATIC WATER LEVELS: (FROM TOP OF CASING)	BEFORE DEVELOPMENT	7.38 FT	DATE	4-1-10
	24 HRS. AFTER DEVEL.		DATE	
DEPTH TO SEDIMENT: (FROM TOP OF CASING)	BEFORE DEVELOPMENT	32.47 FT	DATE	4-1-10
	24 HRS. AFTER DEVEL.		DATE	

DEPTH TO WELL BOTTOM: (FROM TOP OF CASING) 32.5 FT TOC

QUANTITY OF MUD/WATER (gallons):

SONIC DRILLING

LOST DURING DRILLING

REMOVED PRIOR TO WELL INSERTION

LOST d/THICK FLUID DISPLACEMENT

ADDED d/FILTER PACK REPLACEMENT

(a) water column (ft.) 25.12 FEET (b) well diameter (in.) 2-INCH

(c) screen length (ft.) 4 FEET (d) borehole diameter (in.) 6-INCH

(e) annulus space/length (ft) 8 FEET

QUANTITY OF FLUID STANDING IN WELL gallons

QUANTITY OF FLUID IN ANNULUS gallons

TOTAL QTY. (5 equivalent volumes)

TOTAL QTY. (5 times losses)

TOTAL DEVEL. VOLUME REQ'D gallons

TYPE AND SIZE OF PUMP: 1.8-INCH TORNADO SUBMERSIBLE

TYPE AND SIZE OF BAILER: —

DESCRIPTION OF SURGE TECHNIQUE, IF ANY: OSCILLATE PUMP ACROSS SCREEN

TYPICAL PUMPING RATE 1 GPM GAL/HR EST. RECHARGE RATE

TOTAL QUANTITY OF WATER REMOVED 50 GALS TIME REQUIRED

SIGNATURE OF SITE GEOLOGIST

REHABILITATION BY FRONTIER CREW
- DAVID CHRECHGOST
- CHAD WHITMAN

USACE

Project: Luckey Fusrsd 92002

Well: MW-27 (I)

Geologist: Cam Pidge P.G.
TPMC

Some sediment hard bottom after surging

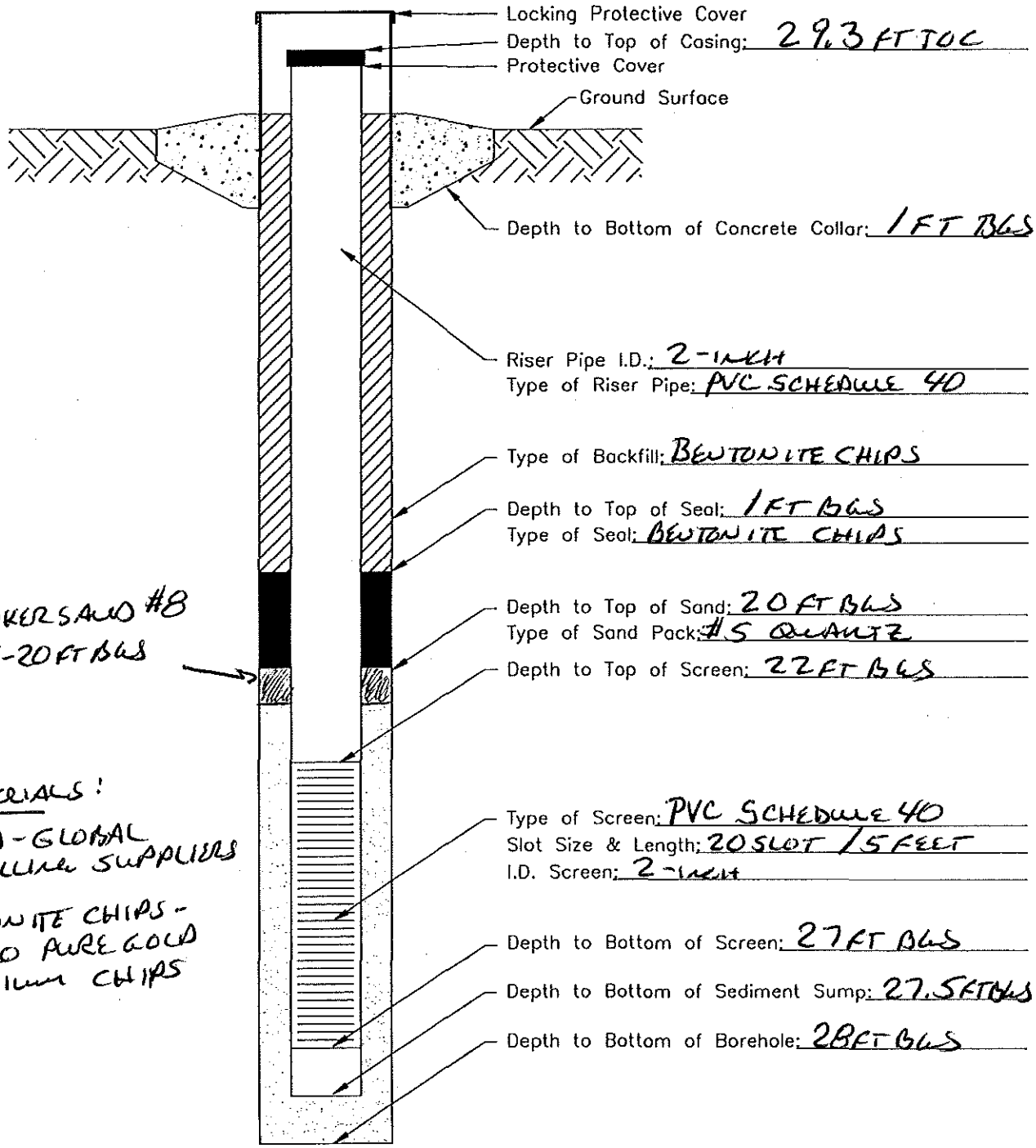
Date	Time	Pump On/Off	Flow Rate (gal/min)	Quantity Removed (gallons)	Depth to Water (ft TOC)	pH	Cond (µS/cm)	DO (mg/L)	Temp (°C)	Turbidity (NTU)	Redox Potential (Eh) (mV)	Appearance	Comments
4-1	11:10	on	1		7.38	6.79	1.17	1.04	11.72	505		Cloudy Gray	Surged
	11:15					6.58	1.16	1.24	11.64	-5.0			
	11:20					6.54	1.16	0.82	11.67	647			Surged
	11:25		1			6.49	1.17	0.73	11.68	910			Surged
	11:30					6.48	1.17	0.69	11.72	-5.0			
	11:35					6.47	1.18	0.69	11.56	-5.0			
	11:40		1			6.47	1.19	0.62	11.56	379			
	11:45					6.46	1.19	0.56	11.58	324			
	11:50					6.46	1.19	0.56	11.57	238			Surged
	11:55		1			6.46	1.19	0.66	11.61	600			
	12:00				11.90	6.46	1.20	0.57	11.63	310			

TerranearPMC
222 Valley Creek Blvd, Suite 210
Exton, PA 19341-2843
(610) 862-5000 phone
(610) 862-5050 fax

Project: USACE LUCKEY FUSRAP
Project No.: 92002.07
Borehole Diameter: 6/8-INCH
Top of PVC Casing Elevation:

Monitoring Well No.: MW-22R(I)
Date Started: 6 APRIL 2010
Date Completed: 12 APRIL 2010
Driller: FRONTZ / LAUER & SCHREECKHOST
Drilling Method: SONIC
Development Method: SURGE / PUMP
Ground Surface Elevation:

MONITORING WELL DIAGRAM



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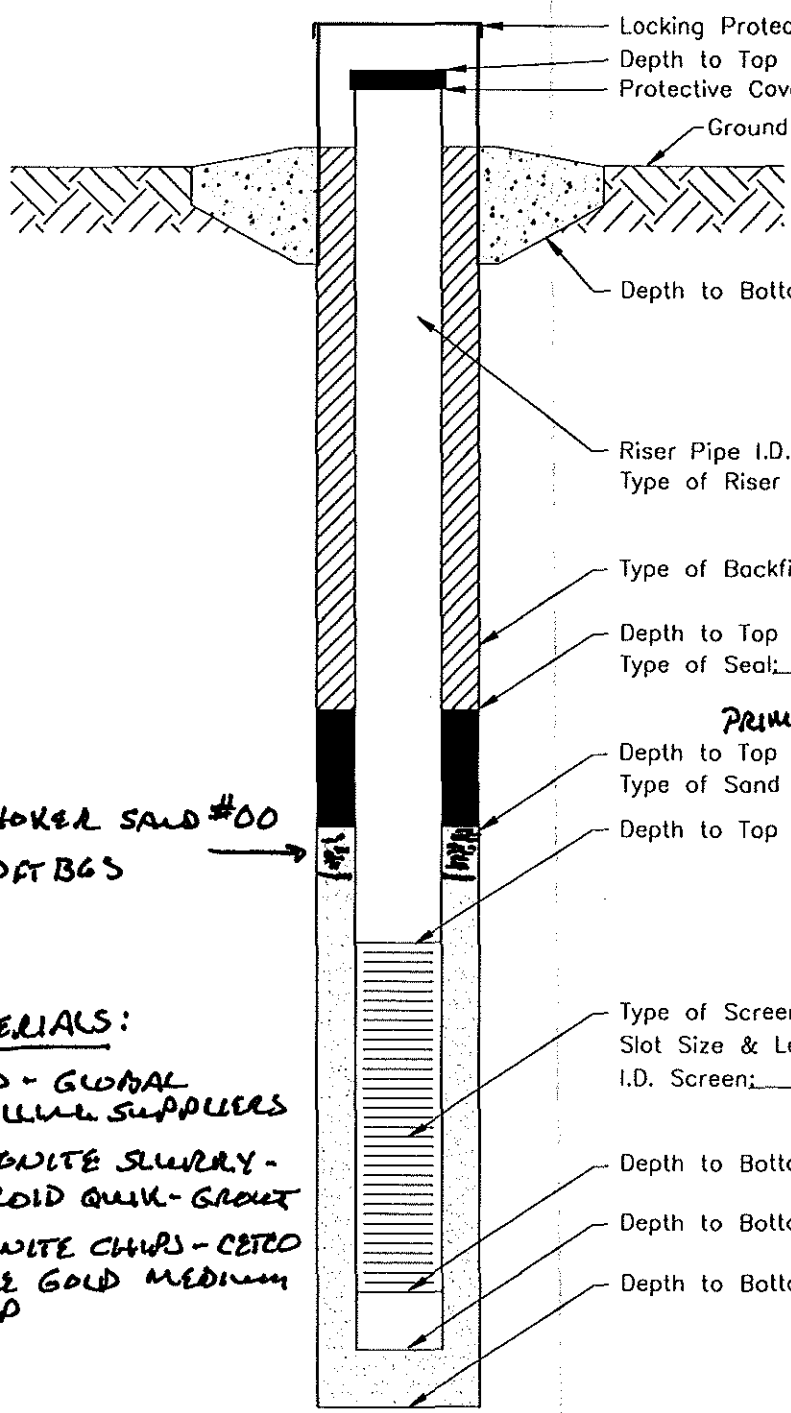
Exton, PA 19341-2843
(610) 862-5000 phone
(610) 862-5050 fax

Project: USACE LUCKEY FUSRAP
Project No.: 92002.07
Borehole Diameter: 8-INCH
Top of PVC Casing Elevation:

Monitoring Well No.: MW-24R(S)
Date Started: 13 APRIL 2010
Date Completed: 13 APRIL 2010
Driller: DAVE SCHREENGOST / FRONTIER
Drilling Method: SONIC
Development Method: SURGE / PUMP
Ground Surface Elevation:

MONITORING WELL DIAGRAM



Locking Protective Cover
Depth to Top of Casing: 20.2 FT TOC
Protective Cover
Ground Surface
Depth to Bottom of Concrete Collar: 1 FT BGS
Riser Pipe I.D.: 2-INCH
Type of Riser Pipe: PVC SCHEDULE 40
Type of Backfill: BENTONITE
Depth to Top of Seal: 2 FT BGS
Type of Seal: BENTONITE CHIPS
PRIMARY
Depth to Top of Sand: 10 FT BGS
Type of Sand Pack: #7 QUARTZ
Depth to Top of Screen: 13 FT BGS
Type of Screen: PVC SCHEDULE 40
Slot Size & Length: 10 SLOT / 5 FT
I.D. Screen: 2-INCH
Depth to Bottom of Screen: 18 FT BGS
Depth to Bottom of Sediment Sump: 18 FT BGS
Depth to Bottom of Borehole: 18 FT BGS

CHOKER SAND #00
9-10 FT BGS

MATERIALS:
SAND - GLOBAL DRILLING SUPPLIERS
BENTONITE SLURRY - BAROID QUIK-GROUT
BENTONITE CHIPS - CETCO PURE GOLD MEDIUM CHIP

TerranearPMC
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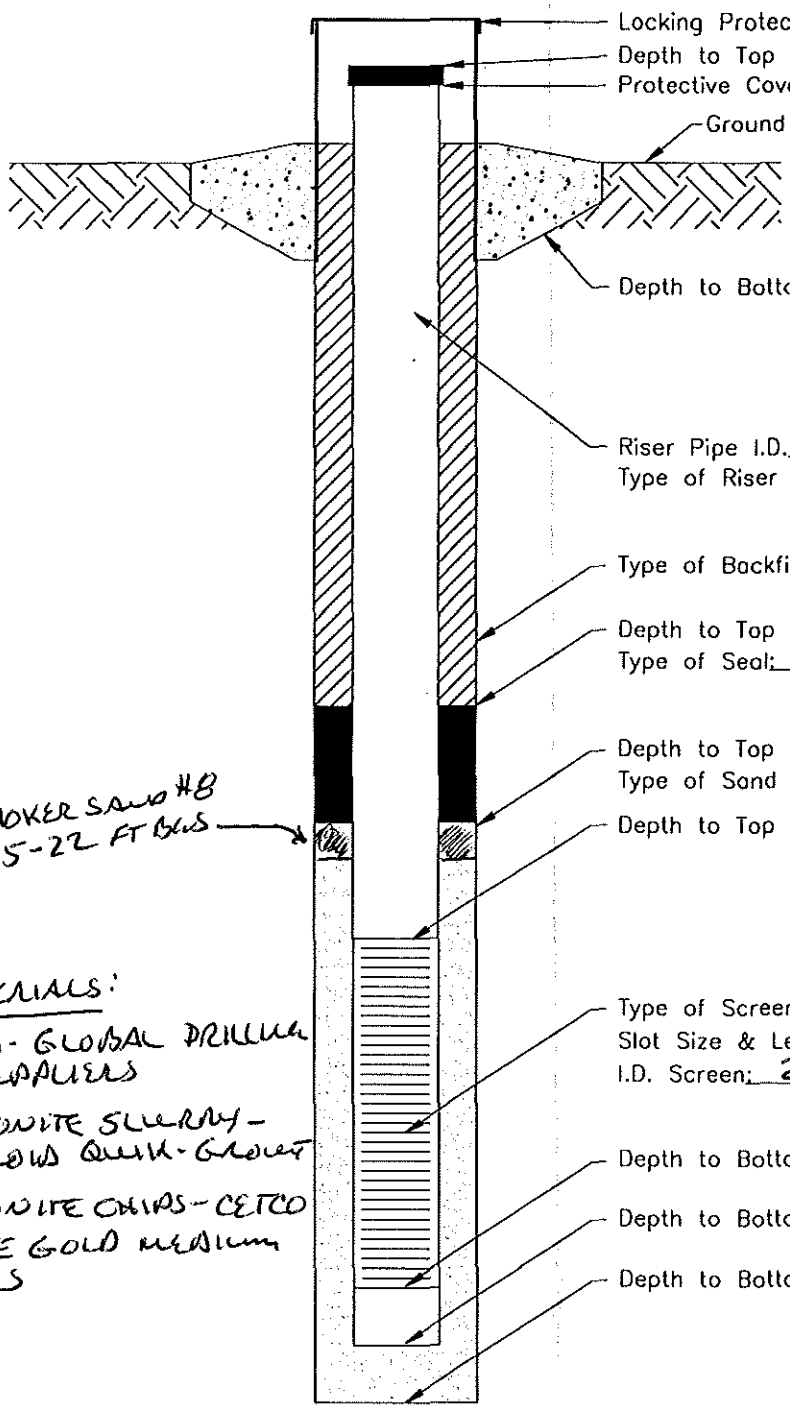
(610) 862-5000 phone
(610) 862-5050 fax

Project: USACE LUCKEY FUSRAP
Project No.: 92002.07
Borehole Diameter: 8-INCH
Top of PVC Casing Elevation:

Monitoring Well No.: MW-50 (I)
Date Started: 2 APRIL 2010
Date Completed: 5 APRIL 2010
Driller: FRONTIER DRILLING / KRIS LAMER
Drilling Method: SONIC
Development Method: SURGE / PUMP
Ground Surface Elevation:

MONITORING WELL DIAGRAM



Locking Protective Cover
Depth to Top of Casing:
Protective Cover
Ground Surface
Depth to Bottom of Concrete Collar: 1 FT BGS
Riser Pipe I.D.: 2-INCH
Type of Riser Pipe: PVC SCHEDULE 40
Type of Backfill: BENTONITE SLURRY
Depth to Top of Seal: 14 FT BGS
Type of Seal: BENTONITE CHIPS
Depth to Top of Sand: 22 FT BGS
Type of Sand Pack: #5 QUARTZ
Depth to Top of Screen: 24.6 FT BGS
Type of Screen: PVC SCHEDULE 40
Slot Size & Length: 20 SLOT / 5 FEET
I.D. Screen: 2-INCH
Depth to Bottom of Screen: 29.6 FT BGS
Depth to Bottom of Sediment Sump: 30 FT BGS
Depth to Bottom of Borehole: 30 FT BGS

MATERIALS:
SAND - GLOBAL DRILLING SUPPLIERS
BENTONITE SLURRY - BAROID QUIK-GROUT
BENTONITE CHIPS - CETCO PURE GOLD MEDIUM CHIPS

TerranearPMC
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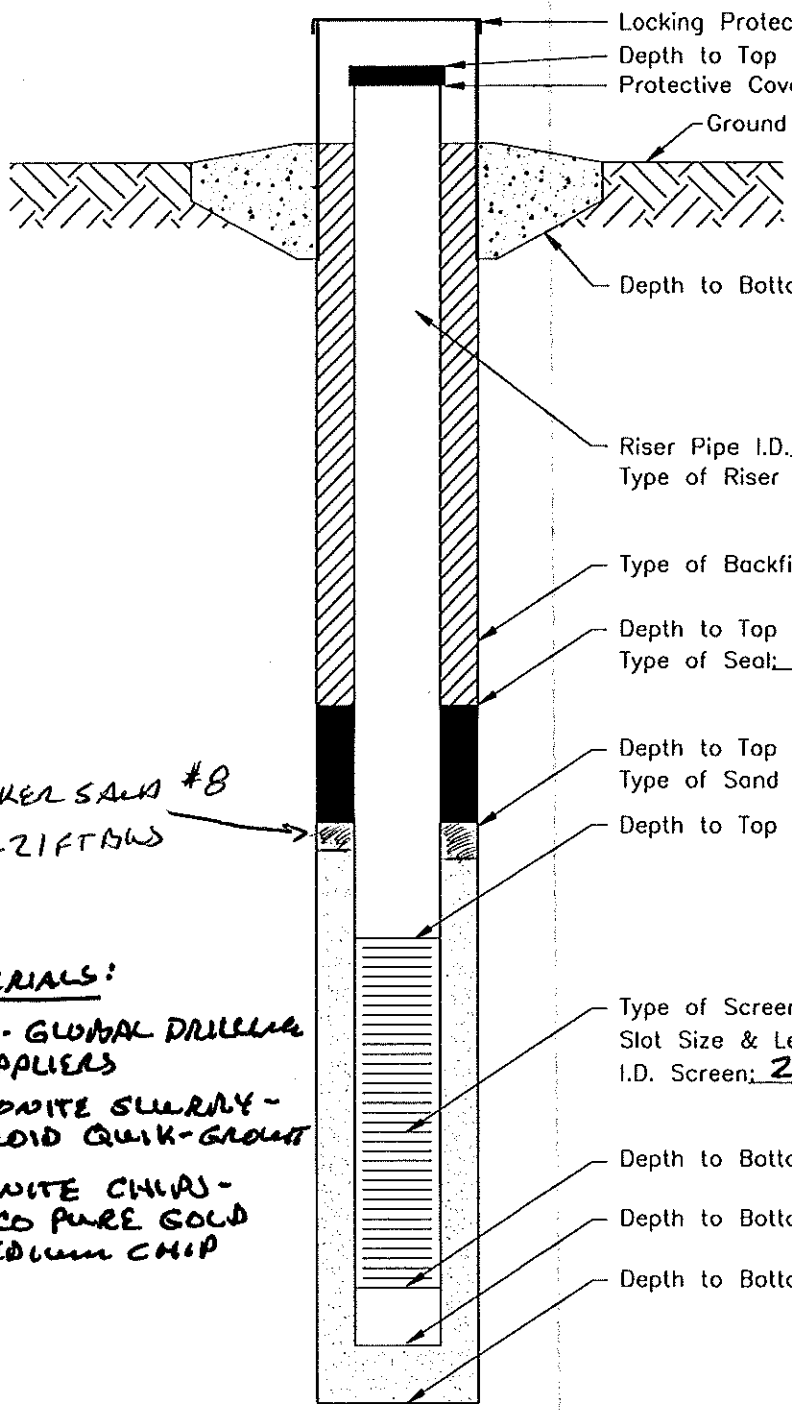
(610) 862-5050 fax

Project: USACE LUCKEY FUSRAP
Project No.: 92002.07
Borehole Diameter: 6-INCH
Top of PVC Casing Elevation:

Monitoring Well No.: MW-53 (I)
Date Started: 22 MARCH 2010
Date Completed: 22 MARCH 2010
Driller: FRONTZ DRILLING/KRIS LAUER
Drilling Method: SONIC
Development Method: SURGE/PUMP
Ground Surface Elevation:

MONITORING WELL DIAGRAM



Locking Protective Cover
Depth to Top of Casing: 30.3 FT TOC
Protective Cover
Ground Surface
Depth to Bottom of Concrete Collar: 1 FT BGS
Riser Pipe I.D.: 2-INCH
Type of Riser Pipe: PVC SCHEDULE 40
Type of Backfill: BENTONITE SLURRY
Depth to Top of Seal: 15 FT BGS
Type of Seal: BENTONITE CHIPS
Depth to Top of Sand: 21 FT BLS
Type of Sand Pack: #5 QUARTZ
Depth to Top of Screen: 23 FT BGS
Type of Screen: PVC SCHEDULE 40
Slot Size & Length: 20 SLOT / 5 FEET
I.D. Screen: 2-INCH
Depth to Bottom of Screen: 28 FT BLS
Depth to Bottom of Sediment Sump: 28.5 FT BGS
Depth to Bottom of Borehole: 30 FT BGS

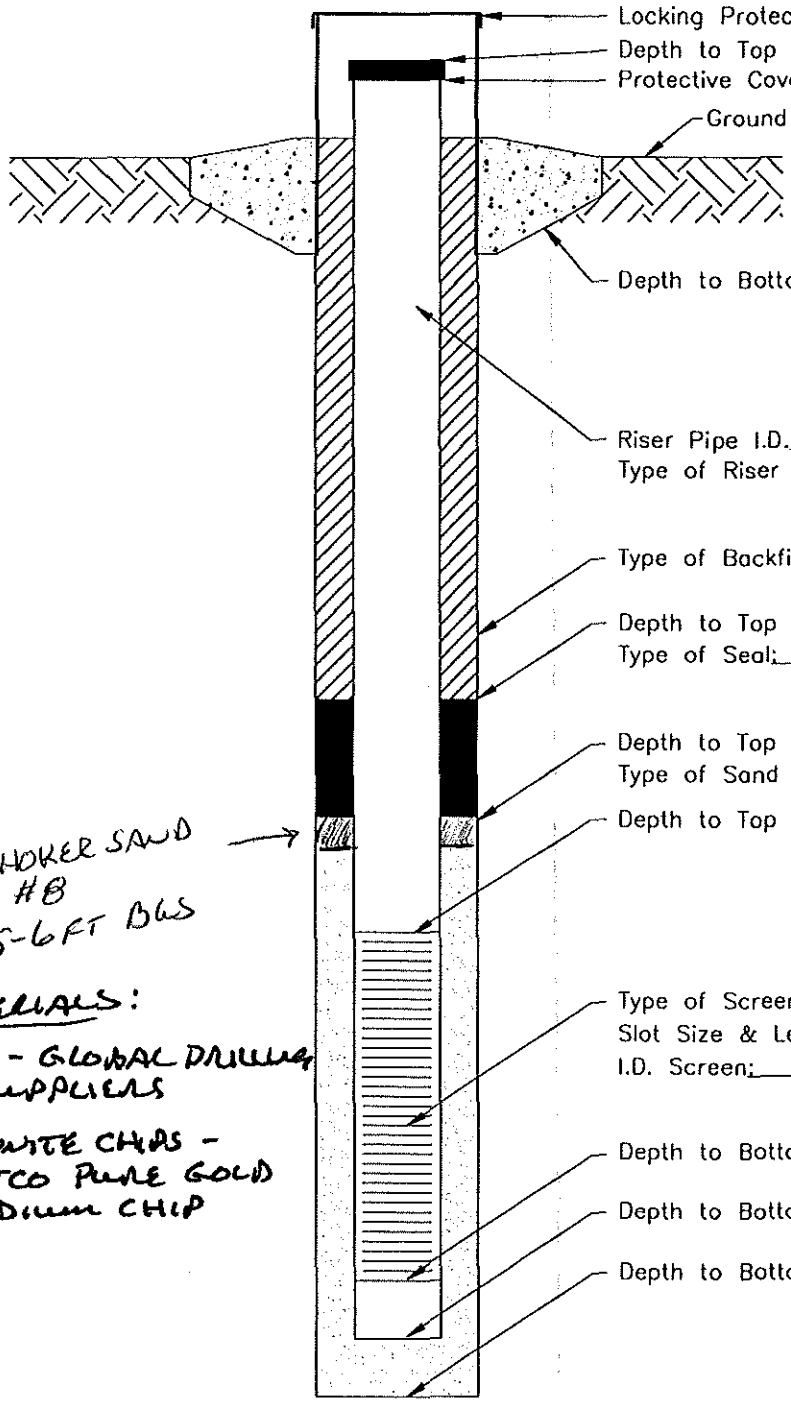
MATERIALS:
SAND - GLOBAL DRILLING SUPPLIERS
BENTONITE SLURRY - BAROID QUIK-GROUT
BENTONITE CHIPS - CETCO PURE GOLD MEDIUM CHIP

TerranearPMC
222 Valley Creek Blvd, Suite 210
Exton, PA 19341-2843
(610) 862-5000 phone
(610) 862-5050 fax

Project: USACE LUCKEY FUSRAP
Project No.: 92002.07
Borehole Diameter: 8-INCH
Top of PVC Casing Elevation:

Monitoring Well No.: MW-54(S)
Date Started: 24 MARCH 2010
Date Completed: 24 MARCH 2010
Driller: FRONTZ DRILLING / KRIS LAWER
Drilling Method: SONIC
Development Method: SURGE / PUMP
Ground Surface Elevation:

MONITORING WELL DIAGRAM



Locking Protective Cover
Depth to Top of Casing: 14.9 FT TOC
Protective Cover
Ground Surface
Depth to Bottom of Concrete Collar: 1 FT BGS
Riser Pipe I.D.: 2-INCH
Type of Riser Pipe: PVC SCHEDULE 40
Type of Backfill: BENTONITE CHIPS
Depth to Top of Seal: 1 FT BGS
Type of Seal: BENTONITE CHIPS
Depth to Top of Sand: 6 FT BGS
Type of Sand Pack: #7 QUARTZ
Depth to Top of Screen: 7.6 FT BGS
Type of Screen: SLOTTED PVC SCHEDULE 40
Slot Size & Length: 10 SLOT / 5 FEET
I.D. Screen: 2-INCH
Depth to Bottom of Screen: 12.6 FT BGS
Depth to Bottom of Sediment Sump: 13 FT BGS
Depth to Bottom of Borehole: 13 FT BGS

CHOKER SAND #8 5-6 FT BGS

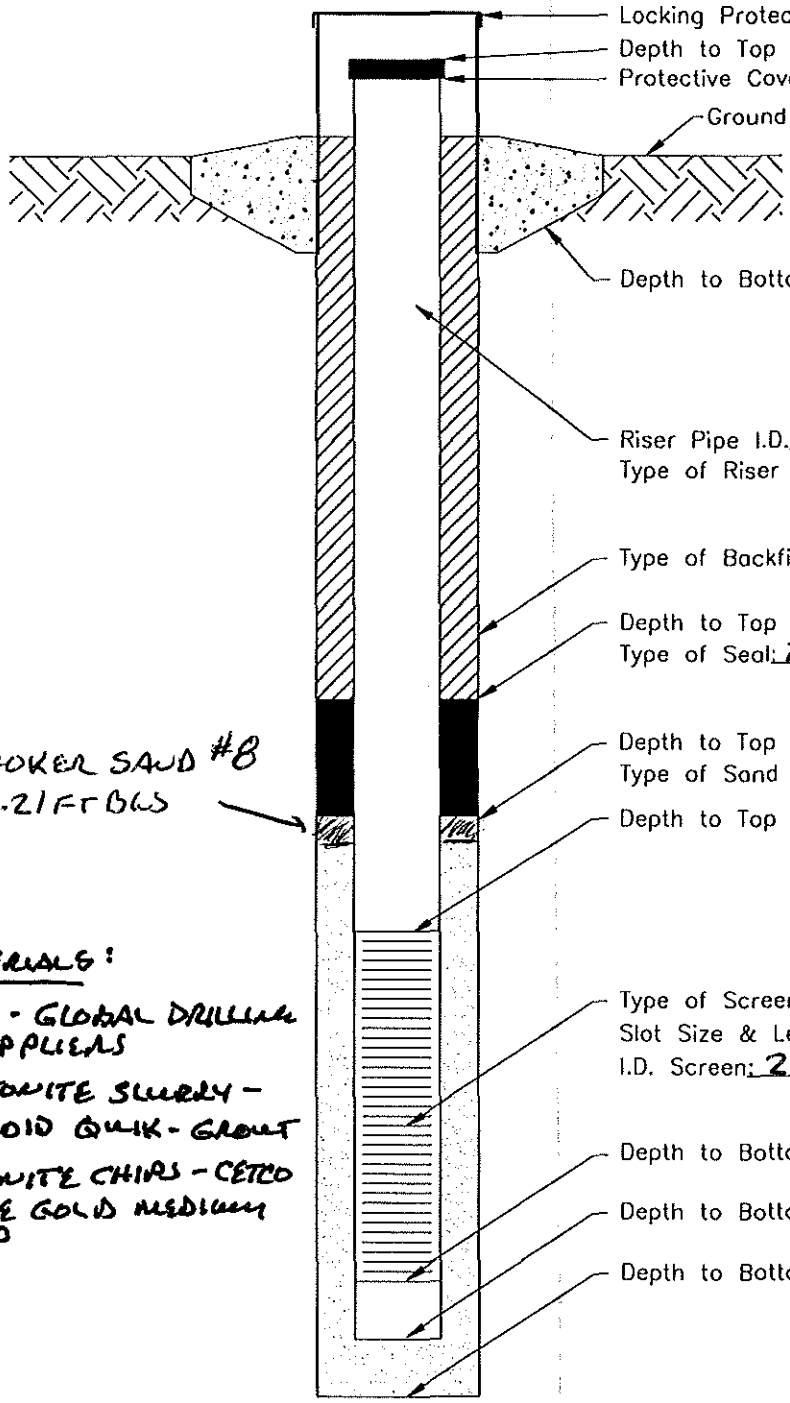
MATERIALS:
SAND - GLOBAL DRILLING SUPPLIERS
BENTONITE CHIPS - CETCO PURE GOLD MEDIUM CHIP

TerranearPMC
222 Valley Creek Blvd, Suite 210
Exton, PA 19341-2843
(610) 862-5000 phone
(610) 862-5050 fax

Project: USACE LUCKEY FUSRAP
Project No.: 92002.07
Borehole Diameter: 6-INCH
Top of PVC Casing Elevation:

Monitoring Well No.: MW-55 (I)
Date Started: 23 MARCH 2010
Date Completed: 24 MARCH 2010
Driller: FRONTIER DRILLING / KRIS LAUER
Drilling Method: SONIC
Development Method: SURGE / PUMP
Ground Surface Elevation:

MONITORING WELL DIAGRAM



Locking Protective Cover
Depth to Top of Casing: 32 FT TOC
Protective Cover
Ground Surface
Depth to Bottom of Concrete Collar: 1 FT BGS
Riser Pipe I.D.: 2-INCH
Type of Riser Pipe: PVC SCHEDULE 40
Type of Backfill: BENTONITE SLURRY
Depth to Top of Seal: 1 FT BGS
Type of Seal: BENTONITE CHIPS
Depth to Top of Sand: 21 FT BGS
Type of Sand Pack: #5 QUARTZ
Depth to Top of Screen: 23.5 FT BGS
Type of Screen: PVC SCHEDULE 40
Slot Size & Length: 20 SLOT / 5 FEET
I.D. Screen: 2-INCH
Depth to Bottom of Screen: 28.5 FT BGS
Depth to Bottom of Sediment Sump: 29 FT BGS
Depth to Bottom of Borehole: 29 FT BGS

CHOKER SAND #8
20-21 FT BGS

MATERIALS:

SAND - GLOBAL DRILLING SUPPLIERS

BENTONITE SLURRY - BAROID QUIK-GROUT

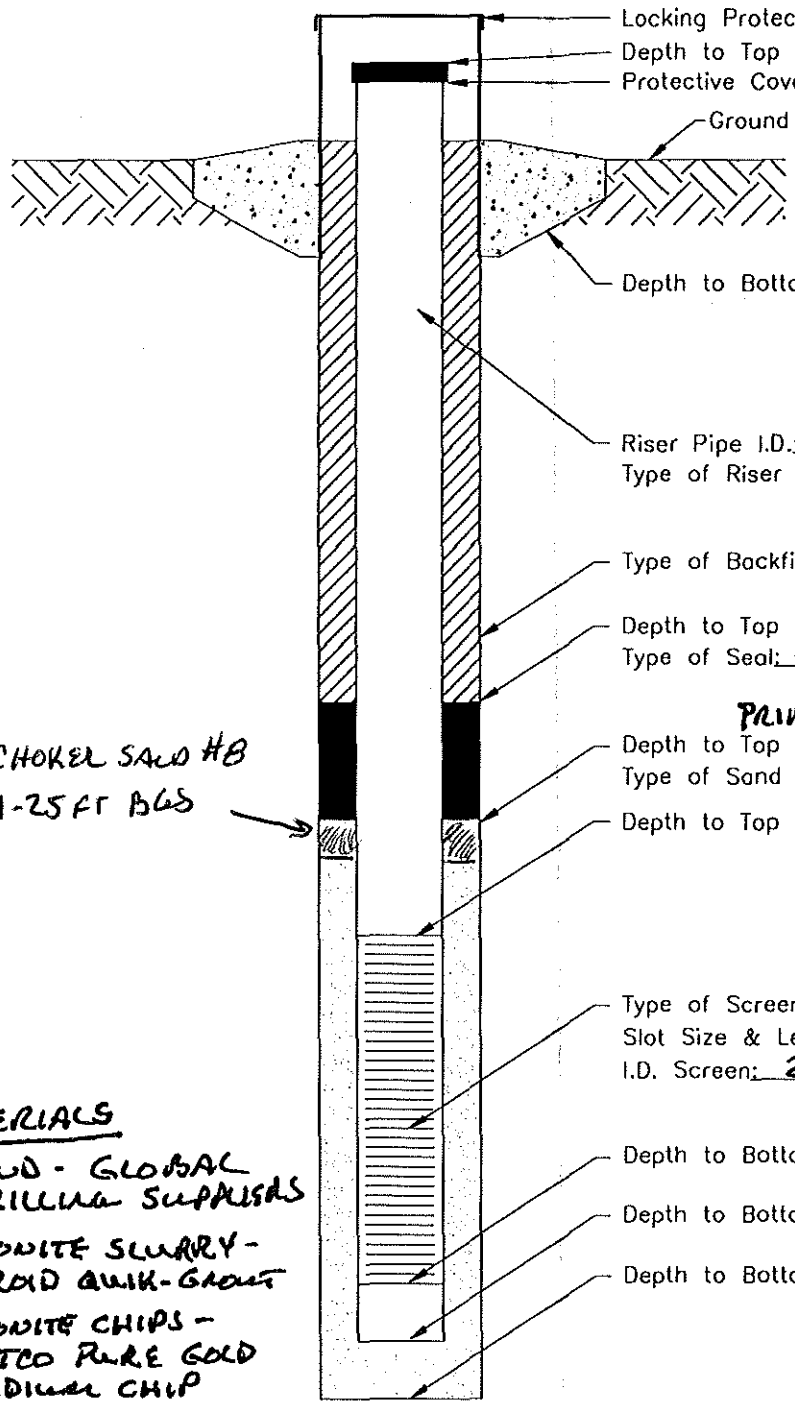
BENTONITE CHIPS - CETCO PURE GOLD MEDIUM CHIP

TerranearPMC
222 Valley Creek Blvd, Suite 210
Exton, PA 19341-2843
(610) 862-5000 phone
(610) 862-5050 fax

Project: USACE LUCKEY FUSRAP
Project No.: 92002.07
Borehole Diameter: 6-INCH
Top of PVC Casing Elevation:

Monitoring Well No.: MW-56 (I)
Date Started: 12 APRIL 2010
Date Completed: 13 APRIL 2010
Driller: FRONTE DRILLING / ~~KRIS LAWLER~~ DAVE SCHREGARDUS
Drilling Method: SONIC
Development Method: SURGE / PUMP
Ground Surface Elevation:

MONITORING WELL DIAGRAM



Locking Protective Cover
Depth to Top of Casing: 35.4 FT TOC
Protective Cover
Ground Surface
Depth to Bottom of Concrete Collar: 1 FT BGS
Riser Pipe I.D.: 2-INCH
Type of Riser Pipe: PVC SCHEDULE 40
Type of Backfill: BENTONITE
Depth to Top of Seal: 2 FT BGS
Type of Seal: BENTONITE CHIPS
PRIMARY
Depth to Top of Sand: 25 FT BGS
Type of Sand Pack: #5 QUARTZ
Depth to Top of Screen: 28 FT BGS
Type of Screen: PVC SCHEDULE 40
Slot Size & Length: 20 SLOT / 5 FEET
I.D. Screen: 2-INCH
Depth to Bottom of Screen: 33 FT BGS
Depth to Bottom of Sediment Sump: 33 FT BGS
Depth to Bottom of Borehole: 33 FT BGS

MATERIALS
SAND - GLOBAL DRILLING SUPPLIES
BENTONITE SLURRY - BAROID QUIK-GROUT
BENTONITE CHIPS - CETCO PURE GOLD MEDIUM CHIP

TPMC
USACE LUCKEY FUSRAP
92002

WELL DEVELOPMENT RECORD

WELL DESIGNATION: MW-22R(I) DATE(S) OF INSTALLATION: 12APR2010

SITE GEOLOGIST: CARL RIDGE P.G. DATE(S) OF DEVELOPMENT: 4-16-10

STATIC WATER LEVELS: (FROM TOP OF CASING)	BEFORE DEVELOPMENT	7.40 FT	DATE	4-16-10
	24 HRS. AFTER DEVEL.		DATE	
DEPTH TO SEDIMENT: (FROM TOP OF CASING)	BEFORE DEVELOPMENT	29.26 FT	DATE	4-16-10
	24 HRS. AFTER DEVEL.		DATE	

DEPTH TO WELL BOTTOM: (FROM TOP OF CASING) 29.3 FT TOC

QUANTITY OF MUD/WATER (gallons):

SONIC DRILLING

LOST DURING DRILLING

REMOVED PRIOR TO WELL INSERTION

LOST d/THICK FLUID DISPLACEMENT

ADDED d/FILTER PACK REPLACEMENT

(a) water column (ft.) 21.86 FT (b) well diameter (in.) 2-INCH

(c) screen length (ft.) 5 FT (d) borehole diameter (in.) 8-INCH

(e) annulus space/length (ft) 8.5 FT INCLUDES CHOKER AND PRIMARY SAND

QUANTITY OF FLUID STANDING IN WELL gallons

QUANTITY OF FLUID IN ANNULUS gallons

TOTAL QTY. (5 equivalent volumes)

TOTAL QTY. (5 times losses)

TOTAL DEVEL. VOLUME REQ'D gallons

TYPE AND SIZE OF PUMP: SUBMERSIBLE / 1.7-INCH

TYPE AND SIZE OF BAILER: PUMP

DESCRIPTION OF SURGE TECHNIQUE, IF ANY: OSCILLATE PUMP ACROSS SCREEN INTERVAL

TYPICAL PUMPING RATE 1 GPM GAL/HR EST. RECHARGE RATE

TOTAL QUANTITY OF WATER REMOVED 55 GALS TIME REQUIRED

SIGNATURE OF SITE GEOLOGIST

USACE
Project: Luckey Fusrad 92002
Well: MW 22R (I)
Geologist: Carl Pidge P.G.
TPMC

Date	Time	Pump On/Off	Flow Rate (gal/min)	Quantity Removed (gallons)	Depth to Water (ft TOC)	pH	Cond (µS/cm)	DO (mg/L)	Temp (°C)	Turbidity (NTU)	Redox Potential (Eh) (mV)	Appearance	Comments
4-16	4:15	on	1		7.4	5.86	0.434	7.10	34.39	0.0			
	4:20					5.84	0.461	11.01	20.40	4.0			Surged
	4:25					5.85	0.456	12.21	15.10	4.2			
	4:30		1			5.86	0.445	11.50	13.13	6.1			Surged
	4:35					5.87	0.441	11.60	12.57	6.4			
	4:40					5.84	0.437	11.52	12.13	6.5			
	4:45					5.83	0.435	11.41	11.94	5.3			
	4:50					5.83	0.433	11.29	11.85	5.5			
	4:55		1			5.84	0.432	11.12	11.85	6.0			
	5:00					5.84	0.431	11.00	11.81	3.7			
	5:05					5.85	0.427	10.58	12.95	4.3			
	5:10		1			5.84	0.433	11.09	12.15	3.8			
	5:15					5.84	0.434	11.18	11.85	4.1			
	5:20				8.9	5.85	0.434	11.20	11.80	4.5			

TPMC
USACE LUCKEY FUSRAP
92002

WELL DEVELOPMENT RECORD

WELL DESIGNATION: MW 24 R(S) DATE(S) OF INSTALLATION: 13 APR 2010

SITE GEOLOGIST: CARL PIDGE P.G. DATE(S) OF DEVELOPMENT: 4-16-10

STATIC WATER LEVELS: (FROM TOP OF CASING)
BEFORE DEVELOPMENT 3.30 FT DATE 4-16-10
24 HRS. AFTER DEVEL. _____ DATE _____

DEPTH TO SEDIMENT: (FROM TOP OF CASING)
BEFORE DEVELOPMENT 20.2 FT DATE 4-16-10
24 HRS. AFTER DEVEL. _____ DATE _____

DEPTH TO WELL BOTTOM: (FROM TOP OF CASING) 20.2 FT

QUANTITY OF MUD/WATER (gallons):

SONIC DRILLING

LOST DURING DRILLING _____

REMOVED PRIOR TO WELL INSERTION _____

LOST d/THICK FLUID DISPLACEMENT _____

ADDED d/FILTER PACK REPLACEMENT _____

(a) water column (ft.) 16.9 FT (b) well diameter (in.) 2 IN

(c) screen length (ft.) 5 FT (d) borehole diameter (in.) 8-IN

(e) annulus space/length (ft) 9 FT INCLUDES CHOKER AND PRIMARY SAND

QUANTITY OF FLUID STANDING IN WELL _____ gallons

QUANTITY OF FLUID IN ANNULUS _____ gallons

TOTAL QTY. (5 equivalent volumes) _____

TOTAL QTY. (5 times losses) _____

TOTAL DEVEL. VOLUME REQ'D _____ gallons

TYPE AND SIZE OF PUMP: SUBMERSIBLE 1 1/2-INCH

TYPE AND SIZE OF BAILER: PUMP

DESCRIPTION OF SURGE TECHNIQUE, IF ANY: OSCILLATE PUMP ACROSS SCREEN INTERVAL

TYPICAL PUMPING RATE 1 GPM GAL/HR EST. RECHARGE RATE _____

TOTAL QUANTITY OF WATER REMOVED 25 GALS TIME REQUIRED _____

SIGNATURE OF SITE GEOLOGIST _____

USACE

Project: LUCKEY FUSRAP 92002

Well: MW-24R (S)

Geologist: CARL PIDGE P.G. TPMC

Date	Time	Pump On/Off	Flow Rate (gal/min)	Quantity Removed (gallons)	Depth to Water (ft TOC)	pH	Cond (µS/cm)	DO (mg/L)	Temp (°C)	Turbidity (NTU)	Redox Potential (Eh) (mV)	Appearance	Comments
	1:50	on	1		3.3	5.82	0.415	9.36	25.40	12.5			surged
	1:55					5.83	0.425	10.64	21.30	19.3			Surged
	2:00		1			5.82	0.428	11.90	15.63	22.2			
	2:05					5.81	0.416	11.87	13.77	33.2			
	2:10	off	1	20		5.80	0413	11.63	13.06	22.5			well Dry
	2:15				18.78								

TPMC
USACE LUCKEY FUSRAP
92002

WELL DEVELOPMENT RECORD

WELL DESIGNATION: MW-53 (I) DATE(S) OF INSTALLATION: 3-22-10

SITE GEOLOGIST: CARL PIDGE P.G. DATE(S) OF DEVELOPMENT: 4-1-10

STATIC WATER LEVELS: (FROM TOP OF CASING)
BEFORE DEVELOPMENT 7.04 FT DATE 4-1-10
24 HRS. AFTER DEVEL. _____ DATE _____

DEPTH TO SEDIMENT: (FROM TOP OF CASING)
BEFORE DEVELOPMENT 30.27 FT DATE 4-1-10
24 HRS. AFTER DEVEL. _____ DATE _____

DEPTH TO WELL BOTTOM: (FROM TOP OF CASING) 30.27 FT

QUANTITY OF MUD/WATER (gallons):

SONIC DRILLING

LOST DURING DRILLING _____
REMOVED PRIOR TO WELL INSERTION _____
LOST d/THICK FLUID DISPLACEMENT _____
ADDED d/FILTER PACK REPLACEMENT _____

(a) water column (ft.) 23.23 FT (b) well diameter (in.) 2-INCH
(c) screen length (ft.) 5 FEET (d) borehole diameter (in.) 6-INCH
(e) annulus space/length (ft) 10FT INCLUDES CHOKER AND PRIMARY SAND

QUANTITY OF FLUID STANDING IN WELL _____ gallons
QUANTITY OF FLUID IN ANNULUS _____ gallons
TOTAL QTY. (5 equivalent volumes) _____
TOTAL QTY. (5 times losses) _____
TOTAL DEVEL. VOLUME REQ'D _____ gallons

TYPE AND SIZE OF PUMP: 1.8 INCH TORNADO SUBMERSIBLE
TYPE AND SIZE OF BAILER: —
DESCRIPTION OF SURGE TECHNIQUE, IF ANY: OSCILLATE PUMP ACROSS SCREEN

TYPICAL PUMPING RATE 1.3 GPM GAL/HR EST. RECHARGE RATE _____
TOTAL QUANTITY OF WATER REMOVED 55 GALS TIME REQUIRED _____
SIGNATURE OF SITE GEOLOGIST _____

USACE

Project: Luckey Fusrap 92002

Well: MW 53 (I)

Geologist: Carl Pierce P.G.
TPMC

Hard bottom

Date	Time	Pump On/Off	Flow Rate (gal/min)	Quantity Removed (gallons)	Depth to Water (ft TOC)	pH	Cond (µS/cm)	DO (mg/L)	Temp (°C)	Turbidity (NTU)	Redox Potential (Eh) (mV)	Appearance	Comments
4-1	9:00	On	1.5		7.04	6.91	1.30	1.45	10.95	-5.0		Cloudy	Surged
	9:05					6.76	1.30	0.23	10.90	-5.0			Surged
	9:10		1			6.39	1.45	0.34	10.83	-5.0			Surged
	9:15					6.34	1.58	0.42	10.77	-5.0			Surged
	9:20					6.37	1.57	0.18	10.84	-5.0			Surged
	9:25		1			6.38	1.57	0.12	10.82	803			Surged
	9:30					6.40	1.56	0.20	10.81	606			Surged
	9:35		1			6.39	1.58	0.20	10.80	-5.0			
	9:40			55	9.30	6.40	1.58	0.26	10.79	394			

NEW

WELL DEVELOPMENT RECORD

TPMC
USACE LUCKEY FUSRAP
92002

WELL DESIGNATION: MW 54(S) DATE(S) OF INSTALLATION: 3-24-10

SITE GEOLOGIST: CARL PIDGE P.G. DATE(S) OF DEVELOPMENT: 3-30-10

STATIC WATER LEVELS: (FROM TOP OF CASING)	BEFORE DEVELOPMENT	7.15 FT	DATE	3-30-10
	24 HRS. AFTER DEVEL.	11.9 FT	DATE	1 APRIL 10
DEPTH TO SEDIMENT: (FROM TOP OF CASING)	BEFORE DEVELOPMENT	14.9 FT	DATE	3-30-10
	24 HRS. AFTER DEVEL.	~~11.9 FT TOC~~	DATE	

DEPTH TO WELL BOTTOM: (FROM TOP OF CASING) 14.9 FT TOC

QUANTITY OF MUD/WATER (gallons):

SONIC DRILLING

LOST DURING DRILLING	
REMOVED PRIOR TO WELL INSERTION	
LOST d/THICK FLUID DISPLACEMENT	
ADDED d/FILTER PACK REPLACEMENT	

(a) water column (ft.) 7.75 FT (b) well diameter (in.) 2-INCH

(c) screen length (ft.) 5 FT (d) borehole diameter (in.) 8-INCH

(e) annulus space/length (ft) 8 FT INCLUDES CHOKER AND PRIMARY SAND

QUANTITY OF FLUID STANDING IN WELL _____ gallons

QUANTITY OF FLUID IN ANNULUS _____ gallons

TOTAL QTY. (5 equivalent volumes) _____

TOTAL QTY. (5 times losses) _____

TOTAL DEVEL. VOLUME REQ'D _____ gallons

TYPE AND SIZE OF PUMP: 1.8 INCH TORNADO SUBMERSIBLE

TYPE AND SIZE OF BAILER: —

DESCRIPTION OF SURGE TECHNIQUE, IF ANY: OSCILLATE PUMP ACROSS SCREEN

TYPICAL PUMPING RATE 1 GAL/HR EST. RECHARGE RATE _____

TOTAL QUANTITY OF WATER REMOVED ≈ 21 GALS TIME REQUIRED _____

SIGNATURE OF SITE GEOLOGIST _____

INITIAL DEVELOPMENT BY FRONTZ DRILLING CREW
DAVE SCHLEGENGOST
CHAD WHITMAN

USACE

Project: Luckey FUSRAP 92002

Well: MW54S

Geologist: Cam Pidge P.G.
TPMC

Date	Time	Pump On/Off	Flow Rate (gal/min)	Quantity Removed (gallons)	Depth to Water (ft TOC)	pH	Cond (µS/cm)	DO (mg/L)	Temp (°C)	Turbidity (NTU)	Redox Potential (Eh) (mV)	Appearance	Comments
3-30	9:25	9:30 off	1	10		5.59	0.911	9.15	10.69	98.1			No water @ 9:30
	9:40	9:41 off		0.5		5.53	0.887	10.04	9.15	142.0			No water @ 9:40
4-1	8:15		1		11.9								

NEW
INITIAL

WELL DEVELOPMENT RECORD

TPMC
USACE LUCKEY FUSRAP
92002

WELL DESIGNATION: NEW 55(I) DATE(S) OF INSTALLATION: 23 MARCH 10

SITE GEOLOGIST: CARL PIDGE P.G. DATE(S) OF DEVELOPMENT: 30 MARCH 10

STATIC WATER LEVELS: (FROM TOP OF CASING)
BEFORE DEVELOPMENT 6.85 FT DATE 30 MARCH 10
24 HRS. AFTER DEVEL. DATE

DEPTH TO SEDIMENT: (FROM TOP OF CASING)
BEFORE DEVELOPMENT 32.06 FT DATE 30 MARCH 10
24 HRS. AFTER DEVEL. DATE

DEPTH TO WELL BOTTOM: (FROM TOP OF CASING) 32 FT HARD BOTTOM

QUANTITY OF MUD/WATER (gallons):

SONIC DRILLING

LOST DURING DRILLING
REMOVED PRIOR TO WELL INSERTION
LOST d/THICK FLUID DISPLACEMENT
ADDED d/FILTER PACK REPLACEMENT

(a) water column (ft.) 25.15 FT (b) well diameter (in.) 2-INCH

(c) screen length (ft.) 5 FEET (d) borehole diameter (in.) 6-INCH

(e) annulus space/length (ft) 9FT INCLUDES CHOKER AND PRIMARY SEAL

QUANTITY OF FLUID STANDING IN WELL gallons

QUANTITY OF FLUID IN ANNULUS gallons

TOTAL QTY. (5 equivalent volumes)

TOTAL QTY. (5 times losses)

TOTAL DEVEL. VOLUME REQ'D gallons

TYPE AND SIZE OF PUMP: 1.8-INCH TORNADO SUBMERSIBLE

TYPE AND SIZE OF BAILER: —

DESCRIPTION OF SURGE TECHNIQUE, IF ANY: OSCILLATE PUMP ACROSS SCREEN

TYPICAL PUMPING RATE 1.5 GPM GAL/HR EST. RECHARGE RATE

TOTAL QUANTITY OF WATER REMOVED 55 GALS TIME REQUIRED

SIGNATURE OF SITE GEOLOGIST

INITIAL DEVELOPMENT BY FRONTZ DRILLING CREW
DAVE SCHREENGOST
CHAD WHITMAN

USACE

Project: LUCKEY FUSRAP 92002

Well: MW 55I

Geologist: CARL PIDGE P.G.
TPMC

INITIAL DEVELOPMENT BY FROUTZ DRILLING CREW
DAVE SCHNEEGOST
CHAD WHITMAN

Page 1 of 1

Hard bottom
No sediment

Date	Time	Pump On/Off	Flow Rate (gal/min)	Quantity Removed (gallons)	Depth to Water (ft TOC)	pH	Cond (µS/cm)	DO (mg/L)	Temp (°C)	Turbidity (NTU)	Redox Potential (Eh) (mV)	Appearance	Comments
~~10:35~~ 3-30	10:35		1.5 gpm	0	6.85	5.78	1.22	7.97	10.13	602		Gray Cloudy	
"	10:40			7.5		5.67	1.18	5.87	10.39	133			
"	10:45			7.5		5.80	1.22	5.36	10.66	-5.0			Surged
"	10:50		1.5	7.5		5.90	1.19	3.30	10.53	-5.0			Surged
"	10:55			7.5		5.93	1.18	3.19	10.64	483			
"	11:00			7.5		5.94	1.18	3.02	10.62	72.1			
"	11:05			7.5		6.05	1.17	2.54	10.66	28.9			
"	11:10		1	7.5		6.03	1.21	2.61	11.03	16.2			
"	11:15			7.5		6.04	1.21	2.70	10.99	3.0		Clear	
			55 GALLONS										

NEW

WELL DEVELOPMENT RECORD

TPMC
USACE LUCKEY FUSRAP
92002

WELL DESIGNATION: MW 56(I)

DATE(S) OF INSTALLATION: 13APR 2010

SITE GEOLOGIST: CARL PIDGE P.G.

DATE(S) OF DEVELOPMENT: 4-16-10

STATIC WATER LEVELS: (FROM TOP OF CASING)
BEFORE DEVELOPMENT 8.85 FT DATE 4-16-10
24 HRS. AFTER DEVEL. _____ DATE _____

DEPTH TO SEDIMENT: (FROM TOP OF CASING)
BEFORE DEVELOPMENT 35.4 FT DATE _____
24 HRS. AFTER DEVEL. _____ DATE _____

DEPTH TO WELL BOTTOM: (FROM TOP OF CASING) 35.4 FT

QUANTITY OF MUD/WATER (gallons):

SONIC DRILLING

LOST DURING DRILLING _____

REMOVED PRIOR TO WELL INSERTION _____

LOST d/THICK FLUID DISPLACEMENT _____

ADDED d/FILTER PACK REPLACEMENT _____

(a) water column (ft.) 26.55 FT (b) well diameter (in.) 2 IN

(c) screen length (ft.) 5 FT (d) borehole diameter (in.) 8 IN

(e) annulus space/length (ft) 9 INCLUDES CHOKER AND PRIMARY SAND

QUANTITY OF FLUID STANDING IN WELL _____ gallons

QUANTITY OF FLUID IN ANNULUS _____ gallons

TOTAL QTY. (5 equivalent volumes) _____

TOTAL QTY. (5 times losses) _____

TOTAL DEVEL. VOLUME REQ'D _____ gallons

TYPE AND SIZE OF PUMP: SUBMERSIBLE / 1.7-INCH

TYPE AND SIZE OF BAILER: PUMP

DESCRIPTION OF SURGE TECHNIQUE, IF ANY: OSCILLATE PUMP ACROSS SCREEN INTERVAL

TYPICAL PUMPING RATE 1 GPM GAL/HR EST. RECHARGE RATE _____

TOTAL QUANTITY OF WATER REMOVED 55 GALS TIME REQUIRED _____

SIGNATURE OF SITE GEOLOGIST _____

USACE

Project: Luckey Fusrap 92002

Well: MW 56(I)

Geologist: Carl Pierce P.G.
TPMC

Date	Time	Pump On/Off	Flow Rate (gal/min)	Quantity Removed (gallons)	Depth to Water (ft TOC)	pH	Cond (µS/cm)	DO (mg/L)	Temp (°C)	Turbidity (NTU)	Redox Potential (Eh) (mV)	Appearance	Comments
4-16	11:40	on	.01	~~8.85~~	8.85	5.72	0.394	9.58	23.26	11.1			surged
	11:45					5.73	0.407	11.42	17.26	21.2			
	11:50					5.73	0.403	11.88	14.41	21.6			Surged
	11:55					5.74	0.398	11.74	13.16	19.4			
	12:00		1			5.73	0.392	11.68	12.91	43.1			
	12:05					5.75	0.395	11.77	12.68	28.2			
	12:10					5.75	0.394	11.67	12.63	22.7			
	12:15					5.76	0.393	11.49	12.58	20.7			
	12:20					5.76	0.393	11.43	12.58	20.3			
	12:25		1			5.76	0.393	11.35	12.58	18.1			
	12:30					5.76	0.394	11.31	12.59	20.4			
	12:35					5.78	0.396	11.28	12.62	19.8			
	12:40				10.15	5.78	0.396	11.26	12.66	19.4			

DNR 7802.05e

WELL LOG AND DRILLING REPORT

Ohio Department of Natural Resources
Division of Water, 2045 Morse Road, Columbus, Ohio 43229-6605
Voice (614) 265-6740 Fax (614) 265-6767

Well Log Number: 2026759

Page 1 of 1 for this record.

WELL LOCATION

County: WOOD Township: TROY

Owner/Builder: ARMY CORP OF ENGINEERS

Address of Well Location: 21200 LUCKEY RD

City: LUCKEY Zip Code +4: 43443

Permit No. ____ Section; ____ and/or Lot No. ____

Use of Well: MONITOR

Coordinates of Well (Use only one of the below coordinate systems)

State Plane Coordinates

N ☐ X ____ +/- ____ ft.

S ☐ Y ____ +/- ____ ft.

Latitude, Longitude Coordinates

Latitude: 41.45976 Longitude: -83.4879

Elevation of Well in feet: ____ +/- ____ ft.

Datum Plane: ☐ NAD27 ☒ NAD83 Elevation Source ____

Source of Coordinates: GPS

Well location written description:

Comments on water quality/quantity and well construction:

MW 22R (1)

GRAVEL PACK WAS 100 LBS #5 FROM 27 - 19 FT. AND 25 LBS #8 FROM 19 - 18 FT.

WELL TEST *

Pre-Pumping Static Level 0 ft. Date ____

Measured from ____

Pumping test method ____

Test Rate ____ gpm Duration of Test ____ hrs.

Feet of Drawdown ____ ft. Sustainable Yield ____ gpm

*(Attach a copy of the pumping test record, per section 1521.05, ORC)

Is Copy Attached? ☐ Yes ☒ No Flowing Well? ☐ Yes ☒ No

PUMP/PITLESS

Type of pump ____ Capacity ____ gpm

Pump set at ____ ft. Pitless Type ____

Pump installed by ____

I hereby certify the information given is accurate and correct to the best of my knowledge.

Drilling Firm: FRONTZ DRILLING, INC.

Address: 2031 MILLERSBURG RD

City, State, Zip: WOOSTER OH 44691

Signed: KRISTI FITZGERALD (Filed Electronically) Date: 4/22/2010

ODH Registration Number: 0120

CONSTRUCTION DETAILS

Drilling Method: ROTOSONIC

BOREHOLE/CASING (Measured from ground surface)

1 Borehole Diameter 9.25 inches Depth 18 ft.
Casing Diameter 2 in. Length 22 ft. Thickness 0.154 in.

2 Borehole Diameter 5 inches Depth 27 ft.
Casing Diameter ____ in. Length ____ ft. Thickness ____ in.

Casing Height Above Ground 2.5 ft.

Type 1: PVC
Type 2: ____

Joints 1: Threaded
Joints 2: ____

SCREEN

Diameter 2 in. Slot Size 0.01 in. Screen Length 5 ft.

Type: MACHINE SLOTTED Material: PVC

Set Between 27 ft. and 22 ft.

GRAVEL PACK (Filter Pack)

Material/Size: #5 Vol/Wt. Used: 125 LBS

Method of Installation: Poured (gravity)

Depth: Placed From: 27 ft. To: 18 ft.

GROUT

Material: Bentonite pellets/chunks Vol/Wt. Used: 475 LBS

Method of Installation: Poured (gravity)

Depth: Placed From: 18 ft. To: 2 ft.

DRILLING LOG*

FORMATIONS INCLUDE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.

Color	Texture	Formation	From	To
GRAY-BROWN		CLAY	0	1
DARK BROWN		SILT	1	10.5
DARK GRAY	FINE	SAND	10.5	14
DARK GRAY	FINE TO COURSE	GRAVEL	14	16
		LIMESTONE	16	27

Aquifer Type (Formation producing the most water.) LIMESTONE

Date of Well Completion 4/12/2010 Total Depth of Well 27 ft.

Completion of this form is required by section 1521.05, Ohio Revised Code - file within 30 days after completion of drilling.
Distribute copies of this record to Customer, and Local Health Deptartment.

DNR 7802.05e

WELL LOG AND DRILLING REPORT

Ohio Department of Natural Resources
Division of Water, 2045 Morse Road, Columbus, Ohio 43229-6605
Voice (614) 265-6740 Fax (614) 265-6767

Well Log Number: 2026760

Page 1 of 1 for this record.

WELL LOCATION

County: WOOD Township: TROY

Owner/Builder: ARMY CORP OF ENGINEERS

Address of Well Location: 21200 LUCKEY RD

City: LUCKEY Zip Code +4: 43443

Permit No. ____ Section: ____ and or Lot No. ____

Use of Well: MONITOR

Coordinates of Well (Use only one of the below coordinate systems)

State Plane Coordinates

N ☐ X ____ +/- ____ ft.

S ☐ Y ____ +/- ____ ft.

Latitude, Longitude Coordinates

Latitude: 41.4577 Longitude: -83.48937

Elevation of Well in feet: 650 +/- 1 ft.

Datum Plane: ☐ NAD27 ☒ NAD83 Elevation Source ____

Source of Coordinates: GPS

Well location written description:

Comments on water quality/quantity and well construction:

MW 24R(S)

GRAVEL PACK #5 350 LBS FROM 18-10FT. #8 25 LBS FROM 10-9

WELL TEST *

Pre-Pumping Static Level 0 ft. Date ____

Measured from ____

Pumping test method ____

Test Rate ____ gpm Duration of Test ____ hrs.

Feet of Drawdown ____ ft. Sustainable Yield ____ gpm

*(Attach a copy of the pumping test record, per section 1521.05, ORC)

Is Copy Attached? ☐ Yes ☒ No Flowing Well? ☐ Yes ☒ No

PUMP/PITLESS

Type of pump ____ Capacity ____ gpm

Pump set at ____ ft. Pitless Type ____

Pump installed by ____

I hereby certify the information given is accurate and correct to the best of my knowledge.

Drilling Firm: FRONTZ DRILLING, INC.

Address: 2031 MILLERSBURG RD

City, State, Zip: WOOSTER OH 44691

Signed: KRISTI FITZGERALD (Filed Electronically) Date: 4/22/2010

ODH Registration Number: 0120

CONSTRUCTION DETAILS

Drilling Method: ROTOSONIC

BOREHOLE/CASING (Measured from ground surface)

1 Borehole Diameter 9.25 inches Depth 18 ft.
Casing Diameter 2 in. Length 15.5 ft. Thickness 0.154 in.

2 Borehole Diameter ____ inches Depth ____ ft.
Casing Diameter ____ in. Length ____ ft. Thickness ____ in.

Casing Height Above Ground 2.5 ft.

Type 1: PVC
Type 2: ____

Joints 1: Threaded
Joints 2: ____

SCREEN

Diameter 2 in. Slot Size 0.01 in. Screen Length 5 ft.

Type: MACHINE SLOTTED Material: PVC

Set Between 18 ft. and 13 ft.

GRAVEL PACK (Filter Pack)

Material/Size: #5 Vol/Wt. Used: 375 LBS

Method of Installation: Poured (gravity)

Depth: Placed From: 18 ft. To: 9 ft.

GROUT

Material: Bentonite pellets/chunks Vol/Wt. Used: 275 LBS

Method of Installation: Poured (gravity)

Depth: Placed From: 9 ft. To: 2 ft.

DRILLING LOG*

FORMATIONS INCLUDE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.

Color	Texture	Formation	From	To
GRAY-BROWN		CLAY	0	2.5
DARK BROWN		SILT	2.5	4.5
DARK BROWN		SILT AND CLAY	4.5	15.5
GRAY-BROWN		CLAY	15.5	16
GRAY		CLAY	16	17
GRAY		SAND	17	18

Aquifer Type (Formation producing the most water.) SAND

Date of Well Completion 4/13/2010 Total Depth of Well 18 ft.

Completion of this form is required by section 1521.05, Ohio Revised Code - file within 30 days after completion of drilling.
Distribute copies of this record to Customer, and Local Health Deptartment.

DNR 7802.05e

WELL LOG AND DRILLING REPORT

Ohio Department of Natural Resources
Division of Water, 2045 Morse Road, Columbus, Ohio 43229-6605
Voice (614) 265-6740 Fax (614) 265-6767

Well Log Number: 2026765

Page 1 of 1 for this record.

WELL LOCATION

County: WOOD Township: TROY

Owner/Builder: ARMY CORP OF ENGINEERS

Address of Well Location: 21200 LUCKEY RD

City: LUCKEY Zip Code +4: 43443

Permit No. ____ Section; ____ and/or Lot No. ____

Use of Well: MONITOR

Coordinates of Well (Use only one of the below coordinate systems)

State Plane Coordinates

N ☒ X 1697066.31 +/- 1 ft.

S ☐ Y 654336.12 +/- 1 ft.

Latitude, Longitude Coordinates

Latitude: ____ Longitude: ____

Elevation of Well in feet: ____ +/- ____ ft.

Datum Plane: ☐ NAD27 ☒ NAD83 Elevation Source ____

Source of Coordinates: MAP-OTHERS

Well location written description:

Comments on water quality/quantity and well construction:

MW-50I

WELL TEST *

Pre-Pumping Static Level 0 ft. Date ____

Measured from ____

Pumping test method ____

Test Rate ____ gpm Duration of Test ____ hrs.

Feet of Drawdown ____ ft. Sustainable Yield ____ gpm

*(Attach a copy of the pumping test record, per section 1521.05, ORC)

Is Copy Attached? ☐ Yes ☒ No Flowing Well? ☐ Yes ☒ No

PUMP/PITLESS

Type of pump ____ Capacity ____ gpm

Pump set at ____ ft. Pitless Type ____

Pump installed by ____

I hereby certify the information given is accurate and correct to the best of my knowledge.

Drilling Firm: FRONTZ DRILLING, INC.

Address: 2031 MILLERSBURG RD

City, State, Zip: WOOSTER OH 44691

Signed: KRISTI FITZGERALD (Filed Electronically) Date: 4/23/2010

ODH Registration Number: 0120

CONSTRUCTION DETAILS

Drilling Method: ROTOSONIC

BOREHOLE/CASING (Measured from ground surface)

1 Borehole Diameter 9.25 inches Depth 20 ft.
Casing Diameter 2 in. Length 25 ft. Thickness 0.154 in.

2 Borehole Diameter 5 inches Depth 30 ft.
Casing Diameter ____ in. Length ____ ft. Thickness ____ in.

Casing Height Above Ground 0 ft.

Type 1: PVC
Type 2: ____

Joints 1: Threaded
Joints 2: ____

SCREEN

Diameter 2 in. Slot Size 0.02 in. Screen Length 5 ft.

Type MACHINE SLOTTED Material PVC

Set Between 30 ft. and 25 ft.

GRAVEL PACK (Filter Pack)

Material/Size #5 Vol/Wt. Used 300 LBS

Method of Installation Poured (gravity)

Depth: Placed From: 30 ft. To: 22 ft.

GROUT

Material Bentonite pellets/chunks Vol/Wt. Used 100 LBS

Method of Installation Poured (gravity)

Depth: Placed From: 22 ft. To: 1 ft.

DRILLING LOG*

FORMATIONS INCLUDE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.

Color	Texture	Formation	From	To
BROWN-GRAY	FIRM	CLAY AND SILT	0	20
GRAY-WHITE	HARD	LIMESTONE	20	30

Aquifer Type (Formation producing the most water.) LIMESTONE

Date of Well Completion 4/5/2010 Total Depth of Well 30 ft.

Completion of this form is required by section 1521.05, Ohio Revised Code - file within 30 days after completion of drilling.
Distribute copies of this record to Customer, and Local Health Deptartment.

DNR 7802.05e

WELL LOG AND DRILLING REPORT

Ohio Department of Natural Resources
Division of Water, 2045 Morse Road, Columbus, Ohio 43229-6605
Voice (614) 265-6740 Fax (614) 265-6767

Well Log Number: 2026766

Page 1 of 1 for this record.

WELL LOCATION

County: WOOD Township: TROY

Owner/Builder: ARMY CORP OF ENGINEERS

Address of Well Location: 21200 LUCKEY RD

City: LUCKEY Zip Code +4: 43433

Permit No. ____ Section: ____ and/or Lot No. ____

Use of Well: MONITOR

Coordinates of Well (Use only one of the below coordinate systems)

State Plane Coordinates

N [X] X 1697890 +/- 1 ft.

S [ ] Y 654976 +/- 1 ft.

Latitude, Longitude Coordinates

Latitude: ____ Longitude: ____

Elevation of Well in feet: 646 +/- 1 ft.

Datum Plane: [ ] NAD27 [X] NAD83 Elevation Source ____

Source of Coordinates: MAP-OTHERS

Well location written description:

Comments on water quality/quantity and well construction:
MW-53I

WELL TEST *

Pre-Pumping Static Level 0 ft. Date ____

Measured from ____

Pumping test method ____

Test Rate ____ gpm Duration of Test ____ hrs.

Feet of Drawdown ____ ft. Sustainable Yield ____ gpm

*(Attach a copy of the pumping test record, per section 1521.05, ORC)

Is Copy Attached? [ ] Yes [X] No Flowing Well? [ ] Yes [X] No

PUMP/PITLESS

Type of pump ____ Capacity ____ gpm

Pump set at ____ ft. Pitless Type ____

Pump installed by ____

I hereby certify the information given is accurate and correct to the best of my knowledge.

Drilling Firm: FRONTZ DRILLING, INC.

Address: 2031 MILLERSBURG RD

City, State, Zip: WOOSTER OH 44691

Signed: KRISTI FITZGERALD Date: 4/23/2010

(Filed Electronically)

ODH Registration Number: 0120

CONSTRUCTION DETAILS

Drilling Method: ROTOSONIC

BOREHOLE/CASING (Measured from ground surface)

1 Borehole Diameter 9.25 inches Depth 17 ft.
Casing Diameter 2 in. Length 23 ft. Thickness 0.154 in.

2 Borehole Diameter 5 inches Depth 28 ft.
Casing Diameter ____ in. Length ____ ft. Thickness ____ in.

Casing Height Above Ground 2 ft.

Type 1: PVC
Type 2: ____

Joints 1: Threaded
Joints 2: ____

SCREEN

Diameter 2 in. Slot Size 0.02 in. Screen Length 5 ft.

Type MACHINE SLOTTED Material PVC

Set Between 28 ft. and 23 ft.

GRAVEL PACK (Filter Pack)

Material/Size #5 Vol/Wt. Used 105 LBS

Method of Installation Poured (gravity)

Depth: Placed From: 28 ft. To: 20 ft.

GROUT

Material Bentonite pellets/chunks Vol/Wt. Used 100 LBS

Method of Installation Pumped w/Tremie pipe

Depth: Placed From: 20 ft. To: 1 ft.

DRILLING LOG*

FORMATIONS INCLUDE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.

Color	Texture	Formation	From	To
GRAY-BROWN	HARD	CLAY	0	17
WHITE-GRAY	SOLID	LIMESTONE	17	28

Aquifer Type (Formation producing the most water.) LIMESTONE

Date of Well Completion 3/22/2010 Total Depth of Well 28 ft.

Completion of this form is required by section 1521.05, Ohio Revised Code - file within 30 days after completion of drilling.
Distribute copies of this record to Customer, and Local Health Deptartment.

DNR 7802.05e

WELL LOG AND DRILLING REPORT

Ohio Department of Natural Resources
Division of Water, 2045 Morse Road, Columbus, Ohio 43229-6605
Voice (614) 265-6740 Fax (614) 265-6767

Well Log Number: 2026767

Page 1 of 1 for this record.

WELL LOCATION

County: WOOD Township: TROY

Owner/Builder: ARMY CORP OF ENGINEERS

Address of Well Location: 21200 LUCKEY RD

City: LUCKEY Zip Code +4: 43433

Permit No. _____ Section _____ and/or Lot No. _____

Use of Well: MONITOR

Coordinates of Well (Use only one of the below coordinate systems)

State Plane Coordinates

N [X] X 1698119 +/- 1 ft.

S [ ] Y 654803.98 +/- 1 ft.

Latitude, Longitude Coordinates

Latitude: _____ Longitude: _____

Elevation of Well in feet: 645 +/- 1 ft.

Datum Plane: [ ] NAD27 [X] NAD83 Elevation Source _____

Source of Coordinates: MAP-OTHERS

Well location written description:

Comments on water quality/quantity and well construction:

MW-54S

WELL TEST *

Pre-Pumping Static Level 0 ft. Date _____

Measured from _____

Pumping test method _____

Test Rate _____ gpm Duration of Test _____ hrs.

Feet of Drawdown _____ ft. Sustainable Yield _____ gpm

*(Attach a copy of the pumping test record, per section 1521.05, ORC)

Is Copy Attached? [ ] Yes [X] No Flowing Well? [ ] Yes [X] No

PUMP/PITLESS

Type of pump _____ Capacity _____ gpm

Pump set at _____ ft. Pitless Type _____

Pump installed by _____

I hereby certify the information given is accurate and correct to the best of my knowledge.

Drilling Firm: FRONTZ DRILLING, INC.

Address: 2031 MILLERSBURG RD

City, State, Zip: WOOSTER OH 44691

Signed: KRISTI FITZGERALD (Filed Electronically) Date: 4/23/2010

ODH Registration Number: 0120

CONSTRUCTION DETAILS

Drilling Method: ROTOSONIC

BOREHOLE/CASING (Measured from ground surface)

1 Borehole Diameter 9.25 inches Depth 13 ft.
Casing Diameter 2 in. Length 8 ft. Thickness 0.154 in.

2 Borehole Diameter _____ inches Depth _____ ft.
Casing Diameter _____ in. Length _____ ft. Thickness _____ in.

Casing Height Above Ground 2 ft.

Type 1: PVC
2: _____

Joints 1: Threaded
2: _____

SCREEN

Diameter 2 in. Slot Size 0.01 in. Screen Length 5 ft.

Type MACHINE SLOTTED Material PVC

Set Between 13 ft. and 8 ft.

GRAVEL PACK (Filter Pack)

Material/Size #5 Vol/Wt. Used 105 LBS

Method of Installation Poured (gravity)

Depth: Placed From: 13 ft. To: 5 ft.

GROUT

Material Bentonite pellets/chunks Vol/Wt. Used 75 LBS

Method of Installation Poured (gravity)

Depth: Placed From: 5 ft. To: 2 ft.

DRILLING LOG*

FORMATIONS INCLUDE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.

Color	Texture	Formation	From	To
BROWN-GRAY	HARD	CLAY	0	13

Aquifer Type (Formation producing the most water.) CLAY

Date of Well Completion 3/24/2010 Total Depth of Well 13 ft.

Completion of this form is required by section 1521.05, Ohio Revised Code - file within 30 days after completion of drilling.
Distribute copies of this record to Customer, and Local Health Deptartment.

DNR 7802.05e

WELL LOG AND DRILLING REPORT

Ohio Department of Natural Resources
Division of Water, 2045 Morse Road, Columbus, Ohio 43229-6605
Voice (614) 265-6740 Fax (614) 265-6767

Well Log Number: 2026769

Page 1 of 1 for this record.

WELL LOCATION

County: WOOD Township: TROY

Owner/Builder: ARMY CORP OF ENGINEERS

Address of Well Location: 21200 LUCKEY RD

City: LUCKEY Zip Code +4: 43433

Permit No. ____ Section: ____ and or Lot No. ____

Use of Well: MONITOR

Coordinates of Well (Use only one of the below coordinate systems)

State Plane Coordinates

N ☒ X 1698129.54 +/- 1 ft.

S ☐ Y 654795.54 +/- 1 ft.

Latitude, Longitude Coordinates

Latitude: ____ Longitude: ____

Elevation of Well in feet: 645 +/- 1 ft.

Datum Plane: ☐ NAD27 ☒ NAD83 Elevation Source ____

Source of Coordinates: MAP-OTHERS

Well location written description:

Comments on water quality/quantity and well construction:

MW-55I

WELL TEST *

Pre-Pumping Static Level 0 ft. Date ____

Measured from ____

Pumping test method ____

Test Rate ____ gpm Duration of Test ____ hrs.

Feet of Drawdown ____ ft. Sustainable Yield ____ gpm

*(Attach a copy of the pumping test record, per section 1521.05, ORC)

Is Copy Attached? ☐ Yes ☒ No Flowing Well? ☐ Yes ☒ No

PUMP/PITLESS

Type of pump ____ Capacity ____ gpm

Pump set at ____ ft. Pitless Type ____

Pump installed by ____

I hereby certify the information given is accurate and correct to the best of my knowledge.

Drilling Firm: FRONTZ DRILLING, INC.

Address: 2031 MILLERSBURG RD

City, State, Zip: WOOSTER OH 44691

Signed: KRISTI FITZGERALD (Filed Electronically) Date: 4/23/2010

ODH Registration Number: 0120

CONSTRUCTION DETAILS

Drilling Method: ROTOSONIC

BOREHOLE/CASING (Measured from ground surface)

1 Borehole Diameter 9.25 inches Depth 14 ft.
Casing Diameter 2 in. Length 24 ft. Thickness 0.154 in.

2 Borehole Diameter 5 inches Depth 29 ft.
Casing Diameter ____ in. Length ____ ft. Thickness ____ in.

Casing Height Above Ground 2 ft.

Type 1: PVC
Type 2: ____

Joints 1: Threaded
Joints 2: ____

SCREEN

Diameter 2 in. Slot Size 0.02 in. Screen Length 5 ft.

Type MACHINE SLOTTED Material PVC

Set Between 29 ft. and 24 ft.

GRAVEL PACK (Filter Pack)

Material/Size #5 Vol/Wt. Used 105 LBS

Method of Installation Poured (gravity)

Depth: Placed From: 29 ft. To: 20 ft.

GROUT

Material Bentonite pellets/chunks Vol/Wt. Used 100 LBS

Method of Installation Pumped w/Tremie pipe

Depth: Placed From: 20 ft. To: 1 ft.

DRILLING LOG*

FORMATIONS INCLUDE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.

Color	Texture	Formation	From	To
GRAY-BROWN	HARD	CLAY	0	14
WHITE-GRAY	SOLID	LIMESTONE	14	29

Aquifer Type (Formation producing the most water.) LIMESTONE

Date of Well Completion 3/24/2010 Total Depth of Well 29 ft.

Completion of this form is required by section 1521.05, Ohio Revised Code - file within 30 days after completion of drilling.
Distribute copies of this record to Customer, and Local Health Deptartment.

DNR 7802.05e

WELL LOG AND DRILLING REPORT

Ohio Department of Natural Resources
Division of Water, 2045 Morse Road, Columbus, Ohio 43229-6605
Voice (614) 265-6740 Fax (614) 265-6767

Well Log Number: 2026770

Page 1 of 1 for this record.

WELL LOCATION

County: WOOD Township: TROY

Owner/Builder: ARMY CORP OF ENGINEERS

Address of Well Location: 21200 LUCKEY RD

City: LUCKEY Zip Code +4: 43443

Permit No. _____ Section: _____ and or Lot No. _____

Use of Well: MONITOR

Coordinates of Well (Use only one of the below coordinate systems)

State Plane Coordinates

N ☐ X _____ +/- _____ ft.

S ☐ Y _____ +/- _____ ft.

Latitude, Longitude Coordinates

Latitude: 41.45767 Longitude: -83.48932

Elevation of Well in feet: 650 +/- 1 ft.

Datum Plane: ☐ NAD27 ☒ NAD83 Elevation Source: GPS

Source of Coordinates: GPS

Well location written description:

Comments on water quality/quantity and well construction:

MW-56I

GRAVEL #5 100 LBS FROM 33-25 FT. #8 25 LBS FROM 25-24 FT.

WELL TEST *

Pre-Pumping Static Level 0 ft. Date _____

Measured from _____

Pumping test method _____

Test Rate _____ gpm Duration of Test _____ hrs.

Feet of Drawdown _____ ft. Sustainable Yield _____ gpm

*(Attach a copy of the pumping test record, per section 1521.05, ORC)

Is Copy Attached? ☐ Yes ☒ No Flowing Well? ☐ Yes ☒ No

PUMP/PITLESS

Type of pump _____ Capacity _____ gpm

Pump set at _____ ft. Pitless Type _____

Pump installed by _____

I hereby certify the information given is accurate and correct to the best of my knowledge.

Drilling Firm: FRONTZ DRILLING, INC.

Address: 2031 MILLERSBURG RD

City, State, Zip: WOOSTER OH 44691

Signed: KRISTI FITZGERALD (Filed Electronically) Date: 4/23/2010

ODH Registration Number: 0120

CONSTRUCTION DETAILS

Drilling Method: ROTOSONIC

BOREHOLE/CASING (Measured from ground surface)

1 Borehole Diameter 9.25 inches Depth 23 ft.
Casing Diameter 2 in. Length 30.5 ft. Thickness 0.154 in.

2 Borehole Diameter 5 inches Depth 33 ft.
Casing Diameter _____ in. Length _____ ft. Thickness _____ in.

Casing Height Above Ground 2.5 ft.

Type 1: PVC
Type 2: _____

Joints 1: Threaded
Joints 2: _____

SCREEN

Diameter 2 in. Slot Size 0.02 in. Screen Length 5 ft.

Type MACHINE SLOTTED Material PVC

Set Between 33 ft. and 28 ft.

GRAVEL PACK (Filter Pack)

Material/Size #5 Vol/Wt. Used 125 LBS

Method of Installation Poured (gravity)

Depth: Placed From: 33 ft. To: 24 ft.

GROUT

Material Bentonite pellets/chunks Vol/Wt. Used 475 LBS

Method of Installation Poured (gravity)

Depth: Placed From: 24 ft. To: 2 ft.

DRILLING LOG*

FORMATIONS INCLUDE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.

Color	Texture	Formation	From	To
GRAY-BROWN		CLAY	0	2
GRAY-BROWN		SAND AND GRAVEL	2	3.5
BROWN		CLAYGRAVELSILT	3.5	6.5
BROWN		SILT AND CLAY	6.5	12
GRAY		CLAY	12	15
GRAY		CLAYSANDGRAVEL	15	20
GRAY		GRAVEL AND SAND	20	23
GRAY		LIMESTONE	23	33

Aquifer Type (Formation producing the most water.) LIMESTONE

Date of Well Completion 4/13/2010 Total Depth of Well 33 ft.

Completion of this form is required by section 1521.05, Ohio Revised Code - file within 30 days after completion of drilling.
Distribute copies of this record to Customer, and Local Health Deptartment.

Appendix J

Utility Manhole Sampling Forms

(Provided in Electronic Files)

Manhole Logs

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	~~Boring~~ MANHOLE #: MH01
Geologist: CARL PIONE PG	Driller/Company: TPMC	~~Frontz Drilling~~
Drilling Equip.: ~~Versa-Sonic~~ DISPOSABLE SAMPLE SCOOP	Date Start: 23 JAN 10	Date Completed: 23 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 6 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic	Used? ☐ Yes ☒ No Volume _____	Initial 2 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☐ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation _____	24 hr. _____ ft.
SAMPLE VESSEL		
Hole Diameter: _____	Depth: from _____ ft. to _____ ft.	

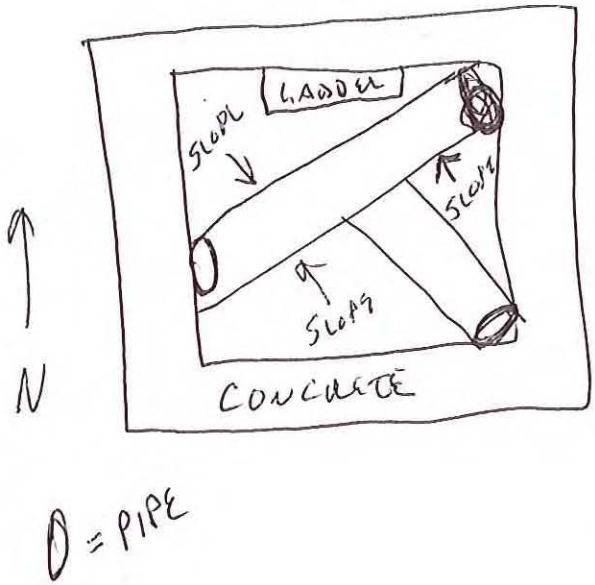
Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
						MANHOLE SEDIMENT SAMPLE MH01SE0001 06
0						≈ 1-INCH OF SEDIMENT IN SUMP FINES OF CLAY SILT AND FINE SAND SATURATED BLACK W/ DARK BROWN
	WATER ▽	2 FT BGS				
5						
	BOTTOM 6 FT BGS	MH01				
10						CANNOT SEE INSIDE VAULT BELOW WATER TO SKETCH
15						
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	MANHOLE ~~Boring~~ #: MHQ2	
Geologist: CAM PIDGE PG	Driller/Company: TPMC	~~J Frontz Drilling~~	
Drilling Equip.: ~~Versa-Sonic~~ DISPOSABLE SCOOP		Date Start: 23 JAN 10	Date Completed: 23 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 5 FT BGS	Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic	Used? ☐ Yes ☒ No Volume _____	Initial DRY ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☐ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation _____	24 hr. _____ ft.
Hole Diameter: _____	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
						MANHOLE SEDIMENT SAMPLE MHQ2SE0001QS
0	DRY					≈2 INCHES FINE SAND WITH SILT MOIST 10 YR 5/8 w/ 10YR4/2
5	BOTTOM 6 FT BGS	MHQ2				
10						
15						
20						

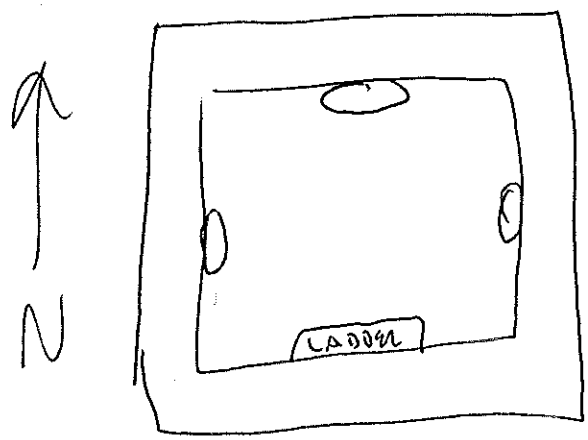


GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	~~Boring~~ MANHOLE #: MH03
Geologist: CARL PINAE P.G.	Driller/Company: TPMC	/ ~~Frontz Drilling~~
Drilling Equip.: ~~Versa-Sonic~~ DISPOSABLE SCOOP	Date Start: 23 JAN 10	Date Completed: 23 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 6 FT BGS	Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic	Used? ☐ Yes ☒ No Volume _____	Initial DRY ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☐ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation _____	24 hr. _____ ft.
Hole Diameter: _____	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
						MANHOLE SEDIMENT SAMPLE MH03SE00106
0	DRY					≈ 2 INCHES SEDIMENT FINE TO COARSE SAND W/ LITTLE SILT LOOSE DRY 10YR 5/6
5	6FT BGS BOTTOM					
10						
15						
20						



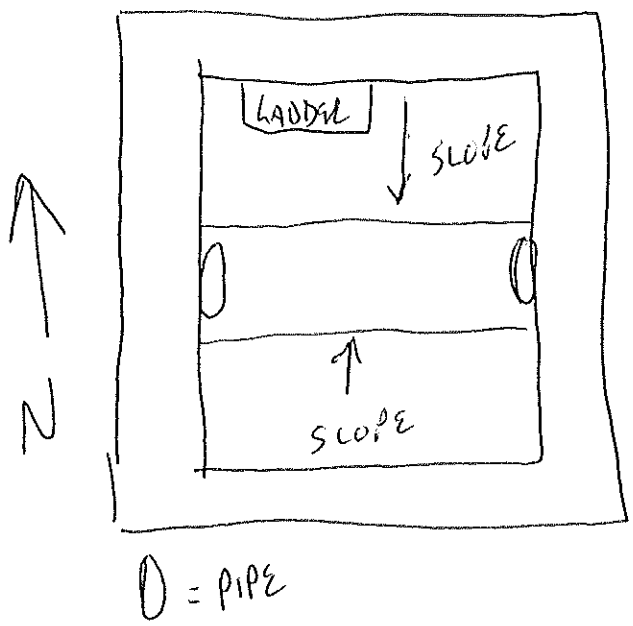
D = PIPE

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	MANHOLE ~~Boring~~ #: MHQ4
Geologist: Carl Pidgeon	Driller/Company: TPMC	/ ~~Frontz Drilling~~
Drilling Equip.: ~~Versa-Sonic~~ DISPOSABLE SCOOP	Date Start: 23 JAN 10	Date Completed: 23 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 6 FT BGS	Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter:	Used? ☐ Yes ☒ No Volume ☐ Neat Cement ☐ Bentonite Method of Installation Depth: from ft. to ft.	Initial DRY ft Development ft. 24 hr. ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
						MAN HOLE SEDIMENT SAMPLE MHQ4 SEQQ1Q6
0	DRY					≈ 2 INCHES SEDIMENT FINE TO COARSE SAND LITTLE SILT 10YR 4/6 LOOSE
5						
	BOTTOM	6 FT BGS				
10						
15						
20						



GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	~~Boring~~ MANHOLE #: MH05
Geologist: CARL PIONE PG.	Driller/Company: TPMC	~~Frontz Drilling~~
Drilling Equip.: ~~Versa-Sonic~~ N/A	Date Start: 25 JAN 10	Date Completed: 25 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: — / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic	Used? ☐ Yes ☒ No Volume _____	Initial _____ ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☐ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation _____	24 hr. _____ ft.
Hole Diameter: _____	Depth: from _____ ft. to _____ ft.	

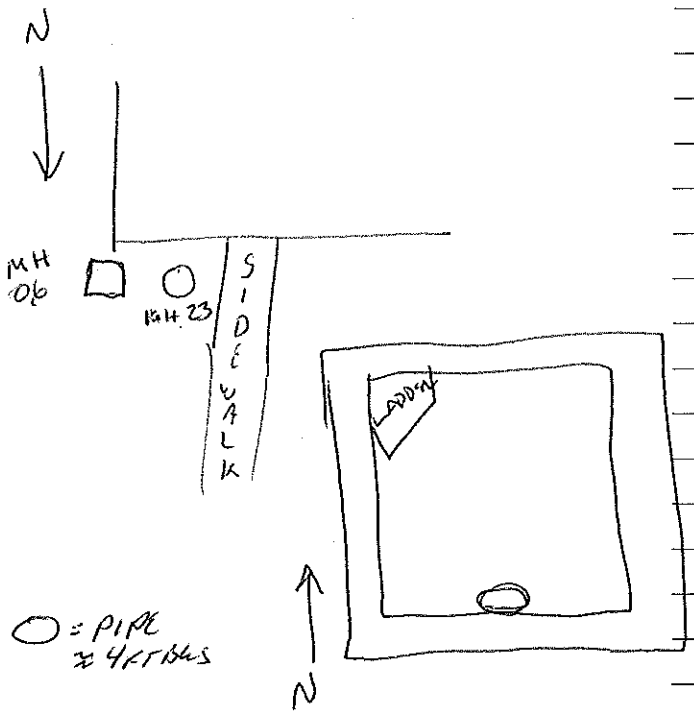
	RADIOLOGICAL SCAN (CPM)		GEOLOGIC LOG			
Depth (FT BGS)	CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0						NO SAMPLE MANHOLE OUTLINE FOUND IN ASPHALT BUT COVER IS SEALED OVER W/ ASPHALT
5						
10						
15						
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	~~Boring~~ MANHOLE #: MH 06
Geologist: CARL PIDAL PG.	Driller/Company: TPMC	~~I. Frontz Drilling~~
Drilling Equip.: ~~Versa-Sonic~~ DISPOSABLE SCOOP	Date Start: 23 JAN 10	Date Completed: 23 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 7 FT BGS
Well Depth: NA		

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic	Used? ☐ Yes ☒ No Volume _____	Initial 6 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☐ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation _____	24 hr. _____ ft.
Hole Diameter: _____	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
						MANHOLE SEDIMENT SAMPLE MH06 SE 00/07 OIL SHEEN SEWAGE ODOR
0						SAMPLE TAKEN BUT MOSTLY SILTY WATER BLACK VERY LITTLE SEDIMENT IN BOTTOM OF MANHOLE
5	WATER 6FT BGS ▽					
	BOTTOM	7FT BGS				
10						
15						
20						



○ = PIPE ≈ 4FT BGS

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	manhole ~~Boring~~ #: MH27
Geologist: Carl Pidgeon P.G.	Driller/Company: TPMC	/ ~~Frontz Drilling~~
Drilling Equip.: ~~Versa Sonic~~	Date Start: 25 JAN 10	Date Completed: 25 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: — / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: _____	Used? ☐ Yes ☒ No Volume _____ ☐ Neat Cement ☐ Bentonite Method of Installation _____ Depth: from _____ ft. to _____ ft.	Initial _____ ft Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
						NO SAMPLE
0						VAULT CANNOT BE FOUND LIKELY COVERED WITH DEBRIS AND RUBBLE
5						
10						
15						
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	MAN HOLE Boring #: MH08
Geologist: CARL PIDGE PG.	Driller/Company: TPMC ~~/ Frontz Drilling~~	
Drilling Equip.: Versa-Sonic DISPOSABLE SCOOP	Date Start: 25 JAN 10	Date Completed: 25 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 7 FT BGS	Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: _____	Used? ☐ Yes ☒ No Volume _____ ☐ Neat Cement ☐ Bentonite Method of Installation _____ Depth: from _____ ft. to _____ ft.	Initial 1.5' ft Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
						SEWAGE ODOR OIL SHEEN MANHOLE SEDIMENT SAMPLE MH08SE0001
0						≈ 1 INCH SILTY SLUDGE BLACK
	WATER ▽	1.5 FT BGS				
5						
	BOTTOM 7 FT BGS					
10						
15						
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP		MAN HOLE Boring #: MH09
Geologist: CARL PIDGE PG.	Driller/Company: TPMC		/ ~~Frontz Drilling~~
Drilling Equip.: ~~Versa-Sonic~~ DISPOSABLE SCOOP		Date Start: 25 JAN 10	Date Completed: 25 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 7 FT BGS	Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic	Used? ☐ Yes ☒ No Volume _____	Initial 1 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☐ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation _____	24 hr. _____ ft.
Hole Diameter: _____	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	RADIOLOGICAL SCAN (CPM) DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
						SEWAGE ODOR MANHOLE SEDIMENT SAMPLE MH09 SE0001 OIL SHEEN
0	WATER ▽	1 FT BGS				≈ 1-2 INCHES SILTY SLUDGE BLACK
5						
	BOTTOM	7 FT BGS				
10						
15						
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	~~Boring~~ MANHOLE #: MH 18
Geologist: CARL PIDLE PG	Driller/Company: TPMC	~~/ Frontz Drilling~~
Drilling Equip.: ~~Versa-Sonic~~	Date Start: 25JAN10	Date Completed: 25JAN10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: — / Well Depth: NA

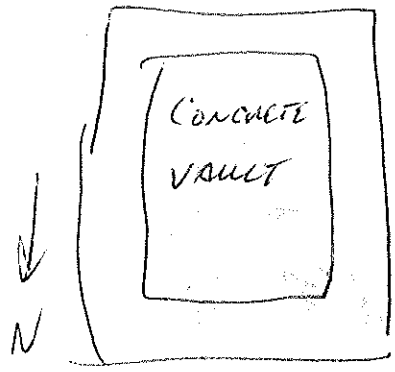
Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic	Used? ☐ Yes ☒ No Volume _____	Initial _____ ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☐ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation _____	24 hr. _____ ft.
Hole Diameter: _____	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
						NO SAMPLE
0						VAULT LIKELY COVERED WITH DEBRIS AND/OR RUBBLE CANNOT FIND VAULT
5						
10						
15						
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	~~Boring~~ MANHOLE #: MH 11
Geologist: CARL PIDKE PG	Driller/Company: TPMC	/ ~~Frontz Drilling~~
Drilling Equip.: ~~Versa-Sonic~~ DISPOSABLE SCOOP	Date Start: 25 JAN 10	Date Completed: 25 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 9 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic	Used? ☐ Yes ☒ No Volume _____	Initial 1 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☐ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation _____	24 hr. _____ ft.
Hole Diameter: _____	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
						MANHOLE SEDIMENT SAMPLE SEWAGE ODOR / OIL SHEEN MH11SE00109
0	WATER ▽	1 FT BGS				≈ 1 INCH SILT SLUDGE BLACK OIL SHEEN
5						
10	BOTTOM	9 FT BGS				CANNOT SKETCH DUE TO WATER INSIDE VAULT
15						
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	MANHOLE ~~Boring #~~: MH 20
Geologist: CARL PIDGE P.G.	Driller/Company: TPMC	~~Frontz Drilling~~
Drilling Equip.: ~~Versa-Sonic~~ DISPOSABLE SCOOP	Date Start: 23JAN10	Date Completed: 23 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 7 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter:	Used? ☐ Yes ☒ No Volume ☐ Neat Cement ☐ Bentonite Method of Installation Depth: from ft. to ft.	Initial 3 ft Development ft. 24 hr. ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
						MANHOLE SEDIMENT SAMPLE MH 20 SE 001 07
0						≈ 2 INCHES CLAYEY SILT LITTLE COARSE SAND BLACK SATURATED
	WATER ▽					
5						CANNOT SEE INSIDE VAULT TO SKETCH
	BOTTOM	7FTBGS				
10						
15						
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	~~Boring~~ Manhole #: MH21
Geologist: Carl Pidal PG	Driller/Company: TPMC	/ ~~Frontz Drilling~~
Drilling Equip.: ~~Versa-Sonic~~ Hand Auger	Date Start: 23 JAN 10	Date Completed: 23 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 4 FT BGS / Well Depth: NA

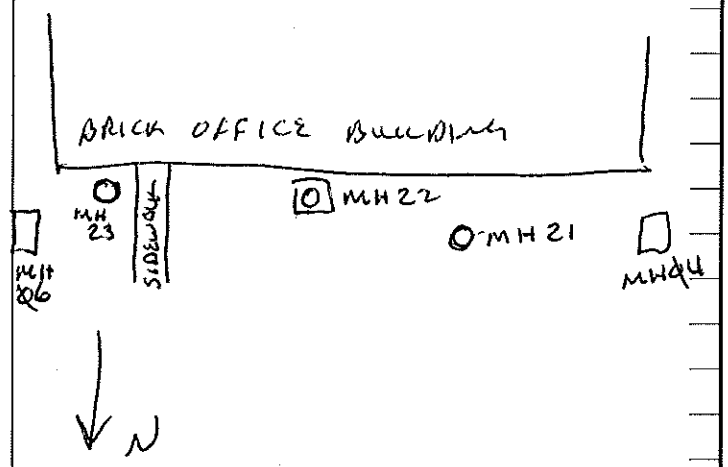
Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic	Used? ☐ Yes ☒ No Volume _____	Initial _____ ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☐ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation _____	24 hr. _____ ft.
Hole Diameter: _____	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
						MANHOLE SEDIMENT SAMPLE MH21SE0001
0						DOLOMITE GRAVEL 10YR 3/1 CANNOT JUDGE THICKNESS AS GRAVEL FILLS BACK IN AS WE HAND AUGER IT OUT
1.5	WATER ▽	1.5 FT BGS				
5	4 FT BGS BOTTOM					
10						BRICK OFFICE BUILDING 6 INCH STEEL STAND PIPE MH21 N
15						
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	MANHOLE ~~Boring~~ #: MH22
Geologist: Cam Pique	Driller/Company: TPMC	/ ~~Frontz Drilling~~
Drilling Equip.: ~~Versa-Sonic~~	Date Start: 23 JAN 10	Date Completed: 23 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 6 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: _____	Used? ☐ Yes ☒ No Volume _____ ☐ Neat Cement ☐ Bentonite Method of Installation _____ Depth: from _____ ft. to _____ ft.	Initial 4 ft Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	RADIOLOGICAL SCAN (CPM) DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
						NO SAMPLE
0						BRICK LINED MANHOLE SUMP NO RETREIVABLE SEDIMENT IN MANHOLE NO SAMPLE SOLID BOTTOM
	WATER 4 FT BGS	▽				
5						CANNOT SEE BOTTOM OF VAULT TO SKETCH
	BOTTOM	6 FT BGS				
10						
15						
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GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	~~Boring #~~ MANHOLE: MH 23	
Geologist: CARL PIDGE PG.	Driller/Company: TPMC	/ ~~Frontz Drilling~~	
Drilling Equip.: ~~Versa-Sonic~~ HAND AUGER	Date Start: 23 JAN 10	Date Completed: 23 JAN 10	
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 3 FT BGS	Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter:	Used? ☐ Yes ☒ No Volume ☐ Neat Cement ☐ Bentonite Method of Installation Depth: from ft. to ft.	Initial 0.5 ft Development ft. 24 hr. ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
						MANHOLE SEDIMENT SAMPLE MH23SE0001Q3
						SEWAGE ODOR/OILSHEEN
0						↕ OPEN
	WATER	0.5 FT BGS				1.5 FT BGS
						CLAYEY SILT BLACK VERY WET
	3 FT BGS					3 FT BGS
5						
						NOTE: MH 23 WAS UNCOVERED DURING EXCAVATION OF TRENCH TR6A NORTH EAST CORNER OF BRICK OFFICE BUILDING
10						THE CONCRETE COVER WAS ≈ 1.5 FT BGS
						SOUTH SIDE OF MANHOLE HAS SOIL FROM EXCAVATION NORTH SIDE NARROW OPENING TO 3 FT BGS
15						
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	~~Boring~~ MANHOLE #: MH24
Geologist: Cane Pidue P.G.	Driller/Company: TPMC	/ ~~Frontz Drilling~~
Drilling Equip.: ~~Versa-Sonic~~ DISPOSABLE SCOOP	Date Start: 25 JAN 10	Date Completed: 25 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 6 / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic	Used? ☐ Yes ☒ No Volume _____	Initial 0.5 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☐ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation _____	24 hr. _____ ft.
Hole Diameter: _____	Depth: from _____ ft. to _____ ft.	

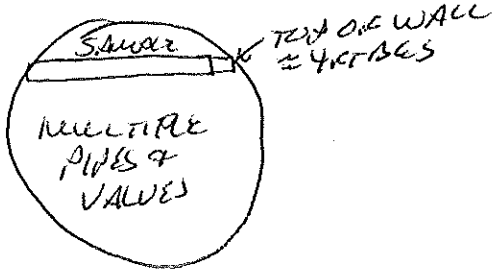
Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
						SEWAGE ODOR / OIL SHEEN MANHOLE SEDIMENT SAMPLE MH24SE0001Q6 SQUARE STEEL PLATE
0	WATER ▽ 0.5 FT BLS					≈ 3 INCHES SILTY VERY WET BLACK SLUDGE-LIKE
5	BOTTOM 6 FT BGS					
10						CONCRETE
15						ASPHALT MH 24 OFFICE BLDG MH&6
20						ROADWAY

N

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	~~Boring~~ MANHOLE #: MH25
Geologist: Cam Pidge Pib	Driller/Company: TPMC	/ ~~Frontz Drilling~~
Drilling Equip.: Versa-Sonic BUCKET AUGER	Date Start: 25JAN10	Date Completed: 25JAN10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 7FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic	Used? ☐ Yes ☒ No Volume _____	Initial 0 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☐ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation _____	24 hr. _____ ft.
Hole Diameter: _____	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
						SEWAGE ODOR / OIL SHEEN MANHOLE SEDIMENT SAMPLE MH25SED0107
0	WATER ▽	0 FT BGS				≈3 INCHES SILTY SUBDAL BLACK WET
5						NOTE: MULTIPLE PIPES AND VALVES NOTICED DURING WALKOVER WITH VAULT FLOODED CANNOT SEE PIPES SAMPLE COLLECTED SOUTH OF SHORT WALL ON SOUTH SIDE OF ROUND VAULT
	BOTTOM 7FT BGS					
10						SAMPLED WITH BUCKET AUGER AS SCOOP IS TO BIG TO FIT PASSED PIPE RUNS & VALVES
15						
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GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP		MANHOLE ~~Boring~~ #: MH26
Geologist: CARL ROLLE PG	Driller/Company: TPMC		~~Erontz Drilling~~
Drilling Equip.: ~~Versa-Sonic~~ DISPOSABLE SCOOP		Date Start: 25 JAN 10	Date Completed 25 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: —	Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic	Used? ☐ Yes ☒ No Volume _____	Initial 1 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☐ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation _____	24 hr. _____ ft.
Hole Diameter: _____	Depth: from _____ ft. to _____ ft.	

	RADIOLOGICAL SCAN (CPM)		GEOLOGIC LOG			
Depth (FT BGS)	CORE	DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	WATER	1 FT BLS				NO SAMPLE LIQUID IN TANK IS OILY & YELLOW DID NOT MEASURE BOTTOM SO AS NOT TO CONTAMINATE SAMPLE POLE
5						
10						
15						
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	MANHOLE ~~Boring~~ #: MH 27
Geologist: CARL PIDAL P.G.	Driller/Company: TPMC	/ ~~Frontz Drilling~~
Drilling Equip.: ~~Versa-Sonic~~ DISPOSABLE SCOOP	Date Start: 25 JAN 10	Date Completed: 25 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 3 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic	Used? ☐ Yes ☒ No Volume _____	Initial 2.9 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☐ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation _____	24 hr. _____ ft.
Hole Diameter: _____	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
						MANHOLE SEDIMENT SAMPLE MH27SE0001Q3
0						SMALL PILE CLAYEY SILT W/ FINE GRAVEL IN SOUTHWEST CORNER OF VAULT, NO SEDIMENT ON REMAINDER OF FLOOR.
	WATER	← 2.9 FT BGS				
	3 FT BGS BOTTOM BOTTOM CONCRETE VAULT					SCALE HOUSE SHED MH 27
5						
10						
15						
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	~~Boring #~~ MANHOLE: MH28
Geologist: CARL PRUDE PG.	Driller/Company: TPMC	/ ~~Frontz Drilling~~
Drilling Equip.: ~~Versa Sonic~~	Date Start: 26JAN10	Date Completed: 26JAN10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: — / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic	Used? ☐ Yes ☒ No Volume _____	Initial 2 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☐ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation _____	24 hr. _____ ft.
Hole Diameter: _____	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0						NO SAMPLE OILY GREASY WATER DID NOT MEASURE BOTTOM
	WATER	2 FT BGS				
5						→ N STAIRS MH11 MH28 MH 29 MH 30 MH 31
10						
15						
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	~~Boring #~~ MANHOLE: MH29
Geologist: Carl Pidge PG.	Driller/Company: TPMC	/ ~~Frontz Drilling~~
Drilling Equip.: ~~Versa-Sonic~~	Date Start: 26 JAN 10	Date Completed: 26 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: — / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic	Used? ☐ Yes ☒ No Volume _____	Initial 2 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☐ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation _____	24 hr. _____ ft.
Hole Diameter: _____	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	WATER	2FT BGS				NO SAMPLE OILY GREASY WATER DID NOT MEASURE BOTTOM
5						→ N STAIRS MH 11 MH 28 MH 29 MH 30 MH 31
10						
15						
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	MANHOLE ~~Boring #~~: MH 30
Geologist: CARL PIDUE P.G.	Driller/Company: TPMC	/ ~~Frontz Drilling~~
Drilling Equip.: ~~Versa-Sonic~~	Date Start: 26 JAN 10	Date Completed: 26 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: — / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter:	Used? ☐ Yes ☒ No Volume ☐ Neat Cement ☐ Bentonite Method of Installation Depth: from ft. to ft.	Initial 2 ft Development ft. 24 hr. ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0						NO SAMPLE OILY GREASY WATER DID NOT MEASURE BOTTOM
	WATER	2FT BGS				
5						→ N STAIRS MH 11 MH 28 MH 29 MH 30 MH 31
10						
15						
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	MANHOLE ~~Boring~~ #: MH 31
Geologist: CARL PIDGE PG.	Driller/Company: TPMC	/ ~~Frontz Drilling~~
Drilling Equip.: ~~Versa-Sonic~~	Date Start: 26 JAN 10	Date Completed: 26 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: — / Well Depth: NA

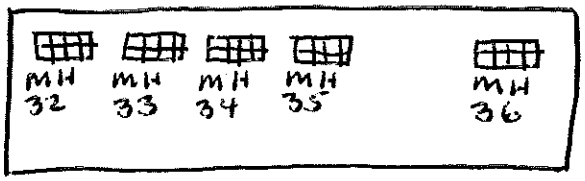
Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic	Used? ☐ Yes ☒ No Volume _____	Initial 2 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☐ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation _____	24 hr. _____ ft.
Hole Diameter: _____	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0	WATER	2 FT BGS				NO SAMPLE OILY GREASY WATER DID NOT MEASURE BOTTOM
5						→ N STAINS MH 11 MH 28 MH 29 MH 30 MH 31
10						
15						
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	MANHOLE ~~Boring #~~: MH32
Geologist: Carl Pierce P.G.	Driller/Company: TPMC	/ Frontz Drilling
Drilling Equip.: ~~Versa-Sonic~~	Date Start: 26 JAN 10	Date Completed: 26 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 10 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic	Used? ☐ Yes ☒ No Volume _____	Initial 1.5 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☐ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation _____	24 hr. _____ ft.
Hole Diameter: _____	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	RADIOLOGICAL SCAN (CPM) DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
0						NO SAMPLE NO SEDIMENT/SLUDGE SOLID BOTTOM
	WATER	1.5 FT BGS				
5						↑N 
10	BOTTOM	10 FT BGS				
15						DOSE CHAMBER
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	~~Boring~~ MANHOLE #: MH33
Geologist: CARL PIDGE P.G.	Driller/Company: TPMC	/ ~~Frontz Drilling~~
Drilling Equip.: ~~Versa-Sonic~~	Date Start 26 JAN 10	Date Completed: 26 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 10 FT BGS / Well Depth: NA

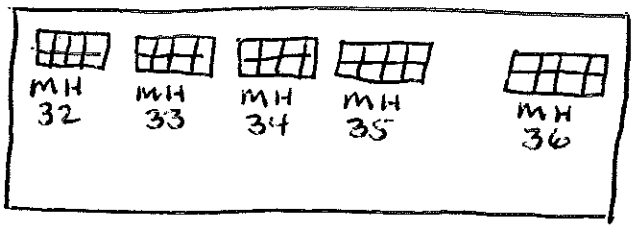
Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: _____	Used? ☐ Yes ☒ No Volume _____ ☐ Neat Cement ☐ Bentonite Method of Installation _____ Depth: from _____ ft. to _____ ft.	Initial 1.5 ft Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	RADIOLOGICAL SCAN (CPM) DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0						NO SAMPLE NO SEDIMENT/SLUDGE SOLID BOTTOM
	WATER	1.5 FT BGS				↑N
5						MH 32 MH 33 MH 34 MH 35 MH 36
10	BOTTOM	10 FT BGS				
15						DOSE CHAMBER
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	MANHOLE ~~Boring~~ #: MH 34
Geologist: CARL PIDGE P.G.	Driller/Company: TPMC	/ ~~Erontz Drilling~~
Drilling Equip.: ~~Varca Sonic~~	Date Start: 26 JAN 10	Date Completed: 26 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 10 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic ☐ Air Rotary ☐ Bucket Auger ☐ MUD Rotary ☐ Flight Auger Hole Diameter: _____	Used? ☐ Yes ☒ No Volume _____ ☐ Neat Cement ☐ Bentonite Method of Installation _____ Depth: from _____ ft. to _____ ft.	Initial 1.5 ft Development _____ ft. 24 hr. _____ ft.

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0						NO SAMPLE NO SEDIMENT/SLUDGE SOLID BOTTOM ↑N
	WATER 1.5 FT BGS					
5						
10	BOTTOM	10 FT BGS				
15						DOSE CHAMBER
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	~~Boring~~ MAN HOLE #: MH35
Geologist: CARL PIDGE PG.	Driller/Company: TPMC	/ ~~Frontz Drilling~~
Drilling Equip.: ~~Versa-Sonic~~	Date Start: 26 JAN 10	Date Completed: 26 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 10 FT BGS / Well Depth: NA

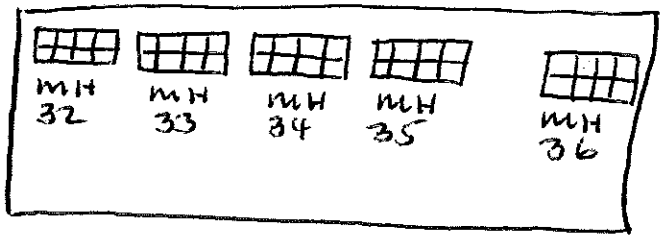
Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic	Used? ☐ Yes ☒ No Volume _____	Initial 1.5 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☐ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation _____	24 hr. _____ ft.
Hole Diameter: _____	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	RADIOLOGICAL SCAN (CPM) DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
0	WATER	1.5 FT BGS				NO SAMPLE NO SEDIMENT / SLUDGE SOLID BOTTOM ↑N
5						MH 32 MH 33 MH 34 MH 35 MH 36
10	BOTTOM	10 FT BGS				
15						DOSE CHAMBER
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	MANHOLE ~~Boring~~ #: MH36
Geologist: CAMI PIDGE P.G.	Driller/Company: TPMC	~~Frentz Drilling~~
Drilling Equip.: ~~Versa Sonic~~	Date Start: 26 JAN 10	Date Completed: 26 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 10 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic	Used? ☐ Yes ☑ No Volume _____	Initial 1.5 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☐ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation _____	24 hr. _____ ft.
Hole Diameter: _____	Depth: from _____ ft. to _____ ft.	

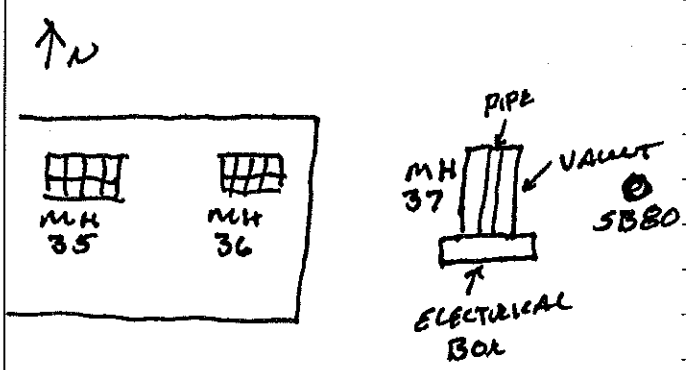
Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	RADIOLOGICAL SCAN (CPM) DOWNHOLE	Recovery-(FT)	USCS Class	Contact-Depth	GEOLOGIC LOG Descriptions and Comments
0	WATER	1.5 FT BGS				NO SAMPLE NO SEDIMENT / SLUDGE SOLID BOTTOM ↑N 
5						
10	BOTTOM	10 FT BGS				DOSE CHAMBER
15						
20						

GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	MANHOLE ~~Boring#~~: MH 37
Geologist: CARL PIDGE P.G.	Driller/Company: TAMC	/ ~~Frontz Drilling~~
Drilling Equip.: ~~Versa-Sonic~~ DISPOSABLE SCOOP	Date Start: 26 JAN 10	Date Completed: 26 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 7 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic	Used? ☐ Yes ☒ No Volume _____	Initial 4 ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☐ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation _____	24 hr. _____ ft.
Hole Diameter: _____	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0						SLUDGE WITH LEAVES BLACK VERY LITTLE MATERIAL
5	WATER	4 FT BGS				
	BOTTOM	7 FT BGS				
10						
15						
20						

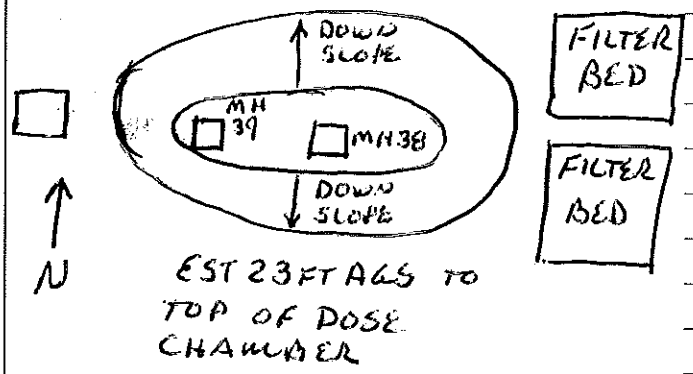


GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	MANHOLE ~~Boring~~ #: MH 38
Geologist: CARL PIDGE PG	Driller/Company: TPMC	/ F~~fontz Drilling~~
Drilling Equip.: ~~Versa-Sonic~~	Date Start: 26 JAN 10	Date Completed: 26 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 9 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic	Used? ☐ Yes ☑ No Volume _____	Initial _____ ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☐ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation _____	24 hr. _____ ft.
Hole Diameter: _____	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	Descriptions and Comments
0						DOSE CHAMBER NO SAMPLE FROZEN MATERIAL COULD BE PILE OF SOIL; COULD NOT CHIP APART, MIGHT BE ON TOP OF ICE
5						
10	9 FT TOP OF CONCRETE					
15						
20						

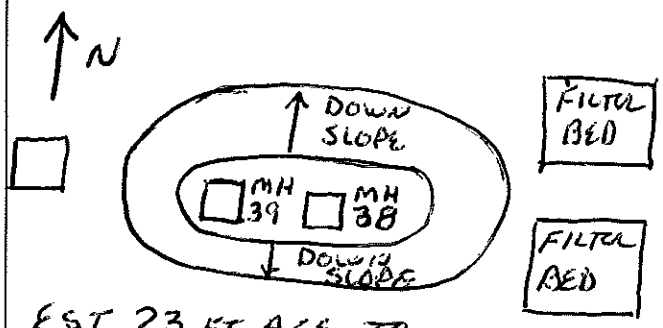


GEOLOGIC BORING LOG

Project #: 92002	Project Name: Luckey FUSRAP	MANHOLE ~~Boring~~ #: MH 39
Geologist: CARL PIDAL PG.	Driller/Company: TPMC	/ ~~Erontz Drilling~~
Drilling Equip.: ~~Verea Sonic~~	Date Start: 26 JAN 10	Date Completed: 26 JAN 10
Surface Elev.:	Top of Casing Elev.: NA	Total Depth: 10 FT BGS / Well Depth: NA

Method of Drilling	Grout	Static Water Level
☐ Hollow Stem ☐ Sonic	Used? ☐ Yes ☒ No Volume _____	Initial _____ ft
☐ Air Rotary ☐ Bucket Auger	☐ Neat Cement ☐ Bentonite	Development _____ ft.
☐ MUD Rotary ☐ Flight Auger	Method of Installation _____	24 hr. _____ ft.
Hole Diameter: _____	Depth: from _____ ft. to _____ ft.	

Depth (FT BGS)	RADIOLOGICAL SCAN (CPM) CORE	DOWNHOLE	GEOLOGIC LOG Recovery-(FT)	USCS Class	Contact-Depth	DOSE CHAMBER Descriptions and Comments
0						NO SAMPLE FROZEN MATERIAL COULD BE SOIL ON TOP OF ICE DIFFICULT TO IDENTIFY
5						
10	10 FT TOP OF CONCRETE					
15						EST 23 FT AGS TO TOP OF DOSE CHAMBER
20						



Appendix K

Environmental Health and Safety

(Provided in Electronic Files)

Air Samples On Site Rad

Air Samples Off Site Rad

BZ Off Site Beryllium and Lead

Air Sample Notes

Off Site Smear Samples

IH Reports

Outreach Laboratory
311 North Aspen
Broken Arrow, OK 74012
(918) 251-2515
FAX (918) 251-0008

May 07, 2010

John Davis
TES, LLC
222 Valley Creek Blvd, Suite 210
Exton, PA 19341

CLIENT PROJECT: Luckey FUSRAP
OUTREACH LAB ID: 20100285

Dear Mr. Davis,

Please find enclosed the analytical report for your samples received in our laboratory on April 22, 2010. Thirty-nine filter samples were received in good condition and analyzed for Gross Alpha/Beta, per your chain of custody.

All Quality Control for the requested analyses is reported on the analytical report. The method blank and laboratory control standard are within method control limits.

Parameters certified by NELAC meet all requirements of NELAC. A scope of Certified parameters is available upon request.

Per your request, these samples will be returned to your facility. Please provide a return address at your earliest convenience.

Thank you for choosing Outreach Laboratory and if you have any questions, please call us at 918-251-2515.

Labora[redacted]

ODEQ ID #9517
NRC ODEQ LIC. #27522-01

ACCREDITED IN ACCORDANCE WITH nelac

CERT. ID #OK001
See Certified
Parameter List

Outreach Laboratory
311 North Aspen
Broken Arrow, OK 74012
(918) 251-2515
FAX (918) 251-0008

Client:	TPMC-Energy Solutions
Client Project:	Luckey FUSRAP
Lab Number:	20100285
Date Reported:	4/29/2010
Date Received:	4/22/10
Page Number:	1 of 10

Analytical Report

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Lab ID:	**20100285-01**						
Client ID:	**Env-Air-15 (Sample #15)**						
Date Sampled:	**11/6/2009 3:55:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	3.9E-15 +/- 6.0E-15	uCi/ml	5.1E-15	4/26/2010	4/26/2010	TM
Gross Beta	EPA 900*/9310*	1.8E-14 +/- 1.2E-14	uCi/ml	1.1E-14	4/26/2010	4/26/2010	TM
Lab ID:	**20100285-02**						
Client ID:	**Env-Air-16 (Sample #16)**						
Date Sampled:	**11/6/2009 3:35:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	9.8E-15 +/- 7.7E-15	uCi/ml	5.1E-15	4/26/2010	4/26/2010	TM
Gross Beta	EPA 900*/9310*	1.5E-14 +/- 1.2E-14	uCi/ml	1.1E-14	4/26/2010	4/26/2010	TM
Lab ID:	**20100285-03**						
Client ID:	**Env-Air-32 (Sample #32)**						
Date Sampled:	**11/18/2009 8:50:00 AM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	2.0E-14 +/- 1.1E-14	uCi/ml	6.2E-15	4/26/2010	4/26/2010	TM
Gross Beta	EPA 900*/9310*	3.1E-14 +/- 1.6E-14	uCi/ml	1.4E-14	4/26/2010	4/26/2010	TM
Lab ID:	**20100285-04**						
Client ID:	**Env-Air-52 (Sample #52)**						
Date Sampled:	**11/23/2009 5:45:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	3.6E-14 +/- 2.3E-14	uCi/ml	1.4E-14	4/26/2010	4/26/2010	TM
Gross Beta	EPA 900*/9310*	6.9E-14 +/- 3.6E-14	uCi/ml	3.0E-14	4/26/2010	4/26/2010	TM

*NELAC Certified Parameter BDL = Below Detection Limit

Outreach Laboratory
311 North Aspen
Broken Arrow, OK 74012
(918) 251-2515
FAX (918) 251-0008

Client:	TPMC-Energy Solutions
Client Project:	Luckey FUSRAP
Lab Number:	20100285
Date Reported:	4/29/2010
Date Received:	4/22/10
Page Number:	2 of 10

Analytical Report

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Lab ID:	**20100285-05**						
Client ID:	**Env-Air-63 (Sample #63)**						
Date Sampled:	**12/1/2009 6:09:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	2.3E-14 +/- 1.9E-14	uCi/ml	1.3E-14	4/26/2010	4/26/2010	TM
Gross Beta	EPA 900*/9310*	3.2E-14 +/- 3.1E-14	uCi/ml	2.9E-14	4/26/2010	4/26/2010	TM
Lab ID:	**20100285-06**						
Client ID:	**Env-Air-84 (Sample #84)**						
Date Sampled:	**12/4/2009 5:56:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	5.9E-15 +/- 1.6E-14	uCi/ml	1.5E-14	4/26/2010	4/26/2010	TM
Gross Beta	EPA 900*/9310*	5.1E-14 +/- 3.8E-14	uCi/ml	3.4E-14	4/26/2010	4/26/2010	TM
Lab ID:	**20100285-07**						
Client ID:	**Env-Air-101 (Sample #101)**						
Date Sampled:	**12/6/2009 2:24:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	3.5E-14 +/- 3.6E-14	uCi/ml	2.6E-14	4/26/2010	4/26/2010	TM
Gross Beta	EPA 900*/9310*	7.9E-14 +/- 6.3E-14	uCi/ml	5.7E-14	4/26/2010	4/26/2010	TM
Lab ID:	**20100285-08**						
Client ID:	**Env-Air-116 (Sample #116)**						
Date Sampled:	**12/8/2009 4:41:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	3.1E-14 +/- 2.4E-14	uCi/ml	1.6E-14	4/26/2010	4/26/2010	TM
Gross Beta	EPA 900*/9310*	3.2E-14 +/- 3.7E-14	uCi/ml	3.5E-14	4/26/2010	4/26/2010	TM

*NELAC Certified Parameter BDL = Below Detection Limit

Outreach Laboratory
311 North Aspen
Broken Arrow, OK 74012
(918) 251-2515
FAX (918) 251-0008

Client:	TPMC-Energy Solutions
Client Project:	Luckey FUSRAP
Lab Number:	20100285
Date Reported:	4/29/2010
Date Received:	4/22/10
Page Number:	3 of 10

Analytical Report

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Lab ID:	**20100285-09**						
Client ID:	**Env-Air-117 (Sample #117)**						
Date Sampled:	**12/8/2009 4:35:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	4.6E-14 +/- 2.6E-14	uCi/ml	1.5E-14	4/26/2010	4/26/2010	TM
Gross Beta	EPA 900*/9310*	3.2E-14 +/- 3.4E-14	uCi/ml	3.3E-14	4/26/2010	4/26/2010	TM
Lab ID:	**20100285-10**						
Client ID:	**Env-Air-141 (Sample #141)**						
Date Sampled:	**12/11/2009 3:58:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	3.2E-14 +/- 3.0E-14	uCi/ml	2.1E-14	4/26/2010	4/26/2010	TM
Gross Beta	EPA 900*/9310*	4.8E-14 +/- 4.9E-14	uCi/ml	4.6E-14	4/26/2010	4/26/2010	TM
Lab ID:	**20100285-11**						
Client ID:	**Env-Air-167 (Sample #167)**						
Date Sampled:	**12/17/2009 4:02:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	1.7E-14 +/- 2.6E-14	uCi/ml	2.2E-14	4/26/2010	4/26/2010	TM
Gross Beta	EPA 900*/9310*	6.2E-14 +/- 5.2E-14	uCi/ml	4.7E-14	4/26/2010	4/26/2010	TM
Lab ID:	**20100285-12**						
Client ID:	**Env-Air-173 (Sample #173)**						
Date Sampled:	**12/18/2009 4:27:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	3.5E-14 +/- 3.2E-14	uCi/ml	2.3E-14	4/26/2010	4/26/2010	TM
Gross Beta	EPA 900*/9310*	1.4E-14 +/- 4.9E-14	uCi/ml	5.0E-14	4/26/2010	4/26/2010	TM

*NELAC Certified Parameter BDL = Below Detection Limit

Outreach Laboratory
311 North Aspen
Broken Arrow, OK 74012
(918) 251-2515
FAX (918) 251-0008

Client:	TPMC-Energy Solutions
Client Project:	Luckey FUSRAP
Lab Number:	20100285
Date Reported:	4/29/2010
Date Received:	4/22/10
Page Number:	4 of 10

Analytical Report

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Lab ID:	**20100285-13**						
Client ID:	**Env-Air-197 (Sample #197)**						
Date Sampled:	**12/28/2009 6:10:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	1.6E-14 +/- 2.0E-14	uCi/ml	1.6E-14	4/26/2010	4/26/2010	TM
Gross Beta	EPA 900*/9310*	4.9E-14 +/- 3.9E-14	uCi/ml	3.6E-14	4/26/2010	4/26/2010	TM
Lab ID:	**20100285-14**						
Client ID:	**Env-Air-206 (Sample #206)**						
Date Sampled:	**12/30/2009 5:41:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	2.2E-14 +/- 2.0E-14	uCi/ml	1.4E-14	4/26/2010	4/26/2010	TM
Gross Beta	EPA 900*/9310*	4.1E-14 +/- 3.4E-14	uCi/ml	3.1E-14	4/26/2010	4/26/2010	TM
Lab ID:	**20100285-15**						
Client ID:	**Env-Air-214 (Sample #214)**						
Date Sampled:	**1/2/2010 5:21:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	3.5E-15 +/- 1.8E-14	uCi/ml	1.8E-14	4/26/2010	4/26/2010	TM
Gross Beta	EPA 900*/9310*	4.7E-14 +/- 4.3E-14	uCi/ml	4.0E-14	4/26/2010	4/26/2010	TM
Lab ID:	**20100285-16**						
Client ID:	**Env-Air-230 (Sample #230)**						
Date Sampled:	**1/6/2010 5:09:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	2.2E-14 +/- 2.2E-14	uCi/ml	1.7E-14	4/26/2010	4/26/2010	TM
Gross Beta	EPA 900*/9310*	7.7E-14 +/- 4.3E-14	uCi/ml	3.6E-14	4/26/2010	4/26/2010	TM

*NELAC Certified Parameter BDL = Below Detection Limit

Outreach Laboratory
311 North Aspen
Broken Arrow, OK 74012
(918) 251-2515
FAX (918) 251-0008

Client:	TPMC-Energy Solutions
Client Project:	Luckey FUSRAP
Lab Number:	20100285
Date Reported:	4/29/2010
Date Received:	4/22/10
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Analytical Report

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Lab ID:	**20100285-17**						
Client ID:	**Env-Air-242 (Sample #242)**						
Date Sampled:	**1/8/2010 3:56:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-4.0E-15 +/- 1.7E-14	uCi/ml	2.1E-14	4/26/2010	4/26/2010	TM
Gross Beta	EPA 900*/9310*	5.7E-14 +/- 4.9E-14	uCi/ml	4.5E-14	4/26/2010	4/26/2010	TM
Lab ID:	**20100285-18**						
Client ID:	**Env-Air-248 (Sample #248)**						
Date Sampled:	**1/10/2010 4:50:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	1.9E-14 +/- 2.9E-14	uCi/ml	2.4E-14	4/26/2010	4/26/2010	TM
Gross Beta	EPA 900*/9310*	1.3E-13 +/- 6.6E-14	uCi/ml	5.3E-14	4/26/2010	4/26/2010	TM
Lab ID:	**20100285-19**						
Client ID:	**Env-Air-271 (Sample #271)**						
Date Sampled:	**1/14/2010 4:57:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	1.2E-14 +/- 1.9E-14	uCi/ml	1.6E-14	4/26/2010	4/26/2010	TM
Gross Beta	EPA 900*/9310*	7.5E-14 +/- 4.2E-14	uCi/ml	3.5E-14	4/26/2010	4/26/2010	TM
Lab ID:	**20100285-20**						
Client ID:	**Env-Air-285 (Sample #285)**						
Date Sampled:	**1/16/2010 5:37:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	1.7E-14 +/- 1.9E-14	uCi/ml	1.5E-14	4/26/2010	4/26/2010	TM
Gross Beta	EPA 900*/9310*	4.9E-14 +/- 3.6E-14	uCi/ml	3.2E-14	4/26/2010	4/26/2010	TM

*NELAC Certified Parameter BDL = Below Detection Limit

Outreach Laboratory
311 North Aspen
Broken Arrow, OK 74012
(918) 251-2515
FAX (918) 251-0008

Client:	TPMC-Energy Solutions
Client Project:	Luckey FUSRAP
Lab Number:	20100285
Date Reported:	4/29/2010
Date Received:	4/22/10
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Analytical Report

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Lab ID:	**20100285-21**						
Client ID:	**Env-Air-342 (Sample #342)**						
Date Sampled:	**1/27/2010 5:10:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	1.3E-14 +/- 1.9E-14	uCi/ml	1.6E-14	4/27/2010	4/27/2010	TM
Gross Beta	EPA 900*/9310*	8.6E-14 +/- 4.4E-14	uCi/ml	3.6E-14	4/27/2010	4/27/2010	TM
Lab ID:	**20100285-22**						
Client ID:	**Env-Air-357 (Sample #357)**						
Date Sampled:	**1/29/2010 4:50:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	6.5E-15 +/- 1.8E-14	uCi/ml	1.7E-14	4/27/2010	4/27/2010	TM
Gross Beta	EPA 900*/9310*	4.9E-14 +/- 4.1E-14	uCi/ml	3.7E-14	4/27/2010	4/27/2010	TM
Lab ID:	**20100285-23**						
Client ID:	**Env-Air-399 (Sample #399)**						
Date Sampled:	**2/5/2010 5:15:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	3.1E-15 +/- 1.6E-14	uCi/ml	1.6E-14	4/27/2010	4/27/2010	TM
Gross Beta	EPA 900*/9310*	5.5E-14 +/- 3.9E-14	uCi/ml	3.5E-14	4/27/2010	4/27/2010	TM
Lab ID:	**20100285-24**						
Client ID:	**Env-Air-441 (Sample #441)**						
Date Sampled:	**2/17/2010 4:35:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	9.7E-15 +/- 1.9E-14	uCi/ml	1.7E-14	4/27/2010	4/27/2010	TM
Gross Beta	EPA 900*/9310*	4.6E-14 +/- 4.0E-14	uCi/ml	3.7E-14	4/27/2010	4/27/2010	TM

*NELAC Certified Parameter BDL = Below Detection Limit

Outreach Laboratory
311 North Aspen
Broken Arrow, OK 74012
(918) 251-2515
FAX (918) 251-0008

Client:	TPMC-Energy Solutions
Client Project:	Luckey FUSRAP
Lab Number:	20100285
Date Reported:	4/29/2010
Date Received:	4/22/10
Page Number:	7 of 10

Analytical Report

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Lab ID:	**20100285-25**						
Client ID:	**Env-Air-463 (Sample #463)**						
Date Sampled:	**2/22/2010 4:55:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	6.7E-15 +/- 1.9E-14	uCi/ml	1.7E-14	4/27/2010	4/27/2010	TM
Gross Beta	EPA 900*/9310*	4.0E-14 +/- 4.1E-14	uCi/ml	3.8E-14	4/27/2010	4/27/2010	TM
Lab ID:	**20100285-26**						
Client ID:	**Env-Air-512 (Sample #512)**						
Date Sampled:	**3/9/2010 3:52:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	6.6E-15 +/- 1.8E-14	uCi/ml	1.7E-14	4/27/2010	4/27/2010	TM
Gross Beta	EPA 900*/9310*	1.3E-14 +/- 3.7E-14	uCi/ml	3.8E-14	4/27/2010	4/27/2010	TM
Lab ID:	**20100285-27**						
Client ID:	**Env-Air-514 (Sample #514)**						
Date Sampled:	**3/10/2010 5:00:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	1.4E-14 +/- 1.8E-14	uCi/ml	1.5E-14	4/27/2010	4/27/2010	TM
Gross Beta	EPA 900*/9310*	2.9E-14 +/- 3.3E-14	uCi/ml	3.2E-14	4/27/2010	4/27/2010	TM
Lab ID:	**20100285-28**						
Client ID:	**Env-Air-542 (Sample #542)**						
Date Sampled:	**3/16/2010 5:40:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-3.1E-15 +/- 1.3E-14	uCi/ml	1.6E-14	4/27/2010	4/27/2010	TM
Gross Beta	EPA 900*/9310*	3.1E-14 +/- 3.6E-14	uCi/ml	3.5E-14	4/27/2010	4/27/2010	TM

*NELAC Certified Parameter BDL = Below Detection Limit

Outreach Laboratory
311 North Aspen
Broken Arrow, OK 74012
(918) 251-2515
FAX (918) 251-0008

Client:	TPMC-Energy Solutions
Client Project:	Luckey FUSRAP
Lab Number:	20100285
Date Reported:	4/29/2010
Date Received:	4/22/10
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Analytical Report

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Lab ID:	**20100285-29**						
Client ID:	**Env-Air-604 (Sample #604)**						
Date Sampled:	**4/1/2010 4:10:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	6.8E-15 +/- 1.9E-14	uCi/ml	1.8E-14	4/27/2010	4/27/2010	TM
Gross Beta	EPA 900*/9310*	4.6E-14 +/- 4.2E-14	uCi/ml	3.9E-14	4/27/2010	4/27/2010	TM
Lab ID:	**20100285-30**						
Client ID:	**Env-Air-607 (Sample #607)**						
Date Sampled:	**4/2/2010 12:10:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	1.9E-14 +/- 3.7E-14	uCi/ml	3.3E-14	4/27/2010	4/27/2010	TM
Gross Beta	EPA 900*/9310*	6.9E-14 +/- 7.5E-14	uCi/ml	7.1E-14	4/27/2010	4/27/2010	TM
Lab ID:	**20100285-31**						
Client ID:	**Env-Air-608 (Sample #608)**						
Date Sampled:	**4/2/2010 12:05:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-6.5E-15 +/- 2.8E-14	uCi/ml	3.4E-14	4/27/2010	4/27/2010	TM
Gross Beta	EPA 900*/9310*	1.0E-13 +/- 8.1E-14	uCi/ml	7.4E-14	4/27/2010	4/27/2010	TM
Lab ID:	**20100285-32**						
Client ID:	**Env-Air-609 (Sample #609)**						
Date Sampled:	**4/2/2010 12:05:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	0.0E+00 +/- 3.1E-14	uCi/ml	3.3E-14	4/27/2010	4/27/2010	TM
Gross Beta	EPA 900*/9310*	7.6E-14 +/- 7.7E-14	uCi/ml	7.3E-14	4/27/2010	4/27/2010	TM

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Outreach Laboratory
311 North Aspen
Broken Arrow, OK 74012
(918) 251-2515
FAX (918) 251-0008

Client:	TPMC-Energy Solutions
Client Project:	Luckey FUSRAP
Lab Number:	20100285
Date Reported:	4/29/2010
Date Received:	4/22/10
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Analytical Report

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Lab ID:	**20100285-33**						
Client ID:	**Env-Air-613 (Sample #613)**						
Date Sampled:	**4/5/2010 4:35:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	9.9E-15 +/- 1.9E-14	uCi/ml	1.7E-14	4/27/2010	4/27/2010	TM
Gross Beta	EPA 900*/9310*	4.1E-14 +/- 4.0E-14	uCi/ml	3.7E-14	4/27/2010	4/27/2010	TM
Lab ID:	**20100285-34**						
Client ID:	**Env-Air-618 (Sample #618)**						
Date Sampled:	**4/6/2010 5:55:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-2.7E-15 +/- 1.2E-14	uCi/ml	1.4E-14	4/27/2010	4/27/2010	TM
Gross Beta	EPA 900*/9310*	5.4E-14 +/- 3.5E-14	uCi/ml	3.0E-14	4/27/2010	4/27/2010	TM
Lab ID:	**20100285-35**						
Client ID:	**Env-Air-623 (Sample #623)**						
Date Sampled:	**4/7/2010 4:00:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	3.7E-15 +/- 1.9E-14	uCi/ml	1.9E-14	4/27/2010	4/27/2010	TM
Gross Beta	EPA 900*/9310*	4.6E-14 +/- 4.5E-14	uCi/ml	4.2E-14	4/27/2010	4/27/2010	TM
Lab ID:	**20100285-36**						
Client ID:	**Env-Air-Blank1 (Blank 1)**						
Date Sampled:	**4/19/2010 10:00:00 AM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	1.7 +/- 2.2	dpm/f	1.7	4/27/2010	4/27/2010	TM
Gross Beta	EPA 900*/9310*	1.3 +/- 3.7	dpm/f	3.8	4/27/2010	4/27/2010	TM
Lab ID:	**20100285-37**						
Client ID:	**Env-Air-Blank2 (Blank 2)**						
Date Sampled:	**4/19/2010 10:00:00 AM**						
Matrix:	**Other**						

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Outreach Laboratory
311 North Aspen
Broken Arrow, OK 74012
(918) 251-2515
FAX (918) 251-0008

Client:	TPMC-Energy Solutions
Client Project:	Luckey FUSRAP
Lab Number:	20100285
Date Reported:	4/29/2010
Date Received:	4/22/10
Page Number:	10 of 10

Analytical Report

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
		Radiochemical Analyses					
Gross Alpha	EPA 900*/9310*	2.3 +/- 2.3	dpm/f	1.7	4/27/2010	4/27/2010	TM
Gross Beta	EPA 900*/9310*	6.0 +/- 4.3	dpm/f	3.8	4/27/2010	4/27/2010	TM

Lab ID: **20100285-38**
Client ID: **Env-Air-Blank3 (Blank 3)**
Date Sampled: **4/19/2010 10:00:00 AM**
Matrix: **Other**

		Radiochemical Analyses					
Gross Alpha	EPA 900*/9310*	-1.0 +/- 1.1	dpm/f	1.7	4/27/2010	4/27/2010	TM
Gross Beta	EPA 900*/9310*	5.5 +/- 4.2	dpm/f	3.8	4/27/2010	4/27/2010	TM

Lab ID: **20100285-39**
Client ID: **Env-Air-Blank4 (Blank 4)**
Date Sampled: **4/19/2010 10:00:00 AM**
Matrix: **Other**

		Radiochemical Analyses					
Gross Alpha	EPA 900*/9310*	0 +/- 1.6	dpm/f	1.7	4/27/2010	4/27/2010	TM
Gross Beta	EPA 900*/9310*	2.4 +/- 3.8	dpm/f	3.8	4/27/2010	4/27/2010	TM

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	MS %REC	MSD %REC	MSD RPD	Date
Gross Alpha	0	95.0							4/27/2010
Gross Alpha	0	84.0							4/26/2010
Gross Beta	1.34	101.0							4/27/2010
Gross Beta	3.15	111.0							4/26/2010

Lab Approval: [redacted]

*NELAC Certified Parameter BDL = Below Detection Limit

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Darin McElemey QA Contact Phone: (440) 655-6387 (716) 572-1297

Work Order #: [redacted] Sample Program: —

Samplers: Darin McElemey

Parameters for Analysis

NOTE: Please report activity in mCi/ml

	Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Gross Alpha	Gross Beta							Comments
1	11/6/09	1555	Env-Air-15	N/A	DM	1	X	X							Sample #. 15
2	11/6/09	1535	Env-Air-16		DM	1	X	X							16
3	11/18/09	08:50	Env-Air-32		DM	1	X	X							32
4	11/23/09	17:45	Env-Air-52		DM	1	X	X							52
5	12/1/09	18:09	Env-Air-63		DM	1	X	X							63
6	12/4/09	17:56	Env-Air-84		DM	1	X	X							84
7	12/6/09	14:24	Env-Air-101		DM	1	X	X							101
8	12/8/09	16:41	Env-Air-116		DM	1	X	X							116
9	12/8/09	16:35	Env-Air-117		DM	1	X	X							117
10	12/11/09	15:58	Env-Air-141		DM	1	X	X							141

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TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Darin McElney QA Contact Phone: (440) 655-6387

Work Order #: — Sample Program: —

Samplers: Darin McElney

Page 2 of 4

Parameters for Analysis

	Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Gross Alpha	Gross Beta							Comments
11	12/17/09	16:02	Env-Air-167	N/A	DM	1	X	X							Sample # - 167
12	12/18/09	16:27	Env-Air-173		DM	1	X	X							173
13	12/28/09	18:10	Env-Air-197		DM	1	X	X							197
14	12/30/09	17:41	Env-Air-206		DM	1	X	X							206
15	1/2/10	17:21	Env-Air-214		DM	1	X	X							214
16	1/6/10	17:09	Env-Air-230		DM	1	X	X							230
17	1/8/10	15:56	Env-Air-242		DM	1	X	X							242
18	1/10/10	16:50	Env-Air-248		DM	1	X	X							248
19	1/14/10	16:57	Env-Air-271		DM	1	X	X							271
20	1/16/10	17:37	Env-Air-285		DM	1	X	X							285

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TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey Fusrap

QA Contact: Darin McElency QA Contact Phone: (440) 655-6387

Work Order #: — Sample Program: —

Samplers: Darin McElency

Page 3 of 4

Parameters for Analysis

	Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Gross Alpha	Gross Beta							Comments
21	1/27/10	17:10	Env-Air-342	N/A	DM	1	X	X							Sample # 342
22	1/29/10	16:50	Env-Air-357		DM	1	X	X							357
23	2/5/10	17:15	Env-Air-399		DM	1	X	X							399
24	2/17/10	16:35	Env-Air-441		DM	1	X	X							441
25	2/22/10	16:55	Env-Air-463		DM	1	X	X							463
26	3/9/10	15:52	Env-Air-512		DM	1	X	X							512
27	3/10/10	17:00	Env-Air-514		DM	1	X	X							514
28	3/16/10	17:40	Env-Air-542		DM	1	X	X							542
29	4/1/10	16:10	Env-Air-604		DM	1	X	X							604
30	4/2/10	12:10	Env-Air-607		DM	1	X	X							607

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[redacted]	4/19/10/12:00	[redacted]	04/22/10/1120

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TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Darin McElency QA Contact Phone: (440) 655-6387

Work Order #: — Sample Program: —

Samplers: Darin McElency

Page 4 of 4

Parameters for Analysis

	Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Gross Alpha	Gross Beta							Comments
31	4/2/10	12:05	Env - Air - 608	N/A	DM	1	X	X							Sample # 608
32	4/2/10	12:05	Env - Air - 609		DM	1	X	X							609
33	4/5/10	16:35	Env - Air - 613		DM	1	X	X							613
34	4/6/10	17:55	Env - Air - 618		DM	1	X	X							618
35	4/7/10	16:00	Env - Air - 623		DM	1	X	X							623
36	4/19/10	10:00	Env - Air - Blank 1		DM	1	X	X							Blank 1
37	4/19/10	10:00	Env - Air - Blank 2		DM	1	X	X							Blank 2
38	4/19/10	10:00	Env - Air - Blank 3		DM	1	X	X							Blank 3
39	4/19/10	10:00	Env - Air - Blank 4		DM	1	X	X							Blank 4
				N/A											

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AMENDED REPORT

Analytical Data Package Prepared For

USACE

Luckey_FUSRAP

Radiochemical Analysis By

TestAmerica

2800 G.W. Way, Richland Wa, 99354, (509)-375-3131.

Assigned Laboratory Code:

Data Package Contains 24 *Pages*

Report No.: 42986

Results in this report relate only to the sample(s) analyzed.

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
40744		LUCKY-BZA-1	J9K300464-001	LP9DX1	LP9DX1	9334504
		LUCKY-BZA-2	J9K300464-002	LP9D01	LP9D01	9334504
		LUCKY-BZA-3	J9K300464-003	LP9D11	LP9D11	9334504
		LUCKY-BZA-4	J9K300464-004	LP9D21	LP9D21	9334504
		LUCKY-BZA-5	J9K300464-005	LP9D31	LP9D31	9334504
		LUCKY-BZA-6	J9K300464-006	LP9D41	LP9D41	9334504
		LUCKY-BZA-7	J9K300464-007	LP9D51	LP9D51	9334504
		LUCKY-BZA-8	J9K300464-008	LP9D61	LP9D61	9334504
		LUCKY-BZA-9	J9K300464-009	LP9D71	LP9D71	9334504

AMENDED REPORT

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Certificate of Analysis

December 1, 2009
December 30, 2009

TG Adams & Associates, Inc.
Attention: Darin McEleney

Date Received in Lab	:	November 30, 2009
Sample Type	:	Nine (9) Filters
SDG Number	:	40744
Project Number/Name	:	Luckey - FUSRAP

CASE NARRATIVE

December 30, 2009: This data report has been amended to include the CRDL for the Beryllium analysis and to report the results as ug/m3, as requested by the client. All amended information in this case narrative will be bold, underlined and italicized.

I. Introduction

On November 30, 2009, nine filter samples were received at the TestAmerica Richland laboratory for ICP metals analysis. Upon receipt, the samples were assigned the TestAmerica identification numbers as described on the cover page of the Analytical Data Package report form. The samples were assigned to Lot Number J9K300464.

II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in. Envelope # 1 is missing. We do not know if we received the envelope at the TA-Richland laboratory or it was misplaced. No flow volume was available for sample #1.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information; analytical results and the appropriate associated statistical uncertainties.

The requested analyses were:

ICP Metals:
ICP Metals by NIOSH Method 7300

IV. Quality Control

The analytical result for each analysis performed includes a minimum of one laboratory control sample (LCS), and one reagent blank sample analysis. Any exceptions have been noted in the "Comments" section.

V. Comments

ICP Metals

ICP Metals by NIOSH Method 7300:

The samples were received at Richland already digested in 50ml digi-prep tubes. The samples were digested at St. Louis using the digi-prep method instead of NIOSH 7300. The samples were evaporated at Richland and method NIOSH 7300 was performed. The QC samples were prepared in St. Louis and are within acceptance limits. Data is accepted. Except as noted, the batch blank, the LCS and sample results are within acceptance limits.

I certify that this Certificate of Analysis is in compliance with AIHA, both technically and for completeness, for other than the conditions detailed in the following report. 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.

Reviewed and approved:

[redacted]

Christi Hayes
Project Manager

Isotope	Richland SOP #	Old Richland SOP #	Method Reference	Title
Asbestos	RL-ASB-001	N / A	NIOSH 7400	Fiber Counting by Phase Contrast Microscopy based on NIOSH 7400
Asbestos	RL-ASB-002	N / A	NIOSH 9002	Sample Prep and Analysis for Asbestos (bulk) by Polarized Light Microsopy based on NIOSH 9002
Alpha - Gross	ARCHIVED	RICH-RB-5035	Liquid Scintillation Anal / Packard	DETERMINATION OF GROSS ALPHA IN NASAL SMEARS BY LIQUID SCINTILLATION COUNTING
Alpha - Gross	RL-GPC-001	RICH-RC-5014	9310 / EPA SW846 900 0 / EPA 600	DETERMINATION OF GROSS ALPHA AND GROSS BETA IN WATER BY METHOD 9310
Alpha - Gross	RL-GPC-007	RICH-RC-5020	SM 7110B EPA 680	DETERMINATION OF GROSS ALPHA AND GROSS BETA IN SOIL, SHORELINE SOIL, FOOD AND VEGETATION
Alpha - Gross	RL-GPC-002	RICH-RC-5021	00-02 EPA 520	DETERMINATION OF GROSS ALPHA ACTIVITY IN WATER BY COPRECIPITATION
Alpha - Gross	RL-GPC-008	RICH-RC-5036	ER100 / LANL	PREPARATION OF AIR FILTERS FOR GROSS ALPHA / BETA AND COMPOSITING AIR FILTERS
Am	RL-ALP-003	RICH-RC-5072	Mod RP 725 / DOE0089T EXT Chromatography	SEPARATION OF AMERICIUM, CURIUM, AND URANIUM BY EXTRACTION CHROMATOGRAPHY
Am	RL-ALP-010	RICH-RC-5080	Am03 / Pu11HASL 300 NAS-NS-3006	SEQUENTIAL SEPARATION OF PLUTONIUM AND AMERICIUM
Beta - Gross	RL-GPC-001	RICH-RC-5014	9310 / EPA SW846 900 0 / EPA 600	DETERMINATION OF GROSS ALPHA AND GROSS BETA IN WATER BY METHOD 9310
Beta - Gross	RL-GPC-007	RICH-RC-5020	SM 7110B EPA 680	DETERMINATION OF GROSS ALPHA AND GROSS BETA IN SOIL, SHORELINE SOIL, FOOD AND VEGETATION
Beta - Gross	RL-GPC-008	RICH-RC-5036	ER100 / LANL	PREPARATION OF AIR FILTERS FOR GROSS ALPHA / BETA AND COMPOSITING AIR FILTERS
C14	RL-LSC-001	RICH-RB-5013	Mod H-02 / EPA 520	TRITIUM, CARBON-14, NICKEL-63 OR PHOSPHORUS-32 ANALYSIS IN URINE
C14	RL-LSC-008	RICH-RC-5022	EPA C-01 / EPA 520	CARBON 14 BY DIGESTION METHOD
C14	RL-LSC-009	RICH-RC-5040	Mod C14 / EPA 680	DETERMINATION OF CARBON-14 BY BENZENE SYNTHESIS
C14	RL-LSC-010	RICH-RC-5046	EPA C-01 / EPA 520	DETERMINATION OF CARBON-14 IN GRAPHITE AND SOIL
C14	RL-LSC-011	RICH-RC-5047	Mod H-02 / EPA 520	DETERMINATION OF CARBON-14 IN WATER BY DIRECT COUNTING
Cm	RL-ALP-003	RICH-RC-5072	Mod RP 725 / DOE0089T EXT Chromatography	SEPARATION OF AMERICIUM, CURIUM, AND URANIUM BY EXTRACTION CHROMATOGRAPHY
Coliform	RL-WC-001	RICH-WC-5001	9222B	DETERMINATION OF TOTAL COLIFORM: MULTIPLE TUBE FERMENTATION TECHNIQUE
Coliform	RL-WC-002	RICH-WC-5002	9131	TOTAL COLIFORMS BY MEMBRANE FILTRATION
Coliform	RL-WC-005	RICH-WC-5007	9223	TOTAL COLIFORM BY THE COLILERT METHOD
Cr6+	RL-WC-003	RICH-WC-5003	7196A, SW846	DETERMINATION OF HEXAVALENT CHROMIUM [Cr(VI)] IN WATER, SOIL, AND SIMILAR MATRICES
Cr6+	RL-WC-004	RICH-WC-5005	3060 / SW846	DETERMINATION OF HEXAVALENT CHROMIUM (CrVI) IN SOLID MATRICES WITH ALKALINE DIGESTION
Fe	RL-LSC-015	RICH-RC-5074	EXT Chromatography ModFe55 / PNL-ALO-435	SEPARATION OF IRON AND NICKEL BY EXTRACTION CHROMATOGRAPHY
Fe55	RL-LSC-016	RICH-RC-5023	R4-73-014 / EPA HASL 300	DETERMINATION OF IRON-55 AND IRON-59 IN WATER
Fe59	RL-LSC-016	RICH-RC-5023	R4-73-014 / EPA HASL 300	DETERMINATION OF IRON-55 AND IRON-59 IN WATER
Gamma	RL-GAM-001	RICH-RC-5017	901 0 / HASL 300 ASTM D3649	PREPARATION OF ALL MATRICES FOR ANALYSIS BY GAMMA SPECTROSCOPY
H3	RL-LSC-001	RICH-RB-5013	Mod H-02 / EPA 520	TRITIUM, CARBON-14, NICKEL-63 OR PHOSPHORUS-32 ANALYSIS IN URINE
H3	RL-LSC-003	RICH-RB-5034	7500-3 / SM	DETERMINATION OF TRITIUM IN URINE BY DISTILLATION
H3	RL-LSC-004	RICH-RC-5004	H3 / EPA LV539	DETERMINATION OF TRITIUM IN AIR
H3	RL-LSC-005	RICH-RC-5007	Mod '906 0 / EPA 600	SEPARATION OF TRITIUM IN WATER AND AQUEOUS COMPONENT OF WINE
H3	RL-LSC-007	RICH-RC-5024	H-3 by EE EPA LV539 / HASL 300	DETERMINATION OF LOW LEVEL TRITIUM IN WATER BY ELECTROLYTIC ENRICHMENT
H3	RL-LSC-002	RICH-RC-5037	H-3 in Water / Tissue / LV 539	DETERMINATION OF TRITIUM BY CRYOGENIC DISTILLATION

Isotope	Richland SOP #	Old Richland SOP #	Method Reference	Title
H3	RL-LSC-006	RICH-RC-5048	H-3 in Water/Tissue / LV 539	TRITIUM PREPARATION IN MILK SAMPLES
I129	RL-GAM-002	RICH-RC-5025	R4-73-014I/EPA ASTM D2334 (Discontinued)	DETERMINATION OF IODINE-131 AND 129 IN WATER BY SOLVENT EXTRACTION METHOD
I131	RL-GAM-002	RICH-RC-5025	R4-73-014I/EPA ASTM D2334 (Discontinued)	DETERMINATION OF IODINE-131 AND 129 IN WATER BY SOLVENT EXTRACTION METHOD
I131	ARCHIVED	RICH-RC-5049	HASL 300 (1983)	DETERMINATION OF IODINE-131 IN MILK BY BATCH ION-EXCHANGE
Metals	ARCHIVED	BHI-MT-0001	6010	ICP-AE SPECTROSCOPY, SPECTROMETRIC METHOD FOR TRACE ELEMENT ANALYSIS, METHOD 6010A FOR Bechtel
Metals	RL-MT-001	RICH-MT-0001	6010B	ICP-AES for TRACE ELEMENT ANALYSIS, METHOD 6010B
Metals	RL-MT-002	RICH-MT-0002	SW486 3050B	ACID DIGESTION FOR ICP ANALYSIS
Metals	RL-MT-003	RICH-MT-0003	NIOSH 7300	DIGESTION PREP based on METHOD NIOSH 7300
Ni	RL-LSC-015	RICH-RC-5074	EXT Chromatography ModFe55/PNL-ALO-435	SEPARATION OF IRON AND NICKEL BY EXTRACTION CHROMATOGRAPHY
Ni63	RL-LSC-001	RICH-RB-5013	Mod H-02 / EPA 520	TRITIUM, CARBON-14, NICKEL-63 OR PHOSPHORUS-32 ANALYSIS IN URINE
Ni63	RL-LSC-017	RICH-RC-5069	EXT Chromatography Mod RP300 / DOE0089T	SEPARATION OF Ni-63 BY EXTRACTION CHROMATOGRAPHY
Np	RL-ALP-013	RICH-RC-5009	NAS-NS-3060	DETERMINATION OF NEPTUNIUM-237 BY LIQUID-LIQUID EXTRACTION IN ALL MATRICES
Np	RL-ALP-006	RICH-RC-5064	EXT Chromatography	SEPARATION OF NEPTUNIUM BY EXTRACTION CHROMATOGRAPHY
P32	RL-LSC-001	RICH-RB-5013	Mod H-02 / EPA 520	TRITIUM, CARBON-14, NICKEL-63 OR PHOSPHORUS-32 ANALYSIS IN URINE
Pb	RL-ALP-011	RICH-RC-5076	EXT Chromatography	DETERMINATION OF LEAD-210 BY EXTRACTION CHROMATOGRAPHY
Po	RL-ALP-007	RICH-RB-5001	NAS-NS-3037 HASL 300	DETERMINATION OF POLONIUM-210 IN URINE
Po	RL-ALP-012	RICH-RC-5012	Po-01 / HASL 300 Mod U01 HASL 300	SEPARATION OF ISOTOPIC URANIUM AND POLONIUM-210 IN WATER, SOIL AND FILTERS
Prep - Bioassay	ARCHIVED	RICH-RB-0001		PREPARATION FOR RAPID BIOASSAY ANALYSES
Prep - Bioassay	RL-PRP-001	RICH-RB-5002	Mod Pu06 / HASL 300	PREPARATION OF URINE AND BLOOD SAMPLES
Prep - Bioassay	ARCHIVED	RICH-RB-5004	ASTM D1429-95	DETERMINATION OF SPECIFIC GRAVITY OF URINE
Prep - Bioassay	RL-RPL-002	RICH-RB-5036	Pub 6490,6601 / PNL	PREPARATION OF SYNTHETIC URINE AND FECES USING RECIPES FROM HPS N13 30 PREFORMANCE TESTING
Prep - Bioassay	RL-PRP-002	RICH-RB-5037	LA-10300-M R200 ASTM D3865	PREPARATION OF FECAL SAMPLES USING HYDROFLUORIC ACID DIGESTION
Prep - Bioassay	RL-RPL-003	RICH-RC-5028	ICRP Publication 23	PREPARATION OF SYNTHETIC URINE AND FECES
Prep - Count	RL-ALP-016	RICH-RC-5003	G-03 / HASL 300	COPRECIPITATION OF SOME ACTINIDES ON NEODYMIUM FLUORIDE FOR ALPHA-PARTICLE SPECTROMETRY
Prep - Count	RL-ALP-015	RICH-RC-5039	G-03 / HASL 300 Anal Chem 1972	ELECTRODEPOSITION OF ACTINIDES
Prep - Count	RL-ALP-014	RICH-RC-5085	Morrison & Freiser NAS-NS-3050	ANHYDROUS ETHER EXTRACTION OF URANIUM
Prep - Env	RL-KPA-001	RICH-RC-5015	ASTM / D5174-97	ENVIRONMENTAL SAMPLE PREPARATION FOR URANIUM BY LASER-INDUCED PHOSPHORESCENCE
Prep - Env	RL-PRP-004	RICH-RC-5016	Sr02 / HASL 300	PREPARATION OF ENVIRONMENTAL MATRICES
Prep - Env	RL-PRP-007	RICH-RC-5045	Mod Pu02 / HASL 300	PREPARATION OF MIXED BED RESINS AND PRE-FILTERS
Prep - Env	RL-PRP-008	RICH-RC-5068	Mod ER100 / LA10300	PREPARATION OF SOIL, VEGETATION AND AIR FILTERS BY MIXED STRONG ACID LEACHING
Prep - Resin	RL-ALP-017	RICH-RC-5018	Mod Pu11 / Mod 300	ION-EXCHANGE PREPARATION
Prep - Soil	RL-PRP-003	RICH-RC-5013	Pu02A / HASL 300	PREPARATION OF SOIL SAMPLES
Prep - Soil	RL-PRP-005	RICH-RC-5019	D5259 / ASTM SW 846/3015/3051/3052	PREPARATION AND DISSOLUTION OF SEDIMENTS AND SOIL BY MICROWAVE BOMB DIGESTION

Isotope	Richland SOP #	Old Richland SOP #	Method Reference	Title
Prep - Soil	RL-PRP-006	RICH-RC-5032	Pu02A / HASL 300	COMPLETE DISSOLUTION BY MIXED ACIDS IN A TEFLON BEAKER
Prep - Soil	RL-PRP-009	RICH-RC-5077	Mod ER100 / LA10300	PREPARATION OF SMALL SOIL SAMPLES FOR GAMMA SPEC AND/OR RADIOCHEM ANAL BY ACID DIGESTION
Prep - Urine	RL-PRP-010	RICH-RC-5086	AnalyticaChemActa1992 RP800 / DOE00089T	URINE AND WATER SAMPLE PREPARATION BY CALCIUM PHOSPHATE PRECIPITATION
Prep - Water	RL-PRP-010	RICH-RC-5086	AnalyticaChemActa1992 RP800 / DOE00089T	URINE AND WATER SAMPLE PREPARATION BY CALCIUM PHOSPHATE PRECIPITATION
Pu	ARCHIVED	RICH-RB-5015	Pu11 / HASL 300	RAPID DETERMINATION OF PLUTONIUM IN FECES
Pu	RL-ALP-002	RICH-RC-5010	Pu11 / HASL 300	DETERMINATION OF ISOTOPIC PLUTONIUM IN ALL MATRICES
Pu	RL-ALP-010	RICH-RC-5080	Am03 HASL 300 Pu11 / HASL 300	SEQUENTIAL SEPARATION OF PLUTONIUM AND AMERICIUM
Pu	RL-ALP-001	RICH-RC-5087	AnalyticaChemActa1992 RP800 / DOE00089T	DETERMINATION OF PLUTONIUM BY EXTRACTION CHROMATOGRAPHY
Ra	RL-RA-001	RICH-RC-5005	903 1 / EPA 600	RADIUM-226 AND RADIUM-228 SEPARATION IN RADIOCHEMICAL MATRICES - ADAPTED FROM EPA 903 1 AND 904 0
Ra	RL-RA-001	RICH-RC-5005	904 0 / EPA 600	RADIUM-226 AND RADIUM-228 SEPARATION IN RADIOCHEMICAL MATRICES - ADAPTED FROM EPA 903 1 AND 904 0
Ra	RL-RA-002	RICH-RC-5027	Mod D2460/ ASTM 903 0 / EPA 600	DETERMINATION OF TOTAL RADIUM
Rn	RL-LSC-019	RICH-RC-5082	913 0 / EPA	DETERMINATION OF RADON-222 - ADAPTED FROM METHOD 913 0
S35	ARCHIVED	RICH-RB-5020	Hillebrand, Lundeell, Bright, Hoffman 1953	DETERMINATION OF SULFUR-35 IN URINE
Se79	RL-LSC-012	RICH-RC-5043	Selenium / NAS-NS-3030	RADIOCHEMICAL DETERMINATION OF SELENIUM-79
Solubility	ARCHIVED	RICH-RC-5035	Kalfward&Thomas PNL3716	DETERMINATION OF SOLUBILITY OF RADIOACTIVE PARTICLE CONSTITUENTS
Sr	RL-GPC-005	RICH-RB-5007	Mod Sr02 / HASL 300 Mod 905 0 / EPA 600	DETERMINATION OF TOTAL STRONTIUM IN URINE
Sr	RL-GPC-006	RICH-RB-5021	Mod Sr02 / HASL300 Mod 905 0 / EPA 600	DETERMINATION OF STRONTIUM IN FECES
Sr	ARCHIVED	RICH-RB-5022	Mod Sr02 / HASL300 Mod 905 0 / EPA 600	DETERMINATION OF TOTAL STRONTIUM IN URINE FOR RAPID ANALYSIS
Sr	ARCHIVED	RICH-RB-5031	Mod Sr02 / HASL300 Mod 905 0 / EPA 600	RAPID DETERMINATION OF TOTAL STRONTIUM IN FECES
Sr	RL-GPC-003	RICH-RC-5006	Mod Sr02 / HASL300 Mod 905 0 / EPA 600	STRONTIUM SEPARATION IN ENVIROMENTAL MATRICES
Sr - Yt	RL-GPC-004	RICH-RC-5071	Mod Sr02 / HASL300 Mod 905 0 / EPA 600	YTTRIUM-90 SEPARATION FOR STRONTIUM-90 DETERMINATION IN ALL MATRICES
Tc	RL-LSC-014	RICH-RC-5065	EXT Chromatography Mod RP550 / DOE0089T	DETERMINATION OF TECHNETIUM-99 BY EXTRACTION CHROMATOGRAPHY
Tc	RL-LSC-013	RICH-RC-5078	Tc01 / HASL 300	SEPARATION OF TECHNETIUM-99 IN ALL MATRICES
Th	RL-ALP-008	RICH-RB-5006	Mod Th01 / HASL 300	SEPARATION OF THORIUM FROM URINE AND FECAL SAMPLES
Th	RL-ALP-005	RICH-RC-5084	Mod Th01 / HASL 300 Anal Chim Acta 1982	DETERMINATION OF THORIUM ISOTOPIC IN ENVIRONMENTAL MATRICES
U	RL-ALP-012	RICH-RC-5012	Po-01 / HASL 300 Mod U01 / HASL 300	SEPARATION OF ISOTOPIC URANIUM AND POLONIUM-210 IN WATER, SOIL AND FILTERS
U	RL-KPA-002	RICH-RC-5031	Mod U01 / HASL 300	SEPARATION OF TOTAL URANIUM IN WATER AND URINE
U	RL-KPA-003	RICH-RC-5058	D5174 / ASTM	DETERMINATION OF URANIUM BY PHOSPHORESCENCE ANALYSIS
U	RL-ALP-004	RICH-RC-5067	EXT Chromatography Mod RP725 / DOE0089T	SEPARATION OF URANIUM BY EXTRACTION CHROMATOGRAPHY
U	RL-ALP-003	RICH-RC-5072	EXT Chrom Mod RP725 & 800 / DOE0089T	SEPARATION OF AMERICIUM, CURIUM, AND URANIUM BY EXTRACTION CHROMATOGRAPHY
U	RL-ALP-009	RICH-RC-5079	EXT Chromatography Mod RP725 / DOE0089T	DETERMINATION OF ISOTOPIC URANIUM IN ALL MATRICES

Drinking Water Method Cross References

	DRINKING WATER ASTM METHOD CROSS REFERENCES	
Referenced Method	**Isotope(s)**	**TestAmerica Richland's SOP No.**
EPA 901.1	Cs-134, I-131	RL-GAM-001
EPA 900.0	Alpha & Beta	RL-GPC-001
EPA 00-02	Gross Alpha (Coprecipitation)	RL-GPC-002
EPA 903.0	Total Alpha Radium (Ra-226)	RL-RA-002
EPA 903.1	Ra-226	RL-RA-001
EPA 904.0	Ra-228	RL-RA-001
EPA 905.0	Sr-89/90	RL-GPC-003
ASTM D5174	Uranium	RL-KPA-003
EPA 906.0	Tritium	RL-LSC-005

Results in this report relate only to the sample(s) analyzed.

Uncertainty Estimation

TestAmerica Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, R = constants * f(x,y,z,...). The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value (S/? n), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or TestAmerica.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) ***u_c - Combined Uncertainty.***	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, ***u_c the combined uncertainty.*** The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or TestAmerica "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. Lc=(1.645 * Sqrt(2*(BkgrndCnt/BkgrndCntMin)/SCntMin)) * (ConvFct/(Eff*Yld*Abn*Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC|MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. MDC = (4.65 * Sqrt((BkgrndCnt/BkgrndCntMin)/SCntMin) + 2.71/SCntMin) * (ConvFct/(Eff * Yld * Abn * Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUcert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the **Work Order** Number.
RER	The equation Replicate Error Ratio = (S-D)/[sqrt($TPUs^2$ + $TPUd^2$)] as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by TestAmerica upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

AMENDED REPORT

Date: 30-Dec-09

Sample Results Summary

TestAmerica

Ordered by Method, Batch No., Client Sample ID.

Report No. : 42986 **SDG No:** 40744

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDC or MDA	CRDL	RER2
9334504 DQ									
LUCKY-BZA-1									
	LP9DX1	Beryllium	0.00E+00 +-	U	ug/sa		5.00E-03		
LUCKY-BZA-2									
	LP9D01	Beryllium	-1.56E-03 +-	JU	ug/m3		3.12E-03	2.00E-01	
LUCKY-BZA-3									
	LP9D11	Beryllium	-1.17E-03 +-	JU	ug/m3		2.35E-03	2.00E-01	
LUCKY-BZA-4									
	LP9D21	Beryllium	6.67E-04 +-	JU	ug/m3		3.33E-03	2.00E-01	
LUCKY-BZA-5									
	LP9D31	Beryllium	5.30E-02 +-	J	ug/m3		3.33E-03	2.00E-01	
LUCKY-BZA-6									
	LP9D41	Beryllium	8.52E-03 +-	J	ug/m3		3.70E-03	2.00E-01	
LUCKY-BZA-7									
	LP9D51	Beryllium	3.46E-02 +-	J	ug/m3		3.60E-03	2.00E-01	
LUCKY-BZA-8									
	LP9D61	Beryllium	3.07E-03 +-	J	ug/m3		2.36E-03	2.00E-01	
LUCKY-BZA-9									
	LP9D71	Beryllium	-1.89E-03 +-	JU	ug/m3		3.14E-03	2.00E-01	

No. of Results: 9

TestAmerica

rptSTLRchSaSummary2 V5.2.5 A2002

RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

AMENDED REPORT

Date: 30-Dec-09

QC Results Summary

TestAmerica

Ordered by Method, Batch No, QC Type,.

Report No. : 42986 **SDG No.:** 40744

Batch Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDC|MDA
DQ								
9334504 BLANK QC,								
LP9E31B	Beryllium	-7.00E-05 +- 0.0E+00	U	mg/L				1.00E-04
9334504 LCS,								
LP9E31C	Beryllium	9.65E-01 +- 6.7E-03		mg/L		2%	-1.0	1.00E-04
LP9E31L	Beryllium	1.01E+00 +- 2.1E-03		mg/L		2%	-1.0	1.00E-04

No. of Results: 3

TestAmerica

rptSTLRchQcSummary V5.2.5 A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 30-Dec-09

Lab Name:	TestAmerica	**SDG:**	40744	**Collection Date:**	11/19/2009 5:00:00 PM
Lot-Sample No.:	J9K300464-001	**Report No. :**	42986	**Received Date:**	11/30/2009 10:00:00 AM
Client Sample ID:	LUCKY-BZA-1	**COC No. :**		**Matrix:**	WIPE

Luckey_FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9334504	DQ			**Work Order:** LP9DX1			**Report DB ID:** LP9DX1					
Beryllium	**0.00E+00**	U			5.00E-03	ug/sa		*0.*	11/30/09 07:57 p		1.0	0
								N/A			Sample	

No. of Results: 1 **Comments:**

AMENDED REPORT

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 30-Dec-09

Lab Name:	TestAmerica	**SDG:**	40744	**Collection Date:**	11/20/2009 4:11:00 PM
Lot-Sample No.:	J9K300464-002	**Report No. :**	42986	**Received Date:**	11/30/2009 10:00:00 AM
Client Sample ID:	LUCKY-BZA-2	**COC No. :**		**Matrix:**	WIPE

Luckey_FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9334504	DQ			**Work Order:**	LP9D01		**Report DB ID:**	LP9D01				
Beryllium	**-1.56E-03**	JU			3.12E-03	ug/m3		*-0.5*	11/30/09 08:02 p		1604.0	0
							2.00E-01	*N/A*			L	

No. of Results: 1 **Comments:**

AMENDED REPORT

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 30-Dec-09

Lab Name:	TestAmerica	**SDG:**	40744	**Collection Date:**	11/20/2009 4:45:00 PM
Lot-Sample No.:	J9K300464-003	**Report No. :**	42986	**Received Date:**	11/30/2009 10:00:00 AM
Client Sample ID:	LUCKY-BZA-3	**COC No. :**		**Matrix:**	WIPE

Luckey_FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9334504	DQ			**Work Order:** LP9D11			**Report DB ID:** LP9D11					
Beryllium	**-1.17E-03**	JU			2.35E-03	ug/m3		*-0.5*	11/30/09 08:08 p		2130.0	0
							2.00E-01	*N/A*			L	

No. of Results: 1 **Comments:**

AMENDED REPORT

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 30-Dec-09

Lab Name:	**TestAmerica**	**SDG:**	40744	**Collection Date:**	11/21/2009 4:35:00 PM
Lot-Sample No.:	**J9K300464-004**	**Report No. :**	42986	**Received Date:**	11/30/2009 10:00:00 AM
Client Sample ID:	**LUCKY-BZA-4**	**COC No. :**		**Matrix:**	WIPE

Luckey_FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9334504	DQ			**Work Order:**	LP9D21		**Report DB ID:**	LP9D21				
Beryllium	**6.67E-04**	JU			3.33E-03	ug/m3		*0.2*	11/30/09 08:13 p		1500.0	0
							2.00E-01	*N/A*			L	

No. of Results: 1 **Comments:**

AMENDED REPORT

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 30-Dec-09

Lab Name:	**TestAmerica**	**SDG:**	40744	**Collection Date:**	11/21/2009 4:50:00 PM
Lot-Sample No.:	**J9K300464-005**	**Report No. :**	42986	**Received Date:**	11/30/2009 10:00:00 AM
Client Sample ID:	**LUCKY-BZA-5**	**COC No. :**		**Matrix:**	WIPE

Luckey_FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9334504	DQ			**Work Order:**	LP9D31		**Report DB ID:**	LP9D31				
Beryllium	**5.30E-02**	J			3.33E-03	ug/m3		*(15.9)*	11/30/09 08:18 p		1500.0	0
							2.00E-01	*N/A*			L	

No. of Results: 1 **Comments:**

AMENDED REPORT

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 30-Dec-09

Lab Name:	TestAmerica	**SDG:**	40744	**Collection Date:**	11/23/2009 4:00:00 PM
Lot-Sample No.:	J9K300464-006	**Report No. :**	42986	**Received Date:**	11/30/2009 10:00:00 AM
Client Sample ID:	LUCKY-BZA-6	**COC No. :**		**Matrix:**	WIPE

Luckey_FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9334504 DQ				**Work Order:** LP9D41			**Report DB ID:** LP9D41					
Beryllium	**8.52E-03**	J			3.70E-03	ug/m3		*(2.3)*	11/30/09 08:23 p		1350.0	0
							2.00E-01	*N/A*			L	

No. of Results: 1 **Comments:**

AMENDED REPORT

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 30-Dec-09

Lab Name:	TestAmerica	**SDG:**	40744	**Collection Date:**	11/23/2009 4:28:00 PM
Lot-Sample No.:	J9K300464-007	**Report No. :**	42986	**Received Date:**	11/30/2009 10:00:00 AM
Client Sample ID:	LUCKY-BZA-7	**COC No. :**		**Matrix:**	WIPE

Luckey_FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9334504 DQ				**Work Order:** LP9D51			**Report DB ID:** LP9D51					
Beryllium	**3.46E-02**	J			3.60E-03	ug/m3		*(9.6)*	11/30/09 08:28 p		1389.0	0
							2.00E-01	*N/A*			L	

No. of Results: 1 **Comments:**

AMENDED REPORT

TestAmerica

rptSTLRchSample V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 30-Dec-09

Lab Name:	TestAmerica	**SDG:**	40744	**Collection Date:**	11/24/2009 4:30:00 PM
Lot-Sample No.:	J9K300464-008	**Report No. :**	42986	**Received Date:**	11/30/2009 10:00:00 AM
Client Sample ID:	LUCKY-BZA-8	**COC No. :**		**Matrix:**	WIPE

Luckey_FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9334504	DQ			**Work Order:**	LP9D61		**Report DB ID:**	LP9D61				
Beryllium	**3.07E-03**	J			2.36E-03	ug/m3		*(1.3)*	11/30/09 08:44 p		2120.0	0
							2.00E-01	*N/A*			L	

No. of Results: 1 **Comments:**

AMENDED REPORT

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 30-Dec-09

Lab Name:	TestAmerica	**SDG:**	40744	**Collection Date:**	11/24/2009 4:30:00 PM
Lot-Sample No.:	J9K300464-009	**Report No. :**	42986	**Received Date:**	11/30/2009 10:00:00 AM
Client Sample ID:	LUCKY-BZA-9	**COC No. :**		**Matrix:**	WIPE

Luckey_FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9334504	DQ			**Work Order:**	LP9D71		**Report DB ID:**	LP9D71				
Beryllium	**-1.89E-03**	JU			3.14E-03	ug/m3		*-0.6*	11/30/09 08:49 p		1590.0	0
							2.00E-01	*N/A*			L	

No. of Results: 1 **Comments:**

AMENDED REPORT

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM II

BLANK RESULTS

Date: 30-Dec-09

Lab Name: TestAmerica

Matrix: WIPE

SDG: 40744

Report No. : 42986

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9334504	DQ			**Work Order:** LP9E31B			**Report DB ID:** LP9E31B					
Beryllium	-7.00E-05	U		0.0E+00	1.00E-04	mg/L		-0.7 N/A	11/30/09 07:42 p		1.0 Sample	0

No. of Results: 1 **Comments:**

TestAmerica
rptSTLRchBlank
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

AMENDED REPORT

FORM II

LCS RESULTS

Date: 30-Dec-09

Lab Name: TestAmerica

Matrix: WIPE

SDG: 40744

Report No. : 42986

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 9334504	DQ			Work Order:	LP9E31C		Report DB ID:	LP9E31C					
Beryllium	9.65E-01			6.7E-03	1.00E-04	mg/L		5.00E+01		2%	11/30/09 07:47 p	1.0	0
							Rec Limits:			-1.0		Sample	

No. of Results: 1 Comments:

AMENDED REPORT

TestAmerica Bias - (Result/Expected)-1 as defined by ANSI N13.30.

rptSTLRchLcs
V5.2.5 A2002

FORM II

DUPLICATE LCS RESULTS

Date: 30-Dec-09

Lab Name: TestAmerica

Matrix: WIPE

SDG: 40744

Report No. : 42986

Parameter	Dup Rst, Orig Rst	Qual	Total Uncert(2 s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 9334504 DQ			**Work Order:** LP9E31L			**Report DB ID:** LP9E31L			**Orig Sa DB ID:** LP9E31C			
Beryllium	1.01E+00		2.1E-03	1.00E-04	mg/L		5.00E+01		2%	11/30/09 07:52 p	1.0	0
	9.65E-01		6.7E-03	1.00E-04	RER2	13.7	Rec Limits:		-1.0		Sample	

No. of Results: 1 **Comments:**

TestAmerica **Bias** - (Result/Expected)-1 as defined by ANSI N13.30. **RER2** - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

rptSTLRchLcs
V5.2.5 A2002

AMENDED REPORT

TPMC Sample Chain of Custody

Page 1 of 1

Client: USACE

Project Name: Lockey FUSRAP

QA Contact: Steve Deeter **QA Contact Phone:** 610 862 5043

Work Order #: 92002 **Sample Program:** —

Samplers: Steve Deeter

Parameters for Analysis: Beryllium

Lockey 84709 Solid J9K300464 SDG # 40744 Due 12-01-09

J9K300464

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Beryllium								Comments
11/19/09	1700	Lockey-BZA-1	LP9DX	SH	1	1								
11/20/09	1611	Lockey-BZA-2	LP9D0	WR	1	1								
11/20/09	1645	Lockey-BZA-3	LP9D1	SH	1	1								
11/21/09	1635	Lockey-BZA-4	LP9D2	WR	1	1								
11/21/09	1650	Lockey-BZA-5	LP9D3	SH	1	1								
11/23/09	1600	Lockey-BZA-6	LP9D4	WR	1	1								
11/23/09	1628	Lockey-BZA-7	LP9D5	SH	1	1								
11/24/09	1630	Lockey-BZA-8	LP9D6	WR	1	1								
11/24/09	1630	Lockey-BZA-9	LP9D7	WR	1	1								

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[redacted]	11/24/09 1700	[redacted]	11-25-09	PRISM APPL
	[illegible]		113009 10AM	Test America Other:

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

AMENDED REPORT

AMENDED REPORT

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Sample Check-in List

Date/Time Received: 10AM 1/30/09 @ GM Screen Results (out) .4 (in) .4 Initials [ ]

Client: LCKY SDG #: 40744 NA [ ] SAF #: [ ]

Work Order Number: J9K300464 Chain of Custody # N/A

Shipping Container ID: [ ] Air Bill # [ ]

Item 1 through 5 for shipping container only. Initial appropriate response.

1. Custody Seals on shipping container intact? Yes [ ] No [ ] No Custody Seal [ ]
2. Custody Seals dated and signed? Yes [ ] No [ ] No Custody Seal [ ]
3. Chain of Custody record present? Yes [ ] No [ ]
4. Cooler temperature: 7°C NA [ ] 5. Vermiculite/packing materials is NA [ ] Wet [ ] Dry [ ]

Item 6 through 10 for samples. Initial appropriate response.

6. Number of samples in shipping container (Each sample may contain multiple bottles): 9 @ 9 VOA.
7. Sample holding times exceeded? NA [ ] Yes [ ] No [ ]
8. Samples have:
   ____tape
   ____custody seals
   ____hazard labels
   ____appropriate sample labels
9. Samples are:
   ____in good condition
   ____broken
   ____leaking
   ____have air bubbles
   (Only for samples requiring head space)

   Bergs
   Solid
10. Sample pH taken? NA [ ] pH<2 [ ] pH>2 [ ] pH>9 [ ] Amount of HNO3 Added ____
11. Sample Location, Sample Collector Listed? * Yes [ ] No [ ]
    *For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes [ ] No [ ]
13. Description of anomalies (include sample numbers): NA [ ] ____

[redacted] de for additional comments

Sample Custodian: [redacted] Date: 1/30/09 @ 10AM Mon

Client Informed on ____ by ____ Person contacted ____

[X] No action [redacted]

Project Manage[redacted] Date 12/30/09

LS-023, Rev. 10, 10/09

AMENDED REPORT

Analytical Data Package Prepared For

USACE

Luckey - FUSRAP

Radiochemical Analysis By

TestAmerica

2800 G.W. Way, Richland Wa, 99354, (509)-375-3131.

Assigned Laboratory Code:

Data Package Contains 40 *Pages*

Report No.: 42945

Results in this report relate only to the sample(s) analyzed.

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
40824		LUCKEY-BLANK-1	J9L210415-011		LRFDD1	9355228
		LUCKEY-BLANK-2	J9L210415-022		LRFEK1	9355251
		LUCKEY-BZA-10	J9L210415-001	LRFCH1	LRFCH1	9355228
		LUCKEY-BZA-11	J9L210415-002	LRFCK1	LRFCK1	9355228
		LUCKEY-BZA-12	J9L210415-003	LRFCL1	LRFCL1	9355228
		LUCKEY-BZA-13	J9L210415-004	LRFCQ1	LRFCQ1	9355228
		LUCKEY-BZA-14	J9L210415-005	LRFCT1	LRFCT1	9355228
		LUCKEY-BZA-15	J9L210415-006	LRFCV1	LRFCV1	9355228
		LUCKEY-BZA-16	J9L210415-007	LRFCW1	LRFCW1	9355228
		LUCKEY-BZA-17	J9L210415-008	LRFC71	LRFC71	9355228
		LUCKEY-BZA-18	J9L210415-009	LRFC91	LRFC91	9355228
		LUCKEY-BZA-19	J9L210415-010	LRFDC1	LRFDC1	9355228
		LUCKEY-BZA-20	J9L210415-012	LRFDP1	LRFDP1	9355228
		LUCKEY-BZA-21	J9L210415-013	LRFDR1	LRFDR1	9355251
		LUCKEY-BZA-22	J9L210415-014	LRFDT1	LRFDT1	9355251
		LUCKEY-BZA-23	J9L210415-015	LRFDX1	LRFDX1	9355251
		LUCKEY-BZA-24	J9L210415-016	LRFD21	LRFD21	9355251
		LUCKEY-BZA-25	J9L210415-017	LRFD41	LRFD41	9355251
		LUCKEY-BZA-26	J9L210415-018	LRFD71	LRFD71	9355251
		LUCKEY-BZA-27	J9L210415-019	LRFEC1	LRFEC1	9355251
		LUCKEY-BZA-28	J9L210415-020	LRFEE1	LRFEE1	9355251
		LUCKEY-BZA-29	J9L210415-021	LRFEJ1	LRFEJ1	9355251

AMENDED REPORT

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Certificate of Analysis

December 22, 2009
December 29, 2009

TG Adams & Associates, Inc.
Attention: Darin McEleney

Date Received in Lab	:	December 21, 2009
Sample Type	:	Twenty-Two (22) Filters
SDG Number	:	40824
Project Number/Name	:	Luckey - FUSRAP

CASE NARRATIVE

December 29, 2009: This data report has been amended to include the CRDL for the Beryllium analysis and to reflect the correct minutes for samples 12 and 13, as requested by the client. All amended information in this case narrative will be bold, underlined and italicized.

I. Introduction

On December 21, 2009, twenty-two filter samples were received at the TestAmerica Richland laboratory for ICP metals analysis. Upon receipt, the samples were assigned the TestAmerica identification numbers as described on the cover page of the Analytical Data Package report form. The samples were assigned to Lot Number J9L210415.

II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information; analytical results and the appropriate associated statistical uncertainties.

The requested analyses were:

ICP Metals:
ICP Metals by NIOSH Method 7300

IV. Quality Control

The analytical result for each analysis performed includes a minimum of one laboratory control sample (LCS), and one reagent blank sample analysis. Any exceptions have been noted in the "Comments" section.

V. Comments

ICP Metals

ICP Metals by NIOSH Method 7300:

The samples were analyzed in two batches: 935528 and 9355251, for Beryllium and Lead.

There was a discrepancy between the ON/OFF times and the calculated minutes recorded on the filter's envelopes. The air volume was calculated based on the time recorded using our formula. See attached report. The units are reported as ug/m3.

The batch blank, the LCS and sample results are within acceptance limits.

I certify that this Certificate of Analysis is in compliance with AIHA, both technically and for completeness, for other than the conditions detailed in the following report. 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.

Reviewed and approved:

[redacted]

Christi Hayes
Project Manager

Isotope	Richland SOP #	Old Richland SOP #	Method Reference	Title
Asbestos	RL-ASB-001	N / A	NIOSH 7400	Fiber Counting by Phase Contrast Microscopy based on NIOSH 7400
Asbestos	RL-ASB-002	N / A	NIOSH 9002	Sample Prep and Analysis for Asbestos (bulk) by Polarized Light Microsopy based on NIOSH 9002
Alpha - Gross	ARCHIVED	RICH-RB-5035	Liquid Scintillation Anal / Packard	DETERMINATION OF GROSS ALPHA IN NASAL SMEARS BY LIQUID SCINTILLATION COUNTING
Alpha - Gross	RL-GPC-001	RICH-RC-5014	9310 / EPA SW846 900 0 / EPA 600	DETERMINATION OF GROSS ALPHA AND GROSS BETA IN WATER BY METHOD 9310
Alpha - Gross	RL-GPC-007	RICH-RC-5020	SM 7110B EPA 680	DETERMINATION OF GROSS ALPHA AND GROSS BETA IN SOIL, SHORELINE SOIL, FOOD AND VEGETATION
Alpha - Gross	RL-GPC-002	RICH-RC-5021	00-02 EPA 520	DETERMINATION OF GROSS ALPHA ACTIVITY IN WATER BY COPRECIPITATION
Alpha - Gross	RL-GPC-008	RICH-RC-5036	ER100 / LANL	PREPARATION OF AIR FILTERS FOR GROSS ALPHA / BETA AND COMPOSITING AIR FILTERS
Am	RL-ALP-003	RICH-RC-5072	Mod RP 725 / DOE0089T EXT Chromatography	SEPARATION OF AMERICIUM, CURIUM, AND URANIUM BY EXTRACTION CHROMATOGRAPHY
Am	RL-ALP-010	RICH-RC-5080	Am03 / Pu11HASL 300 NAS-NS-3006	SEQUENTIAL SEPARATION OF PLUTONIUM AND AMERICIUM
Beta - Gross	RL-GPC-001	RICH-RC-5014	9310 / EPA SW846 900 0 / EPA 600	DETERMINATION OF GROSS ALPHA AND GROSS BETA IN WATER BY METHOD 9310
Beta - Gross	RL-GPC-007	RICH-RC-5020	SM 7110B EPA 680	DETERMINATION OF GROSS ALPHA AND GROSS BETA IN SOIL, SHORELINE SOIL, FOOD AND VEGETATION
Beta - Gross	RL-GPC-008	RICH-RC-5036	ER100 / LANL	PREPARATION OF AIR FILTERS FOR GROSS ALPHA / BETA AND COMPOSITING AIR FILTERS
C14	RL-LSC-001	RICH-RB-5013	Mod H-02 / EPA 520	TRITIUM, CARBON-14, NICKEL-63 OR PHOSPHORUS-32 ANALYSIS IN URINE
C14	RL-LSC-008	RICH-RC-5022	EPA C-01 / EPA 520	CARBON 14 BY DIGESTION METHOD
C14	RL-LSC-009	RICH-RC-5040	Mod C14 / EPA 680	DETERMINATION OF CARBON-14 BY BENZENE SYNTHESIS
C14	RL-LSC-010	RICH-RC-5046	EPA C-01 / EPA 520	DETERMINATION OF CARBON-14 IN GRAPHITE AND SOIL
C14	RL-LSC-011	RICH-RC-5047	Mod H-02 / EPA 520	DETERMINATION OF CARBON-14 IN WATER BY DIRECT COUNTING
Cm	RL-ALP-003	RICH-RC-5072	Mod RP 725 / DOE0089T EXT Chromatography	SEPARATION OF AMERICIUM, CURIUM, AND URANIUM BY EXTRACTION CHROMATOGRAPHY
Coliform	RL-WC-001	RICH-WC-5001	9222B	DETERMINATION OF TOTAL COLIFORM: MULTIPLE TUBE FERMENTATION TECHNIQUE
Coliform	RL-WC-002	RICH-WC-5002	9131	TOTAL COLIFORMS BY MEMBRANE FILTRATION
Coliform	RL-WC-005	RICH-WC-5007	9223	TOTAL COLIFORM BY THE COLILERT METHOD
Cr6+	RL-WC-003	RICH-WC-5003	7196A, SW846	DETERMINATION OF HEXAVALENT CHROMIUM [Cr(VI)] IN WATER, SOIL, AND SIMILAR MATRICES
Cr6+	RL-WC-004	RICH-WC-5005	3060 / SW846	DETERMINATION OF HEXAVALENT CHROMIUM (CrVI) IN SOLID MATRICES WITH ALKALINE DIGESTION
Fe	RL-LSC-015	RICH-RC-5074	EXT Chromatography ModFe55 / PNL-ALO-435	SEPARATION OF IRON AND NICKEL BY EXTRACTION CHROMATOGRAPHY
Fe55	RL-LSC-016	RICH-RC-5023	R4-73-014 / EPA HASL 300	DETERMINATION OF IRON-55 AND IRON-59 IN WATER
Fe59	RL-LSC-016	RICH-RC-5023	R4-73-014 / EPA HASL 300	DETERMINATION OF IRON-55 AND IRON-59 IN WATER
Gamma	RL-GAM-001	RICH-RC-5017	901 0 / HASL 300 ASTM D3649	PREPARATION OF ALL MATRICES FOR ANALYSIS BY GAMMA SPECTROSCOPY
H3	RL-LSC-001	RICH-RB-5013	Mod H-02 / EPA 520	TRITIUM, CARBON-14, NICKEL-63 OR PHOSPHORUS-32 ANALYSIS IN URINE
H3	RL-LSC-003	RICH-RB-5034	7500-3 / SM	DETERMINATION OF TRITIUM IN URINE BY DISTILLATION
H3	RL-LSC-004	RICH-RC-5004	H3 / EPA LV539	DETERMINATION OF TRITIUM IN AIR
H3	RL-LSC-005	RICH-RC-5007	Mod '906 0 / EPA 600	SEPARATION OF TRITIUM IN WATER AND AQUEOUS COMPONENT OF WINE
H3	RL-LSC-007	RICH-RC-5024	H-3 by EE EPA LV539 / HASL 300	DETERMINATION OF LOW LEVEL TRITIUM IN WATER BY ELECTROLYTIC ENRICHMENT
H3	RL-LSC-002	RICH-RC-5037	H-3 in Water / Tissue / LV 539	DETERMINATION OF TRITIUM BY CRYOGENIC DISTILLATION

Isotope	Richland SOP #	Old Richland SOP #	Method Reference	Title
H3	RL-LSC-006	RICH-RC-5048	H-3 in Water/Tissue / LV 539	TRITIUM PREPARATION IN MILK SAMPLES
I129	RL-GAM-002	RICH-RC-5025	R4-73-014I/EPA ASTM D2334 (Discontinued)	DETERMINATION OF IODINE-131 AND 129 IN WATER BY SOLVENT EXTRACTION METHOD
I131	RL-GAM-002	RICH-RC-5025	R4-73-014I/EPA ASTM D2334 (Discontinued)	DETERMINATION OF IODINE-131 AND 129 IN WATER BY SOLVENT EXTRACTION METHOD
I131	ARCHIVED	RICH-RC-5049	HASL 300 (1983)	DETERMINATION OF IODINE-131 IN MILK BY BATCH ION-EXCHANGE
Metals	ARCHIVED	BHI-MT-0001	6010	ICP-AE SPECTROSCOPY, SPECTROMETRIC METHOD FOR TRACE ELEMENT ANALYSIS, METHOD 6010A FOR Bechtel
Metals	RL-MT-001	RICH-MT-0001	6010B	ICP-AES for TRACE ELEMENT ANALYSIS, METHOD 6010B
Metals	RL-MT-002	RICH-MT-0002	SW486 3050B	ACID DIGESTION FOR ICP ANALYSIS
Metals	RL-MT-003	RICH-MT-0003	NIOSH 7300	DIGESTION PREP based on METHOD NIOSH 7300
Ni	RL-LSC-015	RICH-RC-5074	EXT Chromatography ModFe55/PNL-ALO-435	SEPARATION OF IRON AND NICKEL BY EXTRACTION CHROMATOGRAPHY
Ni63	RL-LSC-001	RICH-RB-5013	Mod H-02 / EPA 520	TRITIUM, CARBON-14, NICKEL-63 OR PHOSPHORUS-32 ANALYSIS IN URINE
Ni63	RL-LSC-017	RICH-RC-5069	EXT Chromatography Mod RP300 / DOE0089T	SEPARATION OF Ni-63 BY EXTRACTION CHROMATOGRAPHY
Np	RL-ALP-013	RICH-RC-5009	NAS-NS-3060	DETERMINATION OF NEPTUNIUM-237 BY LIQUID-LIQUID EXTRACTION IN ALL MATRICES
Np	RL-ALP-006	RICH-RC-5064	EXT Chromatography	SEPARATION OF NEPTUNIUM BY EXTRACTION CHROMATOGRAPHY
P32	RL-LSC-001	RICH-RB-5013	Mod H-02 / EPA 520	TRITIUM, CARBON-14, NICKEL-63 OR PHOSPHORUS-32 ANALYSIS IN URINE
Pb	RL-ALP-011	RICH-RC-5076	EXT Chromatography	DETERMINATION OF LEAD-210 BY EXTRACTION CHROMATOGRAPHY
Po	RL-ALP-007	RICH-RB-5001	NAS-NS-3037 HASL 300	DETERMINATION OF POLONIUM-210 IN URINE
Po	RL-ALP-012	RICH-RC-5012	Po-01 / HASL 300 Mod U01 HASL 300	SEPARATION OF ISOTOPIC URANIUM AND POLONIUM-210 IN WATER, SOIL AND FILTERS
Prep - Bioassay	ARCHIVED	RICH-RB-0001		PREPARATION FOR RAPID BIOASSAY ANALYSES
Prep - Bioassay	RL-PRP-001	RICH-RB-5002	Mod Pu06 / HASL 300	PREPARATION OF URINE AND BLOOD SAMPLES
Prep - Bioassay	ARCHIVED	RICH-RB-5004	ASTM D1429-95	DETERMINATION OF SPECIFIC GRAVITY OF URINE
Prep - Bioassay	RL-RPL-002	RICH-RB-5036	Pub 6490,6601 / PNL	PREPARATION OF SYNTHETIC URINE AND FECES USING RECIPES FROM HPS N13 30 PREFORMANCE TESTING
Prep - Bioassay	RL-PRP-002	RICH-RB-5037	LA-10300-M R200 ASTM D3865	PREPARATION OF FECAL SAMPLES USING HYDROFLUORIC ACID DIGESTION
Prep - Bioassay	RL-RPL-003	RICH-RC-5028	ICRP Publication 23	PREPARATION OF SYNTHETIC URINE AND FECES
Prep - Count	RL-ALP-016	RICH-RC-5003	G-03 / HASL 300	COPRECIPITATION OF SOME ACTINIDES ON NEODYMIUM FLUORIDE FOR ALPHA-PARTICLE SPECTROMETRY
Prep - Count	RL-ALP-015	RICH-RC-5039	G-03 / HASL 300 Anal Chem 1972	ELECTRODEPOSITION OF ACTINIDES
Prep - Count	RL-ALP-014	RICH-RC-5085	Morrison & Freiser NAS-NS-3050	ANHYDROUS ETHER EXTRACTION OF URANIUM
Prep - Env	RL-KPA-001	RICH-RC-5015	ASTM / D5174-97	ENVIRONMENTAL SAMPLE PREPARATION FOR URANIUM BY LASER-INDUCED PHOSPHORESCENCE
Prep - Env	RL-PRP-004	RICH-RC-5016	Sr02 / HASL 300	PREPARATION OF ENVIRONMENTAL MATRICES
Prep - Env	RL-PRP-007	RICH-RC-5045	Mod Pu02 / HASL 300	PREPARATION OF MIXED BED RESINS AND PRE-FILTERS
Prep - Env	RL-PRP-008	RICH-RC-5068	Mod ER100 / LA10300	PREPARATION OF SOIL, VEGETATION AND AIR FILTERS BY MIXED STRONG ACID LEACHING
Prep - Resin	RL-ALP-017	RICH-RC-5018	Mod Pu11 / Mod 300	ION-EXCHANGE PREPARATION
Prep - Soil	RL-PRP-003	RICH-RC-5013	Pu02A / HASL 300	PREPARATION OF SOIL SAMPLES
Prep - Soil	RL-PRP-005	RICH-RC-5019	D5259 / ASTM SW 846/3015/3051/3052	PREPARATION AND DISSOLUTION OF SEDIMENTS AND SOIL BY MICROWAVE BOMB DIGESTION

Isotope	Richland SOP #	Old Richland SOP #	Method Reference	Title
Prep - Soil	RL-PRP-006	RICH-RC-5032	Pu02A / HASL 300	COMPLETE DISSOLUTION BY MIXED ACIDS IN A TEFLON BEAKER
Prep - Soil	RL-PRP-009	RICH-RC-5077	Mod ER100 / LA10300	PREPARATION OF SMALL SOIL SAMPLES FOR GAMMA SPEC AND/OR RADIOCHEM ANAL BY ACID DIGESTION
Prep - Urine	RL-PRP-010	RICH-RC-5086	AnalyticaChemActa1992 RP800 / DOE00089T	URINE AND WATER SAMPLE PREPARATION BY CALCIUM PHOSPHATE PRECIPITATION
Prep - Water	RL-PRP-010	RICH-RC-5086	AnalyticaChemActa1992 RP800 / DOE00089T	URINE AND WATER SAMPLE PREPARATION BY CALCIUM PHOSPHATE PRECIPITATION
Pu	ARCHIVED	RICH-RB-5015	Pu11 / HASL 300	RAPID DETERMINATION OF PLUTONIUM IN FECES
Pu	RL-ALP-002	RICH-RC-5010	Pu11 / HASL 300	DETERMINATION OF ISOTOPIC PLUTONIUM IN ALL MATRICES
Pu	RL-ALP-010	RICH-RC-5080	Am03 HASL 300 Pu11 / HASL 300	SEQUENTIAL SEPARATION OF PLUTONIUM AND AMERICIUM
Pu	RL-ALP-001	RICH-RC-5087	AnalyticaChemActa1992 RP800 / DOE00089T	DETERMINATION OF PLUTONIUM BY EXTRACTION CHROMATOGRAPHY
Ra	RL-RA-001	RICH-RC-5005	903 1 / EPA 600	RADIUM-226 AND RADIUM-228 SEPARATION IN RADIOCHEMICAL MATRICES - ADAPTED FROM EPA 903 1 AND 904 0
Ra	RL-RA-001	RICH-RC-5005	904 0 / EPA 600	RADIUM-226 AND RADIUM-228 SEPARATION IN RADIOCHEMICAL MATRICES - ADAPTED FROM EPA 903 1 AND 904 0
Ra	RL-RA-002	RICH-RC-5027	Mod D2460/ ASTM 903 0 / EPA 600	DETERMINATION OF TOTAL RADIUM
Rn	RL-LSC-019	RICH-RC-5082	913 0 / EPA	DETERMINATION OF RADON-222 - ADAPTED FROM METHOD 913 0
S35	ARCHIVED	RICH-RB-5020	Hillebrand, Lundeell, Bright, Hoffman 1953	DETERMINATION OF SULFUR-35 IN URINE
Se79	RL-LSC-012	RICH-RC-5043	Selenium / NAS-NS-3030	RADIOCHEMICAL DETERMINATION OF SELENIUM-79
Solubility	ARCHIVED	RICH-RC-5035	Kalfward&Thomas PNL3716	DETERMINATION OF SOLUBILITY OF RADIOACTIVE PARTICLE CONSTITUENTS
Sr	RL-GPC-005	RICH-RB-5007	Mod Sr02 / HASL 300 Mod 905 0 / EPA 600	DETERMINATION OF TOTAL STRONTIUM IN URINE
Sr	RL-GPC-006	RICH-RB-5021	Mod Sr02 / HASL300 Mod 905 0 / EPA 600	DETERMINATION OF STRONTIUM IN FECES
Sr	ARCHIVED	RICH-RB-5022	Mod Sr02 / HASL300 Mod 905 0 / EPA 600	DETERMINATION OF TOTAL STRONTIUM IN URINE FOR RAPID ANALYSIS
Sr	ARCHIVED	RICH-RB-5031	Mod Sr02 / HASL300 Mod 905 0 / EPA 600	RAPID DETERMINATION OF TOTAL STRONTIUM IN FECES
Sr	RL-GPC-003	RICH-RC-5006	Mod Sr02 / HASL300 Mod 905 0 / EPA 600	STRONTIUM SEPARATION IN ENVIROMENTAL MATRICES
Sr - Yt	RL-GPC-004	RICH-RC-5071	Mod Sr02 / HASL300 Mod 905 0 / EPA 600	YTTRIUM-90 SEPARATION FOR STRONTIUM-90 DETERMINATION IN ALL MATRICES
Tc	RL-LSC-014	RICH-RC-5065	EXT Chromatography Mod RP550 / DOE0089T	DETERMINATION OF TECHNETIUM-99 BY EXTRACTION CHROMATOGRAPHY
Tc	RL-LSC-013	RICH-RC-5078	Tc01 / HASL 300	SEPARATION OF TECHNETIUM-99 IN ALL MATRICES
Th	RL-ALP-008	RICH-RB-5006	Mod Th01 / HASL 300	SEPARATION OF THORIUM FROM URINE AND FECAL SAMPLES
Th	RL-ALP-005	RICH-RC-5084	Mod Th01 / HASL 300 Anal Chim Acta 1982	DETERMINATION OF THORIUM ISOTOPIC IN ENVIRONMENTAL MATRICES
U	RL-ALP-012	RICH-RC-5012	Po-01 / HASL 300 Mod U01 / HASL 300	SEPARATION OF ISOTOPIC URANIUM AND POLONIUM-210 IN WATER, SOIL AND FILTERS
U	RL-KPA-002	RICH-RC-5031	Mod U01 / HASL 300	SEPARATION OF TOTAL URANIUM IN WATER AND URINE
U	RL-KPA-003	RICH-RC-5058	D5174 / ASTM	DETERMINATION OF URANIUM BY PHOSPHORESCENCE ANALYSIS
U	RL-ALP-004	RICH-RC-5067	EXT Chromatography Mod RP725 / DOE0089T	SEPARATION OF URANIUM BY EXTRACTION CHROMATOGRAPHY
U	RL-ALP-003	RICH-RC-5072	EXT Chrom Mod RP725 & 800 / DOE0089T	SEPARATION OF AMERICIUM, CURIUM, AND URANIUM BY EXTRACTION CHROMATOGRAPHY
U	RL-ALP-009	RICH-RC-5079	EXT Chromatography Mod RP725 / DOE0089T	DETERMINATION OF ISOTOPIC URANIUM IN ALL MATRICES

Drinking Water Method Cross References

	DRINKING WATER ASTM METHOD CROSS REFERENCES	
Referenced Method	**Isotope(s)**	**TestAmerica Richland's SOP No.**
EPA 901.1	Cs-134, I-131	RL-GAM-001
EPA 900.0	Alpha & Beta	RL-GPC-001
EPA 00-02	Gross Alpha (Coprecipitation)	RL-GPC-002
EPA 903.0	Total Alpha Radium (Ra-226)	RL-RA-002
EPA 903.1	Ra-226	RL-RA-001
EPA 904.0	Ra-228	RL-RA-001
EPA 905.0	Sr-89/90	RL-GPC-003
ASTM D5174	Uranium	RL-KPA-003
EPA 906.0	Tritium	RL-LSC-005

Results in this report relate only to the sample(s) analyzed.

Uncertainty Estimation

TestAmerica Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, R = constants * f(x,y,z,...). The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value (S/?n), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or TestAmerica.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) ***u_c - Combined Uncertainty.***	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, *u_c the combined uncertainty.* The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or TestAmerica "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. Lc=(1.645 * Sqrt(2*(BkgrndCnt/BkgrndCntMin)/SCntMin)) * (ConvFct/(Eff*Yld*Abn*Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC|MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. MDC = (4.65 * Sqrt((BkgrndCnt/BkgrndCntMin)/SCntMin) + 2.71/SCntMin) * (ConvFct/(Eff * Yld * Abn * Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUcert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the **Work Order** Number.
RER	The equation Replicate Error Ratio = (S-D)/[sqrt($TPUs^2$ + $TPUd^2$)] as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by TestAmerica upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

AMENDED REPORT

Date: 29-Dec-09

Sample Results Summary

TestAmerica

Ordered by Method, Batch No., Client Sample ID.

Report No. : 42945 **SDG No:** 40824

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDC or MDA	CRDL	RER2
9355228 DQ									
LUCKEY-BLANK-1									
	LRFDD1	Beryllium	-1.50E-03 +- 2.0E-03	U	ug/sa		3.00E-02		
		Lead	2.24E-01 +- 5.9E-02	U	ug/sa		8.70E-01		
LUCKEY-BZA-10									
	LRFCH1	Beryllium	5.45E-03 +-	JU	ug/m3		1.72E-02	2.00E-01	
		Lead	1.69E-01 +-	U	ug/m3		4.99E-01		
LUCKEY-BZA-11									
	LRFCK1	Beryllium	-1.01E-03 +-	JU	ug/m3		2.02E-02	2.00E-01	
		Lead	2.06E-01 +-	U	ug/m3		5.86E-01		
LUCKEY-BZA-12									
	LRFCL1	Beryllium	3.16E-02 +-	J	ug/m3		1.69E-02	2.00E-01	
		Lead	2.61E-01 +-	U	ug/m3		4.91E-01		
LUCKEY-BZA-13									
	LRFCQ1	Beryllium	1.17E-03 +-	JU	ug/m3		1.75E-02	2.00E-01	
		Lead	1.64E-01 +-	U	ug/m3		5.09E-01		
LUCKEY-BZA-14									
	LRFCT1	Beryllium	7.41E-03 +-	JU	ug/m3		1.71E-02	2.00E-01	
		Lead	1.63E-01 +-	U	ug/m3		4.96E-01		
LUCKEY-BZA-15									
	LRFCV1	Beryllium	1.34E-02 +-	JU	ug/m3		3.23E-02	2.00E-01	
		Lead	4.17E-01 +-	U	ug/m3		9.35E-01		
LUCKEY-BZA-16									
	LRFCW1	Beryllium	2.94E-03 +-	JU	ug/m3		1.96E-02	2.00E-01	
		Lead	2.41E-01 +-	U	ug/m3		5.69E-01		
LUCKEY-BZA-17									
	LRFC71	Beryllium	1.54E-02 +-	JU	ug/m3		1.56E-02	2.00E-01	
		Lead	1.68E-01 +-	U	ug/m3		4.53E-01		
LUCKEY-BZA-18									
	LRFC91	Beryllium	1.71E-02 +-	JU	ug/m3		2.50E-02	2.00E-01	
		Lead	3.45E-01 +-	U	ug/m3		7.25E-01		
LUCKEY-BZA-19									
	LRFDC1	Beryllium	9.79E-02 +-	J	ug/m3		4.29E-02	2.00E-01	
		Lead	6.06E-01 +-	U	ug/m3		1.24E+00		
LUCKEY-BZA-20									
	LRFDP1	Beryllium	5.16E-02 +-	J	ug/m3		2.72E-02	2.00E-01	
		Lead	3.30E-01 +-	U	ug/m3		7.88E-01		
9355251 DQ									
LUCKEY-BLANK-2									

TestAmerica

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RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

AMENDED REPORT

Sample Results Summary

Date: 29-Dec-09

TestAmerica

Ordered by Method, Batch No., Client Sample ID.

Report No. : 42945 **SDG No:** 40824

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDC or MDA	CRDL	RER2
9355251 DQ									
LUCKEY-BLANK-2									
	LRFEK1	Beryllium	1.00E-03 +-	U	ug/sa		3.00E-02		
		Lead	2.29E-01 +-	U	ug/sa		8.70E-01		
LUCKEY-BZA-21									
	LRFDR1	Beryllium	3.54E-02 +-	JU	ug/m3		4.17E-02	2.00E-01	
		Lead	4.84E-01 +-	U	ug/m3		1.21E+00		
LUCKEY-BZA-22									
	LRFDT1	Beryllium	3.34E-01 +-		ug/m3		4.66E-02	2.00E-01	
		Lead	9.32E-01 +-	U	ug/m3		1.35E+00		
LUCKEY-BZA-23									
	LRFDX1	Beryllium	1.78E-01 +-	J	ug/m3		1.50E-02	2.00E-01	
		Lead	5.89E-01 +-		ug/m3		4.35E-01		
LUCKEY-BZA-24									
	LRFD21	Beryllium	7.77E-03 +-	JU	ug/m3		1.46E-02	2.00E-01	
		Lead	1.53E-01 +-	U	ug/m3		4.22E-01		
LUCKEY-BZA-25									
	LRFD41	Beryllium	6.71E-03 +-	JU	ug/m3		1.39E-02	2.00E-01	
		Lead	1.48E-01 +-	U	ug/m3		4.03E-01		
LUCKEY-BZA-26									
	LRFD71	Beryllium	1.40E-01 +-	J	ug/m3		1.43E-02	2.00E-01	
		Lead	4.77E-01 +-		ug/m3		4.14E-01		
LUCKEY-BZA-27									
	LRFEC1	Beryllium	1.57E-02 +-	J	ug/m3		1.36E-02	2.00E-01	
		Lead	1.51E-01 +-	U	ug/m3		3.95E-01		
LUCKEY-BZA-28									
	LRFEE1	Beryllium	6.80E-03 +-	JU	ug/m3		2.55E-02	2.00E-01	
		Lead	1.71E-01 +-	U	ug/m3		7.40E-01		
LUCKEY-BZA-29									
	LRFEJ1	Beryllium	5.95E-03 +-	JU	ug/m3		2.55E-02	2.00E-01	
		Lead	2.40E-01 +-	U	ug/m3		7.40E-01		

No. of Results: 44

TestAmerica

rptSTLRchSaSummary2 V5.2.5 A2002

RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

AMENDED REPORT

Date: 29-Dec-09

QC Results Summary

TestAmerica

Ordered by Method, Batch No, QC Type,.

Report No. : 42945 **SDG No.:** 40824

Batch Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDC|MDA
DQ								
9355228 BLANK QC,								
LRFLM1B	Beryllium	-2.00E-05 +- 2.0E-05	U	mg/L				6.00E-04
	Lead	4.70E-03 +- 2.8E-04	U	mg/L				1.74E-02
9355228 LCS,								
LRFLM1C	Beryllium	1.07E+00 +- 4.3E-03		mg/L		2%	-1.0	6.00E-04
	Lead	1.01E+00 +- 7.6E-03		mg/L		2%	-1.0	1.74E-02
LRFLM1L	Beryllium	1.04E+00 +- 2.0E-02		mg/L		2%	-1.0	6.00E-04
	Lead	9.82E-01 +- 1.6E-02		mg/L		2%	-1.0	1.74E-02
DQ								
9355251 BLANK QC,								
LRFN01B	Beryllium	-3.00E-05 +- 4.0E-05	U	mg/L				6.00E-04
	Lead	6.07E-03 +- 1.3E-03	U	mg/L				1.74E-02
9355251 LCS,								
LRFN01C	Beryllium	1.06E+00 +- 8.2E-03		mg/L		2%	-1.0	6.00E-04
	Lead	9.95E-01 +- 1.1E-03		mg/L		2%	-1.0	1.74E-02
LRFN01L	Beryllium	1.07E+00 +- 5.0E-03		mg/L		2%	-1.0	6.00E-04
	Lead	1.01E+00 +- 5.2E-03		mg/L		2%	-1.0	1.74E-02

No. of Results: 12

TestAmerica

rptSTLRchQcSummary V5.2.5 A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 29-Dec-09

Lab Name:	TestAmerica	**SDG:**	40824	**Collection Date:**	12/15/2009 4:00:00 PM
Lot-Sample No.:	J9L210415-011	**Report No. :**	42945	**Received Date:**	12/21/2009 8:00:00 AM
Client Sample ID:	LUCKEY-BLANK-1	**COC No. :**		**Matrix:**	FILTER

Luckey - FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9355228	DQ			**Work Order:**			**Report DB ID:** LRFDD1					
Beryllium	**-1.50E-03**	U		2.0E-03	3.00E-02	ug/sa		*-0.05* *-(1.5)*	12/21/09 01:30 p		1.0 Sample	0
Lead	**2.24E-01**	U		5.9E-02	8.70E-01	ug/sa		*0.26* *(7.6)*	12/21/09 01:30 p		1.0 Sample	0

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

AMENDED REPORT

FORM I

SAMPLE RESULTS

Date: 29-Dec-09

Lab Name:	TestAmerica	**SDG:**	40824	**Collection Date:**	12/15/2009 4:00:00 PM
Lot-Sample No.:	J9L210415-022	**Report No. :**	42945	**Received Date:**	12/21/2009 8:00:00 AM
Client Sample ID:	LUCKEY-BLANK-2	**COC No. :**		**Matrix:**	FILTER

Luckey - FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9355251 DQ				**Work Order:**			**Report DB ID:** LRFEK1					
Beryllium	**1.00E-03**	U			3.00E-02	ug/sa		*0.03*	12/21/09 02:58 p		1.0	0
								N/A			Sample	
Lead	**2.29E-01**	U			8.70E-01	ug/sa		*0.26*	12/21/09 02:58 p		1.0	0
								N/A			Sample	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

AMENDED REPORT

FORM I

SAMPLE RESULTS

Date: 29-Dec-09

Lab Name:	TestAmerica	**SDG:**	40824	**Collection Date:**	11/24/2009 5:29:00 PM
Lot-Sample No.:	J9L210415-001	**Report No. :**	42945	**Received Date:**	12/21/2009 8:00:00 AM
Client Sample ID:	LUCKEY-BZA-10	**COC No. :**		**Matrix:**	FILTER

Luckey - FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9355228 DQ				**Work Order:** LRFCH1			**Report DB ID:** LRFCH1					
Beryllium	**5.45E-03**	JU			1.72E-02	ug/m3		*0.32*	12/21/09 12:17 p		1743.0	0
							2.00E-01	*N/A*			L	
Lead	**1.69E-01**	U			4.99E-01	ug/m3		*0.34*	12/21/09 12:17 p		1743.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

AMENDED REPORT

FORM I

SAMPLE RESULTS

Date: 29-Dec-09

Lab Name:	TestAmerica	**SDG:**	40824	**Collection Date:**	12/1/2009 3:15:00 PM
Lot-Sample No.:	J9L210415-002	**Report No. :**	42945	**Received Date:**	12/21/2009 8:00:00 AM
Client Sample ID:	LUCKEY-BZA-11	**COC No. :**		**Matrix:**	FILTER

Luckey - FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9355228	DQ			**Work Order:** LRFCK1			**Report DB ID:** LRFCK1					
Beryllium	**-1.01E-03**	JU			2.02E-02	ug/m3		*-0.05*	12/21/09 12:22 p		1485.0	0
							2.00E-01	*N/A*			L	
Lead	**2.06E-01**	U			5.86E-01	ug/m3		*0.35*	12/21/09 12:22 p		1485.0	0
								N/A			L	

No. of Results: 2 **Comments:**

AMENDED REPORT

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 29-Dec-09

Lab Name:	TestAmerica	**SDG:**	40824	**Collection Date:**	12/1/2009 6:00:00 PM
Lot-Sample No.:	J9L210415-003	**Report No. :**	42945	**Received Date:**	12/21/2009 8:00:00 AM
Client Sample ID:	LUCKEY-BZA-12	**COC No. :**		**Matrix:**	FILTER

Luckey - FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9355228 DQ				**Work Order:** LRFCL1			**Report DB ID:** LRFCL1					
Beryllium	**3.16E-02**	J			1.69E-02	ug/m3		*(1.9)*	12/21/09 12:38 p		1773.0	0
							2.00E-01	*N/A*			L	
Lead	**2.61E-01**	U			4.91E-01	ug/m3		*0.53*	12/21/09 12:38 p		1773.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

AMENDED REPORT

FORM I

SAMPLE RESULTS

Date: 29-Dec-09

Lab Name:	TestAmerica	**SDG:**	40824	**Collection Date:**	12/2/2009 5:00:00 PM
Lot-Sample No.:	J9L210415-004	**Report No. :**	42945	**Received Date:**	12/21/2009 8:00:00 AM
Client Sample ID:	LUCKEY-BZA-13	**COC No. :**		**Matrix:**	FILTER

Luckey - FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9355228	DQ			**Work Order:**	LRFCQ1		**Report DB ID:**	LRFCQ1				
Beryllium	**1.17E-03**	JU			1.75E-02	ug/m3		*0.07*	12/21/09 12:43 p		1710.0	0
							2.00E-01	*N/A*			L	
Lead	**1.64E-01**	U			5.09E-01	ug/m3		*0.32*	12/21/09 12:43 p		1710.0	0
								N/A			L	

No. of Results: 2 **Comments:**

AMENDED REPORT

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 29-Dec-09

Lab Name:	**TestAmerica**	**SDG:**	40824	**Collection Date:**	12/2/2009 6:30:00 PM
Lot-Sample No.:	**J9L210415-005**	**Report No. :**	42945	**Received Date:**	12/21/2009 8:00:00 AM
Client Sample ID:	**LUCKEY-BZA-14**	**COC No. :**		**Matrix:**	FILTER

Luckey - FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9355228	DQ			**Work Order:** LRFCT1			**Report DB ID:** LRFCT1					
Beryllium	**7.41E-03**	JU			1.71E-02	ug/m3		*0.43*	12/21/09 12:48 p		1755.0	0
							2.00E-01	*N/A*			L	
Lead	**1.63E-01**	U			4.96E-01	ug/m3		*0.33*	12/21/09 12:48 p		1755.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

AMENDED REPORT

FORM I

SAMPLE RESULTS

Date: 29-Dec-09

Lab Name:	TestAmerica	**SDG:**	40824	**Collection Date:**	12/3/2009 3:34:00 PM
Lot-Sample No.:	J9L210415-006	**Report No. :**	42945	**Received Date:**	12/21/2009 8:00:00 AM
Client Sample ID:	LUCKEY-BZA-15	**COC No. :**		**Matrix:**	FILTER

Luckey - FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9355228	DQ			**Work Order:**	LRFCV1		**Report DB ID:**	LRFCV1				
Beryllium	**1.34E-02**	JU			3.23E-02	ug/m3		*0.42*	12/21/09 12:53 p		930.0	0
							2.00E-01	*N/A*			L	
Lead	**4.17E-01**	U			9.35E-01	ug/m3		*0.45*	12/21/09 12:53 p		930.0	0
								N/A			L	

No. of Results: 2 **Comments:**

AMENDED REPORT

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 29-Dec-09

Lab Name:	TestAmerica	**SDG:**	40824	**Collection Date:**	12/4/2009 4:30:00 PM
Lot-Sample No.:	J9L210415-007	**Report No. :**	42945	**Received Date:**	12/21/2009 8:00:00 AM
Client Sample ID:	LUCKEY-BZA-16	**COC No. :**		**Matrix:**	FILTER

Luckey - FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9355228	DQ			**Work Order:**	LRFCW1		**Report DB ID:**	LRFCW1				
Beryllium	**2.94E-03**	JU			1.96E-02	ug/m3		*0.15*	12/21/09 12:58 p		1530.0	0
							2.00E-01	*N/A*			L	
Lead	**2.41E-01**	U			5.69E-01	ug/m3		*0.42*	12/21/09 12:58 p		1530.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

AMENDED REPORT

FORM I

SAMPLE RESULTS

Date: 29-Dec-09

Lab Name:	TestAmerica	**SDG:**	40824	**Collection Date:**	12/4/2009 4:00:00 PM
Lot-Sample No.:	J9L210415-008	**Report No. :**	42945	**Received Date:**	12/21/2009 8:00:00 AM
Client Sample ID:	LUCKEY-BZA-17	**COC No. :**		**Matrix:**	FILTER

Luckey - FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9355228 DQ				**Work Order:** LRFC71			**Report DB ID:** LRFC71					
Beryllium	**1.54E-02**	JU			1.56E-02	ug/m3		*0.98*	12/21/09 01:04 p		1920.0	0
							2.00E-01	*N/A*			L	
Lead	**1.68E-01**	U			4.53E-01	ug/m3		*0.37*	12/21/09 01:04 p		1920.0	0
								N/A			L	

No. of Results: 2 **Comments:**

AMENDED REPORT

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 29-Dec-09

Lab Name:	TestAmerica	**SDG:**	40824	**Collection Date:**	12/5/2009 2:30:00 PM
Lot-Sample No.:	J9L210415-009	**Report No. :**	42945	**Received Date:**	12/21/2009 8:00:00 AM
Client Sample ID:	LUCKEY-BZA-18	**COC No. :**		**Matrix:**	FILTER

Luckey - FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9355228 DQ				**Work Order:** LRFC91			**Report DB ID:** LRFC91					
Beryllium	**1.71E-02**	JU			2.50E-02	ug/m3		*0.68*	12/21/09 01:09 p		1200.0	0
							2.00E-01	*N/A*			L	
Lead	**3.45E-01**	U			7.25E-01	ug/m3		*0.48*	12/21/09 01:09 p		1200.0	0
								N/A			L	

No. of Results: 2 **Comments:**

AMENDED REPORT

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 29-Dec-09

Lab Name:	TestAmerica	**SDG:**	40824	**Collection Date:**	12/6/2009 1:50:00 PM
Lot-Sample No.:	J9L210415-010	**Report No. :**	42945	**Received Date:**	12/21/2009 8:00:00 AM
Client Sample ID:	LUCKEY-BZA-19	**COC No. :**		**Matrix:**	FILTER

Luckey - FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9355228 DQ				**Work Order:** LRFDC1			**Report DB ID:** LRFDC1					
Beryllium	**9.79E-02**	J			4.29E-02	ug/m3		*(2.3)*	12/21/09 01:14 p		700.0	0
							2.00E-01	*N/A*			L	
Lead	**6.06E-01**	U			1.24E+00	ug/m3		*0.49*	12/21/09 01:14 p		700.0	0
								N/A			L	

No. of Results: 2 **Comments:**

AMENDED REPORT

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 29-Dec-09

Lab Name:	TestAmerica	**SDG:**	40824	**Collection Date:**	12/6/2009 1:36:00 PM
Lot-Sample No.:	J9L210415-012	**Report No. :**	42945	**Received Date:**	12/21/2009 8:00:00 AM
Client Sample ID:	LUCKEY-BZA-20	**COC No. :**		**Matrix:**	FILTER

Luckey - FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9355228 DQ				**Work Order:** LRFDP1			**Report DB ID:** LRFDP1					
Beryllium	**5.16E-02**	J			2.72E-02	ug/m3		*(1.9)*	12/21/09 01:35 p		1104.0	0
							2.00E-01	*N/A*			L	
Lead	**3.30E-01**	U			7.88E-01	ug/m3		*0.42*	12/21/09 01:35 p		1104.0	0
								N/A			L	

No. of Results: 2 **Comments:**

AMENDED REPORT

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 29-Dec-09

Lab Name:	TestAmerica	**SDG:**	40824	**Collection Date:**	12/6/2009 1:00:00 PM
Lot-Sample No.:	J9L210415-013	**Report No. :**	42945	**Received Date:**	12/21/2009 8:00:00 AM
Client Sample ID:	LUCKEY-BZA-21	**COC No. :**		**Matrix:**	FILTER

Luckey - FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9355251	DQ			Work Order:	LRFDR1		Report DB ID:	LRFDR1				
Beryllium	**3.54E-02**	JU			4.17E-02	ug/m3		*0.85*	12/21/09 02:01 p		720.0	0
							2.00E-01	*N/A*			L	
Lead	**4.84E-01**	U			1.21E+00	ug/m3		*0.4*	12/21/09 02:01 p		720.0	0
								N/A			L	

No. of Results: 2 Comments:

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

AMENDED REPORT

FORM I

SAMPLE RESULTS

Date: 29-Dec-09

Lab Name:	TestAmerica	**SDG:**	40824	**Collection Date:**	12/6/2009 1:36:00 PM
Lot-Sample No.:	J9L210415-014	**Report No. :**	42945	**Received Date:**	12/21/2009 8:00:00 AM
Client Sample ID:	LUCKEY-BZA-22	**COC No. :**		**Matrix:**	FILTER

Luckey - FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9355251	DQ			**Work Order:**	LRFDT1		**Report DB ID:**	LRFDT1				
Beryllium	**3.34E-01**				4.66E-02	ug/m3		*(7.2)*	12/21/09 02:06 p		644.0	0
							2.00E-01	*N/A*			L	
Lead	**9.32E-01**	U			1.35E+00	ug/m3		*0.69*	12/21/09 02:06 p		644.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

AMENDED REPORT

FORM I

SAMPLE RESULTS

Date: 29-Dec-09

Lab Name:	TestAmerica	**SDG:**	40824	**Collection Date:**	12/7/2009 5:45:00 PM
Lot-Sample No.:	J9L210415-015	**Report No. :**	42945	**Received Date:**	12/21/2009 8:00:00 AM
Client Sample ID:	LUCKEY-BZA-23	**COC No. :**		**Matrix:**	FILTER

Luckey - FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9355251 DQ				**Work Order:** LRFDX1			**Report DB ID:** LRFDX1					
Beryllium	**1.78E-01**	J			1.50E-02	ug/m3		*(11.9)*	12/21/09 02:11 p		2000.0	0
							2.00E-01	*N/A*			L	
Lead	**5.89E-01**				4.35E-01	ug/m3		*(1.4)*	12/21/09 02:11 p		2000.0	0
								N/A			L	

No. of Results: 2 **Comments:**

AMENDED REPORT

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 29-Dec-09

Lab Name:	TestAmerica	**SDG:**	40824	**Collection Date:**	12/7/2009 5:05:00 PM
Lot-Sample No.:	J9L210415-016	**Report No. :**	42945	**Received Date:**	12/21/2009 8:00:00 AM
Client Sample ID:	LUCKEY-BZA-24	**COC No. :**		**Matrix:**	FILTER

Luckey - FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9355251 DQ				**Work Order:** LRFD21			**Report DB ID:** LRFD21					
Beryllium	**7.77E-03**	JU			1.46E-02	ug/m3		*0.53*	12/21/09 02:17 p		2060.0	0
							2.00E-01	*N/A*			L	
Lead	**1.53E-01**	U			4.22E-01	ug/m3		*0.36*	12/21/09 02:17 p		2060.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

AMENDED REPORT

FORM I

SAMPLE RESULTS

Date: 29-Dec-09

Lab Name:	TestAmerica	**SDG:**	40824	**Collection Date:**	12/7/2009 5:30:00 PM
Lot-Sample No.:	J9L210415-017	**Report No. :**	42945	**Received Date:**	12/21/2009 8:00:00 AM
Client Sample ID:	LUCKEY-BZA-25	**COC No. :**		**Matrix:**	FILTER

Luckey - FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9355251 DQ				**Work Order:** LRFD41			**Report DB ID:** LRFD41					
Beryllium	**6.71E-03**	JU			1.39E-02	ug/m3		*0.48*	12/21/09 02:22 p		2160.0	0
							2.00E-01	*N/A*			L	
Lead	**1.48E-01**	U			4.03E-01	ug/m3		*0.37*	12/21/09 02:22 p		2160.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

AMENDED REPORT

FORM I

SAMPLE RESULTS

Date: 29-Dec-09

Lab Name:	TestAmerica	**SDG:**	40824	**Collection Date:**	12/8/2009 4:30:00 PM
Lot-Sample No.:	J9L210415-018	**Report No. :**	42945	**Received Date:**	12/21/2009 8:00:00 AM
Client Sample ID:	LUCKEY-BZA-26	**COC No. :**		**Matrix:**	FILTER

Luckey - FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9355251 DQ				**Work Order:** LRFD71			**Report DB ID:** LRFD71					
Beryllium	**1.40E-01**	J			1.43E-02	ug/m3		*(9.8)*	12/21/09 02:27 p		2100.0	0
							2.00E-01	*N/A*			L	
Lead	**4.77E-01**				4.14E-01	ug/m3		*(1.2)*	12/21/09 02:27 p		2100.0	0
								N/A			L	

No. of Results: 2 **Comments:**

AMENDED REPORT

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 29-Dec-09

Lab Name:	TestAmerica	**SDG:**	40824	**Collection Date:**	12/8/2009 4:30:00 PM
Lot-Sample No.:	J9L210415-019	**Report No. :**	42945	**Received Date:**	12/21/2009 8:00:00 AM
Client Sample ID:	LUCKEY-BZA-27	**COC No. :**		**Matrix:**	FILTER

Luckey - FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9355251 DQ				**Work Order:** LRFEC1			**Report DB ID:** LRFEC1					
Beryllium	**1.57E-02**	J			1.36E-02	ug/m3		*(1.1)*	12/21/09 02:43 p		2200.0	0
							2.00E-01	*N/A*			L	
Lead	**1.51E-01**	U			3.95E-01	ug/m3		*0.38*	12/21/09 02:43 p		2200.0	0
								N/A			L	

No. of Results: 2 **Comments:**

AMENDED REPORT

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 29-Dec-09

Lab Name:	TestAmerica	**SDG:**	40824	**Collection Date:**	12/10/2009 12:10:00 PM
Lot-Sample No.:	J9L210415-020	**Report No. :**	42945	**Received Date:**	12/21/2009 8:00:00 AM
Client Sample ID:	LUCKEY-BZA-28	**COC No. :**		**Matrix:**	FILTER

Luckey - FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9355251	DQ			**Work Order:**	LRFEE1		**Report DB ID:**	LRFEE1				
Beryllium	**6.80E-03**	JU			2.55E-02	ug/m3		*0.27*	12/21/09 02:48 p		1176.0	0
							2.00E-01	*N/A*			L	
Lead	**1.71E-01**	U			7.40E-01	ug/m3		*0.23*	12/21/09 02:48 p		1176.0	0
								N/A			L	

No. of Results: 2 **Comments:**

AMENDED REPORT

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 29-Dec-09

Lab Name:	TestAmerica	**SDG:**	40824	**Collection Date:**	12/10/2009 12:10:00 PM
Lot-Sample No.:	J9L210415-021	**Report No. :**	42945	**Received Date:**	12/21/2009 8:00:00 AM
Client Sample ID:	LUCKEY-BZA-29	**COC No. :**		**Matrix:**	FILTER

Luckey - FUSRAP

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9355251	DQ			**Work Order:** LRFEJ1			**Report DB ID:** LRFEJ1					
Beryllium	**5.95E-03**	JU			2.55E-02	ug/m3		*0.23*	12/21/09 02:53 p		1176.0	0
							2.00E-01	*N/A*			L	
Lead	**2.40E-01**	U			7.40E-01	ug/m3		*0.32*	12/21/09 02:53 p		1176.0	0
								N/A			L	

No. of Results: 2 **Comments:**

AMENDED REPORT

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
J Qual - No U|< qualifier has been assigned and the result is below the Reporting Limit, RL (CRDL) or Report Value is Estimated.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM II

BLANK RESULTS

Date: 29-Dec-09

Lab Name: TestAmerica

Matrix: FILTER

SDG: 40824

Report No. : 42945

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 9355228	DQ			**Work Order:**	LRFLM1B		**Report DB ID:**	LRFLM1B				
Beryllium	-2.00E-05	U		2.0E-05	6.00E-04	mg/L		-0.03	12/21/09 12:01 p		1.0	0
								-(2.)			Sample	
Lead	4.70E-03	U		2.8E-04	1.74E-02	mg/L		0.27	12/21/09 12:01 p		1.0	0
								(33.6)			Sample	
Batch: 9355251	DQ			**Work Order:**	LRFN01B		**Report DB ID:**	LRFN01B				
Beryllium	-3.00E-05	U		4.0E-05	6.00E-04	mg/L		-0.05	12/21/09 01:45 p		1.0	0
								-(1.5)			Sample	
Lead	6.07E-03	U		1.3E-03	1.74E-02	mg/L		0.35	12/21/09 01:45 p		1.0	0
								(9.5)			Sample	

No. of Results: 4 **Comments:**

TestAmerica
rptSTLRchBlank
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

AMENDED REPORT

FORM II

LCS RESULTS

Date: 29-Dec-09

Lab Name: TestAmerica

Matrix: FILTER

SDG: 40824

Report No. : 42945

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 9355228	DQ			**Work Order:**	LRFLM1C		**Report DB ID:**	LRFLM1C					
Beryllium	1.07E+00			4.3E-03	6.00E-04	mg/L		5.00E+01		2%	12/21/09 12:06 p	1.0	0
							Rec Limits:			-1.0		Sample	
Lead	1.01E+00			7.6E-03	1.74E-02	mg/L		5.00E+01		2%	12/21/09 12:06 p	1.0	0
							Rec Limits:			-1.0		Sample	
Batch: 9355251	DQ			**Work Order:**	LRFN01C		**Report DB ID:**	LRFN01C					
Beryllium	1.06E+00			8.2E-03	6.00E-04	mg/L		5.00E+01		2%	12/21/09 01:51 p	1.0	0
							Rec Limits:			-1.0		Sample	
Lead	9.95E-01			1.1E-03	1.74E-02	mg/L		5.00E+01		2%	12/21/09 01:51 p	1.0	0
							Rec Limits:			-1.0		Sample	

No. of Results: 4 **Comments:**

TestAmerica **Bias** - (Result/Expected)-1 as defined by ANSI N13.30.

rptSTLRchLcs
V5.2.5 A2002

AMENDED REPORT

FORM II

DUPLICATE LCS RESULTS

Date: 29-Dec-09

Lab Name: TestAmerica **SDG:** 40824

Matrix: FILTER **Report No. :** 42945

Parameter	Dup Rst, Orig Rst	Qual	Total Uncert(2 s)	MDC|MDA	Report Unit		Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 9355228 DQ			**Work Order:** LRFLM1L				**Report DB ID:** LRFLM1L			**Orig Sa DB ID:** LRFLM1C			
Beryllium	1.04E+00		2.0E-02	6.00E-04	mg/L			5.00E+01		2%	12/21/09 12:12 p	1.0	0
	1.07E+00		4.3E-03	6.00E-04	RER2	3.3	Rec Limits:			-1.0		Sample	
Lead	9.82E-01		1.6E-02	1.74E-02	mg/L			5.00E+01		2%	12/21/09 12:12 p	1.0	0
	1.01E+00		7.6E-03	1.74E-02	RER2		Rec Limits:			-1.0		Sample	
Batch: 9355251 DQ			**Work Order:** LRFN01L				**Report DB ID:** LRFN01L			**Orig Sa DB ID:** LRFN01C			
Beryllium	1.07E+00		5.0E-03	6.00E-04	mg/L			5.00E+01		2%	12/21/09 01:56 p	1.0	0
	1.06E+00		8.2E-03	6.00E-04	RER2	1.9	Rec Limits:			-1.0		Sample	
Lead	1.01E+00		5.2E-03	1.74E-02	mg/L			5.00E+01		2%	12/21/09 01:56 p	1.0	0
	9.95E-01		1.1E-03	1.74E-02	RER2	4.9	Rec Limits:			-1.0		Sample	

No. of Results: 4 **Comments:**

AMENDED REPORT

TestAmerica Bias - (Result/Expected)-1 as defined by ANSI N13.30. RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

rptSTLRchLcs
V5.2.5 A2002

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Darin McEleney QA Contact Phone: 716 572-1297

Work Order #: 92002 Sample Program: —

Samplers: Darin McEleney

Parameters for Analysis: 8470XT LCKY J9L210415 SDG 40824 DUE-12-22-09

Page 1 of 3

AD Dec 21 09

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Beryllium							Comments
11/24/09	1729	Luckey-BZA-10		SH	1	X		LRFCH					onsite sample # 58
12/1/09	1515	Luckey-BZA-11		WR	1	X		LRFCK					61
12/1/09	1800	Luckey-BZA-12		DM	1	X		LRFCL					62
12/2/09	1700	Luckey-BZA-13		WFR	1	X		LRFCQ					70
12/2/09	1830	Luckey-BZA-14		WFR	1	X		LRFCT					71
12/3/09	1534	Luckey-BZA-15		WFR	1	X		LRFCV					78
12/4/09	1630	Luckey-BZA-16		WFR	1	X		LRFCW					88
12/4/09	1600	Luckey-BZA-17		WFR	1	X		LRFC7					90
12/5/09	1430	Luckey-BZA-18		SH	1	X		LRFC9					96
12/6/09	1350	Luckey-BZA-19		DM	1	X		LRFDC					97

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[redacted]	12/15/09 / 1700	[redacted]	12.21.09 8:00am	PRISM APPL
				Test America Other:

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

AMENDED REPORT

TPMC Sample Chain of Custody

J9L210415

Page 2 of 3

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Darin McEleney QA Contact Phone: 716 572-1297

Work Order #: 92002 Sample Program: ——

Samplers: Darin McEleney

Parameters for Analysis: 84707 J9L210415 SDG 40824 DUE-12-22-09

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Beryllium			Comments
12/15/09	1600	Luckey-Blank-1		DM	1	X		LRFDD	onsite sample # ~~98~~ on
12/6/09	1336	Luckey-BZA-20		WR	1	X		LRFDP	98
12/6/09	1300	Luckey-BZA-21		WR	1	X		LRFDR	99
12/6/09	1336	Luckey-BZA-22		WR	1	X		LRFDT	100
12/7/09	1745	Luckey-BZA-23		SH	1	X		LRFDX	105
12/7/09	1705	Luckey-BZA-24		WR	1	X		LRFD2	106
12/7/09	1730	Luckey-BZA-25		WR	1	X		LRFD4	107
12/8/09	1630	Luckey-BZA-26		WFR	1	X		LRFD7	112
12/8/09	1630	Luckey-BZA-27		WR	1	X		LRFEC	115
12/10/09	1210	Luckey-BZA-28		WR	1	X		LRFEE	127

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[redacted]	12/15/09/1700	[redacted]	Dec. 21 09 8	PRISM APPL
				Test America Other:

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

AMENDED REPORT

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Darin McElney QA Contact Phone: 716 572-1297

Work Order #: 92002 Sample Program: ——

Samplers: Darin McElney

Page 3 of 3

Parameters for Analysis: 84907 JL210415 SDG 40824 *Due 12-22-09

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Beryllium								Comments
12/10/09	1210	Luckey-B2A-29		WR	1	X		LRFEJ						Air Sample # 128
12/15/09	1600	Luckey-Blank-2		DM	1	X		LRFEK						Blank

N A

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[redacted]	12/15/09/1700	[redacted]	Dec. 21 09 8:00

Shipped To (circle one): PRISM APPL Test America Other:_____

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

AMENDED REPORT

AMENDED REPORT

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sample Check-in List

Date/Time Received: 800AM Dec 21 09 @ GM Screen Results (out) .3 (in) .3 Initials [ ]

Client: LCKY SDG #: 40824 NA [ ] SAF #: _____ NA [ ]

Work Order Number: J9L210415 Chain of Custody # N/A

Shipping Container ID: _____ NA [ ] Air Bill # _____ NA [ ]

Item 1 through 5 for shipping container only. Initial appropriate response.

1. Custody Seals on shipping container intact? Yes [ ] No [ ] No Custody Seal [ ]
2. Custody Seals dated and signed? Yes [ ] No [ ] No Custody Seal [ ]
3. Chain of Custody record present? Yes [ ] No [ ]
4. Cooler temperature: _____ NA [ ] 5. Vermiculite/packing materials is NA [ ] Wet [ ] Dry [ ]

Item 6 through 10 for samples. Initial appropriate response.

6. Number of samples in shipping container (Each sample may contain multiple bottles): 22
7. Sample holding times exceeded? NA [ ] Yes [ ] No [ ]
8. Samples have:
   _____ tape
   _____ custody seals
   _____ hazard labels
   _____ appropriate sample labels
9. Samples are:
   _____ in good condition
   _____ broken
   _____ leaking
   _____ have air bubbles
   (Only for samples requiring head space)

   Filters.
10. Sample pH taken? NA [ ] pH<2 [ ] pH>2 [ ] pH>9 [ ] Amount of HNO3 Added _____
11. Sample Location, Sample Collector Listed? * Yes [ ] No [ ]
    *For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes [ ] No [ ]
13. Description of anomalies (include sample numbers): NA [ ] _____

_____

_____

_____

[redacted] for additional comments

Sample Custodian: [redacted] Date: Dec 21 09 @ 800 AM

Client Informed on _____ by _____ Person contacted _____

[X] No action [redacted]

Project Mana[redacted] Date 12/21/09

LS-023, Rev. 10, 10/09

Analytical Data Package Prepared For

USACE

Luckey FUSRAP - WO# 92002

Radiochemical Analysis By

TestAmerica

2800 G.W. Way, Richland Wa, 99354, (509)-375-3131.

Assigned Laboratory Code:

Data Package Contains 67 *Pages*

Report No.: 43267

Results in this report relate only to the sample(s) analyzed.

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
40988		153	J0B150463-001	LVPLM1	LVPLM1	0047195
		160	J0B150463-002	LVPMP1	LVPMP1	0047195
		189	J0B150463-003	LVPMQ1	LVPMQ1	0047195
		202	J0B150463-004	LVPMV1	LVPMV1	0047195
		204	J0B150463-005	LVPMW1	LVPMW1	0047195
		209	J0B150463-006	LVPM21	LVPM21	0047195
		210	J0B150463-007	LVPM41	LVPM41	0047195
		212	J0B150463-008	LVPM51	LVPM51	0047195
		226	J0B150463-009	LVPM61	LVPM61	0047195
		231	J0B150463-010	LVPM71	LVPM71	0047195
		232	J0B150463-012	LVPND1	LVPND1	0047195
		243	J0B150463-013	LVPNF1	LVPNF1	0047195
		244	J0B150463-014	LVPNG1	LVPNG1	0047195
		245	J0B150463-015	LVPNH1	LVPNH1	0047195
		250	J0B150463-016	LVPNJ1	LVPNJ1	0047201
		251	J0B150463-017	LVPNK1	LVPNK1	0047201
		262	J0B150463-018	LVPNL1	LVPNL1	0047201
		263	J0B150463-019	LVPNM1	LVPNM1	0047201
		268	J0B150463-020	LVPNN1	LVPNN1	0047201
		273	J0B150463-021	LVPNP1	LVPNP1	0047201
		274	J0B150463-023	LVPNW1	LVPNW1	0047201
		279	J0B150463-024	LVPNX1	LVPNX1	0047201
		281	J0B150463-025	LVPN01	LVPN01	0047201
		282	J0B150463-026	LVPN21	LVPN21	0047201
		287	J0B150463-027	LVPN41	LVPN41	0047201
		288	J0B150463-028	LVPN61	LVPN61	0047201

Report No.: 43267

Results in this report relate only to the sample(s) analyzed.

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
40988		295	J0B150463-029	LVPN71	LVPN71	0047201
		296	J0B150463-030	LVPN91	LVPN91	0047201
		302	J0B150463-031	LVPPD1	LVPPD1	0047214
		303	J0B150463-032	LVPPE1	LVPPE1	0047214
		305	J0B150463-034	LVPPH1	LVPPH1	0047214
		310	J0B150463-035	LVPPJ1	LVPPJ1	0047214
		328	J0B150463-036	LVPPK1	LVPPK1	0047214
		329	J0B150463-037	LVPPM1	LVPPM1	0047214
		332	J0B150463-038	LVPPN1	LVPPN1	0047214
		335	J0B150463-039	LVPPP1	LVPPP1	0047214
		344	J0B150463-040	LVPPQ1	LVPPQ1	0047214
		346	J0B150463-041	LVPPR1	LVPPR1	0047214
		352	J0B150463-042	LVPPT1	LVPPT1	0047214
		353	J0B150463-043	LVPPV1	LVPPV1	0047214
		BLANK # 1	J0B150463-011	LVPM91	LVPM91	0047195
		BLANK 2	J0B150463-022	LVPNR1	LVPNR1	0047201
		BLANK-3	J0B150463-033	LVPPF1	LVPPF1	0047214
		LUCKEY BLANK 4	J0B150463-044	LVPPW1	LVPPW1	0047214

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Certificate of Analysis

February 17, 2010

TerranearPMC, LLC
222 Valley Creek Blvd, Ste 210
Exton, PA 19341

Attention: Darin McEleney

Date Received in Lab	:	February 15, 2010
Sample Type	:	Forty-Four (44) Filters
SDG Number	:	40988
Project Number/Name	:	Luckey - FUSRAP

CASE NARRATIVE

I. Introduction

On February 15, 2010, forty-four filter samples were received at the TestAmerica Richland laboratory for ICP metals analysis. Upon receipt, the samples were assigned the TestAmerica identification numbers as described on the cover page of the Analytical Data Package report form. These samples were assigned to Lot Number J0B150463.

II. Sample Receipt

These samples were received in good condition and no anomalies were noted during check-in. The samples were logged in using the sample id # listed under the comments section on the chain of custody.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information; analytical results and the appropriate associated statistical uncertainties.

The requested analyses were:

ICP Metals:
ICP Metals by NIOSH Method 7300

IV. Quality Control

The analytical result for each analysis performed includes a minimum of one laboratory control sample (LCS), and one reagent blank sample analysis. Any exceptions have been noted in the "Comments" section.

V. Comments

ICP Metals

ICP Metals by NIOSH Method 7300:

The samples were analyzed in three batches: 0047201, 0047195, 0047214, for Beryllium and Lead.

The batch blank, the LCS and sample results are within acceptance limits.

I certify that this Certificate of Analysis is in compliance with AIHA, both technically and for completeness, for other than the conditions detailed in the following report. 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.

Reviewed and approved:

[redacted]

Christi Hayes
Project Manager

Isotope	Richland SOP #	Old Richland SOP #	Method Reference	Title
Asbestos	RL-ASB-001	N / A	NIOSH 7400	Fiber Counting by Phase Contrast Microscopy based on NIOSH 7400
Asbestos	RL-ASB-002	N / A	NIOSH 9002	Sample Prep and Analysis for Asbestos (bulk) by Polarized Light Microsopy based on NIOSH 9002
Alpha - Gross	ARCHIVED	RICH-RB-5035	Liquid Scintillation Anal / Packard	DETERMINATION OF GROSS ALPHA IN NASAL SMEARS BY LIQUID SCINTILLATION COUNTING
Alpha - Gross	RL-GPC-001	RICH-RC-5014	9310 / EPA SW846 900 0 / EPA 600	DETERMINATION OF GROSS ALPHA AND GROSS BETA IN WATER BY METHOD 9310
Alpha - Gross	RL-GPC-007	RICH-RC-5020	SM 7110B EPA 680	DETERMINATION OF GROSS ALPHA AND GROSS BETA IN SOIL, SHORELINE SOIL, FOOD AND VEGETATION
Alpha - Gross	RL-GPC-002	RICH-RC-5021	00-02 EPA 520	DETERMINATION OF GROSS ALPHA ACTIVITY IN WATER BY COPRECIPITATION
Alpha - Gross	RL-GPC-008	RICH-RC-5036	ER100 / LANL	PREPARATION OF AIR FILTERS FOR GROSS ALPHA / BETA AND COMPOSITING AIR FILTERS
Am	RL-ALP-003	RICH-RC-5072	Mod RP 725 / DOE0089T EXT Chromatography	SEPARATION OF AMERICIUM, CURIUM, AND URANIUM BY EXTRACTION CHROMATOGRAPHY
Am	RL-ALP-010	RICH-RC-5080	Am03 / Pu11HASL 300 NAS-NS-3006	SEQUENTIAL SEPARATION OF PLUTONIUM AND AMERICIUM
Beta - Gross	RL-GPC-001	RICH-RC-5014	9310 / EPA SW846 900 0 / EPA 600	DETERMINATION OF GROSS ALPHA AND GROSS BETA IN WATER BY METHOD 9310
Beta - Gross	RL-GPC-007	RICH-RC-5020	SM 7110B EPA 680	DETERMINATION OF GROSS ALPHA AND GROSS BETA IN SOIL, SHORELINE SOIL, FOOD AND VEGETATION
Beta - Gross	RL-GPC-008	RICH-RC-5036	ER100 / LANL	PREPARATION OF AIR FILTERS FOR GROSS ALPHA / BETA AND COMPOSITING AIR FILTERS
C14	RL-LSC-001	RICH-RB-5013	Mod H-02 / EPA 520	TRITIUM, CARBON-14, NICKEL-63 OR PHOSPHORUS-32 ANALYSIS IN URINE
C14	RL-LSC-008	RICH-RC-5022	EPA C-01 / EPA 520	CARBON 14 BY DIGESTION METHOD
C14	RL-LSC-009	RICH-RC-5040	Mod C14 / EPA 680	DETERMINATION OF CARBON-14 BY BENZENE SYNTHESIS
C14	RL-LSC-010	RICH-RC-5046	EPA C-01 / EPA 520	DETERMINATION OF CARBON-14 IN GRAPHITE AND SOIL
C14	RL-LSC-011	RICH-RC-5047	Mod H-02 / EPA 520	DETERMINATION OF CARBON-14 IN WATER BY DIRECT COUNTING
Cm	RL-ALP-003	RICH-RC-5072	Mod RP 725 / DOE0089T EXT Chromatography	SEPARATION OF AMERICIUM, CURIUM, AND URANIUM BY EXTRACTION CHROMATOGRAPHY
Coliform	RL-WC-001	RICH-WC-5001	9222B	DETERMINATION OF TOTAL COLIFORM: MULTIPLE TUBE FERMENTATION TECHNIQUE
Coliform	RL-WC-002	RICH-WC-5002	9131	TOTAL COLIFORMS BY MEMBRANE FILTRATION
Coliform	RL-WC-005	RICH-WC-5007	9223	TOTAL COLIFORM BY THE COLILERT METHOD
Cr6+	RL-WC-003	RICH-WC-5003	7196A, SW846	DETERMINATION OF HEXAVALENT CHROMIUM [Cr(VI)] IN WATER, SOIL, AND SIMILAR MATRICES
Cr6+	RL-WC-004	RICH-WC-5005	3060 / SW846	DETERMINATION OF HEXAVALENT CHROMIUM (CrVI) IN SOLID MATRICES WITH ALKALINE DIGESTION
Fe	RL-LSC-015	RICH-RC-5074	EXT Chromatography ModFe55 / PNL-ALO-435	SEPARATION OF IRON AND NICKEL BY EXTRACTION CHROMATOGRAPHY
Fe55	RL-LSC-016	RICH-RC-5023	R4-73-014 / EPA HASL 300	DETERMINATION OF IRON-55 AND IRON-59 IN WATER
Fe59	RL-LSC-016	RICH-RC-5023	R4-73-014 / EPA HASL 300	DETERMINATION OF IRON-55 AND IRON-59 IN WATER
Gamma	RL-GAM-001	RICH-RC-5017	901 0 / HASL 300 ASTM D3649	PREPARATION OF ALL MATRICES FOR ANALYSIS BY GAMMA SPECTROSCOPY
H3	RL-LSC-001	RICH-RB-5013	Mod H-02 / EPA 520	TRITIUM, CARBON-14, NICKEL-63 OR PHOSPHORUS-32 ANALYSIS IN URINE
H3	RL-LSC-003	RICH-RB-5034	7500-3 / SM	DETERMINATION OF TRITIUM IN URINE BY DISTILLATION
H3	RL-LSC-004	RICH-RC-5004	H3 / EPA LV539	DETERMINATION OF TRITIUM IN AIR
H3	RL-LSC-005	RICH-RC-5007	Mod '906 0 / EPA 600	SEPARATION OF TRITIUM IN WATER AND AQUEOUS COMPONENT OF WINE
H3	RL-LSC-007	RICH-RC-5024	H-3 by EE EPA LV539 / HASL 300	DETERMINATION OF LOW LEVEL TRITIUM IN WATER BY ELECTROLYTIC ENRICHMENT
H3	RL-LSC-002	RICH-RC-5037	H-3 in Water / Tissue / LV 539	DETERMINATION OF TRITIUM BY CRYOGENIC DISTILLATION

Isotope	Richland SOP #	Old Richland SOP #	Method Reference	Title
H3	RL-LSC-006	RICH-RC-5048	H-3 in Water/Tissue / LV 539	TRITIUM PREPARATION IN MILK SAMPLES
I129	RL-GAM-002	RICH-RC-5025	R4-73-014I/EPA ASTM D2334 (Discontinued)	DETERMINATION OF IODINE-131 AND 129 IN WATER BY SOLVENT EXTRACTION METHOD
I131	RL-GAM-002	RICH-RC-5025	R4-73-014I/EPA ASTM D2334 (Discontinued)	DETERMINATION OF IODINE-131 AND 129 IN WATER BY SOLVENT EXTRACTION METHOD
I131	ARCHIVED	RICH-RC-5049	HASL 300 (1983)	DETERMINATION OF IODINE-131 IN MILK BY BATCH ION-EXCHANGE
Metals	ARCHIVED	BHI-MT-0001	6010	ICP-AE SPECTROSCOPY, SPECTROMETRIC METHOD FOR TRACE ELEMENT ANALYSIS, METHOD 6010A FOR Bechtel
Metals	RL-MT-001	RICH-MT-0001	6010B	ICP-AES for TRACE ELEMENT ANALYSIS, METHOD 6010B
Metals	RL-MT-002	RICH-MT-0002	SW486 3050B	ACID DIGESTION FOR ICP ANALYSIS
Metals	RL-MT-003	RICH-MT-0003	NIOSH 7300	DIGESTION PREP based on METHOD NIOSH 7300
Ni	RL-LSC-015	RICH-RC-5074	EXT Chromatography ModFe55/PNL-ALO-435	SEPARATION OF IRON AND NICKEL BY EXTRACTION CHROMATOGRAPHY
Ni63	RL-LSC-001	RICH-RB-5013	Mod H-02 / EPA 520	TRITIUM, CARBON-14, NICKEL-63 OR PHOSPHORUS-32 ANALYSIS IN URINE
Ni63	RL-LSC-017	RICH-RC-5069	EXT Chromatography Mod RP300 / DOE0089T	SEPARATION OF Ni-63 BY EXTRACTION CHROMATOGRAPHY
Np	RL-ALP-013	RICH-RC-5009	NAS-NS-3060	DETERMINATION OF NEPTUNIUM-237 BY LIQUID-LIQUID EXTRACTION IN ALL MATRICES
Np	RL-ALP-006	RICH-RC-5064	EXT Chromatography	SEPARATION OF NEPTUNIUM BY EXTRACTION CHROMATOGRAPHY
P32	RL-LSC-001	RICH-RB-5013	Mod H-02 / EPA 520	TRITIUM, CARBON-14, NICKEL-63 OR PHOSPHORUS-32 ANALYSIS IN URINE
Pb	RL-ALP-011	RICH-RC-5076	EXT Chromatography	DETERMINATION OF LEAD-210 BY EXTRACTION CHROMATOGRAPHY
Po	RL-ALP-007	RICH-RB-5001	NAS-NS-3037 HASL 300	DETERMINATION OF POLONIUM-210 IN URINE
Po	RL-ALP-012	RICH-RC-5012	Po-01 / HASL 300 Mod U01 HASL 300	SEPARATION OF ISOTOPIC URANIUM AND POLONIUM-210 IN WATER, SOIL AND FILTERS
Prep - Bioassay	ARCHIVED	RICH-RB-0001		PREPARATION FOR RAPID BIOASSAY ANALYSES
Prep - Bioassay	RL-PRP-001	RICH-RB-5002	Mod Pu06 / HASL 300	PREPARATION OF URINE AND BLOOD SAMPLES
Prep - Bioassay	ARCHIVED	RICH-RB-5004	ASTM D1429-95	DETERMINATION OF SPECIFIC GRAVITY OF URINE
Prep - Bioassay	RL-RPL-002	RICH-RB-5036	Pub 6490,6601 / PNL	PREPARATION OF SYNTHETIC URINE AND FECES USING RECIPES FROM HPS N13 30 PREFORMANCE TESTING
Prep - Bioassay	RL-PRP-002	RICH-RB-5037	LA-10300-M R200 ASTM D3865	PREPARATION OF FECAL SAMPLES USING HYDROFLUORIC ACID DIGESTION
Prep - Bioassay	RL-RPL-003	RICH-RC-5028	ICRP Publication 23	PREPARATION OF SYNTHETIC URINE AND FECES
Prep - Count	RL-ALP-016	RICH-RC-5003	G-03 / HASL 300	COPRECIPITATION OF SOME ACTINIDES ON NEODYMIUM FLUORIDE FOR ALPHA-PARTICLE SPECTROMETRY
Prep - Count	RL-ALP-015	RICH-RC-5039	G-03 / HASL 300 Anal Chem 1972	ELECTRODEPOSITION OF ACTINIDES
Prep - Count	RL-ALP-014	RICH-RC-5085	Morrison & Freiser NAS-NS-3050	ANHYDROUS ETHER EXTRACTION OF URANIUM
Prep - Env	RL-KPA-001	RICH-RC-5015	ASTM / D5174-97	ENVIRONMENTAL SAMPLE PREPARATION FOR URANIUM BY LASER-INDUCED PHOSPHORESCENCE
Prep - Env	RL-PRP-004	RICH-RC-5016	Sr02 / HASL 300	PREPARATION OF ENVIRONMENTAL MATRICES
Prep - Env	RL-PRP-007	RICH-RC-5045	Mod Pu02 / HASL 300	PREPARATION OF MIXED BED RESINS AND PRE-FILTERS
Prep - Env	RL-PRP-008	RICH-RC-5068	Mod ER100 / LA10300	PREPARATION OF SOIL, VEGETATION AND AIR FILTERS BY MIXED STRONG ACID LEACHING
Prep - Resin	RL-ALP-017	RICH-RC-5018	Mod Pu11 / Mod 300	ION-EXCHANGE PREPARATION
Prep - Soil	RL-PRP-003	RICH-RC-5013	Pu02A / HASL 300	PREPARATION OF SOIL SAMPLES
Prep - Soil	RL-PRP-005	RICH-RC-5019	D5259 / ASTM SW 846/3015/3051/3052	PREPARATION AND DISSOLUTION OF SEDIMENTS AND SOIL BY MICROWAVE BOMB DIGESTION

Isotope	Richland SOP #	Old Richland SOP #	Method Reference	Title
Prep - Soil	RL-PRP-006	RICH-RC-5032	Pu02A / HASL 300	COMPLETE DISSOLUTION BY MIXED ACIDS IN A TEFLON BEAKER
Prep - Soil	RL-PRP-009	RICH-RC-5077	Mod ER100 / LA10300	PREPARATION OF SMALL SOIL SAMPLES FOR GAMMA SPEC AND/OR RADIOCHEM ANAL BY ACID DIGESTION
Prep - Urine	RL-PRP-010	RICH-RC-5086	AnalyticaChemActa1992 RP800 / DOE00089T	URINE AND WATER SAMPLE PREPARATION BY CALCIUM PHOSPHATE PRECIPITATION
Prep - Water	RL-PRP-010	RICH-RC-5086	AnalyticaChemActa1992 RP800 / DOE00089T	URINE AND WATER SAMPLE PREPARATION BY CALCIUM PHOSPHATE PRECIPITATION
Pu	ARCHIVED	RICH-RB-5015	Pu11 / HASL 300	RAPID DETERMINATION OF PLUTONIUM IN FECES
Pu	RL-ALP-002	RICH-RC-5010	Pu11 / HASL 300	DETERMINATION OF ISOTOPIC PLUTONIUM IN ALL MATRICES
Pu	RL-ALP-010	RICH-RC-5080	Am03 HASL 300 Pu11 / HASL 300	SEQUENTIAL SEPARATION OF PLUTONIUM AND AMERICIUM
Pu	RL-ALP-001	RICH-RC-5087	AnalyticaChemActa1992 RP800 / DOE00089T	DETERMINATION OF PLUTONIUM BY EXTRACTION CHROMATOGRAPHY
Ra	RL-RA-001	RICH-RC-5005	903 1 / EPA 600	RADIUM-226 AND RADIUM-228 SEPARATION IN RADIOCHEMICAL MATRICES - ADAPTED FROM EPA 903 1 AND 904 0
Ra	RL-RA-001	RICH-RC-5005	904 0 / EPA 600	RADIUM-226 AND RADIUM-228 SEPARATION IN RADIOCHEMICAL MATRICES - ADAPTED FROM EPA 903 1 AND 904 0
Ra	RL-RA-002	RICH-RC-5027	Mod D2460/ ASTM 903 0 / EPA 600	DETERMINATION OF TOTAL RADIUM
Rn	RL-LSC-019	RICH-RC-5082	913 0 / EPA	DETERMINATION OF RADON-222 - ADAPTED FROM METHOD 913 0
S35	ARCHIVED	RICH-RB-5020	Hillebrand, Lundeell, Bright, Hoffman 1953	DETERMINATION OF SULFUR-35 IN URINE
Se79	RL-LSC-012	RICH-RC-5043	Selenium / NAS-NS-3030	RADIOCHEMICAL DETERMINATION OF SELENIUM-79
Solubility	ARCHIVED	RICH-RC-5035	Kalfward&Thomas PNL3716	DETERMINATION OF SOLUBILITY OF RADIOACTIVE PARTICLE CONSTITUENTS
Sr	RL-GPC-005	RICH-RB-5007	Mod Sr02 / HASL 300 Mod 905 0 / EPA 600	DETERMINATION OF TOTAL STRONTIUM IN URINE
Sr	RL-GPC-006	RICH-RB-5021	Mod Sr02 / HASL300 Mod 905 0 / EPA 600	DETERMINATION OF STRONTIUM IN FECES
Sr	ARCHIVED	RICH-RB-5022	Mod Sr02 / HASL300 Mod 905 0 / EPA 600	DETERMINATION OF TOTAL STRONTIUM IN URINE FOR RAPID ANALYSIS
Sr	ARCHIVED	RICH-RB-5031	Mod Sr02 / HASL300 Mod 905 0 / EPA 600	RAPID DETERMINATION OF TOTAL STRONTIUM IN FECES
Sr	RL-GPC-003	RICH-RC-5006	Mod Sr02 / HASL300 Mod 905 0 / EPA 600	STRONTIUM SEPARATION IN ENVIROMENTAL MATRICES
Sr - Yt	RL-GPC-004	RICH-RC-5071	Mod Sr02 / HASL300 Mod 905 0 / EPA 600	YTTRIUM-90 SEPARATION FOR STRONTIUM-90 DETERMINATION IN ALL MATRICES
Tc	RL-LSC-014	RICH-RC-5065	EXT Chromatography Mod RP550 / DOE0089T	DETERMINATION OF TECHNETIUM-99 BY EXTRACTION CHROMATOGRAPHY
Tc	RL-LSC-013	RICH-RC-5078	Tc01 / HASL 300	SEPARATION OF TECHNETIUM-99 IN ALL MATRICES
Th	RL-ALP-008	RICH-RB-5006	Mod Th01 / HASL 300	SEPARATION OF THORIUM FROM URINE AND FECAL SAMPLES
Th	RL-ALP-005	RICH-RC-5084	Mod Th01 / HASL 300 Anal Chim Acta 1982	DETERMINATION OF THORIUM ISOTOPIC IN ENVIRONMENTAL MATRICES
U	RL-ALP-012	RICH-RC-5012	Po-01 / HASL 300 Mod U01 / HASL 300	SEPARATION OF ISOTOPIC URANIUM AND POLONIUM-210 IN WATER, SOIL AND FILTERS
U	RL-KPA-002	RICH-RC-5031	Mod U01 / HASL 300	SEPARATION OF TOTAL URANIUM IN WATER AND URINE
U	RL-KPA-003	RICH-RC-5058	D5174 / ASTM	DETERMINATION OF URANIUM BY PHOSPHORESCENCE ANALYSIS
U	RL-ALP-004	RICH-RC-5067	EXT Chromatography Mod RP725 / DOE0089T	SEPARATION OF URANIUM BY EXTRACTION CHROMATOGRAPHY
U	RL-ALP-003	RICH-RC-5072	EXT Chrom Mod RP725 & 800 / DOE0089T	SEPARATION OF AMERICIUM, CURIUM, AND URANIUM BY EXTRACTION CHROMATOGRAPHY
U	RL-ALP-009	RICH-RC-5079	EXT Chromatography Mod RP725 / DOE0089T	DETERMINATION OF ISOTOPIC URANIUM IN ALL MATRICES

Drinking Water Method Cross References

	DRINKING WATER ASTM METHOD CROSS REFERENCES	
Referenced Method	**Isotope(s)**	**TestAmerica Richland's SOP No.**
EPA 901.1	Cs-134, I-131	RL-GAM-001
EPA 900.0	Alpha & Beta	RL-GPC-001
EPA 00-02	Gross Alpha (Coprecipitation)	RL-GPC-002
EPA 903.0	Total Alpha Radium (Ra-226)	RL-RA-002
EPA 903.1	Ra-226	RL-RA-001
EPA 904.0	Ra-228	RL-RA-001
EPA 905.0	Sr-89/90	RL-GPC-003
ASTM D5174	Uranium	RL-KPA-003
EPA 906.0	Tritium	RL-LSC-005

Results in this report relate only to the sample(s) analyzed.

Uncertainty Estimation

TestAmerica Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, R = constants * f(x,y,z,...). The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value (S/?n), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or TestAmerica.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) ***u_c - Combined Uncertainty.***	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, ***u_c the combined uncertainty.*** The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or TestAmerica "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. Lc=(1.645 * Sqrt(2*(BkgrndCnt/BkgrndCntMin)/SCntMin)) * (ConvFct/(Eff*Yld*Abn*Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC|MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. MDC = (4.65 * Sqrt((BkgrndCnt/BkgrndCntMin)/SCntMin) + 2.71/SCntMin) * (ConvFct/(Eff * Yld * Abn * Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUcert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the **Work Order** Number.
RER	The equation Replicate Error Ratio = (S-D)/[sqrt($TPUs^2$ + $TPUd^2$)] as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by TestAmerica upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

Sample Results Summary

Date: 17-Feb-10

TestAmerica

Ordered by Method, Batch No., Client Sample ID.

Report No. : 43267 **SDG No:** 40988

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDC or MDA	CRDL	RER2
0047195 DQ									
153									
	LVPLM1	Beryllium	8.19E-02 +-		ug/m3		2.84E-02		
		Lead	4.45E-01 +-	U	ug/m3		8.24E-01		
160									
	LVPMP1	Beryllium	3.89E-02 +-		ug/m3		1.45E-02		
		Lead	2.31E-01 +-	U	ug/m3		4.20E-01		
189									
	LVPMQ1	Beryllium	7.53E-02 +-		ug/m3		2.33E-02		
		Lead	3.28E-01 +-	U	ug/m3		6.75E-01		
202									
	LVPMV1	Beryllium	6.06E-03 +-	U	ug/m3		1.52E-02		
		Lead	9.39E-02 +-	U	ug/m3		4.39E-01		
204									
	LVPMW1	Beryllium	4.25E-03 +-	U	ug/m3		1.42E-02		
		Lead	8.82E-02 +-	U	ug/m3		4.10E-01		
209									
	LVPM21	Beryllium	4.29E-03 +-	U	ug/m3		1.35E-02		
		Lead	9.63E-02 +-	U	ug/m3		3.93E-01		
210									
	LVPM41	Beryllium	1.18E-02 +-	U	ug/m3		2.08E-02		
		Lead	1.42E-01 +-	U	ug/m3		6.04E-01		
212									
	LVPM51	Beryllium	1.52E-02 +-	U	ug/m3		2.29E-02		
		Lead	6.69E-01 +-		ug/m3		6.63E-01		
226									
	LVPM61	Beryllium	6.41E-03 +-	U	ug/m3		1.75E-02		
		Lead	1.07E-01 +-	U	ug/m3		5.07E-01		
231									
	LVPM71	Beryllium	4.22E-03 +-	U	ug/m3		1.58E-02		
		Lead	9.86E-02 +-	U	ug/m3		4.59E-01		
232									
	LVPND1	Beryllium	2.68E-01 +-		ug/m3		1.61E-02		
		Lead	7.45E-01 +-		ug/m3		4.68E-01		
243									
	LVPNF1	Beryllium	1.57E-01 +-		ug/m3		3.33E-02		
		Lead	5.47E-01 +-	U	ug/m3		9.67E-01		
244									
	LVPNG1	Beryllium	9.41E-03 +-	U	ug/m3		1.49E-02		

TestAmerica

rptSTLRchSaSummary2 V5.2.5 A2002

RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

Sample Results Summary

Date: 17-Feb-10

TestAmerica

Ordered by Method, Batch No., Client Sample ID.

Report No. : 43267 **SDG No:** 40988

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDC or MDA	CRDL	RER2
0047195 DQ									
244									
	LVPNG1	Lead	1.51E-01 +-	U	ug/m3		4.31E-01		
245									
	LVPNH1	Beryllium	1.86E-02 +-		ug/m3		1.71E-02		
		Lead	1.40E-01 +-	U	ug/m3		4.97E-01		
BLANK # 1									
	LVPM91	Beryllium	9.00E-03 +-	U	ug/sa		3.00E-02		
		Lead	2.22E-01 +-	U	ug/sa		8.70E-01		
0047201 DQ									
250									
	LVPNJ1	Beryllium	1.52E-02 +-	U	ug/m3		1.79E-02		
		Lead	1.51E-01 +-	U	ug/m3		5.18E-01		
251									
	LVPNK1	Beryllium	4.28E-03 +-	U	ug/m3		1.51E-02		
		Lead	1.23E-01 +-	U	ug/m3		4.39E-01		
262									
	LVPNL1	Beryllium	8.11E-03 +-	U	ug/m3		1.32E-02		
		Lead	1.04E-01 +-	U	ug/m3		3.82E-01		
263									
	LVPNM1	Beryllium	3.69E-03 +-	U	ug/m3		1.30E-02		
		Lead	7.14E-02 +-	U	ug/m3		3.78E-01		
268									
	LVPNN1	Beryllium	-4.67E-04 +-	U	ug/m3		1.40E-02		
		Lead	8.83E-02 +-	U	ug/m3		4.07E-01		
273									
	LVPNP1	Beryllium	2.04E-03 +-	U	ug/m3		1.53E-02		
		Lead	1.27E-01 +-	U	ug/m3		4.44E-01		
274									
	LVPNW1	Beryllium	2.61E-03 +-	U	ug/m3		1.30E-02		
		Lead	1.03E-01 +-	U	ug/m3		3.78E-01		
279									
	LVPNX1	Beryllium	6.97E-04 +-	U	ug/m3		1.39E-02		
		Lead	1.30E-01 +-	U	ug/m3		4.04E-01		
281									
	LVPN01	Beryllium	0.00E+00 +-	U	ug/m3		1.28E-02		
		Lead	1.09E-01 +-	U	ug/m3		3.72E-01		
282									
	LVPN21	Beryllium	5.53E-03 +-	U	ug/m3		1.66E-02		

TestAmerica

rptSTLRchSaSummary2 V5.2.5 A2002

RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

Sample Results Summary

Date: 17-Feb-10

TestAmerica

Ordered by Method, Batch No., Client Sample ID.

Report No. : 43267 **SDG No:** 40988

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDC or MDA	CRDL	RER2
0047201 DQ									
282									
	LVPN21	Lead	2.09E-01 +-	U	ug/m3		4.81E-01		
287									
	LVPN41	Beryllium	6.00E-02 +-		ug/m3		1.45E-02		
		Lead	1.49E-01 +-	U	ug/m3		4.19E-01		
288									
	LVPN61	Beryllium	1.09E-02 +-	U	ug/m3		1.81E-02		
		Lead	2.60E-01 +-	U	ug/m3		5.25E-01		
295									
	LVPN71	Beryllium	1.04E-02 +-	U	ug/m3		6.25E-02		
		Lead	7.20E-01 +-	U	ug/m3		1.81E+00		
296									
	LVPN91	Beryllium	8.42E-02 +-		ug/m3		5.00E-02		
		Lead	5.79E-01 +-	U	ug/m3		1.45E+00		
BLANK 2									
	LVPNR1	Beryllium	-6.00E-03 +-	U	ug/sa		3.00E-02		
		Lead	2.34E-01 +-	U	ug/sa		8.70E-01		
0047214 DQ									
302									
	LVPPD1	Beryllium	7.03E-03 +-	U	ug/m3		1.56E-02		
		Lead	1.88E-01 +-	U	ug/m3		4.53E-01		
303									
	LVPPE1	Beryllium	9.62E-04 +-	U	ug/m3		1.92E-02		
		Lead	2.08E-01 +-	U	ug/m3		5.58E-01		
305									
	LVPPH1	Beryllium	2.28E+00 +-		ug/m3		1.26E-02		
		Lead	2.03E-01 +-	U	ug/m3		3.66E-01		
310									
	LVPPJ1	Beryllium	1.50E+00 +-		ug/m3		1.26E-02		
		Lead	6.72E-01 +-		ug/m3		3.66E-01		
328									
	LVPPK1	Beryllium	1.17E-02 +-	U	ug/m3		1.52E-02		
		Lead	2.08E-01 +-	U	ug/m3		4.42E-01		
329									
	LVPPM1	Beryllium	2.96E-02 +-		ug/m3		1.25E-02		
		Lead	1.23E-01 +-	U	ug/m3		3.63E-01		
332									
	LVPPN1	Beryllium	1.51E-02 +-		ug/m3		1.29E-02		

TestAmerica

rptSTLRchSaSummary2 V5.2.5 A2002

RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

Sample Results Summary

Date: 17-Feb-10

TestAmerica

Ordered by Method, Batch No., Client Sample ID.

Report No. : 43267 **SDG No:** 40988

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDC or MDA	CRDL	RER2
0047214 DQ									
332									
	LVPPN1	Lead	1.35E-01 +-	U	ug/m3		3.75E-01		
335									
	LVPPP1	Beryllium	1.67E-02 +-		ug/m3		1.35E-02		
		Lead	2.05E-01 +-	U	ug/m3		3.92E-01		
344									
	LVPPQ1	Beryllium	1.79E+00 +-		ug/m3		1.23E-02		
		Lead	3.35E+00 +-		ug/m3		3.57E-01		
346									
	LVPPR1	Beryllium	7.41E-03 +-	U	ug/m3		1.78E-02		
		Lead	2.51E-01 +-	U	ug/m3		5.15E-01		
352									
	LVPPT1	Beryllium	1.19E+00 +-		ug/m3		1.28E-02		
		Lead	3.69E+00 +-		ug/m3		3.72E-01		
353									
	LVPPV1	Beryllium	7.95E-01 +-		ug/m3		1.29E-02		
		Lead	1.97E+00 +-		ug/m3		3.75E-01		
BLANK-3									
	LVPPF1	Beryllium	-1.00E-03 +-	U	ug/sa		3.00E-02		
		Lead	3.00E-01 +-	U	ug/sa		8.70E-01		
LUCKEY BLANK 4									
	LVPPW1	Beryllium	-4.50E-03 +-	U	ug/sa		3.00E-02		
		Lead	1.96E-01 +-	U	ug/sa		8.70E-01		

No. of Results: 88

TestAmerica

rptSTLRchSaSummary2 V5.2.5 A2002

RER2 - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

QC Results Summary

Date: 17-Feb-10

TestAmerica

Ordered by Method, Batch No, QC Type,.

Report No. : 43267 **SDG No.:** 40988

Batch Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDC|MDA
DQ								
0047195 BLANK QC,								
LVQDQ1B	Beryllium	3.40E-04 +- 0.0E+00	U	mg/L				6.00E-04
	Lead	5.14E-03 +- 4.6E-04	U	mg/L				1.74E-02
0047195 LCS,								
LVQDQ1C	Beryllium	1.07E+00 +- 2.2E-02		mg/L		2%	-1.0	6.00E-04
	Lead	1.00E+00 +- 1.7E-02		mg/L		2%	-1.0	1.74E-02
LVQDQ1L	Beryllium	1.03E+00 +- 9.0E-03		mg/L		2%	-1.0	6.00E-04
	Lead	9.67E-01 +- 1.6E-02		mg/L		2%	-1.0	1.74E-02
DQ								
0047201 BLANK QC,								
LVQD81B	Beryllium	6.10E-04 +- 2.0E-05		mg/L				6.00E-04
	Lead	4.46E-03 +- 2.9E-03	U	mg/L				1.74E-02
0047201 LCS,								
LVQD81C	Beryllium	1.01E+00 +- 1.1E-03		mg/L		2%	-1.0	6.00E-04
	Lead	9.46E-01 +- 3.2E-03		mg/L		2%	-1.0	1.74E-02
LVQD81L	Beryllium	1.02E+00 +- 6.7E-03		mg/L		2%	-1.0	6.00E-04
	Lead	9.54E-01 +- 8.2E-03		mg/L		2%	-1.0	1.74E-02
DQ								
0047214 BLANK QC,								
LVQFF1B	Beryllium	-1.20E-04 +- 4.0E-05	U	mg/L				6.00E-04
	Lead	5.96E-03 +- 7.8E-04	U	mg/L				1.74E-02
0047214 LCS,								
LVQFF1C	Beryllium	1.06E+00 +- 1.3E-02		mg/L		2%	-1.0	6.00E-04
	Lead	9.92E-01 +- 1.5E-02		mg/L		2%	-1.0	1.74E-02
LVQFF1L	Beryllium	1.02E+00 +- 2.8E-03		mg/L		2%	-1.0	6.00E-04
	Lead	9.58E-01 +- 5.8E-03		mg/L		2%	-1.0	1.74E-02

No. of Results: 18

TestAmerica

rptSTLRchQcSummary V5.2.5 A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	12/16/2009 3:20:00 PM
Lot-Sample No.:	J0B150463-001	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	153	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047195 DQ				**Work Order:** LVPLM1			**Report DB ID:** LVPLM1					
Beryllium	**8.19E-02**				2.84E-02	ug/m3		*(2.9)*	2/16/10 02:05 p		1056.0	0
								N/A			L	
Lead	**4.45E-01**	U			8.24E-01	ug/m3		*0.54*	2/16/10 02:05 p		1056.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	12/15/2009 3:58:00 PM
Lot-Sample No.:	J0B150463-002	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	160	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047195 DQ				**Work Order:** LVPMP1			**Report DB ID:** LVPMP1					
Beryllium	**3.89E-02**				1.45E-02	ug/m3		*(2.7)*	2/16/10 02:10 p		2072.0	0
								N/A			L	
Lead	**2.31E-01**	U			4.20E-01	ug/m3		*0.55*	2/16/10 02:10 p		2072.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	12/21/2009 1:46:00 PM
Lot-Sample No.:	J0B150463-003	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	189	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047195 DQ				**Work Order:** LVPMQ1			**Report DB ID:** LVPMQ1					
Beryllium	**7.53E-02**				2.33E-02	ug/m3		*(3.2)*	2/16/10 02:15 p		1288.0	0
								N/A			L	
Lead	**3.28E-01**	U			6.75E-01	ug/m3		*0.49*	2/16/10 02:15 p		1288.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	12/29/2009 6:05:00 PM
Lot-Sample No.:	J0B150463-004	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	202	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047195 DQ				**Work Order:** LVPMV1			**Report DB ID:** LVPMV1					
Beryllium	**6.06E-03**	U			1.52E-02	ug/m3		*0.4*	2/16/10 02:20 p		1980.0	0
								N/A			L	
Lead	**9.39E-02**	U			4.39E-01	ug/m3		*0.21*	2/16/10 02:20 p		1980.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name: TestAmerica | **SDG:** 40988 | **Collection Date:** 12/30/2009 5:30:00 PM

Lot-Sample No.: J0B150463-005 | **Report No. :** 43267 | **Received Date:** 2/15/2010 10:00:00 AM

Client Sample ID: 204 | **COC No. :** | **Matrix:** FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047195 DQ				**Work Order:** LVPMW1			**Report DB ID:** LVPMW1					
Beryllium	**4.25E-03**	U			1.42E-02	ug/m3		*0.3*	2/16/10 02:36 p		2120.0	0
								N/A			L	
Lead	**8.82E-02**	U			4.10E-01	ug/m3		*0.21*	2/16/10 02:36 p		2120.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	12/31/2009 5:20:00 PM
Lot-Sample No.:	J0B150463-006	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	209	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047195 DQ				**Work Order:** LVPM21			**Report DB ID:** LVPM21					
Beryllium	**4.29E-03**	U			1.35E-02	ug/m3		*0.32*	2/16/10 02:41 p		2216.0	0
								N/A			L	
Lead	**9.63E-02**	U			3.93E-01	ug/m3		*0.25*	2/16/10 02:41 p		2216.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	1/1/2010 2:40:00 PM
Lot-Sample No.:	J0B150463-007	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	210	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047195 DQ				**Work Order:** LVPM41			**Report DB ID:** LVPM41					
Beryllium	**1.18E-02**	U			2.08E-02	ug/m3		*0.57*	2/16/10 02:47 p		1440.0	0
								N/A			L	
Lead	**1.42E-01**	U			6.04E-01	ug/m3		*0.24*	2/16/10 02:47 p		1440.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	1/3/2010 5:00:00 PM
Lot-Sample No.:	J0B150463-008	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	212	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047195 DQ				**Work Order:** LVPM51			**Report DB ID:** LVPM51					
Beryllium	**1.52E-02**	U			2.29E-02	ug/m3		*0.67*	2/16/10 02:52 p		1312.0	0
								N/A			L	
Lead	**6.69E-01**				6.63E-01	ug/m3		*(1.)*	2/16/10 02:52 p		1312.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	1/6/2010 5:00:00 PM
Lot-Sample No.:	J0B150463-009	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	226	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047195 DQ				**Work Order:** LVPM61			**Report DB ID:** LVPM61					
Beryllium	**6.41E-03**	U			1.75E-02	ug/m3		*0.37*	2/16/10 02:57 p		1716.0	0
								N/A			L	
Lead	**1.07E-01**	U			5.07E-01	ug/m3		*0.21*	2/16/10 02:57 p		1716.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	1/7/2010 5:07:00 PM
Lot-Sample No.:	J0B150463-010	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	231	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047195 DQ				**Work Order:** LVPM71			**Report DB ID:** LVPM71					
Beryllium	**4.22E-03**	U			1.58E-02	ug/m3		*0.27*	2/16/10 03:02 p		1896.0	0
								N/A			L	
Lead	**9.86E-02**	U			4.59E-01	ug/m3		*0.21*	2/16/10 03:02 p		1896.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	1/7/2010 5:50:00 PM
Lot-Sample No.:	J0B150463-012	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	232	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047195	DQ			**Work Order:** LVPND1			**Report DB ID:** LVPND1					
Beryllium	**2.68E-01**				1.61E-02	ug/m3		*(16.6)*	2/16/10 03:13 p		1860.0	0
								N/A			L	
Lead	**7.45E-01**				4.68E-01	ug/m3		*(1.6)*	2/16/10 03:13 p		1860.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name: TestAmerica | **SDG:** 40988 | **Collection Date:** 1/8/2010 3:40:00 PM

Lot-Sample No.: J0B150463-013 | **Report No. :** 43267 | **Received Date:** 2/15/2010 10:00:00 AM

Client Sample ID: 243 | **COC No. :** | **Matrix:** FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047195 DQ				**Work Order:** LVPNF1			**Report DB ID:** LVPNF1					
Beryllium	**1.57E-01**				3.33E-02	ug/m3		*(4.7)*	2/16/10 03:18 p		900.0	0
								N/A			L	
Lead	**5.47E-01**	U			9.67E-01	ug/m3		*0.57*	2/16/10 03:18 p		900.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name: TestAmerica | **SDG:** 40988 | **Collection Date:** 1/8/2010 4:55:00 PM

Lot-Sample No.: J0B150463-014 | **Report No. :** 43267 | **Received Date:** 2/15/2010 10:00:00 AM

Client Sample ID: 244 | **COC No. :** | **Matrix:** FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047195 DQ				**Work Order:** LVPNG1			**Report DB ID:** LVPNG1					
Beryllium	**9.41E-03**	U			1.49E-02	ug/m3		*0.63*	2/16/10 03:23 p		2020.0	0
								N/A			L	
Lead	**1.51E-01**	U			4.31E-01	ug/m3		*0.35*	2/16/10 03:23 p		2020.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name: TestAmerica | **SDG:** 40988 | **Collection Date:** 1/9/2010 5:03:00 PM

Lot-Sample No.: J0B150463-015 | **Report No. :** 43267 | **Received Date:** 2/15/2010 10:00:00 AM

Client Sample ID: 245 | **COC No. :** | **Matrix:** FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047195 DQ				**Work Order:** LVPNH1			**Report DB ID:** LVPNH1					
Beryllium	**1.86E-02**				1.71E-02	ug/m3		*(1.1)*	2/16/10 03:39 p		1752.0	0
								N/A			L	
Lead	**1.40E-01**	U			4.97E-01	ug/m3		*0.28*	2/16/10 03:39 p		1752.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	1/10/2010 5:30:00 PM
Lot-Sample No.:	J0B150463-016	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	250	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047201 DQ				**Work Order:** LVPNJ1			**Report DB ID:** LVPNJ1					
Beryllium	**1.52E-02**	U			1.79E-02	ug/m3		*0.85*	2/16/10 04:42 p		1680.0	0
								N/A			L	
Lead	**1.51E-01**	U			5.18E-01	ug/m3		*0.29*	2/16/10 04:42 p		1680.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	1/11/2010 4:53:00 PM
Lot-Sample No.:	J0B150463-017	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	251	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047201 DQ				**Work Order:** LVPNK1			**Report DB ID:** LVPNK1					
Beryllium	**4.28E-03**	U			1.51E-02	ug/m3		*0.28*	2/16/10 04:47 p		1984.0	0
								N/A			L	
Lead	**1.23E-01**	U			4.39E-01	ug/m3		*0.28*	2/16/10 04:47 p		1984.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	1/12/2010 5:47:00 PM
Lot-Sample No.:	J0B150463-018	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	262	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047201 DQ				**Work Order:** LVPNL1			**Report DB ID:** LVPNL1					
Beryllium	**8.11E-03**	U			1.32E-02	ug/m3		*0.62*	2/16/10 04:36 p		2280.0	0
								N/A			L	
Lead	**1.04E-01**	U			3.82E-01	ug/m3		*0.27*	2/16/10 04:36 p		2280.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	1/12/2010 6:06:00 PM
Lot-Sample No.:	J0B150463-019	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	263	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047201 DQ				**Work Order:** LVPNM1			**Report DB ID:** LVPNM1					
Beryllium	**3.69E-03**	U			1.30E-02	ug/m3		*0.28*	2/16/10 04:52 p		2304.0	0
								N/A			L	
Lead	**7.14E-02**	U			3.78E-01	ug/m3		*0.19*	2/16/10 04:52 p		2304.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	1/13/2010 5:25:00 PM
Lot-Sample No.:	J0B150463-020	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	268	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047201	DQ			**Work Order:** LVPNN1			**Report DB ID:** LVPNN1					
Beryllium	**-4.67E-04**	U			1.40E-02	ug/m3		*-0.03*	2/16/10 05:08 p		2140.0	0
								N/A			L	
Lead	**8.83E-02**	U			4.07E-01	ug/m3		*0.22*	2/16/10 05:08 p		2140.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	1/14/2010 5:00:00 PM
Lot-Sample No.:	J0B150463-021	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	273	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047201 DQ				**Work Order:** LVPNP1			**Report DB ID:** LVPNP1					
Beryllium	**2.04E-03**	U			1.53E-02	ug/m3		*0.13*	2/16/10 05:13 p		1960.0	0
								N/A			L	
Lead	**1.27E-01**	U			4.44E-01	ug/m3		*0.29*	2/16/10 05:13 p		1960.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name: TestAmerica | **SDG:** 40988 | **Collection Date:** 1/14/2010 5:20:00 PM

Lot-Sample No.: J0B150463-023 | **Report No. :** 43267 | **Received Date:** 2/15/2010 10:00:00 AM

Client Sample ID: 274 | **COC No. :** | **Matrix:** FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047201 DQ				**Work Order:** LVPNW1			**Report DB ID:** LVPNW1					
Beryllium	**2.61E-03**	U			1.30E-02	ug/m3		*0.2*	2/16/10 05:23 p		2300.0	0
								N/A			L	
Lead	**1.03E-01**	U			3.78E-01	ug/m3		*0.27*	2/16/10 05:23 p		2300.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name: TestAmerica | **SDG:** 40988 | **Collection Date:** 1/15/2010 4:50:00 PM

Lot-Sample No.: J0B150463-024 | **Report No. :** 43267 | **Received Date:** 2/15/2010 10:00:00 AM

Client Sample ID: 279 | **COC No. :** | **Matrix:** FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047201 DQ				**Work Order:** LVPNX1			**Report DB ID:** LVPNX1					
Beryllium	**6.97E-04**	U			1.39E-02	ug/m3		*0.05*	2/16/10 05:29 p		2152.0	0
								N/A			L	
Lead	**1.30E-01**	U			4.04E-01	ug/m3		*0.32*	2/16/10 05:29 p		2152.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	1/15/2010 5:30:00 PM
Lot-Sample No.:	J0B150463-025	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	281	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047201 DQ				**Work Order:** LVPN01			**Report DB ID:** LVPN01					
Beryllium	**0.00E+00**	U			1.28E-02	ug/m3		*0.*	2/16/10 05:34 p		2340.0	0
								N/A			L	
Lead	**1.09E-01**	U			3.72E-01	ug/m3		*0.29*	2/16/10 05:34 p		2340.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name: TestAmerica | **SDG:** 40988 | **Collection Date:** 1/16/2010 4:30:00 PM

Lot-Sample No.: J0B150463-026 | **Report No. :** 43267 | **Received Date:** 2/15/2010 10:00:00 AM

Client Sample ID: 282 | **COC No. :** | **Matrix:** FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047201 DQ				Work Order: LVPN21			Report DB ID: LVPN21					
Beryllium	**5.53E-03**	U			1.66E-02	ug/m3		*0.33*	2/16/10 05:39 p		1808.0	0
								N/A			L	
Lead	**2.09E-01**	U			4.81E-01	ug/m3		*0.44*	2/16/10 05:39 p		1808.0	0
								N/A			L	

No. of Results: 2 Comments:

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name: TestAmerica | **SDG:** 40988 | **Collection Date:** 1/16/2010 5:25:00 PM

Lot-Sample No.: J0B150463-027 | **Report No. :** 43267 | **Received Date:** 2/15/2010 10:00:00 AM

Client Sample ID: 287 | **COC No. :** | **Matrix:** FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047201 DQ				Work Order: LVPN41			Report DB ID: LVPN41					
Beryllium	**6.00E-02**				1.45E-02	ug/m3		*(4.2)*	2/16/10 05:44 p		2076.0	0
								N/A			L	
Lead	**1.49E-01**	U			4.19E-01	ug/m3		*0.36*	2/16/10 05:44 p		2076.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name: TestAmerica | **SDG:** 40988 | **Collection Date:** 1/17/2010 3:30:00 PM

Lot-Sample No.: J0B150463-028 | **Report No. :** 43267 | **Received Date:** 2/15/2010 10:00:00 AM

Client Sample ID: 288 | **COC No. :** | **Matrix:** FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047201 DQ				**Work Order:** LVPN61			**Report DB ID:** LVPN61					
Beryllium	**1.09E-02**	U			1.81E-02	ug/m3		*0.6*	2/16/10 05:49 p		1656.0	0
								N/A			L	
Lead	**2.60E-01**	U			5.25E-01	ug/m3		*0.49*	2/16/10 05:49 p		1656.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	1/18/2010 5:15:00 PM
Lot-Sample No.:	J0B150463-029	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	295	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047201 DQ				**Work Order:** LVPN71			**Report DB ID:** LVPN71					
Beryllium	**1.04E-02**	U			6.25E-02	ug/m3		*0.17*	2/16/10 05:55 p		480.0	0
								N/A			L	
Lead	**7.20E-01**	U			1.81E+00	ug/m3		*0.4*	2/16/10 05:55 p		480.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	**TestAmerica**	**SDG:**	40988	**Collection Date:**	1/18/2010 10:30:00 AM
Lot-Sample No.:	**J0B150463-030**	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	**296**	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047201 DQ				**Work Order:** LVPN91			**Report DB ID:** LVPN91					
Beryllium	**8.42E-02**				5.00E-02	ug/m3		*(1.7)*	2/16/10 06:10 p		600.0	0
								N/A			L	
Lead	**5.79E-01**	U			1.45E+00	ug/m3		*0.4*	2/16/10 06:10 p		600.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name: TestAmerica | **SDG:** 40988 | **Collection Date:** 1/19/2010 5:00:00 PM

Lot-Sample No.: J0B150463-031 | **Report No. :** 43267 | **Received Date:** 2/15/2010 10:00:00 AM

Client Sample ID: 302 | **COC No. :** | **Matrix:** FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047214 DQ				Work Order: LVPPD1			Report DB ID: LVPPD1					
Beryllium	**7.03E-03**	U			1.56E-02	ug/m3		*0.45*	2/16/10 06:42 p		1920.0	0
								N/A			L	
Lead	**1.88E-01**	U			4.53E-01	ug/m3		*0.41*	2/16/10 06:42 p		1920.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	1/19/2010 5:00:00 PM
Lot-Sample No.:	J0B150463-032	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	303	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047214 DQ				**Work Order:** LVPPE1			**Report DB ID:** LVPPE1					
Beryllium	**9.62E-04**	U			1.92E-02	ug/m3		*0.05*	2/16/10 06:47 p		1560.0	0
								N/A			L	
Lead	**2.08E-01**	U			5.58E-01	ug/m3		*0.37*	2/16/10 06:47 p		1560.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	1/20/2010 5:15:00 PM
Lot-Sample No.:	J0B150463-034	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	305	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047214	DQ			**Work Order:** LVPPH1			**Report DB ID:** LVPPH1					
Beryllium	**2.28E+00**				1.26E-02	ug/m3		*(180.8)*	2/16/10 06:57 p		2380.0	0
								N/A			L	
Lead	**2.03E-01**	U			3.66E-01	ug/m3		*0.56*	2/16/10 06:57 p		2380.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	1/21/2010 5:10:00 PM
Lot-Sample No.:	J0B150463-035	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	310	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047214	DQ			**Work Order:** LVPPJ1			**Report DB ID:** LVPPJ1					
Beryllium	**1.50E+00**				1.26E-02	ug/m3		*(119.1)*	2/16/10 07:13 p		2380.0	0
								N/A			L	
Lead	**6.72E-01**				3.66E-01	ug/m3		*(1.8)*	2/16/10 07:13 p		2380.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	1/23/2010 5:12:00 PM
Lot-Sample No.:	J0B150463-036	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	328	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047214 DQ				**Work Order:** LVPPK1			**Report DB ID:** LVPPK1					
Beryllium	**1.17E-02**	U			1.52E-02	ug/m3		*0.77*	2/16/10 07:18 p		1968.0	0
								N/A			L	
Lead	**2.08E-01**	U			4.42E-01	ug/m3		*0.47*	2/16/10 07:18 p		1968.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	1/23/2010 5:30:00 PM
Lot-Sample No.:	J0B150463-037	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	329	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047214	DQ			**Work Order:**	LVPPM1		**Report DB ID:**	LVPPM1				
Beryllium	**2.96E-02**				1.25E-02	ug/m3		*(2.4)*	2/16/10 07:23 p		2400.0	0
								N/A			L	
Lead	**1.23E-01**	U			3.63E-01	ug/m3		*0.34*	2/16/10 07:23 p		2400.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name: TestAmerica | **SDG:** 40988 | **Collection Date:** 1/25/2010 5:30:00 PM

Lot-Sample No.: J0B150463-038 | **Report No. :** 43267 | **Received Date:** 2/15/2010 10:00:00 AM

Client Sample ID: 332 | **COC No. :** | **Matrix:** FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047214 DQ				**Work Order:** LVPPN1			**Report DB ID:** LVPPN1					
Beryllium	**1.51E-02**				1.29E-02	ug/m3		*(1.2)*	2/16/10 07:29 p		2320.0	0
								N/A			L	
Lead	**1.35E-01**	U			3.75E-01	ug/m3		*0.36*	2/16/10 07:29 p		2320.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name: TestAmerica | **SDG:** 40988 | **Collection Date:** 1/26/2010 5:00:00 PM

Lot-Sample No.: J0B150463-039 | **Report No. :** 43267 | **Received Date:** 2/15/2010 10:00:00 AM

Client Sample ID: 335 | **COC No. :** | **Matrix:** FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047214 DQ				**Work Order:** LVPPP1			**Report DB ID:** LVPPP1					
Beryllium	**1.67E-02**				1.35E-02	ug/m3		*(1.2)*	2/16/10 07:34 p		2220.0	0
								N/A			L	
Lead	**2.05E-01**	U			3.92E-01	ug/m3		*0.52*	2/16/10 07:34 p		2220.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	1/27/2010 5:40:00 PM
Lot-Sample No.:	J0B150463-040	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	344	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047214	DQ			**Work Order:** LVPPQ1			**Report DB ID:** LVPPQ1					
Beryllium	**1.79E+00**				1.23E-02	ug/m3		*(145.7)*	2/16/10 07:39 p		2440.0	0
								N/A			L	
Lead	**3.35E+00**				3.57E-01	ug/m3		*(9.4)*	2/16/10 07:39 p		2440.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	1/26/2010 4:32:00 PM
Lot-Sample No.:	J0B150463-041	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	346	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047214 DQ				**Work Order:** LVPPR1			**Report DB ID:** LVPPR1					
Beryllium	**7.41E-03**	U			1.78E-02	ug/m3		*0.42*	2/16/10 07:44 p		1688.0	0
								N/A			L	
Lead	**2.51E-01**	U			5.15E-01	ug/m3		*0.49*	2/16/10 07:44 p		1688.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	1/28/2010 5:15:00 PM
Lot-Sample No.:	J0B150463-042	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	352	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047214	DQ			**Work Order:** LVPPT1			**Report DB ID:** LVPPT1					
Beryllium	**1.19E+00**				1.28E-02	ug/m3		*(93.)*	2/16/10 07:49 p		2340.0	0
								N/A			L	
Lead	**3.69E+00**				3.72E-01	ug/m3		*(9.9)*	2/16/10 07:49 p		2340.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	1/29/2010 5:10:00 PM
Lot-Sample No.:	J0B150463-043	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	353	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047214	DQ			**Work Order:** LVPPV1			**Report DB ID:** LVPPV1					
Beryllium	**7.95E-01**				1.29E-02	ug/m3		*(61.4)*	2/16/10 07:55 p		2320.0	0
								N/A			L	
Lead	**1.97E+00**				3.75E-01	ug/m3		*(5.2)*	2/16/10 07:55 p		2320.0	0
								N/A			L	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	2/9/2010 5:50:00 PM
Lot-Sample No.:	J0B150463-011	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	BLANK # 1	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047195 DQ				**Work Order:** LVPM91			**Report DB ID:** LVPM91					
Beryllium	**9.00E-03**	U			3.00E-02	ug/sa		*0.3*	2/16/10 03:07 p		1.0	0
								N/A			Sample	
Lead	**2.22E-01**	U			8.70E-01	ug/sa		*0.25*	2/16/10 03:07 p		1.0	0
								N/A			Sample	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	2/9/2010 5:50:00 PM
Lot-Sample No.:	J0B150463-022	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	BLANK 2	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047201 DQ				**Work Order:** LVPNR1			**Report DB ID:** LVPNR1					
Beryllium	**-6.00E-03**	U			3.00E-02	ug/sa		*-0.2*	2/16/10 05:18 p		1.0	0
								N/A			Sample	
Lead	**2.34E-01**	U			8.70E-01	ug/sa		*0.27*	2/16/10 05:18 p		1.0	0
								N/A			Sample	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	2/9/2010 5:50:00 PM
Lot-Sample No.:	J0B150463-033	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	BLANK-3	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047214 DQ				**Work Order:** LVPPF1			**Report DB ID:** LVPPF1					
Beryllium	**-1.00E-03**	U			3.00E-02	ug/sa		*-0.03*	2/16/10 06:52 p		1.0	0
								N/A			Sample	
Lead	**3.00E-01**	U			8.70E-01	ug/sa		*0.34*	2/16/10 06:52 p		1.0	0
								N/A			Sample	

No. of Results: 2 **Comments:**

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 17-Feb-10

Lab Name:	TestAmerica	**SDG:**	40988	**Collection Date:**	2/9/2010 5:50:00 PM
Lot-Sample No.:	J0B150463-044	**Report No. :**	43267	**Received Date:**	2/15/2010 10:00:00 AM
Client Sample ID:	LUCKEY BLANK 4	**COC No. :**		**Matrix:**	FILTER

Luckey FUSRAP - WO# 92002

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047214 DQ				**Work Order:** LVPPW1			**Report DB ID:** LVPPW1					
Beryllium	**-4.50E-03**	U			3.00E-02	ug/sa		*-0.15*	2/16/10 08:00 p		1.0	0
								N/A			Sample	
Lead	**1.96E-01**	U			8.70E-01	ug/sa		*0.22*	2/16/10 08:00 p		1.0	0
								N/A			Sample	

No. of Results: 2 **Comments:**

TestAmerica
rptSTLRchSample
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM II

BLANK RESULTS

Date: 17-Feb-10

Lab Name: TestAmerica

Matrix: FILTER

SDG: 40988

Report No. : 43267

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 0047195	DQ			**Work Order:**	LVQDQ1B		**Report DB ID:**	LVQDQ1B				
Beryllium	3.40E-04	U		0.0E+00	6.00E-04	mg/L		0.57	2/16/10 01:49 p		1.0	0
								N/A			Sample	
Lead	5.14E-03	U		4.6E-04	1.74E-02	mg/L		0.3	2/16/10 01:49 p		1.0	0
								(22.3)			Sample	
Batch: 0047201	DQ			**Work Order:**	LVQD81B		**Report DB ID:**	LVQD81B				
Beryllium	6.10E-04			2.0E-05	6.00E-04	mg/L		(1.)	2/16/10 04:01 p		1.0	0
								(61.)			Sample	
Lead	4.46E-03	U		2.9E-03	1.74E-02	mg/L		0.26	2/16/10 04:16 p		1.0	0
								(3.1)			Sample	
Batch: 0047214	DQ			**Work Order:**	LVQFF1B		**Report DB ID:**	LVQFF1B				
Beryllium	-1.20E-04	U		4.0E-05	6.00E-04	mg/L		-0.2	2/16/10 06:26 p		1.0	0
								-(6.)			Sample	
Lead	5.96E-03	U		7.8E-04	1.74E-02	mg/L		0.34	2/16/10 06:26 p		1.0	0
								(15.3)			Sample	

No. of Results: 6 **Comments:**

TestAmerica
rptSTLRchBlank
V5.2.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM II

LCS RESULTS

Date: 17-Feb-10

Lab Name: TestAmerica

Matrix: FILTER

SDG: 40988

Report No. : 43267

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 0047195	DQ			**Work Order:**	LVQDQ1C		**Report DB ID:**	LVQDQ1C					
Beryllium	1.07E+00			2.2E-02	6.00E-04	mg/L		5.00E+01		2%	2/16/10 01:54 p	1.0	0
							Rec Limits:			-1.0		Sample	
Lead	1.00E+00			1.7E-02	1.74E-02	mg/L		5.00E+01		2%	2/16/10 01:54 p	1.0	0
							Rec Limits:			-1.0		Sample	
Batch: 0047201	DQ			**Work Order:**	LVQD81C		**Report DB ID:**	LVQD81C					
Beryllium	1.01E+00			1.1E-03	6.00E-04	mg/L		5.00E+01		2%	2/16/10 04:26 p	1.0	0
							Rec Limits:			-1.0		Sample	
Lead	9.46E-01			3.2E-03	1.74E-02	mg/L		5.00E+01		2%	2/16/10 04:26 p	1.0	0
							Rec Limits:			-1.0		Sample	
Batch: 0047214	DQ			**Work Order:**	LVQFF1C		**Report DB ID:**	LVQFF1C					
Beryllium	1.06E+00			1.3E-02	6.00E-04	mg/L		5.00E+01		2%	2/16/10 06:31 p	1.0	0
							Rec Limits:			-1.0		Sample	
Lead	9.92E-01			1.5E-02	1.74E-02	mg/L		5.00E+01		2%	2/16/10 06:31 p	1.0	0
							Rec Limits:			-1.0		Sample	

No. of Results: 6 **Comments:**

TestAmerica Bias - (Result/Expected)-1 as defined by ANSI N13.30.

rptSTLRchLcs
V5.2.5 A2002

FORM II

DUPLICATE LCS RESULTS

Date: 17-Feb-10

Lab Name: TestAmerica **SDG:** 40988

Matrix: FILTER **Report No. :** 43267

Parameter	Dup Rst, Orig Rst	Qual	Total Uncert(2 s)	MDC|MDA	Report Unit		Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 0047195 DQ			**Work Order:** LVQDQ1L				**Report DB ID:** LVQDQ1L			**Orig Sa DB ID:** LVQDQ1C			
Beryllium	1.03E+00		9.0E-03	6.00E-04	mg/L			5.00E+01		2%	2/16/10 02:00 p	1.0	0
	1.07E+00		2.2E-02	6.00E-04	**RER2**	**3.6**	**Rec Limits:**			-1.0		Sample	
Lead	9.67E-01		1.6E-02	1.74E-02	mg/L			5.00E+01		2%	2/16/10 02:00 p	1.0	0
	1.00E+00		1.7E-02	1.74E-02	**RER2**	**3.1**	**Rec Limits:**			-1.0		Sample	
Batch: 0047201 DQ			**Work Order:** LVQD81L				**Report DB ID:** LVQD81L			**Orig Sa DB ID:** LVQD81C			
Beryllium	1.02E+00		6.7E-03	6.00E-04	mg/L			5.00E+01		2%	2/16/10 04:31 p	1.0	0
	1.01E+00		1.1E-03	6.00E-04	**RER2**	**3.0**	**Rec Limits:**			-1.0		Sample	
Lead	9.54E-01		8.2E-03	1.74E-02	mg/L			5.00E+01		2%	2/16/10 04:31 p	1.0	0
	9.46E-01		3.2E-03	1.74E-02	**RER2**	**1.9**	**Rec Limits:**			-1.0		Sample	
Batch: 0047214 DQ			**Work Order:** LVQFF1L				**Report DB ID:** LVQFF1L			**Orig Sa DB ID:** LVQFF1C			
Beryllium	1.02E+00		2.8E-03	6.00E-04	mg/L			5.00E+01		2%	2/16/10 06:36 p	1.0	0
	1.06E+00		1.3E-02	6.00E-04	**RER2**	**7.0**	**Rec Limits:**			-1.0		Sample	
Lead	9.58E-01		5.8E-03	1.74E-02	mg/L			5.00E+01		2%	2/16/10 06:36 p	1.0	0
	9.92E-01		1.5E-02	1.74E-02	**RER2**	**4.3**	**Rec Limits:**			-1.0		Sample	

No. of Results: 6 **Comments:**

TestAmerica **Bias** - (Result/Expected)-1 as defined by ANSI N13.30. **RER2** - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

rptSTLRchLcs
V5.2.5 A2002

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Darin McEleney QA Contact Phone: 716 572-1287

Work Order #: 92002 Sample Program: —

Samplers: Darin McEleney

Page 1 of 5

84707
JOB150463
SDG40988
Due - 2/17/10

Parameters for Analysis

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Beryllium	Lead							Comments
12/16/09	1520	Luckey-BZA-41	N/A	DM	1	X	X			LVPLM				Sample # 153
12/15/09	1558	Luckey-BZA-42		SH	1	X	X			LVPMP				160
12/21/09	1346	Luckey-BZA-43		SH	1	X	X			LVPMQ				189
12/29/09	1805	Luckey-BZA-43		DM	1	X	X			LVPMV				202
12/30/09	1730	Luckey-BZA-44		DM	1	X	X			LVPMW				204
12/31/09	1720	Luckey-BZA-45		BR	1	X	X			LVPM2				209
1/1/10	1440	Luckey-BZA-46		DG	1	X	X			LVPM4				210
1/3/10	1700	Luckey-BZA-47		JD	1	X	X			LVPM5				212
1/6/10	1700	Luckey-BZA-48		SH	1	X	X			LVPM6				226
1/7/10	1707	Luckey-BZA-49		DLR	1	X	X			LVPM7				231

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				Test America Other:

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Darin McEleney QA Contact Phone: (716) 572-1297

Work Order #: 92002 Sample Program: —

Samplers: Darin McEleney

Page 2 of 5

JOB 150463
SDG 40988
DUE 2.17.10

Parameters for Analysis

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Beryllium	Lead						Comments
2/9/10	1750	Luckey-Blank-1	N/A	DLR	1	X	X		LVPM9				Sample # Blank 1 ~~232~~
1/7/10	1750	Luckey-BZA-50		DLR	1	X	X		LVPND				232 ~~243~~
1/8/10	1540	Luckey-BZA-51		DLR	1	X	X		LVPNF				243 ~~244~~
1/8/10	1655	Luckey-BZA-52		DLR	1	X	X		LVPNG				244 ~~245~~
1/9/10	1703	Luckey-BZA-53		DLR	1	X	X		LVPNH				245 ~~250~~
1/10/10	1730	Luckey-BZA-54		DLR	1	X	X		LVPNJ				250 ~~251~~
1/11/10	1653	Luckey-BZA-55		DLR	1	X	X		LVPNK				251 ~~262~~
1/12/10	1747	Luckey-BZA-56		DLR	1	X	X		LVPNL				262 ~~263~~
1/12/10	1806	Luckey-BZA-57		DLR	1	X	X		LVPNM				263 ~~268~~
1/13/10	1725	Luckey-BZA-58		JK	1	X	X		LVPNN				268 ~~273~~

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[redacted]	2/11/10 1200	[redacted]	2/15/10 @10	PRISM APPL Test America Other:

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Darin McEleney QA Contact Phone: 716 572-1297

Work Order #: 92002 Sample Program: ——

Samplers: Darin McEleney

JOB150463

Page 3 of 5

JOB150463
SDG 40988
Due 2/17/10

Parameters for Analysis

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Beryllium	Lead						Comments
1/14/10	1700	Luckey-BZA-59	N/A	DM	1	X	X		L	V	P	N	Sample # 273
2/9/10	1750	Luckey-Blank-2		DM	1	X	X		L	V	P	N	Blank 2
1/14/10	1720	Luckey-BZA-60		DM	1	X	X		L	V	P	N	274
1/15/10	1650	Luckey-BZA-61		KN	1	X	X		L	V	P	N	279
1/15/10	1730	Luckey-BZA-62		DM	1	X	X		L	V	P	N	281
1/16/10	1630	Luckey-BZA-63		KN	1	X	X		L	V	P	N	282
1/16/10	1725	Luckey-BZA-64		DM	1	X	X		L	V	P	N	287
1/17/10	1530	Luckey-BZA-65		SB	1	X	X		L	V	P	N	288
1/18/10	1715	Luckey-BZA-66		DM	1	X	X		L	V	P	N	295
1/18/10	1030	Luckey-BZA-67		DAG	1	X	X		L	V	P	N	296

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[redacted]	2/11/10/1200	[redacted]	2/15/10@10AM	PRISM APPL
				Test America Other:

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Darin McEleney QA Contact Phone: 716 572-1297

Work Order #: 92002 Sample Program: —

Samplers: Darin McEleney

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JOB150463
UDG40988
Dell-2.17.10

Parameters for Analysis

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Beryllium	Lead							Comments
1/19/10	1700	Luckey - BZA-68	N/A	DM	1	X	X		L	V	P	P	D	Sample # 302
1/19/10	1700	Luckey - BZA-69		CB	1	X	X		L	V	P	P	E	303
2/9/10	1750	Luckey - Blank-3		DM	1	X	X		L	V	P	P	F	Blank-3
1/20/10	1715	Luckey - BZA-70		CB	1	X	X		L	V	P	P	H	305
1/21/10	1710	Luckey - BZA-71		DAG	1	X	X		L	V	P	P	J	310
1/23/10	1712	Luckey - BZA-72		MC	1	X	X		L	V	P	P	K	328
1/23/10	1730	Luckey - BZA-73		CB	1	X	X		L	V	P	P	M	329
1/25/10	1730	Luckey - BZA-74		DAG	1	X	X		L	V	P	P	N	332
1/26/10	1700	Luckey - BZA-75		CB	1	X	X		L	V	P	P	P	335
1/27/10	1740	Luckey - BZA-76		CB	1	X	X		L	V	P	P	Q	344

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[redacted]	2/11/10/1200	[redacted]	2/15/10 @10AM	PRISM APPL
				Test America Other:

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Darin McElney QA Contact Phone: 716 572 1297

Work Order #: 92002 Sample Program: —

Samplers: Darin McElney

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JOB150463
SDG40988
DUE 2/17/10

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers								Comments
1/26/10	1632	Luckey-BZA-77	N/A	DAG	1	X	X		LVPPR				Sample # 346
1/28/10	1715	Luckey-BZA-78		DM	1	X	X		LVPPT				352
1/29/10	1710	Luckey-BZA-79		CB	1	X	X		LVPPV				353
2/9/10	1750	Luckey-Blank 4		DM	1	X	X		LVPPW				Luckey Blank 4

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:	Shipped To (circle one):
[redacted]	2/11/10 1200	[redacted]	2/15/10 @ 10am	PRISM APPL
				Test America Other:

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Sample Check-in List

Date/Time Received: 2.15.10@ 10AM GM Screen Results (out) 2 (in) 3 Initials [✓]

Client: LUCKey (USACE) SDG #: 40988 NA [ ] SAF #: _____ NA [ ]

Work Order Number: J0B150463 Chain of Custody # _____

Shipping Container ID: _____ NA [✓] Air Bill # 1Z635AV1231000 2861 NA [ ]

Item 1 through 5 for shipping container only. Initial appropriate response.

1. Custody Seals on shipping container intact? Yes [ ] No [ ] No Custody Seal [✓]
2. Custody Seals dated and signed? Yes [ ] No [ ] No Custody Seal [✓]
3. Chain of Custody record present? Yes [✓] No [ ]
4. Cooler temperature: _____ NA [✓] 5. Vermiculite/packing materials is NA [✓] Wet [ ] Dry [ ]

Item 6 through 10 for samples. Initial appropriate response.

6. Number of samples in shipping container (Each sample may contain multiple bottles): 44 (40) (4 Blanks)
7. Sample holding times exceeded? NA [ ] Yes [ ] No [✓]
8. Samples have:
   - ✓ tape
   - ____ custody seals
   - ✓ hazard labels
   - ✓ appropriate sample labels
9. Samples are:
   - ✓ in good condition
   - ____ broken
   - ____ leaking
   - ____ have air bubbles (Only for samples requiring head space)

   Filters (wipes) AG 2/15/10
10. Sample pH taken? NA [✓] pH<2 [ ] pH>2 [ ] pH>9 [ ] Amount of HNO3 Added _____
11. Sample Location, Sample Collector Listed? * Yes [✓] No [ ]
    *For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes [ ] No [✓]
13. Description of anomalies (include sample numbers): NA [ ]

    Logged Samples in as Sample ID # in Right Column.

see other side for additional comments

Sample Custod[redacted] Date: 2.15.10@10AM

Client Informed on _____ by _____ Person contacted _____

[X] No action n[redacted]

Project Manager[redacted] Date 2/16/10

LS-023, Rev. 10, 10/09

Sample #	Sample Date	Sample Type (Env or BZA)	Air Sample Results			
			Alpha (µC/ml)	Beta (µC/ml)	Beryllium (µg/m^3)	Lead (µg/m^3)
1	10/23/2009	Baseline - Env	<5.93E-15	<1.09E-13	*1.89E-4	
2	10/27/2009	Baseline - Env	<4.38E-15	<1.36E-13	*3.30E-4	
3	10/29/2009	Baseline - Env	5.64E-15	<6.80E-14	*1.74E-4	
4	10/29/2009	Baseline - Env	6.08E-15	<7.07E-14	*1.63E-4	
5	10/30/2009	Baseline - Env	<7.41e-15	<1.39E-13	*2.05E-4	
6	10/30/2009	Baseline - Env	5.17E-15	<1.32E-13	*1.78E-4	
7	11/3/2009	Baseline - Env	<9.45E-15	<1.47E-13	*1.23E-4	
8	11/3/2009	Baseline - Env	<8.77E-15	<1.29E-13		
9	11/3/2009	Baseline - Env	<2.89E-14	<3.29E-13	*2.29E-4	
10	11/3/2009	Baseline - Env	<2.48E-14	<3.67E-13		
11	11/4/2009	Baseline - Env	<1.37E-14	<2.04E-13	*2.73E-4	
12	11/4/2009	Baseline - Env	<1.02E-14	<2.01E-13		
13	11/5/2009	Baseline - Env	<9.04E-15	<1.15E-13	*3.80E-4	
14	11/5/2009	Baseline - Env	8.36E-15	<1.10E-13		
15	11/6/2009	Baseline - Env	2.03E-14	<1.18E-13		
16	11/6/2009	Baseline - Env	1.93E-14	<1.16E-13		
17	11/9/2009	Baseline - Env	<3.26E-15	9.23E-14		
18	11/9/2009	Baseline - Env	3.84E-15	<7.19E-14		
19	11/10/2009	Baseline - Env	<9.23E-15	<2.06E-13		
20	11/10/2009	Baseline - Env	7.25E-15	<2.04E-13		
21	11/11/2009	Baseline - Env	<9.23E-15	<2.06E-13		
22	11/11/2009	Baseline - Env	<6.37E-15	<1.88E-13		
23	11/12/2009	Baseline - Env	<8.52E-15	<1.90E-13		
24	11/12/2009	Baseline - Env	<6.37E-15	<1.88E-13		
25	11/13/2009	Baseline - Env	<9.60E-15	<1.49E-13		
26	11/13/2009	Baseline - Env	<9.60E-15	<1.49E-13		
27	11/16/2009	Baseline - Env	<2.99E-15	<6.67E-14		
28	11/16/2009	Baseline - Env	2.94E-15	<6.60E-14		
29	11/16/2009	Baseline - Env	<8.52E-15	<1.90E-13		
30	11/17/2009	Baseline - Env	<7.35E-15	<1.66E-13		
31	11/17/2009	Baseline - Env	No Valid Sample			
32	11/18/2009	Environmental	2.32E-14	<1.37E-13		
33	11/19/2009	Environmental	<9.15E-15	<1.37E-13		
34	11/19/2009	Environmental	<1.42E-14	<2.34E-13		
35	11/19/2009	Environmental	<2.82E-14	<6.31E-13		
35A	11/19/2009	Environmental	<2.26E-14	<3.34E-13	*3.87E-3	

Sample #	Sample Date	Sample Type (Env or BZA)	Air Sample Results			
			Alpha (µC/ml)	Beta (µC/ml)	Beryllium (µg/m^3)	Lead (µg/m^3)
36	11/20/2009	BZA	<7.35E-13	<1.11E-11		
37	11/20/2009	Environmental	<2.28E-14	<3.47E-13		
38	11/20/2009	Environmental	<2.28E-14	<3.47E-13	*3.00E-4	
39	11/20/2009	Environmental	<2.26E-14	<2.57E-13	*2.70E-4	
40	11/20/2009	BZA	<4.14E-13	<8.15E-12		
41	11/20/2009	BZA	<5.28E-13	<7.83E-12		
42	11/20/2009	Environmental	4.56E-14	<2.92E-13	*3.93E-4	
43	11/21/2009	Environmental	<1.84E-14	<5.56E-13	*2.06E-3	
44	11/21/2009	Environmental	1.91E-14	<3.35E-13	*1.29E-3	
45	11/21/2009	Environmental	1.55E-14	<2.71E-13	*5.81E-4	
46	11/21/2009	BZA	<5.06E-13	<5.76E-12		
47	11/21/2009	BZA	<5.54E-13	<8.17E-12		
48	11/23/2009	BZA	4.74E-13	<8.70E-12		
49	11/23/2009	BZA	6.90E-13	<9.82E-12		
50	11/23/2009	Environmental	<1.18E-14	<3.55E-13	*5.29E-4	
51	11/23/2009	Environmental	1.71E-14	<3.00E-13		
52	11/23/2009	Environmental	2.68E-14	<3.17E-13		
53	11/23/2009	Environmental	<1.45E-14	<4.39E-13		
54	11/24/2009	Environmental	<9.87E-15	<2.98E-13	*5.39E-4	
55	11/24/2009	Environmental	1.47E-14	2.99E-13	*1.31E-3	
56	11/24/2009	Environmental	<1.04E-14	<3.15E-13	*4.16E-4	
57	11/24/2009	Environmental	<1.04E-14	<3.15E-13	*2.12E-3	
58	11/24/2009	BZA	<4.74E-13	<8.18E-12	<1.72E-2	<4.99E-1
59	12/1/2009	BZA	<2.59E-13	<7.57E-12		
60	12/1/2009	BZA	<2.21E-13	<6.68E-12		
61	12/1/2009	BZA	<5.72E-13	<1.06E-11	<2.02E-2	<5.86E-1
62	12/1/2009	BZA	5.80E-13	<8.13E-12	3.16E-2	<4.91E-1
63	12/1/2009	Environmental	2.96E-14	<2.48E-13		
64	12/1/2009	Environmental	<1.76E-14	<2.70E-13		
65	12/1/2009	Environmental	<8.79E-15	<2.58E-13		
66	12/1/2009	Environmental	<2.09E-14	<3.52E-13		
67	12/1/2009	BZA	<3.08E-13	<8.99E-12	<1.95E-2	<5.65E-1
68	12/2/2009	BZA	<1.49E-13	<4.51E-12		
69	12/2/2009	BZA	<2.90E-13	<8.46E-12		
70	12/2/2009	BZA	<5.05E-13	<9.38E-12	<1.75E-2	<5.09E-1
71	12/2/2009	BZA	<5.47E-13	<8.13E-12	<1.71E-2	<4.96E-1

Sample #	Sample Date	Sample Type (Env or BZA)	Air Sample Results			
			Alpha (µC/ml)	Beta (µC/ml)	Beryllium (µg/m^3)	Lead (µg/m^3)
72	12/2/2009	Environmental	<9.12E-15	<2.66E-13		
73	12/2/2009	Environmental	<1.04E-14	<3.15E-13		
74	12/2/2009	Environmental	1.27E-14	<3.06E-13		
75	12/2/2009	Environmental	1.37E-14	<3.41E-13		
76	12/2/2009	BZA	<1.30E-13	<3.79E-12	<1.28E-2	<3.72E-1
77	12/3/2009	BZA	<3.25E-13	<9.82E-12		
78	12/3/2009	BZA	<5.79E-13	<8.61E-12	<3.23E-2	<9.35E-1
79	12/3/2009	Environmental	<1.18E-14	<3.55E-13		
80	12/3/2009	Environmental	<9.84E-15	3.19E-13		
81	12/3/2009	Environmental	<1.83E-14	<3.83E-13		
82	12/3/2009	Environmental	<1.27E-14	<2.73E-13		
83	12/3/2009	BZA	<3.58E-13	<6.65E-12	<1.25E-2	<3.64E-1
84	12/4/2009	Environmental	2.39E-14	<3.00E-13		
85	12/4/2009	Environmental	<2.09E-14	<3.06E-13		
86	12/4/2009	Environmental	<1.42E-14	<3.05E-13		
87	12/4/2009	Environmental	<1.92E-14	<3.24E-13		
88	12/4/2009	BZA	<6.19E-13	<1.06E-11	<1.96E-2	<5.69E-1
89	12/4/2009	BZA	<3.71E-13	<6.70E-12	1.34E-2	3.85E+0
90	12/4/2009	BZA	<4.49E-13	<8.11E-12	<1.56E-2	<4.53E-1
91	12/5/2009	BZA	<9.67E-13	<2.08E-11		
92	12/5/2009	Environmental	<2.53E-14	<4.26E-13		
93	12/5/2009	Environmental	<2.52E-14	<3.88E-13		
94	12/5/2009	Environmental	No Valid Sample			
95	12/5/2009	Environmental	No Valid Sample			
96	12/5/2009	BZA	<1.01E-12	<1.37E-11	<2.50E-2	<7.25E-1
97	12/6/2009	BZA	**1.07E-13	**<2.16E-13	9.79E-2	<1.24E+0
98	12/6/2009	BZA	4.71E-12	<1.49E-11	5.16E-2	<7.88E-1
99	12/6/2009	BZA	**6.27E-14	**<2.98E-13	<4.17E-2	<1.21E+0
100	12/6/2009	BZA	**9.86E-14	**<2.56E-13	**3.34E-3	<1.35E+0
101	12/6/2009	Environmental	4.25E-14	<6.10E-13		
102	12/6/2009	Environmental	<1.85E-14	<5.85E-13		
103	12/6/2009	Environmental	<2.97E-14	<9.40E-13		
104	12/6/2009	Environmental	<1.86E-14	<5.88E-13		
105	12/7/2009	BZA	1.58E-12	<7.97E-12	1.78E-1	5.89E-1
106	12/7/2009	BZA	1.03E-12	<6.97E-12	<1.46E-2	<4.22E-1
107	12/7/2009	BZA	6.15E-13	<7.25E-12	<1.39E-2	<4.03E-1

Sample #	Sample Date	Sample Type (Env or BZA)	Air Sample Results			
			Alpha (µC/ml)	Beta (µC/ml)	Beryllium (µg/m^3)	Lead (µg/m^3)
108	12/7/2009	Environmental	<2.09E-14	<3.11E-13		
109	12/7/2009	Environmental	<1.86E-14	<2.86E-13		
110	12/7/2009	Environmental	<2.25E-14	<3.36E-13		
111	12/7/2009	Environmental	<1.93E-14	<2.97E-13		
112	12/8/2009	BZA	9.66E-13	<7.88E-12	1.40E-1	4.77E-1
113	12/8/2009	BZA	<5.01E-13	<9.55E-12	<1.81E-2	<5.24E-1
114	12/8/2009	BZA	<4.47E-13	<6.88E-12		
115	12/8/2009	BZA	6.15E-13	<7.52E-12	1.57E-02	<3.95E-1
116	12/8/2009	Environmental	2.10E-14	<3.37E-13		
117	12/8/2009	Environmental	2.44E-14	<2.91E-13		
118	12/8/2009	Environmental	<2.67E-14	<3.98E-13		
119	12/8/2009	Environmental	<2.09E-14	<3.22E-13		
120	12/9/2009	BZA	<1.20E-14	<1.78E-13		
121	12/9/2009	BZA	<1.03E-12	<1.58E-11		
122	12/9/2009	BZA	<8.95E-13	<1.38E-11		
123	12/9/2009	Environmental	<2.44E-16	<4.64E-15		
124	12/9/2009	Environmental	<2.49E-14	<5.34E-13		
125	12/9/2009	BZA	<4.67E-13	<6.17E-12	<1.16E-2	<3.37E-1
126	12/10/2009	BZA	<8.20E-13	<1.22E-11		
127	12/10/2009	BZA	<1.01E-12	<1.34E-11	<2.55E-2	<7.40E-1
128	12/10/2009	BZA	<1.01E-12	<1.34E-11	<2.55E-2	<7.40E-1
129	12/15/2009	BZA	<6.82E-13	<2.24E-11	<3.71E-2	<1.08E+0
130	12/14/2009	BZA	6.76E-13	<8.44E-12		
131	12/5/2009	Environmental	<1.93E-14	<2.97E-13		
132	12/14/2009	BZA	<6.74E-13	<9.38E-12		
133	12/14/2009	Environmental	<2.08E-14	<3.59E-13	*-4.90E-5	
134	12/14/2009	Environmental	1.87E-14	<2.70E-13	*8.71E-4	
135	12/14/2009	Environmental	<2.44E-14	<3.64E-13	*1.11E-4	
136	12/14/2009	BZA	<6.07E-13	<8.44E-12		
137	12/14/2009	BZA	<2.05E-13	<7.02E-12	<1.50E-2	<4.36E-1
138	12/13/2009	BZA	<1.18E-12	<2.28E-11	<4.17E-2	<1.21E+0
139	12/11/2009	Environmental	<2.34E-14	<3.63E-13		
140	12/10/2009	Environmental	<2.64E-14	<3.67E-13		
141	12/11/2009	Environmental	2.62E-14	<4.04E-13		
142	12/11/2009	Environmental	<2.40E-14	<4.05E-13		
143	12/11/2009	Environmental	<1.98E-14	<3.42E-13		

Sample #	Sample Date	Sample Type (Env or BZA)	Air Sample Results			
			Alpha (µC/ml)	Beta (µC/ml)	Beryllium (µg/m^3)	Lead (µg/m^3)
144	12/11/2009	BZA	<5.01E-13	<8.66E-12		
145	12/11/2009	BZA	<6.03E-13	<9.75E-12		
146	12/11/2009	BZA	<1.06E-12	<1.16E-11		
147	12/15/2009	Environmental	<2.09E-14	<3.22E-13	*8.31E-4	
148	12/10/2009	BZA	<9.17E-13	<1.35E-11	<2.59E-2	<7.50E-1
149	12/11/2009	BZA	<6.74E-13	<9.38E-12	<1.84E-2	<5.34E-1
150	12/10/2009	Environmental	<5.22E-13	<7.78E-12		
151	12/10/2009	Environmental	<2.14E-14	<3.29E-13		
152	12/10/2009	Environmental	<2.55E-14	<3.80E-13		
153	12/16/2009	BZA	<8.95E-13	<1.38E-11	8.19E-2	<8.24E-1
154	12/16/2009	Environmental	<2.73E-14	<3.98E-13		
155	12/16/2009	Environmental	<2.67E-14	<3.89E-13		
156	12/16/2009	Environmental	<2.04E-14	<3.44E-13		
157	12/16/2009	Environmental	<1.62E-14	<3.48E-13		
158	12/15/2009	Environmental	1.30E-14	<3.13E-13		
159	12/15/2009	Environmental	<1.88E-14	<3.17E-13		
160	12/15/2009	BZA	<4.06E-13	<7.02E-12	3.89E-2	<4.20E-1
161	12/15/2009	BZA	<5.33E-13	<9.21E-12		
162	12/15/2009	Environmental	<1.26E-14	<3.79E-13		
163	12/15/2009	Environmental	<1.89E-14	<3.26E-13		
164	12/15/2009	BZA	<4.95E-13	<8.25E-12		
165	12/17/2009	Environmental	<2.19E-14	<3.76E-13		
166	12/17/2009	Environmental	<1.94E-14	<3.34E-13		
167	12/17/2009	Environmental	2.34E-14	<4.36E-13		
168	12/17/2009	BZA	<3.16E-13	<6.82E-12		
169	12/18/2009	BZA	<2.94E-12	<5.06E-11		
170	12/18/2009	Environmental	<1.67E-14	<3.34E-13		
171	12/18/2009	Environmental	<1.78E-14	<3.57E-13		
172	12/18/2009	Environmental	<2.61E-14	<3.83E-13		
173	12/18/2009	Environmental	2.74E-14	<5.28E-13		
174	12/17/2009	BZA	<4.06E-13	<6.98E-12		
175	12/19/2009	Environmental	<2.12E-14	<4.25E-13		
176	12/19/2009	Environmental	<2.30E-14	<3.96E-13		
177	12/19/2009	Environmental	<2.06E-14	<4.21E-13		
178	12/19/2009	Environmental	<1.91E-14	<3.90E-13		
179	12/19/2009	BZA	<4.06E-13	<6.98E-12		

Sample #	Sample Date	Sample Type (Env or BZA)	Air Sample Results			
			Alpha (µC/ml)	Beta (µC/ml)	Beryllium (µg/m^3)	Lead (µg/m^3)
180	12/19/2009	BZA	<4.13E-13	<8.42E-12		
181	12/20/2009	BZA	1.66E-12	<1.17E-11		
182	12/21/2009	BZA	<3.27E-13	<6.66E-12		
183	12/21/2009	Environmental	<1.81E-14	<3.12E-13		
184	12/21/2009	Environmental	<1.89E-14	<3.26E-13		
185	12/21/2009	Environmental	<1.71E-14	<3.48E-13		
186	12/21/2009	Environmental	<1.82E-14	<3.72E-13		
187	12/21/2009	BZA	<1.55E-13	<3.32E-12		
188	12/21/2009	BZA	<1.18E-12	<2.04E-11		
189	12/21/2009	BZA	<6.56E-13	<1.13E-11	7.53E-2	<6.75E-1
190	12/22/2009	Environmental	<1.81E-14	<3.12E-13		
191	12/22/2009	Environmental	<1.82E-14	<3.72E-13		
192	12/22/2009	Environmental	<1.78E-14	<3.63E-13		
193	12/22/2009	Environmental	<1.98E-14	<3.41E-13		
194	12/22/2009	BZA	<3.55E-13	<6.11E-12		
195	12/23/2009	BZA	<3.55E-13	<6.11E-12		
196	12/28/2009	Environmental	<2.47E-14	<3.76E-13		
197	12/28/2009	Environmental	2.47E-14	<3.76E-13		
198	12/28/2009	Environmental	<1.48E-14	<3.11E-13		
199	12/28/2009	Environmental	<1.21E-14	<3.41E-13		
200	12/28/2009	BZA	<3.95E-13	<6.37E-12		
201	12/29/2009	BZA	<4.26E-13	<7.34E-12		
202	12/29/2009	BZA	<3.92E-13	<7.85E-12	<1.02E-2	<4.39E-1
203	12/30/2009	BZA	1.18E-12	<7.27E-12		
204	12/30/2009	BZA	9.59E-13	<6.98E-12	<1.42E-2	<4.10E-1
205	12/30/2009	Environmental	<1.34E-14	<2.81E-13		
206	12/30/2009	Environmental	1.68E-14	<2.85E-13		
207	12/30/2009	Environmental	<1.29E-14	<2.70E-13		
208	12/30/2009	Environmental	1.20E-14	<2.80E-13		
209	12/31/2009	BZA	4.41E-13	<6.64E-12	<1.35E-2	<3.93E-1
210	1/1/2010	BZA	4.80E-13	<1.12E-11	<2.08E-2	<6.04E-1
211	No Valid Sample					
212	1/3/2010	BZA	<8.53E-13	<1.33E-11	<2.29E-2	6.69E-1
213	1/2/2010	Environmental	<2.04E-14	<3.11E-13		
214	1/2/2010	Environmental	2.52E-14	<3.78E-13		
215	1/2/2010	Environmental	<2.44E-14	<3.50E-13		

Sample #	Sample Date	Sample Type (Env or BZA)	Air Sample Results			
			Alpha (µC/ml)	Beta (µC/ml)	Beryllium (µg/m^3)	Lead (µg/m^3)
216	1/2/2010	Environmental	<2.27E-14	<3.61E-13		
217	1/2/2010	BZA	<3.74E-13	<7.58E-12		
218	1/3/2010	BZA	<3.55E-13	<1.10E-11		
219	1/4/2010	Environmental	<9.16E-15	<2.83E-13		
220	1/4/2010	Environmental	1.74E-14	5.40E-13		
221	1/4/2010	Environmental	<2.51E-14	<4.82E-13		
222	1/4/2010	Environmental	<2.36E-14	<3.38E-13		
223	1/5/2010	Environmental	<1.15E-14	<3.70E-13		
224	1/5/2010	Environmental	<1.19E-14	<3.35E-13		
225	1/5/2010	Environmental	<1.10E-14	<3.41E-13		
226	1/6/2010	BZA	<2.84E-13	<8.77E-12	<1.75E-2	<5.07E-1
227	1/6/2010	Environmental	<1.17E-14	4.02E-13		
228	1/6/2010	Environmental	<1.68E-14	<3.42E-13		
229	1/6/2010	Environmental	<1.06E-14	<3.29E-13		
230	1/6/2010	Environmental	1.43E-14	<3.48E-13		
231	1/7/2010	BZA	<4.13E-13	<8.39E-12	<1.58E-2	<4.59E-1
232	1/7/2010	BZA	<2.92E-13	<8.22E-12	**2.68E-3	7.45E-1
233	1/7/2010	Environmental	<9.19E-15	<2.85E-13	*1.04E-3	
234	1/7/2010	Environmental	1.22E-14	<2.83E-13	*1.74E-3	
235	1/7/2010	Environmental	1.12E-14	<2.86E-13	*6.67E-4	
236	1/7/2010	BZA	<2.37E-13	<6.69E-12		
237	1/7/2010	Environmental	<8.62E-15	<2.67E-13	*3.37E-4	
238	1/8/2010	Environmental	<1.51E-14	<4.34E-13		
239	1/8/2010	Environmental	1.67E-14	<4.26E-13		
240	1/8/2010	Environmental	<1.20E-14	<3.73E-13		
241	1/8/2010	BZA	<3.10E-13	<9.82E-12		
242	1/8/2010	Environmental	2.48E-14	<4.21E-13		
243	1/8/2010	BZA	<6.16E-13	<1.74E-11	1.57E-1	7.45E-1
244	1/8/2010	BZA	4.62E-13	<8.18E-12	<1.49E-2	<4.31E-1
245	1/8/2010	BZA	<4.36E-13	<8.73E-12	1.86E-2	<4.97E-1
246	1/10/2010	Environmental	<2.40E-14	<4.87E-13		
247	1/10/2010	Environmental	<2.38E-14	<4.72E-13		
248	1/10/2010	Environmental	2.64E-14	<5.00E-13		
249	1/10/2010	Environmental	<1.80E-14	<5.71E-13		
250	1/10/2010	BZA	<6.97E-13	<9.64E-12	<1.79E-2	<5.18E-1
251	1/11/2010	BZA	<2.77E-13	<8.04E-12	<1.51E-2	<4.39E-1

Sample #	Sample Date	Sample Type (Env or BZA)	Air Sample Results			
			Alpha (µC/ml)	Beta (µC/ml)	Beryllium (µg/m^3)	Lead (µg/m^3)
252	1/11/2010	Environmental	<2.04E-14	<3.18E-13		
253	1/11/2010	Environmental	<1.81E-14	<3.60E-13		
254	1/11/2010	Environmental	<1.53E-14	3.93E-13		
255	1/11/2010	Environmental	<2.17E-14	<3.38E-13		
256	1/11/2010	BZA	<2.13E-13	<6.61E-12		
257	1/12/2010	Environmental	<1.85E-14	<3.66E-13		
258	1/12/2010	Environmental	<1.74E-14	<3.54E-13		
259	1/12/2010	Environmental	<2.26E-14	<3.52E-13		
260	1/12/2010	Environmental	<2.33E-14	<4.73E-13		
261	1/12/2010	BZA	3.24E-13	<6.12E-12		
262	1/12/2010	BZA	<4.44E-13	<6.92E-12	<1.32E-2	<3.82E-1
263	1/13/2010	BZA	<4.44E-13	<6.82E-12	<1.30E-2	<3.78E-1
264	1/13/2010	Environmental	<1.43E-14	<2.91E-13		
265	1/13/2010	Environmental	<2.06E-14	<3.20E-13		
266	1/13/2010	Environmental	<1.69E-14	<3.35E-13		
267	1/13/2010	Environmental	<1.13E-14	<3.64E-13		
268	1/13/2010	BZA	<4.86E-13	<7.57E-12	<1.40E-2	<4.07E-1
269	1/14/2010	Environmental	<2.41E-14	<3.67E-13		
270	1/14/2010	Environmental	1.39E-14	<3.69E-13		
271	1/14/2010	Environmental	1.40E-14	<3.71E-13		
272	1/14/2010	Environmental	<2.44E-14	<3.72E-13		
273	1/14/2010	BZA	<2.77E-13	<8.04E-12	<1.53E-2	<4.44E-1
274	1/14/2010	BZA	<4.44E-13	<6.92E-12	<1.30E-2	<3.78E-1
275	1/15/2010	Environmental	<2.07E-14	4.22E-13		
276	1/15/2010	Environmental	<2.59E-14	<3.45E-13		
277	1/15/2010	Environmental	<2.57E-14	<3.42E-13		
278	1/15/2010	Environmental	<2.01E-14	<3.19E-13		
279	1/15/2010	BZA	5.35E-13	<7.31E-12	<1.39E-2	<4.04E-1
280	1/16/2010	BZA	<3.25E-13	<5.06E-12		
281	1/15/2010	BZA	<5.15E-13	<7.13E-12	<1.28E-2	<3.72E-1
282	1/16/2010	BZA	<5.70E-13	<9.04E-12	<1.66E-2	<4.81E-1
283	1/16/2010	Environmental	<2.43E-14	<3.23E-13		
284	1/16/2010	Environmental	<1.92E-14	<3.05E-13		
285	1/16/2010	Environmental	1.35E-14	<3.39E-13		
286	1/16/2010	Environmental	<2.33E-14	<3.07E-13		
287	1/16/2010	BZA	<6.13E-13	<8.07E-12	6.00E-2	<4.19E-1

Sample #	Sample Date	Sample Type (Env or BZA)	Air Sample Results			
			Alpha (µC/ml)	Beta (µC/ml)	Beryllium (µg/m^3)	Lead (µg/m^3)
288	1/17/2010	BZA	3.96E-13	<9.24E-12	<1.81E-2	<5.25E-1
289	1/18/2010	BZA	<8.85E-13	<1.58E-11		
290	1/17/2010	Environmental	<1.55E-14	<4.63E-13		
291	1/17/2010	Environmental	<1.52E-14	<4.80E-13		
292	1/17/2010	Environmental	<1.46E-14	<4.38E-13		
293	1/17/2010	Environmental	<1.61E-14	<4.82E-13		
294	1/18/2010	BZA	<8.85E-13	<9.02E-12		
295	1/18/2010	BZA	<1.23E-12	<3.69E-11	<6.25E-2	<1.81E+0
296	1/18/2010	BZA	<2.15E-12	<2.83E-11	8.42E-2	<1.45E+0
297	1/19/2010	BZA	<1.32E-12	<2.46E-11		
298	1/19/2010	Environmental	<2.84E-14	<3.73E-13		
299	1/19/2010	Environmental	<1.06E-14	<3.19E-13		
300	1/19/2010	Environmental	<1.84E-14	<4.05E-13		
301	1/19/2010	Environmental	<2.20E-14	<4.10E-13		
302	1/19/2010	BZA	<7.00E-13	<9.35E-12	<1.56E-2	<4.53E-1
303	1/19/2010	BZA	4.49E-13	<1.11E-11	<1.92E-2	<5.58E-1
304	1/20/2010	BZA	<1.42E-13	<4.22E-12		
305	1/20/2010	BZA	6.55E-13	<7.76E-12	**2.28E-2	<3.66E-1
306	1/20/2010	Environmental	<2.22E-14	<4.14E-13		
307	1/20/2010	Environmental	<2.98E-14	<4.21E-13		
308	1/20/2010	Environmental	<2.24E-14	<4.18E-13		
309	1/20/2010	Environmental	<2.49E-14	<3.32E-13		
310	1/21/2010	BZA	1.09E-12	<7.26E-12	**1.50E-2	6.72E-1
311	1/21/2010	Environmental	<2.74E-14	<3.88E-13		
312	1/21/2010	Environmental	<2.06E-14	<3.85E-13		
313	1/21/2010	Environmental	<1.91E-14	<3.57E-13		
314	1/21/2010	Environmental	<2.04E-14	<3.85E-13		
315	1/22/2010	Environmental	<2.72E-14	<3.64E-13		
316	1/22/2010	Environmental	<2.08E-14	<3.88E-13		
317	1/22/2010	Environmental	<2.67E-14	<3.58E-13		
318	1/22/2010	Environmental	<1.90E-14	<3.63E-13		
319	1/23/2010	Environmental	<2.95E-14	<3.95E-13		
320	1/23/2010	Environmental	<2.22E-14	<4.25E-13		
321	1/23/2010	Environmental	<2.87E-14	<3.84E-13		
322	1/23/2010	Environmental	<2.26E-14	<4.22E-13		
323	1/25/2010	Environmental	<2.12E-14	<3.63E-13		

Sample #	Sample Date	Sample Type (Env or BZA)	Air Sample Results			
			Alpha (µC/ml)	Beta (µC/ml)	Beryllium (µg/m^3)	Lead (µg/m^3)
324	1/25/2010	Environmental	<1.59E-14	<3.31E-13		
325	1/22/2010	BZA	<4.38E-13	<8.15E-12		
326	1/23/2010	BZA	<4.75E-13	<7.88E-12		
327	1/22/2010	BZA	<4.38E-13	<8.15E-12		
328	1/23/2010	BZA	<5.13E-13	<8.97E-12	<1.52E-2	<4.42E-1
329	1/23/2010	BZA	<4.16E-13	<7.75E-12	2.96E-2	<3.63E-1
330	1/25/2010	BZA	<5.54E-13	<1.03E-11		
331	1/25/2010	BZA	<4.27E-13	<7.09E-12		
332	1/25/2010	BZA	<4.34E-13	<8.08E-12	1.51E-2	<3.75E-1
333	1/25/2010	Environmental	<2.91E-14	<3.49E-13		
334	1/25/2010	Environmental	<1.47E-14	<3.06E-13		
335	1/26/2010	BZA	6.12E-13	<7.73E-12	1.67E-2	<3.92E-1
336	1/26/2010	Environmental	<1.18E-14	<3.72E-13		
337	1/26/2010	Environmental	<2.20E-14	<3.76E-13		
338	1/26/2010	Environmental	<1.68E-14	<3.51E-13		
339	1/26/2010	Environmental	<2.81E-14	<3.69E-13		
340	1/27/2010	Environmental	<1.59E-14	<3.31E-13		
341	1/27/2010	Environmental	<2.93E-14	<3.52E-13		
342	1/27/2010	Environmental	1.84E-14	<3.58E-13		
343	1/27/2010	Environmental	<1.66E-14	<3.66E-13		
344	1/27/2010	BZA	6.19E-13	<7.40E-12	**1.79E-2	3.35E+0
345	1/27/2010	BZA	<1.10E-12	<1.55E-11		
346	1/26/2010	BZA	<4.79E-13	<1.00E-11	<1.78E-2	<5.15E-1
347	1/28/2010	Environmental	<2.26E-14	<3.86E-13		
348	1/28/2010	Environmental	<2.33E-14	<2.80E-13		
349	1/28/2010	Environmental	<2.32E-14	<3.97E-13		
350	1/28/2010	Environmental	3.56E-14	<3.86E-13		
351	1/28/2010	BZA	<6.26E-13	<8.20E-12		
352	1/28/2010	BZA	<2.51E-13	<7.15E-12	**1.19E-2	3.69E+0
353	1/29/2010	BZA	<3.54E-13	<7.39E-12	**7.95E-3	1.97E+0
354	1/29/2010	Environmental	<1.78E-14	<3.71E-13		

* = Samples Analyzed On-site

** = Activity reported including PF of 100 in calculation

>Action

= Result <MDC but >DAC

Sample #	Sample Date	Sample Type (Env or BZA)	Air Sample Results			
			Alpha (µC/ml)	Beta (µC/ml)	Beryllium (µg/m^3)	Lead (µg/m^3)
355	1/29/2010	Environmental	<1.72E-14	<3.79E-13		
356	1/29/2010	Environmental	<2.84E-14	<3.41E-13		
357	1/29/2010	Environmental	2.48E-14	<3.71E-13		
358	1/30/2010	Environmental	2.02E-14	<3.55E-13		
359	1/30/2010	Environmental	<2.89E-14	<4.20E-13		
360	1/30/2010	Environmental	<1.13E-14	3.68E-13		
361	1/30/2010	Environmental	<2.83E-14	<4.12E-13		
362	1/30/2010	BZA	<3.48E-13	<6.98E-12		
363	1/29/2010	BZA	<6.04E-13	<6.91E-12		
364	1/30/2010	BZA	1.09E-12	<8.15E-12		
365	2/1/2010	BZA	5.36E-13	<7.40E-12		
366	2/1/2010	Environmental	<2.75E-14	<4.15E-13		
367	2/1/2010	Environmental	<2.48E-14	<3.75E-13		
368	2/1/2010	Environmental	<1.20E-14	<3.52E-13		
369	2/1/2010	Environmental	<1.59E-14	<3.68E-13		
370	2/1/2010	BZA	<2.59E-13	<7.59E-12		
371	2/2/2010	Environmental	<1.21E-14	<3.55E-13		
372	2/2/2010	Environmental	1.42E-14	5.26E-13		
373	2/2/2010	Environmental	<9.69E-15	<2.84E-13		
374	2/2/2010	Environmental	<2.30E-14	3.55E-13		
375	2/2/2010	BZA	<1.49E-14	<2.25E-13		
376	2/2/2010	BZA	<2.15E-13	<6.39E-12		
377	2/2/2010	BZA	<2.82E-13	<8.97E-12		
378	2/2/2010	BZA	<5.45E-13	<8.24E-12		
379	2/3/2010	BZA	<2.36E-13	<6.91E-12		
380	2/3/2010	BZA	No Valid Sample			
381	2/3/2010	BZA	<5.66E-13	<8.24E-12		
382	2/3/2010	Environmental	<1.55E-14	<3.41E-13		
383	2/3/2010	Environmental	2.19E-14	<3.34E-13		
384	2/3/2010	Environmental	<2.94E-14	<3.41E-13		
385	2/3/2010	Environmental	<1.63E-14	<3.45E-13		
386	2/3/2010	BZA	<3.48E-13	<7.38E-12		
387	2/4/2010	BZA	<6.24E-13	<7.24E-12		
388	2/4/2010	BZA	<8.09E-13	<9.52E-12		
389	2/4/2010	BZA	<4.09E-13	<8.69E-12		
390	2/4/2010	Environmental	<2.05E-14	<3.50E-13		

Sample #	Sample Date	Sample Type (Env or BZA)	Air Sample Results			
			Alpha (µC/ml)	Beta (µC/ml)	Beryllium (µg/m^3)	Lead (µg/m^3)
391	2/4/2010	Environmental	1.73E-14	<3.42E-13		
392	2/4/2010	Environmental	<1.58E-14	<3.43E-13		
393	2/4/2010	Environmental	<1.52E-14	<3.23E-13		
394	2/5/2010	Environmental	<1.70E-14	<3.61E-13		
395	2/5/2010	Environmental	1.65E-14	<3.26E-13		
396	2/5/2010	BZA	<6.90E-13	<8.00E-12		
397	2/5/2010	BZA	<7.28E-13	<8.44E-12		
398	2/5/2010	Environmental	<1.70E-14	<3.61E-13		
399	2/5/2010	Environmental	2.76E-14	<3.59E-13		
400	2/6/2010	Environmental	<2.62E-14	<5.77E-13		
401	2/6/2010	Environmental	<2.62E-14	<5.77E-13		
402	2/6/2010	Environmental	<2.59E-14	<5.69E-13		
403	2/6/2010	Environmental	<2.94E-14	<5.10E-13		
404	2/8/2010	Environmental	<2.84E-14	<3.49E-13		
405	2/8/2010	Environmental	<2.26E-14	<3.51E-13		
406	2/8/2010	Environmental	<2.15E-14	<3.23E-13		
407	2/8/2010	BZA	<2.00E-12	<2.99E-11		
408	2/8/2010	BZA	<5.2E-13	<8.08E-12		
409	2/8/2010	Environmental	<1.56E-14	<3.34E-13		
410	2/9/2010	BZA	<5.72E-14	<8.57E-12		
411	2/9/2010	Environmental	<2.42E-14	<3.63E-13		
412	2/9/2010	Environmental	<2.28E-14	<5.01E-13		
413	2/9/2010	Environmental	<2.95E-14	<5.04E-13		
414	2/11/2010	BZA	<1.32E-12	<1.92E-11		
415	2/11/2010	BZA	<6.66E-13	<8.43E-12		
416	2/11/2010	Environmental	<2.23E-14	<3.81E-13		
417	2/11/2010	Environmental	<3.07E-16	<3.89E-15		
418	2/11/2010	Environmental	<1.68E-14	<3.70E-13		
419	2/11/2010	Environmental	<2.61E-14	<3.31E-13		
420	2/9/2010	BZA	<5.20E-13	<8.97E-12		
421	2/12/2010	Environmental	<2.80E-14	<3.49E-13		
422	2/12/2010	Environmental	<2.77E-14	<3.51E-13		
423	2/12/2010	Environmental	<3.00E-14	4.14E-13		
424	2/12/2010	Environmental	<2.66E-14	<3.37E-13		
425	2/12/2010	BZA	<2.83E-13	<8.40E-12		
426	2/12/2010	BZA	<6.78E-13	<1.08E-11		

Sample #	Sample Date	Sample Type (Env or BZA)	Air Sample Results			
			Alpha (µC/ml)	Beta (µC/ml)	Beryllium (µg/m^3)	Lead (µg/m^3)
427	2/13/2010	BZA	<3.96E-13	<1.18E-11		
428	2/13/2010	Environmental	<1.81E-14	<4.11E-13		
429	2/13/2010	Environmental	<2.02E-14	<3.47E-13		
430	2/13/2010	Environmental	<1.27E-14	<3.75E-13		
431	2/13/2010	Environmental	<2.10E-14	<3.61E-13		
432	2/15/2010	BZA	<4.68E-13	<8.04E-12		
433	2/16/2010	Environmental	<2.14E-14	<4.51E-13		
434	2/16/2010	Environmental	<2.34E-14	<4.02E-13		
435	2/16/2010	Environmental	<1.81E-14	<3.81E-13		
436	2/16/2010	Environmental	<1.77E-14	<3.73E-13		
437	2/16/2010	BZA	<3.70E-13	<7.80E-12		
438	2/16/2010	BZA	<3.50E-13	<1.04E-11		
439	2/17/2010	Environmental	<2.24E-14	<3.84E-13		
440	2/17/2010	Environmental	<1.65E-14	<3.46E-13		
441	2/17/2010	Environmental	2.55E-14	<3.83E-13		
442	2/17/2010	Environmental	<2.08E-14	7.46E-13		
443	2/17/2010	BZA	<6.44E-13	<1.11E-11		
444	2/18/2010	BZA	<1.03E-12	<2.15E-11		
445	2/18/2010	Environmental	<2.13E-14	5.87E-13		
446	2/18/2010	Environmental	<1.85E-14	<3.43E-13		
447	2/18/2010	Environmental	<2.18E-14	<4.04E-13		
448	2/18/2010	Environmental	<2.18E-14	<4.04E-13		
449	2/18/2010	BZA	<3.82E-13	<8.02E-12		
450	2/19/2010	Environmental	<2.75E-14	<3.36E-13		
451	2/19/2010	Environmental	<1.74E-14	<3.88E-13		
452	2/19/2010	Environmental	<1.86E-14	<4.15E-13		
453	2/19/2010	Environmental	<2.33E-14	<3.99E-13		
454	2/19/2010	BZA	<9.87E-13	<2.20E-11		
455	2/20/2010	BZA	<4.57E-13	<1.38E-11		
456	2/20/2010	Environmental	2.34E-14	<3.95E-13		
457	2/20/2010	Environmental	<2.72E-14	<4.83E-13		
458	2/20/2010	Environmental	<2.72E-14	<4.83E-13		
459	2/20/2010	Environmental	<2.72E-14	<4.83E-13		
460	2/9/2010	BZA	<1.04E-12	<1.27E-13		
461	2/22/2010	Environmental	<1.76E-14	<3.86E-13		
462	2/22/2010	Environmental	<2.33E-14	<3.99E-13		

Sample #	Sample Date	Sample Type (Env or BZA)	Air Sample Results			
			Alpha (µC/ml)	Beta (µC/ml)	Beryllium (µg/m^3)	Lead (µg/m^3)
463	2/22/2010	Environmental	2.86E-14	<3.86E-13		
464	2/22/2010	Environmental	<1.49E-14	<3.29E-13		
465	2/22/2010	BZA	<9.29E-13	<2.80E-11		
466	2/22/2010	BZA	<9.91E-13	<2.98E-11		
467	2/23/2010	Environmental	<2.76E-14	<4.34E-13		
468	2/23/2010	Environmental	<2.50E-14	<4.28E-13		
469	2/23/2010	Environmental	<1.93E-14	<4.28E-13		
470	2/23/2010	Environmental	<2.09E-14	<3.58E-13		
471	2/23/2010	BZA	<1.18E-12	<1.09E-11		
472	2/24/2010	Environmental	<1.68E-14	<3.70E-13		
473	2/24/2010	Environmental	<2.39E-14	<4.08E-13		
474	2/24/2010	Environmental	2.66E-14	4.34E-13		
475	2/24/2010	Environmental	<1.59E-14	<3.27E-13		
476	2/24/2010	BZA	<1.66E-14	<3.06E-13		
477	2/26/2010	BZA	<1.35E-12	<2.12E-11		
478	3/1/2010	BZA	<5.15E-13	<9.36E-12		
479	3/2/2010	BZA	<6.29E-13	<8.17E-12		
480	3/3/2010	Environmental	<2.33E-14	<3.95E-13		
481	3/3/2010	Environmental	<1.84E-14	<4.04E-13		
482	3/3/2010	Environmental	<1.88E-14	<4.14E-13		
483	3/3/2010	Environmental	<1.97E-14	<3.82E-13		
484	3/3/2010	BZA	<3.53E-13	<1.10E-11		
485	3/3/2010	BZA	<2.97E-13	<9.29E-12		
486	3/4/2010	Environmental	<1.68E-14	<3.70E-13		
487	3/4/2010	Environmental	<1.18E-14	<3.68E-13		
488	3/4/2010	Environmental	1.71E-14	<3.21E-13		
489	3/4/2010	Environmental	<2.05E-14	<3.51E-13		
490	3/4/2010	BZA	<5.89E-13	<1.83E-11		
491	3/4/2010	BZA	<8.53E-13	<8.01E-12		
492	3/5/2010	Environmental	<2.83E-14	<3.67E-13		
493	3/5/2010	Environmental	<2.59E-14	<4.17E-13		
494	3/5/2010	Environmental	<1.47E-14	<4.65E-13		
495	3/5/2010	BZA	1.04E-12	<8.41E-12		
496	3/5/2010	Environmental	No Valid Sample			
497	3/6/2010	Environmental	<2.30E-14	<3.71E-13		
498	3/6/2010	Environmental	<2.35E-14	<3.79E-13		

Sample #	Sample Date	Sample Type (Env or BZA)	Air Sample Results			
			Alpha (µC/ml)	Beta (µC/ml)	Beryllium (µg/m^3)	Lead (µg/m^3)
499	3/6/2010	Environmental	<1.88E-14	<4.21E-13		
500	3/6/2010	Environmental	<2.23E-14	<3.89E-13		
501	3/6/2010	BZA	<1.67E-12	<2.69E-11		
502	3/8/2010	Environmental	<1.27E-14	<3.71E-13		
503	3/8/2010	Environmental	<2.78E-14	<3.64E-13		
504	3/8/2010	Environmental	<2.58E-14	<3.76E-13		
505	3/8/2010	Environmental	<2.20E-14	<3.61E-13		
506	3/8/2010	BZA	<4.26E-13	<7.89E-12		
507	3/9/2010	Environmental	<2.08E-14	<4.65E-13		
508	3/9/2010	BZA	<3.73E-13	<1.10E-11		
509	3/9/2010	BZA	<6.65E-13	<9.69E-12		
510	3/9/2010	Environmental	2.39E-14	<3.98E-13		
511	3/9/2010	Environmental	1.84E-14	<3.84E-13		
512	3/9/2010	Environmental	2.82E-14	<3.90E-13		
513	3/10/2010	BZA	<4.50E-13	<7.38E-12		
514	3/10/2010	Environmental	2.90E-14	<3.31E-13		
515	3/10/2010	Environmental	<2.01E-14	<3.51E-13		
516	3/10/2010	Environmental	<1.52E-14	<3.40E-13		
517	3/9/2010	BZA	<5.44E-13	9.05E-12		
518	3/10/2010	Environmental	<1.94E-14	<3.38E-13		
519	3/11/2010	BZA	3.45E-13	<8.08E-12		
520	3/11/2010	BZA	<5.19E-13	<7.28E-12		
521	3/11/2010	Environmental	<2.21E-14	<3.10E-13		
522	3/11/2010	Environmental	<2.49E-14	<3.49E-13		
523	3/11/2010	Environmental	<2.17E-14	<3.04E-13		
524	3/11/2010	Environmental	<1.09E-14	<3.09E-13		
525	3/12/2010	BZA	<2.84E-13	<8.08E-12		
526	3/12/2010	Environmental	<1.58E-14	<3.53E-13		
527	3/12/2010	BZA	<2.71E-13	<7.71E-13		
528	3/12/2010	Environmental	<2.24E-14	<7.07E-13		
529	3/12/2010	Environmental	<2.24E-14	<7.07E-13		
530	3/12/2010	Environmental	<2.26E-14	<7.21E-13		
531	3/11/2010	BZA	<2.71E-13	<7.71E-12		
532	3/15/2010	BZA	<3.67E-13	<7.58E-12		
533	3/15/2010	Environmental	<2.33E-14	<4.07E-13		
534	3/15/2010	Environmental	<1.13E-14	<3.20E-13		

Sample #	Sample Date	Sample Type (Env or BZA)	Air Sample Results			
			Alpha (µC/ml)	Beta (µC/ml)	Beryllium (µg/m^3)	Lead (µg/m^3)
535	3/15/2010	Environmental	<1.72E-14	<3.84E-13		
536	3/15/2010	Environmental	1.93E-14	<3.71E-13		
537	3/15/2010	BZA	<5.19E-13	<7.28E-12		
538	3/15/2010	BZA	<8.12E-13	<9.52E-12		
539	3/16/2010	BZA	<5.43E-13	<7.60E-12		
540	3/16/2010	BZA	<2.81E-12	<2.88E-11		
541	3/16/2010	Environmental	2.66E-14	<3.40E-13		
542	3/16/2010	Environmental	2.77E-14	<3.54E-13		
543	3/16/2010	Environmental	<2.39E-14	<3.34E-13		
544	3/16/2010	Environmental	<1.77E-14	<3.09E-13		
545	3/16/2010	BZA	<8.62E-13	<1.44E-11		
546	3/17/2010	Environmental	1.58E-14	<4.12E-13		
547	3/17/2010	Environmental	<2.28E-14	<3.98E-13		
548	3/17/2010	Environmental	<1.72E-13	<3.84E-13		
549	3/17/2010	Environmental	<2.96E-14	<3.45E-13		
550	3/17/2010	BZA	<1.55E-12	<2.20E-11		
551	3/17/2010	BZA	<2.79E-13	<8.85E-12		
552	3/18/2010	Environmental	<1.76E-14	<3.58E-13		
553	3/18/2010	Environmental	<2.09E-14	<3.65E-13		
554	3/18/2010	Environmental	<1.72E-14	<3.51E-13		
555	3/18/2010	Environmental	<2.82E-14	<3.12E-13		
556	3/18/2010	BZA	<4.02E-13	<8.19E-12		
557	3/18/2010	BZA	<7.18E-13	<7.96E-12		
558	3/19/2010	Environmental	<3.10E-14	<3.43E-13		
559	3/19/2010	Environmental	2.67E-14	<3.91E-13		
560	3/19/2010	Environmental	<1.76E-14	<3.93E-13		
561	3/19/2010	Environmental	2.56E-14	<3.74E-13		
562	3/19/2010	BZA	<7.53E-13	<8.34E-12		
563	3/19/2010	BZA	8.60E-13	<8.60E-12		
564	3/20/2010	Environmental	<2.32E-14	<5.20E-13		
565	3/20/2010	Environmental	<1.84E-14	<4.11E-13		
566	3/20/2010	Environmental	<2.93E-14	<5.11E-13		
567	3/20/2010	Environmental	<1.72E-14	<3.84E-13		
568	3/20/2010	BZA	<5.43E-13	<1.54E-11		
569	3/20/2010	BZA	<7.78E-13	<9.09E-12		
570	3/20/2010	BZA	1.68E-12	<1.21E-11		

Sample #	Sample Date	Sample Type (Env or BZA)	Air Sample Results			
			Alpha (µC/ml)	Beta (µC/ml)	Beryllium (µg/m^3)	Lead (µg/m^3)
571	3/22/2010	BZA	<4.84E-13	<8.74E-12		
572	3/22/2010	Environmental	<2.18E-14	<3.81E-13		
573	3/22/2010	Environmental	<2.02E-14	<3.64E-13		
574	3/22/2010	Environmental	<2.18E-14	<3.81E-13		
575	3/22/2010	Environmental	<2.47E-14	<3.12E-13		
576	3/22/2010	BZA	<8.44E-13	<8.52E-12		
577	3/23/2010	Environmental	<1.88E-14	<4.21E-13		
578	3/23/2010	Environmental	2.65E-14	<3.66E-13		
579	3/23/2010	Environmental	<2.06E-14	<3.74E-13		
580	3/23/2010	Environmental	<2.90E-14	<3.60E-13		
581	3/24/2010	Environmental	<2.84E-14	<3.58E-13		
582	3/24/2010	Environmental	No Valid Sample			
583	3/24/2010	Environmental	<2.14E-14	<3.73E-13		
584	3/24/2010	Environmental	<1.58E-14	<3.53E-13		
585	3/26/2010	Environmental	<2.36E-14	<4.28E-13		
586	3/26/2010	Environmental	<2.85E-14	<5.16E-13		
587	3/26/2010	BZA	<5.69E-13	<1.03E-11		
588	3/26/2010	Environmental	<2.10E-14	3.85E-13		
589	3/26/2010	Environmental	<2.02E-14	<3.65E-13		
590	3/27/2010	BZA	<4.03E-12	<7.31E-11		
591	3/28/2010	BZA	<3.14E-13	<9.35E-12		
592	3/30/2010	Environmental	<2.38E-14	<3.83E-13		
593	3/30/2010	Environmental	<2.57E-14	<3.54E-13		
594	3/30/2010	Environmental	<2.97E-14	<4.09E-13		
595	3/30/2010	Environmental	<2.54E-14	<4.06E-13		
596	3/30/2010	BZA	<7.81E-13	<1.12E-11		
597	3/27/2010	BZA	<3.73E-13	<1.11E-11		
598	3/31/2010	Environmental	<2.94E-14	<4.73E-13		
599	3/31/2010	Environmental	<2.87E-14	<4.61E-13		
600	3/31/2010	Environmental	<1.48E-14	<4.56E-13		
601	3/31/2010	Environmental	<1.74E-14	<5.37E-13		
602	4/1/2010	Environmental	<1.38E-14	<4.25E-13		
603	4/1/2010	Environmental	<2.66E-14	<4.28E-13		
604	4/1/2010	Environmental	2.86E-14	<4.15E-13		
605	4/1/2010	Environmental	<1.14E-14	<3.51E-13		
606	4/1/2010	BZA	<5.08E-12	<8.18E-11		

Sample #	Sample Date	Sample Type (Env or BZA)	Air Sample Results			
			Alpha (µC/ml)	Beta (µC/ml)	Beryllium (µg/m^3)	Lead (µg/m^3)
607	4/2/2010	Environmental	2.99E-14	<7.61E-13		
608	4/2/2010	Environmental	2.95E-14	<7.82E-13		
609	4/2/2010	Environmental	2.95E-14	<7.69E-13		
610	4/2/2010	Environmental	<2.54E-14	<8.04E-13		
611	4/5/2010	Environmental	<1.64E-14	<5.20E-13		
612	4/5/2010	Environmental	<2.94E-14	<4.73E-13		
613	4/5/2010	Environmental	2.99E-14	<3.90E-13		
614	4/5/2010	Environmental	<1.51E-14	<4.78E-13		
615	4/6/2010	Environmental	<2.09E-14	<3.65E-13		
616	4/6/2010	Environmental	<2.18E-14	3.95E-13		
617	4/6/2010	Environmental	<1.61E-14	<3.61E-13		
618	4/6/2010	Environmental	1.97E-14	<3.15E-13		
619	4/7/2010	BZA	<2.36E-12	<3.21E-11		
620	4/7/2010	Environmental	<1.16E-14	<3.68E-13		
621	4/7/2010	Environmental	<2.79E-14	<4.61E-13		
622	4/7/2010	Environmental	<1.40E-14	<4.42E-13		
623	4/7/2010	Environmental	2.27E-14	<4.31E-13		
624	4/9/2010	Environmental	<1.38E-14	<4.11E-13		
625	4/9/2010	Environmental	<1.35E-14	<4.02E-13		
626	4/9/2010	Environmental	<2.20E-14	<4.08E-13		
627	4/9/2010	Environmental	<2.02E-14	<3.74E-13		
628	4/9/2010	BZA	<7.90E-13	<1.20E-11		
629	4/10/2010	Environmental	<2.20E-14	<3.94E-13		
630	4/10/2010	Environmental	<2.15E-14	<3.85E-13		
631	4/10/2010	Environmental	2.45E-14	<4.08E-13		
632	4/10/2010	Environmental	2.11E-14	<3.52E-13		
633	4/10/2010	BZA	<4.40E-13	<7.87E-12		
634	4/11/2010	BZA	<5.95E-13	<8.43E-12		
635	4/11/2010	Environmental	<2.55E-14	3.82E-13		
636	4/11/2010	Environmental	<2.84E-14	<3.43E-13		
637	4/11/2010	Environmental	<2.72E-14	<3.85E-13		
638	4/11/2010	Environmental	<2.66E-14	<3.77E-13		
639	4/6/2010	BZA	<1.22E-12	<2.13E-11		
640	4/12/2010	Environmental	<1.94E-14	<3.61E-13		
641	4/12/2010	Environmental	<2.05E-14	<3.65E-13		
642	4/12/2010	Environmental	2.99E-14	<3.54E-13		

Sample #	Sample Date	Sample Type (Env or BZA)	Air Sample Results			
			Alpha (µC/ml)	Beta (µC/ml)	Beryllium (µg/m^3)	Lead (µg/m^3)
643	4/12/2010	Environmental	<1.90E-14	<3.38E-13		
644	4/12/2010	BZA	<4.84E-13	<9.02E-12		
645	4/13/2010	BZA	5.21E-13	<1.33E-11		
646	4/13/2010	Environmental	<2.82E-14	<4.36E-13		
647	4/13/2010	Environmental	<1.43E-14	<4.44E-13		
648	4/13/2010	Environmental	<2.96E-14	<4.58E-13		
649	4/13/2010	Environmental	<1.19E-14	4.18E-13		
650	4/14/2010	Environmental	<2.34E-14	<3.54E-13		
651	4/14/2010	Environmental	No Valid Sample			
652	4/14/2010	Environmental	<1.29E-14	<3.61E-13		
653	4/14/2010	Environmental	2.19E-14	<3.69E-13		
654	4/15/2010	Environmental	<2.25E-14	<3.40E-13		
655	4/15/2010	Environmental	2.73E-14	<3.61E-13		
656	4/15/2010	Environmental	<1.38E-14	4.02E-13		
657	4/15/2010	Environmental	<2.60E-14	<3.93E-13		
658	4/15/2010	BZA	<6.89E-13	<1.04E-11		
659	4/16/2010	BZA	<1.95E-12	<2.95E-11		
660	4/16/2010	Environmental	<2.39E-14	<3.61E-13		
661	4/16/2010	Environmental	2.10E-14	3.97E-13		
662	4/16/2010	Environmental	<2.44E-14	<3.69E-13		
663	4/16/2010	Environmental	<2.54E-14	<3.85E-13		

* = Samples Analyzed On-site

** = Activity reported including PF of 100 in calculation

>Action

= Result <MDC but >DAC

Outreach Laboratory
311 North Aspen
Broken Arrow, OK 74012
(918) 251-2515
FAX (918) 251-0008

May 07, 2010

John Davis
TES, LLC
222 Valley Creek Blvd, Suite 210
Exton, PA 19341

CLIENT PROJECT: Luckey FUSRAP
OUTREACH LAB ID: 20100284

Dear Mr. Davis,

Please find enclosed the analytical report for your samples received in our laboratory on April 22, 2010. Forty-four swipe samples were received in good condition and analyzed for Gross Alpha/Beta, per your chain of custody.

All Quality Control for the requested analyses is reported on the analytical report. The method blank and laboratory control standard are within method control limits.

Parameters certified by NELAC meet all requirements of NELAC. A scope of Certified parameters is available upon request.

All non-hazardous, non-radioactive samples will be disposed thirty days after the report date, unless we are otherwise notified.

Thank you for choosing Outreach Laboratory and if you have any questions, please call us at 918-251-2515.

Laboratory Director
[redacted]

ODEQ ID #9517
NRC ODEQ LIC. #27522-01

ACCREDITED IN ACCORDANCE WITH nelac

CERT. ID #OK001
See Certified
Parameter List

Outreach Laboratory
311 North Aspen
Broken Arrow, OK 74012
(918) 251-2515
FAX (918) 251-0008

Client:	TPMC-Energy Solutions
Client Project:	Luckey FUSRAP
Lab Number:	20100284
Date Reported:	4/29/2010
Date Received:	4/22/10
Page Number:	1 of 12

Analytical Report

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Lab ID:	**20100284-01**						
Client ID:	**Smear-1**						
Date Sampled:	**3/5/2010 10:00:00 AM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-0.9 +/- 1.0	dpm/100 cm2	1.5	4/22/2010	4/22/2010	TM
Gross Beta	EPA 900*/9310*	2.7 +/- 5.4	dpm/100 cm2	5.4	4/22/2010	4/22/2010	TM
Lab ID:	**20100284-02**						
Client ID:	**Smear-2**						
Date Sampled:	**3/6/2010 5:30:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-0.9 +/- 1.0	dpm/100 cm2	1.5	4/22/2010	4/22/2010	TM
Gross Beta	EPA 900*/9310*	-1.0 +/- 4.8	dpm/100 cm2	5.4	4/22/2010	4/22/2010	TM
Lab ID:	**20100284-03**						
Client ID:	**Smear-3**						
Date Sampled:	**3/6/2010 10:30:00 AM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-0.3 +/- 1.3	dpm/100 cm2	1.5	4/22/2010	4/22/2010	TM
Gross Beta	EPA 900*/9310*	3.4 +/- 5.4	dpm/100 cm2	5.4	4/22/2010	4/22/2010	TM
Lab ID:	**20100284-04**						
Client ID:	**Smear-4**						
Date Sampled:	**3/6/2010 10:30:00 AM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-0.9 +/- 1.0	dpm/100 cm2	1.5	4/22/2010	4/22/2010	TM
Gross Beta	EPA 900*/9310*	1.9 +/- 5.3	dpm/100 cm2	5.4	4/22/2010	4/22/2010	TM

*NELAC Certified Parameter BDL = Below Detection Limit

Outreach Laboratory
311 North Aspen
Broken Arrow, OK 74012
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Client:	TPMC-Energy Solutions
Client Project:	Luckey FUSRAP
Lab Number:	20100284
Date Reported:	4/29/2010
Date Received:	4/22/10
Page Number:	2 of 12

Analytical Report

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Lab ID:	**20100284-05**						
Client ID:	**Smear-5**						
Date Sampled:	**3/6/2010 10:30:00 AM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-0.3 +/- 1.3	dpm/100 cm2	1.5	4/22/2010	4/22/2010	TM
Gross Beta	EPA 900*/9310*	1.2 +/- 5.2	dpm/100 cm2	5.4	4/22/2010	4/22/2010	TM
Lab ID:	**20100284-06**						
Client ID:	**Smear-6**						
Date Sampled:	**3/6/2010 10:30:00 AM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	0.0 +/- 1.4	dpm/100 cm2	1.5	4/22/2010	4/22/2010	TM
Gross Beta	EPA 900*/9310*	5.6 +/- 5.7	dpm/100 cm2	5.4	4/22/2010	4/22/2010	TM
Lab ID:	**20100284-07**						
Client ID:	**Smear-7**						
Date Sampled:	**3/19/2010 11:15:00 AM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	0.0 +/- 1.4	dpm/100 cm2	1.5	4/22/2010	4/22/2010	TM
Gross Beta	EPA 900*/9310*	4.5 +/- 5.6	dpm/100 cm2	5.4	4/22/2010	4/22/2010	TM
Lab ID:	**20100284-08**						
Client ID:	**Smear-8**						
Date Sampled:	**3/19/2010 11:15:00 AM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	0.9 +/- 1.7	dpm/100 cm2	1.5	4/22/2010	4/22/2010	TM
Gross Beta	EPA 900*/9310*	1.2 +/- 5.2	dpm/100 cm2	5.4	4/22/2010	4/22/2010	TM

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Outreach Laboratory
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Client:	TPMC-Energy Solutions
Client Project:	Luckey FUSRAP
Lab Number:	20100284
Date Reported:	4/29/2010
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Analytical Report

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Lab ID:	**20100284-09**						
Client ID:	**Smear-9**						
Date Sampled:	**3/19/2010 11:15:00 AM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-0.3 +/- 1.3	dpm/100 cm2	1.5	4/22/2010	4/22/2010	TM
Gross Beta	EPA 900*/9310*	4.1 +/- 5.5	dpm/100 cm2	5.4	4/22/2010	4/22/2010	TM
Lab ID:	**20100284-10**						
Client ID:	**Smear-10**						
Date Sampled:	**3/19/2010 11:30:00 AM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	0.6 +/- 1.6	dpm/100 cm2	1.5	4/22/2010	4/22/2010	TM
Gross Beta	EPA 900*/9310*	3.4 +/- 5.4	dpm/100 cm2	5.4	4/22/2010	4/22/2010	TM
Lab ID:	**20100284-11**						
Client ID:	**Smear-11**						
Date Sampled:	**3/19/2010 11:30:00 AM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	0.3 +/- 1.5	dpm/100 cm2	1.5	4/22/2010	4/22/2010	TM
Gross Beta	EPA 900*/9310*	-0.7 +/- 4.9	dpm/100 cm2	5.4	4/22/2010	4/22/2010	TM
Lab ID:	**20100284-12**						
Client ID:	**Smear-12**						
Date Sampled:	**3/19/2010 11:30:00 AM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-0.9 +/- 1.0	dpm/100 cm2	1.5	4/22/2010	4/22/2010	TM
Gross Beta	EPA 900*/9310*	-0.7 +/- 4.9	dpm/100 cm2	5.4	4/22/2010	4/22/2010	TM

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Client:	TPMC-Energy Solutions
Client Project:	Luckey FUSRAP
Lab Number:	20100284
Date Reported:	4/29/2010
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Analytical Report

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Lab ID:	**20100284-13**						
Client ID:	**Smear-13**						
Date Sampled:	**3/19/2010 11:30:00 AM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-0.9 +/- 1.0	dpm/100 cm2	1.5	4/22/2010	4/22/2010	TM
Gross Beta	EPA 900*/9310*	-1.4 +/- 4.8	dpm/100 cm2	5.4	4/22/2010	4/22/2010	TM
Lab ID:	**20100284-14**						
Client ID:	**Smear-14**						
Date Sampled:	**3/19/2010 11:30:00 AM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-0.9 +/- 1.0	dpm/100 cm2	1.5	4/22/2010	4/22/2010	TM
Gross Beta	EPA 900*/9310*	5.2 +/- 5.7	dpm/100 cm2	5.4	4/22/2010	4/22/2010	TM
Lab ID:	**20100284-15**						
Client ID:	**Smear-15**						
Date Sampled:	**3/20/2010 10:00:00 AM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-0.6 +/- 1.2	dpm/100 cm2	1.5	4/22/2010	4/22/2010	TM
Gross Beta	EPA 900*/9310*	3.4 +/- 5.4	dpm/100 cm2	5.4	4/22/2010	4/22/2010	TM
Lab ID:	**20100284-16**						
Client ID:	**Smear-16**						
Date Sampled:	**3/28/2010 3:00:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	0.0 +/- 1.4	dpm/100 cm2	1.5	4/22/2010	4/22/2010	TM
Gross Beta	EPA 900*/9310*	-1.8 +/- 4.7	dpm/100 cm2	5.4	4/22/2010	4/22/2010	TM

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Client:	TPMC-Energy Solutions
Client Project:	Luckey FUSRAP
Lab Number:	20100284
Date Reported:	4/29/2010
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Analytical Report

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Lab ID:	**20100284-17**						
Client ID:	**Smear-17**						
Date Sampled:	**3/28/2010 3:00:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	0.0 +/- 1.4	dpm/100 cm2	1.5	4/22/2010	4/22/2010	TM
Gross Beta	EPA 900*/9310*	-0.3 +/- 4.9	dpm/100 cm2	5.4	4/22/2010	4/22/2010	TM
Lab ID:	**20100284-18**						
Client ID:	**Smear-18**						
Date Sampled:	**3/28/2010 3:00:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-0.6 +/- 1.2	dpm/100 cm2	1.5	4/22/2010	4/22/2010	TM
Gross Beta	EPA 900*/9310*	3.4 +/- 5.4	dpm/100 cm2	5.4	4/22/2010	4/22/2010	TM
Lab ID:	**20100284-19**						
Client ID:	**Smear-19**						
Date Sampled:	**3/28/2010 3:00:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-0.3 +/- 1.3	dpm/100 cm2	1.5	4/22/2010	4/22/2010	TM
Gross Beta	EPA 900*/9310*	0.8 +/- 5.1	dpm/100 cm2	5.4	4/22/2010	4/22/2010	TM
Lab ID:	**20100284-20**						
Client ID:	**Smear-20**						
Date Sampled:	**3/28/2010 3:00:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-0.6 +/- 1.2	dpm/100 cm2	1.5	4/22/2010	4/22/2010	TM
Gross Beta	EPA 900*/9310*	2.3 +/- 5.3	dpm/100 cm2	5.4	4/22/2010	4/22/2010	TM

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Client:	TPMC-Energy Solutions
Client Project:	Luckey FUSRAP
Lab Number:	20100284
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Analytical Report

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Lab ID:	**20100284-21**						
Client ID:	**Smear-21**						
Date Sampled:	**3/28/2010 3:00:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-0.7 +/- 1.3	dpm/100 cm2	1.7	4/23/2010	4/23/2010	TM
Gross Beta	EPA 900*/9310*	1.6 +/- 3.7	dpm/100 cm2	3.8	4/23/2010	4/23/2010	TM
Lab ID:	**20100284-22**						
Client ID:	**Smear-22**						
Date Sampled:	**3/28/2010 3:00:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-0.3 +/- 1.5	dpm/100 cm2	1.7	4/23/2010	4/23/2010	TM
Gross Beta	EPA 900*/9310*	0.6 +/- 3.6	dpm/100 cm2	3.8	4/23/2010	4/23/2010	TM
Lab ID:	**20100284-23**						
Client ID:	**Smear-23**						
Date Sampled:	**3/28/2010 3:00:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-0.7 +/- 1.3	dpm/100 cm2	1.7	4/23/2010	4/23/2010	TM
Gross Beta	EPA 900*/9310*	0.6 +/- 3.6	dpm/100 cm2	3.8	4/23/2010	4/23/2010	TM
Lab ID:	**20100284-24**						
Client ID:	**Smear-24**						
Date Sampled:	**3/28/2010 3:00:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-0.3 +/- 1.5	dpm/100 cm2	1.7	4/23/2010	4/23/2010	TM
Gross Beta	EPA 900*/9310*	5.2 +/- 4.2	dpm/100 cm2	3.8	4/23/2010	4/23/2010	TM

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Client:	TPMC-Energy Solutions
Client Project:	Luckey FUSRAP
Lab Number:	20100284
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Analytical Report

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Lab ID:	**20100284-25**						
Client ID:	**Smear-25**						
Date Sampled:	**3/28/2010 3:00:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	0.0 +/- 1.6	dpm/100 cm2	1.7	4/23/2010	4/23/2010	TM
Gross Beta	EPA 900*/9310*	0.8 +/- 3.6	dpm/100 cm2	3.8	4/23/2010	4/23/2010	TM
Lab ID:	**20100284-26**						
Client ID:	**Smear-26**						
Date Sampled:	**3/28/2010 3:00:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-1.0 +/- 1.1	dpm/100 cm2	1.7	4/23/2010	4/23/2010	TM
Gross Beta	EPA 900*/9310*	1.6 +/- 3.7	dpm/100 cm2	3.8	4/23/2010	4/23/2010	TM
Lab ID:	**20100284-27**						
Client ID:	**Smear-27**						
Date Sampled:	**3/28/2010 3:00:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-0.7 +/- 1.3	dpm/100 cm2	1.7	4/23/2010	4/23/2010	TM
Gross Beta	EPA 900*/9310*	2.1 +/- 3.8	dpm/100 cm2	3.8	4/23/2010	4/23/2010	TM
Lab ID:	**20100284-28**						
Client ID:	**Smear-28**						
Date Sampled:	**3/28/2010 3:00:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-1.0 +/- 1.1	dpm/100 cm2	1.7	4/23/2010	4/23/2010	TM
Gross Beta	EPA 900*/9310*	0.1 +/- 3.5	dpm/100 cm2	3.8	4/23/2010	4/23/2010	TM

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Client:	TPMC-Energy Solutions
Client Project:	Luckey FUSRAP
Lab Number:	20100284
Date Reported:	4/29/2010
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Analytical Report

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Lab ID:	**20100284-29**						
Client ID:	**Smear-29**						
Date Sampled:	**3/28/2010 3:00:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	1.3 +/- 2.1	dpm/100 cm2	1.7	4/23/2010	4/23/2010	TM
Gross Beta	EPA 900*/9310*	1.9 +/- 3.7	dpm/100 cm2	3.8	4/23/2010	4/23/2010	TM
Lab ID:	**20100284-30**						
Client ID:	**Smear-30**						
Date Sampled:	**3/28/2010 3:00:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	0.3 +/- 1.7	dpm/100 cm2	1.7	4/23/2010	4/23/2010	TM
Gross Beta	EPA 900*/9310*	1.6 +/- 3.7	dpm/100 cm2	3.8	4/23/2010	4/23/2010	TM
Lab ID:	**20100284-31**						
Client ID:	**Smear-31**						
Date Sampled:	**3/28/2010 3:00:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-1.0 +/- 1.1	dpm/100 cm2	1.7	4/23/2010	4/23/2010	TM
Gross Beta	EPA 900*/9310*	-0.5 +/- 3.4	dpm/100 cm2	3.8	4/23/2010	4/23/2010	TM
Lab ID:	**20100284-32**						
Client ID:	**Smear-32**						
Date Sampled:	**3/28/2010 3:00:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-0.7 +/- 1.3	dpm/100 cm2	1.7	4/23/2010	4/23/2010	TM
Gross Beta	EPA 900*/9310*	0.8 +/- 3.6	dpm/100 cm2	3.8	4/23/2010	4/23/2010	TM

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Client:	TPMC-Energy Solutions
Client Project:	Luckey FUSRAP
Lab Number:	20100284
Date Reported:	4/29/2010
Date Received:	4/22/10
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Analytical Report

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Lab ID:	**20100284-33**						
Client ID:	**Smear-33**						
Date Sampled:	**3/28/2010 3:00:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	0.0 +/- 1.6	dpm/100 cm2	1.7	4/23/2010	4/23/2010	TM
Gross Beta	EPA 900*/9310*	-1.0 +/- 3.3	dpm/100 cm2	3.8	4/23/2010	4/23/2010	TM
Lab ID:	**20100284-34**						
Client ID:	**Smear-34**						
Date Sampled:	**3/28/2010 3:00:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	0.3 +/- 1.7	dpm/100 cm2	1.7	4/23/2010	4/23/2010	TM
Gross Beta	EPA 900*/9310*	0.1 +/- 3.5	dpm/100 cm2	3.8	4/23/2010	4/23/2010	TM
Lab ID:	**20100284-35**						
Client ID:	**Smear-35**						
Date Sampled:	**4/6/2010 10:00:00 AM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-0.7 +/- 1.3	dpm/100 cm2	1.7	4/23/2010	4/23/2010	TM
Gross Beta	EPA 900*/9310*	1.9 +/- 3.7	dpm/100 cm2	3.8	4/23/2010	4/23/2010	TM
Lab ID:	**20100284-36**						
Client ID:	**Smear-36**						
Date Sampled:	**4/7/2010 10:30:00 AM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-0.3 +/- 1.5	dpm/100 cm2	1.7	4/23/2010	4/23/2010	TM
Gross Beta	EPA 900*/9310*	2.1 +/- 3.8	dpm/100 cm2	3.8	4/23/2010	4/23/2010	TM

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Lab Number:	20100284
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Analytical Report

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Lab ID:	**20100284-37**						
Client ID:	**Smear-37**						
Date Sampled:	**4/7/2010 10:30:00 AM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-0.3 +/- 1.5	dpm/100 cm2	1.7	4/23/2010	4/23/2010	TM
Gross Beta	EPA 900*/9310*	1.9 +/- 3.7	dpm/100 cm2	3.8	4/23/2010	4/23/2010	TM
Lab ID:	**20100284-38**						
Client ID:	**Smear-38**						
Date Sampled:	**4/7/2010 10:30:00 AM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-0.7 +/- 1.3	dpm/100 cm2	1.7	4/23/2010	4/23/2010	TM
Gross Beta	EPA 900*/9310*	3.4 +/- 3.9	dpm/100 cm2	3.8	4/23/2010	4/23/2010	TM
Lab ID:	**20100284-39**						
Client ID:	**Smear-39**						
Date Sampled:	**4/14/2010 12:45:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-0.3 +/- 1.5	dpm/100 cm2	1.7	4/23/2010	4/23/2010	TM
Gross Beta	EPA 900*/9310*	2.1 +/- 3.8	dpm/100 cm2	3.8	4/23/2010	4/23/2010	TM
Lab ID:	**20100284-40**						
Client ID:	**Smear-40**						
Date Sampled:	**4/14/2010 12:45:00 PM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	0.0 +/- 1.6	dpm/100 cm2	1.7	4/23/2010	4/23/2010	TM
Gross Beta	EPA 900*/9310*	-1.8 +/- 3.2	dpm/100 cm2	3.8	4/23/2010	4/23/2010	TM

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Client Project:	Luckey FUSRAP
Lab Number:	20100284
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Analytical Report

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Lab ID:	**20100284-41**						
Client ID:	**Smear-Blank-1**						
Date Sampled:	**4/19/2010 11:30:00 AM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-0.7 +/- 1.3	dpm/100 cm2	1.7	4/26/2010	4/26/2010	TM
Gross Beta	EPA 900*/9310*	0.3 +/- 3.5	dpm/100 cm2	3.8	4/26/2010	4/26/2010	TM
Lab ID:	**20100284-42**						
Client ID:	**Smear-Blank-2**						
Date Sampled:	**4/19/2010 11:30:00 AM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-1.0 +/- 1.1	dpm/100 cm2	1.7	4/26/2010	4/26/2010	TM
Gross Beta	EPA 900*/9310*	-0.2 +/- 3.5	dpm/100 cm2	3.8	4/26/2010	4/26/2010	TM
Lab ID:	**20100284-43**						
Client ID:	**Smear-Blank-3**						
Date Sampled:	**4/19/2010 11:30:00 AM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-1.0 +/- 1.1	dpm/100 cm2	1.7	4/26/2010	4/26/2010	TM
Gross Beta	EPA 900*/9310*	2.1 +/- 3.8	dpm/100 cm2	3.8	4/26/2010	4/26/2010	TM
Lab ID:	**20100284-44**						
Client ID:	**Smear-Blank-4**						
Date Sampled:	**4/19/2010 11:30:00 AM**						
Matrix:	**Other**						
	Radiochemical Analyses						
Gross Alpha	EPA 900*/9310*	-0.3 +/- 1.5	dpm/100 cm2	1.7	4/26/2010	4/26/2010	TM
Gross Beta	EPA 900*/9310*	0.6 +/- 3.6	dpm/100 cm2	3.8	4/26/2010	4/26/2010	TM

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Client:	TPMC-Energy Solutions
Client Project:	Luckey FUSRAP
Lab Number:	20100284
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QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	MS %REC	MSD %REC	MSD RPD	Date
Gross Alpha	0	100.0							4/26/2010
Gross Alpha	0	89.0							4/23/2010
Gross Alpha	0	90.0							4/22/2010
Gross Beta	0	87.0							4/26/2010
Gross Beta	2.12	105.0							4/23/2010
Gross Beta	0.074	108.0							4/22/2010

Lab Approval: [redacted]

*NELAC Certified Parameter BDL = Below Detection Limit

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Darin McEleney QA Contact Phone: (440)655-6387

Work Order #: — Sample Program: —

Samplers: Darin McEleney

Parameters for Analysis

NOTE: Please report activity in dpm/100cm² (smears represent an area 100cm²)

	Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Gross Alpha	Gross Beta							Comments
1	3/5/10	10:00	Smear - 1	N/A	DM	1	X	X							Survey # 56
2	3/6/10	17:30	Smear - 2		DM	1	X	X							57
3	3/6/10	10:30	Smear - 3		DM	1	X	X							58
4	3/6/10	10:30	Smear - 4		DM	1	X	X							58
5	3/6/10	10:30	Smear - 5		DM	1	X	X							58
6	3/6/10	10:30	Smear - 6		DM	1	X	X							58
7	3/19/10	11:15	Smear - 7		DM	1	X	X							66
8	3/19/10	11:15	Smear - 8		DM	1	X	X							66
9	3/19/10	11:15	Smear - 9		DM	1	X	X							66
10	3/19/10	11:30	Smear - 10		DM	1	X	X							67

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[redacted]	4/19/10 / 12:00	[redacted]	04/22/10/1120

Shipped To (circle one):

PRISM APPL

Test America Other: Outreach Labs

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Darin McElerney QA Contact Phone: (440) 655-6387

Work Order #: — Sample Program: —

Samplers: Darin McElerney

Page 2 of 5

Parameters for Analysis

	Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Gross Alpha	Gross Beta							Comments
11	3/19/10	11:30	Smear - 11	N/A	DM	1	X	X							Survey # 67
12	3/19/10	11:30	Smear - 12		DM	1	X	X							67
13	3/19/10	11:30	Smear - 13		DM	1	X	X							67
14	3/19/10	11:30	Smear - 14		DM	1	X	X							67
15	3/20/10	10:00	Smear - 15		DM	1	X	X							68
16	3/28/10	15:00	Smear - 16		DM	1	X	X							74
17	3/28/10	15:00	Smear - 17		DM	1	X	X							74
18	3/28/10	15:00	Smear - 18		DM	1	X	X							74
19	3/28/10	15:00	Smear - 19		DM	1	X	X							74
20	3/28/10	15:00	Smear - 20		DM	1	X	X							74

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[redacted]	4/19/10 / 12:00	[redacted]	04/28/10/1128

Shipped To (circle one):

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Test America Other: Ostreach Labs

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TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Darin McElevey QA Contact Phone: (440) 655-6387

Work Order #: — Sample Program: —

Samplers: Darin McElevey

Page 3 of 5

Parameters for Analysis

	Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Gross Alpha	Gross Beta							Comments
21	3/28/10	15:00	Smear - 21	N/A	DM	1	X	X							Survey # 74
22	3/28/10	15:00	Smear - 22		DM	1	X	X							74
23	3/28/10	15:00	Smear - 23		DM	1	X	X							74
24	3/28/10	15:00	Smear - 24		DM	1	X	X							74
25	3/28/10	15:00	Smear - 25		DM	1	X	X							74
26	3/28/10	15:00	Smear - 26		DM	1	X	X							74
27	3/28/10	15:00	Smear - 27		DM	1	X	X							74
28	3/28/10	15:00	Smear - 28		DM	1	X	X							74
29	3/28/10	15:00	Smear - 29		DM	1	X	X							74
30	3/28/10	15:00	Smear - 30		DM	1	X	X							74

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[redacted]	4/19/10 / 12:00	[redacted]	042210/1120

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TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Darin McElency QA Contact Phone: (440) 655-6387

Work Order #: — Sample Program: —

Samplers: Darin McElency

Page 4 of 5

Parameters for Analysis

	Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Gross Alpha	Gross Beta							Comments
31	3/28/10	15:00	Smear - 31	N/A	DM	1	X	X							Survey # 74
32	3/28/10	15:00	Smear - 32		DM	1	X	X							74
33	3/28/10	15:00	Smear - 33		DM	1	X	X							74
34	3/28/10	15:00	Smear - 34		DM	1	X	X							74
35	4/6/10	10:00	Smear - 35		DM	1	X	X							75
36	4/7/10	10:30	Smear - 36		DM	1	X	X							76
37	4/7/10	10:30	Smear - 37		DM	1	X	X							76
38	4/7/10	10:30	Smear - 38		DM	1	X	X							76
39	4/14/10	12:45	Smear - 39		DM	1	X	X							78
40	4/14/10	12:45	Smear - 40		DM	1	X	X							78

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[redacted]	4/19/10/12:00	[redacted]	04/22/10/1120

Shipped To (circle one):

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Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

TPMC Sample Chain of Custody

Client: USACE

Project Name: Luckey FUSRAP

QA Contact: Darin McEleney QA Contact Phone: (440) 655-6387

Work Order #: — Sample Program: —

Samplers: Darin McEleney

Parameters for Analysis

Date	Time	Site ID	Sample Tracking Number	Sample Tech	Number of Containers	Gross Alpha	Gross Beta							Comments
4/19/10	11:30	Smear - Blank-1	N/A	DM	1	X	X							Blank 1
4/19/10	11:30	Smear - Blank-2		DM	1	X	X							Blank 2
4/19/10	11:30	Smear - Blank-3		DM	1	X	X							Blank 3
4/19/10	11:30	Smear - Blank-4		DM	1	X	X							Blank 4

N A

Relinquished by (signature):	Date/Time:	Received by (signature):	Date/Time:
[redacted]	4/19/10 / 12:00	[redacted]	04/22/10/1130

Shipped To (circle one):

PRISM APPL

Test America Other: Outreach Labs

Copies: **WHITE** and **YELLOW** copies accompany shipment to laboratory. **PINK** and **GOLD** copies retained by sampler.

Industrial Hygiene Report for Employee Exposures to Airborne Beryllium and Lead

Introduction

From November 24 through December 10, 2009 TerranearPMC-*Energy*Solutions (TES) Safety and Health (S&H) conducted personal sampling for airborne beryllium and lead. The purpose of this sampling episode was to assess personnel exposures to these airborne contaminants due to remediation activities conducted for the United States Army Corps of Engineers at the Luckey, Ohio site per the *Excavation Volume Uncertainty Reduction under the Luckey FUSRAP Site* Project.

Specific activities assessed were: Drilling, Waste Packaging and Soil Processing. Sampling was conducted as part of the TES commitment to employee safety and health; ensuring that field personnel were properly protected from the inhalation hazards associated with beryllium and lead.

Background

The Excavation Volume Uncertainty Reduction Project Site was the former location of the Brush Beryllium Company (BBC) where processing of beryllium ore was conducted. The site consists of thirteen buildings, two (2) production wells, an inactive sewage disposal system, parking lots and two (2) abandoned rail spur at the site on approximately 40 acres.

Due to past operations, a concern exists for such contaminants-of-concern (COCs) as beryllium, lead, radium-226, thorium-230, uranium-234 and uranium-238. TES has been tasked to reduce the volume and related cost estimate uncertainties by further delineating the vertical and horizontal extent of the COCs in the surface and subsurface soils at the Luckey Site. As such, these activities present potential health hazards to the workers that have been assigned to perform this work. This report focuses on the non-radiological hazards of beryllium and lead.

Sampling and Analysis Methodology

Industrial hygiene (IH) personal exposure sampling for beryllium and lead was conducted in accordance with 10 CFR 850, the Department of Energy (DOE) Chronic Beryllium Disease Prevention Program (CBDPP), and 29 CFR 1926.62, the United Stated Occupational Safety and Health Administration (OSHA) Standard for Lead for the Construction Industry. These regulations require that exposure assessments are conducted by placing a collection media about the employee breathing zone (within a 6-inch radius of the mouth/nose region) so as to determine the potential inhalation intake of these contaminants while performing their assigned work activities. The specific protocol employed was Method 7300 of the National Institute for Occupational Safety and Health (NIOSH) where the collection media was a mixed cellular ester fiber filter cassette connected to an air sampling pump operating between 1 – 4 liters per minute (LPM). Flowrates may vary or extend outside the flowrate range depending on specific conditions. Samples were sent to an analytical laboratory that is accredited by the

American Industrial Hygiene Association using the analytical process: Inductively Coupled Argon Plasma; Atomic Emissions Spectroscopy.

All work activities discussed in this report required respiratory protection. Therefore, all personnel associated with the field activities of drilling, waste packaging and soil processing wore full-face air-purifying respirators with type-100 cartridges. Based on sample results, down-grading of personal protective equipment may or may not be applicable (refer to the Results, Conclusion and Recommendations sections).

Results

Employee exposure results for beryllium and lead are presented in Tables 1-4 located in the Appendix Section. Tables 1, 2 and 3 indicate that personnel working on the drill rigs and performing waste packaging operations had airborne exposure concentrations for both beryllium and lead that were within the OSHA action levels of 0.2 micrograms per cubic meter ($\mu g/m^3$) and 30 $\mu g/m^3$, respectively.

Information presented in Table 4 indicates, that while lead exposures associated with soil sample processing were well controlled within the action level, the beryllium action level was exceeded on one occasion (12/6/09 at 0.334 $\mu g/m^3$) and were approached on two other occasions days (12/7/09 at 0.17 $\mu g/m^3$ and 12/8/09 at 0.14 $\mu g/m^3$). See the Conclusion and Recommendations Sections for further discussion regarding beryllium exposures for this operation.

Conclusion: Discussion of Results

Laboratory results were compared to occupational exposure limits as established and maintained by OSHA and are referred to as Permissible Exposure Limits (PELs) and Action Levels (ALs). The OSHA PEL is defined as the concentration in air of a substance to which nearly all workers may be repeatedly exposed for eight hours a day, forty hours per week for thirty years without receiving adverse health effects. The AL is a term used by OSHA (as well as other occupational health organizations) whereby a specific protective measure must be administered by the employer to ensure that individuals shall not be subjected to more severe (i.e. higher) exposure concentrations. Such measures may include respiratory protection, increased exposure monitoring, initiation of medical surveillance, etc. While ALs are usually ½ of the PEL, for beryllium and lead they are 0.1 PEL and 0.6 PEL, respectively.

Although the beryllium AL was exceeded during soil sample processing, personnel were wearing respiratory protection, thus appropriately controlling individual inhalation exposures for this operation.

Recommendations

1. While sampling and analysis indicate that drilling operations and waste packaging activities represent beryllium and lead inhalation exposure concentrations to be

controlled, there are a few workers that have received inconclusive Beryllium Lymphocyte Proliferation Test results. Because this test is designed to identify individuals that have sensitivity to beryllium, these workers need to continue wearing respirators. Should additional testing indicate that they are not sensitive to beryllium, they may downgrade PPE requirements. Other workers involved with these activities, may continue work without mandatory respirator protection.

2. Workers processing soil samples need to continue wearing respirator protection.

3. While IH results presented in this report are associated with the specific work activities of drilling, waste packaging and soil sample processing, these results cannot be translated to represent other activities. Therefore, whenever a new activity that represents a potential health concern due to beryllium and/or lead is conducted (such as the anticipated trenching tasks), respirator protection shall be initially required.

4. IH sampling needs to continue periodically (as opposed to the previous daily basis) per 10 CFR 850 and TES CBDPP requirements. The purpose is to verify that operations and subsequent employee exposures have remained constant.

In addition to this report, personal notifications shall be issued to all individuals that wore sampling equipment. These notifications are required per 10 CCR 850 and 29 CFR 1926.62 and shall specify the individual's exposure concentration along with any other pertinent information determined through IH sampling and analysis.

Please feel free to contact TES Safety and Health, if there are any further questions or inquiries regarding this IH survey.

Robert A. Brounstein, MS, CIH, CSP
Corporate Director, Safety and Health
TerraneaerPMC, LLC
Cell (505) 412-5718
Office (505) 663-7105

APPENDIX A

Tables 1 -4 (Beryllium and Lead Personal Sampling Results)

Table 1: Drill Rig #1

Date	Number	Flow Rate (LPM)	Sample Time (min)	Sample Volume (Liters)	Be Results ($\mu g/m^3$)	Pb Results ($\mu g/m^3$)
12/1/2009	Luckey-BZA-11 (61)	3 LPM	495	1485	0.001	0.206
12/2/2009	Luckey-BZA-14 (71)	3 LPM	585	1755	0.00741	0.163
12/4/2009	Luckey-BZA-17 (90)	4 LPM	480	1920	0.0154	0.168
12/7/2009	Luckey-BZA-25 (107)	4 LPM	540	2160	0.00671	0.148
12/10/2009	Luckey-BZA-28 (127)	4 LPM	294	1176	0.0068	0.171

Table 2: Drill Rig 2

Date	Sample Number	Flow Rate (LPM)	Sample Time (min)	Sample Volume (liters)	Be Results ($\mu g/m^3$)	Pb Results ($\mu g/m^3$)
11/24/2009	Luckey-BZA-10 (58)	3 LPM	589	1767	0.00545	0.169
12/1/2009	Luckey-BZA-12 (62)	3 LPM	609	1827	0.0316	0.261
12/2/2009	Luckey-BZA-13 (70)	3 LPM	570	1710	0.00117	0.164
12/3/2009	Luckey-BZA-15 (78)	3 LPM	430	1290	0.0134	0.417
12/4/2009	Luckey-BZA-16 (88)	3 LPM	510	1530	0.00294	0.241
12/7/2009	Luckey-BZA-24 (106)	4 LPM	515	2060	0.00777	0.153
12/8/2009	Luckey-BZA-27 (115)	4 LPM	550	2200	0.0157	0.151
12/10/2009	Luckey-BZA-29 (128)	4 LPM	294	1176	0.00595	0.240

Table 3: Waste Packaging (IDW Management)

Date	Sample Number	Flow Rate (LPM)	Sample Time (min)	Sample Volume (liters)	Be Results ($\mu g/m^3$)	Pb Results ($\mu g/m^3$)
12/6/2009	Luckey-BZA-19 (97)	4 LPM	172	688	0.0979	0.606
12/6/2009	Luckey-BZA-20 (98)	4 LPM	121	484	0.0516	0.330
12/6/2009	Luckey-BZA-21 (99)	4 LPM	124	496	0.0354	0.484

Table 4: Sample Process Connex Box (Process Soil Samples for Lab Analysis)

Date	Sample Number	Flow Rate(LPM)	Sample Time (min)	Sample Volume (liters)	Be Results ($\mu g/m^3$)	Pb Results ($\mu g/m^3$)
12/5/2009	Luckey-BZA-18 (96)	4 LPM	300	1200	0.0171	0.345
12/6/2009	Luckey-BZA-22 (100)	4 LPM	159	1936	0.334	0.932
12/7/2009	Luckey-BZA-23 (105)	4 LPM	500	2000	0.178	0.589
12/8/2009	Luckey-BZA-26 (112)	4 LPM	525	2100	0.14	0.477

Note:
LPM = liters per minute
$\mu g/m^3$ = micrograms per cubic meter
A Blank sample was sent with and represents a sample blank for sample numbers 58-97.
Results: beryllium < 0.0015 µg/sample; lead < 0.224 µg/sample
A Blank sample was sent with and represents a sample blank for sample numbers 98-128
Results: beryllium < 0.001 µg/sample; lead < 0.229 µg/sample

Free Release Trailmobile 65 VLB Trailer 1PT011AJ8F9006174

SURVEY RECORD LOG Items/Supplies/Equipment

SURVEYOR Rigby/Sutherland BUILDING # Energy Solutions Analytical Lab

INST/Det (α,β,γ) Circle 1: 2221/44-9 SN 47479/PRD15324 DATE/TIME 3-27-10/1130 BKG 40 EFF 11.1%

INST/Det (α,β,γ) Circle 1: / SN / DATE/TIME / BKG / EFF /

INST/Det (α,β,γ) Circle 1: N/A SN N/A DATE/TIME N/A BKG N/A EFF N/A

INST/Det (α,β,γ) Circle 1: / SN / DATE/TIME / BKG / EFF /

INST (exp rate) / SN / DATE/TIME / BKG /

INST (smears) L2929/4310-1 SN 157319/PR16223 DATE/TIME 3-27-10/1406 BKG α 0.16 EFF 24.9%

LAW: 40-100 GCPM BKG β 38 EFF 19.9%

CAL DUE: INST (α): INST (β,γ): 9-12-10 INST (γ): INST (smears): 6-14-10 INST (exp rates):

Detector: Detector: 9-12-10 Detector: Detector: 6-14-10

GRID COORDINATES	~~GROSS α~~ Range GCPM	GROSS β,γ CPM	GROSS γ (NaI) CPM	MICRO REM READING	GROSS α SMEAR CPM	GROSS β,γ SMEAR CPM
1 Bottom of Gray Chair	40-60	19	N/A	N/A	0	34
2 Bottom of Orange Chair	40-80	32			0	45
3 Top of Small Portable Oven	40-50	30			0	32
4 Inside Door of College Scale	40-50	26			0	51
5 Top of Printer	40-60	38			0	49
6 Top of Thermolyne Scale	40-50	30			1	37
7 Keyboard	40-100	33			0	40
8 Handle of Rad Safe	40-80	35			2	36
9 Top of Computer Processor	40-60	21			0	51
10 Top of White Scale Case	40-60	32			0	36
Note: 100% of items/supplies/equipment in lab were surveyed.						
Range: 30-100 GCPM / LAW 40-60 GCPM.						
10% of items documented above.						

SURVEY RECORD LOG

FREE RELEASE ENERGY SOLUTIONS LAB
* 1PT011J8F9006174

SURVEYOR KEN NOFZIGER / MIKE MCCOY / CATHERINE BARBA-ABAY BUILDING # 65 K lb TRANSMOBILE INC. TRAILER

INST/Det (α,β,γ) Circle 1 L2221/449 SN 147479/PR 015324 DATE/TIME 3-28-10 1500 BKG 38 cpm EFF 11.1 %

INST/Det (α, β,γ) Circle 1 _____ SN _____ DATE/TIME _____ BKG _____ EFF _____

INST/Det (α, β,γ) Circle 1 _____ SN _____ DATE/TIME _____ BKG _____ EFF _____

INST/Det (α, β,γ) Circle 1 N A SN _____ DATE/TIME N A BKG _____ EFF _____

INST (exp rate) _____ SN _____ DATE/TIME _____ BKG _____

INST (smears) L2929/43-101 SN 157342/PR 162233 DATE/TIME 3-28-10 1800 BKG α 0.03 cpm EFF 26.6 %

LAW: 18-62 gcpm BKG β 40 cpm EFF 19.4 %

CAL DUE: INST (α): _____ INST (β,γ): 9-12-10 INST (γ): _____ INST (smears): 6-14-10 INST (exp rates): _____

Detector: _____ Detector: 9-12-10 Detector: _____ Detector: 6-14-10

GRID COORDINATES	GROSS α CPM	GROSS β,γ CPM	GROSS γ (NaI) CPM	MICRO REM READING	GROSS α SMEAR CPM	GROSS β,γ SMEAR CPM
#50 OFFICE SUPPLIES FRONT AREA		29			0	42
CABINETS (INSIDE)	N A	N A	N A	N A	N A	N A
			N A			

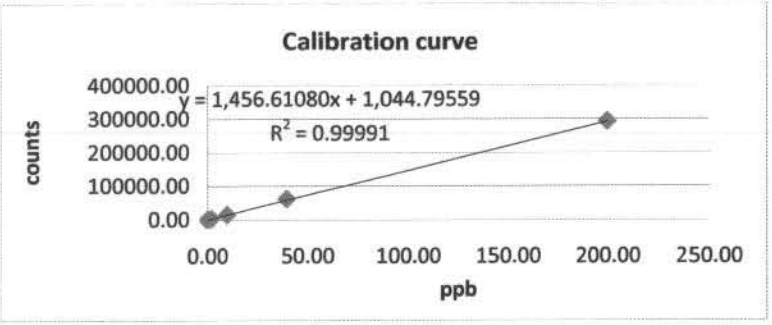
* NOTE: SEE Be RESULTS ATTACHED

3/27/2010
KDN

Mobile Lab Release Survey SR#
1PTO11AJ8F9006174 Trailmobile Inc.
65Klb Trailer

Beryllium
Beryllium
9.01218

	counts
0.00	392.90
0.50	1264.30
2.00	3373.80
10.00	15652.40
40.00	61432.20
200.00	291947.40



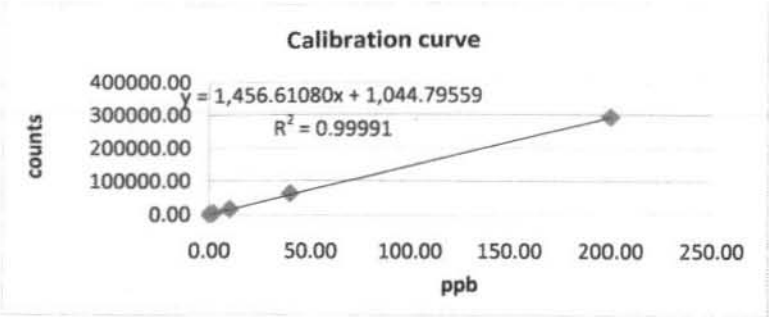
	Results		Converted Value		Smear greater than release criteria?
	0 Cal	0.00	PPB		
	40 Cal	39.08	PPB		
	200 Cal	199.45	PPB		
	MS 0	-0.01	PPB		
	MS Trace BeO	9.35	PPB		
Items from inside cabinet # 11		0.38	PPB	0.038 ug Be/100 cm2	No
Items from inside cabinet # 12		0.20	PPB	0.02 ug Be/100 cm3	No
Items from inside cabinet # 13		0.25	PPB	0.025 ug Be/100 cm4	No
Items from inside cabinet # 14		0.14	PPB	0.014 ug Be/100 cm5	No
Items from inside cabinet # 15		0.16	PPB	0.016 ug Be/100 cm6	No
Items from inside cabinet # 16		0.27	PPB	0.027 ug Be/100 cm7	No
Items from inside cabinet # 19		0.13	PPB	0.013 ug Be/100 cm8	No
Items from inside cabinet # 20		0.24	PPB	0.024 ug Be/100 cm9	No
Items from inside cabinet # 21		0.14	PPB	0.014 ug Be/100 cm10	No
Items from inside cabinet # 24		0.26	PPB	0.026 ug Be/100 cm11	No
Items from inside cabinet # 25		0.35	PPB	0.035 ug Be/100 cm12	No
Miscellaneous items		0.39	PPB	0.039 ug Be/100 cm13	No
Items from inside cabinet # 21		0.01	PPB	0.001 ug Be/100 cm14	No
Items from inside cabinet # 22		0.03	PPB	0.003 ug Be/100 cm15	No
Dewars		0.10	PPB	0.01 ug Be/100 cm16	No

3/27/2010
KDN

Mobile Lab Release Survey SR#
1PTO11AJ8F9006174 Trailmobile Inc.
65Klb Trailer

Beryllium
Beryllium
9.01218

	counts
0.00	392.90
0.50	1264.30
2.00	3373.80
10.00	15652.40
40.00	61432.20
200.00	291947.40



Results		Converted Value	Smear greater than release criteria?	
0 Cal	0.00	PPB		
40 Cal	39.08	PPB		
200 Cal	199.45	PPB	* SEE NEXT SHEET	
MS 0	-0.01	PPB		
MS Trace BeO	9.35	PPB		
Items from inside cabinet # 11	0.38	PPB	0.038 ug Be/100 cm2	No
Items from inside cabinet # 12	0.20	PPB	0.02 ug Be/100 cm3	No
Items from inside cabinet # 13	0.25	PPB	0.025 ug Be/100 cm4	No
Items from inside cabinet # 14	0.14	PPB	0.014 ug Be/100 cm5	No
Items from inside cabinet # 15	0.16	PPB	0.016 ug Be/100 cm6	No
Items from inside cabinet # 16	0.27	PPB	0.027 ug Be/100 cm7	No
Items from inside cabinet # 19	0.13	PPB	0.013 ug Be/100 cm8	No
Items from inside cabinet # 20	0.24	PPB	0.024 ug Be/100 cm9	No
Items from inside cabinet # 21	0.14	PPB	0.014 ug Be/100 cm10	No
Items from inside cabinet # 24	0.26	PPB	0.026 ug Be/100 cm11	No
Items from inside cabinet # 25	0.35	PPB	0.035 ug Be/100 cm12	No
Miscellaneous items	0.39	PPB	0.039 ug Be/100 cm13	No
Items from inside cabinet # 21	0.01	PPB	0.001 ug Be/100 cm14	No
Items from inside cabinet # 22	0.03	PPB	0.003 ug Be/100 cm15	No
Dewars	0.10	PPB	0.01 ug Be/100 cm16	No

N/A

PAGE 4 OF 5

PAGE 1 OF 5

	Inside heating duct above cabinets # 8-9 #26	0.19	PPB	0.019	ug Be/100 cm27	No	
	Computer work space #27	0.29	PPB	0.029	ug Be/100 cm28	No	
	Left sheilding stand (D2) #28	0.05	PPB	0.005	ug Be/100 cm29	No	
	Right sheilding stand (D1) #29	0.07	PPB	0.007	ug Be/100 cm30	No	
	Wall #30	0.10	PPB	0.01	ug Be/100 cm31	No	
	# 6 cabinet face #31	0.03	PPB	0.003	ug Be/100 cm32	No	
	Matrix spike	9.33	PPB	0.933			
	Bottom shelf of Tennelec #32	0.37	PPB	0.037	ug Be/100 cm34	No	
	Back wall -small storage room #33	0.02	PPB	0.002	ug Be/100 cm35	No	
	Top of File cabinet in small storage room #34	0.05	PPB	0.005	ug Be/100 cm36	No	
	Small storage area -Floor #35	0.12	PPB	0.012	ug Be/100 cm37	No	
	Work area by shields-Floor #36	0.13	PPB	0.013	ug Be/100 cm38	No	
	Floor-see map #37	0.09	PPB	0.009	ug Be/100 cm39	No	
	Floor-see map #38	0.09	PPB	0.009	ug Be/100 cm40	No	
	Floor-see map #39	0.17	PPB	0.017	ug Be/100 cm41	No	
	Floor-see map #40	0.25	PPB	0.025	ug Be/100 cm42	No	
	Floor-see map #41	0.71	PPB	0.071	ug Be/100 cm43	No	
	Floor-see map #42	0.21	PPB	0.021	ug Be/100 cm44	No	
	Matrix spike	9.33	PPB	0.933			
	Floor-see map #43	0.77	PPB	0.077	ug Be/100 cm46	No	
	Floor-see map #44	1.84	PPB	0.184	ug Be/100 cm47	No	
	Floor-see map #45	0.58	PPB	0.058	ug Be/100 cm48	No	
	Floor-see map #46	0.25	PPB	0.025	ug Be/100 cm49	No	
	Floor-see map #47	0.31	PPB	0.031	ug Be/100 cm50	No	
	Floor-see map #48	-0.01	PPB	-0.001	ug Be/100 cm51	No	
	Floor-see map #49	-0.01	PPB	-0.001	ug Be/100 cm52	No	
Outside	Front hitch bar #1	-0.01	PPB	-0.001	ug Be/100 cm53	No	
	Rear door-left #3	0.05	PPB	0.005	ug Be/100 cm54	No	
Fume hood release survey	Left hood (A) above HEPA filter #1	0.00	PPB	0	ug Be/100 cm55	No	
	Left hood (A) sides #2	0.02	PPB	0.002	ug Be/100 cm56	No	
	Left hood (A) bottom #3	0.01	PPB	0.001	ug Be/100 cm57	No	
*See attached	Misc. Items Office supplies inside cabinets in front area #50	0.72	PPB	0.072	ug Be/100 cm58	No	
Fum Hood Release survey	Right hood (B) Enclosure above HEPA filter #1	0.05	PPB	0.005	ug Be/100 cm59	No	
	Right hood (B) back wall #2	0.15	PPB	0.015	ug Be/100 cm60	No	
	Right hood (B) center divider between (A) & (B) #3	1.24	PPB	0.124	ug Be/100 cm61	No	
	Right hood (B) Right Wall #4	0.00	PPB	0	ug Be/100 cm62	No	
	Right hood (B) Bottom #5	0.33	PPB	0.033	ug Be/100 cm63	No	
	Right hood (B) Front window inside #6	0.08	PPB	0.008	ug Be/100 cm64	No	
	Right hood (B) Front window outside #7	0.00	PPB	0	ug Be/100 cm65	No	
	Right hood (B) top #8	0.20	PPB	0.02	ug Be/100 cm66	No	
	Right hood (B) fan motor #9	0.71	PPB	0.071	ug Be/100 cm67	No	
	0 Cal	0.00	PPB				
	40 Cal	39.41	PPB				
	200 Cal	198.18	PPB				
	MS 0	-0.01	PPB				
	MS Trace BeO	9.33	PPB				

N/A

Appendix L

Investigation Derived Waste

(Provided in Electronic Files)

Ditch Sample Results

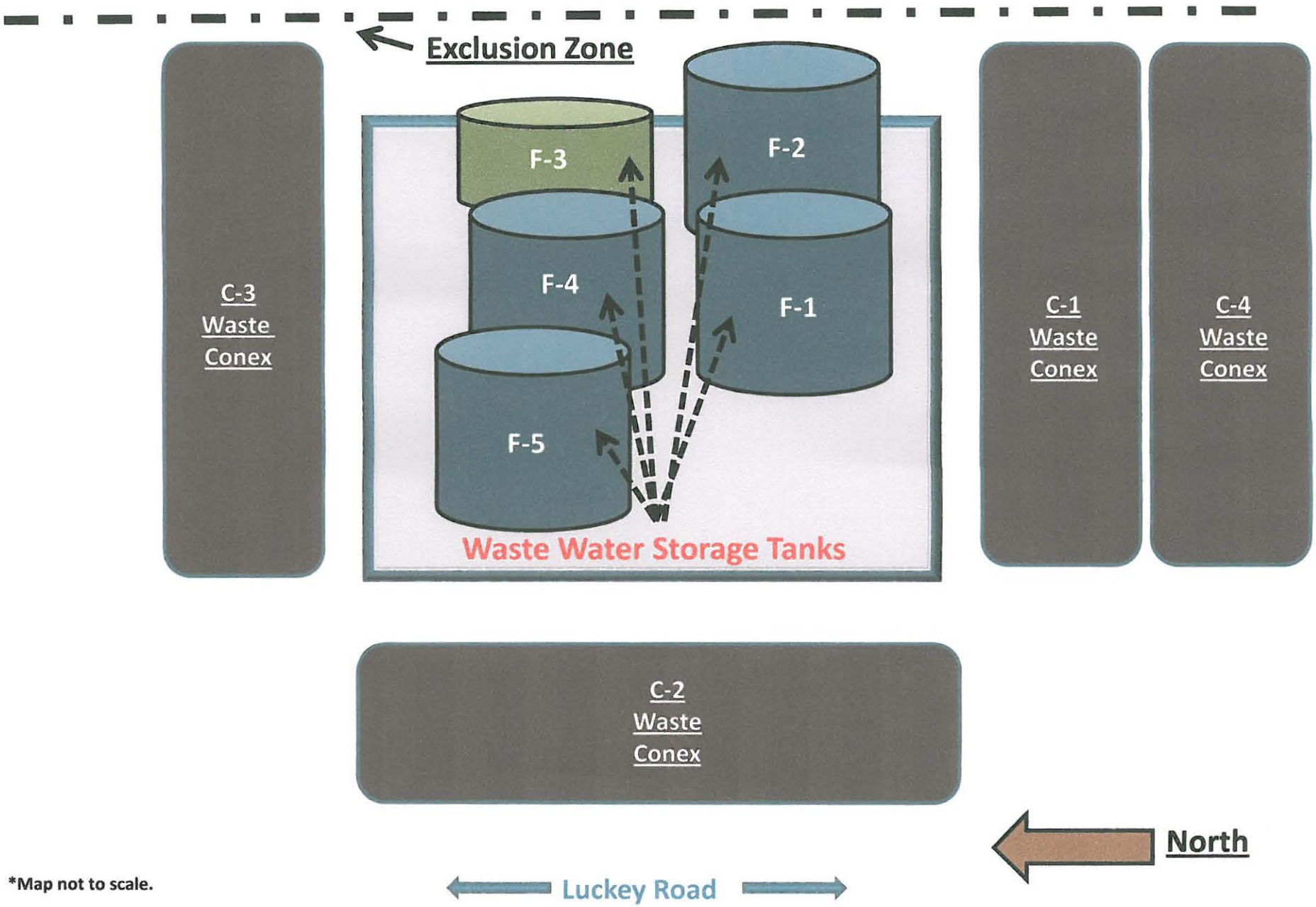
Luckey IDW

Lucky Waste Drum Inventory

Lucky Composite Waste Samples

RAM CONEX MAP

LUCKEY WASTE STORAGE AREA - MAY 2010



*Map not to scale.

Page 1 of 1

SURVEY RECORD LOG

SURVEYOR Baine / Rigby BUILDING # Conex / C1 / C2 / C3 / C4

INST/Det (α, β,γ) Circle 1 L-19 SN 144029 DATE/TIME 5/1/10 1530 BKG 5 EFF 9

INST/Det (α, β,γ) Circle 1 _____ SN _____ DATE/TIME _____ BKG _____ EFF _____

INST/Det (α, β,γ) Circle 1 _____ SN _____ DATE/TIME _____ BKG _____ EFF _____

INST/Det (α, β,γ) Circle 1 _____ SN _____ DATE/TIME _____ BKG _____ EFF _____

INST (exp rate) _____ SN _____ DATE/TIME _____ BKG _____

INST (smears) _____ SN _____ DATE/TIME _____ BKG α _____ EFF _____

NA READINGS = INACCESSABLE BKG β _____ EFF _____

CAL DUE: INST (α): _____ INST (β,γ): L-19 INST (γ): _____ INST (smears): _____ INST (exp rates): _____

Detector: _____ Detector: 9-13-10 Detector: _____ Detector: _____

GRID COORDINATES	GROSS α CPM	GROSS β,γ CPM	GROSS γ (NaI) CPM	MICRO REM READING	GROSS α SMEAR CPM	GROSS β,γ SMEAR CPM
Conex C1 Entry Door				8		
Left Side				9		
Right Side				N/A		
End				6		
Conex C2 Entry Door				6		
" Left Side				9		
" Right " Side				7		
" " End		N	A	6		
Conex C3 Entry Door				9		
Right Side				11		
Left Side				10		
End				7	N	A
Conex C4 Entry Door				6		
Right Side				8		
Left Side				N/A		
End				9		

Waste Water Storage Area

SURVEY RECORD LOG CONTINUATION FORM

GRID COORDINATES	GROSS α CPM	GROSS β,γ CPM	GROSS γ (NaI) CPM	MICRO REM READING	GROSS α SMEAR CPM	GROSS β,γ SMEAR CPM
F-1				6		
F-2				6		
F-3		N	A	5	N	A
F-4				6		
F-5				5		
			N	A		

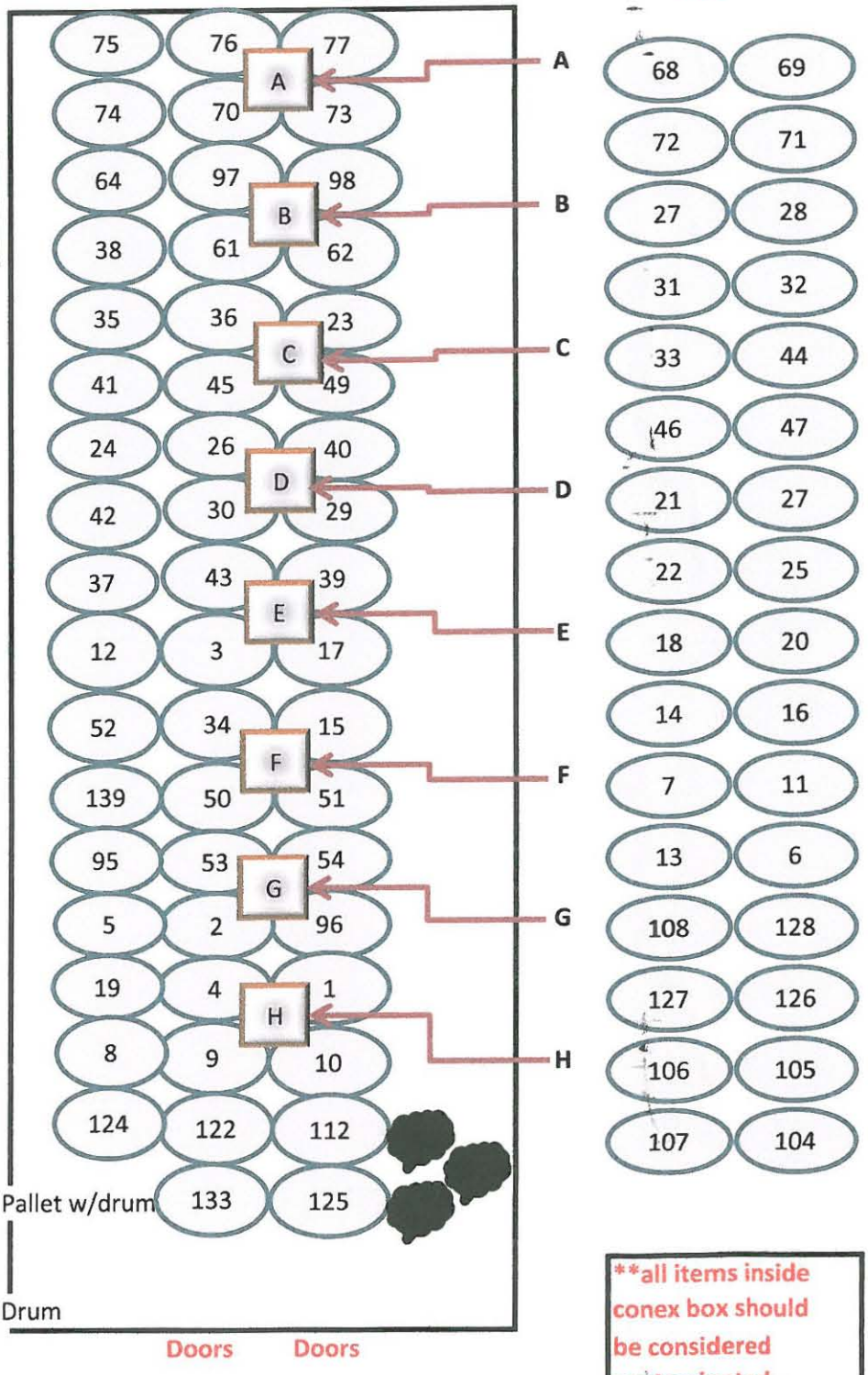
CONTAINER INVENTORY

Container: C-1

Date: April 28, 2010
Tech: Rigby / McCoy / Baine

Contents:

55 Gal Drums, archive soil samples
IDW Bags, plastic, lab waste,
wood, pallets



North

Key

IDW Bags

Pallet w/Drums

Drums

**all items inside conex box should be considered contaminated.

CONTAINER INVENTORY

Container: C-2

Date: April 28, 2010
Tech: Rigby / McCoy / Baine

Shelf 1:
a. Lab Samples
long handle tool
b. Be Samples

c. chairs, fan, heaters

d. Lab Equip for
soil processing

Shelf 2:
a. 5 gal buckets

b. Rad Samples
Bedrock cores
c. Lab Samples
Bedrock cores
d. Sinks
supplies

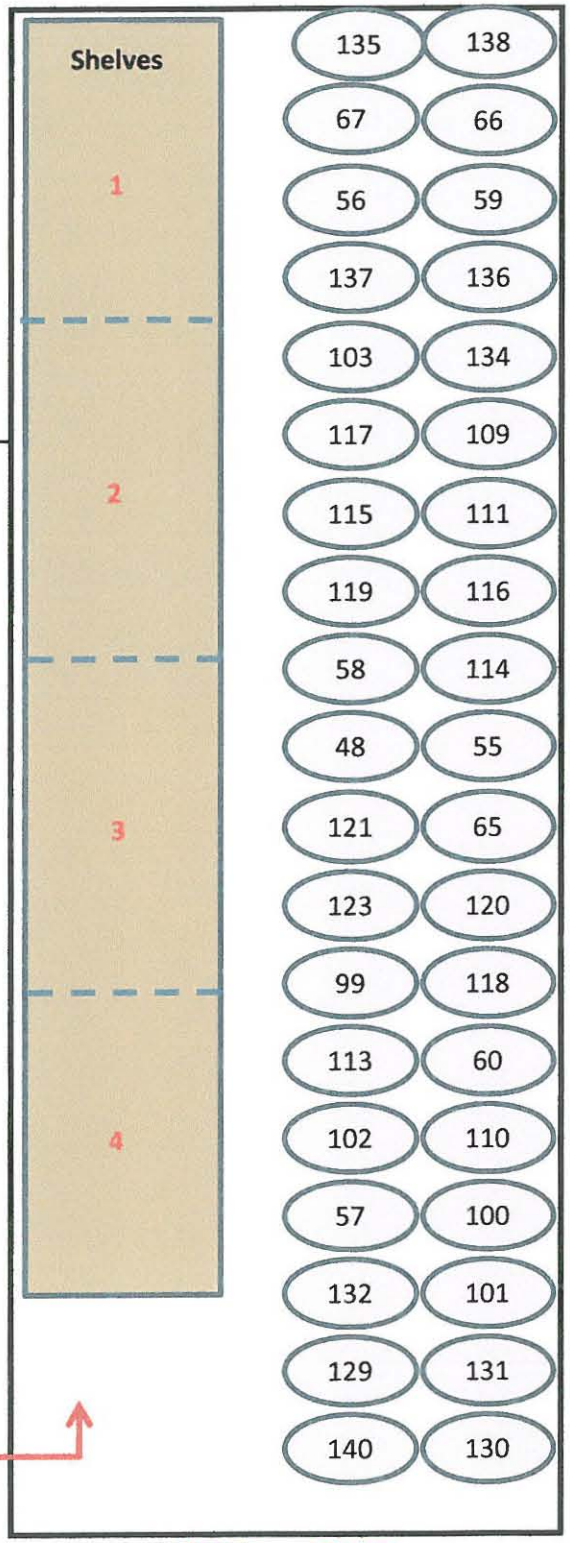
Shelf 3:
a. coolers with MH samples
Lab Samples
b. Rad Samples

c. Ductwork for ventilation

d. Pet Carrier (air samplers)

Shelf 4:
a. lead shielding for 2x2
RCT tools for ditch survey
b. Misc supply
Rad samples
c. Saw, soil crusher,
Rad supply
d. rubber site boots, wood

***Floor in Front: Ovens (2)**



Contents:

55 Gal Drums, archive soil samples, metal, plastic, wood

****all items inside conex box should be considered contaminated.**

Shelf Key:
a. top shelf
b. 2nd shelf
c. 3rd shelf
d. floor

North

Key

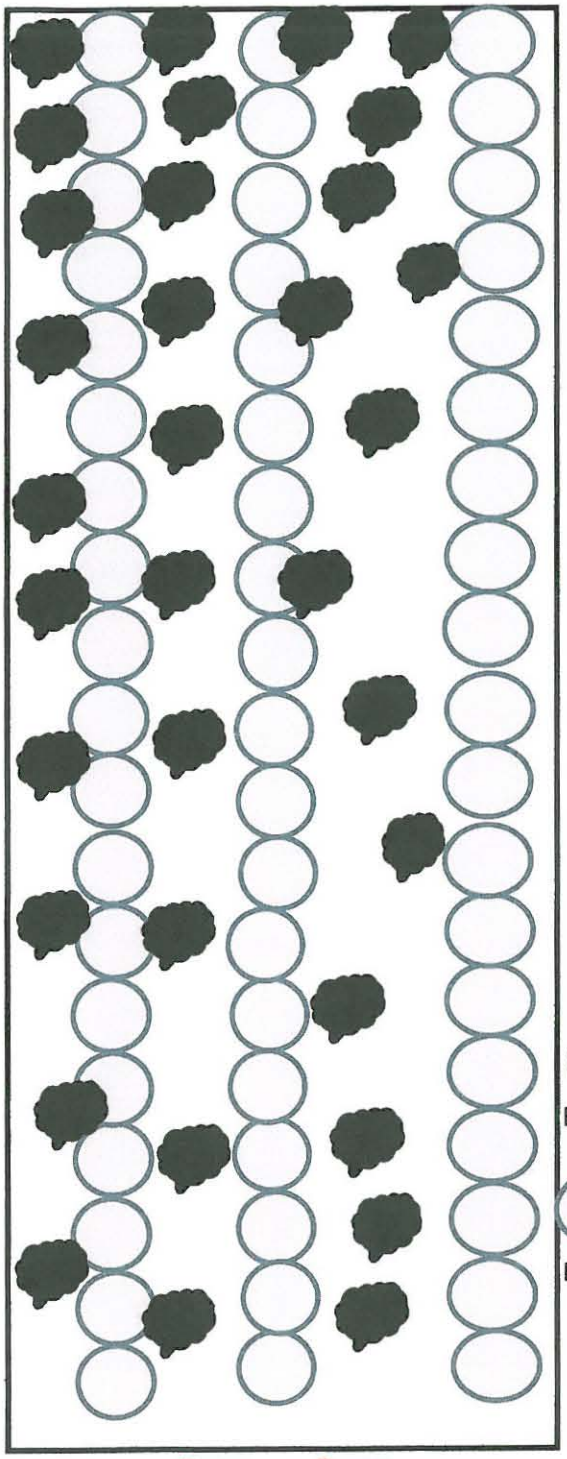
Drum

CONTAINER INVENTORY

Container: C-3

Date: April 28, 2010
Tech: Rigby / McCoy / Baine

Contents:
60 Empty Waste Drums
IDW Bags
Wood
Metal
Plastic
Pallets



**all items inside conex box should be considered contaminated.

Key

Bags, Wood, Pallets, metal

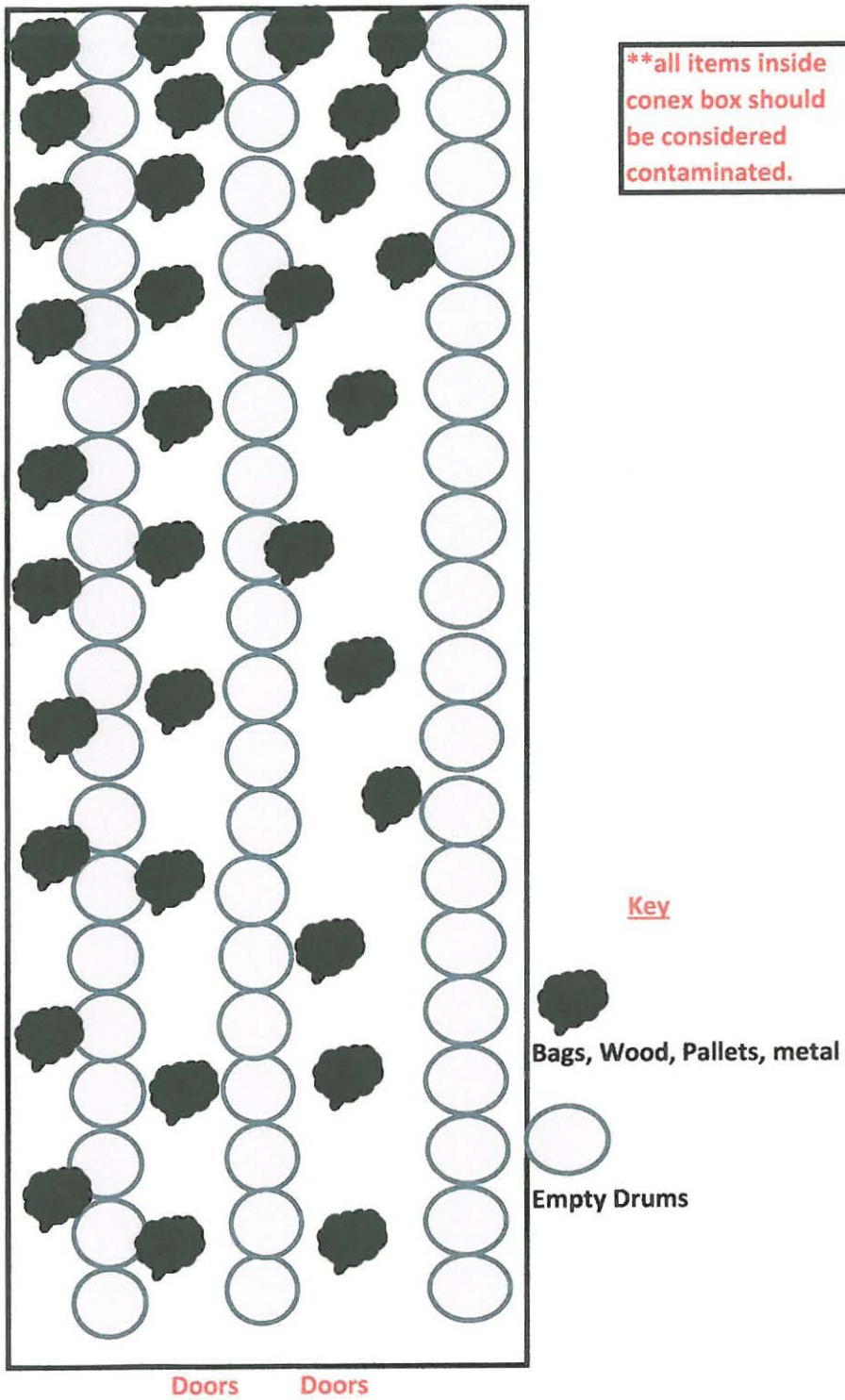
Empty Drums

CONTAINER INVENTORY

Container: C-4

Date: April 28, 2010
Tech: Rigby / McCoy / Baine

Contents:
100 Empty Waste Drums
IDW Bags
Wood
Metal
Plastic
Pallets



**all items inside conex box should be considered contaminated.

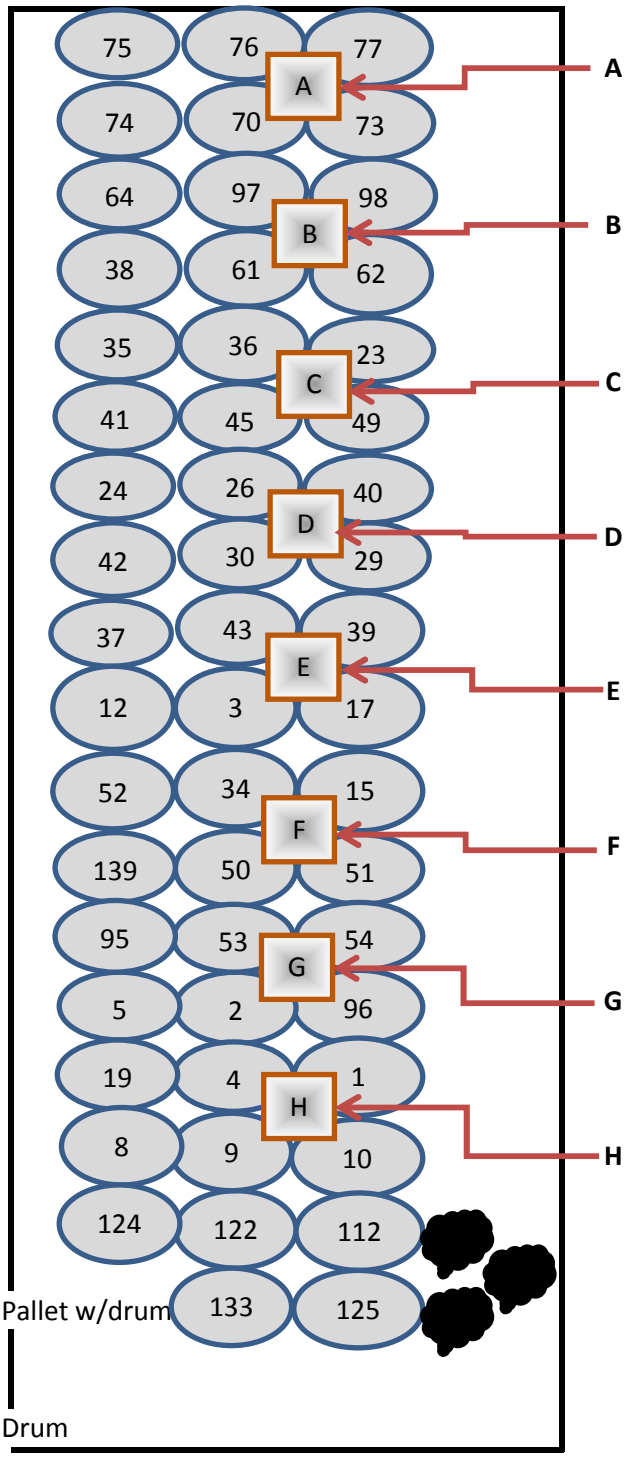
CONEX 1 CONTAINER INVENTORY

Container: C-1

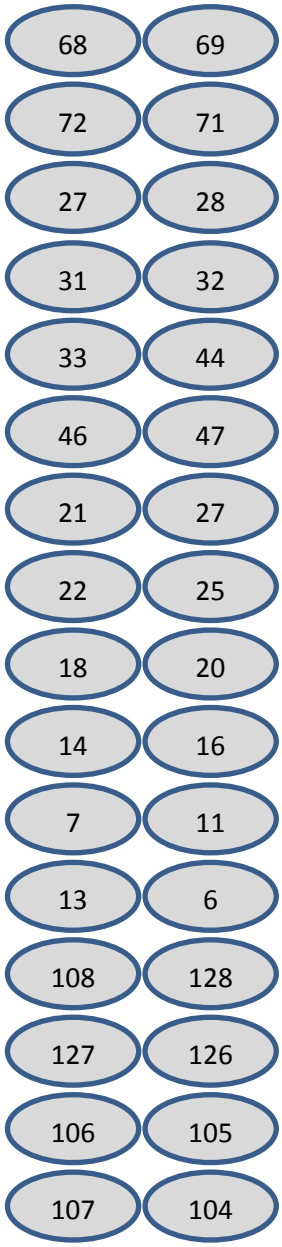
Date: April 28, 2010
Tech: Rigby / McCoy / Baine

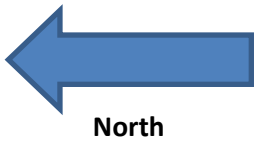
Contents:

55 Gal Drums, archive soil samples
IDW Bags, plastic, lab waste,
wood, pallets



TOP



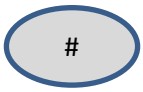


North

Key

IDW Bags

Pallet w/Drums



Drums

****all items inside conex box should be considered contaminated.**

CONEX 2 CONTAINER INVENTORY

Container: C-2

Date: April 28, 2010
Tech: Rigby / McCoy / Baine

Shelf 1:
a. Lab Samples
long handle tool
b. Be Samples

c. chairs, fan, heaters

d. Lab Equip for
soil processing

Shelf 2:
a. 5 gal buckets

b. Rad Samples
Bedrock cores
c. Lab Samples
Bedrock cores
d. Sinks
supplies

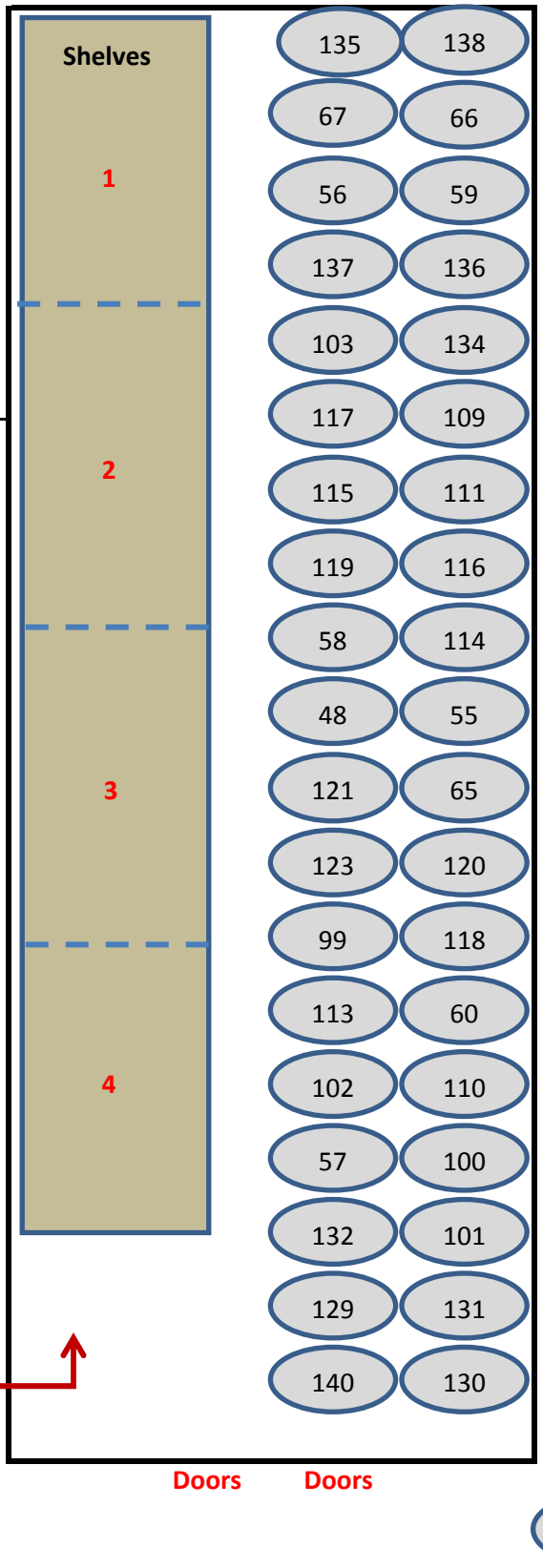
Shelf 3:
a. coolers with MH samples
Lab Samples
b. Rad Samples

c. Ductwork for ventilation

d. Pet Carrier (air samplers)

Shelf 4:
a. lead shielding for 2x2
RCT tools for ditch survey
b. Misc supply
Rad samples
c. Saw, soil crusher,
Rad supply
d. rubber site boots, wood

***Floor in Front: Ovens (2)**



Contents:

55 Gal Drums, archive soil samples, metal, plastic, wood

****all items inside conex box should be considered contaminated.**

Shelf Key:
a. top shelf
b. 2nd shelf
c. 3rd shelf
d. floor

North

Key

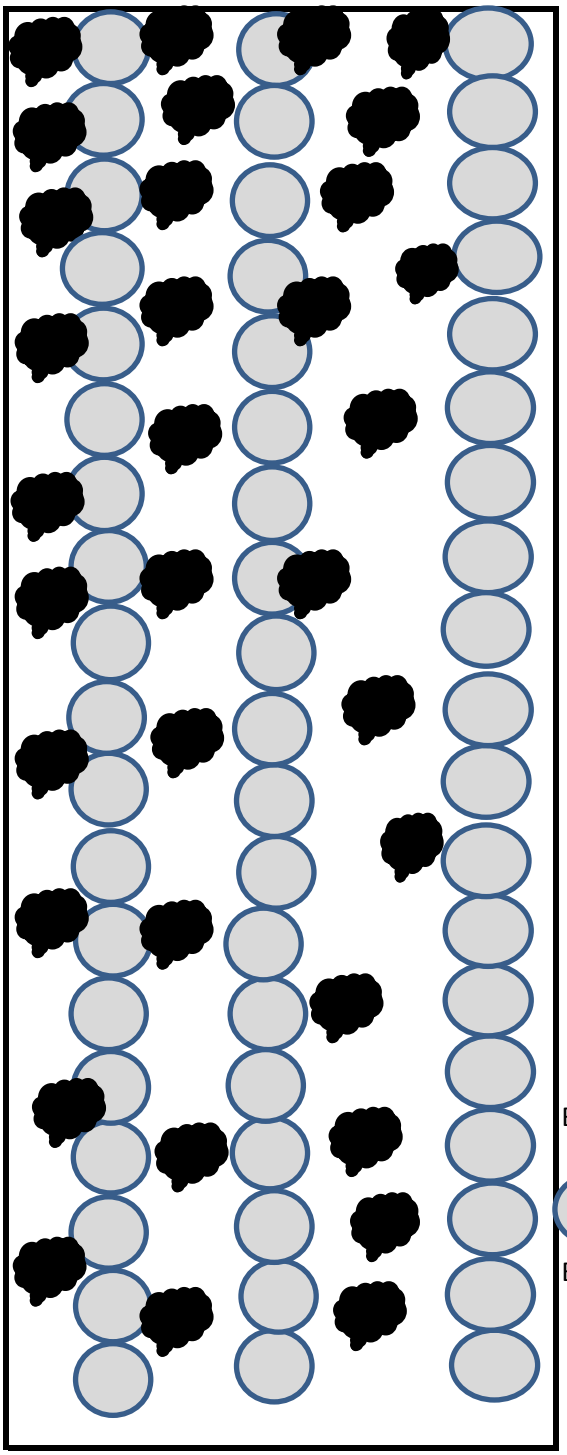
Drum

CONEX 3 CONTAINER INVENTORY

Container: C-3

Date: April 28, 2010
Tech: Rigby / McCoy / Baine

Contents:
60 Empty Waste Drums
IDW Bags
Wood
Metal
Plastic
Pallets



****all items inside conex box should be considered contaminated.**

Key

Bags, Wood, Pallets, metal

Empty Drums

CONEX 4 CONTAINER INVENTORY

Container: C-4

Date: April 28, 2010

Tech: Rigby / McCoy / Baine

Contents:

100 Empty Waste Drums

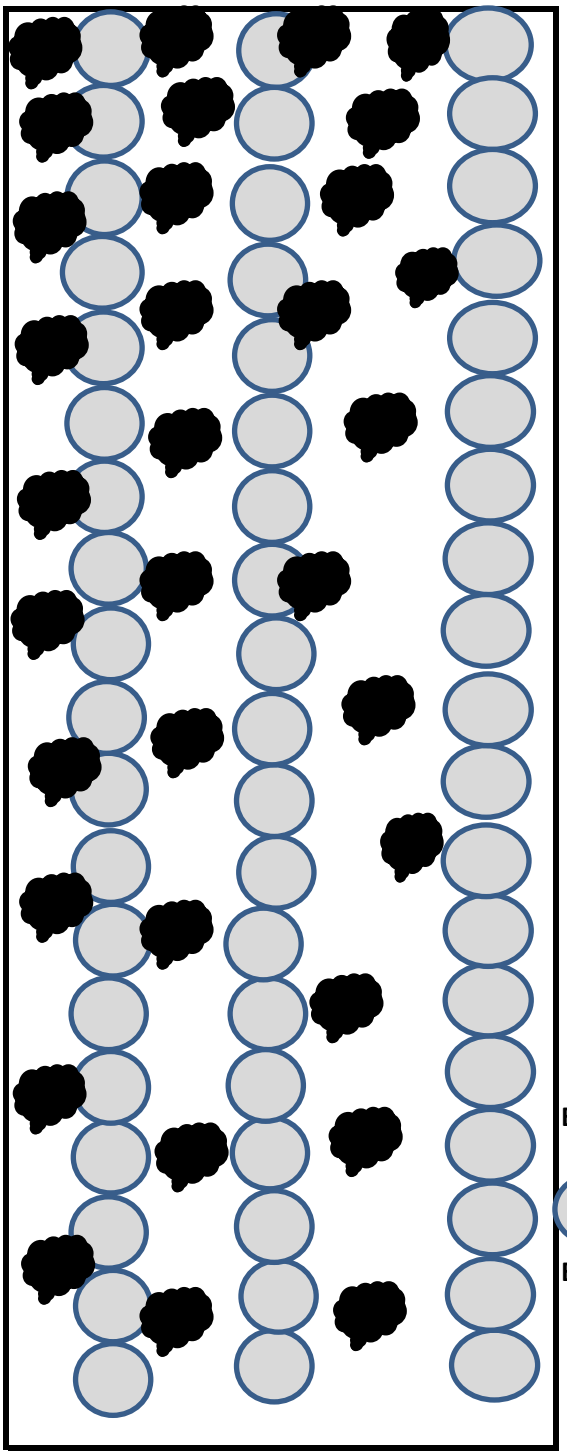
IDW Bags

Wood

Metal

Plastic

Pallets



****all items inside conex box should be considered contaminated.**

Key

Bags, Wood, Pallets, metal

Empty Drums

Appendix M

Site Photos

(Provided in Electronic Files)

Luckey Photo Log

File	Photo	Date Taken	Location	Description
TR-011410	TR-001	1/14/2010	TR03	View of valve and pipe encountered in trench.
TR-011410	TR-002	1/14/2010	TR03	View of trench looking east.
TR-011410	TR-003	1/14/2010	TR04	View of trench looking north.
TR-011410	TR-004	1/14/2010	TR04	View of trench looking north of two steel lines.
TR-011510	TR-005	1/15/2010	TR06	View of trench looking east of water infiltration from side wall.
TR-011510	TR-006	1/15/2010	TR06	View of trench looking north.
TR-011510	TR-007	1/15/2010	TR06A	View of trench looking south.
TR-011510	TR-008	1/15/2010	TR06A	View of manhole encountered in southwest corner of trench.
TR-011610	TR-009	1/16/2010	TR01	View of trench looking north.
TR-011610	TR-010	1/16/2010	TR01	Terracota drain tile in west wall.
TR-011610	TR-011	1/16/2010	TR01	Northeast corner of trench showing steel line (broken off) and white material.
TR-011610	TR-012	1/16/2010	TR02	View of trench looking northwest, showing three cast iron lines.
TR-011610	TR-013	1/16/2010	TR05	View of trench looking northwest, showing 3-inch steel line in end wall.
TR-011610	TR-014	1/16/2010	TR05	View of steel strap in south end wall with rust staining present.
TR-011710	TR-015	1/17/2010	TR07	View of trench looking north.
TR-011710	TR-016	1/17/2010	TR07	View of trench looking north.
TR-011810	TR-017	1/18/2010	TR08	View of trench looking northeast.
TR-011810	TR-018	1/18/2010	TR08	View of line encountered in trench.
TR-011810	TR-019	1/18/2010	TR09	View of trench looking northeast.
TR-011810	TR-020	1/18/2010	TR09	View of steel line encountered in trench.
TR-011910	TR-021	1/19/2010	TR08	Photograph of side wall scanning.
TR-011910	TR-022	1/19/2010	TR09	Creating sump at west end to manage water.
TR-011910	TR-023	1/19/2010	TR09	View of steel lines in south side wall.
TR-011910	TR-024	1/19/2010	TR09	View of "stained material" in southwest corner of trench.
6A-031210	6A-001	3/12/2010	Exclusion Zone	Survey for surface sampling location, looking east near dosing chamber
6A-031210	6A-002	3/12/2010	Exclusion Zone	Survey for surface sampling location, looking east near dosing chamber
7G-031810	7G-001	3/18/2010	MW-01	Measure distance to post locations, looking north, location MW-01
7G-031810	7G-002	3/18/2010	MW-01	Auger holes for posts, looking north
7G-031810	7G-003	3/18/2010	MW-01	Positioning post, looking north
7G-031810	7G-004	3/18/2010	MW-01	Painted Post, looking southeast
7G-031810	7G-005	3/18/2010	MW-01	Painted Well and Posts, looking south
7G-031810	7G-006	3/18/2010	Exclusion Zone	Cutting fence for the decon pad construction, looking north
7G-031910	7G-007	3/19/2010	Exclusion Zone	Digging out fence for the decon pad construction, looking north
7G-031910	7G-008	3/19/2010	Exclusion Zone	Constructing decon pad at fence to enter farmers field with equipment, looking south
7G-031910	7G-009	3/19/2010	Exclusion Zone	Equipment on north fence decon pad being deconned, looking south
7G-032010	7G-010	3/20/2010	MW-45	Measuring depths / collecting data at well, looking south
7G-032010	7G-011	3/20/2010	MW-45	Drilling well, looking north
7G-032010	7G-012	3/20/2010	MW-45	Drum and water management at the drilling location, looking north
7G-032010	7G-013	3/20/2010	MW-45	Remove well head
7G-032010	7G-014	3/20/2010	MW-45	Relocating well head onto laydown area, looking east
7G-032010	7G-015	3/20/2010	MW-45	Positioning catch basin for the water and sediments / soil
7G-032010	7G-016	3/20/2010	MW-45	Relocating equipment for off site locations (outside the exclusion zone)
7G-032010	7G-017	3/20/2010	MW-45	Positioning rig at well along ditch, looking east

Luckey Photo Log

File	Photo	Date Taken	Location	Description
7G-032010	7G-018	3/20/2010	MW-45	Setting barrel over well, looking north
7G-032310	7G-019	3/23/2010	MW-30	Measuring depth of water, looking west
7G-032310	7G-020	3/23/2010	MW-30	Rigging well head, facing north
7G-032310	7G-021	3/23/2010	MW-30	Removing well head, facing north
7G-032310	7G-022	3/23/2010	MW-30	Collecting water and sediments
7G-032310	7G-023	3/23/2010	MW-30	Mixing grout
7G-032310	7G-024	3/23/2010	MW-30	Drum Management
7G-032310	7G-025	3/23/2010	MW-30	Water Management
7G-032410	7G-026	3/24/2010	RAM	Waste water management, looking east
7G-032410	7G-027	3/24/2010	RAM	New waste water storage containers - frac tionation tanks, looking east
7G-032410	7G-028	3/24/2010	Parkinglot	Pumping waste water into tank storage, looking east
7G-033110	7G-029	3/30/2010	Office	Redevelopment instrumentation training session.
7G-040110	7G-030	4/1/2010	Farmers Driveway	Pre-repair of farmers driveway, looking east
7G-040110	7G-031	4/1/2010	Farmers Driveway	Pre-repair of farmers driveway, looking east
7G-040110	7G-032	4/1/2010	Farmers Driveway	Pre-repair of farmers driveway, looking east
7G-040110	7G-033	4/1/2010	Farmers Driveway	Pre-repair of farmers driveway, looking north
7G-040110	7G-034	4/1/2010	Farmers Driveway	Pre-repair of farmers driveway, looking south
7G-040110	7G-035	4/1/2010	Farmers Driveway	Pre-repair of farmers driveway, looking east
7G-040110	7G-036	4/1/2010	Farmers Driveway	Pre-repair of farmers driveway, looking north
7G-040110	7G-037	4/1/2010	Farmers Driveway	Pre-repair of farmers driveway, looking north
7G-040110	7G-038	4/1/2010	Farmers Driveway	Pre-repair of farmers driveway, looking east
7G-040110	7G-039	4/1/2010	Farmers Driveway	Pre-repair of farmers driveway, looking south
7G-040110	7G-040	4/1/2010	Farmers Driveway	Repair of farmers driveway, first load of gravel, looking northeast
7G-040110	7G-041	4/1/2010	Farmers Driveway	Repair of farmers driveway, first load of gravel, looking northeast
7G-040110	7G-042	4/1/2010	Farmers Driveway	Repair of farmers driveway, first load of gravel, looking northeast
7G-040110	7G-043	4/1/2010	Farmers Driveway	Repair of farmers driveway, first load of gravel, looking northeast
7G-040110	7G-044	4/1/2010	Farmers Driveway	Repair of farmers driveway, Farmer W. looking on, looking west
7G-040110	7G-045	4/1/2010	Farmers Driveway	Repair of farmers driveway, Farmer W. looking on, looking west
7G-040110	7G-046	4/1/2010	Farmers Driveway	Repair of farmers driveway, Farmer W. looking on, looking west
7G-040110	7G-047	4/1/2010	Farmers Driveway	Repair of farmers driveway, Farmer W. looking on, looking west
7G-040110	7G-048	4/1/2010	Farmers Driveway	Repair of farmers driveway, Farmer W. looking on, looking west
7G-040110	7G-049	4/1/2010	Farmers Driveway	Repair of farmers driveway, Farmer W. looking on, looking west
7G-040110	7G-050	4/1/2010	Farmers Driveway	Condition of farmers road due to rigs driving and setting up along the property, looking west
7G-040110	7G-051	4/1/2010	Farmers Driveway	Condition of farmers road due to rigs driving and setting up along the property, looking west
7G-040110	7G-052	4/1/2010	Farmers Driveway	Condition of of railbed due to rigs driving and setting up along the property, looking south
7G-040110	7G-053	4/1/2010	Farmers Driveway	Condition of of railbed due to rigs driving and setting up along the property, looking north
7G-040110	7G-054	4/1/2010	Farmers Driveway	Setting up equip along farmers road to touch up roadway, looking west
7G-040110	7G-055	4/1/2010	Farmers Driveway	Setting up equip along farmers road to touch up roadway, looking west
7G-040110	7G-056	4/1/2010	Farmers Driveway	Repair of farmers driveway, Farmers assistant viewing and John Davis Inspecting, looking west
7G-040110	7G-057	4/1/2010	Farmers Driveway	Repair of driveway drillers spread gravel evenly, looking west
7G-040110	7G-058	4/1/2010	Farmers Driveway	Repair of farmers driveway, Farmers assistant discussing with John Davis, looking west
7G-040110	7G-059	4/1/2010	Farmers Driveway	Repair of farmers driveway, Farmers assistant discussing with John Davis, looking west
7G-040110	7G-060	4/1/2010	Farmers Driveway	Repair of farmers driveway, Farmers assistant discussing with John Davis, looking west

File	Photo	Date Taken	Location	Description
7G-040110	7G-061	4/1/2010	Farmers Driveway	Condition of farmers field due to rigs driving, looking north
7G-040110	7G-062	4/1/2010	Farmers Driveway	Farmer w. and John Davis discussing his property.
7G-040110	7G-063	4/1/2010	Farmers Driveway	Repair of driveway drillers spread gravel evenly, looking west
7G-040110	7G-064	4/1/2010	Farmers Driveway	Repaired driveway, looking east
7G-040110	7G-065	4/1/2010	Farmers Driveway	Repaired driveway, looking east
7G-040110	7G-066	4/1/2010	Farmers Driveway	Repaired driveway, looking east
7G-040110	7G-067	4/1/2010	Farmers Driveway	Repaired driveway, looking north
7G-040110	7G-068	4/1/2010	Farmers Driveway	Repaired driveway, looking south
7G-040110	7G-069	4/1/2010	Farmers Driveway	Repaired driveway, looking east
7G-040110	7G-070	4/1/2010	Farmers Driveway	Repaired driveway, looking east
7G-040110	7G-071	4/1/2010	Farmers Driveway	Repaired driveway, looking east
7G-040110	7G-072	4/1/2010	Farmers Driveway	Repaired driveway, looking east
7G-040110	7G-073	4/1/2010	Farmers Driveway	Farmers Field, looking southeast
7G-040110	7G-074	4/1/2010	Farmers Driveway	Repaired driveway, looking south
7G-040110	7G-075	4/1/2010	Farmers Driveway	Repaired railroad bed, looking south
SB-031010	SB-001	3/10/2010	MW-53	Ground Conditions while drilling well, looking north
SB-031010	SB-002	3/10/2010	MW-53	Drilling well, looking north
SB-031010	SB-003	3/10/2010	MW-53	Radiological survey of soil core from new well, looking north
SB-031010	SB-004	3/10/2010	MW-53	Rig stuck in mud due to wet conditions of field, looking east
SB-031010	SB-005	3/10/2010	Chop House	Soil Processing of soil cores in the "chop house" soil processing lab, looking west
SB-031010	SB-006	3/12/2010	Exclusion Zone	Drilling well at dusk in rain, looking north
LAB031010	LAB-001	3/10/2010	LAB	BE analysis
WC030110	WC-001	3/1/2010	Exclusion Zone	Loading wood chips from the wood chip stick pile into dump truck with excavator, looking east
WC030110	WC-002	3/1/2010	Exclusion Zone	Loaded dump truck, looking south
WC030110	WC-003	3/1/2010	Exclusion Zone	Spreading wood chips with the bobcat outside of connex boxes, looking south
WC030110	WC-004	3/1/2010	Exclusion Zone	Finished roadway along the south perimeter fenceline, looking north
WC030110	WC-005	3/2/2010	Exclusion Zone	Finished roadway, looking north
IDW033110	IDW-001	3/31/2010	RAM	Sampling Drums of Soil, looking southwest
IDW033110	IDW-002	3/31/2010	RAM	Sampling Drums of Soil, looking southwest
IDW033110	IDW-003	3/31/2010	RAM	Sampling Drums of Soil, looking southwest
IDW033110	IDW-004	3/31/2010	RAM	Controls at the RAM Storage Area. Facing northwest
IDW033110	IDW-005	3/31/2010	RAM	Controls at the RAM Storage Area. Facing east
IDW033110	IDW-006	3/31/2010	RAM	Controls at the RAM Storage Area. Facing south
IDW033110	IDW-007	3/31/2010	RAM	Controls at the RAM Storage Area. Facing south
IDW040610	IDW-008	4/6/2010	RAM	Water Management, looking east.
IDW040610	IDW-009	4/6/2010	RAM	Water Management, looking east.
IDW040610	IDW-010	4/6/2010	RAM	Searching for archive samples, looking west
IDW040610	IDW-011	4/6/2010	RAM	Searching for archive samples, looking west
IDW042610	IDW-012	4/26/2010	RAM	Moving IDW bags out of C-3 to search for lab waste and place drums inside conex then bags on top.
IDW042610	IDW-013	4/26/2010	RAM	Loading pallets and wood into C-1
IDW042610	IDW-014	4/26/2010	RAM	Loading pallets and wood into C-1
IDW042610	IDW-015	4/26/2010	RAM	Loading pallets and wood into C-1
IDW042610	IDW-016	4/26/2010	RAM	Loading pallets and wood into C-1

File	Photo	Date Taken	Location	Description
IDW042610	IDW-017	4/26/2010	RAM	Moving IDW bags out of C-3 to search for lab waste and place drums inside conex then bags on top.
IDW042610	IDW-018	4/26/2010	RAM	Moving IDW bags out of C-3 to search for lab waste and place drums inside conex then bags on top.
IDW042610	IDW-019	4/26/2010	RAM	Moving IDW bags out of C-3 to search for lab waste and place drums inside conex then bags on top.
IDW042610	IDW-020	4/26/2010	RAM	Moving IDW bags out of C-3 to search for lab waste and place drums inside conex then bags on top.
IDW042610	IDW-021	4/26/2010	RAM	Moving IDW bags out of C-3 to search for lab waste and place drums inside conex then bags on top.
IDW042610	IDW-022	4/26/2010	RAM	Moving IDW bags out of C-3 to search for lab waste and place drums inside conex then bags on top.
IDW042610	IDW-023	4/26/2010	RAM	Example of IDW bag label.
IDW042610	IDW-024	4/26/2010	RAM	Moving IDW core tubes out of C-3 to search for lab waste and place drums inside conex then bags on top.
IDW042610	IDW-025	4/26/2010	RAM	Moving IDW core tubes out of C-3 to search for lab waste and place drums inside conex then bags on top.
IDW042610	IDW-026	4/26/2010	RAM	Rpackaging IDW and empty (MT) drums into C-3
IDW042610	IDW-027	4/26/2010	RAM	Rpackaging IDW and empty (MT) drums into C-3
IDW042610	IDW-028	4/26/2010	RAM	Rpackaging IDW and empty (MT) drums into C-3
IDW042610	IDW-029	4/26/2010	RAM	Rpackaging IDW and empty (MT) drums into C-3
IDW042610	IDW-030	4/26/2010	RAM	Rpackaging IDW and empty (MT) drums into C-3
IDW042610	IDW-031	4/26/2010	RAM	Rpackaging IDW and empty (MT) drums into C-3
IDW042610	IDW-032	4/26/2010	RAM	Rpackaging IDW and empty (MT) drums into C-3
IDW042610	IDW-033	4/26/2010	RAM	Drums to be relabeled MT before loading into conex.
IDW042610	IDW-034	4/26/2010	RAM	Re-labeling MT drums.
IDW042610	IDW-035	4/26/2010	RAM	Re-labeling MT drums.
IDW042610	IDW-036	4/26/2010	RAM	Loading wood into C-1
IDW042610	IDW-037	4/26/2010	RAM	Be lab waste consolidation and processing.
IDW042610	IDW-038	4/26/2010	RAM	Be lab waste consolidation and processing.
IDW042610	IDW-039	4/26/2010	RAM	Be lab waste consolidation and processing.
IDW042610	IDW-040	4/26/2010	RAM	Be lab waste consolidation and processing.
IDW042610	IDW-041	4/26/2010	RAM	Be lab waste consolidation and processing.
IDW042610	IDW-042	4/26/2010	RAM	Flooding inside of waste water sotrage area due to heavy rains.
IDW042710	IDW-043	4/27/2010	RAM	C-1 inside conex
IDW042710	IDW-044	4/27/2010	RAM	C-1 inside conex
IDW042710	IDW-045	4/27/2010	RAM	IDW bags staged to place in C-4
IDW042710	IDW-046	4/27/2010	RAM	IDW bags staged to place in C-4
IDW042710	IDW-047	4/27/2010	RAM	View from loaded C-4
IDW042710	IDW-048	4/27/2010	RAM	Preparing empty drums for storage in conex boxes.
IDW042710	IDW-049	4/27/2010	RAM	Placing wood in C-1 conex
IDW042710	IDW-050	4/27/2010	RAM	Loaded C-4
IDW042710	IDW-051	4/27/2010	RAM	Decon of misc metal and other items remaining on site
IDW042710	IDW-052	4/27/2010	RAM	Decon of Control Point Conex
IDW042710	IDW-053	4/27/2010	RAM	Moving supplies to remain behond for the Army Corp into C-2
IDW042710	IDW-054	4/27/2010	RAM	C-2 view from doorway
IDW042710	IDW-055	4/27/2010	RAM	Chemical Processing Area
IDW042710	IDW-056	4/27/2010	RAM	Checking pH of containers
IDW042710	IDW-057	4/27/2010	RAM	Dumping chemicals out of vials
IDW042710	IDW-058	4/27/2010	RAM	Work going on in the Chemical Processing Area
IDW042710	IDW-059	4/27/2010	RAM	Control Point Conex

File	Photo	Date Taken	Location	Description
IDW042710	IDW-060	4/27/2010	RAM	Decon of Generators
IDW042710	IDW-061	4/27/2010	RAM	Waste Water Storage area and the flood from rain
IDW042710	IDW-062	4/27/2010	RAM	Waste Water Storage area and the flood from rain
IDW042810	IDW-063	4/28/2010	RAM	C-1 - Final View - outside
IDW042810	IDW-064	4/28/2010	RAM	C-1 - Final View - inside
IDW042810	IDW-065	4/28/2010	RAM	C-2 - Final View - outside
IDW042810	IDW-066	4/28/2010	RAM	C-2 - Final View - inside
IDW042810	IDW-067	4/28/2010	RAM	C-3 - Final View - outside
IDW042810	IDW-068	4/28/2010	RAM	C-3 - Final View - inside
IDW042810	IDW-069	4/28/2010	RAM	C-4 - Final View - outside
IDW042810	IDW-070	4/28/2010	RAM	C-4 - Final View - inside
LAB-033110	Lab-002	3/31/2010	LAB	Unstabilization of the lab foundation, looking east.
LAB-033110	Lab-003	3/31/2010	LAB	Unstabilization of the lab foundation, looking east.
LAB-033110	Lab-004	3/31/2010	Outside LAB	Reclaimation of exclusion zone outside lab after relocation, looking east.
SO-041210	SO-001	4/12/2010	Office Trailer	Preparing soil samples to go to Test America during demob activities in office trailer.
SO-041210	SO-002	4/12/2010	Office Trailer	Preparing soil samples to go to Test America during demob activities in office trailer.
SO-041210	SO-003	4/12/2010	Office Trailer	Preparing soil samples to go to Test America during demob activities in office trailer.
SO-041710	SO-004	4/17/2010	Office Trailer	Preparing soil samples for thorium to go to Test America during demob activities in office trailer.
SO-041710	SO-005	4/17/2010	Office Trailer	Preparing soil samples for thorium to go to Test America during demob activities in office trailer.
SO-041710	SO-006	4/17/2010	Office Trailer	Preparing soil samples for thorium to go to Test America during demob activities in office trailer.
SO-041710	SO-007	4/17/2010	Office Trailer	Preparing soil samples for thorium to go to Test America during demob activities in office trailer.
SO-041710	SO-008	4/17/2010	Office Trailer	Preparing soil samples for thorium to go to Test America during demob activities in office trailer.
SO-041710	SO-009	4/17/2010	Office Trailer	Preparing soil samples for thorium to go to Test America during demob activities in office trailer.
DM-041910	DM-001	4/19/2010	Trailer Complex	Demobe: Relocation of conex for final placement, framing waste water tank area.
DM-041910	DM-002	4/19/2010	Trailer Complex	Demobe: Relocation of conex for final placement, framing waste water tank area.
DM-041910	DM-003	4/19/2010	Trailer Complex	Demobe: Relocation of conex for final placement, framing waste water tank area.
DM-041910	DM-004	4/19/2010	Trailer Complex	Demobe: Relocation of conex for final placement, framing waste water tank area.
DM-041910	DM-005	4/19/2010	Trailer Complex	Demobe: Relocation of conex for final placement, framing waste water tank area.
DM-041910	DM-006	4/19/2010	Trailer Complex	Demobe: Relocation of conex for final placement, framing waste water tank area.
DM-041910	DM-007	4/19/2010	Trailer Complex	Demobe: Relocation of conex for final placement, John Davis inspects area for approval.
DM-041910	DM-008	4/19/2010	Trailer Complex	Demobe: Touch up areas within parking area left behind during project.
DM-041910	DM-009	4/19/2010	Trailer Complex	Demobe: Touch up areas within parking area left behind during project.
DM-041910	DM-010	4/19/2010	Trailer Complex	Demobe: Touch up areas within parking area left behind during project.
DM-041910	DM-011	4/19/2010	Trailer Complex	Demobe: Touch up areas within parking area left behind during project.
DM-041910	DM-012	4/19/2010	Trailer Complex	Demobe: Re-decon the doors of the Chop House prior to release.
DM-041910	DM-013	4/19/2010	Trailer Complex	Demobe: Re-decon the doors of the Chop House prior to release.
DM-042010	DM-014	4/20/2010	Trailer Complex	Demobe: Placing full archive drums inside the conex for storage.
DM-042010	DM-015	4/20/2010	Trailer Complex	Demobe: Surface of waste water storage area deconned.
DM-042010	DM-016	4/20/2010	Trailer Complex	Demobe: Loading drums on pallets into pidgen hole / waste sorage connex.
DM-042010	DM-017	4/20/2010	Trailer Complex	Demobe: Deconned, surveyed and released equipment.
DM-042010	DM-018	4/20/2010	Trailer Complex	Demobe: Pumping clean water into drums to decon.
DM-042010	DM-019	4/20/2010	Trailer Complex	Demobe: Loading supplies into chop house conex to be shipped to TES project in NY.
DM-042110	DM-020	4/21/2010	Exclusion Zone	Security breach, fence cut and generator stolen, south fence looking north

File	Photo	Date Taken	Location	Description
DM-042110	DM-021	4/21/2010	Exclusion Zone	Fence piece that was cut.
DM-042110	DM-022	4/21/2010	Exclusion Zone	Fence piece that was cut.
DM-042110	DM-023	4/21/2010	Exclusion Zone	Security breach, fence cut and generator stolen, south fence looking south.
DM-042110	DM-024	4/21/2010	Exclusion Zone	Security breach, fence cut and generator stolen, south fence looking north
DM-042110	DM-025	4/21/2010	Exclusion Zone	Security breach, fence cut and generator stolen, south fence looking east
DM-042110	DM-026	4/21/2010	RAM	Demobe: RAM storage, Empty drum staging area, looking east
DM-042110	DM-027	4/21/2010	RAM	Demobe: RAM storage, Empty drum staging area, looking southeast
DM-042110	DM-028	4/21/2010	RAM	Demobe: RAM storage, deconned surface, looking south
DM-042110	DM-029	4/21/2010	Parkinglot	Demobe: Re-staging of porta-johns outside of parking area.
DM-042210	DM-030	4/22/2010	Chop House	Demobe: Loading of Supplies.
DM-042210	DM-031	4/22/2010	Chop House	Demobe: Loading of Supplies.
DM-042210	DM-032	4/22/2010	Chop House	Demobe: Loading of Supplies.
DM-042210	DM-033	4/22/2010	Chop House	Demobe: Ready for shipment.
DM-042210	DM-034	4/22/2010	Parkinglot	Demobe: crane to lift chop house onto flat bed for shipment.
DM-042210	DM-035	4/22/2010	Parkinglot	Demobe: crane to lift chop house onto flat bed for shipment.
DM-042210	DM-036	4/22/2010	Parkinglot	Demobe: flatbed to haul chop house to NY.
DM-042210	DM-037	4/22/2010	Parkinglot	Demobe: directing flatbed under the crane and chop house conex to be loaded.
DM-042210	DM-038	4/22/2010	Parkinglot	Demobe: loading chop house onto flatbed.
DM-042210	DM-039	4/22/2010	Parkinglot	Demobe: loading chop house onto flatbed.
DM-042210	DM-040	4/22/2010	Parkinglot	Demobe: loading chop house onto flatbed.
DM-042210	DM-041	4/22/2010	Parkinglot	Demobe: Army corp trailer removed from site and the TES Office Trailer moved outside of fence.
DM-042210	DM-042	4/22/2010	Parkinglot	Demobe: Army corp trailer removed from site and the TES Office Trailer moved outside of fence.
DM-042210	DM-043	4/22/2010	Parkinglot	Demobe: Army corp trailer removed from site and the TES Office Trailer moved outside of fence.
DM-042210	DM-044	4/22/2010	Parkinglot	Demobe: area after trailers moved, looking north.
DM-042210	DM-045	4/22/2010	Parkinglot	Demobe: area after trailers moved, looking north.
DM-042210	DM-046	4/22/2010	Parkinglot	Demobe: Fence repaired.
FSS-042710	FSS-001	4/27/2010	Main Gate	Final Site Status, Exclusion Zone, looking east
FSS-042710	FSS-002	4/27/2010	West Decon Pad	Final Site Status, Exclusion Zone, looking south
FSS-042710	FSS-003	4/27/2010	SW Corner of Site	Final Site Status, Exclusion Zone, looking SW
FSS-042710	FSS-004	4/27/2010	South of Production Bldg	Final Site Status, Exclusion Zone, looking west
FSS-042710	FSS-005	4/27/2010	MW-24 R	Final Site Status, Exclusion Zone
FSS-042710	FSS-006	4/27/2010	MW-24 R	Final Site Status, Exclusion Zone
FSS-042710	FSS-007	4/27/2010	MW-56 I	Final Site Status, Exclusion Zone
FSS-042710	FSS-008	4/27/2010	MW-56 I	Final Site Status, Exclusion Zone
FSS-042710	FSS-009	4/27/2010	South Perimeter	Final Site Status, Exclusion Zone, looking south, fence repaired (where generator was stolen)
FSS-042710	FSS-010	4/27/2010	East Perimeter	Final Site Status, Exclusion Zone, looking east, rail bed access fence repaired
FSS-042710	FSS-011	4/27/2010	NE Corner Perimeter	Final Site Status, Exclusion Zone, looking NE, view of wells outside exclusion zone
FSS-042710	FSS-012	4/27/2010	MW-19 I	Final Site Status, Exclusion Zone
FSS-042710	FSS-013	4/27/2010	MW-19 I	Final Site Status, Exclusion Zone
FSS-042710	FSS-014	4/27/2010	West Side of Ditch	Final Site Status, Exclusion Zone, looking north
FSS-042710	FSS-015	4/27/2010	NE of Production Bldg	Final Site Status, Exclusion Zone, looking west
FSS-042710	FSS-016	4/27/2010	West Side of Ditch	Final Site Status, Exclusion Zone, looking north
FSS-042710	FSS-017	4/27/2010	MW-22 R	Final Site Status, Exclusion Zone

File	Photo	Date Taken	Location	Description
FSS-042710	FSS-018	4/27/2010	MW-22 R	Final Site Status, Exclusion Zone
FSS-042710	FSS-019	4/27/2010	MW-26 S	Final Site Status, Exclusion Zone
FSS-042710	FSS-020	4/27/2010	MW-26 S	Final Site Status, Exclusion Zone
FSS-042710	FSS-021	4/27/2010	MW-1 I	Final Site Status, Exclusion Zone
FSS-042710	FSS-022	4/27/2010	MW-1 I	Final Site Status, Exclusion Zone
FSS-042710	FSS-023	4/27/2010	MW-2 S	Final Site Status, Exclusion Zone
FSS-042710	FSS-024	4/27/2010	MW-2 S	Final Site Status, Exclusion Zone
FSS-042710	FSS-025	4/27/2010	NW of Dosing Chamber	Final Site Status, Exclusion Zone, looking West
FSS-042710	FSS-026	4/27/2010	North Perimeter	Final Site Status, Exclusion Zone, looking north, fence repaired (farmers field)
FSS-042710	FSS-027	4/27/2010	MW-25 I	Final Site Status, Exclusion Zone
FSS-042710	FSS-028	4/27/2010	MW-25 I	Final Site Status, Exclusion Zone
FSS-042710	FSS-029	4/27/2010	North Roadway	Final Site Status, Exclusion Zone, looking East
FSS-042710	FSS-030	4/27/2010	MW-21 I	Final Site Status, Exclusion Zone
FSS-042710	FSS-031	4/27/2010	MW-21 I	Final Site Status, Exclusion Zone
FSS-042710	FSS-032	4/27/2010	North of Production Bldg	Final Site Status, Exclusion Zone, looking south
FSS-042710	FSS-033	4/27/2010	North of Production Bldg	Final Site Status, Exclusion Zone, looking southwest, east decon pad area
FSS-042710	FSS-034	4/27/2010	MW-50 I	Final Site Status, Exclusion Zone
FSS-042710	FSS-035	4/27/2010	MW-50 I	Final Site Status, Exclusion Zone
FSS-042710	FSS-036	4/27/2010	TR-6 / TR-6A	Final Site Status, Exclusion Zone, looking west, viewing old wood chip pile laydown area
FSS-042710	FSS-037	4/27/2010	NW Parking Lot	Final Site Status, Exclusion Zone, looking north, fence repaired (farmers field)
FSS-042810	FSS-038	4/28/2010	MW-53 I	Final Site Status, Outside Exclusion Zone
FSS-042810	FSS-039	4/28/2010	MW-53 I	Final Site Status, Outside Exclusion Zone
FSS-042810	FSS-040	4/28/2010	Farmers Rail Bed	Final Site Status, Outside Exclusion Zone, north looking south
FSS-042810	FSS-041	4/28/2010	MW 64 S	Final Site Status, Outside Exclusion Zone
FSS-042810	FSS-042	4/28/2010	MW 64 S	Final Site Status, Outside Exclusion Zone
FSS-042810	FSS-043	4/28/2010	MW-55	Final Site Status, Outside Exclusion Zone
FSS-042810	FSS-044	4/28/2010	MW-55	Final Site Status, Outside Exclusion Zone
DSG-021210	DSG-001	2/21/2010	Main Ditch	Shoveling snow for gamma walkover survey, looking southwest
DSG-021210	DSG-002	2/21/2010	Main Ditch	Shoveling snow for gamma walkover survey, looking southwest
DSG-021210	DSG-003	2/21/2010	Main Ditch	Gamma walkover survey, looking east
BEC-042910	BEC-001	4/29/2010	Parkinglot	BE Chemical processing, disassembled containers
BEC-042910	BEC-002	4/29/2010	Parkinglot	BE Chemical processing, disassembled containers
BEC-042910	BEC-003	4/29/2010	Parkinglot	BE Chemical processing, disassembled containers
BEC-042910	BEC-004	4/29/2010	Parkinglot	BE Chemical processing, disassembled containers
BEC-042910	BEC-005	4/29/2010	Parkinglot	BE Chemical processing, decontaminated containers
BEC-042910	BEC-006	4/29/2010	Parkinglot	BE Chemical processing, decontaminated containers
BEC-042910	BEC-007	4/29/2010	Parkinglot	BE Chemical processing, bags full of containers with Be chemicals inside
BEC-042910	BEC-008	4/29/2010	Parkinglot	BE Chemical processing, emptying containers
BEC-042910	BEC-009	4/29/2010	Parkinglot	BE Chemical processing, emptying containers
BEC-042910	BEC-010	4/29/2010	Parkinglot	BE Chemical processing, emptying containers
BEC-042910	BEC-011	4/29/2010	Parkinglot	BE Chemical processing, emptying containers
BEC-042910	BEC-012	4/29/2010	Parkinglot	BE Chemical processing, emptying containers
BEC-042910	BEC-013	4/29/2010	Parkinglot	BE Chemical processing, emptying containers

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File	Photo	Date Taken	Location	Description
BEC-042910	**BEC-014**	4/29/2010	Parkinglot	BE Chemical processing, emptying containers
BEC-042910	**BEC-015**	4/29/2010	Parkinglot	BE Chemical processing, straining liquid off containers
BEC-042910	**BEC-016**	4/29/2010	Parkinglot	BE Chemical processing, liquid empty, containers drying
EZI-050110	**EZI-001**	5/1/2010	Exclusion Zone	Final Inspection, Darin & Bill, north fence line damaged fence, looking north
EZI-050110	**EZI-002**	5/1/2010	Exclusion Zone	Final Inspection, Darin & Bill, north fence line damaged fence, looking northeast
EZI-050110	**EZI-003**	5/1/2010	Exclusion Zone	Final Inspection, Darin & Bill, north fence line damaged fence, looking northeast
EZI-050110	**EZI-004**	5/1/2010	Exclusion Zone	Final Inspection, Darin & Bill, north fence line damaged fence, looking northeast
EZI-050110	**EZI-005**	5/1/2010	Exclusion Zone	Final Inspection, Darin & Bill, north fence line damaged fence
EZI-050110	**EZI-006**	5/1/2010	RAM	Final Inspection, Darin & Bill, caufer dam around waster water storage tanks, looking east
EZI-050110	**EZI-007**	5/1/2010	RAM	Final Inspection, Darin & Bill, caufer dam around waster water storage tanks, looking east
EZI-050110	**EZI-008**	5/1/2010	RAM	Final Inspection, Darin & Bill, caufer dam around waster water storage tanks, looking east
EZI-050110	**EZI-009**	5/1/2010	RAM	Final Inspection, Darin & Bill, caufer dam around waster water storage tanks, looking southeast
EZI-050110	**EZI-010**	5/1/2010	RAM	Final Inspection, Darin & Bill, caufer dam around waster water storage tanks, patched hole
EZI-050110	**EZI-011**	5/1/2010	RAM	Final Inspection, Darin & Bill, caufer dam around waster water storage tanks, corner construction
EZI-050110	**EZI-012**	5/1/2010	RAM	Dose Rate Survey in RAM of waste containers