Final

Site Investigation Report
Artillery and Mortar Impact Areas South of Bains Gap Road
Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X

Fort McClellan
Calhoun County, Alabama

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Table of Contents

Page

List of Appendices iii
List of Tables iv
List of Figures iv
Executive Summary ES-1
1.0 Introduction 1-1
1.1 Project Description 1-1
1.2 Purpose and Objectives 1-2
1.3 Site Description and History 1-2
2.0 Previous Investigations 2-1
3.0 Current Site Investigation Activities 3-1
3.1 UXO Avoidance 3-1
3.2 Environmental Sampling 3-1
3.2.1 Surface and Depositional Soil Sampling 3-1
3.2.2 Subsurface Soil Sampling 3-2
3.2.3 Surface Water Sampling 3-2
3.2.4 Seep Water Sampling 3-3
3.2.5 Sediment Sampling 3-3
3.3 Surveying of Sample Locations 3-4
3.4 Analytical Program 3-4
3.5 Sample Preservation, Packaging, and Shipping 3-4
3.6 Investigation-Derived Waste Management and Disposal 3-5
3.7 Variances/Nonconformances 3-5
3.8 Data Quality 3-5
4.0 Site Characterization 4-1
4.1 Regional and Site Geology 4-1
4.1.1 Regional Geology 4-1
4.1.2 Site Geology 4-5
4.2 Surface Water Hydrology 4-6
5.0 Summary of Analytical Results 5-1
5.1 Surface and Depositional Soil Analytical Results 5-1
5.2 Subsurface Soil Analytical Results 5-2
5.3 Seep Water Analytical Results 5-3

Table of Contents *(Continued)*

Page

5.4 Surface Water Analytical Results 5-3
5.5 Sediment Analytical Results 5-4
5.6 Preliminary Risk Assessment 5-5
6.0 Summary, Conclusions, and Recommendations 6-1
7.0 References 7-1

Attachment 1 - List of Abbreviations and Acronyms

List of Appendices

Appendix A - Sample Collection Logs and Analysis Request/Chain-of-Custody Records
Appendix B - Boring Logs
Appendix C - Survey Data
Appendix D - Variance Reports
Appendix E - Summary of Validated Analytical Data
Appendix F - Quality Assurance Reports for Analytical Data
Appendix G - Summary Statistics for Background Media, Fort McClellan, Alabama
Appendix H - Preliminary Risk Assessment

List of Tables

Table	Title	Follows Page
3-1	Sampling Locations and Rationale	3-1
3-2	Soil Sample Designations and Analytical Parameters	3-1
3-3	Surface Water, Seep Water, and Sediment Sample Designations and Analytical Parameters	3-3
3-4	Surface Water and Seep Water Field Parameters	3-3
3-5	Variances to the Site-Specific Field Sampling Plan	3-5
5-1	Surface and Depositional Soil Analytical Results	5-1
5-2	Subsurface Soil Analytical Results	5-1
5-3	Seep Water Analytical Results	5-1
5-4	Surface Water Analytical Results	5-1
5-5	Sediment Analytical Results	5-1

List of Figures

Figure	Title	Follows Page
1-1	Site Location Map	1-2
1-2	Site Map	1-2
3-1	Sample Location Map	3-1

Executive Summary

In accordance with Contract Number DACA21-96-D-0018, Task Order CK10, IT Corporation (IT) completed a site investigation (SI) at the Artillery and Mortar Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X, at Fort McClellan (FTMC) in Calhoun County, Alabama. The SI was conducted to determine whether chemical constituents are present at the site and, if present, whether the concentrations present an unacceptable risk to human health or the environment. The SI at the Artillery and Mortar Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X, consisted of the sampling and analysis of 14 surface soil samples, 5 depositional soil samples, 14 subsurface soil samples, 7 surface water samples, 7 sediment samples, and 6 seep water samples.

Chemical analysis of samples collected at the site indicates that metals were detected in the various site media. In addition, perchlorate and one explosive compound were detected in one surface soil sample each. To evaluate whether the detected constituents pose an unacceptable risk to human health and the environment, the analytical results were compared to human health site-specific screening levels (SSSL), ecological screening values (ESV), and background screening values for FTMC. A preliminary risk assessment (PRA) was also performed to further characterize the potential threat to human health.

Although the site is located within an undeveloped area of the Main Post and is projected for passive recreation reuse, the analytical data were evaluated against a residential reuse scenario to determine if the site is suitable for unrestricted land reuse. Chemicals of potential concern for residential exposure to site media included four metals (aluminum, antimony, iron, and manganese) in soils and two metals (barium and lead) in seep water. The PRA concluded that exposure to surface soil, subsurface soil, surface water, and sediment poses no unacceptable risk for the resident. Lead, however, was identified as a chemical of concern in seep water. Based on the PRA results, the seep locations were re-sampled to confirm the lead concentrations. Lead concentrations in the seep re-samples were below the SSSL and the background concentration. Therefore, it is concluded that lead is not a chemical of concern in seep water.

The potential threat to ecological receptors is expected to be low. Constituents of potential ecological concern were limited to three metals (antimony, barium, and beryllium) in a limited number of surface and depositional soil samples. Antimony (8.4 milligrams per kilogram [mg/kg]) exceeded its ESV (3.11 mg/kg) and upper background range (2.6 mg/kg) in one surface soil sample. The antimony result was flagged with a "B" data qualifier indicating that the metal

was detected in an associated laboratory or field blank sample. Antimony was not detected in any of the other surface and depositional soil samples. Barium was detected at an estimated concentration (488 mg/kg) exceeding its ESV (165 mg/kg) and upper background range (288 mg/kg) in one surface soil sample. Barium concentrations in all other soil samples collected at the site were below the background concentration or within the upper background range. Beryllium (1.1 to 3.1 mg/kg) exceeded its ESV (1.1 mg/kg) and upper background range (0.87 mg/kg) in four surface and depositional soil samples. The average beryllium concentration in surface soils at the site is 0.95 mg/kg, which is below the ESV and only marginally exceeds background concentration (0.8 mg/kg). The presence of these metals likely reflects either a laboratory artifact (antimony) or, in the case of barium and beryllium, variations in naturally occurring levels. Therefore, antimony, barium, and beryllium are not expected to pose a threat to ecological receptors.

Based on the results of the SI, past operations at the Impact Areas South of Bains Gap Road do not appear to have adversely impacted the environment. The metals and chemical compounds detected in site media do not pose an unacceptable risk to human health and the environment. Therefore, IT recommends "No Further Action" and unrestricted land reuse with regard to hazardous, toxic, and radioactive waste at the Artillery and Mortar Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X.

1.0 Introduction

The U.S. Army has selected Fort McClellan (FTMC) located in Calhoun County, Alabama, for closure by the Base Realignment and Closure (BRAC) Commission under Public Laws 100-526 and 101-510. The 1990 Base Closure Act, Public Law 101-510, established the process by which U.S. Department of Defense (DOD) installations would be closed or realigned. The BRAC Environmental Restoration Program requires investigation and cleanup of federal properties prior to transfer to the public domain. The U.S. Army is conducting environmental studies of the impact of suspected contaminants at parcels at FTMC under the management of the U.S. Army Corps of Engineers (USACE), Mobile District. The USACE contracted IT Corporation (IT) to perform the site investigation (SI) at the Artillery and Mortar Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X, under Contract Number DACA21-96-D-0018, Task Order CK10.

This SI report presents specific information and results compiled from the SI, including field sampling and analysis activities, conducted at the Artillery and Mortar Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X. For the sake of brevity, the site is hereinafter referred to as the Impact Areas South of Bains Gap Road and includes all associated parcels unless otherwise specified.

1.1 Project Description

The Impact Areas South of Bains Gap Road were identified as areas to be investigated prior to property transfer. The parcels were classified as Category 1 Qualified parcels in the environmental baseline survey (EBS) (Environmental Science and Engineering, Inc. [ESE], 1998). Category 1 parcels are areas where no storage, release, or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas). The parcels, however, were qualified "X" because of the potential for unexploded ordnance (UXO).

A site-specific field sampling plan (SFSP) attachment (IT, 2001) and a site-specific safety and health plan (SSHP) attachment were finalized in January 2001. The SFSP and SSHP were prepared to provide technical guidance for sample collection and analysis at the Impact Areas South of Bains Gap Road. The SFSP was used in conjunction with the SSHP as attachments to the installation-wide work plan (IT, 1998), and the installation-wide sampling and analysis plan (SAP) (IT, 2000a). The SAP includes the installation-wide safety and health plan and quality assurance plan.

The SI included fieldwork to collect 14 surface soil samples, 5 depositional soil samples, 14 subsurface soil samples, 7 surface water samples, 7 sediment samples, and 6 seep water samples. Data from the field investigation were used to determine whether potential site-specific chemicals are present at the Impact Areas South of Bains Gap Road.

1.2 Purpose and Objectives

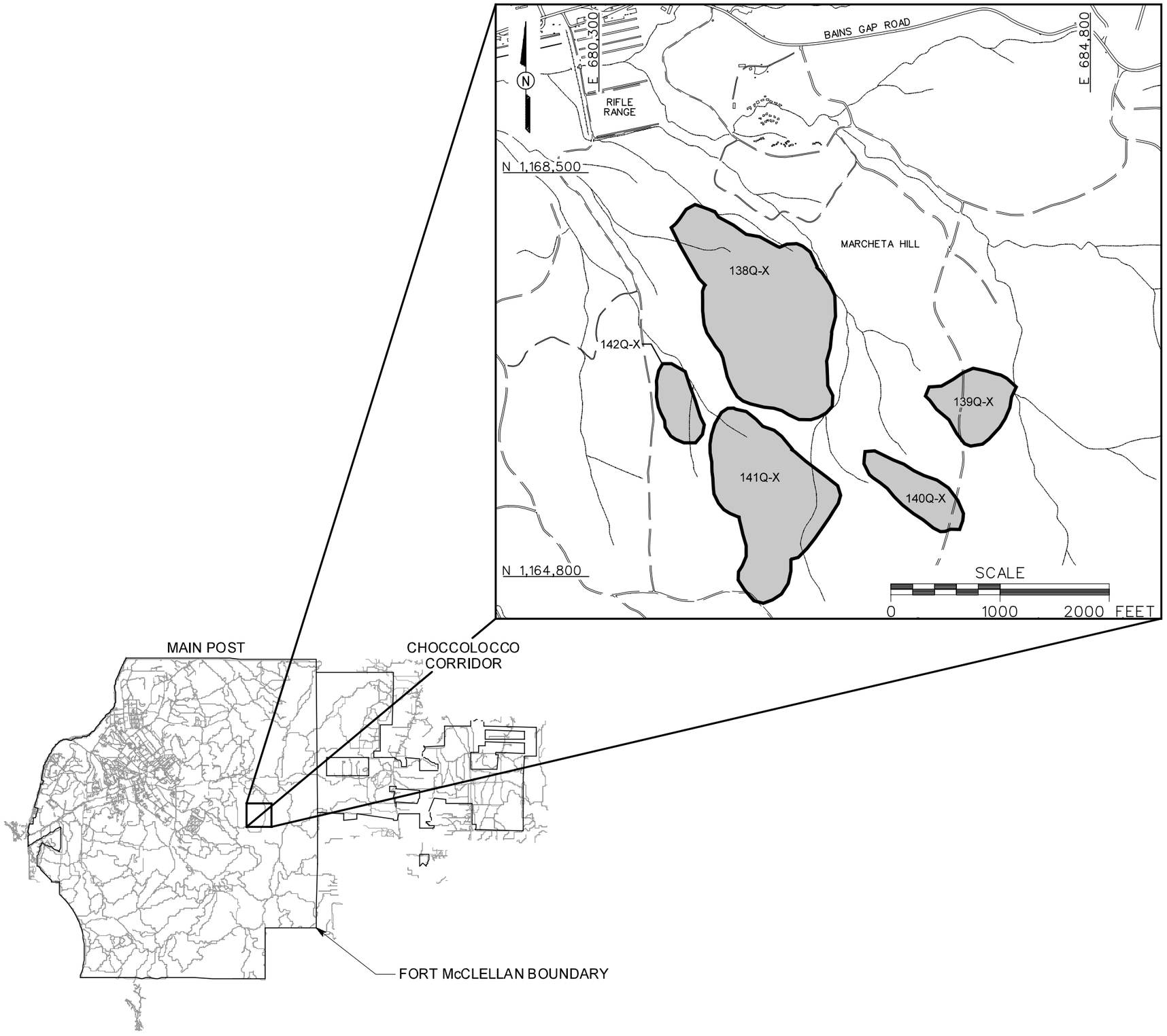
The SI program was designed to collect data from site media and provide a level of defensible data and information in sufficient detail to determine whether chemical constituents are present at the Impact Areas South of Bains Gap Road at concentrations that present an unacceptable risk to human health or the environment. The conclusions of the SI in Chapter 6.0 are based on the comparison of the analytical results to human health site-specific screening levels (SSSL), ecological screening values (ESV), and background screening values for FTMC. The SSSLs and ESVs were developed by IT as part of the human health and ecological risk evaluations associated with SIs being performed under the BRAC Environmental Restoration Program at FTMC. The SSSLs and ESVs are presented in the *Final Human Health and Ecological Screening Values and PAH Background Summary Report* (IT, 2000b). Background metals screening values are presented in the *Final Background Metals Survey Report, Fort McClellan, Alabama* (Science Applications International Corporation [SAIC], 1998).

Based on the conclusions presented in this SI report, the BRAC Cleanup Team will decide either to propose "No Further Action" at the site or to conduct additional work at the site.

1.3 Site Description and History

The Impact Areas South of Bains Gap Road are located in the east-central portion of the FTMC Main Post (Figure 1-1). The parcels are located south of Bains Gap Road and southeast of the Former Mortar Range, Parcel 109Q-X, in the vicinity of Range 21 (Parcel 77Q) and Range 22 (Parcel 78Q) (Figure 1-2). The impact areas were observed on 1949, 1954, and 1961 aerial photograph composites. Artillery and mortars are presumed to have been fired into these impact areas because all other ranges in this vicinity were reported to be exclusively small-arms ranges since the 1940s (ESE, 1998). Shallow depressions, which are probable impact craters, are present throughout each of the parcels.

The impact areas were located near the center of an area marked "Possible Artillery Impact Areas" shown on Plate 3 of the *Archives Search Report, Maps* (USACE, 1999). Maps from the World War I era do not show firing points, firing lines, or artillery and mortar ranges that



LEGEND

- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- BUILDING
- TREES / TREELINE
- MARSH / WETLANDS
- PARCEL BOUNDARY
- SURFACE DRAINAGE / CREEK

FIGURE 1-1
SITE LOCATION MAP
ARTILLERY AND MORTAR IMPACT AREAS SOUTH OF BAINS GAP ROAD PARCELS 138Q-X, 139Q-X, 140Q-X, 141Q-X, AND 142Q-X

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018

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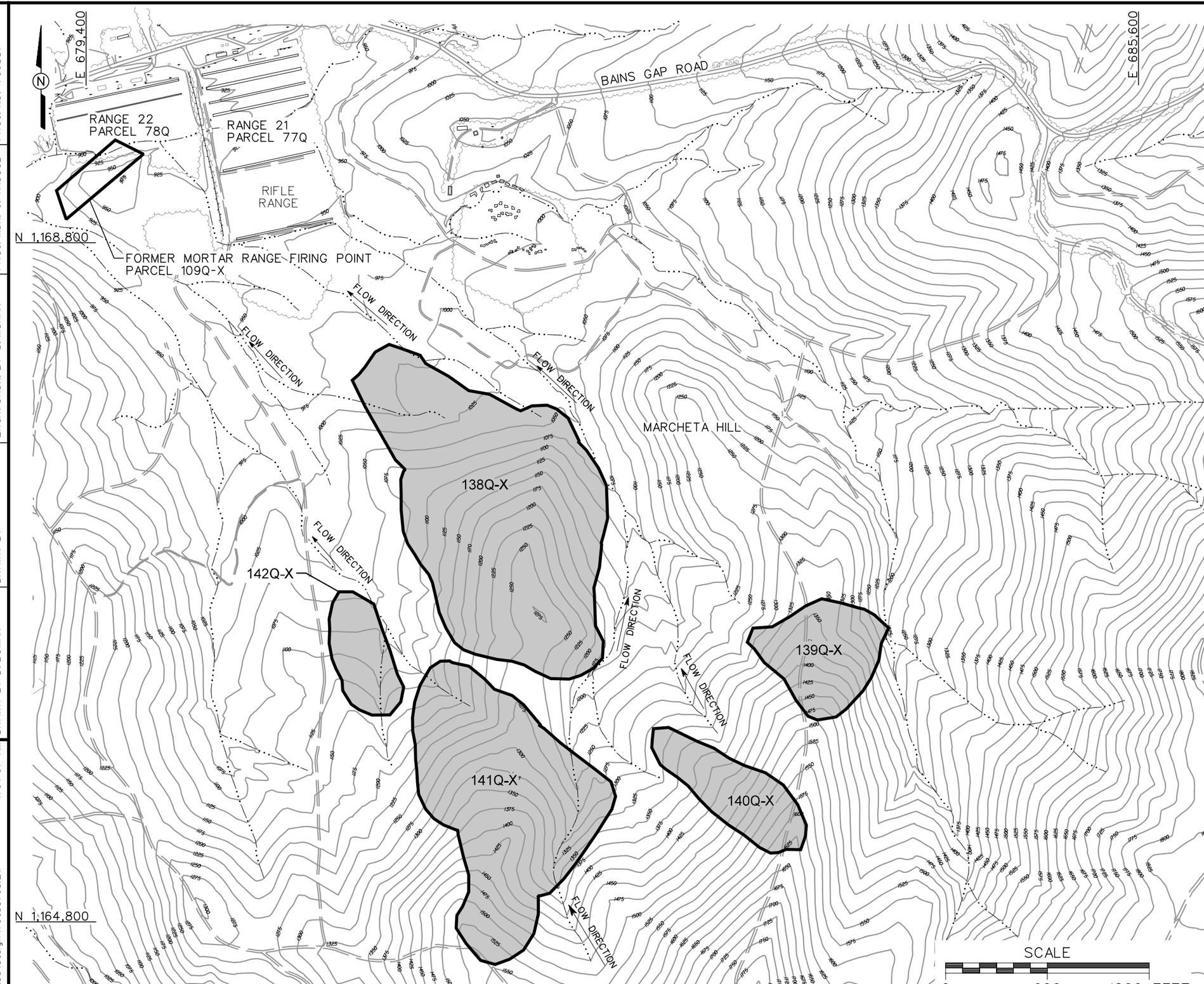

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- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- BUILDING
- TOPOGRAPHIC CONTOURS (CONTOUR INTERVAL - 25 FOOT)
- TREES / TREELINE
- PARCEL BOUNDARY
- BRIDGE
- CULVERT WITH HEADWALL
- SURFACE DRAINAGE / CREEK
- UTILITY POLE

FIGURE 1-2
SITE MAP
ARTILLERY AND MORTAR IMPACT AREAS SOUTH OF BAINS GAP ROAD PARCELS 138Q-X, 139Q-X, 140Q-X, 141Q-X, AND 142Q-X

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impacted these areas (USACE, 1999). Based on photographs and correspondence, range distances were approximately 1,500 to 5,000 yards and the Choccolocco Mountains were likely used as a backstop. Documented artillery and mortar use in this area took place from 1912 to the beginning of World War II.

Ground elevation at the Impact Areas South of Bains Gap Road ranges from approximately 975 feet above mean sea level (amsl) (within Parcel 138Q-X) to approximately 1,625 feet amsl (within Parcel 140Q-X). Surface drainage at the site follows the topography and generally flows to the north-northwest into several intermittent streams that eventually empty into Cane Creek approximately northwest of the area.

The Impact Areas South of Bains Gap Road are located within two special interest natural areas (SINA): the Marcheta Hill Orchid Seep and the Marcheta Hill Crow-Poison Seep. These areas are two of 11 SINAs on the Main Post of FTMC. SINAs are locations where the habitat fosters one or more rare, threatened, or endangered species. Because these species are sensitive to environmental degradation, SINAs require management practices that promote the continued well being of these ecosystems (IT, 2002).

2.0 Previous Investigations

An EBS was conducted by ESE to document current environmental conditions of all FTMC property (ESE, 1998). The study was to identify sites that, based on available information, have no history of contamination and comply with DOD guidance for fast-track cleanup at closing installations. The EBS also provides a baseline picture of FTMC properties by identifying and categorizing the properties by seven criteria:

1. Areas where no storage, release, or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas).

2. Areas where only release or disposal of petroleum products has occurred.

3. Areas where release, disposal, and/or migration of hazardous substances has occurred, but at concentrations that do not require a removal or remedial response.

4. Areas where release, disposal, and/or migration of hazardous substances has occurred, and all removal or remedial actions to protect human health and the environment have been taken.

5. Areas where release, disposal, and/or migration of hazardous substances has occurred, and removal or remedial actions are underway, but all required remedial actions have not yet been taken.

6. Areas where release, disposal, and/or migration of hazardous substances has occurred, but required actions have not yet been implemented.

7. Areas that are not evaluated or require additional evaluation.

For non-Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) environmental or safety issues, the parcel label includes the following components: a unique non-CERCLA issue number; the letter "Q" designating the parcel as a Community Environmental Response Facilitation Act (CERFA) Category 1 Qualified Parcel; and the code for the specific non-CERCLA issue(s) present (ESE, 1998). The non-CERCLA issue codes used are:

- A = Asbestos (in buildings)
- L = Lead-Based Paint (in buildings)
- P = Polychlorinated Biphenyls
- R = Radon (in buildings)

- RD = Radionuclides/Radiological Issues
- X = Unexploded Ordnance
- CWM = Chemical Warfare Material.

The EBS was conducted in accordance with CERFA protocols (CERFA-Public Law 102-426) and DOD policy regarding contamination assessment. Record searches and reviews were performed on all reasonably available documents from FTMC, the Alabama Department of Environmental Management (ADEM), the U.S. Environmental Protection Agency (EPA) Region IV, and Calhoun County, as well as a database search of CERCLA-regulated substances, petroleum products, and Resource Conservation and Recovery Act-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. Personal and telephone interviews of past and present FTMC employees and military personnel were conducted. In addition, visual site inspections were conducted to verify conditions of specific property parcels.

The Impact Areas South of Bains Gap Road were categorized as CERFA Category 1 Qualified parcels. These CERFA parcels are areas where no known or recorded storage, release, or disposal of hazardous substances or petroleum products has occurred (including migration of these substances from adjacent areas). However, the parcels were qualified ("X") for potential UXO. The Impact Areas South of Bains Gap Road required further evaluation to determine the environmental condition of the parcels.

3.0 Current Site Investigation Activities

This chapter summarizes SI activities conducted by IT at the Impact Areas South of Bains Gap Road, including UXO avoidance and environmental sampling and analysis activities.

3.1 UXO Avoidance

UXO avoidance was performed at the Impact Areas South of Bains Gap Road following methodology outlined in Section 4.1.7 of the SAP (IT, 2000a). IT UXO personnel used a low-sensitivity magnetometer to perform a surface sweep of the parcels prior to site access. After the parcels were cleared for access, sample locations were monitored following procedures outlined in Section 4.1.7.3 of the SAP (IT, 2000a).

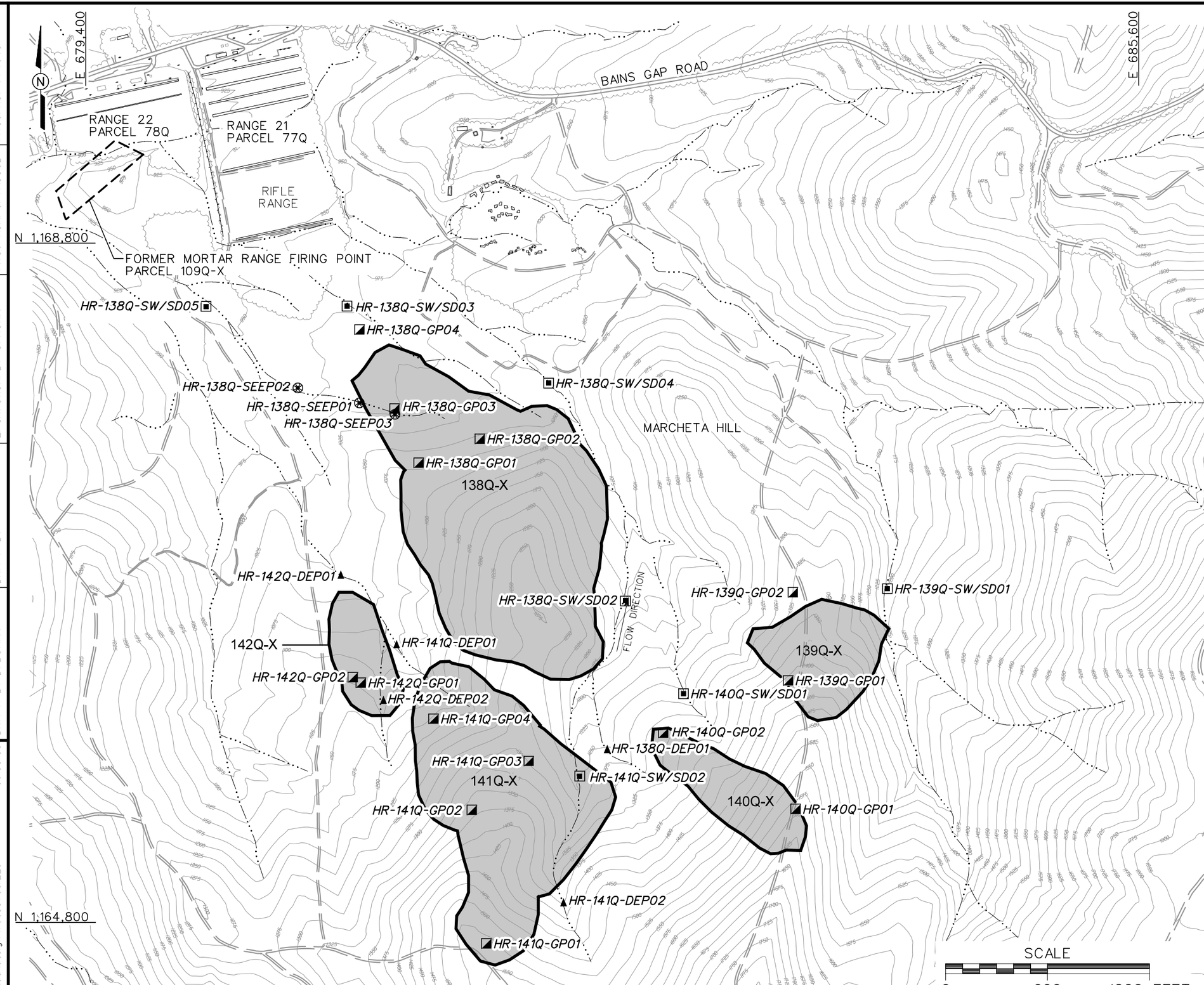
3.2 Environmental Sampling

The environmental sampling performed during the SI at the Impact Areas South of Bains Gap Road included the collection of surface and depositional soil samples, subsurface soil samples, surface water/sediment samples, and seep water samples for chemical analysis. The sample locations were determined by observing site physical characteristics during a site walkover, and by reviewing historical documents pertaining to activities conducted at the site. The sample locations, media, and rationale are summarized in Table 3-1. Sampling locations are shown on Figure 3-1. Samples were submitted for laboratory analysis of site-related parameters listed in Section 3.4.

3.2.1 Surface and Depositional Soil Sampling

Fourteen surface soil samples and five depositional soil samples were collected at the Impact Areas South of Bains Gap Road, as shown on Figure 3-1. Soil sampling locations and rationale are presented in Table 3-1. Soil sample designations and analytical parameters are listed in Table 3-2. Soil sampling locations were determined in the field by the on-site geologist based on UXO avoidance activities, sampling rationale, presence of surface structures, and site topography.

Sample Collection. Surface and depositional soil samples were collected from the upper 1-foot of soil using either a direct-push technology (DPT) sampling system or a stainless-steel hand auger following the methodology specified in Section 4.9.1.1 of the SAP (IT, 2000a). Surface and depositional soil samples were collected by first removing surface debris (e.g., rocks, vegetation) from the immediate sample area. The soil was collected with the sampling device and screened with a photoionization detector (PID) in accordance with Section 4.7.1.1 of the



LEGEND

- UNIMPROVED ROADS AND PARKING
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- BUILDING
- TOPOGRAPHIC CONTOURS (CONTOUR INTERVAL - 25 FOOT)
- TREES / TREELINE
- PARCEL BOUNDARY
- SURFACE DRAINAGE / CREEK
- SURFACE AND SUBSURFACE SOIL SAMPLE LOCATION
- SURFACE WATER/SEDIMENT SAMPLE LOCATION
- SEEP WATER SAMPLE LOCATION
- DEPOSITIONAL SOIL SAMPLE LOCATION

FIGURE 3-1
SAMPLE LOCATION MAP
ARTILLERY AND MORTAR IMPACT AREAS SOUTH OF BAINS GAP ROAD
PARCELS 138Q-X, 139Q-X, 140Q-X, 141Q-X, AND 142Q-X

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Contract No. DACA21-96-D-0018

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Table 3-1

Sampling Locations and Rationale
Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X
Fort McClellan, Calhoun County, Alabama

Parcel Number	Sample Location	Sample Media	Sample Location Rationale
138Q-X	HR-138Q-GP01	Surface soil Subsurface soil	Surface and subsurface soil samples were collected in the western (downslope) portion of Parcel 138Q-X to determine if contaminant releases into the environment have occurred from this area of the site and if contaminated soil exists at this location.
	HR-138Q-GP02	Surface soil Subsurface soil	Surface and subsurface soil samples were collected in the northern (downslope) portion of Parcel 138Q-X to determine if contaminant releases into the environment have occurred from this area of the site and if contaminated soil exists at this location.
	HR-138Q-GP03	Surface soil Subsurface soil	Surface and subsurface soil samples were collected in the northwestern (downslope) portion of Parcel 138Q-X to determine if contaminant releases into the environment have occurred from this area of the site and if contaminated soil exists at this location.
	HR-138Q-GP04	Surface soil Subsurface soil	Surface and subsurface soil samples were collected just northwest (downslope) of Parcel 138Q-X to determine if contaminant releases into the environment have occurred from this area of the site and if contaminated soil exists at this location.
	HR-138Q-DEP01	Depositional soil	A depositional soil sample was collected downstream of Parcel 140Q-X and upstream of Parcel 138Q-X in a dry intermittent stream bed that flows north along the eastern border of Parcel 138Q-X to determine if contaminant releases have occurred from runoff from the parcel.
	HR-138Q-SW/SD02	Surface water Sediment	Surface water and sediment samples were collected from an intermittent stream east of Parcel 138Q-X that flows north along the eastern border of the parcel to determine if contaminant releases have impacted the creek.
	HR-138Q-SW/SD03	Surface water Sediment	Surface water and sediment samples were collected from an intermittent stream northwest (downslope) of Parcel 138Q-X to determine if potential site-specific chemicals have impacted the creek.
	HR-138Q-SW/SD04	Surface water Sediment	Surface water and sediment samples were collected from an intermittent stream northeast (downslope) of Parcel 138Q-X to determine if potential site-specific chemicals have impacted the creek.
	HR-138Q-SW/SD05	Surface water Sediment	Surface water and sediment samples were collected northwest of Parcel 138Q-X in an intermittent stream that flows northwest from the parcel to determine if potential site-specific chemicals have impacted the creek.
	HR-138Q-SEEP01	Seep water	Seep samples were collected in a wetlands area near the northwestern tip of Parcel 138Q-X (downgradient) to determine if contaminant releases have occurred from runoff from the parcel.
	HR-138Q-SEEP02	Seep water	Seep samples were collected in a wetlands area near the northwestern tip of Parcel 138Q-X (downgradient) to determine if contaminant releases have occurred from runoff from the parcel.
	HR-138Q-SEEP03	Seep water	Seep samples were collected in a wetlands area near the northwestern tip of Parcel 138Q-X (downgradient) to determine if contaminant releases have occurred from runoff from the parcel.
139Q-X	HR-139Q-GP01	Surface soil Subsurface soil	Surface and subsurface soil samples were collected in the southwestern section of Parcel 139Q-X to determine if contaminant releases into the environment have occurred from this area of the site and if contaminated soil exists at this location.
	HR-139Q-GP02	Surface soil Subsurface soil	Surface and subsurface soil samples were collected just north (downslope) of Parcel 139Q-X to determine if contaminant releases into the environment have occurred from this area of the site and if contaminated soil exists at this location.
	HR-139Q-SW/SD01	Surface water Sediment	Surface water and sediment samples were collected just northeast of Parcel 139Q-X from an intermittent stream that flows north along the eastern parcel boundary to determine if potential site-specific chemicals have impacted the creek.

Table 3-1

Sampling Locations and Rationale
Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X
Fort McClellan, Calhoun County, Alabama

Parcel Number	Sample Location	Sample Media	Sample Location Rationale
140Q-X	HR-140Q-GP01	Surface soil Subsurface soil	Surface and subsurface soil samples were collected in the southeastern (upslope) section of Parcel 140Q-X to determine if contaminant releases into the environment have occurred from this area of the site and if contaminated soil exists at this location.
	HR-140Q-GP02	Surface soil Subsurface soil	Surface and subsurface soil samples were collected in the northwestern (downslope) section of Parcel 140Q-X to determine if contaminant releases into the environment have occurred from this area of the site and if contaminated soil exists at this location.
	HR-140Q-SW/SD01	Surface water Sediment	Surface water and sediment samples were collected from an intermittent stream north (downstream) of Parcel 140Q-X to determine if potential site-specific chemicals have impacted the creek.
141Q-X	HR-141Q-GP01	Surface soil Subsurface soil	Surface and subsurface soil samples were collected in the southern (upslope) portion of Parcel 141Q-X to determine if contaminant releases into the environment have occurred from this area of the site and if contaminated soil exists at this location.
	HR-141Q-GP02	Surface soil Subsurface soil	Surface and subsurface soil samples were collected in the west-central section of Parcel 141Q-X to determine if contaminant releases into the environment have occurred from this area of the site and if contaminated soil exists at this location.
	HR-141Q-GP03	Surface soil Subsurface soil	Surface and subsurface soil samples were collected in the east-central section of Parcel 141Q-X to determine if contaminant releases into the environment have occurred from this area of the site and if contaminated soil exists at this location.
	HR-141Q-GP04	Surface soil Subsurface soil	Surface and subsurface soil samples were collected in the northwestern (downslope) portion of Parcel 141Q-X to determine if contaminant releases into the environment have occurred from this area of the site and if contaminated soil exists at this location.
	HR-141Q-DEP01	Depositional soil	A depositional soil sample was collected northwest (downslope) of Parcel 141Q-X in a dry intermittent stream bed that flows northwest from the parcel to determine if potential site-specific chemicals have been transport via runoff from the parcel.
	HR-141Q-DEP02	Depositional soil	A depositional soil sample was collected southeast (upslope) of Parcel 141Q-X in a dry intermittent stream bed that flows north through the eastern portion of the parcel to determine if contaminant releases into the environment have occurred from this area and if contaminated soil exists at this location.
	HR-141Q-SW/SD02	Surface water Sediment	Surface water and sediment samples were collected near the eastern boundary of Parcel 141Q-X in the intermittent stream that flows north through the eastern area of the parcel to determine if potential site-specific chemicals have impacted the creek.
142Q-X	HR-142Q-GP01	Surface soil Subsurface soil	Surface and subsurface soil samples were collected southern (upslope) section of Parcel 142Q-X to determine if contaminant releases into the environment have occurred from this area of the site and if contaminated soil exists at this location.
	HR-142Q-GP02	Surface soil Subsurface soil	Surface and subsurface soil samples were collected northern (downslope) section of Parcel 142Q-X to determine if contaminant releases into the environment have occurred from this area of the site and if contaminated soil exists at this location.
	HR-142Q-DEP01	Depositional soil	A depositional soil sample was collected north (downslope) of Parcel 142Q-X in a dry intermittent stream bed that flows northwest along the eastern parcel boundary to determine if potential site-specific chemicals have been transport via runoff from the parcel.
	HR-142Q-DEP02	Depositional soil	A depositional soil sample was collected in the southern portion of Parcel 142Q-X in an intermittent stream that flows north through the parcel to determine if contaminant releases into the environment have occurred from this area and if contaminated soil exists at this location.

Table 3-2

Soil Sample Designations and Analytical Parameters
Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Depth (ft. bgs)	QA/QC Samples		Analytical Parameters
			Field Duplicates	MS/MSD	
HR-138Q-GP01	HR-138Q-GP01-SS-YE0001-REG	0-1		HR-138Q-GP01-SS-YE0001-MS/MSD	TAL Metals, Explosives, and Perchlorate
	HR-138Q-GP01-DS-YE0002-REG	9-11	HR-138Q-GP01-DS-YE0003-FD		
HR-138Q-GP02	HR-138Q-GP02-SS-YE0005-REG	0-1			TAL Metals, Explosives, and Perchlorate
	HR-138Q-GP02-DS-YE0006-REG	4-5			
HR-138Q-GP03	HR-138Q-GP03-SS-YE0007-REG	0-1			TAL Metals, Explosives, and Perchlorate
	HR-138Q-GP03-DS-YE0008-REG	7-8			
HR-138Q-GP04	HR-138Q-GP04-SS-YE0009-REG	0-1		HR-138Q-GP04-SS-YE0009-MS/MSD	TAL Metals, Explosives, and Perchlorate
	HR-138Q-GP04-DS-YE0010-REG	10-11			
HR-138Q-DEP01	HR-138Q-DEP01-DEP-YE0011-REG	0-0.5	HR-138Q-DEP01-DEP-YE0012-FD		TAL Metals, Explosives, and Perchlorate
HR-139Q-GP01	HR-139Q-GP01-SS-YG0001-REG	0-1			TAL Metals, Explosives, and Perchlorate
	HR-139Q-GP01-DS-YG0002-REG	10-11			
HR-139Q-GP02	HR-139Q-GP02-SS-YG0003-REG	0-1			TAL Metals, Explosives, and Perchlorate
	HR-139Q-GP02-DS-YG0004-REG	9-11	HR-139Q-GP02-DS-YG0005-FD		
HR-140Q-GP01	HR-140Q-GP01-SS-YH0001-REG	0-1			TAL Metals, Explosives, and Perchlorate
	HR-140Q-GP01-DS-YH0002-REG	7-8			
HR-140Q-GP02	HR-140Q-GP02-SS-YH0003-REG	0-1			TAL Metals, Explosives, and Perchlorate
	HR-140Q-GP02-DS-YH0004-REG	1-2	HR-140Q-GP02-DS-YH0005-FD		
HR-141Q-GP01	HR-141Q-GP01-SS-YJ0001-REG	0-1			TAL Metals, Explosives, and Perchlorate
	HR-141Q-GP01-DS-YJ0002-REG	5-6			
HR-141Q-GP02	HR-141Q-GP02-SS-YJ0003-REG	0-1			TAL Metals, Explosives, and Perchlorate
	HR-141Q-GP02-DS-YJ0004-REG	3-4			
HR-141Q-GP03	HR-141Q-GP03-SS-YJ0005-REG	0-1			TAL Metals, Explosives, and Perchlorate
	HR-141Q-GP03-DS-YJ0006-REG	2-4			
HR-141Q-GP04	HR-141Q-GP04-SS-YJ0007-REG	0-1			TAL Metals, Explosives, and Perchlorate
	HR-141Q-GP04-DS-YJ0008-REG	2-4			
HR-141Q-DEP01	HR-141Q-DEP01-DEP-YJ0009-REG	0-0.5			TAL Metals, Explosives, and Perchlorate
HR-141Q-DEP02	HR-141Q-DEP02-DEP-YJ0010-REG	0-0.5			TAL Metals, Explosives, and Perchlorate
HR-142Q-GP01	HR-142Q-GP01-SS-YL0001-REG	0-1			TAL Metals, Explosives, and Perchlorate
	HR-142Q-GP01-DS-YL0002-REG	1-4			
HR-142Q-GP02	HR-142Q-GP02-SS-YL0003-REG	0-1			TAL Metals, Explosives, and Perchlorate
	HR-142Q-GP02-DS-YL0004-REG	9-10			
HR-142Q-DEP01	HR-142Q-DEP01-DEP-YL0005-REG	0-0.5			TAL Metals, Explosives, and Perchlorate
HR-142Q-DEP02	HR-142Q-DEP02-DEP-YL0006-REG	0-0.5			TAL Metals, Explosives, and Perchlorate

ft bgs - Feet below ground surface.
FD - Field duplicate.
MS/MSD - Matrix spike/matrix spike duplicate.
QA/QC - Quality assurance/quality control.
REG - Field sample.
TAL - Target analyte list.

SAP (IT, 2000a). The sample was then transferred to a clean stainless-steel bowl, homogenized, and placed in the appropriate sample containers. The samples were analyzed for the parameters listed in Table 3-2 using methods outlined in Section 3.4. Sample collection logs are included in Appendix A.

3.2.2 Subsurface Soil Sampling

Subsurface soil samples were collected from 14 soil borings at the Impact Areas South of Bains Gap Road, as shown on Figure 3-1. Subsurface soil sampling locations and rationale are presented in Table 3-1. Subsurface soil sample designations, depths, and analytical parameters are listed in Table 3-2. Soil boring sampling locations were determined in the field by the on-site geologist based on UXO avoidance activities, sampling rationale, presence of surface structures, and site topography. IT contracted Environmental Services Network, Inc., a DPT subcontractor, to assist in subsurface soil sample collection.

Sample Collection. Subsurface soil samples were collected from the soil borings at depths greater than 1-foot below ground surface (bgs) in the unsaturated zone. The soil borings were advanced and samples collected using the DPT sampling procedures specified in Section 4.9.1.1 of the SAP (IT, 2000a). Sample collection logs are included in Appendix A. The samples were analyzed for the parameters listed in Table 3-2 using methods outlined in Section 3.4.

Subsurface soil samples were collected continuously until DPT sampler refusal was encountered. Samples were field screened using a PID in accordance with Section 4.7.1.1 of the SAP (IT, 2000a) to measure for volatile organic vapors. The sample displaying the highest reading was selected and sent to the laboratory for analysis; however, at those locations where PID readings were not greater than background, the deepest sample interval above the saturated zone was submitted for analysis. The sample was then transferred to a clean stainless-steel bowl, homogenized, and placed in the appropriate sample containers. Samples submitted for laboratory analysis are summarized in Table 3-2. The on-site geologist constructed a detailed boring log for each soil boring. The boring logs are included in Appendix B. At the completion of soil sampling, boreholes were abandoned with bentonite pellets and hydrated with potable water following borehole abandonment procedures summarized in Appendix B of the SAP (IT, 2000a).

3.2.3 Surface Water Sampling

Seven surface water samples were collected at the Impact Areas South of Bains Gap Road at the locations shown on Figure 3-1. Surface water sampling locations and rationale are listed in

Table 3-1. Sample designations and analytical parameters are listed in Table 3-3. The sampling locations were determined in the field, based on drainage pathways and actual field observations.

Sample Collection. The surface water samples were collected in accordance with the procedures specified in Section 4.9.1.3 of the SAP (IT, 2000a). Surface water samples were collected by dipping a stainless-steel pitcher in the water and pouring the water into the appropriate sample containers, or by dipping the sample containers directly in the water. The samples were collected after field parameters (i.e., temperature, pH, specific conductivity, dissolved oxygen, and turbidity) had been measured using a calibrated water-quality meter. The field parameter readings are presented in Table 3-4. Sample collection logs are included in Appendix A. The samples were analyzed for the parameters listed in Table 3-3 using methods outlined in Section 3.4.

3.2.4 Seep Water Sampling

Seep water samples were collected from three locations at the Impact Areas South of Bains Gap Road, as shown on Figure 3-1. The seep locations were sampled on two separate occasions: in May 2001 for full-suite analyses, and in January 2002 for lead analysis only. Seep water sampling locations and rationale are listed in Table 3-1. Seep sample designations and analytical parameters are listed in Table 3-3. The sampling locations were determined in the field, based on drainage pathways and actual field observations.

Sample Collection. The seep water samples were collected in accordance with the procedures specified in Section 4.9.1.3 of the SAP (IT, 2000a). Seep water samples were collected using a syringe equipped with Teflon tubing. The samples were collected after field parameters (i.e., temperature, pH, specific conductivity, dissolved oxygen, and turbidity) had been measured using a calibrated water-quality meter. The field parameter readings are presented in Table 3-4. Sample collection logs are included in Appendix A. The samples were analyzed for the parameters listed in Table 3-3 using methods outlined in Section 3.4.

3.2.5 Sediment Sampling

Seven sediment samples were collected at the same locations as the surface water samples, as shown on Figure 3-1. The sediment sampling locations and rationale are listed in Table 3-1. Sediment sample designations and analytical parameters are listed in Table 3-3. The sampling locations were determined in the field, based on drainage pathways and actual field observations.

Sample Collection. Sediment samples were collected in accordance with the procedures specified in Section 4.9.1.2 of the SAP (IT, 2000a). Sediments were collected from the upper

Table 3-3

Surface Water, Seep Water, and Sediment Sample Designations and Analytical Parameters
Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Matrix	QA/QC Samples[a]		Analytical Suite
			Field Duplicates	MS/MSD	
HR-138Q-SW/SD02	HR-138Q-SW/SD02-SW-YE2002-REG	Surface Water			TAL Metals, Explosives, Perchlorate,
	HR-138Q-SW/SD02-SD-YE1003-REG	Sediment			TOC, Grain Size (sediment only)
HR-138Q-SW/SD03	HR-138Q-SW/SD03-SW-YE2003-REG	Surface Water			TAL Metals, Explosives, Perchlorate,
	HR-138Q-SW/SD03-SD-YE1004-REG	Sediment			TOC, Grain Size (sediment only)
HR-138Q-SW/SD04	HR-138Q-SW/SD04-SW-YE2004-REG	Surface Water			TAL Metals, Explosives, Perchlorate,
	HR-138Q-SW/SD04-SD-YE1005-REG	Sediment			TOC, Grain Size (sediment only)
HR-138Q-SW/SD05	HR-138Q-SW/SD05-SW-YE2005-REG	Surface Water			TAL Metals, Explosives, Perchlorate,
	HR-138Q-SW/SD05-SD-YE1006-REG	Sediment			TOC, Grain Size (sediment only)
HR-138Q-SEEP01	HR-138Q-SEEP01-SEP-YE2006-REG	Seep Water			TAL Metals, Explosives, Perchlorate
	HR-138Q-SEEP01-SEP-YE2006R-REG	Seep Water			Lead
HR-138Q-SEEP02	HR-138Q-SEEP02-SEP-YE2007-REG	Seep Water			TAL Metals, Explosives, Perchlorate
	HR-138Q-SEEP02-SEP-YE2007R-REG	Seep Water			Lead
HR-138Q-SEEP03	HR-138Q-SEEP03-SEP-YE2008-REG	Seep Water			TAL Metals, Explosives, Perchlorate
	HR-138Q-SEEP03-SEP-YE2008R-REG	Seep Water			Lead
HR-139Q-SW/SD01	HR-139Q-SW/SD01-SW-YG2001-REG	Surface Water			TAL Metals, Explosives,
	HR-139Q-SW/SD01-SD-YG1001-REG	Sediment			Perchlorate, and TOC
HR-140Q-SW/SD01	HR-140Q-SW/SD01-SW-YH2001-REG	Surface Water			TAL Metals, Explosives,
	HR-140Q-SW/SD01-SD-YH1001-REG	Sediment			Perchlorate, and TOC
HR-141Q-SW/SD02	HR-141Q-SW/SD02-SW-YJ2002-REG	Surface Water			TAL Metals, Explosives, Perchlorate,
	HR-141Q-SW/SD02-SD-YJ1002-REG	Sediment			TOC, Grain Size (sediment only)

[a] No QA/QC samples specified in site-specific field sampling plan.

MS/MSD - Matrix spike/matrix spike duplicate.
NA - Not applicable.
QA/QC - Quality assurance/quality control.
REG - Field sample.
TAL - Target analyte list.
TOC - Total organic carbon.

Table 3-4

Surface Water and Seep Water Field Parameters
Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Date	Media	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Temperature (°C)	Turbidity (NTU)	pH (SU)
HR-138Q-SW/SD02	3-May-01	SW	0.016	8.16	NR	16.3	2	5.76
HR-138Q-SW/SD03	2-May-01	SW	0.017	8.07	NR	16.6	2	5.74
HR-138Q-SW/SD04	25-Apr-01	SW	0.026	7.48	NR	13.6	0	5.01
HR-138Q-SW/SD05	24-Apr-01	SW	0.016	2.70	NR	16.4	26	4.79
HR-138Q-SEEP01	2-May-01	Seep	0.020	5.46	NR	17.9	0	5.79
	10-Jan-02	Seep	0.019	7.47	340	12.1	2.2	5.24
HR-138Q-SEEP02	2-May-01	Seep	0.019	6.92	NR	17.1	0	5.72
	10-Jan-02	Seep	0.019	7.91	245	10.3	6.1	5.08
HR-138Q-SEEP03	2-May-01	Seep	0.026	11.40*	NR	18.4	9	5.61
	10-Jan-02	Seep	0.022	4.57	375	13.6	3.6	5.10
HR-139Q-SW/SD01	25-Apr-01	SW	0.018	8.85	NR	14.7	0	5.51
HR-140Q-SW/SD01	25-Apr-01	SW	0.017	6.79	NR	15.6	4	4.76
HR-141Q-SWSD02	3-May-01	SW	0.029	7.30	NR	15.7	1	5.50

* Result artificially elevated because the dissolved oxygen sensor was not completely immersed in the seep water.

°C - Degrees Celsius.
mg/L - Milligrams per liter.
mS/cm - Millisiemens per centimeter.
mV - Millivolts.
NR - Not recorded.
NTU - Nephelometric turbidity units.
ORP - Oxidation-reduction potential.
SU - Standard units.
SW - Surface water.

0.5-foot of sediment with a stainless-steel spoon or hand auger and placed in a clean stainless-steel bowl. The sample was then homogenized and placed in the appropriate sample containers. Sample collection logs are included in Appendix A. The samples were analyzed for the parameters listed in Table 3-3 using methods outlined in Section 3.4.

3.3 Surveying of Sample Locations

Sample locations were surveyed using global positioning system survey techniques described in Section 4.3 of the SAP and conventional civil survey techniques described in Section 4.19 of the SAP (IT, 2000a). Horizontal coordinates were referenced to the U.S. State Plane Coordinate System, Alabama East Zone, North American Datum of 1983. Elevations were referenced to the North American Vertical Datum of 1988. Horizontal coordinates and elevations are included in Appendix C.

3.4 Analytical Program

Samples collected during the SI were analyzed for various chemical and physical parameters based on the potential site-specific chemicals and on EPA, ADEM, FTMC, and USACE requirements. Samples collected at the Impact Areas South of Bains Gap Road were analyzed for the following parameters:

- Target analyte list metals – EPA Method 6010B/7000
- Nitroaromatic and nitramine explosives – EPA Method 8330
- Perchlorate – EPA Method 314.0.

The sediment samples were analyzed for the following additional parameters:

- Total organic carbon – EPA Method 9060
- Grain size – American Society for Testing and Materials Method D-422.

The samples were analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 6-1 in Appendix B of the SAP (IT, 2000a).

3.5 Sample Preservation, Packaging, and Shipping

Sample preservation, packaging, and shipping followed requirements specified in Section 4.13.2 of the SAP (IT, 2000a). Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SI are listed in Table 5-1 of Appendix B of the SAP (IT, 2000a). Sample documentation and chain-of-custody records were completed as specified in Section 4.13 of the SAP (IT, 2000a).

Completed analysis request and chain-of-custody records (Appendix A) were secured and included with each shipment of sample coolers to EMAX Laboratories, Inc. in Torrance, California.

3.6 Investigation-Derived Waste Management and Disposal

Investigation-derived waste (IDW) was managed and disposed as outlined in Appendix D of the SAP (IT, 2000a). The IDW generated during the SI at the Impact Areas South of Bains Gap Road was segregated as follows:

- Soil boring cuttings
- Decontamination fluids
- Personal protective equipment (PPE).

Solid IDW was stored inside the fenced area surrounding Buildings 335 and 336 in lined roll-off bins prior to characterization and final disposal. Solid IDW was characterized using toxicity characteristic leaching procedure analyses. Based on the results, soil boring cuttings and PPE generated during the SI were disposed as nonregulated waste at the Industrial Waste Landfill on the Main Post of FTMC.

Liquid IDW was contained in the 20,000-gallon sump associated with the Building T-338 vehicle washrack. Liquid IDW was characterized by volatile organic compound, semivolatile organic compound, and metals analyses. Based on the analyses, liquid IDW was discharged as nonregulated waste to the FTMC wastewater treatment plant on the Main Post.

3.7 Variances/Nonconformances

Five variances to the SFSP were recorded during completion of the SI at the Impact Areas South of Bains Gap Road. The variances did not alter the intent of the investigation or the sampling rationale presented in the SFSP (IT, 2001). The variances to the SFSP are summarized in Table 3-5 and the variance reports are included in Appendix D.

No nonconformances to the SFSP were recorded during the completion of the SI at the Impact Areas South of Bains Gap Road.

3.8 Data Quality

The field sample analytical data are presented in tabular form in Appendix E. The field samples were collected, documented, handled, analyzed, and reported in a manner consistent with the SI work plan; the FTMC SAP and installation-wide quality assurance plan; and standard, accepted

Table 3-5

Variances to the Site-Specific Field Sampling Plan
Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X and 142Q-X
Fort McClellan, Calhoun County, Alabama

Variance to the SFSP	Justification for Variance	Impact to Site Investigation
Surface water and sediment samples were not collected at sample location HR-138Q-SW/SD01. A depositional soil sample (HR-138Q-DEP01) was collected at this location.	Surface water and sediment were not present in the creek.	None. Data from the depositional soil sample were used to characterize the site.
Surface water and sediment samples were not collected at location HR-141Q-SW/SD01. A depositional soil sample (HR-141Q-DEP02) was collected at this location.	Surface water and sediment were not present in the creek.	None. Data from the depositional soil sample were used to characterize the site.
Surface water and sediment samples were not collected at location HR-141Q-SW/SD03. A depositional soil sample (HR-141Q-DEP01) was collected at this location.	Surface water and sediment were not present in the creek.	None. Data from the depositional soil sample were used to characterize the site.
Surface water and sediment samples were not collected at location HR-142Q-SW/SD01. A depositional soil sample (HR-142Q-DEP01) was collected at this location.	Surface water and sediment were not present in the creek.	None. Data from the depositional soil sample were used to characterize the site.
Surface water and sediment samples were not collected at location HR-142Q-SW/SD02. A depositional soil sample (HR-142Q-DEP02) was collected at this location.	Surface water and sediment were not present in the creek.	None. Data from the depositional soil sample were used to characterize the site.

methods and procedures. Data were reported and evaluated in accordance with Corps of Engineers South Atlantic Savannah Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of Appendix B of the SAP [IT, 2000a]). Chemical data were reported via hard-copy data packages by the laboratory using Contract Laboratory Program-like forms.

Data Validation. The reported analytical data were validated in accordance with EPA National Functional Guidelines by Level III criteria. The data validation results are summarized by parcel in quality assurance reports, which include the data validation summary reports (Appendix F). Selected results were rejected or otherwise qualified based on the implementation of accepted data validation procedures and practices. These qualified parameters are highlighted in the report. The validation-assigned qualifiers were added to the FTMC IT Environmental Management System (ITEMS™) database for tracking and reporting. The qualified data were used in the comparison to the SSSLs and ESVs developed by IT. Rejected data (assigned an "R" qualifier) were not used in comparison to the SSSLs and ESVs. The data presented in this report, except where qualified, meet the principle data quality objective for this SI.

4.0 Site Characterization

Subsurface investigations performed at the Impact Areas South of Bains Gap Road, provided soil and bedrock data used to characterize the geology of the site. Because no wells were installed at the site, a hydrogeological characterization was not performed.

4.1 Regional and Site Geology

4.1.1 Regional Geology

Calhoun County includes parts of two physiographic provinces, the Piedmont Upland Province and the Valley and Ridge Province. The Piedmont Upland Province occupies the extreme eastern and southeastern portions of the county, and is characterized by metamorphosed sedimentary rocks. The generally accepted range in age of these metamorphics is Cambrian to Devonian.

The majority of Calhoun County, including the Main Post of FTMC, lies within the Appalachian fold-and-thrust structural belt (Valley and Ridge Province) where southeastward-dipping thrust faults with associated minor folding are the predominant structural features. The fold and thrust belt consists of Paleozoic sedimentary rocks that have been asymmetrically folded and thrust-faulted, with major structures and faults striking in a northeast-southwest direction.

Northwestward transport of the Paleozoic rock sequence along the thrust faults has resulted in the imbricate stacking of large slabs of rock referred to as thrust sheets. Within an individual thrust sheet, smaller faults may splay off the larger thrust fault, resulting in imbricate stacking of rock units within an individual thrust sheet (Osborne and Szabo, 1984). Geologic contacts in this region generally strike parallel to the faults, and repetition of lithologic units is common in vertical sequences. Geologic formations within the Valley and Ridge Province portion of Calhoun County have been mapped by Warman and Causey (1962), Osborne and Szabo (1984), and Moser and DeJarnette (1992), and vary in age from Lower Cambrian to Pennsylvanian.

The basal unit of the sedimentary sequence in Calhoun County is the Cambrian Chilhowee Group. The Chilhowee Group consists of the Cochran, Nichols, Wilson Ridge, and Weisner Formations (Osborne and Szabo, 1984) but in Calhoun County is either undifferentiated or divided into the Cochran and Nichols Formations and an upper undifferentiated Wilson Ridge and Weisner Formation. The Cochran is composed of poorly sorted arkosic sandstone and conglomerate with interbeds of greenish-gray siltstone and mudstone. Massive to laminated

greenish-gray and black mudstone makes up the Nichols Formation, with thin interbeds of siltstone and very fine-grained sandstone (Osborne et al., 1988). These two formations are mapped only in the eastern part of the county.

The Wilson Ridge and Weisner Formations are undifferentiated in Calhoun County and consist of both coarse-grained and fine-grained clastics. The coarse-grained facies appear to dominate the unit and consist primarily of coarse-grained, vitreous quartzite, and friable, fine- to coarse-grained, orthoquartzitic sandstone, both of which locally contain conglomerate. The fine-grained facies consist of sandy and micaceous shale and silty, micaceous mudstone, which are locally interbedded with the coarse clastic rocks. The abundance of orthoquartzitic sandstone and quartzite suggests that most of the Chilhowee Group bedrock in the vicinity of FTMC belongs to the Weisner Formation (Osborne and Szabo, 1984).

The Cambrian Shady Dolomite overlies the Weisner Formation northeast, east and southwest of the Main Post and consists of interlayered bluish-gray or pale yellowish-gray sandy dolomitic limestone and siliceous dolomite with coarsely crystalline porous chert (Osborne et al., 1989). A variegated shale and clayey silt have been included within the lower part of the Shady Dolomite (Cloud, 1966). Material similar to this lower shale unit was noted in core holes drilled by the Alabama Geologic Survey on FTMC (Osborne and Szabo, 1984). The character of the Shady Dolomite in the FTMC vicinity and the true assignment of the shale at this stratigraphic interval are still uncertain (Osborne, 1999).

The Rome Formation overlies the Shady Dolomite and locally occurs to the northwest and southeast of the Main Post as mapped by Warman and Causey (1962), and Osborne and Szabo (1984), and immediately to the west of Reilly Airfield (Osborne and Szabo, 1984). The Rome Formation consists of variegated, thinly interbedded grayish-red-purple mudstone, shale, siltstone, and greenish-red and light gray sandstone, with locally occurring limestone and dolomite. The Conasauga Formation overlies the Rome Formation and occurs along anticlinal axes in the northeastern portion of Pelham Range (Warman and Causey, 1962; Osborne and Szabo, 1984) and the northern portion of the Main Post (Osborne et al., 1997). The Conasauga Formation is composed of dark-gray, finely to coarsely crystalline medium- to thick-bedded dolomite with minor shale and chert (Osborne et al., 1989).

Overlying the Conasauga Formation is the Knox Group, which is composed of the Copper Ridge and Chepultepec dolomites of Cambro-Ordovician age. The Knox Group is undifferentiated in Calhoun County and consists of light medium gray, fine to medium crystalline, variably bedded

to laminated, siliceous dolomite and dolomitic limestone that weather to a chert residuum (Osborne and Szabo, 1984). The Knox Group underlies a large portion of the Pelham Range area.

The Ordovician Newala and Little Oak Limestones overlie the Knox Group. The Newala Limestone consists of light to dark gray, micritic, thick-bedded limestone with minor dolomite. The Little Oak Limestone is comprised of dark gray, medium- to thick-bedded, fossiliferous, argillaceous to silty limestone with chert nodules. These limestone units are mapped as undifferentiated at FTMC and other parts of Calhoun County. The Athens Shale overlies the Ordovician limestone units. The Athens Shale consists of dark gray to black shale and graptolitic shale with localized interbedded dark gray limestone (Osborne et al., 1989). These units occur within an eroded "window" in the uppermost structural thrust sheet at FTMC and underlie much of the developed area of the Main Post.

Other Ordovician-aged bedrock units mapped in Calhoun County include the Greensport Formation, Colvin Mountain Sandstone, and Sequatchie Formation. These units consist of various siltstones, sandstones, shales, dolomites and limestones, and are mapped as one, undifferentiated unit in some areas of Calhoun County. The only Silurian-age sedimentary formation mapped in Calhoun County is the Red Mountain Formation. This unit consists of interbedded red sandstone, siltstone, and shale with greenish-gray to red silty and sandy limestone.

The Devonian Frog Mountain Sandstone consists of sandstone and quartzitic sandstone with shale interbeds, dolomudstone, and glauconitic limestone (Osborne et al., 1988). This unit locally occurs in the western portion of Pelham Range.

The Mississippian Fort Payne Chert and the Maury Formation overlie the Frog Mountain Sandstone and are composed of dark to light gray limestone with abundant chert nodules and greenish-gray to grayish-red phosphatic shale, with increasing amounts of calcareous chert toward the upper portion of the formation (Osborne and Szabo, 1984). These units occur in the northwestern portion of Pelham Range. Overlying the Fort Payne Chert is the Floyd Shale, also of Mississippian age, which consists of thin-bedded, fissile brown to black shale with thin intercalated limestone layers and interbedded sandstone. Osborne and Szabo (1984) reassigned the Floyd Shale, which was mapped by Warman and Causey (1962) on the Main Post of FTMC, to the Ordovician Athens Shale based on fossil data.

The Pennsylvanian Parkwood Formation overlies the Floyd Shale and consists of a medium to dark-gray, silty, clay shale and mudstone with interbedded light to medium gray very fine to fine grained argillaceous, micaceous sandstone. Locally the Parkwood Formation also contains beds of medium- to dark-gray argillaceous, bioclastic to cherty limestone and beds of clayey coal up to a few inches thick (Raymond et al., 1988). The Parkwood Formation in Calhoun County is generally found within a structurally complex area known as the Coosa deformed belt. In the deformed belt, the Parkwood Formation and Floyd Shale are mapped as undifferentiated because their lithologic similarity and significant deformation make it impractical to map the contact (Thomas and Drahovzal, 1974; Osborne et al, 1988). The undifferentiated Parkwood Formation and Floyd Shale are found throughout the western quarter of Pelham Range.

The Jacksonville thrust fault is the most significant structural geologic feature in the vicinity of the Main Post of FTMC, both for its role in determining the stratigraphic relationships in the area and for its contribution to regional water supplies. The trace of the fault extends northeastward for approximately 39 miles between Bynum, Alabama and Piedmont, Alabama. The fault is interpreted as a major splay of the Pell City fault (Osborne and Szabo, 1984). The Ordovician sequence that makes up the Eden thrust sheet is exposed at FTMC through an eroded window, or fenster, in the overlying thrust sheet. Rocks within the window display complex folding with the folds being overturned and tight to isoclinal. The carbonates and shales locally exhibit well-developed cleavage (Osborne and Szabo, 1984). The FTMC window is framed on the northwest by the Rome Formation, north by the Conasauga Formation, northeast, east, and southwest by the Shady Dolomite, and southeast and southwest by the Chilhowee Group (Osborne et al., 1997). Two small klippen of the Shady Dolomite, bounded by the Jacksonville fault, have been recognized adjacent to the Pell City fault at the FTMC window (Osborne et al., 1997).

The Pell City fault serves as a fault contact between the bedrock within the FTMC window and the Rome and Conasauga Formations. The trace of the Pell City fault is also exposed approximately nine miles west of the FTMC window on Pelham Range where it traverses northeast to southwest across the western quarter of Pelham Range. Here, the trace of the Pell City fault marks the boundary between the Pell City thrust sheet and the Coosa deformed belt.

The eastern three quarters of Pelham Range is located within the Pell City thrust sheet while the remaining western quarter of Pelham is located within the Coosa deformed belt. The Pell City thrust sheet is a large-scale thrust sheet containing Cambrian and Ordovician rocks and is relatively less structurally complex than the Coosa deformed belt (Thomas and Neathery, 1982). The Pell City thrust sheet is exposed between the traces of the Jacksonville and Pell City faults

along the western boundary of the FTMC window, and along the trace of the Pell City fault on Pelham Range (Thomas and Neathery, 1982 and Osborne et al., 1988). The Coosa deformed belt is a narrow (approximately 5 to 20 miles wide) northeast- to-southwest-trending linear (approximately 90 miles in length) zone of complex structure consisting mainly of thin imbricate thrust slices. The structure within these imbricate thrust slices is often internally complicated by small-scale folding and additional thrust faults (Thomas and Drahovzal, 1974).

4.1.2 Site Geology

Soils at the Impact Areas South of Bains Gap Road consist mainly of the Stony Rough Land Sandstone series, which are soils of the higher elevations of the Choccolocco Mountains (U.S. Department of Agriculture [USDA], 1961). This miscellaneous land type consists of rough mountainous areas with many outcrops of sandstone and quartzite bedrock, loose rock fragments, and scattered patches of sandy soil material. It also includes rock escarpments on higher parts of the mountains where quartzite of the Weisner Formation is common. Slopes are generally more than 25 percent. The soil material is generally shallow over bedrock.

A small area of the northern portion of Parcel 138Q-X consists of the Jefferson gravelly fine sandy loam, 6 to 10 percent slopes, eroded (USDA, 1961). The Jefferson series consists of well-drained, strongly acid soils that occur in small areas on fans and on foot slopes in the Choccolocco, Colvin, and Coldwater Mountains. These soils have developed from old local alluvium that washed or sloughed from ridges of sandstone, shale, and Weisner quartzite. The surface soil is dark grayish-brown fine sandy loam, and the subsoil is yellowish-brown, light fine sandy clay. Fragments of sandstone and quartzite as much as 8 inches in diameter are on the surface and throughout the profile.

The mapping unit, Jefferson stony fine sandy loam, 6 to 10 percent slopes, eroded, has strong slopes with high runoff. A few places are severely eroded and contain gullies. The solum ranges from 24 to 40 inches in thickness. Tilth is good and the root zone is thick. The stones range from 3 to 8 inches in diameter. A few small, scattered areas have moderate erosion.

Soil descriptions from the DPT soil borings revealed that soils beneath the site consist of silts and clays. DPT refusal was encountered at depths ranging from 4 to 11 feet bgs across the parcels. Competent or weathered bedrock was not encountered during DPT activities.

Bedrock beneath the site is mapped as the Cambrian Chilhowee Group (Osborne et al., 1997). The Chilhowee Group is comprised of the Cochran, Nichols, Wilson Ridge, and Weisner

Formations (Osborne and Szabo, 1984), but in Calhoun County is either undifferentiated or divided into the Cochran and Nichols Formations and an upper undifferentiated Wilson Ridge and Weisner Formation. The Cochran is composed of poorly sorted arkosic sandstone and conglomerate with interbeds of greenish-gray siltstone and mudstone. Massive to laminated, greenish-gray and black mudstone makes up the Nichols Formation with thin interbeds of siltstone and very fine-grained sandstone (Szabo et al., 1988). These two formations are mapped only in the eastern part of the county.

The undifferentiated Wilson Ridge and Weisner Formations in Calhoun County consist of both coarse-grained and fine-grained clastics. The coarse-grained facies appear to dominate the unit and consists primarily of coarse-grained, vitreous quartzite, and friable, fine- to coarse-grained, orthoquartzitic sandstone, both of which locally contain conglomerate. The fine-grained facies consists of sandy and micaceous shale and silty, micaceous mudstone which are locally interbedded with the coarse clastic rocks. The abundance of orthoquartzitic sandstone and quartzite suggests that most of the Chilhowee Group bedrock in the vicinity of FTMC belongs to the Weisner Formation (Osborne and Szabo, 1984).

4.2 Surface Water Hydrology

Precipitation in the form of rainfall averages about 53 inches annually in Anniston, Alabama, with infiltration rates annually exceeding evapotranspiration rates (National Oceanic and Atmospheric Administration, 1998). The major surface water features at the Main Post of FTMC include Remount Creek, Cane Creek, and Cave Creek. These waterways flow in a general northwest to westerly direction towards the Coosa River on the western boundary of Calhoun County.

Ground elevation at the Impact Areas South of Bains Gap Road ranges from approximately 975 feet above mean sea level (amsl) (within Parcel 138Q-X) to approximately 1,625 feet amsl (within Parcel 140Q-X). Surface drainage at the site follows the topography and generally flows to the north-northwest into several intermittent streams that eventually empty into Cane Creek northwest of the area. In addition, three seeps are located near the northwestern tip of Parcel 138Q-X and are part of the Marcheta Hill Orchid Seep SINA.

5.0 Summary of Analytical Results

The results of the chemical analysis of samples collected at the Impact Areas South of Bains Gap Road indicate that metals were detected in the various site media. In addition, perchlorate and one explosive compound were detected in one surface soil sample each. To evaluate whether the detected constituents present an unacceptable risk to human health and the environment, the analytical results were compared to the human health SSSLs and ESVs for FTMC. The SSSLs and ESVs were developed by IT for human health and ecological risk evaluations as part of the on-going SIs being performed under the BRAC Environmental Restoration Program at FTMC.

Metals concentrations exceeding the SSSLs and ESVs were subsequently compared to metals background screening values to determine if the metals concentrations are within natural background concentrations (SAIC, 1998). Summary statistics for background metals samples collected at FTMC are included in Appendix G.

The following sections and Tables 5-1 through 5-5 summarize the results of the comparison of detected constituents to the SSSLs, ESVs, and background screening values. Complete analytical results are presented in Appendix E.

5.1 Surface and Depositional Soil Analytical Results

Fourteen surface soil samples and five depositional soil samples were collected for chemical analysis at the Impact Areas South of Bains Gap Road. Surface and depositional soil samples were collected from the upper 1-foot of soil at the locations shown on Figure 3-1. Analytical results were compared to residential human health SSSLs, ESVs, and metals background screening values as presented in Table 5-1.

Metals. Twenty metals were detected in surface and depositional soil samples collected at the site. The antimony results, seven of the cobalt results, four of the potassium results, and one each of the mercury, nickel, and beryllium results were flagged with a "B" data qualifier signifying that these metals were also detected in an associated laboratory or field blank.

The concentrations of six metals (aluminum, antimony, arsenic, iron, manganese, and thallium) exceeded SSSLs. Of these metals, only aluminum (three samples), antimony (HR-138Q-GP02), iron (HR-141Q-DEP02 and HR-142Q-DEP02), and manganese (three samples) also exceeded their respective background concentrations. With the exception of one “B”-flagged antimony result (8.4 milligrams per kilogram [mg/kg]), the results were within the range of background

Table 5-1

Surface and Depositional Soil Analytical Results
Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X
Fort McClellan, Calhoun County, Alabama

Sample Location						HR-138Q-DEP01						HR-138Q-GP01						HR-138Q-GP02					
Sample Number						YE0011						YE0001						YE0005					
Sample Date						3-May-01						31-Jan-01						1-Feb-01					
Sample Depth (Feet)						0- 1						0- 1						0- 1					
Parameter	Units	UBR[a]	BKG[b]	SSSL[c]	ESV[c]	Result	Qual	>UBR	>BKG	>SSSL	>ESV	Result	Qual	>UBR	>BKG	>SSSL	>ESV	Result	Qual	>UBR	>BKG	>SSSL	>ESV
METALS																							
Aluminum	mg/kg	3.99E+04	1.63E+04	7.80E+03	5.00E+01	1.08E+04				YES	YES	1.89E+04			YES	YES	YES	1.33E+04				YES	YES
Antimony	mg/kg	2.60E+00	1.99E+00	3.11E+00	3.50E+00	ND						ND						8.40E+00	B	YES	YES	YES	YES
Arsenic	mg/kg	4.90E+01	1.37E+01	4.26E-01	1.00E+01	4.18E+00				YES		3.74E+00				YES		3.10E+00				YES	
Barium	mg/kg	2.88E+02	1.24E+02	5.47E+02	1.65E+02	1.30E+02			YES			7.41E+01						8.09E+01					
Beryllium	mg/kg	8.70E-01	8.00E-01	9.60E+00	1.10E+00	1.11E+00	J	YES	YES		YES	6.26E-01	J					4.30E-01	J				
Calcium	mg/kg	1.79E+04	1.72E+03	NA	NA	3.51E+02						1.25E+02						1.42E+02					
Chromium	mg/kg	1.34E+02	3.70E+01	2.32E+01	4.00E-01	7.53E+00					YES	1.39E+01					YES	1.57E+01					YES
Cobalt	mg/kg	7.10E+01	1.52E+01	4.68E+02	2.00E+01	2.01E+01			YES		YES	1.84E+00	J					2.59E+00					
Copper	mg/kg	2.40E+01	1.27E+01	3.13E+02	4.00E+01	8.25E+00						5.27E+00						7.53E+00					
Iron	mg/kg	5.63E+04	3.42E+04	2.34E+03	2.00E+02	1.63E+04				YES	YES	1.65E+04	J			YES	YES	1.67E+04	J			YES	YES
Lead	mg/kg	8.30E+01	4.01E+01	4.00E+02	5.00E+01	1.65E+01						1.12E+01						1.27E+01					
Magnesium	mg/kg	9.60E+03	1.03E+03	NA	4.40E+05	4.98E+02						4.36E+02						5.01E+02					
Manganese	mg/kg	6.85E+03	1.58E+03	3.63E+02	1.00E+02	2.94E+02					YES	1.77E+02	J				YES	1.46E+02	J				YES
Mercury	mg/kg	3.20E-01	8.00E-02	2.33E+00	1.00E-01	2.70E-02	J					3.70E-02	J					4.00E-02	J				
Nickel	mg/kg	2.20E+01	1.03E+01	1.54E+02	3.00E+01	4.49E+00						5.31E+00						4.16E+00					
Potassium	mg/kg	6.01E+03	8.00E+02	NA	NA	1.91E+03			YES			2.42E+02	J					4.55E+02	J				
Sodium	mg/kg	5.63E+02	6.34E+02	NA	NA	ND						ND						ND					
Thallium	mg/kg	3.40E+01	3.43E+00	5.08E-01	1.00E+00	ND						ND						ND					
Vanadium	mg/kg	1.58E+02	5.88E+01	5.31E+01	2.00E+00	1.27E+01					YES	2.31E+01					YES	1.76E+01					YES
Zinc	mg/kg	2.09E+02	4.06E+01	2.34E+03	5.00E+01	2.11E+01	J					1.70E+01	J					1.84E+01	J				
EXPLOSIVES																							
2-Amino-4,6-dinitrotoluene	mg/kg	NA	NA	4.64E-01	8.00E+01	ND						1.60E-01	J					ND					
PERCHLORATE																							
Perchlorate	mg/kg	NA	NA	7.04E+00	NA	ND						ND						ND					

Table 5-1

Surface and Depositional Soil Analytical Results
Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X
Fort McClellan, Calhoun County, Alabama

Sample Location						HR-138Q-GP03						HR-138Q-GP04						HR-139Q-GP01					
Sample Number						YE0007						YE0009						YG0001					
Sample Date						31-Jan-01						31-Jan-01						8-Feb-01					
Sample Depth (Feet)						0- 1						0- 1						0- 1					
Parameter	Units	UBR[a]	BKG[b]	SSSL[c]	ESV[c]	Result	Qual	>UBR	>BKG	>SSSL	>ESV	Result	Qual	>UBR	>BKG	>SSSL	>ESV	Result	Qual	>UBR	>BKG	>SSSL	>ESV
METALS																							
Aluminum	mg/kg	3.99E+04	1.63E+04	7.80E+03	5.00E+01	9.78E+03				YES	YES	9.67E+03				YES	YES	7.81E+03				YES	YES
Antimony	mg/kg	2.60E+00	1.99E+00	3.11E+00	3.50E+00	ND						ND						ND					
Arsenic	mg/kg	4.90E+01	1.37E+01	4.26E-01	1.00E+01	3.44E+00				YES		1.33E+00				YES		5.52E+00				YES	
Barium	mg/kg	2.88E+02	1.24E+02	5.47E+02	1.65E+02	4.97E+01						7.33E+01						4.31E+01					
Beryllium	mg/kg	8.70E-01	8.00E-01	9.60E+00	1.10E+00	3.29E-01	J					2.71E-01	J					5.65E-01	J				
Calcium	mg/kg	1.79E+04	1.72E+03	NA	NA	8.61E+01	J					2.41E+02						3.06E+02					
Chromium	mg/kg	1.34E+02	3.70E+01	2.32E+01	4.00E-01	9.34E+00					YES	6.63E+00					YES	6.03E+00	J				YES
Cobalt	mg/kg	7.10E+01	1.52E+01	4.68E+02	2.00E+01	2.32E+00	J					1.54E+00	B					1.63E+00	B				
Copper	mg/kg	2.40E+01	1.27E+01	3.13E+02	4.00E+01	3.38E+00						3.21E+00						8.07E+00					
Iron	mg/kg	5.63E+04	3.42E+04	2.34E+03	2.00E+02	1.07E+04	J			YES	YES	5.26E+03	J			YES	YES	8.92E+03				YES	YES
Lead	mg/kg	8.30E+01	4.01E+01	4.00E+02	5.00E+01	1.93E+01						1.06E+01						6.47E+00					
Magnesium	mg/kg	9.60E+03	1.03E+03	NA	4.40E+05	3.01E+02						4.43E+02						3.44E+02					
Manganese	mg/kg	6.85E+03	1.58E+03	3.63E+02	1.00E+02	1.18E+02	J				YES	7.71E+01	J					9.83E+01					
Mercury	mg/kg	3.20E-01	8.00E-02	2.33E+00	1.00E-01	3.80E-02	J					ND						2.70E-02	J				
Nickel	mg/kg	2.20E+01	1.03E+01	1.54E+02	3.00E+01	2.50E+00						3.91E+00						2.82E+00					
Potassium	mg/kg	6.01E+03	8.00E+02	NA	NA	2.53E+02	J					2.05E+02	J					2.89E+03			YES		
Sodium	mg/kg	5.63E+02	6.34E+02	NA	NA	ND						ND						ND					
Thallium	mg/kg	3.40E+01	3.43E+00	5.08E-01	1.00E+00	ND						ND						ND					
Vanadium	mg/kg	1.58E+02	5.88E+01	5.31E+01	2.00E+00	1.58E+01					YES	9.63E+00					YES	9.44E+00	J				YES
Zinc	mg/kg	2.09E+02	4.06E+01	2.34E+03	5.00E+01	1.42E+01	J					1.30E+01	J					7.64E+00					
EXPLOSIVES																							
2-Amino-4,6-dinitrotoluene	mg/kg	NA	NA	4.64E-01	8.00E+01	ND						ND						ND					
PERCHLORATE																							
Perchlorate	mg/kg	NA	NA	7.04E+00	NA	ND						ND						ND					

Table 5-1

Surface and Depositional Soil Analytical Results
Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X
Fort McClellan, Calhoun County, Alabama

Sample Location						HR-139Q-GP02						HR-140Q-GP01						HR-140Q-GP02					
Sample Number						YG0003						YH0001						YH0003					
Sample Date						7-Feb-01						7-Feb-01						8-Feb-01					
Sample Depth (Feet)						0- 1						0- 1						0- 1					
Parameter	Units	UBR[a]	BKG[b]	SSSL[c]	ESV[c]	Result	Qual	>UBR	>BKG	>SSSL	>ESV	Result	Qual	>UBR	>BKG	>SSSL	>ESV	Result	Qual	>UBR	>BKG	>SSSL	>ESV
METALS																							
Aluminum	mg/kg	3.99E+04	1.63E+04	7.80E+03	5.00E+01	9.25E+03				YES	YES	1.25E+04				YES	YES	2.17E+04			YES	YES	YES
Antimony	mg/kg	2.60E+00	1.99E+00	3.11E+00	3.50E+00	ND						ND						ND					
Arsenic	mg/kg	4.90E+01	1.37E+01	4.26E-01	1.00E+01	3.97E+00				YES		2.24E+00				YES		3.67E+00				YES	
Barium	mg/kg	2.88E+02	1.24E+02	5.47E+02	1.65E+02	8.36E+01						9.57E+01						2.28E+02			YES		YES
Beryllium	mg/kg	8.70E-01	8.00E-01	9.60E+00	1.10E+00	5.22E-01	J					5.48E-01	J					2.40E+00		YES	YES		YES
Calcium	mg/kg	1.79E+04	1.72E+03	NA	NA	4.96E+02						3.36E+02						3.64E+02					
Chromium	mg/kg	1.34E+02	3.70E+01	2.32E+01	4.00E-01	6.31E+00	J				YES	1.09E+01					YES	1.11E+01					YES
Cobalt	mg/kg	7.10E+01	1.52E+01	4.68E+02	2.00E+01	1.55E+00	B					1.09E+00	B					3.68E+01			YES		YES
Copper	mg/kg	2.40E+01	1.27E+01	3.13E+02	4.00E+01	7.35E+00						3.29E+00						1.18E+01					
Iron	mg/kg	5.63E+04	3.42E+04	2.34E+03	2.00E+02	7.90E+03				YES	YES	1.50E+04				YES	YES	1.15E+04				YES	YES
Lead	mg/kg	8.30E+01	4.01E+01	4.00E+02	5.00E+01	3.29E+01						9.05E+00						2.54E+01					
Magnesium	mg/kg	9.60E+03	1.03E+03	NA	4.40E+05	3.25E+02						5.57E+02						1.23E+03			YES		
Manganese	mg/kg	6.85E+03	1.58E+03	3.63E+02	1.00E+02	1.34E+02					YES	1.57E+02					YES	2.29E+03			YES	YES	YES
Mercury	mg/kg	3.20E-01	8.00E-02	2.33E+00	1.00E-01	9.50E-02	J		YES			ND						5.10E-02	B				
Nickel	mg/kg	2.20E+01	1.03E+01	1.54E+02	3.00E+01	3.07E+00						3.83E+00						9.93E+00					
Potassium	mg/kg	6.01E+03	8.00E+02	NA	NA	3.44E+02	B					1.25E+03			YES			9.71E+02			YES		
Sodium	mg/kg	5.63E+02	6.34E+02	NA	NA	4.51E+01	J					ND						ND					
Thallium	mg/kg	3.40E+01	3.43E+00	5.08E-01	1.00E+00	ND						ND						ND					
Vanadium	mg/kg	1.58E+02	5.88E+01	5.31E+01	2.00E+00	1.10E+01	J				YES	1.40E+01					YES	1.81E+01					YES
Zinc	mg/kg	2.09E+02	4.06E+01	2.34E+03	5.00E+01	2.66E+01						1.42E+01						3.76E+01					
EXPLOSIVES																							
2-Amino-4,6-dinitrotoluene	mg/kg	NA	NA	4.64E-01	8.00E+01	ND						ND						ND					
PERCHLORATE																							
Perchlorate	mg/kg	NA	NA	7.04E+00	NA	ND						ND						ND					

Table 5-1

Surface and Depositional Soil Analytical Results
Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X
Fort McClellan, Calhoun County, Alabama

Sample Location						HR-141Q-DEP01						HR-141Q-DEP02						HR-141Q-GP01					
Sample Number						YJ0009						YJ0010						YJ0001					
Sample Date						24-Apr-01						3-May-01						7-Feb-01					
Sample Depth (Feet)						0- 1						0- 1						0- 1					
Parameter	Units	UBR[a]	BKG[b]	SSSL[c]	ESV[c]	Result	Qual	>UBR	>BKG	>SSSL	>ESV	Result	Qual	>UBR	>BKG	>SSSL	>ESV	Result	Qual	>UBR	>BKG	>SSSL	>ESV
METALS																							
Aluminum	mg/kg	3.99E+04	1.63E+04	7.80E+03	5.00E+01	1.37E+04				YES	YES	1.17E+04				YES	YES	1.49E+04				YES	YES
Antimony	mg/kg	2.60E+00	1.99E+00	3.11E+00	3.50E+00	ND						ND						ND					
Arsenic	mg/kg	4.90E+01	1.37E+01	4.26E-01	1.00E+01	4.40E+00				YES		6.12E+00				YES		3.14E+00				YES	
Barium	mg/kg	2.88E+02	1.24E+02	5.47E+02	1.65E+02	1.67E+02			YES		YES	1.63E+02			YES			6.33E+01					
Beryllium	mg/kg	8.70E-01	8.00E-01	9.60E+00	1.10E+00	1.05E+00	J	YES	YES			1.67E+00		YES	YES		YES	9.10E-01	J	YES	YES		
Calcium	mg/kg	1.79E+04	1.72E+03	NA	NA	5.02E+02						4.85E+02						6.68E+01	J				
Chromium	mg/kg	1.34E+02	3.70E+01	2.32E+01	4.00E-01	7.62E+00					YES	1.22E+01					YES	1.11E+01					YES
Cobalt	mg/kg	7.10E+01	1.52E+01	4.68E+02	2.00E+01	4.09E+00	B					1.70E+01			YES			2.04E+00	J				
Copper	mg/kg	2.40E+01	1.27E+01	3.13E+02	4.00E+01	9.20E+00						6.32E+00						3.68E+00					
Iron	mg/kg	5.63E+04	3.42E+04	2.34E+03	2.00E+02	1.39E+04				YES	YES	3.90E+04			YES	YES	YES	1.49E+04				YES	YES
Lead	mg/kg	8.30E+01	4.01E+01	4.00E+02	5.00E+01	3.77E+01						2.01E+01						1.16E+01					
Magnesium	mg/kg	9.60E+03	1.03E+03	NA	4.40E+05	6.35E+02						5.64E+02						6.64E+02					
Manganese	mg/kg	6.85E+03	1.58E+03	3.63E+02	1.00E+02	8.75E+02				YES	YES	1.62E+03			YES	YES	YES	2.37E+01					
Mercury	mg/kg	3.20E-01	8.00E-02	2.33E+00	1.00E-01	6.00E-02	J					4.00E-02	J					4.30E-02	J				
Nickel	mg/kg	2.20E+01	1.03E+01	1.54E+02	3.00E+01	4.13E+00						6.81E+00						4.49E+00					
Potassium	mg/kg	6.01E+03	8.00E+02	NA	NA	1.54E+03			YES			1.41E+03			YES			5.77E+02	J				
Sodium	mg/kg	5.63E+02	6.34E+02	NA	NA	ND						ND						ND					
Thallium	mg/kg	3.40E+01	3.43E+00	5.08E-01	1.00E+00	ND						1.23E+00	J			YES	YES	ND					
Vanadium	mg/kg	1.58E+02	5.88E+01	5.31E+01	2.00E+00	1.25E+01					YES	2.06E+01					YES	1.94E+01					YES
Zinc	mg/kg	2.09E+02	4.06E+01	2.34E+03	5.00E+01	2.95E+01						2.54E+01	J					2.09E+01					
EXPLOSIVES																							
2-Amino-4,6-dinitrotoluene	mg/kg	NA	NA	4.64E-01	8.00E+01	ND						ND						ND					
PERCHLORATE																							
Perchlorate	mg/kg	NA	NA	7.04E+00	NA	ND						ND						ND					

Table 5-1

Surface and Depositional Soil Analytical Results
Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X
Fort McClellan, Calhoun County, Alabama

Sample Location						HR-141Q-GP02						HR-141Q-GP03						HR-141Q-GP04					
Sample Number						YJ0003						YJ0005						YJ0007					
Sample Date						11-Apr-01						9-Feb-01						8-Feb-01					
Sample Depth (Feet)						0- 1						0- 1						0- 1					
Parameter	Units	UBR[a]	BKG[b]	SSSL[c]	ESV[c]	Result	Qual	>UBR	>BKG	>SSSL	>ESV	Result	Qual	>UBR	>BKG	>SSSL	>ESV	Result	Qual	>UBR	>BKG	>SSSL	>ESV
METALS																							
Aluminum	mg/kg	3.99E+04	1.63E+04	7.80E+03	5.00E+01	1.65E+04			YES	YES	YES	1.57E+04				YES	YES	8.91E+03				YES	YES
Antimony	mg/kg	2.60E+00	1.99E+00	3.11E+00	3.50E+00	ND						ND						ND					
Arsenic	mg/kg	4.90E+01	1.37E+01	4.26E-01	1.00E+01	2.98E+00				YES		4.58E+00				YES		2.48E+00				YES	
Barium	mg/kg	2.88E+02	1.24E+02	5.47E+02	1.65E+02	1.45E+02			YES			4.88E+02	J	YES	YES		YES	1.17E+02	J				
Beryllium	mg/kg	8.70E-01	8.00E-01	9.60E+00	1.10E+00	9.80E-01	J	YES	YES			3.10E+00		YES	YES		YES	8.67E-01	J		YES		
Calcium	mg/kg	1.79E+04	1.72E+03	NA	NA	1.88E+02						1.67E+03						4.01E+02					
Chromium	mg/kg	1.34E+02	3.70E+01	2.32E+01	4.00E-01	9.51E+00					YES	7.98E+00	J				YES	7.62E+00	J				YES
Cobalt	mg/kg	7.10E+01	1.52E+01	4.68E+02	2.00E+01	5.34E+00						1.18E+01	J					1.06E+01	J				
Copper	mg/kg	2.40E+01	1.27E+01	3.13E+02	4.00E+01	5.50E+00						1.19E+01						6.32E+00					
Iron	mg/kg	5.63E+04	3.42E+04	2.34E+03	2.00E+02	1.32E+04				YES	YES	1.44E+04				YES	YES	1.24E+04				YES	YES
Lead	mg/kg	8.30E+01	4.01E+01	4.00E+02	5.00E+01	1.05E+01						3.67E+01						1.42E+01					
Magnesium	mg/kg	9.60E+03	1.03E+03	NA	4.40E+05	8.46E+02						5.80E+02						3.62E+02					
Manganese	mg/kg	6.85E+03	1.58E+03	3.63E+02	1.00E+02	1.61E+02					YES	2.09E+03			YES	YES	YES	5.43E+02				YES	YES
Mercury	mg/kg	3.20E-01	8.00E-02	2.33E+00	1.00E-01	ND						6.50E-02	J					2.40E-02	J				
Nickel	mg/kg	2.20E+01	1.03E+01	1.54E+02	3.00E+01	5.45E+00						6.85E+00	J					1.49E+00	B				
Potassium	mg/kg	6.01E+03	8.00E+02	NA	NA	1.52E+03			YES			7.26E+02						5.51E+02	J				
Sodium	mg/kg	5.63E+02	6.34E+02	NA	NA	ND						2.62E+01	J					2.43E+01	J				
Thallium	mg/kg	3.40E+01	3.43E+00	5.08E-01	1.00E+00	ND						ND						ND					
Vanadium	mg/kg	1.58E+02	5.88E+01	5.31E+01	2.00E+00	1.54E+01					YES	1.32E+01					YES	1.24E+01					YES
Zinc	mg/kg	2.09E+02	4.06E+01	2.34E+03	5.00E+01	2.14E+01						5.94E+01	J		YES		YES	1.56E+01	J				
EXPLOSIVES																							
2-Amino-4,6-dinitrotoluene	mg/kg	NA	NA	4.64E-01	8.00E+01	ND						ND						ND					
PERCHLORATE																							
Perchlorate	mg/kg	NA	NA	7.04E+00	NA	ND						ND						ND					

Table 5-1

Surface and Depositional Soil Analytical Results
Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X
Fort McClellan, Calhoun County, Alabama

Sample Location						HR-142Q-DEP01						HR-142Q-DEP02					
Sample Number						YL0005						YL0006					
Sample Date						24-Apr-01						24-Apr-01					
Sample Depth (Feet)						0- 1						0- 1					
Parameter	Units	UBR[a]	BKG[b]	SSSL[c]	ESV[c]	Result	Qual	>UBR	>BKG	>SSSL	>ESV	Result	Qual	>UBR	>BKG	>SSSL	>ESV
METALS																	
Aluminum	mg/kg	3.99E+04	1.63E+04	7.80E+03	5.00E+01	1.04E+04				YES	YES	1.22E+04				YES	YES
Antimony	mg/kg	2.60E+00	1.99E+00	3.11E+00	3.50E+00	ND						ND					
Arsenic	mg/kg	4.90E+01	1.37E+01	4.26E-01	1.00E+01	4.66E+00				YES		6.50E+00				YES	
Barium	mg/kg	2.88E+02	1.24E+02	5.47E+02	1.65E+02	1.09E+02						1.20E+02					
Beryllium	mg/kg	8.70E-01	8.00E-01	9.60E+00	1.10E+00	1.09E+00	J	YES	YES			9.75E-01	B	YES	YES		
Calcium	mg/kg	1.79E+04	1.72E+03	NA	NA	2.77E+02						2.65E+02					
Chromium	mg/kg	1.34E+02	3.70E+01	2.32E+01	4.00E-01	9.44E+00					YES	1.72E+01					YES
Cobalt	mg/kg	7.10E+01	1.52E+01	4.68E+02	2.00E+01	6.48E+00						1.03E+01					
Copper	mg/kg	2.40E+01	1.27E+01	3.13E+02	4.00E+01	1.12E+01						7.57E+00					
Iron	mg/kg	5.63E+04	3.42E+04	2.34E+03	2.00E+02	2.80E+04				YES	YES	3.72E+04			YES	YES	YES
Lead	mg/kg	8.30E+01	4.01E+01	4.00E+02	5.00E+01	2.41E+01						3.06E+01					
Magnesium	mg/kg	9.60E+03	1.03E+03	NA	4.40E+05	4.68E+02						5.16E+02					
Manganese	mg/kg	6.85E+03	1.58E+03	3.63E+02	1.00E+02	4.59E+02				YES	YES	8.81E+02				YES	YES
Mercury	mg/kg	3.20E-01	8.00E-02	2.33E+00	1.00E-01	ND						ND					
Nickel	mg/kg	2.20E+01	1.03E+01	1.54E+02	3.00E+01	5.60E+00						5.62E+00					
Potassium	mg/kg	6.01E+03	8.00E+02	NA	NA	1.83E+03			YES			1.07E+03	B		YES		
Sodium	mg/kg	5.63E+02	6.34E+02	NA	NA	ND						ND					
Thallium	mg/kg	3.40E+01	3.43E+00	5.08E-01	1.00E+00	9.00E-01	J			YES		1.01E+00	J			YES	YES
Vanadium	mg/kg	1.58E+02	5.88E+01	5.31E+01	2.00E+00	1.49E+01					YES	2.49E+01					YES
Zinc	mg/kg	2.09E+02	4.06E+01	2.34E+03	5.00E+01	2.65E+01						2.49E+01					
EXPLOSIVES																	
2-Amino-4,6-dinitrotoluene	mg/kg	NA	NA	4.64E-01	8.00E+01	ND						ND					
PERCHLORATE																	
Perchlorate	mg/kg	NA	NA	7.04E+00	NA	ND						ND					

Table 5-1

Surface and Depositional Soil Analytical Results
Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X
Fort McClellan, Calhoun County, Alabama

Sample Location						HR-142Q-GP01						HR-142Q-GP02					
Sample Number						YL0001						YL0003					
Sample Date						8-Feb-01						8-Feb-01					
Sample Depth (Feet)						0- 1						0- 1					
Parameter	Units	UBR[a]	BKG[b]	SSSL[c]	ESV[c]	Result	Qual	>UBR	>BKG	>SSSL	>ESV	Result	Qual	>UBR	>BKG	>SSSL	>ESV
METALS																	
Aluminum	mg/kg	3.99E+04	1.63E+04	7.80E+03	5.00E+01	7.09E+03					YES	8.11E+03				YES	YES
Antimony	mg/kg	2.60E+00	1.99E+00	3.11E+00	3.50E+00	ND						ND					
Arsenic	mg/kg	4.90E+01	1.37E+01	4.26E-01	1.00E+01	1.14E+00	J			YES		1.07E+00	J			YES	
Barium	mg/kg	2.88E+02	1.24E+02	5.47E+02	1.65E+02	6.07E+01						4.59E+01					
Beryllium	mg/kg	8.70E-01	8.00E-01	9.60E+00	1.10E+00	3.13E-01	J					2.40E-01	J				
Calcium	mg/kg	1.79E+04	1.72E+03	NA	NA	1.85E+02						9.58E+01	J				
Chromium	mg/kg	1.34E+02	3.70E+01	2.32E+01	4.00E-01	4.05E+00					YES	7.08E+00					YES
Cobalt	mg/kg	7.10E+01	1.52E+01	4.68E+02	2.00E+01	1.85E+00	B					1.31E+00	B				
Copper	mg/kg	2.40E+01	1.27E+01	3.13E+02	4.00E+01	3.13E+00						3.72E+00					
Iron	mg/kg	5.63E+04	3.42E+04	2.34E+03	2.00E+02	5.90E+03				YES	YES	7.25E+03				YES	YES
Lead	mg/kg	8.30E+01	4.01E+01	4.00E+02	5.00E+01	1.07E+01						6.70E+00					
Magnesium	mg/kg	9.60E+03	1.03E+03	NA	4.40E+05	1.84E+02						1.96E+02					
Manganese	mg/kg	6.85E+03	1.58E+03	3.63E+02	1.00E+02	3.91E+01						3.84E+01					
Mercury	mg/kg	3.20E-01	8.00E-02	2.33E+00	1.00E-01	3.50E-02	J					ND					
Nickel	mg/kg	2.20E+01	1.03E+01	1.54E+02	3.00E+01	2.20E+00	J					1.98E+00	J				
Potassium	mg/kg	6.01E+03	8.00E+02	NA	NA	3.42E+02	B					3.45E+02	B				
Sodium	mg/kg	5.63E+02	6.34E+02	NA	NA	ND						ND					
Thallium	mg/kg	3.40E+01	3.43E+00	5.08E-01	1.00E+00	ND						ND					
Vanadium	mg/kg	1.58E+02	5.88E+01	5.31E+01	2.00E+00	7.80E+00					YES	9.16E+00					YES
Zinc	mg/kg	2.09E+02	4.06E+01	2.34E+03	5.00E+01	7.02E+00						6.81E+00					
EXPLOSIVES																	
2-Amino-4,6-dinitrotoluene	mg/kg	NA	NA	4.64E-01	8.00E+01	ND						ND					
PERCHLORATE																	
Perchlorate	mg/kg	NA	NA	7.04E+00	NA	3.19E-02	J					ND					

Analyses performed using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods.

[a] UBR - Upper background range as given in Science Applications International Corporation (SAIC), 1998, *Final Background Metals Survey Report, Fort McClellan, Alabama*, July.

[b] BKG - Background. Concentration listed is two times (2x) the arithmetic mean of background metals concentration given in SAIC, 1998.

[c] Residential human health site-specific screening level (SSSL) and ecological screening value (ESV) as given in IT, 2000, *Final Human Health and Ecological Screening Values and PAH Background Summary Report, Fort McClellan, Calhoun County, Alabama,* July.

B - Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero).

J - Compound was positively identified; reported value is an estimated concentration.

mg/kg - Milligrams per kilogram.

NA - Not available.

ND - Not detected.

Qual - Data validation qualifier.

Table 5-2

Subsurface Soil Analytical Results
Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X
Fort McClellan, Calhoun County, Alabama

Sample Location					HR-138Q-GP01					HR-138Q-GP02					HR-138Q-GP03					HR-138Q-GP04				
Sample Number					YE0002					YE0006					YE0008					YE0010				
Sample Date					31-Jan-01					1-Feb-01					31-Jan-01					31-Jan-01				
Sample Depth (Feet)					9 - 11					4 - 5					7 - 8					10 - 11				
Parameter	Units	UBR[a]	BKG[b]	SSSL[c]	Result	Qual	>UBR	>BKG	>SSSL	Result	Qual	>UBR	>BKG	>SSSL	Result	Qual	>UBR	>BKG	>SSSL	Result	Qual	>UBR	>BKG	>SSSL
METALS																								
Aluminum	mg/kg	2.46E+04	1.36E+04	7.80E+03	6.05E+03					2.34E+04			YES	YES	2.51E+04		YES	YES	YES	1.87E+04			YES	YES
Antimony	mg/kg	9.90E-01	1.31E+00	3.11E+00	ND					ND					ND					7.61E+00	B	YES	YES	YES
Arsenic	mg/kg	3.80E+01	1.83E+01	4.26E-01	7.12E+00				YES	3.73E+00				YES	7.38E+00				YES	7.34E+00				YES
Barium	mg/kg	4.50E+03	2.34E+02	5.47E+02	1.40E+01					3.28E+01					2.77E+01					3.80E+01				
Beryllium	mg/kg	2.00E+00	8.60E-01	9.60E+00	4.22E-01	J				4.24E-01	J				2.96E-01	J				3.64E-01	J			
Calcium	mg/kg	3.65E+03	6.37E+02	NA	1.51E+01	J				5.39E+01	J				1.75E+01	J				3.08E+01	J			
Chromium	mg/kg	5.50E+01	3.83E+01	2.32E+01	1.01E+01					1.67E+01					3.23E+01				YES	1.65E+01				
Cobalt	mg/kg	9.60E+01	1.75E+01	4.68E+02	8.07E-01	B				2.20E+00	J				1.86E+00	J				1.83E+00	J			
Copper	mg/kg	6.10E+01	1.94E+01	3.13E+02	4.85E+00					1.06E+01					1.02E+01					6.04E+00				
Iron	mg/kg	4.80E+04	4.48E+04	2.34E+03	1.56E+04	J			YES	3.30E+04	J			YES	2.96E+04	J			YES	3.81E+04	J			YES
Lead	mg/kg	5.00E+02	3.85E+01	4.00E+02	5.28E+00					7.38E+00					8.10E+00					7.93E+00				
Magnesium	mg/kg	5.94E+03	7.66E+02	NA	1.87E+02					5.51E+02					7.50E+02					3.80E+02				
Manganese	mg/kg	1.90E+04	1.36E+03	3.63E+02	3.26E+00	J				4.79E+01	J				1.48E+01	J				2.58E+01	J			
Mercury	mg/kg	1.20E-01	7.00E-02	2.33E+00	ND					4.20E-02	J				2.60E-02	J				ND				
Nickel	mg/kg	3.80E+01	1.29E+01	1.54E+02	2.60E+00					4.68E+00					4.71E+00					2.33E+00	J			
Potassium	mg/kg	6.15E+03	7.11E+02	NA	1.75E+03			YES		4.61E+02	J				8.38E+02			YES		1.64E+03			YES	
Silver	mg/kg	6.60E-01	2.40E-01	3.91E+01	ND					ND					ND					ND				
Sodium	mg/kg	6.43E+02	7.02E+02	NA	ND					ND					ND					ND				
Thallium	mg/kg	2.40E+01	1.40E+00	5.08E-01	ND					8.17E-01	J			YES	7.17E-01	J			YES	ND				
Vanadium	mg/kg	9.90E+01	6.49E+01	5.31E+01	1.40E+01					2.66E+01					5.01E+01					2.26E+01				
Zinc	mg/kg	8.90E+01	3.49E+01	2.34E+03	1.11E+01	J				2.13E+01	J				1.66E+01	J				1.11E+01	J			

Table 5-2

Subsurface Soil Analytical Results
Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X
Fort McClellan, Calhoun County, Alabama

Sample Location					HR-139Q-GP01					HR-139Q-GP02					HR-140Q-GP01					HR-140Q-GP02				
Sample Number					YG0002					YG0004					YH0002					YH0004				
Sample Date					8-Feb-01					7-Feb-01					7-Feb-01					8-Feb-01				
Sample Depth (Feet)					10 - 11					9 - 11					7 - 8					1 - 2				
Parameter	Units	UBR[a]	BKG[b]	SSSL[c]	Result	Qual	>UBR	>BKG	>SSSL	Result	Qual	>UBR	>BKG	>SSSL	Result	Qual	>UBR	>BKG	>SSSL	Result	Qual	>UBR	>BKG	>SSSL
METALS																								
Aluminum	mg/kg	2.46E+04	1.36E+04	7.80E+03	8.64E+03				YES	1.10E+04				YES	1.36E+04			YES	YES	1.81E+04			YES	YES
Antimony	mg/kg	9.90E-01	1.31E+00	3.11E+00	ND					4.86E+00	J	YES	YES	YES	ND					ND				
Arsenic	mg/kg	3.80E+01	1.83E+01	4.26E-01	5.01E+00				YES	5.42E+00				YES	3.86E+00				YES	3.23E+00				YES
Barium	mg/kg	4.50E+03	2.34E+02	5.47E+02	3.36E+01					2.44E+01					3.02E+01					1.27E+02				
Beryllium	mg/kg	2.00E+00	8.60E-01	9.60E+00	6.72E-01	J				3.89E-01	J				6.89E-01	J				9.38E-01	J		YES	
Calcium	mg/kg	3.65E+03	6.37E+02	NA	2.81E+01	J				1.70E+01	J				1.35E+01	J				1.19E+02	J			
Chromium	mg/kg	5.50E+01	3.83E+01	2.32E+01	8.39E+00	J				8.17E+00	J				7.38E+00					1.20E+01				
Cobalt	mg/kg	9.60E+01	1.75E+01	4.68E+02	8.34E-01	B				ND					ND					2.57E+01			YES	
Copper	mg/kg	6.10E+01	1.94E+01	3.13E+02	1.21E+01					1.02E+01					6.79E+00					9.82E+00				
Iron	mg/kg	4.80E+04	4.48E+04	2.34E+03	1.27E+04				YES	6.74E+03				YES	1.29E+04				YES	1.31E+04				YES
Lead	mg/kg	5.00E+02	3.85E+01	4.00E+02	4.28E+00					6.89E+00					9.58E+00					1.16E+01				
Magnesium	mg/kg	5.94E+03	7.66E+02	NA	3.43E+02					3.89E+02					4.98E+02					1.07E+03			YES	
Manganese	mg/kg	1.90E+04	1.36E+03	3.63E+02	6.40E+00					2.75E+00					8.10E+00					7.78E+02				YES
Mercury	mg/kg	1.20E-01	7.00E-02	2.33E+00	ND					ND					ND					ND				
Nickel	mg/kg	3.80E+01	1.29E+01	1.54E+02	2.68E+00					1.05E+00	J				3.56E+00					8.42E+00				
Potassium	mg/kg	6.15E+03	7.11E+02	NA	3.77E+03			YES		3.30E+03			YES		2.31E+03			YES		1.48E+03			YES	
Silver	mg/kg	6.60E-01	2.40E-01	3.91E+01	5.06E-01	B		YES		ND					ND					ND				
Sodium	mg/kg	6.43E+02	7.02E+02	NA	ND					3.75E+01	J				ND					ND				
Thallium	mg/kg	2.40E+01	1.40E+00	5.08E-01	ND					ND					ND					ND				
Vanadium	mg/kg	9.90E+01	6.49E+01	5.31E+01	1.06E+01	J				1.57E+01	J				9.18E+00					1.87E+01				
Zinc	mg/kg	8.90E+01	3.49E+01	2.34E+03	6.71E+00					4.19E+00					5.43E+00					2.56E+01				

Table 5-2

Subsurface Soil Analytical Results
Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X
Fort McClellan, Calhoun County, Alabama

Sample Location					HR-141Q-GP01					HR-141Q-GP02					HR-141Q-GP03					HR-141Q-GP04				
Sample Number					YJ0002					YJ0004					YJ0006					YJ0008				
Sample Date					7-Feb-01					11-Apr-01					9-Feb-01					8-Feb-01				
Sample Depth (Feet)					5 - 6					3 - 4					2 - 4					2 - 4				
Parameter	Units	UBR[a]	BKG[b]	SSSL[c]	Result	Qual	>UBR	>BKG	>SSSL	Result	Qual	>UBR	>BKG	>SSSL	Result	Qual	>UBR	>BKG	>SSSL	Result	Qual	>UBR	>BKG	>SSSL
METALS																								
Aluminum	mg/kg	2.46E+04	1.36E+04	7.80E+03	1.51E+04			YES	YES	1.27E+04				YES	1.19E+04				YES	1.30E+04				YES
Antimony	mg/kg	9.90E-01	1.31E+00	3.11E+00	ND					ND					ND					ND				
Arsenic	mg/kg	3.80E+01	1.83E+01	4.26E-01	5.50E+00				YES	5.00E+00				YES	4.70E+00				YES	5.44E+00				YES
Barium	mg/kg	4.50E+03	2.34E+02	5.47E+02	2.73E+01					7.18E+01					1.05E+02	J				5.75E+01	J			
Beryllium	mg/kg	2.00E+00	8.60E-01	9.60E+00	1.08E+00	J		YES		1.14E+00	J		YES		9.33E-01	J		YES		4.82E-01	J			
Calcium	mg/kg	3.65E+03	6.37E+02	NA	1.61E+01	J				4.35E+01	J				1.24E+02					7.10E+01	J			
Chromium	mg/kg	5.50E+01	3.83E+01	2.32E+01	1.17E+01					9.36E+00					2.15E+01	J				1.77E+01	J			
Cobalt	mg/kg	9.60E+01	1.75E+01	4.68E+02	8.16E-01	B				1.31E+00	B				6.64E+00	J				2.66E+00	J			
Copper	mg/kg	6.10E+01	1.94E+01	3.13E+02	5.09E+00					7.86E+00					1.20E+01					9.25E+00				
Iron	mg/kg	4.80E+04	4.48E+04	2.34E+03	1.37E+04				YES	6.19E+03				YES	3.54E+04				YES	2.55E+04				YES
Lead	mg/kg	5.00E+02	3.85E+01	4.00E+02	5.02E+00					1.17E+01					9.07E+00					8.41E+00				
Magnesium	mg/kg	5.94E+03	7.66E+02	NA	4.33E+02					4.54E+02					4.42E+02					4.65E+02				
Manganese	mg/kg	1.90E+04	1.36E+03	3.63E+02	2.98E+00					8.16E+00					3.02E+02					8.19E+01				
Mercury	mg/kg	1.20E-01	7.00E-02	2.33E+00	ND					ND					ND					2.30E-02	J			
Nickel	mg/kg	3.80E+01	1.29E+01	1.54E+02	4.12E+00					2.15E+00	J				6.00E+00	J				3.09E+00	B			
Potassium	mg/kg	6.15E+03	7.11E+02	NA	2.75E+03			YES		4.79E+03			YES		8.20E+02			YES		1.34E+03			YES	
Silver	mg/kg	6.60E-01	2.40E-01	3.91E+01	ND					ND					ND					ND				
Sodium	mg/kg	6.43E+02	7.02E+02	NA	ND					ND					ND					2.33E+01	J			
Thallium	mg/kg	2.40E+01	1.40E+00	5.08E-01	ND					ND					ND					ND				
Vanadium	mg/kg	9.90E+01	6.49E+01	5.31E+01	1.63E+01					1.40E+01					1.83E+01					2.31E+01				
Zinc	mg/kg	8.90E+01	3.49E+01	2.34E+03	1.11E+01					1.16E+01					1.77E+01	J				1.73E+01	J			

Table 5-2

Subsurface Soil Analytical Results
Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X
Fort McClellan, Calhoun County, Alabama

Sample Location					HR-142Q-GP01					HR-142Q-GP02				
Sample Number					YL0002					YL0004				
Sample Date					8-Feb-01					8-Feb-01				
Sample Depth (Feet)					1 - 4					9 - 10				
Parameter	Units	UBR[a]	BKG[b]	SSSL[c]	Result	Qual	>UBR	>BKG	>SSSL	Result	Qual	>UBR	>BKG	>SSSL
METALS														
Aluminum	mg/kg	2.46E+04	1.36E+04	7.80E+03	9.73E+03				YES	7.11E+03				
Antimony	mg/kg	9.90E-01	1.31E+00	3.11E+00	ND					ND				
Arsenic	mg/kg	3.80E+01	1.83E+01	4.26E-01	1.43E+00				YES	4.46E+00				YES
Barium	mg/kg	4.50E+03	2.34E+02	5.47E+02	4.52E+01					3.69E+01				
Beryllium	mg/kg	2.00E+00	8.60E-01	9.60E+00	3.81E-01	J				2.27E-01	J			
Calcium	mg/kg	3.65E+03	6.37E+02	NA	1.22E+02					1.45E+01	J			
Chromium	mg/kg	5.50E+01	3.83E+01	2.32E+01	9.59E+00					7.06E+00				
Cobalt	mg/kg	9.60E+01	1.75E+01	4.68E+02	1.30E+00	B				ND				
Copper	mg/kg	6.10E+01	1.94E+01	3.13E+02	4.37E+00					4.81E+00				
Iron	mg/kg	4.80E+04	4.48E+04	2.34E+03	1.72E+04				YES	6.34E+03				YES
Lead	mg/kg	5.00E+02	3.85E+01	4.00E+02	9.20E+00					4.48E+00				
Magnesium	mg/kg	5.94E+03	7.66E+02	NA	1.93E+02					1.13E+02	J			
Manganese	mg/kg	1.90E+04	1.36E+03	3.63E+02	2.91E+01					1.57E+00				
Mercury	mg/kg	1.20E-01	7.00E-02	2.33E+00	ND					ND				
Nickel	mg/kg	3.80E+01	1.29E+01	1.54E+02	3.01E+00					1.47E+00	J			
Potassium	mg/kg	6.15E+03	7.11E+02	NA	3.22E+02	B				2.79E+03			YES	
Silver	mg/kg	6.60E-01	2.40E-01	3.91E+01	ND					ND				
Sodium	mg/kg	6.43E+02	7.02E+02	NA	ND					ND				
Thallium	mg/kg	2.40E+01	1.40E+00	5.08E-01	ND					ND				
Vanadium	mg/kg	9.90E+01	6.49E+01	5.31E+01	1.26E+01					1.03E+01				
Zinc	mg/kg	8.90E+01	3.49E+01	2.34E+03	7.92E+00					1.20E+00	B			

Analyses performed using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods.

[a] UBR - Upper background range as given in Science Applications International Corporation (SAIC), 1998, *Final Background Metals Survey Report, Fort McClellan, Alabama*, July.

[b] BKG - Background. Concentration listed is two times (2x) the arithmetic mean of background metals concentration given in SAIC, 1998.

[c] Residential human health site-specific screening level (SSSL) as given in IT Corporation (2000), *Final Human Health and Ecological Screening Values and PAH Background Summary Report, Fort McClellan, Calhoun County, Alabama*, July.

B - Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero).

J - Compound was positively identified; reported value is an estimated concentration.

mg/kg - Milligrams per kilogram.

NA - Not available.

ND - Not detected.

Qual - Data validation qualifier.

Table 5-3

Seep Water Analytical Results
Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X
Fort McClellan, Calhoun County, Alabama

Sample Location / Sample Number / Sample Date					HR-138Q-SEEP01 YE2006 2-May-01					HR-138Q-SEEP01 YE2006R 10-Jan-02					HR-138Q-SEEP02 YE2007 2-May-01					HR-138Q-SEEP02 YE2007R 10-Jan-02				
Parameter	Units	UBR[a]	BKG[b]	SSSL[c]	Result	Qual	>UBR	>BKG	>SSSL	Result	Qual	>UBR	>BKG	>SSSL	Result	Qual	>UBR	>BKG	>SSSL	Result	Qual	>UBR	>BKG	>SSSL
METALS																								
Aluminum	mg/L	9.60E+00	2.34E+00	1.56E+00	6.23E-01					NR					2.21E-01					NR				
Barium	mg/L	4.01E-01	1.27E-01	1.10E-01	5.16E-02					NR					2.38E-02					NR				
Beryllium	mg/L	2.40E-03	1.25E-03	3.13E-03	ND					NR					ND					NR				
Calcium	mg/L	4.52E+02	5.65E+01	NA	1.44E-01	B				NR					ND					NR				
Copper	mg/L	2.35E-01	2.55E-02	6.26E-02	ND					NR					5.10E-03	B				NR				
Iron	mg/L	2.58E+01	7.04E+00	4.69E-01	7.09E-01				YES	NR					2.93E-01					NR				
Lead	mg/L	2.70E-02	8.00E-03	1.50E-02	1.94E-02			YES	YES	4.37E-03	J				9.29E-03	J		YES		3.21E-03	J			
Magnesium	mg/L	1.49E+02	2.13E+01	NA	2.35E-01	J				NR					1.55E-01	J				NR				
Manganese	mg/L	5.82E+00	5.81E-01	7.35E-02	1.52E-02					NR					1.03E-02					NR				
Potassium	mg/L	6.85E+01	7.20E+00	NA	2.60E+00	J				NR					2.27E+00	J				NR				
Sodium	mg/L	6.47E+01	1.48E+01	NA	9.21E-01	J				NR					8.68E-01	J				NR				
Vanadium	mg/L	1.10E-02	1.70E-02	1.10E-02	ND					NR					ND					NR				
Zinc	mg/L	1.16E+00	2.20E-01	4.69E-01	ND					NR					ND					NR				

Table 5-3

Seep Water Analytical Results
Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X
Fort McClellan, Calhoun County, Alabama

Sample Location Sample Number Sample Date					HR-138Q-SEEP03 YE2008 2-May-01					HR-138Q-SEEP03 YE2008R 10-Jan-02				
Parameter	Units	UBR[a]	BKG[b]	SSSL[c]	Result	Qual	>UBR	>BKG	>SSSL	Result	Qual	>UBR	>BKG	>SSSL
METALS														
Aluminum	mg/L	9.60E+00	2.34E+00	1.56E+00	2.19E+00				YES	NR				
Barium	mg/L	4.01E-01	1.27E-01	1.10E-01	1.40E-01			YES	YES	NR				
Beryllium	mg/L	2.40E-03	1.25E-03	3.13E-03	6.50E-04	J				NR				
Calcium	mg/L	4.52E+02	5.65E+01	NA	5.92E-01	J				NR				
Copper	mg/L	2.35E-01	2.55E-02	6.26E-02	1.31E-02	J				NR				
Iron	mg/L	2.58E+01	7.04E+00	4.69E-01	3.78E+00				YES	NR				
Lead	mg/L	2.70E-02	8.00E-03	1.50E-02	4.53E-02		YES	YES	YES	2.00E-03	J			
Magnesium	mg/L	1.49E+02	2.13E+01	NA	3.64E-01	J				NR				
Manganese	mg/L	5.82E+00	5.81E-01	7.35E-02	2.42E-02					NR				
Potassium	mg/L	6.85E+01	7.20E+00	NA	3.25E+00	J				NR				
Sodium	mg/L	6.47E+01	1.48E+01	NA	1.08E+00					NR				
Vanadium	mg/L	1.10E-02	1.70E-02	1.10E-02	4.05E-03	J				NR				
Zinc	mg/L	1.16E+00	2.20E-01	4.69E-01	1.10E-02	J				NR				

Analyses performed using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods.

[a] UBR - Upper background range as given in Science Applications International Corporation (SAIC), 1998, *Final Background Metals Survey Report, Fort McClellan, Alabama*, July.

[b] BKG - Background. Concentration listed is two times (2x) the arithmetic mean of background metals concentration given in SAIC, 1998.

[c] Residential human health site-specific screening level (SSSL) as given in IT Corporation (2000), *Final Human Health and Ecological Screening Values and PAH Background Summary Report, Fort McClellan, Calhoun County, Alabama*, July.

B - Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero).

J - Compound was positively identified; reported value is an estimated concentration.

mg/L - Milligrams per liter.

NA - Not available.

ND - Not detected.

NR - Not requested.

Qual - Data validation qualifier.

Table 5-4

Surface Water Analytical Results
Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X
Fort McClellan, Calhoun County, Alabama

Sample Location Sample Number Sample Date						HR-138Q-SW/SD02 YE2002 3-May-01						HR-138Q-SW/SD03 YE2003 2-May-01						HR-138Q-SW/SD04 YE2004 25-Apr-01					
Parameter	Units	UBR[a]	BKG[b]	SSSL[c]	ESV[c]	Result	Qual	>UBR	>BKG	>SSSL	>ESV	Result	Qual	>UBR	>BKG	>SSSL	>ESV	Result	Qual	>UBR	>BKG	>SSSL	>ESV
METALS																							
Aluminum	mg/L	4.78E+01	5.26E+00	1.53E+01	8.70E-02	1.73E-01	J				YES	8.43E-02	J					6.10E-02	J				
Barium	mg/L	2.00E-01	7.54E-02	1.10E+00	3.90E-03	2.28E-02					YES	1.67E-02					YES	2.12E-02					YES
Calcium	mg/L	6.41E+01	2.52E+01	NA	1.16E+02	1.66E-01	B					1.45E-01	B					2.78E-01	J				
Copper	mg/L	7.20E-02	1.27E-02	6.23E-01	6.54E-03	ND						ND						ND					
Iron	mg/L	2.32E+02	1.96E+01	4.70E+00	1.00E+00	2.17E-01						6.36E-02	J					4.00E-02	J				
Lead	mg/L	4.70E-02	8.67E-03	1.50E-02	1.32E-03	2.53E-03	B				YES	3.67E-03	B				YES	ND					
Magnesium	mg/L	2.44E+01	1.10E+01	NA	8.20E+01	2.44E-01	J					2.66E-01	J					2.95E-01	J				
Manganese	mg/L	6.06E+00	5.65E-01	6.40E-01	8.00E-02	1.32E-02						7.33E-03	J					6.51E-03	J				
Nickel	mg/L	7.00E-02	2.25E-02	3.10E-01	8.77E-02	ND						ND						ND					
Potassium	mg/L	7.12E+00	2.56E+00	NA	5.30E+01	ND						2.94E+00	J		YES			2.25E+00	J				
Selenium	mg/L	NA	NA	7.82E-02	5.00E-03	ND						ND						ND					
Sodium	mg/L	1.52E+01	3.44E+00	NA	6.80E+02	9.34E-01	J					1.08E+00						8.50E-01	J				
Zinc	mg/L	1.82E-01	4.04E-02	4.65E+00	5.89E-02	ND						ND						ND					

Table 5-4

Surface Water Analytical Results
Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X
Fort McClellan, Calhoun County, Alabama

Sample Location Sample Number Sample Date						HR-138Q-SW/SD05 YE2005 24-Apr-01						HR-139Q-SW/SD01 YG2001 25-Apr-01					
Parameter	Units	UBR[a]	BKG[b]	SSSL[c]	ESV[c]	Result	Qual	>UBR	>BKG	>SSSL	>ESV	Result	Qual	>UBR	>BKG	>SSSL	>ESV
METALS																	
Aluminum	mg/L	4.78E+01	5.26E+00	1.53E+01	8.70E-02	2.44E-01					YES	3.76E-01					YES
Barium	mg/L	2.00E-01	7.54E-02	1.10E+00	3.90E-03	2.58E-02					YES	3.47E-02					YES
Calcium	mg/L	6.41E+01	2.52E+01	NA	1.16E+02	2.13E-01	J					2.75E-01	J				
Copper	mg/L	7.20E-02	1.27E-02	6.23E-01	6.54E-03	1.08E-02	J				YES	ND					
Iron	mg/L	2.32E+02	1.96E+01	4.70E+00	1.00E+00	6.31E-01						4.06E-01					
Lead	mg/L	4.70E-02	8.67E-03	1.50E-02	1.32E-03	2.08E-02			YES	YES	YES	ND					
Magnesium	mg/L	2.44E+01	1.10E+01	NA	8.20E+01	2.03E-01	J					3.12E-01	J				
Manganese	mg/L	6.06E+00	5.65E-01	6.40E-01	8.00E-02	1.46E-02						4.26E-02					
Nickel	mg/L	7.00E-02	2.25E-02	3.10E-01	8.77E-02	ND						ND					
Potassium	mg/L	7.12E+00	2.56E+00	NA	5.30E+01	ND						2.76E+00	J		YES		
Selenium	mg/L	NA	NA	7.82E-02	5.00E-03	1.75E-03	J					ND					
Sodium	mg/L	1.52E+01	3.44E+00	NA	6.80E+02	8.37E-01	J					8.24E-01	J				
Zinc	mg/L	1.82E-01	4.04E-02	4.65E+00	5.89E-02	8.53E-03	J					8.66E-03	J				

Table 5-4

Surface Water Analytical Results
Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X
Fort McClellan, Calhoun County, Alabama

Sample Location Sample Number Sample Date						HR-140Q-SW/SD01 YH2001 25-Apr-01						HR-141Q-SW/SD02 YJ2002 3-May-01					
Parameter	Units	UBR[a]	BKG[b]	SSSL[c]	ESV[c]	Result	Qual	>UBR	>BKG	>SSSL	>ESV	Result	Qual	>UBR	>BKG	>SSSL	>ESV
METALS																	
Aluminum	mg/L	4.78E+01	5.26E+00	1.53E+01	8.70E-02	1.19E-01	J				YES	5.96E-01					YES
Barium	mg/L	2.00E-01	7.54E-02	1.10E+00	3.90E-03	2.83E-02					YES	3.55E-02					YES
Calcium	mg/L	6.41E+01	2.52E+01	NA	1.16E+02	3.28E-01	J					1.70E-01	B				
Copper	mg/L	7.20E-02	1.27E-02	6.23E-01	6.54E-03	ND						ND					
Iron	mg/L	2.32E+02	1.96E+01	4.70E+00	1.00E+00	5.70E-02	J					7.79E-01					
Lead	mg/L	4.70E-02	8.67E-03	1.50E-02	1.32E-03	ND						ND					
Magnesium	mg/L	2.44E+01	1.10E+01	NA	8.20E+01	3.73E-01	J					2.33E-01	J				
Manganese	mg/L	6.06E+00	5.65E-01	6.40E-01	8.00E-02	6.08E-03	J					6.45E-02					
Nickel	mg/L	7.00E-02	2.25E-02	3.10E-01	8.77E-02	1.09E-02	B					ND					
Potassium	mg/L	7.12E+00	2.56E+00	NA	5.30E+01	2.75E+00	J		YES			ND					
Selenium	mg/L	NA	NA	7.82E-02	5.00E-03	ND						ND					
Sodium	mg/L	1.52E+01	3.44E+00	NA	6.80E+02	9.02E-01	J					1.01E+00					
Zinc	mg/L	1.82E-01	4.04E-02	4.65E+00	5.89E-02	ND						ND					

Analyses performed using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods.

[a] UBR - Upper background range as given in Science Applications International Corporation (SAIC), 1998, *Final Background Metals Survey Report, Fort McClellan, Alabama*July.

[b] BKG - Background. Concentration listed is two times (2x) the arithmetic mean of background metals concentration given in SAIC, 1998.

[c] Recreational site user site-specific screening level (SSSL) and ecological screening value (ESV) as given in IT Corporation (2000), *Final Human Health and Ecological Screening Values and PAH Background Summary Report, Fort McClellan, Calhoun County, Alabama,* July.

B - Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero).

J - Compound was positively identified; reported value is an estimated concentration.

mg/L - Milligrams per liter.

NA - Not available.

ND - Not detected.

Qual - Data validation qualifier.

Table 5-5

Sediment Analytical Results
Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X
Fort McClellan, Calhoun County, Alabama

Sample Location Sample Number Sample Date Sample Depth (Feet)						HR-138Q-SW/SD02 YE1003 3-May-01 0- 0.5						HR-138Q-SW/SD03 YE1004 2-May-01 0- 0.5						HR-138Q-SW/SD04 YE1005 25-Apr-01 0- 0.5					
Parameter	Units	UBR[a]	BKG[b]	SSSL[c]	ESV[c]	Result	Qual	>UBR	>BKG	>SSSL	>ESV	Result	Qual	>UBR	>BKG	>SSSL	>ESV	Result	Qual	>UBR	>BKG	>SSSL	>ESV
METALS																							
Aluminum	mg/kg	1.74E+04	8.59E+03	1.15E+06	NA	7.06E+03						1.68E+02						7.57E+03					
Arsenic	mg/kg	2.00E+01	1.13E+01	5.58E+01	7.24E+00	6.74E+00						ND						3.88E+00					
Barium	mg/kg	2.72E+02	9.89E+01	8.36E+04	NA	1.26E+02			YES			6.19E+00						7.48E+01					
Beryllium	mg/kg	1.20E+00	9.70E-01	1.50E+02	NA	1.06E+00	J		YES			ND						7.96E-01	B				
Calcium	mg/kg	2.81E+03	1.11E+03	NA	NA	3.59E+02						2.92E+01	J					1.10E+02	J				
Chromium	mg/kg	6.30E+01	3.12E+01	2.79E+03	5.23E+01	2.37E+01						ND						1.42E+01					
Cobalt	mg/kg	2.20E+01	1.10E+01	6.72E+04	5.00E+01	7.04E+00						6.53E-01	J					3.56E+00	B				
Copper	mg/kg	5.90E+01	1.71E+01	4.74E+04	1.87E+01	5.38E+00						ND						4.97E+00					
Iron	mg/kg	5.75E+04	3.53E+04	3.59E+05	NA	3.54E+04			YES			8.95E+01						2.93E+04					
Lead	mg/kg	1.10E+02	3.78E+01	4.00E+02	3.02E+01	1.14E+01						5.62E+00						7.26E+00					
Magnesium	mg/kg	3.27E+03	9.06E+02	NA	NA	3.36E+02						1.38E+01	J					3.15E+02					
Manganese	mg/kg	2.05E+03	7.12E+02	4.38E+04	NA	2.33E+02						1.35E+01						1.39E+02					
Nickel	mg/kg	3.30E+01	1.30E+01	1.76E+04	1.59E+01	5.13E+00						ND						3.97E+00					
Potassium	mg/kg	4.81E+03	1.01E+03	NA	NA	1.62E+03			YES			ND						1.85E+03			YES		
Thallium	mg/kg	2.20E-01	1.30E-01	7.78E+01	NA	ND						ND						8.52E-01	J	YES	YES		
Vanadium	mg/kg	6.70E+01	4.09E+01	4.83E+03	NA	2.02E+01						ND						1.70E+01					
Zinc	mg/kg	1.11E+02	5.27E+01	3.44E+05	1.24E+02	1.75E+01	J					1.01E+00	B					1.39E+01					
TOTAL ORGANIC CARBON																							
Total Organic Carbon	mg/kg	NA	NA	NA	NA	2.37E+01						7.41E+00						4.92E+01					

Table 5-5

Sediment Analytical Results
Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X
Fort McClellan, Calhoun County, Alabama

Sample Location Sample Number Sample Date Sample Depth (Feet)						HR-138Q-SW/SD05 YE1006 24-Apr-01 0- 0.5						HR-139Q-SW/SD01 YG1001 25-Apr-01 0- 0.5					
Parameter	Units	UBR[a]	BKG[b]	SSSL[c]	ESV[c]	Result	Qual	>UBR	>BKG	>SSSL	>ESV	Result	Qual	>UBR	>BKG	>SSSL	>ESV
METALS																	
Aluminum	mg/kg	1.74E+04	8.59E+03	1.15E+06	NA	2.51E+03						6.13E+03					
Arsenic	mg/kg	2.00E+01	1.13E+01	5.58E+01	7.24E+00	7.70E-01	J					3.78E+00					
Barium	mg/kg	2.72E+02	9.89E+01	8.36E+04	NA	4.64E+01						6.42E+01					
Beryllium	mg/kg	1.20E+00	9.70E-01	1.50E+02	NA	ND						7.71E-01	B				
Calcium	mg/kg	2.81E+03	1.11E+03	NA	NA	6.42E+01	B					1.23E+02					
Chromium	mg/kg	6.30E+01	3.12E+01	2.79E+03	5.23E+01	1.10E+00	B					5.99E+00					
Cobalt	mg/kg	2.20E+01	1.10E+01	6.72E+04	5.00E+01	ND						3.78E+00	B				
Copper	mg/kg	5.90E+01	1.71E+01	4.74E+04	1.87E+01	1.17E+01						2.07E+00	J				
Iron	mg/kg	5.75E+04	3.53E+04	3.59E+05	NA	1.59E+03						2.54E+04					
Lead	mg/kg	1.10E+02	3.78E+01	4.00E+02	3.02E+01	8.93E+01			YES		YES	5.09E+00					
Magnesium	mg/kg	3.27E+03	9.06E+02	NA	NA	9.84E+01	J					2.76E+02					
Manganese	mg/kg	2.05E+03	7.12E+02	4.38E+04	NA	5.57E+00						2.67E+02					
Nickel	mg/kg	3.30E+01	1.30E+01	1.76E+04	1.59E+01	ND						3.92E+00					
Potassium	mg/kg	4.81E+03	1.01E+03	NA	NA	ND						1.61E+03			YES		
Thallium	mg/kg	2.20E-01	1.30E-01	7.78E+01	NA	ND						ND					
Vanadium	mg/kg	6.70E+01	4.09E+01	4.83E+03	NA	1.74E+00	B					1.04E+01					
Zinc	mg/kg	1.11E+02	5.27E+01	3.44E+05	1.24E+02	4.78E+00						1.26E+01					
TOTAL ORGANIC CARBON																	
Total Organic Carbon	mg/kg	NA	NA	NA	NA	5.54E+01						3.18E+01					

Table 5-5

Sediment Analytical Results
Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X
Fort McClellan, Calhoun County, Alabama

Sample Location Sample Number Sample Date Sample Depth (Feet)						HR-140Q-SW/SD01 YH1001 25-Apr-01 0- 0.5						HR-141Q-SW/SD02 YJ1002 3-May-01 0- 0.5					
Parameter	Units	UBR[a]	BKG[b]	SSSL[c]	ESV[c]	Result	Qual	>UBR	>BKG	>SSSL	>ESV	Result	Qual	>UBR	>BKG	>SSSL	>ESV
METALS																	
Aluminum	mg/kg	1.74E+04	8.59E+03	1.15E+06	NA	7.18E+03						6.04E+03					
Arsenic	mg/kg	2.00E+01	1.13E+01	5.58E+01	7.24E+00	5.61E+00						1.73E+00					
Barium	mg/kg	2.72E+02	9.89E+01	8.36E+04	NA	9.43E+01						6.80E+01					
Beryllium	mg/kg	1.20E+00	9.70E-01	1.50E+02	NA	7.79E-01	B					7.15E-01	J				
Calcium	mg/kg	2.81E+03	1.11E+03	NA	NA	1.49E+02						1.41E+02	J				
Chromium	mg/kg	6.30E+01	3.12E+01	2.79E+03	5.23E+01	1.76E+01						5.09E+00					
Cobalt	mg/kg	2.20E+01	1.10E+01	6.72E+04	5.00E+01	8.50E+00						4.64E+00					
Copper	mg/kg	5.90E+01	1.71E+01	4.74E+04	1.87E+01	5.83E+00						5.63E+00					
Iron	mg/kg	5.75E+04	3.53E+04	3.59E+05	NA	3.31E+04						8.76E+03					
Lead	mg/kg	1.10E+02	3.78E+01	4.00E+02	3.02E+01	9.19E+00						8.50E+00					
Magnesium	mg/kg	3.27E+03	9.06E+02	NA	NA	3.16E+02						3.01E+02					
Manganese	mg/kg	2.05E+03	7.12E+02	4.38E+04	NA	3.30E+02						6.94E+01					
Nickel	mg/kg	3.30E+01	1.30E+01	1.76E+04	1.59E+01	5.13E+00						3.96E+00					
Potassium	mg/kg	4.81E+03	1.01E+03	NA	NA	2.03E+03			YES			1.64E+03			YES		
Thallium	mg/kg	2.20E-01	1.30E-01	7.78E+01	NA	1.27E+00	J	YES	YES			ND					
Vanadium	mg/kg	6.70E+01	4.09E+01	4.83E+03	NA	1.74E+01						8.39E+00					
Zinc	mg/kg	1.11E+02	5.27E+01	3.44E+05	1.24E+02	1.10E+01						1.58E+01	J				
TOTAL ORGANIC CARBON																	
Total Organic Carbon	mg/kg	NA	NA	NA	NA	2.63E+01						4.05E+01					

Analyses performed using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods.

[a] UBR - Upper background range as given in Science Applications International Corporation (SAIC), 1998, *Final Background Metals Survey Report, Fort McClellan, Alabama*, July.

[b] BKG - Background. Concentration listed is two times (2x) the arithmetic mean of background metals concentration given in SAIC, 1998.

[c] Recreational site user site-specific screening level (SSSL) and ecological screening value (ESV) as given in IT Corporation (2000), *Final Human Health and Ecological Screening Values and PAH Background Summary Report, Fort McClellan, Calhoun County, Alabama,* July.

B - Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero).

J - Compound was positively identified; reported value is an estimated concentration.

mg/kg - Milligrams per kilogram.

NA - Not available.

ND - Not detected.

Qual - Data validation qualifier.

values determined by SAIC (1998) (Appendix G). Antimony was not detected in any other surface and depositional soil samples.

Eleven metals (aluminum, antimony, barium, beryllium, chromium, cobalt, iron, manganese, thallium, vanadium, and zinc) were detected at concentrations exceeding ESVs. Of these metals, aluminum (three samples), antimony (HR-138Q-GP02), barium (three samples), beryllium (four samples), cobalt (two samples), iron (two samples), manganese (three samples), and zinc (HR-141Q-GP03) also exceeded their respective background concentrations. However, the concentrations of the metals that exceeded ESVs and their respective background concentrations were within the range of background values except for the following:

- Antimony (8.4 mg/kg) exceeded its ESV (3.5 mg/kg) and upper background range (2.6 mg/kg) in one sample (HR-138Q-GP02)
- Barium (488 mg/kg) exceeded its ESV (165 mg/kg) and upper background range (288 mg/kg) in one sample (HR-141Q-GP03);
- Beryllium (1.1 to 3.1 mg/kg) exceeded its ESV (1.1 mg/kg) and upper background range (0.87 mg/kg) in four samples.

Explosives. One explosive compound (2-amino-4,6-dinitrotoluene) was detected in one surface soil sample (HR-138Q-GP01) at a concentration below its SSSL and ESV.

Perchlorate. Perchlorate was detected in one surface soil sample (HR-142Q-GP01) at a concentration below its SSSL (note: an ESV for perchlorate is not available).

5.2 Subsurface Soil Analytical Results

Fourteen subsurface soil samples were collected for chemical analysis at the Impact Areas South of Bains Gap Road. Subsurface soil samples were collected at depths greater than 1-foot bgs at the locations shown on Figure 3-1. Analytical results were compared to residential human health SSSLs and metals background screening values, as presented in Table 5-2.

Metals. Twenty-one metals were detected in subsurface soil samples collected at the Impact Areas South of Bains Gap Road. Five cobalt results and one each of the antimony, silver, and potassium results were flagged with a "B" data qualifier signifying that these metals were also detected in an associated laboratory or field blank.

The concentrations of seven metals (aluminum, antimony, arsenic, chromium, iron, manganese, and thallium) exceeded SSSLs. Of these metals, only aluminum (six locations) and antimony (two locations) also exceeded their respective background concentrations. With the exception of the antimony results (7.61 and 4.86 mg/kg) and one aluminum result (25,100 mg/kg), the metals that exceeded SSSLs and their respective background concentrations were within the range of background values determined by SAIC (1998) (Appendix G).

Explosives. Explosives were not detected in the subsurface soil samples collected at the site.

Perchlorate. Perchlorate was not detected in the subsurface soil samples collected at the site.

5.3 Seep Water Analytical Results

Seep water samples were collected from three locations for chemical analysis at the Impact Areas South of Bains Gap Road, as shown on Figure 3-1. Analytical results were compared to residential human health SSSLs (groundwater) and metals background screening values, as presented in Table 5-3.

Metals. Thirteen metals were detected in seep water samples collected at the Impact Areas South of Bains Gap Road. The concentrations of four metals (aluminum, barium, iron, and lead) exceeded SSSLs. Of these metals, barium (one sample) and lead (two samples) also exceeded their respective background concentrations. With the exception of one lead result, the metals concentrations were within the range of background values determined by SAIC (1998) (Appendix G). The concentration of lead (0.045 milligrams per liter [mg/L]) exceeded its SSSL (0.015 mg/L), background concentration (0.008 mg/L), and upper background range (0.027 mg/L) in the sample collected at HR-138Q-SEEP03. To confirm the lead results, the seeps were re-sampled in January 2002 and analyzed for lead only. Lead concentrations in the seep re-samples were below the SSSL and the background concentration (Table 5-3).

Explosives. Explosives were not detected in the seep water samples collected at the site.

Perchlorate. Perchlorate was not detected in the seep water samples collected at the site.

5.4 Surface Water Analytical Results

Seven surface water samples were collected for chemical analysis at the Impact Areas South of Bains Gap Road, at the locations shown on Figure 3-1. Analytical results were compared to

recreational site-user human health SSSLs, ESVs, and metals background screening values, as presented in Table 5-4.

Metals. Thirteen metals were detected in surface water samples collected at the Impact Areas South of Bains Gap Road. The nickel results, three of the calcium results, and two of the lead results were flagged with a "B" data qualifier signifying that these metals were also detected in an associated laboratory or field blank sample.

Only lead exceeded its SSSL and respective background concentration in one sample (HR-138Q-SW/SD05). However, the lead concentration (0.0208 mg/L) was within the upper background range (0.047 mg/L).

The concentrations of four metals (aluminum, barium, copper, and lead) exceeded ESVs. With the exception of the aforementioned lead result, the concentrations of these metals were below their respective background concentrations. The lead concentration was within the range of background values determined by SAIC (1998).

Explosives. Explosives were not detected in the surface water samples collected at the site.

Perchlorate. Perchlorate was not detected in the surface water samples collected at the site.

5.5 Sediment Analytical Results

Seven sediment samples were collected for chemical and physical analyses at the Impact Areas South of Bains Gap Road at the locations shown on Figure 3-1. Analytical results were compared to recreational site-user human health SSSLs, ESVs, and background screening values, as presented in Table 5-5.

Metals. Seventeen metals were detected in sediment samples collected at the Impact Areas South of Bains Gap Road. Three of the beryllium results, two of the cobalt results, and one each of the calcium, chromium, vanadium, and zinc results were flagged with a "B" data qualifier signifying that these metals were also detected in an associated laboratory or field blank sample.

The metals concentrations in sediments were below SSSLs. Only one metal (lead) exceeded its ESV and respective background concentration in one sample (HR-138Q-SW/SD05). However, the lead concentration (89.3 mg/kg) was within the upper background range (110 mg/kg).

Explosives. Explosives were not detected in the sediment samples collected at the site.

Perchlorate. Perchlorate was not detected in the sediment samples collected at the site.

Total Organic Carbon. The sediment samples were analyzed for total organic carbon (TOC). TOC concentrations in the samples ranged from 7.41 mg/kg to 55.4 mg/kg, as summarized in Appendix E.

Grain Size. The results of grain size analysis for the sediment samples are included in Appendix E.

5.6 Preliminary Risk Assessment

A Preliminary Risk Assessment (PRA) was performed to further characterize the potential threat to human health from exposure to environmental media at the Impact Areas South of Bains Gap Road. The PRA approach was developed at the request of EPA and ADEM to provide a fast and inexpensive estimation of risk for relatively simple sites. It was derived from the streamlined risk assessment (SRA) protocol developed for FTMC and documented in the Installation-Wide Work Plan (IT, 1998). A PRA is a simplified version of a SRA, differing primarily in that the maximum detected concentration (MDC) rather than an estimate of average is adopted as the source-term concentration (STC) for use in the risk assessment. However, a PRA cannot be less conservative (protective) than a SRA and is generally more protective. The PRA for the Impact Areas South of Bains Gap Road is included as Appendix H. It discusses the environmental media of interest, selection of site-related chemicals, selection of chemicals of potential concern (COPC), risk characterization and conclusions.

The foundation of the SRA (and the PRA) is the SSSL, which incorporates all the exposure and toxicological assumptions, and precision of a complete baseline risk assessment. SSSLs are receptor-, medium- and chemical-specific risk-based concentrations that are used to screen media to select COPCs and to characterize the risk; i.e., compute the incremental lifetime cancer risk (ILCR) and hazard index (HI) for non-cancer effects associated with exposure to site media.

The SSSLs applied to a given site represent the most highly exposed receptor scenario for each of several plausible uses for the site. For the Impact Areas South of Bains Gap Road, both the recreational site user and on-site resident receptor scenarios were evaluated. COPCs were selected from the site-related chemicals identified in the previous sections by comparing the MDC of the site-related chemical with the appropriate SSSL. Chemicals that were identified as

not being site-related were dropped from further consideration because their presence was not attributed to site activities. The COPCs selected in this manner are the chemicals in each medium that may contribute significantly to cancer risk or to the potential for non-cancer effects. As noted above, the MDC was selected as the STC for use in risk characterization. ILCR and HI values were estimated for each COPC in each medium and were summed to obtain total ILCR and HI values for each receptor.

Lead in surface water was the only COPC selected for the recreational site user. However, the SSSL, which is the action level for lead in tap water, was deemed too conservative given the incidental nature of exposure to surface water. Therefore, the PRA concluded that recreational site user exposure to site media is unlikely to pose a threat to human health.

COPCs for residential exposure included four metals (aluminum, antimony, iron, and manganese) in soils, and two metals (barium and lead) seep water. The PRA concluded that exposure to surface soil, subsurface soil, surface water, and sediment poses no unacceptable risk for the resident. Lead, however, was identified as a chemical of concern in seep water based on the initial round of sampling. Subsequent re-sampling of the seeps showed that lead is not a chemical of concern in seep water.

6.0 Summary, Conclusions, and Recommendations

IT Corporation, under contract to USACE, completed an SI at the Impact Areas South of Bains Gap Road, at FTMC in Calhoun County, Alabama. The SI was conducted to determine whether chemical constituents are present at the site, and, if present, whether the concentrations present an unacceptable risk to human health or the environment. The SI at the Impact Areas South of Bains Gap Road consisted of the sampling and analysis of 14 surface soil samples, 5 depositional soil samples, 14 subsurface soil samples, 7 surface water samples, 7 sediment samples, and 6 seep water samples.

Chemical analysis of samples collected at the Impact Areas South of Bains Gap Road indicates that metals were detected in the various site media. In addition, perchlorate and one explosive compound were detected in one surface soil sample each. Analytical results were compared to the SSSLs and ESVs for FTMC. The SSSLs and ESVs were developed by IT for human health and ecological risk evaluations as part of the ongoing SIs being performed under the BRAC Environmental Restoration Program at FTMC. Additionally, metals concentrations exceeding SSSLs and ESVs were compared to media-specific background screening values (SAIC, 1998). A PRA was also performed to further characterize the potential threat to human health.

Although the site is located within an undeveloped area of the Main Post and is projected for passive recreation reuse, the analytical data were evaluated against a residential reuse scenario to determine if the site is suitable for unrestricted land reuse. COPCs for residential exposure to site media included four metals (aluminum, antimony, iron, and manganese) in soils, and two metals (barium and lead) in seep water. The PRA concluded that exposure to surface soil, subsurface soil, surface water, and sediment poses no unacceptable risk for the resident. Lead, however, was identified as a chemical of concern in seep water. Based on the PRA results, the seep locations were re-sampled to confirm the lead concentrations. Lead concentrations in the seep re-samples were below the SSSL and the background concentration indicating that lead is not a chemical of concern in seep water.

The potential threat to ecological receptors is also expected to be low. Constituents of potential ecological concern were limited to three metals (antimony, barium, and beryllium) in a limited number of surface and depositional soil samples. Antimony (8.4 mg/kg) exceeded its ESV (3.11 mg/kg) and upper background range (2.6 mg/kg) in one surface soil sample. The antimony result was flagged with a "B" data qualifier indicating that the metal was detected in an associated laboratory or field blank sample. Antimony was not detected in any of the other surface and

depositional soil samples. Barium was detected at an estimated concentration (488 mg/kg) exceeding its ESV (165 mg/kg) and upper background range (288 mg/kg) in one surface soil sample. Barium concentrations in all other soil samples collected at the site were below the background concentration or within the upper background range. Beryllium (1.1 to 3.1 mg/kg) exceeded its ESV (1.1 mg/kg) and upper background range (0.87 mg/kg) in four surface and depositional soil samples. The average beryllium concentration in surface soils at the site is 0.95 mg/kg, which is below the ESV and only marginally exceeds background concentration (0.8 mg/kg). The presence of these metals likely reflects either a laboratory artifact (antimony) or, in the case of barium and beryllium, variations in naturally occurring levels. Therefore, antimony, barium, and beryllium are not expected to pose a threat to ecological receptors.

Based on the results of the SI, past operations at the Impact Areas South of Bains Gap Road do not appear to have adversely impacted the environment. The metals and chemical compounds detected in site media do not pose an unacceptable risk to human health and the environment. Therefore, IT recommends "No Further Action" and unrestricted land reuse with regard to hazardous, toxic, and radioactive waste at the Artillery and Mortar Impact Areas South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X.

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ATTACHMENT 1

LIST OF ABBREVIATIONS AND ACRONYMS

List of Abbreviations and Acronyms

2,4-D	2,4-dichlorophenoxyacetic acid
2,4,5-T	2,4,5-trichlorophenoxyacetic acid
2,4,5-TP	silvex
3D	3D International Environmental Group
AB	ambient blank
AbB3	Anniston gravelly clay loam, 2 to 6 percent slopes, severely eroded
AbC3	Anniston gravelly clay loam, 6 to 10 percent slopes, severely eroded
AbD3	Anniston and Allen gravelly clay loams, 10 to 15 percent slopes, eroded
Abs	skin absorption
ABS	dermal absorption factor
AC	hydrogen cyanide
ACAD	AutoCadd
AcB2	Anniston and Allen gravelly loams, 2 to 6 percent slopes, eroded
AcC2	Anniston and Allen gravelly loams, 6 to 10 percent slopes, eroded
AcD2	Anniston and Allen gravelly loams, 10 to 15 percent slopes, eroded
AcE2	Anniston and Allen gravelly loams, 15 to 25 percent slopes, eroded
ACGIH	American Conference of Governmental Industrial Hygienists
AdE	Anniston and Allen stony loam, 10 to 25 percent slope
ADEM	Alabama Department of Environmental Management
ADPH	Alabama Department of Public Health
AEC	U.S. Army Environmental Center
AEL	airborne exposure limit
AET	adverse effect threshold
AF	soil-to-skin adherence factor
AHA	ammunition holding area
AL	Alabama
ALAD	-aminolevulinic acid dehydratase
amb.	Amber
amsl	above mean sea level
ANAD	Anniston Army Depot
AOC	area of concern
APEC	areas of potential ecological concern
APT	armor-piercing tracer
AR	analysis request
ARAR	applicable or relevant and appropriate requirement
AREE	area requiring environmental evaluation
ASP	Ammunition Supply Point
ASR	Archives Search Report
AST	aboveground storage tank
ASTM	American Society for Testing and Materials
AT	averaging time
ATSDR	Agency for Toxic Substances and Disease Registry
ATV	all-terrain vehicle
AWARE	Associated Water and Air Resources Engineers, Inc.
AWWSB	Anniston Water Works and Sewer Board
‘B’	Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero)
BCF	blank correction factor; bioconcentration factor
BCT	BRAC Cleanup Team
BERA	baseline ecological risk assessment
BEHP	bis(2-ethylhexyl)phthalate
BFB	bromofluorobenzene
BFE	base flood elevation
BG	Bacillus globigii
bgs	below ground surface
BHC	betahexachlorocyclohexane
BHHRA	baseline human health risk assessment
BIRTC	Branch Immaterial Replacement Training Center
bkg	background
bls	below land surface
BOD	biological oxygen demand
Bp	soil-to-plant biotransfer factors
BRAC	Base Realignment and Closure
Braun	Braun Intertec Corporation
BSAF	biota-to-sediment accumulation factors
BSC	background screening criterion
BTAG	Biological Technical Assistance Group
BTEX	benzene, toluene, ethyl benzene, and xylenes
BTOC	below top of casing
BTV	background threshold value
BW	biological warfare; body weight
BZ	breathing zone; 3-quinuclidinyl benzilate
C	ceiling limit value
Ca	carcinogen
CAB	chemical warfare agent breakdown products
CAMU	corrective action management unit
CBR	chemical, biological and radiological
CCAL	continuing calibration
CCB	continuing calibration blank
CCV	continuing calibration verification
CD	compact disc
CDTF	Chemical Defense Training Facility
CEHNC	U.S. Army Engineering and Support Center, Huntsville
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah
CF	conversion factor
CFC	chlorofluorocarbon
CFDP	Center for Domestic Preparedness
CFR	Code of Federal Regulations
CG	carbonyl chloride (phosgene)
CGI	combustible gas indicator
ch	inorganic clays of high plasticity
CHPPM	U.S. Army Center for Health Promotion and Preventive Medicine
CK	cyanogen chloride
cl	inorganic clays of low to medium plasticity
Cl.	chlorinated
CLP	Contract Laboratory Program
cm	centimeter
CN	chloroacetophenone
CNB	chloroacetophenone, benzene, and carbon tetrachloride
CNS	chloroacetophenone, chloropicrin, and chloroform
CO	carbon monoxide
Co-60	cobalt-60
CoA	Code of Alabama
COC	chain of custody; contaminant of concern
COE	Corps of Engineers
Con	skin or eye contact
COPC	chemical(s) of potential concern
COPEC	chemical(s) of potential ecological concern
CPSS	chemicals present in site samples
CQCSM	Contract Quality Control System Manager
CRDL	contract-required detection limit
CRL	certified reporting limit
CRQL	contract-required quantitation limit
CRZ	contamination reduction zone
Cs-137	cesium-137
CS	ortho-chlorobenzylidene-malononitrile
CSEM	conceptual site exposure model
CSM	conceptual site model
CT	central tendency
ctr.	container
CWA	chemical warfare agent
CWM	chemical warfare material; clear, wide mouth
CX	dichloroformoxime
‘D’	duplicate; dilution
D&I	detection and identification
DAF	dilution-attenuation factor
DANC	decontamination agent, non-corrosive
ºC	degrees Celsius
ºF	degrees Fahrenheit
DCE	dichloroethene
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethene
DDT	dichlorodiphenyltrichloroethane
DEH	Directorate of Engineering and Housing
DEP	depositional soil
DFTPP	decafluorotriphenylphosphine
DI	deionized
DID	data item description
DIMP	di-isopropylmethylphosphonate
DM	dry matter
DMBA	dimethylbenz(a)anthracene
DMMP	dimethylmethylphosphonate

DOD	U.S. Department of Defense
DOJ	U.S. Department of Justice
DOT	U.S. Department of Transportation
DP	direct-push
DPDO	Defense Property Disposal Office
DPT	direct-push technology
DQO	data quality objective
DRMO	Defense Reutilization and Marketing Office
DRO	diesel range organics
DS	deep (subsurface) soil
DS2	Decontamination Solution Number 2
DWEL	drinking water equivalent level
E&E	Ecology and Environment, Inc.
EB	equipment blank
EBS	environmental baseline survey
EC_{50}	effects concentration for 50 percent of a population
ECBC	Edgewood Chemical/Biological Command
ED	exposure duration
EDD	electronic data deliverable
EF	exposure frequency
EDQL	ecological data quality level
EE/CA	engineering evaluation and cost analysis
Elev.	elevation
EM	electromagnetic
EMI	Environmental Management Inc.
EM31	Geonics Limited EM31 Terrain Conductivity Meter
EM61	Geonics Limited EM61 High-Resolution Metal Detector
EOD	explosive ordnance disposal
EODT	explosive ordnance disposal team
EPA	U.S. Environmental Protection Agency
EPC	exposure point concentration
EPIC	Environmental Photographic Interpretation Center
EPRI	Electrical Power Research Institute
ER	equipment rinsate
ERA	ecological risk assessment
ER-L	effects range-low
ER-M	effects range-medium
ESE	Environmental Science and Engineering, Inc.
ESMP	Endangered Species Management Plan
ESN	Environmental Services Network, Inc.
ESV	ecological screening value
ET	exposure time
EU	exposure unit
Exp.	explosives
E-W	east to west
EZ	exclusion zone
FAR	Federal Acquisition Regulations
FB	field blank
FD	field duplicate
FDA	U.S. Food and Drug Administration
FedEx	Federal Express, Inc.
FEMA	Federal Emergency Management Agency
FFCA	Federal Facilities Compliance Act
FFE	field flame expedient
FFS	focused feasibility study
FI	fraction of exposure
Fil	filtered
Flt	filtered
FMDC	Fort McClellan Development Commission
FML	flexible membrane liner
FMP 1300	Former Motor Pool 1300
FOMRA	Former Ordnance Motor Repair Area
Foster Wheeler	Foster Wheeler Environmental Corporation
Frtn	fraction
FS	field split; feasibility study
FSP	field sampling plan
ft	feet
ft/ft	feet per foot
FTA	Fire Training Area
FTMC	Fort McClellan
FTRRA	FTMC Reuse & Redevelopment Authority
g	gram
g/m^3	gram per cubic meter
G-856	Geometrics, Inc. G-856 magnetometer
G-858G	Geometrics, Inc. G-858G magnetic gradiometer
GAF	gastrointestinal absorption factor
gal	gallon
gal/min	gallons per minute
GB	sarin
gc	clay gravels; gravel-sand-clay mixtures
GC	gas chromatograph
GCL	geosynthetic clay liner
GC/MS	gas chromatograph/mass spectrometer
GCR	geosynthetic clay liner
GFAA	graphite furnace atomic absorption
GIS	Geographic Information System
gm	silty gravels; gravel-sand-silt mixtures
gp	poorly graded gravels; gravel-sand mixtures
gpm	gallons per minute
GPR	ground-penetrating radar
GPS	global positioning system
GS	ground scar
GSA	General Services Administration; Geologic Survey of Alabama
GSBP	Ground Scar Boiler Plant
GSSI	Geophysical Survey Systems, Inc.
GST	ground stain
GW	groundwater
gw	well-graded gravels; gravel-sand mixtures
HA	hand auger
HCl	hydrochloric acid
HD	distilled mustard
HDPE	high-density polyethylene
HEAST	Health Effects Assessment Summary Tables
Herb.	herbicides
HHRA	human health risk assessment
HI	hazard index
HPLC	high performance liquid chromatography
HNO_3	nitric acid
HQ	hazard quotient
HQ_{screen}	screening-level hazard quotient
hr	hour
H&S	health and safety
HSA	hollow-stem auger
HTRW	hazardous, toxic, and radioactive waste
'I'	out of control, data rejected due to low recovery
IATA	International Air Transport Authority
ICAL	initial calibration
ICB	initial calibration blank
ICP	inductively-coupled plasma
ICRP	International Commission on Radiological Protection
ICS	interference check sample
ID	inside diameter
IDL	instrument detection limit
IDLH	immediately dangerous to life or health
IDM	investigative-derived media
IDW	investigation-derived waste
IEUBK	Integrated Exposure Uptake Biokinetic
IF	ingestion factor; inhalation factor
ILCR	incremental lifetime cancer risk
IMPA	isopropylmethyl phosphonic acid
IMR	Iron Mountain Road
in.	inch
Ing	ingestion
Inh	inhalation
IP	ionization potential
IPS	International Pipe Standard
IR	ingestion rate
IRDMIS	Installation Restoration Data Management Information System
IRIS	Integrated Risk Information Service
IRP	Installation Restoration Program
IS	internal standard
ISCP	Installation Spill Contingency Plan
IT	IT Corporation
ITEMS	IT Environmental Management System™

'J'	estimated concentration
JeB2	Jefferson gravelly fine sandy loam, 2 to 6 percent slopes, eroded
JeC2	Jefferson gravelly fine sandy loam, 6 to 10 percent slopes, eroded
JfB	Jefferson stony fine sandy loam, 0 to 10 percent slopes have strong slopes
JPA	Joint Powers Authority
K	conductivity
K_{ow}	octonal-water partition coefficient
L	lewisite; liter
l	liter
LBP	lead-based paint
LC	liquid chromatography
LCS	laboratory control sample
LC_{50}	lethal concentration for 50 percent population tested
LD_{50}	lethal dose for 50 percent population tested
LEL	lower explosive limit
LOAEL	lowest-observed-advserse-effects-level
LT	less than the certified reporting limit
LUC	land-use control
LUCAP	land-use control assurance plan
LUCIP	land-use control implementation plan
max	maximum
MB	method blank
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MCPA	4-chloro-2-methylphenoxyacetic acid
MCS	media cleanup standard
MD	matrix duplicate
MDC	maximum detected concentration
MDCC	maximum detected constituent concentration
MDL	method detection limit
mg	milligrams
mg/kg	milligrams per kilogram
mg/kg/day	milligram per kilogram per day
mg/kgbw/day	milligrams per kilogram of body weight per day
mg/L	milligrams per liter
mg/m^3	milligrams per cubic meter
mh	inorganic silts, micaceous or diatomaceous fine, sandy or silt soils
MHz	megahertz
µg/g	micrograms per gram
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
µmhos/cm	micromhos per centimeter
min	minimum
MINICAMS	miniature continuous air monitoring system
ml	inorganic silts and very fine sands
mL	milliliter
mm	millimeter
MM	mounded material
MMBtu/hr	million Btu per hour
MOGAS	motor vehicle gasoline
MP	Military Police
MPA	methyl phosphonic acid
MPM	most probable munition
MQL	method quantitation limit
MR	molasses residue
MRL	method reporting limit
MS	matrix spike
mS/cm	millisiemens per centimeter
mS/m	millisiemens per meter
MSD	matrix spike duplicate
MTBE	methyl tertiary butyl ether
msl	mean sea level
MtD3	Montevallo shaly, silty clay loam, 10 to 40 percent slopes , severely eroded
mV	millivolts
MW	monitoring well
MWI&P	Monitoring Well Installation and Management Plan
Na	sodium
NA	not applicable; not available
NAD	North American Datum
NAD83	North American Datum of 1983
NAVD88	North American Vertical Datum of 1988
NAS	National Academy of Sciences
NCEA	National Center for Environmental Assessment
NCP	National Contingency Plan
NCRP	National Council on Radiation Protection and Measurements
ND	not detected
NE	no evidence; northeast
ne	not evaluated
NEW	net explosive weight
NFA	No Further Action
NG	National Guard
NGP	National Guardsperson
ng/L	nanograms per liter
NGVD	National Geodetic Vertical Datum
Ni	nickel
NIC	notice of intended change
NIOSH	National Institute for Occupational Safety and Health
NIST	National Institute of Standards and Technology
NLM	National Library of Medicine
NPDES	National Pollutant Discharge Elimination System
NPW	net present worth
No.	number
NOAA	National Oceanic and Atmospheric Administration
NOAEL	no-observed-adverse-effects-level
NR	not requested; not recorded; no risk
NRC	National Research Council
NRCC	National Research Council of Canada
NRHP	National Register of Historic Places
ns	nanosecond
N-S	north to south
NS	not surveyed
NSA	New South Associates, Inc.
nT	nanotesla
nT/m	nanoteslas per meter
NTU	nephelometric turbidity unit
nv	not validated
O_2	oxygen
O&G	oil and grease
O&M	operation and maintenance
OB/OD	open burning/open detonation
OD	outside diameter
OE	ordnance and explosives
oh	organic clays of medium to high plasticity
ol	organic silts and organic silty clays of low plasticity
OP	organophosphorus
ORP	oxidation-reduction potential
OSHA	Occupational Safety and Health Administration
OSWER	Office of Solid Waste and Emergency Response
OVM-PID/FID	organic vapor meter-photoionization detector/flame ionization detector
OWS	oil/water separator
oz	ounce
PA	preliminary assessment
PAH	polynuclear aromatic hydrocarbon
PARCCS	precision, accuracy, representativeness, comparability, completeness, and sensitivity
Parsons	Parsons Engineering Science, Inc.
Pb	lead
PBMS	performance-based measurement system
PC	permeability coefficient
PCB	polychlorinated biphenyl
PCDD	polychlorinated dibenzo-p-dioxins
PCDF	polychlorinated dibenzofurans
PCE	perchloroethene
PCP	pentachlorophenol
PDS	Personnel Decontamination Station
PEF	particulate emission factor
PEL	permissible exposure limit
PES	potential explosive site
Pest.	pesticides
PETN	pentarey thritol tetranitrate
PFT	portable flamethrower
PG	professional geologist
PID	photoionization detector
PkA	Philo and Stendal soils local alluvium, 0 to 2 percent slopes

PM	project manager
POC	point of contact
POL	petroleum, oils, and lubricants
POW	prisoner of war
PP	peristaltic pump; Proposed Plan
ppb	parts per billion
PPE	personal protective equipment
ppm	parts per million
PPMP	Print Plant Motor Pool
ppt	parts per thousand
PR	potential risk
PRA	preliminary risk assessment
PRG	preliminary remediation goal
PSSC	potential site-specific chemical
pt	peat or other highly organic silts
PVC	polyvinyl chloride
QA	quality assurance
QA/QC	quality assurance/quality control
QAM	quality assurance manual
QAO	quality assurance officer
QAP	installation-wide quality assurance plan
QC	quality control
QST	QST Environmental, Inc.
qty	quantity
Qual	qualifier
'R'	rejected data; resample
R&A	relevant and appropriate
RA	remedial action
RAO	removal action objective
RBC	risk-based concentration
RCRA	Resource Conservation and Recovery Act
RD	remedial design
RDX	cyclonite
ReB3	Rarden silty clay loams
REG	regular field sample
REL	recommended exposure limit
RFA	request for analysis
RfC	reference concentration
RfD	reference dose
RGO	remedial goal option
RI	remedial investigation
RL	reporting limit
RME	reasonable maximum exposure
ROD	Record of Decision
RPD	relative percent difference
RRF	relative response factor
RSD	relative standard deviation
RTC	Recruiting Training Center
RTECS	Registry of Toxic Effects of Chemical Substances
RTK	real-time kinematic
SA	exposed skin surface area
SAD	South Atlantic Division
SAE	Society of Automotive Engineers
SAIC	Science Applications International Corporation
SAP	installation-wide sampling and analysis plan
sc	clayey sands; sand-clay mixtures
Sch.	Schedule
SCM	site conceptual model
SD	sediment
SDG	sample delivery group
SDZ	safe distance zone; surface danger zone
SEMS	Southern Environmental Management & Specialties, Inc.
SF	cancer slope factor
SFSP	site-specific field sampling plan
SGF	standard grade fuels
SHP	installation-wide safety and health plan
SI	site investigation
SINA	Special Interest Natural Area
SL	standing liquid
SLERA	screening-level ecological risk assessment
sm	silty sands; sand-silt mixtures
SM	Serratia marcescens
SMDP	Scientific Management Decision Point
s/n	signal-to-noise ratio
SOP	standard operating procedure
SOPQAM	U.S. EPA's *Standard Operating Procedure/Quality Assurance Manual*
sp	poorly graded sands; gravelly sands
SP	submersible pump
SPCC	system performance calibration compound
SPCS	State Plane Coordinate System
SPM	sample planning module
SQRT	screening quick reference tables
Sr-90	strontium-90
SRA	streamlined human health risk assessment
SRM	standard reference material
Ss	stony rough land, sandstone series
SS	surface soil
SSC	site-specific chemical
SSHO	site safety and health officer
SSHP	site-specific safety and health plan
SSL	soil screening level
SSSL	site-specific screening level
SSSSL	site-specific soil screening level
STB	supertropical bleach
STC	source-term concentration
STD	standard deviation
STEL	short-term exposure limit
STL	Severn-Trent Laboratories
STOLS	Surface Towed Ordnance Locator System®
Std. units	standard units
SU	standard unit
SUXOS	senior UXO supervisor
SVOC	semivolatile organic compound
SW	surface water
SW-846	U.S. EPA's *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*
SWMU	solid waste management unit
SWPP	storm water pollution prevention plan
SZ	support zone
TAL	target analyte list
TAT	turn around time
TB	trip blank
TBC	to be considered
TCA	trichloroethane
TCDD	2,3,7,8-tetrachlorodibenzo-p-dioxin
TCDF	tetrachlorodibenzofurans
TCE	trichloroethene
TCL	target compound list
TCLP	toxicity characteristic leaching procedure
TDEC	Tennessee Department of Environment and Conservation
TDGCL	thiodiglycol
TDGCLA	thiodiglycol chloroacetic acid
TERC	Total Environmental Restoration Contract
THI	target hazard index
TIC	tentatively identified compound
TLV	threshold limit value
TN	Tennessee
TNT	trinitrotoluene
TOC	top of casing; total organic carbon
TPH	total petroleum hydrocarbons
TR	target cancer risk
TRADOC	U.S. Army Training and Doctrine Command
TRPH	total recoverable petroleum hydrocarbons
TSCA	Toxic Substances Control Act
TSDF	treatment, storage, and disposal facility
TWA	time-weighted average
UCL	upper confidence limit
UCR	upper certified range
'U'	not detected above reporting limit
UF	uncertainty factor
USACE	U.S. Army Corps of Engineers
USACHPPM	U.S. Army Center for Health Promotion and Preventive Medicine
USAEC	U.S. Army Environmental Center
USAEHA	U.S. Army Environmental Hygiene Agency
USACMLS	U.S. Army Chemical School

USAMPS	U.S. Army Military Police School
USATCES	U.S. Army Technical Center for Explosive Safety
USATEU	U.S. Army Technical Escort Unit
USATHAMA	U.S. Army Toxic and Hazardous Material Agency
USC	United States Code
USCS	Unified Soil Classification System
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
UTL	upper tolerance level; upper tolerance limit
UXO	unexploded ordnance
UXOQCS	UXO Quality Control Supervisor
UXOSO	UXO safety officer
V	vanadium
VOA	volatile organic analyte
VOC	volatile organic compound
VOH	volatile organic hydrocarbon
VQlfr	validation qualifier
VQual	validation qualifier
VX	nerve agent (O-ethyl-S-[diisopropylaminoethyl]-methylphosphonothiolate)
WAC	Women's Army Corps
Weston	Roy F. Weston, Inc.
WP	installation-wide work plan
WRS	Wilcoxon rank sum
WS	watershed
WSA	Watershed Screening Assessment
WWI	World War I
WWII	World War II
XRF	x-ray fluorescence
yd^3	cubic yards

SAIC – Data Qualifiers, Codes and Footnotes, 1995 Remedial Investigation

N/A – Not analyzed

ND – Not detected

Boolean Codes

- LT – Less than the certified reporting limit

Flagging Codes

- 9 – Non-demonstrated/validated method performed for USAEC
- B – Analyte found in the method blank or QC blank
- C – Analysis was confirmed
- D – Duplicate analysis
- I – Interfaces in sample make quantitation and/or identification to be suspicious
- J – Value is estimated
- K – Reported results are affected by interfaces or high background
- N – Tentatively identified compound (match greater than 70%)
- Q – Sample interference obscured peak of interest
- R – Non-target compound analyzed for but not detected (GC/MS methods)
- S – Non-target compound analyzed for and detected (GC/MS methods)
- T – Non-target compound analyzed for but not detected (non GC/MS methods)
- U – Analysis in unconfirmed
- Z – Non-target compound analyzed for and detected (non-GC/MS methods)

Qualifiers

- J – The low-spike recovery is low
- N – The high-spike recovery is low
- R – Data is rejected

APPENDIX A

SAMPLE COLLECTION LOGS AND ANALYSIS REQUEST/CHAIN-OF-CUSTODY RECORDS

SAMPLE COLLECTION LOGS

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 780567 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 138Q-050401-EMAX

Site: **Artillery and Motar Impact Areas South of B**

Location Code: **HR-138Q-DEP01**

Sample Number: **YE0011**

Sample Name: **HR-138Q-DEP01-DEP-YE0011-REG**

Sampling Method: **HA**

Collection Date: 5/3/01

Collection Time: 1045

Start Depth: 0'

End Depth: 0.5'

Sample Team: Leigh Yates

ERPIMS Values:

Sacode:

Lot Control#:

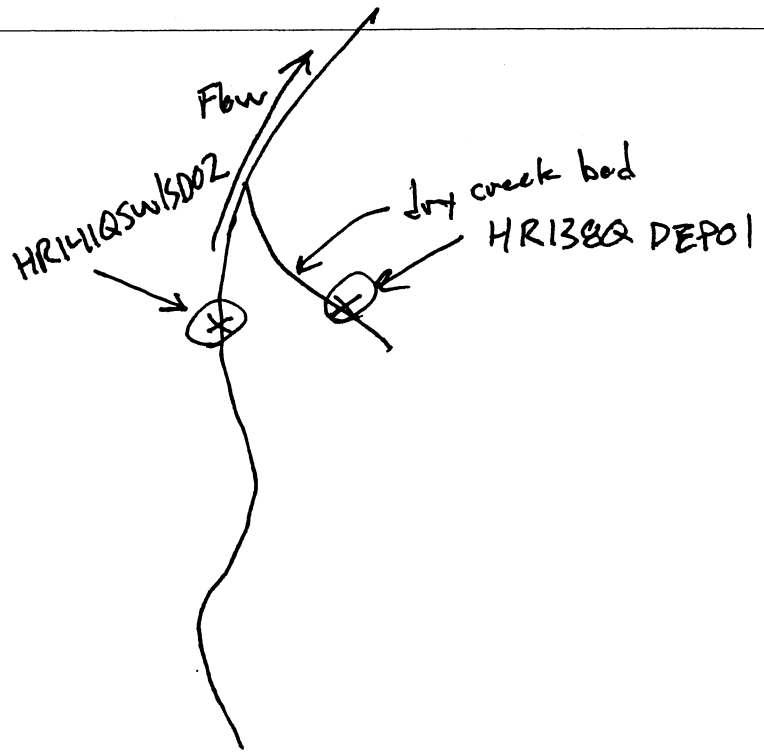
Sample Matrix:

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: Sample collected at location HR138QSWLSD01

Sketch Location:



North

Logged BY / Date: YG 5/3/01

Reviewed BY / Date: 5-3-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 780567 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 138Q-050401-EMAX

Site: **Artillery and Motar Impact Areas South of B**

Location Code: **HR-138Q-DEP01**

Sample Number: **YE0012**

Sample Name: **HR-138Q-DEP01-DEP-YE0012-FD**

Sampling Method: **HA**

Collection Date: 5/3/01

Collection Time: 1045

Start Depth: 0'

End Depth: 0-5'

Sample Team: Leigh Yates

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

ERPIMS Values:

Sacode:

Lot Control#:

Sample Matrix:

Comments: Sample collected at location HR138QSW1SD01

Sketch Location: See sketch for sample # YE0011

Logged BY / Date: JO 5/3/01

Reviewed BY / Date: Dexter 5-3-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 138Q-D20101-EMAX

Site: Artillery and Motar Impact Areas South of B

Location Code: HR-138Q-GP01

Sample Number: YE0001

Sample Name: HR-138Q-GP01-SS-YE0001-REG

Sampling Method: DP

Collection Date: 01/31/01

Collection Time: 1615

Start Depth: 0'

End Depth: 1'

Sample Team: N. Badon, G. Robertson

Analytical Suite	Flt	Frtn	Containers Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID = 0.0

Sketch Location:

Logged BY / Date: [signature] 01/31/01

Reviewed BY / Date: [signature] 2/1/01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 138Q-~~0131~~ 0201 01-EMAX

Site: Artillery and Motar Impact Areas South of B

Location Code: HR-138Q-GP01

Sample Number: YE0001-MS

Sample Name: HR-138Q-GP01-SS-YE0001-MS

Sampling Method: DP

Collection Date: 01/31/01

Collection Time: 1615

Start Depth: 0'

End Depth: 1'

Sample Team: N Badon, G Robertson

Analytical Suite	Containers Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID=0.0

Sketch Location:

Logged BY / Date: [signature] 01/01

Reviewed BY / Date: [signature] 2/1/01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: **796887 Fort McClellan**

Manager: **Jeanne Yacoub**

RFA / COC Number: 138Q-~~0131~~ 0201 01-EMAX

Site: **Artillery and Motar Impact Areas South of B**

Location Code: **HR-138Q-GP01**

Sample Number: **YE0001-MSD**

Sample Name: **HR-138Q-GP01-SS-YE0001-MSD**

Sampling Method: **DP**

Collection Date: 01/31/01

Collection Time: 1615

Start Depth: 0

End Depth: 1'

Sample Team: G Pederson, N Badon

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID=0.0

Sketch Location:

Logged BY / Date: [signature] 01/31/01

Reviewed BY / Date: [signature] 2/1/01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 138Q-~~013101~~ D201 OKM -EMAX

Site: **Artillery and Motar Impact Areas South of B**

Location Code: **HR-138Q-GP01**

Sample Number: **YE0002**

Sample Name: **HR-138Q-GP01-DS-YE0002-REG**

Sampling Method: **DP**

Collection Date: 01/31/01

Collection Time: 16 27

Start Depth: 9'

End Depth: 11'

Sample Team: N. Bedon, G. Robersen

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID=0.0

Sketch Location:

Logged BY / Date: [signature] 01/31/01

Reviewed BY / Date: [signature] 2/1/01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 138Q-~~0131~~ 0201 01-EMAX OKA

Site: **Artillery and Motar Impact Areas South of B**

Location Code: **HR-138Q-GP01**

Sample Number: **YE0003**

Sample Name: **HR-138Q-GP01-DS-YE0003-FD**

Sampling Method: **DP**

Collection Date: 01/31/01

Collection Time: 1627

Start Depth: 9'

End Depth: 11'

Sample Team: N Bodon, G Robertson

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID = 0.0

Sketch Location:

Logged BY / Date: [signature] 01/31/01

Reviewed BY / Date: [signature] 2/1/01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 138Q-020201-EMAX

Site: Artillery and Motar Impact Areas South of B

Location Code: HR-138Q-GP02

Sample Number: YE0005

Sample Name: HR-138Q-GP02-SS-YE0005-REG

Sampling Method: DP

Collection Date: 2/1/01

Collection Time: 1540

Start Depth: 0'

End Depth: 1'

Sample Team: N. Badon

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID= 0.0 ppm

Sketch Location:

Logged BY / Date: N. Badon 2/1/01

Reviewed BY / Date: [illegible]

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 138Q-020201-EMAX

Site: **Artillery and Motar Impact Areas South of B**

Location Code: **HR-138Q-GP02**

Sample Number: **YE0006**

Sample Name: **HR-138Q-GP02-DS-YE0006-REG**

Sampling Method: **DP**

Collection Date: 2/1/01

Collection Time: 1603

Start Depth: 4'

End Depth: 5'

Sample Team: N.Badon

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID= 0.0 ppm

Sketch Location:

Logged BY / Date: N.Badon 2/1/01

Reviewed BY / Date: 2-1-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 138Q-0201-01-EMAX

Site: **Artillery and Motar Impact Areas South of B**

Location Code: **HR-138Q-GP03**

Sample Number: **YE0007**

Sample Name: **HR-138Q-GP03-SS-YE0007-REG**

Sampling Method: **DP**

Collection Date: 01/31/01

Collection Time: 1540

Start Depth: 0'

End Depth: 1'

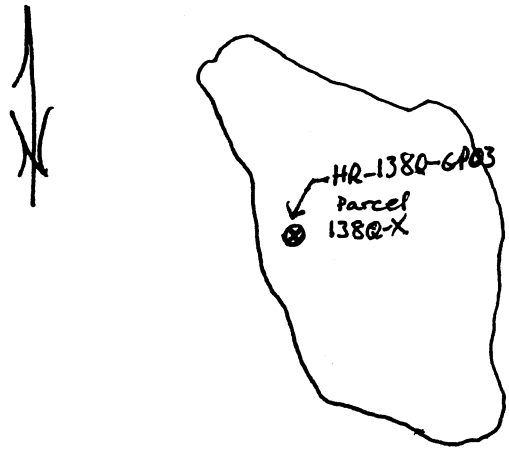
Sample Team: G. Robertson, N. Badot

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID=0.0

Sketch Location:



Logged BY / Date: 01/31/01

Reviewed BY / Date: 2/1/01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 138Q-020101-EMA1

Site: **Artillery and Motar Impact Areas South of B**

Location Code: **HR-138Q-GP03**

Sample Number: **YE0008**

Sample Name: **HR-138Q-GP03-DS-YE0008-REG**

Sampling Method: **DP**

Collection Date: 01/31/01

Collection Time: 1550

Start Depth: 7'

End Depth: 8'

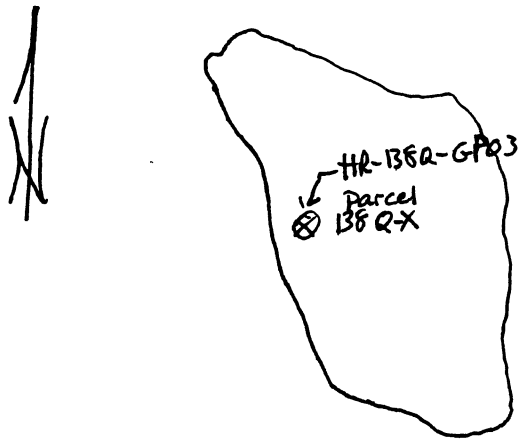
Sample Team: G. Robertson, N. Bodon

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID = 0.0

Sketch Location:



Logged BY / Date: 01/31/01

Reviewed BY / Date: 2/01/01

INTERNATIONAL TECHNOLOGY CORPORATION

2 8 oz Jars

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 138Q-020101-EMS1

Site: Artillery and Motar Impact Areas South of B

Location Code: HR-138Q-GP04

Sample Number: YE0009

Sample Name: HR-138Q-GP04-SS-YE0009-REG

Sampling Method: DP

Collection Date: 1/31/01

Collection Time: 1450

Start Depth: 0'

End Depth: 1'

Sample Team: N. Badon, G. Robertson

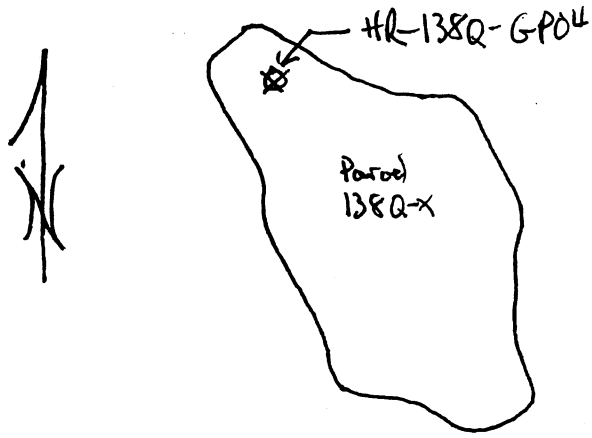
Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	~~4~~ 8 oz	oz	CWM

Comments: PID = 0.0

2 8 oz containers

Sketch Location:



Logged BY / Date: N Badon 1/31/01

Reviewed BY / Date: J. W. 2/1/01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 138Q-020101-EMA1

Site: Artillery and Motar Impact Areas South of B

Location Code: HR-138Q-GP04

Sample Number: YE0009-MS

Sample Name: HR-138Q-GP04-SS-YE0009-MS

Sampling Method: DP

Collection Date: 1/31/01

Collection Time: 1450

Start Depth: 0'

End Depth: 1'

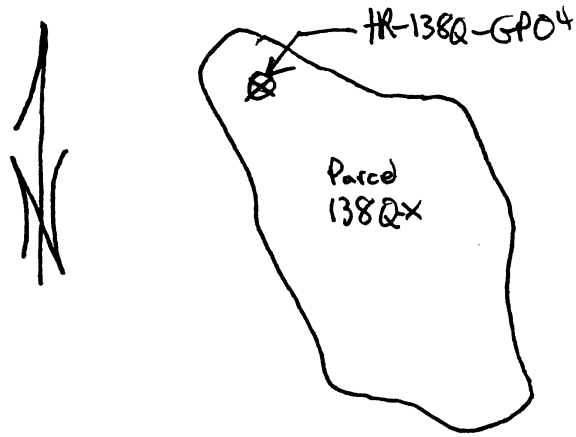
Sample Team: N. Badon, G. Robertson

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID = 0.0

Sketch Location:



Logged BY / Date: N. Badon 1/31/01

Reviewed BY / Date: J. W. 2/1/01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 138Q.020101-EMAX

Site: **Artillery and Motar Impact Areas South of B**

Location Code: **HR-138Q-GP04**

Sample Number: **YE0009-MSD**

Sample Name: **HR-138Q-GP04-SS-YE0009-MSD**

Sampling Method: **DP**

Collection Date: 1/31/01

Collection Time: 1450

Start Depth: 0'

End Depth: 1'

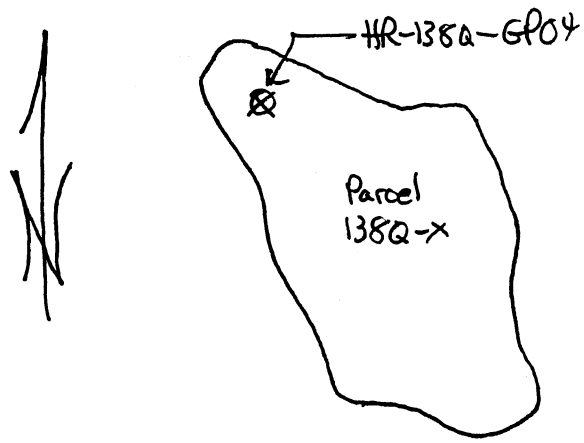
Sample Team: N. Badon, A. Robertson

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID=0.0

Sketch Location:



Logged BY / Date: N. Badon 1/31/01

Reviewed BY / Date: J. W. 2/01/01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 138Q-020101-EMA1

Site: Artillery and Motar Impact Areas South of B

Location Code: HR-138Q-GP04

Sample Number: YE0010

Sample Name: HR-138Q-GP04-DS-YE0010-REG

Sampling Method: DP

Collection Date: 01/31/01

Collection Time: 1507

Start Depth: 10'

End Depth: 11'

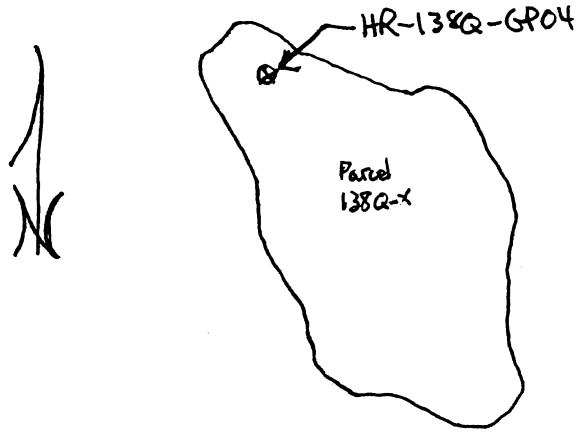
Sample Team: N Baden, G Robertson

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID = 0.0 ppm

Sketch Location:



Logged BY / Date: [signature] 01/31/01

Reviewed BY / Date: [signature] 2/1/01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 780567 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 138Q-050401-EMAX

Site: Artillery and Motar Impact Areas South of B

Location Code: HR-138Q-SEEP01

Sample Number: YE2006

Sample Name: HR-138Q-SEEP01-SEP-YE2006-REG

Sampling Method: ~~GRAB~~ Teflon Tubing & Syringe

Collection Date: ~~134~~ 5/2/01

Collection Time: 1345

Start Depth: 0'

End Depth: 0'

Sample Team: Leigh Yates

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-W	N	A	1	1	L	HDPE
NITROAROMATIC	N	B	2	1	L	Amb. Glass
PERCHLORATE	N	C	1	500	mL	HDPE

ERPIMS Values:

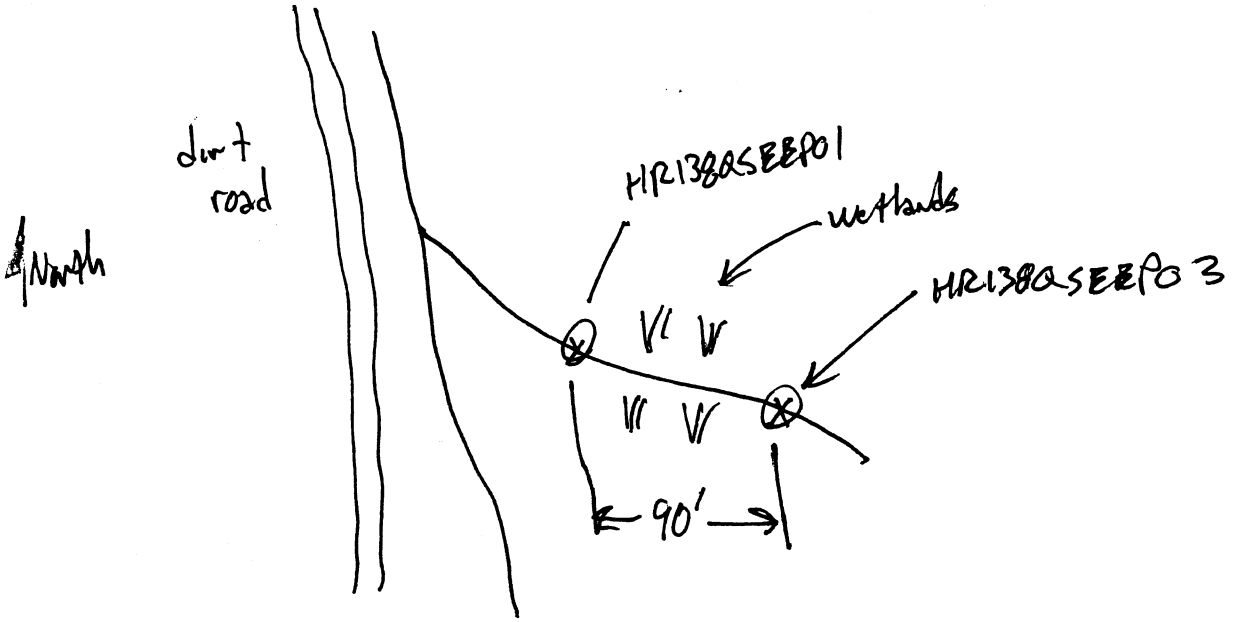
Sacode:

Lot Control#:

Sample Matrix:

Comments: Metals preserved to pH <2.
pH 5.79, conductivity 0.02 mS/cm, turbidity 0 NTU, dissolved oxygen 5.46 mg/L, temperature 17.9°C

Sketch Location:



Logged BY / Date: 5/2/01

Reviewed BY / Date: 5-2-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 **Fort McClellan**

Manager: Jeanne Yacoub

RFA / COC Number: 138Q-011002-EMAV

Location Code: **HR-138Q-SEEP01**

Sample Number: **YE2006R**

Sample Name: **HR-138Q-SEEP01-SEP-YE2006R-REG**

Sampling Method: **GRAB**

Sample Type: **SEP** *Sample Purpose:* **REG**

Collection Date: 1 10 02

Collection Time: 1515

Start Depth: source / seep

End Depth: —

Sample Matrix: **WATER**

Sample Team: J. Alexander / J. Jenkins

QC Partners:

(TB) 011002-TB2 (ER) NA (FB) NA

ERPIMS Values:

Sacode:

Lot Control#:

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
LEAD	N	A	1	500	mL	HDPE

Comments:

~~**Sketch Location:**~~

pH	cond	turb	DO	temp	Eh (mv)
5.24	.019	2.2	7.47	12.1	340

Preserved Sample to pH <2.

Logged BY / Date: 1 1002 *Reviewed BY / Date:* DeKae 1-10-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 780567 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 138Q-050401-EMAX

Site: Artillery and Motar Impact Areas South of B

Location Code: HR-138Q-SEEP02

Sample Number: YE2007

Sample Name: HR-138Q-SEEP02-SEP-YE2007-REG

Sampling Method: ~~GRAB~~ Teflon Tubing & Sponge

Collection Date: 5/2/01

Collection Time: 1530

Start Depth: 0'

End Depth: 0'

Sample Team: Leigh Yates

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-W	N	A	1	1	L	HDPE
NITROAROMATIC	N	B	2	1	L	Amb. Glass
PERCHLORATE	N	C	1	500	mL	HDPE

ERPIMS Values:

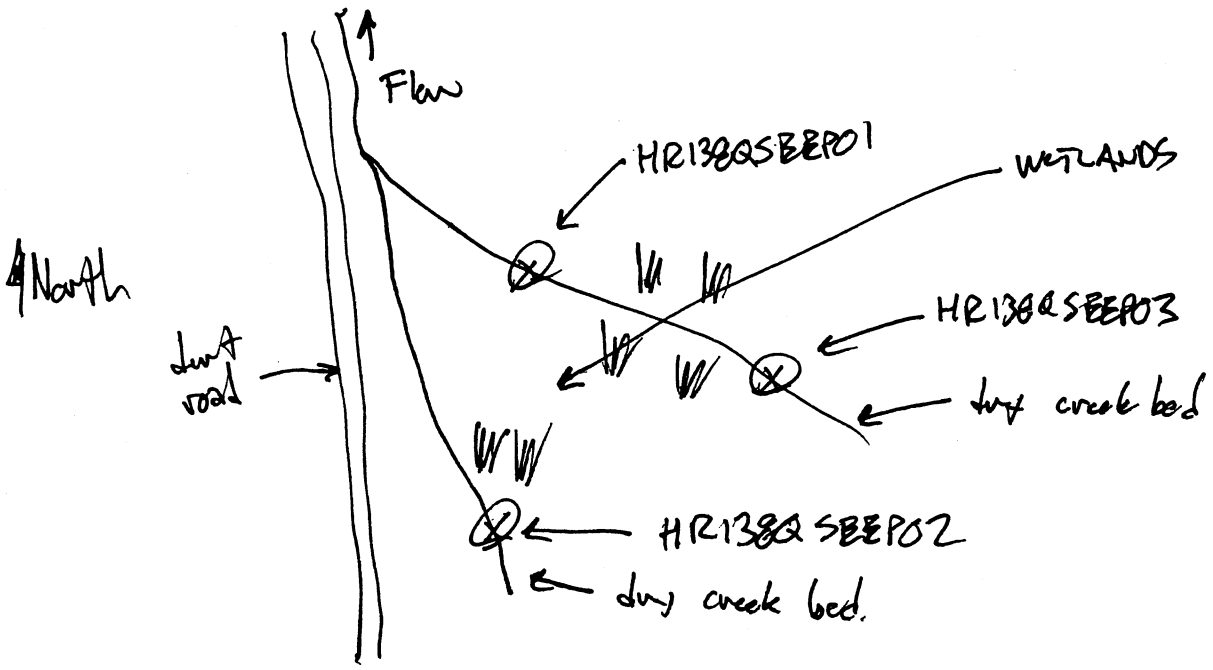
Sacode:

Lot Control#:

Sample Matrix:

Comments: Metals preserved to pH <2
pH 5.72, conductivity 0.019 mS/cm, turbidity 0 NTU, dissolved oxygen 6.92 mg/L, temperature 17.1°C.

Sketch Location:



Logged BY / Date: 5/2/01

Reviewed BY / Date: 5-2-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 **Fort McClellan**

Manager: Jeanne Yacoub

RFA / COC Number: 138Q-011002-EMAV

Location Code: **HR-138Q-SEEP02**

Sample Number: **YE2007R**

Sample Name: **HR-138Q-SEEP02-SEP-YE2007R-REG**

Sampling Method: **GRAB**

Sample Type: **SEP** *Sample Purpose:* **REG**

Collection Date: 1 10 02

Collection Time: 1425

Start Depth: Source / seep

End Depth: —

Sample Matrix: **WATER**

Sample Team: J. Alexander / J. Jenkin

QC Partners:

(TB) 011002-TB2 (ER) NA (FB) NA

ERPIMS Values:

Sacode:

Lot Control#:

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
LEAD	N	A	1	500	mL	HDPE

Comments:

~~**Sketch Location**~~**:**

pH	cond	turb	DO	temp	EH (mV)
5.08	.019	6.1	7.91	10.3	245

Preserved Sample to pH < 2

Logged BY / Date: 1 10 02 *Reviewed BY / Date:* 1-10-02

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 780567 Fort McClellan
Manager: Jeanne Yacoub

RFA / COC Number: 138Q-050401-EMAX

Site: Artillery and Motar Impact Areas South of B
Location Code: HR-138Q-SEEP03
Sample Number: YE2008
Sample Name: HR-138Q-SEEP03-SEP-YE2008-REG
Sampling Method: ~~GRAB~~ (T) Teflon Tubing Syringe

Collection Date: 5/2/01
Collection Time: 1330
Start Depth: 0'
End Depth: 0'
Sample Team: Leigh Yates

Containers

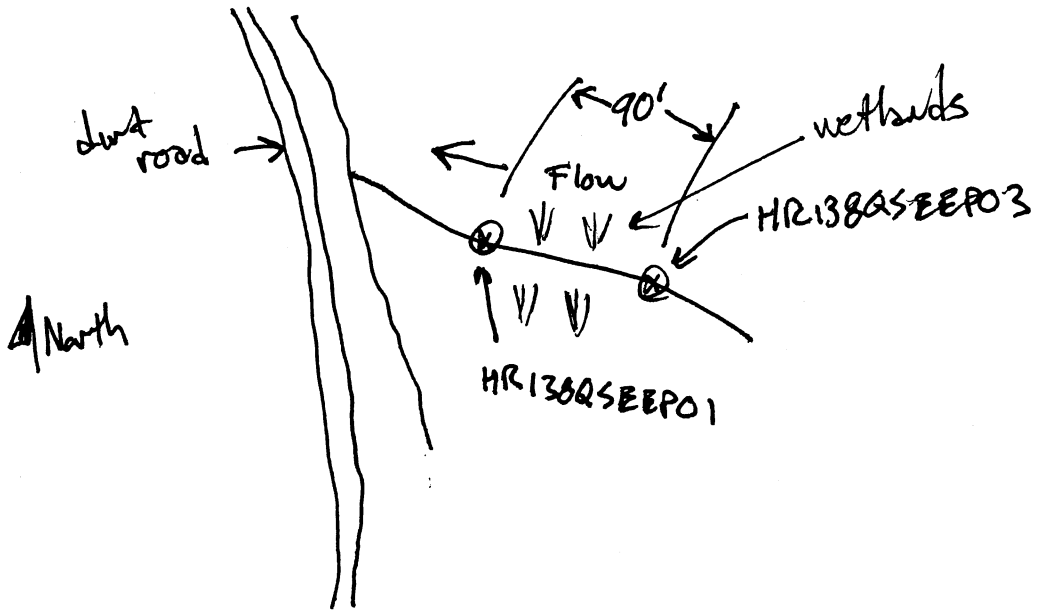
Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-W	N	A	1	1	L	HDPE
NITROAROMATIC	N	B	2	1	L	Amb. Glass
PERCHLORATE	N	C	1	500	mL	HDPE

ERPIMS Values:
Sacode:
Lot Control#:
Sample Matrix:

Comments: Metals preserved to pH <2.
pH 5.61, conductivity 0.026 mS/cm, turbidity 9 NTU, dissolved oxygen 11.40 mg/L temperature 18.4°C.

Additional Seep Added. by J. Jenkins.

Sketch Location:



Logged BY / Date: 5/2/01
Reviewed BY / Date: 5-2-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 **Fort McClellan**

Manager: Jeanne Yacoub

RFA / COC Number: 138Q-011002-EMAX

Location Code: **HR-138Q-SEEP03**

Sample Number: **YE2008R**

Sample Name: **HR-138Q-SEEP03-SEP-YE2008R-REG**

Sampling Method: **GRAB**

Sample Type: **SEP** *Sample Purpose:* **REG**

Collection Date: 1 10 02

Collection Time: 1530

Start Depth: source / seep

End Depth: —

Sample Matrix: **WATER**

Sample Team: J. Alexander / J. Jenkins

QC Partners:

(TB) 011002-TB2 (ER) NA (FB) NA

ERPIMS Values:

Sacode:

Lot Control#:

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
LEAD	N	A	1	500	mL	HDPE

Comments:

Sketch Location:

pH	cond	turb	DO	temp	Eh (mV)
5.1	.022	3.6	4.57	13.6	375

Preserved Sample to Ph<2.

Logged BY / Date: 1 10 02 *Reviewed BY / Date:* 1-10-02

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 780567 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 138Q-050401-EMAX

Site: **Artillery and Motar Impact Areas South of B**

Location Code: **HR-138Q-SW/SD02**

Sample Number: **YE2002**

Sample Name: **HR-138Q-SW/SD02-SW-YE2002-REG**

Sampling Method: **GRAB**

Collection Date: 5/3/01

Collection Time: 1430

Start Depth: 0'

End Depth: 0'

Sample Team: Leah Yates

ERPIMS Values:

Sacode:

Lot Control#:

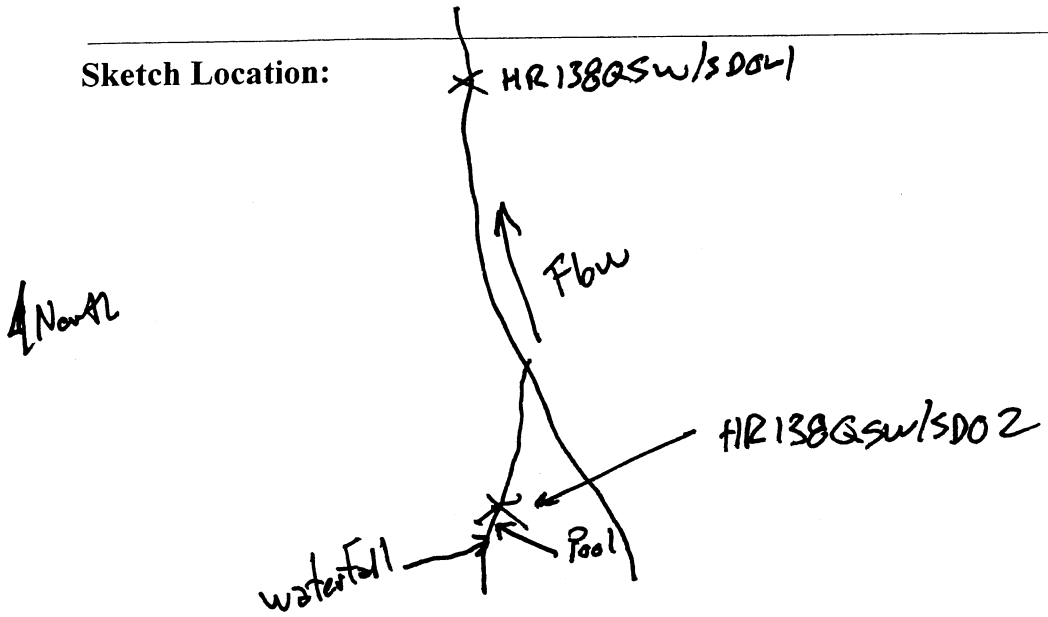
Sample Matrix:

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-W	N	A	1	1	L	HDPE
NITROAROMATIC	N	B	2	1	L	Amb. Glass
PERCHLORATE	N	C	1	500	mL	HDPE

Surface Water Parameters:	Eh (mV)	pH (SU)	Conductivity (mS/cm)	Turbidity (NTU)	DissOxygen (ppm)	Temperature (C)
	N/A	5.76	0.016	2	8.16	16.3

Comments: Metals preserved to pH<2

Sketch Location:



Logged BY / Date: 5/3/01

Reviewed BY / Date: 5-3-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 780567 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 138Q-050401-EMAX

Site: Artillery and Motar Impact Areas South of B

Location Code: HR-138Q-SW/SD03

Sample Number: YE2003

Sample Name: HR-138Q-SW/SD03-SW-YE2003-REG

Sampling Method: GRAB

Collection Date: 5/2/01

Collection Time: 1020

Start Depth: 0'

End Depth: 0'

Sample Team: Leish Yates

ERPIMS Values:

Sacode:

Lot Control#:

Sample Matrix:

Containers

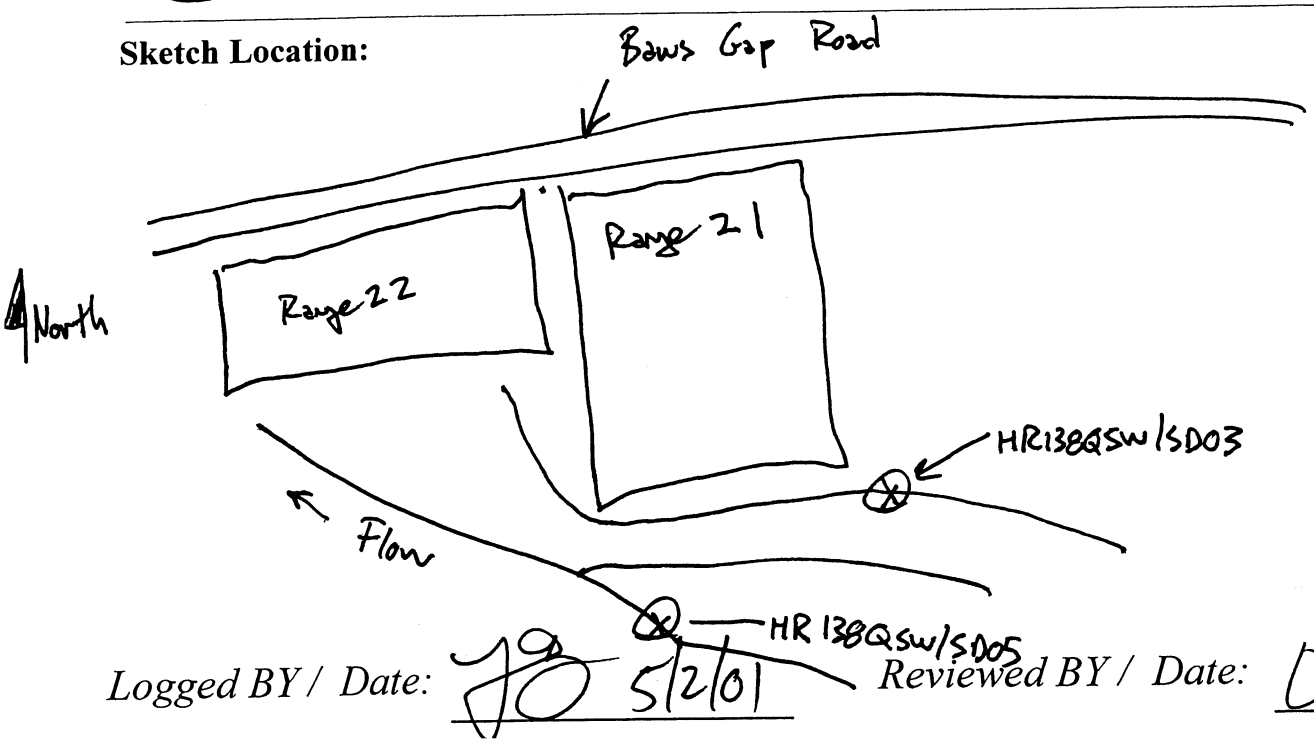
Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-W	N	A	1	1	L	HDPE
NITROAROMATIC	N	B	2	1	L	Amb. Glass
PERCHLORATE	N	C	1	500	mL	HDPE

	Eh (mV)	pH (SU)	Conductivity (mS/cm)	Turbidity (NTU)	DissOxygen (ppm)	Temperature (C)
Surface Water Parameters:	NA	5.74	0.017	2	8.07	16.6

Comments: NA

Metals preserved to pH<2

Sketch Location:



Logged BY / Date: 5/2/01

Reviewed BY / Date: 5-2-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 780567 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 138Q-042501-EMAX

Site: **Artillery and Motar Impact Areas South of B**

Location Code: **HR-138Q-SW/SD04**

Sample Number: **YE2004**

Sample Name: **HR-138Q-SW/SD04-SW-YE2004-REG**

Sampling Method: **GRAB**

Collection Date: 4/25/01

Collection Time: 0930

Start Depth: 0'

End Depth: 0'

Sample Team: Leigh Yates, Justin Fisher

ERPIMS Values:

Sacode:

Lot Control#:

Sample Matrix:

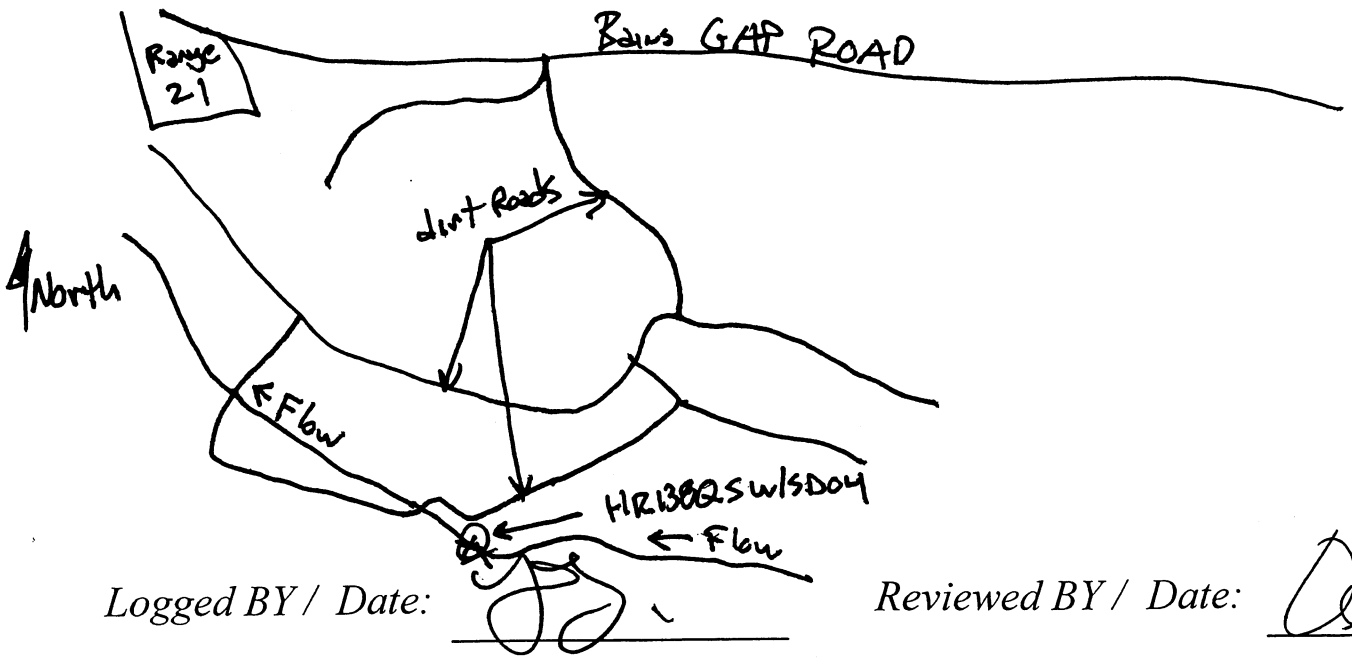
Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-W	N	A	1	1	L	HDPE
NITROAROMATIC	N	B	2	1	L	Amb. Glass
PERCHLORATE	N	C	1	500	mL	HDPE

Surface Water Parameters:	Eh (mV)	pH (SU)	Conductivity (mS/cm)	Turbidity (NTU)	DissOxygen (ppm)	Temperature (C)
	NA	5.01	0.026	0	7.48	13.6

Comments: NA

Sketch Location:



Logged BY / Date: [signature]

Reviewed BY / Date: [signature] 4-25-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 780567 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 138Q-042401-EMAX

Site: **Artillery and Motar Impact Areas South of B**

Location Code: **HR-138Q-SW/SD05**

Sample Number: **YE2005**

Sample Name: **HR-138Q-SW/SD05-SW-YE2005-REG**

Sampling Method: **GRAB**

Collection Date: 4/24/01

Collection Time: 1330

Start Depth: 0'

End Depth: 0'

Sample Team: J. Fisher, L. Yates

ERPIMS Values:

Sacode:

Lot Control#:

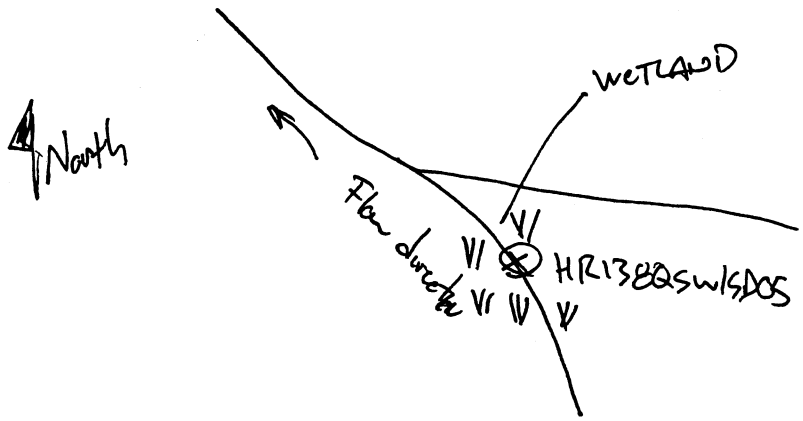
Sample Matrix:

Analytical Suite	Containers Flt	Frtn	Qty	Size	Units	Type
METALS-W	N	A	1	1	L	HDPE
NITROAROMATIC	N	B	2	1	L	Amb. Glass
PERCHLORATE	N	C	1	500	mL	HDPE

Surface Water Parameters:	Eh (mV)	pH (SU)	Conductivity (mS/cm)	Turbidity (NTU)	DissOxygen (ppm)	Temperature (C)
	NA	4.79	0.016	26	2.70	16.4

Comments: NA

Sketch Location:



Logged BY / Date: 4/24/01

Reviewed BY / Date: 4-24-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 780567 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 138Q-050401-EnAX

Site: **Artillery and Motar Impact Areas South of B**

Location Code: **HR-138Q-SW/SD02**

Sample Number: **YE1003**

Sample Name: **HR-138Q-SW/SD02-SD-YE1003-REG**

Sampling Method: **HA**

Collection Date: 5/3/01

Collection Time: 1430

Start Depth: 0'

End Depth: 0.5'

Sample Team: Leigh Yates

ERPIMS Values:

Sacode:

Lot Control#:

Sample Matrix:

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	8	oz	CWM
TOC	N	B	1	8	oz	CWM
GR. SIZE	N	C	1	8	oz	CWM

Comments: NA

Sketch Location: See sketch for sample # YE2002

Logged BY / Date: YG 5/3/01

Reviewed BY / Date: 5-3-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 780567 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 138Q-050401-EMAX

Site: **Artillery and Motar Impact Areas South of B**

Location Code: **HR-138Q-SW/SD03**

Sample Number: **YE1004**

Sample Name: **HR-138Q-SW/SD03-SD-YE1004-REG**

Sampling Method: **HA**

Collection Date: 5/2/01

Collection Time: 1020

Start Depth: 0'

End Depth: 0.5'

Sample Team: Leigh Yates

ERPIMS Values:

Sacode:

Lot Control#:

Sample Matrix:

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	8	oz	CWM
TOC	N	B	1	8	oz	CWM
GR. SIZE	N	C	1	8	oz	CWM

Comments: NA

Sketch Location: See sketch for sample # YE2003

Logged BY / Date: JB 5/2/01

Reviewed BY / Date: DoKae 5-2-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 780567 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 138Q-042501-EMAN

Site: **Artillery and Motar Impact Areas South of B**

Location Code: **HR-138Q-SW/SD04**

Sample Number: **YE1005**

Sample Name: **HR-138Q-SW/SD04-SD-YE1005-REG**

Sampling Method: **HA**

Collection Date: 4/25/01

Collection Time: 0930

Start Depth: 0'

End Depth: 0.5'

Sample Team: Leigh Yates, Justin Fisher

ERPIMS Values:

Sacode:

Lot Control#:

Sample Matrix:

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	8	oz	CWM
TOC	N	B	1	8	oz	CWM
GR. SIZE	N	C	1	8	oz	CWM

Comments: NA

Sketch Location: See sketch for sample # YE2004.

Logged BY / Date: 4/25/01

Reviewed BY / Date: 4-25-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 780567 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 138Q-042401-EMAX

Site: **Artillery and Motar Impact Areas South of B**

Location Code: **HR-138Q-SW/SD05**

Sample Number: **YE1006**

Sample Name: **HR-138Q-SW/SD05-SD-YE1006-REG**

Sampling Method: **HA**

Collection Date: 4/24/01

Collection Time: 1330

Start Depth: 0'

End Depth: 0-5'

Sample Team: L. Yates / J. Fisher

ERPIMS Values:

Sacode:

Lot Control#:

Sample Matrix:

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	8	oz	CWM
TOC	N	B	1	8	oz	CWM
GR. SIZE	N	C	1	8	oz	CWM

Comments: NA

Sketch Location:

See sketch for sample # YE2005

Logged BY / Date: 4/24/01

Reviewed BY / Date: 4/24/01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 139Q-D20901-EMAX

Site: Artillery and Motar Impact Areas South of B

Location Code: HR-139Q-GP01

Sample Number: YG0001

Sample Name: HR-139Q-GP01-SS-YG0001-REG

Sampling Method: ~~DP~~ HA

Collection Date: 2/8/01

Collection Time: 1004

Start Depth: 0'

End Depth: 1

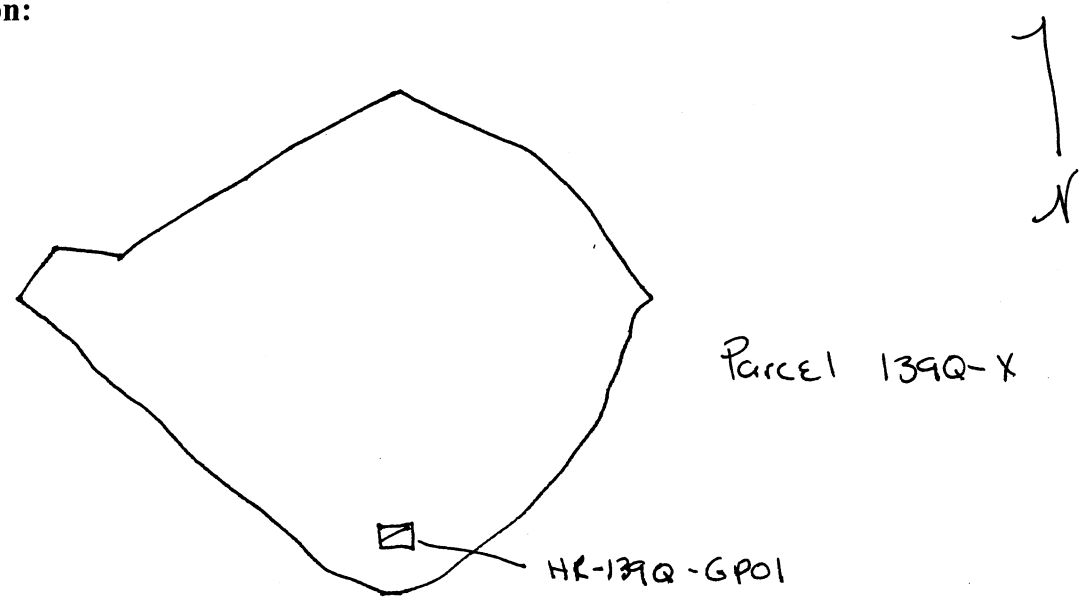
Sample Team: N. Badon, K. Hunter

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID = 0.0 ppm

Sketch Location:



Logged BY / Date: K. Hunter 2/8/01

Reviewed BY / Date: [signature] 2-8-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 139Q-D20901-EMAX

Site: **Artillery and Motar Impact Areas South of B**

Location Code: **HR-139Q-GP01**

Sample Number: **YG0002**

Sample Name: **HR-139Q-GP01-DS-YG0002-REG**

Sampling Method: **DP**

Collection Date: 2/8/01

Collection Time: 1020

Start Depth: 10'

End Depth: 11'

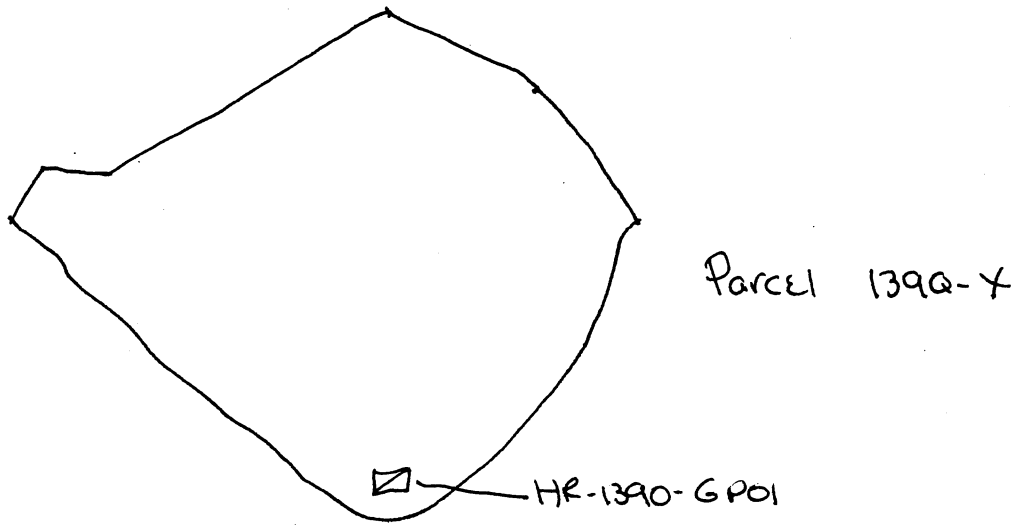
Sample Team: N. Badon, K. Hunter

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID = 0.0 ppm

Sketch Location:



Logged BY / Date: K. Hunter 2/8/01

Reviewed BY / Date: DeKa 2-8-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 139Q-020701-EMAX

Site: **Artillery and Motar Impact Areas South of B**

Location Code: **HR-139Q-GP02**

Sample Number: **YG0003**

Sample Name: **HR-139Q-GP02-SS-YG0003-REG**

Sampling Method: ~~DP~~ HA

Collection Date: 2/7/01

Collection Time: 1405

Start Depth: 0'

End Depth: 1'

Sample Team: N. Badon

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID = 0.0ppm

Sketch Location:

Logged BY / Date: N Badon 2/7/01

Reviewed BY / Date: DRK 2-7-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 139Q-020701-EMAX

Site: Artillery and Motar Impact Areas South of B

Location Code: HR-139Q-GP02

Sample Number: YG0004

Sample Name: HR-139Q-GP02-DS-YG0004-REG

Sampling Method: DP

Collection Date: 2/7/01

Collection Time: 1422

Start Depth: 9'

End Depth: 11

Sample Team: N. Badon

Analytical Suite	Containers Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID = 0.0ppm

Sketch Location:

Logged BY / Date: N Badon 2/7/01

Reviewed BY / Date: O.K. Ae 2-7-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 139Q-020701-EMAX

Site: Artillery and Motar Impact Areas South of B

Location Code: HR-139Q-GP02

Sample Number: YG0005

Sample Name: HR-139Q-GP02-DS-YG0005-FD

Sampling Method: DP

Collection Date: 2/7/01

Collection Time: 1422

Start Depth: 9'

End Depth: 11'

Sample Team: N. Badon

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID= 0.0 ppm

Sketch Location:

Logged BY / Date: N Badon 2/7/01 *Reviewed BY / Date:* [illegible] 2-7-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 780567 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 139Q-042501-EMAX

Site: Artillery and Motar Impact Areas South of B

Location Code: HR-139Q-SW/SD01

Sample Number: YG2001

Sample Name: HR-139Q-SW/SD01-SW-YG2001-REG

Sampling Method: GRAB

Collection Date: 4/25/01

Collection Time: 1430

Start Depth: 0'

End Depth: 0'

Sample Team: Leigh Yates, Justin Fisher

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-W	N	A	1	1	L	HDPE
NITROAROMATIC	N	B	2	1	L	Amb. Glass
PERCHLORATE	N	C	1	500	mL	HDPE

ERPIMS Values:

Sacode:

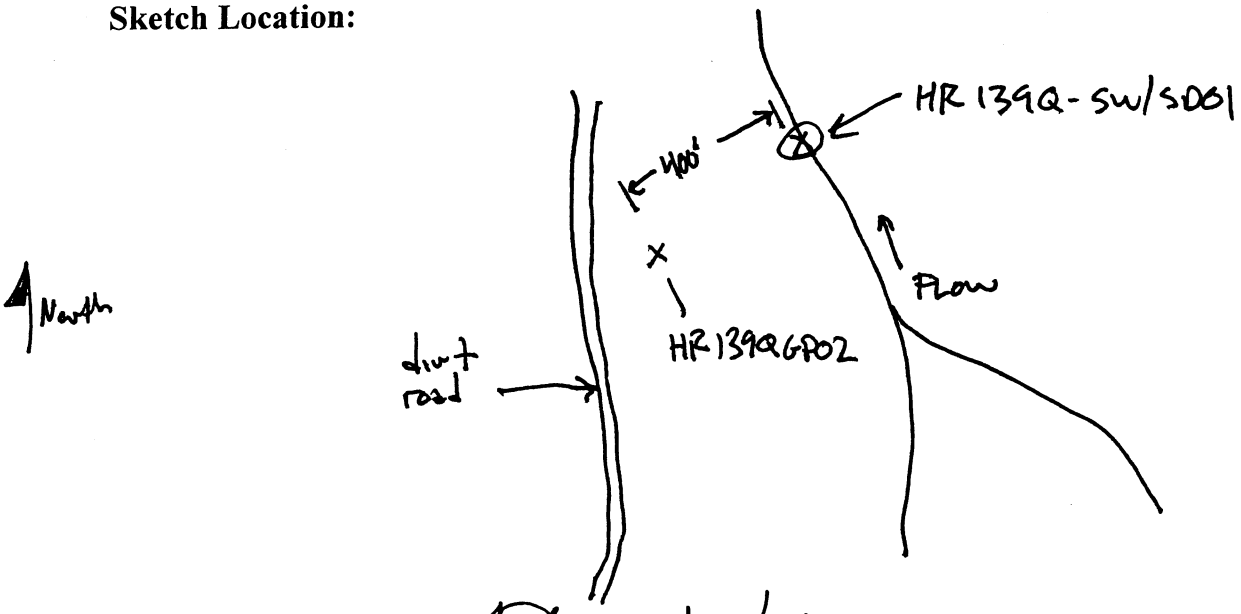
Lot Control#:

Sample Matrix:

	Eh (mV)	pH (SU)	Conductivity (mS/cm)	Turbidity (NTU)	DissOxygen (ppm)	Temperature (C)
Surface Water Parameters:	NA	5.51	0.018	0	8.85	14.7

Comments: NA

Sketch Location:



Logged BY / Date: 4/25/01 *Reviewed BY / Date:* 4-25-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 780567 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 139Q-042501-EMAX

Site: **Artillery and Motar Impact Areas South of B**

Location Code: **HR-139Q-SW/SD01**

Sample Number: **YG1001**

Sample Name: **HR-139Q-SW/SD01-SD-YG1001-REG**

Sampling Method: **HA**

Collection Date: 4/25/01

Collection Time: 1430

Start Depth: 0'

End Depth: 0.5'

Sample Team: Leigh Yates, Justin Rushe

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	8	oz	CWM
TOC	N	B	1	8	oz	CWM
GR. SIZE	N	C	1	8	oz	CWM

ERPIMS Values:

Sacode:

Lot Control#:

Sample Matrix:

Comments: NA

Sketch Location: See sketch for sample # YG2001

Logged BY / Date: 4/25/01

Reviewed BY / Date: 4-25-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 140Q-020701-EMAX

Site: Artillery and Motar Impact Areas South of B

Location Code: HR-140Q-GP01

Sample Number: YH0001

Sample Name: HR-140Q-GP01-SS-YH0001-REG

Sampling Method: ~~DP~~ HA

Collection Date: 2/7/01

Collection Time: 1455

Start Depth: 0'

End Depth: 1'

Sample Team: N. Badon

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID - 0.0 ppm

Sketch Location:

Logged BY / Date: N. Badon 2/7/01

Reviewed BY / Date: DeKa 2-4-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 140Q-020701-EMAX

Site: Artillery and Motar Impact Areas South of B

Location Code: HR-140Q-GP01

Sample Number: YH0002

Sample Name: HR-140Q-GP01-DS-YH0002-REG

Sampling Method: DP

Collection Date: 2/7/01

Collection Time: 1507

Start Depth: 7'

End Depth: 8'

Sample Team: N. Badon

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID=0.0 ppm

Sketch Location:

Logged BY / Date: N Badon 2/7/01

Reviewed BY / Date: DRK 2-4-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 140Q-020801-EMAX

Site: Artillery and Motar Impact Areas South of B

Location Code: HR-140Q-GP02

Sample Number: YH0003

Sample Name: HR-140Q-GP02-SS-YH0003-REG

Sampling Method: ~~DP~~ HA

Collection Date: 2/8/01

Collection Time: 1103

Start Depth: 0'

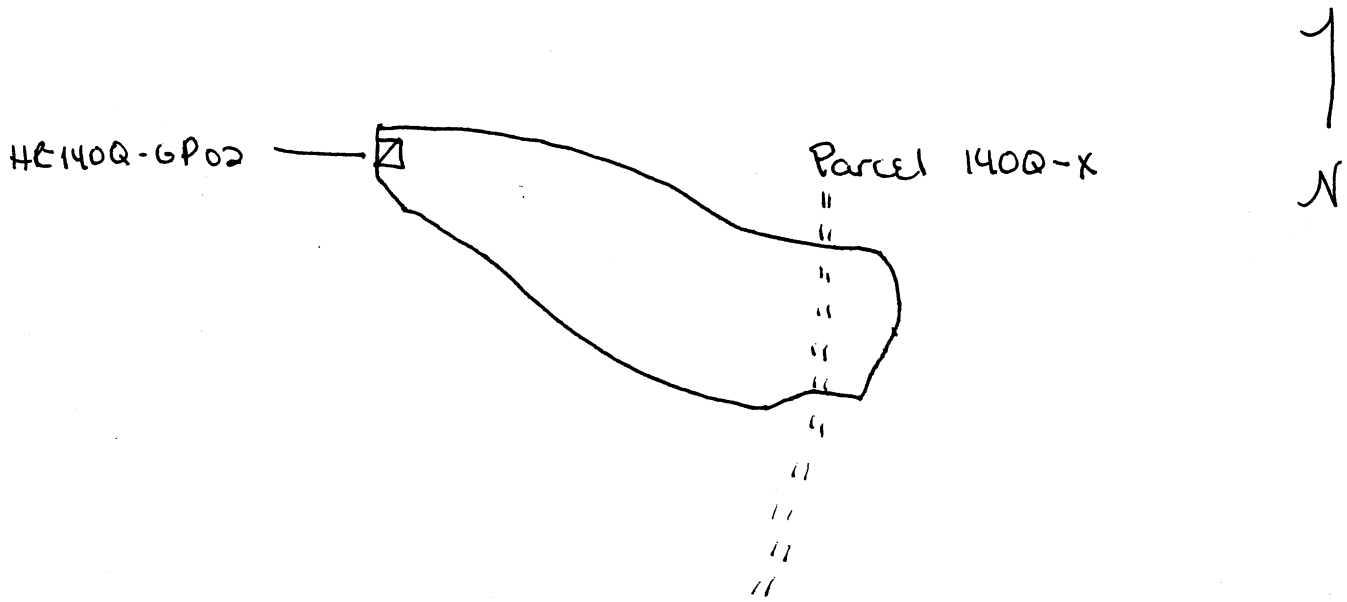
End Depth: 1'

Sample Team: N. Badon, K. Hunter

Analytical Suite	Flt	Frtn	Containers Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID = 0.0 ppm

Sketch Location:



Logged BY / Date: K. Hunter 2/8/01

Reviewed BY / Date: D.R.C. 2-8-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 140Q-020801-EMAX

Site: Artillery and Motar Impact Areas South of B

Location Code: HR-140Q-GP02

Sample Number: YH0004

Sample Name: HR-140Q-GP02-DS-YH0004-REG

Sampling Method: ~~DP~~ HA

Collection Date: 2/8/01

Collection Time: 1116

Start Depth: 1'

End Depth: 2'

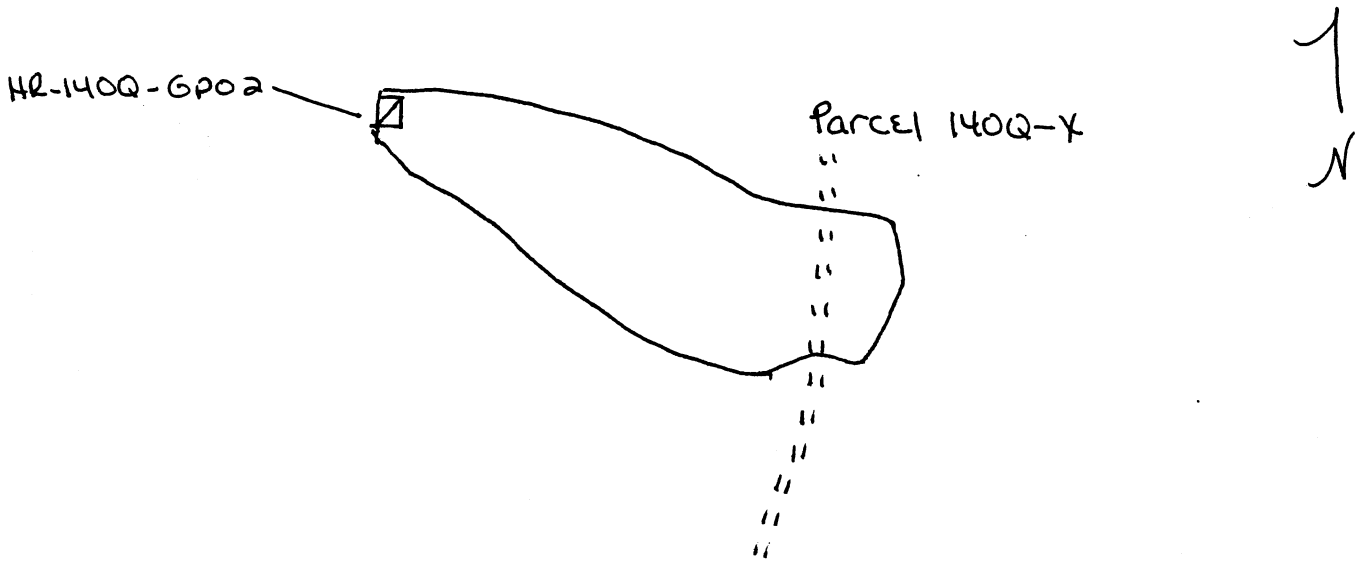
Sample Team: N. Badon, K. Hunter

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID = 0.0 ppm

Sketch Location:



Logged BY / Date: K. Hunter 2/8/01

Reviewed BY / Date: D.K.O. 2-8-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 14Q-020801-EMAX

Site: Artillery and Motar Impact Areas South of B

Location Code: HR-140Q-GP02

Sample Number: YH0005

Sample Name: HR-140Q-GP02-DS-YH0005-FD

Sampling Method: ~~DP~~ HA

Collection Date: 2/8/01

Collection Time: 1116

Start Depth: 1'

End Depth: 2'

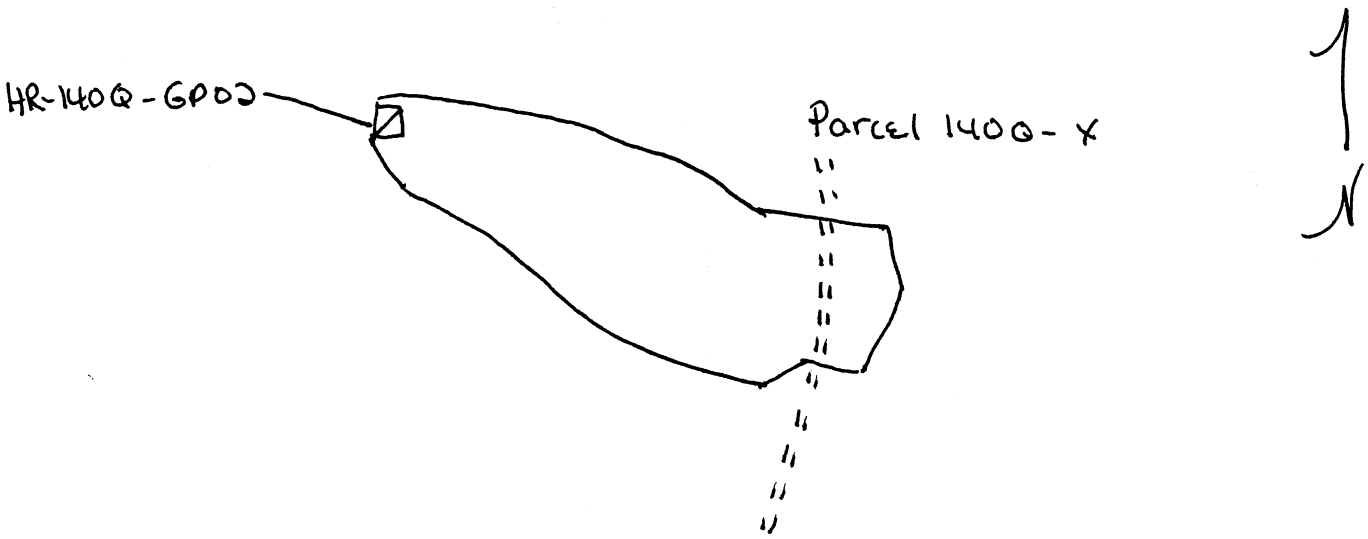
Sample Team: N Bedon, R. Hunter

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID = 0.0 ppm

Sketch Location:



Logged BY / Date: [signature] 2/8/01

Reviewed BY / Date: [signature] 2-8-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 780567 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 140Q-042501-ESMAK

Site: **Artillery and Motar Impact Areas South of B**

Location Code: **HR-140Q-SW/SD01**

Sample Number: **YH2001**

Sample Name: **HR-140Q-SW/SD01-SW-YH2001-REG**

Sampling Method: **GRAB**

Collection Date: 4/25/01

Collection Time: 1530

Start Depth: 0'

End Depth: 0'

Sample Team: Leah Yates, Justin Fuhr

ERPIMS Values:

Sacode:

Lot Control#:

Sample Matrix:

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-W	N	A	1	1	L	HDPE
NITROAROMATIC	N	B	2	1	L	Amb. Glass
PERCHLORATE	N	C	1	500	mL	HDPE

	Eh (mV)	pH (SU)	Conductivity (mS/cm)	Turbidity (NTU)	DissOxygen (ppm)	Temperature (C)
Surface Water Parameters:	NA	4.76	0.017	4	6.79	15.6

Comments: NA

Sketch Location:

Logged BY / Date: 4/25/01

Reviewed BY / Date: 4-25-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 780567 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 140Q-042501-EMAC

Site: **Artillery and Motar Impact Areas South of B**

Location Code: **HR-140Q-SW/SD01**

Sample Number: **YH1001**

Sample Name: **HR-140Q-SW/SD01-SD-YH1001-REG**

Sampling Method: **HA**

Collection Date: 4/25/01

Collection Time: 1530

Start Depth: 0'

End Depth: 0.5'

Sample Team: Leigh Yates, Justin Fisher

ERPIMS Values:

Sacode:

Lot Control#:

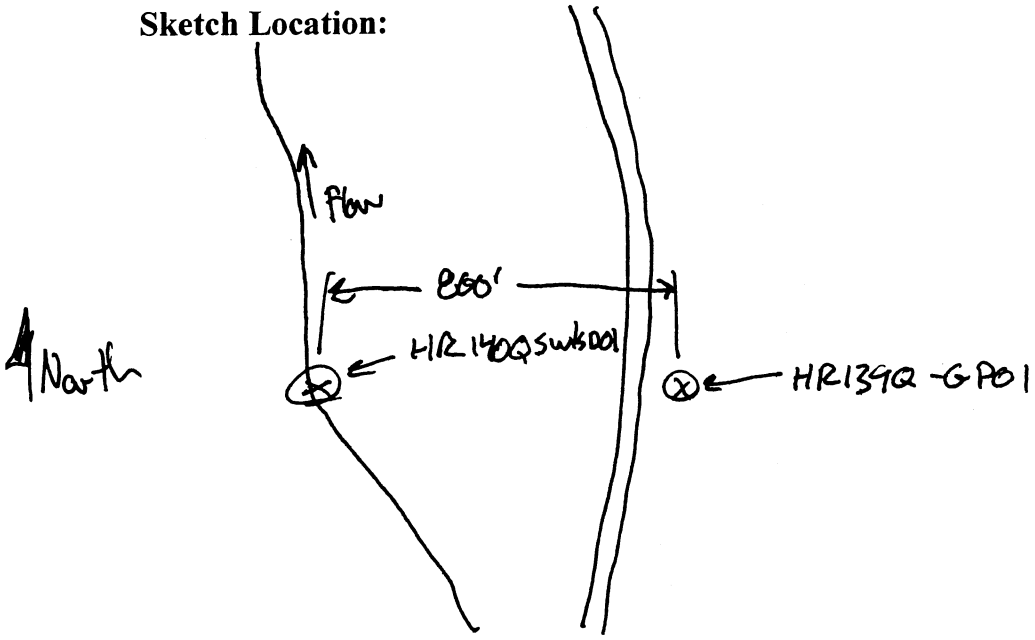
Sample Matrix:

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	8	oz	CWM
TOC	N	B	1	8	oz	CWM
GR. SIZE	N	C	1	8	oz	CWM

Comments: NA

Sketch Location:



Logged BY / Date: 4/25/01

Reviewed BY / Date: 4-25-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 780567 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 141Q-042401-EMAX

Site: **Artillery and Motar Impact Areas South of B**

Location Code: **HR-141Q-DEP01**

Sample Number: **YJ0009**

Sample Name: **HR-141Q-DEP01-DEP-YJ0009-REG**

Sampling Method: **HA**

Collection Date: 4/24/01

Collection Time: 1535

Start Depth: 0'

End Depth: 0-5'

Sample Team: Leigh Yates, Justin Fisher

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	8	oz	CWM

ERPIMS Values:

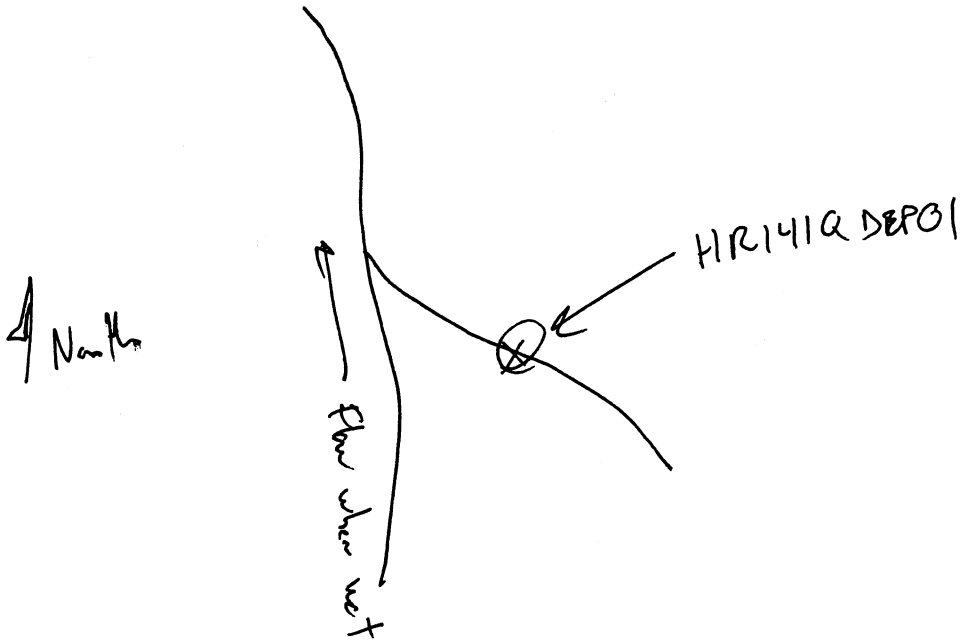
Sacode:

Lot Control#:

Sample Matrix:

Comments: Sample collected at location HR141Q-SW/SD03

Sketch Location:



Logged BY / Date: 4/24/01

Reviewed BY / Date: 4-24-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 780567 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 141Q-050301-EMAX

Site: Artillery and Motar Impact Areas South of B

Location Code: HR-141Q-DEP02

Sample Number: YJ0010

Sample Name: HR-141Q-DEP02-DEP-YJ0010-REG

Sampling Method: HA

Collection Date: 5/3/01

Collection Time: 0930

Start Depth: 0'

End Depth: 0.5'

Sample Team: Leigh Yates

ERPIMS Values:

Sacode:

Lot Control#:

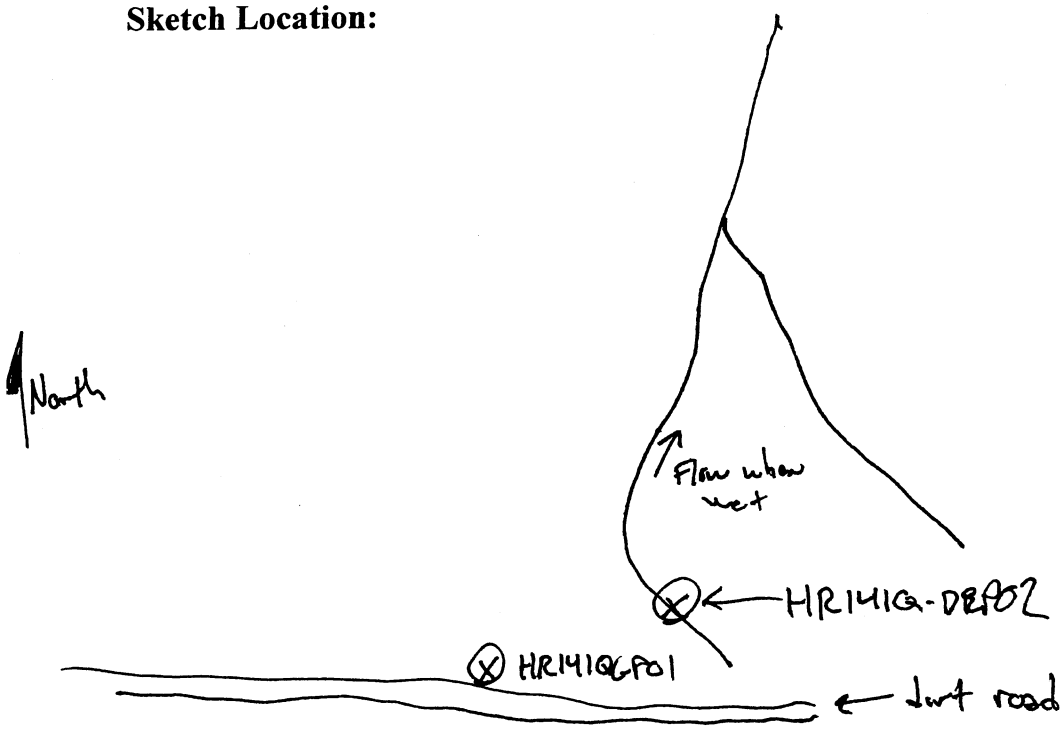
Sample Matrix:

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: LJY ~~NA~~ Sample collected at location HR141QSW1SD01

Sketch Location:



Logged BY / Date: 5/3/01

Reviewed BY / Date: 5-3-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 141Q-020701-EMAX

Site: Artillery and Motar Impact Areas South of B

Location Code: HR-141Q-GP01

Sample Number: YJ0001

Sample Name: HR-141Q-GP01-SS-YJ0001-REG

Sampling Method: ~~DP~~ HA

Collection Date: 2/7/01

Collection Time: ~~1555~~ 1535

Start Depth: 0'

End Depth: 1'

Sample Team: N. Badon

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID = 0.0 ppm

Sketch Location:

Logged BY / Date: N. Badon 2/7/01

Reviewed BY / Date: [illegible] 2-7-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 141Q-020701-EMAX

Site: **Artillery and Motar Impact Areas South of B**

Location Code: **HR-141Q-GP01**

Sample Number: **YJ0002**

Sample Name: **HR-141Q-GP01-DS-YJ0002-REG**

Sampling Method: **DP**

Collection Date: 2/7/01

Collection Time: 1546

Start Depth: 4~~0~~' 5'

End Depth: 6'

Sample Team: N. Badon

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID= 0.0 ppm

Sketch Location:

Logged BY / Date: N. Badon 2/7/01

Reviewed BY / Date: D.K.a 2-7-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 141Q-041101-EMAX

Site: Artillery and Motar Impact Areas South of B

Location Code: HR-141Q-GP02

Sample Number: YJ0003

Sample Name: HR-141Q-GP02-SS-YJ0003-REG

Sampling Method: ~~DP~~ HA

Collection Date: 4/11/01

Collection Time: 1210

Start Depth: 0'

End Depth: 1'

Sample Team: L. Oftane

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID=0.0

* note: samples taken w/ hand auger

Sketch Location:

See YJ0004

Logged BY / Date: LFO 4/11/01

Reviewed BY / Date: DKOe 4-11-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 141Q-041101-EMAX

Site: Artillery and Motar Impact Areas South of B

Location Code: HR-141Q-GP02

Sample Number: YJ0004

Sample Name: HR-141Q-GP02-DS-YJ0004-REG

Sampling Method: ~~DP~~ HA (W)

Collection Date: 4/11/01

Collection Time: 1220

Start Depth: 3'

End Depth: 4'

Sample Team: L. O'Hare

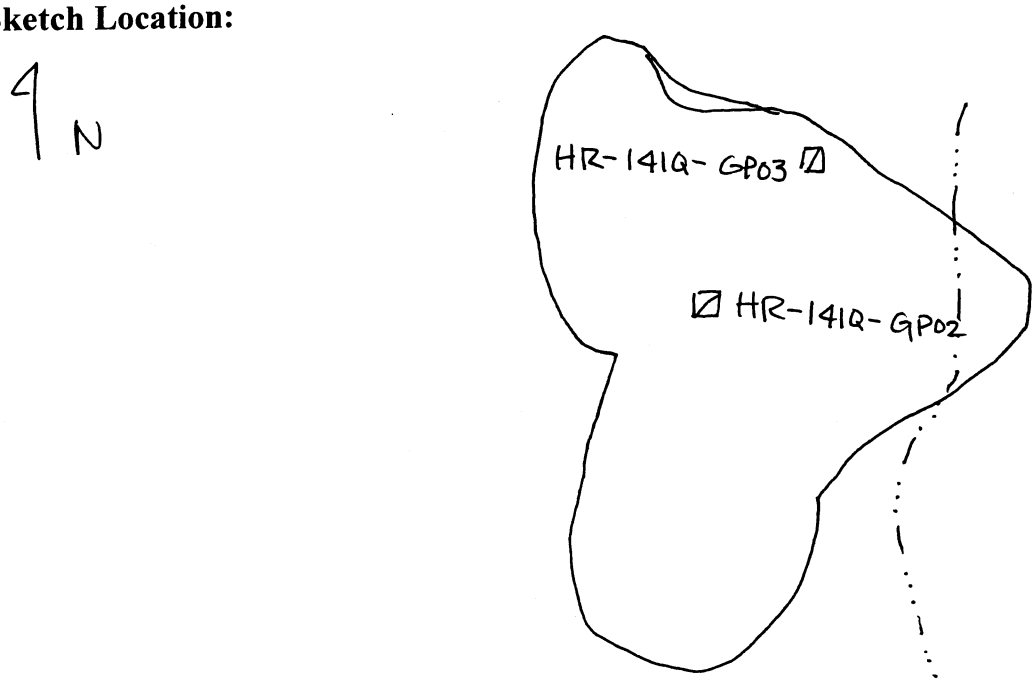
Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID = 0.0

hand auger refusal @ 4' bgs

Sketch Location:



Logged BY / Date: LEO 4/11/01

Reviewed BY / Date: DeKae 4-11-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 141Q-020901-EMAX

Site: **Artillery and Motar Impact Areas South of B**

Location Code: **HR-141Q-GP03**

Sample Number: **YJ0005**

Sample Name: **HR-141Q-GP03-SS-YJ0005-REG**

Sampling Method: **DP**

Collection Date: 2/9/01

Collection Time: 0827

Start Depth: 0'

End Depth: 1'

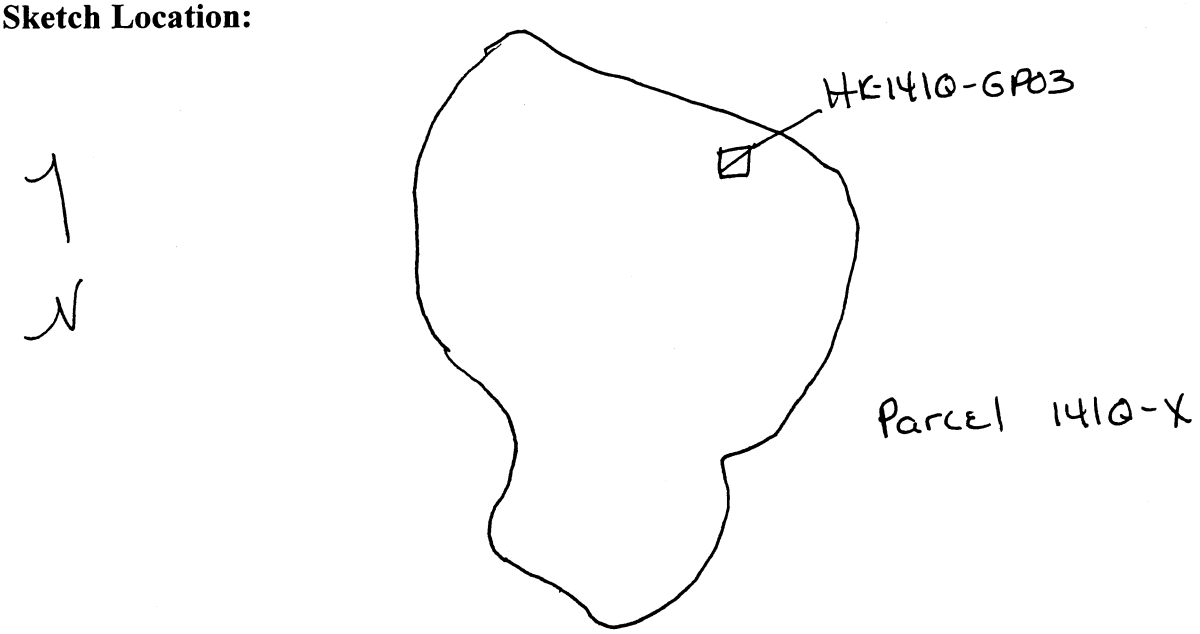
Sample Team: K. Hunter

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments:

Sketch Location:



Logged BY / Date: L. Lester 2/9/01

Reviewed BY / Date: DKC 2-9-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 141Q-020901-EMAX

Site: Artillery and Motar Impact Areas South of B

Location Code: HR-141Q-GP03

Sample Number: YJ0006

Sample Name: HR-141Q-GP03-DS-YJ0006-REG

Sampling Method: DP

Collection Date: 2/8/01 (KH 2/9/01)

Collection Time: 0847

Start Depth: 2'

End Depth: 4'

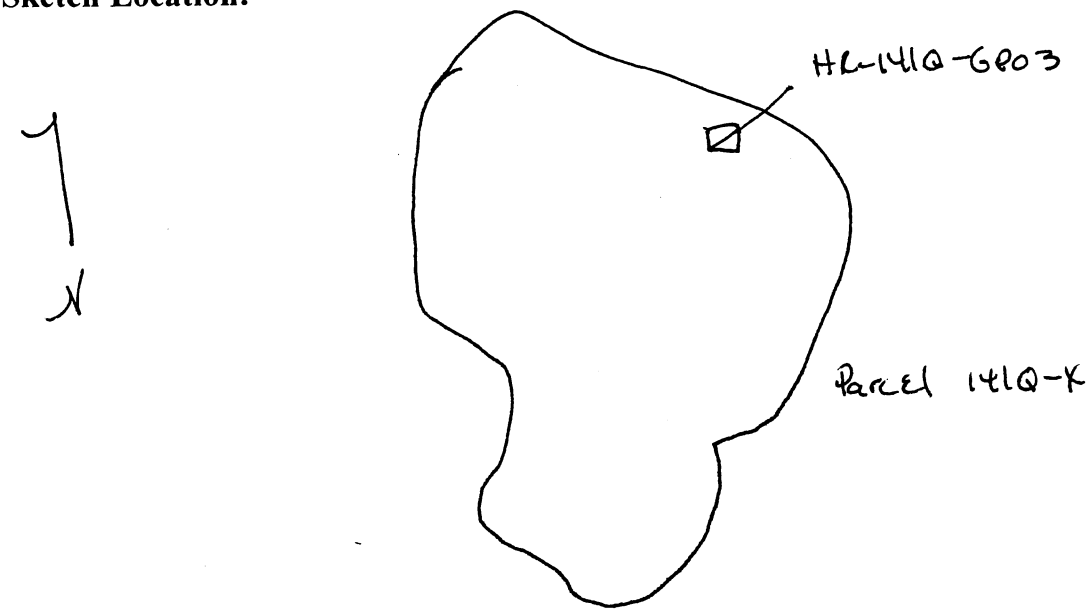
Sample Team: ~~K. Badon~~ (KH 2/9/01) K. Hunter

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: ~~PID~~ (KH 2/9/01) ~~ppm~~ N/A

Sketch Location:



Logged BY / Date: S. Hunter 2/8/01 (KH 2/9/01)

Reviewed BY / Date: D. K. C. 2-9-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 141Q-020901-EMAX

Site: **Artillery and Motar Impact Areas South of B**

Location Code: **HR-141Q-GP04**

Sample Number: **YJ0007**

Sample Name: **HR-141Q-GP04-SS-YJ0007-REG**

Sampling Method: ~~DP~~ HA

Collection Date: 218101

Collection Time: 1530

Start Depth: 0'

End Depth: 1'

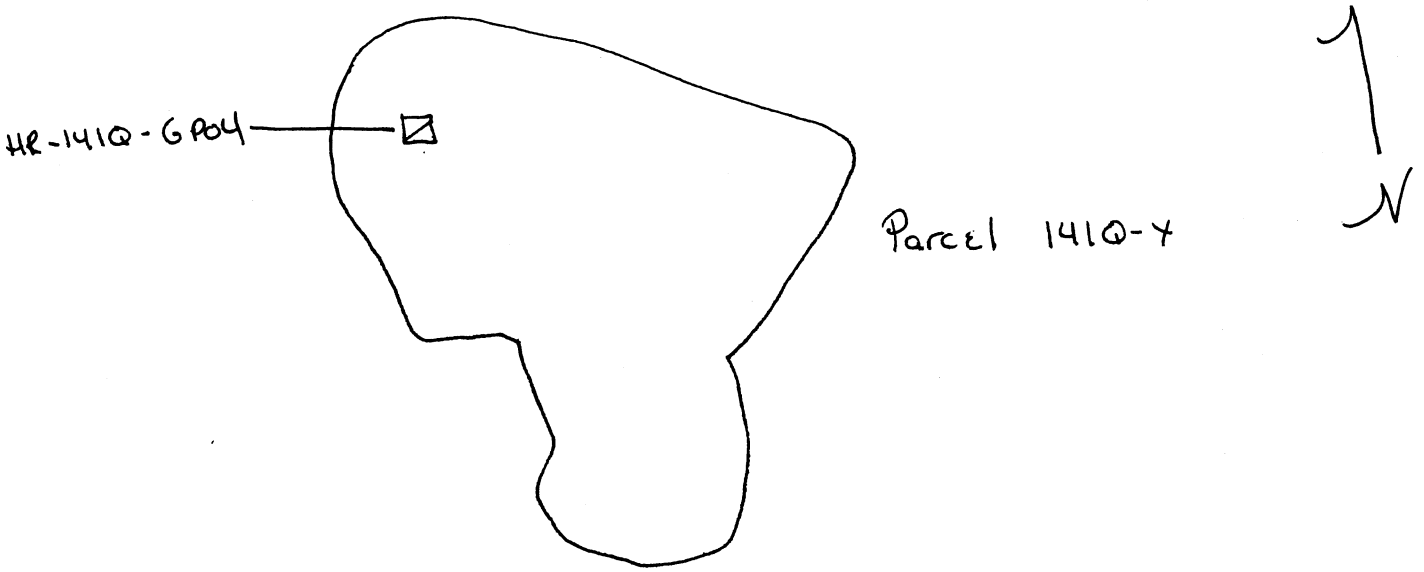
Sample Team: N. Badon, K. Hunter

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID = 0.0 ppm

Sketch Location:



Logged BY / Date: L. Hunter 218101

Reviewed BY / Date: D.L.C. 2-8-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 141Q-020901-EMAX

Site: Artillery and Motar Impact Areas South of B

Location Code: HR-141Q-GP04

Sample Number: YJ0008

Sample Name: HR-141Q-GP04-DS-YJ0008-REG

Sampling Method: DP

Collection Date: 218101

Collection Time: 1538

Start Depth: 2'

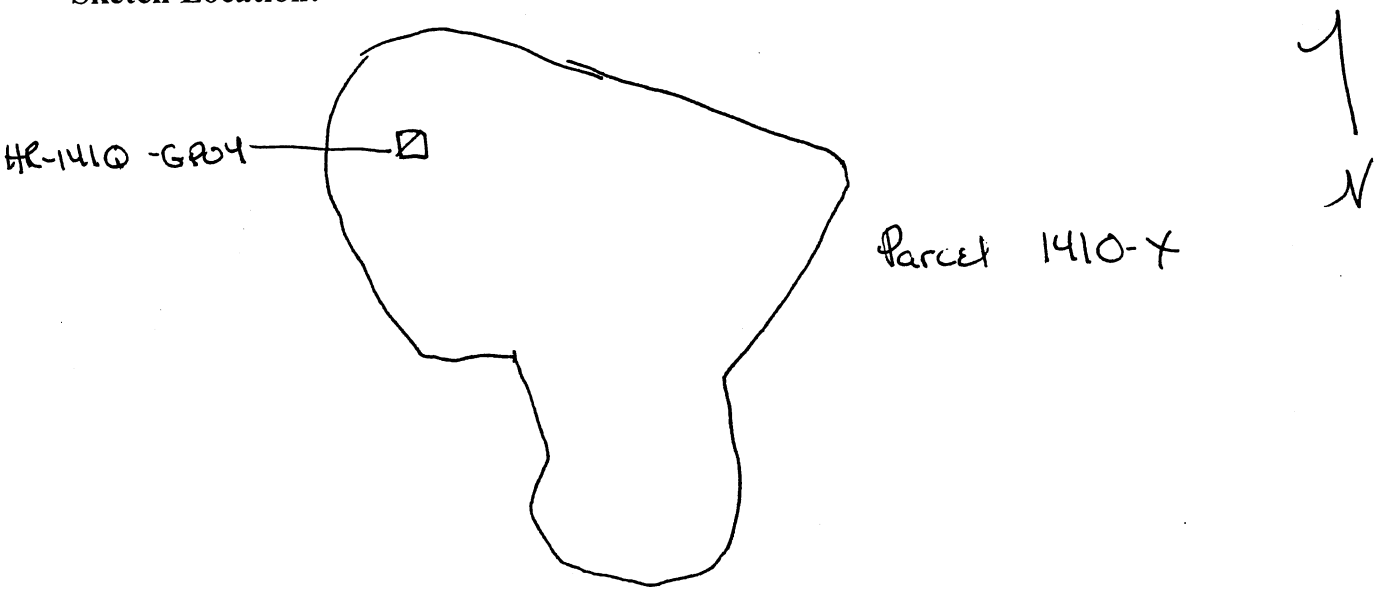
End Depth: 4'

Sample Team: N. Badon, K. Hunter

Analytical Suite	Containers Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID= ppm

Sketch Location:



Logged BY / Date: K. Hunter 218101

Reviewed BY / Date: DeKa 2-8-9

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 780567 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 141Q-050301-EMAX

Site: Artillery and Motar Impact Areas South of B

Location Code: HR-141Q-SW/SD02

Sample Number: YJ2002

Sample Name: HR-141Q-SW/SD02-SW-YJ2002-REG

Sampling Method: GRAB

Collection Date: 5/3/01

Collection Time: 1015

Start Depth: 0'

End Depth: 0'

Sample Team: Leish Yates

ERPIMS Values:

Sacode:

Lot Control#:

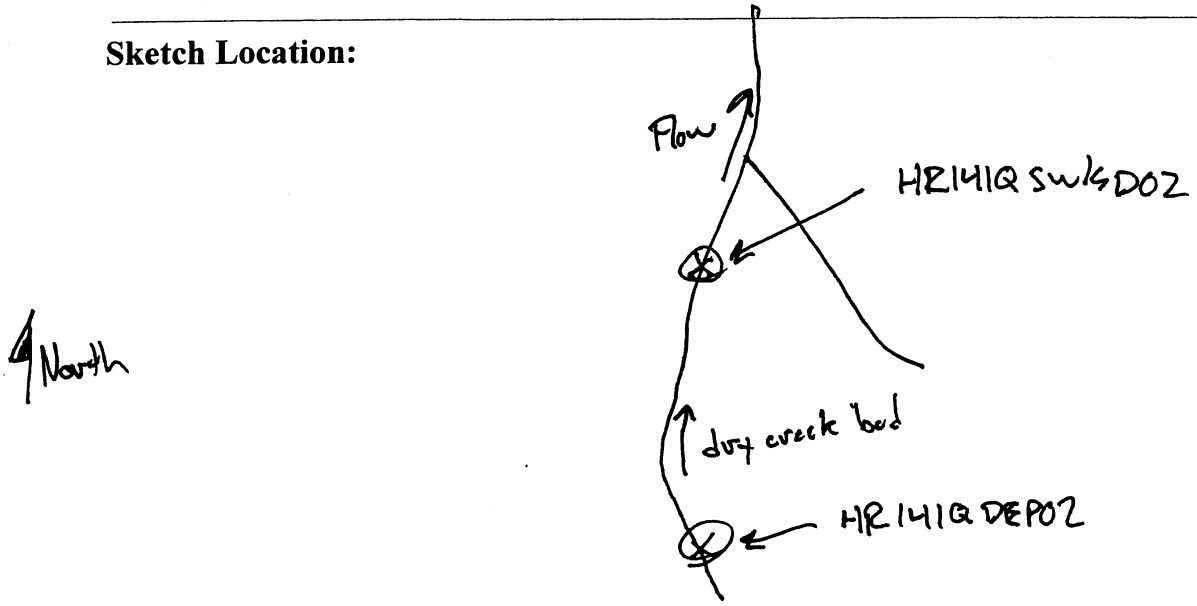
Sample Matrix:

Analytical Suite	Containers Flt	Frtn	Qty	Size	Units	Type
METALS-W	N	A	1	1	L	HDPE
NITROAROMATIC	N	B	2	1	L	Amb. Glass
PERCHLORATE	N	C	1	500	mL	HDPE

	Eh (mV)	pH (SU)	Conductivity (mS/cm)	Turbidity (NTU)	DissOxygen (ppm)	Temperature (C)
Surface Water Parameters:	NA	5.50	0.029	1	7.30	15.7

Comments: Sample for metals preserved to pH <2.

Sketch Location:



Logged BY / Date: [signature] 5/3/01

Reviewed BY / Date: [signature] 5-3-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 780567 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 141Q-050301-EMAX

Site: **Artillery and Motar Impact Areas South of B**

Location Code: **HR-141Q-SW/SD02**

Sample Number: **YJ1002**

Sample Name: **HR-141Q-SW/SD02-SD-YJ1002-REG**

Sampling Method: **HA**

Collection Date: 5/3/01

Collection Time: 1015

Start Depth: 0'

End Depth: 0.5'

Sample Team: Leah Yates

ERPIMS Values:

Sacode:

Lot Control#:

Sample Matrix:

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	8	oz	CWM
TOC	N	B	1	8	oz	CWM
GR. SIZE	N	C	1	8	oz	CWM

Comments: NA

Sketch Location: See sketch for sample # YJ2002

Logged BY / Date: 5/3/01

Reviewed BY / Date: 5-3-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 780567 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 142Q-042401-EMAX

Site: **Artillery and Motar Impact Areas South of B**

Location Code: **HR-142Q-DEP01**

Sample Number: **YL0005**

Sample Name: **HR-142Q-DEP01-DEP-YL0005-REG**

Sampling Method: **HA**

Collection Date: 4/24/01

Collection Time: 1445

Start Depth: 0'

End Depth: 0.5'

Sample Team: Leigh Yates, Justin Fisher

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	8	oz	CWM

ERPIMS Values:

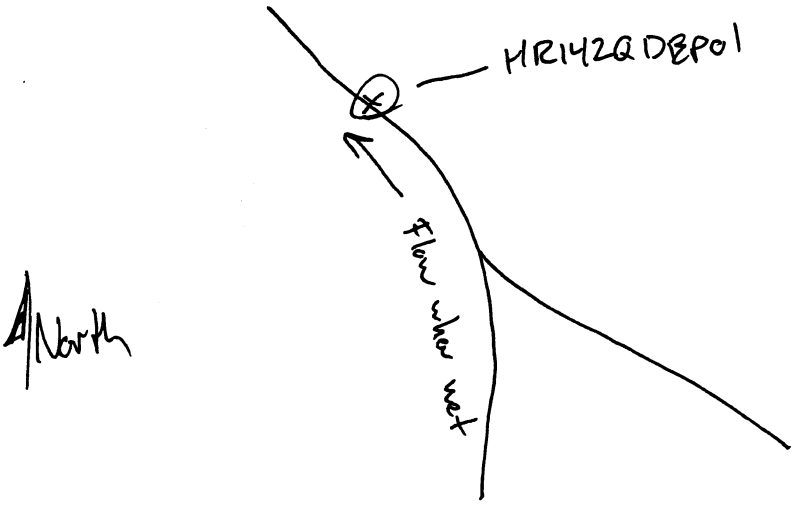
Sacode:

Lot Control#:

Sample Matrix:

Comments: Formerly HR142QSW/SD01

Sketch Location:



Logged BY / Date: 4/24/01

Reviewed BY / Date: 4-24-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 780567 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number:

Site: **Artillery and Motar Impact Areas South of B**

Location Code: **HR-142Q-DEP02**

Sample Number: **YL0006**

Sample Name: **HR-142Q-DEP02-DEP-YL0006-REG**

Sampling Method: **HA**

Collection Date: 4/24/01

Collection Time: ~~1600~~ 1620

Start Depth: 0'

End Depth: 0.5'

Sample Team: L. Yates, J. Fisher

ERPIMS Values:

Sacode:

Lot Control#:

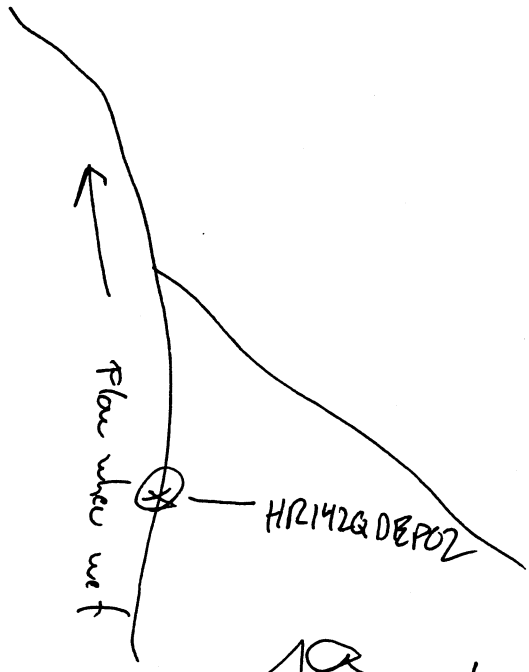
Sample Matrix:

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N		1	8	oz	CWM

Comments: Collected at location HR142Q-SW15D02

Sketch Location:



Logged BY / Date: 4/24/01 *Reviewed BY / Date:* 4-24-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 142Q-020801-EMAX

Site: Artillery and Motar Impact Areas South of B

Location Code: HR-142Q-GP01

Sample Number: YL0001

Sample Name: HR-142Q-GP01-SS-YL0001-REG

Sampling Method: ~~DP~~ HA

Collection Date: 2/8/01

Collection Time: 1204

Start Depth: 0'

End Depth: 1'

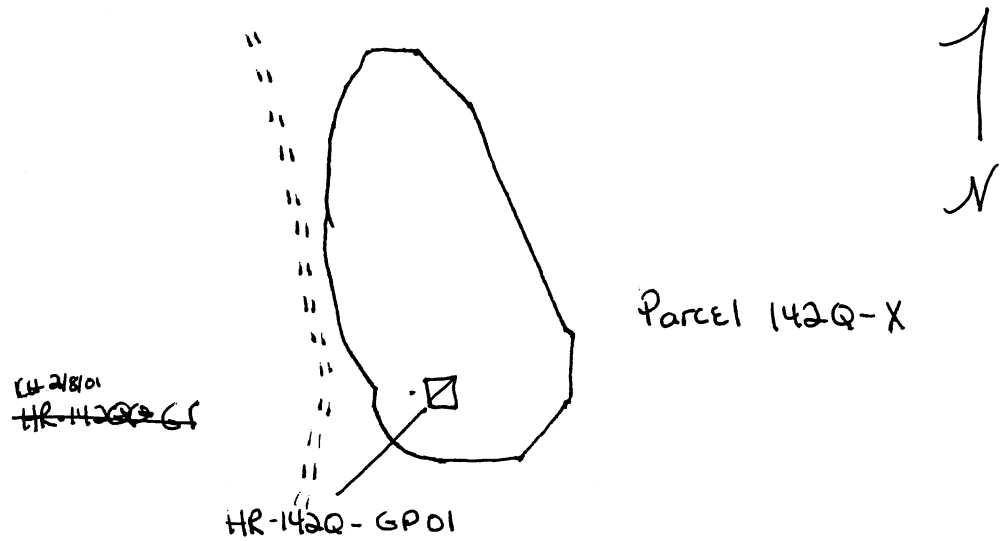
Sample Team: K. Badon, K. Hunter

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID = 00 ppm

Sketch Location:



Logged BY / Date: K. Hunter 2/8/01

Reviewed BY / Date: [signature] 2-8-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 142Q-020801-EMA

Site: Artillery and Motar Impact Areas South of B

Location Code: HR-142Q-GP01

Sample Number: YL0002

Sample Name: HR-142Q-GP01-DS-YL0002-REG

Sampling Method: DP

Collection Date: 2/8/01

Collection Time: 1209

Start Depth: 1'

End Depth: 4'

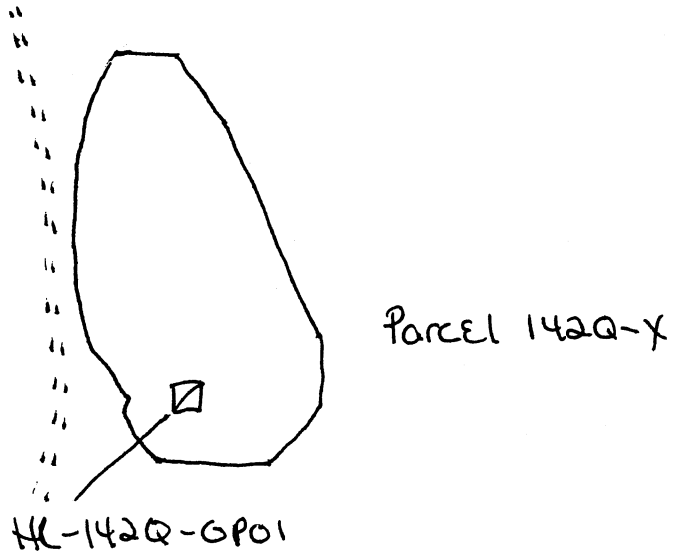
Sample Team: J. Badon, K. Hunter

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID = 1.0 ppm

Sketch Location:



Logged BY / Date: S. Hunter 2/8/01

Reviewed BY / Date: DeKa 2-8-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 142Q-020801-FMAX

Site: Artillery and Motar Impact Areas South of B

Location Code: HR-142Q-GP02

Sample Number: YL0003

Sample Name: HR-142Q-GP02-SS-YL0003-REG

Sampling Method: ~~DP~~ HA

Collection Date: 2/8/01

Collection Time: 1243

Start Depth: 0'

End Depth: 1'

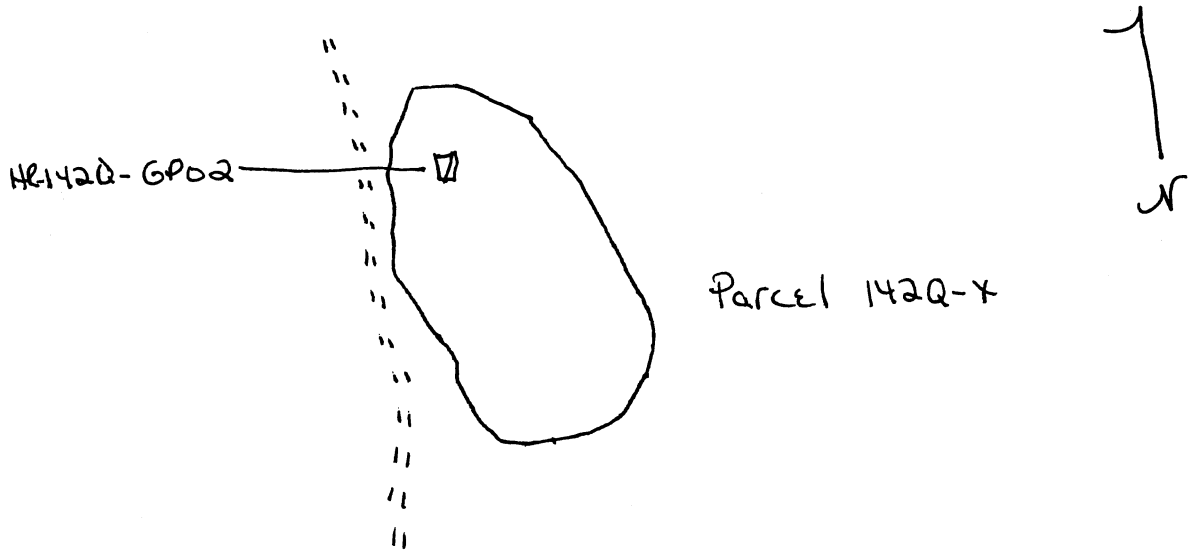
Sample Team: X. Badon, K. Hunter

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID = 0.0 ppm

Sketch Location:



Logged BY / Date: K. Hunter 2/8/01

Reviewed BY / Date: DeKo 2-8-01

INTERNATIONAL TECHNOLOGY CORPORATION

Sample Collection Log

Project: 796887 Fort McClellan

Manager: Jeanne Yacoub

RFA / COC Number: 142Q-020801-EMAX

Site: Artillery and Motar Impact Areas South of B

Location Code: HR-142Q-GP02

Sample Number: YL0004

Sample Name: HR-142Q-GP02-DS-YL0004-REG

Sampling Method: DP

Collection Date: 2/8/01

Collection Time: 1258

Start Depth: 9'

End Depth: 10'

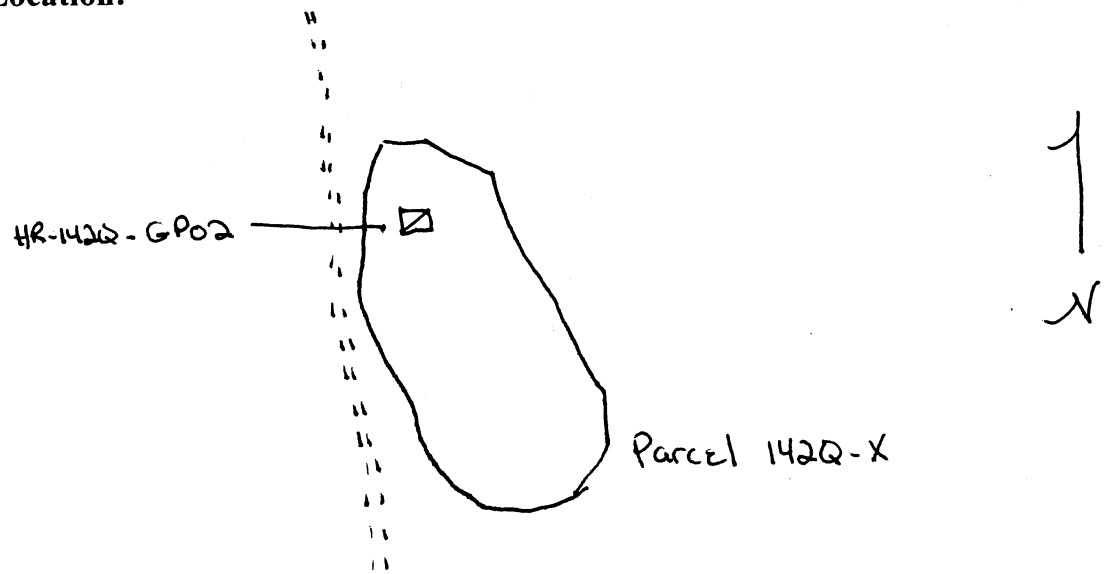
Sample Team: L. Badon, L. Hunter

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
METALS-S	N	A	1	8	oz	CWM
NITROAROMATIC	N	A	1	8	oz	CWM
PERCHLORATE	N	B	1	4	oz	CWM

Comments: PID = 0.0 ppm

Sketch Location:



Logged BY / Date: L. Hunter 2/8/01

Reviewed BY / Date: OEK 2-8-01

ANALYSIS REQUEST/CHAIN-OF-CUSTODY RECORDS

SOG# 01B022

01B022 L3

IT CORPORATION
A Member of The IT Group

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Reference Document No: 138Q-020101-EMAX

Project Number: 796887

Project Name: Fort McClellan

Sample Coordinator: Oliver Allen

Turnaround Time: Normal

Samples Shipment Date: 01 FEB 2001

Lab Destination: EMAX Laboratories, Inc.

Lab Contact: Elizabeth McIntyre

Project Contact: Randy McBride

Carrier/Waybill No.: Fed Ex/792656640797

Bill To: Duane Nielsen
312 Directors Drive
Knoxville TN 37923

Report To: Duane Nielsen
312 Directors Drive
Knoxville TN 37923

Special Instructions: NONE

Possible Hazard Indentification:
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☑

Sample Disposal:
Return to Client ☐ Disposal by Lab ☑ Archive (mos.)

1. Relinquished By (Signature/Affiliation)	Date: 02-01-01 Time: 1500	1. Received By (Signature/Affiliation) EMAX	Date: 2·2·2001 Time: 0945
2. Relinquished By (Signature/Affiliation)	Date: Time:	2. Received By (Signature/Affiliation)	Date: Time:
3. Relinquished By (Signature/Affiliation)	Date: Time:	3. Received By (Signature/Affiliation)	Date: Time:

Comments: NONE

Cooler 1 T=3.1°C
Cooler 2 T=2.7°C

Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
YE0001	HR-138Q-GP01-SS-YE0001-REG	31 JAN 2001	16:15	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YE0001	HR-138Q-GP01-SS-YE0001-REG	31 JAN 2001	16:15	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		
YE0001-MS	HR-138Q-GP01-SS-YE0001-MS	31 JAN 2001	16:15	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YE0001-MS	HR-138Q-GP01-SS-YE0001-MS	31 JAN 2001	16:15	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		
YE0001-MSD	HR-138Q-GP01-SS-YE0001-MSD	31 JAN 2001	16:15	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YE0001-MSD	HR-138Q-GP01-SS-YE0001-MSD	31 JAN 2001	16:15	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		

IT CORPORATION
A Member of The IT Group

01B022 L3

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Reference Document No: 138Q-020101-EMAX

Sample No	Sample Name	Sample Date	Sample Time	Container		Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
YE0002	HR-138Q-GP01-DS-YE0002-REG	31 JAN 2001	16:27	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YE0002	HR-138Q-GP01-DS-YE0002-REG	31 JAN 2001	16:27	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		
YE0003	HR-138Q-GP01-DS-YE0003-FD	31 JAN 2001	16:27	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YE0003	HR-138Q-GP01-DS-YE0003-FD	31 JAN 2001	16:27	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		
YE0007	HR-138Q-GP03-SS-YE0007-REG	31 JAN 2001	15:40	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		
YE0007	HR-138Q-GP03-SS-YE0007-REG	31 JAN 2001	15:40	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YE0008	HR-138Q-GP03-DS-YE0008-REG	31 JAN 2001	15:50	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YE0008	HR-138Q-GP03-DS-YE0008-REG	31 JAN 2001	15:50	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		
YE0009	HR-138Q-GP04-SS-YE0009-REG	31 JAN 2001	14:50	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YE0009	HR-138Q-GP04-SS-YE0009-REG	31 JAN 2001	14:50	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		
YE0009-MS	HR-138Q-GP04-SS-YE0009-MS	31 JAN 2001	14:50	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YE0009-MS	HR-138Q-GP04-SS-YE0009-MS	31 JAN 2001	14:50	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		
YE0009-MSD	HR-138Q-GP04-SS-YE0009-MSD	31 JAN 2001	14:50	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YE0009-MSD	HR-138Q-GP04-SS-YE0009-MSD	31 JAN 2001	14:50	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		
YE0010	HR-138Q-GP04-DS-YE0010-REG	31 JAN 2001	15:07	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		
YE0010	HR-138Q-GP04-DS-YE0010-REG	31 JAN 2001	15:07	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		

SDG #01B022 R10B6 01B032

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Reference Document No: 138Q-020201-EMAX

Project Number: 796887
Project Name: Fort McClellan
Sample Coordinator: Oliver Allen
Turnaround Time:

Samples Shipment Date: 02 FEB 2001
Lab Destination: EMAX Laboratories, Inc.
Lab Contact: Elizabeth McIntyre
Project Contact: Randy McBride
Carrier/Waybill No.: Fed Ex/ 7926 5675 9629

Bill To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923

Report To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923

Special Instructions: NONE

Possible Hazard Indentification:
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☒

Sample Disposal:
Return to Client ☐ Disposal by Lab ☒ Archive (mos.)

1. Relinquished By (Signature/Affiliation)	Date: 2/2/01 Time: 1800	1. Received By (Signature/Affiliation)	Date: 2-3-01 Time: 9:00 Am
2. Relinquished By (Signature/Affiliation)	Date: Time:	2. Received By (Signature/Affiliation)	Date: Time:
3. Relinquished By (Signature/Affiliation)	Date: Time:	3. Received By (Signature/Affiliation)	Date: Time:

Comments: NONE

Cooler #2 · T: 2.5°C

Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
YE0005	HR-138Q-GP02-SS-YE0005-REG	01 FEB 2001	15:40	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YE0005	HR-138Q-GP02-SS-YE0005-REG	01 FEB 2001	15:40	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		
YE0006	HR-138Q-GP02-DS-YE0006-REG	01 FEB 2001	16:03	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YE0006	HR-138Q-GP02-DS-YE0006-REG	01 FEB 2001	16:03	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		

IT CORPORATION
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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

01D239/~~01D240~~ J4

Reference Document No: 138Q-042501-EMAX

Project Number: 796887

Project Name: Fort McClellan

Sample Coordinator: Oliver Allen

Turnaround Time: Normal

Samples Shipment Date: 25 APR 2001

Lab Destination: EMAX Laboratories, Inc.

Lab Contact: Elizabeth McIntyre

Project Contact: Randy McBride

Carrier/Waybill No.: Fed Ex/790035160228

Bill To: Duane Nielsen
312 Directors Drive
Knoxville TN 37923

Report To: Duane Nielsen
312 Directors Drive
Knoxville TN 37923

Special Instructions: None

Possible Hazard Indentification:
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☑

Sample Disposal:
Return to Client ☐ Disposal by Lab ☑ Archive (mos.)

1. Relinquished By (Signature/Affiliation) DRLC	Date: 4-25-01 Time: 1600	1. Received By (Signature/Affiliation) EMAX	Date: 4·26·2001 Time: 0930
2. Relinquished By (Signature/Affiliation)	Date: Time:	2. Received By (Signature/Affiliation)	Date: Time:
3. Relinquished By (Signature/Affiliation)	Date: Time:	3. Received By (Signature/Affiliation)	Date: Time:

Comments: None

Cooler 1 T=2.7°C
Cooler 2 T=2.5°C
Cooler 3 T=3.2°C

Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
YE1005	HR-138Q-SW/SD04-SD-YE1005-REG	25 APR 2001	09:30	8 oz CWM	1	None except cool to 4 C	Perchlorate by 314, Total Organic Carbon by 9060	N		
YE1005	HR-138Q-SW/SD04-SD-YE1005-REG	25 APR 2001	09:30	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YE1005	HR-138Q-SW/SD04-SD-YE1005-REG	25 APR 2001	09:30	8 oz CWM	1	None Required	Grain Size by ASTM D421/D422	N		
YE2004	HR-138Q-SW/SD04-SW-YE2004-REG	25 APR 2001	09:30	1 L HDPE	1	HNO3<pH 2	TAL Metals by 6010B/7470A - Water	N		
YE2004	HR-138Q-SW/SD04-SW-YE2004-REG	25 APR 2001	09:30	1 L Amb. Glass	1	None except cool to 4 C	Nitroaromatics by 8330	N		
YE2004	HR-138Q-SW/SD04-SW-YE2004-REG	25 APR 2001	09:30	500 mL HDPE	1	None except cool to 4 C	Perchlorate by 314	N		

0425-01

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

01D239 / ~~[illegible]~~ J4

Reference Document No: 138Q-042401-EMAX

Project Number: 796887
Project Name: Fort McClellan
Sample Coordinator: Oliver Allen
Turnaround Time: Normal

Samples Shipment Date: 25 APR 2001
Lab Destination: EMAX Laboratories, Inc.
Lab Contact: Elizabeth McIntyre
Project Contact: Randy McBride
Carrier/Waybill No.: Fed Ex/791538159370

Bill To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923

Report To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923

Special Instructions: None

Possible Hazard Indentification: Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☑

Sample Disposal: Return to Client ☐ Disposal by Lab ☑ Archive (mos.)

1. Relinquished By (Signature/Affiliation) DeKC	Date: 4-25-01 Time: 1600	1. Received By (Signature/Affiliation) EMAX	Date: 4-26-2001 Time: 0930
2. Relinquished By (Signature/Affiliation)	Date: Time:	2. Received By (Signature/Affiliation)	Date: Time:
3. Relinquished By (Signature/Affiliation)	Date: Time:	3. Received By (Signature/Affiliation)	Date: Time:

Comments: None

Cooler 1 T=2.7°C
Cooler 2 T=2.5°C
Cooler 3 : 3.2°C

Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
YE1006	HR-138Q-SW/SD05-SD-YE1006-REG	25 APR 2001	13:30	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YE1006	HR-138Q-SW/SD05-SD-YE1006-REG	25 APR 2001	13:30	8 oz CWM	1	None except cool to 4 C	Perchlorate by 314, Total Organic Carbon by 9060	N		
YE1006	HR-138Q-SW/SD05-SD-YE1006-REG	25 APR 2001	13:30	8 oz CWM	1	None Required	Grain Size by ASTM D421/D422	N		
~~[illegible]~~	~~[illegible]~~	~~24 APR 2001~~	~~13:30~~	~~1 L HDPE~~	~~1~~	~~HNO3<pH 2~~	~~TAL Metals by 6010B/7470A - Water~~	~~N~~		
~~YE2005~~	~~HR-138Q-SW/SD05-SW-YE2005-REG~~	~~24 APR 2001~~	~~13:30~~	~~[illegible]~~	~~2~~	~~[illegible]~~	~~Nitroaromatics by 8330~~	~~N~~		
~~YE2005~~	~~HR-138Q-SW/SD05-SW-YE2005-REG~~	~~24 APR 2001~~	~~13:30~~	~~500 mL HDPE~~	~~1~~	~~None except cool to 4 C~~	~~Perchlorate by 314~~	~~N~~		

01D239-02 1002

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

~~01D239~~ / 01D240 J4

Reference Document No: 138Q-042501-EM

Project Number: 796887
Project Name: Fort McClellan
Sample Coordinator: Oliver Allen
Turnaround Time: Normal

Samples Shipment Date: 25 APR 2001
Lab Destination: EMAX Laboratories, Inc.
Lab Contact: Elizabeth McIntyre
Project Contact: Randy McBride
Carrier/Waybill No.: Fed Ex/790035160228

Bill To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923
Report To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923

Special Instructions: None

Possible Hazard Indentification: Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☑

Sample Disposal: Return to Client ☐ Disposal by Lab ☑ Archive (mos.)

1. Relinquished By (Signature/Affiliation): Dexa — Date: 4-25-01 Time: 1600
1. Received By (Signature/Affiliation): EMAX — Date: 4-26-2001 Time: 0930
2. Relinquished By (Signature/Affiliation): — Date: Time:
2. Received By (Signature/Affiliation): — Date: Time:
3. Relinquished By (Signature/Affiliation): — Date: Time:
3. Received By (Signature/Affiliation): — Date: Time:

Comments: None

Cooler 1 T=2.7°C
Cooler 2 T=2.5°C
Cooler 3 T=3.2°C

Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
YE1005	HR-138Q-SW/SD04-SD-YE1005-REG	25 APR 2001	09:30	8 oz CWM	1	None except cool to 4 C	Perchlorate by 314, Total Organic Carbon by 9060	N		
YE1005	HR-138Q-SW/SD04-SD-YE1005-REG	25 APR 2001	09:30	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YE1005	HR-138Q-SW/SD04-SD-YE1005-REG	25 APR 2001	09:30	8 oz CWM	1	None Required	Grain Size by ASTM D421/D422	N		
YE2004	HR-138Q-SW/SD04-SW-YE2004-REG	25 APR 2001	09:30	1 L HDPE	1	HNO3<pH 2	TAL Metals by 6010B/7470A - Water	N		
YE2004	HR-138Q-SW/SD04-SW-YE2004-REG	25 APR 2001	09:30	1 L Amb. Glass	2	None except cool to 4 C	Nitroaromatics by 8330	N		
YE2004	HR-138Q-SW/SD04-SW-YE2004-REG	25 APR 2001	09:30	500 mL HDPE	1	None except cool to 4 C	Perchlorate by 314	N		

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

~~01D239~~ / 01D240 J4

Reference Document No: 138Q-042401-EMA

Project Number: 796887
Project Name: Fort McClellan
Sample Coordinator: Oliver Allen
Turnaround Time: NORMAL

Samples Shipment Date: 25 APR 2001
Lab Destination: EMAX Laboratories, Inc.
Lab Contact: Elizabeth McIntyre
Project Contact: Randy McBride
Carrier/Waybill No.: Fed Ex/791538159370

Bill To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923
Report To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923

Special Instructions: None

Possible Hazard Indentification: Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☑

Sample Disposal: Return to Client ☐ Disposal by Lab ☑ Archive (mos.)

1. Relinquished By (Signature/Affiliation) DeKC	Date: 4-25-01 Time: 1600	1. Received By (Signature/Affiliation) EMAX	Date: 4-26-2001 Time: 0930
2. Relinquished By (Signature/Affiliation)	Date: Time:	2. Received By (Signature/Affiliation)	Date: Time:
3. Relinquished By (Signature/Affiliation)	Date: Time:	3. Received By (Signature/Affiliation)	Date: Time:

Comments: None

Cooler 1 T=2.7°C
Cooler 2 T=2.5°C
Cooler 3 = 3.2°C

Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
YE1006	HR-138Q-SW/SD05-SD-YE1006-REG	25 APR 2001	13:30	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YE1006	HR-138Q-SW/SD05-SD-YE1006-REG	25 APR 2001	[illegible]	8 oz CWM	1	None except cool to 4 C	Perchlorate by 314, Total Organic Carbon by 9060	N		
YE1006	HR-138Q-SW/SD05-SD-YE1006-REG	25 APR 2001	13:30	8 oz CWM	1	None Required	Grain Size by ASTM D421/D422	N		
YE2005	HR-138Q-SW/SD05-SW-YE2005-REG	24 APR 2001	13:30	1 L HDPE	1	HNO3<pH 2	TAL Metals by 6010B/7470A - Water	N		
YE2005	HR-138Q-SW/SD05-SW-YE2005-REG	24 APR 2001	13:30	1 L Amb. Glass	2	None except cool to 4 C	Nitroaromatics by 8330	N		
YE2005	HR-138Q-SW/SD05-SW-YE2005-REG	24 APR 2001	13:30	500 mL HDPE	1	None except cool to 4 C	Perchlorate by 314	N		

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

01E044 R-10B3

Reference Document No: 138Q-050401-EMAX

Project Number: 796887

Project Name: Fort McClellan

Sample Coordinator: Oliver Allen

Turnaround Time: Normal

Samples Shipment Date: 04 MAY 2001

Lab Destination: EMAX Laboratories, Inc.

Lab Contact: Elizabeth McIntyre

Project Contact: Randy McBride

Carrier/Waybill No.: Fed Ex/790042952267

Bill To: Duane Nielsen
312 Directors Drive
Knoxville TN 37923

Report To: Duane Nielsen
312 Directors Drive
Knoxville TN 37923

Special Instructions: None

Possible Hazard Indentification:
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☑

Sample Disposal:
Return to Client ☐ Disposal by Lab ☑ Archive (mos.)

1. Relinquished By (Signature/Affiliation) DeKaer Date: 4 May 2001 Time: 1300

2. Relinquished By (Signature/Affiliation) Date: Time:

3. Relinquished By (Signature/Affiliation) Date: Time:

1. Received By (Signature/Affiliation) EMAX Date: 5.5.2001 Time: 0930

2. Received By (Signature/Affiliation) Date: Time:

3. Received By (Signature/Affiliation) Date: Time:

Comments: None

Cooler 1 T=3.2°C
Cooler 2 T=2.8°C
Cooler 3 T=2.3°C
Cooler 4 T=2.5°C

	Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
1	YE0011	HR-138Q-DEP01-DEP-YE0011-REG	03 MAY 2001	10:45	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
	YE0011	HR-138Q-DEP01-DEP-YE0011-REG	03 MAY 2001	10:45	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		
2	YE0012	HR-138Q-DEP01-DEP-YE0012-FD	03 MAY 2001	10:45	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
	YE0012	HR-138Q-DEP01-DEP-YE0012-FD	03 MAY 2001	10:45	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		
3	YE1003	HR-138Q-SW/SD02-SD-YE1003-REG	03 MAY 2001	14:30	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
	[illegible]	[illegible]-SD-YE1003-REG	03 MAY 2001	14:30	8 oz CWM	1	None except cool to 4 C	Perchlorate by 314, Total Organic Carbon by 9060	N		

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01E044 R-10B3

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Reference Document No: 138Q-050401-EMAX

Sample No	Sample Name	Sample Date	Sample Time	Container		Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
YE1003	HR-138Q-SW/SD02-SD-YE1003-REG	03 MAY 2001	14:30	8 oz CWM	1	None Required	Grain Size by ASTM D421/D422	N		
YE1004	HR-138Q-SW/SD03-SD-YE1004-REG	02 MAY 2001	10:20	8 oz CWM	1	None Required	Grain Size by ASTM D421/D422	N		
YE1004	HR-138Q-SW/SD03-SD-YE1004-REG	02 MAY 2001	10:20	8 oz CWM	1	None except cool to 4 C	Perchlorate by 314, Total Organic Carbon by 9060	N		
YE1004	HR-138Q-SW/SD03-SD-YE1004-REG	02 MAY 2001	10:20	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YE2002	HR-138Q-SW/SD02-SW-YE2002-REG	03 MAY 2001	14:30	1 L HDPE	1	HNO3<pH 2	TAL Metals by 6010B/7470A - Water	N		
YE2002	HR-138Q-SW/SD02-SW-YE2002-REG	03 MAY 2001	14:30	1 L Amb. Glass	2	None except cool to 4 C	Nitroaromatics by 8330	N		
YE2002	HR-138Q-SW/SD02-SW-YE2002-REG	03 MAY 2001	14:30	500 mL HDPE	1	None except cool to 4 C	Perchlorate by 314	N		
YE2003	HR-138Q-SW/SD03-SW-YE2003-REG	02 MAY 2001	10:20	1 L HDPE	1	HNO3<pH 2	TAL Metals by 6010B/7470A - Water	N		
YE2003	HR-138Q-SW/SD03-SW-YE2003-REG	02 MAY 2001	10:20	1 L Amb. Glass	2	None except cool to 4 C	Nitroaromatics by 8330	N		
YE2003	HR-138Q-SW/SD03-SW-YE2003-REG	02 MAY 2001	10:20	500 mL HDPE	1	None except cool to 4 C	Perchlorate by 314	N		
YE2006	HR-138Q-SEEP01-SEP-YE2006-REG	02 MAY 2001	13:45	1 L HDPE	1	HNO3<pH 2	TAL Metals by 6010B/7470A - Water	N		
YE2006	HR-138Q-SEEP01-SEP-YE2006-REG	02 MAY 2001	13:45	500 mL HDPE	1	None except cool to 4 C	Perchlorate by 314	N		
YE2006	HR-138Q-SEEP01-SEP-YE2006-REG	02 MAY 2001	13:45	1 L Amb. Glass	2	None except cool to 4 C	Nitroaromatics by 8330	N		
YE2007	HR-138Q-SEEP02-SEP-YE2007-REG	02 MAY 2001	15:30	500 mL HDPE	1	None except cool to 4 C	Perchlorate by 314	N		
YE2007	HR-138Q-SEEP02-SEP-YE2007-REG	02 MAY 2001	15:30	1 L Amb. Glass	2	None except cool to 4 C	Nitroaromatics by 8330	N		
YE2007	HR-138Q-SEEP02-SEP-YE2007-REG	02 MAY 2001	15:30	1 L HDPE	1	HNO3<pH 2	TAL Metals by 6010B/7470A - Water	N		
YE2008	HR-138Q-SEEP03-SEP-YE2008-REG	02 MAY 2001	13:30	1 L HDPE	1	HNO3<pH 2	TAL Metals by 6010B/7470A - Water	N		
YE2008	HR-138Q-SEEP03-SEP-YE2008-REG	02 MAY 2001	13:30	1 L Amb. Glass	2	None except cool to 4 C	Nitroaromatics by 8330	N		
YE2008	HR-138Q-SEEP03-SEP-YE2008-REG	02 MAY 2001	13:30	500 mL HDPE	1	None except cool to 4 C	Perchlorate by 314	N		

1002

IT CORPORATION
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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

01E045 R-10B3

Reference Document No: 138Q-050401-EMAX

Project Number: 796887

Project Name: Fort McClellan

Sample Coordinator: Oliver Allen

Turnaround Time:

Normal

Samples Shipment Date: 04 MAY 2001

Lab Destination: EMAX Laboratories, Inc.

Lab Contact: Elizabeth McIntyre

Project Contact: Randy McBride

Carrier/Waybill No.: Fed Ex/790042952267

Bill To: Duane Nielsen
312 Directors Drive
Knoxville TN 37923

Report To: Duane Nielsen
312 Directors Drive
Knoxville TN 37923

Special Instructions: None

Possible Hazard Indentification:
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☑

Sample Disposal:
Return to Client ☐ Disposal by Lab ☑ Archive (mos.)

1. Relinquished By (Signature/Affiliation) DeKaen	Date: 4 May 2001 Time: 1300	1. Received By (Signature/Affiliation) EMAX	Date: 5.5.2001 Time: 0930
2. Relinquished By (Signature/Affiliation)	Date: Time:	2. Received By (Signature/Affiliation)	Date: Time:
3. Relinquished By (Signature/Affiliation)	Date: Time:	3. Received By (Signature/Affiliation)	Date: Time:

Comments: None

Cooler 1 T = 3.2°C
Cooler 2 T = 2.8°C
Cooler 3 T = 2.3°C
Cooler 4 T = 2.5°C

Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
YE0011	HR-138Q-DEP01-DEP-YE0011-REG	03 MAY 2001	10:45	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YE0011	HR-138Q-DEP01-DEP-YE0011-REG	03 MAY 2001	10:45	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		
YE0012	HR-138Q-DEP01-DEP-YE0012-FD	03 MAY 2001	10:45	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YE0012	HR-138Q-DEP01-DEP-YE0012-FD	03 MAY 2001	10:45	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		
YE1003	HR-138Q-SW/SD02-SD-YE1003-REG	03 MAY 2001	14:30	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
[illegible]	HR-138Q-SW/SD02-SD-YE1003-REG	03 MAY 2001	14:30	8 oz CWM	1	None except cool to 4 C	Perchlorate by 314, Total Organic Carbon by 9060	N		

1002

IT CORPORATION
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01E045 R-1003

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Reference Document No: 138Q-050401-EMAX

	Sample No	Sample Name	Sample Date	Sample Time	Container		Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
	YE1003	HR-138Q-SW/SD02-SD-YE1003-REG	03 MAY 2001	14:30	8 oz CWM	1	None Required	Grain Size by ASTM D421/D422	N		
	YE1004	HR-138Q-SW/SD03-SD-YE1004-REG	02 MAY 2001	10:20	8 oz CWM	1	None Required	Grain Size by ASTM D421/D422	N		
	YE1004	HR-138Q-SW/SD03-SD-YE1004-REG	02 MAY 2001	10:20	8 oz CWM	1	None except cool to 4 C	Perchlorate by 314, Total Organic Carbon by 9060	N		
	YE1004	HR-138Q-SW/SD03-SD-YE1004-REG	02 MAY 2001	10:20	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
1	YE2002	HR-138Q-SW/SD02-SW-YE2002-REG	03 MAY 2001	14:30	1 L HDPE	1	HNO3<pH 2	TAL Metals by 6010B/7470A - Water	N		
	YE2002	HR-138Q-SW/SD02-SW-YE2002-REG	03 MAY 2001	14:30	1 L Amb. Glass	2	None except cool to 4 C	Nitroaromatics by 8330	N		
	YE2002	HR-138Q-SW/SD02-SW-YE2002-REG	03 MAY 2001	14:30	500 mL HDPE	1	None except cool to 4 C	Perchlorate by 314	N		
2	YE2003	HR-138Q-SW/SD03-SW-YE2003-REG	02 MAY 2001	10:20	1 L HDPE	1	HNO3<pH 2	TAL Metals by 6010B/7470A - Water	N		
	YE2003	HR-138Q-SW/SD03-SW-YE2003-REG	02 MAY 2001	10:20	1 L Amb. Glass	2	None except cool to 4 C	Nitroaromatics by 8330	N		
	YE2003	HR-138Q-SW/SD03-SW-YE2003-REG	02 MAY 2001	10:20	500 mL HDPE	1	None except cool to 4 C	Perchlorate by 314	N		
3	YE2006	HR-138Q-SEEP01-SEP-YE2006-REG	02 MAY 2001	13:45	1 L HDPE	1	HNO3<pH 2	TAL Metals by 6010B/7470A - Water	N		
	YE2006	HR-138Q-SEEP01-SEP-YE2006-REG	02 MAY 2001	13:45	500 mL HDPE	1	None except cool to 4 C	Perchlorate by 314	N		
	YE2006	HR-138Q-SEEP01-SEP-YE2006-REG	02 MAY 2001	13:45	1 L Amb. Glass	2	None except cool to 4 C	Nitroaromatics by 8330	N		
4	YE2007	HR-138Q-SEEP02-SEP-YE2007-REG	02 MAY 2001	15:30	500 mL HDPE	1	None except cool to 4 C	Perchlorate by 314	N		
	YE2007	HR-138Q-SEEP02-SEP-YE2007-REG	02 MAY 2001	15:30	1 L Amb. Glass	2	None except cool to 4 C	Nitroaromatics by 8330	N		
	YE2007	HR-138Q-SEEP02-SEP-YE2007-REG	02 MAY 2001	15:30	1 L HDPE	1	HNO3<pH 2	TAL Metals by 6010B/7470A - Water	N		
5	YE2008	HR-138Q-SEEP03-SEP-YE2008-REG	02 MAY 2001	13:30	1 L HDPE	1	HNO3<pH 2	TAL Metals by 6010B/7470A - Water	N		
	YE2008	HR-138Q-SEEP03-SEP-YE2008-REG	02 MAY 2001	13:30	1 L Amb. Glass	2	None except cool to 4 C	Nitroaromatics by 8330	N		
	YE2008	HR-138Q-SEEP03-SEP-YE2008-REG	02 MAY 2001	13:30	500 mL HDPE	1	None except cool to 4 C	Perchlorate by 314	N		

1003

IT CORPORATION
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SDG# 01B093

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

01B093 J1

Reference Document No: 139Q-020701-EMA

Project Number: 796887
Project Name: Fort McClellan
Sample Coordinator: Oliver Allen
Turnaround Time: NORMAL

Samples Shipment Date: 08 FEB 2001
Lab Destination: EMAX Laboratories, Inc.
Lab Contact: Elizabeth McIntyre
Project Contact: Randy McBride
Carrier/Waybill No.: Fed Ex/790912118618

Bill To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923
Report To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923

Special Instructions: None

Possible Hazard Indentification: Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☑

Sample Disposal: Return to Client ☐ Disposal by Lab ☑ Archive (mos.)

1. Relinquished By (Signature/Affiliation) DeKoe	Date: 2-8-01 Time: 1500	1. Received By (Signature/Affiliation)	Date: 2-9-2001 Time: 0900
2. Relinquished By (Signature/Affiliation)	Date: Time:	2. Received By (Signature/Affiliation)	Date: Time:
3. Relinquished By (Signature/Affiliation)	Date: Time:	3. Received By (Signature/Affiliation)	Date: Time:

Comments: None

Cooler #3 T=3.2°C

	Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
1	YG0003	HR-139Q-GP02-SS-YG0003-REG	07 FEB 2001	14:05	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
	YG0003	HR-139Q-GP02-SS-YG0003-REG	07 FEB 2001	14:05	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		
2	YG0004	HR-139Q-GP02-DS-YG0004-REG	07 FEB 2001	14:22	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
	YG0004	HR-139Q-GP02-DS-YG0004-REG	07 FEB 2001	14:22	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		
3	YG0005	HR-139Q-GP02-DS-YG0005-FD	07 FEB 2001	14:22	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
	YG0005	HR-139Q-GP02-DS-YG0005-FD	07 FEB 2001	14:22	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		

SDG#01B093

01B102 B4

IT CORPORATION
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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Reference Document No: 139Q-020901-EMAX

Project Number: 796887
Project Name: Fort McClellan
Sample Coordinator: Oliver Allen
Turnaround Time: NORMAL

Samples Shipment Date: 09 FEB 2001
Lab Destination: EMAX Laboratories, Inc.
Lab Contact: Elizabeth McIntyre
Project Contact: Randy McBride
Carrier/Waybill No.: Fed Ex/790468314981

Bill To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923

Report To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923

Special Instructions: None

Possible Hazard Indentification: Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☑

Sample Disposal: Return to Client ☐ Disposal by Lab ☑ Archive (mos.)

1. Relinquished By (Signature/Affiliation) D.K. Oee	Date: 2-9-01 Time: 1500	1. Received By (Signature/Affiliation) M Una	Date: 2-10-01 Time: 9:00
2. Relinquished By (Signature/Affiliation)	Date: Time:	2. Received By (Signature/Affiliation)	Date: Time:
3. Relinquished By (Signature/Affiliation)	Date: Time:	3. Received By (Signature/Affiliation)	Date: Time:

Comments: None

T= 3.2°C

	Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
1	YG0001	HR-139Q-GP01-SS-YG0001-REG	08 FEB 2001	10:04	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
	YG0001	HR-139Q-GP01-SS-YG0001-REG	08 FEB 2001	10:04	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		
2	YG0002	HR-139Q-GP01-DS-YG0002-REG	08 FEB 2001	10:20	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
	YG0002	HR-139Q-GP01-DS-YG0002-REG	08 FEB 2001	10:20	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

01D262 K4

Reference Document No: 139Q-042501-EMA

Project Number: 796887
Project Name: Fort McClellan
Sample Coordinator: Oliver Allen
Turnaround Time: NORMAL

Samples Shipment Date: 26 APR 2001
Lab Destination: EMAX Laboratories, Inc.
Lab Contact: Elizabeth McIntyre
Project Contact: Randy McBride
Carrier/Waybill No.: Fed Ex/ 7915 3945 6733

Bill To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923
Report To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923

Special Instructions: None

Possible Hazard Indentification: Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☑

Sample Disposal: Return to Client ☐ Disposal by Lab ☑ Archive (mos.)

1. Relinquished By (Signature/Affiliation)	Date: 4-26-01 Time: 1600	1. Received By (Signature/Affiliation) EMAX	Date: 4-27-2001 Time: 0900
2. Relinquished By (Signature/Affiliation)	Date: Time:	2. Received By (Signature/Affiliation)	Date: Time:
3. Relinquished By (Signature/Affiliation)	Date: Time:	3. Received By (Signature/Affiliation)	Date: Time:

Comments: None

A0001

Cooler 4 T=2.3°c

Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
YG1001	HR-139Q-SW/SD01-SD-YG1001-REG	25 APR 2001	14:30	8 oz CWM	1	None except cool to 4 C	Perchlorate by 314, Total Organic Carbon by 9060	N		
YG1001	HR-139Q-SW/SD01-SD-YG1001-REG	25 APR 2001	14:30	8 oz CWM	1	None Required	Grain Size by ASTM D421/D422	N		
YG1001	HR-139Q-SW/SD01-SD-YG1001-REG	25 APR 2001	14:30	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
~~YG2001~~	~~HR-139Q-SW/SD01-SW-YG2001-REG~~	~~25 APR 2001~~	~~14:30~~	~~1 L HDPE~~	~~1~~	~~HNO3<pH 2~~	~~TAL Metals by 6010B/7470A - Water~~	~~N~~		
~~YG2001~~	~~HR-139Q-SW/SD01-SW-YG2001-REG~~	~~25 APR 2001~~	~~14:30~~	~~1 L Amber~~	~~1~~	~~None except cool to 4 C~~	~~Nitroaromatics by 8330~~	~~N~~		
~~YG2001~~	~~HR-139Q-SW/SD01-SW-YG2001-REG~~	~~25 APR 2001~~	~~14:30~~	~~500 mL HDPE~~	~~1~~	~~None except cool to 4 C~~	~~Perchlorate by 314~~	~~N~~		

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

01D263 K4

Reference Document No: 139Q-042501-EN

Page 1 of 1

Project Number: 796887
Project Name: Fort McClellan
mple Coordinator: Oliver Allen
Turnaround Time: NORMAL

Samples Shipment Date: 26 APR 2001
Lab Destination: EMAX Laboratories, Inc.
Lab Contact: Elizabeth McIntyre
Project Contact: Randy McBride
Carrier/Waybill No.: Fed Ex/ 7915 3945 6733

Bill To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923
Report To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923

ecial Instructions: None

ssible Hazard Indentification:
on-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☑

Sample Disposal:
Return to Client ☐ Disposal by Lab ☑ Archive (mos.)

Relinquished By (Signature/Affiliation): DQX.Ae — Date: 4-26-01 Time: 1600
1. Received By (Signature/Affiliation): EMAX — Date: 4-27-20 Time: 0900
Relinquished By (Signature/Affiliation) — Date: Time:
2. Received By (Signature/Affiliation) — Date: Time:
Relinquished By (Signature/Affiliation) — Date: Time:
3. Received By (Signature/Affiliation) — Date: Time:

omments: None

Cooler 3 4.1°C
Cooler 4 2.3°C

ample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fil	CID	Condition Or Receipt
01	HR-139Q-SW/SD01-SD-YG1001-REG	25 APR 2001	14:30	8 oz CWM	1	None except cool to 4 C	Perchlorate by 314, Total Organic Carbon by 9060	N		
01	HR-139Q-SW/SD01-SD-YG1001-REG	25 APR 2001	14:30	8 oz CWM	1	None except cool to 4 C	Grain Size by ASTM D421/D422	N		
01	HR-139Q-SW/SD01-SD-YG1001-REG	25 APR 2001	14:30	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
01	HR-139Q-SW/SD01-SW-YG2001-REG	25 APR 2001	14:30	1 L HDPE	1	HNO3<pH 2	TAL Metals by 6010B/7470A - Water	N		
01	HR-139Q-SW/SD01-SW-YG2001-REG	25 APR 2001	14:30	1 L Amb. Glass	2	None except cool to 4 C	Nitroaromatics by 8330	N		
	HR-139Q-SW/SD01-SW-YG2001-REG	25 APR 2001	14:30	500 mL HDPE	1	None except cool to 4 C	Perchlorate by 314	N		

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

01B092 J1

Reference Document No: 140Q-020701-EMAX

Project Number: 796887
Project Name: Fort McClellan
Sample Coordinator: Oliver Allen
Turnaround Time: NORMAL

Samples Shipment Date: 08 FEB 2001
Lab Destination: EMAX Laboratories, Inc.
Lab Contact: Elizabeth McIntyre
Project Contact: Randy McBride
Carrier/Waybill No.: Fed Ex/

Bill To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923
Report To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923

Special Instructions: None

Possible Hazard Indentification: Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☑

Sample Disposal: Return to Client ☐ Disposal by Lab ☑ Archive (mos.)

1. Relinquished By (Signature/Affiliation) DRK Allen	Date: 2-8-01 Time: 1500	1. Received By (Signature/Affiliation) EMAX	Date: 2-9-2001 Time: 0900
2. Relinquished By (Signature/Affiliation)	Date: Time:	2. Received By (Signature/Affiliation)	Date: Time:
3. Relinquished By (Signature/Affiliation)	Date: Time:	3. Received By (Signature/Affiliation)	Date: Time:

Comments: None

Cooler #3 T=3.2°c

Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
YH0001	HR-140Q-GP01-SS-YH0001-REG	07 FEB 2001	14:55	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YH0001	HR-140Q-GP01-SS-YH0001-REG	07 FEB 2001	14:55	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		
YH0002	HR-140Q-GP01-DS-YH0002-REG	08 FEB 2001	15:07	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YH0002	HR-140Q-GP01-DS-YH0002-REG	08 FEB 2001	15:07	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		

1001

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

01B092 J1

Reference Document No: 140Q-020801-EMAX

Project Number: 796887
Project Name: Fort McClellan
Sample Coordinator: Oliver Allen
Turnaround Time: NORMAL

Samples Shipment Date: 08 FEB 2001
Lab Destination: EMAX Laboratories, Inc.
Lab Contact: Elizabeth McIntyre
Project Contact: Randy McBride
Carrier/Waybill No.: Fed Ex/791967875260

Bill To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923
Report To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923

Special Instructions: None

Possible Hazard Indentification: Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal: Return to Client ☐ Disposal by Lab ☐ Archive (mos.)

1. Relinquished By (Signature/Affiliation)	Date: 2-8-01 Time: 1500	1. Received By (Signature/Affiliation)	Date: 2.9.2001 Time: 0900
2. Relinquished By (Signature/Affiliation)	Date: Time:	2. Received By (Signature/Affiliation)	Date: Time:
3. Relinquished By (Signature/Affiliation)	Date: Time:	3. Received By (Signature/Affiliation)	Date: Time:

Comments: None

Cooler 3 T= 3.2°c

	Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
3	YH0003	HR-140Q-GP02-SS-YH0003-REG	08 FEB 2001	11:03	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		
	YH0003	HR-140Q-GP02-SS-YH0003-REG	08 FEB 2001	11:03	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
4	YH0004	HR-140Q-GP02-DS-YH0004-REG	08 FEB 2001	11:16	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
	YH0004	HR-140Q-GP02-DS-YH0004-REG	08 FEB 2001	11:16	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		
5	YH0005	HR-140Q-GP02-DS-YH0005-FD	08 FEB 2001	11:16	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
	YH0005	HR-140Q-GP02-DS-YH0005-FD	08 FEB 2001	11:16	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		

1002

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

01D260 K4

Reference Document No: 140Q-042501-EMA

Project Number: 796887

Project Name: Fort McClellan

Sample Coordinator: Oliver Allen

Turnaround Time: Normal

Samples Shipment Date: 25 APR 2001

Lab Destination: EMAX Laboratories, Inc.

Lab Contact: Elizabeth McIntyre

Project Contact: Randy McBride

Carrier/Waybill No.: Fed Ex/ 7915 3945 7008

Bill To: Duane Nielsen
312 Directors Drive
Knoxville TN 37923

Report To: Duane Nielsen
312 Directors Drive
Knoxville TN 37923

Special Instructions: None

Possible Hazard Indentification:
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☑

Sample Disposal:
Return to Client ☐ Disposal by Lab ☑ Archive (mos.)

1. Relinquished By (Signature/Affiliation) DRK.Ce	Date: 4-26-01 Time: 1600	1. Received By (Signature/Affiliation) EMAX	Date: 4.27.2001 Time: 0900
2. Relinquished By (Signature/Affiliation)	Date: Time:	2. Received By (Signature/Affiliation)	Date: Time:
3. Relinquished By (Signature/Affiliation)	Date: Time:	3. Received By (Signature/Affiliation)	Date: Time:

Comments: None

Cooler 4 T= 2.3°C

Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
YH1001	HR-140Q-SW/SD01-SD-YH1001-REG	25 APR 2001	15:30	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YH1001	HR-140Q-SW/SD01-SD-YH1001-REG	25 APR 2001	15:30	8 oz CWM	1	None except cool to 4 C	Perchlorate by 314, Total Organic Carbon by 9060	N		
YH1001	HR-140Q-SW/SD01-SD-YH1001-REG	25 APR 2001	15:30	8 oz CWM	1	None Required	Grain Size by ASTM D421/D422	N		
[illegible]	HR-140Q-SW/SD01-SW-YH2001-REG	25 APR 2001	15:30	1 L HDPE	1	HNO3<pH 2	TAL Metals by 6010B/7470A - Water	N		
YH2001	HR-140Q-SW/SD01-SW-YH2001-REG	[illegible]	[illegible]	1 L Amb. Glass	2	None except cool to 4 C	Nitroaromatics by 8330	N		
YH2001	HR-140Q-SW/SD01-SW-YH2001-REG	[illegible]	15:30	500 mL HDPE	1	None except cool to 4 C	[illegible]	N		

IT CORPORATION
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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

01D261 K4

Reference Document No: 140Q-042501-EMA

Project Number: 796887
Project Name: Fort McClellan
Sample Coordinator: Oliver Allen
Turnaround Time: normal

Samples Shipment Date: 25 APR 2001
Lab Destination: EMAX Laboratories, Inc.
Lab Contact: Elizabeth McIntyre
Project Contact: Randy McBride
Carrier/Waybill No.: Fed Ex/ 7915 3945 7008

Bill To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923
Report To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923

Special Instructions: None

Possible Hazard Indentification:
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☑

Sample Disposal:
Return to Client ☐ Disposal by Lab ☑ Archive (mos.)

1. Relinquished By (Signature/Affiliation)	Date: 4-26-01 Time: 1600	1. Received By (Signature/Affiliation) EMAX	Date: 4.27.2001 Time: 0900
2. Relinquished By (Signature/Affiliation)	Date: Time:	2. Received By (Signature/Affiliation)	Date: Time:
3. Relinquished By (Signature/Affiliation)	Date: Time:	3. Received By (Signature/Affiliation)	Date: Time:

Comments: None

Cooler 2 T=2.6°C
Cooler 3 T= 4.1°C
Cooler 4 T= 2.3°C

Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
YH1001	HR-140Q-SW/SD01-SD-YH1001-REG	25 APR 2001	15:30	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YH1001	HR-140Q-SW/SD01-SD-YH1001-REG	25 APR 2001	15:30	8 oz CWM	1	None except cool to 4 C	Perchlorate by 314, Total Organic Carbon by 9060	N		
YH1001	HR-140Q-SW/SD01-SD-YH1001-REG	25 APR 2001	15:30	8 oz CWM	1	None Required	Grain Size by ASTM D421/D422	N		
YH2001	HR-140Q-SW/SD01-SW-YH2001-REG	25 APR 2001	15:30	1 L HDPE	1	HNO3<pH 2	TAL Metals by 6010B/7470A - Water	N		
YH2001	HR-140Q-SW/SD01-SW-YH2001-REG	25 APR 2001	15:30	1 L Amb. Glass	2	None except cool to 4 C	Nitroaromatics by 8330	N		
YH2001	HR-140Q-SW/SD01-SW-YH2001-REG	25 APR 2001	15:30	500 mL HDPE	1	None except cool to 4 C	Perchlorate by 314	N		

100

IT CORPORATION
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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

01B094 J1

Reference Document No: 141-020701-EMAX

Project Number: 796887
Project Name: Fort McClellan
Sample Coordinator: Oliver Allen
Turnaround Time: NORMAL

Samples Shipment Date: 08 FEB 2001
Lab Destination: EMAX Laboratories, Inc.
Lab Contact: Elizabeth McIntyre
Project Contact: Randy McBride
Carrier/Waybill No.: Fed Ex/

Bill To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923

Report To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923

Special Instructions: None

Possible Hazard Indentification: Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☑

Sample Disposal: Return to Client ☐ Disposal by Lab ☑ Archive (mos.)

1. Relinquished By (Signature/Affiliation) D.R.K.	Date: 2-8-01 Time: 1500	1. Received By (Signature/Affiliation) EMAX	Date: 2-9-2001 Time: 0900
2. Relinquished By (Signature/Affiliation)	Date: Time:	2. Received By (Signature/Affiliation)	Date: Time:
3. Relinquished By (Signature/Affiliation)	Date: Time:	3. Received By (Signature/Affiliation)	Date: Time:

Comments: None

Cooler #3 T=3.2°C

	Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
1	YJ0001	HR-141Q-GP01-SS-YJ0001-REG	07 FEB 2001	15:35	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
	YJ0001	HR-141Q-GP01-SS-YJ0001-REG	07 FEB 2001	15:35	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		
2	YJ0002	HR-141Q-GP01-DS-YJ0002-REG	07 FEB 2001	15:46	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
	YJ0002	HR-141Q-GP01-DS-YJ0002-REG	07 FEB 2001	15:46	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		

1002

01B101 B4

IT CORPORATION
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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Reference Document No: 141Q-020901-EMAX

Project Number: 796887
Project Name: Fort McClellan
Sample Coordinator: Oliver Allen
Turnaround Time: Normal

Samples Shipment Date: 09 FEB 2001
Lab Destination: EMAX Laboratories, Inc.
Lab Contact: Elizabeth McIntyre
Project Contact: Randy McBride
Carrier/Waybill No.: Fed Ex/791968868529

Bill To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923
Report To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923

Special Instructions: None

Possible Hazard Indentification: Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☑

Sample Disposal: Return to Client ☐ Disposal by Lab ☑ Archive (mos.)

1. Relinquished By (Signature/Affiliation)	Date: 2-9-01 Time: 1500	1. Received By (Signature/Affiliation)	Date: 2-10-01 Time: 9:00
2. Relinquished By (Signature/Affiliation)	Date: Time:	2. Received By (Signature/Affiliation)	Date: Time:
3. Relinquished By (Signature/Affiliation)	Date: Time:	3. Received By (Signature/Affiliation)	Date: Time:

Comments: None

T = 3.2°C

	Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
1	YJ0005	HR-141Q-GP03-SS-YJ0005-REG	09 FEB 2001	08:27	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
	YJ0005	HR-141Q-GP03-SS-YJ0005-REG	09 FEB 2001	08:27	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		
2	YJ0006	HR-141Q-GP03-DS-YJ0006-REG	09 FEB 2001	08:47	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
	YJ0006	HR-141Q-GP03-DS-YJ0006-REG	09 FEB 2001	08:47	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		
3	YJ0007	HR-141Q-GP04-SS-YJ0007-REG	08 FEB 2001	15:30	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
	YJ0007	HR-141Q-GP04-SS-YJ0007-REG	08 FEB 2001	15:30	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

01B101 B4

Reference Document No: 141Q-020901-EMAX

Sample No	Sample Name	Sample Date	Sample Time	Container		Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
YJ0008	HR-141Q-GP04-DS-YJ0008-REG	09 FEB 2001	15:38	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YJ0008	HR-141Q-GP04-DS-YJ0008-REG	09 FEB 2001	15:38	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		

4

1002

01B105 S1/WA6

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Reference Document No: IDW-020901-EMAX

Project Number: 796887
Project Name: Fort McClellan
Sample Coordinator: Oliver Allen
Turnaround Time: NORMAL

Samples Shipment Date: 09 FEB 2001
Lab Destination: EMAX Laboratories, Inc.
Lab Contact: Elizabeth McIntyre
Project Contact: Randy McBride
Carrier/Waybill No.: Fed Ex/

Bill To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923
Report To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923

Special Instructions: None

Possible Hazard Indentification: Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☑

Sample Disposal: Return to Client ☐ Disposal by Lab ☑ Archive (mos.)

1. Relinquished By (Signature/Affiliation) DRKae	Date: 2-9-01 Time: 1500	1. Received By (Signature/Affiliation) Smlna	Date: 2-10-01 Time: 9:00
2. Relinquished By (Signature/Affiliation)	Date: Time:	2. Received By (Signature/Affiliation)	Date: Time:
3. Relinquished By (Signature/Affiliation)	Date: Time:	3. Received By (Signature/Affiliation)	Date: Time:

Comments: None

T = 3.8°C

	Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
1	020901-ER	FIELDQC-BW-020901-ER-ER	09 FEB 2001	08:00	40 ml VOA VIAL	3	HCl<pH 2	Volatiles by 8260B	N		
	020901-ER	FIELDQC-BW-020901-ER-ER	09 FEB 2001	08:00	1 L Amb. Glass	2	None except cool to 4 C	Semivolatiles by 8270C	N		
	020901-ER	FIELDQC-BW-020901-ER-ER	09 FEB 2001	08:00	1 L HDPE	1	HNO3<pH 2	TAL Metals by 6010B/7470A - Water	N		
	020901-ER2	FIELDQC-BW-020901-ER2-ER	09 FEB 2001	08:00	40 ml VOA VIAL	3	HCl<pH 2	Volatiles by 8260B	N		
2	020901-ER2	FIELDQC-BW-020901-ER2-ER	09 FEB 2001	08:00	1 L Amb. Glass	2	None except cool to 4 C	Semivolatiles by 8270C	N		
	020901-ER2	FIELDQC-BW-020901-ER2-ER	09 FEB 2001	08:00	1 L HDPE	1	HNO3<pH 2	TAL Metals by 6010B/7470A - Water	N		
3	020901-TB	FIELDQC-BW-020901-TB-TB	09 FEB 2001	08:00	40 ml VOA VIAL	2	HCl<pH 2	Volatiles by 8260B	N		

H4 01D097

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Reference Document No: 141Q-041101-EMAX

Project Number: 796887
Project Name: Fort McClellan
Sample Coordinator: Oliver Allen
Turnaround Time: NORMAL

Samples Shipment Date: 11 APR 2001
Lab Destination: EMAX Laboratories, Inc.
Lab Contact: Elizabeth McIntyre
Project Contact: Randy McBride
Carrier/Waybill No.: Fed Ex/

Bill To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923
Report To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923

Special Instructions: None

Possible Hazard Indentification:
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☑

Sample Disposal:
Return to Client ☐ Disposal by Lab ☑ Archive (mos.)

1. Relinquished By (Signature/Affiliation) [signature] Date: 4-11-01 Time: 1600
2. Relinquished By (Signature/Affiliation) Date: Time:
3. Relinquished By (Signature/Affiliation) Date: Time:

1. Received By (Signature/Affiliation) [signature] Date: 04-12-01 Time: 10:AM
2. Received By (Signature/Affiliation) Date: Time:
3. Received By (Signature/Affiliation) Date: Time:

Comments: None

T=2.2°C

Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
YJ0003	HR-141Q-GP02-SS-YJ0003-REG	11 APR 2001	12:10	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YJ0003	HR-141Q-GP02-SS-YJ0003-REG	11 APR 2001	12:10	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		
YJ0004	HR-141Q-GP02-DS-YJ0004-REG	11 APR 2001	12:20	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YJ0004	HR-141Q-GP02-DS-YJ0004-REG	11 APR 2001	12:20	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

01D236 J4

Reference Document No: 141Q-042401-EMAX

Project Number: 796887

Project Name: Fort McClellan

Sample Coordinator: Oliver Allen

Turnaround Time: NORMAL

Samples Shipment Date: 25 APR 2001

Lab Destination: EMAX Laboratories, Inc.

Lab Contact: Elizabeth McIntyre

Project Contact: Randy McBride

Carrier/Waybill No.: Fed Ex/790035160490

Bill To: Duane Nielsen
312 Directors Drive
Knoxville TN 37923

Report To: Duane Nielsen
312 Directors Drive
Knoxville TN 37923

Special Instructions: None

Possible Hazard Indentification:
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☑

Sample Disposal:
Return to Client ☐ Disposal by Lab ☑ Archive (mos.)

1. Relinquished By (Signature/Affiliation) DRK Cee	Date: 4-25-01 Time: 1600	1. Received By (Signature/Affiliation) EMAX	Date: 4·26·2001 Time: 0930
2. Relinquished By (Signature/Affiliation)	Date: Time:	2. Received By (Signature/Affiliation)	Date: Time:
3. Relinquished By (Signature/Affiliation)	Date: Time:	3. Received By (Signature/Affiliation)	Date: Time:

Comments: None

Cooler 2 T=2.5°C

Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
YJ0009	HR-141Q-DEP01-DEP-YJ0009-REG	24 APR 2001	15:35	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YJ0009	HR-141Q-DEP01-DEP-YJ0009-REG	24 APR 2001	15:35	8 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		

1001

IT CORPORATION
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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

01E046 R-1083

Reference Document No: 141Q-050301-EMAX

Project Number: 796887
Project Name: Fort McClellan
Sample Coordinator: Oliver Allen
Turnaround Time: Normal

Samples Shipment Date: 04 MAY 2001
Lab Destination: EMAX Laboratories, Inc.
Lab Contact: Elizabeth McIntyre
Project Contact: Randy McBride
Carrier/Waybill No.: Fed Ex/790042952109

Bill To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923
Report To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923

Special Instructions: None

Possible Hazard Indentification: Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☑

Sample Disposal: Return to Client ☐ Disposal by Lab ☑ Archive (mos.)

1. Relinquished By (Signature/Affiliation) D.L.K.	Date: 4 May 2001 Time: 1300	1. Received By (Signature/Affiliation) EMAX	Date: 5.5.2001 Time: 0930
2. Relinquished By (Signature/Affiliation)	Date: Time:	2. Received By (Signature/Affiliation)	Date: Time:
3. Relinquished By (Signature/Affiliation)	Date: Time:	3. Received By (Signature/Affiliation)	Date: Time:

Comments: None

Cooler 1 T= 3.2°C
Cooler 2 T= 2.8°C
Cooler 3 T= 2.3°C
Cooler 4 T= 2.5°C

Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
YJ0010	HR-141Q-DEP02-DEP-YJ0010-REG	03 MAY 2001	09:30	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YJ0010	HR-141Q-DEP02-DEP-YJ0010-REG	03 MAY 2001	09:30	8 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		
YJ1002	HR-141Q-SW/SD02-SD-YJ1002-REG	03 MAY 2001	10:15	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YJ1002	HR-141Q-SW/SD02-SD-YJ1002-REG	03 MAY 2001	10:15	8 oz CWM	1	None except cool to 4 C	Perchlorate by 314, Total Organic Carbon by 9060	N		
YJ1002	HR-141Q-SW/SD02-SD-YJ1002-REG	03 MAY 2001	10:15	8 oz CWM	1	None Required	Grain Size by ASTM D421/D422	N		
YJ2002	HR-141Q-SW/SD02-SW-YJ2002-REG	03 MAY 2001	10:15	1 L HDPE	1	HNO3<pH 2	TAL Metals by 6010B/7470A - Water	N		

IT CORPORATION
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01E046 R-10B3

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Reference Document No: 141Q-050301-EMAX

Sample No	Sample Name	Sample Date	Sample Time	Container		Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
[illegible]	[illegible]-SW/SD02-SW-YJ2002-REG	03 MAY 2001	10:15	1 L Amb. Glass	2	None except cool to 4 C	Nitroaromatics by 8330	N		
YJ2002	HR-141Q-SW/SD02-SW-YJ2002-REG	03 MAY 2001	10:15	500 mL HDPE	1	None except cool to 4 C	Perchlorate by 314	N		

1002

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

01E047 R-1083

Reference Document No: 141Q-050301-EMAX

Project Number: 796887
Project Name: Fort McClellan
Sample Coordinator: Oliver Allen
Turnaround Time: Normal

Samples Shipment Date: 04 MAY 2001
Lab Destination: EMAX Laboratories, Inc.
Lab Contact: Elizabeth McIntyre
Project Contact: Randy McBride
Carrier/Waybill No.: Fed Ex/790042952109

Bill To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923
Report To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923

Special Instructions: None

Possible Hazard Indentification:
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☑

Sample Disposal:
Return to Client ☐ Disposal by Lab ☑ Archive (mos.)

1. Relinquished By (Signature/Affiliation) D.L.K.	Date: 4 May 2001 Time: 1300	1. Received By (Signature/Affiliation) EMAX	Date: 5.5.2001 Time: 0930
2. Relinquished By (Signature/Affiliation)	Date: Time:	2. Received By (Signature/Affiliation)	Date: Time:
3. Relinquished By (Signature/Affiliation)	Date: Time:	3. Received By (Signature/Affiliation)	Date: Time:

Comments: None

Cooler 1 T= 3.2°C
Cooler 2 T= 2.8°C
Cooler 3 T= 2.3°C
Cooler 4 T= 2.5°C

Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
YJ0010	HR-141Q-DEP02-DEP-YJ0010-REG	03 MAY 2001	09:30	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YJ0010	HR-141Q-DEP02-DEP-YJ0010-REG	03 MAY 2001	09:30	8 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		
YJ1002	HR-141Q-SW/SD02-SD-YJ1002-REG	03 MAY 2001	10:15	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YJ1002	HR-141Q-SW/SD02-SD-YJ1002-REG	03 MAY 2001	10:15	8 oz CWM	1	None except cool to 4 C	Perchlorate by 314, Total Organic Carbon by 9060	N		
YJ1002	HR-141Q-SW/SD02-SD-YJ1002-REG	03 MAY 2001	10:15	8 oz CWM	1	None Required	Grain Size by ASTM D421/D422	N		
YJ2002	HR-141Q-SW/SD02-SW-YJ2002-REG	03 MAY 2001	10:15	1 L HDPE	1	HNO3<pH 2	TAL Metals by 6010B/7470A - Water	N		

IT CORPORATION
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01E047 R-1003

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Reference Document No: 141Q-050301-EMAX

Sample No	Sample Name	Sample Date	Sample Time	Container		Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
YJ2002	HR-141Q-SW/SD02-SW-YJ2002-REG	03 MAY 2001	10:15	1 L Amb. Glass	2	None except cool to 4 C	Nitroaromatics by 8330	N		
YJ2002	HR-141Q-SW/SD02-SW-YJ2002-REG	03 MAY 2001	10:15	500 mL HDPE	1	None except cool to 4 C	Perchlorate by 314	N		

1002

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

01B095 J1

Reference Document No: 142Q-020801-EMAX

Project Number: 796887
Project Name: Fort McClellan
Sample Coordinator: Oliver Allen
Turnaround Time: NORMAL

Samples Shipment Date: 08 FEB 2001
Lab Destination: EMAX Laboratories, Inc.
Lab Contact: Elizabeth McIntyre
Project Contact: Randy McBride
Carrier/Waybill No.: Fed Ex/791967875513

Bill To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923
Report To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923

Special Instructions: None

Possible Hazard Indentification: Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☑

Sample Disposal: Return to Client ☐ Disposal by Lab ☑ Archive (mos.)

1. Relinquished By (Signature/Affiliation)	Date: 2-8-01 Time: 1500	1. Received By (Signature/Affiliation) EMAX	Date: 2-9-2001 Time: 0900
2. Relinquished By (Signature/Affiliation)	Date: Time:	2. Received By (Signature/Affiliation)	Date: Time:
3. Relinquished By (Signature/Affiliation)	Date: Time:	3. Received By (Signature/Affiliation)	Date: Time:

Comments: None

Cooler #3 T= 3.2°c

	Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
1	YL0001	HR-142Q-GP01-SS-YL0001-REG	08 FEB 2001	12:04	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
	YL0001	HR-142Q-GP01-SS-YL0001-REG	08 FEB 2001	12:04	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		
2	YL0002	HR-142Q-GP01-DS-YL0002-REG	08 FEB 2001	12:09	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
	YL0002	HR-142Q-GP01-DS-YL0002-REG	08 FEB 2001	12:09	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		
3	YL0003	HR-142Q-GP02-SS-YL0003-REG	08 FEB 2001	12:43	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
	YL0003	HR-142Q-GP02-SS-YL0003-REG	08 FEB 2001	12:43	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		

1001

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Reference Document No: 142Q-020801-EMAX

Sample No	Sample Name	Sample Date	Sample Time	Container		Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
YL0004	HR-142Q-GP02-DS-YL0004-REG	08 FEB 2001	12:58	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
YL0004	HR-142Q-GP02-DS-YL0004-REG	08 FEB 2001	12:58	4 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		

4

1002

IT CORPORATION
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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

01D237 J4

Reference Document No: 142Q-042401-EMAX

Project Number: 796887
Project Name: Fort McClellan
Sample Coordinator: Oliver Allen
Turnaround Time: NORMAL

Samples Shipment Date: 25 APR 2001
Lab Destination: EMAX Laboratories, Inc.
Lab Contact: Elizabeth McIntyre
Project Contact: Randy McBride
Carrier/Waybill No.: FedEx/

Bill To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923
Report To: Duane Nielsen, 312 Directors Drive, Knoxville TN 37923

Special Instructions: None

Possible Hazard Indentification: Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☑

Sample Disposal: Return to Client ☐ Disposal by Lab ☑ Archive (mos.)

1. Relinquished By (Signature/Affiliation) Dek Ca	Date: 4-25-01 Time: 1600	1. Received By (Signature/Affiliation) EMAX	Date: 4-26-2001 Time: 0930
2. Relinquished By (Signature/Affiliation)	Date: Time:	2. Received By (Signature/Affiliation)	Date: Time:
3. Relinquished By (Signature/Affiliation)	Date: Time:	3. Received By (Signature/Affiliation)	Date: Time:

Comments: None

Cooler 2 T= 2.5°C

	Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
1	YL0005	HR-142Q-DEP01-DEP-YL0005-REG	24 APR 2001	14:45	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
	YL0005	HR-142Q-DEP01-DEP-YL0005-REG	24 APR 2001	14:45	8 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		
2	YL0006	HR-142Q-DEP02-DEP-YL0006-REG	24 APR 2001	16:20	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Nitroaromatics by 8330	N		
	YL0006	HR-142Q-DEP02-DEP-YL0006-REG	24 APR 2001	16:20	8 oz CWM	1	None except cool to 4 C	Perchlorate by 314	N		

IT CORPORATION
A Member of The IT Group

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

02A039 H2/VW01-13

Reference Document No: 138Q-011002-EMAX

Project Number: 796887
Project Name: Fort McClellan
Sample Coordinator: Oliver Allen
Turnaround Time: Normal

Samples Shipment Date: 11 JAN 2002
Lab Destination: EMAX Laboratories, Inc.
Lab Contact: Elizabeth McIntyre
Project Contact: Randy McBride
Carrier/Waybill No.: Fed Ex/

Bill To: Duane Nielsen
312 Directors Drive
Knoxville TN 37923

Report To: Duane Nielsen
312 Directors Drive
Knoxville TN 37923

Special Instructions: None

Possible Hazard Indentification:
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☒

Sample Disposal:
Return to Client ☐ Disposal by Lab ☒ Archive (mos.)

1. Relinquished By (Signature/Affiliation)	Date: 1/11/02 Time: 1400	1. Received By (Signature/Affiliation)	Date: 01-12-02 Time: 0945
2. Relinquished By (Signature/Affiliation)	Date: Time:	2. Received By (Signature/Affiliation)	Date: Time:
3. Relinquished By (Signature/Affiliation)	Date: Time:	3. Received By (Signature/Affiliation)	Date: Time:

Comments: None

T = 3.5°C

	Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
1	011002-TB2	FIELDQC-BW-011002-TB2-TB	10 JAN 2002	08:00	40 ml VOA Vial	2	HCl<pH 2	Volatiles by 8260B	N		
2	YE2006R	HR-138Q-SEEP01-SEP-YE2006R-REG	10 JAN 2002	15:15	500 mL HDPE	1	HNO3<pH 2	Lead by 6010B	N		
3	YE2007R	HR-138Q-SEEP02-SEP-YE2007R-REG	10 JAN 2002	14:25	500 mL HDPE	1	HNO3<pH 2	Lead by 6010B	N		
4	YE2008R	HR-138Q-SEEP03-SEP-YE2008R-REG	10 JAN 2002	15:30	500 mL HDPE	1	HNO3<pH 2	Lead by 6010B	N		

APPENDIX B

BORING LOGS

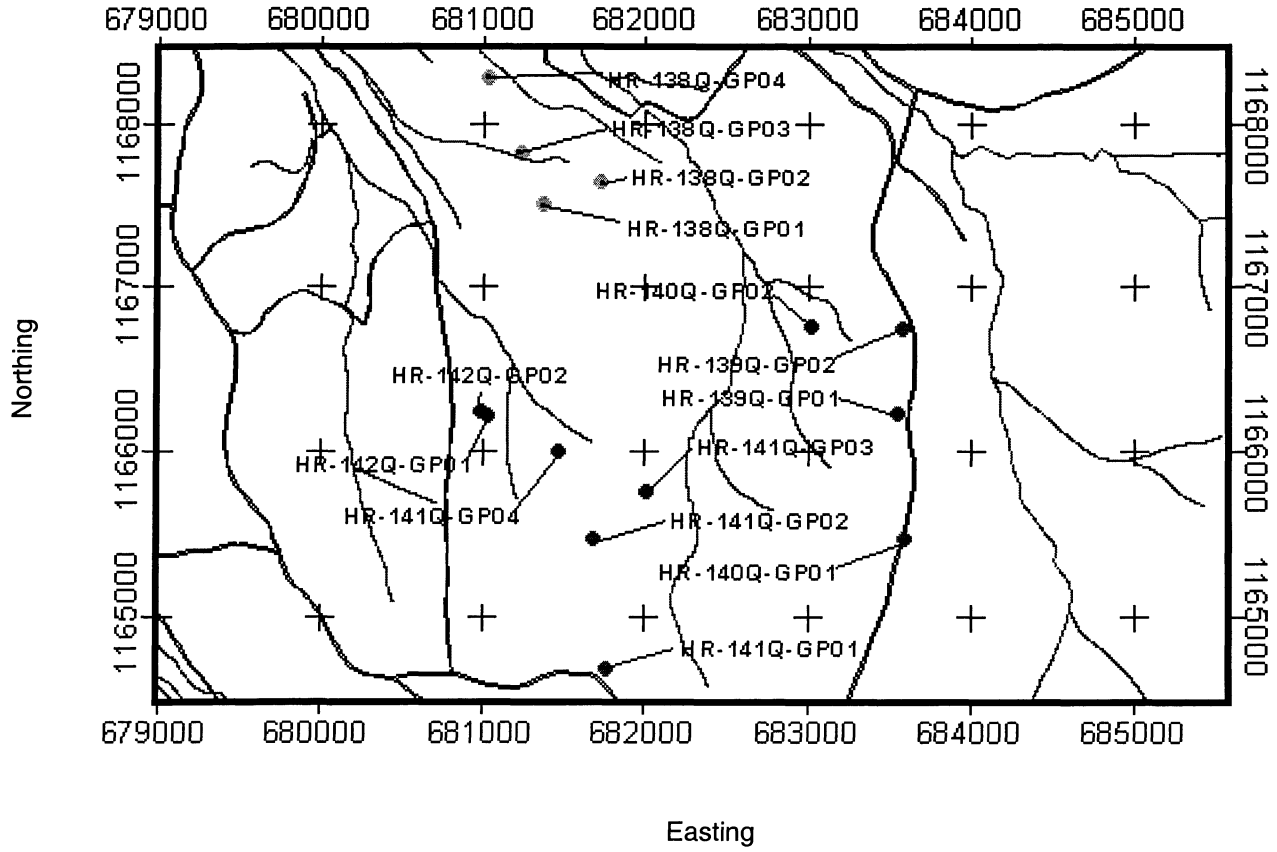
HTRW DRILLING LOG

District: **Mobile USACE**		**HOLE NUMBER** HR-138Q-GP01
1. Company name: **IT Corporation**	2. Drill Subcontractor: ESN	Sheet 1 of 3 sheets

3. Project: Fort McClellan	4. Location: **Calhoun County, Alabama**
5. Name of driller: Sammy McDaniel	6. Mfr. designation of drill: Strataprobe
7. Sizes and types of drilling and sampling equipment: Direct Push DP - 2'x2" Acetate-Lined Sampler	8. Hole location:Artillery & Mortar Impact Areas S. of Bains Gap, Parcel 138Q 9. Surface elevation (feet above mean sea level): 814.4 10. Date started: 01/31/01 — 11. Date completed: 01/31/01
12. Overburden thickness (feet bgs): >11	15. Depth groundwater encountered (feet bgs): Not encountered
13. Depth drilled into rock (feet bgs): 0	16. Depth to water and elapsed time after drilling completed (feet bgs): NA
14. Total depth of hole (feet bgs): 11	17. Other water level measurements (specify): NA

18. Geotechnical samples:	Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: NA		
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)	21. Total core recovery:
		X	Nitroaromatics	Perchlorate		NA
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist:		
	X			Nicole Badon		

LOCATION SKETCH/COMMENTS:



Project: Fort McClellan

bgs= below ground surface
NA = Not applicable

Hole no.: HR-138Q-GP01

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: HR-138Q-GP01

Project: Fort McClellan | Geologist: Nicole Badon | Sheet 2 of 3 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	0	ml: Stiff, medium brown SILT, some Clay, little fine to medium Sand, trace fine to medium Gravel, moist.	ml		Organic Vapor = 0.0ppm		YE0001		Rec 1.0'/1.0 (0-1' bgs)
	1	cl: Medium stiff, orange-red CLAY, some Silt, little fine Sand, moist.	cl		Organic Vapor = 0.0ppm				Rec 2.5'/3.0 (1-4' bgs)
	2								
	3								
	4	cl-ml: Stiff, orange-red to off white CLAY and SILT, little Sand, moist.	cl-ml		Organic Vapor = 0.0ppm				Rec 3.8'/4.0 (4-8' bgs)
810									
	5								
	6								
	7								
	8	cl-ml: Medium stiff, light gray CLAY and SILT, trace fine, subangular Gravel, moist.	cl-ml		Organic Vapor = 0.0ppm				Rec 3.0'/3.0 (8-11' bgs)
	9								
805									
	10								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: HR-138Q-GP01

Project: Fort McClellan | Geologist: Nicole Badon | Sheet 3 of 3 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	11						YE0002 YE0003		Direct push refusal at 11' bgs Bottom of borehole at 11' bgs 11

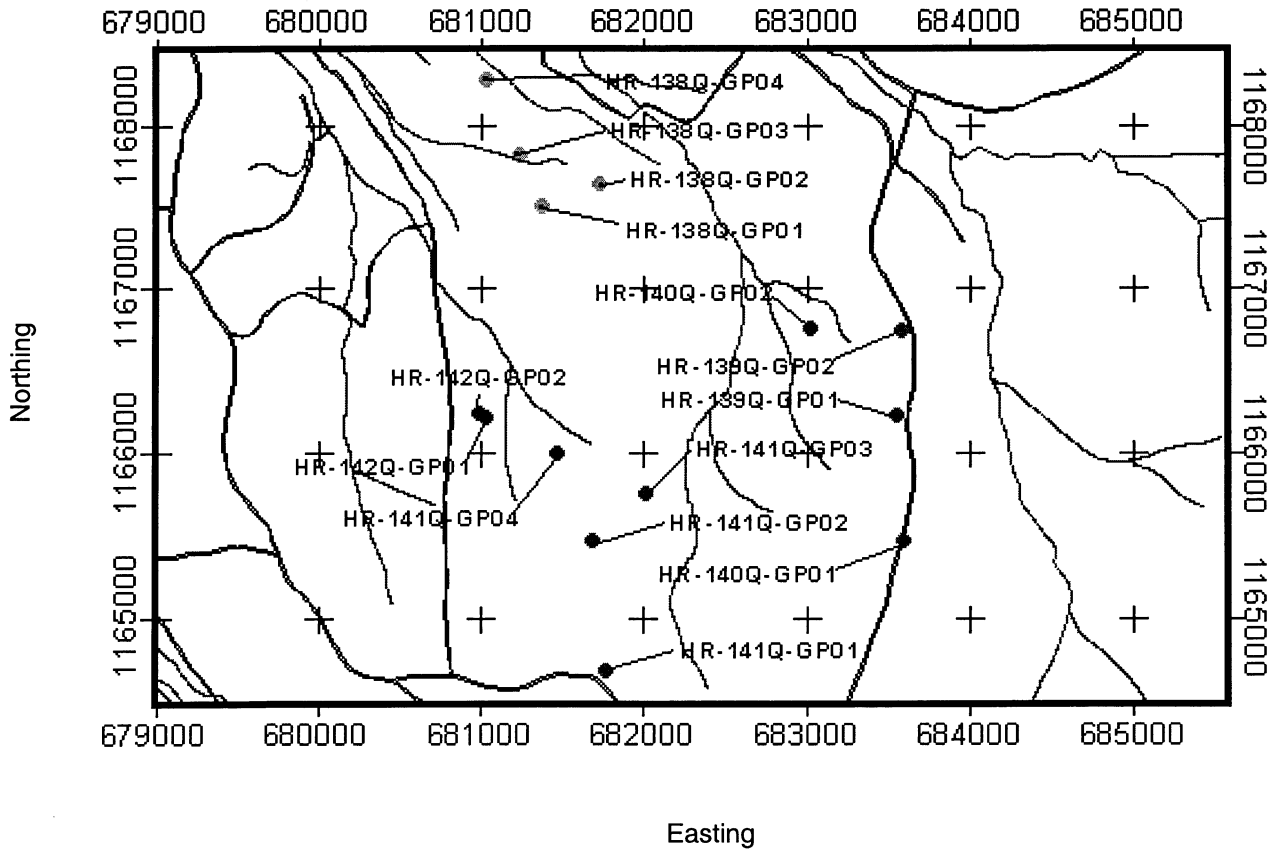
HTRW DRILLING LOG

District: **Mobile USACE**		HOLE NUMBER HR-138Q-GP02
1. Company name: **IT Corporation**	2. Drill Subcontractor: ESN	Sheet 1 of 2 sheets

3. Project: Fort McClellan	4. Location: **Calhoun County, Alabama**
5. Name of driller: Sammy McDaniel	6. Mfr. designation of drill: Strataprobe
7. Sizes and types of drilling and sampling equipment: Direct Push DP - 2'x2" Acetate-Lined Sampler	8. Hole location:Artillery & Mortar Impact Areas S. of Bains Gap, Parcel 138Q 9. Surface elevation (feet above mean sea level): 809.82 10. Date started: 02/01/01 — 11. Date completed: 02/01/01
12. Overburden thickness (feet bgs): >5	15. Depth groundwater encountered (feet bgs): Not encountered
13. Depth drilled into rock (feet bgs): 0	16. Depth to water and elapsed time after drilling completed (feet bgs): NA
14. Total depth of hole (feet bgs): 5	17. Other water level measurements (specify): NA

18. Geotechnical samples:	Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: NA		
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)	21. Total core recovery:
		X	Nitroaromatics	Perchlorate		NA
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist:		
	X			Nicole Badon		

LOCATION SKETCH/COMMENTS:



Project: Fort McClellan

bgs= below ground surface
NA = Not applicable

Hole no.: HR-138Q-GP02

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: HR-138Q-GP02

Project: Fort McClellan | Geologist: Nicole Badon | Sheet 2 of 2 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	0	ml: Medium brown, soft, moist SILT, some Clay, little fine to medium Sand, little coarse, subrounded Gravel, trace roots.	ml		Organic Vapor = 0.0ppm		YE0005		Rec 1.0'/1.0 (0-1' bgs)
	1	ml: Light brown, soft, moist SILT, some Clay, little fine to medium Sand, trace fine, subrounded Gravel.	ml		Organic Vapor = 0.0ppm				Rec 1.0'/1.0 (1-2' bgs)
	2	cl: Light brown, medium stiff CLAY, some Silt, little coarse Sand, trace fine, subangular Gravel.	cl		Organic Vapor = 0.0ppm				Rec 1.2'/2.0 (2-4' bgs)
	3								
	4	cl: Reddish-brown, medium stiff, moist CLAY, some Silt, trace medium to coarse, subangular Gravel.	cl		Organic Vapor = 0.0ppm		YE0006		Rec 1.3'/1.0 (4-5' bgs) Direct push refusal at 5' bgs Bottom of borehole at 5' bgs
805	5								

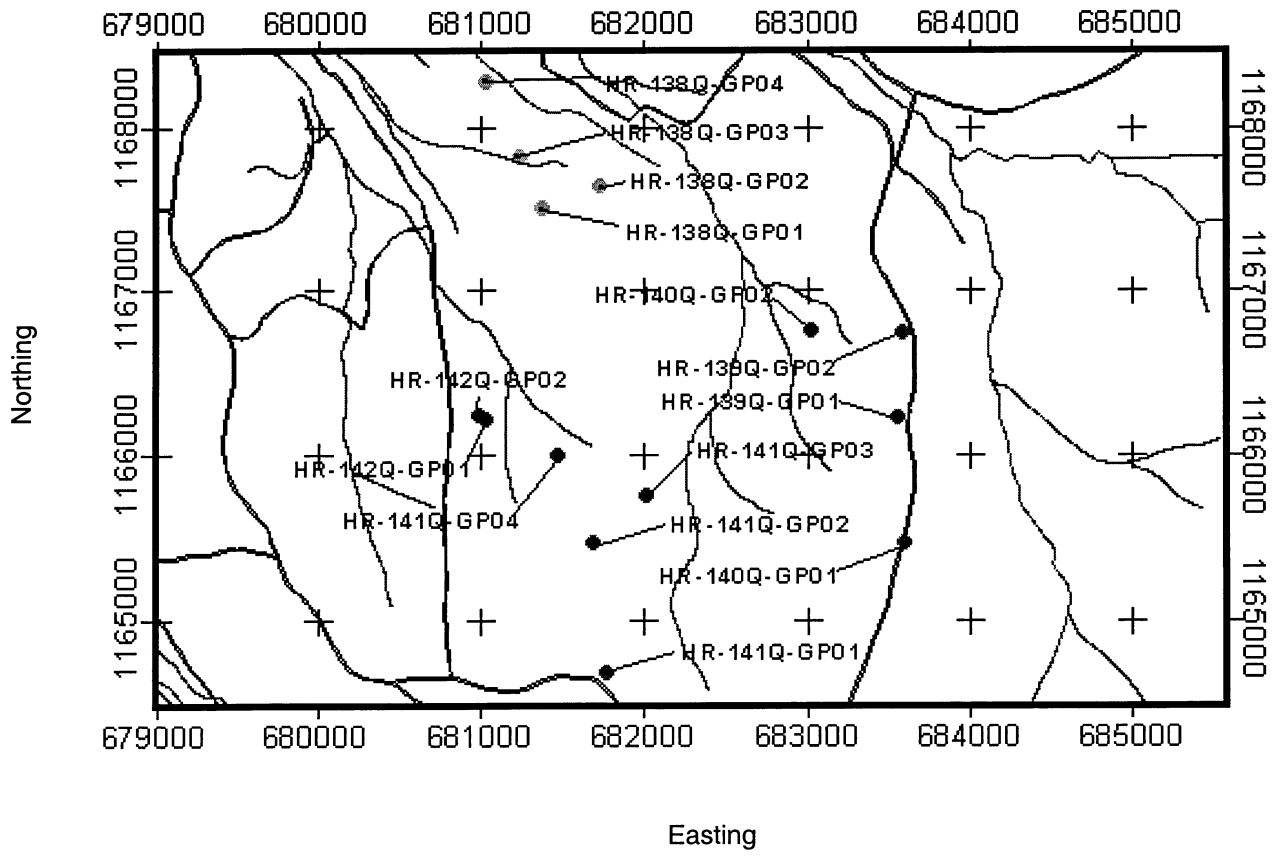
HTRW DRILLING LOG

District: **Mobile USACE**		**HOLE NUMBER** HR-138Q-GP03
1. Company name: **IT Corporation**	2. Drill Subcontractor: ESN	Sheet 1 of 2 sheets

3. Project: Fort McClellan	4. Location: **Calhoun County, Alabama**
5. Name of driller: Sammy McDaniel	6. Mfr. designation of drill: Strataprobe
7. Sizes and types of drilling and sampling equipment: Direct Push DP - 2'x2" Acetate-Lined Sampler	8. Hole location:Artillery & Mortar Impact Areas S. of Bains Gap, Parcel 138Q 9. Surface elevation (feet above mean sea level): 811.04 10. Date started: 01/31/01 — 11. Date completed: 01/31/01
12. Overburden thickness (feet bgs): >8	15. Depth groundwater encountered (feet bgs): Not encountered
13. Depth drilled into rock (feet bgs): 0	16. Depth to water and elapsed time after drilling completed (feet bgs): NA
14. Total depth of hole (feet bgs): 8	17. Other water level measurements (specify): NA

18. Geotechnical samples:	Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: NA		
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)	21. Total core recovery:
		X	Nitroaromatics	Perchlorate		NA
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist:		
	X			Nicole Badon		

LOCATION SKETCH/COMMENTS:



Project: Fort McClellan

bgs= below ground surface
NA = Not applicable

Hole no.: HR-138Q-GP03

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: HR-138Q-GP03

Project: Fort McClellan | Geologist: Nicole Badon | Sheet 2 of 2 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	0	ml: Soft, medium brown SILT, some Clay, little fine to medium Sand, trace coarse, subangular Gravel, moist.	ml		Organic Vapor = 0.0ppm		YE0007		Rec 1.0'/1.0' (0-1' bgs)
810	1	cl: Medium stiff, light brown CLAY, some Silt, little medium to coarse Sand, trace fine, subangular Gravel, moist.	cl		Organic Vapor = 0.0ppm				Rec 2.1'/3.0' (1-4' bgs)
	2								
	3								
	4	cl: Stiff, orange-red CLAY, some Silt, trace medium to coarse Sand, moist.							Rec 4.0'/4.0' (4-8' bgs)
	5								
805	6		cl						
	7				Organic Vapor = 0.0ppm		YE0008		Direct push refusal at 8' bgs Bottom of borehole at 8' bgs
	8								

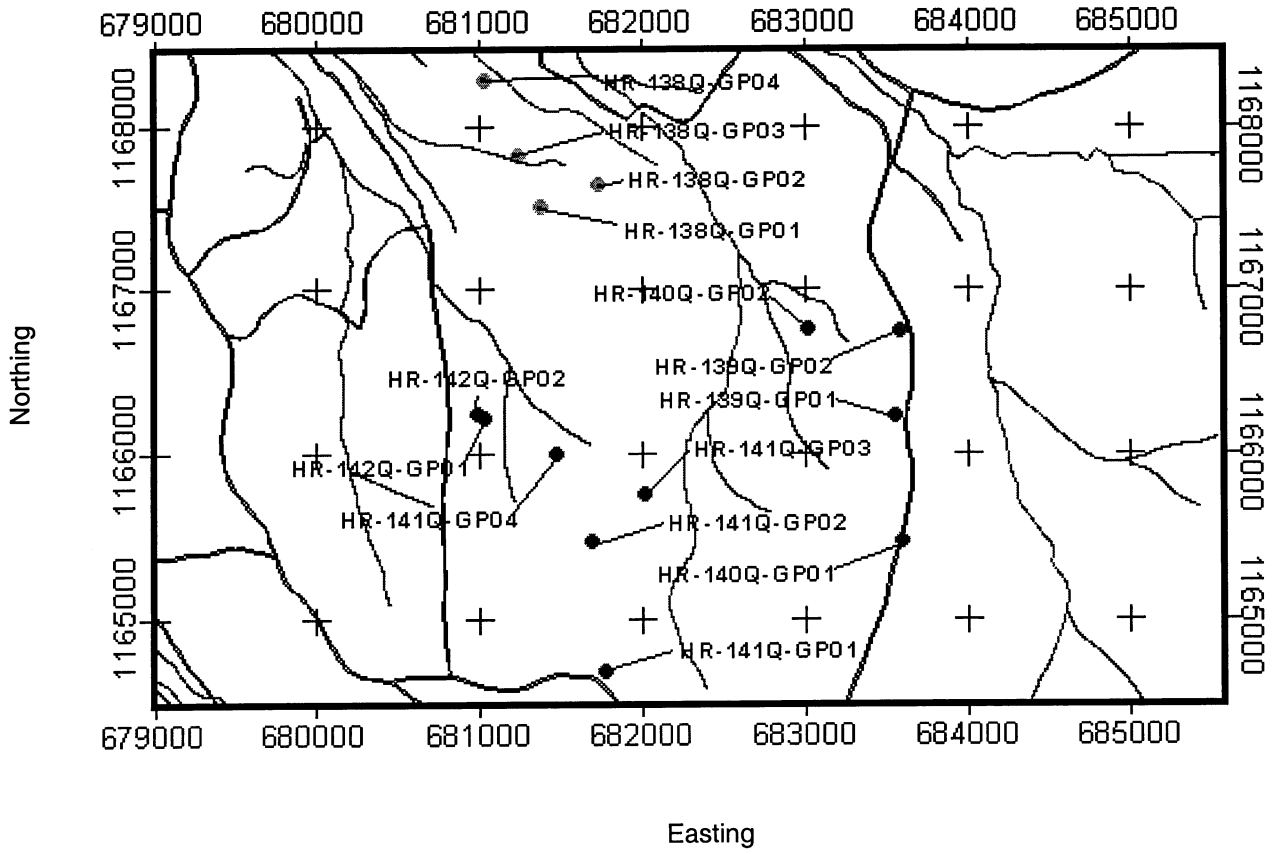
HTRW DRILLING LOG

District: **Mobile USACE**		HOLE NUMBER HR-138Q-GP04
1. Company name: **IT Corporation**	2. Drill Subcontractor: ESN	Sheet 1 of 3 sheets

3. Project: Fort McClellan	4. Location: **Calhoun County, Alabama**
5. Name of driller: Sammy McDaniel	6. Mfr. designation of drill: Strataprobe
7. Sizes and types of drilling and sampling equipment: Direct Push DP - 2'x2" Acetate-Lined Sampler	8. Hole location:Artillery & Mortar Impact Areas S. of Bains Gap, Parcel 138Q 9. Surface elevation (feet above mean sea level): 812.26 10. Date started: 01/31/01 — 11. Date completed: 01/31/01
12. Overburden thickness (feet bgs): >11	15. Depth groundwater encountered (feet bgs): Not encountered
13. Depth drilled into rock (feet bgs): 0	16. Depth to water and elapsed time after drilling completed (feet bgs): NA
14. Total depth of hole (feet bgs): 11	17. Other water level measurements (specify): NA

18. Geotechnical samples:	Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: NA		
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)	21. Total core recovery:
		X	Nitroaromatics	Perchlorate		NA
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist:		
	X			Nicole Badon		

LOCATION SKETCH/COMMENTS:



Project: Fort McClellan

bgs= below ground surface
NA = Not applicable

Hole no.: HR-138Q-GP04

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: HR-138Q-GP04

Project: Fort McClellan | Geologist: Nicole Badon | Sheet 2 of 3 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	0	cl: Soft, medium brown CLAY, some Silt, little fine Sand, trace fine, subangular Gravel, trace organic matter (roots), moist.	cl		Organic Vapor = 0.0ppm		YE0009		Rec 1.0'/1.0' (0-1' bgs)
	1	cl: Medium stiff, orange-red CLAY, some Silt, little medium Sand, trace fine, subangular Gravel, moist.	cl		Organic Vapor = 0.0ppm				Rec 2.2'/3.0' (1-4' bgs)
810	2								
	3								
	4	cl: Very stiff, orange-red CLAY, some Silt, little medium to coarse Sand, moist.	cl		Organic Vapor = 0.0ppm				Rec 4.0'/4.' (4-8' bgs)
	5								
	6								
805	7								
	8	cl: Medium stiff to stiff, orange-red CLAY, little Silt, trace fine to medium Sand, moist.	cl						Rec 3.0'/3.0 (8-11' bgs)
	9								
	10								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: HR-138Q-GP04

Project: Fort McClellan | Geologist: Nicole Badon | Sheet 3 of 3 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	11				Organic Vapor = 0.0ppm		YE0010		Direct push refusal at 11' bgs Bottom of borehole at 11' bgs

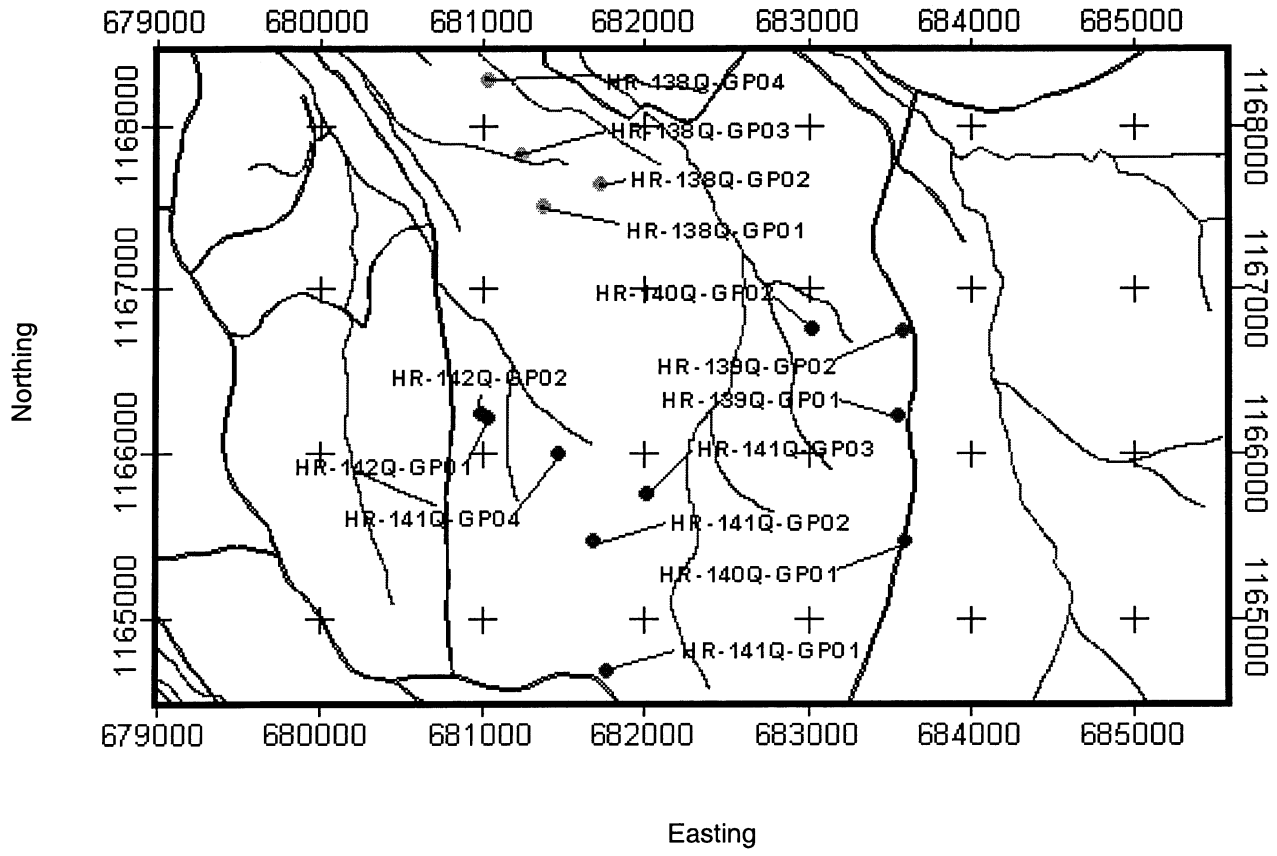
HTRW DRILLING LOG

District: **Mobile USACE**		**HOLE NUMBER** HR-139Q-GP01
1. Company name: **IT Corporation**	2. Drill Subcontractor: ESN	Sheet 1 of 3 sheets

3. Project: Fort McClellan	4. Location: **Calhoun County, Alabama**
5. Name of driller: Sammy McDaniel	6. Mfr. designation of drill: Strataprobe
7. Sizes and types of drilling and sampling equipment: Direct Push DP - 2'x2" Acetate-Lined Sampler	8. Hole location:Artillery & Mortar Impact Areas S. of Bains Gap, Parcel 139Q 9. Surface elevation (feet above mean sea level): 812.33 10. Date started: 02/08/01 — 11. Date completed: 02/08/01
12. Overburden thickness (feet bgs): >11	15. Depth groundwater encountered (feet bgs): Not encountered
13. Depth drilled into rock (feet bgs): 0	16. Depth to water and elapsed time after drilling completed (feet bgs): NA
14. Total depth of hole (feet bgs): 11	17. Other water level measurements (specify): NA

18. Geotechnical samples:	Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: NA		
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)	21. Total core recovery:
		X	Nitroaromatics	Perchlorate		NA
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist:		
	X			Nicole Badon		

LOCATION SKETCH/COMMENTS:



Project: Fort McClellan

bgs= below ground surface
NA = Not applicable

Hole no.: HR-139Q-GP01

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: HR-139Q-GP01

Project: Fort McClellan | Geologist: Nicole Badon | Sheet 2 of 3 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	0	ml: Light brown, soft, moist SILT, some medium to coarse Sand, little fine to coarse, subrounded Gravel.	ml		Organic Vapor = 0.0ppm		YG0001		Rec 1.0'/1.0' (0-1' bgs)
	1	ml: Yellowish-orange, medium stiff, moist SILT, some fine to medium Sand, little medium, subangular Gravel, trace Clay.	ml		Organic Vapor = 0.0ppm				Rec 2.0'/3.0' (1-4' bgs)
810	2								
	3								
	4	ml: Light gray, mottled yellowish-orange SILT, some Clay, trace fine Sand.	ml		Organic Vapor = 0.0ppm				Rec 4.0'/4.0' (4-8' bgs)
	5								
	6								
805	7								
	8	ml: Yellowish-orange, mottled light gray, medium stiff SILT, little Clay, little fine, angular Gravel, trace fine Sand.	ml						Rec 3.4'/3.0 (8-11' bgs)
	9								
	10								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: HR-139Q-GP01

Project: Fort McClellan | Geologist: Nicole Badon | Sheet 3 of 3 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	11				Organic Vapor = 0.0ppm		YG0002		Direct push refusal at 11' bgs Bottom of borehole at 11' bgs

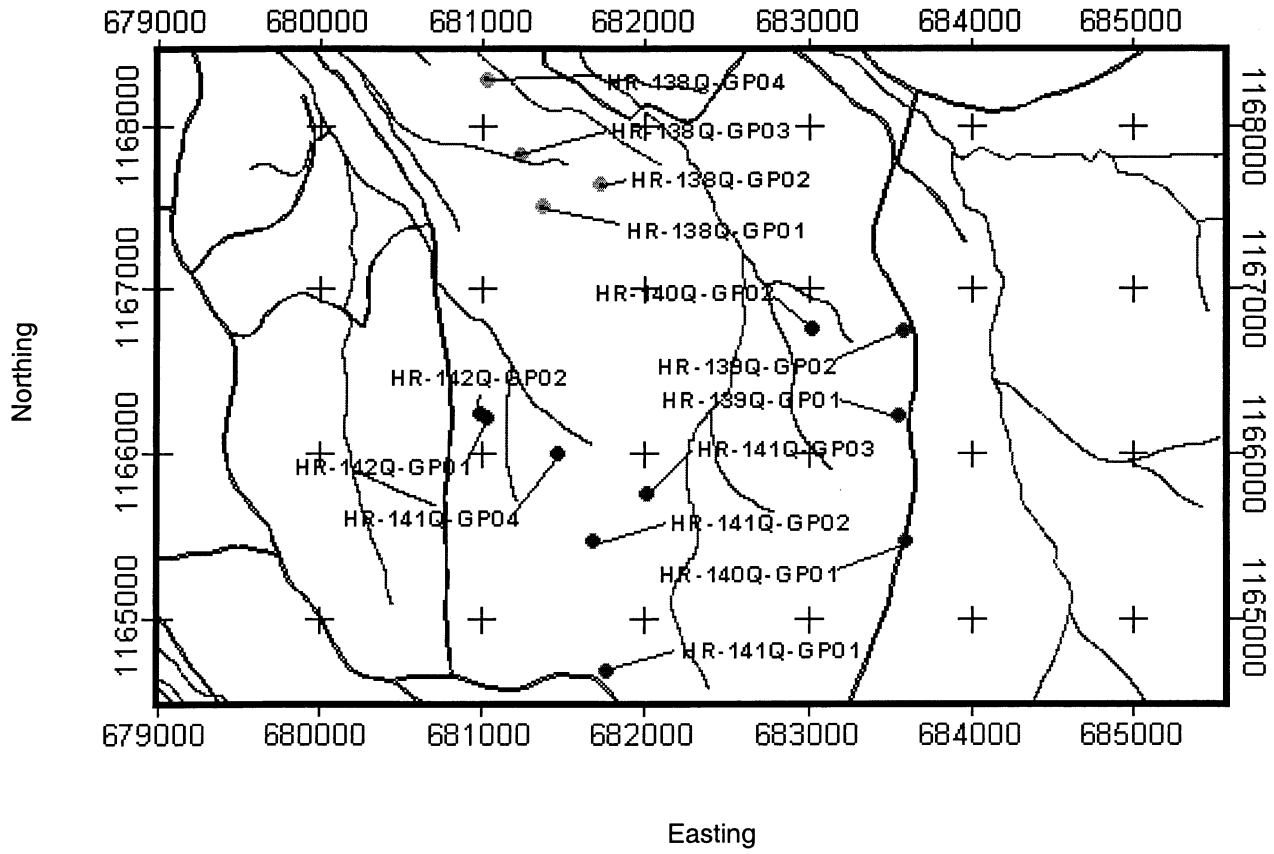
HTRW DRILLING LOG

District: **Mobile USACE**		**HOLE NUMBER** HR-139Q-GP02
1. Company name: **IT Corporation**	2. Drill Subcontractor: ESN	Sheet 1 of 3 sheets

3. Project: Fort McClellan	4. Location: **Calhoun County, Alabama**
5. Name of driller: Sammy McDaniel	6. Mfr. designation of drill: Strataprobe
7. Sizes and types of drilling and sampling equipment: Direct Push DP - 2'x2" Acetate-Lined Sampler	8. Hole location:Artillery & Mortar Impact Areas S. of Bains Gap, Parcel 139Q 9. Surface elevation (feet above mean sea level): 1030.31 10. Date started: 02/07/01 — 11. Date completed: 02/07/01
12. Overburden thickness (feet bgs): >11	15. Depth groundwater encountered (feet bgs): Not encountered
13. Depth drilled into rock (feet bgs): 0	16. Depth to water and elapsed time after drilling completed (feet bgs): NA
14. Total depth of hole (feet bgs): 11	17. Other water level measurements (specify): NA

18. Geotechnical samples:	Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: NA		
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)	21. Total core recovery:
		X	Nitroaromatics	Perchlorate		NA
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist:		
	X			Nicole Badon		

LOCATION SKETCH/COMMENTS:



HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: HR-139Q-GP02

Project: Fort McClellan | Geologist: Nicole Badon | Sheet 2 of 3 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
1030	0	ml: Dark brown, soft, moist SILT, little fine to medium Sand, little medium to coarse, subangular Gravel, trace organics (roots).	ml		Organic Vapor = 0.0ppm		YG0003		Rec 1.0'/1.0)0-1' bgs)
	1	cl: Light brown, stiff, moist CLAY, some Silt, trace fine to medium Sand.	cl		Organic Vapor = 0.0ppm				Rec 2.2'/3.0 (1-4' bgs)
	2								
	3								
	4	cl: Light brown, mottled light gray CLAY, some Silt, trace fine Sand.	cl		Organic Vapor = 0.0ppm				Rec 4.0'/4.0 (4-8' bgs)
1025	5								
	6								
	7								
	8	cl: Light gray, mottled light brown CLAY, some Silt, trace fine Sand.	cl		Organic Vapor = 0.0ppm				Rec 3.2'/3.0 (8-11' bgs)
	9								
	10								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: HR-139Q-GP02

Project: Fort McClellan | Geologist: Nicole Badon | Sheet 3 of 3 sheets

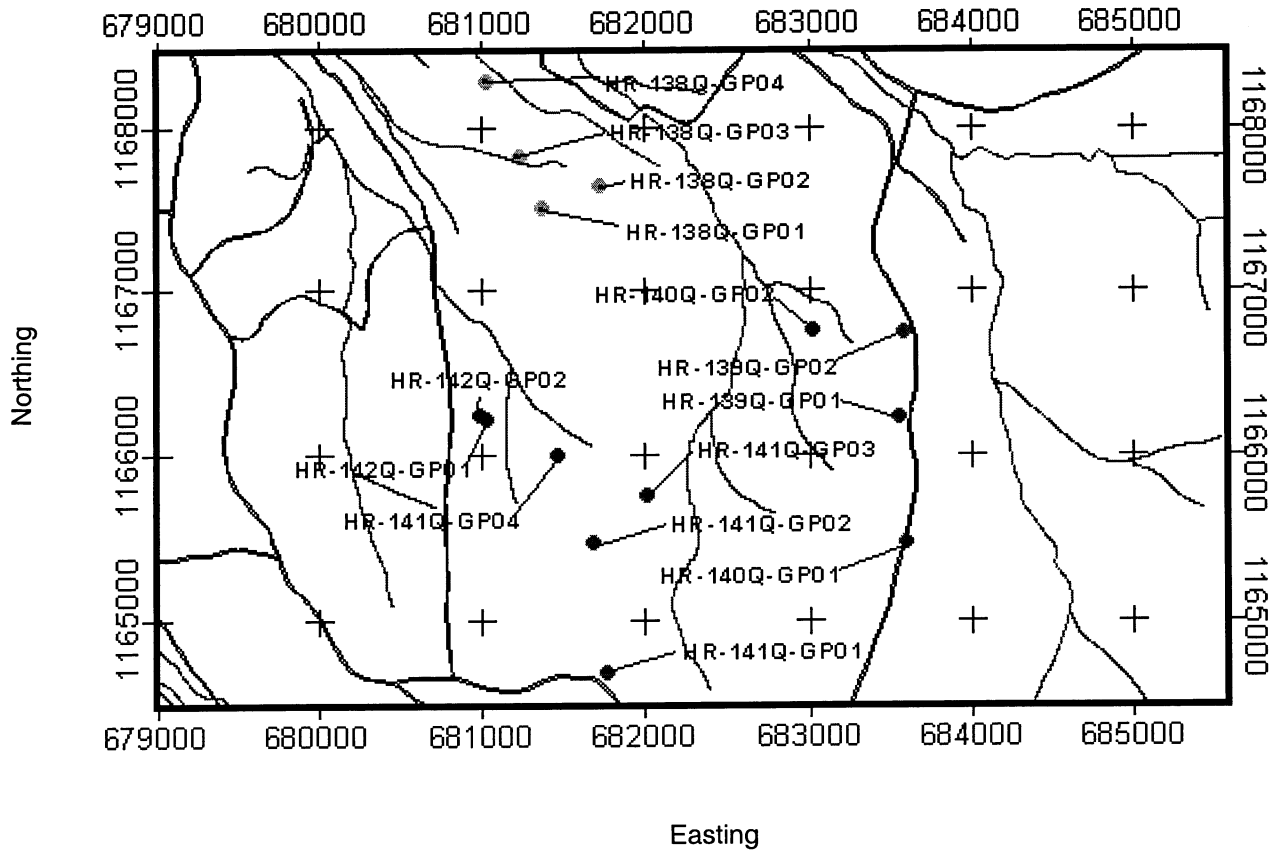
Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	10 20						YG0004 YG0005		Direct push refusal at 11' bgs Bottom of borehole at 11' bgs
	11								11

HTRW DRILLING LOG

District: **Mobile USACE**		**HOLE NUMBER** HR-140Q-GP01
1. Company name: **IT Corporation**	2. Drill Subcontractor: ESN	Sheet 1 of 2 sheets
3. Project: Fort McClellan	4. Location: **Calhoun County, Alabama**	
5. Name of driller: Sammy McDaniel	6. Mfr. designation of drill: Strataprobe	
7. Sizes and types of drilling and sampling equipment: Direct Push DP - 2'x2" Acetate-Lined Sampler	8. Hole location:Artillery & Mortar Impact Areas S. of Bains Gap, Parcel 140Q 9. Surface elevation (feet above mean sea level): 1030.08 10. Date started: 02/07/01	11. Date completed: 02/07/01
12. Overburden thickness (feet bgs): >8	15. Depth groundwater encountered (feet bgs): Not encountered	
13. Depth drilled into rock (feet bgs): 0	16. Depth to water and elapsed time after drilling completed (feet bgs): NA	
14. Total depth of hole (feet bgs): 8	17. Other water level measurements (specify): NA	

18. Geotechnical samples:	Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: NA		
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)	21. Total core recovery:
		X	Nitroaromatics	Perchlorate		NA
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist:		
	X			Nicole Badon		

LOCATION SKETCH/COMMENTS:



bgs= below ground surface
NA = Not applicable

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: HR-140Q-GP01

Project: Fort McClellan | Geologist: Nicole Badon | Sheet 2 of 2 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
1030	0	ml: Dark brown, moist, soft SILT, some fine to medium Sand, little medium to coarse, subangular Gravel, trace organics (roots).	ml		Organic Vapor = 0.0ppm		YH0001		Rec 1.0'/1.0' (0-1' bgs)
	1	ml: Light brown, stiff, moist SILT, some fine to medium Sand, little Clay.	ml		Organic Vapor = 0.0ppm				Rec 2.3'/3.0' (1-4' bgs)
	2								
	3								
	4	ml: Light grayish-orange, stiff, dry SILT, some fine Sand, trace Clay.	ml		Organic Vapor = 0.0ppm				Rec 4.0'/4.0' (4-8' bgs)
1025	5								
	6		ml						
	7								
	8						YH0002		Direct push refusal at 8' bgs Bottom of borehole at 8' bgs

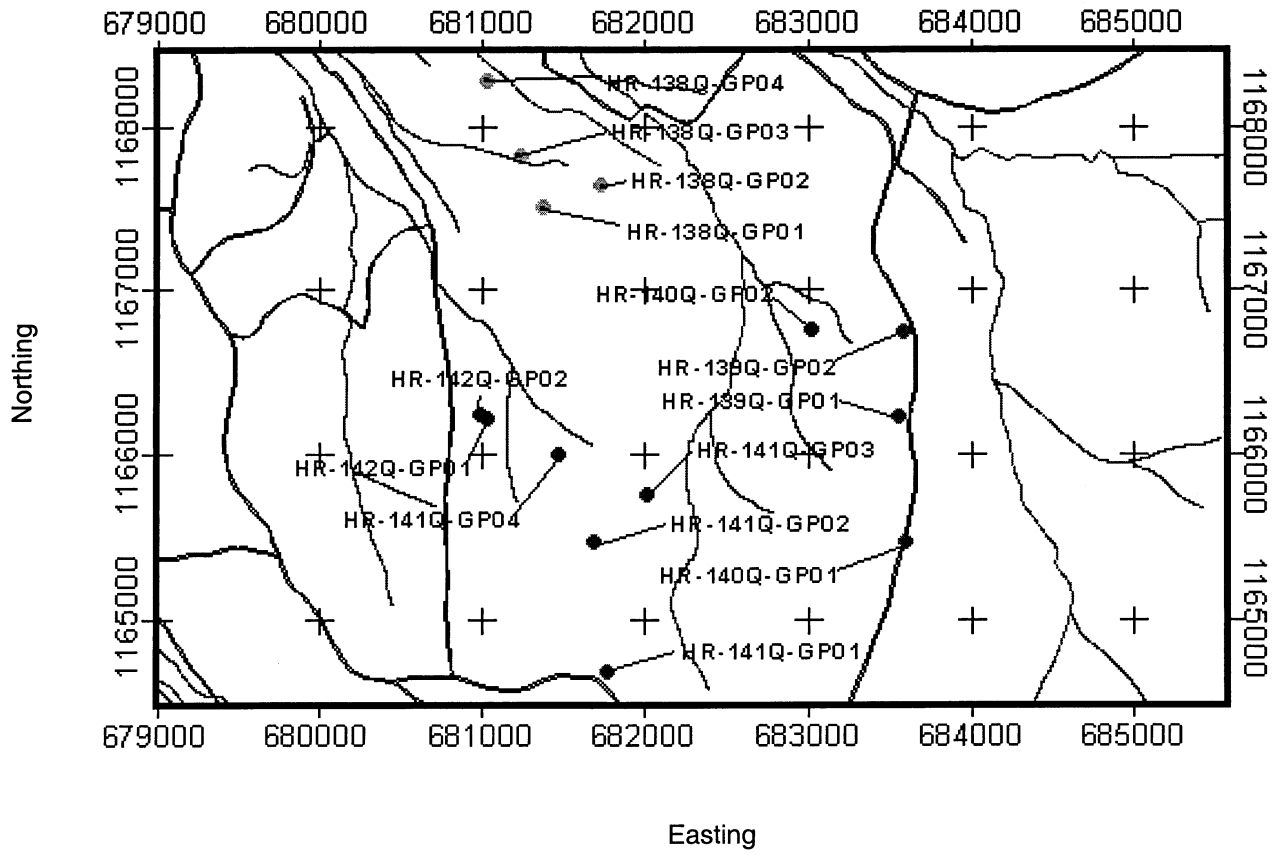
HTRW DRILLING LOG

District: **Mobile USACE**		HOLE NUMBER HR-140Q-GP02
1. Company name: **IT Corporation**	2. Drill Subcontractor: ESN	Sheet 1 of 2 sheets

3. Project: Fort McClellan	4. Location: **Calhoun County, Alabama**
5. Name of driller: Sammy McDaniel	6. Mfr. designation of drill: NA
7. Sizes and types of drilling and sampling equipment: Hand Auger	8. Hole location:Artillery & Mortar Impact Areas S. of Bains Gap, Parcel 140Q
	9. Surface elevation (feet above mean sea level): 809.88
	10. Date started: 02/08/01 / 11. Date completed: 02/08/01
12. Overburden thickness (feet bgs): >2	15. Depth groundwater encountered (feet bgs): Not encountered
13. Depth drilled into rock (feet bgs): 0	16. Depth to water and elapsed time after drilling completed (feet bgs): NA
14. Total depth of hole (feet bgs): 2	17. Other water level measurements (specify): NA

18. Geotechnical samples:	Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: NA		
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)	21. Total core recovery:
		X	Nitroaromatics	Perchlorate		NA
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist: Nicole Badon		
	X					

LOCATION SKETCH/COMMENTS:



Project: Fort McClellan

bgs= below ground surface
NA = Not applicable

Hole no.: HR-140Q-GP02

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: HR-140Q-GP02

Project: Fort McClellan | Geologist: Nicole Badon | Sheet 2 of 2 sheets

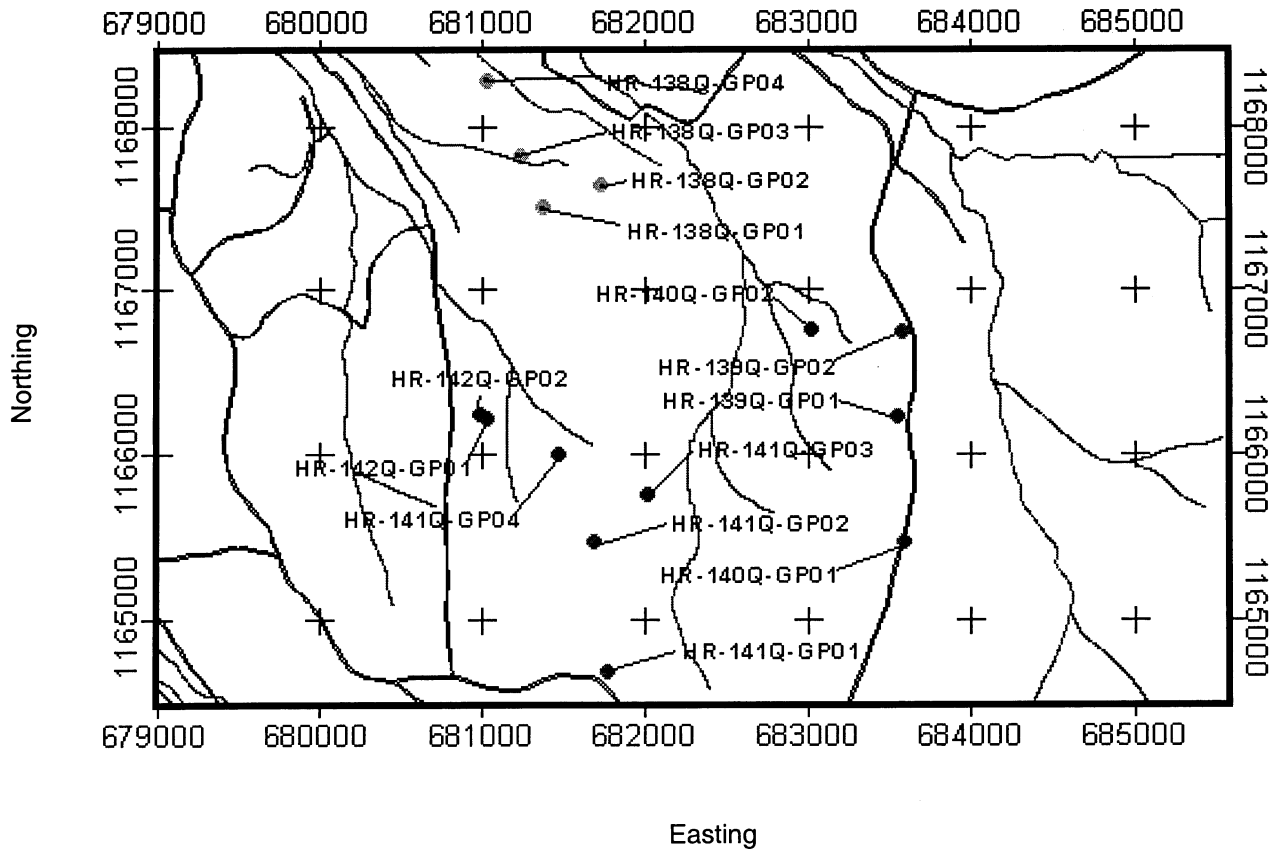
Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	0	ml: Medium brown, moist SILT, some fine to medium Sand, little medium to coarse Gravel, trace organics (roots).	ml		Organic Vapor = 0.0ppm		YH0003		Rec 1.0'/1.0' (0-1' bgs)
	1	cl: Light brown, moist CLAY, some Silt, little medium to coarse Sand, little medium to coarse, angular Gravel.	cl		Organic Vapor = 0.0ppm		YH0004 YH0005		Rec 1.0'/1.0' (1-2' bgs) Hand auger refusal at 2' bgs Bottom of borehole at 2' bgs
	2								

HTRW DRILLING LOG

District: **Mobile USACE**		**HOLE NUMBER** HR-141Q-GP01
1. Company name: **IT Corporation**	2. Drill Subcontractor: ESN	Sheet 1 of 2 sheets
3. Project: Fort McClellan	4. Location: **Calhoun County, Alabama**	
5. Name of driller: Sammy McDaniel	6. Mfr. designation of drill: Strataprobe	
7. Sizes and types of drilling and sampling equipment: Direct Push DP - 2'x2" Acetate-Lined Sampler	8. Hole location:Artillery & Mortar Impact Areas S. of Bains Gap, Parcel 141Q 9. Surface elevation (feet above mean sea level): 1523.72 10. Date started: 02/07/01	11. Date completed: 02/07/01
12. Overburden thickness (feet bgs): >6	15. Depth groundwater encountered (feet bgs): Not encountered	
13. Depth drilled into rock (feet bgs): 0	16. Depth to water and elapsed time after drilling completed (feet bgs): NA	
14. Total depth of hole (feet bgs): 6	17. Other water level measurements (specify): NA	

18. Geotechnical samples:	Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: NA		
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)	21. Total core recovery:
		X	Nitroaromatics	Perchlorate		NA
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist:		
	X			Nicole Badon		

LOCATION SKETCH/COMMENTS:



Project: Fort McClellan

bgs= below ground surface
NA = Not applicable

Hole no.: HR-141Q-GP01

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: HR-141Q-GP01

Project: Fort McClellan | Geologist: Nicole Badon | Sheet 2 of 2 sheets

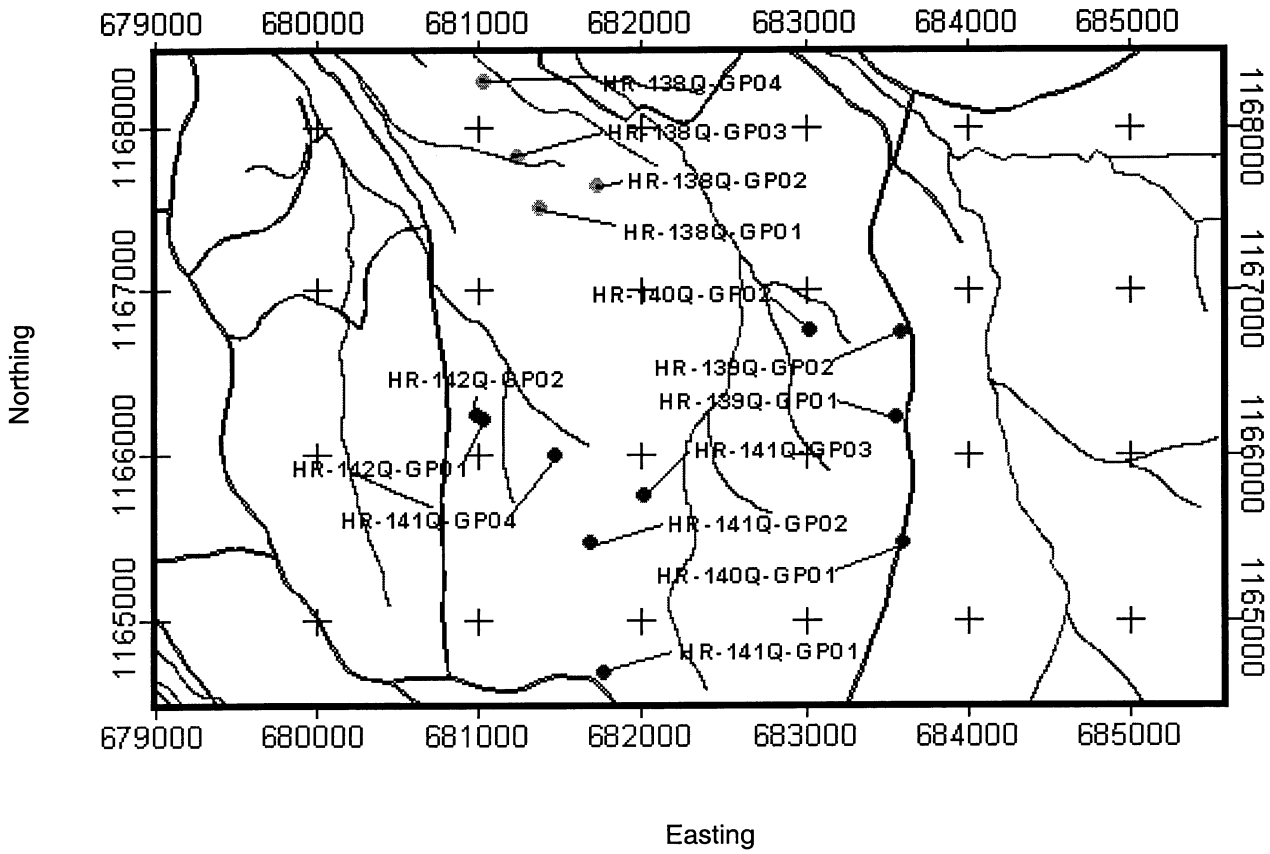
Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	0	ml: Medium to light brown, soft, moist SILT, little Clay, trace fine to medium Sand, trace coarse subangular Gravel.	ml		Organic Vapor = 0.0ppm		YJ0001		Rec 1.0'/1.0' (0-1' bgs)
	1	ml: Light brown to yellowish-orange, medium stiff, dry, SILT, some medium to coarse Sand, trace medium gravel-size fragments of sandstone.	ml		Organic Vapor = 0.0ppm				Rec 2.9'/3.0' (1-4' bgs)
	2								
	3								
1520									
	4	ml: Yellowish-brown, medium stiff, dry, SILT, some fine to medium Sand.	ml		Organic Vapor = 0.0ppm				Rec 1.9'/2.0' (4-6' bgs)
	5								
							YJ0002		Direct push refusal at 6' bgs Bottom of borehole at 6' bgs
	6								

HTRW DRILLING LOG

District: **Mobile USACE**		**HOLE NUMBER** HR-141Q-GP02
1. Company name: **IT Corporation**	2. Drill Subcontractor: ESN	Sheet 1 of 2 sheets
3. Project: Fort McClellan	4. Location: **Calhoun County, Alabama**	
5. Name of driller: Sammy McDaniel	6. Mfr. designation of drill: NA	
7. Sizes and types of drilling and sampling equipment: Hand Auger	8. Hole location:Artillery & Mortar Impact Areas S. of Bains Gap, Parcel 141Q	
	9. Surface elevation (feet above mean sea level): 1352.68	
	10. Date started: 04/11/01	11. Date completed: 04/11/01
12. Overburden thickness (feet bgs): >4	15. Depth groundwater encountered (feet bgs): Not encountered	
13. Depth drilled into rock (feet bgs): 0	16. Depth to water and elapsed time after drilling completed (feet bgs): NA	
14. Total depth of hole (feet bgs): 4	17. Other water level measurements (specify): NA	

18. Geotechnical samples:	Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: NA		
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)	21. Total core recovery:
		X	Nitroaromatics	Perchlorate		NA
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist:		
	X			Leslie O'Hare		

LOCATION SKETCH/COMMENTS:



Project: Fort McClellan

bgs= below ground surface
NA = Not applicable

Hole no.: HR-141Q-GP02

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: HR-141Q-GP02

Project: Fort McClellan | Geologist: Leslie O'Hare | Sheet 2 of 2 sheets

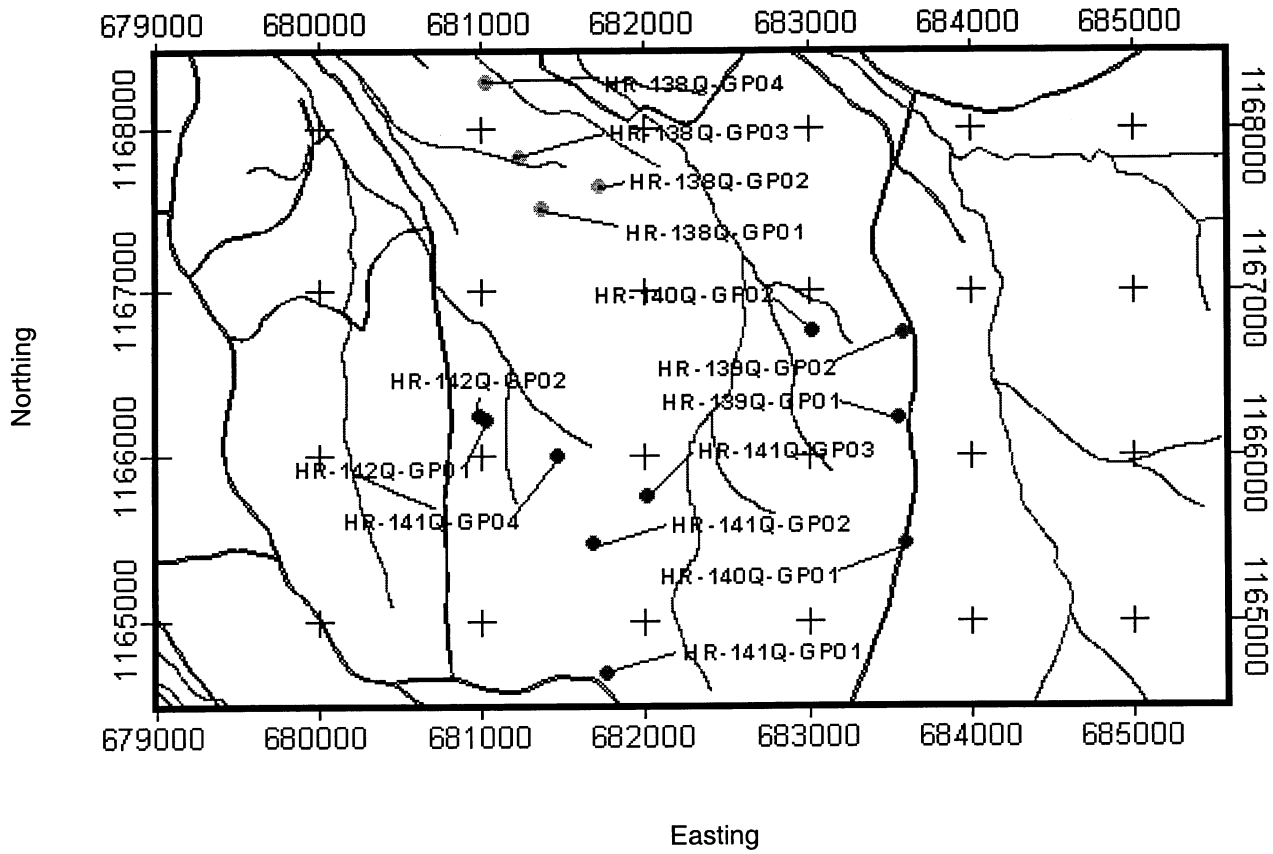
Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	0	cl: Light brown, moist, soft CLAY, some coarse quartz-rich subangular coarse to fine Gravel.	cl		Organic Vapor = 0.0ppm		YJ0003		Rec 1.0'/1.0' (0-1' bgs)
	1	cl: Light brown, dry, soft CLAY.	cl						Rec 2.0'/2.0' (1-3' bgs)
1350	2								
	3	cl: Light gray, mottled, light brown, dry, stiff CLAY.	cl		Organic Vapor = 0.0ppm		YJ0004		Rec 1.0'/1.0' (3-4' bgs) Hand auger refusal at 4' bgs Bottom of borehole at 4' bgs
	4								

HTRW DRILLING LOG

District: **Mobile USACE**		HOLE NUMBER HR-141Q-GP03
1. Company name: **IT Corporation**	2. Drill Subcontractor: ESN	Sheet 1 of 2 sheets
3. Project: Fort McClellan	4. Location: **Calhoun County, Alabama**	
5. Name of driller: Sammy McDaniel	6. Mfr. designation of drill: Strataprobe	
7. Sizes and types of drilling and sampling equipment: Direct Push DP - 2'x2" Acetate-Lined Sampler	8. Hole location:Artillery & Mortar Impact Areas S. of Bains Gap, Parcel 141Q	
	9. Surface elevation (feet above mean sea level): 1280.71	
	10. Date started: 02/09/01	11. Date completed: 02/09/01
12. Overburden thickness (feet bgs): >4	15. Depth groundwater encountered (feet bgs): Not encountered	
13. Depth drilled into rock (feet bgs): 0	16. Depth to water and elapsed time after drilling completed (feet bgs): NA	
14. Total depth of hole (feet bgs): 4	17. Other water level measurements (specify): NA	

18. Geotechnical samples:	Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: NA		
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)	21. Total core recovery:
		X	Nitroaromatics	Perchlorate		NA
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist: Katrina Hunter		
	X					

LOCATION SKETCH/COMMENTS:



Project: Fort McClellan

bgs= below ground surface
NA = Not applicable

Hole no.: HR-141Q-GP03

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: HR-141Q-GP03

Project: Fort McClellan | Geologist: Katrina Hunter | Sheet 2 of 2 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
1280	0	ml: Dark brown, soft, moist SILT, some fine to medium Sand, trace coarse angular Gravel, trace organics.	ml		Organic Vapor = 0.0ppm		YJ0005		Rec 1.0'/1.0' (0-1' bgs)
	1	ml: Dark brown, soft, moist SILT, some Clay, trace fine to medium Sand, trace medium subangular Gravel, trace organics.	ml						Rec 0.6'/1.0' (1-2' bgs)
	2	ml: Light to medium yellowish-brown, medium stiff, slightly moist SILT, some Clay, trace fine Sand, trace fine to medium subangular Gravel.	ml		Organic Vapor = 0.0ppm		YJ0006		Rec 1.2'/2.0' (2-4' bgs)
	3								Direct push refusal at 4' bgs Bottom of borehole at 4' bgs
	4								

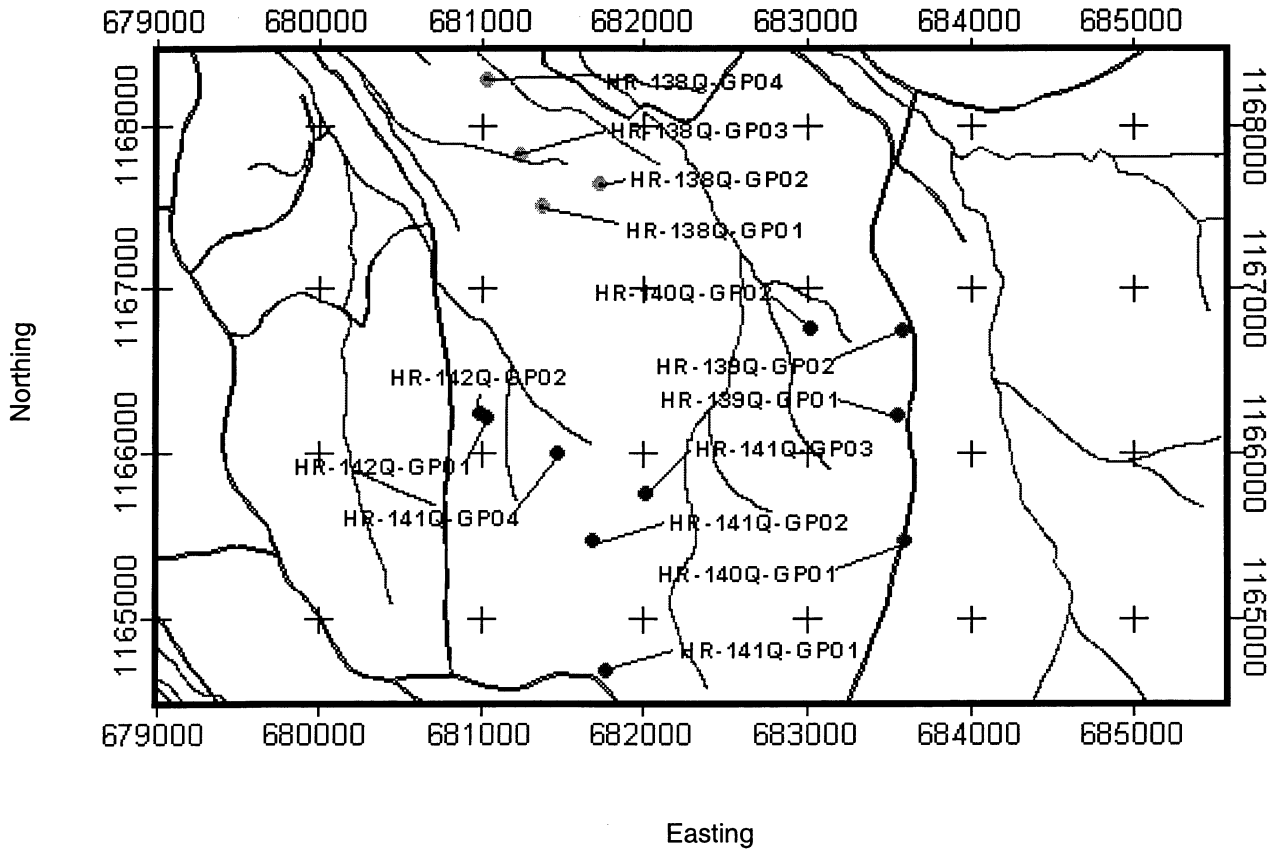
HTRW DRILLING LOG

District: **Mobile USACE**		**HOLE NUMBER** HR-141Q-GP04
1. Company name: **IT Corporation**	2. Drill Subcontractor: ESN	Sheet 1 of 2 sheets

3. Project: Fort McClellan	4. Location: **Calhoun County, Alabama**
5. Name of driller: Sammy McDaniel	6. Mfr. designation of drill: Strataprobe
7. Sizes and types of drilling and sampling equipment: Direct Push DP - 2'x2" Acetate-Lined Sampler	8. Hole location:Artillery & Mortar Impact Areas S. of Bains Gap, Parcel 141Q 9. Surface elevation (feet above mean sea level): 1204.36 10. Date started: 02/08/01 — 11. Date completed: 02/08/01
12. Overburden thickness (feet bgs): >4	15. Depth groundwater encountered (feet bgs): Not encountered
13. Depth drilled into rock (feet bgs): 0	16. Depth to water and elapsed time after drilling completed (feet bgs): NA
14. Total depth of hole (feet bgs): 4	17. Other water level measurements (specify): NA

18. Geotechnical samples:	Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: NA		
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)	21. Total core recovery:
		X	Nitroaromatics	Perchlorate		NA
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist:		
	X			Nicole Badon		

LOCATION SKETCH/COMMENTS:



Project: Fort McClellan

bgs= below ground surface
NA = Not applicable

Hole no.: HR-141Q-GP04

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: HR-141Q-GP04

Project: Fort McClellan | Geologist: Nicole Badon | Sheet 2 of 2 sheets

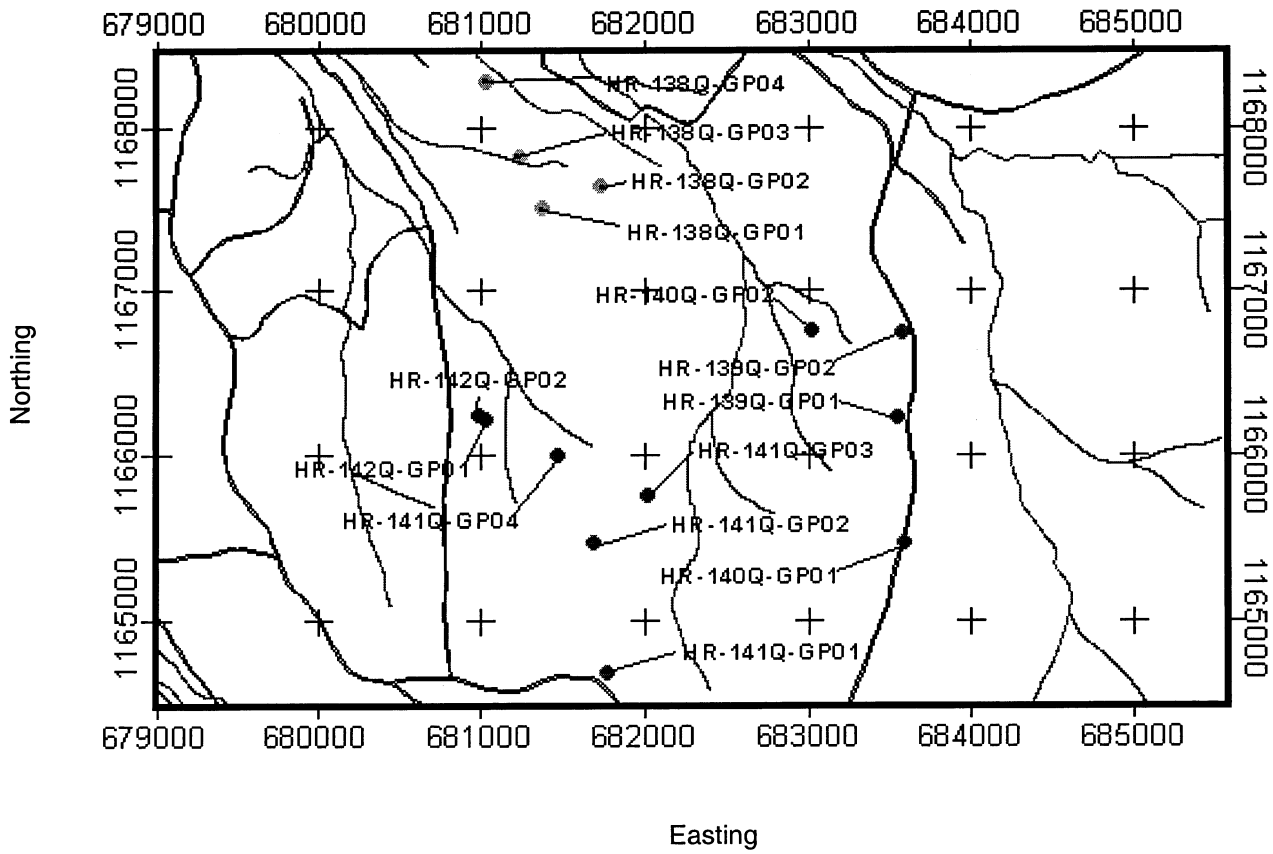
Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	0	ml: Medium brown, soft, moist SILT, some fine to medium Sand, little Clay, trace coarse angular Gravel, trace organics (roots).	ml		Organic Vapor = 0.0ppm		YJ0007		Rec 1.0'/1.0' (0-1' bgs)
	1	cl: Yellowish-brown, soft, moist CLAY, some Silt, little medium to coarse Sand, little fine subangular Gravel.	cl						Rec 1.5'/1.0' (1-2' bgs)
	2	cl: Yellowish-orange, stiff, moist CLAY, some Silt, little medium Sand, trace fine subangular Gravel.	cl		Organic Vapor = 0.0ppm		YJ0008		Rec 1.4'/2.0' (2-4' bgs)
	3								Direct push refusal at 4' bgs Bottom of borehole at 4' bgs
	4								

HTRW DRILLING LOG

District: **Mobile USACE**		**HOLE NUMBER** HR-142Q-GP01
1. Company name: **IT Corporation**	2. Drill Subcontractor: ESN	Sheet 1 of 3 sheets
3. Project: Fort McClellan	4. Location: **Calhoun County, Alabama**	
5. Name of driller: Sammy McDaniel	6. Mfr. designation of drill: Strataprobe	
7. Sizes and types of drilling and sampling equipment: Direct Push DP - 2'x2" Acetate-Lined Sampler	8. Hole location:Artillery & Mortar Impact Areas S. of Bains Gap, Parcel 142Q 9. Surface elevation (feet above mean sea level): 878.28 10. Date started: 02/08/01	11. Date completed: 02/08/01
12. Overburden thickness (feet bgs): >11	15. Depth groundwater encountered (feet bgs): Not encountered	
13. Depth drilled into rock (feet bgs): 0	16. Depth to water and elapsed time after drilling completed (feet bgs): NA	
14. Total depth of hole (feet bgs): 11	17. Other water level measurements (specify): NA	

18. Geotechnical samples:	Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: NA		
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)	21. Total core recovery:
		X	Nitroaromatics	Perchlorate		NA
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist:		
	X			Nicole Badon		

LOCATION SKETCH/COMMENTS:



HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: HR-142Q-GP01

Project: Fort McClellan | Geologist: Nicole Badon | Sheet 2 of 3 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	0	ml: Light brown, moist SILT, some fine to medium Sand, little coarse, angular Gravel, trace organics (roots).	ml		Organic Vapor = 0.0ppm		YL0001		Rec 1.0'/1.0' (0-1' bgs)
	1	ml: Light brown, medium stiff, moist SILT, some fine to coarse Sand, little Clay.	ml		Organic Vapor = 1.0ppm		YL0002		Rec 1.4'/3.0 (1-4' bgs)
875	3								
	4	ml: Light brown, mottled light gray, stiff, dry SILT, some fine Sand, trace Clay.	ml		Organic Vapor = 0.2ppm				Rec 2.7'/4.0' (4-8' bgs)
	5								
	6								
	7								
870	8	ml: Light gray, mottled light brown, stiff, dry SILT, some fine Sand, trace Clay.	ml		Organic Vapor = 0.1ppm				Rec 3.2'/3.0 (8-11' bgs)
	9								
	10								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: HR-142Q-GP01

Project: Fort McClellan

Geologist: Nicole Badon

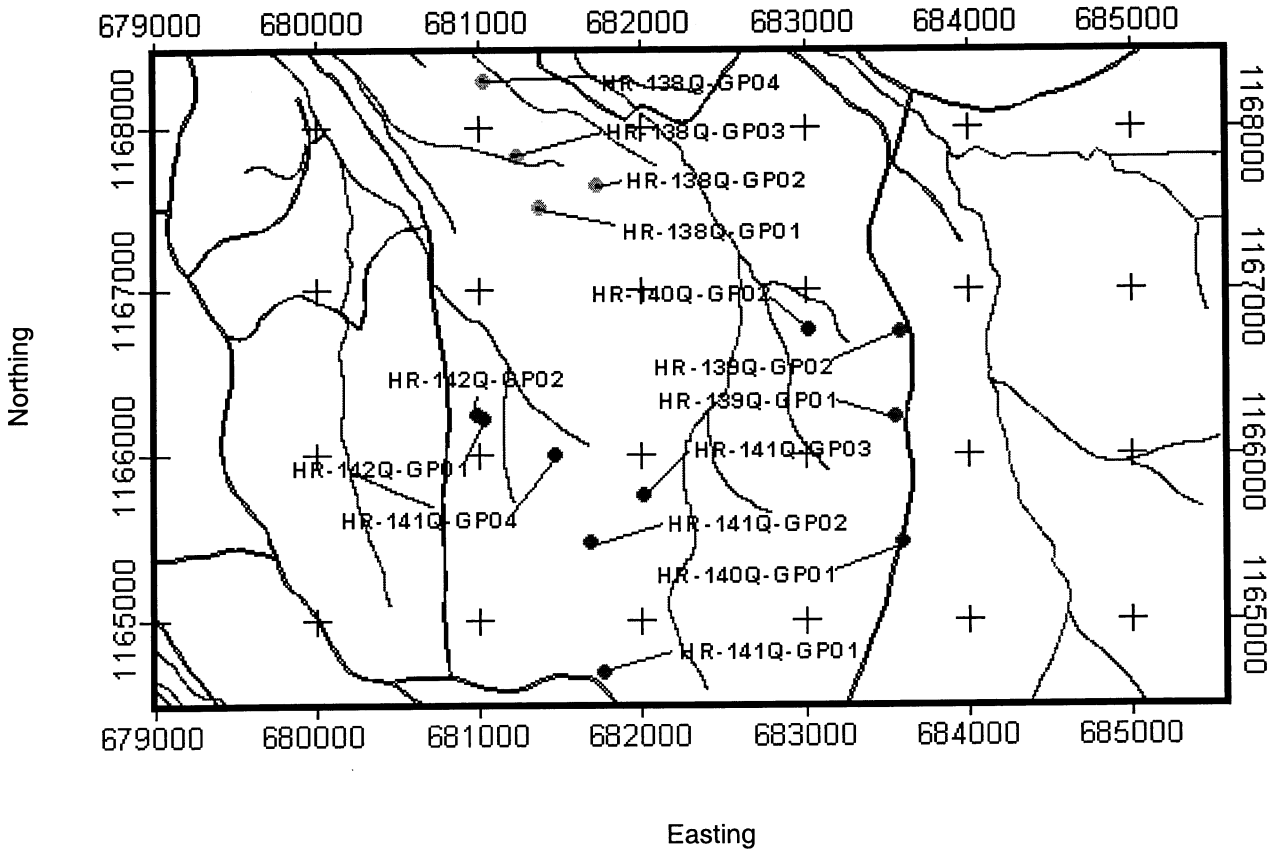
Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	11								Direct push refusal at 11' bgs Bottom of borehole at 11' bgs 11

HTRW DRILLING LOG

District: **Mobile USACE**		HOLE NUMBER HR-142Q-GP02
1. Company name: **IT Corporation**	2. Drill Subcontractor: ESN	Sheet 1 of 2 sheets
3. Project: Fort McClellan	4. Location: **Calhoun County, Alabama**	
5. Name of driller: Sammy McDaniel	6. Mfr. designation of drill: Strataprobe	
7. Sizes and types of drilling and sampling equipment: Direct Push DP - 2'x2" Acetate-Lined Sampler	8. Hole location:Artillery & Mortar Impact Areas S. of Bains Gap, Parcel 142Q	
	9. Surface elevation (feet above mean sea level): 1071.37	
	10. Date started: 02/08/01	11. Date completed: 02/08/01
12. Overburden thickness (feet bgs): >10	15. Depth groundwater encountered (feet bgs): Not encountered	
13. Depth drilled into rock (feet bgs): 0	16. Depth to water and elapsed time after drilling completed (feet bgs): NA	
14. Total depth of hole (feet bgs): 10	17. Other water level measurements (specify): NA	

18. Geotechnical samples:	Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: NA		
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)	21. Total core recovery:
		X	Nitroaromatics	Perchlorate		NA
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist: Nicole Badon		
	X					

LOCATION SKETCH/COMMENTS:



Project: Fort McClellan

bgs= below ground surface
NA = Not applicable

Hole no.: HR-142Q-GP02

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: HR-142Q-GP02

Project: Fort McClellan | Geologist: Nicole Badon | Sheet 2 of 2 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	0	ml: Dark brown to yellowish-orange, soft, moist, SILT, some fine to medium Sand, trace medium, subangular Gravel, trace organics (roots).	ml		Organic Vapor = 0.0ppm		YL0003		Rec 1.0'/1.0 (0-1' bgs)
1070	1	ml: Light brown, medium stiff, moist SILT, some Clay, little fine to medium Sand, trace fine, angular Gravel.	ml		Organic Vapor = 0.0ppm				Rec 1.3'/3.0 (1-4' bgs)
	2								
	3								
	4	ml: Light brown, mottled light gray, stiff, moist SILT, some fine to coarse Sand, trace Clay, trace fine angular Gravel.	ml		Organic Vapor = 0.0ppm				Rec 4.0'/4.0' (4-8' bgs)
	5								
1065	6								
	7								
	8	ml: Yellowish-orange, stiff, dry SILT, some Clay.	ml						Rec 2.7'/2.0' (8-10' bgs)
	9				Organic Vapor = 0.0ppm		YL0004		Direct push refusal at 10' bgs Bottom of borehole at 10' bgs
	10								

APPENDIX C

SURVEY DATA

Appendix C

Survey Data
Impact Areas South of Bains Gap Road,
Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, and 142Q-X
Fort McClellan, Calhoun County, Alabama

Sample Location	Northing	Easting	Ground Elevation (ft amsl)
HR-138Q-DEP01	1165803.08	682480.68	NA
HR-138Q-GP01	1167496.53	681370.39	814.40
HR-138Q-GP02	1167637.37	681730.00	809.82
HR-138Q-GP03	1167815.11	681227.85	811.05
HR-138Q-GP04	1168281.08	681021.95	812.26
HR-138Q-SEEP01	1167849.46	681020.66	NA
HR-138Q-SEEP02	1167938.51	680658.09	NA
HR-138Q-SEEP03	1167782.77	681230.65	NA
HR-138Q-SW/SD02	1166683.02	682586.96	NA
HR-138Q-SW/SD03	1168419.47	680947.66	NA
HR-138Q-SW/SD04	1167966.07	682134.68	NA
HR-138Q-SW/SD05	1168376.68	680084.58	NA
HR-139Q-GP01	1166214.44	683545.66	812.33
HR-139Q-GP02	1166733.56	683573.64	1030.32
HR-139Q-SW/SD01	1166758.05	684188.80	NA
HR-140Q-GP01	1165458.13	683589.87	1030.08
HR-140Q-GP02	1166746.33	683013.59	809.88
HR-140Q-SW/SD01	1166136.87	682929.08	NA
HR-141Q-DEP01	1164934.76	682330.18	1095.70
HR-141Q-DEP02	1166797.43	681258.97	1095.70
HR-141Q-GP01	1164665.58	681769.17	1523.72
HR-141Q-GP02	1165451.83	681683.54	1352.68
HR-141Q-GP03	1165739.86	682018.28	1280.71
HR-141Q-GP04	1165988.96	681457.79	1204.37
HR-141Q-SW/SD02	1165651.57	682318.88	NA
HR-142Q-DEP01	1166976.20	680978.74	877.02
HR-142Q-DEP02	1166092.39	681174.48	1153.62
HR-142Q-GP01	1166200.84	681029.79	878.28
HR-142Q-GP02	1166232.97	680981.90	1071.38

Horizontal coordinates referenced to the U.S. State Plane Coordinate System, Alabama East Zone, North American Datum of 1983 (NAD83).

Elevations referenced to the North American Vertical Datum of 1988 (NAVD88).

ft amsl - Feet above mean sea level
NA - Not available.

APPENDIX D

VARIANCE REPORTS

INTERNATIONAL TECHNOLOGY CORPORATION	**Variance No:** PARCEL138Q-XMAY01.VR1
	Linked w/NC No: x
	Date of Issue: 5-30-01
	Page _1 of 1__

Project Name: **Fort McClellan** – CK10 \ WAD11	Project Number: 796887.11020300

-Variance Report -

I.Description: (by the person identifying the change)

FINAL SITE-SPECIFIC FIELD SAMPLING PLAN, ARTILLERY AND MORTAR IMPACT AREA SOUTH OF BAINS GAP ROAD, PARCEL 138Q-X, 139Q-X, 140Q-X, 141Q-X AND 142Q-X

The Final Site-Specific Field Sampling Plan (FSSFSP) proposed a surface water sample and sediment sample at sample location HR-138Q-SW\SD01. Surface water and sediment were not collected at this location. A depositional soil sample HR-138Q-DEP01 was collected at this location.

Identified by: Leigh Yates, Risk Assessment Specialist	Date: 5-30-01

II. Justification for Variance:

The FSSFSP proposed a surface water sample and sediment sample at sample location HR-138Q-SW\SD01, but was not collected because surface water and sediment were not present in the creek. Several attempts were made to collect a surface water sample and sediment sample from the creek, but all attempts were unsuccessful. A depositional soil sample HR-138Q-DEP01 was collected at this location to determine the presence or absence of contamination.

III. Applicable Document/Work Plan: (by the person identifying the change)

Final Site-Specific Field Sampling Plan, Site-Specific Safety and Health Plan and Site-Specific Unexploded Ordnance Safety Plan Attachments Artillery and Mortar Impact Area South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X and 142Q-X, January 2001.

Distribution List:
1. Jeanne Yacoub, IT Project Manager
2. Steve Moran, IT Technical Lead
3. Jeffrey Tarr, IT Site Manager
4. Randy McBride, IT QA Officer
5. Mr. Ellis Pope, US Army Corps of Engineers
6. Mr. Ross McCollum, US Army Corps of Engineers

- Signatures -

Requested by: Jeffrey Tarr, PG - IT Site Manager	5-31-01 Date
Approved by:	6-19-01 Date
Project Manager Approval:	6/15/01 Date
QA Approval:	6-11-01 Date

INTERNATIONAL TECHNOLOGY CORPORATION	**Variance No:** PARCEL141Q-XMAY01.VR1 **Linked w/NC No:** x **Date of Issue:** 5-30-01 **Page _1 of 1__**
Project Name: **Fort McClellan** – CK10 \ WAD11	Project Number: 796887.11020300

-Variance Report -

I.Description: (by the person identifying the change)

FINAL SITE-SPECIFIC FIELD SAMPLING PLAN, ARTILLERY AND MORTAR IMPACT AREA SOUTH OF BAINS GAP ROAD, PARCEL 138Q-X, 139Q-X, 140Q-X, 141Q-X AND 142Q-X

The Final Site-Specific Field Sampling Plan (FSSFSP) proposed a surface water sample and sediment sample at sample location HR-141Q-SW\SD01. Surface water and sediment were not collected at this location. A depositional soil sample HR-141Q-DEP02 was collected at this location.

Identified by: Leigh Yates, Risk Assessment Specialist	Date: 5-30-01

II. Justification for Variance:

The FSSFSP proposed a surface water sample and sediment sample at sample location HR-141Q-SW\SD01, but was not collected because surface water and sediment were not present in the creek. Several attempts were made to collect a surface water sample and sediment sample from the creek, but all attempts were unsuccessful. A depositional soil sample HR-141Q-DEP02 was collected at this location to determine the presence or absence of contamination.

III. Applicable Document/Work Plan: (by the person identifying the change)

Final Site-Specific Field Sampling Plan, Site-Specific Safety and Health Plan and Site-Specific Unexploded Ordnance Safety Plan Attachments Artillery and Mortar Impact Area South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X and 142Q-X, January 2001.

Distribution List:
1. Jeanne Yacoub, IT Project Manager
2. Steve Moran, IT Technical Lead
3. Jeffrey Tarr, IT Site Manager
4. Randy McBride, IT QA Officer
5. Mr. Ellis Pope, US Army Corps of Engineers
6. Mr. Ross McCollum, US Army Corps of Engineers

- Signatures -

Requested by: Jeffrey Tarr, PG - IT Site Manager	5-31-01 Date
Approved by:	6-19-01 Date
Project Manager Approval:	6/15/01 Date
QA Approval:	6-11-01 Date

INTERNATIONAL TECHNOLOGY CORPORATION	**Variance No:** PARCEL141Q-XMAY01.VR2 **Linked w/NC No:** x **Date of Issue:** 5-30-01 **Page _1 of 1__**
Project Name: **Fort McClellan** – CK10 \ WAD11	Project Number: 796887.11020300

-Variance Report -

I.Description: (by the person identifying the change)

FINAL SITE-SPECIFIC FIELD SAMPLING PLAN, ARTILLERY AND MORTAR IMPACT AREA SOUTH OF BAINS GAP ROAD, PARCEL 138Q-X, 139Q-X, 140Q-X, 141Q-X AND 142Q-X

The Final Site-Specific Field Sampling Plan (FSSFSP) proposed a surface water sample and sediment sample at sample location HR-141Q-SW\SD03. Surface water and sediment were not collected at this location. A depositional soil sample HR-141Q-DEP01 was collected at this location.

Identified by: Leigh Yates, Risk Assessment Specialist	Date: 5-30-01

II. Justification for Variance:

The FSSFSP proposed a surface water sample and sediment sample at sample location HR-141Q-SW\SD03, but was not collected because surface water and sediment were not present in the creek. Several attempts were made to collect a surface water sample and sediment sample from the creek, but all attempts were unsuccessful. A depositional soil sample HR-141Q-DEP01 was collected at this location to determine the presence or absence of contamination.

III. Applicable Document/Work Plan: (by the person identifying the change)

Final Site-Specific Field Sampling Plan, Site-Specific Safety and Health Plan and Site-Specific Unexploded Ordnance Safety Plan Attachments Artillery and Mortar Impact Area South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X and 142Q-X, January 2001.

Distribution List:
1. Jeanne Yacoub, IT Project Manager
2. Steve Moran, IT Technical Lead
3. Jeffrey Tarr, IT Site Manager
4. Randy McBride, IT QA Officer
5. Mr. Ellis Pope, US Army Corps of Engineers
6. Mr. Ross McCollum, US Army Corps of Engineers

- Signatures -

Requested by: Jeffrey Tarr, PG - IT Site Manager Jeffrey J. Tarr	5-31-01 Date
Approved by: Stanley E. Sarratt	6-19-01 Date
Project Manager Approval: Jeanne Yacoub	6/15/01 Date
QA Approval: Randall L. McBride	6-11-01 Date

INTERNATIONAL TECHNOLOGY CORPORATION	**Variance No:** PARCEL142Q-XMAY01.VR1 **Linked w/NC No:** x **Date of Issue:** 5-30-01 **Page _1 of 1__**
Project Name: **Fort McClellan** – CK10 \ WAD11	Project Number: 796887.11020300

-Variance Report -

I.Description: (by the person identifying the change)

FINAL SITE-SPECIFIC FIELD SAMPLING PLAN, ARTILLERY AND MORTAR IMPACT AREA SOUTH OF BAINS GAP ROAD, PARCEL 138Q-X, 139Q-X, 140Q-X, 141Q-X AND 142Q-X

The Final Site-Specific Field Sampling Plan (FSSFSP) proposed a surface water sample and sediment sample at sample location HR-142Q-SW\SD01. Surface water and sediment were not collected at this location. A depositional soil sample HR-142Q-DEP01 was collected at this location.

Identified by: Leigh Yates, Risk Assessment Specialist	Date: 5-30-01

II. Justification for Variance:

The FSSFSP proposed a surface water sample and sediment sample at sample location HR-142Q-SW\SD01, but was not collected because surface water and sediment were not present in the creek. Several attempts were made to collect a surface water sample and sediment sample from the creek, but all attempts were unsuccessful. A depositional soil sample HR-142Q-DEP01 was collected at this location to determine the presence or absence of contamination.

III. Applicable Document/Work Plan: (by the person identifying the change)

Final Site-Specific Field Sampling Plan, Site-Specific Safety and Health Plan and Site-Specific Unexploded Ordnance Safety Plan Attachments Artillery and Mortar Impact Area South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X and 142Q-X, January 2001.

Distribution List:
1. Jeanne Yacoub, IT Project Manager
2. Steve Moran, IT Technical Lead
3. Jeffrey Tarr, IT Site Manager
4. Randy McBride, IT QA Officer
5. Mr. Ellis Pope, US Army Corps of Engineers
6. Mr. Ross McCollum, US Army Corps of Engineers

- Signatures -

Requested by: Jeffrey Tarr, PG - IT Site Manager Jeffrey J. Tarr	5-31-01 Date
Approved by: Stanley E. Parrott	6-19-01 Date
Project Manager Approval: Jeanne Yacoub	6/15/01 Date
QA Approval: Randall L. McBride	6-11-01 Date

INTERNATIONAL TECHNOLOGY CORPORATION	**Variance No:** PARCEL142Q-XMAY01.VR2 **Linked w/NC No:** X **Date of Issue:** 5-30-01 **Page _1 of 1__**
Project Name: **Fort McClellan** – CK10 \ WAD11	Project Number: 796887.11020300

-Variance Report -

I.Description: (by the person identifying the change)

FINAL SITE-SPECIFIC FIELD SAMPLING PLAN, ARTILLERY AND MORTAR IMPACT AREA SOUTH OF BAINS GAP ROAD, PARCEL 138Q-X, 139Q-X, 140Q-X, 141Q-X AND 142Q-X

The Final Site-Specific Field Sampling Plan (FSSFSP) proposed a surface water sample and sediment sample at sample location HR-142Q-SW\SD02. Surface water and sediment were not collected at this location. A depositional soil sample HR-142Q-DEP02 was collected at this location.

Identified by: Leigh Yates, Risk Assessment Specialist	Date: 5-30-01

II. Justification for Variance:

The FSSFSP proposed a surface water sample and sediment sample at sample location HR-142Q-SW\SD02, but was not collected because surface water and sediment were not present in the creek. Several attempts were made to collect a surface water sample and sediment sample from the creek, but all attempts were unsuccessful. A depositional soil sample HR-142Q-DEP02 was collected at this location to determine the presence or absence of contamination.

III. Applicable Document/Work Plan: (by the person identifying the change)

Final Site-Specific Field Sampling Plan, Site-Specific Safety and Health Plan and Site-Specific Unexploded Ordnance Safety Plan Attachments Artillery and Mortar Impact Area South of Bains Gap Road, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X and 142Q-X, January 2001.

Distribution List:
1. Jeanne Yacoub, IT Project Manager
2. Steve Moran, IT Technical Lead
3. Jeffrey Tarr, IT Site Manager
4. Randy McBride, IT QA Officer
5. Mr. Ellis Pope, US Army Corps of Engineers
6. Mr. Ross McCollum, US Army Corps of Engineers

- Signatures -

Requested by: Jeffrey Tarr, PG - IT Site Manager	5-31-01 Date
Approved by: Stanley E. Lanett	6-19-01 Date
Project Manager Approval: Jeanne Yacoub	6/15/01 Date
QA Approval: Randall L McBride	6-11-01 Date

APPENDIX E

SUMMARY OF VALIDATED ANALYTICAL DATA

Summary of Validated Surface and Depositional Soil Data
Artillery and Motar Impact Areas South of Bains Gap (Parcel 138Q)
Fort McClellan, Alabama

Report Date: 08/24/01

	Location Code:	HR-138Q-DEP01			HR-138Q-DEP01			HR-138Q-GP01			HR-138Q-GP02		
	Associated Site:	HR-138Q			HR-138Q			HR-138Q			HR-138Q		
	Sample No:	YE0011			YE0012			YE0001			YE0005		
	Sample Date:	03-MAY-01			03-MAY-01			31-JAN-01			01-FEB-01		
User Test Group	*Sample Depth:*	0 - 1			0 - 1			0 - 1			0 - 1		
Lab Method													
Parameter	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
METALS													
SW6010B													
Aluminum	mg/kg	10800			8310			18900			13300		
Antimony	mg/kg	12.9	U	U	12.5	U	U	12.5	U	UJ	8.4	J	B
Arsenic	mg/kg	4.18			4.99			3.74			3.1		
Barium	mg/kg	130			105			74.1			80.9		
Beryllium	mg/kg	1.11	J	J	.955	J	J	.626	J	J	.43	J	J
Cadmium	mg/kg	.644	U	U	.626	U	U	.625	U	U	.595	U	U
Calcium	mg/kg	351			363			125			142		
Chromium	mg/kg	7.53			6.27			13.9			15.7		
Cobalt	mg/kg	20.1			14.4			1.84	J	J	2.59		
Copper	mg/kg	8.25			10.7			5.27			7.53		
Iron	mg/kg	16300			18900			16500		J	16700		J
Lead	mg/kg	16.5			12.7			11.2			12.7		
Magnesium	mg/kg	498			395			436			501		
Manganese	mg/kg	294			284			177		J	146		J
Nickel	mg/kg	4.49			5.49			5.31			4.16		
Potassium	mg/kg	1910			2220			242	J	J	455	J	J
Selenium	mg/kg	1.29	U	U	1.25	U	U	1.25	U	U	1.19	U	U
Silver	mg/kg	1.29	U	U	1.25	U	U	1.25	U	U	1.19	U	U
Sodium	mg/kg	129	U	U	125	U	U	125	U	U	119	U	U
Thallium	mg/kg	2.57	U	U	2.5	U	U	2.5	U	U	2.38	U	U
Vanadium	mg/kg	12.7			10.8			23.1			17.6		
Zinc	mg/kg	21.1		J	19.7		J	17		J	18.4		J
SW7471A													
Mercury	mg/kg	.027	J	J	.044	J	J	.037	J	J	.040	J	J
NITROAROMATICS													
SW8330													
1,3,5-Trinitrobenzene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
1,3-Dinitrobenzene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
2,4,6-Trinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
2,4-Dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U

Summary of Validated Surface and Depositional Soil Data
Artillery and Motar Impact Areas South of Bains Gap (Parcel 138Q)
Fort McClellan, Alabama

Report Date: 08/24/01

	Location Code:	HR-138Q-GP03			HR-138Q-GP04		
	Associated Site:	HR-138Q			HR-138Q		
	Sample No:	YE0007			YE0009		
	Sample Date:	31-JAN-01			31-JAN-01		
User Test Group	*Sample Depth:*	0 - 1			0 - 1		
Lab Method *Parameter*	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
METALS							
SW6010B							
Aluminum	mg/kg	9780			9670		
Antimony	mg/kg	12.2	U	UJ	11.8	U	UJ
Arsenic	mg/kg	3.44			1.33		
Barium	mg/kg	49.7			73.3		
Beryllium	mg/kg	.329	J	J	.271	J	J
Cadmium	mg/kg	.609	U	U	.591	U	U
Calcium	mg/kg	86.1	J	J	241		
Chromium	mg/kg	9.34			6.63		
Cobalt	mg/kg	2.32	J	J	1.54	J	B
Copper	mg/kg	3.38			3.21		
Iron	mg/kg	10700		J	5260		J
Lead	mg/kg	19.3			10.6		
Magnesium	mg/kg	301			443		
Manganese	mg/kg	118		J	77.1		J
Nickel	mg/kg	2.5			3.91		
Potassium	mg/kg	253	J	J	205	J	J
Selenium	mg/kg	1.22	U	U	1.18	U	U
Silver	mg/kg	1.22	U	U	1.18	U	U
Sodium	mg/kg	122	U	U	118	U	U
Thallium	mg/kg	2.44	U	U	2.36	U	U
Vanadium	mg/kg	15.8			9.63		
Zinc	mg/kg	14.2		J	13		J
SW7471A							
Mercury	mg/kg	.038	J	J	.118	U	U
NITROAROMATICS							
SW8330							
1,3,5-Trinitrobenzene	mg/kg	.4	U	U	.4	U	U
1,3-Dinitrobenzene	mg/kg	.4	U	U	.4	U	U
2,4,6-Trinitrotoluene	mg/kg	.4	U	U	.4	U	U
2,4-Dinitrotoluene	mg/kg	.4	U	U	.4	U	U

Summary of Validated Surface and Depositional Soil Data
Artillery and Motar Impact Areas South of Bains Gap (Parcel 138Q)
Fort McClellan, Alabama

Report Date: 08/24/01

	Location Code:	HR-138Q-DEP01			HR-138Q-DEP01			HR-138Q-GP01			HR-138Q-GP02		
	Associated Site:	HR-138Q			HR-138Q			HR-138Q			HR-138Q		
	Sample No:	YE0011			YE0012			YE0001			YE0005		
	Sample Date:	03-MAY-01			03-MAY-01			31-JAN-01			01-FEB-01		
User Test Group	*Sample Depth:*	0 - 1			0 - 1			0 - 1			0 - 1		
Lab Method													
Parameter	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
NITROAROMATICS													
SW8330													
2,6-Dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
2-Amino-4,6-dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.16	J	J	.4	U	U
2-Nitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
3-Nitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
4-Amino-2,6-dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
HMX	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
Nitrobenzene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
RDX	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
Tetryl	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
p-Nitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
PERCHLORATE													
E314.0													
Perchlorate	mg/kg	.0644	U	U	.0626	U	U						
EPA314.0													
Perchlorate	mg/kg							.0625	U	U	.0595	U	U

Summary of Validated Surface and Depositional Soil Data
Artillery and Motar Impact Areas South of Bains Gap (Parcel 138Q)
Fort McClellan, Alabama

Report Date: 08/24/01

	Location Code:	HR-138Q-GP03			HR-138Q-GP04		
	Associated Site:	HR-138Q			HR-138Q		
	Sample No:	YE0007			YE0009		
	Sample Date:	31-JAN-01			31-JAN-01		
User Test Group	*Sample Depth:*	0 - 1			0 - 1		
Lab Method *Parameter*	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
NITROAROMATICS							
SW8330							
2,6-Dinitrotoluene	mg/kg	.4	U	U	.4	U	U
2-Amino-4,6-dinitrotoluene	mg/kg	.4	U	U	.4	U	U
2-Nitrotoluene	mg/kg	.4	U	U	.4	U	U
3-Nitrotoluene	mg/kg	.4	U	U	.4	U	U
4-Amino-2,6-dinitrotoluene	mg/kg	.4	U	U	.4	U	U
HMX	mg/kg	.4	U	U	.4	U	U
Nitrobenzene	mg/kg	.4	U	U	.4	U	U
RDX	mg/kg	.4	U	U	.4	U	U
Tetryl	mg/kg	.4	U	U	.4	U	U
p-Nitrotoluene	mg/kg	.4	U	U	.4	U	U
PERCHLORATE							
E314.0							
Perchlorate	mg/kg						
EPA314.0							
Perchlorate	mg/kg	.0609	U	U	.0591	U	U

Summary of Validated Surface Soil Data
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 139Q)
Fort McClellan, Alabama

Report Date: 08/24/01

	Location Code:	HR-139Q-GP01			HR-139Q-GP02		
	Associated Site:	HR-139Q			HR-139Q		
	Sample No:	YG0001			YG0003		
	Sample Date:	08-FEB-01			07-FEB-01		
User Test Group	*Sample Depth:*	0 - 1			0 - 1		
Lab Method *Parameter*	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
METALS							
SW6010B							
Aluminum	mg/kg	7810			9250		
Antimony	mg/kg	12.1	U	UJ	13	U	UJ
Arsenic	mg/kg	5.52			3.97		
Barium	mg/kg	43.1			83.6		
Beryllium	mg/kg	.565	J	J	.522	J	J
Cadmium	mg/kg	.605	U	U	.652	U	U
Calcium	mg/kg	306			496		
Chromium	mg/kg	6.03		J	6.31		J
Cobalt	mg/kg	1.63	J	B	1.55	J	B
Copper	mg/kg	8.07			7.35		
Iron	mg/kg	8920			7900		
Lead	mg/kg	6.47			32.9		
Magnesium	mg/kg	344			325		
Manganese	mg/kg	98.3			134		
Nickel	mg/kg	2.82			3.07		
Potassium	mg/kg	2890			344	J	B
Selenium	mg/kg	1.21	U	U	1.3	U	U
Silver	mg/kg	1.21	U	U	1.3	U	U
Sodium	mg/kg	121	U	U	45.1	J	J
Thallium	mg/kg	2.42	U	U	2.61	U	U
Vanadium	mg/kg	9.44		J	11		J
Zinc	mg/kg	7.64			26.6		
SW7471A							
Mercury	mg/kg	.027	J	J	.095	J	J
NITROAROMATICS							
SW8330							
1,3,5-Trinitrobenzene	mg/kg	.4	U	U	.4	U	U
1,3-Dinitrobenzene	mg/kg	.4	U	U	.4	U	U
2,4,6-Trinitrotoluene	mg/kg	.4	U	U	.4	U	U
2,4-Dinitrotoluene	mg/kg	.4	U	U	.4	U	U

Summary of Validated Surface Soil Data
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 139Q)
Fort McClellan, Alabama

Report Date: 08/24/01

	Location Code:	HR-139Q-GP01			HR-139Q-GP02		
	Associated Site:	HR-139Q			HR-139Q		
	Sample No:	YG0001			YG0003		
	Sample Date:	08-FEB-01			07-FEB-01		
User Test Group	*Sample Depth:*	0 - 1			0 - 1		
Lab Method							
Parameter	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
NITROAROMATICS							
SW8330							
2,6-Dinitrotoluene	mg/kg	.4	U	U	.4	U	U
2-Amino-4,6-dinitrotoluene	mg/kg	.4	U	U	.4	U	U
2-Nitrotoluene	mg/kg	.4	U	U	.4	U	U
3-Nitrotoluene	mg/kg	.4	U	U	.4	U	U
4-Amino-2,6-dinitrotoluene	mg/kg	.4	U	U	.4	U	U
HMX	mg/kg	.4	U	U	.4	U	U
Nitrobenzene	mg/kg	.4	U	U	.4	U	U
RDX	mg/kg	.4	U	U	.4	U	U
Tetryl	mg/kg	.4	U	U	.4	U	U
p-Nitrotoluene	mg/kg	.4	U	U	.4	U	U
PERCHLORATE							
EPA314.0							
Perchlorate	mg/kg	.0605	U	U	.0652	U	U

Summary of Validated Surface Soil Data
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 140Q)
Fort McClellan, Alabama

Report Date: 08/24/01

	Location Code:	HR-140Q-GP01			HR-140Q-GP02		
	Associated Site:	HR-140Q			HR-140Q		
	Sample No:	YH0001			YH0003		
	Sample Date:	07-FEB-01			08-FEB-01		
User Test Group	*Sample Depth:*	0 - 1			0 - 1		
Lab Method *Parameter*	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
METALS							
SW6010B							
Aluminum	mg/kg	12500			21700		
Antimony	mg/kg	13.1	U	U	13.6	U	U
Arsenic	mg/kg	2.24			3.67		
Barium	mg/kg	95.7			228		
Beryllium	mg/kg	.548	J	J	2.4		
Cadmium	mg/kg	.653	U	U	.678	U	U
Calcium	mg/kg	336			364		
Chromium	mg/kg	10.9			11.1		
Cobalt	mg/kg	1.09	J	B	36.8		
Copper	mg/kg	3.29			11.8		
Iron	mg/kg	15000			11500		
Lead	mg/kg	9.05			25.4		
Magnesium	mg/kg	557			1230		
Manganese	mg/kg	157			2290		
Nickel	mg/kg	3.83			9.93		
Potassium	mg/kg	1250			971		
Selenium	mg/kg	1.31	U	U	1.36	U	U
Silver	mg/kg	1.31	U	U	1.36	U	U
Sodium	mg/kg	131	U	U	136	U	U
Thallium	mg/kg	2.61	U	U	2.71	U	U
Vanadium	mg/kg	14			18.1		
Zinc	mg/kg	14.2			37.6		
SW7471A							
Mercury	mg/kg	.131	U	U	.051	J	B
NITROAROMATICS							
SW8330							
1,3,5-Trinitrobenzene	mg/kg	.4	U	U	.4	U	U
1,3-Dinitrobenzene	mg/kg	.4	U	U	.4	U	U
2,4,6-Trinitrotoluene	mg/kg	.4	U	U	.4	U	U
2,4-Dinitrotoluene	mg/kg	.4	U	U	.4	U	U

Summary of Validated Surface Soil Data
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 140Q)
Fort McClellan, Alabama

Report Date: 08/24/01

	Location Code:	HR-140Q-GP01			HR-140Q-GP02		
	Associated Site:	HR-140Q			HR-140Q		
	Sample No:	YH0001			YH0003		
	Sample Date:	07-FEB-01			08-FEB-01		
User Test Group	*Sample Depth:*	0 - 1			0 - 1		
Lab Method *Parameter*	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
NITROAROMATICS							
SW8330							
2,6-Dinitrotoluene	mg/kg	.4	U	U	.4	U	U
2-Amino-4,6-dinitrotoluene	mg/kg	.4	U	U	.4	U	U
2-Nitrotoluene	mg/kg	.4	U	U	.4	U	U
3-Nitrotoluene	mg/kg	.4	U	U	.4	U	U
4-Amino-2,6-dinitrotoluene	mg/kg	.4	U	U	.4	U	U
HMX	mg/kg	.4	U	U	.4	U	U
Nitrobenzene	mg/kg	.4	U	U	.4	U	U
RDX	mg/kg	.4	U	U	.4	U	U
Tetryl	mg/kg	.4	U	U	.4	U	U
p-Nitrotoluene	mg/kg	.4	U	U	.4	U	U
PERCHLORATE							
EPA314.0							
Perchlorate	mg/kg	.0653	U	U	.0678	U	U

Summary of Validated Surface and Depositional Soil Data
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 141Q)
Fort McClellan, Alabama

Report Date: 08/24/01

	Location Code:	HR-141Q-DEP01			HR-141Q-DEP02			HR-141Q-GP01			HR-141Q-GP02		
	Associated Site:	HR-141Q			HR-141Q			HR-141Q			HR-141Q		
	Sample No:	YJ0009			YJ0010			YJ0001			YJ0003		
	Sample Date:	24-APR-01			03-MAY-01			07-FEB-01			11-APR-01		
User Test Group	*Sample Depth:*	0 - 1			0 - 1			0 - 1			0 - 1		
Lab Method *Parameter*	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
METALS													
SW6010B													
Aluminum	mg/kg	13700			11700			14900			16500		
Antimony	mg/kg	12.5	U	U	11.2	U	U	12.5	U	U	12.2	U	U
Arsenic	mg/kg	4.4			6.12			3.14			2.98		
Barium	mg/kg	167			163			63.3			145		
Beryllium	mg/kg	1.05	J	J	1.67			.91	J	J	.98	J	J
Cadmium	mg/kg	.624	U	U	.56	U	U	.624	U	U	.608	U	U
Calcium	mg/kg	502			485			66.8	J	J	188		
Chromium	mg/kg	7.62			12.2			11.1			9.51		
Cobalt	mg/kg	4.09		B	17			2.04	J	J	5.34		
Copper	mg/kg	9.2			6.32			3.68			5.5		
Iron	mg/kg	13900			39000			14900			13200		
Lead	mg/kg	37.7			20.1			11.6			10.5		
Magnesium	mg/kg	635			564			664			846		
Manganese	mg/kg	875			1620			23.7			161		
Nickel	mg/kg	4.13			6.81			4.49			5.45		
Potassium	mg/kg	1540			1410			577	J	J	1520		
Selenium	mg/kg	1.25	U	U	1.12	U	U	1.25	U	U	1.22	U	U
Silver	mg/kg	1.25	U	U	1.12	U	U	1.25	U	U	1.22	U	U
Sodium	mg/kg	125	U	U	112	U	U	125	U	U	122	U	U
Thallium	mg/kg	2.5	U	U	1.23	J	J	2.5	U	U	2.43	U	U
Vanadium	mg/kg	12.5			20.6			19.4			15.4		
Zinc	mg/kg	29.5			25.4		J	20.9			21.4		
SW7471A													
Mercury	mg/kg	.060	J	J	.040	J	J	.043	J	J	.122	U	U
NITROAROMATICS													
SW8330													
1,3,5-Trinitrobenzene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
1,3-Dinitrobenzene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
2,4,6-Trinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
2,4-Dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U

Summary of Validated Surface and Depositional Soil Data
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 141Q)
Fort McClellan, Alabama

Report Date: 08/24/01

	Location Code:	HR-141Q-GP03			HR-141Q-GP04		
	Associated Site:	HR-141Q			HR-141Q		
	Sample No:	YJ0005			YJ0007		
	Sample Date:	09-FEB-01			08-FEB-01		
User Test Group	*Sample Depth:*	0 - 1			0 - 1		
Lab Method *Parameter*	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
METALS							
SW6010B							
Aluminum	mg/kg	15700			8910		
Antimony	mg/kg	13	U	UJ	12.1	U	UJ
Arsenic	mg/kg	4.58			2.48		
Barium	mg/kg	488		J	117		J
Beryllium	mg/kg	3.1			.867	J	J
Cadmium	mg/kg	.649	U	U	.603	U	U
Calcium	mg/kg	1670			401		
Chromium	mg/kg	7.98		J	7.62		J
Cobalt	mg/kg	11.8		J	10.6		J
Copper	mg/kg	11.9			6.32		
Iron	mg/kg	14400			12400		
Lead	mg/kg	36.7			14.2		
Magnesium	mg/kg	580			362		
Manganese	mg/kg	2090			543		
Nickel	mg/kg	6.85		J	1.49	J	B
Potassium	mg/kg	726			551	J	J
Selenium	mg/kg	1.3	U	U	1.21	U	U
Silver	mg/kg	1.3	U	U	1.21	U	U
Sodium	mg/kg	26.2	J	J	24.3	J	J
Thallium	mg/kg	2.59	U	U	2.41	U	U
Vanadium	mg/kg	13.2			12.4		
Zinc	mg/kg	59.4		J	15.6		J
SW7471A							
Mercury	mg/kg	.065	J	J	.024	J	J
NITROAROMATICS							
SW8330							
1,3,5-Trinitrobenzene	mg/kg	.4	U	U	.4	U	U
1,3-Dinitrobenzene	mg/kg	.4	U	U	.4	U	U
2,4,6-Trinitrotoluene	mg/kg	.4	U	U	.4	U	U
2,4-Dinitrotoluene	mg/kg	.4	U	U	.4	U	U

Summary of Validated Surface and Depositional Soil Data
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 141Q)
Fort McClellan, Alabama

Report Date: 08/24/01

	Location Code:	HR-141Q-DEP01			HR-141Q-DEP02			HR-141Q-GP01			HR-141Q-GP02		
	Associated Site:	HR-141Q			HR-141Q			HR-141Q			HR-141Q		
	Sample No:	YJ0009			YJ0010			YJ0001			YJ0003		
	Sample Date:	24-APR-01			03-MAY-01			07-FEB-01			11-APR-01		
User Test Group	*Sample Depth:*	0 - 1			0 - 1			0 - 1			0 - 1		
Lab Method *Parameter*	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
NITROAROMATICS													
SW8330													
2,6-Dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
2-Amino-4,6-dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
2-Nitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
3-Nitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
4-Amino-2,6-dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
HMX	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
Nitrobenzene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
RDX	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
Tetryl	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
p-Nitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
PERCHLORATE													
E314.0													
Perchlorate	mg/kg	.0624	U	U	.056	U	U				.0608	U	U
EPA314.0													
Perchlorate	mg/kg							.0624	U	U			

Summary of Validated Surface and Depositional Soil Data
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 141Q)
Fort McClellan, Alabama

Report Date: 08/24/01

	Location Code:	HR-141Q-GP03			HR-141Q-GP04		
	Associated Site:	HR-141Q			HR-141Q		
	Sample No:	YJ0005			YJ0007		
	Sample Date:	09-FEB-01			08-FEB-01		
User Test Group	*Sample Depth:*	0 - 1			0 - 1		
Lab Method							
Parameter	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
NITROAROMATICS							
SW8330							
2,6-Dinitrotoluene	mg/kg	.4	U	U	.4	U	U
2-Amino-4,6-dinitrotoluene	mg/kg	.4	U	U	.4	U	U
2-Nitrotoluene	mg/kg	.4	U	U	.4	U	U
3-Nitrotoluene	mg/kg	.4	U	U	.4	U	U
4-Amino-2,6-dinitrotoluene	mg/kg	.4	U	U	.4	U	U
HMX	mg/kg	.4	U	U	.4	U	U
Nitrobenzene	mg/kg	.4	U	U	.4	U	U
RDX	mg/kg	.4	U	U	.4	U	U
Tetryl	mg/kg	.4	U	U	.4	U	U
p-Nitrotoluene	mg/kg	.4	U	U	.4	U	U
PERCHLORATE							
E314.0							
Perchlorate	mg/kg						
EPA314.0							
Perchlorate	mg/kg	.0649	U	U	.0603	U	U

Summary of Validated Surface and Depositional Soil Data
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 142Q)
Fort McClellan, Alabama

Report Date: 08/24/01

	Location Code:	HR-142Q-DEP01			HR-142Q-DEP02			HR-142Q-GP01			HR-142Q-GP02		
	Associated Site:	HR-142Q			HR-142Q			HR-142Q			HR-142Q		
	Sample No:	YL0005			YL0006			YL0001			YL0003		
	Sample Date:	24-APR-01			24-APR-01			08-FEB-01			08-FEB-01		
User Test Group	*Sample Depth:*	0 - 1			0 - 1			0 - 1			0 - 1		
Lab Method													
Parameter	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
METALS													
SW6010B													
Aluminum	mg/kg	10400			12200			7090			8110		
Antimony	mg/kg	11.7	U	U	13.2	U	U	12.2	U	U	12	U	U
Arsenic	mg/kg	4.66			6.5			1.14	J	J	1.07	J	J
Barium	mg/kg	109			120			60.7			45.9		
Beryllium	mg/kg	1.09	J	J	.975	J	B	.313	J	J	.24	J	J
Cadmium	mg/kg	.587	U	U	.659	U	U	.608	U	U	.599	U	U
Calcium	mg/kg	277			265			185			95.8	J	J
Chromium	mg/kg	9.44			17.2			4.05			7.08		
Cobalt	mg/kg	6.48			10.3			1.85	J	B	1.31	J	B
Copper	mg/kg	11.2			7.57			3.13			3.72		
Iron	mg/kg	28000			37200			5900			7250		
Lead	mg/kg	24.1			30.6			10.7			6.7		
Magnesium	mg/kg	468			516			184			196		
Manganese	mg/kg	459			881			39.1			38.4		
Nickel	mg/kg	5.6			5.62			2.2	J	J	1.98	J	J
Potassium	mg/kg	1830			1070		B	342	J	B	345	J	B
Selenium	mg/kg	1.17	U	U	1.32	U	U	1.22	U	U	1.2	U	U
Silver	mg/kg	1.17	U	U	1.32	U	U	1.22	U	U	1.2	U	U
Sodium	mg/kg	117	U	U	132	U	U	122	U	U	120	U	U
Thallium	mg/kg	.9	J	J	1.01	J	J	2.43	U	U	2.4	U	U
Vanadium	mg/kg	14.9			24.9			7.8			9.16		
Zinc	mg/kg	26.5			24.9			7.02			6.81		
SW7471A													
Mercury	mg/kg	.117	U	U	.132	U	U	.035	J	J	.12	U	U
NITROAROMATICS													
SW8330													
1,3,5-Trinitrobenzene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
1,3-Dinitrobenzene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
2,4,6-Trinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
2,4-Dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U

Summary of Validated Surface and Depositional Soil Data
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 142Q)
Fort McClellan, Alabama

Report Date: 08/24/01

	Location Code:	HR-142Q-DEP01			HR-142Q-DEP02			HR-142Q-GP01			HR-142Q-GP02		
	Associated Site:	HR-142Q			HR-142Q			HR-142Q			HR-142Q		
	Sample No:	YL0005			YL0006			YL0001			YL0003		
	Sample Date:	24-APR-01			24-APR-01			08-FEB-01			08-FEB-01		
User Test Group	*Sample Depth:*	0 - 1			0 - 1			0 - 1			0 - 1		
Lab Method													
Parameter	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
NITROAROMATICS													
SW8330													
2,6-Dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
2-Amino-4,6-dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
2-Nitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
3-Nitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
4-Amino-2,6-dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
HMX	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
Nitrobenzene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
RDX	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
Tetryl	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
p-Nitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
PERCHLORATE													
E314.0													
Perchlorate	mg/kg	.0587	U	U	.0659	U	U						
EPA314.0													
Perchlorate	mg/kg							.0319	J	J	.0599	U	U

Summary of Validated Subsurface Soil Data
Artillery and Motar Impact Areas South of Bains Gap (Parcel 138Q)
Fort McClellan, Alabama

Report Date: 08/24/01

	Location Code:	HR-138Q-GP01			HR-138Q-GP01			HR-138Q-GP02			HR-138Q-GP03		
	Associated Site:	HR-138Q			HR-138Q			HR-138Q			HR-138Q		
	Sample No:	YE0002			YE0003			YE0006			YE0008		
	Sample Date:	31-JAN-01			31-JAN-01			01-FEB-01			31-JAN-01		
User Test Group	*Sample Depth:*	9 - 11			9 - 11			4 - 5			7 - 8		
Lab Method													
Parameter	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
METALS													
SW6010B													
Aluminum	mg/kg	6050			5530			23400			25100		
Antimony	mg/kg	12.1	U	UJ	4.67	J	B	12	U	UJ	12.4	U	UJ
Arsenic	mg/kg	7.12			5.83			3.73			7.38		
Barium	mg/kg	14			16.7			32.8			27.7		
Beryllium	mg/kg	.422	J	J	.41	J	J	.424	J	J	.296	J	J
Cadmium	mg/kg	.603	U	U	.603	U	U	.598	U	U	.62	U	U
Calcium	mg/kg	15.1	J	J	16.1	J	J	53.9	J	J	17.5	J	J
Chromium	mg/kg	10.1			8.39			16.7			32.3		
Cobalt	mg/kg	.807	J	B	1.02	J	B	2.2	J	J	1.86	J	J
Copper	mg/kg	4.85			4.5			10.6			10.2		
Iron	mg/kg	15600		J	12400		J	33000		J	29600		J
Lead	mg/kg	5.28			4.89			7.38			8.1		
Magnesium	mg/kg	187			171			551			750		
Manganese	mg/kg	3.26		J	2.67		J	47.9		J	14.8		J
Nickel	mg/kg	2.6			2.24	J	J	4.68			4.71		
Potassium	mg/kg	1750			1790			461	J	J	838		
Selenium	mg/kg	1.21	U	U	1.21	U	U	1.2	U	U	1.24	U	U
Silver	mg/kg	1.21	U	U	1.21	U	U	1.2	U	U	1.24	U	U
Sodium	mg/kg	121	U	U	121	U	U	120	U	U	124	U	U
Thallium	mg/kg	2.41	U	U	2.41	U	U	.817	J	J	.717	J	J
Vanadium	mg/kg	14			11.4			26.6			50.1		
Zinc	mg/kg	11.1		J	8.6		J	21.3		J	16.6		J
SW7471A													
Mercury	mg/kg	.121	U	U	.121	U	U	.042	J	J	.026	J	J
NITROAROMATICS													
SW8330													
1,3,5-Trinitrobenzene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
1,3-Dinitrobenzene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
2,4,6-Trinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
2,4-Dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U

Summary of Validated Subsurface Soil Data
Artillery and Motar Impact Areas South of Bains Gap (Parcel 138Q)
Fort McClellan, Alabama

Report Date: 08/24/01

Location Code:	HR-138Q-GP04			
Associated Site:	HR-138Q			
Sample No:	YE0010			
Sample Date:	31-JAN-01			
Sample Depth:	10 - 11			
User Test Group / Lab Method / Parameter	*Units*	*Result*	*Qual*	*VQual*
METALS				
SW6010B				
Aluminum	mg/kg	18700		
Antimony	mg/kg	7.61	J	B
Arsenic	mg/kg	7.34		
Barium	mg/kg	38		
Beryllium	mg/kg	.364	J	J
Cadmium	mg/kg	.614	U	U
Calcium	mg/kg	30.8	J	J
Chromium	mg/kg	16.5		
Cobalt	mg/kg	1.83	J	J
Copper	mg/kg	6.04		
Iron	mg/kg	38100		J
Lead	mg/kg	7.93		
Magnesium	mg/kg	380		
Manganese	mg/kg	25.8		J
Nickel	mg/kg	2.33	J	J
Potassium	mg/kg	1640		
Selenium	mg/kg	1.23	U	U
Silver	mg/kg	1.23	U	U
Sodium	mg/kg	123	U	U
Thallium	mg/kg	2.46	U	U
Vanadium	mg/kg	22.6		
Zinc	mg/kg	11.1		J
SW7471A				
Mercury	mg/kg	.123	U	U
NITROAROMATICS				
SW8330				
1,3,5-Trinitrobenzene	mg/kg	.4	U	U
1,3-Dinitrobenzene	mg/kg	.4	U	U
2,4,6-Trinitrotoluene	mg/kg	.4	U	U
2,4-Dinitrotoluene	mg/kg	.4	U	U

Summary of Validated Subsurface Soil Data
Artillery and Motar Impact Areas South of Bains Gap (Parcel 138Q)
Fort McClellan, Alabama

Report Date: 08/24/01

	Location Code:	HR-138Q-GP01			HR-138Q-GP01			HR-138Q-GP02			HR-138Q-GP03		
	Associated Site:	HR-138Q			HR-138Q			HR-138Q			HR-138Q		
	Sample No:	YE0002			YE0003			YE0006			YE0008		
	Sample Date:	31-JAN-01			31-JAN-01			01-FEB-01			31-JAN-01		
User Test Group	*Sample Depth:*	9 - 11			9 - 11			4 - 5			7 - 8		
Lab Method													
Parameter	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
NITROAROMATICS													
SW8330													
2,6-Dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
2-Amino-4,6-dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
2-Nitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
3-Nitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
4-Amino-2,6-dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
HMX	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
Nitrobenzene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
RDX	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
Tetryl	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
p-Nitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
PERCHLORATE													
EPA314.0													
Perchlorate	mg/kg	.0603	U	U	.0603	U	U	.0598	U	U	.062	U	U

Summary of Validated Subsurface Soil Data
Artillery and Motar Impact Areas South of Bains Gap (Parcel 138Q)
Fort McClellan, Alabama

Report Date: 08/24/01

Location Code:		HR-138Q-GP04		
Associated Site:		HR-138Q		
Sample No:		YE0010		
Sample Date:		31-JAN-01		
Sample Depth:		10 - 11		
User Test Group / Lab Method / Parameter	*Units*	*Result*	*Qual*	*VQual*
NITROAROMATICS				
SW8330				
2,6-Dinitrotoluene	mg/kg	.4	U	U
2-Amino-4,6-dinitrotoluene	mg/kg	.4	U	U
2-Nitrotoluene	mg/kg	.4	U	U
3-Nitrotoluene	mg/kg	.4	U	U
4-Amino-2,6-dinitrotoluene	mg/kg	.4	U	U
HMX	mg/kg	.4	U	U
Nitrobenzene	mg/kg	.4	U	U
RDX	mg/kg	.4	U	U
Tetryl	mg/kg	.4	U	U
p-Nitrotoluene	mg/kg	.4	U	U
PERCHLORATE				
EPA314.0				
Perchlorate	mg/kg	.0614	U	U

Summary of Validated Subsurface Soil Data
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 139Q)
Fort McClellan, Alabama

Report Date: 08/24/01

	Location Code:	HR-139Q-GP01			HR-139Q-GP02			HR-139Q-GP02		
	Associated Site:	HR-139Q			HR-139Q			HR-139Q		
	Sample No:	YG0002			YG0004			YG0005		
	Sample Date:	08-FEB-01			07-FEB-01			07-FEB-01		
User Test Group	*Sample Depth:*	10 - 11			9 - 11			9 - 11		
Lab Method *Parameter*	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
METALS										
SW6010B										
Aluminum	mg/kg	8640			11000			10500		
Antimony	mg/kg	11.9	U	UJ	4.86	J	J	12.4	U	UJ
Arsenic	mg/kg	5.01			5.42			6.24		
Barium	mg/kg	33.6			24.4			25.2		
Beryllium	mg/kg	.672	J	J	.389	J	J	.396	J	J
Cadmium	mg/kg	.594	U	U	.62	U	U	.619	U	U
Calcium	mg/kg	28.1	J	J	17	J	J	17.1	J	J
Chromium	mg/kg	8.39		J	8.17		J	8.37		J
Cobalt	mg/kg	.834	J	B	2.48	U	U	.528	J	B
Copper	mg/kg	12.1			10.2			10.6		
Iron	mg/kg	12700			6740			6980		
Lead	mg/kg	4.28			6.89			6.25		
Magnesium	mg/kg	343			389			369		
Manganese	mg/kg	6.4			2.75			2.52		
Nickel	mg/kg	2.68			1.05	J	J	2.48	U	U
Potassium	mg/kg	3770			3300			3620		
Selenium	mg/kg	1.19	U	U	1.24	U	U	1.24	U	U
Silver	mg/kg	.506	J	B	1.24	U	U	.55	J	B
Sodium	mg/kg	119	U	U	37.5	J	J	32.1	J	J
Thallium	mg/kg	2.38	U	U	2.48	U	U	.739	J	J
Vanadium	mg/kg	10.6		J	15.7		J	16.9		J
Zinc	mg/kg	6.71			4.19			3.99		
SW7471A										
Mercury	mg/kg	.119	U	U	.124	U	U	.124	U	U
NITROAROMATICS										
SW8330										
1,3,5-Trinitrobenzene	mg/kg	.4	U	U	.4	U	U	.4	U	U
1,3-Dinitrobenzene	mg/kg	.4	U	U	.4	U	U	.4	U	U
2,4,6-Trinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U
2,4-Dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U

Summary of Validated Subsurface Soil Data
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 139Q)
Fort McClellan, Alabama

Report Date: 08/24/01

	Location Code:	HR-139Q-GP01			HR-139Q-GP02			HR-139Q-GP02		
	Associated Site:	HR-139Q			HR-139Q			HR-139Q		
	Sample No:	YG0002			YG0004			YG0005		
	Sample Date:	08-FEB-01			07-FEB-01			07-FEB-01		
User Test Group	*Sample Depth:*	10 - 11			9 - 11			9 - 11		
Lab Method *Parameter*	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
NITROAROMATICS										
SW8330										
2,6-Dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U
2-Amino-4,6-dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U
2-Nitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U
3-Nitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U
4-Amino-2,6-dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U
HMX	mg/kg	.4	U	U	.4	U	U	.4	U	U
Nitrobenzene	mg/kg	.4	U	U	.4	U	U	.4	U	U
RDX	mg/kg	.4	U	U	.4	U	U	.4	U	U
Tetryl	mg/kg	.4	U	U	.4	U	U	.4	U	U
p-Nitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U
PERCHLORATE										
EPA314.0										
Perchlorate	mg/kg	.0594	U	U	.062	U	U	.0619	U	U

Summary of Validated Subsurface Soil Data
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 140Q)
Fort McClellan, Alabama

Report Date: 08/24/01

	Location Code:	HR-140Q-GP01			HR-140Q-GP02			HR-140Q-GP02		
	Associated Site:	HR-140Q			HR-140Q			HR-140Q		
	Sample No:	YH0002			YH0004			YH0005		
	Sample Date:	07-FEB-01			08-FEB-01			08-FEB-01		
User Test Group	*Sample Depth:*	7 - 8			1 - 2			1 - 2		
Lab Method *Parameter*	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
METALS										
SW6010B										
Aluminum	mg/kg	13600			18100			17100		
Antimony	mg/kg	12.2	U	U	11.9	U	U	11.8	U	U
Arsenic	mg/kg	3.86			3.23			3.13		
Barium	mg/kg	30.2			127			118		
Beryllium	mg/kg	.689	J	J	.938	J	J	.825	J	J
Cadmium	mg/kg	.612	U	U	.597	U	U	.588	U	U
Calcium	mg/kg	13.5	J	J	119	J	J	114	J	J
Chromium	mg/kg	7.38			12			12.4		
Cobalt	mg/kg	2.45	U	U	25.7			28.6		
Copper	mg/kg	6.79			9.82			9.65		
Iron	mg/kg	12900			13100			12300		
Lead	mg/kg	9.58			11.6			13.1		
Magnesium	mg/kg	498			1070			1020		
Manganese	mg/kg	8.1			778			661		
Nickel	mg/kg	3.56			8.42			8.43		
Potassium	mg/kg	2310			1480			1540		
Selenium	mg/kg	1.22	U	U	1.19	U	U	1.18	U	U
Silver	mg/kg	1.22	U	U	1.19	U	U	1.18	U	U
Sodium	mg/kg	122	U	U	119	U	U	118	U	U
Thallium	mg/kg	2.45	U	U	2.39	U	U	2.35	U	U
Vanadium	mg/kg	9.18			18.7			17.6		
Zinc	mg/kg	5.43			25.6			26.9		
SW7471A										
Mercury	mg/kg	.122	U	U	.119	U	U	.118	U	U
NITROAROMATICS										
SW8330										
1,3,5-Trinitrobenzene	mg/kg	.4	U	U	.4	U	U	.4	U	U
1,3-Dinitrobenzene	mg/kg	.4	U	U	.4	U	U	.4	U	U
2,4,6-Trinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U
2,4-Dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U

Summary of Validated Subsurface Soil Data
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 140Q)
Fort McClellan, Alabama

Report Date: 08/24/01

	Location Code:	HR-140Q-GP01			HR-140Q-GP02			HR-140Q-GP02		
	Associated Site:	HR-140Q			HR-140Q			HR-140Q		
	Sample No:	YH0002			YH0004			YH0005		
	Sample Date:	07-FEB-01			08-FEB-01			08-FEB-01		
User Test Group	*Sample Depth:*	7 - 8			1 - 2			1 - 2		
Lab Method *Parameter*	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
NITROAROMATICS										
SW8330										
2,6-Dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U
2-Amino-4,6-dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U
2-Nitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U
3-Nitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U
4-Amino-2,6-dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U
HMX	mg/kg	.4	U	U	.4	U	U	.4	U	U
Nitrobenzene	mg/kg	.4	U	U	.4	U	U	.4	U	U
RDX	mg/kg	.4	U	U	.4	U	U	.4	U	U
Tetryl	mg/kg	.4	U	U	.4	U	U	.4	U	U
p-Nitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U
PERCHLORATE										
EPA314.0										
Perchlorate	mg/kg	.0612	U	U	.0597	U	U	.0588	U	U

Summary of Validated Subsurface Soil Data

Artillery and Mortar Impact Areas South of Bains Gap (Parcel 141Q)

Fort McClellan, Alabama

Report Date: 08/24/01

	Location Code:	HR-141Q-GP01			HR-141Q-GP02			HR-141Q-GP03			HR-141Q-GP04		
	Associated Site:	HR-141Q			HR-141Q			HR-141Q			HR-141Q		
	Sample No:	YJ0002			YJ0004			YJ0006			YJ0008		
	Sample Date:	07-FEB-01			11-APR-01			09-FEB-01			09-FEB-01		
User Test Group	*Sample Depth:*	5 - 6			3 - 4			2 - 4			2 - 4		
Lab Method													
Parameter	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
METALS													
SW6010B													
Aluminum	mg/kg	15100			12700			11900			13000		
Antimony	mg/kg	11.5	U	U	11.8	U	U	11.5	U	UJ	11.6	U	UJ
Arsenic	mg/kg	5.5			5			4.7			5.44		
Barium	mg/kg	27.3			71.8			105		J	57.5		J
Beryllium	mg/kg	1.08	J	J	1.14	J	J	.933	J	J	.482	J	J
Cadmium	mg/kg	.574	U	U	.591	U	U	.576	U	U	.578	U	U
Calcium	mg/kg	16.1	J	J	43.5	J	J	124			71	J	J
Chromium	mg/kg	11.7			9.36			21.5		J	17.7		J
Cobalt	mg/kg	.816	J	B	1.31	J	B	6.64		J	2.66		J
Copper	mg/kg	5.09			7.86			12			9.25		
Iron	mg/kg	13700			6190			35400			25500		
Lead	mg/kg	5.02			11.7			9.07			8.41		
Magnesium	mg/kg	433			454			442			465		
Manganese	mg/kg	2.98			8.16			302			81.9		
Nickel	mg/kg	4.12			2.15	J	J	6		J	3.09		B
Potassium	mg/kg	2750			4790			820			1340		
Selenium	mg/kg	1.15	U	U	1.18	U	U	1.15	U	U	1.16	U	U
Silver	mg/kg	1.15	U	U	1.18	U	U	1.15	U	U	1.16	U	U
Sodium	mg/kg	115	U	U	118	U	U	115	U	U	23.3	J	J
Thallium	mg/kg	2.3	U	U	2.36	U	U	2.3	U	U	2.31	U	U
Vanadium	mg/kg	16.3			14			18.3			23.1		
Zinc	mg/kg	11.1			11.6			17.7		J	17.3		J
SW7471A													
Mercury	mg/kg	.115	U	U	.118	U	U	.115	U	U	.023	J	J
NITROAROMATICS													
SW8330													
1,3,5-Trinitrobenzene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
1,3-Dinitrobenzene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
2,4,6-Trinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
2,4-Dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U

Summary of Validated Subsurface Soil Data
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 141Q)
Fort McClellan, Alabama

Report Date: 08/24/01

	Location Code:	HR-141Q-GP01			HR-141Q-GP02			HR-141Q-GP03			HR-141Q-GP04		
	Associated Site:	HR-141Q			HR-141Q			HR-141Q			HR-141Q		
	Sample No:	YJ0002			YJ0004			YJ0006			YJ0008		
	Sample Date:	07-FEB-01			11-APR-01			09-FEB-01			09-FEB-01		
User Test Group	*Sample Depth:*	5 - 6			3 - 4			2 - 4			2 - 4		
Lab Method													
Parameter	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
NITROAROMATICS													
SW8330													
2,6-Dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
2-Amino-4,6-dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
2-Nitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
3-Nitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
4-Amino-2,6-dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
HMX	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
Nitrobenzene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
RDX	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
Tetryl	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
p-Nitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
PERCHLORATE													
E314.0													
Perchlorate	mg/kg				.0591	U	U						
EPA314.0													
Perchlorate	mg/kg	.0574	U	U				.0576	U	U	.0578	U	U

Summary of Validated Subsurface Soil Data
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 142Q)
Fort McClellan, Alabama

Report Date: 08/24/01

	Location Code:	HR-142Q-GP01			HR-142Q-GP02		
	Associated Site:	HR-142Q			HR-142Q		
	Sample No:	YL0002			YL0004		
	Sample Date:	08-FEB-01			08-FEB-01		
User Test Group	*Sample Depth:*	1 - 4			9 - 10		
Lab Method *Parameter*	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
METALS							
SW6010B							
Aluminum	mg/kg	9730			7110		
Antimony	mg/kg	11.7	U	U	11.9	U	U
Arsenic	mg/kg	1.43			4.46		
Barium	mg/kg	45.2			36.9		
Beryllium	mg/kg	.381	J	J	.227	J	J
Cadmium	mg/kg	.585	U	U	.595	U	U
Calcium	mg/kg	122			14.5	J	J
Chromium	mg/kg	9.59			7.06		
Cobalt	mg/kg	1.3	J	B	2.38	U	U
Copper	mg/kg	4.37			4.81		
Iron	mg/kg	17200			6340		
Lead	mg/kg	9.2			4.48		
Magnesium	mg/kg	193			113	J	J
Manganese	mg/kg	29.1			1.57		
Nickel	mg/kg	3.01			1.47	J	J
Potassium	mg/kg	322	J	B	2790		
Selenium	mg/kg	1.17	U	U	1.19	U	U
Silver	mg/kg	1.17	U	U	1.19	U	U
Sodium	mg/kg	117	U	U	119	U	U
Thallium	mg/kg	2.34	U	U	2.38	U	U
Vanadium	mg/kg	12.6			10.3		
Zinc	mg/kg	7.92			1.2	J	B
SW7471A							
Mercury	mg/kg	.117	U	U	.119	U	U
NITROAROMATICS							
SW8330							
1,3,5-Trinitrobenzene	mg/kg	.4	U	U	.4	U	U
1,3-Dinitrobenzene	mg/kg	.4	U	U	.4	U	U
2,4,6-Trinitrotoluene	mg/kg	.4	U	U	.4	U	U
2,4-Dinitrotoluene	mg/kg	.4	U	U	.4	U	U

Summary of Validated Subsurface Soil Data
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 142Q)
Fort McClellan, Alabama

Report Date: 08/24/01

	Location Code:	HR-142Q-GP01			HR-142Q-GP02		
	Associated Site:	HR-142Q			HR-142Q		
	Sample No:	YL0002			YL0004		
	Sample Date:	08-FEB-01			08-FEB-01		
User Test Group	*Sample Depth:*	1 - 4			9 - 10		
Lab Method							
Parameter	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
NITROAROMATICS							
SW8330							
2,6-Dinitrotoluene	mg/kg	.4	U	U	.4	U	U
2-Amino-4,6-dinitrotoluene	mg/kg	.4	U	U	.4	U	U
2-Nitrotoluene	mg/kg	.4	U	U	.4	U	U
3-Nitrotoluene	mg/kg	.4	U	U	.4	U	U
4-Amino-2,6-dinitrotoluene	mg/kg	.4	U	U	.4	U	U
HMX	mg/kg	.4	U	U	.4	U	U
Nitrobenzene	mg/kg	.4	U	U	.4	U	U
RDX	mg/kg	.4	U	U	.4	U	U
Tetryl	mg/kg	.4	U	U	.4	U	U
p-Nitrotoluene	mg/kg	.4	U	U	.4	U	U
PERCHLORATE							
EPA314.0							
Perchlorate	mg/kg	.0585	U	U	.0595	U	U

Summary of Validated Seep Data
Artillery and Motar Impact Areas South of Bains Gap (Parcel 138Q)
Fort McClellan, Alabama

Report Date: 04/09/02

	Location Code:		HR-138Q-SEEP01			HR-138Q-SEEP01			HR-138Q-SEEP02			HR-138Q-SEEP02		
	Associated Site:		Historic Ranges			Historic Ranges			Historic Ranges			Historic Ranges		
	Sample No:		YE2006			YE2006R			YE2007			YE2007R		
	Sample Date:		02-MAY-01			10-JAN-02			02-MAY-01			10-JAN-02		
User Test Group / *Lab Method* / *Parameter*	*Flt*	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
METALS														
SW6010B														
Aluminum		mg/L	.623						.221					
Antimony		mg/L	.1	U	U				.1	U	U			
Arsenic		mg/L	.01	U	U				.01	U	U			
Barium		mg/L	.0516						.0238					
Beryllium		mg/L	.001	U	U				.001	U	U			
Cadmium		mg/L	.01	U	U				.01	U	U			
Calcium		mg/L	.144	J	B				1	U	U			
Chromium		mg/L	.01	U	U				.01	U	U			
Cobalt		mg/L	.02	U	U				.02	U	U			
Copper		mg/L	.02	U	U				.0051	J	B			
Iron		mg/L	.709						.293					
Lead		mg/L	.0194			.00437	J	J	.00929	J	J	.00321	J	J
Magnesium		mg/L	.235	J	J				.155	J	J			
Manganese		mg/L	.0152						.0103					
Nickel		mg/L	.02	U	U				.02	U	U			
Potassium		mg/L	2.6	J	J				2.27	J	J			
Selenium		mg/L	.01	U	U				.01	U	U			
Silver		mg/L	.01	U	U				.01	U	U			
Sodium		mg/L	.921	J	J				.868	J	J			
Thallium		mg/L	.01	U	U				.01	U	U			
Vanadium		mg/L	.01	U	U				.01	U	U			
Zinc		mg/L	.02	U	U				.02	U	U			
SW7470A														
Mercury		mg/L	.0005	U	U				.0005	U	U			
NITROAROMATICS														
SW8330														
1,3,5-Trinitrobenzene		mg/L	.0004	U	U				.0004	U	U			
1,3-Dinitrobenzene		mg/L	.0004	U	U				.0004	U	U			
2,4,6-Trinitrotoluene		mg/L	.0004	U	U				.0004	U	U			
2,4-Dinitrotoluene		mg/L	.0004	U	U				.0004	U	U			

Summary of Validated Seep Data
Artillery and Motar Impact Areas South of Bains Gap (Parcel 138Q)
Fort McClellan, Alabama

Report Date: 04/09/02

		Location Code:	HR-138Q-SEEP03			HR-138Q-SEEP03		
		Associated Site:	Historic Ranges			Historic Ranges		
		Sample No:	YE2008			YE2008R		
		Sample Date:	02-MAY-01			10-JAN-02		
User Test Group / *Lab Method* / *Parameter*	*Flt*	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
METALS								
SW6010B								
Aluminum		mg/L	2.19					
Antimony		mg/L	.1	U	U			
Arsenic		mg/L	.01	U	U			
Barium		mg/L	.14					
Beryllium		mg/L	.00065	J	J			
Cadmium		mg/L	.01	U	U			
Calcium		mg/L	.592	J	J			
Chromium		mg/L	.01	U	U			
Cobalt		mg/L	.02	U	U			
Copper		mg/L	.0131	J	J			
Iron		mg/L	3.78					
Lead		mg/L	.0453			.002	J	J
Magnesium		mg/L	.364	J	J			
Manganese		mg/L	.0242					
Nickel		mg/L	.02	U	U			
Potassium		mg/L	3.25	J	J			
Selenium		mg/L	.01	U	U			
Silver		mg/L	.01	U	U			
Sodium		mg/L	1.08					
Thallium		mg/L	.01	U	U			
Vanadium		mg/L	.00405	J	J			
Zinc		mg/L	.011	J	J			
SW7470A								
Mercury		mg/L	.0005	U	U			
NITROAROMATICS								
SW8330								
1,3,5-Trinitrobenzene		mg/L	.0004	U	U			
1,3-Dinitrobenzene		mg/L	.0004	U	U			
2,4,6-Trinitrotoluene		mg/L	.0004	U	U			
2,4-Dinitrotoluene		mg/L	.0004	U	U			

Summary of Validated Seep Data
Artillery and Motar Impact Areas South of Bains Gap (Parcel 138Q)
Fort McClellan, Alabama

Report Date: 04/09/02

		Location Code:	HR-138Q-SEEP01			HR-138Q-SEEP01			HR-138Q-SEEP02			HR-138Q-SEEP02		
		Associated Site:	Historic Ranges			Historic Ranges			Historic Ranges			Historic Ranges		
		Sample No:	YE2006			YE2006R			YE2007			YE2007R		
		Sample Date:	02-MAY-01			10-JAN-02			02-MAY-01			10-JAN-02		
User Test Group / *Lab Method* / *Parameter*	*Flt*	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
NITROAROMATICS														
SW8330														
2,6-Dinitrotoluene		mg/L	.0004	U	U				.0004	U	U			
2-Amino-4,6-dinitrotoluene		mg/L	.0004	U	U				.0004	U	U			
2-Nitrotoluene		mg/L	.0004	U	U				.0004	U	U			
3-Nitrotoluene		mg/L	.0004	U	U				.0004	U	U			
4-Amino-2,6-dinitrotoluene		mg/L	.0004	U	U				.0004	U	U			
HMX		mg/L	.001	U	U				.001	U	U			
Nitrobenzene		mg/L	.0004	U	U				.0004	U	U			
RDX		mg/L	.0004	U	U				.0004	U	U			
Tetryl		mg/L	.0004	U	U				.0004	U	U			
p-Nitrotoluene		mg/L	.0004	U	U				.0004	U	U			
PERCHLORATE														
E314.0														
Perchlorate		mg/L	.005	U	U				.005	U	U			

Summary of Validated Seep Data
Artillery and Motar Impact Areas South of Bains Gap (Parcel 138Q)
Fort McClellan, Alabama

Report Date: 04/09/02

	Location Code:		HR-138Q-SEEP03			HR-138Q-SEEP03		
	Associated Site:		Historic Ranges			Historic Ranges		
	Sample No:		YE2008			YE2008R		
	Sample Date:		02-MAY-01			10-JAN-02		
User Test Group / *Lab Method* / *Parameter*	*Flt*	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
NITROAROMATICS								
SW8330								
2,6-Dinitrotoluene		mg/L	.0004	U	U			
2-Amino-4,6-dinitrotoluene		mg/L	.0004	U	U			
2-Nitrotoluene		mg/L	.0004	U	U			
3-Nitrotoluene		mg/L	.0004	U	U			
4-Amino-2,6-dinitrotoluene		mg/L	.0004	U	U			
HMX		mg/L	.001	U	U			
Nitrobenzene		mg/L	.0004	U	U			
RDX		mg/L	.0004	U	U			
Tetryl		mg/L	.0004	U	U			
p-Nitrotoluene		mg/L	.0004	U	U			
PERCHLORATE								
E314.0								
Perchlorate		mg/L	.005	U	U			

Summary of Validated Surface Water Samples
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 138Q)
Fort McClellan, Alabama

Report Date: 08/24/01

	Location Code:		HR-138Q-SW/SD02			HR-138Q-SW/SD03			HR-138Q-SW/SD04			HR-138Q-SW/SD05		
	Associated Site:		HR-138Q			HR-138Q			HR-138Q			HR-138Q		
	Sample No:		YE2002			YE2003			YE2004			YE2005		
	Sample Date:		03-MAY-01			02-MAY-01			25-APR-01			24-APR-01		
User Test Group / *Lab Method* / *Parameter*	*Flt*	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
METALS														
SW6010B														
Aluminum		mg/L	.173	J	J	.0843	J	J	.061	J	J	.244		
Antimony		mg/L	.1	U	U	.1	U	U	.1	U	U	.1	U	U
Arsenic		mg/L	.01	U	U	.01	U	U	.01	U	U	.01	U	U
Barium		mg/L	.0228			.0167			.0212			.0258		
Beryllium		mg/L	.001	U	U	.001	U	U	.001	U	U	.001	U	U
Cadmium		mg/L	.01	U	U	.01	U	U	.01	U	U	.01	U	U
Calcium		mg/L	.166	J	B	.145	J	B	.278	J	J	.213	J	J
Chromium		mg/L	.01	U	U	.01	U	U	.01	U	U	.01	U	U
Cobalt		mg/L	.02	U	U	.02	U	U	.02	U	U	.02	U	U
Copper		mg/L	.02	U	U	.02	U	U	.02	U	U	.0108	J	J
Iron		mg/L	.217			.0636	J	J	.04	J	J	.631		
Lead		mg/L	.00253	J	B	.00367	J	B	.01	U	U	.0208		
Magnesium		mg/L	.244	J	J	.266	J	J	.295	J	J	.203	J	J
Manganese		mg/L	.0132			.00733	J	J	.00651	J	J	.0146		
Nickel		mg/L	.02	U	U	.02	U	U	.02	U	U	.02	U	U
Potassium		mg/L	5	U	U	2.94	J	J	2.25	J	J	5	U	U
Selenium		mg/L	.01	U	U	.01	U	U	.01	U	U	.00175	J	J
Silver		mg/L	.01	U	U	.01	U	U	.01	U	U	.01	U	U
Sodium		mg/L	.934	J	J	1.08			.85	J	J	.837	J	J
Thallium		mg/L	.01	U	U	.01	U	U	.01	U	U	.01	U	U
Vanadium		mg/L	.01	U	U	.01	U	U	.01	U	U	.01	U	U
Zinc		mg/L	.02	U	U	.02	U	U	.02	U	U	.00853	J	J
SW7470A														
Mercury		mg/L	.0005	U	U	.0005	U	U	.0005	U	U	.0005	U	U
NITROAROMATICS														
SW8330														
1,3,5-Trinitrobenzene		mg/L	.0004	U	U	.0004	U	U	.0004	U	U	.0004	U	U
1,3-Dinitrobenzene		mg/L	.0004	U	U	.0004	U	U	.0004	U	U	.0004	U	U
2,4,6-Trinitrotoluene		mg/L	.0004	U	U	.0004	U	U	.0004	U	U	.0004	U	U
2,4-Dinitrotoluene		mg/L	.0004	U	U	.0004	U	U	.0004	U	U	.0004	U	U

Summary of Validated Surface Water Samples
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 138Q)
Fort McClellan, Alabama

Report Date: 08/24/01

	Location Code:		HR-138Q-SW/SD02			HR-138Q-SW/SD03			HR-138Q-SW/SD04			HR-138Q-SW/SD05		
	Associated Site:		HR-138Q			HR-138Q			HR-138Q			HR-138Q		
	Sample No:		YE2002			YE2003			YE2004			YE2005		
	Sample Date:		03-MAY-01			02-MAY-01			25-APR-01			24-APR-01		
User Test Group / *Lab Method* / *Parameter*	*Flt*	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
NITROAROMATICS														
SW8330														
2,6-Dinitrotoluene		mg/L	.0004	U	U	.0004	U	U	.0004	U	U	.0004	U	U
2-Amino-4,6-dinitrotoluene		mg/L	.0004	U	U	.0004	U	U	.0004	U	U	.0004	U	U
2-Nitrotoluene		mg/L	.0004	U	U	.0004	U	U	.0004	U	U	.0004	U	U
3-Nitrotoluene		mg/L	.0004	U	U	.0004	U	U	.0004	U	U	.0004	U	U
4-Amino-2,6-dinitrotoluene		mg/L	.0004	U	U	.0004	U	U	.0004	U	U	.0004	U	U
HMX		mg/L	.001	U	U	.001	U	U	.001	U	U	.001	U	U
Nitrobenzene		mg/L	.0004	U	U	.0004	U	U	.0004	U	U	.0004	U	U
RDX		mg/L	.0004	U	U	.0004	U	U	.0004	U	U	.0004	U	U
Tetryl		mg/L	.0004	U	U	.0004	U	U	.0004	U	U	.0004	U	U
p-Nitrotoluene		mg/L	.0004	U	U	.0004	U	U	.0004	U	U	.0004	U	U
PERCHLORATE														
E314.0														
Perchlorate		mg/L	.005	U	U	.005	U	U	.005	U	U	.005	U	U

Summary of Validated Surface Water Samples
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 139Q)
Fort McClellan, Alabama

Report Date: 08/24/01

Location Code:	HR-139Q-SW/SD01
Associated Site:	HR-139Q
Sample No:	YG2001
Sample Date:	25-APR-01

User Test Group / *Lab Method* / *Parameter*	*Flt*	*Units*	*Result*	*Qual*	*VQual*
METALS					
SW6010B					
Aluminum		mg/L	.376		
Antimony		mg/L	.1	U	U
Arsenic		mg/L	.01	U	U
Barium		mg/L	.0347		
Beryllium		mg/L	.001	U	U
Cadmium		mg/L	.01	U	U
Calcium		mg/L	.275	J	J
Chromium		mg/L	.01	U	U
Cobalt		mg/L	.02	U	U
Copper		mg/L	.02	U	U
Iron		mg/L	.406		
Lead		mg/L	.01	U	U
Magnesium		mg/L	.312	J	J
Manganese		mg/L	.0426		
Nickel		mg/L	.02	U	U
Potassium		mg/L	2.76	J	J
Selenium		mg/L	.01	U	U
Silver		mg/L	.01	U	U
Sodium		mg/L	.824	J	J
Thallium		mg/L	.01	U	U
Vanadium		mg/L	.01	U	U
Zinc		mg/L	.00866	J	J
SW7470A					
Mercury		mg/L	.0005	U	U
NITROAROMATICS					
SW8330					
1,3,5-Trinitrobenzene		mg/L	.0004	U	U
1,3-Dinitrobenzene		mg/L	.0004	U	U
2,4,6-Trinitrotoluene		mg/L	.0004	U	U
2,4-Dinitrotoluene		mg/L	.0004	U	U

Summary of Validated Surface Water Samples
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 139Q)
Fort McClellan, Alabama

Report Date: 08/24/01

Location Code: HR-139Q-SW/SD01
Associated Site: HR-139Q
Sample No: YG2001
Sample Date: 25-APR-01

User Test Group / *Lab Method* / *Parameter*	*Flt*	*Units*	*Result*	*Qual*	*VQual*
NITROAROMATICS					
SW8330					
2,6-Dinitrotoluene		mg/L	.0004	U	U
2-Amino-4,6-dinitrotoluene		mg/L	.0004	U	U
2-Nitrotoluene		mg/L	.0004	U	U
3-Nitrotoluene		mg/L	.0004	U	U
4-Amino-2,6-dinitrotoluene		mg/L	.0004	U	U
HMX		mg/L	.001	U	U
Nitrobenzene		mg/L	.0004	U	U
RDX		mg/L	.0004	U	U
Tetryl		mg/L	.0004	U	U
p-Nitrotoluene		mg/L	.0004	U	U
PERCHLORATE					
E314.0					
Perchlorate		mg/L	.005	U	U

Summary of Validated Surface Water Samples
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 140Q)
Fort McClellan, Alabama

Report Date: 08/24/01

Location Code:	HR-140Q-SW/SD01
Associated Site:	HR-140Q
Sample No:	YH2001
Sample Date:	25-APR-01

User Test Group / *Lab Method* / *Parameter*	*Flt*	*Units*	*Result*	*Qual*	*VQual*
METALS					
SW6010B					
Aluminum		mg/L	.119	J	J
Antimony		mg/L	.1	U	U
Arsenic		mg/L	.01	U	U
Barium		mg/L	.0283		
Beryllium		mg/L	.001	U	U
Cadmium		mg/L	.01	U	U
Calcium		mg/L	.328	J	J
Chromium		mg/L	.01	U	U
Cobalt		mg/L	.02	U	U
Copper		mg/L	.02	U	U
Iron		mg/L	.057	J	J
Lead		mg/L	.01	U	U
Magnesium		mg/L	.373	J	J
Manganese		mg/L	.00608	J	J
Nickel		mg/L	.0109	J	B
Potassium		mg/L	2.75	J	J
Selenium		mg/L	.01	U	U
Silver		mg/L	.01	U	U
Sodium		mg/L	.902	J	J
Thallium		mg/L	.01	U	U
Vanadium		mg/L	.01	U	U
Zinc		mg/L	.02	U	U
SW7470A					
Mercury		mg/L	.0005	U	U
NITROAROMATICS					
SW8330					
1,3,5-Trinitrobenzene		mg/L	.0004	U	U
1,3-Dinitrobenzene		mg/L	.0004	U	U
2,4,6-Trinitrotoluene		mg/L	.0004	U	U
2,4-Dinitrotoluene		mg/L	.0004	U	U

Summary of Validated Surface Water Samples
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 140Q)
Fort McClellan, Alabama

Report Date: 08/24/01

Location Code:	HR-140Q-SW/SD01
Associated Site:	HR-140Q
Sample No:	YH2001
Sample Date:	25-APR-01

User Test Group / *Lab Method* / *Parameter*	*Flt*	*Units*	*Result*	*Qual*	*VQual*
NITROAROMATICS					
SW8330					
2,6-Dinitrotoluene		mg/L	.0004	U	U
2-Amino-4,6-dinitrotoluene		mg/L	.0004	U	U
2-Nitrotoluene		mg/L	.0004	U	U
3-Nitrotoluene		mg/L	.0004	U	U
4-Amino-2,6-dinitrotoluene		mg/L	.0004	U	U
HMX		mg/L	.001	U	U
Nitrobenzene		mg/L	.0004	U	U
RDX		mg/L	.0004	U	U
Tetryl		mg/L	.0004	U	U
p-Nitrotoluene		mg/L	.0004	U	U
PERCHLORATE					
E314.0					
Perchlorate		mg/L	.005	U	U

Summary of Validated Surface Water Samples
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 141Q)
Fort McClellan, Alabama

Report Date: 08/24/01

Location Code: HR-141Q-SW/SD02
Associated Site: HR-141Q
Sample No: YJ2002
Sample Date: 03-MAY-01

User Test Group / *Lab Method* / *Parameter*	*Flt*	*Units*	*Result*	*Qual*	*VQual*
METALS					
SW6010B					
Aluminum		mg/L	.596		
Antimony		mg/L	.1	U	U
Arsenic		mg/L	.01	U	U
Barium		mg/L	.0355		
Beryllium		mg/L	.001	U	U
Cadmium		mg/L	.01	U	U
Calcium		mg/L	.17	J	B
Chromium		mg/L	.01	U	U
Cobalt		mg/L	.02	U	U
Copper		mg/L	.02	U	U
Iron		mg/L	.779		
Lead		mg/L	.01	U	U
Magnesium		mg/L	.233	J	J
Manganese		mg/L	.0645		
Nickel		mg/L	.02	U	U
Potassium		mg/L	5	U	U
Selenium		mg/L	.01	U	U
Silver		mg/L	.01	U	U
Sodium		mg/L	1.01		
Thallium		mg/L	.01	U	U
Vanadium		mg/L	.01	U	U
Zinc		mg/L	.02	U	U
SW7470A					
Mercury		mg/L	.0005	U	U
NITROAROMATICS					
SW8330					
1,3,5-Trinitrobenzene		mg/L	.0004	U	UJ
1,3-Dinitrobenzene		mg/L	.0004	U	UJ
2,4,6-Trinitrotoluene		mg/L	.0004	U	UJ
2,4-Dinitrotoluene		mg/L	.0004	U	U

Summary of Validated Surface Water Samples
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 141Q)
Fort McClellan, Alabama

Report Date: 08/24/01

Location Code:	HR-141Q-SW/SD02
Associated Site:	HR-141Q
Sample No:	YJ2002
Sample Date:	03-MAY-01

User Test Group / *Lab Method* / *Parameter*	*Flt*	*Units*	*Result*	*Qual*	*VQual*
NITROAROMATICS					
SW8330					
2,6-Dinitrotoluene		mg/L	.0004	U	U
2-Amino-4,6-dinitrotoluene		mg/L	.0004	U	U
2-Nitrotoluene		mg/L	.0004	U	U
3-Nitrotoluene		mg/L	.0004	U	U
4-Amino-2,6-dinitrotoluene		mg/L	.0004	U	U
HMX		mg/L	.001	U	UJ
Nitrobenzene		mg/L	.0004	U	U
RDX		mg/L	.0004	U	U
Tetryl		mg/L	.0004	U	UJ
p-Nitrotoluene		mg/L	.0004	U	U
PERCHLORATE					
E314.0					
Perchlorate		mg/L	.005	U	U

Summary of Validated Sediment Data

Artillery and Mortar Impact Areas South of Bains Gap (Parcel 138Q)

Fort McClellan, Alabama

Report Date: 08/24/01

	Location Code:	HR-138Q-SW/SD02			HR-138Q-SW/SD03			HR-138Q-SW/SD04			HR-138Q-SW/SD05		
	Associated Site:	HR-138Q			HR-138Q			HR-138Q			HR-138Q		
	Sample No:	YE1003			YE1004			YE1005			YE1006		
	Sample Date:	03-MAY-01			02-MAY-01			25-APR-01			24-APR-01		
User Test Group	*Sample Depth:*	0 - .5			0 - .5			0 - .5			0 - .5		
Lab Method													
Parameter	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
METALS													
SW6010B													
Aluminum	mg/kg	7060			168			7570			2510		
Antimony	mg/kg	15.9	U	U	11.8	U	U	12.9	U	U	17.5	U	U
Arsenic	mg/kg	6.74			1.18	U	U	3.88			.77	J	J
Barium	mg/kg	126			6.19			74.8			46.4		
Beryllium	mg/kg	1.06	J	J	1.18	U	U	.796	J	B	1.75	U	U
Cadmium	mg/kg	.795	U	U	.588	U	U	.644	U	U	.877	U	U
Calcium	mg/kg	359			29.2	J	J	110	J	J	64.2	J	B
Chromium	mg/kg	23.7			1.18	U	U	14.2			1.1	J	B
Cobalt	mg/kg	7.04			.653	J	J	3.56		B	3.51	U	U
Copper	mg/kg	5.38			2.35	U	U	4.97			11.7		
Iron	mg/kg	35400			89.5			29300			1590		
Lead	mg/kg	11.4			5.62			7.26			89.3		
Magnesium	mg/kg	336			13.8	J	J	315			98.4	J	J
Manganese	mg/kg	233			13.5			139			5.57		
Nickel	mg/kg	5.13			2.35	U	U	3.97			3.51	U	U
Potassium	mg/kg	1620			588	U	U	1850			877	U	U
Selenium	mg/kg	1.59	U	U	1.18	U	U	1.29	U	U	1.75	U	U
Silver	mg/kg	1.59	U	U	1.18	U	U	1.29	U	U	1.75	U	U
Sodium	mg/kg	159	U	U	118	U	U	129	U	U	175	U	U
Thallium	mg/kg	3.18	U	U	2.35	U	U	.852	J	J	3.51	U	U
Vanadium	mg/kg	20.2			1.18	U	U	17			1.74	J	B
Zinc	mg/kg	17.5		J	1.01	J	B	13.9			4.78		
SW7471A													
Mercury	mg/kg	.159	U	U	.118	U	U	.129	U	U	.175	U	U
NITROAROMATICS													
SW8330													
1,3,5-Trinitrobenzene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
1,3-Dinitrobenzene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
2,4,6-Trinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
2,4-Dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U

Summary of Validated Sediment Data
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 138Q)
Fort McClellan, Alabama

Report Date: 08/24/01

	Location Code:	HR-138Q-SW/SD02			HR-138Q-SW/SD03			HR-138Q-SW/SD04			HR-138Q-SW/SD05		
	Associated Site:	HR-138Q			HR-138Q			HR-138Q			HR-138Q		
	Sample No:	YE1003			YE1004			YE1005			YE1006		
	Sample Date:	03-MAY-01			02-MAY-01			25-APR-01			24-APR-01		
User Test Group	*Sample Depth:*	0 - .5			0 - .5			0 - .5			0 - .5		
Lab Method *Parameter*	*Units*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*	*Result*	*Qual*	*VQual*
NITROAROMATICS													
SW8330													
2,6-Dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
2-Amino-4,6-dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
2-Nitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
3-Nitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
4-Amino-2,6-dinitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
HMX	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
Nitrobenzene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
RDX	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
Tetryl	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
p-Nitrotoluene	mg/kg	.4	U	U	.4	U	U	.4	U	U	.4	U	U
PERCHLORATE													
E314.0													
Perchlorate	mg/kg	.0795	U	U	.0588	U	U	.0644	U	U	.0877	U	U
TOC													
SW9060													
Total Organic Carbon	mg/kg	23.7			7.41			49.2			55.4		

Summary of Validated Sediment Data
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 139Q)
Fort McClellan, Alabama

Report Date: 08/24/01

	Location Code:	HR-139Q-SW/SD01		
	Associated Site:	HR-139Q		
	Sample No:	YG1001		
	Sample Date:	25-APR-01		
User Test Group	*Sample Depth:*	0 - .5		
Lab Method				
Parameter	*Units*	*Result*	*Qual*	*VQual*
METALS				
SW6010B				
Aluminum	mg/kg	6130		
Antimony	mg/kg	12	U	U
Arsenic	mg/kg	3.78		
Barium	mg/kg	64.2		
Beryllium	mg/kg	.771	J	B
Cadmium	mg/kg	.602	U	U
Calcium	mg/kg	123		
Chromium	mg/kg	5.99		
Cobalt	mg/kg	3.78		B
Copper	mg/kg	2.07	J	J
Iron	mg/kg	25400		
Lead	mg/kg	5.09		
Magnesium	mg/kg	276		
Manganese	mg/kg	267		
Nickel	mg/kg	3.92		
Potassium	mg/kg	1610		
Selenium	mg/kg	1.2	U	U
Silver	mg/kg	1.2	U	U
Sodium	mg/kg	120	U	U
Thallium	mg/kg	2.41	U	U
Vanadium	mg/kg	10.4		
Zinc	mg/kg	12.6		
SW7471A				
Mercury	mg/kg	.12	U	U
NITROAROMATICS				
SW8330				
1,3,5-Trinitrobenzene	mg/kg	.4	U	U
1,3-Dinitrobenzene	mg/kg	.4	U	U
2,4,6-Trinitrotoluene	mg/kg	.4	U	U
2,4-Dinitrotoluene	mg/kg	.4	U	U

Summary of Validated Sediment Data
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 139Q)
Fort McClellan, Alabama

Report Date: 08/24/01

Location Code:		HR-139Q-SW/SD01		
Associated Site:		HR-139Q		
Sample No:		YG1001		
Sample Date:		25-APR-01		
Sample Depth:		0 - .5		
User Test Group / Lab Method / Parameter	*Units*	*Result*	*Qual*	*VQual*
NITROAROMATICS				
SW8330				
2,6-Dinitrotoluene	mg/kg	.4	U	U
2-Amino-4,6-dinitrotoluene	mg/kg	.4	U	U
2-Nitrotoluene	mg/kg	.4	U	U
3-Nitrotoluene	mg/kg	.4	U	U
4-Amino-2,6-dinitrotoluene	mg/kg	.4	U	U
HMX	mg/kg	.4	U	U
Nitrobenzene	mg/kg	.4	U	U
RDX	mg/kg	.4	U	U
Tetryl	mg/kg	.4	U	U
p-Nitrotoluene	mg/kg	.4	U	U
PERCHLORATE				
E314.0				
Perchlorate	mg/kg	.0602	U	U
TOC				
SW9060				
Total Organic Carbon	mg/kg	31.8		

Summary of Validated Sediment Data
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 140Q)
Fort McClellan, Alabama

Report Date: 08/24/01

Location Code:	HR-140Q-SW/SD01			
Associated Site:	HR-140Q			
Sample No:	YH1001			
Sample Date:	25-APR-01			
Sample Depth:	0 - .5			
User Test Group / Lab Method / Parameter	*Units*	*Result*	*Qual*	*VQual*
METALS				
SW6010B				
Aluminum	mg/kg	7180		
Antimony	mg/kg	12.9	U	U
Arsenic	mg/kg	5.61		
Barium	mg/kg	94.3		
Beryllium	mg/kg	.779	J	B
Cadmium	mg/kg	.647	U	U
Calcium	mg/kg	149		
Chromium	mg/kg	17.6		
Cobalt	mg/kg	8.5		
Copper	mg/kg	5.83		
Iron	mg/kg	33100		
Lead	mg/kg	9.19		
Magnesium	mg/kg	316		
Manganese	mg/kg	330		
Nickel	mg/kg	5.13		
Potassium	mg/kg	2030		
Selenium	mg/kg	1.29	U	U
Silver	mg/kg	1.29	U	U
Sodium	mg/kg	129	U	U
Thallium	mg/kg	1.27	J	J
Vanadium	mg/kg	17.4		
Zinc	mg/kg	11		
SW7471A				
Mercury	mg/kg	.129	U	U
NITROAROMATICS				
SW8330				
1,3,5-Trinitrobenzene	mg/kg	.4	U	U
1,3-Dinitrobenzene	mg/kg	.4	U	U
2,4,6-Trinitrotoluene	mg/kg	.4	U	U
2,4-Dinitrotoluene	mg/kg	.4	U	U

Summary of Validated Sediment Data

Artillery and Mortar Impact Areas South of Bains Gap (Parcel 140Q)

Fort McClellan, Alabama

Report Date: 08/24/01

Location Code:		HR-140Q-SW/SD01		
Associated Site:		HR-140Q		
Sample No:		YH1001		
Sample Date:		25-APR-01		
Sample Depth:		0 - .5		
User Test Group / Lab Method / Parameter	*Units*	*Result*	*Qual*	*VQual*
NITROAROMATICS				
SW8330				
2,6-Dinitrotoluene	mg/kg	.4	U	U
2-Amino-4,6-dinitrotoluene	mg/kg	.4	U	U
2-Nitrotoluene	mg/kg	.4	U	U
3-Nitrotoluene	mg/kg	.4	U	U
4-Amino-2,6-dinitrotoluene	mg/kg	.4	U	U
HMX	mg/kg	.4	U	U
Nitrobenzene	mg/kg	.4	U	U
RDX	mg/kg	.4	U	U
Tetryl	mg/kg	.4	U	U
p-Nitrotoluene	mg/kg	.4	U	U
PERCHLORATE				
E314.0				
Perchlorate	mg/kg	.0647	U	U
TOC				
SW9060				
Total Organic Carbon	mg/kg	26.3		

Summary of Validated Sediment Data
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 141Q)
Fort McClellan, Alabama

Report Date: 08/24/01

	Location Code:	HR-141Q-SW/SD02		
	Associated Site:	HR-141Q		
	Sample No:	YJ1002		
	Sample Date:	03-MAY-01		
User Test Group	*Sample Depth:*	0 - .5		
Lab Method				
Parameter	*Units*	*Result*	*Qual*	*VQual*
METALS				
SW6010B				
Aluminum	mg/kg	6040		
Antimony	mg/kg	15.7	U	U
Arsenic	mg/kg	1.73		
Barium	mg/kg	68		
Beryllium	mg/kg	.715	J	J
Cadmium	mg/kg	.787	U	U
Calcium	mg/kg	141	J	J
Chromium	mg/kg	5.09		
Cobalt	mg/kg	4.64		
Copper	mg/kg	5.63		
Iron	mg/kg	8760		
Lead	mg/kg	8.5		
Magnesium	mg/kg	301		
Manganese	mg/kg	69.4		
Nickel	mg/kg	3.96		
Potassium	mg/kg	1640		
Selenium	mg/kg	1.57	U	U
Silver	mg/kg	1.57	U	U
Sodium	mg/kg	157	U	U
Thallium	mg/kg	3.15	U	U
Vanadium	mg/kg	8.39		
Zinc	mg/kg	15.8		J
SW7471A				
Mercury	mg/kg	.157	U	U
NITROAROMATICS				
SW8330				
1,3,5-Trinitrobenzene	mg/kg	.4	U	U
1,3-Dinitrobenzene	mg/kg	.4	U	U
2,4,6-Trinitrotoluene	mg/kg	.4	U	U
2,4-Dinitrotoluene	mg/kg	.4	U	U

Summary of Validated Sediment Data
Artillery and Mortar Impact Areas South of Bains Gap (Parcel 141Q)
Fort McClellan, Alabama

Report Date: 08/24/01

Location Code:	HR-141Q-SW/SD02			
Associated Site:	HR-141Q			
Sample No:	YJ1002			
Sample Date:	03-MAY-01			
Sample Depth:	0 - .5			
User Test Group / Lab Method / Parameter	*Units*	*Result*	*Qual*	*VQual*
NITROAROMATICS				
SW8330				
2,6-Dinitrotoluene	mg/kg	.4	U	U
2-Amino-4,6-dinitrotoluene	mg/kg	.4	U	U
2-Nitrotoluene	mg/kg	.4	U	U
3-Nitrotoluene	mg/kg	.4	U	U
4-Amino-2,6-dinitrotoluene	mg/kg	.4	U	U
HMX	mg/kg	.4	U	U
Nitrobenzene	mg/kg	.4	U	U
RDX	mg/kg	.4	U	U
Tetryl	mg/kg	.4	U	U
p-Nitrotoluene	mg/kg	.4	U	U
PERCHLORATE				
E314.0				
Perchlorate	mg/kg	.0787	U	U
TOC				
SW9060				
Total Organic Carbon	mg/kg	40.5		

GRAIN SIZE ANALYSIS

Duane Nielsen
IT Corporation
June 15, 2001
IT Project ID: Fort McClellan
IT Project No.: 796887.11020300

IT GEOTECHNICAL LABORATORY
OAK RIDGE, TN
(865) 482-6497

PARTICLE-SIZE ANALYSIS
ASTM D 422

HR-138Q-SW/SD02

Project Name	Fort McClellan	Client Sample No.	YE1003
Project No.	796887.11020300	IT Lab Sample No.	ETDC-9515

Specific Gravity = 2.65
assumed for calculations

Moisture Content = 42.7%
based on dry sample weight

SIEVE ANALYSIS

	Sieve No.	Diameter mm	Percent Finer
COARSE	3"	75.000	100.0%
	1.5"	37.500	100.0%
	0.75"	19.000	100.0%
	0.375"	9.500	85.0%
	#4	4.750	66.9%
	#10	2.000	51.8%

	Sieve No.	Diameter mm	Percent Finer
FINE	#20	0.850	46.6%
	#40	0.425	36.7%
	#60	0.250	27.1%
	#100	0.149	18.7%
	#140	0.106	14.3%
	#200	0.075	10.6%

HYDROMETER ANALYSIS

	Diameter mm	Percent Finer
HYDROMETER		
	0.02096	6.7%
	0.01345	5.2%
	0.00954	4.5%
	0.00679	3.7%
	0.00484	3.0%
	0.00337	1.9%
	0.00141	1.5%

Duane Nielsen
IT Corporation
June 15, 2001
IT Project ID: Fort McClellan
IT Project No.: 796887.11020300

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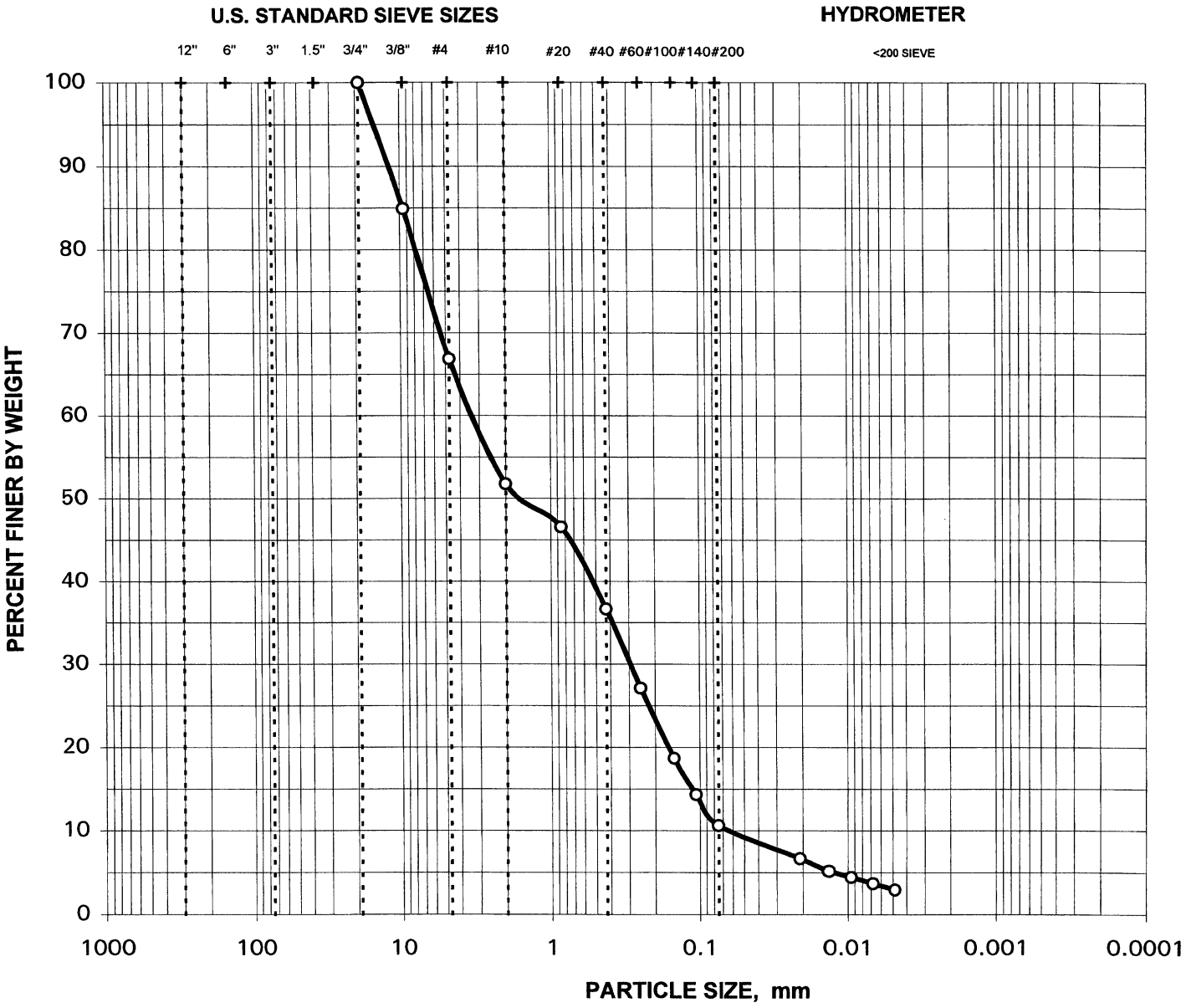
Fort McClellan



CLIENT SAMPLE NO.: YE1003

IT LAB SAMPLE NO.: ETDC-9515

BOULDERS	COBBLES	GRAVEL		SAND			
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT 2 - 75 microns CLAY <2 microns

Duane Nielsen
IT Corporation
June 15, 2001
IT Project ID: Fort McClellan
IT Project No.: 796887.11020300

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(865) 482-6497

PARTICLE-SIZE ANALYSIS
ASTM D 422

HR-138Q-SW/SD03

Project Name	Fort McClellan	Client Sample No.	YE1004
Project No.	796887.11020300	IT Lab Sample No.	ETDC-9516

Specific Gravity = 2.65
assumed for calculations

Moisture Content = 25.9%
based on dry sample weight

SIEVE ANALYSIS

	Sieve No.	Diameter mm	Percent Finer
COARSE	3"	75.000	100.0%
	1.5"	37.500	100.0%
	0.75"	19.000	100.0%
	0.375"	9.500	100.0%
	#4	4.750	97.0%
	#10	2.000	84.8%

	Sieve No.	Diameter mm	Percent Finer
FINE	#20	0.850	72.5%
	#40	0.425	51.7%
	#60	0.250	28.5%
	#100	0.149	11.3%
	#140	0.106	5.6%
	#200	0.075	2.4%

HYDROMETER ANALYSIS

	Diameter mm	Percent Finer
HYDROMETER		
	0.03759	2.4%
	0.02185	1.6%
	0.01387	1.2%
	0.00984	0.8%
	0.00696	0.8%
	0.00492	0.8%
	0.00341	0.8%
	0.00142	0.8%

Duane Nielsen
IT Corporation
June 15, 2001
IT Project ID: Fort McClellan
IT Project No.: 796887.11020300

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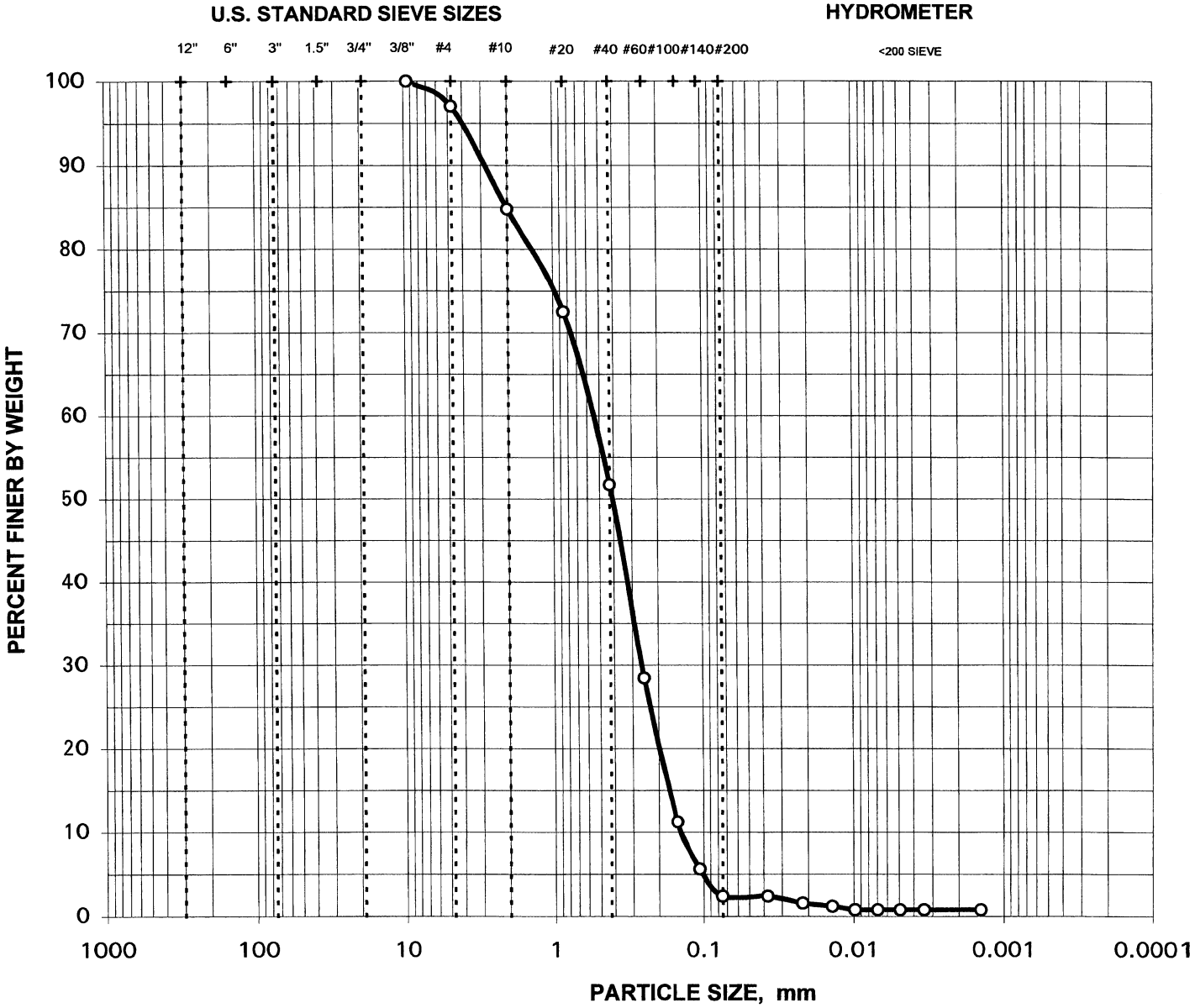
Fort McClellan



CLIENT SAMPLE NO.: YE1004

IT LAB SAMPLE NO.: ETDC-9516

BOULDERS	COBBLES	GRAVEL		SAND			
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT 2 - 75 microns CLAY <2 microns

Duane Nielsen
IT Corporation
June 15, 2001
IT Project ID: Fort McClellan
IT Project No.: 796887.11020300

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PARTICLE-SIZE ANALYSIS
ASTM D 422

HR-1389-SW/SD04

Project Name	Fort McClellan	Client Sample No.	YE1005
Project No.	796887.11020300	IT Lab Sample No.	ETDC-9502

Specific Gravity = 2.65
assumed for calculations

Moisture Content = 26.5%
based on dry sample weight

SIEVE ANALYSIS

COARSE	Sieve No.	Diameter mm	Percent Finer
	3"	75.000	100.0%
	1.5"	37.500	100.0%
	0.75"	19.000	92.8%
	0.375"	9.500	73.9%
	#4	4.750	54.8%
	#10	2.000	39.0%

FINE	Sieve No.	Diameter mm	Percent Finer
	#20	0.850	30.2%
	#40	0.425	19.9%
	#60	0.250	13.9%
	#100	0.149	9.5%
	#140	0.106	7.7%
	#200	0.075	6.4%

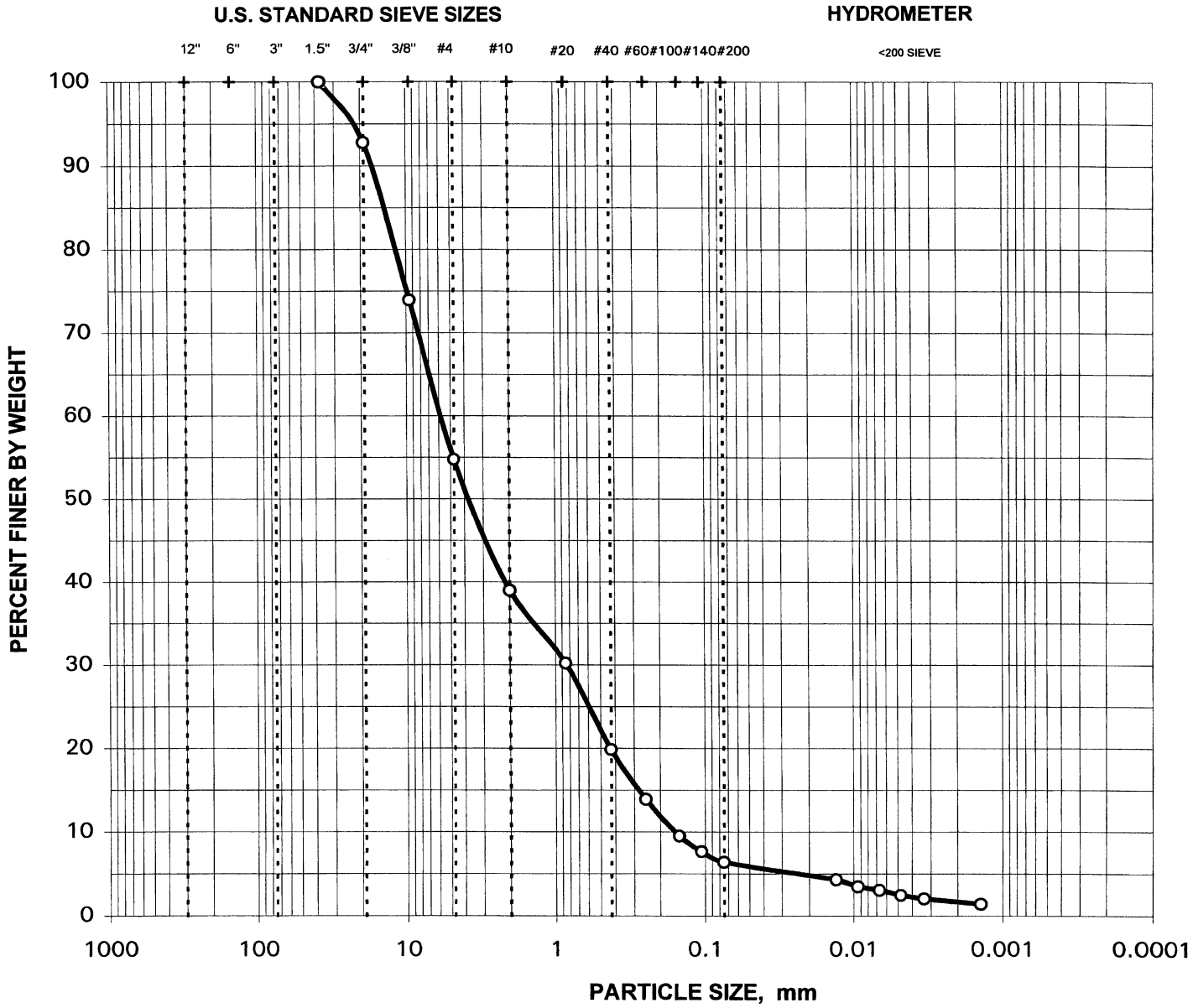
HYDROMETER ANALYSIS

HYDROMETER	Diameter mm	Percent Finer
	0.01316	4.3%
	0.00941	3.5%
	0.00670	3.1%
	0.00477	2.5%
	0.00333	2.1%
	0.00140	1.4%

Duane Nielsen
IT Corporation
June 15, 2001
IT Project ID: Fort McClellan
IT Project No.: 796887.11020300

IT GEOTECHNICAL LABORATORY
OAK RIDGE, TN
(865) 482-6497

Fort McClellan



CLIENT SAMPLE NO.: YE1005

IT LAB SAMPLE NO.: ETDC-9502

BOULDERS	COBBLES	GRAVEL		SAND			
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT 2 - 75 microns CLAY <2 microns

Duane Nielsen
IT Corporation
June 15, 2001
IT Project ID: Fort McClellan
IT Project No.: 796887.11020300

IT GEOTECHNICAL LABORATORY
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PARTICLE-SIZE ANALYSIS
ASTM D 422

HR-138Q-SW/SD05

Project Name: Fort McClellan
Client Sample No.: YE1006

Project No.: 796887.11020300
IT Lab Sample No.: ETDC-9503

Specific Gravity = 2.65
assumed for calculations

Moisture Content = 82.7%
based on dry sample weight

SIEVE ANALYSIS

	Sieve No.	Diameter mm	Percent Finer
COARSE	3"	75.000	100.0%
	1.5"	37.500	100.0%
	0.75"	19.000	100.0%
	0.375"	9.500	99.3%
	#4	4.750	98.2%
	#10	2.000	96.6%

	Sieve No.	Diameter mm	Percent Finer
FINE	#20	0.850	93.6%
	#40	0.425	81.9%
	#60	0.250	72.0%
	#100	0.149	61.4%
	#140	0.106	51.3%
	#200	0.075	40.8%

HYDROMETER ANALYSIS

	Diameter mm	Percent Finer
HYDROMETER		
	0.01326	8.9%
	0.00954	6.0%
	0.00682	4.5%
	0.00485	3.0%
	0.00337	2.5%
	0.00141	2.0%

Duane Nielsen
IT Corporation
June 15, 2001
IT Project ID: Fort McClellan
IT Project No.: 796887.11020300

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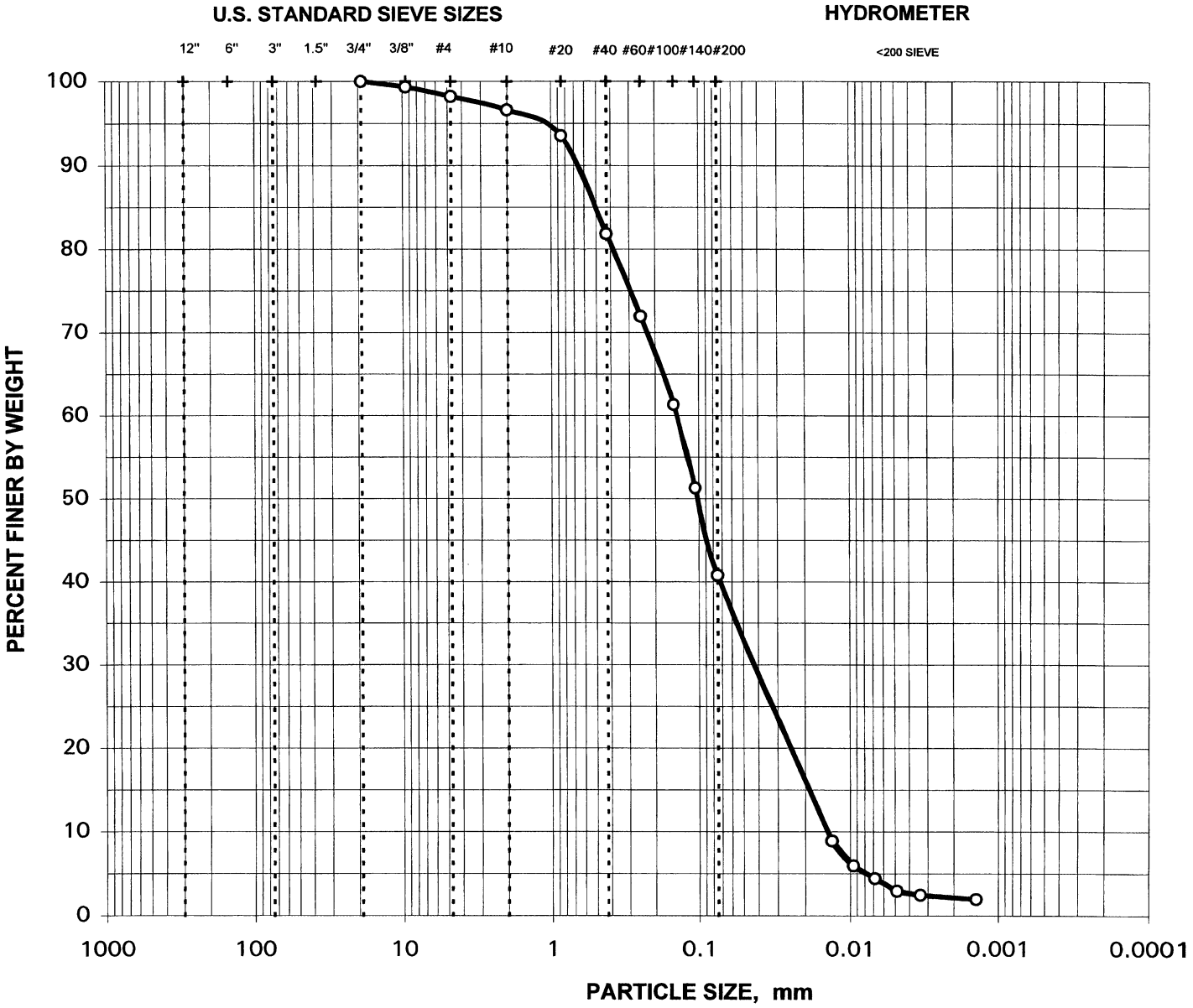
Fort McClellan



CLIENT SAMPLE NO.: YE1006

IT LAB SAMPLE NO.: ETDC-9503

BOULDERS	COBBLES	GRAVEL		SAND			
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT 2 - 75 microns CLAY <2 microns

Duane Nielsen
IT Corporation
June 15, 2001
IT Project ID: Fort McClellan
IT Project No.: 796887.11020300

IT GEOTECHNICAL LABORATORY
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PARTICLE-SIZE ANALYSIS
ASTM D 422

HR-141Q-SW/SD02

Project Name Fort McClellan

Client Sample No. YJ1002

Project No. 796887.11020300

IT Lab Sample No. ETDC-9517

Specific Gravity = 2.65
assumed for calculations

Moisture Content = 65.6%
based on dry sample weight

SIEVE ANALYSIS

	Sieve No.	Diameter mm	Percent Finer
COARSE	3"	75.000	100.0%
	1.5"	37.500	100.0%
	0.75"	19.000	89.3%
	0.375"	9.500	69.5%
	#4	4.750	55.8%
	#10	2.000	48.1%

	Sieve No.	Diameter mm	Percent Finer
FINE	#20	0.850	43.2%
	#40	0.425	28.5%
	#60	0.250	18.7%
	#100	0.149	13.0%
	#140	0.106	10.5%
	#200	0.075	8.5%

HYDROMETER ANALYSIS

	Diameter mm	Percent Finer
HYDROMETER		
	0.03007	6.7%
	0.02321	6.3%
	0.01354	5.3%
	0.00961	4.8%
	0.00684	3.8%
	0.00487	2.4%
	0.00339	1.9%
	0.00141	1.9%

Duane Nielsen
IT Corporation
June 15, 2001
IT Project ID: Fort McClellan
IT Project No.: 796887.11020300

IT GEOTECHNICAL LABORATORY
OAK RIDGE, TN
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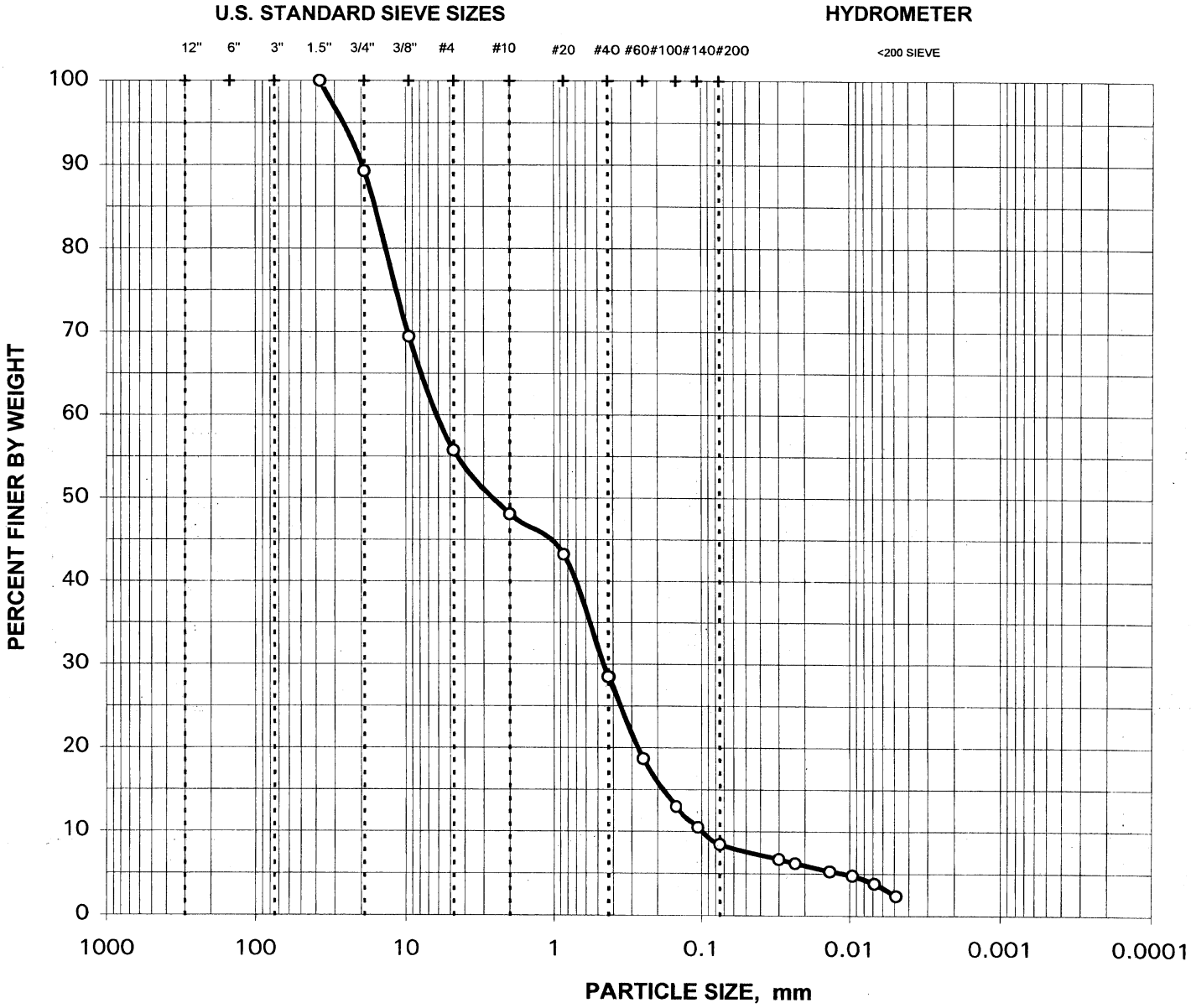
Fort McClellan



CLIENT SAMPLE NO.: YJ1002

IT LAB SAMPLE NO.: ETDC-9517

BOULDERS	COBBLES	GRAVEL		SAND			
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT 2 - 75 microns CLAY <2 microns

APPENDIX F

QUALITY ASSURANCE REPORTS FOR ANALYTICAL DATA

Quality Assurance Report
For the Artillery and Mortar Impact Areas
South of Bains Gap Road
Parcel HR-138Q
IT Project No 796887
Fort McClellan Quality Assurance Report

1.0 Overview

Eleven soil samples, 5 sediment samples, 4 surface water samples and 6 seep samples were collected in support of the investigation at Fort McClellan (FTMC) Parcel HR-138Q, Artillery and Mortar Impact Areas South of Bains Gap Road. All samples were submitted to EMAX Laboratories, Inc. for analysis. Soil, sediment, surface water, and seep samples were analyzed for target analyte list (TAL) metals, nitroaromatic-nitramine explosives, and perchlorate. QC samples consisted of the following types and quantities: 2 field duplicates, 2 MS/MSD, 5 trip blanks, and 3 equipment rinsates. An analytical summary table cross-referencing sample location, sample number, and contaminants of concern is presented in Attachment A.

One hundred (100) percent of samples were validated and reviewed in accordance with the *USEPA Contract Laboratory Program National Functional Guidelines for Evaluating Inorganic Data Review (EPA, February 1994)* and *USEPA Contract Laboratory Program National Functional Guidelines for Organic Review (EPA, October 1999)* for all areas except blanks. Region III *Laboratory Data Validation Functional Guidelines for Inorganic Analyses (EPA, April 1993)* and Region III *National Functional Guidelines for Organic Data Review (EPA, June 1992)* were applied to the areas associated with blank contamination. Data qualifiers assigned to results were based on guidance outlined in the referenced documents and the *Installation-Wide Sampling and Analysis Plan (IT, March 2000)* for FTMC. Table 1.0-1 and Table 1.0-2 define laboratory data and validation data qualifiers assigned to analytical results, respectively.

Table 1.0-1
Laboratory Data Qualifier Definitions

Data Qualifier	Laboratory Data Qualifier Definition
B	Analyte detected in method blank at concentration greater than the reporting limit (and greater than zero).
C	Confirming data obtained using second GC column or GC/MS.
E	Analyte concentration exceeded calibration range.
I	Analyte identification suspect. See narrative for explanation.
J	Result is less than or equal to specified reporting limit but greater than the method detection limit (MDL).
P	Analyte not confirmed. Results from primary and secondary GC columns differ by greater than 10 percent
S	Analyte concentration obtained using Method of Standard Additions (MSA).
U	Not detected. The value represented indicates the reporting limit for the analysis.
D	Sample analyzed as a dilution. The result reported has been calculated using the appropriate dilution factor.
No Code	Confirmed identification.

Table 1.0-2
Validation Data Qualifier Definitions

Validation Qualifier	Validation Data Qualifier Definition
U	Not detected. The associated number indicates approximate sample concentration necessary to be detected.
No Code	Confirmed identification
B	Not detected substantially above the level reported in laboratory or field blanks.
R	Unusable result. Analyte may or may not be present in the sample.
N	Tentative identification. Consider present. Special methods may be needed to confirm its presence or absence in future sampling efforts.
J	Analyte present. Reported value may not be accurate or precise. Considered an estimate.
NJ	Qualitative identification questionable due to poor resolution. Presumptively present at approximate quantity.

The Data Validation Summary Report is presented in Attachment B.

2.0 Summary

Data were evaluated to verify compliance with precision, accuracy, representativeness, comparability, completeness, and sensitivity. To verify that project data quality objectives (DQO) were met, laboratory analytical results and data packages were examined for compliance with SW846 SW6010B/SW7000 Series, SW8330 and U.S. Environmental Protection Agency (EPA) 314.0 quality control (QC) method criteria. Laboratory nonconformances and discrepancies in the data were also examined to determine their impact on the data. The results of this review are presented in the following sections.

2.1 Sample Receipt and Analytical Holding Times

All sample results generated by the laboratory during this investigation have been reviewed with respect to condition of samples as received by the laboratory, chain-of-custody, and analysis holding times. All coolers were received by EMAX in good condition under proper chain-of-custody.

All extraction and analytical holding times were met.

2.2 Rejected Data

No data were qualified by the laboratory or after validation was completed as being rejected ("R"-flagged).

2.3 Blank Results

A description of the types of blank samples which were collected, processed, and evaluated for background and/or process contamination during this sampling is as follows:

- Equipment rinsates (ER) are samples of analyte-free deionized water poured into, or over, or pumped through the sampling device, collected in a sample container, and transported to the laboratory for analysis. Equipment rinsates are used to assess the effectiveness of equipment decontamination procedures.

- Method blanks (MB) are used in the laboratory to assess and document any possible contamination resulting from the analytical process. A method blank is an analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank shall be carried through the complete sample preparation and analytical procedure.

- Initial and continuing calibration blanks (ICB and CCB) are an analyte-free matrix which is analyzed to verify the analysis system is free of contamination. ICBs and CCBs are analyzed immediately after the initial and continuing calibration is performed.

Field sample concentrations were evaluated to determine if the sample results could have been biased by the presence of any contamination measured in equipment rinsate blanks, method blanks and/or initial/continuing calibration blanks. Sample data affected by blank contamination are summarized in Table 2.3-1.

Table 2.3-1
Summary of Blank Contamination

Sample Delivery Group	Sample Number	Contaminant	Action
10138Q-01	YE0002, YE0003 & YE0009	Cobalt	Cobalt results for samples YE0002, YE0003 and YE0009 were "B" qualified.
	YE0003, YE0005 & YE0010	Antimony	Antimony results for samples YE0003, YE0005 and YE0010 were "B" qualified.
10138Q-02	YE1005	Beryllium Cobalt	Beryllium and cobalt results for sample YE1005 was "B" qualified.
	YE1006	Calcium Chromium Vanadium	Calcium, chromium and vanadium results for sample YE1006 were "B" qualified.
10138Q-04	YE1004	Zinc	Zinc result for sample YE1004 was "B" qualified.
10138Q-05	YE2002, YE2003 & YE2006	Calcium	Calcium results for samples YE2002, YE2003 and YE2006 were "B" qualified.
	YE2002 & YE2003	Lead	Lead results for samples YE2002 and YE2003 were "B" qualified.
	YE2007	Copper	Copper result for sample YE2007 was "B" qualified.

2.4 Analytical Precision

Precision is defined as a measurement of mutual agreement among individual measurements of the same property, usually under "prescribed similar conditions." Analytical precision is calculated as relative percent difference (%RPD) based on the following formula:

$$\%RPD = \left| \frac{(A-B)}{(A+B)/2} \right| \times 100$$

where:

%RPD = Relative Percent Difference
A = original result
B = duplicate result

A high RPD between an original sample and its field duplicate may be attributable to the difference in sample matrix or distribution of the contaminant within the sample, rather than the precision of the collection process. Also, when "estimated" results are reported, there is a

potential for increased variability between the primary and duplicate sample results. This occurs because, at low concentrations, the relative difference in results is magnified by the RPD calculation even though the results are comparable in absolute terms. There is also increased uncertainty in the results as the lower limit of detection is approached, due to decreasing analytical accuracy. The RPD calculation cannot be performed in cases where non-detected results are reported with corresponding samples that contain detectable concentrations.

Overall sampling and analysis precision for this task was assessed using field duplicate (FD) samples. Laboratory precision was assessed by laboratory control sample/laboratory control sample duplicate (LCS/LCSD) and matrix spike/matrix spike duplicate (MS/MSD) recoveries. Results indicate that an acceptable analytical precision was achieved. Table 2.4-1 lists precision acceptance criteria for LCS/LCSD, MS/MSD organic and inorganic analyses and field duplicate comparisons. RPD anomalies are summarized in Table 2.4-2.

Table 2.4-1
Precision Acceptance Criteria

Field/Laboratory QC Type	**Matrix**	
	Aqueous	**Soil**
Field Duplicate (Both Organic & Inorganic)	RPD < 35%	RPD < 50%
Perchlorate LCS/LCSD and MS/MSD	RPD < 10%	RPD < 20%
Nitroaromatic and Nitramine Explosives LCS/LCSD and MS/MSD	Refer to Table 8-1of FTMC "Installation Wide Sample and Analysis Plan"	Refer to Table 8-1of FTMC "Installation Wide Sample and Analysis Plan"
Metals LCS/LCSD and MS/MSD	RPD < 20%	RPD < 20%

Table 2.4-2
Summary of Field Duplicate, LCS/LCSD & MS/MSD RPD Anomalies

Sample Delivery Group	Sample Number	Contaminant (RPD %)	Assigned Validation Qualifier
10138Q-01	YE0001 MS/MSD	Antimony (21%) Iron (27%)	Antimony and iron results for samples YE0001, YE0002, YE0003, YE0005, YE0006, YE0007, YE0008, YE0009 and YE0010 were "J " / "UJ" / "B" qualified due to failing MS/MSD.
	YE0009 MS/MSD	Iron (64%)	Iron results for samples YE0001, YE0002, YE0003, YE0005, YE0006, YE0007, YE0008, YE0009 and YE0010 were "J " qualified due to failing MS/MSD.
10138Q-04	IPE026SL / IPE026SC (LCS/LCSD)	Zinc (23%)	Zinc results for samples YE0011, YE0012, YE1003 & YE1004 were "J" qualified due to LCS/LCSD RPD exceedance.

2.5 Analytical Accuracy Assessment

Accuracy is a measure of the degree of agreement of a result against an accepted reference or true value. Accuracy is expressed as a percent recovery (%R) calculated by the ratio of the measurement and accepted true value as shown in the following equation:

$$\%R = (|X_s - X_u|/K) \times 100$$

where:

X_s = measured value of the spiked sample
X_u = measured value of the unspiked sample
K = known amount of the spike in the sample

Surrogate recoveries, MS/MSD and LCS/LCSD, were used to measure analytical accuracy as described in SW846 SW6010B/SW7000 Series methodology, nitroaromatic-nitramine explosives by SW8330, and perchlorate by EPA 314.0. Reported results indicate that an acceptable level of analytical accuracy was achieved. LCS/LCSD and MS/MSD spike recoveries which exceed QA criteria are summarized in Table 2.5-1.

Table 2.5-1
Summary of LCS/LCSD and MS/MSD Spike Recovery Criteria Exceedances

Sample Delivery Group	Sample Number	Contaminant	Action
10138Q-04	YE0001 MS/MSD	Antimony (LB) Iron (HB) Manganese (LB)	Antimony, iron and manganese results for samples YE0001, YE0002, YE0003, YE0005, YE0006, YE0007, YE0008, YE0009 and YE0010 were "J" / "UJ" / "B" qualified due to MS/MSD spike recoveries exceeding QA criteria.
	YE0009 MS/MSD	Antimony (LB) Iron (HB)	Antimony and iron results for samples YE0001, YE0002, YE0003, YE0005, YE0006, YE0007, YE0008, YE0009 and YE0010 were "J" / "UJ" / "B" qualified due to MS/MSD spike recoveries exceeding QA criteria.
10138Q-04	IPE026SL / IPE026SC (LCS/LCSD)	Zinc (HB)	Zinc results for samples YE0011, YE0012, YE1003 & YE1004 were "J" qualified due to LCS spike recovery exceeding QA criteria.

LB - low bias.
HB - high bias.

2.6 Data Representativeness

Representativeness is a qualitative parameter that expresses the degree to which sample data actually represent the matrix conditions. Sample locations selected for this investigation outline contaminant releases into the environment, that may have occurred and will confirm whether contaminated soil exists at this site. Soil sample data are being used to assess potential impacts to terrestrial biota that might use the site for food and/or habitat purposes.

Standardized requirements and procedures for sample collection and handling were employed to maximize sample representativeness.

2.7 Data Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. By employing well-recognized techniques and accepted standardized methods for sampling and analysis, data comparability was achieved during this sampling event.

2.8 Data Completeness

Completeness is calculated for the aggregation of data for each analyte measured during the investigation of Parcel HR-138Q Artillery and Mortar Impact Areas South of Bains Gap Road. The formula for calculating completeness is listed below:

$$\% \text{ Completeness} = (X_V / X_T) \times 100$$

where:

X_V = number of valid (i.e., non-"R"-flagged) results
X_T = number of possible results

Parcel HR-138Q goal for completeness is 95% for both aqueous and soil samples. The % Completeness for this task is calculated to be 100%.

- % Completeness = (843 / 843) x 100 = 100%

2.9 Sensitivity

Sensitivity is defined as the ability of the laboratory's established method detection limits (MDL)/method reporting limits (MRL or RL) to meet project-specific DQOs or site-specific screening levels (SSSL) and or ecological screening values (ESV).

MDL is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero. MDLs are determined from an analysis of a sample in a given matrix containing the target analyte of interest. The MRL is a threshold value based upon the sensitivity capability of method and instrument. MRLs are normally set at a minimum of two times the MDL. MRLs are adjusted based on the sample matrix, moisture (solids only), and any necessary sample dilutions. The laboratory cannot reliably quantitate values reported above the MDL but below the MRL. Therefore, these analyte values must be flagged as estimated quantities ("J"-flagged).

To evaluate method sensitivity, a general comparison of the laboratory's MDLs/MRLs and the site investigation screening levels (background values, human health SSSL for residential reuse, and [ESV]) was performed and presented to the FTMC Base Realignment and Closure Team (BCT) (November 1999). The comparison summarized the relationship between the MDL/MRLs and SSSL/ESVs for each parameter typically reported for all of the major analytical methods used at FTMC. The few cases identified where the MDL and/or MRL values exceeded their corresponding human health SSSL and/or ESV were specifically highlighted and explained. It was understood that for these cases, the standard analytical method of analysis was not going to provide MDLs/MRLs which met human health SSSLs or ESVs without significant uncertainty and

the possibility of reporting false negatives. It was generally accepted that standard EPA SW846 analytical methods would provide sufficient sensitivity for data reported and used in the site screening process at FTMC.

3.0 Data Usability

Data quality indicators (DQI) provide an internal guide for control and review to verify that data are scientifically sound, defensible, and of known and acceptable quality. Factors such as precision, accuracy, representativeness, comparability, completeness, and sensitivity were evaluated to determine if the project's DQOs were met. A review of the data revealed that the majority of QA/QC indicators were within acceptable control limits. Any data anomalies encountered during data validation and overall site evaluations have been summarized in the previous sections of this document.

Based on the results of data validation and QA review, IT has concluded that representative samples were collected and analyzed and that the results are indicative of the media analyzed. The data are to be considered representative of site conditions and are usable for their intended purpose.

4.0 Attachments

Attachment A - Analytical Summary Table
Attachment B - Data Validation Summary Report

ATTACHMENT A

ANALYTICAL SUMMARY TABLE

Ft. McClellan
Parcel HR-138Q
Artillery and Mortar Impact Areas South of Bains Gap Road
Analytical Summary
Project No. 796887

HR-138Q Soil Sampling

Sample Location	Sample Name	Sample Number	Date Sampled	Analytical Suite
HR-138Q-GP01	HR-138Q-GP01-SS-YE0001-REG	YE0001	31-Jan-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
	HR-138Q-GP01-SS-YE0001-MS	YE0001-MS	31-Jan-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
	HR-138Q-GP01-SS-YE0001-MSD	YE0001-MSD	31-Jan-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
	HR-138Q-GP01-DS-YE0002-REG	YE0002	31-Jan-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
	HR-138Q-GP01-DS-YE0003-FD	YE0003	31-Jan-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
HR-138Q-GP02	HR-138Q-GP02-SS-YE0005-REG	YE0005	01-Feb-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
	HR-138Q-GP02-DS-YE0006-REG	YE0006	01-Feb-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
HR-138Q-GP03	HR-138Q-GP03-SS-YE0007-REG	YE0007	31-Jan-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
	HR-138Q-GP03-DS-YE0008-REG	YE0008	31-Jan-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
HR-138Q-GP04	HR-138Q-GP04-SS-YE0009-REG	YE0009	31-Jan-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
	HR-138Q-GP04-SS-YE0009-MS	YE0009-MS	31-Jan-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
	HR-138Q-GP04-SS-YE0009-MSD	YE0009-MSD	31-Jan-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
	HR-138Q-GP04-DS-YE0010-REG	YE0010	31-Jan-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
HR-138Q-DEP01	HR-138Q-DEP01-SS-YE0011-REG	YE0011	03-May-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
	HR-138Q-DEP01-SS-YE0012-FD	YE0012	03-May-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.

HR-138Q Sediment and Surface Water Sampling

Sample Location	Sample Name	Sample Number	Date Sampled	Analytical Suite
HR-138Q-SD/SW02	HR-138Q-SD/SW02-SD-YE1003-REG	YE1003	03-May-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
	HR-138Q-SD/SW02-SW-YE2002-REG	YE2002	03-May-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
HR-138Q-SD/SW03	HR-138Q-SD/SW03-SD-YE1004-REG	YE1004	02-May-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
	HR-138Q-SD/SW03-SW-YE2003-REG	YE2003	02-May-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
HR-138Q-SD/SW04	HR-138Q-SD/SW04-SD-YE1005-REG	YE1005	25-Apr-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
	HR-138Q-SD/SW04-SW-YE2004-REG	YE2004	25-Apr-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
HR-138Q-SD/SW05	HR-138Q-SD/SW05-SD-YE1006-REG	YE1006	24-Apr-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
	HR-138Q-SD/SW05-SW-YE2005-REG	YE2005	24-Apr-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.

HR-138Q Seep Sampling

Sample Location	Sample Name	Sample Number	Date Sampled	Analytical Suite
HR-138Q-SEEP01	HR-138Q-SEEP01-SEP-YE2006-REG	YE2006	02-May-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
	HR-138Q-SEEP01-SEP-YE2006R-REG	YE2006R	10-Jan-02	Lead by SW6010B.
HR-138Q-SEEP02	HR-138Q-SEEP02-SEP-YE2007-REG	YE2007	02-May-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
	HR-138Q-SEEP02-SEP-YE2007R-REG	YE2007R	10-Jan-02	Lead by SW6010B.
HR-138Q-SEEP03	HR-138Q-SEEP03-SEP-YE2008-REG	YE2008	02-May-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
	HR-138Q-SEEP03-SEP-YE2008R-REG	YE2008R	10-Jan-02	Lead by SW6010B.

ATTACHMENT B

DATA VALIDATION SUMMARY REPORT

Data Validation Summary Report
For the Site Investigation Performed at the
"Artillery and Motar Impact Areas South of Bains Gap"
Parcel HR-138Q
Fort McClellan, Calhoun County, Alabama

1.0 Introduction

Level III data validation was performed on 100% of the environmental samples collected for HR-138Q. The analytical data consisted of six sample delivery groups (SDG), 10138Q-01, 10138Q-02, 10138Q-03, 10138Q-04, 10138Q-05, and 10138Q-06, which were analyzed by EMAX Laboratories. The chemical parameters for which the samples were analyzed, are identified below:

Parameter (Method)
Metals by SW846 6010B and 7471A/7470A
Nitroaromatic and Nitramine Explosives by SW846 8330
Perchlorate by EPA 314.0 and Total Organic Carbon (TOC) by SW846 9060

2.0 Procedures

The sample data were validated following the logic identified in the *USEPA Contract Laboratory Program (CLP) National Functional Guidelines For Inorganic Data Review (February 1994)* and *USEPA Contract Laboratory Program National Functional Guidelines For Organic Review (October 1999)* for all areas except Blanks. *Region III Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses (April 1993)* and *Region III National Functional Guidelines for Organic Data Review (June 1992)* were applied to the areas associated with blank contamination. Specific quality control (QC) criteria, as identified in the Quality Assurance Plan (QAP), analytical methods, and laboratory Standard Operating Procedures (SOP's) were applied to all sample results. As the result of the use of Update III SW846 test methods for the analytical data and the application of the CLP guidelines during the validation process, there were instances where specific QC requirements for all target compounds were not defined. This primarily occurred in the organic, Gas Chromatograph (GC) and Gas Chromatograph/Mass Spectra (GC/MS) calibration areas and is due to the fact that the analytical methods are performance-based, and allows the use of average calibration responses, in lieu of, individual responses, which are defined by CLP protocol. In light of applying CLP guidelines to SW846 methods and evaluating the usability of the data during the

validation process, specific QC criteria were determined to address all target compounds and are identified in this report for each parameter, as well as, in the validation checklists, which function as worksheets. All completed validation checklists are on file in the Knoxville office. For those analytical methods not addressed by the CLP and Region III guidelines, the validation was based on the method requirements (i. e. SW846, CFR, SOP's) and technical judgement, following the logic of the CLP validation guidelines.

3.0 Summary of Data Validation Findings

The overall quality of the data was determined to be acceptable with minimal qualifications. No data were rejected.

Individual validation reports have been prepared for each parameter and the overall results of the validation findings are summarized in this report. The validation qualifier data entry verification report (Attachment A) is also provided. This is a complete listing of all of the analytical results and the validation qualifiers assigned for HR-138Q. It also identifies the "use" column, which indicates which result to use in the event of a reanalysis. A listing of the validation qualifiers and the reason codes, along with their definitions are also found in Attachment A. The following section highlights the key findings of the data validation for each analysis.

4.0 Analysis-Specific Data Validation Summaries

4.1 Metals by SW846 6010B/7471A/7470A

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times
Technical holding time criteria were met for all samples.

Initial and Continuing Calibrations
All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks
The 5X rule for contaminants found in the associated equipment rinse, calibration, and method blanks was applied to all sample results. All were found to be acceptable, with the exception of the following:

SDG Number	Sample Number	Compound	Blank Contaminant	Validation Qualifier
10138Q-01	YE0002, YE0003, YE0009	Cobalt	ICB/CCB	B
	YE0003, YE0005, YE0010	Antimony	ICB/CCB	B
10138Q-02	YE1005	Beryllium, Cobalt	ICB/CCB	B
	YE1006	Calcium, Chromium, Vanadium	ICB/CCB	B
10138Q-04	YE1004	Zinc	Method, ICB/CCB	B
10138Q-05	YE2002, YE2003, YE2006	Calcium	ICB/CCB	B
	YE2002, YE2003	Lead	ICB/CCB	B
	YE2007	Copper	ICB/CCB	B

Matrix Spike / Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met with the following exceptions:

SDG Number	Sample Number	Compound	Validation Qualifier
10138Q-01	YE0001 through YE0010	Antimony, Iron, Manganese	J/UJ/B

Laboratory Control Sample (LCS)

LCS was performed for the project samples and all QC criteria were met with the following exceptions:

SDG Number	Sample	Compound	Validation Qualifier
10138Q-04	YE0011, YE0012, YE1003, YE1004	Zinc	J/B

Interference Check Sample (ICS)

All ICS % recoveries were acceptable. All QC criteria were met.

ICP Serial Dilutions

All QC criteria were met for the serial dilutions associated with the project samples with the following exceptions:

SDG Number	Sample	Compound	Validation Qualifier
10138Q-01	All	Zinc	J

Field Duplicates

Original and field duplicate results were evaluated and all QC criteria were met.

Sample Quantitation

Results quantitated between the IDL and the RL ("B" flagged by the laboratory) were qualified as estimated (J), unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.2 Nitroaromatic and Nitramine Explosives by SW846 8330

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike / Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and field duplicate results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J' were qualified as estimated "J" unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.3 Perchlorate by EPA 314.0 and TOC by SW846 9060

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinses and method blanks was applied to all sample results. All were found to be acceptable.

Matrix Spike / Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and field duplicate results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J' were qualified as estimated "J", unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

Data Validation Summary Report
For the Site Investigation Performed at the
"Artillery and Motar Impact Areas South of Bains Gap"
Parcel HR-138Q
Fort McClellan, Calhoun County, Alabama

1.0 Introduction

Level III data validation was performed on 100% of the environmental samples collected for HR-138Q. The analytical data consisted of six sample delivery groups (SDG), 10138Q-01, 10138Q-02, 10138Q-03, 10138Q-04, 10138Q-05, and 10138Q-06, which were analyzed by EMAX Laboratories. The chemical parameters for which the samples were analyzed, are identified below:

Parameter (Method)
Metals by SW846 6010B and 7471A/7470A
Nitroaromatic and Nitramine Explosives by SW846 8330
Perchlorate by EPA 314.0 and Total Organic Carbon (TOC) by SW846 9060

2.0 Procedures

The sample data were validated following the logic identified in the *USEPA Contract Laboratory Program (CLP) National Functional Guidelines For Inorganic Data Review (February 1994)* and *USEPA Contract Laboratory Program National Functional Guidelines For Organic Review (October 1999)* for all areas except Blanks. *Region III Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses (April 1993)* and *Region III National Functional Guidelines for Organic Data Review (June 1992)* were applied to the areas associated with blank contamination. Specific quality control (QC) criteria, as identified in the Quality Assurance Plan (QAP), analytical methods, and laboratory Standard Operating Procedures (SOP's) were applied to all sample results. As the result of the use of Update III SW846 test methods for the analytical data and the application of the CLP guidelines during the validation process, there were instances where specific QC requirements for all target compounds were not defined. This primarily occurred in the organic, Gas Chromatograph (GC) and Gas Chromatograph/Mass Spectra (GC/MS) calibration areas and is due to the fact that the analytical methods are performance-based, and allows the use of average calibration responses, in lieu of, individual responses, which are defined by CLP protocol. In light of applying CLP guidelines to SW846 methods and evaluating the usability of the data during the

validation process, specific QC criteria were determined to address all target compounds and are identified in this report for each parameter, as well as, in the validation checklists, which function as worksheets. All completed validation checklists are on file in the Knoxville office. For those analytical methods not addressed by the CLP and Region III guidelines, the validation was based on the method requirements (i. e. SW846, CFR, SOP's) and technical judgement, following the logic of the CLP validation guidelines.

3.0 Summary of Data Validation Findings

The overall quality of the data was determined to be acceptable with minimal qualifications. No data were rejected.

Individual validation reports have been prepared for each parameter and the overall results of the validation findings are summarized in this report. The validation qualifier data entry verification report (Attachment A) is also provided. This is a complete listing of all of the analytical results and the validation qualifiers assigned for HR-138Q. It also identifies the "use" column, which indicates which result to use in the event of a reanalysis. A listing of the validation qualifiers and the reason codes, along with their definitions are also found in Attachment A. The following section highlights the key findings of the data validation for each analysis.

4.0 Analysis-Specific Data Validation Summaries

4.1 Metals by SW846 6010B/7471A/7470A

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times
Technical holding time criteria were met for all samples.

Initial and Continuing Calibrations
All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks
The 5X rule for contaminants found in the associated equipment rinse, calibration, and method blanks was applied to all sample results. All were found to be acceptable, with the exception of the following:

SDG Number	Sample Number	Compound	Blank Contaminant	Validation Qualifier
10138Q-01	YE0002, YE0003, YE0009	Cobalt	ICB/CCB	B
	YE0003, YE0005, YE0010	Antimony	ICB/CCB	B
10138Q-02	YE1005	Beryllium, Cobalt	ICB/CCB	B
	YE1006	Calcium, Chromium, Vanadium	ICB/CCB	B
10138Q-04	YE1004	Zinc	Method, ICB/CCB	B
10138Q-05	YE2002, YE2003, YE2006	Calcium	ICB/CCB	B
	YE2002, YE2003	Lead	ICB/CCB	B
	YE2007	Copper	ICB/CCB	B

Matrix Spike / Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met with the following exceptions:

SDG Number	Sample Number	Compound	Validation Qualifier
10138Q-01	YE0001 through YE0010	Antimony, Iron, Manganese	J/UJ/B

Laboratory Control Sample (LCS)

LCS was performed for the project samples and all QC criteria were met with the following exceptions:

SDG Number	Sample	Compound	Validation Qualifier
10138Q-04	YE0011, YE0012, YE1003, YE1004	Zinc	J/B

Interference Check Sample (ICS)

All ICS % recoveries were acceptable. All QC criteria were met.

ICP Serial Dilutions

All QC criteria were met for the serial dilutions associated with the project samples with the following exceptions:

SDG Number	Sample	Compound	Validation Qualifier
10138Q-01	All	Zinc	J

Field Duplicates

Original and field duplicate results were evaluated and all QC criteria were met.

Sample Quantitation

Results quantitated between the IDL and the RL ("B" flagged by the laboratory) were qualified as estimated (J), unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.2 Nitroaromatic and Nitramine Explosives by SW846 8330

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike / Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and field duplicate results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J' were qualified as estimated "J" unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.3 Perchlorate by EPA 314.0 and TOC by SW846 9060

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinses and method blanks was applied to all sample results. All were found to be acceptable.

Matrix Spike / Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and field duplicate results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J' were qualified as estimated "J", unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

Validation Qualifiers

U Not detected. The compound/analyte was analyzed for, but not detected above the associated reporting limit.

J The compound/analyte was positively identified; the reported value is the estimated concentration of the constituent detected in the sample analyzed.

B The concentration reported was detected significantly above the levels reported in the associated equipment rinse samples and/or laboratory method and trip blanks. (5X/10X Rule was applied).

R The reported sample results are rejected due to the following:

1. Severe deficiencies in the supporting quality control data.
2. Anomalies noted in the sampling and/or analysis process which could affect the validity of the reported data.
3. The presence or absence of the constituent cannot be verified based on the data provided.
4. To indicate not to use a particular result in the event of a reanalysis.

UJ The compound/analyte was analyzed for, but not detected above the established reporting limit. However, review and evaluation of supporting QC data and/or sampling and analysis process have indicated that the "nondetect" may be inaccurate or imprecise. The nondetect result should be estimated.

Validation Reason Code Definitions

Reason Code	Description
01	Sample received outside of 4+/-2 degrees Celsius
01A	Improper sample preservation
02	Holding time exceeded
02A	Extraction
02B	Analysis
03	Instrument performance – outside criteria
03A	BFB
03B	DFTPP
03C	DDT and/or Endrin % breakdown exceeds criteria
03D	Retention time windows
03E	Resolution
04	Initial calibration results outside specified criteria
04A	Compound mean RRF QC criteria not met
04B	Individual % RSD criteria not met
04C	Correlation coefficient >0.995
05	Continuing calibration results outside specified criteria
05A	Compound mean RRF QC criteria not met
05B	Compound % D QC criteria not met
06	Result qualified as a result of the 5x/10x blank correction
06A	Method or preparation blank
06B	ICB or CCB
06C	ER
06D	TB
06E	FB
07	Surrogate recoveries outside control limits
07A	Sample
07B	Associated method blank or LCS
08	MS/MSD/Duplicate results outside criteria
08A	MS and/or MSD recovery not within control limits (accuracy)
08B	% RPD outside acceptance criteria (precision)
09	Post digestion spike outside criteria (GFAA)
10	Internal standards outside specified control limits
10A	Recovery
10B	Retention time
11	Laboratory control sample recoveries outside specified limits
11A	Recovery
11B	% RPD (if run in duplicate)
12	Interference check standard
13	Serial dilution
14	Tentatively identified compounds
15	Quantitation
16	Multiple results available; alternate analysis preferred
17	Field duplicate RPD criteria is exceeded
18	Percent difference between original and second column exceeds QC criteria
19	Professional judgement was used to qualify the data
20	Pesticide clean-up checks
21	Target compound identification
22	Radiological calibration
23	Radiological quantitation
24	Reported result and/or lab qualifier revised to reflect validation findings

Validation Qualifier Data Entry Verification
Fort McClellan

Run Date: March 26, 2002

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10138Q-01																		
YE0001	SW6010B	SW3050	N 0 1	ALUMINUM	18900	mg/kg		Y	Y	P							B022-01	21:49
				ANTIMONY	12.5	mg/kg	U	N	Y	U	UJ		08A	08B			B022-01	21:49
				ARSENIC	3.74	mg/kg		Y	Y	P							B022-01	15:57
				BARIUM	74.1	mg/kg		Y	Y	P							B022-01	21:49
				BERYLLIUM	.626	mg/kg	J	Y	Y	P	J		15				B022-01	21:49
				CADMIUM	.625	mg/kg	U	N	Y	U	U						B022-01	21:49
				CALCIUM	125	mg/kg		Y	Y	P							B022-01	21:49
				CHROMIUM	13.9	mg/kg		Y	Y	P							B022-01	21:49
				COBALT	1.84	mg/kg	J	Y	Y	P	J		15				B022-01	21:49
				COPPER	5.27	mg/kg		Y	Y	P							B022-01	21:49
				IRON	16500	mg/kg		Y	Y	P	J		08A	08B			B022-01	21:49
				LEAD	11.2	mg/kg		Y	Y	P							B022-01	15:57
				MAGNESIUM	436	mg/kg		Y	Y	P							B022-01	21:49
				MANGANESE	177	mg/kg		Y	Y	P	J		08A				B022-01	21:49
				NICKEL	5.31	mg/kg		Y	Y	P							B022-01	21:49
				POTASSIUM	242	mg/kg	J	Y	Y	P	J		15				B022-01	21:49
				SELENIUM	1.25	mg/kg	U	N	Y	U	U						B022-01	15:57
				SILVER	1.25	mg/kg	U	N	Y	U	U						B022-01	21:49
				SODIUM	125	mg/kg	U	N	Y	U	U						B022-01	21:49
				THALLIUM	2.5	mg/kg	U	N	Y	U	U						B022-01	15:57
				VANADIUM	23.1	mg/kg		Y	Y	P							B022-01	21:49
				ZINC	17	mg/kg		Y	Y	P	J		13				B022-01	21:49
	SW7471A	TOTAL	N 0 1	MERCURY	.037	mg/kg	J	Y	Y	P	J		15				B022-01	13:12
YE0002	SW6010B	SW3050	N 0 1	ALUMINUM	6050	mg/kg		Y	Y	P							B022-02	21:53
				ANTIMONY	12.1	mg/kg	U	N	Y	U	UJ		08A	08B			B022-02	21:53
				ARSENIC	7.12	mg/kg		Y	Y	P							B022-02	16:23
				BARIUM	14	mg/kg		Y	Y	P							B022-02	21:53
				BERYLLIUM	.422	mg/kg	J	Y	Y	P	J		15				B022-02	21:53
				CADMIUM	.603	mg/kg	U	N	Y	U	U						B022-02	21:53
				CALCIUM	15.1	mg/kg	J	Y	Y	P	J		15				B022-02	21:53
				CHROMIUM	10.1	mg/kg		Y	Y	P							B022-02	21:53
				COBALT	.807	mg/kg	J	Y	Y	F	B		06B	15			B022-02	21:53
				COPPER	4.85	mg/kg		Y	Y	P							B022-02	21:53
				IRON	15600	mg/kg		Y	Y	P	J		08A	08B			B022-02	21:53
				LEAD	5.28	mg/kg		Y	Y	P							B022-02	16:23
				MAGNESIUM	187	mg/kg		Y	Y	P							B022-02	21:53
				MANGANESE	3.26	mg/kg		Y	Y	P	J		08A				B022-02	21:53
				NICKEL	2.6	mg/kg		Y	Y	P							B022-02	21:53
				POTASSIUM	1750	mg/kg		Y	Y	P							B022-02	21:53
				SELENIUM	1.21	mg/kg	U	N	Y	U	U						B022-02	16:23

Validation Qualifier Data Entry Verification

Run Date: March 26, 2002

Fort McClellan

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10138Q-01																		
YE0002	SW6010B	SW3050	N 0 1	SILVER	1.21	mg/kg	U	N	Y	U	U						B022-02	21:53
				SODIUM	121	mg/kg	U	N	Y	U	U						B022-02	21:53
				THALLIUM	2.41	mg/kg	U	N	Y	U	U						B022-02	16:23
				VANADIUM	14	mg/kg		Y	Y	P							B022-02	21:53
				ZINC	11.1	mg/kg		Y	Y	P	J		13				B022-02	21:53
	SW7471A	TOTAL	N 0 1	MERCURY	.121	mg/kg	U	N	Y	U	U						B022-02	13:22
YE0003	SW6010B	SW3050	N 0 1	ALUMINUM	5530	mg/kg		Y	Y								B022-03	21:58
				ANTIMONY	4.67	mg/kg	J	Y	Y	F	B		06B	08A	08B	15	B022-03	21:58
				ARSENIC	5.83	mg/kg		Y	Y								B022-03	16:27
				BARIUM	16.7	mg/kg		Y	Y								B022-03	21:58
				BERYLLIUM	.41	mg/kg	J	Y	Y		J		15				B022-03	21:58
				CADMIUM	.603	mg/kg	U	N	Y		U						B022-03	21:58
				CALCIUM	16.1	mg/kg	J	Y	Y		J		15				B022-03	21:58
				CHROMIUM	8.39	mg/kg		Y	Y								B022-03	21:58
				COBALT	1.02	mg/kg	J	Y	Y	F	B		06B	15			B022-03	21:58
				COPPER	4.5	mg/kg		Y	Y								B022-03	21:58
				IRON	12400	mg/kg		Y	Y		J		08A	08B			B022-03	21:58
				LEAD	4.89	mg/kg		Y	Y								B022-03	16:27
				MAGNESIUM	171	mg/kg		Y	Y								B022-03	21:58
				MANGANESE	2.67	mg/kg		Y	Y		J		08A				B022-03	21:58
				NICKEL	2.24	mg/kg	J	Y	Y		J		15				B022-03	21:58
				POTASSIUM	1790	mg/kg		Y	Y								B022-03	21:58
				SELENIUM	1.21	mg/kg	U	N	Y		U						B022-03	16:27
				SILVER	1.21	mg/kg	U	N	Y		U						B022-03	21:58
				SODIUM	121	mg/kg	U	N	Y		U						B022-03	21:58
				THALLIUM	2.41	mg/kg	U	N	Y		U						B022-03	16:27
				VANADIUM	11.4	mg/kg		Y	Y								B022-03	21:58
				ZINC	8.6	mg/kg		Y	Y		J		13				B022-03	21:58
	SW7471A	TOTAL	N 0 1	MERCURY	.121	mg/kg	U	N	Y		U						B022-03	13:25
YE0005	SW6010B	SW3050	N 0 1	ALUMINUM	13300	mg/kg		Y	Y	P							B032-01	22:41
				ANTIMONY	8.4	mg/kg	J	Y	Y	F	B		06B	08A	08B	15	B032-01	22:41
				ARSENIC	3.1	mg/kg		Y	Y	P							B032-01	16:47
				BARIUM	80.9	mg/kg		Y	Y	P							B032-01	22:41
				BERYLLIUM	.43	mg/kg	J	Y	Y	P	J		15				B032-01	22:41
				CADMIUM	.595	mg/kg	U	N	Y	U	U						B032-01	22:41
				CALCIUM	142	mg/kg		Y	Y	P							B032-01	22:41
				CHROMIUM	15.7	mg/kg		Y	Y	P							B032-01	22:41
				COBALT	2.59	mg/kg		Y	Y	P							B032-01	22:41
				COPPER	7.53	mg/kg		Y	Y	P							B032-01	22:41
				IRON	16700	mg/kg		Y	Y	P	J		08A	08B			B032-01	22:41

Validation Qualifier Data Entry Verification

Run Date: March 26, 2002

Fort McClellan

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10138Q-01																		
YE0005	SW6010B	SW3050	N 0 1	LEAD	12.7	mg/kg		Y	Y	P							B032-01	16:47
				MAGNESIUM	501	mg/kg		Y	Y	P							B032-01	22:41
				MANGANESE	146	mg/kg		Y	Y	P	J		08A				B032-01	22:41
				NICKEL	4.16	mg/kg		Y	Y	P							B032-01	22:41
				POTASSIUM	455	mg/kg	J	Y	Y	P	J		15				B032-01	22:41
				SELENIUM	1.19	mg/kg	U	N	Y	U	U						B032-01	16:47
				SILVER	1.19	mg/kg	U	N	Y	U	U						B032-01	22:41
				SODIUM	119	mg/kg	U	N	Y	U	U						B032-01	22:41
				THALLIUM	2.38	mg/kg	U	N	Y	U	U						B032-01	16:47
				VANADIUM	17.6	mg/kg		Y	Y	P							B032-01	22:41
				ZINC	18.4	mg/kg		Y	Y	P	J		13				B032-01	22:41
	SW7471A	TOTAL	N 0 1	MERCURY	.040	mg/kg	J	Y	Y	P	J		15				B032-01	13:42
YE0006	SW6010B	SW3050	N 0 1	ALUMINUM	23400	mg/kg		Y	Y	P							B032-02	22:45
				ANTIMONY	12	mg/kg	U	N	Y	U	UJ		08A	08B			B032-02	22:45
				ARSENIC	3.73	mg/kg		Y	Y	P							B032-02	17:07
				BARIUM	32.8	mg/kg		Y	Y	P							B032-02	22:45
				BERYLLIUM	.424	mg/kg	J	Y	Y	P	J		15				B032-02	22:45
				CADMIUM	.598	mg/kg	U	N	Y	U	U						B032-02	22:45
				CALCIUM	53.9	mg/kg	J	Y	Y	P	J		15				B032-02	22:45
				CHROMIUM	16.7	mg/kg		Y	Y	P							B032-02	22:45
				COBALT	2.2	mg/kg	J	Y	Y	P	J		15				B032-02	22:45
				COPPER	10.6	mg/kg		Y	Y	P							B032-02	22:45
				IRON	33000	mg/kg		Y	Y	P	J		08A	08B			B032-02	22:45
				LEAD	7.38	mg/kg		Y	Y	P							B032-02	17:07
				MAGNESIUM	551	mg/kg		Y	Y	P							B032-02	22:45
				MANGANESE	47.9	mg/kg		Y	Y	P	J		08A				B032-02	22:45
				NICKEL	4.68	mg/kg		Y	Y	P							B032-02	22:45
				POTASSIUM	461	mg/kg	J	Y	Y	P	J		15				B032-02	22:45
				SELENIUM	1.2	mg/kg	U	N	Y	U	U						B032-02	17:07
				SILVER	1.2	mg/kg	U	N	Y	U	U						B032-02	22:45
				SODIUM	120	mg/kg	U	N	Y	U	U						B032-02	22:45
				THALLIUM	.817	mg/kg	J	Y	Y	P	J		15				B032-02	17:07
				VANADIUM	26.6	mg/kg		Y	Y	P							B032-02	22:45
				ZINC	21.3	mg/kg		Y	Y	P	J		13				B032-02	22:45
	SW7471A	TOTAL	N 0 1	MERCURY	.042	mg/kg	J	Y	Y	P	J		15				B032-02	13:44
YE0007	SW6010B	SW3050	N 0 1	ALUMINUM	9780	mg/kg		Y	Y	P							B022-04	22:03
				ANTIMONY	12.2	mg/kg	U	N	Y	U	UJ		08A	08B			B022-04	22:03
				ARSENIC	3.44	mg/kg		Y	Y	P							B022-04	16:31
				BARIUM	49.7	mg/kg		Y	Y	P							B022-04	22:03
				BERYLLIUM	.329	mg/kg	J	Y	Y	P	J		15				B022-04	22:03

Validation Qualifier Data Entry Verification
Fort McClellan

Run Date: March 26, 2002

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10138Q-01																		
YE0007	SW6010B	SW3050	N 0 1	CADMIUM	.609	mg/kg	U	N	Y	U	U						B022-04	22:03
				CALCIUM	86.1	mg/kg	J	Y	Y	P	J		15				B022-04	22:03
				CHROMIUM	9.34	mg/kg		Y	Y	P							B022-04	22:03
				COBALT	2.32	mg/kg	J	Y	Y	P	J		15				B022-04	22:03
				COPPER	3.38	mg/kg		Y	Y	P							B022-04	22:03
				IRON	10700	mg/kg		Y	Y	P	J		08A	08B			B022-04	22:03
				LEAD	19.3	mg/kg		Y	Y	P							B022-04	16:31
				MAGNESIUM	301	mg/kg		Y	Y	P							B022-04	22:03
				MANGANESE	118	mg/kg		Y	Y	P	J		08A				B022-04	22:03
				NICKEL	2.5	mg/kg		Y	Y	P							B022-04	22:03
				POTASSIUM	253	mg/kg	J	Y	Y	P	J		15				B022-04	22:03
				SELENIUM	1.22	mg/kg	U	N	Y	U	U						B022-04	16:31
				SILVER	1.22	mg/kg	U	N	Y	U	U						B022-04	22:03
				SODIUM	122	mg/kg	U	N	Y	U	U						B022-04	22:03
				THALLIUM	2.44	mg/kg	U	N	Y	U	U						B022-04	16:31
				VANADIUM	15.8	mg/kg		Y	Y	P							B022-04	22:03
				ZINC	14.2	mg/kg		Y	Y	P	J		13				B022-04	22:03
	SW7471A	TOTAL	N 0 1	MERCURY	.038	mg/kg	J	Y	Y	P	J		15				B022-04	13:34
YE0008	SW6010B	SW3050	N 0 1	ALUMINUM	25100	mg/kg		Y	Y	P							B022-05	22:08
				ANTIMONY	12.4	mg/kg	U	N	Y	U	UJ		08A	08B			B022-05	22:08
				ARSENIC	7.38	mg/kg		Y	Y	P							B022-05	16:35
				BARIUM	27.7	mg/kg		Y	Y	P							B022-05	22:08
				BERYLLIUM	.296	mg/kg	J	Y	Y	P	J		15				B022-05	22:08
				CADMIUM	.62	mg/kg	U	N	Y	U	U						B022-05	22:08
				CALCIUM	17.5	mg/kg	J	Y	Y	P	J		15				B022-05	22:08
				CHROMIUM	32.3	mg/kg		Y	Y	P							B022-05	22:08
				COBALT	1.86	mg/kg	J	Y	Y	P	J		15				B022-05	22:08
				COPPER	10.2	mg/kg		Y	Y	P							B022-05	22:08
				IRON	29600	mg/kg		Y	Y	P	J		08A	08B			B022-05	22:08
				LEAD	8.1	mg/kg		Y	Y	P							B022-05	16:35
				MAGNESIUM	750	mg/kg		Y	Y	P							B022-05	22:08
				MANGANESE	14.8	mg/kg		Y	Y	P	J		08A				B022-05	22:08
				NICKEL	4.71	mg/kg		Y	Y	P							B022-05	22:08
				POTASSIUM	838	mg/kg		Y	Y	P							B022-05	22:08
				SELENIUM	1.24	mg/kg	U	N	Y	U	U						B022-05	16:35
				SILVER	1.24	mg/kg	U	N	Y	U	U						B022-05	22:08
				SODIUM	124	mg/kg	U	N	Y	U	U						B022-05	22:08
				THALLIUM	.717	mg/kg	J	Y	Y	P	J		15				B022-05	16:35
				VANADIUM	50.1	mg/kg		Y	Y	P							B022-05	22:08
				ZINC	16.6	mg/kg		Y	Y	P	J		13				B022-05	22:08

Validation Qualifier Data Entry Verification
Fort McClellan

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10138Q-01																		
YE0008	SW7471A	TOTAL	N 0 1	MERCURY	.026	mg/kg	J	Y	Y	P	J		15				B022-05	13:37
YE0009	SW6010B	SW3050	N 0 1	ALUMINUM	9670	mg/kg		Y	Y	P							B022-06	22:12
				ANTIMONY	11.8	mg/kg	U	N	Y	U	UJ		08A	08B			B022-06	22:12
				ARSENIC	1.33	mg/kg		Y	Y	P							B022-06	16:39
				BARIUM	73.3	mg/kg		Y	Y	P							B022-06	22:12
				BERYLLIUM	.271	mg/kg	J	Y	Y	P	J		15				B022-06	22:12
				CADMIUM	.591	mg/kg	U	N	Y	U	U						B022-06	22:12
				CALCIUM	241	mg/kg		Y	Y	P							B022-06	22:12
				CHROMIUM	6.63	mg/kg		Y	Y	P							B022-06	22:12
				COBALT	1.54	mg/kg	J	Y	Y	F	B		06B	15			B022-06	22:12
				COPPER	3.21	mg/kg		Y	Y	P							B022-06	22:12
				IRON	5260	mg/kg		Y	Y	P	J		08A	08B			B022-06	22:12
				LEAD	10.6	mg/kg		Y	Y	P							B022-06	16:39
				MAGNESIUM	443	mg/kg		Y	Y	P							B022-06	22:12
				MANGANESE	77.1	mg/kg		Y	Y	P	J		08A				B022-06	22:12
				NICKEL	3.91	mg/kg		Y	Y	P							B022-06	22:12
				POTASSIUM	205	mg/kg	J	Y	Y	P	J		15				B022-06	22:12
				SELENIUM	1.18	mg/kg	U	N	Y	U	U						B022-06	16:39
				SILVER	1.18	mg/kg	U	N	Y	U	U						B022-06	22:12
				SODIUM	118	mg/kg	U	N	Y	U	U						B022-06	22:12
				THALLIUM	2.36	mg/kg	U	N	Y	U	U						B022-06	16:39
				VANADIUM	9.63	mg/kg		Y	Y	P							B022-06	22:12
				ZINC	13	mg/kg		Y	Y	P	J		13				B022-06	22:12
	SW7471A	TOTAL	N 0 1	MERCURY	.118	mg/kg	U	N	Y	U	U						B022-06	14:23
YE0010	SW6010B	SW3050	N 0 1	ALUMINUM	18700	mg/kg		Y	Y	P							B022-07	22:17
				ANTIMONY	7.61	mg/kg	J	Y	Y	F	B		06B	08A	08B	15	B022-07	22:17
				ARSENIC	7.34	mg/kg		Y	Y	P							B022-07	16:43
				BARIUM	38	mg/kg		Y	Y	P							B022-07	22:17
				BERYLLIUM	.364	mg/kg	J	Y	Y	P	J		15				B022-07	22:17
				CADMIUM	.614	mg/kg	U	N	Y	U	U						B022-07	22:17
				CALCIUM	30.8	mg/kg	J	Y	Y	P	J		15				B022-07	22:17
				CHROMIUM	16.5	mg/kg		Y	Y	P							B022-07	22:17
				COBALT	1.83	mg/kg	J	Y	Y	P	J		15				B022-07	22:17
				COPPER	6.04	mg/kg		Y	Y	P							B022-07	22:17
				IRON	38100	mg/kg		Y	Y	P	J		08A	08B			B022-07	22:17
				LEAD	7.93	mg/kg		Y	Y	P							B022-07	16:43
				MAGNESIUM	380	mg/kg		Y	Y	P							B022-07	22:17
				MANGANESE	25.8	mg/kg		Y	Y	P	J		08A				B022-07	22:17
				NICKEL	2.33	mg/kg	J	Y	Y	P	J		15				B022-07	22:17
				POTASSIUM	1640	mg/kg		Y	Y	P							B022-07	22:17

Validation Qualifier Data Entry Verification
Fort McClellan

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10138Q-01																		
YE0010	SW6010B	SW3050	N 0 1	SELENIUM	1.23	mg/kg	U	N	Y	U	U						B022-07	16:43
				SILVER	1.23	mg/kg	U	N	Y	U	U						B022-07	22:17
				SODIUM	123	mg/kg	U	N	Y	U	U						B022-07	22:17
				THALLIUM	2.46	mg/kg	U	N	Y	U	U						B022-07	16:43
				VANADIUM	22.6	mg/kg		Y	Y	P							B022-07	22:17
				ZINC	11.1	mg/kg		Y	Y	P	J		13				B022-07	22:17
	SW7471A	TOTAL	N 0 1	MERCURY	.123	mg/kg	U	N	Y	U	U						B022-07	13:39
YE0001	SW8330	METHOD	N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						B022-01	02:34
				1,3-DNB	.4	mg/kg	U	N	Y	U	U						B022-01	02:34
				2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						B022-01	02:34
				2,4-DNT	.4	mg/kg	U	N	Y	U	U						B022-01	02:34
				2,6-DNT	.4	mg/kg	U	N	Y	U	U						B022-01	02:34
				2-AM-4,6-DNT	.16	mg/kg	J	Y	Y	P	J		15				B022-01	02:34
				2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B022-01	02:34
				3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B022-01	02:34
				4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						B022-01	02:34
				4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B022-01	02:34
				HMX	.4	mg/kg	U	N	Y	U	U						B022-01	02:34
				NITROBENZENE	.4	mg/kg	U	N	Y	U	U						B022-01	02:34
				RDX	.4	mg/kg	U	N	Y	U	U						B022-01	02:34
				TETRYL	.4	mg/kg	U	N	Y	U	U						B022-01	02:34
YE0002	SW8330	METHOD	N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						B022-02	04:35
				1,3-DNB	.4	mg/kg	U	N	Y	U	U						B022-02	04:35
				2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						B022-02	04:35
				2,4-DNT	.4	mg/kg	U	N	Y	U	U						B022-02	04:35
				2,6-DNT	.4	mg/kg	U	N	Y	U	U						B022-02	04:35
				2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						B022-02	04:35
				2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B022-02	04:35
				3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B022-02	04:35
				4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						B022-02	04:35
				4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B022-02	04:35
				HMX	.4	mg/kg	U	N	Y	U	U						B022-02	04:35
				NITROBENZENE	.4	mg/kg	U	N	Y	U	U						B022-02	04:35
				RDX	.4	mg/kg	U	N	Y	U	U						B022-02	04:35
				TETRYL	.4	mg/kg	U	N	Y	U	U						B022-02	04:35
YE0003	SW8330	METHOD	N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y		U						B022-03	05:16
				1,3-DNB	.4	mg/kg	U	N	Y		U						B022-03	05:16
				2,4,6-TNT	.4	mg/kg	U	N	Y		U						B022-03	05:16
				2,4-DNT	.4	mg/kg	U	N	Y		U						B022-03	05:16
				2,6-DNT	.4	mg/kg	U	N	Y		U						B022-03	05:16

Validation Qualifier Data Entry Verification

Run Date: March 26, 2002

Fort McClellan

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10138Q-01																		
YE0003	SW8330	METHOD	N 0 1	2-AM-4,6-DNT	.4	mg/kg	U	N	Y		U						B022-03	05:16
				2-NITROTOLUENE	.4	mg/kg	U	N	Y		U						B022-03	05:16
				3-NITROTOLUENE	.4	mg/kg	U	N	Y		U						B022-03	05:16
				4-AM-2,6-DNT	.4	mg/kg	U	N	Y		U						B022-03	05:16
				4-NITROTOLUENE	.4	mg/kg	U	N	Y		U						B022-03	05:16
				HMX	.4	mg/kg	U	N	Y		U						B022-03	05:16
				NITROBENZENE	.4	mg/kg	U	N	Y		U						B022-03	05:16
				RDX	.4	mg/kg	U	N	Y		U						B022-03	05:16
				TETRYL	.4	mg/kg	U	N	Y		U						B022-03	05:16
YE0005	SW8330	METHOD	N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						B032-01	00:33
				1,3-DNB	.4	mg/kg	U	N	Y	U	U						B032-01	00:33
				2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						B032-01	00:33
				2,4-DNT	.4	mg/kg	U	N	Y	U	U						B032-01	00:33
				2,6-DNT	.4	mg/kg	U	N	Y	U	U						B032-01	00:33
				2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						B032-01	00:33
				2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B032-01	00:33
				3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B032-01	00:33
				4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						B032-01	00:33
				4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B032-01	00:33
				HMX	.4	mg/kg	U	N	Y	U	U						B032-01	00:33
				NITROBENZENE	.4	mg/kg	U	N	Y	U	U						B032-01	00:33
				RDX	.4	mg/kg	U	N	Y	U	U						B032-01	00:33
				TETRYL	.4	mg/kg	U	N	Y	U	U						B032-01	00:33
YE0006	SW8330	METHOD	N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						B032-02	01:13
				1,3-DNB	.4	mg/kg	U	N	Y	U	U						B032-02	01:13
				2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						B032-02	01:13
				2,4-DNT	.4	mg/kg	U	N	Y	U	U						B032-02	01:13
				2,6-DNT	.4	mg/kg	U	N	Y	U	U						B032-02	01:13
				2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						B032-02	01:13
				2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B032-02	01:13
				3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B032-02	01:13
				4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						B032-02	01:13
				4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B032-02	01:13
				HMX	.4	mg/kg	U	N	Y	U	U						B032-02	01:13
				NITROBENZENE	.4	mg/kg	U	N	Y	U	U						B032-02	01:13
				RDX	.4	mg/kg	U	N	Y	U	U						B032-02	01:13
				TETRYL	.4	mg/kg	U	N	Y	U	U						B032-02	01:13
YE0007	SW8330	METHOD	N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						B022-04	05:56
				1,3-DNB	.4	mg/kg	U	N	Y	U	U						B022-04	05:56
				2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						B022-04	05:56

Validation Qualifier Data Entry Verification

Run Date: March 26, 2002

Fort McClellan

Sample Number:	Analytical/Extraction Method:	Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10138Q-01																	
YE0007	SW8330	METHOD N 0 1	2,4-DNT	.4	mg/kg	U	N	Y	U	U						B022-04	05:56
			2,6-DNT	.4	mg/kg	U	N	Y	U	U						B022-04	05:56
			2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						B022-04	05:56
			2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B022-04	05:56
			3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B022-04	05:56
			4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						B022-04	05:56
			4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B022-04	05:56
			HMX	.4	mg/kg	U	N	Y	U	U						B022-04	05:56
			NITROBENZENE	.4	mg/kg	U	N	Y	U	U						B022-04	05:56
			RDX	.4	mg/kg	U	N	Y	U	U						B022-04	05:56
			TETRYL	.4	mg/kg	U	N	Y	U	U						B022-04	05:56
YE0008	SW8330	METHOD N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						B022-05	06:37
			1,3-DNB	.4	mg/kg	U	N	Y	U	U						B022-05	06:37
			2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						B022-05	06:37
			2,4-DNT	.4	mg/kg	U	N	Y	U	U						B022-05	06:37
			2,6-DNT	.4	mg/kg	U	N	Y	U	U						B022-05	06:37
			2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						B022-05	06:37
			2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B022-05	06:37
			3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B022-05	06:37
			4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						B022-05	06:37
			4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B022-05	06:37
			HMX	.4	mg/kg	U	N	Y	U	U						B022-05	06:37
			NITROBENZENE	.4	mg/kg	U	N	Y	U	U						B022-05	06:37
			RDX	.4	mg/kg	U	N	Y	U	U						B022-05	06:37
			TETRYL	.4	mg/kg	U	N	Y	U	U						B022-05	06:37
YE0009	SW8330	METHOD N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						B022-06	07:17
			1,3-DNB	.4	mg/kg	U	N	Y	U	U						B022-06	07:17
			2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						B022-06	07:17
			2,4-DNT	.4	mg/kg	U	N	Y	U	U						B022-06	07:17
			2,6-DNT	.4	mg/kg	U	N	Y	U	U						B022-06	07:17
			2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						B022-06	07:17
			2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B022-06	07:17
			3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B022-06	07:17
			4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						B022-06	07:17
			4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B022-06	07:17
			HMX	.4	mg/kg	U	N	Y	U	U						B022-06	07:17
			NITROBENZENE	.4	mg/kg	U	N	Y	U	U						B022-06	07:17
			RDX	.4	mg/kg	U	N	Y	U	U						B022-06	07:17
			TETRYL	.4	mg/kg	U	N	Y	U	U						B022-06	07:17
YE0010	SW8330	METHOD N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						B022-07	13:43

Validation Qualifier Data Entry Verification

Run Date: March 26, 2002

Fort McClellan

Sample Number:	Analytical/Extraction Method:		Flt	REX	Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10138Q-01																				
YE0010	SW8330	METHOD	N	0	1	1,3-DNB	.4	mg/kg	U	N	Y	U	U						B022-07	13:43
						2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						B022-07	13:43
						2,4-DNT	.4	mg/kg	U	N	Y	U	U						B022-07	13:43
						2,6-DNT	.4	mg/kg	U	N	Y	U	U						B022-07	13:43
						2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						B022-07	13:43
						2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B022-07	13:43
						3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B022-07	13:43
						4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						B022-07	13:43
						4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B022-07	13:43
						HMX	.4	mg/kg	U	N	Y	U	U						B022-07	13:43
						NITROBENZENE	.4	mg/kg	U	N	Y	U	U						B022-07	13:43
						RDX	.4	mg/kg	U	N	Y	U	U						B022-07	13:43
						TETRYL	.4	mg/kg	U	N	Y	U	U						B022-07	13:43
YE0001	EPA314.0	NONE	N	0	1	PERCHLORATE	.0625	mg/kg	U	N	Y	U	U						B022-01	15:41
YE0002	EPA314.0	NONE	N	0	1	PERCHLORATE	.0603	mg/kg	U	N	Y	U	U						B022-02	16:33
YE0003	EPA314.0	NONE	N	0	1	PERCHLORATE	.0603	mg/kg	U	N	Y		U						B022-03	16:50
YE0005	EPA314.0	NONE	N	0	1	PERCHLORATE	.0595	mg/kg	U	N	Y	U	U						B032-01	18:33
YE0006	EPA314.0	NONE	N	0	1	PERCHLORATE	.0598	mg/kg	U	N	Y	U	U						B032-02	19:24
YE0007	EPA314.0	NONE	N	0	1	PERCHLORATE	.0609	mg/kg	U	N	Y	U	U						B022-04	17:07
YE0008	EPA314.0	NONE	N	0	1	PERCHLORATE	.062	mg/kg	U	N	Y	U	U						B022-05	17:24
YE0009	EPA314.0	NONE	N	0	1	PERCHLORATE	.0591	mg/kg	U	N	Y	U	U						B022-06	17:42
YE0010	EPA314.0	NONE	N	0	1	PERCHLORATE	.0614	mg/kg	U	N	Y	U	U						B022-07	21:01
10138Q-02																				
YE1005	SW6010B	SW3050	N	0	1	ALUMINUM	7570	mg/kg		Y	Y	P							D239-01	23:01
						ANTIMONY	12.9	mg/kg	U	N	Y	U	U						D239-01	23:01
						ARSENIC	3.88	mg/kg		Y	Y	P							D239-01	22:51
						BARIUM	74.8	mg/kg		Y	Y	P							D239-01	23:01
						BERYLLIUM	.796	mg/kg	J	Y	Y	F	B		06B	15			D239-01	23:01
						CADMIUM	.644	mg/kg	U	N	Y	U	U						D239-01	23:01
						CALCIUM	110	mg/kg	J	Y	Y	P	J		15				D239-01	23:01
						CHROMIUM	14.2	mg/kg		Y	Y	P							D239-01	23:01
						COBALT	3.56	mg/kg		Y	Y	F	B		06B				D239-01	23:01
						COPPER	4.97	mg/kg		Y	Y	P							D239-01	23:01
						IRON	29300	mg/kg		Y	Y	P							D239-01	23:01
						LEAD	7.26	mg/kg		Y	Y	P							D239-01	22:51
						MAGNESIUM	315	mg/kg		Y	Y	P							D239-01	23:01
						MANGANESE	139	mg/kg		Y	Y	P							D239-01	23:01
						NICKEL	3.97	mg/kg		Y	Y	P							D239-01	23:01

Validation Qualifier Data Entry Verification

Run Date: March 26, 2002

Fort McClellan

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10138Q-02																		
YE1005	SW6010B	SW3050	N 0 1	POTASSIUM	1850	mg/kg		Y	Y	P							D239-01	23:01
				SELENIUM	1.29	mg/kg	U	N	Y	U	U						D239-01	22:51
				SILVER	1.29	mg/kg	U	N	Y	U	U						D239-01	23:01
				SODIUM	129	mg/kg	U	N	Y	U	U						D239-01	23:01
				THALLIUM	.852	mg/kg	J	Y	Y	P	J		15				D239-01	22:51
				VANADIUM	17	mg/kg		Y	Y	P							D239-01	23:01
				ZINC	13.9	mg/kg		Y	Y	P							D239-01	23:01
	SW7471A	TOTAL	N 0 1	MERCURY	.129	mg/kg	U	N	Y	U	U						D239-01	15:13
YE1006	SW6010B	SW3050	N 0 1	ALUMINUM	2510	mg/kg		Y	Y	P							D239-02	23:06
				ANTIMONY	17.5	mg/kg	U	N	Y	U	U						D239-02	23:06
				ARSENIC	.77	mg/kg	J	Y	Y	P	J		15				D239-02	22:56
				BARIUM	46.4	mg/kg		Y	Y	P							D239-02	23:06
				BERYLLIUM	1.75	mg/kg	U	N	Y	U	U						D239-02	23:06
				CADMIUM	.877	mg/kg	U	N	Y	U	U						D239-02	23:06
				CALCIUM	64.2	mg/kg	J	Y	Y	F	B		06B	15			D239-02	23:06
				CHROMIUM	1.1	mg/kg	J	Y	Y	F	B		06B	15			D239-02	23:06
				COBALT	3.51	mg/kg	U	N	Y	U	U						D239-02	23:06
				COPPER	11.7	mg/kg		Y	Y	P							D239-02	23:06
				IRON	1590	mg/kg		Y	Y	P							D239-02	23:06
				LEAD	89.3	mg/kg		Y	Y	P							D239-02	22:56
				MAGNESIUM	98.4	mg/kg	J	Y	Y	P	J		15				D239-02	23:06
				MANGANESE	5.57	mg/kg		Y	Y	P							D239-02	23:06
				NICKEL	3.51	mg/kg	U	N	Y	U	U						D239-02	23:06
				POTASSIUM	877	mg/kg	U	N	Y	U	U						D239-02	23:06
				SELENIUM	1.75	mg/kg	U	N	Y	U	U						D239-02	22:56
				SILVER	1.75	mg/kg	U	N	Y	U	U						D239-02	23:06
				SODIUM	175	mg/kg	U	N	Y	U	U						D239-02	23:06
				THALLIUM	3.51	mg/kg	U	N	Y	U	U						D239-02	22:56
				VANADIUM	1.74	mg/kg	J	Y	Y	F	B		06B				D239-02	23:06
				ZINC	4.78	mg/kg		Y	Y	P							D239-02	23:06
	SW7471A	TOTAL	N 0 1	MERCURY	.175	mg/kg	U	N	Y	U	U						D239-02	15:15
YE1005	SW8330	METHOD	N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						D239-01	17:23
				1,3-DNB	.4	mg/kg	U	N	Y	U	U						D239-01	17:23
				2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						D239-01	17:23
				2,4-DNT	.4	mg/kg	U	N	Y	U	U						D239-01	17:23
				2,6-DNT	.4	mg/kg	U	N	Y	U	U						D239-01	17:23
				2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						D239-01	17:23
				2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						D239-01	17:23
				3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						D239-01	17:23
				4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						D239-01	17:23

Validation Qualifier Data Entry Verification
Fort McClellan

Sample Number:	Analytical/Extraction Method:		Flt	REX	Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10138Q-02																				
YE1005	SW8330	METHOD	N	0	1	4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						D239-01	17:23
						HMX	.4	mg/kg	U	N	Y	U	U						D239-01	17:23
						NITROBENZENE	.4	mg/kg	U	N	Y	U	U						D239-01	17:23
						RDX	.4	mg/kg	U	N	Y	U	U						D239-01	17:23
						TETRYL	.4	mg/kg	U	N	Y	U	U						D239-01	17:23
YE1006	SW8330	METHOD	N	0	1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						D239-02	18:01
						1,3-DNB	.4	mg/kg	U	N	Y	U	U						D239-02	18:01
						2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						D239-02	18:01
						2,4-DNT	.4	mg/kg	U	N	Y	U	U						D239-02	18:01
						2,6-DNT	.4	mg/kg	U	N	Y	U	U						D239-02	18:01
						2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						D239-02	18:01
						2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						D239-02	18:01
						3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						D239-02	18:01
						4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						D239-02	18:01
						4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						D239-02	18:01
						HMX	.4	mg/kg	U	N	Y	U	U						D239-02	18:01
						NITROBENZENE	.4	mg/kg	U	N	Y	U	U						D239-02	18:01
						RDX	.4	mg/kg	U	N	Y	U	U						D239-02	18:01
						TETRYL	.4	mg/kg	U	N	Y	U	U						D239-02	18:01
YE1005	E314.0	NONE	N	0	1	PERCHLORATE	.0644	mg/kg	U	N	Y	U	U						D239-01	20:46
YE1006	E314.0	NONE	N	0	1	PERCHLORATE	.0877	mg/kg	U	N	Y	U	U						D239-02	21:03
YE1005	SW9060	NONE	N	0	1	TOC	49.2	mg/kg		Y	Y	P							D239-01	10:30
YE1006	SW9060	NONE	N	0	1	TOC	55.4	mg/kg		Y	Y	P							D239-02	10:50
10138Q-03																				
YE2004	SW6010B	SW3010	N	0	1	ALUMINUM	.061	mg/L	J	Y	Y	P	J		15				D240-01	21:23
						ANTIMONY	.1	mg/L	U	N	Y	U	U						D240-01	21:23
						ARSENIC	.01	mg/L	U	N	Y	U	U						D240-01	20:13
						BARIUM	.0212	mg/L		Y	Y	P							D240-01	21:23
						BERYLLIUM	.001	mg/L	U	N	Y	U	U						D240-01	21:23
						CADMIUM	.01	mg/L	U	N	Y	U	U						D240-01	21:23
						CALCIUM	.278	mg/L	J	Y	Y	P	J		15				D240-01	21:23
						CHROMIUM	.01	mg/L	U	N	Y	U	U						D240-01	21:23
						COBALT	.02	mg/L	U	N	Y	U	U						D240-01	21:23
						COPPER	.02	mg/L	U	N	Y	U	U						D240-01	21:23
						IRON	.04	mg/L	J	Y	Y	P	J		15				D240-01	21:23
						LEAD	.01	mg/L	U	N	Y	U	U						D240-01	20:13
						MAGNESIUM	.295	mg/L	J	Y	Y	P	J		15				D240-01	21:23
						MANGANESE	.00651	mg/L	J	Y	Y	P	J		15				D240-01	21:23
						NICKEL	.02	mg/L	U	N	Y	U	U						D240-01	21:23

Validation Qualifier Data Entry Verification

Run Date: March 26, 2002

Fort McClellan

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10138Q-03																		
YE2004	SW6010B	SW3010	N 0 1	POTASSIUM	2.25	mg/L	J	Y	Y	P	J		15				D240-01	21:23
				SELENIUM	.01	mg/L	U	N	Y	U	U						D240-01	20:13
				SILVER	.01	mg/L	U	N	Y	U	U						D240-01	21:23
				SODIUM	.85	mg/L	J	Y	Y	P	J		15				D240-01	21:23
				THALLIUM	.01	mg/L	U	N	Y	U	U						D240-01	20:13
				VANADIUM	.01	mg/L	U	N	Y	U	U						D240-01	21:23
				ZINC	.02	mg/L	U	N	Y	U	U						D240-01	21:23
	SW7470A	TOTAL	N 0 1	MERCURY	.0005	mg/L	U	N	Y	U	U						D240-01	12:13
YE2005	SW6010B	SW3010	N 0 1	ALUMINUM	.244	mg/L		Y	Y	P							D240-02	21:27
				ANTIMONY	.1	mg/L	U	N	Y	U	U						D240-02	21:27
				ARSENIC	.01	mg/L	U	N	Y	U	U						D240-02	20:17
				BARIUM	.0258	mg/L		Y	Y	P							D240-02	21:27
				BERYLLIUM	.001	mg/L	U	N	Y	U	U						D240-02	21:27
				CADMIUM	.01	mg/L	U	N	Y	U	U						D240-02	21:27
				CALCIUM	.213	mg/L	J	Y	Y	P	J		15				D240-02	21:27
				CHROMIUM	.01	mg/L	U	N	Y	U	U						D240-02	21:27
				COBALT	.02	mg/L	U	N	Y	U	U						D240-02	21:27
				COPPER	.0108	mg/L	J	Y	Y	P	J		15				D240-02	21:27
				IRON	.631	mg/L		Y	Y	P							D240-02	21:27
				LEAD	.0208	mg/L		Y	Y	P							D240-02	20:17
				MAGNESIUM	.203	mg/L	J	Y	Y	P	J		15				D240-02	21:27
				MANGANESE	.0146	mg/L		Y	Y	P							D240-02	21:27
				NICKEL	.02	mg/L	U	N	Y	U	U						D240-02	21:27
				POTASSIUM	5	mg/L	U	N	Y	U	U						D240-02	21:27
				SELENIUM	.00175	mg/L	J	Y	Y	P	J		15				D240-02	20:17
				SILVER	.01	mg/L	U	N	Y	U	U						D240-02	21:27
				SODIUM	.837	mg/L	J	Y	Y	P	J		15				D240-02	21:27
				THALLIUM	.01	mg/L	U	N	Y	U	U						D240-02	20:17
				VANADIUM	.01	mg/L	U	N	Y	U	U						D240-02	21:27
				ZINC	.00853	mg/L	J	Y	Y	P	J		15				D240-02	21:27
	SW7470A	TOTAL	N 0 1	MERCURY	.0005	mg/L	U	N	Y	U	U						D240-02	12:15
YE2004	SW8330	METHOD	N 0 1	1,3,5-TNB	.0004	mg/L	U	N	Y	U	U						D240-01	02:29
				1,3-DNB	.0004	mg/L	U	N	Y	U	U						D240-01	02:29
				2,4,6-TNT	.0004	mg/L	U	N	Y	U	U						D240-01	02:29
				2,4-DNT	.0004	mg/L	U	N	Y	U	U						D240-01	02:29
				2,6-DNT	.0004	mg/L	U	N	Y	U	U						D240-01	02:29
				2-AM-4,6-DNT	.0004	mg/L	U	N	Y	U	U						D240-01	02:29
				2-NITROTOLUENE	.0004	mg/L	U	N	Y	U	U						D240-01	02:29
				3-NITROTOLUENE	.0004	mg/L	U	N	Y	U	U						D240-01	02:29
				4-AM-2,6-DNT	.0004	mg/L	U	N	Y	U	U						D240-01	02:29

Validation Qualifier Data Entry Verification

Run Date: March 26, 2002

Fort McClellan

Sample Number:	Analytical/Extraction Method:		Flt	REX	Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10138Q-03																				
YE2004	SW8330	METHOD	N	0	1	4-NITROTOLUENE	.0004	mg/L	U	N	Y	U	U						D240-01	02:29
						HMX	.001	mg/L	U	N	Y	U	U						D240-01	02:29
						NITROBENZENE	.0004	mg/L	U	N	Y	U	U						D240-01	02:29
						RDX	.0004	mg/L	U	N	Y	U	U						D240-01	02:29
						TETRYL	.0004	mg/L	U	N	Y	U	U						D240-01	02:29
YE2005	SW8330	METHOD	N	0	1	1,3,5-TNB	.0004	mg/L	U	N	Y	U	U						D240-02	03:08
						1,3-DNB	.0004	mg/L	U	N	Y	U	U						D240-02	03:08
						2,4,6-TNT	.0004	mg/L	U	N	Y	U	U						D240-02	03:08
						2,4-DNT	.0004	mg/L	U	N	Y	U	U						D240-02	03:08
						2,6-DNT	.0004	mg/L	U	N	Y	U	U						D240-02	03:08
						2-AM-4,6-DNT	.0004	mg/L	U	N	Y	U	U						D240-02	03:08
						2-NITROTOLUENE	.0004	mg/L	U	N	Y	U	U						D240-02	03:08
						3-NITROTOLUENE	.0004	mg/L	U	N	Y	U	U						D240-02	03:08
						4-AM-2,6-DNT	.0004	mg/L	U	N	Y	U	U						D240-02	03:08
						4-NITROTOLUENE	.0004	mg/L	U	N	Y	U	U						D240-02	03:08
						HMX	.001	mg/L	U	N	Y	U	U						D240-02	03:08
						NITROBENZENE	.0004	mg/L	U	N	Y	U	U						D240-02	03:08
						RDX	.0004	mg/L	U	N	Y	U	U						D240-02	03:08
						TETRYL	.0004	mg/L	U	N	Y	U	U						D240-02	03:08
YE2004	E314.0	NONE	N	0	1	PERCHLORATE	.005	mg/L	U	N	Y	U	U						D240-01	16:12
YE2005	E314.0	NONE	N	0	1	PERCHLORATE	.005	mg/L	U	N	Y	U	U						D240-02	17:03
10138Q-04																				
YE0011	SW6010B	SW3050	N	0	1	ALUMINUM	10800	mg/kg		Y	Y	P							E044-01	18:58
						ANTIMONY	12.9	mg/kg	U	N	Y	U	U						E044-01	18:58
						ARSENIC	4.18	mg/kg		Y	Y	P							E044-01	19:04
						BARIUM	130	mg/kg		Y	Y	P							E044-01	18:58
						BERYLLIUM	1.11	mg/kg	J	Y	Y	P	J		15				E044-01	18:58
						CADMIUM	.644	mg/kg	U	N	Y	U	U						E044-01	18:58
						CALCIUM	351	mg/kg		Y	Y	P							E044-01	18:58
						CHROMIUM	7.53	mg/kg		Y	Y	P							E044-01	18:58
						COBALT	20.1	mg/kg		Y	Y	P							E044-01	18:58
						COPPER	8.25	mg/kg		Y	Y	P							E044-01	18:58
						IRON	16300	mg/kg		Y	Y	P							E044-01	18:58
						LEAD	16.5	mg/kg		Y	Y	P							E044-01	19:04
						MAGNESIUM	498	mg/kg		Y	Y	P							E044-01	18:58
						MANGANESE	294	mg/kg		Y	Y	P							E044-01	18:58
						NICKEL	4.49	mg/kg		Y	Y	P							E044-01	18:58
						POTASSIUM	1910	mg/kg		Y	Y	P							E044-01	18:58
						SELENIUM	1.29	mg/kg	U	N	Y	U	U						E044-01	19:04

Validation Qualifier Data Entry Verification

Run Date: March 26, 2002

Fort McClellan

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10138Q-04																		
YE0011	SW6010B	SW3050	N 0 1	SILVER	1.29	mg/kg	U	N	Y	U	U						E044-01	18:58
				SODIUM	129	mg/kg	U	N	Y	U	U						E044-01	18:58
				THALLIUM	2.57	mg/kg	U	N	Y	U	U						E044-01	19:04
				VANADIUM	12.7	mg/kg		Y	Y	P							E044-01	18:58
				ZINC	21.1	mg/kg		Y	Y	P	J		11A	11B			E044-01	18:58
	SW7471A	TOTAL	N 0 1	MERCURY	.027	mg/kg	J	Y	Y	P	J		15				E044-01	10:54
YE0012	SW6010B	SW3050	N 0 1	ALUMINUM	8310	mg/kg		Y	Y								E044-02	19:03
				ANTIMONY	12.5	mg/kg	U	N	Y		U						E044-02	19:03
				ARSENIC	4.99	mg/kg		Y	Y								E044-02	19:09
				BARIUM	105	mg/kg		Y	Y								E044-02	19:03
				BERYLLIUM	.955	mg/kg	J	Y	Y		J		15				E044-02	19:03
				CADMIUM	.626	mg/kg	U	N	Y		U						E044-02	19:03
				CALCIUM	363	mg/kg		Y	Y								E044-02	19:03
				CHROMIUM	6.27	mg/kg		Y	Y								E044-02	19:03
				COBALT	14.4	mg/kg		Y	Y								E044-02	19:03
				COPPER	10.7	mg/kg		Y	Y								E044-02	19:03
				IRON	18900	mg/kg		Y	Y								E044-02	19:03
				LEAD	12.7	mg/kg		Y	Y								E044-02	19:09
				MAGNESIUM	395	mg/kg		Y	Y								E044-02	19:03
				MANGANESE	284	mg/kg		Y	Y								E044-02	19:03
				NICKEL	5.49	mg/kg		Y	Y								E044-02	19:03
				POTASSIUM	2220	mg/kg		Y	Y								E044-02	19:03
				SELENIUM	1.25	mg/kg	U	N	Y		U						E044-02	19:09
				SILVER	1.25	mg/kg	U	N	Y		U						E044-02	19:03
				SODIUM	125	mg/kg	U	N	Y		U						E044-02	19:03
				THALLIUM	2.5	mg/kg	U	N	Y		U						E044-02	19:09
				VANADIUM	10.8	mg/kg		Y	Y								E044-02	19:03
				ZINC	19.7	mg/kg		Y	Y		J		11A	11B			E044-02	19:03
	SW7471A	TOTAL	N 0 1	MERCURY	.044	mg/kg	J	Y	Y		J		15				E044-02	10:57
YE1003	SW6010B	SW3050	N 0 1	ALUMINUM	7060	mg/kg		Y	Y	P							E044-03	19:08
				ANTIMONY	15.9	mg/kg	U	N	Y	U	U						E044-03	19:08
				ARSENIC	6.74	mg/kg		Y	Y	P							E044-03	19:14
				BARIUM	126	mg/kg		Y	Y	P							E044-03	19:08
				BERYLLIUM	1.06	mg/kg	J	Y	Y	P	J		15				E044-03	19:08
				CADMIUM	.795	mg/kg	U	N	Y	U	U						E044-03	19:08
				CALCIUM	359	mg/kg		Y	Y	P							E044-03	19:08
				CHROMIUM	23.7	mg/kg		Y	Y	P							E044-03	19:08
				COBALT	7.04	mg/kg		Y	Y	P							E044-03	19:08
				COPPER	5.38	mg/kg		Y	Y	P							E044-03	19:08
				IRON	35400	mg/kg		Y	Y	P							E044-03	19:08

Validation Qualifier Data Entry Verification

Run Date: March 26, 2002

Fort McClellan

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10138Q-04																		
YE1003	SW6010B	SW3050	N 0 1	LEAD	11.4	mg/kg		Y	Y	P							E044-03	19:14
				MAGNESIUM	336	mg/kg		Y	Y	P							E044-03	19:08
				MANGANESE	233	mg/kg		Y	Y	P							E044-03	19:08
				NICKEL	5.13	mg/kg		Y	Y	P							E044-03	19:08
				POTASSIUM	1620	mg/kg		Y	Y	P							E044-03	19:08
				SELENIUM	1.59	mg/kg	U	N	Y	U	U						E044-03	19:14
				SILVER	1.59	mg/kg	U	N	Y	U	U						E044-03	19:08
				SODIUM	159	mg/kg	U	N	Y	U	U						E044-03	19:08
				THALLIUM	3.18	mg/kg	U	N	Y	U	U						E044-03	19:14
				VANADIUM	20.2	mg/kg		Y	Y	P							E044-03	19:08
				ZINC	17.5	mg/kg		Y	Y	P	J		11A	11B			E044-03	19:08
	SW7471A	TOTAL	N 0 1	MERCURY	.159	mg/kg	U	N	Y	U	U						E044-03	10:59
YE1004	SW6010B	SW3050	N 0 1	ALUMINUM	168	mg/kg		Y	Y	P							E044-04	19:13
				ANTIMONY	11.8	mg/kg	U	N	Y	U	U						E044-04	19:13
				ARSENIC	1.18	mg/kg	U	N	Y	U	U						E044-04	19:19
				BARIUM	6.19	mg/kg		Y	Y	P							E044-04	19:13
				BERYLLIUM	1.18	mg/kg	U	N	Y	U	U						E044-04	19:13
				CADMIUM	.588	mg/kg	U	N	Y	U	U						E044-04	19:13
				CALCIUM	29.2	mg/kg	J	Y	Y	P	J		15				E044-04	19:13
				CHROMIUM	1.18	mg/kg	U	N	Y	U	U						E044-04	19:13
				COBALT	.653	mg/kg	J	Y	Y	P	J		15				E044-04	19:13
				COPPER	2.35	mg/kg	U	N	Y	U	U						E044-04	19:13
				IRON	89.5	mg/kg		Y	Y	P							E044-04	19:13
				LEAD	5.62	mg/kg		Y	Y	P							E044-04	19:19
				MAGNESIUM	13.8	mg/kg	J	Y	Y	P	J		15				E044-04	19:13
				MANGANESE	13.5	mg/kg		Y	Y	P							E044-04	19:13
				NICKEL	2.35	mg/kg	U	N	Y	U	U						E044-04	19:13
				POTASSIUM	588	mg/kg	U	N	Y	U	U						E044-04	19:13
				SELENIUM	1.18	mg/kg	U	N	Y	U	U						E044-04	19:19
				SILVER	1.18	mg/kg	U	N	Y	U	U						E044-04	19:13
				SODIUM	118	mg/kg	U	N	Y	U	U						E044-04	19:13
				THALLIUM	2.35	mg/kg	U	N	Y	U	U						E044-04	19:19
				VANADIUM	1.18	mg/kg	U	N	Y	U	U						E044-04	19:13
				ZINC	1.01	mg/kg	J	Y	Y	F	B		06A	06B	11A	11B	E044-04	19:13
	SW7471A	TOTAL	N 0 1	MERCURY	.118	mg/kg	U	N	Y	U	U						E044-04	11:02
YE0011	SW8330	METHOD	N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						E044-01	19:11
				1,3-DNB	.4	mg/kg	U	N	Y	U	U						E044-01	19:11
				2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						E044-01	19:11
				2,4-DNT	.4	mg/kg	U	N	Y	U	U						E044-01	19:11
				2,6-DNT	.4	mg/kg	U	N	Y	U	U						E044-01	19:11

Validation Qualifier Data Entry Verification

Run Date: March 26, 2002

Fort McClellan

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10138Q-04																		
YE0011	SW8330	METHOD	N 0 1	2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						E044-01	19:11
				2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						E044-01	19:11
				3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						E044-01	19:11
				4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						E044-01	19:11
				4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						E044-01	19:11
				HMX	.4	mg/kg	U	N	Y	U	U						E044-01	19:11
				NITROBENZENE	.4	mg/kg	U	N	Y	U	U						E044-01	19:11
				RDX	.4	mg/kg	U	N	Y	U	U						E044-01	19:11
				TETRYL	.4	mg/kg	U	N	Y	U	U						E044-01	19:11
YE0012	SW8330	METHOD	N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y		U						E044-02	19:49
				1,3-DNB	.4	mg/kg	U	N	Y		U						E044-02	19:49
				2,4,6-TNT	.4	mg/kg	U	N	Y		U						E044-02	19:49
				2,4-DNT	.4	mg/kg	U	N	Y		U						E044-02	19:49
				2,6-DNT	.4	mg/kg	U	N	Y		U						E044-02	19:49
				2-AM-4,6-DNT	.4	mg/kg	U	N	Y		U						E044-02	19:49
				2-NITROTOLUENE	.4	mg/kg	U	N	Y		U						E044-02	19:49
				3-NITROTOLUENE	.4	mg/kg	U	N	Y		U						E044-02	19:49
				4-AM-2,6-DNT	.4	mg/kg	U	N	Y		U						E044-02	19:49
				4-NITROTOLUENE	.4	mg/kg	U	N	Y		U						E044-02	19:49
				HMX	.4	mg/kg	U	N	Y		U						E044-02	19:49
				NITROBENZENE	.4	mg/kg	U	N	Y		U						E044-02	19:49
				RDX	.4	mg/kg	U	N	Y		U						E044-02	19:49
				TETRYL	.4	mg/kg	U	N	Y		U						E044-02	19:49
YE1003	SW8330	METHOD	N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						E044-03	20:28
				1,3-DNB	.4	mg/kg	U	N	Y	U	U						E044-03	20:28
				2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						E044-03	20:28
				2,4-DNT	.4	mg/kg	U	N	Y	U	U						E044-03	20:28
				2,6-DNT	.4	mg/kg	U	N	Y	U	U						E044-03	20:28
				2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						E044-03	20:28
				2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						E044-03	20:28
				3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						E044-03	20:28
				4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						E044-03	20:28
				4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						E044-03	20:28
				HMX	.4	mg/kg	U	N	Y	U	U						E044-03	20:28
				NITROBENZENE	.4	mg/kg	U	N	Y	U	U						E044-03	20:28
				RDX	.4	mg/kg	U	N	Y	U	U						E044-03	20:28
				TETRYL	.4	mg/kg	U	N	Y	U	U						E044-03	20:28
YE1004	SW8330	METHOD	N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						E044-04	21:44
				1,3-DNB	.4	mg/kg	U	N	Y	U	U						E044-04	21:44
				2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						E044-04	21:44

Validation Qualifier Data Entry Verification

Run Date: March 26, 2002

Fort McClellan

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10138Q-04																		
YE1004	SW8330	METHOD	N 0 1	2,4-DNT	.4	mg/kg	U	N	Y	U	U						E044-04	21:44
				2,6-DNT	.4	mg/kg	U	N	Y	U	U						E044-04	21:44
				2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						E044-04	21:44
				2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						E044-04	21:44
				3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						E044-04	21:44
				4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						E044-04	21:44
				4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						E044-04	21:44
				HMX	.4	mg/kg	U	N	Y	U	U						E044-04	21:44
				NITROBENZENE	.4	mg/kg	U	N	Y	U	U						E044-04	21:44
				RDX	.4	mg/kg	U	N	Y	U	U						E044-04	21:44
				TETRYL	.4	mg/kg	U	N	Y	U	U						E044-04	21:44
YE0011	E314.0	NONE	N 0 1	PERCHLORATE	.0644	mg/kg	U	N	Y	U	U						E044-01	23:03
YE0012	E314.0	NONE	N 0 1	PERCHLORATE	.0626	mg/kg	U	N	Y		U						E044-02	23:54
YE1003	E314.0	NONE	N 0 1	PERCHLORATE	.0795	mg/kg	U	N	Y	U	U						E044-03	00:11
YE1004	E314.0	NONE	N 0 1	PERCHLORATE	.0588	mg/kg	U	N	Y	U	U						E044-04	00:28
YE1003	SW9060	NONE	N 0 1	TOC	23.7	mg/kg		Y	Y	P							E044-03	11:30
YE1004	SW9060	NONE	N 0 1	TOC	7.41	mg/kg		Y	Y	P							E044-04	11:50
10138Q-05																		
YE2002	SW6010B	SW3010	N 0 1	ALUMINUM	.173	mg/L	J	Y	Y	P	J		15				E045-01	22:16
				ANTIMONY	.1	mg/L	U	N	Y	U	U						E045-01	22:16
				ARSENIC	.01	mg/L	U	N	Y	U	U						E045-01	22:48
				BARIUM	.0228	mg/L		Y	Y	P							E045-01	22:16
				BERYLLIUM	.001	mg/L	U	N	Y	U	U						E045-01	22:16
				CADMIUM	.01	mg/L	U	N	Y	U	U						E045-01	22:16
				CALCIUM	.166	mg/L	J	Y	Y	F	B		06B	15			E045-01	22:16
				CHROMIUM	.01	mg/L	U	N	Y	U	U						E045-01	22:16
				COBALT	.02	mg/L	U	N	Y	U	U						E045-01	22:16
				COPPER	.02	mg/L	U	N	Y	U	U						E045-01	22:16
				IRON	.217	mg/L		Y	Y	P							E045-01	22:16
				LEAD	.00253	mg/L	J	Y	Y	F	B		06B	15			E045-01	22:48
				MAGNESIUM	.244	mg/L	J	Y	Y	P	J		15				E045-01	22:16
				MANGANESE	.0132	mg/L		Y	Y	P							E045-01	22:16
				NICKEL	.02	mg/L	U	N	Y	U	U						E045-01	22:16
				POTASSIUM	5	mg/L	U	N	Y	U	U						E045-01	22:16
				SELENIUM	.01	mg/L	U	N	Y	U	U						E045-01	22:48
				SILVER	.01	mg/L	U	N	Y	U	U						E045-01	22:16
				SODIUM	.934	mg/L	J	Y	Y	P	J		15				E045-01	22:16
				THALLIUM	.01	mg/L	U	N	Y	U	U						E045-01	22:48
				VANADIUM	.01	mg/L	U	N	Y	U	U						E045-01	22:16

Validation Qualifier Data Entry Verification

Run Date: March 26, 2002

Fort McClellan

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10138Q-05																		
YE2002	SW6010B	SW3010	N 0 1	ZINC	.02	mg/L	U	N	Y	U	U						E045-01	22:16
	SW7470A	TOTAL	N 0 1	MERCURY	.0005	mg/L	U	N	Y	U	U						E045-01	10:34
YE2003	SW6010B	SW3010	N 0 1	ALUMINUM	.0843	mg/L	J	Y	Y	P	J		15				E045-02	22:49
				ANTIMONY	.1	mg/L	U	N	Y	U	U						E045-02	22:49
				ARSENIC	.01	mg/L	U	N	Y	U	U						E045-02	22:03
				BARIUM	.0167	mg/L		Y	Y	P							E045-02	22:49
				BERYLLIUM	.001	mg/L	U	N	Y	U	U						E045-02	22:49
				CADMIUM	.01	mg/L	U	N	Y	U	U						E045-02	22:49
				CALCIUM	.145	mg/L	J	Y	Y	F	B		06B	15			E045-02	22:49
				CHROMIUM	.01	mg/L	U	N	Y	U	U						E045-02	22:49
				COBALT	.02	mg/L	U	N	Y	U	U						E045-02	22:49
				COPPER	.02	mg/L	U	N	Y	U	U						E045-02	22:49
				IRON	.0636	mg/L	J	Y	Y	P	J		15				E045-02	22:49
				LEAD	.00367	mg/L	J	Y	Y	F	B		06B	15			E045-02	22:03
				MAGNESIUM	.266	mg/L	J	Y	Y	P	J		15				E045-02	22:49
				MANGANESE	.00733	mg/L	J	Y	Y	P	J		15				E045-02	22:49
				NICKEL	.02	mg/L	U	N	Y	U	U						E045-02	22:49
				POTASSIUM	2.94	mg/L	J	Y	Y	P	J		15				E045-02	22:49
				SELENIUM	.01	mg/L	U	N	Y	U	U						E045-02	22:03
				SILVER	.01	mg/L	U	N	Y	U	U						E045-02	22:49
				SODIUM	1.08	mg/L		Y	Y	P							E045-02	22:49
				THALLIUM	.01	mg/L	U	N	Y	U	U						E045-02	22:03
				VANADIUM	.01	mg/L	U	N	Y	U	U						E045-02	22:49
				ZINC	.02	mg/L	U	N	Y	U	U						E045-02	22:49
	SW7470A	TOTAL	N 0 1	MERCURY	.0005	mg/L	U	N	Y	U	U						E045-02	10:37
YE2006	SW6010B	SW3010	N 0 1	ALUMINUM	.623	mg/L		Y	Y	P							E045-03	22:53
				ANTIMONY	.1	mg/L	U	N	Y	U	U						E045-03	22:53
				ARSENIC	.01	mg/L	U	N	Y	U	U						E045-03	22:07
				BARIUM	.0516	mg/L		Y	Y	P							E045-03	22:53
				BERYLLIUM	.001	mg/L	U	N	Y	U	U						E045-03	22:53
				CADMIUM	.01	mg/L	U	N	Y	U	U						E045-03	22:53
				CALCIUM	.144	mg/L	J	Y	Y	F	B		06B	15			E045-03	22:53
				CHROMIUM	.01	mg/L	U	N	Y	U	U						E045-03	22:53
				COBALT	.02	mg/L	U	N	Y	U	U						E045-03	22:53
				COPPER	.02	mg/L	U	N	Y	U	U						E045-03	22:53
				IRON	.709	mg/L		Y	Y	P							E045-03	22:53
				LEAD	.0194	mg/L		Y	Y	P							E045-03	22:07
				MAGNESIUM	.235	mg/L	J	Y	Y	P	J		15				E045-03	22:53
				MANGANESE	.0152	mg/L		Y	Y	P							E045-03	22:53
				NICKEL	.02	mg/L	U	N	Y	U	U						E045-03	22:53

Validation Qualifier Data Entry Verification

Run Date: March 26, 2002

Fort McClellan

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10138Q-05																		
YE2006	SW6010B	SW3010	N 0 1	POTASSIUM	2.6	mg/L	J	Y	Y	P	J		15				E045-03	22:53
				SELENIUM	.01	mg/L	U	N	Y	U	U						E045-03	22:07
				SILVER	.01	mg/L	U	N	Y	U	U						E045-03	22:53
				SODIUM	.921	mg/L	J	Y	Y	P	J		15				E045-03	22:53
				THALLIUM	.01	mg/L	U	N	Y	U	U						E045-03	22:07
				VANADIUM	.01	mg/L	U	N	Y	U	U						E045-03	22:53
				ZINC	.02	mg/L	U	N	Y	U	U						E045-03	22:53
	SW7470A	TOTAL	N 0 1	MERCURY	.0005	mg/L	U	N	Y	U	U						E045-03	10:45
YE2007	SW6010B	SW3010	N 0 1	ALUMINUM	.221	mg/L		Y	Y	P							E045-04	22:58
				ANTIMONY	.1	mg/L	U	N	Y	U	U						E045-04	22:58
				ARSENIC	.01	mg/L	U	N	Y	U	U						E045-04	22:12
				BARIUM	.0238	mg/L		Y	Y	P							E045-04	22:58
				BERYLLIUM	.001	mg/L	U	N	Y	U	U						E045-04	22:58
				CADMIUM	.01	mg/L	U	N	Y	U	U						E045-04	22:58
				CALCIUM	1	mg/L	U	N	Y	U	U						E045-04	22:58
				CHROMIUM	.01	mg/L	U	N	Y	U	U						E045-04	22:58
				COBALT	.02	mg/L	U	N	Y	U	U						E045-04	22:58
				COPPER	.0051	mg/L	J	Y	Y	F	B		06B	15			E045-04	22:58
				IRON	.293	mg/L		Y	Y	P							E045-04	22:58
				LEAD	.00929	mg/L	J	Y	Y	P	J		15				E045-04	22:12
				MAGNESIUM	.155	mg/L	J	Y	Y	P	J		15				E045-04	22:58
				MANGANESE	.0103	mg/L		Y	Y	P							E045-04	22:58
				NICKEL	.02	mg/L	U	N	Y	U	U						E045-04	22:58
				POTASSIUM	2.27	mg/L	J	Y	Y	P	J		15				E045-04	22:58
				SELENIUM	.01	mg/L	U	N	Y	U	U						E045-04	22:12
				SILVER	.01	mg/L	U	N	Y	U	U						E045-04	22:58
				SODIUM	.868	mg/L	J	Y	Y	P	J		15				E045-04	22:58
				THALLIUM	.01	mg/L	U	N	Y	U	U						E045-04	22:12
				VANADIUM	.01	mg/L	U	N	Y	U	U						E045-04	22:58
				ZINC	.02	mg/L	U	N	Y	U	U						E045-04	22:58
	SW7470A	TOTAL	N 0 1	MERCURY	.0005	mg/L	U	N	Y	U	U						E045-04	10:47
YE2008	SW6010B	SW3010	N 0 1	ALUMINUM	2.19	mg/L		Y	Y	P							E045-05	23:02
				ANTIMONY	.1	mg/L	U	N	Y	U	U						E045-05	23:02
				ARSENIC	.01	mg/L	U	N	Y	U	U						E045-05	22:16
				BARIUM	.14	mg/L		Y	Y	P							E045-05	23:02
				BERYLLIUM	.00065	mg/L	J	Y	Y	P	J		15				E045-05	23:02
				CADMIUM	.01	mg/L	U	N	Y	U	U						E045-05	23:02
				CALCIUM	.592	mg/L	J	Y	Y	P	J		15				E045-05	23:02
				CHROMIUM	.01	mg/L	U	N	Y	U	U						E045-05	23:02
				COBALT	.02	mg/L	U	N	Y	U	U						E045-05	23:02

Validation Qualifier Data Entry Verification

Run Date: March 26, 2002

Fort McClellan

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10138Q-05																		
YE2008	SW6010B	SW3010	N 0 1	COPPER	.0131	mg/L	J	Y	Y	P	J		15				E045-05	23:02
				IRON	3.78	mg/L		Y	Y	P							E045-05	23:02
				LEAD	.0453	mg/L		Y	Y	P							E045-05	22:16
				MAGNESIUM	.364	mg/L	J	Y	Y	P	J		15				E045-05	23:02
				MANGANESE	.0242	mg/L		Y	Y	P							E045-05	23:02
				NICKEL	.02	mg/L	U	N	Y	U	U						E045-05	23:02
				POTASSIUM	3.25	mg/L	J	Y	Y	P	J		15				E045-05	23:02
				SELENIUM	.01	mg/L	U	N	Y	U	U						E045-05	22:16
				SILVER	.01	mg/L	U	N	Y	U	U						E045-05	23:02
				SODIUM	1.08	mg/L		Y	Y	P							E045-05	23:02
				THALLIUM	.01	mg/L	U	N	Y	U	U						E045-05	22:16
				VANADIUM	.00405	mg/L	J	Y	Y	P	J		15				E045-05	23:02
				ZINC	.011	mg/L	J	Y	Y	P	J		15				E045-05	23:02
	SW7470A	TOTAL	N 0 1	MERCURY	.0005	mg/L	U	N	Y	U	U						E045-05	10:49
YE2002	SW8330	METHOD	N 0 1	1,3,5-TNB	.0004	mg/L	U	N	Y	U	U						E045-01R	18:48
				1,3-DNB	.0004	mg/L	U	N	Y	U	U						E045-01R	18:48
				2,4,6-TNT	.0004	mg/L	U	N	Y	U	U						E045-01R	18:48
				2,4-DNT	.0004	mg/L	U	N	Y	U	U						E045-01R	18:48
				2,6-DNT	.0004	mg/L	U	N	Y	U	U						E045-01R	18:48
				2-AM-4,6-DNT	.0004	mg/L	U	N	Y	U	U						E045-01R	18:48
				2-NITROTOLUENE	.0004	mg/L	U	N	Y	U	U						E045-01R	18:48
				3-NITROTOLUENE	.0004	mg/L	U	N	Y	U	U						E045-01R	18:48
				4-AM-2,6-DNT	.0004	mg/L	U	N	Y	U	U						E045-01R	18:48
				4-NITROTOLUENE	.0004	mg/L	U	N	Y	U	U						E045-01R	18:48
				HMX	.001	mg/L	U	N	Y	U	U						E045-01R	18:48
				NITROBENZENE	.0004	mg/L	U	N	Y	U	U						E045-01R	18:48
				RDX	.0004	mg/L	U	N	Y	U	U						E045-01R	18:48
				TETRYL	.0004	mg/L	U	N	Y	U	U						E045-01R	18:48
YE2003	SW8330	METHOD	N 0 1	1,3,5-TNB	.0004	mg/L	U	N	Y	U	U						E045-02R	20:05
				1,3-DNB	.0004	mg/L	U	N	Y	U	U						E045-02R	20:05
				2,4,6-TNT	.0004	mg/L	U	N	Y	U	U						E045-02R	20:05
				2,4-DNT	.0004	mg/L	U	N	Y	U	U						E045-02R	20:05
				2,6-DNT	.0004	mg/L	U	N	Y	U	U						E045-02R	20:05
				2-AM-4,6-DNT	.0004	mg/L	U	N	Y	U	U						E045-02R	20:05
				2-NITROTOLUENE	.0004	mg/L	U	N	Y	U	U						E045-02R	20:05
				3-NITROTOLUENE	.0004	mg/L	U	N	Y	U	U						E045-02R	20:05
				4-AM-2,6-DNT	.0004	mg/L	U	N	Y	U	U						E045-02R	20:05
				4-NITROTOLUENE	.0004	mg/L	U	N	Y	U	U						E045-02R	20:05
				HMX	.001	mg/L	U	N	Y	U	U						E045-02R	20:05
				NITROBENZENE	.0004	mg/L	U	N	Y	U	U						E045-02R	20:05

Validation Qualifier Data Entry Verification

Run Date: March 26, 2002

Fort McClellan

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10138Q-05																		
YE2003	SW8330	METHOD	N 0 1	RDX	.0004	mg/L	U	N	Y	U	U						E045-02R	20:05
				TETRYL	.0004	mg/L	U	N	Y	U	U						E045-02R	20:05
YE2006	SW8330	METHOD	N 0 1	1,3,5-TNB	.0004	mg/L	U	N	Y	U	U						E045-03R	20:44
				1,3-DNB	.0004	mg/L	U	N	Y	U	U						E045-03R	20:44
				2,4,6-TNT	.0004	mg/L	U	N	Y	U	U						E045-03R	20:44
				2,4-DNT	.0004	mg/L	U	N	Y	U	U						E045-03R	20:44
				2,6-DNT	.0004	mg/L	U	N	Y	U	U						E045-03R	20:44
				2-AM-4,6-DNT	.0004	mg/L	U	N	Y	U	U						E045-03R	20:44
				2-NITROTOLUENE	.0004	mg/L	U	N	Y	U	U						E045-03R	20:44
				3-NITROTOLUENE	.0004	mg/L	U	N	Y	U	U						E045-03R	20:44
				4-AM-2,6-DNT	.0004	mg/L	U	N	Y	U	U						E045-03R	20:44
				4-NITROTOLUENE	.0004	mg/L	U	N	Y	U	U						E045-03R	20:44
				HMX	.001	mg/L	U	N	Y	U	U						E045-03R	20:44
				NITROBENZENE	.0004	mg/L	U	N	Y	U	U						E045-03R	20:44
				RDX	.0004	mg/L	U	N	Y	U	U						E045-03R	20:44
				TETRYL	.0004	mg/L	U	N	Y	U	U						E045-03R	20:44
YE2007	SW8330	METHOD	N 0 1	1,3,5-TNB	.0004	mg/L	U	N	Y	U	U						E045-04R	21:22
				1,3-DNB	.0004	mg/L	U	N	Y	U	U						E045-04R	21:22
				2,4,6-TNT	.0004	mg/L	U	N	Y	U	U						E045-04R	21:22
				2,4-DNT	.0004	mg/L	U	N	Y	U	U						E045-04R	21:22
				2,6-DNT	.0004	mg/L	U	N	Y	U	U						E045-04R	21:22
				2-AM-4,6-DNT	.0004	mg/L	U	N	Y	U	U						E045-04R	21:22
				2-NITROTOLUENE	.0004	mg/L	U	N	Y	U	U						E045-04R	21:22
				3-NITROTOLUENE	.0004	mg/L	U	N	Y	U	U						E045-04R	21:22
				4-AM-2,6-DNT	.0004	mg/L	U	N	Y	U	U						E045-04R	21:22
				4-NITROTOLUENE	.0004	mg/L	U	N	Y	U	U						E045-04R	21:22
				HMX	.001	mg/L	U	N	Y	U	U						E045-04R	21:22
				NITROBENZENE	.0004	mg/L	U	N	Y	U	U						E045-04R	21:22
				RDX	.0004	mg/L	U	N	Y	U	U						E045-04R	21:22
				TETRYL	.0004	mg/L	U	N	Y	U	U						E045-04R	21:22
YE2008	SW8330	METHOD	N 0 1	1,3,5-TNB	.0004	mg/L	U	N	Y	U	U						E045-05R	22:00
				1,3-DNB	.0004	mg/L	U	N	Y	U	U						E045-05R	22:00
				2,4,6-TNT	.0004	mg/L	U	N	Y	U	U						E045-05R	22:00
				2,4-DNT	.0004	mg/L	U	N	Y	U	U						E045-05R	22:00
				2,6-DNT	.0004	mg/L	U	N	Y	U	U						E045-05R	22:00
				2-AM-4,6-DNT	.0004	mg/L	U	N	Y	U	U						E045-05R	22:00
				2-NITROTOLUENE	.0004	mg/L	U	N	Y	U	U						E045-05R	22:00
				3-NITROTOLUENE	.0004	mg/L	U	N	Y	U	U						E045-05R	22:00
				4-AM-2,6-DNT	.0004	mg/L	U	N	Y	U	U						E045-05R	22:00
				4-NITROTOLUENE	.0004	mg/L	U	N	Y	U	U						E045-05R	22:00

Validation Qualifier Data Entry Verification
Fort McClellan

Run Date: March 26, 2002

Sample Number:	Analytical/Extraction Method:		Flt	REX	Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10138Q-05																				
YE2008	SW8330	METHOD	N	0	1	HMX	.001	mg/L	U	N	Y	U	U						E045-05R	22:00
						NITROBENZENE	.0004	mg/L	U	N	Y	U	U						E045-05R	22:00
						RDX	.0004	mg/L	U	N	Y	U	U						E045-05R	22:00
						TETRYL	.0004	mg/L	U	N	Y	U	U						E045-05R	22:00
YE2002	E314.0	NONE	N	0	1	PERCHLORATE	.005	mg/L	U	N	Y	U	U						E045-01	02:27
YE2003	E314.0	NONE	N	0	1	PERCHLORATE	.005	mg/L	U	N	Y	U	U						E045-02	02:44
YE2006	E314.0	NONE	N	0	1	PERCHLORATE	.005	mg/L	U	N	Y	U	U						E045-03	03:01
YE2007	E314.0	NONE	N	0	1	PERCHLORATE	.005	mg/L	U	N	Y	U	U						E045-04	05:18
YE2008	E314.0	NONE	N	0	1	PERCHLORATE	.005	mg/L	U	N	Y	U	U						E045-05	06:10
10138Q-06																				
YE2006R	SW6010B	SW3010	N	0	1	LEAD	.00437	mg/L	J	Y	Y		J		15				A039-02	13:04
YE2007R	SW6010B	SW3010	N	0	1	LEAD	.00321	mg/L	J	Y	Y		J		15				A039-03	13:10
YE2008R	SW6010B	SW3010	N	0	1	LEAD	.002	mg/L	J	Y	Y		J		15				A039-04	13:15

Quality Assurance Report
For Site Investigation Performed at Artillery and Mortar Impact Areas
South of Bains Gap Road
Parcel HR-139Q
IT Project No 796887
Fort McClellan Quality Assurance Report

1.0 Overview

Five soil samples, one sediment sample and one surface water sample were collected in support of the investigation at Fort McClellan (FTMC) Parcel HR-139Q, Artillery and Mortar Impact Areas South of Bains Gap Road. All samples were submitted to EMAX Laboratories, Inc. for analysis. QC samples consisted of the following types and quantities: 1 field duplicate and 2 equipment rinsates. An analytical summary table cross-referencing sample location, sample number, and contaminants of concern is presented in Attachment A.

One hundred (100%) percent of samples were validated and reviewed in accordance with the *USEPA Contract Laboratory Program National Functional Guidelines for Evaluating Inorganic Data Review (EPA, February 1994)* and *USEPA Contract Laboratory Program National Functional Guidelines for Organic Review (EPA, October 1999)* for all areas except blanks. Region III *Laboratory Data Validation Functional Guidelines for Inorganic Analyses (EPA, April 1993)* and Region III *National Functional Guidelines for Organic Data Review (EPA, June 1992)* were applied to the areas associated with blank contamination. Data qualifiers assigned to results were based on guidance outlined in the referenced documents and the *Installation-Wide Sampling and Analysis Plan (IT, March 2000)* for FTMC.

Table 1.0-1
Laboratory Data Qualifier Definitions

Data Qualifier	Laboratory Data Qualifier Definition
B	Analyte detected in method blank at concentration greater than the reporting limit (and greater than zero).
C	Confirming data obtained using second GC column or GC/MS.
E	Analyte concentration exceeded calibration range.
I	Analyte identification suspect. See narrative for explanation.
J	Result is less than or equal to specified reporting limit but greater than the method detection limit (MDL).
P	Analyte not confirmed. Results from primary and secondary GC columns differ by greater than 10 percent
S	Analyte concentration obtained using Method of Standard Additions (MSA).
U	Not detected. The value represented indicates the reporting limit for the analysis.
D	Sample analyzed as a dilution. The result reported has been calculated using the appropriate dilution factor.
No Code	Confirmed identification.

Table 1.0-2
Validation Data Qualifier Definitions

Validation Qualifier	Validation Data Qualifier Definition
U	Not detected. The associated number indicates approximate sample concentration necessary to be detected.
No Code	Confirmed identification.
B	Not detected substantially above the level reported in laboratory or field blanks.
R	Unusable result. Analyte may or may not be present in the sample.
N	Tentative identification. Consider present. Special methods may be needed to confirm its presence or absence in future sampling efforts.
J	Analyte present. Reported value may not be accurate or precise. Considered an estimate.
NJ	Qualitative identification questionable due to poor resolution. Presumptively present at approximate quantity.
NV	Result was not validated.

The Data Validation Summary Report is presented in Attachment B.

2.0 Summary

Data were evaluated to verify compliance with precision, accuracy, representativeness, comparability, completeness, and sensitivity. To verify that project data quality objectives (DQOs) were met, laboratory analytical results and data packages were examined for compliance with SW846 8330, 6010B/7470A/7471A, 9060 and Environmental Protection Agency (EPA) 314.0 quality control (QC) method criteria. Laboratory nonconformances and discrepancies in the data were also examined to determine their impact on the data. The results of this review are presented in the following sections.

2.1 Sample Receipt and Analytical Holding Times

All sample results generated by the laboratory during this investigation have been reviewed with respect to condition of samples as received by the laboratory, chain-of-custody, and analysis holding times. All coolers were received by EMAX in good condition under proper chain-of-custody.

All extraction and analytical holding times were met.

2.2 Rejected Data

No data were qualified by the laboratory or after validation was completed as being rejected ("R"-flagged).

2.3 Blank Results

Descriptions of the types of blank samples which were collected, processed, and evaluated for background and/or process contamination during this sampling are as follows:

- Equipment rinsates (ER) are samples of analyte-free deionized water poured into, over, or pumped through the sampling device, collected in a sample container, and transported to the laboratory for analysis. Equipment rinsates are used to assess the effectiveness of equipment decontamination procedures.

- Method blanks (MB) are used in the laboratory to assess and document any possible contamination resulting from the analytical process. A method blank is an analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank shall be carried through the complete sample preparation and analytical procedure.

- Initial and continuing calibration blanks (ICB and CCB) are instrument blanks consisting of an analyte-free matrix. ICBs and CCBs are analyzed to verify the analysis system is free of contamination and are analyzed immediately after the initial and continuing calibrations are performed.

Field sample concentrations were evaluated to determine if the sample results could have been biased by the presence of any contamination measured in equipment rinsate blanks, method blanks and/or initial/continuing calibration blanks. Sample data affected by blank contamination are summarized in Table 2.3-1.

Table 2.3-1
Summary of Blank Contamination

Sample Delivery Group	Sample Number	Contaminant	Action
10139Q-01	YG0001, YG0002, YG0003 and YG0005	Cobalt	Cobalt results for samples YG0001, YG0002, YG0003 and YG0005 were "B" qualified due to ICB/CCB and MB contamination.
	YG0003	Potassium	Potassium result for sample YG0003 was "B" qualified due to ICB/CCB and MB contamination.
	YG0002 and YG0005	Silver	Silver results for samples YG0002 and YG0005 were "B" qualified due to ICB/CCB contamination.
10139Q-02	YG1001	Beryllium Cobalt	Beryllium and Cobalt results for sample YG1001 were "B" qualified due to ICB/CCB contamination.

2.4 Analytical Precision

Precision is defined as a measurement of mutual agreement among individual measurements of the same property, usually under "prescribed similar conditions." Analytical precision is calculated as relative percent difference (%RPD) based on the following formula:

$$\%RPD = \left| \frac{(A-B)}{(A+B)/2} \right| \times 100$$

where:

%RPD = Relative Percent Difference
A = original result
B = duplicate result

A high RPD between an original sample and its field duplicate may be attributable to the difference in sample matrix or distribution of the contaminant within the sample, rather than the precision of the collection process. Also, when "estimated" results are reported, there is a potential for increased variability between the primary and duplicate sample results. This occurs because, at low concentrations, the relative difference in results is magnified by the RPD calculation even though the results are comparable in absolute terms. There is also increased uncertainty in the results as the lower limit of detection is approached, due to decreasing analytical accuracy. The RPD calculation cannot be performed in cases where non-detected results are reported with corresponding samples that contain detectable concentrations.

Overall sampling and analysis precision for this task was assessed using field duplicate (FD) samples. Laboratory precision was assessed by laboratory control sample/laboratory control sample duplicate (LCS/LCSD) and matrix spike/matrix spike duplicate (MS/MSD) recoveries. Results indicate that an acceptable analytical precision was achieved. Table 2.4-1 lists precision acceptance criteria for LCS/LCSD, MS/MSD organic analyses and field duplicate comparisons.

Table 2.4-1 Precision Acceptance Criteria

Field/Laboratory QC Type	Matrix	
	Aqueous	Soil
Field Duplicate (Both Organic & Inorganic)	RPD < 35%	RPD < 50%
Perchlorate LCS/LCSD and MS/MSD	RPD < 10%	RPD < 20%
Nitroaromatic and Nitramine Explosives LCS/LCSD and MS/MSD	Refer to Table 8-1 of FTMC "Installation Wide Sample and Analysis Plan"	Refer to Table 8-1 of FTMC "Installation Wide Sample and Analysis Plan"
Metals LCS/LCSD and MS/MSD	RPD < 20%	RPD < 20%

2.5 Analytical Accuracy Assessment

Accuracy is a measure of the degree of agreement of a result against an accepted reference or true value. Accuracy is expressed as a percent recovery (%R) calculated by the ratio of the measurement and accepted true value as shown in the following equation:

$$\%R = (|X_s - X_u|/K) \times 100$$

where:

X_s = measured value of the spiked sample
X_u = measured value of the unspiked sample
K = known amount of the spike in the sample

Surrogate recoveries, MS/MSD and LCS/LCSD were used to measure analytical accuracy as described in SW846 8330, 6010B/7470A/7471A, 9060 and EPA 314.0. Reported results indicate that an acceptable level of analytical accuracy was achieved. Surrogate, LCS/LCSD and MS/MSD spike recoveries, which exceed QC criteria are summarized in Table 2.5-1.

Table 2.5-1
Summary of Surrogate, LCS/LCSD and MS/MSD Spike Recovery Criteria Exceedances

Sample Delivery Group	Sample Number	Contaminant	Action
10139Q-01	YG0001, YG0002, YG0003, YG0004 and YG0005	Antimony (LB)	Antimony results for samples YG0001 through YG0005 were "J" / "UJ" qualified due to MS/MSD spike recoveries exceeding QC criteria.

LB - Low bias

2.6 Data Representativeness

Representativeness is a qualitative parameter that expresses the degree to which sample data actually represent the matrix conditions. Standardized requirements and procedures for sample collection, handling and analyses were employed to maximize sample representativeness.

Sample locations selected for this investigation will confirm whether contaminant releases into the environment have occurred and if contaminated soil exists at this parcel.

2.7 Data Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. By employing well-recognized techniques and accepted standardized methods for sampling and analysis, data comparability was achieved during this sampling event.

2.8 Data Completeness

Completeness is calculated for the aggregation of data for each analyte measured during the investigation of Parcel HR-139Q, Artillery and Mortar Impact Areas South of Bains Gap Road. The formula for calculating completeness is listed below:

$$\% \text{ Completeness} = (X_V / X_T) \times 100$$

where:

X_V = number of valid (i.e., non-"R"-flagged) results
X_T = number of possible results

Parcel HR-139Q goal for completeness is 95% for both aqueous and soil samples. The % Completeness for this task is calculated to be 100%.

- % Completeness = (267 / 267) x 100 = 100%

2.9 Sensitivity

Sensitivity is defined as the ability of the laboratory's established method detection limits (MDL)/method reporting limits (MRL or RL) to meet project-specific DQOs or site-specific screening levels (SSSL) and or ecological screening values (ESV).

MDL is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero. MDLs are determined from an analysis of a sample in a given matrix containing the target analyte of interest. The MRL is a threshold value based upon the sensitivity capability of method and instrument. MRLs are normally set at a minimum of two times the MDL. MRLs are adjusted based on the sample matrix, moisture (solids only), and any necessary sample dilutions. The laboratory cannot reliably quantitate values reported above the MDL but below the MRL. Therefore, these analyte values must be flagged as estimated quantities ("J"-flagged).

To evaluate method sensitivity, a general comparison of the laboratory's MDLs/MRLs and the site investigation screening levels (background values, human health SSSL for residential reuse, and ESV) was performed and presented to the FTMC Base Realignment and Closure Team (BCT)

(November 1999). The comparison summarized the relationship between the MDL/MRLs and SSSL/ESVs for each parameter typically reported for all of the major analytical methods used at FTMC. The few cases identified where the MDL and/or MRL values exceeded their corresponding human health SSSL and/or ESV were specifically highlighted and explained. It was understood that for these cases, the standard analytical method of analysis was not going to provide MDLs/MRLs, which met human health SSSLs or ESVs without significant uncertainty and the possibility of reporting false negatives. It was generally accepted that standard EPA SW846 analytical methods would provide sufficient sensitivity for data reported and used in the site screening process at FTMC.

3.0 Data Usability

Data quality indicators (DQI) provide an internal guide for control and review to verify that data are scientifically sound, defensible, and of known and acceptable quality. Factors such as precision, accuracy, representativeness, comparability, completeness, and sensitivity were evaluated to determine if the project's DQOs were met. A review of the data revealed that the majority of QA/QC indicators were within acceptable control limits. Any data anomalies encountered during data validation and overall site evaluations have been summarized in the previous sections of this document.

Based on the results of data validation and QA review, IT has concluded that representative samples were collected and analyzed and the results are indicative of the media analyzed. The data are to be considered representative of site conditions and are usable for their intended purpose.

4.0 Attachments

Attachment A - Analytical Summary Table
Attachment B - Data Validation Summary Report

ATTACHMENT A

ANALYTICAL SUMMARY TABLE

Ft. McClellan
Parcel HR-139Q
Artillery and Mortar Impact Areas South of Bains Gap Road
Analytical Summary
Project No. 796887

HR-139Q Soil Sampling

Sample Location	Sample Name	Sample Number	Date Sampled	Analytical Suite
HR-139Q-GP01	HR-139Q-GP01-SS-YG0001-REG	YG0001	08-Feb-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
	HR-139Q-GP01-DS-YG0002-REG	YG0002	08-Feb-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
HR-139Q-GP02	HR-139Q-GP02-SS-YG0003-REG	YG0003	07-Feb-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
	HR-139Q-GP02-DS-YG0004-REG	YG0004	07-Feb-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
	HR-139Q-GP02-DS-YG0005-FD	YG0005	07-Feb-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.

HR-139Q Sediment and Surface Water Sampling

Sample Location	Sample Name	Sample Number	Date Sampled	Analytical Suite
HR-139Q-SD/SW01	HR-139Q-SD/SW01-SD-YG1001-REG	YG1001	25-Apr-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330, Perchlorate by EPA 314.0 and Total Organic Carbon by SW9060.
	HR-139Q-SD/SW01-SW-YG2001-REG	YG2001	25-Apr-01	TAL Metals by SW6010B/SW7470, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.

ATTACHMENT B

DATA VALIDATION SUMMARY REPORT

Data Validation Summary Report
For the Site Investigation Performed at the
"Artillery and Motor Impact Areas South of Bains Gap" (Parcel HR-139Q)
Fort McClellan, Calhoun County, Alabama

1.0 Introduction

Level III data validation was performed on 100% of the environmental samples collected for CK10 (Parcel HR-139Q). The analytical data consisted of three sample delivery groups (SDG), 10139Q-01, 10139Q-02, and 10139Q-03, which were analyzed by EMAX Laboratories. The chemical parameters for which the samples were analyzed and validated are identified below:

Parameter (Method)
TAL Metals by SW846 6010B/7470A/7471A
Nitroaromatic and Nitramine Explosives by SW846 8330
Perchlorate by EPA 314.0 and Total Organic Carbon (TOC) by SW846 9060

2.0 Procedures

The sample data were validated following the logic identified in the *USEPA Contract Laboratory Program (CLP) National Functional Guidelines For Inorganic Data Review (February 1994)* and *USEPA Contract Laboratory Program National Functional Guidelines For Organic Review (October 1999)* for all areas except Blanks. *Region III Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses (April 1993)* and *Region III National Functional Guidelines for Organic Data Review (June 1992)* were applied to the areas associated with blank contamination. Specific quality control (QC) criteria, as identified in the Quality Assurance Plan (QAP), analytical methods, and laboratory Standard Operating Procedures (SOP's) were applied to all sample results. As the result of the use of Update III SW846 test methods for the analytical data and the application of the CLP guidelines during the validation process, there were instances where specific QC requirements for all target compounds were not defined. This primarily occurred in the organic, Gas Chromatograph (GC) and Gas Chromatograph/Mass Spectra (GC/MS) calibration areas and is due to the fact that the analytical methods are performance-based, and allows the use of average calibration responses, in lieu of, individual responses, which are defined by CLP protocol. In light of applying CLP guidelines to SW846 methods and evaluating the usability of the data during the validation process, specific QC criteria were determined to address all target compounds and are identified in this report for each parameter, as well as, in the validation checklists, which function as worksheets. All completed validation checklists are on file in the Knoxville office.

For those analytical methods not addressed by the CLP and Region III guidelines, the validation was based on the method requirements (i. e. SW846, CFR, SOP's) and technical judgement, following the logic of the CLP validation guidelines.

3.0 Summary of Data Validation Findings

The overall quality of the data was determined to be acceptable with minimal qualifications. No data were rejected.

Individual validation reports have been prepared for each parameter and the overall results of the validation findings are summarized in this report. The validation qualifier data entry verification report (Attachment A) is also provided. This is a complete listing of all of the analytical results and the validation qualifiers assigned for HR-139Q. It also identifies the "use" column, which indicates which result to use in the event of a reanalysis. A listing of the validation qualifiers and the reason codes, along with their definitions are also found in Attachment A. The following section highlights the key findings of the data validation for each analysis.

4.0 Analysis-Specific Data Validation Summaries

4.1 Metals by SW-846 6010B/7471A/7470A

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all samples.

Preservation

All samples were properly preserved.

Initial and Continuing Calibrations

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse, calibration, and method blanks was applied to all sample results. All were found to be acceptable with the exception of the following:

SDG Number	Sample Number	Compound	Blank Contaminant	Validation Qualifier
10139Q-01	YG0001, YG0002, YG0003, YG0005	Cobalt	Calibration/Method	B
	YG0003	Potassium	Calibration/Method	B
	YG0002, YG0005	Silver	Calibration	B
10139Q-02	YG1001	Beryllium, Cobalt	Calibration	B

Matrix Spike / Matrix Spike Duplicate
MS/MSD analysis was performed for the project samples and all QC criteria were met with the exception of the following, which exhibited recovery and/or RPD problems:

SDG Number	Sample Number	Compound	Validation Qualifier
10139Q-01	YG0001, YG0002, YG0003, YG0004, YG0005	Antimony	J/UJ

Laboratory Control Sample (LCS)
LCS was performed for the project samples and all QC criteria were met.

Interference Check Sample (ICS)
All ICS % recoveries were acceptable. All QC criteria were met.

ICP Serial Dilutions
All QC criteria were met for the serial dilutions associated with the project samples with the exception of the following:

SDG Number	Sample Number	Compound	Validation Qualifier
10139Q-01	YG0001, YG0002, YG0003, YG0004, YG0005	Chromium, Vanadium	J

Field Duplicates
Original and field duplicate results were evaluated and all QC criteria were met.

Quantitation
Results quantitated between the IDL and the RL ("B" flagged by the laboratory) were qualified as estimated (J).

4.2 Nitroaromatic and Nitramine Explosives by SW846 8330

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike / Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and field duplicate results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as J, were qualified as estimated J unless blank contamination was present or the results were rejected.

4.3. Perchlorates by EPA 314.0 and TOC by SW846 9060

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all samples. All was acceptable no qualification was necessary.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinses and method blanks was applied to all sample results. All were found to be acceptable, no qualification was necessary.

Matrix Spike / Matrix Spike Duplicate

MS/MSD were performed for the project samples, and all QC criteria were met. No qualification was necessary.

Laboratory Control Sample

Laboratory Control Sample (LCS) was performed for the project samples and all QC criteria were met. No qualification was necessary.

Field Duplicates

Original and field duplicate results were evaluated and no problems were noted.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as "J," were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

Validation Qualifiers

U Not detected. The compound/analyte was analyzed for, but not detected above the associated reporting limit.

J The compound/analyte was positively identified; the reported value is the estimated concentration of the constituent detected in the sample analyzed.

B The concentration reported was detected significantly above the levels reported in the associated equipment rinse samples and/or laboratory method and trip blanks. (5X/10X Rule was applied).

R The reported sample results are rejected due to the following:

1. Severe deficiencies in the supporting quality control data.
2. Anomalies noted in the sampling and/or analysis process which could affect the validity of the reported data.
3. The presence or absence of the constituent cannot be verified based on the data provided.
4. To indicate not to use a particular result in the event of a reanalysis.

UJ The compound/analyte was analyzed for, but not detected above the established reporting limit. However, review and evaluation of supporting QC data and/or sampling and analysis process have indicated that the "nondetect" may be inaccurate or imprecise. The nondetect result should be estimated.

Validation Reason Code Definitions

Reason Code	Description
01	Sample received outside of 4+/-2 degrees Celsius
01A	Improper sample preservation
02	Holding time exceeded
02A	Extraction
02B	Analysis
03	Instrument performance – outside criteria
03A	BFB
03B	DFTPP
03C	DDT and/or Endrin % breakdown exceeds criteria
03D	Retention time windows
03E	Resolution
04	Initial calibration results outside specified criteria
04A	Compound mean RRF QC criteria not met
04B	Individual % RSD criteria not met
04C	Correlation coefficient >0.995
05	Continuing calibration results outside specified criteria
05A	Compound mean RRF QC criteria not met
05B	Compound % D QC criteria not met
06	Result qualified as a result of the 5x/10x blank correction
06A	Method or preparation blank
06B	ICB or CCB
06C	ER
06D	TB
06E	FB
07	Surrogate recoveries outside control limits
07A	Sample
07B	Associated method blank or LCS
08	MS/MSD/Duplicate results outside criteria
08A	MS and/or MSD recovery not within control limits (accuracy)
08B	% RPD outside acceptance criteria (precision)
09	Post digestion spike outside criteria (GFAA)
10	Internal standards outside specified control limits
10A	Recovery
10B	Retention time
11	Laboratory control sample recoveries outside specified limits
11A	Recovery
11B	% RPD (if run in duplicate)
12	Interference check standard
13	Serial dilution
14	Tentatively identified compounds
15	Quantitation
16	Multiple results available; alternate analysis preferred
17	Field duplicate RPD criteria is exceeded
18	Percent difference between original and second column exceeds QC criteria
19	Professional judgement was used to qualify the data
20	Pesticide clean-up checks
21	Target compound identification
22	Radiological calibration
23	Radiological quantitation
24	Reported result and/or lab qualifier revised to reflect validation findings

Validation Qualifier Data Entry Verification

Run Date: March 25, 2002

Fort McClellan

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10139Q-01																		
YG0001	SW6010B	SW3050	N 0 1	ALUMINUM	7810	mg/kg		Y	Y	P							B102-01	18:03
				ANTIMONY	12.1	mg/kg	U	N	Y	U	UJ		08A				B102-01	18:03
				ARSENIC	5.52	mg/kg		Y	Y	P							B102-01	16:10
				BARIUM	43.1	mg/kg		Y	Y	P							B102-01	18:03
				BERYLLIUM	.565	mg/kg	J	Y	Y	P	J		15				B102-01	18:03
				CADMIUM	.605	mg/kg	U	N	Y	U	U						B102-01	18:03
				CALCIUM	306	mg/kg		Y	Y	P							B102-01	18:03
				CHROMIUM	6.03	mg/kg		Y	Y	P	J		13				B102-01	18:03
				COBALT	1.63	mg/kg	J	Y	Y	F	B		06A	06B			B102-01	18:03
				COPPER	8.07	mg/kg		Y	Y	P							B102-01	18:03
				IRON	8920	mg/kg		Y	Y	P							B102-01	18:03
				LEAD	6.47	mg/kg		Y	Y	P							B102-01	16:10
				MAGNESIUM	344	mg/kg		Y	Y	P							B102-01	18:03
				MANGANESE	98.3	mg/kg		Y	Y	P							B102-01	18:03
				NICKEL	2.82	mg/kg		Y	Y	P							B102-01	18:03
				POTASSIUM	2890	mg/kg		Y	Y	P							B102-01	18:03
				SELENIUM	1.21	mg/kg	U	N	Y	U	U						B102-01	16:10
				SILVER	1.21	mg/kg	U	N	Y	U	U						B102-01	18:03
				SODIUM	121	mg/kg	U	N	Y	U	U						B102-01	18:03
				THALLIUM	2.42	mg/kg	U	N	Y	U	U						B102-01	16:10
				VANADIUM	9.44	mg/kg		Y	Y	P	J		13				B102-01	18:03
				ZINC	7.64	mg/kg		Y	Y	P							B102-01	18:03
	SW7471A	TOTAL	N 0 1	MERCURY	.027	mg/kg	J	Y	Y	P	J		15				B102-01	14:26
YG0002	SW6010B	SW3050	N 0 1	ALUMINUM	8640	mg/kg		Y	Y	P							B102-02	18:07
				ANTIMONY	11.9	mg/kg	U	N	Y	U	UJ		08A				B102-02	18:07
				ARSENIC	5.01	mg/kg		Y	Y	P							B102-02	16:15
				BARIUM	33.6	mg/kg		Y	Y	P							B102-02	18:07
				BERYLLIUM	.672	mg/kg	J	Y	Y	P	J		15				B102-02	18:07
				CADMIUM	.594	mg/kg	U	N	Y	U	U						B102-02	18:07
				CALCIUM	28.1	mg/kg	J	Y	Y	P	J		15				B102-02	18:07
				CHROMIUM	8.39	mg/kg		Y	Y	P	J		13				B102-02	18:07
				COBALT	.834	mg/kg	J	Y	Y	F	B		06A	06B			B102-02	18:07
				COPPER	12.1	mg/kg		Y	Y	P							B102-02	18:07
				IRON	12700	mg/kg		Y	Y	P							B102-02	18:07
				LEAD	4.28	mg/kg		Y	Y	P							B102-02	16:15
				MAGNESIUM	343	mg/kg		Y	Y	P							B102-02	18:07
				MANGANESE	6.4	mg/kg		Y	Y	P							B102-02	18:07
				NICKEL	2.68	mg/kg		Y	Y	P							B102-02	18:07
				POTASSIUM	3770	mg/kg		Y	Y	P							B102-02	18:07
				SELENIUM	1.19	mg/kg	U	N	Y	U	U						B102-02	16:15

Validation Qualifier Data Entry Verification
Fort McClellan

Run Date: March 25, 2002

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10139Q-01																		
YG0002	SW6010B	SW3050	N 0 1	SILVER	.506	mg/kg	J	Y	Y	F	B		06B				B102-02	18:07
				SODIUM	119	mg/kg	U	N	Y	U	U						B102-02	18:07
				THALLIUM	2.38	mg/kg	U	N	Y	U	U						B102-02	16:15
				VANADIUM	10.6	mg/kg		Y	Y	P	J		13				B102-02	18:07
				ZINC	6.71	mg/kg		Y	Y	P							B102-02	18:07
	SW7471A	TOTAL	N 0 1	MERCURY	.119	mg/kg	U	N	Y	U	U						B102-02	14:29
YG0003	SW6010B	SW3050	N 0 1	ALUMINUM	9250	mg/kg		Y	Y	P							B093-01	18:48
				ANTIMONY	13	mg/kg	U	N	Y	U	UJ		08A				B093-01	18:48
				ARSENIC	3.97	mg/kg		Y	Y	P							B093-01	16:53
				BARIUM	83.6	mg/kg		Y	Y	P							B093-01	18:48
				BERYLLIUM	.522	mg/kg	J	Y	Y	P	J		15				B093-01	18:48
				CADMIUM	.652	mg/kg	U	N	Y	U	U						B093-01	18:48
				CALCIUM	496	mg/kg		Y	Y	P							B093-01	18:48
				CHROMIUM	6.31	mg/kg		Y	Y	P	J		13				B093-01	18:48
				COBALT	1.55	mg/kg	J	Y	Y	F	B		06A				B093-01	18:48
				COPPER	7.35	mg/kg		Y	Y	P							B093-01	18:48
				IRON	7900	mg/kg		Y	Y	P							B093-01	18:48
				LEAD	32.9	mg/kg		Y	Y	P							B093-01	16:53
				MAGNESIUM	325	mg/kg		Y	Y	P							B093-01	18:48
				MANGANESE	134	mg/kg		Y	Y	P							B093-01	18:48
				NICKEL	3.07	mg/kg		Y	Y	P							B093-01	18:48
				POTASSIUM	344	mg/kg	J	Y	Y	F	B		06A	06B			B093-01	18:48
				SELENIUM	1.3	mg/kg	U	N	Y	U	U						B093-01	16:53
				SILVER	1.3	mg/kg	U	N	Y	U	U						B093-01	18:48
				SODIUM	45.1	mg/kg	J	Y	Y	P	J		15				B093-01	18:48
				THALLIUM	2.61	mg/kg	U	N	Y	U	U						B093-01	16:53
				VANADIUM	11	mg/kg		Y	Y	P	J		13				B093-01	18:48
				ZINC	26.6	mg/kg		Y	Y	P							B093-01	18:48
	SW7471A	TOTAL	N 0 1	MERCURY	.095	mg/kg	J	Y	Y	P	J		15				B093-01	14:19
YG0004	SW6010B	SW3050	N 0 1	ALUMINUM	11000	mg/kg		Y	Y	P							B093-02	18:12
				ANTIMONY	4.86	mg/kg	J	Y	Y	P	J		08A	15			B093-02	18:12
				ARSENIC	5.42	mg/kg		Y	Y	P							B093-02	16:19
				BARIUM	24.4	mg/kg		Y	Y	P							B093-02	18:12
				BERYLLIUM	.389	mg/kg	J	Y	Y	P	J		15				B093-02	18:12
				CADMIUM	.62	mg/kg	U	N	Y	U	U						B093-02	18:12
				CALCIUM	17	mg/kg	J	Y	Y	P	J		15				B093-02	18:12
				CHROMIUM	8.17	mg/kg		Y	Y	P	J		13				B093-02	18:12
				COBALT	2.48	mg/kg	U	N	Y	U	U						B093-02	18:12
				COPPER	10.2	mg/kg		Y	Y	P							B093-02	18:12
				IRON	6740	mg/kg		Y	Y	P							B093-02	18:12

Validation Qualifier Data Entry Verification

Run Date: March 25, 2002

Fort McClellan

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10139Q-01																		
YG0004	SW6010B	SW3050	N 0 1	LEAD	6.89	mg/kg		Y	Y	P							B093-02	16:19
				MAGNESIUM	389	mg/kg		Y	Y	P							B093-02	18:12
				MANGANESE	2.75	mg/kg		Y	Y	P							B093-02	18:12
				NICKEL	1.05	mg/kg	J	Y	Y	P	J		15				B093-02	18:12
				POTASSIUM	3300	mg/kg		Y	Y	P							B093-02	18:12
				SELENIUM	1.24	mg/kg	U	N	Y	U	U						B093-02	16:19
				SILVER	1.24	mg/kg	U	N	Y	U	U						B093-02	18:12
				SODIUM	37.5	mg/kg	J	Y	Y	P	J		15				B093-02	18:12
				THALLIUM	2.48	mg/kg	U	N	Y	U	U						B093-02	16:19
				VANADIUM	15.7	mg/kg		Y	Y	P	J		13				B093-02	18:12
				ZINC	4.19	mg/kg		Y	Y	P							B093-02	18:12
	SW7471A	TOTAL	N 0 1	MERCURY	.124	mg/kg	U	N	Y	U	U						B093-02	14:22
YG0005	SW6010B	SW3050	N 0 1	ALUMINUM	10500	mg/kg		Y	Y								B093-03	18:16
				ANTIMONY	12.4	mg/kg	U	N	Y		UJ		08A				B093-03	18:16
				ARSENIC	6.24	mg/kg		Y	Y								B093-03	16:23
				BARIUM	25.2	mg/kg		Y	Y								B093-03	18:16
				BERYLLIUM	.396	mg/kg	J	Y	Y		J		15				B093-03	18:16
				CADMIUM	.619	mg/kg	U	N	Y		U						B093-03	18:16
				CALCIUM	17.1	mg/kg	J	Y	Y		J		15				B093-03	18:16
				CHROMIUM	8.37	mg/kg		Y	Y		J		13				B093-03	18:16
				COBALT	.528	mg/kg	J	Y	Y	F	B		06A	06B			B093-03	18:16
				COPPER	10.6	mg/kg		Y	Y								B093-03	18:16
				IRON	6980	mg/kg		Y	Y								B093-03	18:16
				LEAD	6.25	mg/kg		Y	Y								B093-03	16:23
				MAGNESIUM	369	mg/kg		Y	Y								B093-03	18:16
				MANGANESE	2.52	mg/kg		Y	Y								B093-03	18:16
				NICKEL	2.48	mg/kg	U	N	Y		U						B093-03	18:16
				POTASSIUM	3620	mg/kg		Y	Y								B093-03	18:16
				SELENIUM	1.24	mg/kg	U	N	Y		U						B093-03	16:23
				SILVER	.55	mg/kg	J	Y	Y	F	B		06B				B093-03	18:16
				SODIUM	32.1	mg/kg	J	Y	Y		J		15				B093-03	18:16
				THALLIUM	.739	mg/kg	J	Y	Y		J		15				B093-03	16:23
				VANADIUM	16.9	mg/kg		Y	Y		J		13				B093-03	18:16
				ZINC	3.99	mg/kg		Y	Y								B093-03	18:16
	SW7471A	TOTAL	N 0 1	MERCURY	.124	mg/kg	U	N	Y		U						B093-03	14:24
YG0001	SW8330	METHOD	N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						B102-01	05:05
				1,3-DNB	.4	mg/kg	U	N	Y	U	U						B102-01	05:05
				2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						B102-01	05:05
				2,4-DNT	.4	mg/kg	U	N	Y	U	U						B102-01	05:05
				2,6-DNT	.4	mg/kg	U	N	Y	U	U						B102-01	05:05

Validation Qualifier Data Entry Verification

Run Date: March 25, 2002

Fort McClellan

Sample Number:	Analytical/Extraction Method:	Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10139Q-01																	
YG0001	SW8330	METHOD N 0 1	2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						B102-01	05:05
			2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B102-01	05:05
			3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B102-01	05:05
			4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						B102-01	05:05
			4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B102-01	05:05
			HMX	.4	mg/kg	U	N	Y	U	U						B102-01	05:05
			NITROBENZENE	.4	mg/kg	U	N	Y	U	U						B102-01	05:05
			RDX	.4	mg/kg	U	N	Y	U	U						B102-01	05:05
			TETRYL	.4	mg/kg	U	N	Y	U	U						B102-01	05:05
YG0002	SW8330	METHOD N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						B102-02	05:46
			1,3-DNB	.4	mg/kg	U	N	Y	U	U						B102-02	05:46
			2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						B102-02	05:46
			2,4-DNT	.4	mg/kg	U	N	Y	U	U						B102-02	05:46
			2,6-DNT	.4	mg/kg	U	N	Y	U	U						B102-02	05:46
			2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						B102-02	05:46
			2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B102-02	05:46
			3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B102-02	05:46
			4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						B102-02	05:46
			4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B102-02	05:46
			HMX	.4	mg/kg	U	N	Y	U	U						B102-02	05:46
			NITROBENZENE	.4	mg/kg	U	N	Y	U	U						B102-02	05:46
			RDX	.4	mg/kg	U	N	Y	U	U						B102-02	05:46
			TETRYL	.4	mg/kg	U	N	Y	U	U						B102-02	05:46
YG0003	SW8330	METHOD N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						B093-01	03:04
			1,3-DNB	.4	mg/kg	U	N	Y	U	U						B093-01	03:04
			2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						B093-01	03:04
			2,4-DNT	.4	mg/kg	U	N	Y	U	U						B093-01	03:04
			2,6-DNT	.4	mg/kg	U	N	Y	U	U						B093-01	03:04
			2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						B093-01	03:04
			2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B093-01	03:04
			3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B093-01	03:04
			4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						B093-01	03:04
			4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B093-01	03:04
			HMX	.4	mg/kg	U	N	Y	U	U						B093-01	03:04
			NITROBENZENE	.4	mg/kg	U	N	Y	U	U						B093-01	03:04
			RDX	.4	mg/kg	U	N	Y	U	U						B093-01	03:04
			TETRYL	.4	mg/kg	U	N	Y	U	U						B093-01	03:04
YG0004	SW8330	METHOD N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						B093-02	03:44
			1,3-DNB	.4	mg/kg	U	N	Y	U	U						B093-02	03:44
			2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						B093-02	03:44

Validation Qualifier Data Entry Verification

Run Date: March 25, 2002

Fort McClellan

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10139Q-01																		
YG0004	SW8330	METHOD	N 0 1	2,4-DNT	.4	mg/kg	U	N	Y	U	U						B093-02	03:44
				2,6-DNT	.4	mg/kg	U	N	Y	U	U						B093-02	03:44
				2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						B093-02	03:44
				2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B093-02	03:44
				3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B093-02	03:44
				4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						B093-02	03:44
				4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B093-02	03:44
				HMX	.4	mg/kg	U	N	Y	U	U						B093-02	03:44
				NITROBENZENE	.4	mg/kg	U	N	Y	U	U						B093-02	03:44
				RDX	.4	mg/kg	U	N	Y	U	U						B093-02	03:44
				TETRYL	.4	mg/kg	U	N	Y	U	U						B093-02	03:44
YG0005	SW8330	METHOD	N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y		U						B093-03	04:25
				1,3-DNB	.4	mg/kg	U	N	Y		U						B093-03	04:25
				2,4,6-TNT	.4	mg/kg	U	N	Y		U						B093-03	04:25
				2,4-DNT	.4	mg/kg	U	N	Y		U						B093-03	04:25
				2,6-DNT	.4	mg/kg	U	N	Y		U						B093-03	04:25
				2-AM-4,6-DNT	.4	mg/kg	U	N	Y		U						B093-03	04:25
				2-NITROTOLUENE	.4	mg/kg	U	N	Y		U						B093-03	04:25
				3-NITROTOLUENE	.4	mg/kg	U	N	Y		U						B093-03	04:25
				4-AM-2,6-DNT	.4	mg/kg	U	N	Y		U						B093-03	04:25
				4-NITROTOLUENE	.4	mg/kg	U	N	Y		U						B093-03	04:25
				HMX	.4	mg/kg	U	N	Y		U						B093-03	04:25
				NITROBENZENE	.4	mg/kg	U	N	Y		U						B093-03	04:25
				RDX	.4	mg/kg	U	N	Y		U						B093-03	04:25
				TETRYL	.4	mg/kg	U	N	Y		U						B093-03	04:25
YG0001	EPA314.0	NONE	N 0 1	PERCHLORATE	.0605	mg/kg	U	N	Y	U	U						B102-01	21:44
YG0002	EPA314.0	NONE	N 0 1	PERCHLORATE	.0594	mg/kg	U	N	Y	U	U						B102-02	22:01
YG0003	EPA314.0	NONE	N 0 1	PERCHLORATE	.0652	mg/kg	U	N	Y	U	U						B093-01	20:18
YG0004	EPA314.0	NONE	N 0 1	PERCHLORATE	.062	mg/kg	U	N	Y	U	U						B093-02	21:10
YG0005	EPA314.0	NONE	N 0 1	PERCHLORATE	.0619	mg/kg	U	N	Y		U						B093-03	21:27
10139Q-02																		
YG1001	SW6010B	SW3050	N 0 1	ALUMINUM	6130	mg/kg		Y	Y	P							D262-01	23:16
				ANTIMONY	12	mg/kg	U	N	Y	U	U						D262-01	23:16
				ARSENIC	3.78	mg/kg		Y	Y	P							D262-01	23:06
				BARIUM	64.2	mg/kg		Y	Y	P							D262-01	23:16
				BERYLLIUM	.771	mg/kg	J	Y	Y	F	B		06B				D262-01	23:16
				CADMIUM	.602	mg/kg	U	N	Y	U	U						D262-01	23:16
				CALCIUM	123	mg/kg		Y	Y	P							D262-01	23:16
				CHROMIUM	5.99	mg/kg		Y	Y	P							D262-01	23:16

Validation Qualifier Data Entry Verification

Run Date: March 25, 2002

Fort McClellan

Sample Number:	Analytical/Extraction Method:		Flt	REX	Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10139Q-02																				
YG1001	SW6010B	SW3050	N	0	1	COBALT	3.78	mg/kg		Y	Y	F	B		06B				D262-01	23:16
						COPPER	2.07	mg/kg	J	Y	Y	P	J		15				D262-01	23:16
						IRON	25400	mg/kg		Y	Y	P							D262-01	23:16
						LEAD	5.09	mg/kg		Y	Y	P							D262-01	23:06
						MAGNESIUM	276	mg/kg		Y	Y	P							D262-01	23:16
						MANGANESE	267	mg/kg		Y	Y	P							D262-01	23:16
						NICKEL	3.92	mg/kg		Y	Y	P							D262-01	23:16
						POTASSIUM	1610	mg/kg		Y	Y	P							D262-01	23:16
						SELENIUM	1.2	mg/kg	U	N	Y	U	U						D262-01	23:06
						SILVER	1.2	mg/kg	U	N	Y	U	U						D262-01	23:16
						SODIUM	120	mg/kg	U	N	Y	U	U						D262-01	23:16
						THALLIUM	2.41	mg/kg	U	N	Y	U	U						D262-01	23:06
						VANADIUM	10.4	mg/kg		Y	Y	P							D262-01	23:16
						ZINC	12.6	mg/kg		Y	Y	P							D262-01	23:16
	SW7471A	TOTAL	N	0	1	MERCURY	.12	mg/kg	U	N	Y	U	U						D262-01	15:21
YG1001	SW8330	METHOD	N	0	1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						D262-01	21:15
						1,3-DNB	.4	mg/kg	U	N	Y	U	U						D262-01	21:15
						2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						D262-01	21:15
						2,4-DNT	.4	mg/kg	U	N	Y	U	U						D262-01	21:15
						2,6-DNT	.4	mg/kg	U	N	Y	U	U						D262-01	21:15
						2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						D262-01	21:15
						2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						D262-01	21:15
						3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						D262-01	21:15
						4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						D262-01	21:15
						4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						D262-01	21:15
						HMX	.4	mg/kg	U	N	Y	U	U						D262-01	21:15
						NITROBENZENE	.4	mg/kg	U	N	Y	U	U						D262-01	21:15
						RDX	.4	mg/kg	U	N	Y	U	U						D262-01	21:15
						TETRYL	.4	mg/kg	U	N	Y	U	U						D262-01	21:15
YG1001	E314.0	NONE	N	0	1	PERCHLORATE	.0602	mg/kg	U	N	Y	U	U						D262-01	22:46
YG1001	SW9060	NONE	N	0	1	TOC	31.8	mg/kg		Y	Y	P							D262-01	12:10
10139Q-03																				
YG2001	SW6010B	SW3010	N	0	1	ALUMINUM	.376	mg/L		Y	Y	P							D263-01	21:14
						ANTIMONY	.1	mg/L	U	N	Y	U	U						D263-01	21:14
						ARSENIC	.01	mg/L	U	N	Y	U	U						D263-01	20:04
						BARIUM	.0347	mg/L		Y	Y	P							D263-01	21:14
						BERYLLIUM	.001	mg/L	U	N	Y	U	U						D263-01	21:14
						CADMIUM	.01	mg/L	U	N	Y	U	U						D263-01	21:14
						CALCIUM	.275	mg/L	J	Y	Y	P	J		15				D263-01	21:14

Validation Qualifier Data Entry Verification

Run Date: March 25, 2002

Fort McClellan

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10139Q-03																		
YG2001	SW6010B	SW3010	N 0 1	CHROMIUM	.01	mg/L	U	N	Y	U	U						D263-01	21:14
				COBALT	.02	mg/L	U	N	Y	U	U						D263-01	21:14
				COPPER	.02	mg/L	U	N	Y	U	U						D263-01	21:14
				IRON	.406	mg/L		Y	Y	P							D263-01	21:14
				LEAD	.01	mg/L	U	N	Y	U	U						D263-01	20:04
				MAGNESIUM	.312	mg/L	J	Y	Y	P	J		15				D263-01	21:14
				MANGANESE	.0426	mg/L		Y	Y	P							D263-01	21:14
				NICKEL	.02	mg/L	U	N	Y	U	U						D263-01	21:14
				POTASSIUM	2.76	mg/L	J	Y	Y	P	J		15				D263-01	21:14
				SELENIUM	.01	mg/L	U	N	Y	U	U						D263-01	20:04
				SILVER	.01	mg/L	U	N	Y	U	U						D263-01	21:14
				SODIUM	.824	mg/L	J	Y	Y	P	J		15				D263-01	21:14
				THALLIUM	.01	mg/L	U	N	Y	U	U						D263-01	20:04
				VANADIUM	.01	mg/L	U	N	Y	U	U						D263-01	21:14
				ZINC	.00866	mg/L	J	Y	Y	P	J		15				D263-01	21:14
	SW7470A	TOTAL	N 0 1	MERCURY	.0005	mg/L	U	N	Y	U	U						D263-01	11:35
YG2001	SW8330	METHOD	N 0 1	1,3,5-TNB	.0004	mg/L	U	N	Y	U	U						D263-01	04:25
				1,3-DNB	.0004	mg/L	U	N	Y	U	U						D263-01	04:25
				2,4,6-TNT	.0004	mg/L	U	N	Y	U	U						D263-01	04:25
				2,4-DNT	.0004	mg/L	U	N	Y	U	U						D263-01	04:25
				2,6-DNT	.0004	mg/L	U	N	Y	U	U						D263-01	04:25
				2-AM-4,6-DNT	.0004	mg/L	U	N	Y	U	U						D263-01	04:25
				2-NITROTOLUENE	.0004	mg/L	U	N	Y	U	U						D263-01	04:25
				3-NITROTOLUENE	.0004	mg/L	U	N	Y	U	U						D263-01	04:25
				4-AM-2,6-DNT	.0004	mg/L	U	N	Y	U	U						D263-01	04:25
				4-NITROTOLUENE	.0004	mg/L	U	N	Y	U	U						D263-01	04:25
				HMX	.001	mg/L	U	N	Y	U	U						D263-01	04:25
				NITROBENZENE	.0004	mg/L	U	N	Y	U	U						D263-01	04:25
				RDX	.0004	mg/L	U	N	Y	U	U						D263-01	04:25
				TETRYL	.0004	mg/L	U	N	Y	U	U						D263-01	04:25
YG2001	E314.0	NONE	N 0 1	PERCHLORATE	.005	mg/L	U	N	Y	U	U						D263-01	17:37

Quality Assurance Report
For Site Investigation Performed at Artillery and Mortar Impact Areas
South of Bains Gap Road
Parcel HR-140Q
IT Project No 796887
Fort McClellan Quality Assurance Report

1.0 Overview

Five soil samples, one sediment sample and one surface water sample were collected in support of the investigation at Fort McClellan (FTMC) Parcel HR-140Q, Artillery and Mortar Impact Areas South of Bains Gap Road. All samples were submitted to EMAX Laboratories, Inc. for analysis. QC samples consisted of the following types and quantities: 1 field duplicate and 2 equipment rinsates. An analytical summary table cross-referencing sample location, sample number, and contaminants of concern is presented in Attachment A.

One hundred (100%) percent of samples were validated and reviewed in accordance with the *USEPA Contract Laboratory Program National Functional Guidelines for Evaluating Inorganic Data Review (EPA, February 1994)* and *USEPA Contract Laboratory Program National Functional Guidelines for Organic Review (EPA, October 1999)* for all areas except blanks. Region III *Laboratory Data Validation Functional Guidelines for Inorganic Analyses (EPA, April 1993)* and Region III *National Functional Guidelines for Organic Data Review (EPA, June 1992)* were applied to the areas associated with blank contamination. Data qualifiers assigned to results were based on guidance outlined in the referenced documents and the *Installation-Wide Sampling and Analysis Plan (IT, March 2000)* for FTMC.

Table 1.0-1
Laboratory Data Qualifier Definitions

Data Qualifier	Laboratory Data Qualifier Definition
B	Analyte detected in method blank at concentration greater than the reporting limit (and greater than zero).
C	Confirming data obtained using second GC column or GC/MS.
E	Analyte concentration exceeded calibration range.
I	Analyte identification suspect. See narrative for explanation.
J	Result is less than or equal to specified reporting limit but greater than the method detection limit (MDL).
P	Analyte not confirmed. Results from primary and secondary GC columns differ by greater than 10 percent
S	Analyte concentration obtained using Method of Standard Additions (MSA).
U	Not detected. The value represented indicates the reporting limit for the analysis.
D	Sample analyzed as a dilution. The result reported has been calculated using the appropriate dilution factor.
No Code	Confirmed identification.

Table 1.0-2
Validation Data Qualifier Definitions

Validation Qualifier	Validation Data Qualifier Definition
U	Not detected. The associated number indicates approximate sample concentration necessary to be detected.
No Code	Confirmed identification.
B	Not detected substantially above the level reported in laboratory or field blanks.
R	Unusable result. Analyte may or may not be present in the sample.
N	Tentative identification. Consider present. Special methods may be needed to confirm its presence or absence in future sampling efforts.
J	Analyte present. Reported value may not be accurate or precise. Considered an estimate.
NJ	Qualitative identification questionable due to poor resolution. Presumptively present at approximate quantity.
NV	Result was not validated.

The Data Validation Summary Report is presented in Attachment B.

2.0 Summary

Data were evaluated to verify compliance with precision, accuracy, representativeness, comparability, completeness, and sensitivity. To verify that project data quality objectives (DQOs) were met, laboratory analytical results and data packages were examined for compliance with SW846 8330, 6010B/7470A/7471A, 9060 and Environmental Protection Agency (EPA) 314.0 quality control (QC) method criteria. Laboratory nonconformances and discrepancies in the data were also examined to determine their impact on the data. The results of this review are presented in the following sections.

2.1 Sample Receipt and Analytical Holding Times

All sample results generated by the laboratory during this investigation have been reviewed with respect to condition of samples as received by the laboratory, chain-of-custody, and analysis holding times. All coolers were received by EMAX in good condition under proper chain-of-custody.

All extraction and analytical holding times were met.

2.2 Rejected Data

No data were qualified by the laboratory or after validation was completed as being rejected ("R"-flagged).

2.3 Blank Results

Descriptions of the types of blank samples which were collected, processed, and evaluated for background and/or process contamination during this sampling are as follows:

- Equipment rinsates (ER) are samples of analyte-free deionized water poured into, over, or pumped through the sampling device, collected in a sample container, and transported to the laboratory for analysis. Equipment rinsates are used to assess the effectiveness of equipment decontamination procedures.

- Method blanks (MB) are used in the laboratory to assess and document any possible contamination resulting from the analytical process. A method blank is an analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank shall be carried through the complete sample preparation and analytical procedure.

- Initial and continuing calibration blanks (ICB and CCB) are instrument blanks consisting of an analyte-free matrix. ICBs and CCBs are analyzed to verify the analysis system is free of contamination and are analyzed immediately after the initial and continuing calibrations are performed.

Field sample concentrations were evaluated to determine if the sample results could have been biased by the presence of any contamination measured in equipment rinsate blanks, method blanks and/or initial/continuing calibration blanks. Sample data affected by blank contamination are summarized in Table 2.3-1.

Table 2.3-1
Summary of Blank Contamination

Sample Delivery Group	Sample Number	Contaminant	Action
10140Q-01	YH0001	Cobalt	Cobalt result for sample YH0001 was "B" qualified due to ICB/CCB contamination.
	YH0003	Mercury	Mercury result for sample YH0003 was "B" qualified due to ICB/CCB contamination.
10140Q-02	YH1001	Beryllium	Beryllium result for sample YH1001 was "B" qualified due to ICB/CCB contamination.
10140Q-03	YH2001	Nickel	Nickel result for sample YH2001 was "B" qualified due to ICB/CCB contamination.

2.4 Analytical Precision

Precision is defined as a measurement of mutual agreement among individual measurements of the same property, usually under "prescribed similar conditions." Analytical precision is calculated as relative percent difference (%RPD) based on the following formula:

$$\%RPD = \left| \frac{(A-B)}{(A+B)/2} \right| \times 100$$

where:

%RPD = Relative Percent Difference
A = original result
B = duplicate result

A high RPD between an original sample and its field duplicate may be attributable to the difference in sample matrix or distribution of the contaminant within the sample, rather than the precision of the collection process. Also, when "estimated" results are reported, there is a potential for increased variability between the primary and duplicate sample results. This occurs because, at low concentrations, the relative difference in results is magnified by the RPD calculation even though the results are comparable in absolute terms. There is also increased uncertainty in the results as the lower limit of detection is approached, due to decreasing analytical accuracy. The RPD calculation cannot be performed in cases where non-detected results are reported with corresponding samples that contain detectable concentrations.

Overall sampling and analysis precision for this task was assessed using field duplicate (FD) samples. Laboratory precision was assessed by laboratory control sample/laboratory control sample duplicate (LCS/LCSD) and matrix spike/matrix spike duplicate (MS/MSD) recoveries. Results indicate that an acceptable analytical precision was achieved. Table 2.4-1 lists precision acceptance criteria for LCS/LCSD, MS/MSD organic analyses and field duplicate comparisons.

Table 2.4-1 Precision Acceptance Criteria

Field/Laboratory QC Type	Matrix	
	Aqueous	Soil
Field Duplicate (Both Organic & Inorganic)	RPD < 35%	RPD < 50%
Perchlorate LCS/LCSD and MS/MSD	RPD < 10%	RPD < 20%
Nitroaromatic and Nitramine Explosives LCS/LCSD and MS/MSD	Refer to Table 8-1 of FTMC "Installation Wide Sample and Analysis Plan"	Refer to Table 8-1 of FTMC "Installation Wide Sample and Analysis Plan"
Metals LCS/LCSD and MS/MSD	RPD < 20%	RPD < 20%

2.5 Analytical Accuracy Assessment

Accuracy is a measure of the degree of agreement of a result against an accepted reference or true value. Accuracy is expressed as a percent recovery (%R) calculated by the ratio of the measurement and accepted true value as shown in the following equation:

$$\%R = (|X_s - X_u|/K) \times 100$$

where:

X_s = measured value of the spiked sample
X_u = measured value of the unspiked sample
K = known amount of the spike in the sample

Surrogate recoveries, MS/MSD and LCS/LCSD were used to measure analytical accuracy as described in SW846 8330, 6010B/7470A/7471A, 9060 and EPA 314.0. Reported results indicate that an acceptable level of analytical accuracy was achieved.

2.6 Data Representativeness

Representativeness is a qualitative parameter that expresses the degree to which sample data actually represent the matrix conditions. Standardized requirements and procedures for sample collection, handling and analyses were employed to maximize sample representativeness.

Sample locations selected for this investigation will confirm whether contaminant releases into the environment have occurred and if contaminated soil exists at this parcel.

2.7 Data Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. By employing well-recognized techniques and accepted standardized methods for sampling and analysis, data comparability was achieved during this sampling event.

2.8 Data Completeness

Completeness is calculated for the aggregation of data for each analyte measured during the investigation of Parcel HR-140Q, Artillery and Mortar Impact Areas South of Bains Gap Road. The formula for calculating completeness is listed below:

$$\% \text{ Completeness} = (X_V / X_T) \times 100$$

where:

X_V = number of valid (i.e., non-"R"-flagged) results
X_T = number of possible results

Parcel HR-140Q goal for completeness is 95% for both aqueous and soil samples. The % Completeness for this task is calculated to be 100%.

- % Completeness = (267 / 267) x 100 = 100%

2.9 Sensitivity

Sensitivity is defined as the ability of the laboratory's established method detection limits (MDL)/method reporting limits (MRL or RL) to meet project-specific DQOs or site-specific screening levels (SSSL) and or ecological screening values (ESV).

MDL is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero. MDLs are determined from an analysis of a sample in a given matrix containing the target analyte of interest. The MRL is a threshold value based upon the sensitivity capability of method and instrument. MRLs are normally set at a minimum of two times the MDL. MRLs are adjusted based on the sample matrix, moisture (solids only), and any necessary sample dilutions. The laboratory cannot reliably quantitate values reported above the MDL but below the MRL. Therefore, these analyte values must be flagged as estimated quantities ("J"-flagged).

To evaluate method sensitivity, a general comparison of the laboratory's MDLs/MRLs and the site investigation screening levels (background values, human health SSSL for residential reuse, and ESV) was performed and presented to the FTMC Base Realignment and Closure Team (BCT) (November 1999). The comparison summarized the relationship between the MDL/MRLs and SSSL/ESVs for each parameter typically reported for all of the major analytical methods used at FTMC. The few cases identified where the MDL and/or MRL values exceeded their corresponding human health SSSL and/or ESV were specifically highlighted and explained. It was understood that for these cases, the standard analytical method of analysis was not going to provide MDLs/MRLs, which met human health SSSLs or ESVs without significant uncertainty and

the possibility of reporting false negatives. It was generally accepted that standard EPA SW846 analytical methods would provide sufficient sensitivity for data reported and used in the site screening process at FTMC.

3.0 Data Usability

Data quality indicators (DQI) provide an internal guide for control and review to verify that data are scientifically sound, defensible, and of known and acceptable quality. Factors such as precision, accuracy, representativeness, comparability, completeness, and sensitivity were evaluated to determine if the project's DQOs were met. A review of the data revealed that the majority of QA/QC indicators were within acceptable control limits. Any data anomalies encountered during data validation and overall site evaluations have been summarized in the previous sections of this document.

Based on the results of data validation and QA review, IT has concluded that representative samples were collected and analyzed and the results are indicative of the media analyzed. The data are to be considered representative of site conditions and are usable for their intended purpose.

4.0 Attachments

Attachment A - Analytical Summary Table
Attachment B - Data Validation Summary Report

ATTACHMENT A

ANALYTICAL SUMMARY TABLE

Ft. McClellan
Parcel HR-140Q
Artillery and Mortar Impact Areas South of Bains Gap Road
Analytical Summary
Project No. 796887

HR-140Q Soil Sampling

Sample Location	Sample Name	Sample Number	Date Sampled	Analytical Suite
HR-140Q-GP01	HR-140Q-GP01-SS-YH0001-REG	YH0001	07-Feb-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
	HR-140Q-GP01-DS-YH0002-REG	YH0002	07-Feb-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
HR-140Q-GP02	HR-140Q-GP02-SS-YH0003-REG	YH0003	08-Feb-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
	HR-140Q-GP02-DS-YH0004-REG	YH0004	08-Feb-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
	HR-140Q-GP02-DS-YH0005-FD	YH0005	08-Feb-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.

HR-140Q Sediment and Surface Water Sampling

Sample Location	Sample Name	Sample Number	Date Sampled	Analytical Suite
HR-140Q-SD/SW01	HR-140Q-SD/SW01-SD-YH1001-REG	YH1001	25-Apr-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330, Perchlorate by EPA 314.0 and Total Organic Carbon by SW9060.
	HR-140Q-SD/SW01-SW-YH2001-REG	YH2001	25-Apr-01	TAL Metals by SW6010B/SW7470, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.

ATTACHMENT B

DATA VALIDATION SUMMARY REPORT

Data Validation Summary Report
For the Site Investigation Performed at the
"Artillery and Motor Impact Areas South of Bains Gap" (Parcel HR-140Q)
Fort McClellan, Calhoun County, Alabama

1.0 Introduction

Level III data validation was performed on 100% of the environmental samples collected for CK10 (Parcel HR-140Q). The analytical data consisted of three sample delivery groups (SDG), 10140Q-01, 10140Q-02, and, 10140Q-03, which were analyzed by EMAX Laboratories. The chemical parameters for which the samples were analyzed and validated are identified below:

Parameter (Method)
TAL Metals by SW846 6010B/7470A/7471A
Nitroaromatic and Nitramine Explosives by SW846 8330
Perchlorate by EPA 314.0 and Total Organic Carbon (TOC) by SW846 9060

2.0 Procedures

The sample data were validated following the logic identified in the *USEPA Contract Laboratory Program (CLP) National Functional Guidelines For Inorganic Data Review (February 1994)* and *USEPA Contract Laboratory Program National Functional Guidelines For Organic Review (October 1999)* for all areas except Blanks. *Region III Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses (April 1993)* and *Region III National Functional Guidelines for Organic Data Review (June 1992)* were applied to the areas associated with blank contamination. Specific quality control (QC) criteria, as identified in the Quality Assurance Plan (QAP), analytical methods, and laboratory Standard Operating Procedures (SOP's) were applied to all sample results. As the result of the use of Update III SW846 test methods for the analytical data and the application of the CLP guidelines during the validation process, there were instances where specific QC requirements for all target compounds were not defined. This primarily occurred in the organic, Gas Chromatograph (GC) and Gas Chromatograph/Mass Spectra (GC/MS) calibration areas and is due to the fact that the analytical methods are performance-based, and allows the use of average calibration responses, in lieu of, individual responses, which are defined by CLP protocol. In light of applying CLP guidelines to SW846 methods and evaluating the usability of the data during the validation process, specific QC criteria were determined to address all target compounds and are identified in this report for each parameter, as well as, in the validation checklists, which

function as worksheets. All completed validation checklists are on file in the Knoxville office. For those analytical methods not addressed by the CLP and Region III guidelines, the validation was based on the method requirements (i. e. SW846, CFR, SOP's) and technical judgement, following the logic of the CLP validation guidelines.

3.0 Summary of Data Validation Findings

The overall quality of the data was determined to be acceptable with minimal qualifications. No data were rejected.

Individual validation reports have been prepared for each parameter and the overall results of the validation findings are summarized in this report. The validation qualifier data entry verification report (Attachment A) is also provided. This is a complete listing of all of the analytical results and the validation qualifiers assigned for HR-140Q. It also identifies the "use" column, which indicates which result to use in the event of a reanalysis. A listing of the validation qualifiers and the reason codes, along with their definitions are also found in Attachment A. The following section highlights the key findings of the data validation for each analysis.

4.0 Analysis-Specific Data Validation Summaries

4.1 Metals by SW-846 6010B/7471A/7470A

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all samples.

Preservation

All samples were properly preserved.

Initial and Continuing Calibrations

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse, calibration, and method blanks was applied to all sample results. All were found to be acceptable with the exception of the following:

SDG Number	Sample Number	Compound	Blank Contaminant	Validation Qualifier
10140Q-01	YH0001	Cobalt	Calibration	B
	YH0003	Mercury	Calibration	B
10140Q-02	YH1001	Beryllium	Calibration	B
10140Q-03	YH2001	Nickel	Calibration	B

Matrix Spike / Matrix Spike Duplicate
MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample (LCS)
LCS was performed for the project samples and all QC criteria were met.

Interference Check Sample (ICS)
All ICS % recoveries were acceptable. All QC criteria were met.

ICP Serial Dilutions
All QC criteria were met for the serial dilutions associated with the project samples.

Field Duplicates
Original and field duplicate results were evaluated and all QC criteria were met.

Quantitation
Results quantitated between the IDL and the RL ("B" flagged by the laboratory) were qualified as estimated (J).

4.2 Nitroaromatic and Nitramine Explosives by SW846 8330

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times
Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration
All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks
The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike / Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and field duplicate results were evaluated and no problems were identified.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as J, were qualified as estimated J unless blank contamination was present or the results were rejected.

4.3. Perchlorate by EPA 314.0 and Total Organic Carbon (TOC) by SW846 9060

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all samples. All was acceptable no qualification was necessary.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinses and method blanks was applied to all sample results. All were found to be acceptable, no qualification was necessary.

Matrix Spike / Matrix Spike Duplicate

MS/MSD were performed for the project samples, and all QC criteria were met. No qualification was necessary.

Laboratory Control Sample

Laboratory Control Sample (LCS) was performed for the project samples and all QC criteria were met. No qualification was necessary.

Field Duplicates

Original and field duplicate results were evaluated and no problems were noted.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as "J," were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

Validation Qualifiers

U Not detected. The compound/analyte was analyzed for, but not detected above the associated reporting limit.

J The compound/analyte was positively identified; the reported value is the estimated concentration of the constituent detected in the sample analyzed.

B The concentration reported was detected significantly above the levels reported in the associated equipment rinse samples and/or laboratory method and trip blanks. (5X/10X Rule was applied).

R The reported sample results are rejected due to the following:

1. Severe deficiencies in the supporting quality control data.
2. Anomalies noted in the sampling and/or analysis process which could affect the validity of the reported data.
3. The presence or absence of the constituent cannot be verified based on the data provided.
4. To indicate not to use a particular result in the event of a reanalysis.

UJ The compound/analyte was analyzed for, but not detected above the established reporting limit. However, review and evaluation of supporting QC data and/or sampling and analysis process have indicated that the "nondetect" may be inaccurate or imprecise. The nondetect result should be estimated.

Validation Reason Code Definitions

Reason Code	Description
01	Sample received outside of 4+/-2 degrees Celsius
01A	Improper sample preservation
02	Holding time exceeded
02A	Extraction
02B	Analysis
03	Instrument performance – outside criteria
03A	BFB
03B	DFTPP
03C	DDT and/or Endrin % breakdown exceeds criteria
03D	Retention time windows
03E	Resolution
04	Initial calibration results outside specified criteria
04A	Compound mean RRF QC criteria not met
04B	Individual % RSD criteria not met
04C	Correlation coefficient >0.995
05	Continuing calibration results outside specified criteria
05A	Compound mean RRF QC criteria not met
05B	Compound % D QC criteria not met
06	Result qualified as a result of the 5x/10x blank correction
06A	Method or preparation blank
06B	ICB or CCB
06C	ER
06D	TB
06E	FB
07	Surrogate recoveries outside control limits
07A	Sample
07B	Associated method blank or LCS
08	MS/MSD/Duplicate results outside criteria
08A	MS and/or MSD recovery not within control limits (accuracy)
08B	% RPD outside acceptance criteria (precision)
09	Post digestion spike outside criteria (GFAA)
10	Internal standards outside specified control limits
10A	Recovery
10B	Retention time
11	Laboratory control sample recoveries outside specified limits
11A	Recovery
11B	% RPD (if run in duplicate)
12	Interference check standard
13	Serial dilution
14	Tentatively identified compounds
15	Quantitation
16	Multiple results available; alternate analysis preferred
17	Field duplicate RPD criteria is exceeded
18	Percent difference between original and second column exceeds QC criteria
19	Professional judgement was used to qualify the data
20	Pesticide clean-up checks
21	Target compound identification
22	Radiological calibration
23	Radiological quantitation
24	Reported result and/or lab qualifier revised to reflect validation findings

Validation Qualifier Data Entry Verification

Run Date: March 25, 2002

Fort McClellan

Sample Number:	Analytical/Extraction Method:		Flt	REX	Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10140Q-01																				
YH0001	SW6010B	SW3050	N	0	1	ALUMINUM	12500	mg/kg		Y	Y	P							B092-01	21:18
						ANTIMONY	13.1	mg/kg	U	N	Y	U	U						B092-01	21:18
						ARSENIC	2.24	mg/kg		Y	Y	P							B092-01	21:07
						BARIUM	95.7	mg/kg		Y	Y	P							B092-01	21:18
						BERYLLIUM	.548	mg/kg	J	Y	Y	P	J		15				B092-01	21:18
						CADMIUM	.653	mg/kg	U	N	Y	U	U						B092-01	21:18
						CALCIUM	336	mg/kg		Y	Y	P							B092-01	21:18
						CHROMIUM	10.9	mg/kg		Y	Y	P							B092-01	21:18
						COBALT	1.09	mg/kg	J	Y	Y	F	B		06B				B092-01	21:18
						COPPER	3.29	mg/kg		Y	Y	P							B092-01	21:18
						IRON	15000	mg/kg		Y	Y	P							B092-01	21:18
						LEAD	9.05	mg/kg		Y	Y	P							B092-01	21:07
						MAGNESIUM	557	mg/kg		Y	Y	P							B092-01	21:18
						MANGANESE	157	mg/kg		Y	Y	P							B092-01	21:18
						NICKEL	3.83	mg/kg		Y	Y	P							B092-01	21:18
						POTASSIUM	1250	mg/kg		Y	Y	P							B092-01	21:18
						SELENIUM	1.31	mg/kg	U	N	Y	U	U						B092-01	21:07
						SILVER	1.31	mg/kg	U	N	Y	U	U						B092-01	21:18
						SODIUM	131	mg/kg	U	N	Y	U	U						B092-01	21:18
						THALLIUM	2.61	mg/kg	U	N	Y	U	U						B092-01	21:07
						VANADIUM	14	mg/kg		Y	Y	P							B092-01	21:18
						ZINC	14.2	mg/kg		Y	Y	P							B092-01	21:18
	SW7471A	TOTAL	N	0	1	MERCURY	.131	mg/kg	U	N	Y	U	U						B092-01	12:21
YH0002	SW6010B	SW3050	N	0	1	ALUMINUM	13600	mg/kg		Y	Y	P							B092-02	21:23
						ANTIMONY	12.2	mg/kg	U	N	Y	U	U						B092-02	21:23
						ARSENIC	3.86	mg/kg		Y	Y	P							B092-02	21:03
						BARIUM	30.2	mg/kg		Y	Y	P							B092-02	21:23
						BERYLLIUM	.689	mg/kg	J	Y	Y	P	J		15				B092-02	21:23
						CADMIUM	.612	mg/kg	U	N	Y	U	U						B092-02	21:23
						CALCIUM	13.5	mg/kg	J	Y	Y	P	J		15				B092-02	21:23
						CHROMIUM	7.38	mg/kg		Y	Y	P							B092-02	21:23
						COBALT	2.45	mg/kg	U	N	Y	U	U						B092-02	21:23
						COPPER	6.79	mg/kg		Y	Y	P							B092-02	21:23
						IRON	12900	mg/kg		Y	Y	P							B092-02	21:23
						LEAD	9.58	mg/kg		Y	Y	P							B092-02	21:03
						MAGNESIUM	498	mg/kg		Y	Y	P							B092-02	21:23
						MANGANESE	8.1	mg/kg		Y	Y	P							B092-02	21:23
						NICKEL	3.56	mg/kg		Y	Y	P							B092-02	21:23
						POTASSIUM	2310	mg/kg		Y	Y	P							B092-02	21:23
						SELENIUM	1.22	mg/kg	U	N	Y	U	U						B092-02	21:03

Validation Qualifier Data Entry Verification

Run Date: March 25, 2002

Fort McClellan

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10140Q-01																		
YH0002	SW6010B	SW3050	N 0 1	SILVER	1.22	mg/kg	U	N	Y	U	U						B092-02	21:23
				SODIUM	122	mg/kg	U	N	Y	U	U						B092-02	21:23
				THALLIUM	2.45	mg/kg	U	N	Y	U	U						B092-02	21:03
				VANADIUM	9.18	mg/kg		Y	Y	P							B092-02	21:23
				ZINC	5.43	mg/kg		Y	Y	P							B092-02	21:23
	SW7471A	TOTAL	N 0 1	MERCURY	.122	mg/kg	U	N	Y	U	U						B092-02	12:23
YH0003	SW6010B	SW3050	N 0 1	ALUMINUM	21700	mg/kg		Y	Y	P							B092-03	21:36
				ANTIMONY	13.6	mg/kg	U	N	Y	U	U						B092-03	21:36
				ARSENIC	3.67	mg/kg		Y	Y	P							B092-03	21:21
				BARIUM	228	mg/kg		Y	Y	P							B092-03	21:36
				BERYLLIUM	2.4	mg/kg		Y	Y	P							B092-03	21:36
				CADMIUM	.678	mg/kg	U	N	Y	U	U						B092-03	21:36
				CALCIUM	364	mg/kg		Y	Y	P							B092-03	21:36
				CHROMIUM	11.1	mg/kg		Y	Y	P							B092-03	21:36
				COBALT	36.8	mg/kg		Y	Y	P							B092-03	21:36
				COPPER	11.8	mg/kg		Y	Y	P							B092-03	21:36
				IRON	11500	mg/kg		Y	Y	P							B092-03	21:36
				LEAD	25.4	mg/kg		Y	Y	P							B092-03	21:21
				MAGNESIUM	1230	mg/kg		Y	Y	P							B092-03	21:36
				MANGANESE	2290	mg/kg		Y	Y	P							B092-03	21:36
				NICKEL	9.93	mg/kg		Y	Y	P							B092-03	21:36
				POTASSIUM	971	mg/kg		Y	Y	P							B092-03	21:36
				SELENIUM	1.36	mg/kg	U	N	Y	U	U						B092-03	21:21
				SILVER	1.36	mg/kg	U	N	Y	U	U						B092-03	21:36
				SODIUM	136	mg/kg	U	N	Y	U	U						B092-03	21:36
				THALLIUM	2.71	mg/kg	U	N	Y	U	U						B092-03	21:21
				VANADIUM	18.1	mg/kg		Y	Y	P							B092-03	21:36
				ZINC	37.6	mg/kg		Y	Y	P							B092-03	21:36
	SW7471A	TOTAL	N 0 1	MERCURY	.051	mg/kg	J	Y	Y	F	B		06B				B092-03	12:26
YH0004	SW6010B	SW3050	N 0 1	ALUMINUM	18100	mg/kg		Y	Y	P							B092-04	21:41
				ANTIMONY	11.9	mg/kg	U	N	Y	U	U						B092-04	21:41
				ARSENIC	3.23	mg/kg		Y	Y	P							B092-04	23:15
				BARIUM	127	mg/kg		Y	Y	P							B092-04	21:41
				BERYLLIUM	.938	mg/kg	J	Y	Y	P	J		15				B092-04	21:41
				CADMIUM	.597	mg/kg	U	N	Y	U	U						B092-04	21:41
				CALCIUM	119	mg/kg	J	Y	Y	P	J		15				B092-04	21:41
				CHROMIUM	12	mg/kg		Y	Y	P							B092-04	21:41
				COBALT	25.7	mg/kg		Y	Y	P							B092-04	21:41
				COPPER	9.82	mg/kg		Y	Y	P							B092-04	21:41
				IRON	13100	mg/kg		Y	Y	P							B092-04	21:41

Validation Qualifier Data Entry Verification

Run Date: March 25, 2002

Fort McClellan

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10140Q-01																		
YH0004	SW6010B	SW3050	N 0 1	LEAD	11.6	mg/kg		Y	Y	P							B092-04	23:15
				MAGNESIUM	1070	mg/kg		Y	Y	P							B092-04	21:41
				MANGANESE	778	mg/kg		Y	Y	P							B092-04	21:41
				NICKEL	8.42	mg/kg		Y	Y	P							B092-04	21:41
				POTASSIUM	1480	mg/kg		Y	Y	P							B092-04	21:41
				SELENIUM	1.19	mg/kg	U	N	Y	U	U						B092-04	23:15
				SILVER	1.19	mg/kg	U	N	Y	U	U						B092-04	21:41
				SODIUM	119	mg/kg	U	N	Y	U	U						B092-04	21:41
				THALLIUM	2.39	mg/kg	U	N	Y	U	U						B092-04	23:15
				VANADIUM	18.7	mg/kg		Y	Y	P							B092-04	21:41
				ZINC	25.6	mg/kg		Y	Y	P							B092-04	21:41
	SW7471A	TOTAL	N 0 1	MERCURY	.119	mg/kg	U	N	Y	U	U						B092-04	12:29
YH0005	SW6010B	SW3050	N 0 1	ALUMINUM	17100	mg/kg		Y	Y								B092-05	21:45
				ANTIMONY	11.8	mg/kg	U	N	Y		U						B092-05	21:45
				ARSENIC	3.13	mg/kg		Y	Y								B092-05	21:30
				BARIUM	118	mg/kg		Y	Y								B092-05	21:45
				BERYLLIUM	.825	mg/kg	J	Y	Y		J		15				B092-05	21:45
				CADMIUM	.588	mg/kg	U	N	Y		U						B092-05	21:45
				CALCIUM	114	mg/kg	J	Y	Y		J		15				B092-05	21:45
				CHROMIUM	12.4	mg/kg		Y	Y								B092-05	21:45
				COBALT	28.6	mg/kg		Y	Y								B092-05	21:45
				COPPER	9.65	mg/kg		Y	Y								B092-05	21:45
				IRON	12300	mg/kg		Y	Y								B092-05	21:45
				LEAD	13.1	mg/kg		Y	Y								B092-05	21:30
				MAGNESIUM	1020	mg/kg		Y	Y								B092-05	21:45
				MANGANESE	661	mg/kg		Y	Y								B092-05	21:45
				NICKEL	8.43	mg/kg		Y	Y								B092-05	21:45
				POTASSIUM	1540	mg/kg		Y	Y								B092-05	21:45
				SELENIUM	1.18	mg/kg	U	N	Y		U						B092-05	21:30
				SILVER	1.18	mg/kg	U	N	Y		U						B092-05	21:45
				SODIUM	118	mg/kg	U	N	Y		U						B092-05	21:45
				THALLIUM	2.35	mg/kg	U	N	Y		U						B092-05	21:30
				VANADIUM	17.6	mg/kg		Y	Y								B092-05	21:45
				ZINC	26.9	mg/kg		Y	Y								B092-05	21:45
	SW7471A	TOTAL	N 0 1	MERCURY	.118	mg/kg	U	N	Y		U						B092-05	12:31
YH0001	SW8330	METHOD	N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						B092-01	02:01
				1,3-DNB	.4	mg/kg	U	N	Y	U	U						B092-01	02:01
				2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						B092-01	02:01
				2,4-DNT	.4	mg/kg	U	N	Y	U	U						B092-01	02:01
				2,6-DNT	.4	mg/kg	U	N	Y	U	U						B092-01	02:01

Validation Qualifier Data Entry Verification

Run Date: March 25, 2002

Fort McClellan

Sample Number:	Analytical/Extraction Method:	Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10140Q-01																	
YH0001	SW8330	METHOD N 0 1	2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						B092-01	02:01
			2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B092-01	02:01
			3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B092-01	02:01
			4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						B092-01	02:01
			4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B092-01	02:01
			HMX	.4	mg/kg	U	N	Y	U	U						B092-01	02:01
			NITROBENZENE	.4	mg/kg	U	N	Y	U	U						B092-01	02:01
			RDX	.4	mg/kg	U	N	Y	U	U						B092-01	02:01
			TETRYL	.4	mg/kg	U	N	Y	U	U						B092-01	02:01
YH0002	SW8330	METHOD N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						B092-02	02:42
			1,3-DNB	.4	mg/kg	U	N	Y	U	U						B092-02	02:42
			2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						B092-02	02:42
			2,4-DNT	.4	mg/kg	U	N	Y	U	U						B092-02	02:42
			2,6-DNT	.4	mg/kg	U	N	Y	U	U						B092-02	02:42
			2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						B092-02	02:42
			2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B092-02	02:42
			3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B092-02	02:42
			4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						B092-02	02:42
			4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B092-02	02:42
			HMX	.4	mg/kg	U	N	Y	U	U						B092-02	02:42
			NITROBENZENE	.4	mg/kg	U	N	Y	U	U						B092-02	02:42
			RDX	.4	mg/kg	U	N	Y	U	U						B092-02	02:42
			TETRYL	.4	mg/kg	U	N	Y	U	U						B092-02	02:42
YH0003	SW8330	METHOD N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						B092-03	03:22
			1,3-DNB	.4	mg/kg	U	N	Y	U	U						B092-03	03:22
			2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						B092-03	03:22
			2,4-DNT	.4	mg/kg	U	N	Y	U	U						B092-03	03:22
			2,6-DNT	.4	mg/kg	U	N	Y	U	U						B092-03	03:22
			2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						B092-03	03:22
			2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B092-03	03:22
			3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B092-03	03:22
			4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						B092-03	03:22
			4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B092-03	03:22
			HMX	.4	mg/kg	U	N	Y	U	U						B092-03	03:22
			NITROBENZENE	.4	mg/kg	U	N	Y	U	U						B092-03	03:22
			RDX	.4	mg/kg	U	N	Y	U	U						B092-03	03:22
			TETRYL	.4	mg/kg	U	N	Y	U	U						B092-03	03:22
YH0004	SW8330	METHOD N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						B092-04	04:03
			1,3-DNB	.4	mg/kg	U	N	Y	U	U						B092-04	04:03
			2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						B092-04	04:03

Validation Qualifier Data Entry Verification
Fort McClellan

Run Date: March 25, 2002

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10140Q-01																		
YH0004	SW8330	METHOD	N 0 1	2,4-DNT	.4	mg/kg	U	N	Y	U	U						B092-04	04:03
				2,6-DNT	.4	mg/kg	U	N	Y	U	U						B092-04	04:03
				2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						B092-04	04:03
				2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B092-04	04:03
				3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B092-04	04:03
				4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						B092-04	04:03
				4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B092-04	04:03
				HMX	.4	mg/kg	U	N	Y	U	U						B092-04	04:03
				NITROBENZENE	.4	mg/kg	U	N	Y	U	U						B092-04	04:03
				RDX	.4	mg/kg	U	N	Y	U	U						B092-04	04:03
				TETRYL	.4	mg/kg	U	N	Y	U	U						B092-04	04:03
YH0005	SW8330	METHOD	N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y		U						B092-05	05:24
				1,3-DNB	.4	mg/kg	U	N	Y		U						B092-05	05:24
				2,4,6-TNT	.4	mg/kg	U	N	Y		U						B092-05	05:24
				2,4-DNT	.4	mg/kg	U	N	Y		U						B092-05	05:24
				2,6-DNT	.4	mg/kg	U	N	Y		U						B092-05	05:24
				2-AM-4,6-DNT	.4	mg/kg	U	N	Y		U						B092-05	05:24
				2-NITROTOLUENE	.4	mg/kg	U	N	Y		U						B092-05	05:24
				3-NITROTOLUENE	.4	mg/kg	U	N	Y		U						B092-05	05:24
				4-AM-2,6-DNT	.4	mg/kg	U	N	Y		U						B092-05	05:24
				4-NITROTOLUENE	.4	mg/kg	U	N	Y		U						B092-05	05:24
				HMX	.4	mg/kg	U	N	Y		U						B092-05	05:24
				NITROBENZENE	.4	mg/kg	U	N	Y		U						B092-05	05:24
				RDX	.4	mg/kg	U	N	Y		U						B092-05	05:24
				TETRYL	.4	mg/kg	U	N	Y		U						B092-05	05:24
YH0001	EPA314.0	NONE	N 0 1	PERCHLORATE	.0653	mg/kg	U	N	Y	U	U						B092-01	18:18
YH0002	EPA314.0	NONE	N 0 1	PERCHLORATE	.0612	mg/kg	U	N	Y	U	U						B092-02	18:35
YH0003	EPA314.0	NONE	N 0 1	PERCHLORATE	.0678	mg/kg	U	N	Y	U	U						B092-03	18:52
YH0004	EPA314.0	NONE	N 0 1	PERCHLORATE	.0597	mg/kg	U	N	Y	U	U						B092-04	19:09
YH0005	EPA314.0	NONE	N 0 1	PERCHLORATE	.0588	mg/kg	U	N	Y		U						B092-05	19:27
10140Q-02																		
YH1001	SW6010B	SW3050	N 0 1	ALUMINUM	7180	mg/kg		Y	Y	P							D260-01	23:11
				ANTIMONY	12.9	mg/kg	U	N	Y	U	U						D260-01	23:11
				ARSENIC	5.61	mg/kg		Y	Y	P							D260-01	23:01
				BARIUM	94.3	mg/kg		Y	Y	P							D260-01	23:11
				BERYLLIUM	.779	mg/kg	J	Y	Y	F	B		06B				D260-01	23:11
				CADMIUM	.647	mg/kg	U	N	Y	U	U						D260-01	23:11
				CALCIUM	149	mg/kg		Y	Y	P							D260-01	23:11
				CHROMIUM	17.6	mg/kg		Y	Y	P							D260-01	23:11

Validation Qualifier Data Entry Verification

Run Date: March 25, 2002

Fort McClellan

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10140Q-02																		
YH1001	SW6010B	SW3050	N 0 1	COBALT	8.5	mg/kg		Y	Y	P							D260-01	23:11
				COPPER	5.83	mg/kg		Y	Y	P							D260-01	23:11
				IRON	33100	mg/kg		Y	Y	P							D260-01	23:11
				LEAD	9.19	mg/kg		Y	Y	P							D260-01	23:01
				MAGNESIUM	316	mg/kg		Y	Y	P							D260-01	23:11
				MANGANESE	330	mg/kg		Y	Y	P							D260-01	23:11
				NICKEL	5.13	mg/kg		Y	Y	P							D260-01	23:11
				POTASSIUM	2030	mg/kg		Y	Y	P							D260-01	23:11
				SELENIUM	1.29	mg/kg	U	N	Y	U	U						D260-01	23:01
				SILVER	1.29	mg/kg	U	N	Y	U	U						D260-01	23:11
				SODIUM	129	mg/kg	U	N	Y	U	U						D260-01	23:11
				THALLIUM	1.27	mg/kg	J	Y	Y	P	J		15				D260-01	23:01
				VANADIUM	17.4	mg/kg		Y	Y	P							D260-01	23:11
				ZINC	11	mg/kg		Y	Y	P							D260-01	23:11
	SW7471A	TOTAL	N 0 1	MERCURY	.129	mg/kg	U	N	Y	U	U						D260-01	15:18
YH1001	SW8330	METHOD	N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						D260-01	20:36
				1,3-DNB	.4	mg/kg	U	N	Y	U	U						D260-01	20:36
				2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						D260-01	20:36
				2,4-DNT	.4	mg/kg	U	N	Y	U	U						D260-01	20:36
				2,6-DNT	.4	mg/kg	U	N	Y	U	U						D260-01	20:36
				2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						D260-01	20:36
				2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						D260-01	20:36
				3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						D260-01	20:36
				4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						D260-01	20:36
				4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						D260-01	20:36
				HMX	.4	mg/kg	U	N	Y	U	U						D260-01	20:36
				NITROBENZENE	.4	mg/kg	U	N	Y	U	U						D260-01	20:36
				RDX	.4	mg/kg	U	N	Y	U	U						D260-01	20:36
				TETRYL	.4	mg/kg	U	N	Y	U	U						D260-01	20:36
YH1001	E314.0	NONE	N 0 1	PERCHLORATE	.0647	mg/kg	U	N	Y	U	U						D260-01	21:20
YH1001	SW9060	NONE	N 0 1	TOC	26.3	mg/kg		Y	Y	P							D260-01	11:10
10140Q-03																		
YH2001	SW6010B	SW3010	N 0 1	ALUMINUM	.119	mg/L	J	Y	Y	P	J		15				D261-01	21:00
				ANTIMONY	.1	mg/L	U	N	Y	U	U						D261-01	21:00
				ARSENIC	.01	mg/L	U	N	Y	U	U						D261-01	19:51
				BARIUM	.0283	mg/L		Y	Y	P							D261-01	21:00
				BERYLLIUM	.001	mg/L	U	N	Y	U	U						D261-01	21:00
				CADMIUM	.01	mg/L	U	N	Y	U	U						D261-01	21:00
				CALCIUM	.328	mg/L	J	Y	Y	P	J		15				D261-01	21:00

Validation Qualifier Data Entry Verification

Run Date: March 25, 2002

Fort McClellan

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10140Q-03																		
YH2001	SW6010B	SW3010	N 0 1	CHROMIUM	.01	mg/L	U	N	Y	U	U						D261-01	21:00
				COBALT	.02	mg/L	U	N	Y	U	U						D261-01	21:00
				COPPER	.02	mg/L	U	N	Y	U	U						D261-01	21:00
				IRON	.057	mg/L	J	Y	Y	P	J		15				D261-01	21:00
				LEAD	.01	mg/L	U	N	Y	U	U						D261-01	19:51
				MAGNESIUM	.373	mg/L	J	Y	Y	P	J		15				D261-01	21:00
				MANGANESE	.00608	mg/L	J	Y	Y	P	J		15				D261-01	21:00
				NICKEL	.0109	mg/L	J	Y	Y	F	B		06B				D261-01	21:00
				POTASSIUM	2.75	mg/L	J	Y	Y	P	J		15				D261-01	21:00
				SELENIUM	.01	mg/L	U	N	Y	U	U						D261-01	19:51
				SILVER	.01	mg/L	U	N	Y	U	U						D261-01	21:00
				SODIUM	.902	mg/L	J	Y	Y	P	J		15				D261-01	21:00
				THALLIUM	.01	mg/L	U	N	Y	U	U						D261-01	19:51
				VANADIUM	.01	mg/L	U	N	Y	U	U						D261-01	21:00
				ZINC	.02	mg/L	U	N	Y	U	U						D261-01	21:00
	SW7470A	TOTAL	N 0 1	MERCURY	.0005	mg/L	U	N	Y	U	U						D261-01	11:26
YH2001	SW8330	METHOD	N 0 1	1,3,5-TNB	.0004	mg/L	U	N	Y	U	U						D261-01	03:46
				1,3-DNB	.0004	mg/L	U	N	Y	U	U						D261-01	03:46
				2,4,6-TNT	.0004	mg/L	U	N	Y	U	U						D261-01	03:46
				2,4-DNT	.0004	mg/L	U	N	Y	U	U						D261-01	03:46
				2,6-DNT	.0004	mg/L	U	N	Y	U	U						D261-01	03:46
				2-AM-4,6-DNT	.0004	mg/L	U	N	Y	U	U						D261-01	03:46
				2-NITROTOLUENE	.0004	mg/L	U	N	Y	U	U						D261-01	03:46
				3-NITROTOLUENE	.0004	mg/L	U	N	Y	U	U						D261-01	03:46
				4-AM-2,6-DNT	.0004	mg/L	U	N	Y	U	U						D261-01	03:46
				4-NITROTOLUENE	.0004	mg/L	U	N	Y	U	U						D261-01	03:46
				HMX	.001	mg/L	U	N	Y	U	U						D261-01	03:46
				NITROBENZENE	.0004	mg/L	U	N	Y	U	U						D261-01	03:46
				RDX	.0004	mg/L	U	N	Y	U	U						D261-01	03:46
				TETRYL	.0004	mg/L	U	N	Y	U	U						D261-01	03:46
YH2001	E314.0	NONE	N 0 1	PERCHLORATE	.005	mg/L	U	N	Y	U	U						D261-01	17:20

Quality Assurance Report
For the Artillery and Mortar Impact Areas
South of Bains Gap Road
Parcel HR-141Q
IT Project No 796887
Fort McClellan Quality Assurance Report

1.0 Overview

Ten soil samples, 1 sediment samples and 1 surface water sample were collected in support of the investigation at Fort McClellan (FTMC) Parcel HR-141Q, Artillery and Mortar Impact Areas South of Bains Gap Road. All samples were submitted to EMAX Laboratories, Inc. for analysis. Soil, sediment, and surface water samples were analyzed for target analyte list (TAL) metals, nitroaromatic-nitramine explosives, and perchlorate. QC samples consisted of the following types and quantities: 4 equipment rinsates. An analytical summary table cross-referencing sample location, sample number, and contaminants of concern is presented in Attachment A.

One hundred (100) percent of samples were validated and reviewed in accordance with the *USEPA Contract Laboratory Program National Functional Guidelines for Evaluating Inorganic Data Review (EPA, February 1994)* and *USEPA Contract Laboratory Program National Functional Guidelines for Organic Review (EPA, October 1999)* for all areas except blanks. Region III *Laboratory Data Validation Functional Guidelines for Inorganic Analyses (EPA, April 1993)* and Region III *National Functional Guidelines for Organic Data Review (EPA, June 1992)* were applied to the areas associated with blank contamination. Data qualifiers assigned to results were based on guidance outlined in the referenced documents and the *Installation-Wide Sampling and Analysis Plan (IT, March 2000)* for FTMC. Table 1.0-1 and Table 1.0-2 define laboratory data and validation data qualifiers assigned to analytical results, respectively.

Table 1.0-1
Laboratory Data Qualifier Definitions

Data Qualifier	Laboratory Data Qualifier Definition
B	Analyte detected in method blank at concentration greater than the reporting limit (and greater than zero).
C	Confirming data obtained using second GC column or GC/MS.
E	Analyte concentration exceeded calibration range.
I	Analyte identification suspect. See narrative for explanation.
J	Result is less than or equal to specified reporting limit but greater than the method detection limit (MDL).
P	Analyte not confirmed. Results from primary and secondary GC columns differ by greater than 10 percent
S	Analyte concentration obtained using Method of Standard Additions (MSA).
U	Not detected. The value represented indicates the reporting limit for the analysis.
D	Sample analyzed as a dilution. The result reported has been calculated using the appropriate dilution factor.
No Code	Confirmed identification.

Table 1.0-2
Validation Data Qualifier Definitions

Validation Qualifier	Validation Data Qualifier Definition
U	Not detected. The associated number indicates approximate sample concentration necessary to be detected.
No Code	Confirmed identification
B	Not detected substantially above the level reported in laboratory or field blanks.
R	Unusable result. Analyte may or may not be present in the sample.
N	Tentative identification. Consider present. Special methods may be needed to confirm its presence or absence in future sampling efforts.
J	Analyte present. Reported value may not be accurate or precise. Considered an estimate.
NJ	Qualitative identification questionable due to poor resolution. Presumptively present at approximate quantity.

The Data Validation Summary Report is presented in Attachment B.

2.0 Summary

Data were evaluated to verify compliance with precision, accuracy, representativeness, comparability, completeness, and sensitivity. To verify that project data quality objectives (DQO) were met, laboratory analytical results and data packages were examined for compliance with SW846 SW6010B/SW7000 Series, SW8330, 9060 and U.S. Environmental Protection Agency (EPA) 314.0 quality control (QC) method criteria. Laboratory nonconformances and discrepancies in the data were also examined to determine their impact on the data. The results of this review are presented in the following sections.

2.1 Sample Receipt and Analytical Holding Times

All sample results generated by the laboratory during this investigation have been reviewed with respect to condition of samples as received by the laboratory, chain-of-custody, and analysis holding times. All coolers were received by EMAX in good condition under proper chain-of-custody.

All extraction and analytical holding times were met.

2.2 Rejected Data

No data were qualified by the laboratory or after validation was completed as being rejected ("R"-flagged).

2.3 Blank Results

A description of the types of blank samples which were collected, processed, and evaluated for background and/or process contamination during this sampling is as follows:

- Equipment rinsates (ER) are samples of analyte-free deionized water poured into, or over, or pumped through the sampling device, collected in a sample container, and transported to the laboratory for analysis. Equipment rinsates are used to assess the effectiveness of equipment decontamination procedures.

- Method blanks (MB) are used in the laboratory to assess and document any possible contamination resulting from the analytical process. A method blank is an analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank shall be carried through the complete sample preparation and analytical procedure.

- Initial and continuing calibration blanks (ICB and CCB) are an analyte-free matrix which is analyzed to verify the analysis system is free of contamination. ICBs and CCBs are analyzed immediately after the initial and continuing calibration is performed.

Field sample concentrations were evaluated to determine if the sample results could have been biased by the presence of any contamination measured in equipment rinsate blanks, method blanks and/or initial/continuing calibration blanks. Sample data affected by blank contamination are summarized in Table 2.3-1.

Table 2.3-1
Summary of Blank Contamination

Sample Delivery Group	Sample Number	Contaminant	Action
10141-01	YJ0002	Cobalt	Cobalt result for sample YJ0002 was "B" qualified.
10141Q-01	YJ0007 & YJ0008	Nickel	Nickel results for samples YJ0007 and YJ0008 were "B" qualified.
10141Q-02	YJ0004	Cobalt	Cobalt result for sample YJ0004 was "B" qualified.
10141Q-03	YJ0009	Cobalt	Cobalt result for sample YJ0009 was "B" qualified.
10141Q-05	YJ2002	Calcium	Calcium result for sample YJ2002 was "B" qualified.

2.4 Analytical Precision

Precision is defined as a measurement of mutual agreement among individual measurements of the same property, usually under "prescribed similar conditions." Analytical precision is calculated as relative percent difference (%RPD) based on the following formula:

$$\%RPD = \left| \frac{(A-B)}{(A+B)/2} \right| \times 100$$

where:

%RPD = Relative Percent Difference
A = original result
B = duplicate result

A high RPD between an original sample and its field duplicate may be attributable to the difference in sample matrix or distribution of the contaminant within the sample, rather than the precision of the collection process. Also, when "estimated" results are reported, there is a potential for increased variability between the primary and duplicate sample results. This occurs because, at low concentrations, the relative difference in results is magnified by the RPD calculation even though the results are comparable in absolute terms. There is also increased uncertainty in the results as the lower limit of detection is approached, due to decreasing analytical accuracy. The RPD calculation cannot be performed in cases where non-detected results are reported with corresponding samples that contain detectable concentrations.

Overall sampling and analysis precision for this task was assessed using field duplicate (FD) samples. Laboratory precision was assessed by laboratory control sample/laboratory control sample duplicate (LCS/LCSD) and matrix spike/matrix spike duplicate (MS/MSD) recoveries.

Results indicate that an acceptable analytical precision was achieved. Table 2.4-1 lists precision acceptance criteria for LCS/LCSD, MS/MSD organic and inorganic analyses and field duplicate comparisons. RPD anomalies are summarized in Table 2.4-2.

Table 2.4-1
Precision Acceptance Criteria

Field/Laboratory QC Type	Matrix	
	Aqueous	Soil
Field Duplicate (Both Organic & Inorganic)	RPD < 35%	RPD < 50%
Perchlorate LCS/LCSD and MS/MSD	RPD < 10%	RPD < 20%
Nitroaromatic and Nitramine Explosives LCS/LCSD and MS/MSD	Refer to Table 8-1of FTMC "Installation Wide Sample and Analysis Plan"	Refer to Table 8-1of FTMC "Installation Wide Sample and Analysis Plan"
Metals LCS/LCSD and MS/MSD	RPD < 20%	RPD < 20%

Table 2.4-2
Summary of Field Duplicate, LCS/LCSD & MS/MSD RPD Anomalies

Sample Delivery Group	Sample Number	Contaminant (RPD %)	Assigned Validation Qualifier
10141Q-04	IPE026SL/IPE026SC (LCS/LCSD)	Zinc (23%)	Zinc results for sample YJ0010 and YJ1002 were "J " qualified due to failing LCS/LCSD RPD.
10141Q-05	EXE003WL / EXE003WY (LCS/LCSD)	HMX (38%) 1,3,5-TNB (44%) 1,3-DNB (36%) Tetryl (50%) 2,4,6-TNT (38%)	HMX, 1,3,5-TNB, 1,3-DNB, Tetryl and 2,4,6-TNT results for sample YJ2002 were "UJ" qualified due to failing LCS/LCSD RPD.

2.5 *Analytical Accuracy Assessment*

Accuracy is a measure of the degree of agreement of a result against an accepted reference or true value. Accuracy is expressed as a percent recovery (%R) calculated by the ratio of the measurement and accepted true value as shown in the following equation:

$$\%R = (|X_s - X_u|/K) \times 100$$

where:

X_s = measured value of the spiked sample
X_u = measured value of the unspiked sample
K = known amount of the spike in the sample

Surrogate recoveries, MS/MSD and LCS/LCSD, were used to measure analytical accuracy as described in SW846 8330, SW6010B/SW7000, 9060 and 314.0. Reported results indicate that an acceptable level of analytical accuracy was achieved. LCS/LCSD and MS/MSD spike recoveries which exceed QA criteria are summarized in Table 2.5-1.

Table 2.5-1
Summary of LCS/LCSD and MS/MSD Spike Recovery Criteria Exceedances

Sample Delivery Group	Sample Number	Contaminant	Action
10141Q-01	YJ0005 MS/MSD	Antimony (LB) Barium (LB)	Antimony and barium results for sample YJ0005, YJ0006, YJ0007 and YJ0008 were "J" / "UJ" qualified due to failing MS/MSD spike recoveries.
10141Q-04	IPE026SL/IPE026SC (LCS/LCSD)	Zinc (HB)	Zinc results for sample YJ0010 and YJ1002 were "J " qualified due to failing LCS/LCSD spike recoveries.

LB - low bias.
HB - high bias.

2.6 *Data Representativeness*

Representativeness is a qualitative parameter that expresses the degree to which sample data actually represent the matrix conditions. Sample locations selected for this investigation outline contaminant releases into the environment, that may have occurred and will confirm whether contaminated soil exists at this site. Soil sample data are being used to assess potential impacts to terrestrial biota that might use the site for food and/or habitat purposes.

Standardized requirements and procedures for sample collection and handling were employed to maximize sample representativeness.

2.7 Data Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. By employing well-recognized techniques and accepted standardized methods for sampling and analysis, data comparability was achieved during this sampling event.

2.8 Data Completeness

Completeness is calculated for the aggregation of data for each analyte measured during the investigation of Parcel HR-141Q Artillery and Mortar Impact Areas South of Bains Gap Road. The formula for calculating completeness is listed below:

$$\% \text{ Completeness} = (X_V / X_T) \times 100$$

where:

X_V = number of valid (i.e., non-"R"-flagged) results
X_T = number of possible results

Parcel HR-141Q goal for completeness is 95% for both aqueous and soil samples. The % Completeness for this task is calculated to be 100%.

- % Completeness = (457 / 457) x 100 = 100%

2.9 Sensitivity

Sensitivity is defined as the ability of the laboratory's established method detection limits (MDL)/method reporting limits (MRL or RL) to meet project-specific DQOs or site-specific screening levels (SSSL) and or ecological screening values (ESV).

MDL is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero. MDLs are determined from an analysis of a sample in a given matrix containing the target analyte of interest. The MRL is a threshold value based upon the sensitivity capability of method and instrument. MRLs are normally set at a minimum of two times the MDL. MRLs are adjusted based on the sample matrix, moisture (solids only), and any necessary sample dilutions. The laboratory cannot reliably quantitate values reported above the MDL but below the MRL. Therefore, these analyte values must be flagged as estimated quantities ("J"-flagged).

To evaluate method sensitivity, a general comparison of the laboratory's MDLs/MRLs and the site investigation screening levels (background values, human health SSSL for residential reuse, and [ESV]) was performed and presented to the FTMC Base Realignment and Closure Team (BCT) (November 1999). The comparison summarized the relationship between the MDL/MRLs and SSSL/ESVs for each parameter typically reported for all of the major analytical methods used at FTMC. The few cases identified where the MDL and/or MRL values exceeded their corresponding human health SSSL and/or ESV were specifically highlighted and explained. It was understood that for these cases, the standard analytical method of analysis was not going to provide MDLs/MRLs which met human health SSSLs or ESVs without significant uncertainty and the possibility of reporting false negatives. It was generally accepted that standard EPA SW846 analytical methods would provide sufficient sensitivity for data reported and used in the site screening process at FTMC.

3.0 Data Usability

Data quality indicators (DQI) provide an internal guide for control and review to verify that data are scientifically sound, defensible, and of known and acceptable quality. Factors such as precision, accuracy, representativeness, comparability, completeness, and sensitivity were evaluated to determine if the project's DQOs were met. A review of the data revealed that the majority of QA/QC indicators were within acceptable control limits. Any data anomalies encountered during data validation and overall site evaluations have been summarized in the previous sections of this document.

Based on the results of data validation and QA review, IT has concluded that representative samples were collected and analyzed and that the results are indicative of the media analyzed. The data are to be considered representative of site conditions and are usable for their intended purpose.

4.0 Attachments

Attachment A - Analytical Summary Table
Attachment B - Data Validation Summary Report

ATTACHMENT A

ANALYTICAL SUMMARY TABLE

Ft. McClellan
Parcel HR-141Q
Artillery and Mortar Impact Areas South of Bains Gap Road
Analytical Summary
Project No. 796887

HR-141Q Soil Sampling

Sample Location	Sample Name	Sample Number	Date Sampled	Analytical Suite
HR-141Q-GP01	HR-141Q-GP01-SS-YJ0001-REG	YJ0001	07-Feb-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
	HR-141Q-GP01-DS-YJ0002-REG	YJ0002	07-Feb-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
HR-141Q-GP02	HR-141Q-GP02-SS-YJ0003-REG	YJ0003	11-Apr-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
	HR-141Q-GP02-DS-YJ0004-REG	YJ0004	11-Apr-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
HR-141Q-GP03	HR-141Q-GP03-SS-YJ0005-REG	YJ0005	09-Feb-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
	HR-141Q-GP03-DS-YJ0006-REG	YJ0006	09-Feb-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
HR-141Q-GP04	HR-141Q-GP04-SS-YJ0007-REG	YJ0007	08-Feb-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
	HR-141Q-GP04-DS-YJ0008-REG	YJ0008	08-Feb-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
HR-141Q-DEP01	HR-141Q-DEP01-SS-YJ0009-REG	YJ0009	24-Apr-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
HR-141Q-DEP02	HR-141Q-DEP02-SS-YJ0010-REG	YJ0010	03-May-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.

HR-141Q Sediment-Surface Water Sampling

Sample Location	Sample Name	Sample Number	Date Sampled	Analytical Suite
HR-141Q-SW/SD02	HR-141Q-SW/SD02-SD-YJ1002-REG	YJ1002	03-May-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330, Perchlorate by EPA 314.0, TOC by SW9060 and Grain size by ASTM 421/422.
	HR-141Q-SW/SD02-SW-YJ2002-REG	YJ2002	03-May-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.

ATTACHMENT B

DATA VALIDATION SUMMARY REPORT

Data Validation Summary Report
For the Site Investigation Performed at the
"Artillery and Mortar Impact Areas South of Bains Gap"
Parcel HR-141Q
Fort McClellan, Calhoun County, Alabama

1.0 Introduction

Level III data validation was performed on 100% of the environmental samples collected for HR-141Q. The analytical data consisted of six sample delivery groups (SDG), 10141-01, 10141Q-01, 10141Q-02, 10141Q-03, 10141Q-04, and 10141Q-05, which were analyzed by EMAX Laboratories. The chemical parameters for which the samples were analyzed, are identified below:

Parameter (Method)
Perchlorate by EPA 314.0 and TOC by SW846 9060
Nitroaromatic and Nitramine Explosives by SW846 8330
Metals by SW846 6010B and 7471A/7470A

2.0 Procedures

The sample data were validated following the logic identified in the *USEPA Contract Laboratory Program (CLP) National Functional Guidelines For Inorganic Data Review (February 1994)* and *USEPA Contract Laboratory Program National Functional Guidelines For Organic Review (October 1999)* for all areas except Blanks. *Region III Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses (April 1993)* and *Region III National Functional Guidelines for Organic Data Review (June 1992)* were applied to the areas associated with blank contamination. Specific quality control (QC) criteria, as identified in the Quality Assurance Plan (QAP), analytical methods, and laboratory Standard Operating Procedures (SOP's) were applied to all sample results. As the result of the use of Update III SW846 test methods for the analytical data and the application of the CLP guidelines during the validation process, there were instances where specific QC requirements for all target compounds were not defined. This primarily occurred in the organic, Gas Chromatograph (GC) and Gas Chromatograph/Mass Spectra (GC/MS) calibration areas and is due to the fact that the analytical methods are performance-based, and allows the use of average calibration responses, in lieu of, individual responses, which are defined by CLP protocol. In light of applying CLP guidelines to SW846 methods and evaluating the usability of the data during the validation process, specific QC criteria were determined to address all target compounds and are identified in this report for each parameter, as well as, in the validation checklists, which

function as worksheets. All completed validation checklists are on file in the Knoxville office. For those analytical methods not addressed by the CLP and Region III guidelines, the validation was based on the method requirements (i. e. SW846, CFR, SOP's) and technical judgement, following the logic of the CLP validation guidelines.

3.0 Summary of Data Validation Findings

The overall quality of the data was determined to be acceptable with minimal qualifications. No data were rejected.

Individual validation reports have been prepared for each parameter and the overall results of the validation findings are summarized in this report. The validation qualifier data entry verification report (Attachment A) is also provided. This is a complete listing of all of the analytical results and the validation qualifiers assigned for HR-141Q. It also identifies the "use" column, which indicates which result to use in the event of a reanalysis. A listing of the validation qualifiers and the reason codes, along with their definitions are also found in Attachment A. The following section highlights the key findings of the data validation for each analysis.

4.0 Analysis-Specific Data Validation Summaries

4.1 Perchlorate by EPA 314.0 and TOC by SW846 9060

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinses and method blanks was applied to all sample results. All were found to be acceptable.

Matrix Spike / Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

No field duplicates were associated with these SDGs.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J' were qualified as estimated "J", unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.2 Nitroaromatic and Nitramine Explosives by SW846 8330

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges.

Matrix Spike / Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were found to be acceptable, with the exception of the following:

SDG Number	Sample	Compound	Validation Qualifier
10141Q-05	YJ2002	1,3,5-Trinitrobenzene, 1,3-Dinitrobenzene, 2,4,6-Trinitrotoluene, HMX, Tetryl	UJ

Field Duplicates

No field duplicates were associated with these SDGs.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J' were qualified as estimated "J" unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.3 Metals by SW846 6010B/7471A/7470A

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all samples.

Initial and Continuing Calibrations

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse, calibration, and method blanks was applied to all sample results. All were found to be acceptable, with the exception of the following:

SDG Number	Sample Number	Compound	Blank Contaminant	Validation Qualifier
10141-01	YJ0002	Cobalt	ICB/CCB	B
10141Q-01	YJ0007, YJ0008	Nickel	ICB/CCB	B
10141Q-02	YJ0004	Cobalt	ICB/CCB	B
10141Q-03	YJ0009	Cobalt	ICB/CCB	B
10141Q-05	YJ2002	Calcium	ICB/CCB	B

Matrix Spike / Matrix Spike Duplicate
MS/MSD analysis was performed for the project samples and all QC criteria were met with the following exceptions:

SDG Number	Sample Number	Compound	Validation Qualifier
10141Q-01	ALL	Antimony, Barium	J/UJ

Laboratory Control Sample (LCS)
LCS was performed for the project samples and all QC criteria were met with the following exceptions:

SDG Number	Sample	Compound	Validation Qualifier
10141Q-04	YJ0010, YJ1002	Zinc	J

Interference Check Sample (ICS)
All ICS % recoveries were acceptable. All QC criteria were met.

ICP Serial Dilutions
All QC criteria were met for the serial dilutions associated with the project samples with the following exceptions:

SDG Number	Sample	Compound	Validation Qualifier
10141Q-01	All	Chromium, Cobalt, Nickel, Zinc	J/B
10141Q-04	YJ0010, YJ1002	Zinc	J

Field Duplicates
No field duplicates were associated with these SDGs.

Sample Quantitation
Results quantitated between the IDL and the RL ("B" flagged by the laboratory) were qualified as estimated (J), unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

ATTACHMENT A:

Data Validation Qualifier Entry Verification Report

Validation Qualifiers

U Not detected. The compound/analyte was analyzed for, but not detected above the associated reporting limit.

J The compound/analyte was positively identified; the reported value is the estimated concentration of the constituent detected in the sample analyzed.

B The concentration reported was detected significantly above the levels reported in the associated equipment rinse samples and/or laboratory method and trip blanks. (5X/10X Rule was applied).

R The reported sample results are rejected due to the following:

1. Severe deficiencies in the supporting quality control data.
2. Anomalies noted in the sampling and/or analysis process which could affect the validity of the reported data.
3. The presence or absence of the constituent cannot be verified based on the data provided.
4. To indicate not to use a particular result in the event of a reanalysis.

UJ The compound/analyte was analyzed for, but not detected above the established reporting limit. However, review and evaluation of supporting QC data and/or sampling and analysis process have indicated that the "nondetect" may be inaccurate or imprecise. The nondetect result should be estimated.

Validation Reason Code Definitions

Reason Code	Description
01	Sample received outside of 4+/-2 degrees Celsius
01A	Improper sample preservation
02	Holding time exceeded
02A	Extraction
02B	Analysis
03	Instrument performance – outside criteria
03A	BFB
03B	DFTPP
03C	DDT and/or Endrin % breakdown exceeds criteria
03D	Retention time windows
03E	Resolution
04	Initial calibration results outside specified criteria
04A	Compound mean RRF QC criteria not met
04B	Individual % RSD criteria not met
04C	Correlation coefficient >0.995
05	Continuing calibration results outside specified criteria
05A	Compound mean RRF QC criteria not met
05B	Compound % D QC criteria not met
06	Result qualified as a result of the 5x/10x blank correction
06A	Method or preparation blank
06B	ICB or CCB
06C	ER
06D	TB
06E	FB
07	Surrogate recoveries outside control limits
07A	Sample
07B	Associated method blank or LCS
08	MS/MSD/Duplicate results outside criteria
08A	MS and/or MSD recovery not within control limits (accuracy)
08B	% RPD outside acceptance criteria (precision)
09	Post digestion spike outside criteria (GFAA)
10	Internal standards outside specified control limits
10A	Recovery
10B	Retention time
11	Laboratory control sample recoveries outside specified limits
11A	Recovery
11B	% RPD (if run in duplicate)
12	Interference check standard
13	Serial dilution
14	Tentatively identified compounds
15	Quantitation
16	Multiple results available; alternate analysis preferred
17	Field duplicate RPD criteria is exceeded
18	Percent difference between original and second column exceeds QC criteria
19	Professional judgement was used to qualify the data
20	Pesticide clean-up checks
21	Target compound identification
22	Radiological calibration
23	Radiological quantitation
24	Reported result and/or lab qualifier revised to reflect validation findings

Validation Qualifier Data Entry Verification

Run Date: October 11, 2001

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10141-01																		
YJ0001	SW6010B	SW3050	N 0 1	ALUMINUM	14900	mg/kg		Y	Y	P							B094-01	21:09
				ANTIMONY	12.5	mg/kg	U	N	Y	U	U						B094-01	21:09
				ARSENIC	3.14	mg/kg		Y	Y	P							B094-01	20:54
				BARIUM	63.3	mg/kg		Y	Y	P							B094-01	21:09
				BERYLLIUM	.91	mg/kg	J	Y	Y	P	J		15				B094-01	21:09
				CADMIUM	.624	mg/kg	U	N	Y	U	U						B094-01	21:09
				CALCIUM	66.8	mg/kg	J	Y	Y	P	J		15				B094-01	21:09
				CHROMIUM	11.1	mg/kg		Y	Y	P							B094-01	21:09
				COBALT	2.04	mg/kg	J	Y	Y	P	J		15				B094-01	21:09
				COPPER	3.68	mg/kg		Y	Y	P							B094-01	21:09
				IRON	14900	mg/kg		Y	Y	P							B094-01	21:09
				LEAD	11.6	mg/kg		Y	Y	P							B094-01	20:54
				MAGNESIUM	664	mg/kg		Y	Y	P							B094-01	21:09
				MANGANESE	23.7	mg/kg		Y	Y	P							B094-01	21:09
				NICKEL	4.49	mg/kg		Y	Y	P							B094-01	21:09
				POTASSIUM	577	mg/kg	J	Y	Y	P	J		15				B094-01	21:09
				SELENIUM	1.25	mg/kg	U	N	Y	U	U						B094-01	20:54
				SILVER	1.25	mg/kg	U	N	Y	U	U						B094-01	21:09
				SODIUM	125	mg/kg	U	N	Y	U	U						B094-01	21:09
				THALLIUM	2.5	mg/kg	U	N	Y	U	U						B094-01	20:54
				VANADIUM	19.4	mg/kg		Y	Y	P							B094-01	21:09
				ZINC	20.9	mg/kg		Y	Y	P							B094-01	21:09
	SW7471A	TOTAL	N 0 1	MERCURY	.043	mg/kg	J	Y	Y	P	J		15				B094-01	16:45
YJ0002	SW6010B	SW3050	N 0 1	ALUMINUM	15100	mg/kg		Y	Y	P							B094-02	21:13
				ANTIMONY	11.5	mg/kg	U	N	Y	U	U						B094-02	21:13
				ARSENIC	5.5	mg/kg		Y	Y	P							B094-02	20:58
				BARIUM	27.3	mg/kg		Y	Y	P							B094-02	21:13
				BERYLLIUM	1.08	mg/kg	J	Y	Y	P	J		15				B094-02	21:13
				CADMIUM	.574	mg/kg	U	N	Y	U	U						B094-02	21:13
				CALCIUM	16.1	mg/kg	J	Y	Y	P	J		15				B094-02	21:13
				CHROMIUM	11.7	mg/kg		Y	Y	P							B094-02	21:13
				COBALT	.816	mg/kg	J	Y	Y	F	B		06B	15			B094-02	21:13
				COPPER	5.09	mg/kg		Y	Y	P							B094-02	21:13
				IRON	13700	mg/kg		Y	Y	P							B094-02	21:13
				LEAD	5.02	mg/kg		Y	Y	P							B094-02	20:58
				MAGNESIUM	433	mg/kg		Y	Y	P							B094-02	21:13
				MANGANESE	2.98	mg/kg		Y	Y	P							B094-02	21:13
				NICKEL	4.12	mg/kg		Y	Y	P							B094-02	21:13
				POTASSIUM	2750	mg/kg		Y	Y	P							B094-02	21:13
				SELENIUM	1.15	mg/kg	U	N	Y	U	U						B094-02	20:58

Validation Qualifier Data Entry Verification

Run Date: October 11, 2001

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10141-01																		
YJ0002	SW6010B	SW3050	N 0 1	SILVER	1.15	mg/kg	U	N	Y	U	U						B094-02	21:13
				SODIUM	115	mg/kg	U	N	Y	U	U						B094-02	21:13
				THALLIUM	2.3	mg/kg	U	N	Y	U	U						B094-02	20:58
				VANADIUM	16.3	mg/kg		Y	Y	P							B094-02	21:13
				ZINC	11.1	mg/kg		Y	Y	P							B094-02	21:13
	SW7471A	TOTAL	N 0 1	MERCURY	.115	mg/kg	U	N	Y	U	U						B094-02	16:48
YJ0001	SW8330	METHOD	N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						B094-01	06:04
				1,3-DNB	.4	mg/kg	U	N	Y	U	U						B094-01	06:04
				2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						B094-01	06:04
				2,4-DNT	.4	mg/kg	U	N	Y	U	U						B094-01	06:04
				2,6-DNT	.4	mg/kg	U	N	Y	U	U						B094-01	06:04
				2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						B094-01	06:04
				2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B094-01	06:04
				3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B094-01	06:04
				4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						B094-01	06:04
				4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B094-01	06:04
				HMX	.4	mg/kg	U	N	Y	U	U						B094-01	06:04
				NITROBENZENE	.4	mg/kg	U	N	Y	U	U						B094-01	06:04
				RDX	.4	mg/kg	U	N	Y	U	U						B094-01	06:04
				TETRYL	.4	mg/kg	U	N	Y	U	U						B094-01	06:04
YJ0002	SW8330	METHOD	N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						B094-02	06:45
				1,3-DNB	.4	mg/kg	U	N	Y	U	U						B094-02	06:45
				2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						B094-02	06:45
				2,4-DNT	.4	mg/kg	U	N	Y	U	U						B094-02	06:45
				2,6-DNT	.4	mg/kg	U	N	Y	U	U						B094-02	06:45
				2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						B094-02	06:45
				2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B094-02	06:45
				3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B094-02	06:45
				4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						B094-02	06:45
				4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B094-02	06:45
				HMX	.4	mg/kg	U	N	Y	U	U						B094-02	06:45
				NITROBENZENE	.4	mg/kg	U	N	Y	U	U						B094-02	06:45
				RDX	.4	mg/kg	U	N	Y	U	U						B094-02	06:45
				TETRYL	.4	mg/kg	U	N	Y	U	U						B094-02	06:45
YJ0001	EPA314.0	NONE	N 0 1	PERCHLORATE	.0624	mg/kg	U	N	Y	U	U						B094-01	22:18
YJ0002	EPA314.0	NONE	N 0 1	PERCHLORATE	.0574	mg/kg	U	N	Y	U	U						B094-02	22:36
10141Q-01																		
YJ0005	SW6010B	SW3050	N 0 1	ALUMINUM	15700	mg/kg		Y	Y	P							B101-01	00:38
				ANTIMONY	13	mg/kg	U	N	Y	U	UJ		08A				B101-01	00:38

Validation Qualifier Data Entry Verification

Run Date: October 11, 2001

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10141Q-01																		
YJ0005	SW6010B	SW3050	N 0 1	ARSENIC	4.58	mg/kg		Y	Y	P							B101-01	21:58
				BARIUM	488	mg/kg		Y	Y	P	J		08A				B101-01	00:38
				BERYLLIUM	3.1	mg/kg		Y	Y	P							B101-01	00:38
				CADMIUM	.649	mg/kg	U	N	Y	U	U						B101-01	00:38
				CALCIUM	1670	mg/kg		Y	Y	P							B101-01	00:38
				CHROMIUM	7.98	mg/kg		Y	Y	P	J		13				B101-01	00:38
				COBALT	11.8	mg/kg		Y	Y	P	J		13				B101-01	00:38
				COPPER	11.9	mg/kg		Y	Y	P							B101-01	00:38
				IRON	14400	mg/kg		Y	Y	P							B101-01	00:38
				LEAD	36.7	mg/kg		Y	Y	P							B101-01	21:58
				MAGNESIUM	580	mg/kg		Y	Y	P							B101-01	00:38
				MANGANESE	2090	mg/kg		Y	Y	P							B101-01	00:38
				NICKEL	6.85	mg/kg		Y	Y	P	J		13				B101-01	00:38
				POTASSIUM	726	mg/kg		Y	Y	P							B101-01	00:38
				SELENIUM	1.3	mg/kg	U	N	Y	U	U						B101-01	21:58
				SILVER	1.3	mg/kg	U	N	Y	U	U						B101-01	00:38
				SODIUM	26.2	mg/kg	J	Y	Y	P	J		15				B101-01	00:38
				THALLIUM	2.59	mg/kg	U	N	Y	U	U						B101-01	21:58
				VANADIUM	13.2	mg/kg		Y	Y	P							B101-01	00:38
				ZINC	59.4	mg/kg		Y	Y	P	J		13				B101-01	00:38
	SW7471A	TOTAL	N 0 1	MERCURY	.065	mg/kg	J	Y	Y	P	J		15				B101-01	11:11
YJ0006	SW6010B	SW3050	N 0 1	ALUMINUM	11900	mg/kg		Y	Y	P							B101-02	00:42
				ANTIMONY	11.5	mg/kg	U	N	Y	U	UJ		08A				B101-02	00:42
				ARSENIC	4.7	mg/kg		Y	Y	P							B101-02	22:02
				BARIUM	105	mg/kg		Y	Y	P	J		08A				B101-02	00:42
				BERYLLIUM	.933	mg/kg	J	Y	Y	P	J		15				B101-02	00:42
				CADMIUM	.576	mg/kg	U	N	Y	U	U						B101-02	00:42
				CALCIUM	124	mg/kg		Y	Y	P							B101-02	00:42
				CHROMIUM	21.5	mg/kg		Y	Y	P	J		13				B101-02	00:42
				COBALT	6.64	mg/kg		Y	Y	P	J		13				B101-02	00:42
				COPPER	12	mg/kg		Y	Y	P							B101-02	00:42
				IRON	35400	mg/kg		Y	Y	P							B101-02	00:42
				LEAD	9.07	mg/kg		Y	Y	P							B101-02	22:02
				MAGNESIUM	442	mg/kg		Y	Y	P							B101-02	00:42
				MANGANESE	302	mg/kg		Y	Y	P							B101-02	00:42
				NICKEL	6	mg/kg		Y	Y	P	J		13				B101-02	00:42
				POTASSIUM	820	mg/kg		Y	Y	P							B101-02	00:42
				SELENIUM	1.15	mg/kg	U	N	Y	U	U						B101-02	22:02
				SILVER	1.15	mg/kg	U	N	Y	U	U						B101-02	00:42
				SODIUM	115	mg/kg	U	N	Y	U	U						B101-02	00:42

Validation Qualifier Data Entry Verification

Run Date: October 11, 2001

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10141Q-01																		
YJ0006	SW6010B	SW3050	N 0 1	THALLIUM	2.3	mg/kg	U	N	Y	U	U						B101-02	22:02
				VANADIUM	18.3	mg/kg		Y	Y	P							B101-02	00:42
				ZINC	17.7	mg/kg		Y	Y	P	J		13				B101-02	00:42
	SW7471A	TOTAL	N 0 1	MERCURY	.115	mg/kg	U	N	Y	U	U						B101-02	11:14
YJ0007	SW6010B	SW3050	N 0 1	ALUMINUM	8910	mg/kg		Y	Y	P							B101-03	00:47
				ANTIMONY	12.1	mg/kg	U	N	Y	U	UJ		08A				B101-03	00:47
				ARSENIC	2.48	mg/kg		Y	Y	P							B101-03	22:07
				BARIUM	117	mg/kg		Y	Y	P	J		08A				B101-03	00:47
				BERYLLIUM	.867	mg/kg	J	Y	Y	P	J		15				B101-03	00:47
				CADMIUM	.603	mg/kg	U	N	Y	U	U						B101-03	00:47
				CALCIUM	401	mg/kg		Y	Y	P							B101-03	00:47
				CHROMIUM	7.62	mg/kg		Y	Y	P	J		13				B101-03	00:47
				COBALT	10.6	mg/kg		Y	Y	P	J		13				B101-03	00:47
				COPPER	6.32	mg/kg		Y	Y	P							B101-03	00:47
				IRON	12400	mg/kg		Y	Y	P							B101-03	00:47
				LEAD	14.2	mg/kg		Y	Y	P							B101-03	22:07
				MAGNESIUM	362	mg/kg		Y	Y	P							B101-03	00:47
				MANGANESE	543	mg/kg		Y	Y	P							B101-03	00:47
				NICKEL	1.49	mg/kg	J	Y	Y	F	B		06B	13	15		B101-03	00:47
				POTASSIUM	551	mg/kg	J	Y	Y	P	J		15				B101-03	00:47
				SELENIUM	1.21	mg/kg	U	N	Y	U	U						B101-03	22:07
				SILVER	1.21	mg/kg	U	N	Y	U	U						B101-03	00:47
				SODIUM	24.3	mg/kg	J	Y	Y	P	J		15				B101-03	00:47
				THALLIUM	2.41	mg/kg	U	N	Y	U	U						B101-03	22:07
				VANADIUM	12.4	mg/kg		Y	Y	P							B101-03	00:47
				ZINC	15.6	mg/kg		Y	Y	P	J		13				B101-03	00:47
	SW7471A	TOTAL	N 0 1	MERCURY	.024	mg/kg	J	Y	Y	P	J		15				B101-03	11:16
YJ0008	SW6010B	SW3050	N 0 1	ALUMINUM	13000	mg/kg		Y	Y	P							B101-04	00:52
				ANTIMONY	11.6	mg/kg	U	N	Y	U	UJ		08A				B101-04	00:52
				ARSENIC	5.44	mg/kg		Y	Y	P							B101-04	22:11
				BARIUM	57.5	mg/kg		Y	Y	P	J		08A				B101-04	00:52
				BERYLLIUM	.482	mg/kg	J	Y	Y	P	J		15				B101-04	00:52
				CADMIUM	.578	mg/kg	U	N	Y	U	U						B101-04	00:52
				CALCIUM	71	mg/kg	J	Y	Y	P	J		15				B101-04	00:52
				CHROMIUM	17.7	mg/kg		Y	Y	P	J		13				B101-04	00:52
				COBALT	2.66	mg/kg		Y	Y	P	J		13				B101-04	00:52
				COPPER	9.25	mg/kg		Y	Y	P							B101-04	00:52
				IRON	25500	mg/kg		Y	Y	P							B101-04	00:52
				LEAD	8.41	mg/kg		Y	Y	P							B101-04	22:11
				MAGNESIUM	465	mg/kg		Y	Y	P							B101-04	00:52

Validation Qualifier Data Entry Verification

Run Date: October 11, 2001

Sample Number:	Analytical/Extraction Method:		Flt	REX	Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10141Q-01																				
YJ0008	SW6010B	SW3050	N	0	1	MANGANESE	81.9	mg/kg		Y	Y	P							B101-04	00:52
						NICKEL	3.09	mg/kg		Y	Y	F	B		06B	13			B101-04	00:52
						POTASSIUM	1340	mg/kg		Y	Y	P							B101-04	00:52
						SELENIUM	1.16	mg/kg	U	N	Y	U	U						B101-04	22:11
						SILVER	1.16	mg/kg	U	N	Y	U	U						B101-04	00:52
						SODIUM	23.3	mg/kg	J	Y	Y	P	J		15				B101-04	00:52
						THALLIUM	2.31	mg/kg	U	N	Y	U	U						B101-04	22:11
						VANADIUM	23.1	mg/kg		Y	Y	P							B101-04	00:52
						ZINC	17.3	mg/kg		Y	Y	P	J		13				B101-04	00:52
	SW7471A	TOTAL	N	0	1	MERCURY	.023	mg/kg	J	Y	Y	P	J		15				B101-04	11:18
YJ0005	SW8330	METHOD	N	0	1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						B101-01	14:35
						1,3-DNB	.4	mg/kg	U	N	Y	U	U						B101-01	14:35
						2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						B101-01	14:35
						2,4-DNT	.4	mg/kg	U	N	Y	U	U						B101-01	14:35
						2,6-DNT	.4	mg/kg	U	N	Y	U	U						B101-01	14:35
						2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						B101-01	14:35
						2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B101-01	14:35
						3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B101-01	14:35
						4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						B101-01	14:35
						4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B101-01	14:35
						HMX	.4	mg/kg	U	N	Y	U	U						B101-01	14:35
						NITROBENZENE	.4	mg/kg	U	N	Y	U	U						B101-01	14:35
						RDX	.4	mg/kg	U	N	Y	U	U						B101-01	14:35
						TETRYL	.4	mg/kg	U	N	Y	U	U						B101-01	14:35
YJ0006	SW8330	METHOD	N	0	1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						B101-02	15:15
						1,3-DNB	.4	mg/kg	U	N	Y	U	U						B101-02	15:15
						2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						B101-02	15:15
						2,4-DNT	.4	mg/kg	U	N	Y	U	U						B101-02	15:15
						2,6-DNT	.4	mg/kg	U	N	Y	U	U						B101-02	15:15
						2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						B101-02	15:15
						2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B101-02	15:15
						3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B101-02	15:15
						4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						B101-02	15:15
						4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B101-02	15:15
						HMX	.4	mg/kg	U	N	Y	U	U						B101-02	15:15
						NITROBENZENE	.4	mg/kg	U	N	Y	U	U						B101-02	15:15
						RDX	.4	mg/kg	U	N	Y	U	U						B101-02	15:15
						TETRYL	.4	mg/kg	U	N	Y	U	U						B101-02	15:15
YJ0007	SW8330	METHOD	N	0	1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						B101-03	15:56
						1,3-DNB	.4	mg/kg	U	N	Y	U	U						B101-03	15:56

Validation Qualifier Data Entry Verification

Run Date: October 11, 2001

Sample Number:	Analytical/Extraction Method:		Flt	REX	Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10141Q-01																				
YJ0007	SW8330	METHOD	N	0	1	2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						B101-03	15:56
						2,4-DNT	.4	mg/kg	U	N	Y	U	U						B101-03	15:56
						2,6-DNT	.4	mg/kg	U	N	Y	U	U						B101-03	15:56
						2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						B101-03	15:56
						2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B101-03	15:56
						3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B101-03	15:56
						4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						B101-03	15:56
						4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B101-03	15:56
						HMX	.4	mg/kg	U	N	Y	U	U						B101-03	15:56
						NITROBENZENE	.4	mg/kg	U	N	Y	U	U						B101-03	15:56
						RDX	.4	mg/kg	U	N	Y	U	U						B101-03	15:56
						TETRYL	.4	mg/kg	U	N	Y	U	U						B101-03	15:56
YJ0008	SW8330	METHOD	N	0	1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						B101-04	16:36
						1,3-DNB	.4	mg/kg	U	N	Y	U	U						B101-04	16:36
						2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						B101-04	16:36
						2,4-DNT	.4	mg/kg	U	N	Y	U	U						B101-04	16:36
						2,6-DNT	.4	mg/kg	U	N	Y	U	U						B101-04	16:36
						2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						B101-04	16:36
						2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B101-04	16:36
						3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B101-04	16:36
						4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						B101-04	16:36
						4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B101-04	16:36
						HMX	.4	mg/kg	U	N	Y	U	U						B101-04	16:36
						NITROBENZENE	.4	mg/kg	U	N	Y	U	U						B101-04	16:36
						RDX	.4	mg/kg	U	N	Y	U	U						B101-04	16:36
						TETRYL	.4	mg/kg	U	N	Y	U	U						B101-04	16:36
YJ0005	EPA314.0	NONE	N	0	1	PERCHLORATE	.0649	mg/kg	U	N	Y	U	U						B101-01	22:53
YJ0006	EPA314.0	NONE	N	0	1	PERCHLORATE	.0576	mg/kg	U	N	Y	U	U						B101-02	23:10
YJ0007	EPA314.0	NONE	N	0	1	PERCHLORATE	.0603	mg/kg	U	N	Y	U	U						B101-03	23:27
YJ0008	EPA314.0	NONE	N	0	1	PERCHLORATE	.0578	mg/kg	U	N	Y	U	U						B101-04	23:44
10141Q-02																				
YJ0003	SW6010B	SW3050	N	0	1	ALUMINUM	16500	mg/kg		Y	Y	P							D097-01	21:54
						ANTIMONY	12.2	mg/kg	U	N	Y	U	U						D097-01	21:54
						ARSENIC	2.98	mg/kg		Y	Y	P							D097-01	22:58
						BARIUM	145	mg/kg		Y	Y	P							D097-01	21:54
						BERYLLIUM	.98	mg/kg	J	Y	Y	P	J		15				D097-01	21:54
						CADMIUM	.608	mg/kg	U	N	Y	U	U						D097-01	21:54
						CALCIUM	188	mg/kg		Y	Y	P							D097-01	21:54
						CHROMIUM	9.51	mg/kg		Y	Y	P							D097-01	21:54

Validation Qualifier Data Entry Verification

Run Date: October 11, 2001

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10141Q-02																		
YJ0003	SW6010B	SW3050	N 0 1	COBALT	5.34	mg/kg		Y	Y	P							D097-01	21:54
				COPPER	5.5	mg/kg		Y	Y	P							D097-01	21:54
				IRON	13200	mg/kg		Y	Y	P							D097-01	21:54
				LEAD	10.5	mg/kg		Y	Y	P							D097-01	22:58
				MAGNESIUM	846	mg/kg		Y	Y	P							D097-01	21:54
				MANGANESE	161	mg/kg		Y	Y	P							D097-01	21:54
				NICKEL	5.45	mg/kg		Y	Y	P							D097-01	21:54
				POTASSIUM	1520	mg/kg		Y	Y	P							D097-01	21:54
				SELENIUM	1.22	mg/kg	U	N	Y	U	U						D097-01	22:58
				SILVER	1.22	mg/kg	U	N	Y	U	U						D097-01	21:54
				SODIUM	122	mg/kg	U	N	Y	U	U						D097-01	21:54
				THALLIUM	2.43	mg/kg	U	N	Y	U	U						D097-01	22:58
				VANADIUM	15.4	mg/kg		Y	Y	P							D097-01	21:54
				ZINC	21.4	mg/kg		Y	Y	P							D097-01	21:54
	SW7471A	TOTAL	N 0 1	MERCURY	.122	mg/kg	U	N	Y	U	U						D097-01	16:45
YJ0004	SW6010B	SW3050	N 0 1	ALUMINUM	12700	mg/kg		Y	Y	P							D097-02	21:59
				ANTIMONY	11.8	mg/kg	U	N	Y	U	U						D097-02	21:59
				ARSENIC	5	mg/kg		Y	Y	P							D097-02	23:03
				BARIUM	71.8	mg/kg		Y	Y	P							D097-02	21:59
				BERYLLIUM	1.14	mg/kg	J	Y	Y	P	J		15				D097-02	21:59
				CADMIUM	.591	mg/kg	U	N	Y	U	U						D097-02	21:59
				CALCIUM	43.5	mg/kg	J	Y	Y	P	J		15				D097-02	21:59
				CHROMIUM	9.36	mg/kg		Y	Y	P							D097-02	21:59
				COBALT	1.31	mg/kg	J	Y	Y	F	B		06B	15			D097-02	21:59
				COPPER	7.86	mg/kg		Y	Y	P							D097-02	21:59
				IRON	6190	mg/kg		Y	Y	P							D097-02	21:59
				LEAD	11.7	mg/kg		Y	Y	P							D097-02	23:03
				MAGNESIUM	454	mg/kg		Y	Y	P							D097-02	21:59
				MANGANESE	8.16	mg/kg		Y	Y	P							D097-02	21:59
				NICKEL	2.15	mg/kg	J	Y	Y	P	J		15				D097-02	21:59
				POTASSIUM	4790	mg/kg		Y	Y	P							D097-02	21:59
				SELENIUM	1.18	mg/kg	U	N	Y	U	U						D097-02	23:03
				SILVER	1.18	mg/kg	U	N	Y	U	U						D097-02	21:59
				SODIUM	118	mg/kg	U	N	Y	U	U						D097-02	21:59
				THALLIUM	2.36	mg/kg	U	N	Y	U	U						D097-02	23:03
				VANADIUM	14	mg/kg		Y	Y	P							D097-02	21:59
				ZINC	11.6	mg/kg		Y	Y	P							D097-02	21:59
	SW7471A	TOTAL	N 0 1	MERCURY	.118	mg/kg	U	N	Y	U	U						D097-02	16:47
YJ0003	SW8330	METHOD	N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						D097-01	21:02
				1,3-DNB	.4	mg/kg	U	N	Y	U	U						D097-01	21:02

Validation Qualifier Data Entry Verification

Run Date: October 11, 2001

Sample Number:	Analytical/Extraction Method:		Flt	REX	Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10141Q-02																				
YJ0003	SW8330	METHOD	N	0	1	2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						D097-01	21:02
						2,4-DNT	.4	mg/kg	U	N	Y	U	U						D097-01	21:02
						2,6-DNT	.4	mg/kg	U	N	Y	U	U						D097-01	21:02
						2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						D097-01	21:02
						2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						D097-01	21:02
						3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						D097-01	21:02
						4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						D097-01	21:02
						4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						D097-01	21:02
						HMX	.4	mg/kg	U	N	Y	U	U						D097-01	21:02
						NITROBENZENE	.4	mg/kg	U	N	Y	U	U						D097-01	21:02
						RDX	.4	mg/kg	U	N	Y	U	U						D097-01	21:02
						TETRYL	.4	mg/kg	U	N	Y	U	U						D097-01	21:02
YJ0004	SW8330	METHOD	N	0	1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						D097-02	21:40
						1,3-DNB	.4	mg/kg	U	N	Y	U	U						D097-02	21:40
						2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						D097-02	21:40
						2,4-DNT	.4	mg/kg	U	N	Y	U	U						D097-02	21:40
						2,6-DNT	.4	mg/kg	U	N	Y	U	U						D097-02	21:40
						2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						D097-02	21:40
						2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						D097-02	21:40
						3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						D097-02	21:40
						4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						D097-02	21:40
						4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						D097-02	21:40
						HMX	.4	mg/kg	U	N	Y	U	U						D097-02	21:40
						NITROBENZENE	.4	mg/kg	U	N	Y	U	U						D097-02	21:40
						RDX	.4	mg/kg	U	N	Y	U	U						D097-02	21:40
						TETRYL	.4	mg/kg	U	N	Y	U	U						D097-02	21:40
YJ0003	E314.0	NONE	N	0	1	PERCHLORATE	.0608	mg/kg	U	N	Y	U	U						D097-01	00:21
YJ0004	E314.0	NONE	N	0	1	PERCHLORATE	.0591	mg/kg	U	N	Y	U	U						D097-02	00:38
10141Q-03																				
YJ0009	SW6010B	SW3050	N	0	1	ALUMINUM	13700	mg/kg		Y	Y	P							D236-01	22:35
						ANTIMONY	12.5	mg/kg	U	N	Y	U	U						D236-01	22:35
						ARSENIC	4.4	mg/kg		Y	Y	P							D236-01	22:26
						BARIUM	167	mg/kg		Y	Y	P							D236-01	22:35
						BERYLLIUM	1.05	mg/kg	J	Y	Y	P	J		15				D236-01	22:35
						CADMIUM	.624	mg/kg	U	N	Y	U	U						D236-01	22:35
						CALCIUM	502	mg/kg		Y	Y	P							D236-01	22:35
						CHROMIUM	7.62	mg/kg		Y	Y	P							D236-01	22:35
						COBALT	4.09	mg/kg		Y	Y	F	B		06B				D236-01	22:35
						COPPER	9.2	mg/kg		Y	Y	P							D236-01	22:35

Validation Qualifier Data Entry Verification

Run Date: October 11, 2001

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10141Q-03																		
YJ0009	SW6010B	SW3050	N 0 1	IRON	13900	mg/kg		Y	Y	P							D236-01	22:35
				LEAD	37.7	mg/kg		Y	Y	P							D236-01	22:26
				MAGNESIUM	635	mg/kg		Y	Y	P							D236-01	22:35
				MANGANESE	875	mg/kg		Y	Y	P							D236-01	22:35
				NICKEL	4.13	mg/kg		Y	Y	P							D236-01	22:35
				POTASSIUM	1540	mg/kg		Y	Y	P							D236-01	22:35
				SELENIUM	1.25	mg/kg	U	N	Y	U	U						D236-01	22:26
				SILVER	1.25	mg/kg	U	N	Y	U	U						D236-01	22:35
				SODIUM	125	mg/kg	U	N	Y	U	U						D236-01	22:35
				THALLIUM	2.5	mg/kg	U	N	Y	U	U						D236-01	22:26
				VANADIUM	12.5	mg/kg		Y	Y	P							D236-01	22:35
				ZINC	29.5	mg/kg		Y	Y	P							D236-01	22:35
	SW7471A	TOTAL	N 0 1	MERCURY	.060	mg/kg	J	Y	Y	P	J		15				D236-01	14:45
YJ0009	SW8330	METHOD	N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						D236-01	15:28
				1,3-DNB	.4	mg/kg	U	N	Y	U	U						D236-01	15:28
				2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						D236-01	15:28
				2,4-DNT	.4	mg/kg	U	N	Y	U	U						D236-01	15:28
				2,6-DNT	.4	mg/kg	U	N	Y	U	U						D236-01	15:28
				2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						D236-01	15:28
				2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						D236-01	15:28
				3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						D236-01	15:28
				4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						D236-01	15:28
				4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						D236-01	15:28
				HMX	.4	mg/kg	U	N	Y	U	U						D236-01	15:28
				NITROBENZENE	.4	mg/kg	U	N	Y	U	U						D236-01	15:28
				RDX	.4	mg/kg	U	N	Y	U	U						D236-01	15:28
				TETRYL	.4	mg/kg	U	N	Y	U	U						D236-01	15:28
YJ0009	E314.0	NONE	N 0 1	PERCHLORATE	.0624	mg/kg	U	N	Y	U	U						D236-01	19:54
10141Q-04																		
YJ0010	SW6010B	SW3050	N 0 1	ALUMINUM	11700	mg/kg		Y	Y	P							E046-01	19:19
				ANTIMONY	11.2	mg/kg	U	N	Y	U	U						E046-01	19:19
				ARSENIC	6.12	mg/kg		Y	Y	P							E046-01	19:23
				BARIUM	163	mg/kg		Y	Y	P							E046-01	19:19
				BERYLLIUM	1.67	mg/kg		Y	Y	P							E046-01	19:19
				CADMIUM	.56	mg/kg	U	N	Y	U	U						E046-01	19:19
				CALCIUM	485	mg/kg		Y	Y	P							E046-01	19:19
				CHROMIUM	12.2	mg/kg		Y	Y	P							E046-01	19:19
				COBALT	17	mg/kg		Y	Y	P							E046-01	19:19
				COPPER	6.32	mg/kg		Y	Y	P							E046-01	19:19

Validation Qualifier Data Entry Verification

Run Date: October 11, 2001

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10141Q-04																		
YJ0010	SW6010B	SW3050	N 0 1	IRON	39000	mg/kg		Y	Y	P							E046-01	19:19
				LEAD	20.1	mg/kg		Y	Y	P							E046-01	19:23
				MAGNESIUM	564	mg/kg		Y	Y	P							E046-01	19:19
				MANGANESE	1620	mg/kg		Y	Y	P							E046-01	19:19
				NICKEL	6.81	mg/kg		Y	Y	P							E046-01	19:19
				POTASSIUM	1410	mg/kg		Y	Y	P							E046-01	19:19
				SELENIUM	1.12	mg/kg	U	N	Y	U	U						E046-01	19:23
				SILVER	1.12	mg/kg	U	N	Y	U	U						E046-01	19:19
				SODIUM	112	mg/kg	U	N	Y	U	U						E046-01	19:19
				THALLIUM	1.23	mg/kg	J	Y	Y	P	J		15				E046-01	19:23
				VANADIUM	20.6	mg/kg		Y	Y	P							E046-01	19:19
				ZINC	25.4	mg/kg		Y	Y	P	J		11A	11B	13		E046-01	19:19
	SW7471A	TOTAL	N 0 1	MERCURY	.040	mg/kg	J	Y	Y	P	J		15				E046-01	10:47
YJ1002	SW6010B	SW3050	N 0 1	ALUMINUM	6040	mg/kg		Y	Y	P							E046-02	19:24
				ANTIMONY	15.7	mg/kg	U	N	Y	U	U						E046-02	19:24
				ARSENIC	1.73	mg/kg		Y	Y	P							E046-02	19:28
				BARIUM	68	mg/kg		Y	Y	P							E046-02	19:24
				BERYLLIUM	.715	mg/kg	J	Y	Y	P	J		15				E046-02	19:24
				CADMIUM	.787	mg/kg	U	N	Y	U	U						E046-02	19:24
				CALCIUM	141	mg/kg	J	Y	Y	P	J		15				E046-02	19:24
				CHROMIUM	5.09	mg/kg		Y	Y	P							E046-02	19:24
				COBALT	4.64	mg/kg		Y	Y	P							E046-02	19:24
				COPPER	5.63	mg/kg		Y	Y	P							E046-02	19:24
				IRON	8760	mg/kg		Y	Y	P							E046-02	19:24
				LEAD	8.5	mg/kg		Y	Y	P							E046-02	19:28
				MAGNESIUM	301	mg/kg		Y	Y	P							E046-02	19:24
				MANGANESE	69.4	mg/kg		Y	Y	P							E046-02	19:24
				NICKEL	3.96	mg/kg		Y	Y	P							E046-02	19:24
				POTASSIUM	1640	mg/kg		Y	Y	P							E046-02	19:24
				SELENIUM	1.57	mg/kg	U	N	Y	U	U						E046-02	19:28
				SILVER	1.57	mg/kg	U	N	Y	U	U						E046-02	19:24
				SODIUM	157	mg/kg	U	N	Y	U	U						E046-02	19:24
				THALLIUM	3.15	mg/kg	U	N	Y	U	U						E046-02	19:28
				VANADIUM	8.39	mg/kg		Y	Y	P							E046-02	19:24
				ZINC	15.8	mg/kg		Y	Y	P	J		11A	11B	13		E046-02	19:24
	SW7471A	TOTAL	N 0 1	MERCURY	.157	mg/kg	U	N	Y	U	U						E046-02	10:50
YJ0010	SW8330	METHOD	N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						E046-01	23:40
				1,3-DNB	.4	mg/kg	U	N	Y	U	U						E046-01	23:40
				2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						E046-01	23:40
				2,4-DNT	.4	mg/kg	U	N	Y	U	U						E046-01	23:40

Validation Qualifier Data Entry Verification

Run Date: October 11, 2001

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10141Q-04																		
YJ0010	SW8330	METHOD	N 0 1	2,6-DNT	.4	mg/kg	U	N	Y	U	U						E046-01	23:40
				2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						E046-01	23:40
				2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						E046-01	23:40
				3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						E046-01	23:40
				4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						E046-01	23:40
				4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						E046-01	23:40
				HMX	.4	mg/kg	U	N	Y	U	U						E046-01	23:40
				NITROBENZENE	.4	mg/kg	U	N	Y	U	U						E046-01	23:40
				RDX	.4	mg/kg	U	N	Y	U	U						E046-01	23:40
				TETRYL	.4	mg/kg	U	N	Y	U	U						E046-01	23:40
YJ1002	SW8330	METHOD	N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						E046-02	00:18
				1,3-DNB	.4	mg/kg	U	N	Y	U	U						E046-02	00:18
				2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						E046-02	00:18
				2,4-DNT	.4	mg/kg	U	N	Y	U	U						E046-02	00:18
				2,6-DNT	.4	mg/kg	U	N	Y	U	U						E046-02	00:18
				2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						E046-02	00:18
				2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						E046-02	00:18
				3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						E046-02	00:18
				4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						E046-02	00:18
				4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						E046-02	00:18
				HMX	.4	mg/kg	U	N	Y	U	U						E046-02	00:18
				NITROBENZENE	.4	mg/kg	U	N	Y	U	U						E046-02	00:18
				RDX	.4	mg/kg	U	N	Y	U	U						E046-02	00:18
				TETRYL	.4	mg/kg	U	N	Y	U	U						E046-02	00:18
YJ0010	E314.0	NONE	N 0 1	PERCHLORATE	.056	mg/kg	U	N	Y	U	U						E046-01	00:46
YJ1002	E314.0	NONE	N 0 1	PERCHLORATE	.0787	mg/kg	U	N	Y	U	U						E046-02	01:03
YJ1002	SW9060	NONE	N 0 1	TOC	40.5	mg/kg		Y	Y	P							E046-02	13:00
10141Q-05																		
YJ2002	SW6010B	SW3010	N 0 1	ALUMINUM	.596	mg/L		Y	Y	P							E047-01	21:33
				ANTIMONY	.1	mg/L	U	N	Y	U	U						E047-01	21:33
				ARSENIC	.01	mg/L	U	N	Y	U	U						E047-01	22:56
				BARIUM	.0355	mg/L		Y	Y	P							E047-01	21:33
				BERYLLIUM	.001	mg/L	U	N	Y	U	U						E047-01	21:33
				CADMIUM	.01	mg/L	U	N	Y	U	U						E047-01	21:33
				CALCIUM	.17	mg/L	J	Y	Y	F	B		06B				E047-01	21:33
				CHROMIUM	.01	mg/L	U	N	Y	U	U						E047-01	21:33
				COBALT	.02	mg/L	U	N	Y	U	U						E047-01	21:33
				COPPER	.02	mg/L	U	N	Y	U	U						E047-01	21:33
				IRON	.779	mg/L		Y	Y	P							E047-01	21:33

Validation Qualifier Data Entry Verification

Run Date: October 11, 2001

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10141Q-05																		
YJ2002	SW6010B	SW3010	N 0 1	LEAD	.01	mg/L	U	N	Y	U	U						E047-01	22:56
				MAGNESIUM	.233	mg/L	J	Y	Y	P	J		15				E047-01	21:33
				MANGANESE	.0645	mg/L		Y	Y	P							E047-01	21:33
				NICKEL	.02	mg/L	U	N	Y	U	U						E047-01	21:33
				POTASSIUM	5	mg/L	U	N	Y	U	U						E047-01	21:33
				SELENIUM	.01	mg/L	U	N	Y	U	U						E047-01	22:56
				SILVER	.01	mg/L	U	N	Y	U	U						E047-01	21:33
				SODIUM	1.01	mg/L		Y	Y	P							E047-01	21:33
				THALLIUM	.01	mg/L	U	N	Y	U	U						E047-01	22:56
				VANADIUM	.01	mg/L	U	N	Y	U	U						E047-01	21:33
				ZINC	.02	mg/L	U	N	Y	U	U						E047-01	21:33
	SW7470A	TOTAL	N 0 1	MERCURY	.0005	mg/L	U	N	Y	U	U						E047-01	16:16
YJ2002	SW8330	METHOD	N 0 1	1,3,5-TNB	.0004	mg/L	U	N	Y	U	UJ		11B				E047-01	13:52
				1,3-DNB	.0004	mg/L	U	N	Y	U	UJ		11B				E047-01	13:52
				2,4,6-TNT	.0004	mg/L	U	N	Y	U	UJ		11B				E047-01	13:52
				2,4-DNT	.0004	mg/L	U	N	Y	U	U						E047-01	13:52
				2,6-DNT	.0004	mg/L	U	N	Y	U	U						E047-01	13:52
				2-AM-4,6-DNT	.0004	mg/L	U	N	Y	U	U						E047-01	13:52
				2-NITROTOLUENE	.0004	mg/L	U	N	Y	U	U						E047-01	13:52
				3-NITROTOLUENE	.0004	mg/L	U	N	Y	U	U						E047-01	13:52
				4-AM-2,6-DNT	.0004	mg/L	U	N	Y	U	U						E047-01	13:52
				4-NITROTOLUENE	.0004	mg/L	U	N	Y	U	U						E047-01	13:52
				HMX	.001	mg/L	U	N	Y	U	UJ		11B				E047-01	13:52
				NITROBENZENE	.0004	mg/L	U	N	Y	U	U						E047-01	13:52
				RDX	.0004	mg/L	U	N	Y	U	U						E047-01	13:52
				TETRYL	.0004	mg/L	U	N	Y	U	UJ		11B				E047-01	13:52
YJ2002	E314.0	NONE	N 0 1	PERCHLORATE	.005	mg/L	U	N	Y	U	U						E047-01	01:01

Quality Assurance Report
For the Artillery and Mortar Impact Areas
South of Bains Gap Road
Parcel HR-142Q
IT Project No 796887
Fort McClellan Quality Assurance Report

1.0 Overview

Six soil samples were collected in support of the investigation at Fort McClellan (FTMC) Parcel HR-142Q, Artillery and Mortar Impact Areas South of Bains Gap Road. All samples were submitted to EMAX Laboratories, Inc. for analysis. Soil samples were analyzed for target analyte list (TAL) metals, nitroaromatic-nitramine explosives, and perchlorate. QC samples consisted of the following types and quantities: 2 equipment rinsates. An analytical summary table cross-referencing sample location, sample number, and contaminants of concern is presented in Attachment A.

One hundred (100) percent of samples were validated and reviewed in accordance with the *USEPA Contract Laboratory Program National Functional Guidelines for Evaluating Inorganic Data Review (EPA, February 1994)* and *USEPA Contract Laboratory Program National Functional Guidelines for Organic Review (EPA, October 1999)* for all areas except blanks. Region III *Laboratory Data Validation Functional Guidelines for Inorganic Analyses (EPA, April 1993)* and Region III *National Functional Guidelines for Organic Data Review (EPA, June 1992)* were applied to the areas associated with blank contamination. Data qualifiers assigned to results were based on guidance outlined in the referenced documents and the *Installation-Wide Sampling and Analysis Plan (IT, March 2000)* for FTMC. Table 1.0-1 and Table 1.0-2 define laboratory data and validation data qualifiers assigned to analytical results, respectively.

Table 1.0-1
Laboratory Data Qualifier Definitions

Data Qualifier	Laboratory Data Qualifier Definition
B	Analyte detected in method blank at concentration greater than the reporting limit (and greater than zero).
C	Confirming data obtained using second GC column or GC/MS.
E	Analyte concentration exceeded calibration range.
I	Analyte identification suspect. See narrative for explanation.
J	Result is less than or equal to specified reporting limit but greater than the method detection limit (MDL).
P	Analyte not confirmed. Results from primary and secondary GC columns differ by greater than 10 percent
S	Analyte concentration obtained using Method of Standard Additions (MSA).
U	Not detected. The value represented indicates the reporting limit for the analysis.
D	Sample analyzed as a dilution. The result reported has been calculated using the appropriate dilution factor.
No Code	Confirmed identification.

Table 1.0-2
Validation Data Qualifier Definitions

Validation Qualifier	Validation Data Qualifier Definition
U	Not detected. The associated number indicates approximate sample concentration necessary to be detected.
No Code	Confirmed identification
B	Not detected substantially above the level reported in laboratory or field blanks.
R	Unusable result. Analyte may or may not be present in the sample.
N	Tentative identification. Consider present. Special methods may be needed to confirm its presence or absence in future sampling efforts.
J	Analyte present. Reported value may not be accurate or precise. Considered an estimate.
NJ	Qualitative identification questionable due to poor resolution. Presumptively present at approximate quantity.

The Data Validation Summary Report is presented in Attachment B.

2.0 Summary

Data were evaluated to verify compliance with precision, accuracy, representativeness, comparability, completeness, and sensitivity. To verify that project data quality objectives (DQO) were met, laboratory analytical results and data packages were examined for compliance with SW846 SW6010B/SW7000 Series, SW8330 and U.S. Environmental Protection Agency (EPA) 314.0 quality control (QC) method criteria. Laboratory nonconformances and discrepancies in the data were also examined to determine their impact on the data. The results of this review are presented in the following sections.

2.1 Sample Receipt and Analytical Holding Times

All sample results generated by the laboratory during this investigation have been reviewed with respect to condition of samples as received by the laboratory, chain-of-custody, and analysis holding times. All coolers were received by EMAX in good condition under proper chain-of-custody.

All extraction and analytical holding times were met.

2.2 Rejected Data

No data were qualified by the laboratory or after validation was completed as being rejected ("R"-flagged).

2.3 Blank Results

A description of the types of blank samples which were collected, processed, and evaluated for background and/or process contamination during this sampling is as follows:

- Equipment rinsates (ER) are samples of analyte-free deionized water poured into, or over, or pumped through the sampling device, collected in a sample container, and transported to the laboratory for analysis. Equipment rinsates are used to assess the effectiveness of equipment decontamination procedures.

- Method blanks (MB) are used in the laboratory to assess and document any possible contamination resulting from the analytical process. A method blank is an analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank shall be carried through the complete sample preparation and analytical procedure.

- Initial and continuing calibration blanks (ICB and CCB) are an analyte-free matrix which is analyzed to verify the analysis system is free of contamination. ICBs and CCBs are analyzed immediately after the initial and continuing calibration is performed.

Field sample concentrations were evaluated to determine if the sample results could have been biased by the presence of any contamination measured in equipment rinsate blanks, method blanks and/or initial/continuing calibration blanks. Sample data affected by blank contamination are summarized in Table 2.3-1.

Table 2.3-1
Summary of Blank Contamination

Sample Delivery Group	Sample Number	Contaminant	Action
10142Q-01	YL0001, YL0002 & YL0003	Potassium Cobalt	Potassium and cobalt results for samples YL0001, YL0002 and YL0003 were "B" qualified.
	YL0004	Zinc	Zinc result for sample YL0004 was "B" qualified.
10142Q-02	YL0006	Beryllium Potassium	Beryllium and potassium results for sample YL0006 was "B" qualified.

2.4 Analytical Precision

Precision is defined as a measurement of mutual agreement among individual measurements of the same property, usually under "prescribed similar conditions." Analytical precision is calculated as relative percent difference (%RPD) based on the following formula:

$$\%RPD = \left| \frac{(A-B)}{(A+B)/2} \right| \times 100$$

where:

%RPD = Relative Percent Difference
A = original result
B = duplicate result

A high RPD between an original sample and its field duplicate may be attributable to the difference in sample matrix or distribution of the contaminant within the sample, rather than the precision of the collection process. Also, when "estimated" results are reported, there is a potential for increased variability between the primary and duplicate sample results. This occurs because, at low concentrations, the relative difference in results is magnified by the RPD calculation even though the results are comparable in absolute terms. There is also increased uncertainty in the results as the lower limit of detection is approached, due to decreasing analytical accuracy. The RPD calculation cannot be performed in cases where non-detected results are reported with corresponding samples that contain detectable concentrations.

Overall sampling and analysis precision for this task was assessed using field duplicate (FD) samples. Laboratory precision was assessed by laboratory control sample/laboratory control sample duplicate (LCS/LCSD) and matrix spike/matrix spike duplicate (MS/MSD) recoveries. Results indicate that an acceptable analytical precision was achieved. Table 2.4-1 lists precision

acceptance criteria for LCS/LCSD, MS/MSD organic and inorganic analyses and field duplicate comparisons.

Table 2.4-1
Precision Acceptance Criteria

Field/Laboratory QC Type	Matrix
	Soil
Field Duplicate (Both Organic & Inorganic)	RPD < 50%
Perchlorate LCS/LCSD and MS/MSD	RPD < 20%
Nitroaromatic and Nitramine Explosives LCS/LCSD and MS/MSD	Refer to Table 8-1of FTMC "Installation Wide Sample and Analysis Plan"
Metals LCS/LCSD and MS/MSD	RPD < 20%

2.5 Analytical Accuracy Assessment

Accuracy is a measure of the degree of agreement of a result against an accepted reference or true value. Accuracy is expressed as a percent recovery (%R) calculated by the ratio of the measurement and accepted true value as shown in the following equation:

$$\%R = (|X_s - X_u|/K) \times 100$$

where:

X_s = measured value of the spiked sample
X_u = measured value of the unspiked sample
K = known amount of the spike in the sample

Surrogate recoveries, MS/MSD and LCS/LCSD, were used to measure analytical accuracy as described in SW846 SW8330, SW6010B/SW7000 and EPA 314.0. Reported results indicate that an acceptable level of analytical accuracy was achieved.

2.6 Data Representativeness

Representativeness is a qualitative parameter that expresses the degree to which sample data actually represent the matrix conditions. Sample locations selected for this investigation outline contaminant releases into the environment, that may have occurred and will confirm whether contaminated soil exists at this site. Soil sample data are being used to assess potential impacts to terrestrial biota that might use the site for food and/or habitat purposes.

Standardized requirements and procedures for sample collection and handling were employed to maximize sample representativeness.

2.7 Data Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. By employing well-recognized techniques and accepted standardized methods for sampling and analysis, data comparability was achieved during this sampling event.

2.8 Data Completeness

Completeness is calculated for the aggregation of data for each analyte measured during the investigation of Parcel HR-142Q Artillery and Mortar Impact Areas South of Bains Gap Road. The formula for calculating completeness is listed below:

$$\% \text{ Completeness} = (X_V / X_T) \times 100$$

where:

X_V = number of valid (i.e., non-"R"-flagged) results
X_T = number of possible results

Parcel HR-142Q goal for completeness is 95% for both aqueous and soil samples. The % Completeness for this task is calculated to be 100%.

- % Completeness = (228 / 228) x 100 = 100%

2.9 Sensitivity

Sensitivity is defined as the ability of the laboratory's established method detection limits (MDL)/method reporting limits (MRL or RL) to meet project-specific DQOs or site-specific screening levels (SSSL) and or ecological screening values (ESV).

MDL is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero. MDLs are determined from an analysis of a sample in a given matrix containing the target analyte of interest. The MRL is a threshold value based upon the sensitivity capability of method and instrument. MRLs are normally set at a minimum of two times the MDL. MRLs are adjusted based on the sample matrix, moisture (solids only), and any necessary sample dilutions. The laboratory cannot reliably quantitate values reported above the MDL but below the MRL. Therefore, these analyte values must be flagged as estimated quantities ("J"-flagged).

To evaluate method sensitivity, a general comparison of the laboratory's MDLs/MRLs and the site investigation screening levels (background values, human health SSSL for residential reuse, and [ESV]) was performed and presented to the FTMC Base Realignment and Closure Team (BCT) (November 1999). The comparison summarized the relationship between the MDL/MRLs and SSSL/ESVs for each parameter typically reported for all of the major analytical methods used at FTMC. The few cases identified where the MDL and/or MRL values exceeded their corresponding human health SSSL and/or ESV were specifically highlighted and explained. It was understood that for these cases, the standard analytical method of analysis was not going to provide MDLs/MRLs which met human health SSSLs or ESVs without significant uncertainty and the possibility of reporting false negatives. It was generally accepted that standard EPA SW846 analytical methods would provide sufficient sensitivity for data reported and used in the site screening process at FTMC.

3.0 Data Usability

Data quality indicators (DQI) provide an internal guide for control and review to verify that data are scientifically sound, defensible, and of known and acceptable quality. Factors such as precision, accuracy, representativeness, comparability, completeness, and sensitivity were evaluated to determine if the project's DQOs were met. A review of the data revealed that the majority of QA/QC indicators were within acceptable control limits. Any data anomalies encountered during data validation and overall site evaluations have been summarized in the previous sections of this document.

Based on the results of data validation and QA review, IT has concluded that representative samples were collected and analyzed and that the results are indicative of the media analyzed. The data are to be considered representative of site conditions and are usable for their intended purpose.

4.0 Attachments

Attachment A - Analytical Summary Table
Attachment B - Data Validation Summary Report

ATTACHMENT A

ANALYTICAL SUMMARY TABLE

Ft. McClellan
Parcel HR-142Q
Artillery and Mortar Impact Areas South of Bains Gap Road
Analytical Summary
Project No. 796887

HR-142Q Soil Sampling				
Sample Location	**Sample Name**	**Sample Number**	**Date Sampled**	**Analytical Suite**
HR-142Q-GP01	HR-142Q-GP01-SS-YL0001-REG	YL0001	08-Feb-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
	HR-142Q-GP01-DS-YL0002-REG	YL0002	08-Feb-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
HR-142Q-GP02	HR-142Q-GP02-SS-YL0003-REG	YL0003	08-Feb-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
	HR-142Q-GP02-DS-YL0004-REG	YL0004	08-Feb-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
HR-142Q-DEP01	HR-142Q-DEP01-SS-YL0005-REG	YL0005	24-Apr-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.
HR-142Q-DEP02	HR-142Q-DEP02-SS-YL0006-REG	YL0006	24-Apr-01	TAL Metals by SW6010B/SW7471, Nitroaromatic-Nitramine Explosives by SW8330 & Perchlorate by EPA 314.0.

ATTACHMENT B

DATA VALIDATION SUMMARY REPORT

Data Validation Summary Report
for the Site Investigation Performed at the
Artilley and Mortar Impact Areas South of Bains Gap (Parcel HR-142Q)
Fort McCellan

1.0 Introduction

Level III data validation was performed on 100% of the environmental samples collected at Artillery and Mortar Impact Areas South of Bains Gap (Parcel HR-142Q). The analytical data consisted of two sample delivery groups (SDG) 10142Q-01 and 10142Q-02, which were analyzed by EMAX Laboratories. The chemical parameters for which the samples were analyzed, are identified below:

Parameter (Method)
Metals by SW846 6010B and 7471A/7470A
Nitroaromatic and Nitramine Explosives by SW846 8330
Perchlorate by EPA 314.0

2.0 Procedures

The sample data were validated following the logic identified in the *USEPA Contract Laboratory Program (CLP) National Functional Guidelines For Inorganic Data Review (February 1994)* and *USEPA Contract Laboratory Program National Functional Guidelines For Organic Review (October 1999)* for all areas except Blanks. *Region III Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses (April 1993)* and *Region III National Functional Guidelines for Organic Data Review (June 1992)* were applied to the areas associated with blank contamination. Specific quality control (QC) criteria, as identified in the Quality Assurance Plan (QAP), analytical methods, and laboratory Standard Operating Procedures (SOP's) were applied to all sample results. As the result of the use of Update III SW846 test methods for the analytical data and the application of the CLP guidelines during the validation process, there were instances where specific QC requirements for all target compounds were not defined. This primarily occurred in the organic, Gas Chromatograph (GC) and Gas Chromatograph/Mass Spectra (GC/MS) calibration areas and is due to the fact that the analytical methods are "performance-based", and allows the use of average calibration responses, in lieu of, individual responses, which are defined by CLP protocol. In light of applying CLP guidelines to SW846 methods and evaluating the usability of the data during the validation process, specific QC criteria were determined to address all target compounds and are identified in this report for each parameter, as well as, in the validation checklists, which function as worksheets. All completed validation checklists are on file in the Knoxville office.

For those analytical methods not addressed by the CLP and Region III guidelines, the validation was based on the method requirements (i. e. SW846, CFR, SOP's, QAP) and technical judgement following the logic of the CLP validation guidelines.

3.0 Summary of Data Validation Findings

The overall quality of the data was determined to be acceptable with minimal qualification. No data were rejected.

Individual validation reports have been prepared for each parameter in each SDG and the overall results of the validation findings are summarized in this report. The validation qualifier data entry verification report (Attachment A) is also provided. This is a complete listing of all of the analytical results and the validation qualifiers assigned for Parcel HR-142Q. It also identifies the 'use' column, which indicates which result to use in the event of a reanalysis. A listing of the validation qualifiers and the reason codes, along with their definitions is also found in Attachment A. The following section highlights the key findings of the data validation for each analysis.

4.0 Analysis-Specific Data Validation Summaries

4.1 Metals by SW846 6010B/7471A/7470A

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

<u>Holding Times</u>

Technical holding time criteria were met for all samples.

<u>Initial and Continuing calibrations</u>

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse, calibration, and method blanks was applied to all sample results. All were acceptable with the exception of the following:

Note: 'B' Qualifiers were applied to all of the following sample results.

SDG	Samples Affected	Analyte/Analytes	Associated Blank Contamination
10142Q-01	YL0001, YL0002, YL0003	Potassium, Cobalt	Method/Calib
	YL0004	Zinc	Calibration
10142Q-02	YL0006	Beryllium, Potassium	Calibration

'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers, assigned due to quantitation.

Matrix Spike / Matrix Spike Duplicate

No MS/MSD were performed for the project samples.

Laboratory Control Sample (LCS)

All QC criteria were met for the LCS associated with the project sample analyses.

Interference Check Sample (ICS)

All ICS % recoveries for the project samples were acceptable.

ICP Serial Dilutions

No associated serial dilution samples were performed for the project samples.

Field Duplicates

No field duplicates were associated with this SDG.

Sample Quantitation

Results quantified between the IDL and the RL ("J" flagged by the laboratory) were qualified as estimated (J).

4.2 Nitroaromatic and Nitramine Explosives by SW846 8330

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinses and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges.

Matrix Spike / Matrix Spike Duplicate

No MS/MSD were performed for the project samples.

Laboratory Control Sample (LCS)

LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

No field duplicates were associated with this SDG.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as "J," were qualified as estimated 'J' unless blank contamination was present or the results were rejected.

4.3 Perchlorate by EPA 314.0

Overall, the data are of good quality and are usable as reported by the laboratory. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinses and method blanks was applied to all sample results. All were found to be acceptable.

Matrix Spike / Matrix Spike Duplicate

No MS/MSD were performed for the project samples.

Laboratory Control Sample (LCS)

All QC criteria were met for the LCS associated with the project sample analyses.

Field Duplicates

No field duplicates were associated with this SDG.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J' were qualified as estimated 'J' unless blank contamination was present or the results were rejected.

Attachment A:

Data Validation Qualifier Entry Verification Report

Validation Qualifiers

U Not detected. The compound/analyte was analyzed for, but not detected above the associated reporting limit.

J The compound/analyte was positively identified; the reported value is the estimated concentration of the constituent detected in the sample analyzed.

B The concentration reported was detected significantly above the levels reported in the associated equipment rinse samples and/or laboratory method and trip blanks. (5X/10X Rule was applied).

R The reported sample results are rejected due to the following:

1. Severe deficiencies in the supporting quality control data.
2. Anomalies noted in the sampling and/or analysis process which could affect the validity of the reported data.
3. The presence or absence of the constituent cannot be verified based on the data provided.
4. To indicate not to use a particular result in the event of a reanalysis.

UJ The compound/analyte was analyzed for, but not detected above the established reporting limit. However, review and evaluation of supporting QC data and/or sampling and analysis process have indicated that the "nondetect" may be inaccurate or imprecise. The nondetect result should be estimated.

Validation Reason Code Definitions

Reason Code	Description
01	Sample received outside of 4+/-2 degrees Celsius
01A	Improper sample preservation
02	Holding time exceeded
02A	Extraction
02B	Analysis
03	Instrument performance – outside criteria
03A	BFB
03B	DFTPP
03C	DDT and/or Endrin % breakdown exceeds criteria
03D	Retention time windows
03E	Resolution
04	Initial calibration results outside specified criteria
04A	Compound mean RRF QC criteria not met
04B	Individual % RSD criteria not met
04C	Correlation coefficient >0.995
05	Continuing calibration results outside specified criteria
05A	Compound mean RRF QC criteria not met
05B	Compound % D QC criteria not met
06	Result qualified as a result of the 5x/10x blank correction
06A	Method or preparation blank
06B	ICB or CCB
06C	ER
06D	TB
06E	FB
07	Surrogate recoveries outside control limits
07A	Sample
07B	Associated method blank or LCS
08	MS/MSD/Duplicate results outside criteria
08A	MS and/or MSD recovery not within control limits (accuracy)
08B	% RPD outside acceptance criteria (precision)
09	Post digestion spike outside criteria (GFAA)
10	Internal standards outside specified control limits
10A	Recovery
10B	Retention time
11	Laboratory control sample recoveries outside specified limits
11A	Recovery
11B	% RPD (if run in duplicate)
12	Interference check standard
13	Serial dilution
14	Tentatively identified compounds
15	Quantitation
16	Multiple results available; alternate analysis preferred
17	Field duplicate RPD criteria is exceeded
18	Percent difference between original and second column exceeds QC criteria
19	Professional judgement was used to qualify the data
20	Pesticide clean-up checks
21	Target compound identification
22	Radiological calibration
23	Radiological quantitation
24	Reported result and/or lab qualifier revised to reflect validation findings

Validation Qualifier Data Entry Verification

Run Date: October 11, 2001

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10142Q-01																		
YL0001	SW6010B	SW3050	N 0 1	ALUMINUM	7090	mg/kg		Y	Y	P							B095-01	18:42
				ANTIMONY	12.2	mg/kg	U	N	Y	U	U						B095-01	18:42
				ARSENIC	1.14	mg/kg	J	Y	Y	P	J		15				B095-01	18:12
				BARIUM	60.7	mg/kg		Y	Y	P							B095-01	18:42
				BERYLLIUM	.313	mg/kg	J	Y	Y	P	J		15				B095-01	18:42
				CADMIUM	.608	mg/kg	U	N	Y	U	U						B095-01	18:42
				CALCIUM	185	mg/kg		Y	Y	P							B095-01	18:42
				CHROMIUM	4.05	mg/kg		Y	Y	P							B095-01	18:42
				COBALT	1.85	mg/kg	J	Y	Y	F	B		06B	15			B095-01	18:42
				COPPER	3.13	mg/kg		Y	Y	P							B095-01	18:42
				IRON	5900	mg/kg		Y	Y	P							B095-01	18:42
				LEAD	10.7	mg/kg		Y	Y	P							B095-01	18:12
				MAGNESIUM	184	mg/kg		Y	Y	P							B095-01	18:42
				MANGANESE	39.1	mg/kg		Y	Y	P							B095-01	18:42
				NICKEL	2.2	mg/kg	J	Y	Y	P	J		15				B095-01	18:42
				POTASSIUM	342	mg/kg	J	Y	Y	F	B		06A	15			B095-01	18:42
				SELENIUM	1.22	mg/kg	U	N	Y	U	U						B095-01	18:12
				SILVER	1.22	mg/kg	U	N	Y	U	U						B095-01	18:42
				SODIUM	122	mg/kg	U	N	Y	U	U						B095-01	18:42
				THALLIUM	2.43	mg/kg	U	N	Y	U	U						B095-01	18:12
				VANADIUM	7.8	mg/kg		Y	Y	P							B095-01	18:42
				ZINC	7.02	mg/kg		Y	Y	P							B095-01	18:42
	SW7471A	TOTAL	N 0 1	MERCURY	.035	mg/kg	J	Y	Y	P	J		15				B095-01	17:00
YL0002	SW6010B	SW3050	N 0 1	ALUMINUM	9730	mg/kg		Y	Y	P							B095-02	18:46
				ANTIMONY	11.7	mg/kg	U	N	Y	U	U						B095-02	18:46
				ARSENIC	1.43	mg/kg		Y	Y	P							B095-02	18:16
				BARIUM	45.2	mg/kg		Y	Y	P							B095-02	18:46
				BERYLLIUM	.381	mg/kg	J	Y	Y	P	J		15				B095-02	18:46
				CADMIUM	.585	mg/kg	U	N	Y	U	U						B095-02	18:46
				CALCIUM	122	mg/kg		Y	Y	P							B095-02	18:46
				CHROMIUM	9.59	mg/kg		Y	Y	P							B095-02	18:46
				COBALT	1.3	mg/kg	J	Y	Y	F	B		06B	15			B095-02	18:46
				COPPER	4.37	mg/kg		Y	Y	P							B095-02	18:46
				IRON	17200	mg/kg		Y	Y	P							B095-02	18:46
				LEAD	9.2	mg/kg		Y	Y	P							B095-02	18:16
				MAGNESIUM	193	mg/kg		Y	Y	P							B095-02	18:46
				MANGANESE	29.1	mg/kg		Y	Y	P							B095-02	18:46
				NICKEL	3.01	mg/kg		Y	Y	P							B095-02	18:46
				POTASSIUM	322	mg/kg	J	Y	Y	F	B		06A	15			B095-02	18:46
				SELENIUM	1.17	mg/kg	U	N	Y	U	U						B095-02	18:16

Validation Qualifier Data Entry Verification

Run Date: October 11, 2001

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10142Q-01																		
YL0002	SW6010B	SW3050	N 0 1	SILVER	1.17	mg/kg	U	N	Y	U	U						B095-02	18:46
				SODIUM	117	mg/kg	U	N	Y	U	U						B095-02	18:46
				THALLIUM	2.34	mg/kg	U	N	Y	U	U						B095-02	18:16
				VANADIUM	12.6	mg/kg		Y	Y	P							B095-02	18:46
				ZINC	7.92	mg/kg		Y	Y	P							B095-02	18:46
	SW7471A	TOTAL	N 0 1	MERCURY	.117	mg/kg	U	N	Y	U	U						B095-02	17:02
YL0003	SW6010B	SW3050	N 0 1	ALUMINUM	8110	mg/kg		Y	Y	P							B095-03	18:51
				ANTIMONY	12	mg/kg	U	N	Y	U	U						B095-03	18:51
				ARSENIC	1.07	mg/kg	J	Y	Y	P	J		15				B095-03	18:20
				BARIUM	45.9	mg/kg		Y	Y	P							B095-03	18:51
				BERYLLIUM	.24	mg/kg	J	Y	Y	P	J		15				B095-03	18:51
				CADMIUM	.599	mg/kg	U	N	Y	U	U						B095-03	18:51
				CALCIUM	95.8	mg/kg	J	Y	Y	P	J		15				B095-03	18:51
				CHROMIUM	7.08	mg/kg		Y	Y	P							B095-03	18:51
				COBALT	1.31	mg/kg	J	Y	Y	F	B		06B	15			B095-03	18:51
				COPPER	3.72	mg/kg		Y	Y	P							B095-03	18:51
				IRON	7250	mg/kg		Y	Y	P							B095-03	18:51
				LEAD	6.7	mg/kg		Y	Y	P							B095-03	18:20
				MAGNESIUM	196	mg/kg		Y	Y	P							B095-03	18:51
				MANGANESE	38.4	mg/kg		Y	Y	P							B095-03	18:51
				NICKEL	1.98	mg/kg	J	Y	Y	P	J		15				B095-03	18:51
				POTASSIUM	345	mg/kg	J	Y	Y	F	B		06A	15			B095-03	18:51
				SELENIUM	1.2	mg/kg	U	N	Y	U	U						B095-03	18:20
				SILVER	1.2	mg/kg	U	N	Y	U	U						B095-03	18:51
				SODIUM	120	mg/kg	U	N	Y	U	U						B095-03	18:51
				THALLIUM	2.4	mg/kg	U	N	Y	U	U						B095-03	18:20
				VANADIUM	9.16	mg/kg		Y	Y	P							B095-03	18:51
				ZINC	6.81	mg/kg		Y	Y	P							B095-03	18:51
	SW7471A	TOTAL	N 0 1	MERCURY	.12	mg/kg	U	N	Y	U	U						B095-03	17:05
YL0004	SW6010B	SW3050	N 0 1	ALUMINUM	7110	mg/kg		Y	Y	P							B095-04	18:55
				ANTIMONY	11.9	mg/kg	U	N	Y	U	U						B095-04	18:55
				ARSENIC	4.46	mg/kg		Y	Y	P							B095-04	18:24
				BARIUM	36.9	mg/kg		Y	Y	P							B095-04	18:55
				BERYLLIUM	.227	mg/kg	J	Y	Y	P	J		15				B095-04	18:55
				CADMIUM	.595	mg/kg	U	N	Y	U	U						B095-04	18:55
				CALCIUM	14.5	mg/kg	J	Y	Y	P	J		15				B095-04	18:55
				CHROMIUM	7.06	mg/kg		Y	Y	P							B095-04	18:55
				COBALT	2.38	mg/kg	U	N	Y	U	U						B095-04	18:55
				COPPER	4.81	mg/kg		Y	Y	P							B095-04	18:55
				IRON	6340	mg/kg		Y	Y	P							B095-04	18:55

Validation Qualifier Data Entry Verification

Run Date: October 11, 2001

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10142Q-01																		
YL0004	SW6010B	SW3050	N 0 1	LEAD	4.48	mg/kg		Y	Y	P							B095-04	18:24
				MAGNESIUM	113	mg/kg	J	Y	Y	P	J		15				B095-04	18:55
				MANGANESE	1.57	mg/kg		Y	Y	P							B095-04	18:55
				NICKEL	1.47	mg/kg	J	Y	Y	P	J		15				B095-04	18:55
				POTASSIUM	2790	mg/kg		Y	Y	P							B095-04	18:55
				SELENIUM	1.19	mg/kg	U	N	Y	U	U						B095-04	18:24
				SILVER	1.19	mg/kg	U	N	Y	U	U						B095-04	18:55
				SODIUM	119	mg/kg	U	N	Y	U	U						B095-04	18:55
				THALLIUM	2.38	mg/kg	U	N	Y	U	U						B095-04	18:24
				VANADIUM	10.3	mg/kg		Y	Y	P							B095-04	18:55
				ZINC	1.2	mg/kg	J	Y	Y	F	B		06B	15			B095-04	18:55
	SW7471A	TOTAL	N 0 1	MERCURY	.119	mg/kg	U	N	Y	U	U						B095-04	17:07
YL0001	SW8330	METHOD	N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						B095-01	11:57
				1,3-DNB	.4	mg/kg	U	N	Y	U	U						B095-01	11:57
				2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						B095-01	11:57
				2,4-DNT	.4	mg/kg	U	N	Y	U	U						B095-01	11:57
				2,6-DNT	.4	mg/kg	U	N	Y	U	U						B095-01	11:57
				2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						B095-01	11:57
				2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B095-01	11:57
				3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B095-01	11:57
				4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						B095-01	11:57
				4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B095-01	11:57
				HMX	.4	mg/kg	U	N	Y	U	U						B095-01	11:57
				NITROBENZENE	.4	mg/kg	U	N	Y	U	U						B095-01	11:57
				RDX	.4	mg/kg	U	N	Y	U	U						B095-01	11:57
				TETRYL	.4	mg/kg	U	N	Y	U	U						B095-01	11:57
YL0002	SW8330	METHOD	N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						B095-02	12:38
				1,3-DNB	.4	mg/kg	U	N	Y	U	U						B095-02	12:38
				2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						B095-02	12:38
				2,4-DNT	.4	mg/kg	U	N	Y	U	U						B095-02	12:38
				2,6-DNT	.4	mg/kg	U	N	Y	U	U						B095-02	12:38
				2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						B095-02	12:38
				2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B095-02	12:38
				3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B095-02	12:38
				4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						B095-02	12:38
				4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B095-02	12:38
				HMX	.4	mg/kg	U	N	Y	U	U						B095-02	12:38
				NITROBENZENE	.4	mg/kg	U	N	Y	U	U						B095-02	12:38
				RDX	.4	mg/kg	U	N	Y	U	U						B095-02	12:38
				TETRYL	.4	mg/kg	U	N	Y	U	U						B095-02	12:38

Validation Qualifier Data Entry Verification

Run Date: October 11, 2001

Sample Number:	Analytical/Extraction Method:		Flt	REX	Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10142Q-01																				
YL0003	SW8330	METHOD	N	0	1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						B095-03	13:18
						1,3-DNB	.4	mg/kg	U	N	Y	U	U						B095-03	13:18
						2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						B095-03	13:18
						2,4-DNT	.4	mg/kg	U	N	Y	U	U						B095-03	13:18
						2,6-DNT	.4	mg/kg	U	N	Y	U	U						B095-03	13:18
						2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						B095-03	13:18
						2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B095-03	13:18
						3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B095-03	13:18
						4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						B095-03	13:18
						4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B095-03	13:18
						HMX	.4	mg/kg	U	N	Y	U	U						B095-03	13:18
						NITROBENZENE	.4	mg/kg	U	N	Y	U	U						B095-03	13:18
						RDX	.4	mg/kg	U	N	Y	U	U						B095-03	13:18
						TETRYL	.4	mg/kg	U	N	Y	U	U						B095-03	13:18
YL0004	SW8330	METHOD	N	0	1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						B095-04	13:59
						1,3-DNB	.4	mg/kg	U	N	Y	U	U						B095-04	13:59
						2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						B095-04	13:59
						2,4-DNT	.4	mg/kg	U	N	Y	U	U						B095-04	13:59
						2,6-DNT	.4	mg/kg	U	N	Y	U	U						B095-04	13:59
						2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						B095-04	13:59
						2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B095-04	13:59
						3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B095-04	13:59
						4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						B095-04	13:59
						4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						B095-04	13:59
						HMX	.4	mg/kg	U	N	Y	U	U						B095-04	13:59
						NITROBENZENE	.4	mg/kg	U	N	Y	U	U						B095-04	13:59
						RDX	.4	mg/kg	U	N	Y	U	U						B095-04	13:59
						TETRYL	.4	mg/kg	U	N	Y	U	U						B095-04	13:59
YL0001	EPA314.0	NONE	N	0	1	PERCHLORATE	.0319	mg/kg	J	Y	Y	P	J		15				B095-01	02:27
YL0002	EPA314.0	NONE	N	0	1	PERCHLORATE	.0585	mg/kg	U	N	Y	U	U						B095-02	02:44
YL0003	EPA314.0	NONE	N	0	1	PERCHLORATE	.0599	mg/kg	U	N	Y	U	U						B095-03	03:01
YL0004	EPA314.0	NONE	N	0	1	PERCHLORATE	.0595	mg/kg	U	N	Y	U	U						B095-04	03:18
10142Q-02																				
YL0005	SW6010B	SW3050	N	0	1	ALUMINUM	10400	mg/kg		Y	Y	P							D237-01	22:40
						ANTIMONY	11.7	mg/kg	U	N	Y	U	U						D237-01	22:40
						ARSENIC	4.66	mg/kg		Y	Y	P							D237-01	22:31
						BARIUM	109	mg/kg		Y	Y	P							D237-01	22:40
						BERYLLIUM	1.09	mg/kg	J	Y	Y	P	J		15				D237-01	22:40
						CADMIUM	.587	mg/kg	U	N	Y	U	U						D237-01	22:40

Validation Qualifier Data Entry Verification

Run Date: October 11, 2001

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10142Q-02																		
YL0005	SW6010B	SW3050	N 0 1	CALCIUM	277	mg/kg		Y	Y	P							D237-01	22:40
				CHROMIUM	9.44	mg/kg		Y	Y	P							D237-01	22:40
				COBALT	6.48	mg/kg		Y	Y	P							D237-01	22:40
				COPPER	11.2	mg/kg		Y	Y	P							D237-01	22:40
				IRON	28000	mg/kg		Y	Y	P							D237-01	22:40
				LEAD	24.1	mg/kg		Y	Y	P							D237-01	22:31
				MAGNESIUM	468	mg/kg		Y	Y	P							D237-01	22:40
				MANGANESE	459	mg/kg		Y	Y	P							D237-01	22:40
				NICKEL	5.6	mg/kg		Y	Y	P							D237-01	22:40
				POTASSIUM	1830	mg/kg		Y	Y	P							D237-01	22:40
				SELENIUM	1.17	mg/kg	U	N	Y	U	U						D237-01	22:31
				SILVER	1.17	mg/kg	U	N	Y	U	U						D237-01	22:40
				SODIUM	117	mg/kg	U	N	Y	U	U						D237-01	22:40
				THALLIUM	.9	mg/kg	J	Y	Y	P	J		15				D237-01	22:31
				VANADIUM	14.9	mg/kg		Y	Y	P							D237-01	22:40
				ZINC	26.5	mg/kg		Y	Y	P							D237-01	22:40
	SW7471A	TOTAL	N 0 1	MERCURY	.117	mg/kg	U	N	Y	U	U						D237-01	15:08
YL0006	SW6010B	SW3050	N 0 1	ALUMINUM	12200	mg/kg		Y	Y	P							D237-02	22:46
				ANTIMONY	13.2	mg/kg	U	N	Y	U	U						D237-02	22:46
				ARSENIC	6.5	mg/kg		Y	Y	P							D237-02	22:36
				BARIUM	120	mg/kg		Y	Y	P							D237-02	22:46
				BERYLLIUM	.975	mg/kg	J	Y	Y	F	B		06B	15			D237-02	22:46
				CADMIUM	.659	mg/kg	U	N	Y	U	U						D237-02	22:46
				CALCIUM	265	mg/kg		Y	Y	P							D237-02	22:46
				CHROMIUM	17.2	mg/kg		Y	Y	P							D237-02	22:46
				COBALT	10.3	mg/kg		Y	Y	P							D237-02	22:46
				COPPER	7.57	mg/kg		Y	Y	P							D237-02	22:46
				IRON	37200	mg/kg		Y	Y	P							D237-02	22:46
				LEAD	30.6	mg/kg		Y	Y	P							D237-02	22:36
				MAGNESIUM	516	mg/kg		Y	Y	P							D237-02	22:46
				MANGANESE	881	mg/kg		Y	Y	P							D237-02	22:46
				NICKEL	5.62	mg/kg		Y	Y	P							D237-02	22:46
				POTASSIUM	1070	mg/kg		Y	Y	F	B		06B				D237-02	22:46
				SELENIUM	1.32	mg/kg	U	N	Y	U	U						D237-02	22:36
				SILVER	1.32	mg/kg	U	N	Y	U	U						D237-02	22:46
				SODIUM	132	mg/kg	U	N	Y	U	U						D237-02	22:46
				THALLIUM	1.01	mg/kg	J	Y	Y	P	J		15				D237-02	22:36
				VANADIUM	24.9	mg/kg		Y	Y	P							D237-02	22:46
				ZINC	24.9	mg/kg		Y	Y	P							D237-02	22:46
	SW7471A	TOTAL	N 0 1	MERCURY	.132	mg/kg	U	N	Y	U	U						D237-02	15:10

Validation Qualifier Data Entry Verification

Run Date: October 11, 2001

Sample Number:	Analytical/Extraction Method:		Flt REX Dil:	Parameter:	Result:	Units:	Qlfr:	Hit	Use	BCF	Val Qlfr	Val Code:	Reason Codes 1	2	3	4	Lab Sample:	Analysis Time:
10142Q-02																		
YL0005	SW8330	METHOD	N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						D237-01	16:06
				1,3-DNB	.4	mg/kg	U	N	Y	U	U						D237-01	16:06
				2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						D237-01	16:06
				2,4-DNT	.4	mg/kg	U	N	Y	U	U						D237-01	16:06
				2,6-DNT	.4	mg/kg	U	N	Y	U	U						D237-01	16:06
				2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						D237-01	16:06
				2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						D237-01	16:06
				3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						D237-01	16:06
				4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						D237-01	16:06
				4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						D237-01	16:06
				HMX	.4	mg/kg	U	N	Y	U	U						D237-01	16:06
				NITROBENZENE	.4	mg/kg	U	N	Y	U	U						D237-01	16:06
				RDX	.4	mg/kg	U	N	Y	U	U						D237-01	16:06
				TETRYL	.4	mg/kg	U	N	Y	U	U						D237-01	16:06
YL0006	SW8330	METHOD	N 0 1	1,3,5-TNB	.4	mg/kg	U	N	Y	U	U						D237-02	16:44
				1,3-DNB	.4	mg/kg	U	N	Y	U	U						D237-02	16:44
				2,4,6-TNT	.4	mg/kg	U	N	Y	U	U						D237-02	16:44
				2,4-DNT	.4	mg/kg	U	N	Y	U	U						D237-02	16:44
				2,6-DNT	.4	mg/kg	U	N	Y	U	U						D237-02	16:44
				2-AM-4,6-DNT	.4	mg/kg	U	N	Y	U	U						D237-02	16:44
				2-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						D237-02	16:44
				3-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						D237-02	16:44
				4-AM-2,6-DNT	.4	mg/kg	U	N	Y	U	U						D237-02	16:44
				4-NITROTOLUENE	.4	mg/kg	U	N	Y	U	U						D237-02	16:44
				HMX	.4	mg/kg	U	N	Y	U	U						D237-02	16:44
				NITROBENZENE	.4	mg/kg	U	N	Y	U	U						D237-02	16:44
				RDX	.4	mg/kg	U	N	Y	U	U						D237-02	16:44
				TETRYL	.4	mg/kg	U	N	Y	U	U						D237-02	16:44
YL0005	E314.0	NONE	N 0 1	PERCHLORATE	.0587	mg/kg	U	N	Y	U	U						D237-01	20:11
YL0006	E314.0	NONE	N 0 1	PERCHLORATE	.0659	mg/kg	U	N	Y	U	U						D237-02	20:28

APPENDIX G

SUMMARY STATISTICS FOR BACKGROUND MEDIA, FORT McCLELLAN, ALABAMA

Table 4-12. Summary Statistics for Surface Soil (0 -1 BLS)
Fort McClellan, Alabama

Run Time: 8:18:07 AM
Run Date: 7/10/98
Exposure Unit: SS

Parameter	Units	Total Number of Samples	Total Number of Detects	Frequency of Detection	NonDetects Min CRL	NonDetects Max CRL	Detects Minimum	Detects Maximum	Arithmetic Mean[a]	Standard Deviation[a]	Distribution[b]	95% UCL of Arith. Mean[a]	Exposure Point Concentration[c]		2x Arithmetic Mean[a]
Aluminum	ug/g	70	70	100%	- -	- -	2,400	39,900	8,153.00	6,095	Lognormal	11,187	11,187		16,306
Antimony	ug/g	69	47	68%	0.082	7.1	0.11	2.6	0.99	1.3	Lognormal	3.4	2.6	#	1.99
Arsenic	ug/g	66	66	100%	- -	- -	0.82	49	6.86	8.0	Lognormal	13	13		13.73
Barium	ug/g	70	70	100%	- -	- -	11	288	61.97	54	Lognormal	99	99		123.94
Beryllium	ug/g	54	54	100%	- -	- -	0.062	0.87	0.40	0.22	Lognormal	0.61	0.61		0.80
Cadmium	ug/g	70	45	64%	0.016	1.2	0.024	0.21	0.14	0.16	Lognormal	0.36	0.21	#	0.29
Calcium	ug/g	70	66	94%	75	100	63	17,900	861.37	2,265	Lognormal	1,942	1,942		1,723
Chromium	ug/g	70	70	100%	- -	- -	2.0	134	18.52	20	Lognormal	31	31		37.04
Cobalt	ug/g	70	68	97%	1.4	1.4	0.39	71	7.57	12	Lognormal	18	18		15.15
Copper	ug/g	70	69	99%	0.50	0.50	1.3	24	6.36	4.4	Lognormal	11	11		12.71
Iron	ug/g	70	70	100%	- -	- -	2,510	56,300	17,076.86	11,577	Lognormal	27,000	27,000		34,154
Lead	ug/g	70	70	100%	- -	- -	2.9	83	20.02	15	Lognormal	33	33		40.05
Magnesium	ug/g	70	70	100%	- -	- -	60	9,600	516.49	1,266	Lognormal	768	768		1,033
Manganese	ug/g	70	70	100%	- -	- -	8.0	6,850	789.46	1,192	Lognormal	3,183	3,183		1,579
Mercury	ug/g	70	23	33%	0.023	0.050	0.031	0.32	0.04	0.046	Lognormal	0.058	0.058		0.08
Nickel	ug/g	70	56	80%	1.6	2.3	1.8	22	5.17	4.2	Lognormal	9.7	9.7		10.33
Potassium	ug/g	70	60	86%	82	116	104	6,010	399.88	946	Lognormal	607	607		799.76
Selenium	ug/g	70	1	1%	0.25	0.58	1.3	1.3	0.24	0.14	Lognormal	0.29	0.29		0.48
Silver	ug/g	70	42	60%	0.016	0.80	0.019	1.9	0.18	0.34	Lognormal	0.70	0.70		0.36
Sodium	ug/g	70	66	94%	39	39	76	563	317.14	98	Lognormal	562	562		634.28
Thallium	ug/g	68	55	81%	6.6	6.6	0.015	34	1.71	5.9	Lognormal	12	12		3.43
Vanadium	ug/g	70	70	100%	- -	- -	4.7	158	29.42	26	Lognormal	48	48		58.84
Zinc	ug/g	70	64	91%	4.9	11	4.6	209	20.32	26	Lognormal	35	35		40.64

[a]Results of duplicate analyses were averaged and nondetects were treated as one-half the detection limit in the calculation of the arithmetic mean, standard deviation, and 95% UCL.

[b]For the calculation of exposure point concentrations (EPCs):

If fewer than four samples are available, or the standard deviation of the data set is zero, the distribution is undetermined.

If the probability plot correlation coefficient of the untransformed data is > or = to the critical value, the distribution is normal.

In all other cases, the distribution assumed for the EPC calculation was lognormal.

[c]The exposure point concentration (EPC) is the 95% upper confidence (UCL) of the arithmetic mean, unless the 95% UCL exceeds the maximum detected value. If the latter is true, the maximum detected value is substituted as the EPC(denoted by a "#" next to the EPC).

- - Parameter detected in all samples.

Table 4-13. Summary Statistics for Subsurface Soil (>1-10 feet BLS)
Fort McClellan, Alabama

Run Time: 8:18:07 AM
Run Date: 7/10/98
Exposure Unit: SD

Parameter	Units	Total Number of Samples	Total Number of Detects	Frequency of Detection	NonDetects Min CRL	NonDetects Max CRL	Detects Minimum	Detects Maximum	Arithmetic Mean[a]	Standard Deviation[a]	Distribution[b]	95% UCL of Arith. Mean[a]	Exposure Point Concentration[c]		2x Arithmetic Mean[a]
Aluminum	ug/g	64	64	100%	- -	- -	1,690	24,600	6,795.47	3,552	Lognormal	9,068	9,068		13,591
Antimony	ug/g	63	46	73%	0.079	7.1	0.082	0.99	0.65	0.98	Lognormal	1.8	0.99	#	1.31
Arsenic	ug/g	64	61	95%	0.25	0.45	0.77	38	9.15	9.7	Lognormal	36	36		18.30
Barium	ug/g	64	64	100%	- -	- -	4.1	4,500	116.81	562	Lognormal	161	161		233.62
Beryllium	ug/g	59	57	97%	0.051	0.053	0.041	2.0	0.43	0.43	Lognormal	0.94	0.94		0.86
Cadmium	ug/g	64	35	55%	0.015	1.2	0.020	1.3	0.11	0.21	Lognormal	0.30	0.30		0.22
Calcium	ug/g	64	44	69%	57	200	67	3,650	318.58	606	Lognormal	772	772		637.17
Chromium	ug/g	64	64	100%	- -	- -	5.5	55	19.13	11	Lognormal	27	27		38.25
Cobalt	ug/g	64	60	94%	0.23	1.4	0.26	96	8.77	16	Lognormal	34	34		17.54
Copper	ug/g	64	64	100%	- -	- -	1.3	61	9.72	9.1	Lognormal	16	16		19.43
Iron	ug/g	64	64	100%	- -	- -	4,840	48,000	22,408.44	10,436	Normal	24,586	24,586		44,817
Lead	ug/g	64	64	100%	- -	- -	0.96	500	19.27	61	Lognormal	27	27		38.53
Magnesium	ug/g	64	60	94%	100	200	35	5,940	383.12	885	Lognormal	638	638		766.24
Manganese	ug/g	64	63	98%	4.1	4.1	7.3	19,000	677.67	2,417	Lognormal	3,864	3,864		1,355
Mercury	ug/g	64	31	48%	0.022	0.050	0.022	0.12	0.03	0.025	Lognormal	0.053	0.053		0.07
Nickel	ug/g	64	51	80%	1.6	2.2	2.2	38	6.45	7.8	Lognormal	13	13		12.89
Potassium	ug/g	64	52	81%	75	110	98	6,150	355.37	774	Lognormal	660	660		710.74
Selenium	ug/g	64	1	2%	0.25	0.58	0.55	0.55	0.24	0.060	Lognormal	0.27	0.27		0.47
Silver	ug/g	64	40	63%	0.016	1.2	0.021	0.66	0.12	0.15	Lognormal	0.47	0.47		0.24
Sodium	ug/g	64	63	98%	39	39	203	643	351.05	118	Lognormal	471	471		702.10
Thallium	ug/g	63	55	87%	0.0090	6.6	0.0090	24	0.70	3.0	Lognormal	2.0	2.0		1.40
Vanadium	ug/g	64	64	100%	- -	- -	8.7	99	32.45	20	Lognormal	47	47		64.89
Zinc	ug/g	64	50	78%	4.0	8.0	5.6	89	17.43	17	Lognormal	39	39		34.86

[a]Results of duplicate analyses were averaged and nondetects were treated as one-half the detection limit in the calculation of the arithmetic mean, standard deviation, and 95% UCL.

[b]For the calculation of exposure point concentrations (EPCs):

If fewer than four samples are available, or the standard deviation of the data set is zero, the distribution is undetermined.

If the probability plot correlation coefficient of the untransformed data is > or = to the critical value, the distribution is normal.

In all other cases, the distribution assumed for the EPC calculation was lognormal.

[c]The exposure point concentration (EPC) is the 95% upper confidence (UCL) of the arithmetic mean, unless the 95% UCL exceeds the maximum detected value. If the latter is true, the maximum detected value is substituted as the EPC(denoted by a "#" next to the EPC).

- - Parameter detected in all samples.

Table 4-10. Summary Statistics for Background Surface Water
Fort McClellan, Alabama

Run Time: 5:11:42 PM
Run Date: 7/9/98
Exposure Unit: WS

Parameter	Units	Total Number of Samples	Total Number of Detects	Frequency of Detection	NonDetects Min CRL	NonDetects Max CRL	Detects Minimum	Detects Maximum	Arithmetic Mean[a]	Standard Deviation[a]	Distribution[b]	95% UCL of Arith. Mean[a]	Exposure Point Concentration[c]		2x Arithmetic Mean[a]
Aluminum	µg/L	67	57	85%	50	141	65	47,800	2,629.59	7,921	Lognormal	17,831	17,831		5,259
Arsenic	µg/L	65	9	14%	1.1	2.4	1.4	11	1.08	1.5	Lognormal	1.5	1.5		2.17
Barium	µg/L	67	67	100%	- -	- -	11	200	37.68	35	Lognormal	55	55		75.36
Beryllium	µg/L	56	9	16%	0.20	0.20	0.20	3.2	0.19	0.43	Lognormal	0.22	0.22		0.39
Bicarbonate	µg/L	56	40	71%	5,000	5,000	6,000	172,000	53,178.57	57,480	Lognormal	449,171	172,000	#	106,357
Cadmium	µg/L	67	10	15%	0.20	6.8	0.20	1.5	0.57	0.91	Lognormal	1.4	1.4		1.13
Calcium	µg/L	67	67	100%	- -	- -	179	64,100	12,583.19	13,701	Lognormal	218,721	64,100	#	25,166
Chloride	µg/L	56	56	100%	- -	- -	467	10,100	1,943.05	1,815	Lognormal	2,656	2,656		3,886
Chromium	µg/L	64	1	2%	6.0	17	14	14	5.56	1.7	Undetermined	6.3	6.3		11.13
Copper	µg/L	56	8	14%	5.0	8.1	7.1	72	6.35	13	Lognormal	8.1	8.1		12.70
Fluoride	µg/L	56	6	11%	100	200	128	579	107.86	85	Lognormal	139	139		215.71
Iron	µg/L	67	64	96%	45	78	74	232,000	9,814.08	37,961	Lognormal	46,205	46,205		19,628
Lead	µg/L	66	34	52%	0.60	4.5	0.60	47	4.33	8.3	Lognormal	19	19		8.67
Magnesium	µg/L	67	67	100%	- -	- -	171	24,400	5,486.16	5,916	Lognormal	34,551	24,400	#	10,972
Manganese	µg/L	67	64	96%	5.0	9.7	5.5	6,060	282.42	840	Lognormal	1,153	1,153		564.85
Nickel	µg/L	67	3	4%	15	34	40	70	11.23	11	Lognormal	14	14		22.46
Nitrate,Nitrite	µg/L	56	44	79%	10.0	10.0	11	838	106.09	181	Lognormal	507	507		212.18
Potassium	µg/L	67	61	91%	1,240	1,240	330	7,120	1,281.85	1,157	Lognormal	1,940	1,940		2,564
Sodium	µg/L	66	66	100%	- -	- -	296	15,200	1,718.44	2,043	Lognormal	2,401	2,401		3,437
Sulfate	µg/L	56	56	100%	- -	- -	1,060	62,400	4,313.57	8,203	Lognormal	5,784	5,784		8,627
Thallium	µg/L	59	1	2%	0.100	125	4.2	4.2	1.24	8.1	Undetermined	0.56	0.56		2.49
Total Alkalinity	µg/L	56	40	71%	5,000	5,000	6,000	172,000	53,178.57	57,480	Lognormal	449,171	172,000	#	106,357
Total Phosphorous	µg/L	56	24	43%	10.0	14	11	655	38.82	99	Lognormal	87	87		77.64
Vanadium	µg/L	63	5	8%	10.0	28	13	36	7.60	5.7	Lognormal	9.8	9.8		15.21
Zinc	µg/L	66	6	9%	18	30	27	182	20.17	26	Lognormal	24	24		40.35

[a]Results of duplicate analyses were averaged and nondetects were treated as one-half the detection limit in the calculation of the arithmetic mean, standard deviation, and 95% UCL.

[b]For the calculation of exposure point concentrations (EPCs):

If fewer than four samples are available, or the standard deviation of the data set is zero, the distribution is undetermined.

If the probability plot correlation coefficient of the untransformed data is > or = to the critical value, the distribution is normal.

In all other cases, the distribution assumed for the EPC calculation was lognormal.

[c]The exposure point concentration (EPC) is the 95% upper confidence (UCL) of the arithmetic mean, unless the 95% UCL exceeds the maximum detected value. If the latter is true, the maximum detected value is substituted as the EPC(denoted by a "#" next to the EPC).

- - Parameter detected in all samples.

Table 4-11. Summary Statistics for Background Sediment
Fort McClellan, Alabama

Run Time: 5:01:01 PM
Run Date: 7/9/98
Exposure Unit: DS

Parameter	Units	Total Number of Samples	Total Number of Detects	Frequency of Detection	NonDetects Min CRL	NonDetects Max CRL	Detects Minimum	Detects Maximum	Arithmetic Mean[a]	Standard Deviation[a]	Distribution[b]	95% UCL of Arith. Mean[a]	Exposure Point Concentration[c]		2x Arithmetic Mean[a]
Aluminum	ug/g	65	65	100%	- -	- -	657	17,400	4,296.32	3,138	Lognormal	6,591	6,590.77		8,593
Antimony	ug/g	59	40	68%	0.11	1.00	0.12	1.2	0.36	0.25	Lognormal	0.77	0.77		0.73
Arsenic	ug/g	58	58	100%	- -	- -	0.21	20	5.67	5.0	Lognormal	13	13.34		11.33
Barium	ug/g	65	65	100%	- -	- -	5.4	272	49.46	44	Lognormal	86	85.64		98.91
Beryllium	ug/g	55	55	100%	- -	- -	0.069	1.2	0.49	0.30	Lognormal	0.83	0.83		0.97
Cadmium	ug/g	65	47	72%	0.020	1.2	0.020	2.4	0.22	0.39	Lognormal	0.67	0.67		0.43
Calcium	ug/g	65	61	94%	60	99	88	2,810	555.76	557	Lognormal	1,370	1,369.94		1,111.51
Chromium	ug/g	65	65	100%	- -	- -	1.1	63	15.57	14	Lognormal	30	29.80		31.15
Cobalt	ug/g	64	59	92%	0.24	2.5	0.40	22	5.51	4.5	Lognormal	15	14.80		11.01
Copper	ug/g	61	60	98%	2.8	2.8	0.73	59	8.56	8.8	Lognormal	16	15.75		17.12
Iron	ug/g	65	65	100%	- -	- -	683	57,500	17,633.26	12,838	Lognormal	36,392	36,391.61		35,267
Lead	ug/g	62	61	98%	7.4	7.4	1.7	110	18.91	20	Lognormal	35	35.40		37.82
Magnesium	ug/g	65	65	100%	- -	- -	30	3,270	452.97	686	Lognormal	952	952.13		905.94
Manganese	ug/g	64	62	97%	4.2	5.0	8.7	2,050	356.15	385	Lognormal	1,735	1,735.37		712.31
Mercury	ug/g	65	37	57%	0.024	0.061	0.047	0.28	0.06	0.042	Lognormal	0.087	0.09		0.11
Nickel	ug/g	65	43	66%	2.1	5.3	2.4	33	6.51	6.9	Lognormal	14	14.02		13.02
Potassium	ug/g	65	46	71%	100	151	118	4,810	506.74	842	Lognormal	1,273	1,272.69		1,013.48
Selenium	ug/g	65	4	6%	0.25	1.2	0.72	1.9	0.36	0.29	Lognormal	0.44	0.44		0.72
Silver	ug/g	65	37	57%	0.018	0.80	0.021	1.1	0.16	0.21	Lognormal	0.73	0.73		0.32
Sodium	ug/g	65	57	88%	39	60	173	738	346.14	152	Lognormal	942	738.00	#	692.29
Thallium	ug/g	56	56	100%	- -	- -	0.012	0.22	0.06	0.047	Lognormal	0.098	0.10		0.13
Vanadium	ug/g	65	65	100%	- -	- -	2.6	67	20.44	13	Lognormal	34	33.66		40.87
Zinc	ug/g	65	58	89%	5.3	6.9	6.0	111	26.37	24	Lognormal	56	55.67		52.74

[a]Results of duplicate analyses were averaged and nondetects were treated as one-half the detection limit in the calculation of the arithmetic mean, standard deviation, and 95% UCL.

[b]For the calculation of exposure point concentrations (EPCs):

If fewer than four samples are available, or the standard deviation of the data set is zero, the distribution is undetermined.

If the probability plot correlation coefficient of the untransformed data is > or = to the critical value, the distribution is normal.

In all other cases, the distribution assumed for the EPC calculation was lognormal.

[c]The exposure point concentration (EPC) is the 95% upper confidence (UCL) of the arithmetic mean, unless the 95% UCL exceeds the maximum detected value.

If the latter is true, the maximum detected value is substituted as the EPC(denoted by a "#" next to the EPC).

- - Parameter detected in all samples.

APPENDIX H

PRELIMINARY RISK ASSESSMENT

Technical Memorandum

From: Paul F. Goetchius, DVM, DABT

To: Artillery and Mortar Impact Areas south of Bains Gap Road, Main Post, Parcels 138Q-X, 139Q-X, 140Q-X, 141Q-X, 142Q0X, Fort McClellan
Preliminary Risk Assessment File

Date: 11 April 2002

Subject: **PRELIMINARY RISK ASSESSMENT FOR SUBJECT SITE: REVISION 1**

This memorandum provides a Preliminary Risk Assessment (PRA) for exposure to surface soil, subsurface soil, seep water, surface water and sediment at the Artillery and Mortar Impact Areas south of Bains Gap Road, hereinafter referred to as the Impact Areas. The PRA approach is a shortened version of the Streamlined Risk Assessment (SRA) protocol developed as a uniform and economical approach to evaluating hundreds of similar sites at Fort McClellan (FTMC). It is assumed that the reader is familiar with FTMC and the fundamentals of the SRA protocol. The reader is referred to the Installation-Wide Work Plan (IT, 1998) for more detail. All the comparison and computational operations of the PRA are performed within EXCEL® spread sheet tables. The results of each step are described below.

Media of Interest and Data Selection. Data consist of 19 surface soil samples analyzed for metals, nitroaromatic compounds and perchlorate, and 14 subsurface soil samples, 3 seep water samples, 7 surface water samples and 7 sediment samples analyzed for metals only. The validated data are summarized in Tables 5-1 through 5-5 from the Site Investigation (SI). The seep water is evaluated as groundwater, since it is formed by the discharge of groundwater to the surface.

Site-Related Chemical Selection. Site-related chemicals are those presumed to be released because of activities performed by the army during operation of FTMC. They are identified in Table 1 (surface soil), Table 2 (subsurface soil), Table 3 (seep water), Table 4 (surface water) and Table 5 (sediment) by comparing the maximum detected concentration (MDC) of each chemical with its background screening criterion (BSC), computed as two times the mean of the background data set, in accordance with EPA (2001) Region IV guidance. BSCs were taken from Tables 5-1 through 5-5 from the SI. Upper tolerance limits (UTL), the highest metal concentrations reasonably considered to be within background, are also included in Tables 1 through 5 for information, but were not used to select site-related chemicals. The UTL provides a more refined statistical approach than the BSC for comparing site and background data. UTLs were developed for the entire FTMC facility, combining data from the Main Post and Pelham Range. The UTLs for total soil were adopted for subsurface soil. The UTLs for groundwater were adopted for seep water.

Chemical of Potential Concern Selection. Chemicals of potential concern (COPC) are site-related chemicals whose MDCs exceed their site-specific screening levels (SSSL), and which

may contribute significantly to risk. The SSSLs are receptor-, medium-, and chemical-specific risk-based concentrations that capture all the exposure assumptions and toxicity assessment of a full-blown baseline risk assessment. COPCs are selected for both cancer risk and noncancer effects when the data permit (Tables 1 through 5).

Receptor Scenario Selection. The proposed land reuse plan states that the Impact Areas will be used for passive recreation. The most plausible receptor is a recreational site user. An on-site resident is also included as the upper-bound evaluation of exposure and risk, and to provide additional perspective. SSSLs for both receptor scenarios were used to select COPCs for surface and subsurface soil. As stated before, seep water was evaluated as groundwater. It is assumed that groundwater may be developed for potable use. The resident, but not the recreational site user, is assumed to be exposed to groundwater; therefore, only the resident was used for COPC selection for seep water. The assumptions for residential and recreational site user exposure to surface water and sediment are identical; therefore, only the recreational site user SSSLs were used for COPC selection for surface water and sediment.

Risk Characterization. Risk characterization combines the exposure assumptions and toxicity assessment (incorporated in the SSSLs) with the exposure-point concentration (EPC) to quantify the incremental lifetime cancer risk (ILCR) and noncancer hazard index (HI). ILCR and HI estimates are computed for each chemical in each medium, and are summed to yield a total ILCR and total HI for each receptor scenario. The PRA differs from an SRA in that no attempt is made to estimate an EPC that reflects a conservative estimate of average concentration for use in risk assessment. The 95 percent upper confidence limit on the mean (UCL) is usually used for this purpose. Instead, the MDC is adopted as the EPC, which imparts a conservative bias to the PRA.

The only plausible receptor scenario for the Impact Areas is the recreational site user. No chemicals were selected as COPCs for recreational site user exposure to surface soil (Table 1), subsurface soil (Table 2) or sediment (Table 5); therefore, neither an ILCR nor an HI were estimated for this receptor. Lead was selected as the only COPC in surface water because its MDC (2.08E-2 mg/L) exceeds its SSSL (1.5E-2 mg/L) (Table 4). The SSSL, however, is the action level for lead in tap water (EPA, 2000). Since the incidental nature of exposure to surface water is expected to be far less intense than exposure to tap water, the SSSL of 1.5E-2 mg/L is deemed to be far too conservative. Furthermore, the MDC of lead in surface water is below the UTL and within the range of background (data not shown) (SAIC, 1998). Therefore, lead in surface water is deemed to reflect background conditions rather than a site-related release. It is concluded that recreational site user exposure to surface soil, subsurface soil, surface water and sediment at the Impact Areas is unlikely to result in unacceptable cancer risk or adverse noncancer health effects.

The on-site resident was also evaluated as the upper-bound on exposure and risk and to provide additional perspective. COPCs selected for residential exposure to surface soil include aluminum, antimony, iron and manganese (Table 1). No COPCs were selected for cancer risk; therefore, no ILCR was estimated for exposure to surface soil. The total HI for exposure to surface soil of 2.85E+0 exceeds the threshold value of 1. The MDCs for iron and manganese, however, fall below their respective UTLs and within the range of background (data not shown) (SAIC, 1998), and it was judged that the presence of these metals reflects background conditions.

The situation with aluminum is not so clear. The MDC for aluminum (2.17E+4 mg/kg) slightly exceeds its UTL (2.14E+4 mg/kg), but falls within the range of background (2.40E+3 to 3.99E+4 mg/kg). It is not unreasonable to suspect that aluminum could be a site-related chemical in soil at an artillery impact area. In order to be appropriately protective, it is concluded that concentrations of aluminum and antimony in surface soil represent site-related releases. Therefore, the HI of 5.48E-1, the sum of the HIs for aluminum and antimony, is attributed to exposure to surface soil.

COPCs selected for residential exposure to subsurface soil are limited to aluminum and antimony (Table 2). No COPCs were selected for cancer risk; therefore, no ILCR was estimated for exposure to subsurface soil. The total HI for exposure to subsurface soil of 5.66E-1 falls below the threshold value of 1. Both aluminum and antimony appear to be site-related metals in subsurface soil, consistent with the findings in surface soil.

COPCs for residential exposure to seep water (evaluated as groundwater – a source of potable water for household use) are limited to barium and lead. No COPCs were selected for cancer risk; therefore, no ILCR was estimated for exposure to seep water. The total HI for exposure to seep water of 1.27E-1, due to barium alone, falls below the threshold value of 1. The MDC for barium, however, falls below its UTL and within the range of background (data not shown) (SAIC, 1998), and it is judged that barium in seep water reflects background conditions in groundwater.

The resident theoretically could be exposed to surface soil, subsurface soil, seep water (groundwater), surface water and sediment. As noted above, residential exposure to surface water and sediment would be identical to that of the recreational site user. COPCs were not selected in surface water or sediment for the recreational site user; therefore, these media are not considered further in the residential evaluation. Aluminum and antimony were selected as site-related COPCs in both surface and subsurface soils. It is not plausible that a resident would be simultaneously exposed to the MDCs in both surface and subsurface soil. However, the HIs for each chemical in each medium are summed for the sake of simplicity. Therefore, the total HI for exposure to aluminum in surface and subsurface soil is 6.00E-1, and the total HI for exposure to antimony is 5.15E-1. Both fall below the threshold level of 1. The HIs for aluminum and antimony should not be added because the chemicals do not share a common target organ (please see toxicity profiles appended to IT [2000]).

It is concluded that exposure to surface soil, subsurface soil, surface water and sediment poses no unacceptable risk for the resident. Lead in seep water (groundwater), however, appears to reflect a site-related release that exceeds the action level in tap water. The Impact Areas can be released for recreational site use requiring no further action. The soil, surface water and sediment at the Impact Areas can be released for residential or unrestricted use requiring no further action. Further action is required, however, if the groundwater were to be developed as a source of potable water.

Post-Script. The foregoing identifies lead in seep water as the only chemical of concern for human health in any medium at the Impact Areas. Lead, however, is not expected to be site-related at Impact Areas, because lead is not a component of the artillery and mortar ordnance

used at this site. Consequently, the three seeps were re-sampled on 10 January 2002, taking special care to ensure that sediment was not incorporated into the sample. The samples were analyzed only for lead. Lead concentrations ranged from 2.00E-3 to 4.37E-3 mg/L. All concentrations fell below the background screening criterion of 8.67E-3 mg/L and below the SSSL for residential exposure of 1.50E-2 mg/L. Although it is not entirely clear why the initial (2 May 2001) seep samples yielded higher lead concentrations, more careful sampling showed that lead is not a chemical of concern in seep water.

It is concluded that exposure to soil, groundwater, surface water and sediment poses no unacceptable risk for the resident. The Impact Areas can be released for unrestricted use with no further action.

References

IT Corporation (IT), 1998, ***Installation-Wide Work Plan***, Final, Fort McClellan, Calhoun County, Alabama, Prepared for U.S. Army Corps of Engineers, Mobile District, August*

IT Corporation (IT), 2000, ***Human Health and Ecological Screening Values and PAH Background Summary Report***, Final, Fort McClellan, Calhoun County, Alabama, Prepared for U.S. Army Corps of Engineers, Mobile District, August.

Science Applications International Corporation (SAIC), 1998, ***Final Background Metals Survey Report***, prepared for U.S. Army Corps of Engineers, Mobile District, July.

Environmental Protection Agency (EPA), 2000, ***Drinking Water Standards and Health Advisories***, Office of Water, Washington, DC, EPA 822-B-00-001, Summer.

U.S. Environmental Protection Agency (EPA), 2001, ***Region 4 Human Health Risk Assessment Bulletins – Supplement to RAGS, Interim Human Health Risk Assessment Bulletins***, Waste Management Division, EPA Region 4, Atlanta, GA, on line.

*Note: the Installation-Wide Work Plan was revised in February 2002 but has not yet been released for distribution. The description of the protocol and application of the SRA, however, was not substantively changed.

Table 1

Preliminary Risk Evaluation for Exposure to Surface Soil
Impact Areas - Main Post

Fort McClellan, Calhoun County, Alabama

Chemical	MDC	BSC	UTL	Site-Related Chemical?[a]	Res Soil SSSL-c[b]	Res Soil SSSL-n[c]	Res Cancer COPC?[d]	Res Noncancer COPC?[e]	Res ILCR[f]	Res HI[g]	Rec Soil SSSL-c[h]	Rec Soil SSSL-n[i]	Rec Cancer COPC?[d]	Rec Noncancer COPC?[e]	Rec ILCR[j]	Rec HI[k]
METALS																
Aluminum	2.17E+04	1.63E+04	2.14E+04	2.17E+04		7.80E+03		2.17E+04		2.78E-01		6.27E+05				
Antimony	8.40E+00	1.99E+00	2.64E+00	8.40E+00		3.11E+00		8.40E+00		2.70E-01		2.47E+02				
Arsenic	6.50E+00	1.37E+01	2.54E+01		4.26E-01	2.34E+00					2.94E+01	1.89E+02				
Barium	4.88E+02	1.24E+02	1.94E+02	4.88E+02		5.47E+02						4.41E+04				
Beryllium	3.10E+00	8.00E-01	8.68E-01	3.10E+00		9.60E+00						4.08E+02				
Calcium	1.67E+03	1.72E+03	3.54E+03													
Chromium	1.72E+01	3.70E+01	6.44E+01			2.32E+01						1.82E+03				
Cobalt	3.68E+01	1.52E+01	3.25E+01	3.68E+01		4.68E+02						3.75E+04				
Copper	1.19E+01	1.27E+01	2.25E+01			3.13E+02						2.52E+04				
Iron	3.90E+04	3.42E+04	5.54E+04	3.90E+04		2.34E+03		3.90E+04		1.67E+00		1.89E+05				
Lead	3.77E+01	4.01E+01	6.38E+01			4.00E+02						4.00E+02				
Magnesium	1.23E+03	1.03E+03	9.60E+03	1.23E+03												
Manganese	2.29E+03	1.58E+03	4.66E+03	2.29E+03		3.63E+02		2.29E+03		6.31E-01		2.85E+04				
Mercury	9.50E-02	8.00E-02	3.22E-01	9.50E-02		2.33E+00						1.84E+02				
Nickel	9.93E+00	1.03E+01	2.00E+01			1.54E+02						1.20E+04				
Potassium	2.89E+03	8.00E+02	6.01E+03	2.89E+03												
Sodium	4.51E+01	6.34E+02	5.63E+02													
Thallium	1.23E+00	3.43E+00	4.53E-01			5.08E-01						4.10E+01				
Vanadium	2.49E+01	5.88E+01	9.94E+01			5.31E+01						4.00E+03				
Zinc	5.94E+01	4.06E+01	7.37E+01	5.94E+01		2.34E+03						1.88E+05				
NITROAROMATICS	0.00E+00															
2-Amino-4,6-dinitrotoluene	1.60E-01	NA				4.64E-01						3.66E+01				
PERCHLORATE	0.00E+00											1.48E+05				
Perchlorate	3.19E-02	NA				7.04E+00						5.69E+02				
Total ILCR, HI										2.85E+00						

All concentrations expressed as mg/kg.
MDC = maximum detected concentration; BSC = background screening criterion; UTL = 95% upper tolerance limit (incorporates data from Main Post and Pelham Range).
[a] MDC presented only if it exceeds BSC.
[b] Site-specific screening level based on cancer risk for residential exposure to soil.
[c] Site-specific screening level based on noncancer hazard for residential exposure to soil.
[d] MDC presented only if it exceeds SSSL-c.
[e] MDC presented only if it exceeds SSSL-n.
[f] Incremental lifetime cancer risk for resident exposed to chemical in soil.
[g] Hazard index for noncancer effects for resident exposed to chemical in soil.
[h] Site-specific screening level based on cancer risk for recreational site user exposure to soil.
[i] Site-specific screening level based on noncancer hazard for recreational site user exposure to soil.
[j] Incremental lifetime cancer risk for recreational site user exposed to chemical in soil.
[k] Hazard index for noncancer effects for recreational site user exposed to chemical in soil.

Table 2

Preliminary Risk Evaluation to Subsurface Soil Impact Areas - Main Post

Fort McClellan, Calhoun County, Alabama

Chemical	MDC	BSC	UTL	Site-Related Chemical?[a]	Res Soil SSSL-c[b]	Res Soil SSSL-n[c]	Res Cancer COPC?[d]	Res Noncancer COPC?[e]	Res ILCR[f]	Res HI[g]	Rec Soil SSSL-c[h]	Rec Soil SSSL-n[i]	Rec Cancer COPC?[d]	Rec Noncancer COPC?[e]	Rec ILCR[j]	Rec HI[k]
METALS																
Aluminum	2.51E+04	1.36E+04	1.80E+04	2.51E+04		7.80E+03		2.51E+04		3.22E-01		6.27E+05				
Antimony	7.61E+00	1.31E+00	2.64E+00	7.61E+00		3.11E+00		7.61E+00		2.45E-01		2.47E+02				
Arsenic	7.38E+00	1.83E+01	3.24E+01		4.26E-01	2.34E+00					2.94E+01	1.89E+02				
Barium	1.27E+02	2.34E+02	2.42E+02			5.47E+02						4.41E+04				
Beryllium	1.14E+00	8.60E-01	1.50E+00	1.14E+00		9.60E+00						4.08E+02				
Calcium	1.24E+02	6.37E+02	2.41E+03													
Chromium	3.23E+01	3.83E+01	5.63E+01			2.32E+01						1.82E+03				
Cobalt	2.57E+01	1.75E+01	3.63E+01	2.57E+01		4.68E+02						3.75E+04				
Copper	1.21E+01	1.94E+01	2.59E+01			3.13E+02						2.52E+04				
Iron	3.81E+04	4.48E+04	5.63E+04			2.34E+03						1.89E+05				
Lead	1.17E+01	3.85E+01	6.05E+01			4.00E+02						4.00E+02				
Magnesium	1.07E+03	7.66E+02	5.54E+03	1.07E+03												
Manganese	7.78E+02	1.36E+03	4.12E+03			3.63E+02						2.85E+04				
Mercury	4.20E-02	7.00E-02	1.71E-01			2.33E+00						1.84E+02				
Nickel	8.42E+00	1.29E+01	2.07E+01			1.54E+02						1.20E+04				
Potassium	4.79E+03	7.11E+02	5.78E+03	4.79E+03												
Silver	5.06E-01	2.40E-01	8.51E-01	5.06E-01		3.91E+01						3.16E+03				
Sodium	3.75E+01	7.02E+02	6.23E+02													
Thallium	8.17E-01	1.40E+00	6.62E+00			5.08E-01						4.10E+01				
Vanadium	5.01E+01	6.49E+01	9.05E+01			5.31E+01						4.00E+03				
Zinc	2.56E+01	3.49E+01	7.13E+01			2.34E+03						1.88E+05				
Total ILCR, HI										5.66E-01						

All concentrations expressed as mg/kg.
MDC = maximum detected concentration; BSC = background screening criterion; UTL = 95% upper tolerance limit (values for Total Soil; incorporates data from Main Post and Pelham Range).
VOCs = volatile organic compounds.
[a] MDC presented only if it exceeds BSC.
[b] Site-specific screening level based on cancer risk for residential exposure to soil.
[c] Site-specific screening level based on noncancer hazard for residential exposure to soil.
[d] MDC presented only if it exceeds SSSL-c.
[e] MDC presented only if it exceeds SSSL-n.
[f] Incremental lifetime cancer risk for resident exposed to chemical in soil.
[g] Hazard index for noncancer effects for resident exposed to chemical in soil.
[h] Site-specific screening level based on cancer risk for recreational site user exposure to soil.
[i] Site-specific screening level based on noncancer hazard for recreational site user exposure to soil.
[j] Incremental lifetime cancer risk for recreational site user exposed to chemical in soil.
[k] Hazard index for noncancer effects for recreational site user exposed to chemical in soil.

Table 3

Preliminary Risk Evaluation for Exposure to Seep Water
Impact Areas - Main Post

Fort McClellan, Calhoun County, Alabama

Chemical	MDC	BSC	UTL	Site-Related Chemical?[a]	Res GW SSSL-c[b]	Res GW SSSL-n[c]	Res Cancer COPC?[d]	Res Noncancer COPC?[e]	Res ILCR[f]	Res HI[g]
METALS										
Aluminum	2.19E+00	5.26E+00	9.60E+00			1.56E+00				
Barium	1.40E-01	7.53E-02	4.72E-01	1.40E-01		1.10E-01		1.40E-01		1.27E-01
Beryllium	6.50E-04	3.90E-04	2.37E-03	6.50E-04		3.13E-03				
Calcium	5.92E-01	2.52E+01	4.52E+02							
Copper	1.31E-02	1.27E-02	2.35E-01	1.31E-02		6.26E-02				
Iron	3.78E+00	1.96E+01	2.58E+01			4.69E-01				
Lead	4.53E-02	8.67E-03	2.58E-02	4.53E-02		1.50E-02		4.53E-02		
Magnesium	3.64E-01	1.10E+01	1.49E+02							
Manganese	2.42E-02	5.65E-01	4.13E+00			7.35E-02				
Potassium	3.25E+00	2.56E+00	6.85E+01	3.25E+00						
Sodium	1.08E+00	3.44E+00	4.90E+01							
Vanadium	4.05E-03	1.52E-02	1.14E-02			1.10E-02				
Zinc	1.10E-02	4.03E-02	1.52E+00			4.69E-01				
Total ILCR, HI										1.27E-01

All concentrations expressed as mg/L.
MDC = maximum detected concentration; BSC = background screening criterion; UTL = 95% upper tolerance limit).
(values for ground water; incorporates data from Main Post and Pelham Range).

[a] MDC presented only if it exceeds BSC.

[b] Site-specific screening level based on cancer risk for residential exposure to groundwater.

[c] Site-specific screening level based on noncancer hazard for residential exposure to groundwater.

[d] MDC presented only if it exceeds SSSL-c.

[e] MDC presented only if it exceeds SSSL-n.

[f] Incremental lifetime cancer risk for resident exposed to chemical in groundwater.

[g] Hazard index for noncancer effects for resident exposed to chemical in groundwater.

Table 4

Preliminary Risk Evaluation for Exposure to Surface Water
Impact Areas - Main Post

Fort McClellan, Calhoun County, Alabama

Chemical	MDC	BSC	UTL	Site-Related Chemical?[a]	Rec SW SSSL-c[b]	Rec SW SSSL-n[c]	Rec Cancer COPC?[d]	Rec Noncancer COPC?[e]	Rec ILCR[f]	Rec HI[g]
METALS										
Aluminum	5.96E-01	5.26E+00	1.70E+01			1.53E+01				
Barium	3.55E-02	7.53E-02	1.13E-01			1.10E+00				
Calcium	3.28E-01	2.52E+01	6.41E+01							
Copper	1.08E-02	1.27E-02	7.16E-02			6.23E-01				
Iron	7.79E-01	1.96E+01	4.12E+01			4.70E+00				
Lead	2.08E-02	8.67E-03	4.73E-02	2.08E-02		1.50E-02		2.08E-02		
Magnesium	3.73E-01	1.10E+01	2.44E+01							
Manganese	6.45E-02	5.65E-01	1.83E+00			6.40E-01				
Nickel	1.09E-02	2.24E-02	7.01E-02			3.10E-01				
Potassium	2.94E+00	2.56E+00	4.25E+00	2.94E+00						
Selenium	1.75E-03			1.75E-03		7.82E-02				
Sodium	1.08E+00	3.44E+00	1.52E+01							
Zinc	8.66E-03	4.03E-02	1.82E-01			4.65E+00				
Total ILCR, HI										

All concentrations expressed as mg/L.
MDC = maximum detected concentration; BSC = background screening criterion; UTL = 95% upper tolerance limit (incorporates data from Main Post and Pelham Range).
[a] MDC presented only if it exceeds BSC.
[b] Site-specific screening level based on cancer risk for recreational site user exposure to surface water.
[c] Site-specific screening level based on noncancer hazard for recreational site user exposure to surface water.
[d] MDC presented only if it exceeds SSSL-c.
[e] MDC presented only if it exceeds SSSL-n.
[f] Incremental lifetime cancer risk for recreational site user exposed to chemical in surface water.
[g] Hazard index for noncancer effects for recreational site user exposed to chemical in surface water.

Table 5

Preliminary Risk Evaluation for Exposure to Sediment
Impact Areas - Main Post

Fort McClellan, Calhoun County, Alabama

Chemical	MDC	BSC	UTL	Site-Related Chemical?[a]	Rec SD SSSL-c[b]	Rec SD SSSL-n[c]	Rec Cancer COPC?[d]	Rec Noncancer COPC?[e]	Rec ILCR[f]	Rec HI[g]
METALS										
Aluminum	7.57E+03	8.59E+03	1.43E+04			1.15E+06				
Arsenic	6.74E+00	1.13E+01	2.01E+01		5.58E+01	3.59E+02				
Barium	1.26E+02	9.89E+01	1.91E+02	1.26E+02		8.36E+04				
Beryllium	1.06E+00	9.70E-01	1.24E+00	1.06E+00		1.50E+02				
Calcium	3.59E+02	1.11E+03	2.81E+03							
Chromium	2.37E+01	3.12E+01	6.33E+01			2.79E+03				
Cobalt	8.50E+00	1.10E+01	2.19E+01			6.72E+04				
Copper	1.17E+01	1.71E+01	3.68E+01			4.74E+04				
Iron	3.54E+04	3.53E+04	5.19E+04	3.54E+04		3.59E+05				
Lead	8.93E+01	3.78E+01	7.64E+01	8.93E+01		4.00E+02				
Magnesium	3.36E+02	9.06E+02	2.20E+03							
Manganese	3.30E+02	7.12E+02	2.05E+03			4.38E+04				
Nickel	5.13E+00	1.30E+01	3.16E+01			1.76E+04				
Potassium	2.03E+03	1.01E+03	2.79E+03	2.03E+03						
Thallium	1.27E+00	1.30E-01	2.11E-01	1.27E+00		7.78E+01				
Vanadium	2.02E+01	4.09E+01	6.67E+01			4.83E+03				
Zinc	1.75E+01	5.27E+01	1.11E+02			3.44E+05				
Total ILCR, HI										

All concentrations expressed as mg/kg.
MDC = maximum detected concentration; BSC = background screening criterion; UTL = 95% upper tolerance limit (incorporates data from Main Post and Pelham Range).
[a] MDC presented only if it exceeds BSC.
[b] Site-specific screening level based on cancer risk for recreational site user exposure to sediment.
[c] Site-specific screening level based on noncancer hazard for recreational site user exposure to sediment.
[d] MDC presented only if it exceeds SSSL-c.
[e] MDC presented only if it exceeds SSSL-n.
[f] Incremental lifetime cancer risk for recreational site user exposed to chemical in sediment.
[g] Hazard index for noncancer effects for recreational site user exposed to chemical in sediment.