

Revision 3
Resource Conservation Recovery Act Facility Investigation
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

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LIST OF ACRONYMS AND ABBREVIATIONS

°F	Degrees Fahrenheit
ADEM	Alabama Department of Environmental Management
ALM	Adult Lead Model
AOI	Area of Interest
ARBCA	Alabama Risk-Based Corrective Action Guidance Manual
Army	United States Department of the Army
ASR	Archive Search Report
BCT	BCT
BERA	Baseline ecological risk assessment
BGR	BGR
Bgs	below ground surface
BRAC	Base Realignment and Closure
CA	Cleanup agreement
CDTF	Chemical Defense Training Facility
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERFA	Community Environmental Response Facilitation Act
CFDP	Center for Domestic Preparedness
COC	Constituent of concern
COPC	Constituent of potential concern
COPEC	Constituent of potential ecological concern
DOD	United States Department of Defense
DOJ	United States Department of Justice
DQS	Data Quality Summary
<i>Draft SAP</i>	<i>Draft Installation-Wide Sampling and Analysis Plan</i>
<i>EBS</i>	<i>Final Environmental Baseline Survey, Fort McClellan, Alabama</i>
Eco-RBRG	Ecological Risk-Based Remedial Goals
Eco-SSLs	Ecological soil screening level
EE/CA	Engineering Evaluation/Cost Analysis
EPA	U.S. Environmental Protection Agency
EPC	Exposure point concentration
ESCA	Environmental Services Cooperative Agreement
ESE	Environmental Science & Engineering, Inc.
ESMP	Endangered Species Management Plan
ESV	Ecological screening value
FOSET	Finding of Suitability for Early Transfer
FOST	Finding of Suitability for Transfer
Foster Wheeler	Foster Wheeler Environmental Corporation
ft	feet
HI	Hazard index
HQ	Hazard quotient
IEUBK	Integrated Exposure Uptake Biokinetic Model
ILCR	Incremental lifetime cancer risk

IMR	Infant mortality rate
IT	IT Corporation, Inc.
ITRC	Interstate Technology and Regulatory Council
LUC	Land use control
McClellan	McClellan, Anniston, Alabama
MCPP	2-(2-Methyl-4-chlorophenoxy)propionic acid
MDA	McClellan Development Authority
MDC	Maximum detected concentration
MEC	Munitions and Explosives of Concern
MES	Matrix Environmental Services, LLC
mg/kg	milligram per kilogram
MOUT	Military Operation in Urban Terrain
MRA	Munitions Response Area
MRS	Munitions Response Site
msl	mean sea level
NFA	No Further Action
NHANES	National Health and Nutrition Examination Survey
PAH	Polynuclear aromatic hydrocarbon
PbB	blood lead
PRG	Preliminary Remediation Goal
PSL	Preliminary screening level
PSV	Preliminary screening value
QA	Quality assurance
QAP	<i>Quality Assurance Plan</i>
RBTL	<i>Risk based tolerance level</i>
RC	<i>Representative concentration</i>
RCRA	Resource Conservation Recovery Act
RFI	RCRA Facility Investigation
RM	Risk management
ROE	Right of entry
SAIC	Science Applications International Corporation
SCEM	Site conceptual exposure model
Shaw	Shaw Environmental, Inc.
SHHRA	Streamlined human health risk assessment
SI	Site Investigation
SINA	Special interest natural areas
Site	Range 30 Impact Area, Parcels 88Q and 103Q
SSL	Soil screening level
SSSL	Site-specific screening level
TOC	Total organic carbon
USFWS	United States Fish and Wildlife Service
UCL	Upper confidence limit
U.S.	United States
USACE	United States Army Corps of Engineers

USDA	United States Department of Agriculture
USGS	United States Geological Survey
WRS	Wilcoxon Rank Sum

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EXECUTIVE SUMMARY

The Range 30 Impact Area includes portions of the Former Rifle/Machine Gun Range, Parcel 103Q and Parcel 88Q Range 30: End-of-Cycle Test Range within the northwest region of McClellan, Anniston, Alabama. Parcel 88Q was also known as Range 30: Confidence Course. The subject of this Resource Conservation Recovery Act (RCRA) Facility Investigation (RFI) is the impact area of the historical Range 30 operations located at the base of an unnamed hillside within Parcels 88Q and 103Q. The Range 30 Impact Area within the Parcels 88Q and 103Q boundaries is approximately 35 acres in size and will be collectively referred to as the Site in this report. The Range 30 Impact Area is currently vacant and formerly served for weapons training from approximately 1977 until sometime between 1983 and 1989.

This RFI was designed to collect data from site media and provide a level of defensible data and information in sufficient detail to determine whether chemical contamination is present, as a result of historical training activities and the nature and extent of the contamination. Field work was conducted at the Site in 2004 and 2014.

To meet these objectives, the following RFI activities were performed.

- A visual assessment of bullet pockets and bullet fragments was performed in 2004 to identify proposed sampling locations within drainages and in low areas at the foot of the unnamed hillside. The observed bullet locations were used to select sample locations in order to assess the “worst-case” soil concentrations at the Site.
- Six surface soil and three subsurface soil samples were collected in September 2004 and analyzed for metals, explosives, total organic carbon (TOC), and grain size.
- Twenty-four surface soil and nine subsurface soil samples were collected in August 2014 and analyzed for metals and explosives.

A data quality review of analytical results was performed to assess compliance with project objectives and to assess hard copy consistency and integrity with electronic data deliverables. A statistical evaluation was performed to identify metals that may be present at elevated concentrations as a result of Site-related activities. Screening level human health and ecological risk assessments were performed to evaluate potential unacceptable risk to receptors from elevated metal concentrations in surface soil and subsurface soil at the Site.

The sampling completed as part of the RFI has enabled a more complete understanding of the distribution of contaminants in soils and confirmed the nature of those contaminants. No explosives were detected in the surface soil and subsurface samples collected during the RFI activities. Important conclusions regarding nature and extent are as follows:

- Antimony and lead exceeded residential Preliminary Screening Values (PSVs) in at least one surface soil sample, and are considered human health constituents of potential concern (COPCs) in surface soil at the Site.

- Antimony, copper, lead, nickel, and selenium exceeded ecological screening values (ESVs) in at least one surface soil sample, and are considered constituents of potential ecological concern (COPECs) in surface soil at the Site.
- Antimony and lead exceeded residential PSVs in at least one subsurface soil sample, and are considered human health COPECs in subsurface soil at the Site.
- Antimony, copper, and lead exceeded ESVs in at least one subsurface soil sample, and are considered COPECs in subsurface soil at the Site.

A streamlined human health risk assessment was performed to evaluate the potential threat to human health from exposure to contaminated media at the Site. Five exposure domains were evaluated based on current land use for the trespasser/recreational; and future land use for the trespasser/recreational, commercial worker, construction worker, and resident. Although the Site is projected for either industrial or passive recreational reuse, the analytical data were also screened against residential human health criteria to evaluate the Site for unrestricted future reuse. Based on the streamlined human health risk assessment, no constituents of concern (COCs) were identified in soil at the Site. However, based on the planned future land use at the Site, the MDA will impose a Land Use Control (LUC) restricting the Site from residential use.

A screening-level ecological risk assessment was conducted to evaluate the potential for ecological risks posed by site-related contaminants at the Site. Lead was identified as a COC in total soil (surface soil and subsurface soil combined) at the Site and may pose an increased risk to ecological receptors. However, it appears that the lead contamination that may pose an increased risk to ecological receptors is confined to an area in the vicinity of surface soil sample R30-103Q-007 (0-0.5) located in the central portion of the Site.

Based on the results of the RFI, no further actions are warranted with respect to defining the nature and extent of contamination in environmental media at the Site. However, because lead in soil may pose an increased risk to ecological receptors, remediation for lead contamination in surface soil in the area surrounding surface soil R30-103Q-007 (0-0.5) may be necessary.

1.0 INTRODUCTION

Matrix Environmental Services, LLC (MES) has prepared this Resource Conservation Recovery Act (RCRA) Facility Investigation (RFI) Report to summarize environmental investigations at the Range 30 Impact Area, Parcels 88Q and 103Q within McClellan, Anniston, Alabama (McClellan) formerly known as Fort McClellan. Figure 1-1 shows a map of McClellan. Figure 1-2 shows a parcel location map of Parcels 88Q and 103Q.

This work is being performed on behalf of the McClellan Development Authority (MDA). The MDA assumed from the United States (U.S.) Department of the Army (Army) the responsibility for environmental closure of certain sites at McClellan. Transfer of these sites to the MDA was conducted pursuant to Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 120(h)(3)(C) which allows federal agencies to transfer contaminated property before all necessary cleanup has taken place.

The basis for the cleanup effort at these parcels is an Environmental Services Cooperative Agreement (ESCA) DASW01-03-2-001 effective September 30, 2003 between the MDA and the Army (Army, 2003) which was superseded by ESCA Agreement W9128F-07-2-0163 on September 11, 2007 and its subsequent modifications (Army, 2007). In addition, the MDA negotiated a Cleanup Agreement (CA), amended most recently in February 2014, with the Alabama Department of Environmental Management (ADEM) that describes the responsibilities for completing the investigation and remediation of potentially impacted sites at McClellan (ADEM, 2014). Property that was determined by the Army and ADEM to be suitable for transfer (i.e., “clean property”) was transferred to the MDA under a Finding of Suitability for Transfer (FOST). Subsequently, remaining contaminated property was transferred to the MDA under a Finding of Suitability for Early Transfer (FOSET). The basis for the continuing cleanup effort at these FOSET parcels is the execution of the ESCA and the CA.

1.1 Status of Range 30 Impact Area and Justification for Environmental Investigation

The Range 30 Impact Area includes portions of the Former Rifle/Machine Gun Range, Parcel 103Q and Parcel 88Q Range 30: End-of-Cycle Test Range. Parcel 88Q was also known as Range 30: Confidence Course (Environmental Science and Engineering, Inc. [ESE], 1998). These parcels are located within the northern region of McClellan. Parcel 103Q is approximately 25 acres and Parcel 88Q is roughly 545 acres including the range safety fan. However, the subject of this RFI is the impact area of the historical Range 30 operations located at the base of the unnamed hillside within Parcels 88Q and 103Q. The Range 30 Impact Area within the Parcels 88Q and 103Q boundaries is approximately 35 acres in size, shown on Figure 1-2, and will be collectively referred to as the Site in this report. The Range 30 Impact Area is currently vacant and formerly used for weapons training from approximately 1977 until sometime between 1983 and 1989. The proposed future land use of this Site is light industrial and recreational.

Ranges used for small arms practice firing may contain lead, antimony, copper, zinc, and arsenic that may leach from bullets, bullet fragments, and bullet jackets, potentially affecting surface water and soil. Table 1-1 lists components used to manufacture ammunition (Interstate

Technology and Regulatory Council [ITRC], 2003). Lead typically accounts for more than 85 percent of the weight of the projectile and may constitute an environmental concern. The lead projectile may be alloyed with other metals and be surrounded by a full steel jacket.

In general at rifle and pistol ranges, training is often performed with fixed or stationary targets at known distances resulting in the formation of “bullet pockets” on the face of the berm. The impact of these high speed rounds with the rounds accumulated in the bullet pockets may result in significant fragmentation, ricochet and dispersion of lead. To mitigate this effect, standard range maintenance practices include re-facing the berm surface soil to bury the projectiles below the impact depths of incoming rounds. Although the Site was used for small arms training, there are no berms present but rather a large hillside that served as a backdrop for firing. Small caliber weapons bullets fired into the hillside would not penetrate deep into surface soil. However, erosion of hillside soils could subsequently bury bullets or concentrate them in storm water channels and washes.

The CA describes activities and projects that the MDA will perform to facilitate the reuse of early transfer parcels. The Site is currently located within Table III.I of the CA – those parcels requiring an RFI (CA, 2014). The CA specifies that *Range 30 contamination in soil at Range 30 results from range training activities at the various individual parcels. MDA to perform soil removal and lead stabilization as appropriate.*

1.2 McClellan Site Description and History

McClellan is located in the foothills of the Appalachian Mountains of northeastern Alabama, near the cities of Anniston and Weaver in Calhoun County. McClellan is approximately 60 miles northeast of Birmingham, 75 miles northwest of Auburn, and 95 miles west of Atlanta, Georgia.

The Main Post of McClellan consists of 18,946 acres and was purchased by the U.S. Government in March 1917 for construction of a National Guard Camp. On July 18, 1917 the U.S. War Department authorized the establishment of McClellan as an artillery range and a training camp and on July 20, 1917 construction of the camp began. By February 1919, 1,660 buildings had been constructed and a railway spur from the nearby Southern Railway Tracks was completed. The site was named Camp McClellan in honor of Major General George B. McClellan, a leader of the Union Army during the Civil War. Camp McClellan was used to train troops for World War I from 1917 until the armistice. It was then designated as a demobilization center. Between 1919 and 1929, Camp McClellan served as a training area for active army units and other civilian elements. Camp McClellan was re-designated as Fort McClellan in 1929 and continued to serve as a training area.

In 1940, the government acquired an additional 22,245 acres west of McClellan. This tract of land was named Pelham Range. In 1941, the Alabama Legislature leased approximately 4,488 acres to the U.S. Government to provide an access corridor from the Main Post to Talladega National Forest. This corridor provided access to additional woodlands for training.

The Army operated the Chemical Defense Training Facility (CDTF) at McClellan from 1951 until the school was deactivated in 1973. The CDTF was then reactivated in 1979 and was closed at the time of base closure in 1999 (ESE, 1998). The CDTF offered advanced training in all phases of chemical, biological, and radiological warfare to personnel from all branches of the military.

In 1995, the U.S. Department of Defense announced that McClellan would close by October 1999. The Base Realignment and Closure (BRAC) commission recommended closure of the installation, except for minimum essential land and facilities for a Reserve Component Enclave and essential facilities needed to provide support for the chemical demilitarization operation at Anniston Army Depot. Subsequently, the U.S. Department of Justice (DOJ) requested a transfer of some facilities and training area to their authority for ongoing training exercises. McClellan transferred the CDTF and ancillary support facilities to the DOJ in 2000 to establish the Center for Domestic Preparedness (CFDP).

1.3 Purpose and Objectives

This RFI was designed to collect data from site media and provide a level of defensible data and information in sufficient detail to determine whether chemical contamination is present, as a result of historical training activities and the nature and extent of the contamination. Field work was conducted at the Site in 2004 and 2014.

1.4 Report Organization

Section 2.0 of this report presents a summary of the environmental setting describing location, soil, geology, and hydrogeology of the Site. Section 3.0 presents a summary of previous environmental investigations. Section 4.0 describes the RFI activities and Section 5.0 presents the results of the RFI activities. Contaminant fate and transport is discussed in Section 6.0. Streamlined human health and screening-level ecological risk discussions are presented in Sections 7.0 and 8.0, respectively. Section 9.0 presents the summary, conclusions, and recommendations. Section 10.0 provides the references cited in this report.

Tables, Figures and Appendices follow the text. The Appendices included with this report are as follows:

Appendix A	Analytical Data
	A1 – 2004 Analytical Data
	A2 – 2014 Analytical Data
Appendix B	<i>Data Quality Summary: Range 30 Impact Area</i>
	<i>B1 – 2004 Analytical Results</i>
	<i>B2 – 2014 Analytical Results</i>
Appendix C	Statistical Comparison of Site and Background Data for Metals
Appendix D	Field Documentation
Appendix E	Response to ADEMs Comments Dated 1/28/2014

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2.0 SITE DESCRIPTION AND PHYSICAL SETTING

The following sections describe the Site and physical environment.

2.1 Site Description and History of Impact Area

Range 30 Impact Area includes Parcels 88Q and 103Q within the northern region of McClellan. Parcel 103Q is approximately 25 acres and Parcel 88Q is roughly 545 acres including the range safety fan. This RFI is limited to the approximately 35-acre portion of the impact area of the historical Range 30 operations located at the base of the unnamed hillside of Parcels 88Q and 103Q (Figure 1-2). The Site is bounded to the north by an unpaved road that crosses Parcel 231(7) and intersects Falcon Road, and bounded to the south by an unpaved road near the top of the unnamed hillside, as shown in Figure 1-2.

A 1937 aerial photograph reveals a clearing in the area occupied by Parcel 103Q. Exact dates of use and ordnance used are not described in the *Environmental Baseline Survey (EBS)* prepared by ESE (ESE, 1998). The Archive Search Report (ASR, U.S. Army Corps of Engineers [USACE], 1999) plates show activity in this area as early as World War I. The ASR identifies the area as OA-08, or, during subsequent years, by one of the following names: Tank Sub-Caliber Range, Carbine Transition Range (R-32), and/or Machine Gun Range (R-34) (USACE, 1999).

A portion of the site is overlapped by Army Engineering Evaluation/Cost Analysis (EE/CA) Sector M6-1M Suspect Area (North) – PR which is included in Munitions Response Site 12 (MRS-12, Tract 12C). MRS-12 is located in the northern portion of the Alpha Munitions Response Area (MRA) generally between the Northern Alpha MRS and the Alabama National Guard's Military Operation in Urbanized Terrain (MOUT) Site (MES, 2010).

Range 30 (Parcel 88Q) was used from 1977 to sometime between 1983 and 1989 for end-of-cycle training (ESE, 1998). End-of-cycle testing was the last phase of basic training prior to graduation. Parcel 88Q is the former location of Range 30. Arms fired at this range included:

- M-16 blanks, flares and simulators
- M-60 machine guns
- 0.30 caliber ordnance

Based on the location of Reilly Airfield to the northwest, the position of the Range 30 (Parcel 88Q) Firing Line, and the orientation of the range fan presented in the *EBS*, the direction of fire for Range 30 would have been to the southeast toward the unnamed hillside. The *EBS* does not depict an impact area for Parcel 88Q firing activities. However, the impact area for Parcel 103Q is identified in the *EBS*. Parcel 103Q overlaps Parcel 88Q for a portion of the area covered in this investigation (Figure 1-2). The direction of fire for the range (Parcel 88Q) was to the southeast toward the unnamed hillside (Shaw Environmental, Inc [Shaw], 2003).

2.2 Geology

The geology of McClellan is discussed in the following sections. Information contained in these sections is adapted from previous work performed by IT Corporation, Inc. (IT, 2003).

2.2.1 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. Figure 2-1 shows the geologic map of the area that includes Parcels 88Q and 103Q.

The majority of Calhoun County, including McClellan, 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 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 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 comprises 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 Formation 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 (Osbourne 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 appears 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 McClellan 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 Ft McClellan (Osborne and Szabo, 1984). The character of the Shady Dolomite in the McClellan 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 McClellan, 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 McClellan (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 weathers 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 consists of dark gray, medium- to thick-bedded, fossiliferous, argillaceous to silty limestone with chert nodules. These limestone units are mapped together as undifferentiated at McClellan and in 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 McClellan 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, dolomitic mudstone, and glauconitic limestone (Osbourne, 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 McClellan, to the Ordovician Athens Shale on the basis of fossil data.

The Pennsylvania 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). In Calhoun County, the Parkwood Formation 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 Drahovazal, 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 McClellan, 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 comprising the Eden thrust sheet is exposed at McClellan 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 McClellan 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 McClellan window (Osborne et al., 1997).

The Pell City fault serves as a fault contact between the bedrock within the McClellan window and the Rome and Conasauga Formations. The trace of the Pell City fault is also exposed approximately nine miles west of the McClellan window on Pelham Range, where it traverses northeast to southwest across the western quarter of Pelham Range. 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 are 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. It 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 McClellan window, and along the trace of the Pell City fault on Pelham Range (Thomas and Neathery, 1982; Osborne et al., 1988). The Coosa deformed belt is a narrow (approximately 5 to 20 miles wide) northeast-to-southwest-trending linear zone of complex structure (approximately 90 miles in length) 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).

2.2.2 Site-Specific Geology

The area of investigation is bisected by the Jacksonville fault. As shown on the site geologic map (Figure 2-1), the fault trace and geologic contacts strike generally northeast to southwest with transport direction of the thrust sheet to the northwest. Bedrock south of the fault is mapped as the Cambrian Chilhowee Group, undifferentiated. Most of the undifferentiated Chilhowee Group bedrock in the vicinity of McClellan belongs to the Weisner Formation based upon the abundance of orthoquartzitic sandstone and quartzite (Osborne and Szabo, 1984). Bedrock north of the fault is mapped as the Cambrian Conasauga Formation. 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).

2.3 Soil

The soil types of McClellan are discussed in the following sections. Information contained in these sections is adapted from previous work performed by Shaw (2003).

2.3.1 Regional Soil

The soil associations found at McClellan (U.S. Department of Agriculture [USDA], 1961), include:

- **Anniston-Allen, Decatur-Cumberland.** Alluvium, resulting from weathering of older residual soils developed from sandstone, shale and quartzite; deep, well-drained, level to moderately steep soil in valleys underlain by limestone and shale. Subsoil is dark red sandy clay loam. Cumberland and Decatur soils are dark reddish brown gravelly loam developed from weathered limestone.
- **Clarksville-Fullerton.** Well-drained to moderately well-drained stony or cherty soils developed in the residuum of cherty limestone. This association is limited to Pelham Range. The soils are generally dark brown to dark gray-brown silt loam.
- **Rarden-Montevallo-Lehew.** Moderately deep or shallow soils on ridgetops and steep

slopes and in local alluvium in draws. Soils are developed from the residuum of shale and fine-grained, micaceous sandstone; reddish brown to dark gray-brown to yellow-brown silt loam, clay or silty clay.

- **Stony Rough Land.** Shallow, steep, and stony soils formed from the weathering of sandstone, limestone, and Talladega Slate. Infiltration is slow; the soils contain many boulders and fragments with clayey residuum. This association underlies a large portion of the Main Post at McClellan.

2.3.2 Site-Specific Soil

The soil survey for Calhoun County, Alabama, classifies soil at the Impact Area for Range 30, Parcel 88Q and Former Rifle/Machine Gun Range, Parcel 103Q, as Stony Rough Land sandstone, Anniston and Allen gravelly loam, and Anniston gravelly clay loam (USDA, 1961). The Stony Rough Land sandstone consists of medium to strongly acidic, shallow or stony, well-drained, friable soils with many outcrops of sandstone and quartzite bedrock, loose rock fragments, and scattered patches of sandy soil material. It is found in rough mountainous areas with slopes generally greater than 25 percent (USDA, 1961).

The Anniston and Allen gravelly loam consists of deep, strongly to very strongly acidic, well-drained, friable soils developed from weathered sandstone, shale and quartzite. The surface soil is dark brown to dark reddish-brown gravelly loam. The subsurface soil is dark red to yellowish-red, gravelly fine sandy clay loam to clay loam (USDA, 1961). The Anniston gravelly clay loam consists of friable, medium to strongly acidic, deep, well-drained soils that have developed from weathered sandstone, shale, and quartzite. Sandstone and quartzite gravel, cobbles, and fragments as large as eight inches in diameter are found on the surface and throughout the soil.

The color of the Anniston gravelly clay loam surface soil ranges from dark brown and very dark brown to reddish brown and dark reddish brown. The texture of subsoil ranges from light clay loam to clay or silty clay loam (USDA, 1961).

2.4 Hydrology

Rainfall averages about 53 inches annually in Anniston, Alabama, with infiltration rates annually exceeding evapotranspiration rates (U.S. Department of Commerce, 1998). The major surface water features at the Main Post of McClellan include Remount Creek, Cane Creek, and Cave Creek. These streams flow in a general northwest to westerly direction towards the Coosa River on the western boundary of Calhoun County.

2.4.1 Site Hydrology

The ground surface within the Site is steeply sloped to the southeast. The overall elevation extends from approximately 750 to 780 feet above mean sea level (msl) to 1050 feet above msl at the peak of the unnamed hill. An unnamed intermittent stream flows to the northwest along the northwest corner of the general area of the Site. This intermittent stream eventually empties into Reilly Lake.

2.5 Hydrogeology

The hydrogeology of McClellan is discussed in the following sections. Information contained in these sections is in part adapted from previous work performed by IT, (2002) and Shaw (2003).

2.5.1 Regional Hydrogeology

The hydrogeology of Calhoun County has been investigated by the Geologic Survey of Alabama (Moser and DeJarnette, 1992), the U.S. Geological Survey (USGS) in cooperation with the General Services Administration (Warman and Causey, 1962), and ADEM (Planert and Pritchette, 1989). Groundwater in the vicinity of McClellan occurs in residuum derived from bedrock decomposition along fault zones within fractured bedrock and from the development of karst frameworks. Groundwater flow direction is generally toward major surface water features.

Precipitation and subsequent infiltration provide recharge to the groundwater flow system in the region. The main recharge areas for the aquifers in Calhoun County are located in the valleys. The ridges generally consist of sandstone, quartzite, and slate which are resistant to weathering, relatively unaffected by faulting, and therefore, relatively impermeable. The ridges have steep slopes and thin to no soil cover, which enhances runoff to the edges of the valleys (Planert and Pritchette 1989).

The thrust fault zones typical of the county form large storage reservoirs for groundwater. Points of discharge occur as springs, effluent streams, and lakes. Coldwater Spring is one of the largest springs in the State of Alabama, with a discharge of approximately 32 million gallons per day. This spring is the main source of water for the Anniston Water Department, and serves McClellan. The spring is located approximately 5 miles southwest of Anniston and discharges from the brecciated zone of the Jacksonville Fault (Warman and Causey, 1962).

Shallow groundwater at McClellan occurs principally in the residuum developed from Cambrian sedimentary and carbonate bedrock units of the Weisner Formation, Shady Dolomite and locally in lower Ordovician carbonates. The residuum may yield adequate groundwater for domestic and livestock needs but may go dry during prolonged dry weather. Groundwater within the residuum serves as a recharge reservoir for the underlying bedrock aquifers. Bedrock permeability is locally enhanced by fracture zones associated with thrust faults and by the development of solution (karst) features.

Two major aquifers were identified by Planert and Pritchette (1989): the Knox-Shady aquifer and the Tuscumbia-Fort Payne aquifer. The continuity of these aquifers has been disrupted by the complex geologic structure of the region, such that each major aquifer occurs repeatedly in different areas. The Knox-Shady aquifer group occurs over most of Calhoun County and is the main source of groundwater in the county. It consists of Cambrian-and-Ordovician aged quartzite and carbonates. The Conasauga Formation is the most utilized unit of the Knox-Shady aquifer, with twice as many wells drilled as any other unit (Moser and DeJarnette, 1992).

Regional groundwater flow in the bedrock for the McClellan vicinity was described by the USGS (Scott, et al., 1987). Regional groundwater elevation ranged from 800 feet above msl at McClellan to about 600 feet above msl to the west on Pelham Range, based on water depths in wells completed across multiple formations. Groundwater elevation contours suggest that regional groundwater flow is from the Main Post on McClellan northwest toward the city of Weaver. Scott et al., (1987) concluded that the groundwater surface broadly coincides with the surface topography and that the regional aquifers are hydraulically connected. Groundwater flow on a local scale may be more complex and affected by geologic structures such as the shallow thrust faults, rock fracture systems and karst development in soluble formations.

Shallow groundwater occurs in the weathered residuum/transition derived from the bedrock and thin sediment deposits that are very similar to the decomposed rock. In general, the direction of shallow groundwater flow mimics the local topography.

2.5.2 Site-Specific Hydrogeology

Although groundwater elevations were not measured during the RFI activities, regional groundwater flow in the bedrock was approximated for the McClellan vicinity by the USGS (Scott et al., 1987). Regional groundwater elevation ranged from 800 feet above msl on the main base to about 600 feet above msl to the west on Pelham Range, based on water depths in wells completed across multiple formations. Groundwater elevation contours suggest that regional groundwater flow is from the Main Post to the northwest. Scott et al. (1987) concluded that the groundwater surface broadly coincides with the surface topography and that the regional aquifers are hydraulically connected. Groundwater flow on a local scale may be more complex and may be affected by geologic structures such as the shallow thrust faults, rock fracture systems, and karst development in soluble formations (IT, 2003).

The Site Investigation conducted at the Range 30 Firing Line Area located adjacent to and immediately north of the Site encountered groundwater from approximately 29 to 64 feet below ground surface (ft bgs). The groundwater flow direction at the Range 30 Firing line appears to be to the northwest, following topography (Shaw, 2006).

2.6 Wetlands

There are no designated Wetland areas at the Site (Shaw, 2003).

2.7 Sensitive Habitats

An Endangered Species Management Plan (ESMP) (Garland, 1996) developed for McClellan identified 11 special interest natural areas (SINAs) within McClellan. 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. According to the ESMP, the 11 SINAs located on McClellan include:

- Mountain Longleaf Community Complex
- Cave Creek Seep

- Moorman Hill Mountain Juniper
- Freerick Hill Aster Site
- Bains Gap Seep
- Marcheta Hill Crow-Poison Seep
- Marcheta Hill Orchid Seep
- South Branch of Cane Creek Seep
- Stanley Hill Chestnut Oak Forest
- Reynolds Hill Turkey Oak
- Davis Hill Honeysuckle

No available documentation was found that indicates the Site is located within a SINA (IT, 2002a).

2.8 Threatened and Endangered Species

Two species of fauna listed by the U.S. Fish and Wildlife Service (USFWS) as endangered or threatened have been recorded on McClellan. They are the gray bat (*Myotis grisescens*), which uses the Cane Creek Corridor as a foraging habitat, and the blue shiner (*Cyprinella caerulea*), located within the Choccolocco Creek watershed. An additional endangered species, the red-cockaded woodpecker, historically has inhabited McClellan. The red-cockaded woodpecker has not been observed at McClellan in the recent past. No information reviewed has been found to suggest that these species currently use the Site as a foraging habitat (IT, 2002a).

2.9 Meteorology

McClellan has a temperate continental, humid climate. The annual rainfall is distributed throughout the year but tends to be heavier during the winter and spring months. The average annual precipitation totals about 53 inches. Most flood-producing storms are frontal type, and occur during the winter and spring. Summer thunderstorms sometimes cause serious local floods. Snow accumulation is generally 1 inch or less. Temperature extremes are a few degrees below freezing to just over 100 degrees Fahrenheit (°F). Summer temperatures of 90°F or more occur about 70 days per year, and the average annual temperature is 63°F. Frosts are common but usually of short duration. Winds are typically light breezes with no persistent direction. Tornadoes are rare but do occur in the area. Humidity is moderate during cooler months to high during the warmer part of the year.

2.10 Floodplains

The Federal Emergency Management Agency has identified “Special Flood Hazard Areas.” The Special Flood Hazard Areas are based on an area with a 1 percent annual chance of inundation by flooding for which base flood elevations or velocities may have been determined. The Site is not within a recognized floodplain.

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3.0 PREVIOUS INVESTIGATIONS

This section describes previous investigations and remediation performed at or near the Site including:

- *Environmental Baseline Study* (ESE, 1998)
- *Site Investigation Report, Impact Area for Parcels 88Q and 103Q* (IT, 2002b)
- *Site Investigation Report, Range 30, Confidence Course (Firing Line), Parcel 88Q, Former Rifle/Machine Gun Range, Parcel 102Q, Former Grenade Range Area, Parcel 106Q-X, Tank Sub-Caliber/Carbine Transition/Machine Gun Range (OA-08), Grenade Court (OA-15), Unnamed Small Arms Range* (Shaw, 2006)
- *Engineering Evaluation/Cost Analysis (EE/CA) Alpha Area* (Foster Wheeler Environmental Corporation [Foster Wheeler], 2003)
- *Supplemental Engineering Evaluation/Cost Analysis (EE/CA) Report, Alpha Area, McClellan, Alabama* (URS Group, Inc., 2006)
- *Munitions and Explosives of Concern (MEC) Remediation Munitions Response Sites 12 and 13 (MRS-12 and MRS-13)* (MES, 2014).

3.1 Environmental Baseline Study

The *EBS* was performed by ESE to document existing environmental conditions at the McClellan property (ESE, 1998). The *EBS* identified sites that, based on available information, had no history of contamination and complied with U.S. Department of Defense (DOD) guidance on fast-track cleanup at closing installations. The *EBS* also provided a baseline depiction of McClellan properties by identifying and categorizing the properties using seven criteria.

1. Areas where no storage, release, or disposal of hazardous substances or petroleum products has occurred.
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 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 been implemented.
7. Areas that are not evaluated or require additional evaluation.

For non-CERCLA environmental or safety issues, the parcel label included 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. The non-CERCLA issue code X refers to unexploded ordnance.

The *EBS* was performed in accordance with protocols of the CERFA (Public Law 102-426) and DOD policy regarding contamination assessment. Activities performed as part of the *EBS* included:

- Record searches and reviews on reasonably available documents from McClellan, ADEM, U.S. Environmental Protection Agency (EPA) Region IV, and Calhoun County.
- Database search of CERCLA-regulated substances, petroleum products, and RCRA-regulated facilities.
- Reviewed available historical maps and aerial photographs to document historical land uses.
- Conducted personal and telephone interviews of past and present McClellan employees and military personnel.
- Visual site inspections were conducted to verify conditions of specific property parcels.

The Site is an area where no known or recorded storage, release, or disposal (including migration) has occurred on site property. The parcels, however, were qualified because the areas were used as active ranges and chemicals of potential concern may be present as a result of range activities. Therefore, the Site, required additional evaluation to assess environmental conditions.

3.2 Site Investigation Report

IT provided a letter report, dated February 26, 2002, to document the Site Investigation (SI) activities conducted at the Site. The SI consisted of a site walk by IT personnel at the Site in October 2001. Numerous bullet fragments were observed over much of the area and were concentrated along the slope and base of the hillside. No environmental samples were collected as part of the SI.

Based on the indications of the SI, IT surmised that the past operations at the Site may have adversely impacted the environment. The bullets observed on the surface may indicate that lead concentrations in soil may pose an unacceptable risk to human health and the environment. The SI information for the Impact Area for the Site was presented to the Base Cleanup Team (BCT) in January 2003 (IT, 2002b). Further investigation at the Impact Area for the Site was recommended to define nature and extent of the lead contamination in soil.

3.3 Site Investigation Report for Areas Adjacent to Site – Range 30 Firing Line

Though the Range 30 Firing Line Area is not included in this investigation, its proximity provides information relevant to the subject Site. The *Final SI* for the *Range 30, Confidence Course (Firing Line), Parcel 88Q, Former Rifle/Machine Gun Range, Parcel 102Q, Former Grenade Range Area, Parcel 106Q-X, Tank Sub-Caliber/Carbine Transition/Machine Gun Range, OA-08, Grenade Court, OA-15 and Unnamed Small Arms Range (Range 30 Firing Line SI)* (Shaw, 2006) was

performed to collect data to discern whether chemical constituents present at the Range 30 Firing Line Area are at concentrations that pose an unacceptable risk to human health or the environment. The Range 30 Firing Line Area investigated is a 24-acre area located northwest of the Site. The *Range 30 Firing Line SI* consisted of the collection and analysis of 39 surface soil samples, 33 subsurface soil samples, two surface water/sediment samples, and one depositional soil sample. Five groundwater monitoring wells were also installed and sampled during this investigation.

Chemical constituents detected in soil, sediment, surface water, and groundwater samples were compared to site-specific screening levels (SSSLs). The *Range 30 Firing Line SI* results found that volatile organic compounds, herbicides, and pesticides, while sporadically detected in Site media posed no unacceptable risk to potential human receptors. Although metals were commonly detected in soil it was concluded the concentrations of metals were naturally occurring or posed no unacceptable risk to potential human receptors. Lead in surface water exceeded the EPA action level for lead in tap water, but the elevated lead concentration was attributed to the turbidity of the sample. In addition, the nature of exposure to surface water is incidental and expected to be less intense than the exposure to tap water; therefore the SSSLs may be overly conservative. Lead in surface water was not expected to pose unacceptable risk to human health. Concentrations of iron and manganese exceeded SSSLs in groundwater samples but were below their respective background concentrations and did not pose an increased risk to human health.

Concentrations of chemical constituents detected in the surface soil and surface water samples collected for the *Range 30 Firing Line SI* were also compared to ecological screening values (ESVs). The concentrations of several metals in the surface soil and surface water samples were identified as constituents of potential ecological concern (COPECs). Through statistical and geochemical evaluation, the COPECs were considered naturally occurring except for copper and lead in two surface soil samples and one surface water sample. Copper exceeded its ESV in one sample, while lead exceeded the ESV in both of the surface soil samples. The results were not considered representative of prevailing site-wide concentrations. Lead in surface water also exceeded the ESV; however the sample was turbid and may have contributed to the elevated lead concentration. It was concluded that lead and copper in surface soil and surface water do not pose unacceptable risk to ecological receptors.

Additionally, endrin, a pesticide, and 2-(2-Methyl-4-chlorophenoxy) propionic acid (MCPP), an herbicide, in one surface soil exceeded their respective ESVs. However, it was concluded that these constituents did not pose unacceptable risk to potential ecological receptors because of the conservatism of the ESVs and the relatively small amounts by which chemical constituents exceeded their ESVs.

Based on results of the *Range 30 Firing Line SI*, Shaw recommended no further action (NFA) and unrestricted land reuse with regard to CERCLA-related hazardous substances for the area of investigation at Range 30, Confidence Course (Firing Line), Parcel 88Q; Former Rifle/Machine Gun Range, parcel 102Q; Former Grenade Range/Area, Parcel 106Q-X, Tank Sub

Caliber/Carbine Transition/Machine Gun Range (OA-08); Grenade Court (OA-15); and Unnamed Small Arms Range. ADEM concurred with this recommendation on October 23, 2007.

3.4 2003 EE/CA of the Alpha Area

The *EE/CA* for the Alpha Area (Foster Wheeler, 2003) was performed to evaluate the presence of MEC that may exist within the Alpha Area, evaluate potential risks to human health and environment due to the presence of MEC and to recommend an approach for reducing the risk of exposure to potential MEC items. The Alpha Area is an approximate 930-acre parcel that overlays much of the Range 30 Impact Area and the surrounding area. The Alpha Area was divided into four major Sectors (M5-1L, M6-1L, M6-1M and Smoke Ranges/T-38) for the purposes of the *EE/CA* field effort. The Range 30 Impact Area is located within three sub-sectors of the M6-1M Sector and are referred to as M6-1M Suspect Area (North) – PR, M6-1M Remainder – PR and M6-1M Remainder – I/AR. The nature and extent of MEC within the Alpha Area was estimated using site-specific field data that were collected during the *EE/CA* field effort.

The *EE/CA* noted that Range 30 was used as recently as 1974 as a training area where rifle and machine gun fire training exercises were conducted. The *EE/CA* describes M6-1M Suspect Area (North) – PR as approximately 6 acres in the northern portion of the Alpha Area and was part of several historical ranges including OA-05 – World War I Machine Gun Range, OA-11 – Tank Combat Range, OA-08 – Defendum Rifle Range and OA-10 – World War II Machine Gun Range. During the *EE/CA* field investigation in the M6-1M Suspect Area (North) – PR, three practice 3.5-inch rockets were found on the surface and blown in place due to the possible presence of energetic materials. The *EE/CA* recommended that the remedial alternative for sub-sector M6-1M Suspect Area (North) – PR is clearance to a depth of one foot. The portions of the sub-sectors M6-1M Remainder – PR and M6-1M Remainder – I/AR which coincide with the remainder of the Range 30 Impact Area were recommended for NFA for MEC in the *EE/CA*.

3.5 2006 Supplemental EE/CA of the Alpha Area

A *Supplemental EE/CA* (URS Group, 2006) was performed in 2004 and 2005 to support the NFA recommendations of the Alpha *EE/CA* (Foster Wheeler, 2003). The *Supplemental EE/CA* consisted of approximately 77,000 linear feet of geophysical transects spaced approximately 100 feet apart and 1,200 targeted subsurface anomalies which were intrusively investigated. Transects 1-26 were performed in the 93 acre Northern Transect Area. 605 anomalies were intrusively investigated of which 58 were classified as MEC scrap or MEC fragmentation. No MEC was found in the Northern Transect Area. Transects 27-53 were performed in the 87 acre Southern Transect Area. A total of 595 anomalies were intrusively investigated in the Southern Transect Area, of which 189 were classified as MEC scrap or MEC fragmentation, and 11 were MEC (various grenades and mortars).

The Northern Transect Area subarea NT-1 included the easternmost 2-3 acres of Range 30 Parcel 88Q but no portions of M6-1M Suspect Area (North) - PR. No MEC and only one piece of MEC fragmentation were encountered in Range 30. The *Supplemental EE/CA* recommended NFA for MEC for the Northern Transect Area area NT-1 (URS Group, 2006).

3.6 2014 After Action Report, Munitions Response Sites 12 and 13 (MRS-12 and MRS-13)

MES performed the MEC clearance of M6-1M Suspect Area (North) PR in accordance with the *Final EE/CA Action Memorandum Alpha Munitions Response Site 12 and 13* (MES, 2010). The sub-sector M6-1M Suspect Area (North) PR was designated as Tract 12-C in MRS-12. All of Tract 12-C was first cleared to 1 foot using mag and dig methods. The northern edge of Tract 12-C which corresponded to the area outside the McClellan Park System was cleared to the depth of detection using mag and dig methods as this area was too steep to perform digital geophysical mapping (MES, 2014). No MEC was recovered during the clearance activities. Pieces of MEC scrap were recovered consisting primarily of 3.5-inch rockets, rifle grenades (smoke) and 37mm HE projectiles. Some small arms ammunition was also recovered.

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4.0 RCRA FACILITY INVESTIGATION ACTIVITIES

This section describes the activities performed for the RFI. The objectives of the 2004 field activities were to (1) visually assess locations of bullet pockets and bullet fragments at the base of the unnamed hillside, and (2) obtain additional information regarding explosives and metals in soil where bullets and bullet fragments were identified. In response to ADEMs comments on the 2004 RFI activities, additional activities were performed in 2014. A copy of the response to ADEMs comments dated 1/28/2014 is provided in Appendix E. The objectives of the 2014 field activities were to collect additional surface soil and subsurface soil samples to provide a more robust data set and further define the nature and extent of contamination in surface soil and subsurface soil at the Site.

Media investigated during this RFI included surface soil and subsurface soil. Because surface water is only present at the Site intermittently as the result of ponding following heavy rainfall, no surface water samples were collected during this RFI. Groundwater samples were collected during the Range 30 Firing Line SI (see Section 3.3). The Range 30 Firing Line is adjacent to and hydraulically down gradient from the Range 30 Impact Area. Because concentrations detected in down gradient groundwater collected during the SI were not considered site-related or did not pose an increased risk to human health, groundwater was not considered a media of concern for the Range 30 Impact Area. Because it was determined during the SI that the groundwater did not pose an increased risk to human health, and because metals and explosive compounds generally do not migrate easily from soil to groundwater, no groundwater samples were collected during this RFI.

4.1 2004 RFI Activities

To help meet the objectives of the RFI the following field activities were conducted in September 2004:

- Site reconnaissance was performed to visually assess where bullets and bullet fragments were located. A global positioning system was used to obtain coordinates of these locations prior to sampling. Because of the dynamic nature of erosional processes and the potential resultant movement of bullet pockets, the current locations of bullets may not indicate the highest possible soil contamination. In addition, mobility of elemental lead found in bullets is extremely low and contamination of adjacent soil from leaching of bullets is expected to take decades. Regardless, using observed bullet locations to guide sample location selection is considered to provide a sound approach for assessing the “worst-case” soil concentration.
- Three sample locations were selected based on field observations. Surface and subsurface soils were collected from R30-102Q-001, R30-102Q-002, and R30-88Q-003 located at the foot of the unnamed hillside where there were visible concentrations of bullets and bullet fragments.
- Three surface soil samples were collected from R30-88Q-008, R30-88Q-009, and R30-88Q-010 located within a runoff channel where bullets were present. Samples R30-88Q-008

through R30-88Q-010 were originally classified as “sediment” samples because the soils were deposited by running water at the time of sample collection. However, the samples were not submerged in water. Subsequently, these samples were reclassified as surface soils after the samples were submitted to the laboratory.

- Six surface soil (0 to 0.5 ft bgs) samples were collected and analyzed for metals, explosives, total organic carbon (TOC), and grain size.
- Three subsurface soil (0.5 to 1.5 ft bgs) samples were collected and analyzed for metals, explosives, TOC, and grain size.

4.2 2014 RFI Activities

The following additional field activities were conducted in August 2014:

- Collected fifteen surface soil (0 to 0.5 ft bgs) samples and analyzed for metals by SW846 Method 6020A.
- Collected nine surface soil (0 to 0.5 ft bgs) and nine subsurface soil (0.5 to 1.5 ft bgs) co-located samples from nine locations. Samples were analyzed for metals by SW846 Method 6020A and explosives by SW846 Method 8330A.

4.3 Soil Sample Collection

Soil sampling was performed following the methodology presented in the *Draft Installation-Wide Sampling and Analysis Plan (Draft SAP)* (MES, 2013). Surface soil samples were collected from between 0 and 0.5 ft bgs using a stainless steel spoon. Subsurface soil samples were collected from 0.5 to 1.5 ft bgs using a stainless steel hand auger. Soil samples were not sieved during sample collection; however the analytical laboratory removed foreign particles from the samples prior to analysis. Soil sampling equipment that could come into contact with samples or sampling surfaces was decontaminated prior to use. Table 4-1 lists the soil sample designations, sample depths, and analytical parameters. Figure 4-1 shows the soil sample locations. The chain-of-custody forms for the samples collected during the RFI sampling event are provided in Appendix D.

4.4 Data Quality Review

MES reviewed the analytical data for the surface soil and subsurface soil samples collected in September 2004 and August 2014. The data quality review was performed in accordance with the *Quality Assurance Plan (QAP)* (Appendix A of the *Draft SAP* [MES, 2013]) to assess compliance with the quality assurance (QA) objectives, and to assess hard copy and electronic deliverable consistency and integrity.

4.5 Statistical Evaluation of Metals Results

To evaluate the nature and extent of metals contamination at the Site, a statistical evaluation was performed to identify metals that may be present at elevated concentrations as a result of Site-related activities. The statistical evaluation is included in Appendix C and consisted of a multi-tiered process described below:

- **Tier 1:** The Maximum Detected Concentration (MDC) of each metal was compared to the background screening criterion (i.e., two times the mean of the background data) (Science

Application International Corporation [SAIC], 1998). Metals with MDCs that did not exceed the background screening criterion were considered to be present at background concentrations, and therefore, were not selected as site-related constituents; these metals were not considered further in the evaluation. Metals with MDCs that exceeded the background screening criterion were then evaluated under Tier 2.

- **Tier 2:** The Tier 2 evaluation included the: (a) the Wilcoxon Rank Sum (WRS) test, (b) box plots, and (c) the hot measurement test. Metals that did not pass either of these tests were then evaluated under Tier 3.
- **Tier 3:** Tier 3 consisted of a geochemical evaluation to determine whether concentrations of site metals were naturally occurring or elevated due to contamination. This evaluation is based on the natural association between a trace element and one or more specific soil-forming minerals that concentrate that trace element. Trace elements that appeared anomalously high relative to the major associated elements were considered to be present due to site-related activities.

Metal results that failed all three tiers were considered contaminants at the Site. Contaminants were compared to Preliminary Screening Values (PSVs) to evaluate which metals were contaminants of potential concern (COPCs), and to Ecological Screening Values (ESVs) to evaluate which metals were contaminants of potential ecological concern (COPECs) at the Site. The results of the statistical evaluation of metals are discussed in detail in the Statistical Comparison of Site and Background Data and Geochemical Evaluation of Metals included in Appendix C.

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5.0 RESULTS OF RFI AND NATURE AND EXTENT

This section discusses the results of the RFI activities and presents the nature and extent of contamination at the Site based on metal and explosives analytical results for surface soil and subsurface soil samples collected in September 2004 and August 2014.

5.1 Analytical Data and Data Quality Review

The analytical data for the RFI samples are provided in Appendix A. Appendix A1 includes the analytical data for the 2004 RFI samples, and Appendix A2 includes the analytical data for the 2014 RFI samples. MES reviewed the analytical data in accordance with the *QAP (Appendix A of the Draft SAP [MES, 2013])* to assess compliance with the QA objectives, and to assess hard copy and electronic deliverable consistency and integrity. A data quality review was not performed on the grain size as the results present physical characteristics rather than chemical constituents. However, the electronic and hardcopy deliverables were checked for accuracy and consistency. The geotechnical sample results for grain size are also provided in Appendix A1.

The results of the data quality review for the surface and subsurface soil samples collected during the RFI activities are presented in Data Quality Summaries (DQSs) provided in Appendix B. Appendix B1 includes the DQS for the 2004 samples, and Appendix B2 includes the DQS for the 2014 samples. Based on the data quality review, the analytical data generated for this investigation were adequate to fulfill program objectives and may be used to define the nature and extent of contamination.

5.2 Summary of RFI Analytical Results

This section describes the analytical results for the surface soil and subsurface soil samples collected during the RFI. The analytical results for the surface soil and subsurface soil samples are presented in Tables 5-1 to 5-4.

5.2.1 Surface Soil Analytical Results

During the RFI, a total of thirty surface soil samples (six in 2004 and 24 in 2014) were collected at the Site from 0 to 0.5 ft bgs and analyzed for the methods listed in Table 4-1. The surface soil analytical results for metals and explosives are presented in Table 5-1, and the results for TOC and grain size are presented in Table 5-2. No explosives compounds were detected in the surface soil samples. Of the 23 metals analyzed, only silver was not detected in any of the surface soil samples. The distribution of detections based upon sampling locations is variable; the number of detected metals in the surface soils samples ranged from 15 metals in sample R30-88Q-008 to 21 metals detected in samples R30-88Q-012, R30-88Q-017, R30-103Q-001, R30-103Q-002, R30-103Q-003, R30-103Q-006, R30-103Q-008, R30-103Q-010, R30-103Q-011, R30-103Q-012, R30-103Q-013, and R30-103Q-015.

Metals detected in the surface soil samples at the Site included typical components of small arms ammunition (see Table 1-1): antimony, arsenic, copper, iron, lead, and zinc. Arsenic,

copper, iron, lead, and zinc were detected in all thirty of the surface soil samples while antimony was detected in twenty-two of the thirty surface soil samples (Table 5-1).

- Antimony detections ranged from 0.247 J mg/kg in samples R30-103Q-001 and R30-103Q-009 to 5.62 mg/kg in sample R30-103Q-007.
- Arsenic detections ranged from 1.41 mg/kg in sample R30-88Q-018 to 10.6 mg/kg in sample R30-103Q-011.
- Copper detections ranged from 1.82 mg/kg in sample R30-103Q-004 to 263 mg/kg in R30-103Q-007.
- Iron detections ranged from 2,480 mg/kg in sample R30-103Q-005 to 38,800 mg/kg in R30-103Q-003.
- Lead detections ranged from 4.47 milligrams per kilogram [mg/kg] in sample R30-103Q-004 to 1480 mg/kg in sample R30-103Q-007.
- Zinc detections ranged from 4.39 mg/kg in sample R30-103Q-004 to 40.4 mg/kg in sample R30-88Q-016.

The surface soil samples collected in 2004 were analyzed for TOC and grain size to better understand the nature of the soils at the Site. The TOC and grain size results are shown in Table 5-2. TOC was not detected in the surface soil samples collected in 2004.

5.2.2 Subsurface Soil Analytical Results

During the RFI, a total of twelve subsurface soil samples (three in 2004 and nine in 2014) were collected at the Site from 0.5 to 1.5 bgs and analyzed for the methods listed in Table 4-1. The subsurface soil analytical results for metals and explosives are presented in Table 5-3, and the results for TOC and grain size are presented in Table 5-4. No explosive compounds were detected in the subsurface soil samples. Each of the 23 metals analyzed were detected in one or more of the subsurface soil samples. The distribution of detections based upon sampling locations is variable; the number of detected metals in the subsurface soils samples ranged from 17 metals in samples R30-88Q-003 and R30-102Q-002 to 22 metals in sample R30-103Q-003.

Metals detected in the subsurface soil samples at the Site included typical components of small arms ammunition (see Table 1-1): antimony, arsenic, copper, iron, lead, and zinc. Arsenic, copper, iron, lead, and zinc were detected in all twelve of the subsurface soil samples while antimony was detected in six of the twelve subsurface soil samples (Table 5-3).

- Antimony detections ranged from 0.258 J mg/kg in sample R30-103Q-001 to 3.48 J mg/kg in sample R30-88Q-003.
- Arsenic detections ranged from 1.31 mg/kg in sample R30-103Q-005 to 23.9 mg/kg in sample R30-103Q-003.
- Copper detections ranged from 3.59 mg/kg in sample R30-103Q-004 to 89.2 mg/kg in R30-102Q-001.

- Iron detections ranged from 2510 mg/kg in sample R30-103Q-005 to 55300 mg/kg in R30-103Q-003.
- Lead detections ranged from 8.03 mg/kg in sample R30-88Q-011 to 464 mg/kg in sample R30-103Q-007.
- Zinc detections ranged from 6.54 mg/kg in sample R30-103Q-005 to 35.1 mg/kg in sample R30-102Q-001.

The subsurface soil samples collected in 2004 were analyzed for TOC and grain size to better understand the nature of the soils at the Site. TOC was detected in one of the three subsurface soil samples, R30-88Q-003 (1050 J mg/kg). The TOC and grain size results are shown in Table 5-4.

5.3 Nature and Extent of Contamination

To evaluate the nature and extent of contamination at the Site, the metal results from the RFI samples were assessed to identify metal contaminants at the Site. A statistical evaluation was performed to identify metals that may be present at elevated concentrations as a result of Site-related activities. The statistical evaluation consisted of a multi-tiered approach described in Section 4.5. Metal results that failed all three tiers were considered to be contaminants at the Site. A detailed description of the statistical evaluation for the metal results is provided in Appendix C.

To evaluate which analytes were COPCs and COPECs at the Site, the contaminants were compared to PSVs and ESVs, respectively (ADEM, 2008). The PSVs used in this RFI are based on the most updated EPA Regional Screening Levels (RSLs) (EPA, 2016) in lieu of the PSVs presented in the *Alabama Risk-Based Corrective Action Guidance Manual, Revision 2 (ARBCA)* (ADEM, 2008). The PSVs used in this report are the lower of either the cancer RSL (target risk 1E-06) or non-cancer RSL (hazard quotient [HQ] 0.1). For analytes where a RSL was not available, the PSV was obtained from other source references as provided in Table 2-2 of the *ARBCA* (ADEM, 2008). The ESVs used in this report are the EPA Ecological Soil Screening Levels (EcoSSLs) (EPA, 2003), selected in accordance with Section 3.14 of the *ARBCA* (ADEM, 2008). Contaminants exceeding PSVs or ESVs are considered to be COPCs (human health) or COPECs (ecological), respectively, at the Site.

5.3.1 Surface Soil

Twenty-two out of twenty-three metals were detected in one or more of the surface soil samples. Based on the statistical evaluation (Appendix C), the following metal results were identified as Site-related and are considered to be contaminants in surface soil at the Site (also shown in Table C5 in Appendix C).

- Antimony in surface soil samples R30-88Q-010, R30-88Q-012, R30-88Q-014 to R30-88Q-018; R30-103Q-005, R30-103Q-007, R30-103Q-015, and R30-103Q-016.
- Copper in surface soil samples R30-88Q-003, R30-88Q-010, R30-88Q-012, R30-88Q-014 to R30-88Q-018; R30-102Q-001, R30-102Q-002; R30-103Q-005, R30-103Q-007, R30-103Q-011, R30-103Q-015, and R30-103Q-016.

- Lead in surface soil samples R30-88Q-003, R30-88Q-010, R30-88Q-012, R30-88Q-014 to R30-88Q-018; R30-102Q-001, R30-102Q-002; R30-103Q-005, R30-103Q-007, R30-103Q-011, R30-103Q-015, and R30-103Q-016.
- Nickel in surface soil sample R30-103Q-007.
- Selenium in surface soil sample R30-102Q-002

The metal contaminants in surface soil were compared to PSVs and ESVs as presented in Table 5-5. The residential PSVs, the most stringent of the screening levels, were used to evaluate the nature and extent of metals contamination in surface soil at the Site to determine if unrestricted land use may be attained at the Site. Metal contaminants exceeding residential PSVs or ESVs were considered to be COPCs or COPECs, respectively, at the Site. Antimony and lead exceeded the residential PSVs in at least one surface soil sample. Antimony, copper, lead, nickel and selenium exceeded ESVs in at least one surface soil sample. Figures 5-1 and 5-2 show the sample locations and metal COPC concentrations exceeding PSVs and metal COPEC concentrations exceeding ESVs, respectively, in surface soil at the Site.

5.3.2 Subsurface Soil

Twenty-three metals were detected in one or more of the subsurface soil samples. Based on the statistical evaluation (Appendix C), the following metal results were identified as Site-related and are considered to be contaminants in subsurface soil at the Site (also shown in Table C5 in Appendix C).

- Antimony in subsurface soil samples R30-88Q-003, R30-88Q-012; R30-103Q-003, R30-103Q-005, and R30-103Q-007.
- Copper in subsurface soil samples R30-88Q-003, R30-88Q-012; R30-102Q-001; R30-103Q-005, and R30-103Q-007.
- Lead in subsurface soil samples R30-88Q-003, R30-88Q-012; R30-102Q-001; R30-103Q-003, and R30-103Q-007.

The metal contaminants in subsurface soil were compared to PSVs and ESVs as presented in Table 5-6. The residential PSVs, the most stringent of the screening levels, were used to evaluate the nature and extent of metals contamination in subsurface soil at the Site. Metal contaminants exceeding residential PSVs or ESVs were considered to be COPCs or COPECs, respectively, at the Site. Antimony and lead exceeded the residential PSV; antimony, copper, and lead exceeded the ESVs. Figures 5-3 and 5-4 show the sample locations and metal COPC concentrations exceeding PSVs and metal COPEC concentrations exceeding ESVs, respectively, in subsurface soil at the Site.

5.4 Nature and Extent Conclusions

The sampling completed as part of the RFI activities has enabled a more complete understanding of the distribution of contaminants in soils and confirmed the nature of those contaminants. Important conclusions regarding nature and extent of contamination at the Site are as follows:

- No explosives were detected in the surface soil and subsurface samples collected during the RFI activities.
- After the statistical evaluation of surface soil samples was performed, the following COPCs and COPECs were identified by comparing detected contaminant concentrations to PSVs and ESVs, respectively (Table 5-5).
 - Antimony exceeded the residential PSV in one surface soil sample (R30-103Q-007) located at the base of the unnamed hill (Figure 5-1), and is therefore considered a human health COPC in surface soil. Antimony concentrations were less than the industrial/commercial PSV in surface soil.
 - Antimony exceeded the ESV in eleven surface soil samples (Figure 5-2), and is therefore considered a COPEC in surface soil.
 - Copper exceeded the ESV in eleven surface soil samples (Figure 5-2), and is therefore considered a COPEC in surface soil.
 - Lead exceeded the residential PSV in five surface soil samples (Figure 5-1), and is therefore considered a human health COPC in surface soil. Lead was also detected in sample R30-88Q-018 (407 mg/kg) located on the side of the unnamed hill in the southern corner of Parcel 88Q, at a concentration only slightly above the residential PSV of 400 mg/kg.
 - Lead exceeded the ESV in fifteen surface soil samples (Figure 5-2), and is therefore considered a COPEC in surface soil.
 - Nickel exceeded the ESV in one surface soil sample (R30-103Q-007) (Figure 5-2), and is therefore considered a COPEC in surface soil.
 - Selenium exceeded the ESV in one surface soil sample (R30-102Q-002) (Figure 5-2) and is therefore considered a COPEC in surface soil.
- After the statistical evaluation of subsurface soil samples was performed, the following COPCs and COPECs were identified by comparing detected contaminant concentrations to PSVs and ESVs, respectively (Table 5-6).
 - Antimony exceeded the residential PSV in subsurface soil sample R30-88Q-003 and is therefore considered a human health COPC in subsurface soil (Figure 5-3). Antimony concentrations were less than the industrial/commercial PSV in subsurface soil.
 - Antimony exceeded the ESV in five subsurface soil samples and is therefore considered a COPEC in subsurface soil (Figure 5-4).
 - Copper exceeded the ESV in three subsurface soil samples and is therefore considered a COPEC in subsurface soil (Figure 5-4).
 - Lead exceeded the residential PSV in subsurface soil samples R30-102Q-001 and R30-103Q-007 (Figure 5-3) and is therefore considered a human health COPC in subsurface

soil. Lead concentrations were less than the industrial/commercial PSV in subsurface soil.

- Lead exceeded the ESV in five subsurface soil samples (Figure 5-4) and is therefore considered a COPEC in subsurface soil.

Given the consistent and corroborative nature of the data collected during the RFI activities and previous investigations, and the limited number and defined extent of Site contaminants, the investigation has been successful in identifying the nature of concentrations of environmental contamination at the Site.

Metals contamination appears to be confined to the area at or near the M6-1M Suspect Area on the north side of the unnamed hill. Despite the steep topography of the area, there appears to be minimal contaminant migration as indicated by the samples with concentrations less than the industrial/commercial PSVs located downgradient of the samples with the highest concentration of metals contaminants located within the M6-1M Suspect Area (Figure 5-1).

6.0 CONTAMINANT FATE AND TRANSPORT

The fate and transport of contaminants when released to the environment will govern the potential for exposures to human and ecological receptors. Contaminants in environmental media may result in direct exposure (e.g., plants exposed to surface soil) and have the potential to migrate to other environmental media or areas. This section discusses the mechanisms by which contaminants can be transported at the Site. This discussion is limited to metals in soil because the analytical data for explosives in soil were all reported below the detection limit by the laboratory.

Contaminants can be transported from their source(s) to other areas as a result of several potential transport mechanisms and migration pathways. The migration of contaminants at a site is dependent on factors that include 1) site characteristics (e.g. soil and bedrock conditions, and climatic conditions); and 2) contaminant characteristics. Potential migration pathways for contaminants in soil are:

- fugitive dust emissions
- volatilization
- erosion and surface water runoff
- leaching from soil to groundwater
- bioaccumulation

6.1 Dust Emissions

Contaminants adsorbed to surface soil may be transported from source areas by fugitive dust generation and entrainment by the wind. Contaminant-adsorbed dust could also be released to the atmosphere through construction activities. Because metal concentrations exceeded the PSVs or ESVs in surface soil sample locations at the Site, transport via dust emissions is a probable route of contaminant migration at the Site.

6.2 Volatilization

Volatilization is the movement of a chemical from the surface of a liquid or solid to a gas or vapor phase. Volatilization losses to the air are related to the chemical concentration, molecular weight, solubility, vapor pressure, and ambient temperature. Metals in the surface soil are not expected to volatilize to any great extent, with the exception of mercury. Mercury is not a contaminant at the Site nor did concentrations of mercury exceed the ESV or PSVs. Therefore, transport by volatilization into the atmosphere is not a probable route of contaminant migration at the Site.

6.3 Erosion and Surface Water Runoff

Erosion and surface water runoff via rainwater has the potential to transport contaminants either in a dissolved state or adsorbed to soil particulates or organic matter. Surface soil contaminants may be solubilized by rainwater and subsequently transported via surface runoff following local topography to drainage systems, low-lying areas, and nearby surface water bodies. The solubility of inorganics (metals) in rainwater is largely dependent upon the pH of the rainwater. Because the rainwater in this region is most likely slightly acidic, the metal

constituents in surface soil are likely to solubilize to a small degree in the rainwater and be subject to minimal transport via runoff. Because metal COPCs and COPECs were identified in surface soil samples at the Site, transport via surface runoff is a probable route of contaminant migration at the Site. In addition, movement of soil particles containing elevated metal concentrations through erosion, either naturally occurring or resulting from the impact of bullets into the unnamed hillside, may also cause migration of metal concentrations.

6.4 Leaching From Soil to Groundwater

Contaminants in surface soil may be transported vertically to subsurface soils and groundwater via solubilization in rainwater and infiltration. Migration in this manner is dependent upon soil adsorption capacity, contaminant solubility, precipitation frequency, and infiltration rates. Metals in soil are relatively immobile and do not readily leach to groundwater. There are multiple lines of evidence that indicate that the transport of metals to groundwater via leaching is not a viable pathway and the likelihood of elevated metals in groundwater is extremely remote. These include: (1) the lack of metals contamination in groundwater at other ranges at McClellan; (2) the depth to water at the Site is estimated to be on the order of 30 feet below ground surface based on groundwater elevations reported in the Range 30 Firing Line SI; and (3) with the exception of sample R30-88Q-003, metal concentrations in co-located surface and subsurface soils at the Site show a decrease in concentration ranging from 50% to 90% over a depth of 1.5 feet.

6.5 Bioaccumulation

Many inorganic chemicals have the potential to bioaccumulate in plants or animals through root uptake from soils to plants, ingestion of water, incidental ingestion of soils, and ingestion of contaminated plants or animal prey as food sources. Of the metals, only mercury has biomagnification potential, however, mercury is not considered a contaminant at the Site. Therefore, bioaccumulation is not a pathway of major concern for the COPCs/COPECs at this Site.

7.0 STREAMLINED HUMAN HEALTH RISK ASSESSMENT

This section discusses the streamlined human health risk assessment (SHHRA) at the Site based on the metals results for surface and subsurface soil samples collected during this RFI.

The SHHRA was performed in accordance with the *ARBCA*. The *ARBCA* process utilizes a tiered approach, with each subsequent tier being more site-specific, as described below. A flow chart showing the human health risk assessment process is provided in Figure 7-1.

- Preliminary Screening Level (PSL) Evaluation: The maximum detected concentrations (MDCs) for each COPC are compared to PSVs. If the concentrations exceed acceptable levels, RM-1 or RM-2 Levels are then calculated.
- Risk Management (RM)-1 Evaluation: The cumulative risk is compared to target risk levels and media-, receptor- and pathway-specific RM-1 levels are calculated, if needed, based on default assumptions and parameter values.
- RM-2 Evaluation: Site-specific RM-2 levels are determined using site-specific data.

For this SSHRA, only the PSL and RM-1 evaluations were performed. To provide a framework for the overall risk evaluation of the Site, a Site Conceptual Exposure Model (SCEM) was developed prior to the PSL Evaluation.

7.1 Site Conceptual Exposure Model

The SCEM identifies and integrates the various factors that contribute to human health risk at a site. The SCEM depicts the relationship between the chemical source areas, transport and release mechanisms, exposure routes, and receptors for the scenarios applicable to the Site. The human health SCEM for the Site is graphically displayed in Figure 7-2.

7.1.1 Contaminant Sources, Release, and Transport

Primary contaminant release mechanisms were associated with small arms training activities conducted at the Site, resulting in the release of metal contaminants in surface soil and subsurface soil. No evidence of explosives contamination was found.

Potential contaminant transport pathways include rain runoff and erosion to surface soil, or wind-blown particulates. The contaminant source and release mechanisms for the Site are shown in Figure 7-2.

7.1.2 Receptors and Exposure Routes

The Site is a wooded area located on the northern slope of an unnamed hill. The area of investigation encompasses about 35 acres and is not fenced, therefore, the area is currently accessible to trespassers. The Site is currently unused and is not currently maintained. The only human receptor at the Site under the current land-use scenario is the trespasser/recreational user. The trespasser/recreational user receptor may be exposed to surface soil.

The human receptors that may potentially be exposed to contamination at the Site under the proposed future land use scenario (light industrial and recreational) include commercial worker, construction worker, and trespasser/recreational user. Although the Site is not expected to be used for residential purposes, the resident was also evaluated to allow for the potential of unrestricted land use. The resident, commercial worker, and construction worker receptors under the future Site-use scenarios are assumed to be exposed to total soil to reflect the potential for construction or development to bring subsurface soil to the surface.

The human receptor and exposure route scenarios for current and future land use at the Site are shown in Figure 7-2. Because the contaminated areas were confined within the boundaries of Parcels 88Q and 103Q, only onsite scenarios were evaluated for this SHHRA.

7.1.3 Exposure Domains

The exposure domain is the area over which the receptor is or may be exposed to the contaminated media. An impacted site or area of interest (AOI) may have multiple exposure domains, one for each receptor and each complete route of exposure (ROE). Separate domains may also exist for current scenarios versus future scenarios. Areas expected to differ in their potential exposure are evaluated separately. For this investigation, AOIs were determined by forming a boundary around the area that contained soil sample locations with metal contaminant concentrations greater than PSVs or ESVs, and on land use within that area. The exposure domains and associated AOIs included in the SHHRA for the Site are presented in Table 7-1. Figure 7-3 shows the locations of the AOIs. AOI #1 is 8.7 acres of park future use and AOI #2 is 1.3 acres of industrial/office park future use. Sizes of the evaluated exposure units are also included in Table 7-1.

7.1.4 Representative Concentrations

Representative concentrations (RCs) represent the chemical concentrations in environmental media that may come in contact with a receptor. The RC is a value that reflects a conservative estimate of average over the exposure domain represented by the entire data set. RCs should be developed for each exposure domain.

During the PSL evaluation, the ARBCA recommends the utilization of the MDCs for the RCs for soil.

During the RM-1 evaluation, the ARBCA recommends the utilization of RCs based on the 95 percent upper confidence limit (95% UCL) on the mean for soil. The 95% UCLs are calculated using ProUCL® (EPA, 2013). An appropriate amount of data must exist to accurately estimate the 95% UCL. For data sets with fewer than six sample values within an exposure domain, the MDCs were used as the RCs when calculating cumulative risk during the RM-1 evaluation for the Site. According to the ARBCA, the values for non-detect samples within the exposure domain should be replaced by half the detection limits if detection limits are less than the appropriate PSV. However, if the detection limits for non-detect samples are greater than the screening levels, the detection limit should be used as the sample concentration.

7.2 Preliminary Screening Level Evaluation

The PSL evaluation is a preliminary risk evaluation to identify COPC concentrations and AOIs within the Site that may need further evaluation. During the PSL evaluation, the maximum detected concentrations (MDCs) are compared to PSVs. COPCs that exceed the PSVs are then incorporated into the RM-1 evaluation to assess the cumulative risk within each exposure domain.

7.2.1 PSVs Used in PSL Evaluation

For soils there are two types of PSVs: 1) EPA Regional Screening Levels (RSLs) for direct exposure to soil for the resident and industrial/commercial site users, and 2) soil screening levels (SSLs) protective of groundwater from leaching from soil. The RSLs used in the PSL evaluation are based on the most updated EPA RSLs (EPA, 2016) in lieu of the PSVs shown in *Table 2-2* of the *ARBCA* (ADEM, 2008).

For the RSLs for direct exposure to soil, the lower of either the cancer RSL (target risk 1E-06) or non-cancer RSL (hazard quotient [HQ] 0.1) was used for the PSL evaluation. Based on the mixed current and proposed future land use, comparisons were made to both the residential and commercial RSLs for this SHHRA. To identify the human health COPCs for the Site, the residential PSVs were used in the PSL evaluation to determine if unrestricted land use may be attained at the Site.

Because leaching from soil into groundwater is not considered a complete pathway at the Site (Figure 7-2), comparisons to SSLs were not included in this PSL evaluation.

7.2.2 Identification of Human Health COPCs

Based on the metals statistics evaluation described in 4.5 and Appendix C, the following metal constituents are considered to be contaminants at the Site:

- Antimony, copper, lead, nickel, and selenium in surface soil.
- Antimony, copper, and lead in subsurface soil.

To evaluate which contaminants were COPCs at the Site, the contaminants were compared to PSVs, as described in Section 5.3 and shown in Tables 5-5 and 5-6 for surface soil and subsurface soil, respectively. The contaminants with MDCs greater than PSVs are considered human health COPCs at the Site. As indicated in Tables 5-5 and 5-6, antimony and lead are considered human health COPCs in surface soil and subsurface soil at the Site. The human health COPCs are used to assess the cumulative risk within each exposure domain in the RM-1 evaluation.

7.3 Risk Management-1 (RM-1) Evaluation

The RM-1 evaluation first requires the determination of whether the cumulative risk present at the Site exceeds the target risk levels. If the cumulative risk (i.e., the sum of risk for each COPC and each complete ROE) for an area of contamination exceeds the target risk level, risk

management and/or remediation may be necessary. A RM-1 evaluation, recommended by the ARBCA, consists of the following:

- Determine the cumulative risk present within each exposure domain.
- Compare cumulative risks to target risk levels.
- Compare RM-1 Risk-Based Target Levels (RBTs) with the representative concentrations (RCs) for each COPC, complete ROE and receptor whose cumulative risk exceeded the target risk levels.
- Evaluate the groundwater resource protection criteria.
- Make risk management recommendations.

7.3.1 Cumulative Risk

Cumulative risk is calculated utilizing the forward-calculation method presented in *Appendix B* of the ARBCA (ADEM, 2008). To calculate the cumulative risk within each exposure domain, the Individual Incremental Lifetime Cancer Risks (ILCRs) and non-cancer Hazard Quotients (HQs) for the human health COPCs were calculated for each complete ROE and receptor. The individual ILCRs and HQs were then summed to yield a total ILCR and non-cancer Hazard Index (HI) for each receptor and ROE.

7.3.1.1 Representative Concentrations for RM-1 Evaluation

During the RM-1 evaluation, RCs based on the 95% UCL were used to calculate the cumulative risk within each exposure domain. For exposure domains with data sets less than six sample values, the MDCs were used as the RCs when calculating cumulative risk during the RM-1 evaluation for the Site. Table 7-2 presents the samples used in the SHHRA for each exposure domain. For exposure domains with six or more samples, the 95% UCL was calculated and used for the RC during the RM-1 evaluation.

7.3.1.2 Incremental Lifetime Cancer Risk

For carcinogenic effects, risk is quantified using the ILCR that represents an increase in the probability of an individual developing cancer due to exposure to a COPC through a complete ROE. The equations in *Appendix B* of the ARBCA (*page B-4*) were used to calculate the individual ILCRs for each receptor and ROE. Since a receptor may be exposed to multiple COPCs and ROEs, the acceptable risk level should account for the effect of simultaneous exposure to multiple COPCs and ROEs. The total ILCR is the sum of the individual ILCRs for each COPC and each complete ROE. The acceptable ILCR for individual COPCs is $1\text{E-}06$. The acceptable total ILCR target risk level for a receptor is $1\text{E-}05$ (ARBCA, 2008). Because cancer slope factors are not available for the human health COPCs (antimony and lead) at the Site, ILCRs were not calculated for this SHHRA.

7.3.1.3 Non-Cancer Hazard Index

For non-carcinogenic effects, risk is quantified using a HQ that represents the ratio of the estimated dose for a chemical and a route of exposure to the reference dose. When a receptor is exposed to multiple COPCs and multiple ROEs, individual HQs may be added together to estimate the Hazard Index (HI). The HI is the sum of individual HQs. The acceptable HQ for individual COPCs for non-carcinogens is 0.1. The acceptable total HI (i.e., the sum of the

individual COPC HQs) for a receptor is 1.0. Total HIs for a receptor above 1.0 raises concern for potential non-cancer effects (ARBCA, 2008). Table 7-3 presents the individual HQs and total HIs for each exposure domain at the Site.

Because cancer slope factors or noncancer reference doses are not available for lead, it cannot be evaluated in the same manner as the other metals. The risk assessment for lead is described in Section 7.4.

7.3.2 Cumulative Risks Exceeding Target Risk Levels

As part of the RM-1 evaluation, the cumulative risks for carcinogenic (total ILCR) and non-carcinogenic (HI) effects for each exposure domain are compared to the target risk levels (i.e. ILCR = $1\text{E-}05$ and HI = 1.0). As stated in Section 7.3.1.2, because cancer slope factors are not available for the human health COPCs at the Site, ILCRs were not calculated for this SHHRA. Table 7-3 presents the cumulative non-carcinogenic risk for each exposure domain at the Site.

As indicated in Table 7-3, because the HIs for each exposure domain were less than 1.0, antimony is not considered a non-cancer risk in soil for both current and future land use at the Site.

7.3.3 Groundwater Resource Protection

The groundwater resource protection component of the ARBCA risk evaluation includes assessing the use of groundwater as a current and future drinking water supply. Currently, there are no potable wells on the Site and no plans for wells since potable water is available from the City of Anniston. Allowable soil and groundwater contaminant levels are determined for water supply wells onsite and offsite the property. At sites where there are no water supply wells present, the remedial measures for soil and groundwater are required to be protective of the groundwater resource for likely future use. For future land use other than unrestricted land use (i.e., residential scenario), LUCs in the form of an environmental covenant shall be filed.

7.4 Risk Characterization for Lead

Risk to humans from exposure to lead is evaluated separately from other chemicals because of its unique health effects. Lead is ubiquitous, so that exposure simultaneously involves multiple routes and sources. Because toxicity values (cancer slope factor and reference dose) have not been developed for lead, it cannot be evaluated in the same manner as the other metals.

Risk via lead exposure to soil is handled differently than it is with other soil contaminants in two key ways:

- The risk endpoint is not a daily intake, but a target tissue level, blood lead (PbB) concentration.
- The total of multiple sources of lead in the environment (soil, indoor dust, drinking water, and air) are considered together in determining the acceptable exposure of soil.

EPA has developed two models for use in evaluating lead. The Integrated Exposure Uptake Biokinetic (IEUBK) Model Lead in Children is used to predict the risk of elevated PbB levels in young children (up to the age of seven) (EPA, 2002 and 2009a). The Adult Lead Model (ALM) is used for adults in nonresidential settings, and is based on the fetus of a pregnant worker exposed long term as the most sensitive receptor. Both models use a target PbB of 10 µg/dL in the child or fetus as the point of departure.

The IEUBK and ALM use default values for exposure to both soil and other media. The soil ingestion rates used in the models are very similar to those used to assess exposure to other soil contaminants (100 mg/day for children, 50 mg/day for adults). EPA Dietary intakes have been developed based on longitudinal studies known as the National Health and Nutrition Examination Survey (NHANES). The original dietary data (obtained from the 1991-1999 data) have been updated, and EPA recommends using the 1995-2003 data (EPA, 2009b). The more recent data show a slightly lower daily dietary lead intake, which results in a slightly higher acceptable soil intake for the same target PbB.

For this SHHRA, the risk of human exposure to lead for the trespasser/recreational, commercial worker, and construction worker was evaluated by generating a Preliminary Remediation Goal (PRG) for lead using the ALM. The RCs for exposure domains 1 to 4 were compared to the PRG for lead. The risk of human exposure to lead for the resident was evaluated using the IEUBK model in the “forward” mode to predict the risk of elevated PbB levels in young children (up to the age of seven). IEUBK predicts the risk (probability) that a typical or hypothetical child exposed to specified media lead concentrations will have a PbB concentration greater than or equal to 10 µg/dL (the blood lead level of concern). Table 7-4 summarizes the results of the lead risk assessment using the ALM and IEUBK models. The RCs for exposure domains 1 to 4 were less than the PRG. The PbB concentrations for the young child (ages 0.5 to 7 years) were less than the target PbB of 10 µg/dL.

7.5 Uncertainty Analysis

Uncertainty is a component of any risk assessment and is the result of several factors. Due to the complexity and individuality of each environmental risk assessment, a certain amount of uncertainty is expected. The following includes a discussion on sources of uncertainty for this risk assessment.

- Calculation of the RC can be a source of either an over-estimate or under-estimate of exposure depending on the representativeness of supporting data. To reduce the level of uncertainty at the Site, surface and subsurface soil samples were collected at locations with potentially “worst-case” concentrations of contaminants in soil at the Site. The array of sample locations is representative of the most contaminated areas at the Site, thereby reducing the level of uncertainty.
- Some metals that were ascertained to be naturally occurring during the metals statistical evaluations (Appendix C) had concentrations above PSVs, which contribute to risk and are

not related to Site activities. Naturally occurring metal concentrations such as these may result in an overestimation of increased risk related to Site activities.

- Long-term fate of bullets in soil at the Site also poses uncertainty. Little information is available regarding the degradation of bullets in soil.

Acceptable levels of uncertainty in this risk assessment have been accomplished by mitigation of variables contributing to uncertainty. The estimation of risk associated with a non-carcinogenic threat is likely biased slightly high as a result of risk attributed by naturally occurring metals.

7.6 Streamlined Human Health Risk Assessment Conclusions

Based on the current (trespasser/recreational) and future (trespasser/recreational, commercial worker, and construction worker) land use at the Site, the surface soil and subsurface soil at the Site poses no unacceptable risk to the commercial worker, construction worker, trespasser/recreational, or resident. However, based on the planned future land use at the Site, the MDA will impose a LUC restricting the Site from residential use.

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8.0 SCREENING LEVEL ECOLOGICAL RISK ASSESSMENT

A screening level ecological risk assessment was conducted to evaluate the potential for ecological risks posed by Site-related constituents at the Site. This section discusses the environmental setting, exposure pathways, and ecological risk assessment performed as part of this RFI.

8.1 Environmental Setting and Terrestrial Habitat

The northern boundary of the Site is a mixture of forest and grassland. The eastern, southern and western boundaries of the Site are primarily forested. The topography of the northern edge of the Site is mostly flat with the remaining portion consisting of a steep slope. The unnamed hillside slopes steeply to the northwest with a slope of approximately 33%. The overall elevation across the investigation area extends from approximately 770 to 1040 feet above msl. An unnamed intermittent stream flows to the northwest corner of the area of investigation. This intermittent stream eventually empties into Reilly Lake (Shaw, 2003).

Terrestrial habitat at the Site is comprised of sparse grasslands, and dry Virginia pine-oak forest. The grassland area of the Impact Area near the northern boundary of the Site is near a fill area that has been graded and contoured and was granted unrestricted NFA by ADEM in February of 2006. This area is dominated by various grasses and herbs including dock (*Rumex spp.*), clover (*Trifolium spp.*), vetch (*Astragalus spp.*), milkweed (*Asclepias spp.*), bed straw (*Galium spp.*), ox-eye daisy (*Chrysanthemum leucanthemum*), and johnson grass (*Sorghum halepense*).

Most of the Site is characterized as dry Virginia pine-oak forest. Virginia pine (*Pinus virginiana*) is the dominant species. Other canopy species that occur infrequently are southern red oak (*Quercus falcata*), blackjack oak (*Quercus marilandica*), chestnut oak (*Quercus prinis*), and post oak (*Quercus stellata*). The majority of the forest floor in this area is blanketed with pine needles, with the false jessamine (*Gelsemium sempervirens*) vine and the little bluestem (*Schizachyrium scoparium*) and black oat grass (*Stipa avenacea*) occasionally encountered.

In general, the terrain at McClellan supports large numbers of amphibians and reptiles. Jacksonville State University has prepared a report titled *Amphibians and Reptiles of Fort McClellan, Calhoun County, Alabama* (Cline and Adams, 1997). The report indicated that surveys in 1997 found 16 species of toads and frogs, 12 species of salamanders, 5 species of lizards, 7 species of turtles, and 17 species of snakes. Typical inhabitants of the area surrounding the Site are copperhead (*Agkistrodon contortix*), king snake (*Lampropeltis getulus*), black racer (*Coluber constrictor*), fence lizard (*Sceloporous undulatus*), and six-lined racerunner (*Cnemidophorus sexlineatus*).

Terrestrial species that may inhabit the upland areas of the Site include opossum, short-tailed shrew, raccoon, white-tail deer, red fox, coyote, gray squirrel, striped skunk, a number of species of mice and rats (e.g., white-footed mouse, eastern harvest mouse, cotton mouse, eastern wood rat, and hispid cotton rat), and eastern cottontail. Approximately 200 avian species reside at McClellan at least part of the year (Shaw, 2006). Common species expected to

occur in the vicinity of the Site include northern cardinal (*Cardinalis cardinalis*), northern mockingbird (*Mimus polyglottus*), warblers (*Dendroica spp.*), indigo bunting (*Passerina cyanea*), red-eyed vireo (*Vireo olivaceus*), American crow (*Corvus brachyrhynchos*), bluejay (*Cyanocitta cristata*), several species of woodpeckers (*Melanerpes spp.*, *Picoices spp.*), and Carolina chickadee (*Parus carolinensis*). Game birds present in the vicinity of the Site may include northern bobwhite (*Colinus virginianus*), mourning dove (*Zenaida macroura*), and eastern wild turkey (*Meleagris gallopavo*). A variety of raptors (e.g., red-tailed hawk, sharp-shinned hawk, barred owl, and great homed owl) could also use portions of this area for a hunting ground, particularly the fringe area where the forested areas abut roads and cleared areas.

The following species, listed as threatened or endangered by the USFWS, have been recorded on McClellan (IT, 2002a):

- Gray Bat (*Myotis grisescens*)
- Blue Shiner (*Cyprinella caerulea*)
- Mohr's Barbara Buttons (*Marshallia mohril*)
- Tennessee Yellow-Eyed Grass (*Xyris tennesseensis*)

Based upon available documentation that was reviewed, none of the above species have been identified at the Site (ESE, 1998).

8.2 Exposure Pathways

For exposures to occur, complete exposure pathways must exist between the contaminant and the receptor. A complete exposure pathway requires the following four components:

- A source mechanism for contaminant release.
- A transport mechanism.
- A point of environmental contact.
- A route of uptake at the exposure point.

If any of these four components are absent, then a pathway is generally considered incomplete (EPA, 1989).

Ecological receptors may be exposed to constituents in soils via direct and/or secondary exposure pathways. Direct exposure pathways include soil ingestion, dermal absorption, and inhalation of COCs adsorbed to fugitive dust. Significant exposure via dermal contact is limited to organic constituents, which are lipophilic and can penetrate epidermal barriers. Mammals are less susceptible to exposure via dermal contact with soils because their fur prevents skin from coming into direct contact with soil. However, soil ingestion may occur while grooming, preening, burrowing, or consuming plants, insects, or invertebrates that reside in soil.

Exposure via inhalation of fugitive dust is limited to contaminants present in surface soils at areas that are devoid of vegetation. The amount of vegetative cover, the inherent moisture

content of the soil, and the frequency of soil disturbance play important roles in the amount of fugitive dust generated at a particular site. In forested areas, such as at the Site, fugitive dust generation is expected to be minimal.

Secondary exposure pathways involve constituents that are transferred through different trophic levels of the food chain and may be bioaccumulated. This may include constituents bioaccumulated from soil into plant tissues or into terrestrial species ingesting soils or biota. These plants or animals may, in turn, be consumed by animals at higher trophic levels. The COPECs at this site are not bioaccumulative and do not biomagnify up the food chain.

8.3 Ecological Risk Assessment

The ecological risk assessment at the Site was performed based on the metal results for surface and subsurface soil samples collected during this RFI. The screening-level ecological risk assessment for the Site consisted of the following steps, which are discussed in the following sections. A flow chart showing the ecological risk assessment process is provided in Figure 8-1.

- Select the COPECs by comparing the MDC for each contaminant to ESVs.
- Compare RCs for the COPECs to ecological risk-based remedial goals (Eco-RBRGs) to identify the COCs that may pose an ecological risk.
- For COPECs with no established Eco-RBRGs, evaluate the concentrations relative to screening levels and/or other risk benchmarks to identify COCs that may require additional site-specific evaluation for ecological risk.
- Perform an uncertainty analysis and assess the COCs in relation to the environmental setting and habitat(s) in and around the Site.

8.3.1 Constituents of Potential Ecological Concern

COPECs were selected by comparing the MDCs for the metal contaminants in surface and subsurface soil to their respective ESVs, presented in Table 8-1. The ESVs used in this ecological risk assessment are the EPA Ecological Soil Screening Levels (EcoSSLs) (EPA, 2003), selected as per Section 3.14 of the *ARBCA* (ADEM, 2008). Contaminants that exceeded the ESVs are considered COPECs at the Site. Antimony, copper, lead, nickel, and selenium are considered COPECs in surface soil; and antimony, copper, and lead are considered COPECs in subsurface soil at the Site.

8.3.2 Representative Concentrations

RCs represent the chemical concentrations in environmental media that may come in contact with a receptor. The RC is a value that reflects a conservative estimate of average over the AOI. RCs based on the 95% UCL on the mean were used for this ecological risk assessment. Because the subsurface soil samples were relatively shallow, collected between 0.5 and 1.5 feet bgs, the ecological receptors are assumed to be exposed to the subsurface soil as well as surface soil within AOIs 1 and 2 (Figure 7-3). Therefore, RCs were calculated for total soil (i.e., surface soil and subsurface soil combined) within AOIs 1 and 2 for COPECs antimony, copper, lead, nickel, and selenium during the ecological risk evaluation. The RCs for each COPEC are shown in Table

8-2. The samples used in the calculations of the RCs for the ecological risk assessment are also shown in Table 8-2.

8.3.3 COPECs Compared to Ecological Risk-Based Remedial Goals

Ecological risk assessments were conducted by Shaw for the Iron Mountain Road (IMR) and Bains Gap Road (BGR) Ranges at McClellan. The results of the screening-level risk assessments and the problem formulation and study designs for the IMR and BGR Ranges are documented in the *Screening-Level Ecological Risk Assessment for the Iron Mountain Road Ranges* (IT, 2002c), the *Data Evaluation Report and Screening Level Ecological Risk Assessment for the Bains Gap Road Ranges* (IT, 2002d), the *Baseline Ecological Risk Assessment Problem Formulation and Study Design for the Iron Mountain Road Ranges* (IT, 2002e), and the *Baseline Ecological Risk Assessment Problem Formulation and Study Design for the Bains Gap Road Ranges* (Shaw, 2003). Based on these studies Eco-RBRGs were developed as documented in the *Identification of Ecological Risk-Based Remedial Goals, Iron Mountain Road and Bains Gap Road Ranges* (Shaw, 2010). As a result of the aforementioned studies, Shaw performed a baseline ecological risk assessment (BERA) to address the assessment endpoints identified in the problem formulations for the IMR and BGR Ranges (Shaw, 2010). During the BERA, ecological risk-based remedial goals (Eco-RBRGs) were developed for COPECs that are protective of the sensitive receptors potentially present at the IMR and BGR Ranges. The Eco-RBRGs for soil are 18 mg/kg for antimony, 334 mg/kg for copper, 500 mg/kg for lead, and 100 mg/kg for zinc.

Because the IMR and BGR Ranges experienced similar historical land use activities, contain similar constituents of concern and are proximal to the Site, the RCs for the COPECs for the Site were compared to the Eco-RBRGs developed for the IMR and BGR Ranges. The RCs for COPECs antimony, copper, and lead were compared to the Eco-RBRGs, shown in Table 8-2. The RC for lead in total soil was greater than the Eco-RBRG, and was therefore identified as a COC at the Site.

Because surface soil sample R30-103Q-007 (0-0.5) showed an anomalously high lead concentration compared to the other surface and subsurface soil samples at the Site, an assessment was made using a RC calculated for lead in total soil within AOIs 1 and 2, without the lead value for surface soil sample R30-103Q-007 (0-0.5) in accordance with EPA ProUCL guidance for data outliers (EPA, 2015). The RC for lead in total soil within AOIs 1 and 2 without surface soil sample R30-103Q-007 (0-0.5) was 445 mg/kg, less than the 500 mg/kg Eco-RBRG for lead. Therefore, it appears that the lead contamination that may pose an increased risk to ecological receptors is confined to a small area in the vicinity of surface soil sample R30-103Q-007 (0-0.5), located in the central portion of the Site (Figure 7-3).

8.3.4 COPECs Compared to ESVs

Because there are no established Eco-RBRGs for nickel and selenium, the RCs for nickel and selenium in total soil were compared to their respective ESVs, shown in Table 8-2. The RCs for nickel and selenium were less than the ESVs. Therefore, nickel and selenium in total soil are not considered to be COCs at the Site.

8.4 Uncertainty Analysis

Uncertainty is a component of any risk assessment and is the result of several factors. Due to the complexity and individuality of each environmental risk assessment, a certain amount of uncertainty is expected. The following includes a discussion on sources of uncertainty for this risk assessment.

- Some metals that were ascertained to be naturally occurring during the metals statistical evaluations (Appendix C) had concentrations above ESVs, which contribute to risk and are not related to Site activities. Naturally occurring metal concentrations such as these may result in an overestimation of increased risk related to Site activities.
- Temporal variation habitat condition and species present at the Site can be a potential source of uncertainty when inferring (a) the existence of potential (unknown) ecological receptor species; and (b) potential (unknown) exposure pathways, i.e., most ecological receptors have a large enough home range that precludes them from being exposed to the specific areas of contaminated surface soil for their entire lifetimes.
- Long-term fate of bullets in soil at the Site also poses uncertainty. Little information is available regarding the degradation of bullets in soil due to complex temporal geochemical and environmental interactions.

Acceptable levels of uncertainty in this risk assessment have been accomplished by mitigation of variables contributing to uncertainty. The conservative approach taken for this ecological risk assessment is based primarily on COPECs and media for which there are sufficient representative data, and therefore, the result is also representative of risk associated with the Site. The estimation of ecological risk is likely biased high as a result of risk contributed by naturally occurring metals, sporadic low metal concentrations and conservative estimates of habitat condition and species present that may or may not be representative of actual ecological Site conditions.

8.5 Conclusions

The screening level ecological risk assessment for the Site included the identification of the COPECs; calculating RCs (i.e., 95% UCL) for each COPEC in total soil within AOIs 1 and 2; and comparing the RCs to Eco-RBRGs, or to ESVs for COPECs that did not have an established Eco-RBRG.

Because the antimony and copper RCs were less than the Eco-RBRGs, they are not considered COCs at the Site. Because the nickel and selenium RCs were less than the ESVs, they are not considered COCs at the Site (Table 8-2).

Lead was identified as a COC in total soil at the Site, and may pose an increased risk to ecological receptors within a localized area in the vicinity of surface soil sample R30-103Q-007 (0-0.5) located in the central portion of the Site (Figure 7-3).

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9.0 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This section summarizes the investigation activities performed during the RFI for the Site and presents the major results, conclusions and recommendations. The RFI investigation was performed to collect additional information to define the nature and extent of contamination in soil at the Site.

9.1 RFI Activities

This RFI was designed to collect data from site media and provide a level of defensible data and information in sufficient detail to determine whether chemical contamination is present, as a result of historical training activities and the nature and extent of the contamination. Field work was conducted at the Site in 2004 and 2014.

To meet these objectives, the following RFI activities were performed.

- A visual assessment of bullet pockets and bullet fragments was performed in 2004 to identify proposed sampling locations within drainages and in low areas at the foot of the unnamed hillside. The observed bullet locations were used to select sample locations in order to assess the “worst-case” soil concentrations at the Site.
- Six surface soil and three subsurface soil samples were collected in September 2004 and analyzed for metals, explosives, TOC, and grain size.
- Twenty-four surface soil and nine subsurface soil samples were collected in August 2014 and analyzed for metals and explosives.

A data quality review of analytical results was performed to assess compliance with QA objectives and to assess hard copy consistency and integrity with electronic data deliverables. A statistical evaluation was performed to identify metals that may be present at elevated concentrations as a result of Site-related activities. Screening level human health and ecological risk assessments were performed to evaluate potential unacceptable risk to receptors from elevated metal concentrations in surface soil and subsurface soil at the Site.

9.2 Results of the RFI and Nature and Extent

The sampling completed as part of the RFI has enabled a more complete understanding of the distribution of contaminants in soils and confirmed the nature of those contaminants. No explosives were detected in the surface soil and subsurface samples collected during the RFI activities. Important conclusions regarding nature and extent are as follows:

- Antimony, copper, and lead exceeded residential PSVs in at least one surface soil sample, and are considered human health COPCs in surface soil at the Site.
- Antimony, copper, lead, nickel, and selenium exceeded ESVs in at least one surface soil sample, and are considered COPECs in surface soil at the Site.
- Antimony and lead exceeded residential PSVs in at least one subsurface soil sample, and are considered human health COPCs in subsurface soil at the Site.

- Antimony, copper, and lead exceeded ESVs in at least one subsurface soil sample, and are considered COPECs in subsurface soil at the Site.

9.3 Streamlined Human Health Risk Assessment Conclusions

A streamlined human health risk assessment was performed to evaluate the potential threat to human health from exposure to contaminated media at the Site. Five exposure domains were evaluated based on current land use for the trespasser/recreational; and future land use for the trespasser/recreational, commercial worker, construction worker, and resident. Based on the streamlined human health risk assessment, no COCs were identified in soil at the Site (Table 7-4).

9.4 Screening Level Ecological Risk Assessment Conclusions

A screening-level ecological risk assessment was conducted to evaluate the potential for ecological risks posed by site-related contaminants at the Site. Lead was identified as a COC in total soil at the Site, and may pose an increased risk to ecological receptors in a localized area in the vicinity of surface soil R30-103Q-007 (0-0.5) located in the central portion of the Site.

9.5 Recommendations

Based on the results of the RFI, no further actions are warranted with respect to defining the nature and extent of contamination in environmental media at the Site. However, because lead in soil may pose an increased risk to ecological receptors, remediation for lead contamination in surface soil in the area surrounding surface soil R30-103Q-007 (0-0.5) may be necessary. Also, based on the planned future land use at the Site, the MDA will impose a LUC restricting the Site from residential use.

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Tables

**Table 1-1: Constituents Potentially Present at Firing Ranges
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Constituent	Comment
Lead	Primary constituent of a projectile
Lead Styphnate/Lead Azide	Primary constituent of primer
Antimony	Increases hardness of lead projectile
Arsenic	Naturally associated with lead
Copper as bullet alloy	Increases hardness of lead projectile
Copper	Jacket alloy metal
Zinc	Jacket alloy metal
Iron	Iron tips on penetrator rounds

Source = ITRC, 2003

Table 4-1: Sample Designations and Analytical Parameters
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Identification	Depth (feet bgs)	Sample Date	Analytical Parameters
Surface Soil Samples			
R30-88Q-003	0 - 0.5	9/2/2004	6010, 7471, 8330, TOC, GS
R30-88Q-008	0 - 0.5	9/2/2004	6010, 7471, 8330, TOC, GS
R30-88Q-009	0 - 0.5	9/2/2004	6010, 7471, 8330, TOC, GS
R30-88Q-010	0 - 0.5	9/2/2004	6010, 7471, 8330, TOC, GS
R30-88Q-011	0 - 0.5	8/20/2014	6020, 7471, 8330
R30-88Q-012	0 - 0.5	8/20/2014	6020, 7471, 8330
R30-88Q-013	0 - 0.5	8/20/2014	6020, 7471
R30-88Q-014	0 - 0.5	8/20/2014	6020, 7471
R30-88Q-015	0 - 0.5	8/21/2014	6020, 7471
R30-88Q-016	0 - 0.5	8/20/2014	6020, 7471
R30-88Q-017	0 - 0.5	8/20/2014	6020, 7471
R30-88Q-018	0 - 0.5	8/20/2014	6020, 7471
R30-102Q-001	0 - 0.5	9/2/2004	6010, 7471, 8330, TOC, GS
R30-102Q-002	0 - 0.5	9/2/2004	6010, 7471, 8330, TOC, GS
R30-103Q-001	0 - 0.5	8/21/2014	6020, 7471, 8330
R30-103Q-002	0 - 0.5	8/21/2014	6020, 7471, 8330
R30-103Q-003	0 - 0.5	8/21/2014	6020, 7471, 8330
R30-103Q-004	0 - 0.5	8/21/2014	6020, 7471, 8330
R30-103Q-005	0 - 0.5	8/21/2014	6020, 7471, 8330
R30-103Q-006	0 - 0.5	8/20/2014	6020, 7471, 8330
R30-103Q-007	0 - 0.5	8/20/2014	6020, 7471, 8330
R30-103Q-008	0 - 0.5	8/21/2014	6020, 7471
R30-103Q-009	0 - 0.5	8/20/2014	6020, 7471
R30-103Q-010	0 - 0.5	8/20/2014	6020, 7471
R30-103Q-011	0 - 0.5	8/21/2014	6020, 7471
R30-103Q-012	0 - 0.5	8/20/2014	6020, 7471
R30-103Q-013	0 - 0.5	8/21/2014	6020, 7471
R30-103Q-014	0 - 0.5	8/20/2014	6020, 7471
R30-103Q-015	0 - 0.5	8/21/2014	6020, 7471
R30-103Q-016	0 - 0.5	8/20/2014	6020, 7471
Subsurface Soil Samples			
R30-88Q-003	0.5 - 1.5	9/2/2004	6010, 7471, 8330, TOC, GS
R30-88Q-011	0.5 - 1.5	8/20/2014	6020, 7471, 8330
R30-88Q-012	0.5 - 1.5	8/20/2014	6020, 7471, 8330
R30-102Q-001	0.5 - 1.5	9/2/2004	6010, 7471, 8330, TOC, GS
R30-102Q-002	0.5 - 1.5	9/2/2004	6010, 7471, 8330, TOC, GS
R30-103Q-001	0.5 - 1.5	8/21/2014	6020, 7471, 8330
R30-103Q-002	0.5 - 1.5	8/21/2014	6020, 7471, 8330
R30-103Q-003	0.5 - 1.5	8/21/2014	6020, 7471, 8330
R30-103Q-004	0.5 - 1.5	8/21/2014	6020, 7471, 8330
R30-103Q-005	0.5 - 1.5	8/21/2014	6020, 7471, 8330
R30-103Q-006	0.5 - 1.5	8/20/2014	6020, 7471, 8330
R30-103Q-007	0.5 - 1.5	8/20/2014	6020, 7471, 8330

Notes:

6010 = ICP metals by SW846-6010B

Table 4-1: Sample Designations and Analytical Parameters
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

6020 = ICP-MS metals by SW846-6020A

7471 = Mercury by SW846-7471A

8330 = Explosives by SW846-8330A

bgs = below ground surface

TOC = Total organic carbon by Walkley-Black

GS = Grain size by ASTM D4464M

Table 5-1: Summary of Metals and Explosives Analytical Results for Surface Soil
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Parameter Name	Units	R30-88Q-003	R30-88Q-008	R30-88Q-009	R30-88Q-010	R30-88Q-011	R30-88Q-012	R30-88Q-013	R30-88Q-014	R30-88Q-015	R30-88Q-016	R30-88Q-017	R30-88Q-018	R30-102Q-001	R30-102Q-002	
		(0-0.5 ft bgs)	(0-0.5 ft bgs)	(0-0.5 ft bgs)	(0-0.5 ft bgs)	(0-0.5 ft bgs)	(0-0.5 ft bgs)	(0-0.5 ft bgs)	(0-0.5 ft bgs)	(0-0.5 ft bgs)	(0-0.5 ft bgs)	(0-0.5 ft bgs)	(0-0.5 ft bgs)	(0-0.5 ft bgs)	(0-0.5 ft bgs)	(0-0.5 ft bgs)
		9/2/2004	9/2/2004	9/2/2004	9/2/2004	8/20/2014	8/20/2014	8/20/2014	8/20/2014	8/21/2014	8/20/2014	8/20/2014	8/20/2014	8/20/2014	9/2/2004	9/2/2004
Metals																
Aluminum	mg/kg	14700	5010	14400	16000	11700	8010	13600	6520	5890	6460	8320 (JM)	4600	21300	31400	
Antimony	mg/kg	< 13.4	< 13.1	11.2 U^ (UB)	2.29 J (JM)	< 0.539	2.48 (JM)	0.320 J	3.04	0.479 J	2.78	0.644 (JM)	0.372 J	11.1 U^ (UB)	11.5 U^ (UJBM)	
Arsenic	mg/kg	6.03	3.55	4.42	5.22	5.43	2.49	5.62	2.02	1.75	1.92	2.7	1.41	4.89	6.82	
Barium	mg/kg	23.8	23.5	27.1	23.8	19.3	134	19.7	101	135	102	213	62.8	44	38.9	
Beryllium	mg/kg	0.313 J	< 1.31	0.31 J	0.283 J	0.179 J	0.6	0.181 J	0.438 J	0.405 J	0.465 J	0.568	0.415 J	0.411 J	0.49 J	
Cadmium	mg/kg	< 1.34	< 1.31	< 1.12	< 1.14	0.142 J	0.223 J	0.171 J	0.127 J	0.116 J	0.156 J	0.151 J	< 0.506	< 1.11	< 1.15	
Calcium	mg/kg	120 J	82.9 J	90.8 J	109 J	58.7 J	255	211	280	360	257	1800	159	265	99.3 J	
Chromium	mg/kg	13.1	8.86	17.1	16.6	19.6	5.33	26.3	5.48	3.85	3.95	6.68	3.35	13.8	22.2	
Cobalt	mg/kg	< 3.35	< 3.26	1.56 J	1.34 J	1.09	2.61	1.33	2.48	1.84	2.11	3.35	1.57	2.44 J	1.97 J (JM)	
Copper	mg/kg	53.5	3.07	7.24	24.4	5.96	134	10.2	83.9	39.3	180	38.6	55.3	57.6	13.9	
Iron	mg/kg	9810	9750	12700	14100	14300	4070	15600	3990	3340	3150	4600	2550	12400	18100	
Lead	mg/kg	307	10.9	13.6	121	7.34	612	40.4	578	178	634	212	407	358	27.6	
Magnesium	mg/kg	395	121 J	439	380	212	367	248	259	281	284	417	230	618	743	
Manganese	mg/kg	129	130	165	118	119	1210	158	846	935	795	1220	213	193	142 (JM)	
Mercury	mg/kg	< 0.134	< 0.131	< 0.112	< 0.114	0.0334 J	0.0349 J	0.0407 J	0.0406 J	0.0366 J	0.0412 J	0.0378 J	0.0401 J	0.0559 J	0.0445 J	
Nickel	mg/kg	5.44	1.47 J	6.11	6.81	3.58	17.6	4.1	9.65	11.3	13.1	11	3.3	12	13.3 (JM)	
Potassium	mg/kg	813	417 J	750	540 J	225	200	258	156	158	170	238	137	588	695	
Selenium	mg/kg	< 1.34	< 1.31	< 1.12	< 1.14	0.114 J	0.197 J	0.133 J	0.216 J	0.171 J	0.158 J	0.218 J	0.155 J	< 1.11	0.612 J	
Silver	mg/kg	< 3.35	< 3.26	< 2.81	< 2.85	< 0.539	< 0.506	< 0.536	< 0.531	< 0.528	< 0.515	< 0.527	< 0.506	< 2.77	< 2.87	
Sodium	mg/kg	42.7 J	43.7 J	35.9 J	40 J	< 108	< 101	< 107	< 106	< 106	< 103	< 105	< 101	38.9 J	42 J	
Thallium	mg/kg	< 2.68	< 2.61	< 2.25	< 2.28	< 0.539	0.117 J	< 0.536	< 0.531	< 0.528	< 0.515	0.132 J	< 0.506	< 2.22	< 2.29	
Vanadium	mg/kg	22.8	15.8	23.4	28.9	31.2	8.79	34.2	8.28	6.95	6.71	10.4	4.87	27.1	40.7	
Zinc	mg/kg	21	5.29	19.3	19.5	9.46	34.2	10.8	31.7	15.1	40.4	22.6	22.5	29	30.1	
Explosives																
1,3,5-Trinitrobenzene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	--	--	--	--	--	--	< 400	< 400	
1,3-Dinitrobenzene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	--	--	--	--	--	--	< 400	< 400	
2,4,6-Trinitrotoluene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	--	--	--	--	--	--	< 400	< 400	
2,4-Dinitrotoluene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	--	--	--	--	--	--	< 400	< 400	
2,6-Dinitrotoluene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	--	--	--	--	--	--	< 400	< 400	
2-Amino-4,6-Dinitrotoluene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	--	--	--	--	--	--	< 400	< 400	
2-Nitrotoluene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	--	--	--	--	--	--	< 400	< 400	
3-Nitrotoluene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	--	--	--	--	--	--	< 400	< 400	
4-Amino-2,6-Dinitrotoluene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	--	--	--	--	--	--	< 400	< 400	
4-Nitrotoluene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	--	--	--	--	--	--	< 400	< 400	
HMX	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	--	--	--	--	--	--	< 400	< 400	
Nitrobenzene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	--	--	--	--	--	--	< 400	< 400	
RDX	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	--	--	--	--	--	--	< 400	< 400	
Tetryl	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	--	--	--	--	--	--	< 400	< 400	

Table 5-1: Summary of Metals and Explosives Analytical Results for Surface Soil
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Parameter Name	Units	R30-103Q-001	R30-103Q-002	R30-103Q-003	R30-103Q-004	R30-103Q-005	R30-103Q-006	R30-103Q-007	R30-103Q-008	R30-103Q-009	R30-103Q-010	R30-103Q-011	R30-103Q-012	R30-103Q-013
		(0-0.5 ft bgs)	(0-0.5 ft bgs)	(0-0.5 ft bgs)	(0-0.5 ft bgs)	(0-0.5 ft bgs)	(0-0.5 ft bgs)	(0-0.5 ft bgs)	(0-0.5 ft bgs)	(0-0.5 ft bgs)	(0-0.5 ft bgs)	(0-0.5 ft bgs)	(0-0.5 ft bgs)	(0-0.5 ft bgs)
		8/21/2014	8/21/2014	8/21/2014	8/21/2014	8/21/2014	8/21/2014	8/20/2014	8/20/2014	8/21/2014	8/20/2014	8/20/2014	8/21/2014	8/20/2014
Metals														
Aluminum	mg/kg	14000	19700	15400	4570	4070	19500	4660	15300	5040	10900	11000	21700	11900
Antimony	mg/kg	0.247 J	0.388 J	0.501 J	< 0.509	0.845	0.312 J	5.62	0.279 J	0.247 J	0.293 J	0.921	0.428 J	0.293 J
Arsenic	mg/kg	4.07	6.27	15	3.8	1.6	6.02	1.78	5.62	2.39	4.12	10.6	6.66	4.57
Barium	mg/kg	62.5	43.1	34.9	14.1	68.7	86.5	63.9	121	36.1	67.5	48	161	55.8
Beryllium	mg/kg	0.353 J	0.317 J	0.275 J	< 0.509	0.312 J	0.518 J	0.303 J	0.556 J	0.178 J	0.359 J	0.402 J	0.697	0.369 J
Cadmium	mg/kg	0.118 J	0.203 J	0.447 J	< 0.509	0.176 J	0.243 J	< 0.505	0.280 J	< 0.514	0.154 J	0.284 J	0.251 J	0.196 J
Calcium	mg/kg	279	458	174	120	153	222	304	576	255	619	147	827	340
Chromium	mg/kg	12.1	17.5	34.3	8.44	2.98	20	5.18	12.4	13.3	12.8	19.8	14.1	9.91
Cobalt	mg/kg	4.81	3.81	2.45	0.796	2.89	7.17	3.14	4.9	2.66	3.59	3.28	7.84	3.53
Copper	mg/kg	5.02	8	8.86	1.82	25.6	8.82	263	5.58	4.22	16	16.2	10.9	8.18
Iron	mg/kg	10800	17700	38800	6930	2480	17000	3350	12600	7390	10500	24400	14900	10200
Lead	mg/kg	17.9	17.3	20.2	4.47	194	36.9	1480	21.5	8.21	16.1	78.7	48.2	24.5
Magnesium	mg/kg	462	470	233	111	219	543	234	442	249	377	245	670	362
Manganese	mg/kg	347	917	279	193	489	779	462	1450	131	1070	372	2070	713
Mercury	mg/kg	0.0324 J	0.0805 J	0.0919 J	0.0273 J	0.0243 J	0.0605 J	0.0248 J	0.0542 J	0.0305 J	0.054 J	0.0428 J	0.0948 J	0.0529 J
Nickel	mg/kg	6.28	7.28	5.63	1.48	5.86	8.79	42.4	6.65	3.17	4.93	7.52	10.2	5.34
Potassium	mg/kg	346	443	264	183	151	536	184	367	173	258	416	562	312
Selenium	mg/kg	0.163 J	0.192 J	0.304 J	< 0.509	0.125 J	0.253 J	0.139 J	0.237 J	0.118 J	0.192 J	0.224 J	0.310 J	0.174 J
Silver	mg/kg	< 0.549	< 0.552	< 0.578	< 0.509	< 0.514	< 0.532	< 0.505	< 0.619	< 0.514	< 0.546	< 0.542	< 0.543	< 0.533
Sodium	mg/kg	< 110	< 110	< 116	< 102	< 103	< 106	< 101	< 124	< 103	< 109	< 108	< 109	< 107
Thallium	mg/kg	0.170 J	0.241 J	0.162 J	< 0.509	< 0.514	0.277 J	0.103 J	0.212 J	< 0.514	0.183 J	0.145 J	0.306 J	0.144 J
Vanadium	mg/kg	22.6	37.8	69.9	16.1	5.22	35.3	7.27	26.4	12.3	21.4	37.3	31.9	22.5
Zinc	mg/kg	17.4	16.5	16.8	4.39	15	23.6	29.1	18	13.7	23.8	15.5	35.7	14.5
Explosives														
1,3,5-Trinitrobenzene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	< 400	--	--	--	--	--	--
1,3-Dinitrobenzene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	< 400	--	--	--	--	--	--
2,4,6-Trinitrotoluene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	< 400	--	--	--	--	--	--
2,4-Dinitrotoluene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	< 400	--	--	--	--	--	--
2,6-Dinitrotoluene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	< 400	--	--	--	--	--	--
2-Amino-4,6-Dinitrotoluene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	< 400	--	--	--	--	--	--
2-Nitrotoluene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	< 400	--	--	--	--	--	--
3-Nitrotoluene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	< 400	--	--	--	--	--	--
4-Amino-2,6-Dinitrotoluene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	< 400	--	--	--	--	--	--
4-Nitrotoluene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	< 400	--	--	--	--	--	--
HMX	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	< 400	--	--	--	--	--	--
Nitrobenzene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	< 400	--	--	--	--	--	--
RDX	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	< 400	--	--	--	--	--	--
Tetryl	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	< 400	--	--	--	--	--	--

Table 5-1: Summary of Metals and Explosives Analytical Results for Surface Soil
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Parameter Name	Units	R30-103Q-014	R30-103Q-015	R30-103Q-016
		(0-0.5 ft bgs)	(0-0.5 ft bgs)	(0-0.5 ft bgs)
		8/20/2014	8/21/2014	8/20/2014
Metals				
Aluminum	mg/kg	15800	12800	11800
Antimony	mg/kg	< 0.537	2.69	0.593
Arsenic	mg/kg	5.45	6.03	2.53
Barium	mg/kg	178	70.6	23.2
Beryllium	mg/kg	1.11	0.458 J	0.246 J
Cadmium	mg/kg	0.322 J	0.239 J	< 0.515
Calcium	mg/kg	919	552	118
Chromium	mg/kg	9.96	12.4	6.84
Cobalt	mg/kg	6.16	4.6	3.09
Copper	mg/kg	5.46	64.6	42.4
Iron	mg/kg	9090	16800	6470
Lead	mg/kg	26.9	336	137
Magnesium	mg/kg	544	457	265
Manganese	mg/kg	2880	776	208
Mercury	mg/kg	0.0557 J	0.0574 J	0.0561 J
Nickel	mg/kg	7.77	12.2	8.03
Potassium	mg/kg	408	402	215
Selenium	mg/kg	0.316 J	0.212 J	< 0.515
Silver	mg/kg	< 0.537	< 0.515	< 0.515
Sodium	mg/kg	< 107	< 103	< 103
Thallium	mg/kg	0.238 J	0.188 J	0.122 J
Vanadium	mg/kg	19.9	28.4	14.3
Zinc	mg/kg	20.9	28.6	14.4
Explosives				
1,3,5-Trinitrobenzene	µg/kg	--	--	--
1,3-Dinitrobenzene	µg/kg	--	--	--
2,4,6-Trinitrotoluene	µg/kg	--	--	--
2,4-Dinitrotoluene	µg/kg	--	--	--
2,6-Dinitrotoluene	µg/kg	--	--	--
2-Amino-4,6-Dinitrotoluene	µg/kg	--	--	--
2-Nitrotoluene	µg/kg	--	--	--
3-Nitrotoluene	µg/kg	--	--	--
4-Amino-2,6-Dinitrotoluene	µg/kg	--	--	--
4-Nitrotoluene	µg/kg	--	--	--
HMX	µg/kg	--	--	--
Nitrobenzene	µg/kg	--	--	--
RDX	µg/kg	--	--	--
Tetryl	µg/kg	--	--	--

Notes:

< = The result was not detected at the concentration shown.
ft bgs = Sample depth in feet below ground surface.
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram

Lab Flags:

J = Estimated value. The analyte is positively identified and the concentration is less than the reporting limit (RL) but greater than the method detection limit (MDL).
U^ = Lab flag updated by MES data reviewer; analyte is not detected above the RL.

Validation Qualifiers (Validation codes consist of a validation qualifier and sub-qualifier(s) and are delineated with parenthesis):

J = Estimated detection. The associated numerical value is the approximate concentration of the analyte in the sample.
U = Result was qualified as not detected above the level of the reporting limit or reported sample quantitation limit.
UJ = Analyte was analyzed for, but was not detected. The reported quantitation limit is estimated.

Validation Sub-qualifiers:

B = Result was qualified based on method blank or continuing calibration blank contamination.
M = The MS and MSD recoveries were outside laboratory historical control limits.

Table 5-2: Summary of Miscellaneous and Geotechnical Results for Surface Soil
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Parameter Name	Units	R30-88Q-003	R30-88Q-008	R30-88Q-009	R30-88Q-010	R30-102Q-001	R30-102Q-002
		(0 - 0.5 ft bgs)	(0 - 0.5 ft bgs)	(0 - 0.5 ft bgs)	(0 - 0.5 ft bgs)	(0 - 0.5 ft bgs)	(0 - 0.5 ft bgs)
		9/2/2004	9/2/2004	9/2/2004	9/2/2004	9/2/2004	9/2/2004
Miscellaneous							
TOC	mg/kg	< 1340	< 1310	< 1120	< 1140	< 1110	< 1150
Moisture	%	25.3	23.4	11.1	12.3	9.9	12.8
Grain Size							
Clay	%	10.53	6.04	6.82	9.21	13.64	13.94
Gravel	%	ND	ND	ND	ND	ND	ND
Sand, Coarse	%	ND	ND	ND	ND	ND	ND
Sand, Fine	%	43.62	56.14	41.66	49.22	46.71	53.81
Sand, Medium	%	35.73	25.35	37.45	31.21	25	21.21
Silt	%	10.11	12.47	14.07	10.36	14.66	11.04
Median Grain Size	mm	0.318	0.299	0.323	0.288	0.221	0.232
Silt & Clay	%	20.65	18.51	20.89	19.57	28.3	24.98

Notes:

< = The result was not detected at the concentration shown.

ft bgs = Sample depth in feet below ground surface.

mg/kg = milligrams per kilogram

mm = millimeter

ND = Not detected

% = Percent

Table 5-3: Summary of Metals and Explosives Analytical Results for Subsurface Soil
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Parameter Name	Units	R30-88Q-003	R30-88Q-011	R30-88Q-012	R30-102Q-001	R30-102Q-002	R30-103Q-001	R30-103Q-002	R30-103Q-003	R30-103Q-004	R30-103Q-005	R30-103Q-006	R30-103Q-007
		(0.5-1.5 ft bgs)	(0.5-1.5 ft bgs)	(0.5-1.5 ft bgs)	(0.5-1.5 ft bgs)	(0.5-1.5 ft bgs)	(0.5-1.5 ft bgs)	(0.5-1.5 ft bgs)	(0.5-1.5 ft bgs)	(0.5-1.5 ft bgs)	(0.5-1.5 ft bgs)	(0.5-1.5 ft bgs)	(0.5-1.5 ft bgs)
		9/2/2004	8/20/2014	8/20/2014	9/2/2004	9/2/2004	8/21/2014	8/21/2014	8/21/2014	8/21/2014	8/21/2014	8/20/2014	8/20/2014
Metals													
Aluminum	mg/kg	13800	14300	7700	21700	26100	19500	11100	15100	11100	3930	21900	5220
Antimony	mg/kg	3.48 J	< 0.53	0.82	11.2 U^ (UB)	12.4 U^ (UB)	0.258 J	< 0.522	0.805	< 0.52	0.375 J	< 0.547	2.59
Arsenic	mg/kg	5.01	6.04	2.26	5.05	6.46	6	2.49	23.9	5.32	1.31	6.2	1.59
Barium	mg/kg	23.3	22.1	96.9	46.9	33.9	63.3	22.6	80	40.9	48	73.8	59.6
Beryllium	mg/kg	0.272 J	0.202 J	0.464 J	0.415 J	0.395 J	0.396 J	0.132 J	0.354 J	0.222 J	0.219 J	0.415 J	0.289 J
Cadmium	mg/kg	< 1.11	0.170 J	0.149 J	< 1.12	< 1.24	0.232 J	0.135 J	0.474 J	0.182 J	0.113 J	0.229 J	0.105 J
Calcium	mg/kg	99.4 J	66.4 J	138	273	87.8 J	246	292	76.1 J	149	121	203	222
Chromium	mg/kg	12.4	21.2	6.67	22	18.4	29.2	12	87.1	12.6	10	18	4.86
Cobalt	mg/kg	< 2.79	0.936	2.45	2.92	2.11 J	5.56	1.09	4.04	2.29	2.56	6.82	2.83
Copper	mg/kg	54	9.44	15.7	89.2	10	6.34	5.37	9.89	3.59	5.41	7.99	66.3
Iron	mg/kg	8730	16000	4590	12800	16900	16800	8380	55300	11500	2510	18300	3140
Lead	mg/kg	308	8.03	89.4	460	11.3	13.6	8.86	34.8	8.72	23.7	18.7	464
Magnesium	mg/kg	362	238	344	676	553	558	225	202	255	218	581	257
Manganese	mg/kg	89.6	124	567	227	135	221	170	451	534	204	379	303
Mercury	mg/kg	< 0.111	0.0349 J	0.0316 J	0.0637 J	< 0.124	0.158	0.0477 J	0.0834 J	0.0542 J	< 0.102	0.0827 J	0.026 J
Nickel	mg/kg	4.85	4.34	6.81	12.4	10.6	8.24	11.7	7.24	4.08	6.2	8.87	16.4
Potassium	mg/kg	887	238	173	572	572 J	437	274	210	295	130	546	173
Selenium	mg/kg	< 1.11	0.121 J	0.168 J	< 1.12	< 1.24	0.213 J	< 0.522	0.364 J	0.128 J	< 0.494	0.231 J	0.131 J
Silver	mg/kg	< 2.79	< 0.53	< 0.515	< 2.81	< 3.09	< 0.526	< 0.522	0.119 J	< 0.52	< 0.494	< 0.547	< 0.502
Sodium	mg/kg	35.5 J	< 106	< 103	28.7 J	43.4 J	< 105	< 104	< 114	< 104	< 98.9	< 109	< 100
Thallium	mg/kg	< 2.23	0.111 J	< 0.515	< 2.25	< 2.48	0.199 J	0.113 J	0.204 J	0.119 J	< 0.494	0.263 J	< 0.502
Vanadium	mg/kg	21.3	34.9	9.96	27.9	36.3	33.1	20.7	89.7	26.3	5.45	39.1	7.15
Zinc	mg/kg	17	10.3	14.1	35.1	24.7	17.2	7.07	18.8	9.33	6.54	19.5	19.6
Explosives													
1,3,5-Trinitrobenzene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400
1,3-Dinitrobenzene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400
2,4,6-Trinitrotoluene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400
2,4-Dinitrotoluene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400
2,6-Dinitrotoluene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400
2-Amino-4,6-Dinitrotoluene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400
2-Nitrotoluene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400
3-Nitrotoluene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400
4-Amino-2,6-Dinitrotoluene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400
4-Nitrotoluene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400
HMX	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400
Nitrobenzene	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400
RDX	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400
Tetryl	µg/kg	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400	< 400

Notes:
< = The result was not detected at the concentration shown.
ft bgs = Sample depth in feet below ground surface.
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram

**Table 5-3: Summary of Metals and Explosives Analytical Results for Subsurface Soil
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Lab Flags:

J = Estimated value. The analyte is positively identified and the concentration is less than the reporting limit (RL) but greater than the method detection limit (MDL).
U^ = Lab flag updated by MES data reviewer; analyte is not detected above the RL.

Validation Qualifiers (Validation codes consist of a validation qualifier and sub-qualifier(s) and are delineated with parenthesis):

U = Result was qualified as not detected above the level of the reporting limit or reported sample quantitation limit.

Validation Sub-qualifiers:

B = Result was qualified based on method blank, continuing calibration blank, and/or trip blank contamination.

**Table 5-4: Summary of Miscellaneous and Geotechnical Results for Subsurface Soil
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Parameter Name	Units	R30-88Q-003	R30-102Q-001	R30-102Q-002
		(0.5 - 1.5 ft bgs)	(0.5 - 1.5 ft bgs)	(0.5 - 1.5 ft bgs)
		9/2/2004	9/2/2004	9/2/2004
Miscellaneous				
TOC	mg/kg	1050 J	< 1120	< 1240
Moisture	%	10.3	11.1	19.2
Grain Size				
Clay	%	14.01	11.25	16.58
Gravel	%	ND	ND	ND
Sand, Coarse	%	ND	ND	ND
Sand, Fine	%	46.29	49.13	44.34
Sand, Medium	%	26.21	23.09	28.98
Silt	%	13.49	16.52	10.1
Median Grain Size	mm	0.239	0.218	0.242
Silt & Clay	%	27.51	27.78	26.67

Notes:

< = The result was not detected at the concentration shown.

ft bgs = Sample depth in feet below ground surface.

mg/kg = milligrams per kilogram

mm = millimeter

ND = Not detected

% = Percent

Lab Flags:

J = Estimated value. The analyte is positively identified and the concentration is less than the

Table 5-5: Metal Contaminants in Surface Soil Compared to PSVs and ESVs
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Surface Soil Contaminants	Units	RS PSV	Ind/Com PSV	ESV	R30-88Q-003 (0-0.5 ft bgs) 9/2/2004	R30-88Q-010 (0-0.5 ft bgs) 9/2/2004	R30-88Q-012 (0-0.5 ft bgs) 8/20/2014	R30-88Q-014 (0-0.5 ft bgs) 8/20/2014	R30-88Q-015 (0-0.5 ft bgs) 8/21/2014	R30-88Q-016 (0-0.5 ft bgs) 8/20/2014
Antimony	mg/kg	3.1	47	0.27	--	2.29 J (JM)	2.48 (JM)	3.04	0.479 J	2.78
Copper	mg/kg	310	4700	28	53.5	24.4	134	83.9	39.3	180
Lead	mg/kg	400	800	11	307	121	612	578	178	634
Nickel	mg/kg	150	2200	38	--	--	--	--	--	--
Selenium	mg/kg	39	580	0.52	--	--	--	--	--	--

Surface Soil Contaminants	Units	RS PSV	Ind/Com PSV	ESV	R30-88Q-017 (0-0.5 ft bgs) 8/20/2014	R30-88Q-018 (0-0.5 ft bgs) 8/20/2014	R30-102Q-001 (0-0.5 ft bgs) 9/2/2004	R30-102Q-002 (0-0.5 ft bgs) 9/2/2004	R30-103Q-005 (0-0.5 ft bgs) 8/21/2014	R30-103Q-007 (0-0.5 ft bgs) 8/20/2014
Antimony	mg/kg	3.1	47	0.27	0.644 (JM)	0.372 J	--	--	0.845	5.62
Copper	mg/kg	310	4700	28	38.6	55.3	57.6	13.9	25.6	263
Lead	mg/kg	400	800	11	212	407	358	27.6	194	1480
Nickel	mg/kg	150	2200	38	--	--	--	--	--	42.4
Selenium	mg/kg	39	580	0.52	--	--	--	0.612 J	--	--

Surface Soil Contaminants	Units	RS PSV	Ind/Com PSV	ESV	R30-103Q-011 (0-0.5 ft bgs) 8/21/2014	R30-103Q-015 (0-0.5 ft bgs) 8/21/2014	R30-103Q-016 (0-0.5 ft bgs) 8/20/2014
Antimony	mg/kg	3.1	47	0.27	0.921	2.69	0.593
Copper	mg/kg	310	4700	28	16.2	64.6	42.4
Lead	mg/kg	400	800	11	78.7	336	137
Nickel	mg/kg	150	2200	38	--	--	--
Selenium	mg/kg	39	580	0.52	--	--	--

Notes:

-- = not detected or not considered a contaminant
 ESV = Ecological Screening Value
 ft bgs = feet below ground surface.
 Ind/Com = Industrial/Commercial

mg/kg = milligrams per kilogram
 PSV = Preliminary screening value
 RS = Residential

Result > RS PSV
 Result > Ind/Com PSV
 Result > ESV

Lab Flags:

J = Estimated value. The analyte is positively identified and the concentration is less than the reporting limit (RL) but greater than the method detection limit (MDL).

**Table 5-5: Metal Contaminants in Surface Soil Compared to PSVs and ESVs
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Validation Qualifiers (Validation codes consist of a validation qualifier and sub-qualifier(s) and are delineated with parenthesis):

J = Estimated detection. The associated numerical value is the approximate concentration of the analyte in the sample.

Validation Sub-qualifiers:

M = The MS and MSD recoveries were outside laboratory historical control limits.

**Table 5-6: Metal Contaminants in Subsurface Soil Compared to PSVs and ESVs
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Subsurface Soil Contaminants	Units	RS PSV	Ind/ Com PSV	ESV	R30-88Q-003 (0.5-1.5 ft bgs) 9/2/2004	R30-88Q-012 (0.5-1.5 ft bgs) 8/20/2014	R30-102Q-001 (0.5-1.5 ft bgs) 9/2/2004	R30-103Q-003 (0.5-1.5 ft bgs) 8/21/2014	R30-103Q-005 (0.5-1.5 ft bgs) 8/21/2014	R30-103Q-007 (0.5-1.5 ft bgs) 8/20/2014
Antimony	mg/kg	3.1	47	0.27	3.48 J	0.82	--	0.805	0.375 J	2.59
Copper	mg/kg	310	4700	28	54	15.7	89.2	--	5.41	66.3
Lead	mg/kg	400	800	11	308	89.4	460	34.8	23.7	464

Notes:

-- = not detected or not considered a contaminant

ESV = Ecological Screening Value

ft bgs = feet below ground surface.

Ind/Com = Industrial/Commercial

mg/kg = milligrams per kilogram

PSV = Preliminary screening value

RS = Residential

Result > RS PSV

Result > Ind/Com PSV

Result > ESV

Lab Flags:

J = Estimated value. The analyte is positively identified and the concentration is less than the reporting limit (RL) but greater than the method detection limit (MDL).

**Table 7-1: Exposure Domains
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Exposure Domain	AOI	Size in acres	Land Use	Receptor	Contaminated Media	Exposure Pathway/ROE
Current Site Use						
1	1 & 2	10.0	passive recreation	Trespasser/ Recreational	Surface Soil	incidental ingestion, dermal contact
Future Site Use						
2	1	8.7	passive recreation	Trespasser/ Recreational	Surface Soil	incidental ingestion, dermal contact
					Subsurface Soil*	incidental ingestion, dermal contact
3	2	1.3	industrial / office park	Commercial worker	Total Soil ⁽¹⁾	incidental ingestion, dermal contact, inhalation of particulates
4	2	1.3	industrial / office park	Construction worker	Total Soil ⁽¹⁾	incidental ingestion, dermal contact, inhalation of particulates
5	1 & 2	10.0	Residential **	Resident*	Total Soil ⁽¹⁾	incidental ingestion, dermal contact

Notes:

AOI = Area of interest (See Figure 7-3 for locations of AOIs)

ROE = Route of exposure

* Pathway is evaluated to assess need for institutional controls but expected to be controlled or incomplete based on projected land use.

** Although the Site is not expected to be used for residential purposes, the resident was also evaluated to assess the potential for unrestricted land use.

⁽¹⁾ The resident, commercial worker, and construction worker receptors under the future Site-use scenarios are assumed to be exposed to total soil to reflect the potential for construction or development to bring subsurface soil to the surface.

**Table 7-2: Representative Concentrations
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

ED#	Site Use / Receptor	Contaminated Media	Samples used in Risk Evaluation	COPC	RC (mg/kg)	Basis
1	Current Site Use / Trespasser/ Recreational	Surface Soil	R30-88Q-003 (0-0.5), R30-88Q-012 (0-0.5), R30-88Q-014 (0-0.5), R30-88Q-016 (0-0.5), R30-88Q-018 (0-0.5), R30-102Q-001 (0-0.5), R30-102Q-002 (0-0.5), R30-103Q-007 (0-0.5), R30-103Q-016 (0-0.5)	antimony	3.9	95% UCL 95% KM (t)
				lead	766	95% UCL 95% Student's-t
2	Future Site Use / Trespasser/ Recreational	Surface Soil	R30-88Q-012 (0-0.5), R30-88Q-014 (0-0.5), R30-88Q-016 (0-0.5), R30-88Q-018 (0-0.5), R30-103Q-007 (0-0.5), R30-103Q-016 (0-0.5)	antimony	4.1	95% UCL 95% Student's-t
				lead	1000	95% UCL 95% Student's-t
		Subsurface Soil	R30-88Q-012 (0.5-1.5), R30-103Q-007 (0.5-1.5)	antimony	3.5*	MDC small data set
				lead	464*	MDC small data set
3	Future Site Use / Commercial Worker	Total Soil	R30-88Q-003 (0-0.5), R30-102Q-001 (0-0.5), R30-102Q-002 (0-0.5); R30-88Q-003 (0.5-1.5), R30-102Q-001 (0.5-1.5), R30-102Q-002 (0.5-1.5)	antimony	3.5	MDC only one detection
				lead	400	95% UCL 95% Student's-t
4	Future Site Use / Construction Worker	Total Soil	R30-88Q-003 (0-0.5), R30-102Q-001 (0-0.5), R30-102Q-002 (0-0.5); R30-88Q-003 (0.5-1.5), R30-102Q-001 (0.5-1.5), R30-102Q-002 (0.5-1.5)	antimony	3.5	MDC 95% Student's-t
				lead	396	95% UCL 95% Student's-t
5	Future Site Use / Resident	Total Soil	R30-88Q-003 (0-0.5), R30-88Q-012 (0-0.5), R30-88Q-014 (0-0.5), R30-88Q-016 (0-0.5), R30-88Q-018 (0-0.5), R30-102Q-001 (0-0.5), R30-102Q-002 (0-0.5), R30-103Q-007 (0-0.5), R30-103Q-016 (0-0.5); R30-88Q-003 (0.5-1.5), R30-88Q-012 (0.5-1.5), R30-102Q-001 (0.5-1.5), R30-102Q-002 (0.5-1.5), R30-103Q-007 (0.5-1.5)	antimony	3.4	95% UCL 95% KM (t)
				lead	600	95% UCL 95% Student's-t

Notes:

95% UCL = 95th percent upper confidence limit; see Appendix D for ProUCL evaluations.

COPC = Constituent of potential concern

ED = Exposure domain

MDC = maximum detected concentration

mg/kg = milligrams per kilogram

RC = Representative concentration

RCs shown to two significant figures

* Because there were not enough sample points in the exposure domain to calculate a 95% UCL, the MDC is used for the RC.

**Table 7-3: Human Health Cumulative Risk
Range 30 Impact Area
McClellan, Anniston, Alabama**

Current Site Use - Trespasser/Recreational (Exposure Domain 1)							
HH COPCs	RC (mg/kg)	Ingestion		Dermal Contact		Sum of ILCR	Sum of HQ (HI)
		ILCR	HQ	ILCR	HQ		
Surface Soil							
Antimony	3.1	NA	1.65E-02	NA	1.88E-04	NA	1.67E-02
Cumulative Risk		NA	1.65E-02	NA	1.88E-04	NA	0.02

Future Site Use - Trespasser/Recreational (Exposure Domain 2)							
HH COPCs	RC (mg/kg)	Ingestion		Dermal Contact		Sum of ILCR	Sum of HQ (HI)
		ILCR	HQ	ILCR	HQ		
Surface Soil							
Antimony	4.1	NA	2.16E-02	NA	2.46E-04	NA	2.18E-02
Subsurface Soil							
Antimony *	2.6	NA	1.38E-02	NA	1.57E-04	NA	1.40E-02
Cumulative Risk		NA	3.54E-02	NA	4.03E-04	NA	0.04

Future Site Use - Commercial Worker (Exposure Domain 3)							
HH COPCs	RC (mg/kg)	Ingestion		Dermal Contact		Sum of ILCR	Sum of HQ (HI)
		ILCR	HQ	ILCR	HQ		
Total Soil							
Antimony	2.4	NA	4.40E-03	NA	6.69E-05	NA	4.47E-03
Cumulative Risk		NA	4.40E-03	NA	6.69E-05	NA	0.004

Future Site Use - Construction Worker (Exposure Domain 4)							
HH COPCs	RC (mg/kg)	Ingestion		Dermal Contact		Sum of ILCR	Sum of HQ (HI)
		ILCR	HQ	ILCR	HQ		
Total Soil							
Antimony	2.4	NA	1.04E-02	NA	6.69E-05	NA	1.05E-02
Cumulative Risk		NA	1.04E-02	NA	6.69E-05	NA	0.01

Future Site Use - Resident - Adult (Exposure Domain 5a)							
HH COPCs	RC (mg/kg)	Ingestion		Dermal Contact		Sum of ILCR	Sum of HQ (HI)
		ILCR	HQ	ILCR	HQ		
Total Soil							
Antimony	3.0	NA	1.03E-02	NA	4.10E-05	NA	1.03E-02
Cumulative Risk		NA	1.03E-02	NA	4.10E-05	NA	0.01

Future Site Use - Resident - Child (Exposure Domain 5b)							
HH COPCs	RC (mg/kg)	Ingestion		Dermal Contact		Sum of ILCR	Sum of HQ (HI)
		ILCR	HQ	ILCR	HQ		
Total Soil							
Antimony	3.0	NA	9.59E-02	NA	2.68E-04	NA	9.62E-02
Cumulative Risk		NA	9.59E-02	NA	2.68E-04	NA	0.10

Notes:

95% UCL = 95th percent upper confidence limit

mg/kg = milligrams per kilogram

HH COPC = Human health constituent of potential concern

HI = Hazard index

Table 7-3: Human Health Cumulative Risk
Range 30 Impact Area
McClellan, Anniston, Alabama

HQ = Hazard quotient

ILCR = Incremental lifetime cancer risk

MDC = maximum detected concentration

NA = Not applicable

RC = Representative concentration

* Because there were not enough sample points in the exposure domain to calculate a 95% UCL, the MDC was used for the RC.

**Table 7-4: Human Health Lead Risk Assessment
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

ALM	Units	PRG*	ED #1	ED #2		ED #3	ED #4
			Surface Soil RC	Surface Soil RC	Subsurface Soil RC	Total Soil RC	Total Soil RC
Lead	mg/kg	2240	766	1012	464	396	396

IEUBK	Units	Target PbB**	ED #5						
			Years						
			0.5-1	1-2	2-3	3-4	4-5	5-6	6-7
PbB	µg/dL	10	6.6	7.7	7.2	6.9	5.6	4.7	4.1

Notes:

ALM = Adult Lead Model

ED = Exposure Domain

IEUBK = Integrated Exposure Uptake Biokinetic Model

mg/kg = milligrams per kilogram

PbB = lead blood level

PRG = Preliminary Remediation Goal

RC = Representative concentration

* PRG based on the default values specified in the EPA ALM spreadsheet
(version date 6/21/09); assuming PbB target risk of 10 µg/dL.

<http://www2.epa.gov/superfund/lead-superfund-sites-software-and-users-manuals#recommend>

** PbB level of concern, as per EPA (2009b)

ED# 1: Current Site Use - Trespasser/Recreational

ED# 2: Future Site Use - Trespasser/Recreational

ED# 3: Future Site Use - Commercial Worker

ED# 4: Future Site Use - Construction Worker

ED# 5: Future Site Use - Resident

**Table 8-1: Summary of Constituents of Potential Ecological Concern
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

COPECs	Units	ESV	Surface Soil MDC	Subsurface Soil MDC
Antimony	mg/kg	0.27	5.62	3.48
Copper	mg/kg	28	263	89.2
Lead	mg/kg	11	1480	464
Nickel	mg/kg	38	42.4	--
Selenium	mg/kg	0.52	0.612	--

Notes:

-- = not detected or not considered a contaminant

COPEC = Constituent of Potential Ecological Concern

ESV = Ecological Screening Value

mg/kg = milligrams per kilogram

MDC > ESV

**Table 8-2: Representative Concentrations for COPECs Compared to Eco-RBRGs and ESVs
Range 30 Impact Area, Parcels 88Q and 103Q,
McClellan, Anniston, Alabama**

COPEC	Units	Eco-RBRG	Total Soil RCs AOIs 1 & 2 *
Antimony	mg/kg	18	3.0
Copper	mg/kg	334	113
Lead	mg/kg	500	594
		ESV	
Nickel	mg/kg	38	18.2
Selenium	mg/kg	0.52	0.30

Notes:

-- = not applicable

COPEC = Constituent of Potential Ecological Concern

Eco-RBRG = Ecological Risk-Based Remedial Goal (Shaw, 2010)

ESV = Ecological Screening Value (EPA, 2003)

mg/kg = milligrams per kilogram

RC = Representative concentration

RC > Eco-RBRG or ESV

* Samples used in calculating RCs:

R30-88Q-003 (0-0.5)

R30-88Q-012 (0-0.5)

R30-88Q-014 (0-0.5)

R30-88Q-016 (0-0.5)

R30-88Q-018 (0-0.5)

R30-102Q-001 (0-0.5)

R30-102Q-002 (0-0.5)

R30-103Q-007 (0-0.5)

R30-103Q-016 (0-0.5)

R30-88Q-003 (0.5-1.5)

R30-88Q-012 (0.5-1.5)

R30-102Q-001 (0.5-1.5)

R30-102Q-002 (0.5-1.5)

R30-103Q-007 (0.5-1.5)

Figures

FIGURES

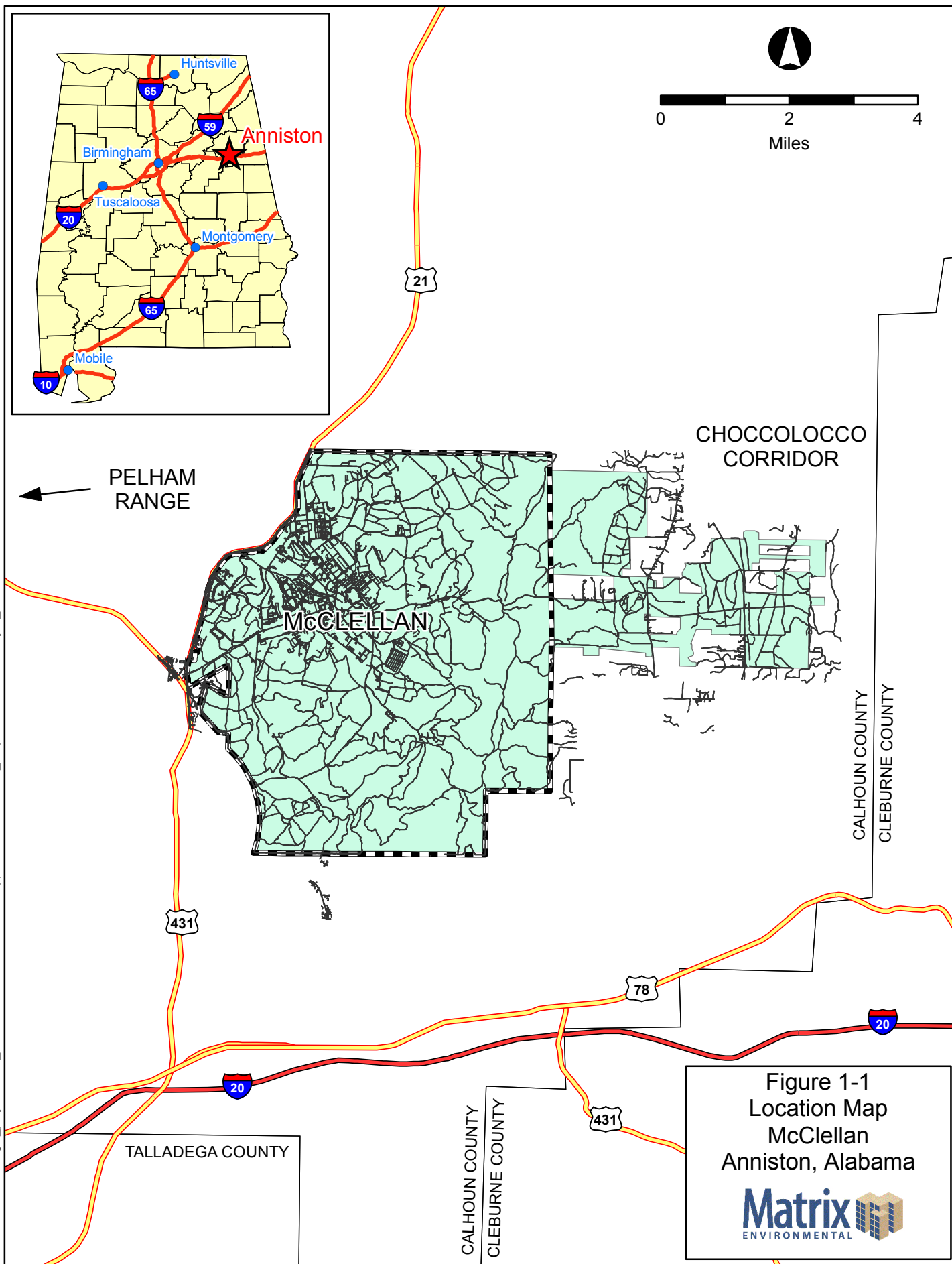


Figure 1-1
Location Map
McClellan
Anniston, Alabama

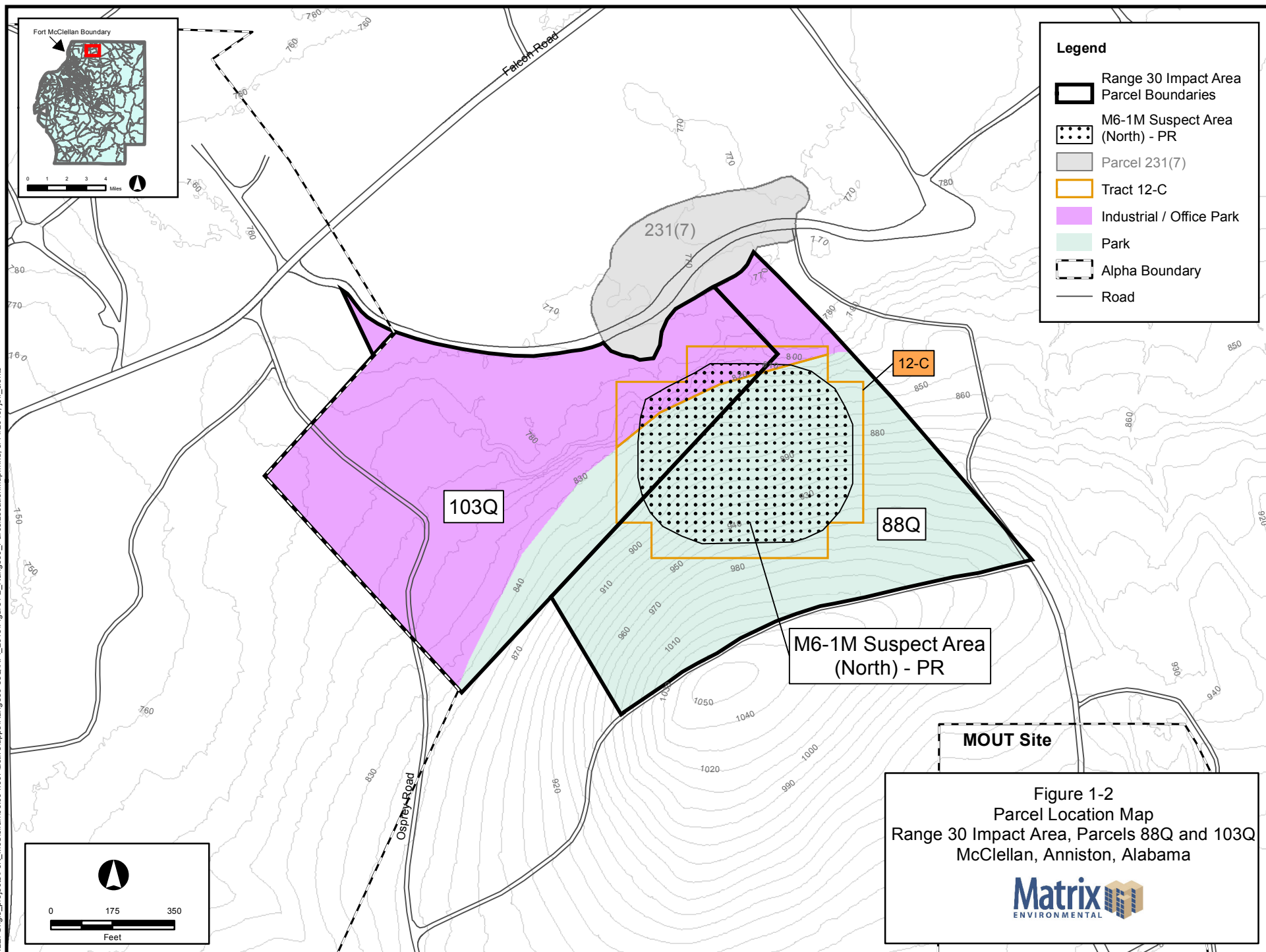
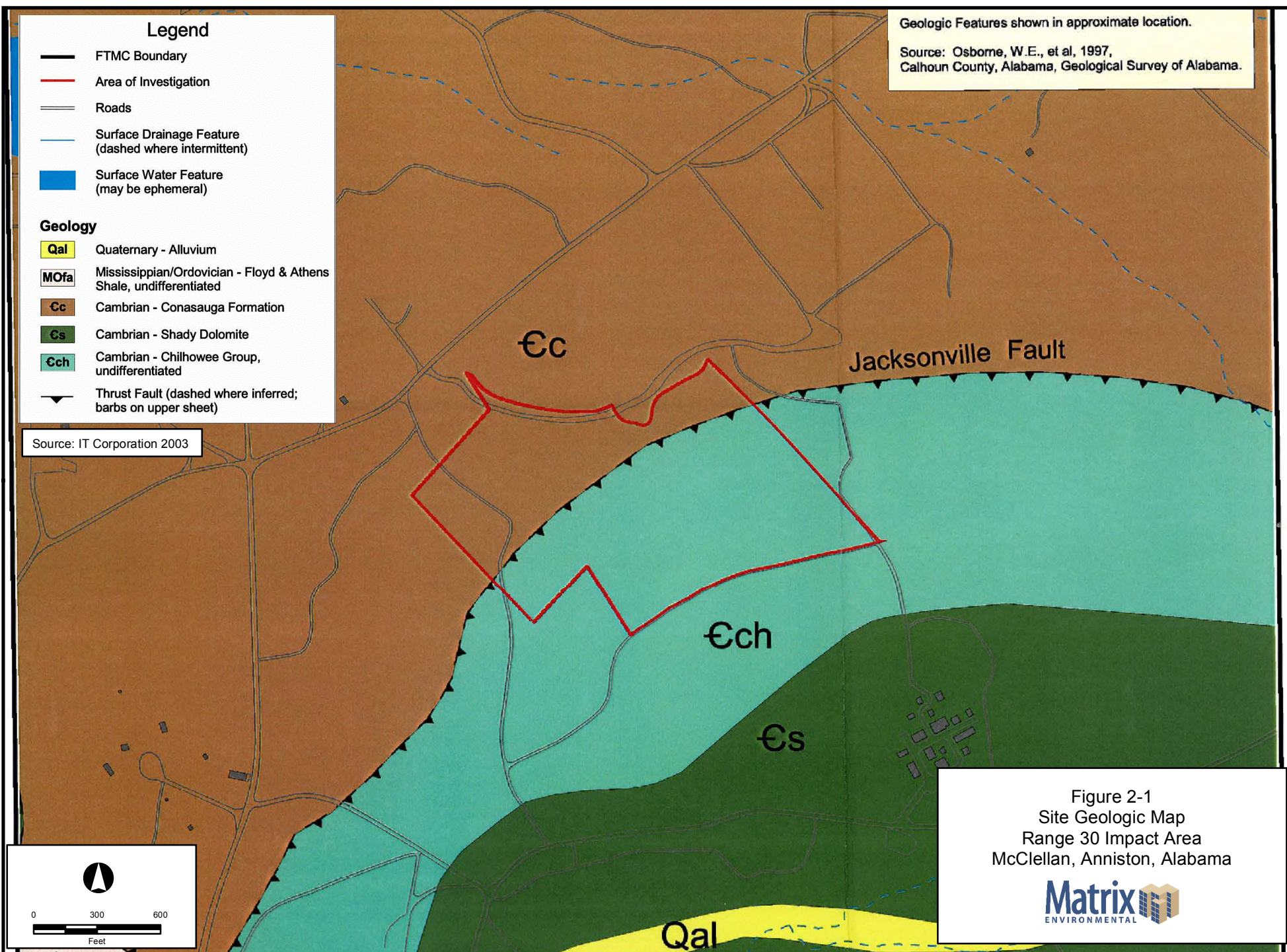
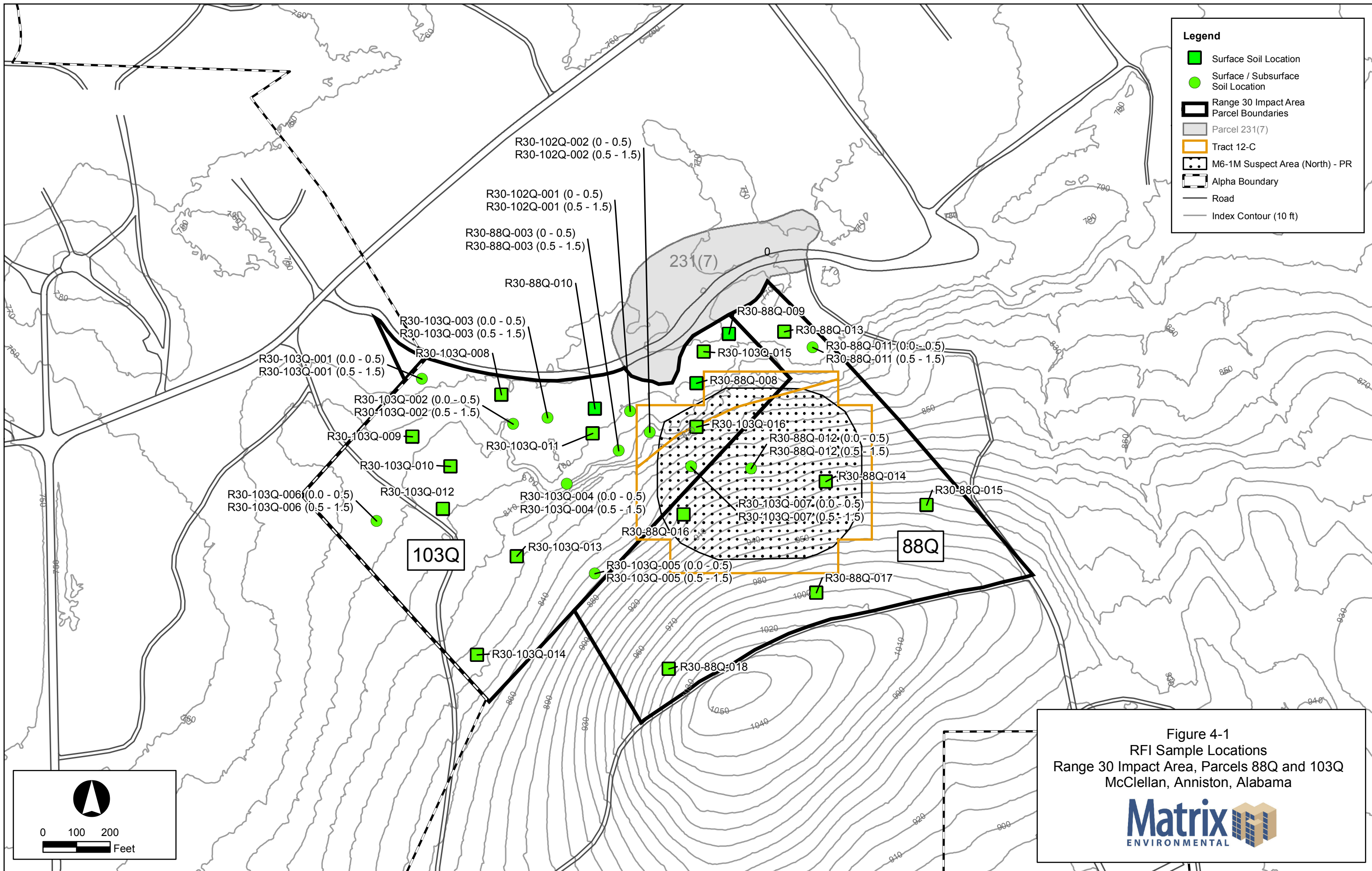


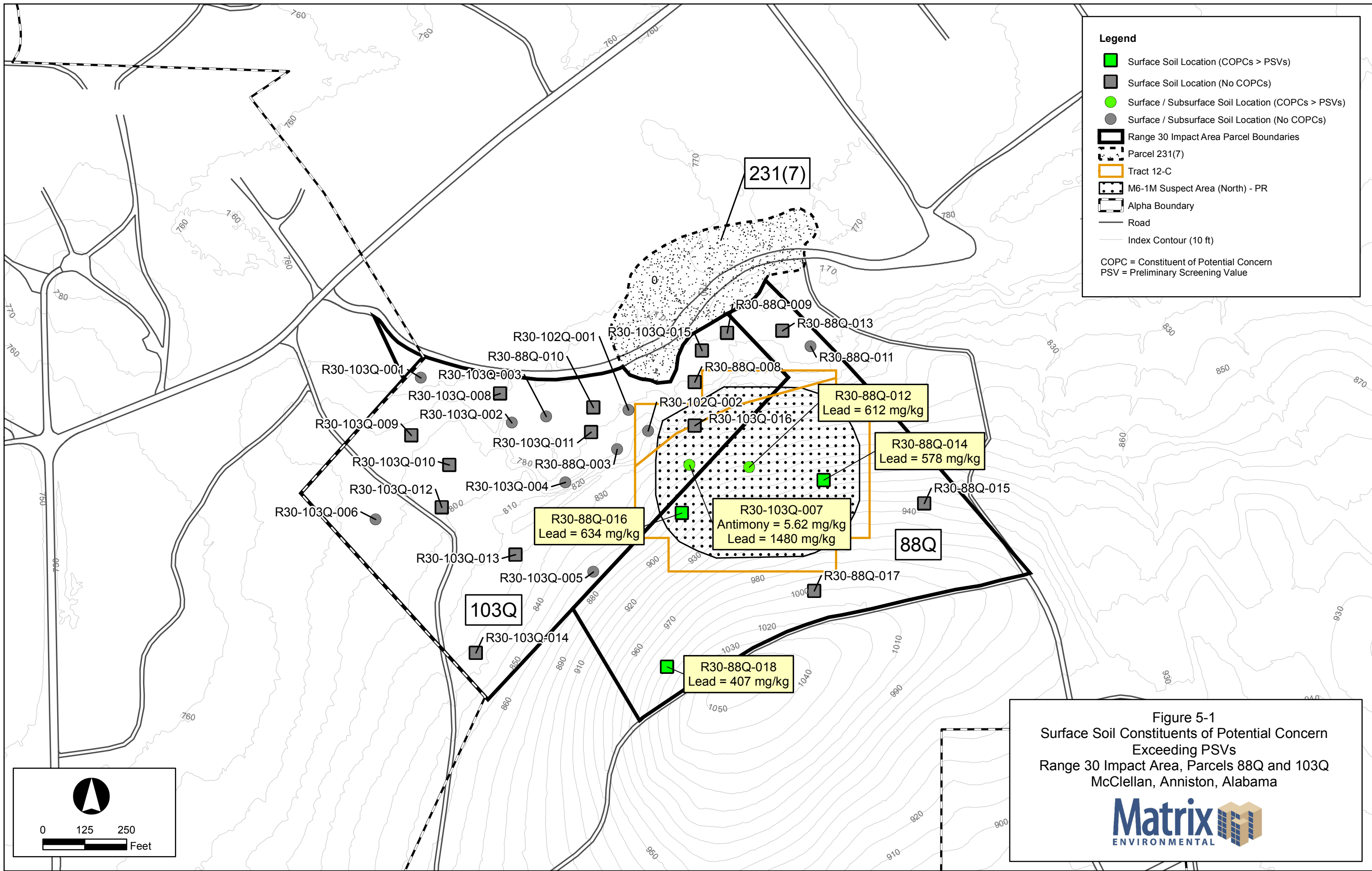
Figure 1-2
Parcel Location Map
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama



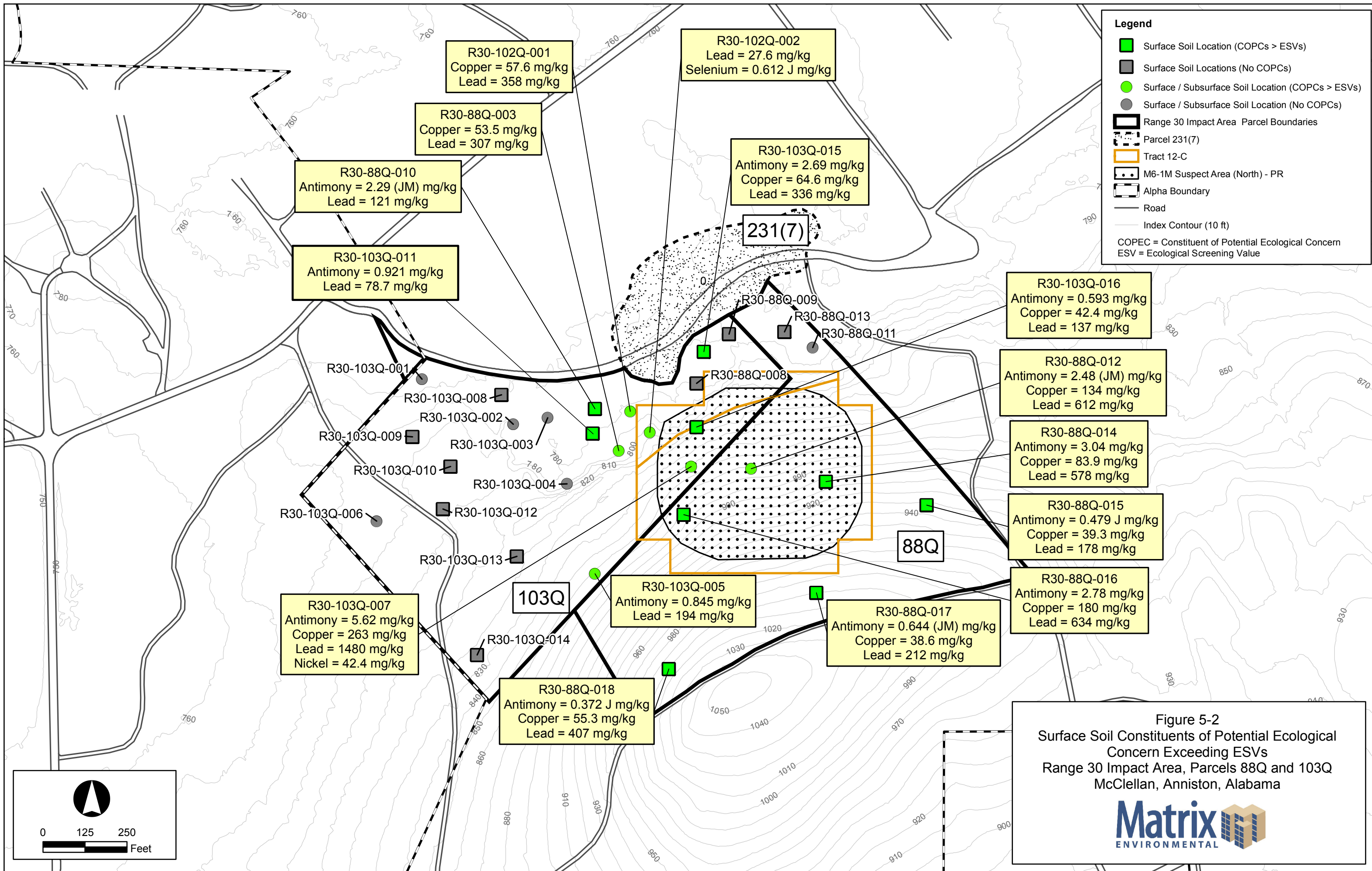
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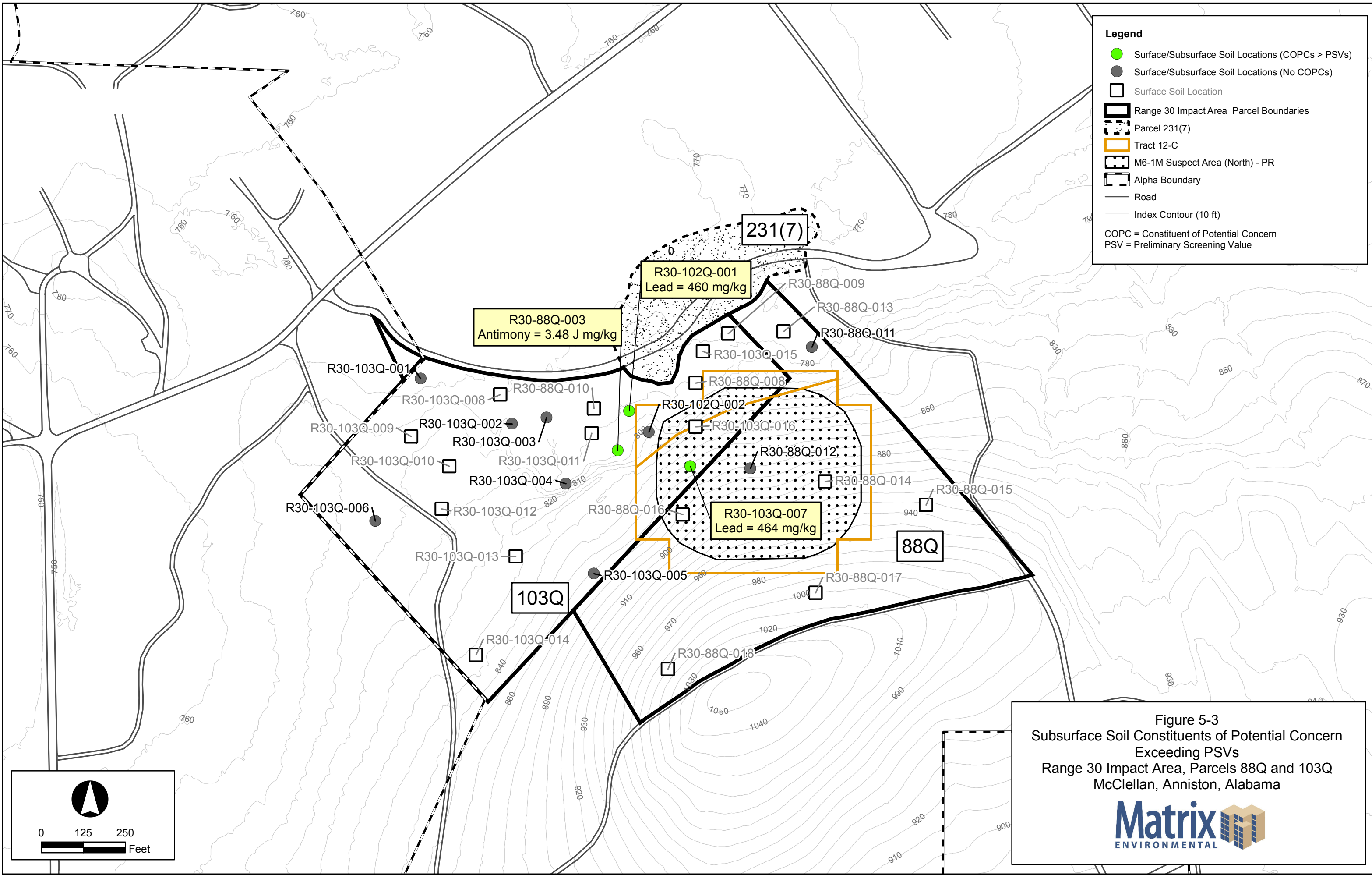
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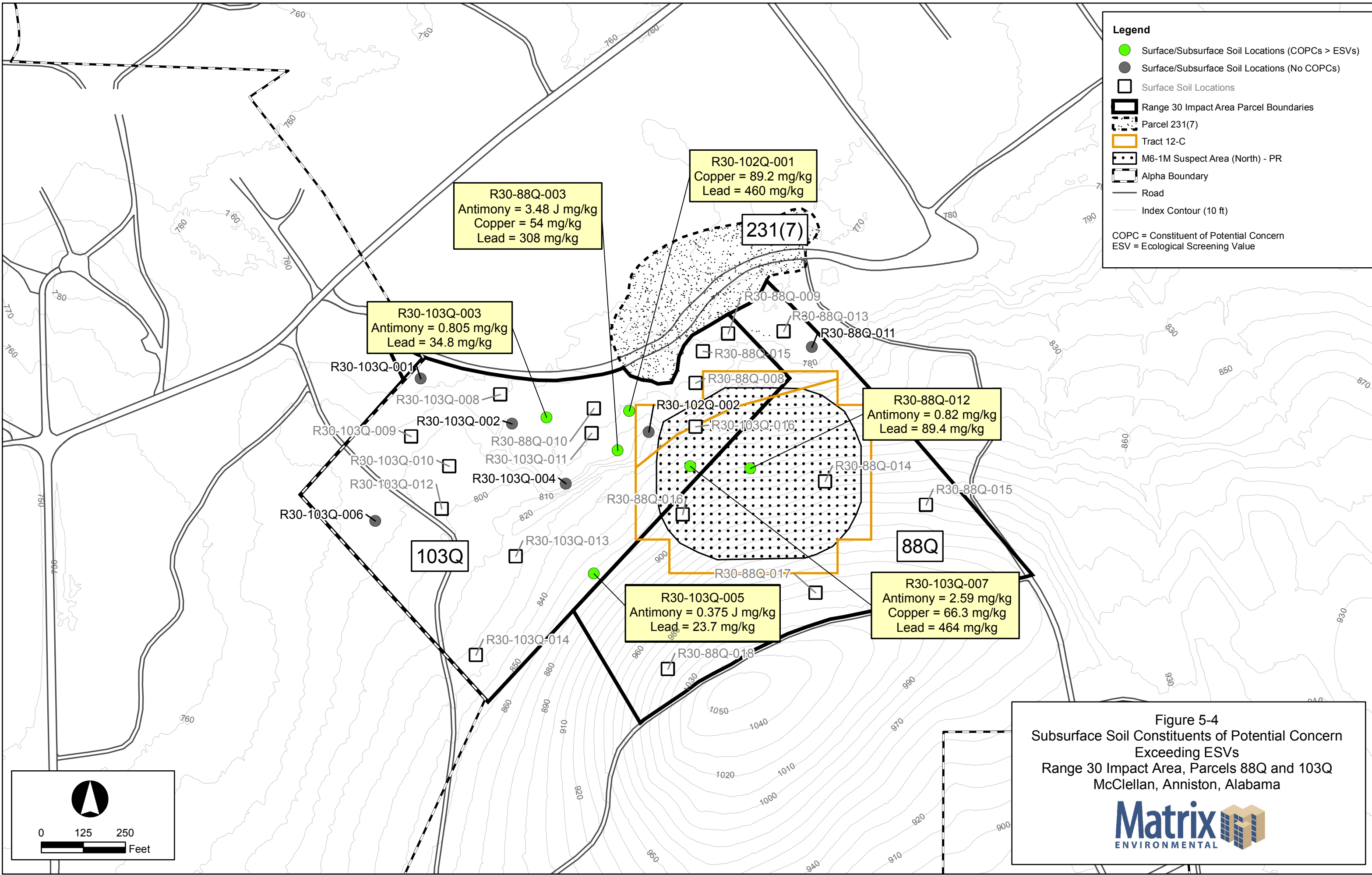


Figure 7-1. Human Health Risk Assessment Process
McClellan, Anniston, Alabama

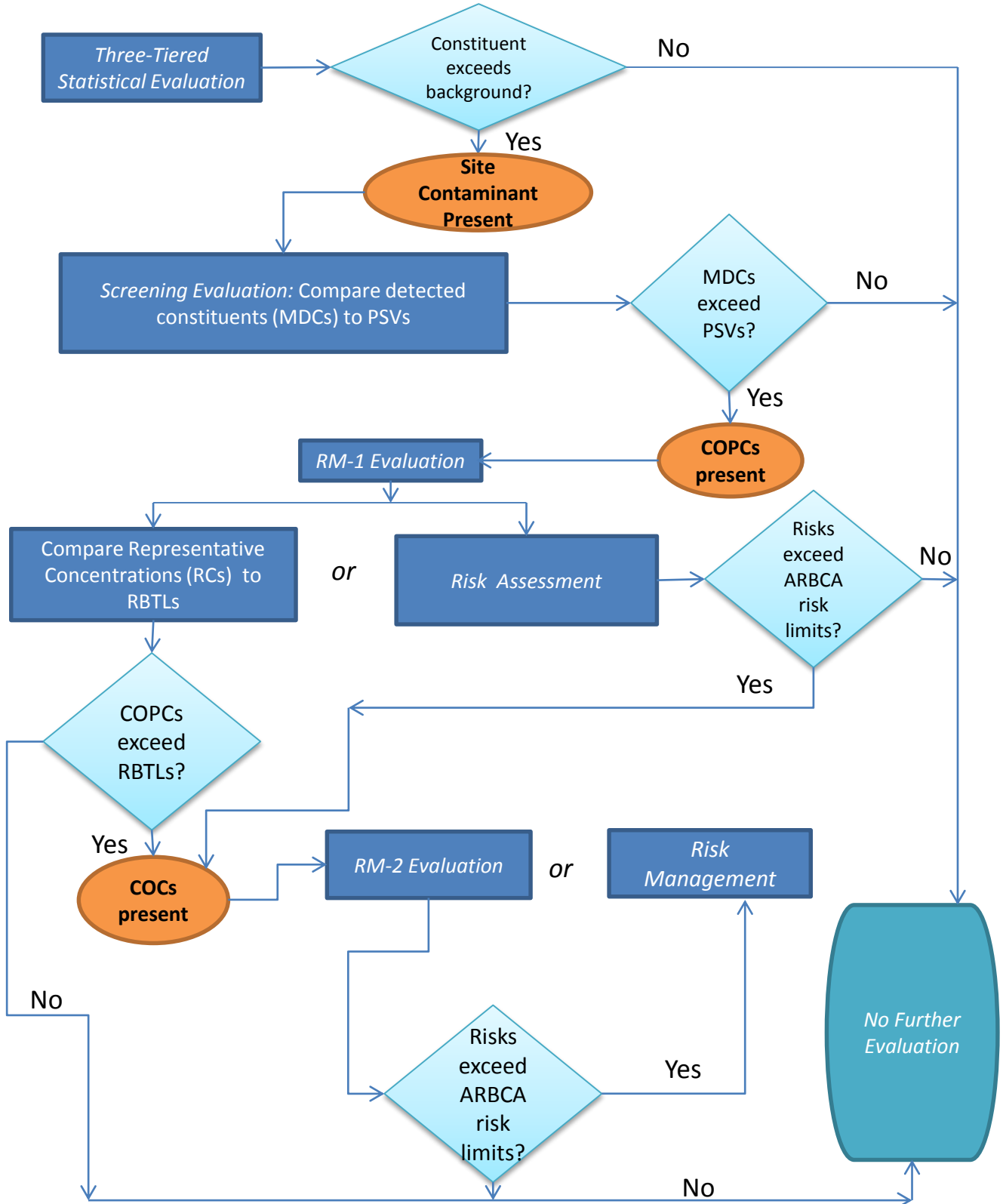
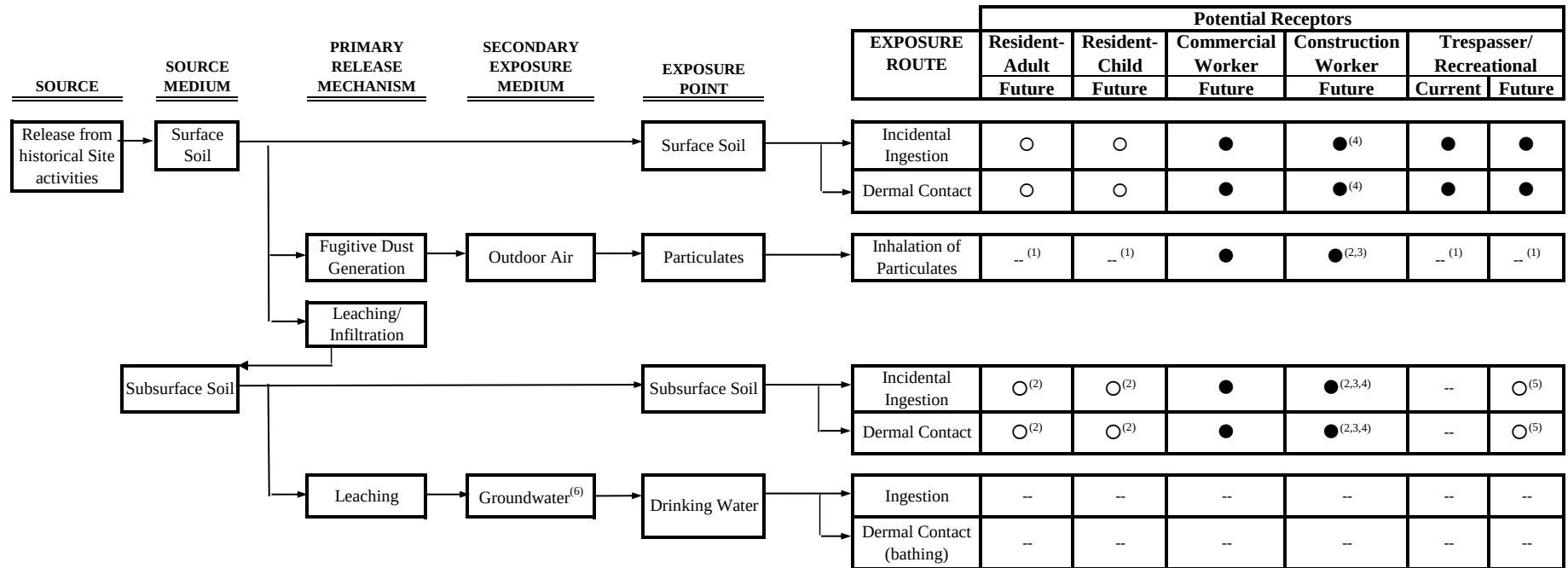


Figure 7-2. Human Health Conceptual Site Exposure Model
Range 30 Impact Area, Parcels 88Q and 103Q, McClellan, Anniston, Alabama



● = Potentially complete exposure pathway

○ = Pathway evaluated to assess need for institutional controls but expected to be controlled or incomplete based on projected land use.

-- = Incomplete or de minimis exposure pathway

(1) Exposure via inhalation of particulates for residents and trespassers is negligible compared with other soil exposures due to the low particulate volatilization factor (VF_p).

(2) Subsurface soil in areas targeted for redevelopment is assumed to potentially become surface soil as a result of construction/regrading activities during Site redevelopment.

(3) Construction worker pathways are incomplete in proposed park areas where no earthwork is planned.

(4) It is assumed that these exposures will be controlled via proper health and safety and soil management plans.

(5) Recreational contact pathways with subsurface soils are incomplete in proposed park areas where no earthwork is planned.

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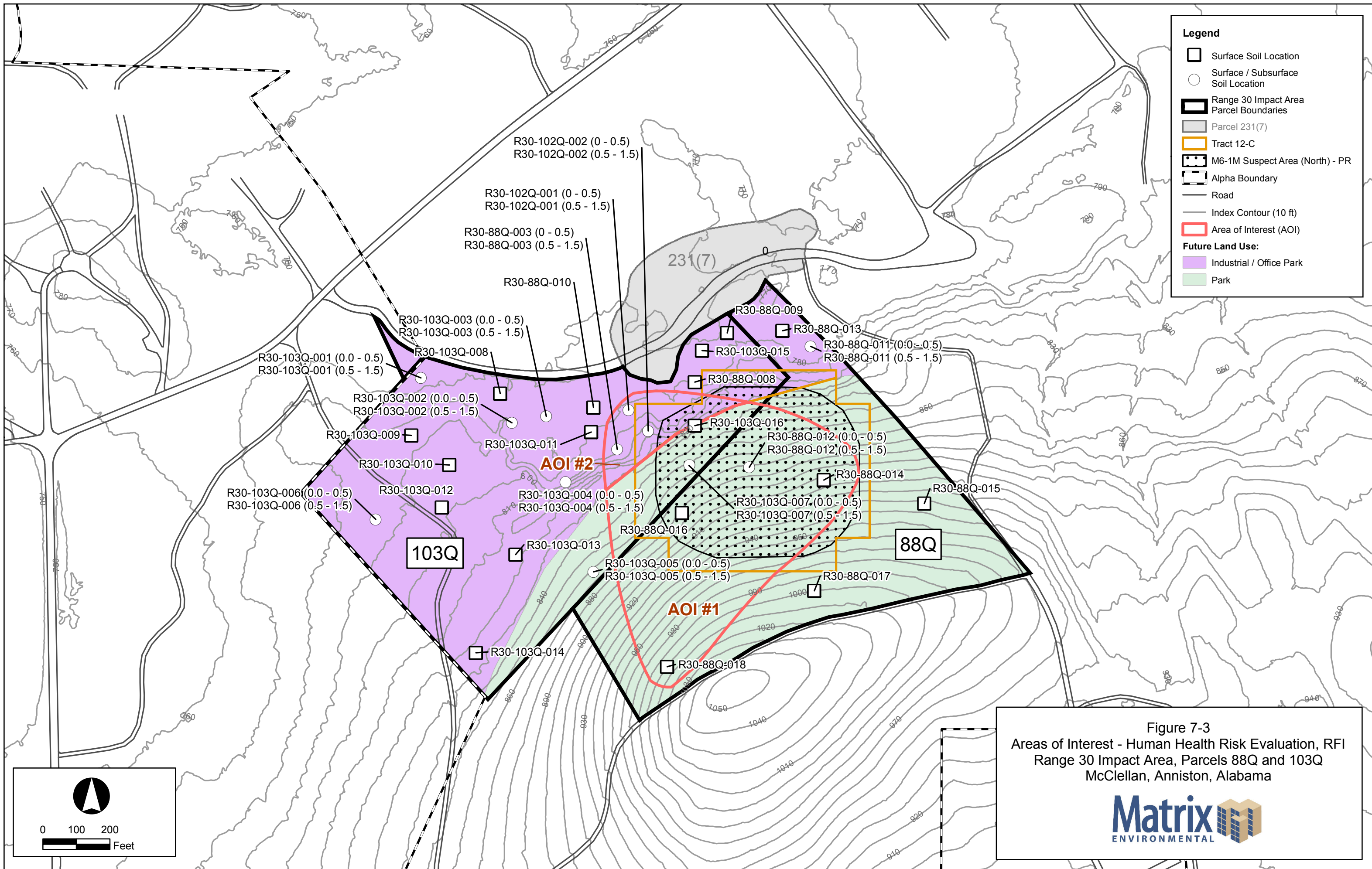
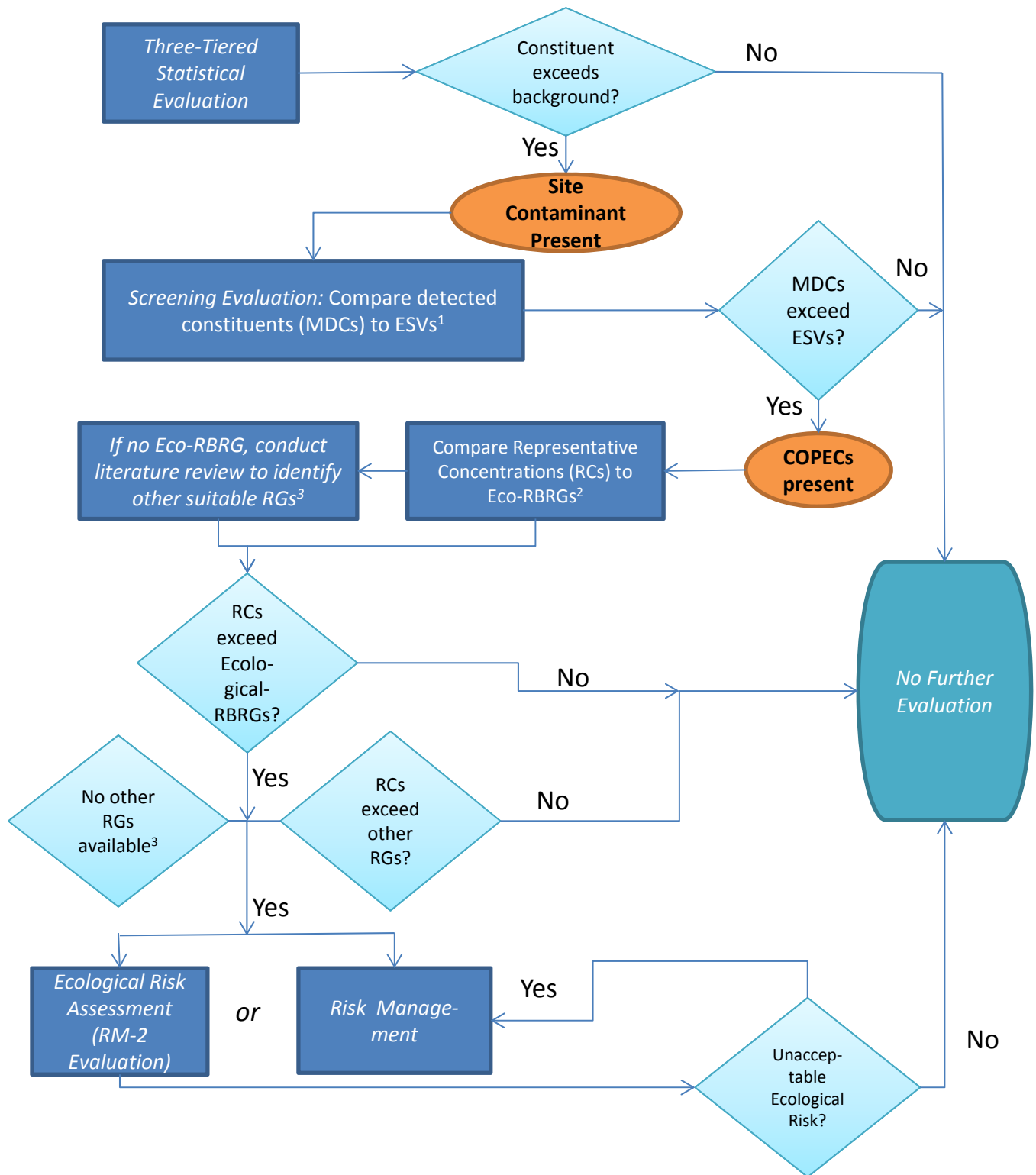


Figure 8-1. Ecological Risk Assessment Process
McClellan, Anniston, Alabama



¹Updated Ecological Screening Values for Fort McClellan Sites, Matrix Environmental Services, 2011.

²Eco-RBRGs calculated per *Final – Revision 2, Identification of Risk-Based Remedial Goals (RBRGs) – Iron Mountain Road and Bains Gap Road Ranges*, Shaw, May 2010.

³Other RGs should be clean-up levels or demonstrated risk-based concentrations, not other screening levels.

APPENDICES

APPENDIX A

Analytical Data

APPENDIX A1
Analytical Data for 2004 Samples

Appendix A1: 2004 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Reporting Units
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I038	I038-17	ASTM D422/D4464M	Sand, Fine	49.13	V	Z	--	--	%
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I038	I038-17	ASTM D422/D4464M	Clay	11.25	V	Z	--	--	%
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I038	I038-17	ASTM D422/D4464M	Silt	16.52	V	Z	--	--	%
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I038	I038-17	ASTM D422/D4464M	Median Grain Size	0.218	V	Z	--	--	millimeter
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I038	I038-17	ASTM D422/D4464M	Sand, Coarse	0	U	Z	--	--	%
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I038	I038-17	ASTM D422/D4464M	Gravel	0	U	Z	--	--	%
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I038	I038-17	ASTM D422/D4464M	Sand, Medium	23.09	V	Z	--	--	%
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I038	I038-17	ASTM D422/D4464M	Silt & Clay	27.78	V	Z	--	--	%
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW6010B	Nickel	12.4	V	Z	0.619	2.25	mg/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW6010B	Barium	46.9	V	Z	0.169	1.12	mg/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW6010B	Vanadium	27.9	V	Z	0.562	2.25	mg/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW6010B	Beryllium	0.415	J	Z	0.169	1.12	mg/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW6010B	Copper	89.2	V	Z	0.562	2.25	mg/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW6010B	Silver	2.81	U	Z	0.709	2.81	mg/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW6010B	Potassium	572	V	Z	84.4	562	mg/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW6010B	Antimony	11.2	U^	(UB)	2.25	11.2	mg/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW6010B	Arsenic	5.05	V	Z	0.45	1.12	mg/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW6010B	Thallium	2.25	U	Z	0.562	2.25	mg/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW6010B	Selenium	1.12	U	Z	0.562	1.12	mg/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW6010B	Lead	460	V	Z	0.225	1.12	mg/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW6010B	Cadmium	1.12	U	Z	0.562	1.12	mg/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW6010B	Chromium	22	V	Z	0.675	2.25	mg/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW6010B	Aluminum	21700	V	Z	5.62	22.5	mg/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW6010B	Manganese	227	V	Z	0.225	1.12	mg/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW6010B	Zinc	35.1	V	Z	0.337	1.12	mg/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW6010B	Calcium	273	V	Z	8.44	112	mg/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW6010B	Cobalt	2.92	V	Z	0.844	2.81	mg/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW6010B	Sodium	28.7	J	Z	28.1	112	mg/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW6010B	Iron	12800	V	Z	1.69	22.5	mg/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW6010B	Magnesium	676	V	Z	11.2	112	mg/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW7471A	Mercury	0.0637	J	Z	0.037	0.11	mg/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW8330	Nitrobenzene	400	U	Z	400	400	ug/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW8330	4-Amino-2,6-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW8330	4-Nitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW8330	3-Nitrotoluene	400	U	Z	400	400	ug/kg

Appendix A1: 2004 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Reporting Units
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW8330	2-Nitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW8330	2,6-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW8330	2,4,6-Trinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW8330	Tetryl	400	U	Z	400	400	ug/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW8330	RDX	400	U	Z	400	400	ug/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW8330	1,3-Dinitrobenzene	400	U	Z	400	400	ug/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW8330	HMX	400	U	Z	400	400	ug/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW8330	1,3,5-Trinitrobenzene	400	U	Z	400	400	ug/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW8330	2-Amino-4,6-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	SW8330	2,4-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-001	0.5-1.5	9/2/04	NS	04I037	I037-20	WBLACK	TOC	1120	U	Z	337	1120	mg/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I038	I038-16	ASTM D422/D4464M	Sand, Coarse	0	U	Z	--	--	%
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I038	I038-16	ASTM D422/D4464M	Median Grain Size	0.221	V	Z	--	--	millimeter
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I038	I038-16	ASTM D422/D4464M	Sand, Fine	46.71	V	Z	--	--	%
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I038	I038-16	ASTM D422/D4464M	Silt & Clay	28.3	V	Z	--	--	%
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I038	I038-16	ASTM D422/D4464M	Gravel	0	U	Z	--	--	%
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I038	I038-16	ASTM D422/D4464M	Clay	13.64	V	Z	--	--	%
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I038	I038-16	ASTM D422/D4464M	Silt	14.66	V	Z	--	--	%
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I038	I038-16	ASTM D422/D4464M	Sand, Medium	25	V	Z	--	--	%
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW6010B	Magnesium	618	V	Z	11.1	111	mg/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW6010B	Zinc	29	V	Z	0.333	1.11	mg/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW6010B	Silver	2.77	U	Z	0.699	2.77	mg/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW6010B	Cobalt	2.44	J	Z	0.832	2.77	mg/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW6010B	Aluminum	21300	V	Z	5.55	22.2	mg/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW6010B	Antimony	11.1	U^	(UB)	2.22	11.1	mg/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW6010B	Barium	44	V	Z	0.166	1.11	mg/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW6010B	Beryllium	0.411	J	Z	0.166	1.11	mg/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW6010B	Cadmium	1.11	U	Z	0.555	1.11	mg/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW6010B	Calcium	265	V	Z	8.32	111	mg/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW6010B	Chromium	13.8	V	Z	0.666	2.22	mg/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW6010B	Arsenic	4.89	V	Z	0.444	1.11	mg/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW6010B	Iron	12400	V	Z	1.66	22.2	mg/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW6010B	Manganese	193	V	Z	0.222	1.11	mg/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW6010B	Nickel	12	V	Z	0.61	2.22	mg/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW6010B	Potassium	588	V	Z	83.2	555	mg/kg

Appendix A1: 2004 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Reporting Units
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW6010B	Sodium	38.9	J	Z	27.7	111	mg/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW6010B	Copper	57.6	V	Z	0.555	2.22	mg/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW6010B	Lead	358	V	Z	0.222	1.11	mg/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW6010B	Selenium	1.11	U	Z	0.555	1.11	mg/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW6010B	Thallium	2.22	U	Z	0.555	2.22	mg/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW6010B	Vanadium	27.1	V	Z	0.555	2.22	mg/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW7471A	Mercury	0.0559	J	Z	0.037	0.11	mg/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW8330	2-Amino-4,6-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW8330	Tetryl	400	U	Z	400	400	ug/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW8330	2,4-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW8330	1,3,5-Trinitrobenzene	400	U	Z	400	400	ug/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW8330	RDX	400	U	Z	400	400	ug/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW8330	1,3-Dinitrobenzene	400	U	Z	400	400	ug/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW8330	Nitrobenzene	400	U	Z	400	400	ug/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW8330	2,4,6-Trinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW8330	4-Amino-2,6-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW8330	2,6-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW8330	2-Nitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW8330	3-Nitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW8330	HMX	400	U	Z	400	400	ug/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	SW8330	4-Nitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-001	0-0.5	9/2/04	NS	04I037	I037-19	WBLACK	TOC	1110	U	Z	333	1110	mg/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I038	I038-18	ASTM D422/D4464M	Silt & Clay	26.67	V	Z	--	--	%
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I038	I038-18	ASTM D422/D4464M	Silt	10.1	V	Z	--	--	%
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I038	I038-18	ASTM D422/D4464M	Sand, Medium	28.98	V	Z	--	--	%
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I038	I038-18	ASTM D422/D4464M	Gravel	0	U	Z	--	--	%
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I038	I038-18	ASTM D422/D4464M	Median Grain Size	0.242	V	Z	--	--	millimeter
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I038	I038-18	ASTM D422/D4464M	Clay	16.58	V	Z	--	--	%
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I038	I038-18	ASTM D422/D4464M	Sand, Fine	44.34	V	Z	--	--	%
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I038	I038-18	ASTM D422/D4464M	Sand, Coarse	0	U	Z	--	--	%
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW6010B	Sodium	43.4	J	Z	30.9	124	mg/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW6010B	Selenium	1.24	U	Z	0.619	1.24	mg/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW6010B	Calcium	87.8	J	Z	9.28	124	mg/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW6010B	Cadmium	1.24	U	Z	0.619	1.24	mg/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW6010B	Beryllium	0.395	J	Z	0.186	1.24	mg/kg

Appendix A1: 2004 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Reporting Units
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW6010B	Aluminum	26100	V	Z	6.19	24.8	mg/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW6010B	Vanadium	36.3	V	Z	0.619	2.48	mg/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW6010B	Barium	33.9	V	Z	0.186	1.24	mg/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW6010B	Copper	10	V	Z	0.619	2.48	mg/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW6010B	Chromium	18.4	V	Z	0.743	2.48	mg/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW6010B	Antimony	12.4	U^	(UB)	2.48	12.4	mg/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW6010B	Cobalt	2.11	J	Z	0.928	3.09	mg/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW6010B	Iron	16900	V	Z	1.86	24.8	mg/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW6010B	Zinc	24.7	V	Z	0.371	1.24	mg/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW6010B	Silver	3.09	U	Z	0.78	3.09	mg/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW6010B	Potassium	572	J	Z	92.8	619	mg/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW6010B	Nickel	10.6	V	Z	0.681	2.48	mg/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW6010B	Magnesium	553	V	Z	12.4	124	mg/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW6010B	Thallium	2.48	U	Z	0.619	2.48	mg/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW6010B	Arsenic	6.46	V	Z	0.495	1.24	mg/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW6010B	Lead	11.3	V	Z	0.248	1.24	mg/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW6010B	Manganese	135	V	Z	0.248	1.24	mg/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW7471A	Mercury	0.12	U	Z	0.041	0.12	mg/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW8330	2-Amino-4,6-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW8330	1,3-Dinitrobenzene	400	U	Z	400	400	ug/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW8330	4-Nitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW8330	2,6-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW8330	4-Amino-2,6-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW8330	2,4,6-Trinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW8330	Nitrobenzene	400	U	Z	400	400	ug/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW8330	2-Nitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW8330	2,4-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW8330	Tetryl	400	U	Z	400	400	ug/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW8330	HMX	400	U	Z	400	400	ug/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW8330	RDX	400	U	Z	400	400	ug/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW8330	1,3,5-Trinitrobenzene	400	U	Z	400	400	ug/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	SW8330	3-Nitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-002	0.5-1.5	9/2/04	NS	04I037	I037-21	WBLACK	TOC	1240	U	Z	371	1240	mg/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I038	I038-19	ASTM D422/D4464M	Clay	13.94	V	Z	--	--	%
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I038	I038-19	ASTM D422/D4464M	Sand, Medium	21.21	V	Z	--	--	%

Appendix A1: 2004 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Reporting Units
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I038	I038-19	ASTM D422/D4464M	Median Grain Size	0.232	V	Z	--	--	millimeter
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I038	I038-19	ASTM D422/D4464M	Silt	11.04	V	Z	--	--	%
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I038	I038-19	ASTM D422/D4464M	Sand, Fine	53.81	V	Z	--	--	%
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I038	I038-19	ASTM D422/D4464M	Gravel	0	U	Z	--	--	%
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I038	I038-19	ASTM D422/D4464M	Silt & Clay	24.98	V	Z	--	--	%
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I038	I038-19	ASTM D422/D4464M	Sand, Coarse	0	U	Z	--	--	%
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW6010B	Cobalt	1.97	J	(JM)	0.86	2.87	mg/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW6010B	Nickel	13.3	V	(JM)	0.631	2.29	mg/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW6010B	Selenium	0.612	J	Z	0.573	1.15	mg/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW6010B	Calcium	99.3	J	Z	8.6	115	mg/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW6010B	Chromium	22.2	V	Z	0.688	2.29	mg/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW6010B	Cadmium	1.15	U	Z	0.573	1.15	mg/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW6010B	Vanadium	40.7	V	Z	0.573	2.29	mg/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW6010B	Copper	13.9	V	Z	0.573	2.29	mg/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW6010B	Antimony	11.5	U^	(UJBM)	2.29	11.5	mg/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW6010B	Beryllium	0.49	J	Z	0.172	1.15	mg/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW6010B	Barium	38.9	V	Z	0.172	1.15	mg/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW6010B	Iron	18100	V	Z	1.72	22.9	mg/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW6010B	Magnesium	743	V	Z	11.5	115	mg/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW6010B	Potassium	695	V	Z	86	573	mg/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW6010B	Silver	2.87	U	Z	0.722	2.87	mg/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW6010B	Sodium	42	J	Z	28.7	115	mg/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW6010B	Lead	27.6	V	Z	0.229	1.15	mg/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW6010B	Thallium	2.29	U	Z	0.573	2.29	mg/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW6010B	Arsenic	6.82	V	Z	0.459	1.15	mg/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW6010B	Manganese	142	V	(JM)	0.229	1.15	mg/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW6010B	Aluminum	31400	V	Z	5.73	22.9	mg/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW6010B	Zinc	30.1	V	Z	0.344	1.15	mg/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW7471A	Mercury	0.0445	J	Z	0.038	0.11	mg/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW8330	2-Nitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW8330	1,3-Dinitrobenzene	400	U	Z	400	400	ug/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW8330	4-Nitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW8330	1,3,5-Trinitrobenzene	400	U	Z	400	400	ug/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW8330	Tetryl	400	U	Z	400	400	ug/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW8330	Nitrobenzene	400	U	Z	400	400	ug/kg

Appendix A1: 2004 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Reporting Units
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW8330	2,4,6-Trinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW8330	4-Amino-2,6-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW8330	2-Amino-4,6-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW8330	HMX	400	U	Z	400	400	ug/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW8330	2,4-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW8330	3-Nitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW8330	RDX	400	U	Z	400	400	ug/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	SW8330	2,6-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-102Q-002	0-0.5	9/2/04	NS	04I037	I037-18	WBLACK	TOC	1150	U	Z	344	1150	mg/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I038	I038-05	ASTM D422/D4464M	Median Grain Size	0.239	V	Z	--	--	millimeter
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I038	I038-05	ASTM D422/D4464M	Sand, Medium	26.21	V	Z	--	--	%
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I038	I038-05	ASTM D422/D4464M	Clay	14.01	V	Z	--	--	%
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I038	I038-05	ASTM D422/D4464M	Silt & Clay	27.51	V	Z	--	--	%
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I038	I038-05	ASTM D422/D4464M	Sand, Fine	46.29	V	Z	--	--	%
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I038	I038-05	ASTM D422/D4464M	Silt	13.49	V	Z	--	--	%
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I038	I038-05	ASTM D422/D4464M	Sand, Coarse	0	U	Z	--	--	%
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I038	I038-05	ASTM D422/D4464M	Gravel	0	U	Z	--	--	%
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW6010B	Nickel	4.85	V	Z	0.613	2.23	mg/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW6010B	Lead	308	V	Z	0.223	1.11	mg/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW6010B	Cadmium	1.11	U	Z	0.557	1.11	mg/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW6010B	Manganese	89.6	V	Z	0.223	1.11	mg/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW6010B	Sodium	35.5	J	Z	27.9	111	mg/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW6010B	Magnesium	362	V	Z	11.1	111	mg/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW6010B	Selenium	1.11	U	Z	0.557	1.11	mg/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW6010B	Iron	8730	V	Z	1.67	22.3	mg/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW6010B	Copper	54	V	Z	0.557	2.23	mg/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW6010B	Zinc	17	V	Z	0.334	1.11	mg/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW6010B	Vanadium	21.3	V	Z	0.557	2.23	mg/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW6010B	Potassium	887	V	Z	83.6	557	mg/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW6010B	Arsenic	5.01	V	Z	0.446	1.11	mg/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW6010B	Cobalt	2.79	U	Z	0.836	2.79	mg/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW6010B	Chromium	12.4	V	Z	0.669	2.23	mg/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW6010B	Thallium	2.23	U	Z	0.557	2.23	mg/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW6010B	Aluminum	13800	V	Z	5.57	22.3	mg/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW6010B	Antimony	3.48	J	Z	2.23	11.1	mg/kg

Appendix A1: 2004 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Reporting Units
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW6010B	Barium	23.3	V	Z	0.167	1.11	mg/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW6010B	Calcium	99.4	J	Z	8.36	111	mg/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW6010B	Beryllium	0.272	J	Z	0.167	1.11	mg/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW6010B	Silver	2.79	U	Z	0.702	2.79	mg/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW7471A	Mercury	0.11	U	Z	0.037	0.11	mg/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW8330	Tetryl	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW8330	2-Amino-4,6-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW8330	2,6-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW8330	HMX	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW8330	Nitrobenzene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW8330	2,4-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW8330	2-Nitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW8330	3-Nitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW8330	4-Nitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW8330	1,3-Dinitrobenzene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW8330	4-Amino-2,6-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW8330	1,3,5-Trinitrobenzene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW8330	RDX	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	SW8330	2,4,6-Trinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0.5-1.5	9/2/04	NS	04I037	I037-07	WBLACK	TOC	1050	J	Z	334	1110	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I038	I038-04	ASTM D422/D4464M	Gravel	0	U	Z	--	--	%
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I038	I038-04	ASTM D422/D4464M	Sand, Medium	35.73	V	Z	--	--	%
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I038	I038-04	ASTM D422/D4464M	Silt & Clay	20.65	V	Z	--	--	%
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I038	I038-04	ASTM D422/D4464M	Sand, Fine	43.62	V	Z	--	--	%
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I038	I038-04	ASTM D422/D4464M	Silt	10.11	V	Z	--	--	%
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I038	I038-04	ASTM D422/D4464M	Clay	10.53	V	Z	--	--	%
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I038	I038-04	ASTM D422/D4464M	Median Grain Size	0.318	V	Z	--	--	millimeter
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I038	I038-04	ASTM D422/D4464M	Sand, Coarse	0	U	Z	--	--	%
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06	SW6010B	Sodium	42.7	J	Z	33.5	134	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06	SW6010B	Potassium	813	V	Z	100	669	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06	SW6010B	Lead	307	V	Z	0.268	1.34	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06	SW6010B	Chromium	13.1	V	Z	0.803	2.68	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06	SW6010B	Vanadium	22.8	V	Z	0.669	2.68	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06	SW6010B	Arsenic	6.03	V	Z	0.535	1.34	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06	SW6010B	Selenium	1.34	U	Z	0.669	1.34	mg/kg

Appendix A1: 2004 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Reporting Units
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06	SW6010B	Calcium	120	J	Z	10	134	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06	SW6010B	Antimony	13.4	U	Z	2.68	13.4	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06	SW6010B	Magnesium	395	V	Z	13.4	134	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06	SW6010B	Cadmium	1.34	U	Z	0.669	1.34	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06	SW6010B	Copper	53.5	V	Z	0.669	2.68	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06	SW6010B	Zinc	21	V	Z	0.402	1.34	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06	SW6010B	Nickel	5.44	V	Z	0.736	2.68	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06	SW6010B	Manganese	129	V	Z	0.268	1.34	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06	SW6010B	Iron	9810	V	Z	2.01	26.8	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06	SW6010B	Silver	3.35	U	Z	0.843	3.35	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06	SW6010B	Barium	23.8	V	Z	0.201	1.34	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06	SW6010B	Thallium	2.68	U	Z	0.669	2.68	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06	SW6010B	Aluminum	14700	V	Z	6.69	26.8	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06	SW6010B	Beryllium	0.313	J	Z	0.201	1.34	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06	SW6010B	Cobalt	3.35	U	Z	1	3.35	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06	SW7471A	Mercury	0.13	U	Z	0.044	0.13	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06W	SW8330	4-Nitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06W	SW8330	3-Nitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06W	SW8330	2,4-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06W	SW8330	2-Nitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06W	SW8330	2,6-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06W	SW8330	2-Amino-4,6-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06W	SW8330	Nitrobenzene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06W	SW8330	4-Amino-2,6-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06W	SW8330	HMX	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06W	SW8330	RDX	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06W	SW8330	1,3,5-Trinitrobenzene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06W	SW8330	1,3-Dinitrobenzene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06W	SW8330	Tetryl	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06W	SW8330	2,4,6-Trinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0-0.5	9/2/04	NS	04I037	I037-06	WBLACK	TOC	1340	U	Z	402	1340	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I038	I038-20	ASTM D422/D4464M	Clay	10.72	V	Z	--	--	%
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I038	I038-20	ASTM D422/D4464M	Sand, Coarse	0	U	Z	--	--	%
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I038	I038-20	ASTM D422/D4464M	Median Grain Size	0.307	V	Z	--	--	millimeter
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I038	I038-20	ASTM D422/D4464M	Sand, Fine	46.2	V	Z	--	--	%

Appendix A1: 2004 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Reporting Units
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I038	I038-20	ASTM D422/D4464M	Gravel	0	U	Z	--	--	%
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I038	I038-20	ASTM D422/D4464M	Silt	9.52	V	Z	--	--	%
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I038	I038-20	ASTM D422/D4464M	Silt & Clay	20.24	V	Z	--	--	%
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I038	I038-20	ASTM D422/D4464M	Sand, Medium	33.55	V	Z	--	--	%
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW6010B	Lead	41.6	V	Z	0.223	1.11	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW6010B	Thallium	2.23	U	Z	0.557	2.23	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW6010B	Zinc	5.44	V	Z	0.334	1.11	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW6010B	Antimony	11.1	U	Z	2.23	11.1	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW6010B	Aluminum	5160	V	Z	5.57	22.3	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW6010B	Arsenic	3.47	V	Z	0.445	1.11	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW6010B	Cobalt	2.78	U	Z	0.835	2.78	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW6010B	Iron	3810	V	Z	1.67	22.3	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW6010B	Chromium	5.38	V	Z	0.668	2.23	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW6010B	Barium	8.35	V	Z	0.167	1.11	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW6010B	Copper	7.14	V	Z	0.557	2.23	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW6010B	Manganese	3.63	V	Z	0.223	1.11	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW6010B	Selenium	1.11	U	Z	0.557	1.11	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW6010B	Beryllium	1.11	U	Z	0.167	1.11	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW6010B	Vanadium	10.7	V	Z	0.557	2.23	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW6010B	Nickel	1.21	J	Z	0.612	2.23	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW6010B	Potassium	912	V	Z	83.5	557	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW6010B	Silver	2.78	U	Z	0.702	2.78	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW6010B	Sodium	35.5	J	Z	27.8	111	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW6010B	Magnesium	139	V	Z	11.1	111	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW6010B	Calcium	40.8	J	Z	8.35	111	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW6010B	Cadmium	1.11	U	Z	0.557	1.11	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW7471A	Mercury	0.11	U	Z	0.037	0.11	mg/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW8330	3-Nitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW8330	1,3,5-Trinitrobenzene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW8330	HMX	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW8330	2-Nitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW8330	2,4-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW8330	2,6-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW8330	4-Amino-2,6-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW8330	2,4,6-Trinitrotoluene	400	U	Z	400	400	ug/kg

Appendix A1: 2004 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Reporting Units
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW8330	Nitrobenzene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW8330	2-Amino-4,6-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW8330	1,3-Dinitrobenzene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW8330	RDX	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW8330	4-Nitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	SW8330	Tetryl	400	U	Z	400	400	ug/kg
SO	R30-88Q-003	0-0.5	9/2/04	FD	04I037	I037-16	WBLACK	TOC	1110	U	Z	334	1110	mg/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I038	I038-12	ASTM D422/D4464M	Silt & Clay	18.51	V	Z	--	--	%
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I038	I038-12	ASTM D422/D4464M	Silt	12.47	V	Z	--	--	%
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I038	I038-12	ASTM D422/D4464M	Sand, Fine	56.14	V	Z	--	--	%
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I038	I038-12	ASTM D422/D4464M	Median Grain Size	0.299	V	Z	--	--	millimeter
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I038	I038-12	ASTM D422/D4464M	Sand, Medium	25.35	V	Z	--	--	%
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I038	I038-12	ASTM D422/D4464M	Sand, Coarse	0	U	Z	--	--	%
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I038	I038-12	ASTM D422/D4464M	Clay	6.04	V	Z	--	--	%
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I038	I038-12	ASTM D422/D4464M	Gravel	0	U	Z	--	--	%
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW6010B	Iron	9750	V	Z	1.96	26.1	mg/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW6010B	Barium	23.5	V	Z	0.196	1.31	mg/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW6010B	Calcium	82.9	J	Z	9.79	131	mg/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW6010B	Cobalt	3.26	U	Z	0.979	3.26	mg/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW6010B	Chromium	8.86	V	Z	0.783	2.61	mg/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW6010B	Cadmium	1.31	U	Z	0.653	1.31	mg/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW6010B	Beryllium	1.31	U	Z	0.196	1.31	mg/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW6010B	Antimony	13.1	U	Z	2.61	13.1	mg/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW6010B	Zinc	5.29	V	Z	0.392	1.31	mg/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW6010B	Copper	3.07	V	Z	0.653	2.61	mg/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW6010B	Aluminum	5010	V	Z	6.53	26.1	mg/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW6010B	Thallium	2.61	U	Z	0.653	2.61	mg/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW6010B	Lead	10.9	V	Z	0.261	1.31	mg/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW6010B	Magnesium	121	J	Z	13.1	131	mg/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW6010B	Arsenic	3.55	V	Z	0.522	1.31	mg/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW6010B	Vanadium	15.8	V	Z	0.653	2.61	mg/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW6010B	Sodium	43.7	J	Z	32.6	131	mg/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW6010B	Silver	3.26	U	Z	0.822	3.26	mg/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW6010B	Potassium	417	J	Z	97.9	653	mg/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW6010B	Nickel	1.47	J	Z	0.718	2.61	mg/kg

Appendix A1: 2004 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Reporting Units
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW6010B	Manganese	130	V	Z	0.261	1.31	mg/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW6010B	Selenium	1.31	U	Z	0.653	1.31	mg/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW7471A	Mercury	0.13	U	Z	0.043	0.13	mg/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW8330	Tetryl	400	U	Z	400	400	ug/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW8330	HMX	400	U	Z	400	400	ug/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW8330	4-Amino-2,6-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW8330	Nitrobenzene	400	U	Z	400	400	ug/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW8330	2-Nitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW8330	1,3,5-Trinitrobenzene	400	U	Z	400	400	ug/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW8330	1,3-Dinitrobenzene	400	U	Z	400	400	ug/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW8330	RDX	400	U	Z	400	400	ug/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW8330	2-Amino-4,6-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW8330	3-Nitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW8330	4-Nitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW8330	2,6-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW8330	2,4-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	SW8330	2,4,6-Trinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-008	0-0.5	9/2/04	NS	04I037	I037-14	WBLACK	TOC	1310	U	Z	392	1310	mg/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I038	I038-13	ASTM D422/D4464M	Median Grain Size	0.323	V	Z	--	--	millimeter
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I038	I038-13	ASTM D422/D4464M	Gravel	0	U	Z	--	--	%
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I038	I038-13	ASTM D422/D4464M	Clay	6.82	V	Z	--	--	%
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I038	I038-13	ASTM D422/D4464M	Sand, Coarse	0	U	Z	--	--	%
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I038	I038-13	ASTM D422/D4464M	Silt	14.07	V	Z	--	--	%
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I038	I038-13	ASTM D422/D4464M	Sand, Fine	41.66	V	Z	--	--	%
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I038	I038-13	ASTM D422/D4464M	Silt & Clay	20.89	V	Z	--	--	%
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I038	I038-13	ASTM D422/D4464M	Sand, Medium	37.45	V	Z	--	--	%
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW6010B	Potassium	750	V	Z	84.4	562	mg/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW6010B	Sodium	35.9	J	Z	28.1	112	mg/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW6010B	Manganese	165	V	Z	0.225	1.12	mg/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW6010B	Iron	12700	V	Z	1.69	22.5	mg/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW6010B	Copper	7.24	V	Z	0.562	2.25	mg/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW6010B	Cobalt	1.56	J	Z	0.844	2.81	mg/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW6010B	Chromium	17.1	V	Z	0.675	2.25	mg/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW6010B	Aluminum	14400	V	Z	5.62	22.5	mg/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW6010B	Calcium	90.8	J	Z	8.44	112	mg/kg

Appendix A1: 2004 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Reporting Units
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW6010B	Arsenic	4.42	V	Z	0.45	1.12	mg/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW6010B	Silver	2.81	U	Z	0.709	2.81	mg/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW6010B	Nickel	6.11	V	Z	0.619	2.25	mg/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW6010B	Vanadium	23.4	V	Z	0.562	2.25	mg/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW6010B	Cadmium	1.12	U	Z	0.562	1.12	mg/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW6010B	Beryllium	0.31	J	Z	0.169	1.12	mg/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW6010B	Barium	27.1	V	Z	0.169	1.12	mg/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW6010B	Zinc	19.3	V	Z	0.337	1.12	mg/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW6010B	Antimony	11.2	U^	(UB)	2.25	11.2	mg/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW6010B	Selenium	1.12	U	Z	0.562	1.12	mg/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW6010B	Lead	13.6	V	Z	0.225	1.12	mg/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW6010B	Thallium	2.25	U	Z	0.562	2.25	mg/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW6010B	Magnesium	439	V	Z	11.2	112	mg/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW7471A	Mercury	0.11	U	Z	0.037	0.11	mg/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW8330	4-Nitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW8330	1,3-Dinitrobenzene	400	U	Z	400	400	ug/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW8330	1,3,5-Trinitrobenzene	400	U	Z	400	400	ug/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW8330	HMX	400	U	Z	400	400	ug/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW8330	2-Amino-4,6-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW8330	RDX	400	U	Z	400	400	ug/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW8330	4-Amino-2,6-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW8330	Tetryl	400	U	Z	400	400	ug/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW8330	2,4-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW8330	Nitrobenzene	400	U	Z	400	400	ug/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW8330	2,4,6-Trinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW8330	2,6-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW8330	3-Nitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	SW8330	2-Nitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-009	0-0.5	9/2/04	NS	04I037	I037-15	WBLACK	TOC	1120	U	Z	337	1120	mg/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I038	I038-14	ASTM D422/D4464M	Clay	9.21	V	Z	--	--	%
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I038	I038-14	ASTM D422/D4464M	Sand, Coarse	0	U	Z	--	--	%
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I038	I038-14	ASTM D422/D4464M	Silt	10.36	V	Z	--	--	%
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I038	I038-14	ASTM D422/D4464M	Gravel	0	U	Z	--	--	%
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I038	I038-14	ASTM D422/D4464M	Silt & Clay	19.57	V	Z	--	--	%
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I038	I038-14	ASTM D422/D4464M	Sand, Medium	31.21	V	Z	--	--	%

Appendix A1: 2004 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Reporting Units
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I038	I038-14	ASTM D422/D4464M	Median Grain Size	0.288	V	Z	--	--	millimeter
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I038	I038-14	ASTM D422/D4464M	Sand, Fine	49.22	V	Z	--	--	%
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW6010B	Vanadium	28.9	V	Z	0.57	2.28	mg/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW6010B	Cadmium	1.14	U	Z	0.57	1.14	mg/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW6010B	Chromium	16.6	V	Z	0.684	2.28	mg/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW6010B	Cobalt	1.34	J	Z	0.855	2.85	mg/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW6010B	Silver	2.85	U	Z	0.718	2.85	mg/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW6010B	Potassium	540	J	Z	85.5	570	mg/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW6010B	Zinc	19.5	V	Z	0.342	1.14	mg/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW6010B	Arsenic	5.22	V	Z	0.456	1.14	mg/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW6010B	Sodium	40	J	Z	28.5	114	mg/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW6010B	Barium	23.8	V	Z	0.171	1.14	mg/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW6010B	Iron	14100	V	Z	1.71	22.8	mg/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW6010B	Magnesium	380	V	Z	11.4	114	mg/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW6010B	Nickel	6.81	V	Z	0.627	2.28	mg/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW6010B	Beryllium	0.283	J	Z	0.171	1.14	mg/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW6010B	Copper	24.4	V	Z	0.57	2.28	mg/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW6010B	Aluminum	16000	V	Z	5.7	22.8	mg/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW6010B	Calcium	109	J	Z	8.55	114	mg/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW6010B	Manganese	118	V	Z	0.228	1.14	mg/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW6010B	Lead	121	V	Z	0.228	1.14	mg/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW6010B	Thallium	2.28	U	Z	0.57	2.28	mg/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW6010B	Antimony	2.29	J	(JM)	2.28	11.4	mg/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW6010B	Selenium	1.14	U	Z	0.57	1.14	mg/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW7471A	Mercury	0.11	U	Z	0.038	0.11	mg/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW8330	1,3,5-Trinitrobenzene	400	U	Z	400	400	ug/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW8330	3-Nitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW8330	2-Nitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW8330	2,4-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW8330	4-Amino-2,6-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW8330	2,4,6-Trinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW8330	1,3-Dinitrobenzene	400	U	Z	400	400	ug/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW8330	Nitrobenzene	400	U	Z	400	400	ug/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW8330	2-Amino-4,6-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW8330	Tetryl	400	U	Z	400	400	ug/kg

Appendix A1: 2004 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample		QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation		Reporting	
		Depth (ft bgs)	Sample Date								Code	MDL	RL	Units
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW8330	HMX	400	U	Z	400	400	ug/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW8330	2,6-Dinitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW8330	RDX	400	U	Z	400	400	ug/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	SW8330	4-Nitrotoluene	400	U	Z	400	400	ug/kg
SO	R30-88Q-010	0-0.5	9/2/04	NS	04I037	I037-01	WBLACK	TOC	1140	U	Z	342	1140	mg/kg

Notes:

-- = Information either not available or not applicable

% = Percent

FD = Field duplicate

ft bgs = feet below ground surface

ID = Identification

MDL = Method detection limit

µg/kg = micrograms per kilogram

mg/kg = milligrams per kilogram

NS = Normal sample

QC = Quality control

RL = Reporting limit

SO = Soil

Lab Flags:

J = Estimated value. The analyte is positively identified and the concentration is less than the RL but greater than the MDL.

U = Analyte is not detected above the RL.

V = Detected value.

^ = Lab flag updated by MES data reviewer.

Validation codes consist of a validation qualifier and sub-qualifier(s) and are delineated with parenthesis.

Validation Qualifiers:

J = Estimated detection. The associated numerical value is the approximate concentration of the analyte in the sample.

UJ = Analyte was analyzed for, but was not detected. The reported quantitation limit is estimated.

U = Result was qualified as not detected above the RL or reported sample quantitation limit.

Validation Sub-qualifiers:

B = Result was qualified based on method blank or continuing calibration blank.

M = The MS and MSD recoveries were outside laboratory historical control limits.

APPENDIX A2
Analytical Data for 2014 Samples

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	D2216	Moisture, Percent	9.1	V	Z	0.1	0.1	%
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW6020A	Aluminum	19500	V	Z	10.5	105	mg/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW6020A	Antimony	0.258	J	Z	0.211	0.526	mg/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW6020A	Arsenic	6	V	Z	0.105	0.526	mg/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW6020A	Barium	63.3	V	Z	0.105	0.526	mg/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW6020A	Beryllium	0.396	J	Z	0.105	0.526	mg/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW6020A	Cadmium	0.232	J	Z	0.105	0.526	mg/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW6020A	Calcium	246	V	Z	21.1	105	mg/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW6020A	Chromium	29.2	V	Z	0.105	0.526	mg/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW6020A	Cobalt	5.56	V	Z	0.105	0.526	mg/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW6020A	Copper	6.34	V	Z	0.211	0.526	mg/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW6020A	Iron	16800	V	Z	10.5	105	mg/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW6020A	Lead	13.6	V	Z	0.105	0.526	mg/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW6020A	Magnesium	558	V	Z	21.1	105	mg/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW6020A	Manganese	221	V	Z	0.211	0.526	mg/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW6020A	Nickel	8.24	V	Z	0.105	0.526	mg/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW6020A	Potassium	437	V	Z	21.1	105	mg/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW6020A	Selenium	0.213	J	Z	0.105	0.526	mg/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW6020A	Silver	0.526	U	Z	0.105	0.526	mg/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW6020A	Sodium	105	U	Z	21.1	105	mg/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW6020A	Thallium	0.199	J	Z	0.105	0.526	mg/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW6020A	Vanadium	33.1	V	Z	0.263	0.526	mg/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW6020A	Zinc	17.2	V	Z	1.05	2.11	mg/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW7471A	Mercury	0.158	V	Z	0.0218	0.109	mg/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW8330	1,3,5-Trinitrobenzene	400	U	Z	99	400	ug/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW8330	1,3-Dinitrobenzene	400	U	Z	99	400	ug/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW8330	2,4,6-Trinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW8330	2,4-Dinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW8330	2,6-Dinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW8330	2-Amino-4,6-Dinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW8330	2-Nitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW8330	3-Nitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW8330	4-Amino-2,6-Dinitrotoluene	400	U	Z	99	400	ug/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW8330	4-Nitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW8330	HMX	400	U	Z	99	400	ug/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW8330	Nitrobenzene	400	U	Z	99	400	ug/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW8330	RDX	400	U	Z	99	400	ug/kg
SO	R30-103Q-001 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-03	SW8330	Tetryl	400	U	Z	99	400	ug/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	D2216	Moisture, Percent	9.8	V	Z	0.1	0.1	%
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW6020A	Aluminum	14000	V	Z	11	110	mg/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW6020A	Antimony	0.247	J	Z	0.22	0.549	mg/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW6020A	Arsenic	4.07	V	Z	0.11	0.549	mg/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW6020A	Barium	62.5	V	Z	0.11	0.549	mg/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW6020A	Beryllium	0.353	J	Z	0.11	0.549	mg/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW6020A	Cadmium	0.118	J	Z	0.11	0.549	mg/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW6020A	Calcium	279	V	Z	22	110	mg/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW6020A	Chromium	12.1	V	Z	0.11	0.549	mg/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW6020A	Cobalt	4.81	V	Z	0.11	0.549	mg/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW6020A	Copper	5.02	V	Z	0.22	0.549	mg/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW6020A	Iron	10800	V	Z	11	110	mg/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW6020A	Lead	17.9	V	Z	0.11	0.549	mg/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW6020A	Magnesium	462	V	Z	22	110	mg/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW6020A	Manganese	347	V	Z	0.22	0.549	mg/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW6020A	Nickel	6.28	V	Z	0.11	0.549	mg/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW6020A	Potassium	346	V	Z	22	110	mg/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW6020A	Selenium	0.163	J	Z	0.11	0.549	mg/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW6020A	Silver	0.549	U	Z	0.11	0.549	mg/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW6020A	Sodium	110	U	Z	22	110	mg/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW6020A	Thallium	0.17	J	Z	0.11	0.549	mg/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW6020A	Vanadium	22.6	V	Z	0.274	0.549	mg/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW6020A	Zinc	17.4	V	Z	1.1	2.2	mg/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW7471A	Mercury	0.0324	J	Z	0.0221	0.111	mg/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW8330	1,3,5-Trinitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW8330	1,3-Dinitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW8330	2,4,6-Trinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW8330	2,4-Dinitrotoluene	400	U	Z	100	400	ug/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW8330	2,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW8330	2-Amino-4,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW8330	2-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW8330	3-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW8330	4-Amino-2,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW8330	4-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW8330	HMX	400	U	Z	100	400	ug/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW8330	Nitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW8330	RDX	400	U	Z	100	400	ug/kg
SO	R30-103Q-001 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-02	SW8330	Tetryl	400	U	Z	100	400	ug/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	D2216	Moisture, Percent	9.6	V	Z	0.1	0.1	%
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW6020A	Aluminum	11100	V	Z	10.4	104	mg/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW6020A	Antimony	0.522	U	Z	0.209	0.522	mg/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW6020A	Arsenic	2.49	V	Z	0.104	0.522	mg/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW6020A	Barium	22.6	V	Z	0.104	0.522	mg/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW6020A	Beryllium	0.132	J	Z	0.104	0.522	mg/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW6020A	Cadmium	0.135	J	Z	0.104	0.522	mg/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW6020A	Calcium	292	V	Z	20.9	104	mg/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW6020A	Chromium	12	V	Z	0.104	0.522	mg/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW6020A	Cobalt	1.09	V	Z	0.104	0.522	mg/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW6020A	Copper	5.37	V	Z	0.209	0.522	mg/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW6020A	Iron	8380	V	Z	10.4	104	mg/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW6020A	Lead	8.86	V	Z	0.104	0.522	mg/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW6020A	Magnesium	225	V	Z	20.9	104	mg/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW6020A	Manganese	170	V	Z	0.209	0.522	mg/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW6020A	Nickel	11.7	V	Z	0.104	0.522	mg/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW6020A	Potassium	274	V	Z	20.9	104	mg/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW6020A	Selenium	0.522	U	Z	0.104	0.522	mg/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW6020A	Silver	0.522	U	Z	0.104	0.522	mg/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW6020A	Sodium	104	U	Z	20.9	104	mg/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW6020A	Thallium	0.113	J	Z	0.104	0.522	mg/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW6020A	Vanadium	20.7	V	Z	0.261	0.522	mg/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW6020A	Zinc	7.07	V	Z	1.04	2.09	mg/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW7471A	Mercury	0.0477	J	Z	0.0221	0.11	mg/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW8330	1,3,5-Trinitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW8330	1,3-Dinitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW8330	2,4,6-Trinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW8330	2,4-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW8330	2,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW8330	2-Amino-4,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW8330	2-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW8330	3-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW8330	4-Amino-2,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW8330	4-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW8330	HMX	400	U	Z	100	400	ug/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW8330	Nitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW8330	RDX	400	U	Z	100	400	ug/kg
SO	R30-103Q-002 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-05	SW8330	Tetryl	400	U	Z	100	400	ug/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	D2216	Moisture, Percent	10.3	V	Z	0.1	0.1	%
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW6020A	Aluminum	19700	V	Z	11	110	mg/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW6020A	Antimony	0.388	J	Z	0.221	0.552	mg/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW6020A	Arsenic	6.27	V	Z	0.11	0.552	mg/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW6020A	Barium	43.1	V	Z	0.11	0.552	mg/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW6020A	Beryllium	0.317	J	Z	0.11	0.552	mg/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW6020A	Cadmium	0.203	J	Z	0.11	0.552	mg/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW6020A	Calcium	458	V	Z	22.1	110	mg/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW6020A	Chromium	17.5	V	Z	0.11	0.552	mg/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW6020A	Cobalt	3.81	V	Z	0.11	0.552	mg/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW6020A	Copper	8	V	Z	0.221	0.552	mg/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW6020A	Iron	17700	V	Z	11	110	mg/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW6020A	Lead	17.3	V	Z	0.11	0.552	mg/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW6020A	Magnesium	470	V	Z	22.1	110	mg/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW6020A	Manganese	917	V	Z	0.221	0.552	mg/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW6020A	Nickel	7.28	V	Z	0.11	0.552	mg/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW6020A	Potassium	443	V	Z	22.1	110	mg/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW6020A	Selenium	0.192	J	Z	0.11	0.552	mg/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW6020A	Silver	0.552	U	Z	0.11	0.552	mg/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW6020A	Sodium	110	U	Z	22.1	110	mg/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW6020A	Thallium	0.241	J	Z	0.11	0.552	mg/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW6020A	Vanadium	37.8	V	Z	0.276	0.552	mg/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW6020A	Zinc	16.5	V	Z	1.1	2.21	mg/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW7471A	Mercury	0.0805	J	Z	0.0223	0.111	mg/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW8330	1,3,5-Trinitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW8330	1,3-Dinitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW8330	2,4,6-Trinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW8330	2,4-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW8330	2,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW8330	2-Amino-4,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW8330	2-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW8330	3-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW8330	4-Amino-2,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW8330	4-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW8330	HMX	400	U	Z	100	400	ug/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW8330	Nitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW8330	RDX	400	U	Z	100	400	ug/kg
SO	R30-103Q-002 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-04	SW8330	Tetryl	400	U	Z	100	400	ug/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	D2216	Moisture, Percent	13.4	V	Z	0.1	0.1	%
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW6020A	Aluminum	15100	V	Z	11.4	114	mg/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW6020A	Antimony	0.805	V	Z	0.229	0.572	mg/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW6020A	Arsenic	23.9	V	Z	0.114	0.572	mg/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW6020A	Barium	80	V	Z	0.114	0.572	mg/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW6020A	Beryllium	0.354	J	Z	0.114	0.572	mg/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW6020A	Cadmium	0.474	J	Z	0.114	0.572	mg/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW6020A	Calcium	76.1	J	Z	22.9	114	mg/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW6020A	Chromium	87.1	V	Z	0.114	0.572	mg/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW6020A	Cobalt	4.04	V	Z	0.114	0.572	mg/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW6020A	Copper	9.89	V	Z	0.229	0.572	mg/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW6020A	Iron	55300	V	Z	11.4	114	mg/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW6020A	Lead	34.8	V	Z	0.114	0.572	mg/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Lab Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW6020A	Magnesium	202	V	Z	22.9	114	mg/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW6020A	Manganese	451	V	Z	0.229	0.572	mg/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW6020A	Nickel	7.24	V	Z	0.114	0.572	mg/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW6020A	Potassium	210	V	Z	22.9	114	mg/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW6020A	Selenium	0.364	J	Z	0.114	0.572	mg/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW6020A	Silver	0.119	J	Z	0.114	0.572	mg/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW6020A	Sodium	114	U	Z	22.9	114	mg/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW6020A	Thallium	0.204	J	Z	0.114	0.572	mg/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW6020A	Vanadium	89.7	V	Z	0.286	0.572	mg/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW6020A	Zinc	18.8	V	Z	1.14	2.29	mg/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW7471A	Mercury	0.0834	J	Z	0.0229	0.115	mg/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW8330	1,3,5-Trinitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW8330	1,3-Dinitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW8330	2,4,6-Trinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW8330	2,4-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW8330	2,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW8330	2-Amino-4,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW8330	2-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW8330	3-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW8330	4-Amino-2,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW8330	4-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW8330	HMX	400	U	Z	100	400	ug/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW8330	Nitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW8330	RDX	400	U	Z	100	400	ug/kg
SO	R30-103Q-003 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-07	SW8330	Tetryl	400	U	Z	100	400	ug/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	D2216	Moisture, Percent	13.5	V	Z	0.1	0.1	%
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW6020A	Aluminum	15400	V	Z	11.6	116	mg/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW6020A	Antimony	0.501	J	Z	0.231	0.578	mg/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW6020A	Arsenic	15	V	Z	0.116	0.578	mg/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW6020A	Barium	34.9	V	Z	0.116	0.578	mg/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW6020A	Beryllium	0.275	J	Z	0.116	0.578	mg/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW6020A	Cadmium	0.447	J	Z	0.116	0.578	mg/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW6020A	Calcium	174	V	Z	23.1	116	mg/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW6020A	Chromium	34.3	V	Z	0.116	0.578	mg/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW6020A	Cobalt	2.45	V	Z	0.116	0.578	mg/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW6020A	Copper	8.86	V	Z	0.231	0.578	mg/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW6020A	Iron	38800	V	Z	11.6	116	mg/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW6020A	Lead	20.2	V	Z	0.116	0.578	mg/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW6020A	Magnesium	233	V	Z	23.1	116	mg/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW6020A	Manganese	279	V	Z	0.231	0.578	mg/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW6020A	Nickel	5.63	V	Z	0.116	0.578	mg/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW6020A	Potassium	264	V	Z	23.1	116	mg/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW6020A	Selenium	0.304	J	Z	0.116	0.578	mg/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW6020A	Silver	0.578	U	Z	0.116	0.578	mg/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW6020A	Sodium	116	U	Z	23.1	116	mg/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW6020A	Thallium	0.162	J	Z	0.116	0.578	mg/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW6020A	Vanadium	69.9	V	Z	0.289	0.578	mg/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW6020A	Zinc	16.8	V	Z	1.16	2.31	mg/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW7471A	Mercury	0.0919	J	Z	0.0232	0.116	mg/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW8330	1,3,5-Trinitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW8330	1,3-Dinitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW8330	2,4,6-Trinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW8330	2,4-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW8330	2,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW8330	2-Amino-4,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW8330	2-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW8330	3-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW8330	4-Amino-2,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW8330	4-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW8330	HMX	400	U	Z	100	400	ug/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW8330	Nitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW8330	RDX	400	U	Z	100	400	ug/kg
SO	R30-103Q-003 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-06	SW8330	Tetryl	400	U	Z	100	400	ug/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	D2216	Moisture, Percent	7.1	V	Z	0.1	0.1	%
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW6020A	Aluminum	11100	V	Z	10.4	104	mg/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW6020A	Antimony	0.52	U	Z	0.208	0.52	mg/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW6020A	Arsenic	5.32	V	Z	0.104	0.52	mg/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW6020A	Barium	40.9	V	Z	0.104	0.52	mg/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW6020A	Beryllium	0.222	J	Z	0.104	0.52	mg/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW6020A	Cadmium	0.182	J	Z	0.104	0.52	mg/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW6020A	Calcium	149	V	Z	20.8	104	mg/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW6020A	Chromium	12.6	V	Z	0.104	0.52	mg/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW6020A	Cobalt	2.29	V	Z	0.104	0.52	mg/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW6020A	Copper	3.59	V	Z	0.208	0.52	mg/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW6020A	Iron	11500	V	Z	10.4	104	mg/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW6020A	Lead	8.72	V	Z	0.104	0.52	mg/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW6020A	Magnesium	255	V	Z	20.8	104	mg/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW6020A	Manganese	534	V	Z	0.208	0.52	mg/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW6020A	Nickel	4.08	V	Z	0.104	0.52	mg/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW6020A	Potassium	295	V	Z	20.8	104	mg/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW6020A	Selenium	0.128	J	Z	0.104	0.52	mg/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW6020A	Silver	0.52	U	Z	0.104	0.52	mg/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW6020A	Sodium	104	U	Z	20.8	104	mg/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW6020A	Thallium	0.119	J	Z	0.104	0.52	mg/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW6020A	Vanadium	26.3	V	Z	0.26	0.52	mg/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW6020A	Zinc	9.33	V	Z	1.04	2.08	mg/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW7471A	Mercury	0.0542	J	Z	0.0213	0.107	mg/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW8330	1,3,5-Trinitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW8330	1,3-Dinitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW8330	2,4,6-Trinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW8330	2,4-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW8330	2,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW8330	2-Amino-4,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW8330	2-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW8330	3-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW8330	4-Amino-2,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW8330	4-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW8330	HMX	400	U	Z	100	400	ug/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW8330	Nitrobenzene	400	U	Z	100	400	ug/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW8330	RDX	400	U	Z	100	400	ug/kg
SO	R30-103Q-004 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-09	SW8330	Tetryl	400	U	Z	100	400	ug/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	D2216	Moisture, Percent	7.3	V	Z	0.1	0.1	%
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW6020A	Aluminum	4570	V	Z	10.2	102	mg/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW6020A	Antimony	0.509	U	Z	0.203	0.509	mg/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW6020A	Arsenic	3.8	V	Z	0.102	0.509	mg/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW6020A	Barium	14.1	V	Z	0.102	0.509	mg/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW6020A	Beryllium	0.509	U	Z	0.102	0.509	mg/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW6020A	Cadmium	0.509	U	Z	0.102	0.509	mg/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW6020A	Calcium	120	V	Z	20.3	102	mg/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW6020A	Chromium	8.44	V	Z	0.102	0.509	mg/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW6020A	Cobalt	0.796	V	Z	0.102	0.509	mg/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW6020A	Copper	1.82	V	Z	0.203	0.509	mg/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW6020A	Iron	6930	V	Z	10.2	102	mg/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW6020A	Lead	4.47	V	Z	0.102	0.509	mg/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW6020A	Magnesium	111	V	Z	20.3	102	mg/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW6020A	Manganese	193	V	Z	0.203	0.509	mg/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW6020A	Nickel	1.48	V	Z	0.102	0.509	mg/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW6020A	Potassium	183	V	Z	20.3	102	mg/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW6020A	Selenium	0.509	U	Z	0.102	0.509	mg/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW6020A	Silver	0.509	U	Z	0.102	0.509	mg/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW6020A	Sodium	102	U	Z	20.3	102	mg/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW6020A	Thallium	0.509	U	Z	0.102	0.509	mg/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW6020A	Vanadium	16.1	V	Z	0.254	0.509	mg/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW6020A	Zinc	4.39	V	Z	1.02	2.03	mg/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW7471A	Mercury	0.0273	J	Z	0.0214	0.107	mg/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW8330	1,3,5-Trinitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW8330	1,3-Dinitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW8330	2,4,6-Trinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW8330	2,4-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW8330	2,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW8330	2-Amino-4,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW8330	2-Nitrotoluene	400	U	Z	100	400	ug/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW8330	3-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW8330	4-Amino-2,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW8330	4-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW8330	HMX	400	U	Z	100	400	ug/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW8330	Nitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW8330	RDX	400	U	Z	100	400	ug/kg
SO	R30-103Q-004 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-08	SW8330	Tetryl	400	U	Z	100	400	ug/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	D2216	Moisture, Percent	2.7	V	Z	0.1	0.1	%
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW6020A	Aluminum	3930	V	Z	9.89	98.9	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW6020A	Antimony	0.375	J	Z	0.198	0.494	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW6020A	Arsenic	1.31	V	Z	0.0989	0.494	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW6020A	Barium	48	V	Z	0.0989	0.494	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW6020A	Beryllium	0.219	J	Z	0.0989	0.494	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW6020A	Cadmium	0.113	J	Z	0.0989	0.494	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW6020A	Calcium	121	V	Z	19.8	98.9	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW6020A	Chromium	10	V	Z	0.0989	0.494	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW6020A	Cobalt	2.56	V	Z	0.0989	0.494	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW6020A	Copper	5.41	V	Z	0.198	0.494	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW6020A	Iron	2510	V	Z	9.89	98.9	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW6020A	Lead	23.7	V	Z	0.0989	0.494	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW6020A	Magnesium	218	V	Z	19.8	98.9	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW6020A	Manganese	204	V	Z	0.198	0.494	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW6020A	Nickel	6.2	V	Z	0.0989	0.494	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW6020A	Potassium	130	V	Z	19.8	98.9	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW6020A	Selenium	0.494	U	Z	0.0989	0.494	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW6020A	Silver	0.494	U	Z	0.0989	0.494	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW6020A	Sodium	98.9	U	Z	19.8	98.9	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW6020A	Thallium	0.494	U	Z	0.0989	0.494	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW6020A	Vanadium	5.45	V	Z	0.247	0.494	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW6020A	Zinc	6.54	V	Z	0.989	1.98	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW7471A	Mercury	0.102	U	Z	0.0204	0.102	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW8330	1,3,5-Trinitrobenzene	400	U	Z	99	400	ug/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW8330	1,3-Dinitrobenzene	400	U	Z	99	400	ug/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW8330	2,4,6-Trinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW8330	2,4-Dinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW8330	2,6-Dinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW8330	2-Amino-4,6-Dinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW8330	2-Nitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW8330	3-Nitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW8330	4-Amino-2,6-Dinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW8330	4-Nitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW8330	HMX	400	U	Z	99	400	ug/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW8330	Nitrobenzene	400	U	Z	99	400	ug/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW8330	RDX	400	U	Z	99	400	ug/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	NS	14H167	H167-11	SW8330	Tetryl	400	U	Z	99	400	ug/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	D2216	Moisture, Percent	2.7	V	Z	0.1	0.1	%
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW6020A	Aluminum	4250	V	Z	10.2	102	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW6020A	Antimony	0.449	J	Z	0.203	0.509	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW6020A	Arsenic	1.64	V	Z	0.102	0.509	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW6020A	Barium	48.2	V	Z	0.102	0.509	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW6020A	Beryllium	0.282	J	Z	0.102	0.509	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW6020A	Cadmium	0.115	J	Z	0.102	0.509	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW6020A	Calcium	122	V	Z	20.3	102	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW6020A	Chromium	5.9	V	Z	0.102	0.509	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW6020A	Cobalt	2.83	V	Z	0.102	0.509	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW6020A	Copper	6.38	V	Z	0.203	0.509	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW6020A	Iron	3240	V	Z	10.2	102	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW6020A	Lead	29.8	V	Z	0.102	0.509	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW6020A	Magnesium	233	V	Z	20.3	102	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW6020A	Manganese	240	V	Z	0.203	0.509	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW6020A	Nickel	4.08	V	Z	0.102	0.509	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW6020A	Potassium	141	V	Z	20.3	102	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW6020A	Selenium	0.105	J	Z	0.102	0.509	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW6020A	Silver	0.509	U	Z	0.102	0.509	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW6020A	Sodium	102	U	Z	20.3	102	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW6020A	Thallium	0.509	U	Z	0.102	0.509	mg/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW6020A	Vanadium	6.09	V	Z	0.254	0.509	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW6020A	Zinc	7.04	V	Z	1.02	2.03	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW7471A	Mercury	0.101	U	Z	0.0203	0.101	mg/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW8330	1,3,5-Trinitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW8330	1,3-Dinitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW8330	2,4,6-Trinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW8330	2,4-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW8330	2,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW8330	2-Amino-4,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW8330	2-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW8330	3-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW8330	4-Amino-2,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW8330	4-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW8330	HMX	400	U	Z	100	400	ug/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW8330	Nitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW8330	RDX	400	U	Z	100	400	ug/kg
SO	R30-103Q-005 (0.5-1.5)	0.5-1.5	8/21/14	FD	14H167	H167-12	SW8330	Tetryl	400	U	Z	100	400	ug/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	D2216	Moisture, Percent	3.7	V	Z	0.1	0.1	%
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW6020A	Aluminum	4070	V	Z	10.3	103	mg/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW6020A	Antimony	0.845	V	Z	0.206	0.514	mg/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW6020A	Arsenic	1.6	V	Z	0.103	0.514	mg/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW6020A	Barium	68.7	V	Z	0.103	0.514	mg/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW6020A	Beryllium	0.312	J	Z	0.103	0.514	mg/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW6020A	Cadmium	0.176	J	Z	0.103	0.514	mg/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW6020A	Calcium	153	V	Z	20.6	103	mg/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW6020A	Chromium	2.98	V	Z	0.103	0.514	mg/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW6020A	Cobalt	2.89	V	Z	0.103	0.514	mg/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW6020A	Copper	25.6	V	Z	0.206	0.514	mg/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW6020A	Iron	2480	V	Z	10.3	103	mg/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW6020A	Lead	194	V	Z	0.103	0.514	mg/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW6020A	Magnesium	219	V	Z	20.6	103	mg/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW6020A	Manganese	489	V	Z	0.206	0.514	mg/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW6020A	Nickel	5.86	V	Z	0.103	0.514	mg/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW6020A	Potassium	151	V	Z	20.6	103	mg/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW6020A	Selenium	0.125	J	Z	0.103	0.514	mg/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW6020A	Silver	0.514	U	Z	0.103	0.514	mg/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW6020A	Sodium	103	U	Z	20.6	103	mg/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW6020A	Thallium	0.514	U	Z	0.103	0.514	mg/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW6020A	Vanadium	5.22	V	Z	0.257	0.514	mg/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW6020A	Zinc	15	V	Z	1.03	2.06	mg/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW7471A	Mercury	0.0243	J	Z	0.0207	0.103	mg/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW8330	1,3,5-Trinitrobenzene	400	U	Z	99	400	ug/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW8330	1,3-Dinitrobenzene	400	U	Z	99	400	ug/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW8330	2,4,6-Trinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW8330	2,4-Dinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW8330	2,6-Dinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW8330	2-Amino-4,6-Dinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW8330	2-Nitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW8330	3-Nitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW8330	4-Amino-2,6-Dinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW8330	4-Nitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW8330	HMX	400	U	Z	99	400	ug/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW8330	Nitrobenzene	400	U	Z	99	400	ug/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW8330	RDX	400	U	Z	99	400	ug/kg
SO	R30-103Q-005 (0-0.5)	0-0.5	8/21/14	NS	14H167	H167-10	SW8330	Tetryl	400	U	Z	99	400	ug/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08	D2216	Moisture, Percent	9.9	V	Z	0.1	0.1	%
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08N	SW6020A	Aluminum	21900	V	Z	10.9	109	mg/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08N	SW6020A	Antimony	0.547	U	Z	0.219	0.547	mg/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08N	SW6020A	Arsenic	6.2	V	Z	0.109	0.547	mg/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08N	SW6020A	Barium	73.8	V	Z	0.109	0.547	mg/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08N	SW6020A	Beryllium	0.415	J	Z	0.109	0.547	mg/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08N	SW6020A	Cadmium	0.229	J	Z	0.109	0.547	mg/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08N	SW6020A	Calcium	203	V	Z	21.9	109	mg/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08N	SW6020A	Chromium	18	V	Z	0.109	0.547	mg/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08N	SW6020A	Cobalt	6.82	V	Z	0.109	0.547	mg/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08N	SW6020A	Copper	7.99	V	Z	0.219	0.547	mg/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Lab Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08N	SW6020A	Iron	18300	V	Z	10.9	109	mg/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08N	SW6020A	Lead	18.7	V	Z	0.109	0.547	mg/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08N	SW6020A	Magnesium	581	V	Z	21.9	109	mg/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08N	SW6020A	Manganese	379	V	Z	0.219	0.547	mg/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08N	SW6020A	Nickel	8.87	V	Z	0.109	0.547	mg/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08N	SW6020A	Potassium	546	V	Z	21.9	109	mg/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08N	SW6020A	Selenium	0.231	J	Z	0.109	0.547	mg/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08N	SW6020A	Silver	0.547	U	Z	0.109	0.547	mg/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08N	SW6020A	Sodium	109	U	Z	21.9	109	mg/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08N	SW6020A	Thallium	0.263	J	Z	0.109	0.547	mg/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08N	SW6020A	Vanadium	39.1	V	Z	0.273	0.547	mg/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08N	SW6020A	Zinc	19.5	V	Z	1.09	2.19	mg/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08	SW7471A	Mercury	0.0827	J	Z	0.0219	0.11	mg/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08	SW8330	1,3,5-Trinitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08	SW8330	1,3-Dinitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08	SW8330	2,4,6-Trinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08	SW8330	2,4-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08	SW8330	2,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08	SW8330	2-Amino-4,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08	SW8330	2-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08	SW8330	3-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08	SW8330	4-Amino-2,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08	SW8330	4-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08	SW8330	HMX	400	U	Z	100	400	ug/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08	SW8330	Nitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08	SW8330	RDX	400	U	Z	100	400	ug/kg
SO	R30-103Q-006 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-08	SW8330	Tetryl	400	U	Z	100	400	ug/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07	D2216	Moisture, Percent	9.6	V	Z	0.1	0.1	%
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07N	SW6020A	Aluminum	19500	V	Z	10.6	106	mg/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07N	SW6020A	Antimony	0.312	J	Z	0.213	0.532	mg/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07N	SW6020A	Arsenic	6.02	V	Z	0.106	0.532	mg/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07N	SW6020A	Barium	86.5	V	Z	0.106	0.532	mg/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07N	SW6020A	Beryllium	0.518	J	Z	0.106	0.532	mg/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07N	SW6020A	Cadmium	0.243	J	Z	0.106	0.532	mg/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07N	SW6020A	Calcium	222	V	Z	21.3	106	mg/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07N	SW6020A	Chromium	20	V	Z	0.106	0.532	mg/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07N	SW6020A	Cobalt	7.17	V	Z	0.106	0.532	mg/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07N	SW6020A	Copper	8.82	V	Z	0.213	0.532	mg/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07N	SW6020A	Iron	17000	V	Z	10.6	106	mg/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07N	SW6020A	Lead	36.9	V	Z	0.106	0.532	mg/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07N	SW6020A	Magnesium	543	V	Z	21.3	106	mg/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07N	SW6020A	Manganese	779	V	Z	0.213	0.532	mg/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07N	SW6020A	Nickel	8.79	V	Z	0.106	0.532	mg/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07N	SW6020A	Potassium	536	V	Z	21.3	106	mg/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07N	SW6020A	Selenium	0.253	J	Z	0.106	0.532	mg/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07N	SW6020A	Silver	0.532	U	Z	0.106	0.532	mg/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07N	SW6020A	Sodium	106	U	Z	21.3	106	mg/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07N	SW6020A	Thallium	0.277	J	Z	0.106	0.532	mg/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07N	SW6020A	Vanadium	35.3	V	Z	0.266	0.532	mg/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07N	SW6020A	Zinc	23.6	V	Z	1.06	2.13	mg/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07	SW7471A	Mercury	0.0605	J	Z	0.0221	0.111	mg/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07	SW8330	1,3,5-Trinitrobenzene	400	U	Z	99	400	ug/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07	SW8330	1,3-Dinitrobenzene	400	U	Z	99	400	ug/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07	SW8330	2,4,6-Trinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07	SW8330	2,4-Dinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07	SW8330	2,6-Dinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07	SW8330	2-Amino-4,6-Dinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07	SW8330	2-Nitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07	SW8330	3-Nitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07	SW8330	4-Amino-2,6-Dinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07	SW8330	4-Nitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07	SW8330	HMX	400	U	Z	99	400	ug/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07	SW8330	Nitrobenzene	400	U	Z	99	400	ug/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07	SW8330	RDX	400	U	Z	99	400	ug/kg
SO	R30-103Q-006 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-07	SW8330	Tetryl	400	U	Z	99	400	ug/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19	D2216	Moisture, Percent	4.2	V	Z	0.1	0.1	%

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample		QC Code	Delivery Group	Lab		Method	Parameter Name	Value	Lab Validation		MDL	RL	Units
		Depth (ft bgs)	Sample Date			Sample ID					Flag	Code			
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19N		SW6020A	Aluminum	5220	V	Z	10	100	mg/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19N		SW6020A	Antimony	2.59	V	Z	0.201	0.502	mg/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19N		SW6020A	Arsenic	1.59	V	Z	0.1	0.502	mg/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19N		SW6020A	Barium	59.6	V	Z	0.1	0.502	mg/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19N		SW6020A	Beryllium	0.289	J	Z	0.1	0.502	mg/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19N		SW6020A	Cadmium	0.105	J	Z	0.1	0.502	mg/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19N		SW6020A	Calcium	222	V	Z	20.1	100	mg/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19N		SW6020A	Chromium	4.86	V	Z	0.1	0.502	mg/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19N		SW6020A	Cobalt	2.83	V	Z	0.1	0.502	mg/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19N		SW6020A	Copper	66.3	V	Z	0.201	0.502	mg/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19N		SW6020A	Iron	3140	V	Z	10	100	mg/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19N		SW6020A	Lead	464	V	Z	0.1	0.502	mg/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19N		SW6020A	Magnesium	257	V	Z	20.1	100	mg/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19N		SW6020A	Manganese	303	V	Z	0.201	0.502	mg/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19N		SW6020A	Nickel	16.4	V	Z	0.1	0.502	mg/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19N		SW6020A	Potassium	173	V	Z	20.1	100	mg/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19N		SW6020A	Selenium	0.131	J	Z	0.1	0.502	mg/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19N		SW6020A	Silver	0.502	U	Z	0.1	0.502	mg/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19N		SW6020A	Sodium	100	U	Z	20.1	100	mg/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19N		SW6020A	Thallium	0.502	U	Z	0.1	0.502	mg/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19N		SW6020A	Vanadium	7.15	V	Z	0.251	0.502	mg/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19N		SW6020A	Zinc	19.6	V	Z	1	2.01	mg/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19		SW7471A	Mercury	0.026	J	Z	0.0208	0.104	mg/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19		SW8330	1,3,5-Trinitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19		SW8330	1,3-Dinitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19		SW8330	2,4,6-Trinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19		SW8330	2,4-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19		SW8330	2,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19		SW8330	2-Amino-4,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19		SW8330	2-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19		SW8330	3-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19		SW8330	4-Amino-2,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19		SW8330	4-Nitrotoluene	400	U	Z	100	400	ug/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19	SW8330	HMX	400	U	Z	100	400	ug/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19	SW8330	Nitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19	SW8330	RDX	400	U	Z	100	400	ug/kg
SO	R30-103Q-007 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-19	SW8330	Tetryl	400	U	Z	100	400	ug/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18	D2216	Moisture, Percent	6.1	V	Z	0.1	0.1	%
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18N	SW6020A	Aluminum	4660	V	Z	10.1	101	mg/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18N	SW6020A	Antimony	5.62	V	Z	0.202	0.505	mg/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18N	SW6020A	Arsenic	1.78	V	Z	0.101	0.505	mg/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18N	SW6020A	Barium	63.9	V	Z	0.101	0.505	mg/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18N	SW6020A	Beryllium	0.303	J	Z	0.101	0.505	mg/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18N	SW6020A	Cadmium	0.505	U	Z	0.101	0.505	mg/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18N	SW6020A	Calcium	304	V	Z	20.2	101	mg/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18N	SW6020A	Chromium	5.18	V	Z	0.101	0.505	mg/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18N	SW6020A	Cobalt	3.14	V	Z	0.101	0.505	mg/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18N	SW6020A	Copper	263	V	Z	0.202	0.505	mg/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18N	SW6020A	Iron	3350	V	Z	10.1	101	mg/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18N	SW6020A	Lead	1480	V	Z	0.505	2.52	mg/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18N	SW6020A	Magnesium	234	V	Z	20.2	101	mg/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18N	SW6020A	Manganese	462	V	Z	0.202	0.505	mg/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18N	SW6020A	Nickel	42.4	V	Z	0.101	0.505	mg/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18N	SW6020A	Potassium	184	V	Z	20.2	101	mg/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18N	SW6020A	Selenium	0.139	J	Z	0.101	0.505	mg/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18N	SW6020A	Silver	0.505	U	Z	0.101	0.505	mg/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18N	SW6020A	Sodium	101	U	Z	20.2	101	mg/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18N	SW6020A	Thallium	0.103	J	Z	0.101	0.505	mg/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18N	SW6020A	Vanadium	7.27	V	Z	0.252	0.505	mg/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18N	SW6020A	Zinc	29.1	V	Z	1.01	2.02	mg/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18	SW7471A	Mercury	0.0248	J	Z	0.0213	0.106	mg/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18	SW8330	1,3,5-Trinitrobenzene	400	U	Z	99	400	ug/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18	SW8330	1,3-Dinitrobenzene	400	U	Z	99	400	ug/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18	SW8330	2,4,6-Trinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18	SW8330	2,4-Dinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18	SW8330	2,6-Dinitrotoluene	400	U	Z	99	400	ug/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18	SW8330	2-Amino-4,6-Dinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18	SW8330	2-Nitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18	SW8330	3-Nitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18	SW8330	4-Amino-2,6-Dinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18	SW8330	4-Nitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18	SW8330	HMX	400	U	Z	99	400	ug/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18	SW8330	Nitrobenzene	400	U	Z	99	400	ug/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18	SW8330	RDX	400	U	Z	99	400	ug/kg
SO	R30-103Q-007 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-18	SW8330	Tetryl	400	U	Z	99	400	ug/kg
SO	R30-103Q-008	0-0.5	8/21/14	NS	14H167	H167-13	D2216	Moisture, Percent	21.2	V	Z	0.1	0.1	%
SO	R30-103Q-008	0-0.5	8/21/14	NS	14H167	H167-13	SW6020A	Aluminum	15300	V	Z	12.4	124	mg/kg
SO	R30-103Q-008	0-0.5	8/21/14	NS	14H167	H167-13	SW6020A	Antimony	0.279	J	Z	0.248	0.619	mg/kg
SO	R30-103Q-008	0-0.5	8/21/14	NS	14H167	H167-13	SW6020A	Arsenic	5.62	V	Z	0.124	0.619	mg/kg
SO	R30-103Q-008	0-0.5	8/21/14	NS	14H167	H167-13	SW6020A	Barium	121	V	Z	0.124	0.619	mg/kg
SO	R30-103Q-008	0-0.5	8/21/14	NS	14H167	H167-13	SW6020A	Beryllium	0.556	J	Z	0.124	0.619	mg/kg
SO	R30-103Q-008	0-0.5	8/21/14	NS	14H167	H167-13	SW6020A	Cadmium	0.28	J	Z	0.124	0.619	mg/kg
SO	R30-103Q-008	0-0.5	8/21/14	NS	14H167	H167-13	SW6020A	Calcium	576	V	Z	24.8	124	mg/kg
SO	R30-103Q-008	0-0.5	8/21/14	NS	14H167	H167-13	SW6020A	Chromium	12.4	V	Z	0.124	0.619	mg/kg
SO	R30-103Q-008	0-0.5	8/21/14	NS	14H167	H167-13	SW6020A	Cobalt	4.9	V	Z	0.124	0.619	mg/kg
SO	R30-103Q-008	0-0.5	8/21/14	NS	14H167	H167-13	SW6020A	Copper	5.58	V	Z	0.248	0.619	mg/kg
SO	R30-103Q-008	0-0.5	8/21/14	NS	14H167	H167-13	SW6020A	Iron	12600	V	Z	12.4	124	mg/kg
SO	R30-103Q-008	0-0.5	8/21/14	NS	14H167	H167-13	SW6020A	Lead	21.5	V	Z	0.124	0.619	mg/kg
SO	R30-103Q-008	0-0.5	8/21/14	NS	14H167	H167-13	SW6020A	Magnesium	442	V	Z	24.8	124	mg/kg
SO	R30-103Q-008	0-0.5	8/21/14	NS	14H167	H167-13	SW6020A	Manganese	1450	V	Z	0.248	0.619	mg/kg
SO	R30-103Q-008	0-0.5	8/21/14	NS	14H167	H167-13	SW6020A	Nickel	6.65	V	Z	0.124	0.619	mg/kg
SO	R30-103Q-008	0-0.5	8/21/14	NS	14H167	H167-13	SW6020A	Potassium	367	V	Z	24.8	124	mg/kg
SO	R30-103Q-008	0-0.5	8/21/14	NS	14H167	H167-13	SW6020A	Selenium	0.237	J	Z	0.124	0.619	mg/kg
SO	R30-103Q-008	0-0.5	8/21/14	NS	14H167	H167-13	SW6020A	Silver	0.619	U	Z	0.124	0.619	mg/kg
SO	R30-103Q-008	0-0.5	8/21/14	NS	14H167	H167-13	SW6020A	Sodium	124	U	Z	24.8	124	mg/kg
SO	R30-103Q-008	0-0.5	8/21/14	NS	14H167	H167-13	SW6020A	Thallium	0.212	J	Z	0.124	0.619	mg/kg
SO	R30-103Q-008	0-0.5	8/21/14	NS	14H167	H167-13	SW6020A	Vanadium	26.4	V	Z	0.31	0.619	mg/kg
SO	R30-103Q-008	0-0.5	8/21/14	NS	14H167	H167-13	SW6020A	Zinc	18	V	Z	1.24	2.48	mg/kg
SO	R30-103Q-008	0-0.5	8/21/14	NS	14H167	H167-13	SW7471A	Mercury	0.0542	J	Z	0.0254	0.127	mg/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-103Q-009	0-0.5	8/20/14	NS	14H166	H166-09	D2216	Moisture, Percent	6.1	V	Z	0.1	0.1	%
SO	R30-103Q-009	0-0.5	8/20/14	NS	14H166	H166-09N	SW6020A	Aluminum	5040	V	Z	10.3	103	mg/kg
SO	R30-103Q-009	0-0.5	8/20/14	NS	14H166	H166-09N	SW6020A	Antimony	0.247	J	Z	0.206	0.514	mg/kg
SO	R30-103Q-009	0-0.5	8/20/14	NS	14H166	H166-09N	SW6020A	Arsenic	2.39	V	Z	0.103	0.514	mg/kg
SO	R30-103Q-009	0-0.5	8/20/14	NS	14H166	H166-09N	SW6020A	Barium	36.1	V	Z	0.103	0.514	mg/kg
SO	R30-103Q-009	0-0.5	8/20/14	NS	14H166	H166-09N	SW6020A	Beryllium	0.178	J	Z	0.103	0.514	mg/kg
SO	R30-103Q-009	0-0.5	8/20/14	NS	14H166	H166-09N	SW6020A	Cadmium	0.514	U	Z	0.103	0.514	mg/kg
SO	R30-103Q-009	0-0.5	8/20/14	NS	14H166	H166-09N	SW6020A	Calcium	255	V	Z	20.6	103	mg/kg
SO	R30-103Q-009	0-0.5	8/20/14	NS	14H166	H166-09N	SW6020A	Chromium	13.3	V	Z	0.103	0.514	mg/kg
SO	R30-103Q-009	0-0.5	8/20/14	NS	14H166	H166-09N	SW6020A	Cobalt	2.66	V	Z	0.103	0.514	mg/kg
SO	R30-103Q-009	0-0.5	8/20/14	NS	14H166	H166-09N	SW6020A	Copper	4.22	V	Z	0.206	0.514	mg/kg
SO	R30-103Q-009	0-0.5	8/20/14	NS	14H166	H166-09N	SW6020A	Iron	7390	V	Z	10.3	103	mg/kg
SO	R30-103Q-009	0-0.5	8/20/14	NS	14H166	H166-09N	SW6020A	Lead	8.21	V	Z	0.103	0.514	mg/kg
SO	R30-103Q-009	0-0.5	8/20/14	NS	14H166	H166-09N	SW6020A	Magnesium	249	V	Z	20.6	103	mg/kg
SO	R30-103Q-009	0-0.5	8/20/14	NS	14H166	H166-09N	SW6020A	Manganese	131	V	Z	0.206	0.514	mg/kg
SO	R30-103Q-009	0-0.5	8/20/14	NS	14H166	H166-09N	SW6020A	Nickel	3.17	V	Z	0.103	0.514	mg/kg
SO	R30-103Q-009	0-0.5	8/20/14	NS	14H166	H166-09N	SW6020A	Potassium	173	V	Z	20.6	103	mg/kg
SO	R30-103Q-009	0-0.5	8/20/14	NS	14H166	H166-09N	SW6020A	Selenium	0.118	J	Z	0.103	0.514	mg/kg
SO	R30-103Q-009	0-0.5	8/20/14	NS	14H166	H166-09N	SW6020A	Silver	0.514	U	Z	0.103	0.514	mg/kg
SO	R30-103Q-009	0-0.5	8/20/14	NS	14H166	H166-09N	SW6020A	Sodium	103	U	Z	20.6	103	mg/kg
SO	R30-103Q-009	0-0.5	8/20/14	NS	14H166	H166-09N	SW6020A	Thallium	0.514	U	Z	0.103	0.514	mg/kg
SO	R30-103Q-009	0-0.5	8/20/14	NS	14H166	H166-09N	SW6020A	Vanadium	12.3	V	Z	0.257	0.514	mg/kg
SO	R30-103Q-009	0-0.5	8/20/14	NS	14H166	H166-09N	SW6020A	Zinc	13.7	V	Z	1.03	2.06	mg/kg
SO	R30-103Q-009	0-0.5	8/20/14	NS	14H166	H166-09	SW7471A	Mercury	0.0305	J	Z	0.0212	0.106	mg/kg
SO	R30-103Q-010	0-0.5	8/20/14	NS	14H166	H166-10	D2216	Moisture, Percent	8.4	V	Z	0.1	0.1	%
SO	R30-103Q-010	0-0.5	8/20/14	NS	14H166	H166-10N	SW6020A	Aluminum	10900	V	Z	10.9	109	mg/kg
SO	R30-103Q-010	0-0.5	8/20/14	NS	14H166	H166-10N	SW6020A	Antimony	0.293	J	Z	0.218	0.546	mg/kg
SO	R30-103Q-010	0-0.5	8/20/14	NS	14H166	H166-10N	SW6020A	Arsenic	4.12	V	Z	0.109	0.546	mg/kg
SO	R30-103Q-010	0-0.5	8/20/14	NS	14H166	H166-10N	SW6020A	Barium	67.5	V	Z	0.109	0.546	mg/kg
SO	R30-103Q-010	0-0.5	8/20/14	NS	14H166	H166-10N	SW6020A	Beryllium	0.359	J	Z	0.109	0.546	mg/kg
SO	R30-103Q-010	0-0.5	8/20/14	NS	14H166	H166-10N	SW6020A	Cadmium	0.154	J	Z	0.109	0.546	mg/kg
SO	R30-103Q-010	0-0.5	8/20/14	NS	14H166	H166-10N	SW6020A	Calcium	619	V	Z	21.8	109	mg/kg
SO	R30-103Q-010	0-0.5	8/20/14	NS	14H166	H166-10N	SW6020A	Chromium	12.8	V	Z	0.109	0.546	mg/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-103Q-010	0-0.5	8/20/14	NS	14H166	H166-10N	SW6020A	Cobalt	3.59	V	Z	0.109	0.546	mg/kg
SO	R30-103Q-010	0-0.5	8/20/14	NS	14H166	H166-10N	SW6020A	Copper	16	V	Z	0.218	0.546	mg/kg
SO	R30-103Q-010	0-0.5	8/20/14	NS	14H166	H166-10N	SW6020A	Iron	10500	V	Z	10.9	109	mg/kg
SO	R30-103Q-010	0-0.5	8/20/14	NS	14H166	H166-10N	SW6020A	Lead	16.1	V	Z	0.109	0.546	mg/kg
SO	R30-103Q-010	0-0.5	8/20/14	NS	14H166	H166-10N	SW6020A	Magnesium	377	V	Z	21.8	109	mg/kg
SO	R30-103Q-010	0-0.5	8/20/14	NS	14H166	H166-10N	SW6020A	Manganese	1070	V	Z	0.218	0.546	mg/kg
SO	R30-103Q-010	0-0.5	8/20/14	NS	14H166	H166-10N	SW6020A	Nickel	4.93	V	Z	0.109	0.546	mg/kg
SO	R30-103Q-010	0-0.5	8/20/14	NS	14H166	H166-10N	SW6020A	Potassium	258	V	Z	21.8	109	mg/kg
SO	R30-103Q-010	0-0.5	8/20/14	NS	14H166	H166-10N	SW6020A	Selenium	0.192	J	Z	0.109	0.546	mg/kg
SO	R30-103Q-010	0-0.5	8/20/14	NS	14H166	H166-10N	SW6020A	Silver	0.546	U	Z	0.109	0.546	mg/kg
SO	R30-103Q-010	0-0.5	8/20/14	NS	14H166	H166-10N	SW6020A	Sodium	109	U	Z	21.8	109	mg/kg
SO	R30-103Q-010	0-0.5	8/20/14	NS	14H166	H166-10N	SW6020A	Thallium	0.183	J	Z	0.109	0.546	mg/kg
SO	R30-103Q-010	0-0.5	8/20/14	NS	14H166	H166-10N	SW6020A	Vanadium	21.4	V	Z	0.273	0.546	mg/kg
SO	R30-103Q-010	0-0.5	8/20/14	NS	14H166	H166-10N	SW6020A	Zinc	23.8	V	Z	1.09	2.18	mg/kg
SO	R30-103Q-010	0-0.5	8/20/14	NS	14H166	H166-10	SW7471A	Mercury	0.054	J	Z	0.0218	0.109	mg/kg
SO	R30-103Q-011	0-0.5	8/21/14	NS	14H167	H167-14	D2216	Moisture, Percent	10.4	V	Z	0.1	0.1	%
SO	R30-103Q-011	0-0.5	8/21/14	NS	14H167	H167-14	SW6020A	Aluminum	11000	V	Z	10.8	108	mg/kg
SO	R30-103Q-011	0-0.5	8/21/14	NS	14H167	H167-14	SW6020A	Antimony	0.921	V	Z	0.217	0.542	mg/kg
SO	R30-103Q-011	0-0.5	8/21/14	NS	14H167	H167-14	SW6020A	Arsenic	10.6	V	Z	0.108	0.542	mg/kg
SO	R30-103Q-011	0-0.5	8/21/14	NS	14H167	H167-14	SW6020A	Barium	48	V	Z	0.108	0.542	mg/kg
SO	R30-103Q-011	0-0.5	8/21/14	NS	14H167	H167-14	SW6020A	Beryllium	0.402	J	Z	0.108	0.542	mg/kg
SO	R30-103Q-011	0-0.5	8/21/14	NS	14H167	H167-14	SW6020A	Cadmium	0.284	J	Z	0.108	0.542	mg/kg
SO	R30-103Q-011	0-0.5	8/21/14	NS	14H167	H167-14	SW6020A	Calcium	147	V	Z	21.7	108	mg/kg
SO	R30-103Q-011	0-0.5	8/21/14	NS	14H167	H167-14	SW6020A	Chromium	19.8	V	Z	0.108	0.542	mg/kg
SO	R30-103Q-011	0-0.5	8/21/14	NS	14H167	H167-14	SW6020A	Cobalt	3.28	V	Z	0.108	0.542	mg/kg
SO	R30-103Q-011	0-0.5	8/21/14	NS	14H167	H167-14	SW6020A	Copper	16.2	V	Z	0.217	0.542	mg/kg
SO	R30-103Q-011	0-0.5	8/21/14	NS	14H167	H167-14	SW6020A	Iron	24400	V	Z	10.8	108	mg/kg
SO	R30-103Q-011	0-0.5	8/21/14	NS	14H167	H167-14	SW6020A	Lead	78.7	V	Z	0.108	0.542	mg/kg
SO	R30-103Q-011	0-0.5	8/21/14	NS	14H167	H167-14	SW6020A	Magnesium	245	V	Z	21.7	108	mg/kg
SO	R30-103Q-011	0-0.5	8/21/14	NS	14H167	H167-14	SW6020A	Manganese	372	V	Z	0.217	0.542	mg/kg
SO	R30-103Q-011	0-0.5	8/21/14	NS	14H167	H167-14	SW6020A	Nickel	7.52	V	Z	0.108	0.542	mg/kg
SO	R30-103Q-011	0-0.5	8/21/14	NS	14H167	H167-14	SW6020A	Potassium	416	V	Z	21.7	108	mg/kg
SO	R30-103Q-011	0-0.5	8/21/14	NS	14H167	H167-14	SW6020A	Selenium	0.224	J	Z	0.108	0.542	mg/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-103Q-011	0-0.5	8/21/14	NS	14H167	H167-14	SW6020A	Silver	0.542	U	Z	0.108	0.542	mg/kg
SO	R30-103Q-011	0-0.5	8/21/14	NS	14H167	H167-14	SW6020A	Sodium	108	U	Z	21.7	108	mg/kg
SO	R30-103Q-011	0-0.5	8/21/14	NS	14H167	H167-14	SW6020A	Thallium	0.145	J	Z	0.108	0.542	mg/kg
SO	R30-103Q-011	0-0.5	8/21/14	NS	14H167	H167-14	SW6020A	Vanadium	37.3	V	Z	0.271	0.542	mg/kg
SO	R30-103Q-011	0-0.5	8/21/14	NS	14H167	H167-14	SW6020A	Zinc	15.5	V	Z	1.08	2.17	mg/kg
SO	R30-103Q-011	0-0.5	8/21/14	NS	14H167	H167-14	SW7471A	Mercury	0.0428	J	Z	0.0223	0.111	mg/kg
SO	R30-103Q-012	0-0.5	8/20/14	NS	14H166	H166-20	D2216	Moisture, Percent	11.4	V	Z	0.1	0.1	%
SO	R30-103Q-012	0-0.5	8/20/14	NS	14H166	H166-20N	SW6020A	Aluminum	21700	V	Z	10.9	109	mg/kg
SO	R30-103Q-012	0-0.5	8/20/14	NS	14H166	H166-20N	SW6020A	Antimony	0.428	J	Z	0.217	0.543	mg/kg
SO	R30-103Q-012	0-0.5	8/20/14	NS	14H166	H166-20N	SW6020A	Arsenic	6.66	V	Z	0.109	0.543	mg/kg
SO	R30-103Q-012	0-0.5	8/20/14	NS	14H166	H166-20N	SW6020A	Barium	161	V	Z	0.109	0.543	mg/kg
SO	R30-103Q-012	0-0.5	8/20/14	NS	14H166	H166-20N	SW6020A	Beryllium	0.697	V	Z	0.109	0.543	mg/kg
SO	R30-103Q-012	0-0.5	8/20/14	NS	14H166	H166-20N	SW6020A	Cadmium	0.251	J	Z	0.109	0.543	mg/kg
SO	R30-103Q-012	0-0.5	8/20/14	NS	14H166	H166-20N	SW6020A	Calcium	827	V	Z	21.7	109	mg/kg
SO	R30-103Q-012	0-0.5	8/20/14	NS	14H166	H166-20N	SW6020A	Chromium	14.1	V	Z	0.109	0.543	mg/kg
SO	R30-103Q-012	0-0.5	8/20/14	NS	14H166	H166-20N	SW6020A	Cobalt	7.84	V	Z	0.109	0.543	mg/kg
SO	R30-103Q-012	0-0.5	8/20/14	NS	14H166	H166-20N	SW6020A	Copper	10.9	V	Z	0.217	0.543	mg/kg
SO	R30-103Q-012	0-0.5	8/20/14	NS	14H166	H166-20N	SW6020A	Iron	14900	V	Z	10.9	109	mg/kg
SO	R30-103Q-012	0-0.5	8/20/14	NS	14H166	H166-20N	SW6020A	Lead	48.2	V	Z	0.109	0.543	mg/kg
SO	R30-103Q-012	0-0.5	8/20/14	NS	14H166	H166-20N	SW6020A	Magnesium	670	V	Z	21.7	109	mg/kg
SO	R30-103Q-012	0-0.5	8/20/14	NS	14H166	H166-20I	SW6020A	Manganese	2070	V	Z	1.09	2.71	mg/kg
SO	R30-103Q-012	0-0.5	8/20/14	NS	14H166	H166-20N	SW6020A	Nickel	10.2	V	Z	0.109	0.543	mg/kg
SO	R30-103Q-012	0-0.5	8/20/14	NS	14H166	H166-20N	SW6020A	Potassium	562	V	Z	21.7	109	mg/kg
SO	R30-103Q-012	0-0.5	8/20/14	NS	14H166	H166-20N	SW6020A	Selenium	0.31	J	Z	0.109	0.543	mg/kg
SO	R30-103Q-012	0-0.5	8/20/14	NS	14H166	H166-20N	SW6020A	Silver	0.543	U	Z	0.109	0.543	mg/kg
SO	R30-103Q-012	0-0.5	8/20/14	NS	14H166	H166-20N	SW6020A	Sodium	109	U	Z	21.7	109	mg/kg
SO	R30-103Q-012	0-0.5	8/20/14	NS	14H166	H166-20N	SW6020A	Thallium	0.306	J	Z	0.109	0.543	mg/kg
SO	R30-103Q-012	0-0.5	8/20/14	NS	14H166	H166-20N	SW6020A	Vanadium	31.9	V	Z	0.271	0.543	mg/kg
SO	R30-103Q-012	0-0.5	8/20/14	NS	14H166	H166-20N	SW6020A	Zinc	35.7	V	Z	1.09	2.17	mg/kg
SO	R30-103Q-012	0-0.5	8/20/14	NS	14H166	H166-20	SW7471A	Mercury	0.0948	J	Z	0.0226	0.113	mg/kg
SO	R30-103Q-013	0-0.5	8/21/14	NS	14H167	H167-15	D2216	Moisture, Percent	6.6	V	Z	0.1	0.1	%
SO	R30-103Q-013	0-0.5	8/21/14	NS	14H167	H167-15	SW6020A	Aluminum	11900	V	Z	10.7	107	mg/kg
SO	R30-103Q-013	0-0.5	8/21/14	NS	14H167	H167-15	SW6020A	Antimony	0.293	J	Z	0.213	0.533	mg/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-103Q-013	0-0.5	8/21/14	NS	14H167	H167-15	SW6020A	Arsenic	4.57	V	Z	0.107	0.533	mg/kg
SO	R30-103Q-013	0-0.5	8/21/14	NS	14H167	H167-15	SW6020A	Barium	55.8	V	Z	0.107	0.533	mg/kg
SO	R30-103Q-013	0-0.5	8/21/14	NS	14H167	H167-15	SW6020A	Beryllium	0.369	J	Z	0.107	0.533	mg/kg
SO	R30-103Q-013	0-0.5	8/21/14	NS	14H167	H167-15	SW6020A	Cadmium	0.196	J	Z	0.107	0.533	mg/kg
SO	R30-103Q-013	0-0.5	8/21/14	NS	14H167	H167-15	SW6020A	Calcium	340	V	Z	21.3	107	mg/kg
SO	R30-103Q-013	0-0.5	8/21/14	NS	14H167	H167-15	SW6020A	Chromium	9.91	V	Z	0.107	0.533	mg/kg
SO	R30-103Q-013	0-0.5	8/21/14	NS	14H167	H167-15	SW6020A	Cobalt	3.53	V	Z	0.107	0.533	mg/kg
SO	R30-103Q-013	0-0.5	8/21/14	NS	14H167	H167-15	SW6020A	Copper	8.18	V	Z	0.213	0.533	mg/kg
SO	R30-103Q-013	0-0.5	8/21/14	NS	14H167	H167-15	SW6020A	Iron	10200	V	Z	10.7	107	mg/kg
SO	R30-103Q-013	0-0.5	8/21/14	NS	14H167	H167-15	SW6020A	Lead	24.5	V	Z	0.107	0.533	mg/kg
SO	R30-103Q-013	0-0.5	8/21/14	NS	14H167	H167-15	SW6020A	Magnesium	362	V	Z	21.3	107	mg/kg
SO	R30-103Q-013	0-0.5	8/21/14	NS	14H167	H167-15	SW6020A	Manganese	713	V	Z	0.213	0.533	mg/kg
SO	R30-103Q-013	0-0.5	8/21/14	NS	14H167	H167-15	SW6020A	Nickel	5.34	V	Z	0.107	0.533	mg/kg
SO	R30-103Q-013	0-0.5	8/21/14	NS	14H167	H167-15	SW6020A	Potassium	312	V	Z	21.3	107	mg/kg
SO	R30-103Q-013	0-0.5	8/21/14	NS	14H167	H167-15	SW6020A	Selenium	0.174	J	Z	0.107	0.533	mg/kg
SO	R30-103Q-013	0-0.5	8/21/14	NS	14H167	H167-15	SW6020A	Silver	0.533	U	Z	0.107	0.533	mg/kg
SO	R30-103Q-013	0-0.5	8/21/14	NS	14H167	H167-15	SW6020A	Sodium	107	U	Z	21.3	107	mg/kg
SO	R30-103Q-013	0-0.5	8/21/14	NS	14H167	H167-15	SW6020A	Thallium	0.144	J	Z	0.107	0.533	mg/kg
SO	R30-103Q-013	0-0.5	8/21/14	NS	14H167	H167-15	SW6020A	Vanadium	22.5	V	Z	0.266	0.533	mg/kg
SO	R30-103Q-013	0-0.5	8/21/14	NS	14H167	H167-15	SW6020A	Zinc	14.5	V	Z	1.07	2.13	mg/kg
SO	R30-103Q-013	0-0.5	8/21/14	NS	14H167	H167-15	SW7471A	Mercury	0.0529	J	Z	0.0215	0.107	mg/kg
SO	R30-103Q-014	0-0.5	8/20/14	NS	14H166	H166-11	D2216	Moisture, Percent	10.1	V	Z	0.1	0.1	%
SO	R30-103Q-014	0-0.5	8/20/14	NS	14H166	H166-11N	SW6020A	Aluminum	15800	V	Z	10.7	107	mg/kg
SO	R30-103Q-014	0-0.5	8/20/14	NS	14H166	H166-11N	SW6020A	Antimony	0.537	U	Z	0.215	0.537	mg/kg
SO	R30-103Q-014	0-0.5	8/20/14	NS	14H166	H166-11N	SW6020A	Arsenic	5.45	V	Z	0.107	0.537	mg/kg
SO	R30-103Q-014	0-0.5	8/20/14	NS	14H166	H166-11N	SW6020A	Barium	178	V	Z	0.107	0.537	mg/kg
SO	R30-103Q-014	0-0.5	8/20/14	NS	14H166	H166-11N	SW6020A	Beryllium	1.11	V	Z	0.107	0.537	mg/kg
SO	R30-103Q-014	0-0.5	8/20/14	NS	14H166	H166-11N	SW6020A	Cadmium	0.322	J	Z	0.107	0.537	mg/kg
SO	R30-103Q-014	0-0.5	8/20/14	NS	14H166	H166-11N	SW6020A	Calcium	919	V	Z	21.5	107	mg/kg
SO	R30-103Q-014	0-0.5	8/20/14	NS	14H166	H166-11N	SW6020A	Chromium	9.96	V	Z	0.107	0.537	mg/kg
SO	R30-103Q-014	0-0.5	8/20/14	NS	14H166	H166-11N	SW6020A	Cobalt	6.16	V	Z	0.107	0.537	mg/kg
SO	R30-103Q-014	0-0.5	8/20/14	NS	14H166	H166-11N	SW6020A	Copper	5.46	V	Z	0.215	0.537	mg/kg
SO	R30-103Q-014	0-0.5	8/20/14	NS	14H166	H166-11N	SW6020A	Iron	9090	V	Z	10.7	107	mg/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-103Q-014	0-0.5	8/20/14	NS	14H166	H166-11N	SW6020A	Lead	26.9	V	Z	0.107	0.537	mg/kg
SO	R30-103Q-014	0-0.5	8/20/14	NS	14H166	H166-11N	SW6020A	Magnesium	544	V	Z	21.5	107	mg/kg
SO	R30-103Q-014	0-0.5	8/20/14	NS	14H166	H166-11I	SW6020A	Manganese	2880	V	Z	1.07	2.69	mg/kg
SO	R30-103Q-014	0-0.5	8/20/14	NS	14H166	H166-11N	SW6020A	Nickel	7.77	V	Z	0.107	0.537	mg/kg
SO	R30-103Q-014	0-0.5	8/20/14	NS	14H166	H166-11N	SW6020A	Potassium	408	V	Z	21.5	107	mg/kg
SO	R30-103Q-014	0-0.5	8/20/14	NS	14H166	H166-11N	SW6020A	Selenium	0.316	J	Z	0.107	0.537	mg/kg
SO	R30-103Q-014	0-0.5	8/20/14	NS	14H166	H166-11N	SW6020A	Silver	0.537	U	Z	0.107	0.537	mg/kg
SO	R30-103Q-014	0-0.5	8/20/14	NS	14H166	H166-11N	SW6020A	Sodium	107	U	Z	21.5	107	mg/kg
SO	R30-103Q-014	0-0.5	8/20/14	NS	14H166	H166-11N	SW6020A	Thallium	0.238	J	Z	0.107	0.537	mg/kg
SO	R30-103Q-014	0-0.5	8/20/14	NS	14H166	H166-11N	SW6020A	Vanadium	19.9	V	Z	0.269	0.537	mg/kg
SO	R30-103Q-014	0-0.5	8/20/14	NS	14H166	H166-11N	SW6020A	Zinc	20.9	V	Z	1.07	2.15	mg/kg
SO	R30-103Q-014	0-0.5	8/20/14	NS	14H166	H166-11	SW7471A	Mercury	0.0557	J	Z	0.0221	0.111	mg/kg
SO	R30-103Q-015	0-0.5	8/21/14	NS	14H167	H167-16	D2216	Moisture, Percent	10.4	V	Z	0.1	0.1	%
SO	R30-103Q-015	0-0.5	8/21/14	NS	14H167	H167-16	SW6020A	Aluminum	12800	V	Z	10.3	103	mg/kg
SO	R30-103Q-015	0-0.5	8/21/14	NS	14H167	H167-16	SW6020A	Antimony	2.69	V	Z	0.206	0.515	mg/kg
SO	R30-103Q-015	0-0.5	8/21/14	NS	14H167	H167-16	SW6020A	Arsenic	6.03	V	Z	0.103	0.515	mg/kg
SO	R30-103Q-015	0-0.5	8/21/14	NS	14H167	H167-16	SW6020A	Barium	70.6	V	Z	0.103	0.515	mg/kg
SO	R30-103Q-015	0-0.5	8/21/14	NS	14H167	H167-16	SW6020A	Beryllium	0.458	J	Z	0.103	0.515	mg/kg
SO	R30-103Q-015	0-0.5	8/21/14	NS	14H167	H167-16	SW6020A	Cadmium	0.239	J	Z	0.103	0.515	mg/kg
SO	R30-103Q-015	0-0.5	8/21/14	NS	14H167	H167-16	SW6020A	Calcium	552	V	Z	20.6	103	mg/kg
SO	R30-103Q-015	0-0.5	8/21/14	NS	14H167	H167-16	SW6020A	Chromium	12.4	V	Z	0.103	0.515	mg/kg
SO	R30-103Q-015	0-0.5	8/21/14	NS	14H167	H167-16	SW6020A	Cobalt	4.6	V	Z	0.103	0.515	mg/kg
SO	R30-103Q-015	0-0.5	8/21/14	NS	14H167	H167-16	SW6020A	Copper	64.6	V	Z	0.206	0.515	mg/kg
SO	R30-103Q-015	0-0.5	8/21/14	NS	14H167	H167-16	SW6020A	Iron	16800	V	Z	10.3	103	mg/kg
SO	R30-103Q-015	0-0.5	8/21/14	NS	14H167	H167-16	SW6020A	Lead	336	V	Z	0.103	0.515	mg/kg
SO	R30-103Q-015	0-0.5	8/21/14	NS	14H167	H167-16	SW6020A	Magnesium	457	V	Z	20.6	103	mg/kg
SO	R30-103Q-015	0-0.5	8/21/14	NS	14H167	H167-16	SW6020A	Manganese	776	V	Z	0.206	0.515	mg/kg
SO	R30-103Q-015	0-0.5	8/21/14	NS	14H167	H167-16	SW6020A	Nickel	12.2	V	Z	0.103	0.515	mg/kg
SO	R30-103Q-015	0-0.5	8/21/14	NS	14H167	H167-16	SW6020A	Potassium	402	V	Z	20.6	103	mg/kg
SO	R30-103Q-015	0-0.5	8/21/14	NS	14H167	H167-16	SW6020A	Selenium	0.212	J	Z	0.103	0.515	mg/kg
SO	R30-103Q-015	0-0.5	8/21/14	NS	14H167	H167-16	SW6020A	Silver	0.515	U	Z	0.103	0.515	mg/kg
SO	R30-103Q-015	0-0.5	8/21/14	NS	14H167	H167-16	SW6020A	Sodium	103	U	Z	20.6	103	mg/kg
SO	R30-103Q-015	0-0.5	8/21/14	NS	14H167	H167-16	SW6020A	Thallium	0.188	J	Z	0.103	0.515	mg/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-103Q-015	0-0.5	8/21/14	NS	14H167	H167-16	SW6020A	Vanadium	28.4	V	Z	0.257	0.515	mg/kg
SO	R30-103Q-015	0-0.5	8/21/14	NS	14H167	H167-16	SW6020A	Zinc	28.6	V	Z	1.03	2.06	mg/kg
SO	R30-103Q-015	0-0.5	8/21/14	NS	14H167	H167-16	SW7471A	Mercury	0.0574	J	Z	0.0224	0.112	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	NS	14H166	H166-12	D2216	Moisture, Percent	5.8	V	Z	0.1	0.1	%
SO	R30-103Q-016	0-0.5	8/20/14	NS	14H166	H166-12N	SW6020A	Aluminum	11800	V	Z	10.3	103	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	NS	14H166	H166-12N	SW6020A	Antimony	0.593	V	Z	0.206	0.515	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	NS	14H166	H166-12N	SW6020A	Arsenic	2.53	V	Z	0.103	0.515	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	NS	14H166	H166-12N	SW6020A	Barium	23.2	V	Z	0.103	0.515	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	NS	14H166	H166-12N	SW6020A	Beryllium	0.246	J	Z	0.103	0.515	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	NS	14H166	H166-12N	SW6020A	Cadmium	0.515	U	Z	0.103	0.515	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	NS	14H166	H166-12N	SW6020A	Calcium	118	V	Z	20.6	103	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	NS	14H166	H166-12N	SW6020A	Chromium	6.84	V	Z	0.103	0.515	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	NS	14H166	H166-12N	SW6020A	Cobalt	3.09	V	Z	0.103	0.515	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	NS	14H166	H166-12N	SW6020A	Copper	42.4	V	Z	0.206	0.515	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	NS	14H166	H166-12N	SW6020A	Iron	6470	V	Z	10.3	103	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	NS	14H166	H166-12N	SW6020A	Lead	137	V	Z	0.103	0.515	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	NS	14H166	H166-12N	SW6020A	Magnesium	265	V	Z	20.6	103	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	NS	14H166	H166-12N	SW6020A	Manganese	208	V	Z	0.206	0.515	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	NS	14H166	H166-12N	SW6020A	Nickel	8.03	V	Z	0.103	0.515	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	NS	14H166	H166-12N	SW6020A	Potassium	215	V	Z	20.6	103	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	NS	14H166	H166-12N	SW6020A	Selenium	0.515	U	Z	0.103	0.515	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	NS	14H166	H166-12N	SW6020A	Silver	0.515	U	Z	0.103	0.515	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	NS	14H166	H166-12N	SW6020A	Sodium	103	U	Z	20.6	103	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	NS	14H166	H166-12N	SW6020A	Thallium	0.122	J	Z	0.103	0.515	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	NS	14H166	H166-12N	SW6020A	Vanadium	14.3	V	Z	0.258	0.515	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	NS	14H166	H166-12N	SW6020A	Zinc	14.4	V	Z	1.03	2.06	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	NS	14H166	H166-12	SW7471A	Mercury	0.0561	J	Z	0.0209	0.105	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	FD	14H166	H166-21	D2216	Moisture, Percent	8	V	Z	0.1	0.1	%
SO	R30-103Q-016	0-0.5	8/20/14	FD	14H166	H166-21N	SW6020A	Aluminum	12200	V	Z	10.7	107	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	FD	14H166	H166-21N	SW6020A	Antimony	0.686	V	Z	0.213	0.533	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	FD	14H166	H166-21N	SW6020A	Arsenic	2.6	V	Z	0.107	0.533	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	FD	14H166	H166-21N	SW6020A	Barium	24	V	Z	0.107	0.533	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	FD	14H166	H166-21N	SW6020A	Beryllium	0.252	J	Z	0.107	0.533	mg/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-103Q-016	0-0.5	8/20/14	FD	14H166	H166-21N	SW6020A	Cadmium	0.107	J	Z	0.107	0.533	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	FD	14H166	H166-21N	SW6020A	Calcium	136	V	Z	21.3	107	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	FD	14H166	H166-21N	SW6020A	Chromium	6.86	V	Z	0.107	0.533	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	FD	14H166	H166-21N	SW6020A	Cobalt	3.04	V	Z	0.107	0.533	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	FD	14H166	H166-21N	SW6020A	Copper	48.6	V	Z	0.213	0.533	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	FD	14H166	H166-21N	SW6020A	Iron	6640	V	Z	10.7	107	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	FD	14H166	H166-21N	SW6020A	Lead	151	V	Z	0.107	0.533	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	FD	14H166	H166-21N	SW6020A	Magnesium	272	V	Z	21.3	107	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	FD	14H166	H166-21N	SW6020A	Manganese	207	V	Z	0.213	0.533	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	FD	14H166	H166-21N	SW6020A	Nickel	8.78	V	Z	0.107	0.533	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	FD	14H166	H166-21N	SW6020A	Potassium	230	V	Z	21.3	107	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	FD	14H166	H166-21N	SW6020A	Selenium	0.533	U	Z	0.107	0.533	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	FD	14H166	H166-21N	SW6020A	Silver	0.533	U	Z	0.107	0.533	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	FD	14H166	H166-21N	SW6020A	Sodium	107	U	Z	21.3	107	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	FD	14H166	H166-21N	SW6020A	Thallium	0.125	J	Z	0.107	0.533	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	FD	14H166	H166-21N	SW6020A	Vanadium	14.7	V	Z	0.266	0.533	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	FD	14H166	H166-21N	SW6020A	Zinc	17.2	V	Z	1.07	2.13	mg/kg
SO	R30-103Q-016	0-0.5	8/20/14	FD	14H166	H166-21	SW7471A	Mercury	0.0493	J	Z	0.0213	0.107	mg/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03	D2216	Moisture, Percent	10.5	V	Z	0.1	0.1	%
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03N	SW6020A	Aluminum	14300	V	Z	10.6	106	mg/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03N	SW6020A	Antimony	0.53	U	Z	0.212	0.53	mg/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03N	SW6020A	Arsenic	6.04	V	Z	0.106	0.53	mg/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03N	SW6020A	Barium	22.1	V	Z	0.106	0.53	mg/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03N	SW6020A	Beryllium	0.202	J	Z	0.106	0.53	mg/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03N	SW6020A	Cadmium	0.17	J	Z	0.106	0.53	mg/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03N	SW6020A	Calcium	66.4	J	Z	21.2	106	mg/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03N	SW6020A	Chromium	21.2	V	Z	0.106	0.53	mg/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03N	SW6020A	Cobalt	0.936	V	Z	0.106	0.53	mg/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03N	SW6020A	Copper	9.44	V	Z	0.212	0.53	mg/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03N	SW6020A	Iron	16000	V	Z	10.6	106	mg/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03N	SW6020A	Lead	8.03	V	Z	0.106	0.53	mg/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03N	SW6020A	Magnesium	238	V	Z	21.2	106	mg/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03N	SW6020A	Manganese	124	V	Z	0.212	0.53	mg/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample		QC Code	Delivery Group	Lab		Parameter Name	Value	Lab Validation		MDL	RL	Units
		Depth (ft bgs)	Sample Date			Sample ID	Method			Flag	Code			
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03N	SW6020A	Nickel	4.34	V	Z	0.106	0.53	mg/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03N	SW6020A	Potassium	238	V	Z	21.2	106	mg/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03N	SW6020A	Selenium	0.121	J	Z	0.106	0.53	mg/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03N	SW6020A	Silver	0.53	U	Z	0.106	0.53	mg/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03N	SW6020A	Sodium	106	U	Z	21.2	106	mg/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03N	SW6020A	Thallium	0.111	J	Z	0.106	0.53	mg/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03N	SW6020A	Vanadium	34.9	V	Z	0.265	0.53	mg/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03N	SW6020A	Zinc	10.3	V	Z	1.06	2.12	mg/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03	SW7471A	Mercury	0.0349	J	Z	0.0222	0.111	mg/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03	SW8330	1,3,5-Trinitrobenzene	400	U	Z	99	400	ug/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03	SW8330	1,3-Dinitrobenzene	400	U	Z	99	400	ug/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03	SW8330	2,4,6-Trinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03	SW8330	2,4-Dinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03	SW8330	2,6-Dinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03	SW8330	2-Amino-4,6-Dinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03	SW8330	2-Nitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03	SW8330	3-Nitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03	SW8330	4-Amino-2,6-Dinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03	SW8330	4-Nitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03	SW8330	HMX	400	U	Z	99	400	ug/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03	SW8330	Nitrobenzene	400	U	Z	99	400	ug/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03	SW8330	RDX	400	U	Z	99	400	ug/kg
SO	R30-88Q-011 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-03	SW8330	Tetryl	400	U	Z	99	400	ug/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01	D2216	Moisture, Percent	7.7	V	Z	0.1	0.1	%
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01N	SW6020A	Aluminum	11700	V	Z	10.8	108	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01N	SW6020A	Antimony	0.539	U	Z	0.216	0.539	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01N	SW6020A	Arsenic	5.43	V	Z	0.108	0.539	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01N	SW6020A	Barium	19.3	V	Z	0.108	0.539	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01N	SW6020A	Beryllium	0.179	J	Z	0.108	0.539	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01N	SW6020A	Cadmium	0.142	J	Z	0.108	0.539	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01N	SW6020A	Calcium	58.7	J	Z	21.6	108	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01N	SW6020A	Chromium	19.6	V	Z	0.108	0.539	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01N	SW6020A	Cobalt	1.09	V	Z	0.108	0.539	mg/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01N	SW6020A	Copper	5.96	V	Z	0.216	0.539	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01N	SW6020A	Iron	14300	V	Z	10.8	108	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01N	SW6020A	Lead	7.34	V	Z	0.108	0.539	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01N	SW6020A	Magnesium	212	V	Z	21.6	108	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01N	SW6020A	Manganese	119	V	Z	0.216	0.539	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01N	SW6020A	Nickel	3.58	V	Z	0.108	0.539	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01N	SW6020A	Potassium	225	V	Z	21.6	108	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01N	SW6020A	Selenium	0.114	J	Z	0.108	0.539	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01N	SW6020A	Silver	0.539	U	Z	0.108	0.539	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01N	SW6020A	Sodium	108	U	Z	21.6	108	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01N	SW6020A	Thallium	0.539	U	Z	0.108	0.539	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01N	SW6020A	Vanadium	31.2	V	Z	0.27	0.539	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01N	SW6020A	Zinc	9.46	V	Z	1.08	2.16	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01	SW7471A	Mercury	0.0334	J	Z	0.0217	0.108	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01	SW8330	1,3,5-Trinitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01	SW8330	1,3-Dinitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01	SW8330	2,4,6-Trinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01	SW8330	2,4-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01	SW8330	2,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01	SW8330	2-Amino-4,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01	SW8330	2-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01	SW8330	3-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01	SW8330	4-Amino-2,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01	SW8330	4-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01	SW8330	HMX	400	U	Z	100	400	ug/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01	SW8330	Nitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01	SW8330	RDX	400	U	Z	100	400	ug/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-01	SW8330	Tetryl	400	U	Z	100	400	ug/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02	D2216	Moisture, Percent	8	V	Z	0.1	0.1	%
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02N	SW6020A	Aluminum	12800	V	Z	10.5	105	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02N	SW6020A	Antimony	0.523	U	Z	0.209	0.523	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02N	SW6020A	Arsenic	5.63	V	Z	0.105	0.523	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02N	SW6020A	Barium	21.2	V	Z	0.105	0.523	mg/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02N	SW6020A	Beryllium	0.188	J	Z	0.105	0.523	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02N	SW6020A	Cadmium	0.144	J	Z	0.105	0.523	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02N	SW6020A	Calcium	70.4	J	Z	20.9	105	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02N	SW6020A	Chromium	20.9	V	Z	0.105	0.523	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02N	SW6020A	Cobalt	1.22	V	Z	0.105	0.523	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02N	SW6020A	Copper	6.47	V	Z	0.209	0.523	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02N	SW6020A	Iron	14800	V	Z	10.5	105	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02N	SW6020A	Lead	8.08	V	Z	0.105	0.523	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02N	SW6020A	Magnesium	239	V	Z	20.9	105	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02N	SW6020A	Manganese	138	V	Z	0.209	0.523	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02N	SW6020A	Nickel	4.06	V	Z	0.105	0.523	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02N	SW6020A	Potassium	258	V	Z	20.9	105	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02N	SW6020A	Selenium	0.119	J	Z	0.105	0.523	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02N	SW6020A	Silver	0.523	U	Z	0.105	0.523	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02N	SW6020A	Sodium	105	U	Z	20.9	105	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02N	SW6020A	Thallium	0.108	J	Z	0.105	0.523	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02N	SW6020A	Vanadium	33.1	V	Z	0.261	0.523	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02N	SW6020A	Zinc	11	V	Z	1.05	2.09	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02	SW7471A	Mercury	0.0411	J	Z	0.0216	0.108	mg/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02	SW8330	1,3,5-Trinitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02	SW8330	1,3-Dinitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02	SW8330	2,4,6-Trinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02	SW8330	2,4-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02	SW8330	2,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02	SW8330	2-Amino-4,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02	SW8330	2-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02	SW8330	3-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02	SW8330	4-Amino-2,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02	SW8330	4-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02	SW8330	HMX	400	U	Z	100	400	ug/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02	SW8330	Nitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02	SW8330	RDX	400	U	Z	100	400	ug/kg
SO	R30-88Q-011 (0-0.5)	0-0.5	8/20/14	FD	14H166	H166-02	SW8330	Tetryl	400	U	Z	100	400	ug/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14	D2216	Moisture, Percent	3.4	V	Z	0.1	0.1	%
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14N	SW6020A	Aluminum	7700	V	Z	10.3	103	mg/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14N	SW6020A	Antimony	0.82	V	Z	0.206	0.515	mg/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14N	SW6020A	Arsenic	2.26	V	Z	0.103	0.515	mg/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14N	SW6020A	Barium	96.9	V	Z	0.103	0.515	mg/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14N	SW6020A	Beryllium	0.464	J	Z	0.103	0.515	mg/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14N	SW6020A	Cadmium	0.149	J	Z	0.103	0.515	mg/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14N	SW6020A	Calcium	138	V	Z	20.6	103	mg/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14N	SW6020A	Chromium	6.67	V	Z	0.103	0.515	mg/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14N	SW6020A	Cobalt	2.45	V	Z	0.103	0.515	mg/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14N	SW6020A	Copper	15.7	V	Z	0.206	0.515	mg/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14N	SW6020A	Iron	4590	V	Z	10.3	103	mg/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14N	SW6020A	Lead	89.4	V	Z	0.103	0.515	mg/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14N	SW6020A	Magnesium	344	V	Z	20.6	103	mg/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14N	SW6020A	Manganese	567	V	Z	0.206	0.515	mg/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14N	SW6020A	Nickel	6.81	V	Z	0.103	0.515	mg/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14N	SW6020A	Potassium	173	V	Z	20.6	103	mg/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14N	SW6020A	Selenium	0.168	J	Z	0.103	0.515	mg/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14N	SW6020A	Silver	0.515	U	Z	0.103	0.515	mg/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14N	SW6020A	Sodium	103	U	Z	20.6	103	mg/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14N	SW6020A	Thallium	0.515	U	Z	0.103	0.515	mg/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14N	SW6020A	Vanadium	9.96	V	Z	0.258	0.515	mg/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14N	SW6020A	Zinc	14.1	V	Z	1.03	2.06	mg/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14	SW7471A	Mercury	0.0316	J	Z	0.0207	0.104	mg/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14	SW8330	1,3,5-Trinitrobenzene	400	U	Z	99	400	ug/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14	SW8330	1,3-Dinitrobenzene	400	U	Z	99	400	ug/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14	SW8330	2,4,6-Trinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14	SW8330	2,4-Dinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14	SW8330	2,6-Dinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14	SW8330	2-Amino-4,6-Dinitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14	SW8330	2-Nitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14	SW8330	3-Nitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14	SW8330	4-Amino-2,6-Dinitrotoluene	400	U	Z	99	400	ug/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14	SW8330	4-Nitrotoluene	400	U	Z	99	400	ug/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14	SW8330	HMX	400	U	Z	99	400	ug/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14	SW8330	Nitrobenzene	400	U	Z	99	400	ug/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14	SW8330	RDX	400	U	Z	99	400	ug/kg
SO	R30-88Q-012 (0.5-1.5)	0.5-1.5	8/20/14	NS	14H166	H166-14	SW8330	Tetryl	400	U	Z	99	400	ug/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13	D2216	Moisture, Percent	4.6	V	Z	0.1	0.1	%
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13N	SW6020A	Aluminum	8010	V	Z	10.1	101	mg/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13N	SW6020A	Antimony	2.48	V	JM	0.203	0.506	mg/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13N	SW6020A	Arsenic	2.49	V	Z	0.101	0.506	mg/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13N	SW6020A	Barium	134	V	Z	0.101	0.506	mg/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13N	SW6020A	Beryllium	0.6	V	Z	0.101	0.506	mg/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13N	SW6020A	Cadmium	0.223	J	Z	0.101	0.506	mg/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13N	SW6020A	Calcium	255	V	Z	20.3	101	mg/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13N	SW6020A	Chromium	5.33	V	Z	0.101	0.506	mg/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13N	SW6020A	Cobalt	2.61	V	Z	0.101	0.506	mg/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13N	SW6020A	Copper	134	V	Z	0.203	0.506	mg/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13N	SW6020A	Iron	4070	V	Z	10.1	101	mg/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13N	SW6020A	Lead	612	V	Z	0.101	0.506	mg/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13N	SW6020A	Magnesium	367	V	Z	20.3	101	mg/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13N	SW6020A	Manganese	1210	V	Z	0.203	0.506	mg/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13N	SW6020A	Nickel	17.6	V	Z	0.101	0.506	mg/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13N	SW6020A	Potassium	200	V	Z	20.3	101	mg/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13N	SW6020A	Selenium	0.197	J	Z	0.101	0.506	mg/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13N	SW6020A	Silver	0.506	U	Z	0.101	0.506	mg/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13N	SW6020A	Sodium	101	U	Z	20.3	101	mg/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13N	SW6020A	Thallium	0.117	J	Z	0.101	0.506	mg/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13N	SW6020A	Vanadium	8.79	V	Z	0.253	0.506	mg/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13N	SW6020A	Zinc	34.2	V	Z	1.01	2.03	mg/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13	SW7471A	Mercury	0.0349	J	Z	0.021	0.105	mg/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13	SW8330	1,3,5-Trinitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13	SW8330	1,3-Dinitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13	SW8330	2,4,6-Trinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13	SW8330	2,4-Dinitrotoluene	400	U	Z	100	400	ug/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13	SW8330	2,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13	SW8330	2-Amino-4,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13	SW8330	2-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13	SW8330	3-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13	SW8330	4-Amino-2,6-Dinitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13	SW8330	4-Nitrotoluene	400	U	Z	100	400	ug/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13	SW8330	HMX	400	U	Z	100	400	ug/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13	SW8330	Nitrobenzene	400	U	Z	100	400	ug/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13	SW8330	RDX	400	U	Z	100	400	ug/kg
SO	R30-88Q-012 (0-0.5)	0-0.5	8/20/14	NS	14H166	H166-13	SW8330	Tetryl	400	U	Z	100	400	ug/kg
SO	R30-88Q-013	0-0.5	8/20/14	NS	14H166	H166-15	D2216	Moisture, Percent	9	V	Z	0.1	0.1	%
SO	R30-88Q-013	0-0.5	8/20/14	NS	14H166	H166-15N	SW6020A	Aluminum	13600	V	Z	10.7	107	mg/kg
SO	R30-88Q-013	0-0.5	8/20/14	NS	14H166	H166-15N	SW6020A	Antimony	0.32	J	Z	0.215	0.536	mg/kg
SO	R30-88Q-013	0-0.5	8/20/14	NS	14H166	H166-15N	SW6020A	Arsenic	5.62	V	Z	0.107	0.536	mg/kg
SO	R30-88Q-013	0-0.5	8/20/14	NS	14H166	H166-15N	SW6020A	Barium	19.7	V	Z	0.107	0.536	mg/kg
SO	R30-88Q-013	0-0.5	8/20/14	NS	14H166	H166-15N	SW6020A	Beryllium	0.181	J	Z	0.107	0.536	mg/kg
SO	R30-88Q-013	0-0.5	8/20/14	NS	14H166	H166-15N	SW6020A	Cadmium	0.171	J	Z	0.107	0.536	mg/kg
SO	R30-88Q-013	0-0.5	8/20/14	NS	14H166	H166-15N	SW6020A	Calcium	211	V	Z	21.5	107	mg/kg
SO	R30-88Q-013	0-0.5	8/20/14	NS	14H166	H166-15N	SW6020A	Chromium	26.3	V	Z	0.107	0.536	mg/kg
SO	R30-88Q-013	0-0.5	8/20/14	NS	14H166	H166-15N	SW6020A	Cobalt	1.33	V	Z	0.107	0.536	mg/kg
SO	R30-88Q-013	0-0.5	8/20/14	NS	14H166	H166-15N	SW6020A	Copper	10.2	V	Z	0.215	0.536	mg/kg
SO	R30-88Q-013	0-0.5	8/20/14	NS	14H166	H166-15N	SW6020A	Iron	15600	V	Z	10.7	107	mg/kg
SO	R30-88Q-013	0-0.5	8/20/14	NS	14H166	H166-15N	SW6020A	Lead	40.4	V	Z	0.107	0.536	mg/kg
SO	R30-88Q-013	0-0.5	8/20/14	NS	14H166	H166-15N	SW6020A	Magnesium	248	V	Z	21.5	107	mg/kg
SO	R30-88Q-013	0-0.5	8/20/14	NS	14H166	H166-15N	SW6020A	Manganese	158	V	Z	0.215	0.536	mg/kg
SO	R30-88Q-013	0-0.5	8/20/14	NS	14H166	H166-15N	SW6020A	Nickel	4.1	V	Z	0.107	0.536	mg/kg
SO	R30-88Q-013	0-0.5	8/20/14	NS	14H166	H166-15N	SW6020A	Potassium	258	V	Z	21.5	107	mg/kg
SO	R30-88Q-013	0-0.5	8/20/14	NS	14H166	H166-15N	SW6020A	Selenium	0.133	J	Z	0.107	0.536	mg/kg
SO	R30-88Q-013	0-0.5	8/20/14	NS	14H166	H166-15N	SW6020A	Silver	0.536	U	Z	0.107	0.536	mg/kg
SO	R30-88Q-013	0-0.5	8/20/14	NS	14H166	H166-15N	SW6020A	Sodium	107	U	Z	21.5	107	mg/kg
SO	R30-88Q-013	0-0.5	8/20/14	NS	14H166	H166-15N	SW6020A	Thallium	0.536	U	Z	0.107	0.536	mg/kg
SO	R30-88Q-013	0-0.5	8/20/14	NS	14H166	H166-15N	SW6020A	Vanadium	34.2	V	Z	0.268	0.536	mg/kg
SO	R30-88Q-013	0-0.5	8/20/14	NS	14H166	H166-15N	SW6020A	Zinc	10.8	V	Z	1.07	2.15	mg/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-88Q-013	0-0.5	8/20/14	NS	14H166	H166-15	SW7471A	Mercury	0.0407	J	Z	0.0219	0.11	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	NS	14H166	H166-04	D2216	Moisture, Percent	8.5	V	Z	0.1	0.1	%
SO	R30-88Q-014	0-0.5	8/20/14	NS	14H166	H166-04N	SW6020A	Aluminum	6520	V	Z	10.6	106	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	NS	14H166	H166-04N	SW6020A	Antimony	3.04	V	Z	0.212	0.531	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	NS	14H166	H166-04N	SW6020A	Arsenic	2.02	V	Z	0.106	0.531	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	NS	14H166	H166-04N	SW6020A	Barium	101	V	Z	0.106	0.531	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	NS	14H166	H166-04N	SW6020A	Beryllium	0.438	J	Z	0.106	0.531	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	NS	14H166	H166-04N	SW6020A	Cadmium	0.127	J	Z	0.106	0.531	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	NS	14H166	H166-04N	SW6020A	Calcium	280	V	Z	21.2	106	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	NS	14H166	H166-04N	SW6020A	Chromium	5.48	V	Z	0.106	0.531	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	NS	14H166	H166-04N	SW6020A	Cobalt	2.48	V	Z	0.106	0.531	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	NS	14H166	H166-04N	SW6020A	Copper	83.9	V	Z	0.212	0.531	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	NS	14H166	H166-04N	SW6020A	Iron	3990	V	Z	10.6	106	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	NS	14H166	H166-04N	SW6020A	Lead	578	V	Z	0.106	0.531	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	NS	14H166	H166-04N	SW6020A	Magnesium	259	V	Z	21.2	106	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	NS	14H166	H166-04N	SW6020A	Manganese	846	V	Z	0.212	0.531	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	NS	14H166	H166-04N	SW6020A	Nickel	9.65	V	Z	0.106	0.531	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	NS	14H166	H166-04N	SW6020A	Potassium	156	V	Z	21.2	106	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	NS	14H166	H166-04N	SW6020A	Selenium	0.216	J	Z	0.106	0.531	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	NS	14H166	H166-04N	SW6020A	Silver	0.531	U	Z	0.106	0.531	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	NS	14H166	H166-04N	SW6020A	Sodium	106	U	Z	21.2	106	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	NS	14H166	H166-04N	SW6020A	Thallium	0.531	U	Z	0.106	0.531	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	NS	14H166	H166-04N	SW6020A	Vanadium	8.28	V	Z	0.265	0.531	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	NS	14H166	H166-04N	SW6020A	Zinc	31.7	V	Z	1.06	2.12	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	NS	14H166	H166-04	SW7471A	Mercury	0.0406	J	Z	0.0218	0.109	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	FD	14H166	H166-16	D2216	Moisture, Percent	8	V	Z	0.1	0.1	%
SO	R30-88Q-014	0-0.5	8/20/14	FD	14H166	H166-16N	SW6020A	Aluminum	6400	V	Z	10.8	108	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	FD	14H166	H166-16N	SW6020A	Antimony	2.67	V	Z	0.215	0.538	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	FD	14H166	H166-16N	SW6020A	Arsenic	1.98	V	Z	0.108	0.538	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	FD	14H166	H166-16N	SW6020A	Barium	103	V	Z	0.108	0.538	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	FD	14H166	H166-16N	SW6020A	Beryllium	0.445	J	Z	0.108	0.538	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	FD	14H166	H166-16N	SW6020A	Cadmium	0.11	J	Z	0.108	0.538	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	FD	14H166	H166-16N	SW6020A	Calcium	288	V	Z	21.5	108	mg/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-88Q-014	0-0.5	8/20/14	FD	14H166	H166-16N	SW6020A	Chromium	5.53	V	Z	0.108	0.538	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	FD	14H166	H166-16N	SW6020A	Cobalt	2.43	V	Z	0.108	0.538	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	FD	14H166	H166-16N	SW6020A	Copper	78.8	V	Z	0.215	0.538	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	FD	14H166	H166-16N	SW6020A	Iron	3960	V	Z	10.8	108	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	FD	14H166	H166-16N	SW6020A	Lead	624	V	Z	0.108	0.538	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	FD	14H166	H166-16N	SW6020A	Magnesium	258	V	Z	21.5	108	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	FD	14H166	H166-16N	SW6020A	Manganese	823	V	Z	0.215	0.538	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	FD	14H166	H166-16N	SW6020A	Nickel	9.52	V	Z	0.108	0.538	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	FD	14H166	H166-16N	SW6020A	Potassium	158	V	Z	21.5	108	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	FD	14H166	H166-16N	SW6020A	Selenium	0.233	J	Z	0.108	0.538	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	FD	14H166	H166-16N	SW6020A	Silver	0.538	U	Z	0.108	0.538	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	FD	14H166	H166-16N	SW6020A	Sodium	108	U	Z	21.5	108	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	FD	14H166	H166-16N	SW6020A	Thallium	0.538	U	Z	0.108	0.538	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	FD	14H166	H166-16N	SW6020A	Vanadium	8.33	V	Z	0.269	0.538	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	FD	14H166	H166-16N	SW6020A	Zinc	33.5	V	Z	1.08	2.15	mg/kg
SO	R30-88Q-014	0-0.5	8/20/14	FD	14H166	H166-16	SW7471A	Mercury	0.042	J	Z	0.0212	0.106	mg/kg
SO	R30-88Q-015	0-0.5	8/21/14	NS	14H167	H167-01	D2216	Moisture, Percent	6.3	V	Z	0.1	0.1	%
SO	R30-88Q-015	0-0.5	8/21/14	NS	14H167	H167-01	SW6020A	Aluminum	5890	V	Z	10.6	106	mg/kg
SO	R30-88Q-015	0-0.5	8/21/14	NS	14H167	H167-01	SW6020A	Antimony	0.479	J	Z	0.211	0.528	mg/kg
SO	R30-88Q-015	0-0.5	8/21/14	NS	14H167	H167-01	SW6020A	Arsenic	1.75	V	Z	0.106	0.528	mg/kg
SO	R30-88Q-015	0-0.5	8/21/14	NS	14H167	H167-01	SW6020A	Barium	135	V	Z	0.106	0.528	mg/kg
SO	R30-88Q-015	0-0.5	8/21/14	NS	14H167	H167-01	SW6020A	Beryllium	0.405	J	Z	0.106	0.528	mg/kg
SO	R30-88Q-015	0-0.5	8/21/14	NS	14H167	H167-01	SW6020A	Cadmium	0.116	J	Z	0.106	0.528	mg/kg
SO	R30-88Q-015	0-0.5	8/21/14	NS	14H167	H167-01	SW6020A	Calcium	360	V	Z	21.1	106	mg/kg
SO	R30-88Q-015	0-0.5	8/21/14	NS	14H167	H167-01	SW6020A	Chromium	3.85	V	Z	0.106	0.528	mg/kg
SO	R30-88Q-015	0-0.5	8/21/14	NS	14H167	H167-01	SW6020A	Cobalt	1.84	V	Z	0.106	0.528	mg/kg
SO	R30-88Q-015	0-0.5	8/21/14	NS	14H167	H167-01	SW6020A	Copper	39.3	V	Z	0.211	0.528	mg/kg
SO	R30-88Q-015	0-0.5	8/21/14	NS	14H167	H167-01	SW6020A	Iron	3340	V	Z	10.6	106	mg/kg
SO	R30-88Q-015	0-0.5	8/21/14	NS	14H167	H167-01	SW6020A	Lead	178	V	Z	0.106	0.528	mg/kg
SO	R30-88Q-015	0-0.5	8/21/14	NS	14H167	H167-01	SW6020A	Magnesium	281	V	Z	21.1	106	mg/kg
SO	R30-88Q-015	0-0.5	8/21/14	NS	14H167	H167-01	SW6020A	Manganese	935	V	Z	0.211	0.528	mg/kg
SO	R30-88Q-015	0-0.5	8/21/14	NS	14H167	H167-01	SW6020A	Nickel	11.3	V	Z	0.106	0.528	mg/kg
SO	R30-88Q-015	0-0.5	8/21/14	NS	14H167	H167-01	SW6020A	Potassium	158	V	Z	21.1	106	mg/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-88Q-015	0-0.5	8/21/14	NS	14H167	H167-01	SW6020A	Selenium	0.171	J	Z	0.106	0.528	mg/kg
SO	R30-88Q-015	0-0.5	8/21/14	NS	14H167	H167-01	SW6020A	Silver	0.528	U	Z	0.106	0.528	mg/kg
SO	R30-88Q-015	0-0.5	8/21/14	NS	14H167	H167-01	SW6020A	Sodium	106	U	Z	21.1	106	mg/kg
SO	R30-88Q-015	0-0.5	8/21/14	NS	14H167	H167-01	SW6020A	Thallium	0.528	U	Z	0.106	0.528	mg/kg
SO	R30-88Q-015	0-0.5	8/21/14	NS	14H167	H167-01	SW6020A	Vanadium	6.95	V	Z	0.264	0.528	mg/kg
SO	R30-88Q-015	0-0.5	8/21/14	NS	14H167	H167-01	SW6020A	Zinc	15.1	V	Z	1.06	2.11	mg/kg
SO	R30-88Q-015	0-0.5	8/21/14	NS	14H167	H167-01	SW7471A	Mercury	0.0366	J	Z	0.0213	0.107	mg/kg
SO	R30-88Q-016	0-0.5	8/20/14	NS	14H166	H166-05	D2216	Moisture, Percent	5.3	V	Z	0.1	0.1	%
SO	R30-88Q-016	0-0.5	8/20/14	NS	14H166	H166-05N	SW6020A	Aluminum	6460	V	Z	10.3	103	mg/kg
SO	R30-88Q-016	0-0.5	8/20/14	NS	14H166	H166-05N	SW6020A	Antimony	2.78	V	Z	0.206	0.515	mg/kg
SO	R30-88Q-016	0-0.5	8/20/14	NS	14H166	H166-05N	SW6020A	Arsenic	1.92	V	Z	0.103	0.515	mg/kg
SO	R30-88Q-016	0-0.5	8/20/14	NS	14H166	H166-05N	SW6020A	Barium	102	V	Z	0.103	0.515	mg/kg
SO	R30-88Q-016	0-0.5	8/20/14	NS	14H166	H166-05N	SW6020A	Beryllium	0.465	J	Z	0.103	0.515	mg/kg
SO	R30-88Q-016	0-0.5	8/20/14	NS	14H166	H166-05N	SW6020A	Cadmium	0.156	J	Z	0.103	0.515	mg/kg
SO	R30-88Q-016	0-0.5	8/20/14	NS	14H166	H166-05N	SW6020A	Calcium	257	V	Z	20.6	103	mg/kg
SO	R30-88Q-016	0-0.5	8/20/14	NS	14H166	H166-05N	SW6020A	Chromium	3.95	V	Z	0.103	0.515	mg/kg
SO	R30-88Q-016	0-0.5	8/20/14	NS	14H166	H166-05N	SW6020A	Cobalt	2.11	V	Z	0.103	0.515	mg/kg
SO	R30-88Q-016	0-0.5	8/20/14	NS	14H166	H166-05N	SW6020A	Copper	180	V	Z	0.206	0.515	mg/kg
SO	R30-88Q-016	0-0.5	8/20/14	NS	14H166	H166-05N	SW6020A	Iron	3150	V	Z	10.3	103	mg/kg
SO	R30-88Q-016	0-0.5	8/20/14	NS	14H166	H166-05N	SW6020A	Lead	634	V	Z	0.103	0.515	mg/kg
SO	R30-88Q-016	0-0.5	8/20/14	NS	14H166	H166-05N	SW6020A	Magnesium	284	V	Z	20.6	103	mg/kg
SO	R30-88Q-016	0-0.5	8/20/14	NS	14H166	H166-05N	SW6020A	Manganese	795	V	Z	0.206	0.515	mg/kg
SO	R30-88Q-016	0-0.5	8/20/14	NS	14H166	H166-05N	SW6020A	Nickel	13.1	V	Z	0.103	0.515	mg/kg
SO	R30-88Q-016	0-0.5	8/20/14	NS	14H166	H166-05N	SW6020A	Potassium	170	V	Z	20.6	103	mg/kg
SO	R30-88Q-016	0-0.5	8/20/14	NS	14H166	H166-05N	SW6020A	Selenium	0.158	J	Z	0.103	0.515	mg/kg
SO	R30-88Q-016	0-0.5	8/20/14	NS	14H166	H166-05N	SW6020A	Silver	0.515	U	Z	0.103	0.515	mg/kg
SO	R30-88Q-016	0-0.5	8/20/14	NS	14H166	H166-05N	SW6020A	Sodium	103	U	Z	20.6	103	mg/kg
SO	R30-88Q-016	0-0.5	8/20/14	NS	14H166	H166-05N	SW6020A	Thallium	0.515	U	Z	0.103	0.515	mg/kg
SO	R30-88Q-016	0-0.5	8/20/14	NS	14H166	H166-05N	SW6020A	Vanadium	6.71	V	Z	0.258	0.515	mg/kg
SO	R30-88Q-016	0-0.5	8/20/14	NS	14H166	H166-05N	SW6020A	Zinc	40.4	V	Z	1.03	2.06	mg/kg
SO	R30-88Q-016	0-0.5	8/20/14	NS	14H166	H166-05	SW7471A	Mercury	0.0412	J	Z	0.021	0.105	mg/kg
SO	R30-88Q-017	0-0.5	8/20/14	NS	14H166	H166-17	D2216	Moisture, Percent	6.6	V	Z	0.1	0.1	%
SO	R30-88Q-017	0-0.5	8/20/14	NS	14H166	H166-17N	SW6020A	Aluminum	8320	V	JM	10.5	105	mg/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-88Q-017	0-0.5	8/20/14	NS	14H166	H166-17N	SW6020A	Antimony	0.644	V	JM	0.211	0.527	mg/kg
SO	R30-88Q-017	0-0.5	8/20/14	NS	14H166	H166-17N	SW6020A	Arsenic	2.7	V	Z	0.105	0.527	mg/kg
SO	R30-88Q-017	0-0.5	8/20/14	NS	14H166	H166-17N	SW6020A	Barium	213	V	Z	0.105	0.527	mg/kg
SO	R30-88Q-017	0-0.5	8/20/14	NS	14H166	H166-17N	SW6020A	Beryllium	0.568	V	Z	0.105	0.527	mg/kg
SO	R30-88Q-017	0-0.5	8/20/14	NS	14H166	H166-17N	SW6020A	Cadmium	0.151	J	Z	0.105	0.527	mg/kg
SO	R30-88Q-017	0-0.5	8/20/14	NS	14H166	H166-17N	SW6020A	Calcium	1800	V	Z	21.1	105	mg/kg
SO	R30-88Q-017	0-0.5	8/20/14	NS	14H166	H166-17N	SW6020A	Chromium	6.68	V	Z	0.105	0.527	mg/kg
SO	R30-88Q-017	0-0.5	8/20/14	NS	14H166	H166-17N	SW6020A	Cobalt	3.35	V	Z	0.105	0.527	mg/kg
SO	R30-88Q-017	0-0.5	8/20/14	NS	14H166	H166-17N	SW6020A	Copper	38.6	V	Z	0.211	0.527	mg/kg
SO	R30-88Q-017	0-0.5	8/20/14	NS	14H166	H166-17N	SW6020A	Iron	4600	V	Z	10.5	105	mg/kg
SO	R30-88Q-017	0-0.5	8/20/14	NS	14H166	H166-17N	SW6020A	Lead	212	V	Z	0.105	0.527	mg/kg
SO	R30-88Q-017	0-0.5	8/20/14	NS	14H166	H166-17N	SW6020A	Magnesium	417	V	Z	21.1	105	mg/kg
SO	R30-88Q-017	0-0.5	8/20/14	NS	14H166	H166-17N	SW6020A	Manganese	1220	V	Z	0.211	0.527	mg/kg
SO	R30-88Q-017	0-0.5	8/20/14	NS	14H166	H166-17N	SW6020A	Nickel	11	V	Z	0.105	0.527	mg/kg
SO	R30-88Q-017	0-0.5	8/20/14	NS	14H166	H166-17N	SW6020A	Potassium	238	V	Z	21.1	105	mg/kg
SO	R30-88Q-017	0-0.5	8/20/14	NS	14H166	H166-17N	SW6020A	Selenium	0.218	J	Z	0.105	0.527	mg/kg
SO	R30-88Q-017	0-0.5	8/20/14	NS	14H166	H166-17N	SW6020A	Silver	0.527	U	Z	0.105	0.527	mg/kg
SO	R30-88Q-017	0-0.5	8/20/14	NS	14H166	H166-17N	SW6020A	Sodium	105	U	Z	21.1	105	mg/kg
SO	R30-88Q-017	0-0.5	8/20/14	NS	14H166	H166-17N	SW6020A	Thallium	0.132	J	Z	0.105	0.527	mg/kg
SO	R30-88Q-017	0-0.5	8/20/14	NS	14H166	H166-17N	SW6020A	Vanadium	10.4	V	Z	0.264	0.527	mg/kg
SO	R30-88Q-017	0-0.5	8/20/14	NS	14H166	H166-17N	SW6020A	Zinc	22.6	V	Z	1.05	2.11	mg/kg
SO	R30-88Q-017	0-0.5	8/20/14	NS	14H166	H166-17	SW7471A	Mercury	0.0378	J	Z	0.0214	0.107	mg/kg
SO	R30-88Q-018	0-0.5	8/20/14	NS	14H166	H166-06	D2216	Moisture, Percent	5.4	V	Z	0.1	0.1	%
SO	R30-88Q-018	0-0.5	8/20/14	NS	14H166	H166-06N	SW6020A	Aluminum	4600	V	Z	10.1	101	mg/kg
SO	R30-88Q-018	0-0.5	8/20/14	NS	14H166	H166-06N	SW6020A	Antimony	0.372	J	Z	0.202	0.506	mg/kg
SO	R30-88Q-018	0-0.5	8/20/14	NS	14H166	H166-06N	SW6020A	Arsenic	1.41	V	Z	0.101	0.506	mg/kg
SO	R30-88Q-018	0-0.5	8/20/14	NS	14H166	H166-06N	SW6020A	Barium	62.8	V	Z	0.101	0.506	mg/kg
SO	R30-88Q-018	0-0.5	8/20/14	NS	14H166	H166-06N	SW6020A	Beryllium	0.415	J	Z	0.101	0.506	mg/kg
SO	R30-88Q-018	0-0.5	8/20/14	NS	14H166	H166-06N	SW6020A	Cadmium	0.506	U	Z	0.101	0.506	mg/kg
SO	R30-88Q-018	0-0.5	8/20/14	NS	14H166	H166-06N	SW6020A	Calcium	159	V	Z	20.2	101	mg/kg
SO	R30-88Q-018	0-0.5	8/20/14	NS	14H166	H166-06N	SW6020A	Chromium	3.35	V	Z	0.101	0.506	mg/kg
SO	R30-88Q-018	0-0.5	8/20/14	NS	14H166	H166-06N	SW6020A	Cobalt	1.57	V	Z	0.101	0.506	mg/kg
SO	R30-88Q-018	0-0.5	8/20/14	NS	14H166	H166-06N	SW6020A	Copper	55.3	V	Z	0.202	0.506	mg/kg

Appendix A2: 2014 Analytical Data
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Sample Matrix	Station Name	Sample Depth (ft bgs)	Sample Date	QC Code	Delivery Group	Lab Sample ID	Method	Parameter Name	Value	Lab Flag	Validation Code	MDL	RL	Units
SO	R30-88Q-018	0-0.5	8/20/14	NS	14H166	H166-06N	SW6020A	Iron	2550	V	Z	10.1	101	mg/kg
SO	R30-88Q-018	0-0.5	8/20/14	NS	14H166	H166-06N	SW6020A	Lead	407	V	Z	0.101	0.506	mg/kg
SO	R30-88Q-018	0-0.5	8/20/14	NS	14H166	H166-06N	SW6020A	Magnesium	230	V	Z	20.2	101	mg/kg
SO	R30-88Q-018	0-0.5	8/20/14	NS	14H166	H166-06N	SW6020A	Manganese	213	V	Z	0.202	0.506	mg/kg
SO	R30-88Q-018	0-0.5	8/20/14	NS	14H166	H166-06N	SW6020A	Nickel	3.3	V	Z	0.101	0.506	mg/kg
SO	R30-88Q-018	0-0.5	8/20/14	NS	14H166	H166-06N	SW6020A	Potassium	137	V	Z	20.2	101	mg/kg
SO	R30-88Q-018	0-0.5	8/20/14	NS	14H166	H166-06N	SW6020A	Selenium	0.155	J	Z	0.101	0.506	mg/kg
SO	R30-88Q-018	0-0.5	8/20/14	NS	14H166	H166-06N	SW6020A	Silver	0.506	U	Z	0.101	0.506	mg/kg
SO	R30-88Q-018	0-0.5	8/20/14	NS	14H166	H166-06N	SW6020A	Sodium	101	U	Z	20.2	101	mg/kg
SO	R30-88Q-018	0-0.5	8/20/14	NS	14H166	H166-06N	SW6020A	Thallium	0.506	U	Z	0.101	0.506	mg/kg
SO	R30-88Q-018	0-0.5	8/20/14	NS	14H166	H166-06N	SW6020A	Vanadium	4.87	V	Z	0.253	0.506	mg/kg
SO	R30-88Q-018	0-0.5	8/20/14	NS	14H166	H166-06N	SW6020A	Zinc	22.5	V	Z	1.01	2.02	mg/kg
SO	R30-88Q-018	0-0.5	8/20/14	NS	14H166	H166-06	SW7471A	Mercury	0.0401	J	Z	0.0212	0.106	mg/kg

Notes:

-- = Information either not available or not applicable
 % = Percent
 FD = Field duplicate
 ft bgs = feet below ground surface
 ID = Identification
 MDL = Method detection limit
 µg/kg = micrograms per kilogram

mg/kg = milligrams per kilogram
 NS = Normal sample
 QC = Quality control
 RL = Reporting limit
 SO = Soil

Lab Flags:

J = Estimated value. The analyte is positively identified and the concentration is less than the RL but greater than the MDL.
 U = Analyte is not detected above the RL.
 V = Detected value.

Validation codes consist of a validation qualifier and sub-qualifier(s) and are delineated with parenthesis.

Validation Qualifiers:

J = Estimated detection. The associated numerical value is the approximate concentration of the analyte in the sample.

Validation Sub-qualifiers:

M = The MS and MSD recoveries were outside laboratory historical control limits.

APPENDIX B
Data Quality Summary

APPENDIX B1
Data Quality Summary
2004 Analytical Results

**Appendix B1
Data Quality Summary:
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

September 2004 Sampling Event

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B1-1	Laboratory Data Forms

LIST OF ABBREVIATIONS AND ACRONYMS

ADEM	Alabama Department of Environmental Management
ASTM	American Society for Testing and Material
Army	United States Department of the Army
bgs	below ground surface
CA	Cleanup agreement
CCAL	Continuing calibration
CCB	Continuing calibration blank
COC	Chain-of-custody
DQO	Data Quality Objective
DQS	Data Quality Summary
EMAX	EMAX Laboratories, Torrance, California
EPA	United States Environmental Protection Agency
ESV	Ecological screening value
FD	Field duplicate
HPLC	High Performance Liquid Chromatography
ICAL	Initial calibration
IDL	Instrument detection limit
LCS	Laboratory control sample
LCSD	Laboratory control sample duplicate
McClellan	McClellan, Anniston, Alabama
MDA	McClellan Development Authority
MDL	Method detection limit
MES	Matrix Environmental Services, LLC
MS	Matrix spike
MSD	Matrix spike duplicate
PARCCS	Precision, accuracy, representativeness, completeness, comparability, and sensitivity
QA	Quality assurance
QAP	<i>Quality Assurance Plan</i>
QC	Quality control
PSV	Preliminary Screening Value
%R	Percent recovery
Range 30	Range 30 Impact Area, Parcels 88Q and 103Q
RCRA	Resource Conservation Recovery Act
RFI	RCRA Facility Investigation
RL	Reporting limit
RPD	Relative percent difference
RSD	Relative standard deviation
SFSP	<i>Site-Specific Field Sampling Plan</i>
SOP	Standard operating procedure
SRM	Standard reference material
TOC	Total Organic Carbon

1.0 INTRODUCTION

Matrix Environmental Services, LLC (MES) has prepared this Data Quality Summary (DQS) on behalf of the McClellan Development Authority (MDA) in support of the Range 30 Impact Area, Parcels 88Q and 103Q (Range 30) within McClellan, Anniston, Alabama (McClellan) formerly known as Fort McClellan. The purpose of this document is to summarize the data quality of the investigative samples collected in support of the Resource Conservation Recovery Act (RCRA) Facility Investigation (RFI) Report. Specifically, this DQS addresses the data quality review for soil samples collected during the September 2004 sampling event.

The Site-Specific Field Sampling Plan (SFSP) for Range 30 Impact Area (MES, 2004a) SFSP discusses the approved methods used to conduct the investigation and references the *Quality Assurance Plan (QAP)*, (MES, 2004b) which details the specifics of quality assurance (QA) and quality control (QC) with respect to sampling and data evaluation.

2.0 PROJECT DESCRIPTION

Project objectives and QA objectives in terms of precision, accuracy, representativeness, completeness, comparability, and sensitivity (PARCCS) are described in this section.

2.1 Project Objectives

The objectives of the environmental investigation at Range 30 were to (1) visually assess locations of bullet pockets and bullet fragments at the foot of the unnamed hillside, (2) obtain additional information regarding explosives and metals in soil where bullets and bullet fragments were concentrated, (3) corroborate previous investigation results by collecting samples near locations where previous concentrations exceeded screening values and (4) provide information to help design a corrective measures program. To help meet these objectives, the following field activities were conducted:

- Collected surface soil (0 to 0.5 feet below ground surface [bgs]) samples from eight locations and analyzed for metals, explosives, total organic carbon (TOC), and grain size.
- Collected subsurface soil (0.5 to 1.5 feet bgs) samples from five locations and analyzed for metals, explosives, total organic carbon (TOC), and grain size.

2.2 Data Quality Levels

During the field program, soil samples were collected and analyzed with definitive level methods for specific chemical analytes. Analyses performed using established analytical procedures and strict QC procedures produce definitive level data (United States Environmental Protection Agency [EPA], 1994). Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846) (EPA, 1986), Methods of Soil Analysis (Page, et.al, 1992), and American Society for Testing and Material (ASTM, 1994) were used to collect definitive level data for the Range 30 samples. Analytical results produced were analyte-specific with confirmation of analyte identity and concentration. Definitive level data meeting quality criteria are suitable for site assessments, risk assessments, remedial design, and remediation efforts.

Screening level data (i.e., field pH, conductivity, temperature, turbidity, dissolved oxygen, and oxidation/reduction potential measurements) were not collected during this investigation.

2.3 Data Quality Objectives

QA objectives in terms of precision, accuracy, representativeness, completeness, comparability, and sensitivity are outlined below.

Precision is a measure of the reproducibility of a set of duplicate analytical results, usually under prescribed similar conditions. Precision, as discussed in Section A3.3.1 in the QAP, is expressed in terms of the relative percent difference (RPD) between duplicate determinations, or in terms of the relative standard deviation (RSD) when three or more determinations are made. Various measures of precision exist depending on the prescribed similar conditions.

Overall sampling and analysis precision was assessed using RPDs for laboratory duplicates, matrix spike/matrix spike duplicates (MS/MSDs), and field duplicates (FDs). The RPDs for

laboratory control sample/laboratory control sample duplicate (LCS/LCSD) results were used to assess laboratory precision. RPD is defined as the difference between two measurements divided by their mean and expressed as a percent as shown in the following equation:

$$RPD = \frac{|X - Y|}{(X + Y) / 2} \times 100\%$$

where:

X = Primary sample concentration (primary field investigative sample, MS, or LCS)

Y = Duplicate sample concentration (laboratory duplicate, FD, MSD, or LCSD)

To evaluate precision, the RPDs for MS/MSDs, laboratory duplicate samples, and LCS/LCSDs were compared to laboratory historical limits. The RPDs for FDs were compared to the project precision goal of 100 percent for solid samples.

RSD is the standard deviation of a set of values divided by the average value expressed as a percent as shown in the following equation:

$$RSD = S / \bar{X} \times 100$$

where:

S = The standard deviation of the sample data

$\bar{X}$ = The arithmetic mean of the sample data.

RSDs can be used to evaluate the linearity of the initial calibration (EPA, 1986).

Accuracy is a measure of the agreement of an analytical result with the true value. Accuracy, as discussed in Section A3.3.2 in the QAP, is typically 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.

Analytical accuracy is assessed through the analysis of spikes such as surrogates, MS/MSDs and LCS/LCSDs, performance evaluation samples, standard reference materials (SRMs) and calibration check samples. Surrogates and MS/MSDs are spiked into the actual sample matrix and are accuracy indicators that take into account the nature of the matrix in question and the native concentration of the analyte spiked. Matrix variability or interferences from high concentrations of native compounds may adversely affect spike recovery and yield less than conclusive data. Accuracy checks that focus on analytical method and consist of compounds spiked in a blank or non-interfering matrix (e.g., LCSs, SRMs, or calibration check samples)

address the accuracy of the method or instrumentation at detecting the target analyte(s) at a certain quantification level and are not considered to be subject to matrix effects. The accuracy of sample results can also be affected by holding time violations.

Representativeness, as described in Section A3.3.5 in the QAP, is a qualitative parameter that expresses the degree to which sample data actually represent the matrix conditions. For example, in conducting groundwater monitoring, representativeness requires proper location of wells and the collection of samples under consistent, documented procedures. Wells are located based upon the results of the hydrogeologic study in progress and are designed to provide maximum coverage of the flow conditions. Requirements and procedures for sample collection and handling are designed to maximize sample representativeness. Representativeness can also be monitored by reviewing field documentation.

Completeness, as discussed in Section A3.3.4 in the QAP, represents the percentage of valid data collected from a sampling/analytical program or measurement system compared to the amount achieved under optimal conditions. The completeness goal for critical samples (i.e., field samples requiring chemical or geotechnical analysis) is 95 percent. Completeness is calculated using the following formula:

$$\text{Percent Complete} = \frac{\text{Valid Data}}{\text{Total Data}} \times 100\%$$

Comparability, as discussed in Section A3.3.6 of the QAP, is a qualitative parameter expressing the confidence with which one data set can be compared with another. Comparability for sampling and analysis tasks is achieved by:

- Specifying well-recognized techniques and accepted standard methods for sampling and analysis, and using well-trained sampling and analysis technicians to execute the prescribed methods consistently.
- Requiring that all sampling and analysis personnel produce adequate documentation to record how the prescribed methods were actually executed.
- Noting non-conformances and corrective measures taken.

Specifying standardized laboratory methods helps to ensure that the data generated for an event are comparable to past and future activities.

Sensitivity is used broadly here to describe the method detection/quantitation/reporting limits established to meet project-specific data quality objectives (DQOs). In addition, sensitivity can be used to describe the capability of a method or instrument to discriminate between measurement responses. Several limits have been established to describe sensitivity requirements as specified in Section A3.3.7 of the QAP. Reported instrument detection limits (IDLs) and method detection limits (MDLs) are typically based upon a reagent water matrix or purified solid, and ignore sample matrix interferences and the resulting effects on the limits. For this reason, published MDLs or IDLs may not be achievable for environmental samples.

The QAP reporting limits (RLs) were generated by the laboratory and may exceed Preliminary Screening Values (PSVs) and Ecological Screening Values (ESVs) (ADEM, 2008) due to instrument limitations. Section 6.2 discusses the comparisons between the PSVs and ESVs, and the laboratory RLs and MDLs for this investigation.

2.4 Analytical Services

EMAX Laboratories, Inc (EMAX), Torrance, California, provided analytical services for the sampling conducted by MES, with the exception of grain size. PTS Laboratories, Santa Fe Springs, California, performed the grain size analysis.

2.4.1 Analytical Program

The QAP lists the EPA analytical methods used to meet definitive data requirements. Based on activities conducted at Range 30 during the September 2004 sampling event, the methods used to analyze constituents of concern in samples during the investigation were:

- Method SW6010B – Metals by Inductively Coupled Plasma Atomic Emission Spectrometry
- Method SW7470A – Mercury in Waters by Cold Vapor Atomic Absorption
- Method SW7471A – Mercury in Solids by Cold Vapor Atomic Absorption
- Method SW8330B – Explosives by High Performance Liquid Chromatography (HPLC)
- Walkley-Black Method - TOC by Titration

ASTM Method D2216 was used to determine the percent moisture for solid samples. The percent moisture values were used for calculating (and reporting) the solid sample analytical concentrations on a dry weight basis. ASTM Method D4464M was used to determine grain size. Data quality reviews based on PARCCS parameters were not performed for percent moisture or grain size.

2.4.2 Quality Control

The SFSP and the QAP describe the analytical QC requirements. The results of the analytical QC data review for this investigation are presented in Section 5.0.

3.0 DEVIATIONS FROM PLANNED PROCEDURES

Deviations from the *SFSP* (MES, 2004a) were noted during the preparation of this DQS. No surface water samples were collected in association with this investigation as specified in the *SFSP* due to dry conditions at the time of sampling. In addition, samples were collected after a rain event from surficial erosional features and classified as sediment. Because no permanent water features are located at the Site, these samples have been reclassified as surface soil. Please note that the chains-of-custody have not been updated to reflect this change as these documents are used to track the samples throughout collection and analysis.

4.0 ASSESSMENT OF DATA QUALITY

Data quality is assessed through two review processes. The contracted analytical laboratory performs the first data review to assess compliance with QAP-approved analytical methods (MES, 2004b) and with laboratory standard operating procedures (SOPs). MES performs the second data review to assess compliance with the QA objectives, and to assess hard copy and electronic deliverable consistency and integrity.

4.1 Laboratory Data Quality Assessment

The laboratory data quality assessment includes an analytical data review to ensure accurate and complete data reporting and compliance with the analytical method specifications.

4.1.1 Laboratory Qualification of Data

The laboratory will flag analytical results, when necessary, to indicate potential impacts to data usability and to alert the user to special analytical conditions. More than one qualifier may be used to indicate multiple conditions or situations that apply to an individual result. The following laboratory qualifiers were used during this investigation:

FLAG	DESCRIPTION
J	Estimated value. The analyte is positively identified and the concentration is less than the reporting limit (RL) but greater than the method detection limit (MDL).
U	Analyte is not detected above the RL.
V	Detected value.
^	Lab flag updated by MES data reviewer.

4.2 MES Data Quality and Usability Assessment

The following sections describe the procedures that MES followed to assess the quality and usability of both field measurement and definitive data. Data assessment is complete when 100 percent of the information have been collected and reviewed. Based on the results of the review process, data are categorized as fully usable, usable as qualified, or rejected.

4.2.1 Data Review and Validation

MES reviewed the analytical data in accordance with the QAP (MES, 2004b), *SFSP* (MES, 2004a), analytical methods (EPA, 1986), and *USEPA Contract Laboratory Program National Functional Guidelines for Organic and Inorganic Data Review* (EPA, 1999 and 2002). The data review process included reviewing and evaluating 100 percent of the hard copy data for (1) extraction and analysis holding times, (2) surrogate recoveries, (3) blank detections, (4) LCS/LCSD recoveries and RPDs, (5) MS/MSD recoveries and RPDs, (6) FD RPDs, (7) laboratory duplicate RPDs, if applicable, (8) initial and continuing calibrations, (9) instrument tuning and performance, (10) reporting limits, and (11) completeness of the chain-of-custody (COC) forms.

Hard copy data packages were checked to verify that the following items were included:

- Case narrative
- Data summary sheets
- Initial and continuing calibrations

- Method or preparation blanks (at least one per QC batch)
- MS/MSD (5 percent of client samples)
- LCS/LCSD (one per QC batch)
- Duplicate analyses (laboratory duplicate sample, LCS/LCSD and/or MS/MSD, as applicable)
- Holding times
- Retention time window calculation (if applicable)
- Standard preparation sheets
- Linear range calculations (correlation coefficients)

The results of the review of the chemical data obtained during this investigation are included in Section 5.0. The laboratory data forms showing the validated results are included in Attachment B1-1.

4.2.2 MES Qualification of Data

Based on the data review, MES assigned final qualifiers to analytical results on both the hard copy results and in the database. The following final qualifiers were assigned to the results to describe data quality and usability:

FLAG	DESCRIPTION
J	Estimated detection. The associated numerical value is the approximate concentration of the analyte in the sample.
UJ	Analyte was analyzed for, but was not detected. The reported quantitation limit is estimated.
U	Result was qualified as not detected above the RL or reported sample quantitation limit.

In addition to the qualifier, a sub-qualifier was applied to describe the specific condition(s) or situation(s) that apply to an individual result. These qualifiers and sub-qualifiers are collectively referred to as validation codes.

FLAG	DESCRIPTION
B	Result was qualified based on method blank or continuing calibration blank contamination.
M	The MS and MSD recoveries were outside laboratory historical control limits.

Whenever duplicate sets of results were reported by the laboratory due to re-extractions, re-analyses, or dual column analytical methods, the MES reviewer chose the “most-preferred” results based on the data review. In the “Reportable Result” column shown on the hard copy sample data reports and the database, MES assigned a “Y” flag for the “most-preferred” results, and an “N” flag for the “least-preferred” results. When there was only one set of laboratory reported results, MES assigned a “Y” flag in the “Reportable Result” column. In Section 5.0, only the reportable results (flagged “Y”) are shown in Tables B1-5-2 to B1-5-11.

5.0 RESULTS OF QUALITY CONTROL ANALYSES

Table B1-5-1 lists samples and analytical methods included in the investigation for Range 30. To evaluate the data quality, the results were compared to method requirements and laboratory historical control limits.

Table B1-5-2 lists the analytical results that were qualified based on the data review process. Table B1-5-3 summarizes the number of records that were qualified for each analytical method. Based on the information in Tables B1-5-2 through B1-5-3, 1.7 percent of the analytical data were qualified. Overall, 100 percent of the data were usable or qualified as usable, and no data were rejected. The results of the data review process are discussed further in the following sections.

5.1 Quality Control Procedures and Results of Quality Control Analyses

Two types of QC results were used to evaluate data quality: field QC samples were collected and analyzed to evaluate field sampling activities, and laboratory QC samples were analyzed to evaluate laboratory analytical procedures and maintain control of the analytical methods.

5.1.1 Field Quality Control Procedures and Analyses

Field QC samples included MS/MSD samples and FDs. The *SFSP* and *QAP* were used as guidance documents to identify the appropriate number of field QC samples, procedures for their collection and analysis, and evaluation of results required for this investigation. The evaluation procedures for the field QC sample analyses are summarized below.

5.1.1.1 Matrix Spike/Matrix Spike Duplicate and Laboratory Duplicate Samples

MS and MSD samples are investigative samples spiked by the laboratory with known concentrations of target analytes. A laboratory duplicate is an environmental sample that is divided into two separate aliquots by the laboratory. MS, MSD, and laboratory duplicate sample results are used to evaluate possible matrix interferences. The formulas used to calculate the percent recoveries and RPDs are presented in Section 2.3.

Accuracy was assessed by calculating the MS and MSD percent recoveries of the concentrations of the target analytes added to the investigative sample. The percent recoveries were then compared to laboratory historical control limits. When the MS and MSD percent recoveries were outside laboratory historical control limits, the MS/MSD qualifications were used to qualify the spiked sample results only. Qualifiers were applied only when both the MS and MSD percent recoveries were outside laboratory historical control limits. In cases where only an MS was analyzed, qualifiers were applied when the MS percent recovery was outside laboratory historical control limits. Low recoveries for the MS/MSD may indicate the matrix has negatively influenced the results. Constituent concentrations could be potentially higher in samples with low MS/MSD recoveries. High MS/MSD recoveries may indicate the matrix has positively influenced the results. Constituent concentrations may be potentially lower in samples with high MS/MSD recoveries.

Precision was assessed by calculating the RPDs for the MS/MSD sample pairs and laboratory duplicate samples. The MS/MSD and laboratory duplicate RPD values were reviewed to assess

the precision of the analytical results based on the magnitude of the RPD values. In cases where a target analyte was not detected in at least one of the MS/MSD sample pair or laboratory duplicate sample pair, an RPD would not be valid, and therefore, was not calculated. Qualifiers were not applied based on MS/MSD or laboratory duplicate RPD values, however, the MS/MSD and laboratory duplicate RPD values were compared to laboratory historical control limits to assess if further evaluation of the data was warranted.

For this investigation, two soil MS/MSD samples were collected and analyzed for Methods 6010B, 7471A, and 8330; and two soil MS/laboratory duplicate samples were collected and analyzed for the TOC by the Walkley-Black method. Table B1-5-4 shows the five sample results that were qualified as estimated detects (JM) or non-detects (UJM) because of MS and MSD percent recovery data that were outside laboratory historical control limits. Please note, the B sub-qualifier shown in Table B1-5-4 is due to blank contamination and is discussed in Section 5.1.2.4. A summary of the MS/MSD percent recovery data is shown in Table B1-5-5. For aluminum and iron in samples R30-88Q-010 (0-0.5 feet bgs) and R30-102Q-002 (0-0.5 feet bgs), the MS and MSD percent recoveries were outside laboratory historical control limits. However, because the spike amount was less than four times the sample concentration, the MS/MSDs for aluminum and iron could not be properly assessed; therefore no qualifiers were applied for aluminum and iron. Because 88 percent of the MS and MSD percent recovery results were within the laboratory control limits, the overall accuracy of the analytical results is considered to be acceptable.

A summary of the MS/MSD RPD data is shown in Table B1-5-5. A summary of the laboratory duplicate RPD data is shown in Table B1-5-6. Because 99 percent of the MS/MSD RPD results and 100 percent of the laboratory duplicate RPD results were within the laboratory control limits, the overall variability of the precision measurements is considered to be acceptable.

5.1.1.2 Field Duplicate Samples

FD samples were collected and analyzed as specified in the QAP (Section A6.3.5) and SFSP. FD samples are independent samples collected simultaneously or in immediate succession with the original investigative samples such that they are expected to be equally representative of the medium at the time of sampling. These samples provide precision information for the entire measurement system, including sample collection, handling, shipping, storage, preparation, and analysis. The precision of FD pairs were assessed by calculating the RPDs using the equation in Section 2.3. In cases where a target analyte was not detected in either sample or was detected in only one of the samples, an RPD would not be valid, and therefore, was not calculated.

One soil FD sample was collected for this investigation. Table B1-5-7 lists the original station name from the COC form (i.e. COC IDs used to disguise the sample's identity when the sample was sent to the laboratory), the parent station name, and the methods analyzed. The results for the FD and associated investigative sample analyses were reviewed to assess the precision of the analytical results based on the magnitude of the RPD values.

Table B1-5-8 shows the RPDs calculated for the investigative and FD sample pairs. The criterion of 100 percent for solid samples was used to assess if further evaluation of the data was warranted. Of the 16 field duplicate comparisons, only five RPD values exceeded 100 percent. The RPD outliers comprised approximately 30 percent of the FD RPD comparisons. Therefore, the overall variability of the precision measurements is considered to be acceptable.

5.1.1.3 Source Water and Equipment Blank Analyses

A source water blank sample is defined as a sample of a "clean" reagent source, such as deionized water, considered to be "analyte-free" or "background-free" of contamination. Source water samples are collected at the beginning of each sampling event from the on-site potable water source (and used for the initial rinse during the decontamination procedures) and are collected on a weekly basis to monitor the final rinse water provided by the contractor for potential contaminants. Equipment blanks are samples of distilled water poured into, over, or pumped through a sampling device. If these blanks show elevated concentrations of target analytes, the corresponding data set may be considered biased.

Source water and equipment blanks were inadvertently not collected for this investigation. Therefore, the existence or magnitude of contamination resulting from field activities could not be assessed. However, because no qualifiers are applied to investigative sample results based on source water and equipment blank results (due to difficulty with associating the proper investigative samples to the blank samples), and because review of the investigative sample data showed no apparent overall contamination problems (i.e., no abnormally high target analyte results), data quality is not considered to be impacted by the lack of source water and equipment blank results.

5.1.2 Laboratory Quality Control Procedures and Analyses

Laboratory QC checks include internal system checks and QC samples used to monitor the possible effect of laboratory activities on sample results. The analytical method and method-specific SOPs developed by the laboratory define the types of laboratory QC checks required. QC procedures followed by the laboratory include sample container inspection, COC documentation review, sample holding time review, LCS/LCSD analyses, method blank analyses, and surrogate spike percent recovery evaluation. The laboratories are also responsible for analytical instrument calibration, which includes method-specific criteria for initial and continuing calibrations for external and internal standard calibration procedures.

5.1.2.1 Initial Sample Inspection and Chain-of-Custody Documentation

The laboratory inspected the shipping containers upon receipt and compared the contents with the COC form associated with each cooler. Information from the sample check-in procedure was recorded on the Sample Receipt Form, including sample receipt anomalies. These forms were used by the laboratory to document that sample identifications listed on the COC forms agreed with the samples contained in the coolers. The laboratory verified that COC forms were filled out properly, sample containers were not broken, custody seals were intact, the pH method-specific criteria for water samples (if applicable), and cooler temperatures were maintained at 4 ± 2 degrees Celsius. The completed forms are included in the laboratory analytical packages and were reviewed during the data review process.

MES compared the data on the COC forms with the laboratory reports and documented any differences. If minor discrepancies were found and verified by the laboratory, the laboratory reports and MES electronic databases were corrected. In addition to the COC checks, MES reviewers verified approximately 10 percent of the laboratory hard copy reports against the laboratory electronic data deliverables.

5.1.2.2 Holding Times

Samples were shipped regularly in coordination with the analytical laboratory to ensure analyses were conducted within the required holding times. The time elapsed between sample collection and sample extraction/analysis was calculated as part of the review process to evaluate if holding times were met. Holding time criteria were met for this investigation, therefore, accuracy of the analytical results is acceptable with regards to holding time.

5.1.2.3 Laboratory Control Sample/Laboratory Control Sample Duplicate

The laboratory analyzed LCS/LCSD pairs with each analytical batch of field samples to assess internal precision and accuracy. LCS/LCSD pairs consisted of analyte-free water spiked with selected target constituents of known concentration. The LCS/LCSD percent recoveries and RPDs are used to determine laboratory accuracy and precision, respectively. The formulas used to calculate the percent recoveries and RPDs are presented in Section 2.3. The percent recoveries and RPDs were then compared to laboratory historical control limits. When the LCS and LCSD percent recoveries were outside laboratory historical control limits, the LCS/LCSD qualifications were applied to investigative samples within the same analytical batch. Qualifiers were applied only when both the LCS and LCSD percent recoveries were outside laboratory historical control limits. In cases where only an LCS was analyzed, qualifiers were applied when the LCS percent recovery was outside laboratory historical control limits. Qualifiers were not applied based on LCS/LCSD RPD values, however, the LCS/LCSD RPD values were compared to laboratory historical control limits to assess if further evaluation of the data was warranted. For this investigation, MES reviewed the LCS/LCSD percent recoveries and RPDs for Methods 6010B and 7471A for solid samples; and the LCS percent recovery for TOC by the Walkley-Black method for solid samples.

Table B1-5-9 shows the LCS/LCSD percent recovery and RPD data. Because percent recoveries were within the laboratory historical control limits, no qualifiers were required for the analytical results. Of the 46 LCS/LCSD comparisons, none of the RPD values exceeded the laboratory RPD control limits. One hundred percent of the LCS/LCSD percent recoveries and RPD results were within the laboratory control limits, therefore, the analytical accuracy and overall variability of the precision measurements is considered to be acceptable.

5.1.2.4 Method Blank and Continuing Calibration Blank Samples

Method blanks are prepared and analyzed by the laboratory to assess the level of background interferences and possible contamination in the analytical system. The method blank must be carried through the complete procedure and contain analyte-free reagents in the same volumes as used in processing the samples. The goal is to conduct investigative sample analysis in such a manner that sample contamination is not introduced by the analytical methods, equipment, or reagents. If such contamination occurs, it is usually identified by the detection of target analytes at trace or low concentrations in the method blanks. When these detections are found,

the laboratory investigates the source, qualifies the affected data as appropriate according to the magnitude of the detections, and implements corrective measures as appropriate. For this investigation, method blanks were prepared and analyzed with each analytical batch for Methods 6010B, 7470A, 7471A, 8330, and TOC by the Walkley-Black method.

Continuing calibration blanks (CCBs) are used to check the instrument calibration and level of background interferences. CCBs are prepared by acidifying reagent water to the same concentrations of the acids used in the calibration standards and investigative samples. For this investigation, CCBs were analyzed for Methods 6010B, 7470A, and 7471A to evaluate if any metals detected in the CCBs impacted the concentrations of the associated samples.

The following are descriptions of the qualifiers that may be used based on blank contamination:

- When an explosive target analyte was detected in the sample and associated method blank, affected sample results with concentrations less than five times the blank concentration were qualified as non-detect (UB) at the reporting limit (when the sample concentration was less than the reporting limit) or qualified as non-detect (UB) at the concentration observed in the sample (when the sample concentration was greater than the reporting limit).
- When a metal target analyte was detected in the sample and associated method blank, if the method blank result was above the MDL but below the RL, no qualifiers were required. When the method blank result was above the RL, associated sample results above the MDL but below the RL were qualified as non-detect (UB) at the RL, and associated sample results above the RL but below ten times the blank concentration were qualified as estimated (JB).
- When a metal target analyte was detected in the sample and associated CCB affected sample results with concentrations $> \text{MDL}$ but $\leq \text{RL}$ were qualified as non-detect (UB) at the RL; associated sample results with concentrations $> \text{RL}$ but $< 5x$ the blank concentration were qualified as non-detect (UB) at the sample concentration; for sample results with concentrations $> \text{RL}$ and $> 5x$ the blank concentration, no qualifiers were required.
- When a metal target analyte was reported as a negative concentration in the associated method and/or continuing calibration blank, affected sample detects with concentrations less than five times the absolute value in the associated blank were qualified as estimated (J-) and may be biased low, and affected sample non-detects were qualified as estimated (UJ-) and may be potential false negatives.

Solid sample results qualified due to method blank or CCB detects are shown in Table B1-5-10. Please note, the M sub-qualifier shown in Table B1-5-4 is due to out-of-control MS/MSDs discussed in Section 5.1.1.1.

5.1.2.5 Surrogate Recovery

Surrogate spike compounds were added to investigative samples during organic analyses to assess the individual matrix effect of investigative samples and to monitor overall analytical system performance. Surrogate recoveries that are outside the laboratory historical control

limits may indicate performance problems with the analytical system and extraction procedures, or significant matrix effects when evaluated in conjunction with the MS/MSD results. MES reviewers used laboratory historical control limits to assess percent recoveries for surrogate spike constituents. For sample results affected by surrogate percent recoveries less than the lower control limit, detects were qualified as estimated (JS) and may be biased low, and non-detects were qualified as estimated (UJS) and may be potential false negatives. For sample results affected by surrogate percent recoveries greater than the upper control limit, detects were qualified as estimated (JS) and may be biased high. No qualifiers were required for non-detect results based on high surrogate recoveries.

A summary of the surrogate percent recovery data is provided in Table B1-5-11 for undiluted samples and diluted samples whose surrogates were not diluted out. No qualifiers were required for solid sample results based on surrogate recoveries.

5.1.2.6 Initial and Continuing Calibration

The calibration of an analytical instrument involves the delineation of the relationship between the response of the instrument and the concentration of an analyte introduced into the instrument. An initial calibration (ICAL) is performed on an analytical instrument prior to the analysis of samples to ensure that the equipment is capable of producing acceptable qualitative and quantitative data. The continuing calibration (CCAL) is the verification of the ICAL at periodic intervals. The CCAL demonstrates that the instrument is capable of acceptable performance during the course of the analytical analysis. Review of the ICAL data included the evaluation of the correlation coefficients and relative standard deviations. Review of the CCAL data included the evaluation of the percent difference between the concentration of the CCAL standard and the expected concentration. For sample results associated with CCAL data that did not meet method-specific criteria, detects and non-detects were qualified as estimated (JC and UJC, respectively). No qualifiers were required for solid sample results based on ICAL and CCAL data.

5.2 Summary of Data Quality Indicators

5.2.1 Precision

As discussed in Section 2.3, the precision evaluation included field precision (FDs), laboratory precision (LCS/LCSDs), and combined field/laboratory precision (MS/MSD and laboratory duplicate samples). The MS/MSD and laboratory duplicate, FD, and LCS/LCSD RPDs are discussed in Sections 5.1.1.1, 5.1.1.2, and 5.1.2.3 of this report, respectively. Based on this evaluation, the precision of the data is acceptable for its intended use.

5.2.2 Accuracy

As discussed in Section 2.3, the accuracy evaluation included a comparison of spike recoveries from field samples (surrogate and MS/MSD spikes) and laboratory QC samples (LCS and LCSD), and assessing holding time. The MS/MSD, LCS/LCSD, and surrogate spike recoveries are discussed in Sections 5.1.1.1, 5.1.2.3, and 5.1.2.5, respectively, and holding time is discussed in Section 5.1.2.2. Recoveries from MS/MSDs, LCS/LCSD and surrogate percent recoveries were compared to laboratory historical control limits to determine a laboratory's ability to accurately determine both qualitative and quantitative results. The investigative

sample results were within the required percent recovery limits, except as noted. The investigative sample results were within the required holding time limits. Based on this evaluation, the accuracy of the data is acceptable for its intended use.

5.2.3 Representativeness

Representativeness is the degree to which the data accurately and precisely portray the environmental conditions being studied. For this investigation, sampling procedures and locations were selected to accurately represent overall site conditions and were biased toward areas that were likely to exhibit evidence of past releases. Sampling was conducted using known, approved field procedures to minimize variability introduced during field sampling. The investigative and FD analyses indicate that the overall combined variability introduced by the sampling procedures, sample matrix, and laboratory analysis is acceptable, and the FD samples are representative of the data associated with the investigative sample.

5.2.4 Completeness

Completeness refers to the amount of valid data obtainable from a measurement system compared to the expected amount of data. Data that have not been qualified as rejected during the data validation process are considered to be valid. As presented in the QAP (MES, 2004b), a completeness goal of 95 percent was established for investigations. Of the 532 investigative and field duplicate sample results from the investigation, no results were qualified as rejected based on MES' review of the data. Therefore a completeness of 100 percent was calculated for the investigation, which exceeds project goals. One hundred percent of the results are usable or usable as qualified and are acceptable for their intended use.

5.2.5 Comparability

Comparability expresses the confidence with which one data set can be compared to another. Comparability objectives were met by minimizing the number of contract laboratories used, using EPA methods for analyses, and reporting results in standardized units. The comparability objective for the project was fulfilled.

6.0 REPORTING LIMITS AND DATA USES

This section discusses the laboratory reporting limits and how they compare to PSVs and ESVs.

6.1 Laboratory Reporting Limits

EMAX confirms reporting limits on an annual or quarterly basis by performing MDL studies. The MDL is defined as the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero and is generated from the analysis of a sample in a given matrix containing the analyte (40 Code of Federal Regulations, Chapter 1, Part 136, Appendix B). The reporting limit is defined as the lowest concentration of the target analyte required to be reported. This value is based on project-specific criteria.

The laboratory reports detections that are below the reporting limit as estimated values by assigning a flag to the analytical result. This flag is assigned because the laboratory cannot accurately quantify analyte concentrations at levels below the reporting limit. For detections in the concentration range between the MDL and the reporting limit, the laboratory is confident of the analyte identification and detection but can only estimate the analyte concentration.

6.2 Comparison of Laboratory Reporting Limits to PSVs and ESVs

For this assessment, the laboratory RLs and MDLs were compared to PSVs and ESVs, shown in Table B1-6-1. The laboratory RLs and MDLs for the investigative samples were equal to or lower than the PSVs and ESVs with the exception of antimony, arsenic, chromium, cobalt, thallium, 1,3,5-trinitrobenzene, and 2,6-dinitrotoluene. These limits were above the PSVs or ESVs due to limitations with the analytical method. If a PSV and ESV were not available for comparison for a particular analyte, that analyte was not shown in Table B1-6-1.

7.0 CONCLUSIONS

This DQS presents in specific terms the QA and QC practices used to achieve the project objectives for the Range 30 investigation. Samples were collected and analyzed in accordance with EPA methods and using laboratory-specific QA/QC procedures. These procedures were followed to generate legally and technically defensible data.

Some of the quality issues addressed in Section 5.0 of this report resulted in qualification of investigative sample results. The data were acceptable with the following qualifications:

- Five soil sample results were qualified as estimated detects (JM) or non-detects (UJM) because the percent recoveries for the MS and MSD were outside laboratory historical control limits (Table B1-5-4).
- Five soil sample results were qualified due to method blank or CCB detects (Table B1-5-10).

Based on this review, the analytical data generated for this investigation are adequate to fulfill program objectives and may be used to define the nature and extent of contamination and support the selection and implementation of any appropriate corrective measure.

8.0 REFERENCES

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TABLES

Table B1-5-1: Sample Index
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Site Name	Station Name	Sample Depth (ft bgs)	QC Code	Matrix	Sample Date	Lab	Delivery Group	Laboratory Sample ID	Method
RANGE 30 IMPACT AREA	R30-88Q-001	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-02	SW6010B
RANGE 30 IMPACT AREA	R30-88Q-001	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-02	SW7471A
RANGE 30 IMPACT AREA	R30-88Q-001	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-02R	WBLACK
RANGE 30 IMPACT AREA	R30-88Q-001	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-02W	SW8330
RANGE 30 IMPACT AREA	R30-88Q-001	0.5 - 1.5	NS	SO	09/02/04	EMXT	04I037	I037-03	SW6010B
RANGE 30 IMPACT AREA	R30-88Q-001	0.5 - 1.5	NS	SO	09/02/04	EMXT	04I037	I037-03	SW7471A
RANGE 30 IMPACT AREA	R30-88Q-001	0.5 - 1.5	NS	SO	09/02/04	EMXT	04I037	I037-03	WBLACK
RANGE 30 IMPACT AREA	R30-88Q-001	0.5 - 1.5	NS	SO	09/02/04	EMXT	04I037	I037-03W	SW8330
RANGE 30 IMPACT AREA	R30-88Q-002	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-04	SW6010B
RANGE 30 IMPACT AREA	R30-88Q-002	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-04	SW7471A
RANGE 30 IMPACT AREA	R30-88Q-002	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-04R	WBLACK
RANGE 30 IMPACT AREA	R30-88Q-002	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-04W	SW8330
RANGE 30 IMPACT AREA	R30-88Q-002	0.5 - 1.5	NS	SO	09/02/04	EMXT	04I037	I037-05	SW6010B
RANGE 30 IMPACT AREA	R30-88Q-002	0.5 - 1.5	NS	SO	09/02/04	EMXT	04I037	I037-05	SW7471A
RANGE 30 IMPACT AREA	R30-88Q-002	0.5 - 1.5	NS	SO	09/02/04	EMXT	04I037	I037-05	WBLACK
RANGE 30 IMPACT AREA	R30-88Q-002	0.5 - 1.5	NS	SO	09/02/04	EMXT	04I037	I037-05W	SW8330
RANGE 30 IMPACT AREA	R30-88Q-003	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-06	SW6010B
RANGE 30 IMPACT AREA	R30-88Q-003	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-06	SW7471A
RANGE 30 IMPACT AREA	R30-88Q-003	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-06	WBLACK
RANGE 30 IMPACT AREA	R30-88Q-003	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-06W	SW8330
RANGE 30 IMPACT AREA	R30-88Q-003	0 - 0.5	FD	SO	09/02/04	EMXT	04I037	I037-16	SW6010B
RANGE 30 IMPACT AREA	R30-88Q-003	0 - 0.5	FD	SO	09/02/04	EMXT	04I037	I037-16	SW7471A
RANGE 30 IMPACT AREA	R30-88Q-003	0 - 0.5	FD	SO	09/02/04	EMXT	04I037	I037-16	SW8330
RANGE 30 IMPACT AREA	R30-88Q-003	0 - 0.5	FD	SO	09/02/04	EMXT	04I037	I037-16	WBLACK
RANGE 30 IMPACT AREA	R30-88Q-003	0.5 - 1.5	NS	SO	09/02/04	EMXT	04I037	I037-07	SW6010B
RANGE 30 IMPACT AREA	R30-88Q-003	0.5 - 1.5	NS	SO	09/02/04	EMXT	04I037	I037-07	SW7471A
RANGE 30 IMPACT AREA	R30-88Q-003	0.5 - 1.5	NS	SO	09/02/04	EMXT	04I037	I037-07	SW8330
RANGE 30 IMPACT AREA	R30-88Q-003	0.5 - 1.5	NS	SO	09/02/04	EMXT	04I037	I037-07	WBLACK
RANGE 30 IMPACT AREA	R30-88Q-008	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-14	SW6010B
RANGE 30 IMPACT AREA	R30-88Q-008	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-14	SW7471A
RANGE 30 IMPACT AREA	R30-88Q-008	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-14	SW8330
RANGE 30 IMPACT AREA	R30-88Q-008	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-14	WBLACK
RANGE 30 IMPACT AREA	R30-88Q-009	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-15	SW6010B
RANGE 30 IMPACT AREA	R30-88Q-009	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-15	SW7471A
RANGE 30 IMPACT AREA	R30-88Q-009	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-15	SW8330

Table B1-5-1: Sample Index
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Site Name	Station Name	Sample Depth		QC Code	Matrix	Sample Date	Lab	Delivery	Laboratory	Method
		(ft bgs)						Group	Sample ID	
RANGE 30 IMPACT AREA	R30-88Q-009	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-15	WBLACK	
RANGE 30 IMPACT AREA	R30-88Q-010	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-01	SW6010B	
RANGE 30 IMPACT AREA	R30-88Q-010	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-01	SW7471A	
RANGE 30 IMPACT AREA	R30-88Q-010	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-01	SW8330	
RANGE 30 IMPACT AREA	R30-88Q-010	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-01	WBLACK	
RANGE 30 IMPACT AREA	R30-88Q-010	0 - 0.5	MS	SO	09/02/04	EMXT	04I037	I037-01M	SW6010B	
RANGE 30 IMPACT AREA	R30-88Q-010	0 - 0.5	MS	SO	09/02/04	EMXT	04I037	I037-01M	SW7471A	
RANGE 30 IMPACT AREA	R30-88Q-010	0 - 0.5	MS	SO	09/02/04	EMXT	04I037	I037-01M	SW8330	
RANGE 30 IMPACT AREA	R30-88Q-010	0 - 0.5	MS	SO	09/02/04	EMXT	04I037	I037-01M	WBLACK	
RANGE 30 IMPACT AREA	R30-88Q-010	0 - 0.5	MSD	SO	09/02/04	EMXT	04I037	I037-01S	SW6010B	
RANGE 30 IMPACT AREA	R30-88Q-010	0 - 0.5	MSD	SO	09/02/04	EMXT	04I037	I037-01S	SW7471A	
RANGE 30 IMPACT AREA	R30-88Q-010	0 - 0.5	MSD	SO	09/02/04	EMXT	04I037	I037-01S	SW8330	
RANGE 30 IMPACT AREA	R30-88Q-010	0 - 0.5	LD	SO	09/02/04	EMXT	04I037	I037-01D	WBLACK	
RANGE 30 IMPACT AREA	R30-102Q-001	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-19	SW6010B	
RANGE 30 IMPACT AREA	R30-102Q-001	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-19	SW7471A	
RANGE 30 IMPACT AREA	R30-102Q-001	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-19	SW8330	
RANGE 30 IMPACT AREA	R30-102Q-001	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-19	WBLACK	
RANGE 30 IMPACT AREA	R30-102Q-001	0.5 - 1.5	NS	SO	09/02/04	EMXT	04I037	I037-20	SW6010B	
RANGE 30 IMPACT AREA	R30-102Q-001	0.5 - 1.5	NS	SO	09/02/04	EMXT	04I037	I037-20	SW7471A	
RANGE 30 IMPACT AREA	R30-102Q-001	0.5 - 1.5	NS	SO	09/02/04	EMXT	04I037	I037-20	SW8330	
RANGE 30 IMPACT AREA	R30-102Q-001	0.5 - 1.5	NS	SO	09/02/04	EMXT	04I037	I037-20	WBLACK	
RANGE 30 IMPACT AREA	R30-102Q-002	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-18	SW6010B	
RANGE 30 IMPACT AREA	R30-102Q-002	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-18	SW7471A	
RANGE 30 IMPACT AREA	R30-102Q-002	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-18	SW8330	
RANGE 30 IMPACT AREA	R30-102Q-002	0 - 0.5	NS	SO	09/02/04	EMXT	04I037	I037-18	WBLACK	
RANGE 30 IMPACT AREA	R30-102Q-002	0 - 0.5	MS	SO	09/02/04	EMXT	04I037	I037-18M	SW6010B	
RANGE 30 IMPACT AREA	R30-102Q-002	0 - 0.5	MS	SO	09/02/04	EMXT	04I037	I037-18M	SW7471A	
RANGE 30 IMPACT AREA	R30-102Q-002	0 - 0.5	MS	SO	09/02/04	EMXT	04I037	I037-18M	SW8330	
RANGE 30 IMPACT AREA	R30-102Q-002	0 - 0.5	MS	SO	09/02/04	EMXT	04I037	I037-18M	WBLACK	
RANGE 30 IMPACT AREA	R30-102Q-002	0 - 0.5	MSD	SO	09/02/04	EMXT	04I037	I037-18S	SW6010B	
RANGE 30 IMPACT AREA	R30-102Q-002	0 - 0.5	MSD	SO	09/02/04	EMXT	04I037	I037-18S	SW7471A	
RANGE 30 IMPACT AREA	R30-102Q-002	0 - 0.5	MSD	SO	09/02/04	EMXT	04I037	I037-18S	SW8330	
RANGE 30 IMPACT AREA	R30-102Q-002	0 - 0.5	LD	SO	09/02/04	EMXT	04I037	I037-18D	WBLACK	
RANGE 30 IMPACT AREA	R30-102Q-002	0.5 - 1.5	NS	SO	09/02/04	EMXT	04I037	I037-21	SW6010B	
RANGE 30 IMPACT AREA	R30-102Q-002	0.5 - 1.5	NS	SO	09/02/04	EMXT	04I037	I037-21	SW7471A	

Table B1-5-1: Sample Index
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Site Name	Station Name	Sample Depth		QC Code	Matrix	Sample Date	Lab	Delivery	Laboratory	Method
		(ft bgs)						Group	Sample ID	
RANGE 30 IMPACT AREA	R30-102Q-002	0.5 - 1.5		NS	SO	09/02/04	EMXT	04I037	I037-21	SW8330
RANGE 30 IMPACT AREA	R30-102Q-002	0.5 - 1.5		NS	SO	09/02/04	EMXT	04I037	I037-21	WBLACK

Notes:

EMXT = EMAX Laboratories, Torrance, CA

FD = Field duplicate

ft bgs = feet below ground surface

LD = Laboratory duplicate

MS = Matrix spike

MSD = Matrix spike duplicate

NS = Normal sample

QC = Quality Control

SO = Soil

WBLACK = Walkley-Black

**Table B1-5-2: Summary of Final Qualifiers
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Station Name	Sample Depth (ft bgs)	Matrix	Sample Date	Delivery Group	QC Code	Method	Parameter Name	Value	Lab Flag	Validation Code	Units	Detected Result
R30-88Q-009	0 - 0.5	SO	09/02/04	04I037	NS	SW6010B	Antimony	11.2	U^	(UB)	mg/kg	N
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	NS	SW6010B	Antimony	2.29	J	(JM)	mg/kg	Y
R30-102Q-001	0 - 0.5	SO	09/02/04	04I037	NS	SW6010B	Antimony	11.1	U^	(UB)	mg/kg	N
R30-102Q-001	0.5 - 1.5	SO	09/02/04	04I037	NS	SW6010B	Antimony	11.2	U^	(UB)	mg/kg	N
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	NS	SW6010B	Antimony	11.5	U^	(UJBM)	mg/kg	N
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	NS	SW6010B	Cobalt	1.97	J	(JM)	mg/kg	Y
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	NS	SW6010B	Manganese	142	V	(JM)	mg/kg	Y
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	NS	SW6010B	Nickel	13.3	V	(JM)	mg/kg	Y
R30-102Q-002	0.5 - 1.5	SO	09/02/04	04I037	NS	SW6010B	Antimony	12.4	U^	(UB)	mg/kg	N

Notes:

ft bgs = feet below ground surface

FD = Field duplicate

mg/kg = milligrams per kilogram

NS = Normal sample

QC = Quality Control

SO = Soil

Lab Flags:

J = Estimated value. The analyte is positively identified and the concentration is less than the reporting limit (RL) but greater than the method detection limit (MDL).

U = Analyte is not detected above the RL.

V = Detected value.

^ = Lab flag updated by MES data reviewer.

Validation codes consist of a validation qualifier and sub-qualifier(s) and are delineated with parenthesis.

Validation Qualifiers:

J = Estimated detection. The associated numerical value is the approximate concentration of the analyte in the sample.

UJ = Analyte was analyzed for, but was not detected. The reported quantitation limit is estimated.

U = Result was qualified as not detected above the RL or reported sample quantitation limit.

Validation Sub-qualifiers:

B = Result was qualified based on method blank or continuing calibration blank.

M = The MS and MSD recoveries were outside laboratory historical control limits.

**Table B1-5-3: Qualified Data Summary
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Lab	QC Code	Matrix	Method	Non-Qualified			
				Results	JM	UB	UJBM
EMXT	NS	SO	SW6010B	277	4	4	1
EMXT	NS	SO	SW7471A	13			
EMXT	NS	SO	SW8330	182			
EMXT	NS	SO	WBLACK	13			
EMXT	FD	SO	SW6010B	22			
EMXT	FD	SO	SW7471A	1			
EMXT	FD	SO	SW8330	14			
EMXT	FD	SO	WBLACK	1			

Notes:

EMXT = EMAX Laboratories, Torrance, CA

FD = Field duplicate

NS = Normal sample

QC = Quality Control

SO = Soil

WBLACK = Walkley-Black

Validation Qualifiers:

J = Estimated detection. The associated numerical value is the approximate concentration of the analyte in the sample.

UJ = Analyte was analyzed for, but was not detected. The reported quantitation limit is estimated.

U = Result was qualified as not detected above the reporting limit or reported sample quantitation limit.

Validation Sub-qualifiers:

B = Result was qualified based on method blank or continuing calibration blank.

M = The MS and MSD recoveries were outside laboratory historical control limits.

**Table B1-5-4: Data Qualifiers Due to MS/MSD Recovery Outliers
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Station Name	Sample Depth	Matrix	Sample Date	Delivery Group	Parameter		Lab Value	Lab Flag	Validation Code	Units	MS	MSD	LCL	UCL
	(ft bgs)				QC Code	Name					%R	%R		
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	NS	Antimony	2.29	J	(JM)	mg/kg	55	55	80	120
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	NS	Antimony	11.5	U^	(UJBM)	mg/kg	47	47	80	120
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	NS	Cobalt	1.97	J	(JM)	mg/kg	76	77	80	120
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	NS	Manganese	142	V	(JM)	mg/kg	69	73	80	120
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	NS	Nickel	13.3	V	(JM)	mg/kg	78	79	80	120

Notes:

ft bgs = feet below ground surface

LCL = Lower control limit

MS = Matrix spike

MSD = Matrix spike duplicate

mg/kg = milligrams per kilograms

NS = Normal sample

QC = Quality Control

SO = Soil

UCL = Upper control limit

%R = Percent recovery

Lab Flags:

J = Estimated value. The analyte is positively identified and the concentration is less than the reporting limit (RL) but greater than the method detection limit (MDL).

U = Analyte is not detected above the RL.

V = Detected value.

^ = Lab flag updated by MES data reviewer.

Validation codes consist of a validation qualifier and sub-qualifier(s) and are delineated with parenthesis.

Validation Qualifiers:

J = Estimated detection. The associated numerical value is the approximate concentration of the analyte in the sample.

UJ = Analyte was analyzed for, but was not detected. The reported quantitation limit is estimated.

Validation Sub-qualifiers:

M = The MS and MSD recoveries were outside laboratory historical control limits.

B = Result was qualified based on method blank or continuing calibration blank; see Section 5.1.2.4 for details.

Table B1-5-5: Summary of MS/MSD Recoveries and RPDs
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Station Name	Sample Depth (ft bgs)	Matrix	Sample Date	Delivery Group	Method	Parameter Name	MS %R	MSD %R	LCL	UCL	RPD	RPD Limit
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW6010B	Aluminum	300	307	80	120	2.3	20
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW6010B	Antimony	55	55	80	120	0.0	20
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW6010B	ArSOmic	98	99	80	120	1.0	20
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW6010B	Barium	86	87	80	120	1.2	20
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW6010B	Beryllium	89	89	80	120	0.0	20
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW6010B	Cadmium	86	86	80	120	0.0	20
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW6010B	Calcium	88	88	80	120	0.0	20
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW6010B	Chromium	87	88	80	120	1.1	20
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW6010B	Cobalt	82	83	80	120	1.2	20
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW6010B	Copper	84	85	80	120	1.2	20
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW6010B	Iron	-32	-28	80	120	13.3	20
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW6010B	Lead	98	98	80	120	0.0	20
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW6010B	Magnesium	90	91	80	120	1.1	20
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW6010B	ManganeSO	81	82	80	120	1.2	20
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW6010B	Nickel	84	84	80	120	0.0	20
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW6010B	Potassium	89	87	80	120	2.3	20
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW6010B	SOlenium	94	94	80	120	0.0	20
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW6010B	Silver	85	85	80	120	0.0	20
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW6010B	Sodium	89	90	80	120	1.1	20
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW6010B	Thallium	101	103	80	120	2.0	20
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW6010B	Vanadium	85	85	80	120	0.0	20
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW6010B	Zinc	85	86	80	120	1.2	20
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW7471A	Mercury	94	95	80	120	1.1	20
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW8330	1,3,5-Trinitrobenzene	100	102	71	132	2.0	50
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW8330	1,3-Dinitrobenzene	101	100	69	130	1.0	50
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW8330	2,4,6-Trinitrotoluene	100	101	44	106	1.0	50
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW8330	2,4-Dinitrotoluene	105	105	62	132	0.0	50
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW8330	2,6-Dinitrotoluene	97	100	65	125	3.0	50
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW8330	2-Amino-4,6-Dinitrotoluene	105	103	66	126	1.9	50
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW8330	2-Nitrotoluene	96	94	59	125	2.1	50
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW8330	3-Nitrotoluene	97	101	62	122	4.0	50
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW8330	4-Amino-2,6-Dinitrotoluene	98	97	72	150	1.0	50
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW8330	4-Nitrotoluene	99	97	58	128	2.0	50

Table B1-5-5: Summary of MS/MSD Recoveries and RPDs
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Station Name	Sample Depth (ft bgs)	Matrix	Sample Date	Delivery Group	Method	Parameter Name	MS %R	MSD %R	LCL	UCL	RPD	RPD Limit
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW8330	HMX	97	109	60	133	11.7	50
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW8330	Nitrobenzene	103	101	67	128	2.0	50
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW8330	RDX	94	97	59	129	3.1	50
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	SW8330	Tetryl	85	88	37	120	3.5	50
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	WBLACK	TOC	90	NA	80	120	NA	NA
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW6010B	Aluminum	308	353	80	120	13.6	20
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW6010B	Antimony	47	47	80	120	0.0	20
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW6010B	ArSOmic	80	85	80	120	6.1	20
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW6010B	Barium	81	83	80	120	2.4	20
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW6010B	Beryllium	83	84	80	120	1.2	20
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW6010B	Cadmium	81	82	80	120	1.2	20
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW6010B	Calcium	81	83	80	120	2.4	20
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW6010B	Chromium	79	81	80	120	2.5	20
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW6010B	Cobalt	76	77	80	120	1.3	20
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW6010B	Copper	80	82	80	120	2.5	20
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW6010B	Iron	-61	-33	80	120	59.6	20
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW6010B	Lead	94	98	80	120	4.2	20
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW6010B	Magnesium	84	86	80	120	2.4	20
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW6010B	ManganeSO	69	73	80	120	5.6	20
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW6010B	Nickel	78	79	80	120	1.3	20
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW6010B	Potassium	84	86	80	120	2.4	20
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW6010B	SOlenium	77	81	80	120	5.1	20
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW6010B	Silver	80	81	80	120	1.2	20
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW6010B	Sodium	84	86	80	120	2.4	20
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW6010B	Thallium	84	89	80	120	5.8	20
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW6010B	Vanadium	79	81	80	120	2.5	20
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW6010B	Zinc	79	80	80	120	1.3	20
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW7471A	Mercury	89	91	80	120	2.2	20
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW8330	1,3,5-Trinitrobenzene	102	100	71	132	2.0	50
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW8330	1,3-Dinitrobenzene	101	100	69	130	1.0	50
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW8330	2,4,6-Trinitrotoluene	101	100	44	106	1.0	50
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW8330	2,4-Dinitrotoluene	104	102	62	132	1.9	50
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW8330	2,6-Dinitrotoluene	97	100	65	125	3.0	50

**Table B1-5-5: Summary of MS/MSD Recoveries and RPDs
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Station Name	Sample Depth (ft bgs)	Matrix	Sample Date	Delivery Group	Method	Parameter Name	MS %R	MSD %R	LCL	UCL	RPD	RPD Limit
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW8330	2-Amino-4,6-Dinitrotoluene	105	103	66	126	1.9	50
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW8330	2-Nitrotoluene	97	99	59	125	2.0	50
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW8330	3-Nitrotoluene	103	99	62	122	4.0	50
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW8330	4-Amino-2,6-Dinitrotoluene	99	95	72	150	4.1	50
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW8330	4-Nitrotoluene	103	101	58	128	2.0	50
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW8330	HMX	112	109	60	133	2.7	50
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW8330	Nitrobenzene	103	100	67	128	3.0	50
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW8330	RDX	94	92	59	129	2.2	50
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	SW8330	Tetryl	94	88	37	120	6.6	50
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	WBLACK	TOC	105	NA	80	120	NA	NA

Notes:

ft bgs = feet below ground surface

LCL = Lower control limit

MS = Matrix spike

MSD = Matrix spike duplicate

%R = Percent recovery

RPD = Relative percent difference

SO = Soil

UCL = Upper control limit

WBLACK = Walkley-Black

Indicates the value is less than the LCL.

Indicates the value is greater than the UCL.

**Table B1-5-6: Summary of Laboratory Duplicate RPDs
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Station Name	Sample Depth (ft bgs)	Matrix	Sample Date	Delivery Group	Method	Parameter Name	NS		LD		RPD	
							Sample Value	Lab Flag	Sample Value	Lab Flag	RPD	Limit
R30-88Q-010	0 - 0.5	SO	09/02/04	04I037	WBLACK	TOC	1140	U	1140	U	0	20
R30-102Q-002	0 - 0.5	SO	09/02/04	04I037	WBLACK	TOC	1150	U	1150	U	0	20

Notes:

ft bgs = feet below ground surface

LD = Laboratory Duplicate

NS = Normal Sample

RPD = Relative percent difference

SO = Soil

WBLACK = Walkley-Black

Lab Flag:

U = Analyte is not detected above the reporting limit.

**Table B1-5-7: Field Duplicate Cross Reference
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Matrix	COC ID	Parent Station Name	Sample Depth	COC	Sample Date	Delivery	Method
			(ft bgs)	Number		Group	
SO	DUP032	R30-88Q-003	0 - 0.5	1874	09/02/04	04I037	SW6010B
SO	DUP032	R30-88Q-003	0 - 0.5	1874	09/02/04	04I037	SW7471A
SO	DUP032	R30-88Q-003	0 - 0.5	1874	09/02/04	04I037	SW8330
SO	DUP032	R30-88Q-003	0 - 0.5	1874	09/02/04	04I037	WBLACK

Notes:

COC = Chain-of-Custody

ft bgs = feet below ground surface

ID = Identification

SO = Soil

SW = Surface water

WBLACK = Walkley-Black

-- = Not applicable

**Table B1-5-8: Comparison of Investigative and Field Duplicate Sample Detections
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Station Name	Sample Depth (ft bgs)	Matrix	Sample Date	Delivery Group	Method	Parameter Name	FD Value	FD Lab Flag	NS Value	NS Lab Flag	Units	RPD	MDL	RL
R30-88Q-003	0 - 0.5	SO	09/02/04	04I037	SW6010B	Aluminum	5160	V	14700	V	mg/kg	96.1	6.69	26.8
R30-88Q-003	0 - 0.5	SO	09/02/04	04I037	SW6010B	Arsenic	3.47	V	6.03	V	mg/kg	53.9	0.535	1.34
R30-88Q-003	0 - 0.5	SO	09/02/04	04I037	SW6010B	Barium	8.35	V	23.8	V	mg/kg	96.1	0.201	1.34
R30-88Q-003	0 - 0.5	SO	09/02/04	04I037	SW6010B	Calcium	40.8	J	120	J	mg/kg	98.5	10	134
R30-88Q-003	0 - 0.5	SO	09/02/04	04I037	SW6010B	Chromium	5.38	V	13.1	V	mg/kg	83.5	0.803	2.68
R30-88Q-003	0 - 0.5	SO	09/02/04	04I037	SW6010B	Copper	7.14	V	53.5	V	mg/kg	152.9	0.669	2.68
R30-88Q-003	0 - 0.5	SO	09/02/04	04I037	SW6010B	Iron	3810	V	9810	V	mg/kg	88.1	2.01	26.8
R30-88Q-003	0 - 0.5	SO	09/02/04	04I037	SW6010B	Lead	41.6	V	307	V	mg/kg	152.3	0.268	1.34
R30-88Q-003	0 - 0.5	SO	09/02/04	04I037	SW6010B	Magnesium	139	V	395	V	mg/kg	95.9	13.4	134
R30-88Q-003	0 - 0.5	SO	09/02/04	04I037	SW6010B	Manganese	3.63	V	129	V	mg/kg	189.1	0.268	1.34
R30-88Q-003	0 - 0.5	SO	09/02/04	04I037	SW6010B	Nickel	1.21	J	5.44	V	mg/kg	127.2	0.736	2.68
R30-88Q-003	0 - 0.5	SO	09/02/04	04I037	SW6010B	Potassium	912	V	813	V	mg/kg	11.5	100	669
R30-88Q-003	0 - 0.5	SO	09/02/04	04I037	SW6010B	Sodium	35.5	J	42.7	J	mg/kg	18.4	33.5	134
R30-88Q-003	0 - 0.5	SO	09/02/04	04I037	SW6010B	Vanadium	10.7	V	22.8	V	mg/kg	72.2	0.669	2.68
R30-88Q-003	0 - 0.5	SO	09/02/04	04I037	SW6010B	Zinc	5.44	V	21	V	mg/kg	117.7	0.402	1.34

Notes:

FD = Field duplicate

ft bgs = feet below ground surface

MDL = Method detection limit

mg/kg - milligrams per kilogram

NS = Normal sample

RL = Reporting limit

RPD = Relative percent difference

SO = Soil

Lab Flags:

J = Estimated value. The analyte is positively identified and the concentration is less than the reporting limit (RL) but greater than the method detection limit (MDL).

V = Detected value.

Indicates the RPD is greater than the 100 percent criteria.

**Table B1-5-9: Summary of LCS/LCSD Recoveries and RPDs
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Delivery Group	Analytical Batch	Analysis Date	Matrix	Method	Parameter Name	LCS %R	LCSD %R	LCL	UCL	RPD	RPD Limit
04I037	BCI001S	09/13/04	SO	WBLACK	TOC	100	NA	80	120	NA	NA
04I037	BCI002S	09/13/04	SO	WBLACK	TOC	96	NA	80	120	NA	NA
04I037	I07I044008	09/21/04	SO	SW6010B	Aluminum	93	93	80	120	0.0	20
04I037	I07I044008	09/21/04	SO	SW6010B	Antimony	88	87	80	120	1.1	20
04I037	I07I044008	09/21/04	SO	SW6010B	Barium	90	90	80	120	0.0	20
04I037	I07I044008	09/21/04	SO	SW6010B	Beryllium	94	94	80	120	0.0	20
04I037	I07I044008	09/21/04	SO	SW6010B	Cadmium	91	91	80	120	0.0	20
04I037	I07I044008	09/21/04	SO	SW6010B	Calcium	93	93	80	120	0.0	20
04I037	I07I044008	09/21/04	SO	SW6010B	Chromium	93	93	80	120	0.0	20
04I037	I07I044008	09/21/04	SO	SW6010B	Cobalt	88	88	80	120	0.0	20
04I037	I07I044008	09/21/04	SO	SW6010B	Copper	90	90	80	120	0.0	20
04I037	I07I044008	09/21/04	SO	SW6010B	Iron	93	93	80	120	0.0	20
04I037	I07I044008	09/21/04	SO	SW6010B	Magnesium	95	95	80	120	0.0	20
04I037	I07I044008	09/21/04	SO	SW6010B	Manganese	90	90	80	120	0.0	20
04I037	I07I044008	09/21/04	SO	SW6010B	Nickel	89	88	80	120	1.1	20
04I037	I07I044008	09/21/04	SO	SW6010B	Potassium	95	94	80	120	1.1	20
04I037	I07I044008	09/21/04	SO	SW6010B	Silver	91	91	80	120	0.0	20
04I037	I07I044008	09/21/04	SO	SW6010B	Sodium	95	96	80	120	1.0	20
04I037	I07I044008	09/21/04	SO	SW6010B	Vanadium	93	92	80	120	1.1	20
04I037	I07I044008	09/21/04	SO	SW6010B	Zinc	90	90	80	120	0.0	20
04I037	I07I044032	09/21/04	SO	SW6010B	Aluminum	93	93	80	120	0.0	20
04I037	I07I044032	09/21/04	SO	SW6010B	Antimony	87	87	80	120	0.0	20
04I037	I07I044032	09/21/04	SO	SW6010B	Barium	89	89	80	120	0.0	20
04I037	I07I044032	09/21/04	SO	SW6010B	Beryllium	92	92	80	120	0.0	20
04I037	I07I044032	09/21/04	SO	SW6010B	Cadmium	91	91	80	120	0.0	20
04I037	I07I044032	09/21/04	SO	SW6010B	Calcium	92	92	80	120	0.0	20
04I037	I07I044032	09/21/04	SO	SW6010B	Chromium	91	91	80	120	0.0	20
04I037	I07I044032	09/21/04	SO	SW6010B	Cobalt	86	86	80	120	0.0	20
04I037	I07I044032	09/21/04	SO	SW6010B	Copper	89	89	80	120	0.0	20
04I037	I07I044032	09/21/04	SO	SW6010B	Iron	92	92	80	120	0.0	20
04I037	I07I044032	09/21/04	SO	SW6010B	Magnesium	94	94	80	120	0.0	20
04I037	I07I044032	09/21/04	SO	SW6010B	Manganese	89	89	80	120	0.0	20
04I037	I07I044032	09/21/04	SO	SW6010B	Nickel	88	87	80	120	1.1	20
04I037	I07I044032	09/21/04	SO	SW6010B	Potassium	94	95	80	120	1.1	20

**Table B1-5-9: Summary of LCS/LCSD Recoveries and RPDs
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Delivery Group	Analytical Batch	Analysis		Method	Parameter Name	LCS	LCS	LCL	UCL	RPD	RPD
		Date	Matrix			%R	%R				Limit
04I037	I07I044032	09/21/04	SO	SW6010B	Silver	91	90	80	120	1.1	20
04I037	I07I044032	09/21/04	SO	SW6010B	Sodium	95	94	80	120	1.1	20
04I037	I07I044032	09/21/04	SO	SW6010B	Vanadium	91	91	80	120	0.0	20
04I037	I07I044032	09/21/04	SO	SW6010B	Zinc	88	88	80	120	0.0	20
04I037	I31I025008	09/15/04	SO	SW6010B	Arsenic	103	100	80	120	3.0	20
04I037	I31I025008	09/15/04	SO	SW6010B	Lead	103	101	80	120	2.0	20
04I037	I31I025008	09/15/04	SO	SW6010B	Selenium	99	96	80	120	3.1	20
04I037	I31I025008	09/15/04	SO	SW6010B	Thallium	107	104	80	120	2.8	20
04I037	I31I027008	09/16/04	SO	SW6010B	Arsenic	93	93	80	120	0.0	20
04I037	I31I027008	09/16/04	SO	SW6010B	Lead	95	94	80	120	1.1	20
04I037	I31I027008	09/16/04	SO	SW6010B	Selenium	89	89	80	120	0.0	20
04I037	I31I027008	09/16/04	SO	SW6010B	Thallium	97	96	80	120	1.0	20
04I037	M47I036008	09/21/04	SO	SW7471A	Mercury	97	97	80	120	0.0	20
04I037	M47I036043	09/21/04	SO	SW7471A	Mercury	99	99	80	120	0.0	20
04I037	XI14002A	09/14/04	SO	SW8330	1,3,5-Trinitrobenzene	103	NA	71	132	NA	NA
04I037	XI14002A	09/14/04	SO	SW8330	1,3-Dinitrobenzene	104	NA	69	130	NA	NA
04I037	XI14002A	09/14/04	SO	SW8330	2,4,6-Trinitrotoluene	101	NA	44	106	NA	NA
04I037	XI14002A	09/14/04	SO	SW8330	2,4-Dinitrotoluene	106	NA	62	132	NA	NA
04I037	XI14002A	09/14/04	SO	SW8330	2,6-Dinitrotoluene	100	NA	65	125	NA	NA
04I037	XI14002A	09/14/04	SO	SW8330	2-Amino-4,6-Dinitrotoluene	107	NA	66	126	NA	NA
04I037	XI14002A	09/14/04	SO	SW8330	2-Nitrotoluene	95	NA	59	125	NA	NA
04I037	XI14002A	09/14/04	SO	SW8330	3-Nitrotoluene	102	NA	62	122	NA	NA
04I037	XI14002A	09/14/04	SO	SW8330	4-Amino-2,6-Dinitrotoluene	100	NA	72	150	NA	NA
04I037	XI14002A	09/14/04	SO	SW8330	4-Nitrotoluene	102	NA	58	128	NA	NA
04I037	XI14002A	09/14/04	SO	SW8330	HMX	99	NA	60	133	NA	NA
04I037	XI14002A	09/14/04	SO	SW8330	Nitrobenzene	105	NA	67	128	NA	NA
04I037	XI14002A	09/14/04	SO	SW8330	RDX	97	NA	59	129	NA	NA
04I037	XI14002A	09/14/04	SO	SW8330	Tetryl	94	NA	37	120	NA	NA
04I037	XI14014A	09/14/04	SO	SW8330	1,3,5-Trinitrobenzene	103	NA	71	132	NA	NA
04I037	XI14014A	09/14/04	SO	SW8330	1,3-Dinitrobenzene	101	NA	69	130	NA	NA
04I037	XI14014A	09/14/04	SO	SW8330	2,4,6-Trinitrotoluene	100	NA	44	106	NA	NA
04I037	XI14014A	09/14/04	SO	SW8330	2,4-Dinitrotoluene	102	NA	62	132	NA	NA
04I037	XI14014A	09/14/04	SO	SW8330	2,6-Dinitrotoluene	96	NA	65	125	NA	NA

**Table B1-5-9: Summary of LCS/LCSD Recoveries and RPDs
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Delivery Group	Analytical Batch	Analysis			Parameter Name	LCS	LCSD	LCL	UCL	RPD	RPD Limit
		Date	Matrix	Method		%R	%R				
04I037	XI14014A	09/14/04	SO	SW8330	2-Amino-4,6-Dinitrotoluene	103	NA	66	126	NA	NA
04I037	XI14014A	09/14/04	SO	SW8330	2-Nitrotoluene	95	NA	59	125	NA	NA
04I037	XI14014A	09/14/04	SO	SW8330	3-Nitrotoluene	97	NA	62	122	NA	NA
04I037	XI14014A	09/14/04	SO	SW8330	4-Amino-2,6-Dinitrotoluene	99	NA	72	150	NA	NA
04I037	XI14014A	09/14/04	SO	SW8330	4-Nitrotoluene	103	NA	58	128	NA	NA
04I037	XI14014A	09/14/04	SO	SW8330	HMX	97	NA	60	133	NA	NA
04I037	XI14014A	09/14/04	SO	SW8330	Nitrobenzene	103	NA	67	128	NA	NA
04I037	XI14014A	09/14/04	SO	SW8330	RDX	94	NA	59	129	NA	NA
04I037	XI14014A	09/14/04	SO	SW8330	Tetryl	87	NA	37	120	NA	NA

Notes:

LCL = Lower control limit

LCS = Laboratory control sample

LCSD = Laboratory control sample duplicate

NA = Not applicable

%R = Percent recovery

RPD = Relative percent difference

SO = Soil

UCL = Upper control limit

WBLACK = Walkley-Black

**Table B1-5-10: Data Qualifiers Due to Blank Detections
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Station Name	Sample Depth (ft bgs)	Matrix	QC Code	Sample Date	Delivery Group	Lab ID	Analysis Date	Method	Parameter Name	Value	Lab Flag	Validation Code	Units	MDL	RL
R30-88Q-009	0 - 0.5	SO	NS	9/2/04	04I037	I037-15	9/21/04	SW6010B	Antimony	11.2	U^	(UB)	mg/kg	2.25	11.2
R30-102Q-001	0 - 0.5	SO	NS	9/2/04	04I037	I037-19	9/21/04	SW6010B	Antimony	11.1	U^	(UB)	mg/kg	2.22	11.1
R30-102Q-001	0.5 - 1.5	SO	NS	9/2/04	04I037	I037-20	9/21/04	SW6010B	Antimony	11.2	U^	(UB)	mg/kg	2.25	11.2
R30-102Q-002	0 - 0.5	SO	NS	9/2/04	04I037	I037-18	9/21/04	SW6010B	Antimony	11.5	U^	(UJBM)	mg/kg	2.29	11.5
R30-102Q-002	0.5 - 1.5	SO	NS	9/2/04	04I037	I037-21	9/21/04	SW6010B	Antimony	12.4	U^	(UB)	mg/kg	2.48	12.4

Notes:

ft bgs = feet below ground surface

FD = Field duplicate

ID = Identification

MDL = Method detection limit

mg/kg - milligrams per kilogram

NS = Normal sample

QC = Quality control

RL = Reporting limit

SO = Soil

Lab Flags:

U = Analyte is not detected above the RL.

^ = Lab flag updated by MES data reviewer.

Validation codes consist of a validation qualifier and sub-qualifier(s) and are delineated with parenthesis.

Validation Qualifiers:

U = Result was qualified as not detected above the RL or reported sample quantitation limit.

UJ = Result was qualified as not detected and the reported quantitation limit is estimated.

Validation Sub-qualifiers:

B = Result was qualified based on method blank or continuing calibration blank.

M = The MS and MSD recoveries were outside laboratory historical control limits; see Section 5.1.1.1.

**Table B1-5-11: Summary of Surrogate Recoveries
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Station Name	Sample Depth (ft bgs)	Matrix	QC Code	Delivery Group	Method	Parameter Name	%R	LCL	UCL
R30-88Q-001	0 - 0.5	SO	NS	04I037	SW8330	3,4-Dinitrotoluene	98	50	150
R30-88Q-001	0.5 - 1.5	SO	NS	04I037	SW8330	3,4-Dinitrotoluene	97	50	150
R30-88Q-002	0 - 0.5	SO	NS	04I037	SW8330	3,4-Dinitrotoluene	97	50	150
R30-88Q-002	0.5 - 1.5	SO	NS	04I037	SW8330	3,4-Dinitrotoluene	95	50	150
R30-88Q-003	0 - 0.5	SO	NS	04I037	SW8330	3,4-Dinitrotoluene	95	50	150
R30-88Q-003	0 - 0.5	SO	FD	04I037	SW8330	3,4-Dinitrotoluene	96	50	150
R30-88Q-003	0.5 - 1.5	SO	NS	04I037	SW8330	3,4-Dinitrotoluene	97	50	150
R30-88Q-008	0 - 0.5	SO	NS	04I037	SW8330	3,4-Dinitrotoluene	96	50	150
R30-88Q-009	0 - 0.5	SO	NS	04I037	SW8330	3,4-Dinitrotoluene	95	50	150
R30-88Q-010	0 - 0.5	SO	NS	04I037	SW8330	3,4-Dinitrotoluene	96	50	150
R30-102Q-001	0 - 0.5	SO	NS	04I037	SW8330	3,4-Dinitrotoluene	96	50	150
R30-102Q-001	0.5 - 1.5	SO	NS	04I037	SW8330	3,4-Dinitrotoluene	94	50	150
R30-102Q-002	0 - 0.5	SO	NS	04I037	SW8330	3,4-Dinitrotoluene	98	50	150
R30-102Q-002	0.5 - 1.5	SO	NS	04I037	SW8330	3,4-Dinitrotoluene	97	50	150

Notes:

FD = Field duplicate

LCL = Lower control limit

NS = Normal sample

QC = Quality control

%R = Percent recovery

RPD = Relative percent difference

SO = Soil

UCL = Upper control limit

**Table B1-6-1: Reporting Limits and Method Detection Limits Compared to PSVs and ESVs
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Matrix	Method	Parameter Name	Units	MDL	RL	RS PSV	Ind/Com PSV	ESV
SO	SW6010B	Aluminum	mg/kg	5	20	7,700	110,000	50
SO	SW6010B	Antimony	mg/kg	2	10	3.1	47	0.27
SO	SW6010B	Arsenic	mg/kg	0.4	1	0.68	3.0	18
SO	SW6010B	Barium	mg/kg	0.15	1	1,500	22,000	330
SO	SW6010B	Beryllium	mg/kg	0.15	1	16	230	21
SO	SW6010B	Cadmium	mg/kg	0.5	1	7.1	98	0.36
SO	SW6010B	Chromium	mg/kg	0.6	2	0.3*	6.3*	26.0
SO	SW6010B	Cobalt	mg/kg	0.75	2.5	2.3	35	13
SO	SW6010B	Copper	mg/kg	0.5	2	310	4700	28
SO	SW6010B	Iron	mg/kg	1.5	20	5,500	82,000	200
SO	SW6010B	Lead	mg/kg	0.2	1	400	800	11
SO	SW6010B	Magnesium	mg/kg	10	100	--	--	4,400
SO	SW6010B	Manganese	mg/kg	0.2	1	180	2,600	220
SO	SW6010B	Nickel	mg/kg	0.55	2	150	2,200	38
SO	SW6010B	Selenium	mg/kg	0.5	1	39	580	0.52
SO	SW6010B	Silver	mg/kg	0.63	2.5	39	580	4.2
SO	SW6010B	Thallium	mg/kg	0.5	2	0.078	1.2	1
SO	SW6010B	Vanadium	mg/kg	0.5	2	39	580	7.8
SO	SW6010B	Zinc	mg/kg	0.3	1	2,300	35,000	46
SO	SW7471A	Mercury	mg/kg	0.033	0.1	0.94	4.0	0.1
SO	SW8330	1,3,5-Trinitrobenzene	ug/kg	400	400	220,000	3,200,000	376
SO	SW8330	1,3-Dinitrobenzene	ug/kg	400	400	630	8,200	655
SO	SW8330	2,4,6-Trinitrotoluene	ug/kg	400	400	3,600	51,000	--
SO	SW8330	2,4-Dinitrotoluene	ug/kg	400	400	1,700	7,400	1,280
SO	SW8330	2,6-Dinitrotoluene	ug/kg	400	400	360	1,500	33
SO	SW8330	2-Amino-4,6-Dinitrotoluene	ug/kg	400	400	15,000	230,000	--
SO	SW8330	2-Nitrotoluene	ug/kg	400	400	3,200	15,000	--
SO	SW8330	4-Amino-2,6-Dinitrotoluene	ug/kg	400	400	15,000	230,000	--
SO	SW8330	4-Nitrotoluene	ug/kg	400	400	25,000	140,000	--
SO	SW8330	HMX	ug/kg	400	400	390,000	5,700,000	--
SO	SW8330	Nitrobenzene	ug/kg	400	400	5,100	22,000	40,000
SO	SW8330	RDX	ug/kg	400	400	6,100	28,000	--
SO	SW8330	Tetryl	ug/kg	400	400	16,000	230,000	--

**Table B1-6-1: Reporting Limits and Method Detection Limits Compared to PSVs and ESVs
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Notes:

ESV = Ecological screening value (updated June 2011)

MDL = Method detection limit

µg/kg = micrograms per kilogram

mg/kg = milligrams per kilogram

PSV = Preliminary Screening Value (RSLs dated June 2015, TR=1E-6, HQ=0.1)

RL = Reporting limit

SO = Soil

* PSV for Cr VI shown

Indicates the limit is greater than the PSV.

Indicates the limit is greater than the ESV.

ATTACHMENT B1-1
Laboratory Data Forms

EPA METHOD 8330
EXPLOSIVES

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=====
Client      : MATRIX ENVIRONMENTAL SERVICES   Date Collected: 09/02/04
Project     : MCCLELLAN, AL                 Date Received: 09/03/04
Batch No.   : 041037                        Date Extracted: 09/13/04 16:00
Sample ID:  R30-88Q-010                     Date Analyzed: 09/14/04 15:50
Lab Samp ID: I037-01                        Dilution Factor: 1
Lab File ID: XI14005A                       Matrix       : SEDIMENT
Ext Btch ID: EX1003S                        % Moisture    : NA
Calib. Ref.: XI14002A                       Instrument ID : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)	Reportable
-----	-----	-----	-----	
HMX	ND	400	400	y ↓
RDX	ND	400	400	
1,3,5-TNB	ND	400	400	
1,3-DNB	ND	400	400	
TETRYL	ND	400	400	
NITROBENZENE	ND	400	400	
2,4,6-TNT	ND	400	400	
4-AM-2,6-DNT	ND	400	400	
2-AM-4,6-DNT	ND	400	400	
2,6-DNT	ND	400	400	
2,4-DNT	ND	400	400	
2-NITROTOLUENE	ND	400	400	
3-NITROTOLUENE	ND	400	400	
4-NITROTOLUENE	ND	400	400	

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
-----	-----	-----
3,4-DNT	96	50-150

RL: Reporting Limit

Note: All positive results are confirmed by CN column

juw
11/23/04

6004

EPA METHOD 8330
EXPLOSIVES

```

=====
Client   : MATRIX ENVIRONMENTAL SERVICES   Date Collected: 09/02/04
Project  : MCCLELLAN, AL                  Date Received: 09/03/04
Batch No. : 041037                        Date Extracted: 09/13/04 16:00
Sample ID: R30-880-001-0.0-0.5           Date Analyzed: 09/15/04 09:08
Lab Samp ID: I037-02W                     Dilution Factor: 1
Lab File ID: XI14041A                     Matrix : SEDIMENT
Ext Btch ID: EX1003S                      % Moisture : NA
Calib. Ref.: XI14037A                     Instrument ID : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)	Reportable
HMX	ND	400	400	Y ↓
RDX	ND	400	400	
1,3,5-TNB	ND	400	400	
1,3-DNB	ND	400	400	
TETRYL	ND	400	400	
NITROBENZENE	ND	400	400	
2,4,6-TNT	ND	400	400	
4-AM-2,6-DNT	ND	400	400	
2-AM-4,6-DNT	ND	400	400	
2,6-DNT	ND	400	400	
2,4-DNT	ND	400	400	
2-NITROTOLUENE	ND	400	400	
3-NITROTOLUENE	ND	400	400	
4-NITROTOLUENE	ND	400	400	
SURROGATE PARAMETERS	% RECOVERY	QC LIMIT		
3,4-DNT	98	50-150		

RL: Reporting Limit

Note: All positive results are confirmed by CN column

Jan 11/23/04 6005

EPA METHOD 8330
EXPLOSIVES

```

=====
Client   : MATRIX ENVIRONMENTAL SERVICES   Date Collected: 09/02/04
Project  : MCCLELLAN, AL                  Date Received: 09/03/04
Batch No. : 041037                        Date Extracted: 09/13/04 16:00
Sample ID: R30-88Q-001-0.5-1.5           Date Analyzed: 09/15/04 09:37
Lab Samp ID: I037-03W                     Dilution Factor: 1
Lab File ID: X114042A                     Matrix       : SEDIMENT
Ext Btch ID: EX1003S                      % Moisture   : NA
Calib. Ref.: X114037A                     Instrument ID : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)	Reportable
-----	-----	-----	-----	Y
HMX	ND	400	400	↓
RDX	ND	400	400	
1,3,5-TNB	ND	400	400	
1,3-DNB	ND	400	400	
TETRYL	ND	400	400	
NITROBENZENE	ND	400	400	
2,4,6-TNT	ND	400	400	
4-AM-2,6-DNT	ND	400	400	
2-AM-4,6-DNT	ND	400	400	
2,6-DNT	ND	400	400	
2,4-DNT	ND	400	400	
2-NITROTOLUENE	ND	400	400	
3-NITROTOLUENE	ND	400	400	
4-NITROTOLUENE	ND	400	400	
SURROGATE PARAMETERS	% RECOVERY	QC LIMIT		
-----	-----	-----		
3,4-DNT	97	50-150		

RL: Reporting Limit

Note: All positive results are confirmed by CN column

gmc
11/23/04 6006

EPA METHOD 8330
EXPLOSIVES

```

=====
Client      : MATRIX ENVIRONMENTAL SERVICES   Date Collected: 09/02/04
Project     : MCCLELLAN, AL                 Date Received: 09/03/04
Batch No.   : 041037                       Date Extracted: 09/13/04 16:00
Sample ID:  R30-880-002-0.0-0.5           Date Analyzed: 09/15/04 10:06
Lab Samp ID: 1037-04W                     Dilution Factor: 1
Lab File ID: X114043A                     Matrix          : SEDIMENT
Ext Btch ID: EX1003S                       % Moisture       : NA
Calib. Ref.: X114037A                     Instrument ID    : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)	Reportable
-----	-----	-----	-----	Y
HMX	ND	400	400	↓
RDX	ND	400	400	
1,3,5-TNB	ND	400	400	
1,3-DNB	ND	400	400	
TETRYL	ND	400	400	
NITROBENZENE	ND	400	400	
2,4,6-TNT	ND	400	400	
4-AM-2,6-DNT	ND	400	400	
2-AM-4,6-DNT	ND	400	400	
2,6-DNT	ND	400	400	
2,4-DNT	ND	400	400	
2-NITROTOLUENE	ND	400	400	
3-NITROTOLUENE	ND	400	400	
4-NITROTOLUENE	ND	400	400	

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
-----	-----	-----
3,4-DNT	97	50-150

RL: Reporting Limit

Note: All positive results are confirmed by CN column

gmc
11/23/04

6007

EPA METHOD 8330
EXPLOSIVES

```

=====
Client      : MATRIX ENVIRONMENTAL SERVICES   Date Collected: 09/02/04
Project     : MCCLELLAN, AL                  Date Received: 09/03/04
Batch No.   : 041037                         Date Extracted: 09/13/04 16:00
Sample ID   : R30-880-002-0.5-1.5           Date Analyzed: 09/15/04 10:34
Lab Samp ID : I037-05W                       Dilution Factor: 1
Lab File ID : X114044A                       Matrix       : SEDIMENT
Ext Btch ID : EX1003S                        % Moisture    : NA
Calib. Ref. : X114037A                      Instrument ID : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)	Reportable
-----	-----	-----	-----	-----
HMX	ND	400	400	Y ↓
RDX	ND	400	400	
1,3,5-TNB	ND	400	400	
1,3-DNB	ND	400	400	
TETRYL	ND	400	400	
NITROBENZENE	ND	400	400	
2,4,6-TNT	ND	400	400	
4-AM-2,6-DNT	ND	400	400	
2-AM-4,6-DNT	ND	400	400	
2,6-DNT	ND	400	400	
2,4-DNT	ND	400	400	
2-NITROTOLUENE	ND	400	400	
3-NITROTOLUENE	ND	400	400	
4-NITROTOLUENE	ND	400	400	
SURROGATE PARAMETERS	% RECOVERY	QC LIMIT		
-----	-----	-----		
3,4-DNT	95	50-150		

RL: Reporting Limit

Note: All positive results are confirmed by CN column

gmc
11/23/04

6008

EPA METHOD 8330
EXPLOSIVES

```

=====
Client      : MATRIX ENVIRONMENTAL SERVICES   Date Collected: 09/02/04
Project     : MCCLELLAN, AL                 Date Received: 09/03/04
Batch No.   : 041037                       Date Extracted: 09/13/04 16:00
Sample ID   : R30-880-003-0.0-0.5          Date Analyzed: 09/15/04 11:03
Lab Samp ID : 1037-06W                     Dilution Factor: 1
Lab File ID : X114045A                     Matrix          : SEDIMENT
Ext Btch ID : EX1003S                       % Moisture       : NA
Calib. Ref. : X114037A                     Instrument ID    : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)
-----	-----	-----	-----
HMX	ND	400	400
RDX	ND	400	400
1,3,5-TNB	ND	400	400
1,3-DNB	ND	400	400
TETRYL	ND	400	400
NITROBENZENE	ND	400	400
2,4,6-TNT	ND	400	400
4-AM-2,6-DNT	ND	400	400
2-AM-4,6-DNT	ND	400	400
2,6-DNT	ND	400	400
2,4-DNT	ND	400	400
2-NITROTOLUENE	ND	400	400
3-NITROTOLUENE	ND	400	400
4-NITROTOLUENE	ND	400	400

Reportable

Y



SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
-----	-----	-----
3,4-DNT	95	50-150

RL: Reporting Limit

Note: All positive results are confirmed by CN column

gmc
11/23/04

6009

EPA METHOD 8330
EXPLOSIVES

```

=====
Client   : MATRIX ENVIRONMENTAL SERVICES   Date Collected: 09/02/04
Project  : MCCLELLAN, AL                   Date Received: 09/03/04
Batch No. : 041037                         Date Extracted: 09/13/04 16:00
Sample ID: R30-88Q-003-0.5-1.5            Date Analyzed: 09/14/04 20:39
Lab Samp ID: 1037-07                       Dilution Factor: 1
Lab File ID: X114015A                      Matrix       : SEDIMENT
Ext Btch ID: EX1003S                       % Moisture    : NA
Calib. Ref.: X114014A                      Instrument ID : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)	Reportable
-----	-----	-----	-----	
HMX	ND	400	400	y ↓
RDX	ND	400	400	
1,3,5-TNB	ND	400	400	
1,3-DNB	ND	400	400	
TETRYL	ND	400	400	
4-NITROBENZENE	ND	400	400	
2,4,6-TNT	ND	400	400	
4-AM-2,6-DNT	ND	400	400	
2-AM-4,6-DNT	ND	400	400	
2,6-DNT	ND	400	400	
2,4-DNT	ND	400	400	
2-NITROTOLUENE	ND	400	400	
3-NITROTOLUENE	ND	400	400	
4-NITROTOLUENE	ND	400	400	

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
-----	-----	-----
3,4-DNT	97	50-150

RL: Reporting Limit

Note: All positive results are confirmed by CN column

Jan 11/23/04

6010

EPA METHOD 8330
EXPLOSIVES

```

=====
Client   : MATRIX ENVIRONMENTAL SERVICES   Date Collected: 09/02/04
Project  : MCCLELLAN, AL                  Date Received: 09/03/04
Batch No. : 041037                        Date Extracted: 09/13/04 16:00
Sample ID: R30-880-008                    Date Analyzed: 09/15/04 00:58
Lab Samp ID: 1037-14                      Dilution Factor: 1
Lab File ID: X114024A                     Matrix       : SEDIMENT
Ext Btch ID: EX1004S                      % Moisture    : NA
Calib. Ref.: X114014A                     Instrument ID : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)
-----	-----	-----	-----
HMX	ND	400	400
RDX	ND	400	400
1,3,5-TNB	ND	400	400
1,3-DNB	ND	400	400
TETRYL	ND	400	400
NITROBENZENE	ND	400	400
2,4,6-TNT	ND	400	400
4-AM-2,6-DNT	ND	400	400
2-AM-4,6-DNT	ND	400	400
2,6-DNT	ND	400	400
2,4-DNT	ND	400	400
2-NITROTOLUENE	ND	400	400
3-NITROTOLUENE	ND	400	400
4-NITROTOLUENE	ND	400	400
-----	-----	-----	-----
SURROGATE PARAMETERS	% RECOVERY	QC LIMIT	
-----	-----	-----	
3,4-DNT	96	50-150	

Reportable



RL: Reporting Limit

Note: All positive results are confirmed by CN column

gaw
11/23/04 6017

EPA METHOD 8330
EXPLOSIVES

```

=====
Client      : MATRIX ENVIRONMENTAL SERVICES   Date Collected: 09/02/04
Project     : MCCLELLAN, AL                 Date Received: 09/03/04
Batch No.   : 041037                       Date Extracted: 09/13/04 16:00
Sample ID   : R30-88Q-009                  Date Analyzed: 09/15/04 02:24
Lab Samp ID : I037-15                      Dilution Factor: 1
Lab File ID : X114027A                     Matrix          : SEDIMENT
Ext Btch ID : EX1004S                      % Moisture       : NA
Calib. Ref. : X114026A                     Instrument ID    : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)	Reportable
-----	-----	-----	-----	-----
HMX	ND	400	400	Reportable ↓
RDX	ND	400	400	
1,3,5-TNB	ND	400	400	
1,3-DNB	ND	400	400	
TETRYL	ND	400	400	
NITROBENZENE	ND	400	400	
2,4,6-TNT	ND	400	400	
4-AM-2,6-DNT	ND	400	400	
2-AM-4,6-DNT	ND	400	400	
2,6-DNT	ND	400	400	
2,4-DNT	ND	400	400	
2-NITROTOLUENE	ND	400	400	
3-NITROTOLUENE	ND	400	400	
4-NITROTOLUENE	ND	400	400	
-----	-----	-----	-----	-----
PROBATE PARAMETERS	% RECOVERY	QC LIMIT		
-----	-----	-----		
2,4-DNT	95	50-150		

RL: Reporting Limit

Note: All positive results are confirmed by CN column

guc
11/23/04 6018

EPA METHOD 8330
EXPLOSIVES

```

=====
Client      : MATRIX ENVIRONMENTAL SERVICES   Date Collected: 09/02/04
Project     : MCCLELLAN, AL                 Date Received: 09/03/04
Batch No.   : 041037                       Date Extracted: 09/13/04 16:00
Sample ID   : DUP032-0.0-0.5               Date Analyzed: 09/15/04 02:53
Lab Samp ID : 1037-16                      Dilution Factor: 1
Lab File ID : X114028A                     Matrix       : SEDIMENT
Ext Btch ID : EX1004S                      % Moisture    : NA
Calib. Ref. : X114026A                     Instrument ID : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)	Reportable
4MX	ND	400	400	Y ↓
DNX	ND	400	400	
1,3,5-TNB	ND	400	400	
1,3-DNB	ND	400	400	
TETRYL	ND	400	400	
NITROBENZENE	ND	400	400	
2,4,6-TNT	ND	400	400	
4-AM-2,6-DNT	ND	400	400	
2-AM-4,6-DNT	ND	400	400	
2,6-DNT	ND	400	400	
2,4-DNT	ND	400	400	
2-NITROTOLUENE	ND	400	400	
3-NITROTOLUENE	ND	400	400	
4-NITROTOLUENE	ND	400	400	
SURROGATE PARAMETERS	% RECOVERY	QC LIMIT		
3,4-DNT	96	50-150		

RL: Reporting Limit

Note: All positive results are confirmed by CN column

6019

EPA METHOD 8330
EXPLOSIVES

```

=====
Client      : MATRIX ENVIRONMENTAL SERVICES   Date Collected: 09/02/04
Project     : MCCLELLAN, AL                  Date Received: 09/03/04
Batch No.   : 041037                         Date Extracted: 09/13/04 16:00
Sample ID   : R30-102Q-002-0.0-0.5          Date Analyzed: 09/15/04 03:51
Lab Samp ID : 1037-18                       Dilution Factor: 1
Lab File ID : X114030A                      Matrix       : SEDIMENT
Int Btch ID : EX1004S                       % Moisture    : NA
Calib. Ref. : X114026A                     Instrument ID : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)	Reportable Y
-----	-----	-----	-----	
HMX	ND	400	400	
RDX	ND	400	400	
1,3,5-TNB	ND	400	400	
1,3-DNB	ND	400	400	
TETRYL	ND	400	400	
NITROBENZENE	ND	400	400	
2,4,6-TNT	ND	400	400	
4-AM-2,6-DNT	ND	400	400	
2-AM-4,6-DNT	ND	400	400	
2,6-DNT	ND	400	400	
2,4-DNT	ND	400	400	
2-NITROTOLUENE	ND	400	400	
3-NITROTOLUENE	ND	400	400	
4-NITROTOLUENE	ND	400	400	

PROBROGATE PARAMETERS	% RECOVERY	QC LIMIT
-----	-----	-----
2,4,6-DNT	98	50-150

RL: Reporting Limit

Note: All positive results are confirmed by CN column

gpc 11/23/04 6021

EPA METHOD 8330
EXPLOSIVES

```

=====
Client      : MATRIX ENVIRONMENTAL SERVICES   Date Collected: 09/02/04
Project     : MCCLELLAN, AL                 Date Received: 09/03/04
Batch No.   : 041037                       Date Extracted: 09/13/04 16:00
Sample ID   : R30-1020-001-0.0-0.5         Date Analyzed: 09/15/04 05:17
Lab Samp ID : 1037-19                      Dilution Factor: 1
Lab File ID : X114033A                     Matrix       : SEDIMENT
Ext Btch ID : EX1004S                      % Moisture    : NA
Calib. Ref. : X114026A                     Instrument ID : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)
-----	-----	-----	-----
HMX	ND	400	400
RDX	ND	400	400
1,3,5-TNB	ND	400	400
1,3-DNB	ND	400	400
TETRYL	ND	400	400
NITROBENZENE	ND	400	400
2,4,6-TNT	ND	400	400
4-AM-2,6-DNT	ND	400	400
2-AM-4,6-DNT	ND	400	400
2,6-DNT	ND	400	400
2,4-DNT	ND	400	400
2-NITROTOLUENE	ND	400	400
3-NITROTOLUENE	ND	400	400
4-NITROTOLUENE	ND	400	400
SURROGATE PARAMETERS	% RECOVERY	QC LIMIT	
-----	-----	-----	
3,4-DNT	96	50-150	

Reportable



RL: Reporting Limit

Note: All positive results are confirmed by CN column

Jan 11/2014

6022

EPA METHOD 8330
EXPLOSIVES

```

=====
Client      : MATRIX ENVIRONMENTAL SERVICES   Date Collected: 09/02/04
Project     : MCCLELLAN, AL                  Date Received: 09/03/04
Batch No.   : 041037                         Date Extracted: 09/13/04 16:00
Sample ID:  R30-102Q-001-0.5-1.5           Date Analyzed: 09/15/04 05:46
Lab Samp ID: 1037-20                        Dilution Factor: 1
Lab File ID: X114034A                       Matrix       : SEDIMENT
Ext Btch ID: EX1004S                         % Moisture    : NA
Calib. Ref.: X114026A                       Instrument ID : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)	<i>Reportable</i> ↓
-----	-----	-----	-----	
MMX	ND	400	400	
DDX	ND	400	400	
1,3,5-TNB	ND	400	400	
1,3-DNB	ND	400	400	
TETRYL	ND	400	400	
NITROBENZENE	ND	400	400	
2,4,6-TNT	ND	400	400	
4-AM-2,6-DNT	ND	400	400	
2-AM-4,6-DNT	ND	400	400	
2,6-DNT	ND	400	400	
2,4-DNT	ND	400	400	
2-NITROTOLUENE	ND	400	400	
3-NITROTOLUENE	ND	400	400	
4-NITROTOLUENE	ND	400	400	
SURROGATE PARAMETERS	% RECOVERY	QC LIMIT		
-----	-----	-----		
3,4-DNT	94	50-150		

RL: Reporting Limit

Note: All positive results are confirmed by CN column

Jan 11/23/04 6023

EPA METHOD 8330
EXPLOSIVES

```

=====
Client      : MATRIX ENVIRONMENTAL SERVICES   Date Collected: 09/02/04
Project     : MCCLELLAN, AL                  Date Received: 09/03/04
Batch No.   : 041037                         Date Extracted: 09/13/04 16:00
Sample ID   : R30-1020-002-0.5-1.5          Date Analyzed: 09/15/04 06:15
Lab Samp ID : I037-21                       Dilution Factor: 1
Lab File ID : X114035A                      Matrix          : SEDIMENT
Ext Btch ID : EX1004S                       % Moisture       : NA
Calib. Ref. : X114026A                      Instrument ID    : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)
-----	-----	-----	-----
HMX	ND	400	400
RDX	ND	400	400
1,3,5-TNB	ND	400	400
1,3-DNB	ND	400	400
TETRYL	ND	400	400
NITROBENZENE	ND	400	400
2,4,6-TNT	ND	400	400
4-AM-2,6-DNT	ND	400	400
2-AM-4,6-DNT	ND	400	400
2,6-DNT	ND	400	400
2,4-DNT	ND	400	400
2-NITROTOLUENE	ND	400	400
3-NITROTOLUENE	ND	400	400
4-NITROTOLUENE	ND	400	400
SURROGATE PARAMETERS	% RECOVERY	QC LIMIT	
-----	-----	-----	
3,4-DNT	97	50-150	

Reportable



RL: Reporting Limit

Note: All positive results are confirmed by CN column

gmc
11/27/04

6024

METHOD 3050B/6010B
METALS BY ICP

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	09/02/04
Project	: MCCLELLAN, AL	Date Received:	09/03/04
SDG NO.	: 041037	Date Extracted:	09/08/04 08:30
Sample ID:	R30-88Q-010	Date Analyzed:	09/21/04 16:58
Lab Samp ID:	I037-01	Dilution Factor:	1
Lab File ID:	I07I044016	Matrix	: SOIL
Ext Btch ID:	IPI010S	% Moisture	: 12.3
Calib. Ref.:	I07I044008	Instrument ID	: EMAXTI07

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)	Reportable
Aluminum	16000	22.8	5.7	Y
Antimony	2.29J	11.4	2.28	
Barium	23.8	1.14	.171	
Beryllium	.283J	1.14	.171	
Cadmium	ND	1.14	.57	
Calcium	109J	114	8.55	
Chromium	16.6	2.28	.684	
Cobalt	1.34J	2.85	.855	
Copper	24.4	2.28	.57	
Iron	14100	22.8	1.71	
Magnesium	380	114	11.4	
Manganese	118	1.14	.228	
Nickel	6.81	2.28	.627	
Potassium	540J	570	85.5	
Silver	ND	2.85	.718	
Sodium	40J	114	28.5	
Vanadium	28.9	2.28	.57	
Zinc	19.5	1.14	.342	

Jan
11/23/04

7004

METHOD 3050B/6010B
METALS BY TRACE ICP

Client : MATRIX ENVIRONMENTAL SERVICES Date Collected: 09/02/04
Project : MCCLELLAN, AL Date Received: 09/03/04
SDG NO. : 04I037 Date Extracted: 09/08/04 08:30
Sample ID: R30-88Q-010 Date Analyzed: 09/15/04 14:07
Lab Samp ID: I037-01 Dilution Factor: 1
Lab File ID: I31I025016 Matrix : SOIL
Ext Btch ID: IPI010S % Moisture : 12.3
Calib. Ref.: I31I025008 Instrument ID : EMAXT131

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)	Reportable
Arsenic	5.22	1.14	.456	Y
Lead	121	1.14	.228	↓
Selenium	ND	1.14	.57	
Thallium	ND	2.28	.57	

Jan 11/20/04 7005

METHOD 3050B/6010B
METALS BY ICP

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	09/02/04
Project	: MCCLELLAN, AL	Date Received:	09/03/04
SDG NO.	: 041037	Date Extracted:	09/08/04 08:30
Sample ID:	R30-88Q-001-0.0-0.5	Date Analyzed:	09/21/04 17:06
Lab Samp ID:	I037-02	Dilution Factor:	1
Lab File ID:	I07I044018	Matrix	: SOIL
Ext Btch ID:	IPI010S	% Moisture	: 29.4
Calib. Ref.:	I07I044008	Instrument ID	: EMAXTI07

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	28700	28.3	7.08
Antimony	ND	14.2	2.83
Barium	81.2	1.42	.212
Beryllium	.703J	1.42	.212
Cadmium	ND	1.42	.708
Calcium	841	142	10.6
Chromium	32.3	2.83	.85
Cobalt	6.2	3.54	1.06
Copper	18.8	2.83	.708
Iron	24600	28.3	2.12
Magnesium	1040	142	14.2
Manganese	485	1.42	.283
Nickel	11.3	2.83	.779
Potassium	1300	708	106
Silver	ND	3.54	.892
Sodium	45.2J	142	35.4
Vanadium	42.6	2.83	.708
Zinc	40.7	1.42	.425

Reportable



Jan
11/23/04

7006

METHOD 3050B/6010B
METALS BY TRACE ICP

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	09/02/04
Project	: MCCLELLAN, AL	Date Received:	09/03/04
SDG NO.	: 04I037	Date Extracted:	09/08/04 08:30
Sample ID:	R30-88Q-001-0.0-0.5	Date Analyzed:	09/15/04 14:17
Lab Samp ID:	I037-02	Dilution Factor:	1
Lab File ID:	I31I025018	Matrix	: SOIL
Ext Btch ID:	IPI010S	% Moisture	: 29.4
Calib. Ref.:	I31I025008	Instrument ID	: EMAXT131

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	HDL (mg/kg)
Arsenic	7.86	1.42	.567
Lead	51.2	1.42	.283
Selenium	ND	1.42	.708
Thallium	ND	2.83	.708

Reportable



gww
11/23/04

7007

METHOD 3050B/6010B
METALS BY ICP

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	09/02/04
Project	: MCCLELLAN, AL	Date Received:	09/03/04
SDG NO.	: 041037	Date Extracted:	09/08/04 08:30
Sample ID:	R30-88Q-001-0.5-1.5	Date Analyzed:	09/21/04 17:10
Lab Samp ID:	I037-03	Dilution Factor:	1
Lab File ID:	I071044019	Matrix	: SOIL
Ext Btch ID:	IPI010S	% Moisture	: 14.1
Calib. Ref.:	I071044008	Instrument ID	: EMAXT107

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	23700	23.3	5.82
Antimony	ND	11.6	2.33
Barium	73	1.16	.175
Beryllium	.62J	1.16	.175
Cadmium	ND	1.16	.582
Calcium	445	116	8.73
Chromium	25.1	2.33	.698
Cobalt	4.91	2.91	.873
Copper	14.1	2.33	.582
Iron	17400	23.3	1.75
Magnesium	833	116	11.6
Manganese	436	1.16	.233
Nickel	9.94	2.33	.64
Potassium	914	582	87.3
Silver	ND	2.91	.733
Sodium	44.5J	116	29.1
Vanadium	31.6	2.33	.582
Zinc	34.8	1.16	.349

Reportable



juu
11/23/04

7008

METHOD 3050B/6010B
METALS BY TRACE ICP

Client : MATRIX ENVIRONMENTAL SERVICES Date Collected: 09/02/04
Project : MCCLELLAN, AL Date Received: 09/03/04
SDG NO. : 041037 Date Extracted: 09/08/04 08:30
Sample ID: R30-88Q-001-0.5-1.5 Date Analyzed: 09/15/04 14:22
Lab Samp ID: I037-03 Dilution Factor: 1
Lab File ID: I311025019 Matrix : SOIL
Ext Btch ID: IPI010S % Moisture : 14.1
Calib. Ref.: I311025008 Instrument ID : EMAXTI31

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Arsenic	4.95	1.16	.466
Lead	37.2	1.16	.233
Selenium	ND	1.16	.582
Thallium	ND	2.33	.582

Reportable



Jan 11/29/04

7009

METHOD 3050B/6010B
METALS BY ICP

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	09/02/04
Project	: MCCLELLAN, AL	Date Received:	09/03/04
SDG NO.	: 041037	Date Extracted:	09/08/04 08:30
Sample ID:	R30-88Q-002-0.0-0.5	Date Analyzed:	09/21/04 17:24
Lab Samp ID:	I037-04	Dilution Factor:	1
Lab File ID:	I071044022	Matrix	: SOIL
Ext Btch ID:	IPI010S	% Moisture	: 16.1
Calib. Ref.:	I071044020	Instrument ID	: EMAXTI07

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	14500	23.8	5.96
Antimony	2.59J	11.9	2.38
Barium	89.4	1.19	.179
Beryllium	.561J	1.19	.179
Cadmium	ND	1.19	.596
Calcium	1100	119	8.94
Chromium	11.5	2.38	.715
Cobalt	5.31	2.98	.894
Copper	7.57	2.38	.596
Iron	9280	23.8	1.79
Magnesium	628	119	11.9
Manganese	1110	1.19	.238
Nickel	6.2	2.38	.656
Potassium	728	596	89.4
Silver	ND	2.98	.751
Sodium	41.8J	119	29.8
Vanadium	18.3	2.38	.596
Zinc	28.4	1.19	.358

Reportable



Jan 11/23/04

7010

METHOD 3050B/6010B
METALS BY TRACE ICP

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Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	09/02/04
Project	: MCCLELLAN, AL	Date Received:	09/03/04
SDG NO.	: 041037	Date Extracted:	09/08/04 08:30
Sample ID:	R30-88Q-002-0.0-0.5	Date Analyzed:	09/15/04 14:42
Lab Samp ID:	I037-04	Dilution Factor:	1
Lab File ID:	I311025022	Matrix	: SOIL
Ext Btch ID:	IPI010S	% Moisture	: 16.1
Calib. Ref.:	I311025020	Instrument ID	: EMAXT131

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PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
-----	-----	-----	-----
Arsenic	5.22	1.19	.477
Lead	39.6	1.19	.238
Selenium	ND	1.19	.596
Thallium	ND	2.38	.596

Reportable



gmc
11/23/04

7011

METHOD 3050B/6010B
METALS BY ICP

Client : MATRIX ENVIRONMENTAL SERVICES Date Collected: 09/02/04
Project : MCCLELLAN, AL Date Received: 09/03/04
SDG NO. : 04I037 Date Extracted: 09/08/04 08:30
Sample ID: R30-88Q-002-0.5-1.5 Date Analyzed: 09/21/04 17:28
Lab Samp ID: I037-05 Dilution Factor: 1
Lab File ID: I07I044023 Matrix : SOIL
Ext Btch ID: IPI010S % Moisture : 23.5
Calib. Ref.: I07I044020 Instrument ID : EMAXT107

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	22200	26.1	6.54
Antimony	ND	13.1	2.61
Barium	138	1.31	.196
Beryllium	.992J	1.31	.196
Cadmium	ND	1.31	.654
Calcium	379	131	9.8
Chromium	17.7	2.61	.784
Cobalt	8.21	3.27	.98
Copper	7.91	2.61	.654
Iron	13000	26.1	1.96
Magnesium	782	131	13.1
Manganese	2040	1.31	.261
Nickel	10.2	2.61	.719
Potassium	978	654	98
Silver	ND	3.27	.824
Sodium	45.8J	131	32.7
Vanadium	26.3	2.61	.654
Zinc	34.1	1.31	.392

Reportable



you 11/23/04 7012

METHOD 3050B/6010B
METALS BY TRACE ICP

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	09/02/04
Project	: MCCLELLAN, AL	Date Received:	09/03/04
SDG NO.	: 041037	Date Extracted:	09/08/04 08:30
Sample ID:	R30-88Q-002-0.5-1.5	Date Analyzed:	09/15/04 14:48
Lab Samp ID:	I037-05	Dilution Factor:	1
Lab File ID:	I311025023	Matrix	: SOIL
Ext Btch ID:	IPI010S	% Moisture	: 23.5
Calib. Ref.:	I311025020	Instrument ID	: EMAXTI31

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Arsenic	5.33	1.31	.523
Lead	89.7	1.31	.261
Selenium	ND	1.31	.654
Thallium	ND	2.61	.654

Reportable



gmc
11/23/04

7013

METHOD 3050B/6010B
METALS BY ICP

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	09/02/04
Project	: MCCLELLAN, AL	Date Received:	09/03/04
SDG NO.	: 04I037	Date Extracted:	09/08/04 08:30
Sample ID:	R30-88Q-003-0.0-0.5	Date Analyzed:	09/21/04 17:32
Lab Samp ID:	I037-06	Dilution Factor:	1
Lab File ID:	I07I044024	Matrix	: SOIL
Ext Btch ID:	IPI010S	% Moisture	: 25.3
Calib. Ref.:	I07I044020	Instrument ID	: EMAXT107

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	14700	26.8	6.69
Antimony	ND	13.4	2.68
Barium	23.8	1.34	.201
Beryllium	.313J	1.34	.201
Cadmium	ND	1.34	.669
Calcium	120J	134	10
Chromium	13.1	2.68	.803
Cobalt	ND	3.35	1
Copper	53.5	2.68	.669
Iron	9810	26.8	2.01
Magnesium	395	134	13.4
Manganese	129	1.34	.268
Nickel	5.44	2.68	.736
Potassium	813	669	100
Silver	ND	3.35	.843
Sodium	42.7J	134	33.5
Vanadium	22.8	2.68	.669
Zinc	21	1.34	.402

Reportable



gww
11/23/04

7014

METHOD 3050B/6010B
METALS BY TRACE ICP

Client : MATRIX ENVIRONMENTAL SERVICES Date Collected: 09/02/04
Project : MCCLELLAN, AL Date Received: 09/03/04
SDG NO. : 041037 Date Extracted: 09/08/04 08:30
Sample ID: R30-88Q-003-0.0-0.5 Date Analyzed: 09/15/04 14:53
Lab Samp ID: 1037-06 Dilution Factor: 1
Lab File ID: I311025024 Matrix : SOIL
Ext Btch ID: IPI010S % Moisture : 25.3
Calib. Ref.: I311025020 Instrument ID : EMAXTI31

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)	Reportable
Arsenic	6.03	1.34	.535	Y
Lead	307	1.34	.268	↓
Selenium	ND	1.34	.669	
Thallium	ND	2.68	.669	

Jan 11/23/04 7015

METHOD 3050B/6010B
METALS BY ICP

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	09/02/04
Project	: MCCLELLAN, AL	Date Received:	09/03/04
SDG NO.	: 04I037	Date Extracted:	09/08/04 08:30
Sample ID:	R30-88Q-003-0.5-1.5	Date Analyzed:	09/21/04 17:36
Lab Samp ID:	I037-07	Dilution Factor:	1
Lab File ID:	107I044025	Matrix	: SOIL
Ext Btch ID:	IPI0105	% Moisture	: 10.3
Calib. Ref.:	107I044020	Instrument ID	: EMAXTI07

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	13800	22.3	5.57
Antimony	3.48J	11.1	2.23
Barium	23.3	1.11	.167
Beryllium	.272J	1.11	.167
Cadmium	ND	1.11	.557
Calcium	99.4J	111	8.36
Chromium	12.4	2.23	.669
Cobalt	ND	2.79	.836
Copper	54	2.23	.557
Iron	8730	22.3	1.67
Magnesium	362	111	11.1
Manganese	89.6	1.11	.223
Nickel	4.85	2.23	.613
Potassium	887	557	83.6
Silver	ND	2.79	.702
Sodium	35.5J	111	27.9
Vanadium	21.3	2.23	.557
Zinc	17	1.11	.334

Reportable



gaw
11/23/07

7016

METHOD 30508/60108
METALS BY TRACE ICP

Client : MATRIX ENVIRONMENTAL SERVICES Date Collected: 09/02/04
Project : MCCLELLAN, AL Date Received: 09/03/04
SDG NO. : 04I037 Date Extracted: 09/08/04 08:30
Sample ID: R30-88Q-003-0.5-1.5 Date Analyzed: 09/15/04 14:58
Lab Samp ID: I037-07 Dilution Factor: 1
Lab File ID: I31I025025 Matrix : SOIL
Ext Btch ID: IPI010S % Moisture : 10.3
Calib. Ref.: I31I025020 Instrument ID : EMAXT131

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Arsenic	5.01	1.11	.446
Lead	308	1.11	.223
Selenium	ND	1.11	.557
Thallium	ND	2.23	.557

Reportable

Y
↓

Jan 11/23/04 7017

METHOD 3050B/6010B
METALS BY ICP

Client : MATRIX ENVIRONMENTAL SERVICES Date Collected: 09/02/04
Project : MCCLELLAN, AL Date Received: 09/03/04
SDG NO. : 041037 Date Extracted: 09/08/04 08:30
Sample ID: R30-88Q-008 Date Analyzed: 09/21/04 18:14
Lab Samp ID: I037-14 Dilution Factor: 1
Lab File ID: I071044034 Matrix : ~~SOIL~~ Sediment *SL 12/3/04*
Ext Btch ID: IPI010S % Moisture : 23.4
Calib. Ref.: I071044032 Instrument ID : EMAXT107

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)	Reportable
Aluminum	5010	26.1	6.53	Y ↓
Antimony	ND	13.1	2.61	
Barium	23.5	1.31	.196	
Beryllium	ND	1.31	.196	
Cadmium	ND	1.31	.653	
Calcium	82.9J	131	9.79	
Chromium	8.86	2.61	.783	
Cobalt	ND	3.26	.979	
Copper	3.07	2.61	.653	
Iron	9750	26.1	1.96	
Magnesium	121J	131	13.1	
Manganese	130	1.31	.261	
Nickel	1.47J	2.61	.718	
Potassium	417J	653	97.9	
Silver	ND	3.26	.822	
Sodium	43.7J	131	32.6	
Vanadium	15.8	2.61	.653	
Zinc	5.29	1.31	.392	

gmc
11/23/04 7030

METHOD 3050B/6010B
METALS BY TRACE ICP

Client : MATRIX ENVIRONMENTAL SERVICES Date Collected: 09/02/04
Project : MCCLELLAN, AL Date Received: 09/03/04
SDG NO. : 04I037 Date Extracted: 09/08/04 08:30
Sample ID: R30-88Q-008 Date Analyzed: 09/15/04 15:51
Lab Samp ID: 1037-14 Dilution Factor: 1
Lab File ID: I31I025034 Matrix : ~~Soil~~ Sediment OK 12/3/04
Ext Btch ID: IPI010S % Moisture : 23.4
Calib. Ref.: I31I025032 Instrument ID : EMAXT131

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)	Reportable
Arsenic	3.55	1.31	.522	Y
Lead	10.9	1.31	.261	↓
Selenium	ND	1.31	.653	
Thallium	ND	2.61	.653	

gmc
11/23/04
7031

METHOD 3050B/6010B
METALS BY ICP

Client : MATRIX ENVIRONMENTAL SERVICES Date Collected: 09/02/04
Project : MCCLELLAN, AL Date Received: 09/03/04
SDG NO. : 041037 Date Extracted: 09/08/04 08:30
Sample ID: R30-88Q-009 Date Analyzed: 09/21/04 18:18
Lab Samp ID: I037-15 Dilution Factor: 1
Lab File ID: I071044035 Matrix : ~~SOIL~~ Sediment *DR 12/3/04*
Ext Btch ID: IPI0105 % Moisture : 11.1
Calib. Ref.: I071044032 Instrument ID : EMAXT107

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)	Reportable
Aluminum	14400	22.5	5.62	Y ↓
Antimony	<i>UB</i> ~~3.75~~ 11.2	11.2	2.25	
Barium	27.1	1.12	.169	
Beryllium	.31J	1.12	.169	
Cadmium	ND	1.12	.562	
Calcium	90.8J	112	8.44	
Chromium	17.1	2.25	.675	
Cobalt	1.56J	2.81	.844	
Copper	7.24	2.25	.562	
Iron	12700	22.5	1.69	
Magnesium	439	112	11.2	
Manganese	165	1.12	.225	
Nickel	6.11	2.25	.619	
Potassium	750	562	84.4	
Silver	ND	2.81	.709	
Sodium	35.9J	112	28.1	
Vanadium	23.4	2.25	.562	
Zinc	19.3	1.12	.337	

juu
11/23/04

7032

METHOD 3050B/6010B
METALS BY TRACE ICP

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 09/02/04
Project : MCCLELLAN, AL	Date Received: 09/03/04
SDG NO. : 04I037	Date Extracted: 09/08/04 08:30
Sample ID: R30-88Q-009	Date Analyzed: 09/15/04 15:56
Lab Samp ID: I037-15	Dilution Factor: 1
Lab File ID: I31I025035	Matrix : ~~SOIL~~ Sediment
Ext Btch ID: IPI010S	% Moisture : 11.1
Calib. Ref.: I31I025032	Instrument ID : EMAXT131

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)	Reportable
Arsenic	4.42	1.12	.45	Y ↓
Lead	13.6	1.12	.225	
Selenium	ND	1.12	.562	
Thallium	ND	2.25	.562	

gmc
11/23/04

7033

METHOD 3050B/6010B
METALS BY ICP

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	09/02/04
Project	: MCCLELLAN, AL	Date Received:	09/03/04
SDG NO.	: 04I037	Date Extracted:	09/08/04 08:30
Sample ID:	DUP032-0.0-0.5	Date Analyzed:	09/21/04 18:22
Lab Samp ID:	I037-16	Dilution Factor:	1
Lab File ID:	I07I044036	Matrix	: SOIL
Ext Btch ID:	IPI010S	% Moisture	: 10.2
Calib. Ref.:	I07I044032	Instrument ID	: EMAXTI07

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	5160	22.3	5.57
Antimony	ND	11.1	2.23
Barium	8.35	1.11	.167
Beryllium	ND	1.11	.167
Cadmium	ND	1.11	.557
Calcium	40.8J	111	8.35
Chromium	5.38	2.23	.668
Cobalt	ND	2.78	.835
Copper	7.14	2.23	.557
Iron	3810	22.3	1.67
Magnesium	139	111	11.1
Manganese	3.63	1.11	.223
Nickel	1.21J	2.23	.612
Potassium	912	557	83.5
Silver	ND	2.78	.702
Sodium	35.5J	111	27.8
Vanadium	10.7	2.23	.557
Zinc	5.44	1.11	.334

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gmc
11/23/04

7034

METHOD 3050B/6010B
METALS BY TRACE ICP

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	09/02/04
Project	: MCCLELLAN, AL	Date Received:	09/03/04
SDG NO.	: 04I037	Date Extracted:	09/08/04 08:30
Sample ID:	DUP032-0.0-0.5	Date Analyzed:	09/15/04 16:02
Lab Samp ID:	I037-16	Dilution Factor:	1
Lab File ID:	I31I025036	Matrix	: SOIL
Ext Btch ID:	IPI010S	% Moisture	: 10.2
Calib. Ref.:	I31I025032	Instrument ID	: EMAXTI31

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)	Reportable
Arsenic	3.47	1.11	.445	Y
Lead	41.6	1.11	.223	↓
Selenium	ND	1.11	.557	
Thallium	ND	2.23	.557	

Jan
11/23/04

7035

METHOD 3050B/6010B
METALS BY ICP

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	09/02/04
Project	: MCCLELLAN, AL	Date Received:	09/03/04
SDG NO.	: 041037	Date Extracted:	09/08/04 08:30
Sample ID:	R30-102Q-002-0.0-0.5	Date Analyzed:	09/21/04 19:10
Lab Samp ID:	I037-18	Dilution Factor:	1
Lab File ID:	I07I044047	Matrix	: SOIL
Ext Btch ID:	IPI011S	% Moisture	: 12.8
Calib. Ref.:	I07I044044	Instrument ID	: EMAXT107

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	HDL (mg/kg)	Reportable
Aluminum	31400	22.9	5.73	Y
Antimony	5.185	11.5	2.29	
Barium	38.9	1.15	.172	
Beryllium	.49J	1.15	.172	
Cadmium	ND	1.15	.573	
Calcium	99.3J	115	8.6	
Chromium	22.2	2.29	.688	
Cobalt	1.97J	2.87	.86	
Copper	13.9	2.29	.573	
Iron	18100	22.9	1.72	
Magnesium	743	115	11.5	
Manganese	142	1.15	.229	
Nickel	13.3	2.29	.631	
Potassium	695	573	.86	
Silver	ND	2.87	.722	
Sodium	42J	115	28.7	
Vanadium	40.7	2.29	.573	
Zinc	30.1	1.15	.344	

BR 12/3/04

gaw
11/23/04

7038

METHOD 3050B/6010B
METALS BY TRACE ICP

Client : MATRIX ENVIRONMENTAL SERVICES Date Collected: 09/02/04
Project : MCCLELLAN, AL Date Received: 09/03/04
SDG NO. : 04I037 Date Extracted: 09/08/04 08:30
Sample ID: R30-102Q-002-0.0-0.5 Date Analyzed: 09/16/04 14:35
Lab Samp ID: I037-18 Dilution Factor: 1
Lab File ID: I311027016 Matrix : SOIL
Ext Btch ID: IPI0115 % Moisture : 12.8
Calib. Ref.: I311027008 Instrument ID : EMAXT131

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Arsenic	6.82	1.15	.459
Lead	27.6	1.15	.229
Selenium	.612J	1.15	.573
Thallium	ND	2.29	.573

Reportable

Y
↓

7039

METHOD 3050B/6010B
METALS BY ICP

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	09/02/04
Project	: MCCLELLAN, AL	Date Received:	09/03/04
SDG NO.	: 04I037	Date Extracted:	09/08/04 08:30
Sample ID:	R30-102Q-001-0.0-0.5	Date Analyzed:	09/21/04 19:14
Lab Samp ID:	I037-19	Dilution Factor:	1
Lab File ID:	I07I044048	Matrix	: SOIL
Ext Btch ID:	IPI011S	% Moisture	: 9.9
Calib. Ref.:	I07I044044	Instrument ID	: EMAXTI07

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)	Reportable
Aluminum	21300	22.2	5.55	↓
Antimony	UB 4.495 11.1	11.1	2.22	
Barium	44	1.11	.166	
Beryllium	.411J	1.11	.166	
Cadmium	ND	1.11	.555	
Calcium	265	111	8.32	
Chromium	13.8	2.22	.666	
Cobalt	2.44J	2.77	.832	
Copper	57.6	2.22	.555	
Iron	12400	22.2	1.66	
Magnesium	618	111	11.1	
Manganese	193	1.11	.222	
Nickel	12	2.22	.61	
Potassium	588	555	83.2	
Silver	ND	2.77	.699	
Sodium	38.9J	111	27.7	
Vanadium	27.1	2.22	.555	
Zinc	29	1.11	.333	

7040
11/23/04

METHOD 3050B/6010B
METALS BY TRACE ICP

Client : MATRIX ENVIRONMENTAL SERVICES Date Collected: 09/02/04
Project : MCCLELLAN, AL Date Received: 09/03/04
SDG NO. : 041037 Date Extracted: 09/08/04 08:30
Sample ID: R30-102Q-001-0.0-0.5 Date Analyzed: 09/16/04 14:45
Lab Samp ID: 1037-19 Dilution Factor: 1
Lab File ID: 1311027018 Matrix : SOIL
Ext Btch ID: IPI011S % Moisture : 9.9
Calib. Ref.: 1311027008 Instrument ID : EMAXT131

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Arsenic	4.89	1.11	.444
Lead	358	1.11	.222
Selenium	ND	1.11	.555
Thallium	ND	2.22	.555

Reportable

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7041
11/23/04

METHOD 3050B/6010B
METALS BY ICP

Client : MATRIX ENVIRONMENTAL SERVICES Date Collected: 09/02/04
Project : MCCLELLAN, AL Date Received: 09/03/04
SDG NO. : 04I037 Date Extracted: 09/08/04 08:30
Sample ID: R30-102Q-001-0.5-1.5 Date Analyzed: 09/21/04 19:18
Lab Samp ID: I037-20 Dilution Factor: 1
Lab File ID: I07I044049 Matrix : SOIL
Ext Btch ID: IPI011S % Moisture : 11.1
Calib. Ref.: I07I044044 Instrument ID : EMAXT107

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	21700	22.5	5.62
Antimony	UB 3.62 11.2	11.2	2.25
Barium	46.9	1.12	.169
Beryllium	.415J	1.12	.169
Cadmium	ND	1.12	.562
Calcium	273	112	8.44
Chromium	22	2.25	.675
Cobalt	2.92	2.81	.844
Copper	89.2	2.25	.562
Iron	12800	22.5	1.69
Magnesium	676	112	11.2
Manganese	227	1.12	.225
Nickel	12.4	2.25	.619
Potassium	572	562	84.4
Silver	ND	2.81	.709
Sodium	28.7J	112	28.1
Vanadium	27.9	2.25	.562
Zinc	35.1	1.12	.337

Reportable
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11/23/04

METHOD 3050B/6010B
METALS BY TRACE ICP

Client : MATRIX ENVIRONMENTAL SERVICES Date Collected: 09/02/04
Project : MCCLELLAN, AL Date Received: 09/03/04
SDG NO. : 04I037 Date Extracted: 09/08/04 08:30
Sample ID: R30-102Q-001-0.5-1.5 Date Analyzed: 09/16/04 14:51
Lab Samp ID: I037-20 Dilution Factor: 1
Lab File ID: I31I027019 Matrix : SOIL
Ext Btch ID: IPI011S % Moisture : 11.1
Calib. Ref.: I31I027008 Instrument ID : EMAXT131

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Arsenic	5.05	1.12	.45
Lead	460	1.12	.225
Selenium	ND	1.12	.562
Thallium	ND	2.25	.562

Reportable

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METHOD 3050B/6010B
METALS BY ICP

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	09/02/04
Project	: MCCLELLAN, AL	Date Received:	09/03/04
SDG NO.	: 041037	Date Extracted:	09/08/04 08:30
Sample ID:	R30-102Q-002-0.5-1.5	Date Analyzed:	09/21/04 19:23
Lab Samp ID:	I037-21	Dilution Factor:	1
Lab File ID:	I07I044050	Matrix	: SOIL
Ext Btch ID:	IP1011S	% Moisture	: 19.2
Calib. Ref.:	I07I044044	Instrument ID	: EMAXT107

PARAMETERS	RESULTS	RL	MDL	Reportable
.....	(mg/kg)	(mg/kg)	(mg/kg)	
Aluminum	26100	24.8	6.19	Y ↓
Antimony	UB 2.52 12.4	12.4	2.48	
Barium	33.9	1.24	.186	
Beryllium	.395J	1.24	.186	
Cadmium	ND	1.24	.619	
Calcium	87.8J	124	9.28	
Chromium	18.4	2.48	.743	
Cobalt	2.11J	3.09	.928	
Copper	10	2.48	.619	
Iron	16900	24.8	1.86	
Magnesium	553	124	12.4	
Manganese	135	1.24	.248	
Nickel	10.6	2.48	.681	
Potassium	572J	619	92.8	
Silver	ND	3.09	.78	
Sodium	43.4J	124	30.9	
Vanadium	36.3	2.48	.619	
Zinc	24.7	1.24	.371	

7044
11/23/04

METHOD 3050B/6010B
METALS BY TRACE ICP

Client : MATRIX ENVIRONMENTAL SERVICES Date Collected: 09/02/04
Project : MCCLELLAN, AL Date Received: 09/03/04
SDG NO. : 041037 Date Extracted: 09/08/04 08:30
Sample ID: R30-102Q-002-0.5-1.5 Date Analyzed: 09/16/04 15:07
Lab Samp ID: I037-21 Dilution Factor: 1
Lab File ID: I31I027022 Matrix : SOIL
Ext Btch ID: IPI011S % Moisture : 19.2
Calib. Ref.: I31I027020 Instrument ID : EMAXTI31

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)	Reportable
Arsenic	6.46	1.24	.495	Y
Lead	11.3	1.24	.248	↓
Selenium	ND	1.24	.619	
Thallium	ND	2.48	.619	

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METHOD 7471A
MERCURY BY COLD VAPOR

Client : MATRIX ENVIRONMENTAL SERVICES
Project : MCCLELLAN, AL
Batch No. : 061037

Matrix : SOIL
Instrument ID : T1047

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/kg)	DLF	MOIST	RL (mg/kg)	MDL (mg/kg)	Analysis DATE/TIME	Extraction DATE/TIME	LFID	CAL REF	PREP BATCH	Collection DATE/TIME	Received DATE/TIME
MBLK1S	HG1038SB	ND	1	NA	.1	.033	09/21/04 12:10	09/20/04 17:00	M471036010	M471036008	HG1038S	NA	09/20/04
LCS1S	HG1038SL	.812	1	NA	.1	.033	09/21/04 12:12	09/20/04 17:00	M471036011	M471036008	HG1038S	NA	09/20/04
LCD1S	HG1038SC	.81	1	NA	.1	.033	09/21/04 12:14	09/20/04 17:00	M471036012	M471036008	HG1038S	NA	09/20/04
R30-880-010AS	1037-01A	.414	1	12.3	.114	.0376	09/21/04 12:17	09/20/04 17:00	M471036013	M471036008	HG1038S	09/02/04	09/03/04
R30-880-010	1037-01	ND	1	12.3	.114	.0376	09/21/04 12:19	09/20/04 17:00	M471036014	M471036008	HG1038S	09/02/04	09/03/04
R30-880-010DL	1037-01T	ND	5	12.3	.57	.188	09/21/04 12:21	09/20/04 17:00	M471036015	M471036008	HG1038S	09/02/04	09/03/04
R30-880-010MS	1037-01M	.897	1	12.3	.114	.0376	09/21/04 12:23	09/20/04 17:00	M471036016	M471036008	HG1038S	09/02/04	09/03/04
R30-880-010MSD	1037-01S	.899	1	12.3	.114	.0376	09/21/04 12:25	09/20/04 17:00	M471036017	M471036008	HG1038S	09/02/04	09/03/04
R30-880-001-0.0-0.5	1037-02	.0692J	1	29.4	.142	.0467	09/21/04 12:28	09/20/04 17:00	M471036018	M471036008	HG1038S	09/02/04	09/03/04
R30-880-001-0.5-1.5	1037-03	.0699J	1	14.1	.116	.0384	09/21/04 12:30	09/20/04 17:00	M471036019	M471036008	HG1038S	09/02/04	09/03/04
R30-880-002-0.0-0.5	1037-04	ND	1	16.1	.119	.0393	09/21/04 12:37	09/20/04 17:00	M471036022	M471036020	HG1038S	09/02/04	09/03/04
R30-880-002-0.5-1.5	1037-05	ND	1	23.5	.131	.0431	09/21/04 12:39	09/20/04 17:00	M471036023	M471036020	HG1038S	09/02/04	09/03/04
R30-880-003-0.0-0.5	1037-06	ND	1	25.3	.134	.0442	09/21/04 12:41	09/20/04 17:00	M471036024	M471036020	HG1038S	09/02/04	09/03/04
R30-880-003-0.5-1.5	1037-07	ND	1	10.3	.111	.0368	09/21/04 12:44	09/20/04 17:00	M471036025	M471036020	HG1038S	09/02/04	09/03/04
R30-880-004-0.0-0.5	1037-08	.0381J	1	9.0	.11	.0343	09/21/04 12:46	09/20/04 17:00	M471036026	M471036020	HG1038S	09/02/04	09/03/04
R30-880-004-0.5-1.5	1037-09	.0665J	1	12.8	.115	.0378	09/21/04 12:48	09/20/04 17:00	M471036027	M471036020	HG1038S	09/02/04	09/03/04
R30-880-005-0.0-0.5	1037-10	.937	1	19.6	.124	.041	09/21/04 12:50	09/20/04 17:00	M471036028	M471036020	HG1038S	09/02/04	09/03/04
R30-880-005-0.5-1.5	1037-11	.166	1	14.6	.117	.0385	09/21/04 12:52	09/20/04 17:00	M471036029	M471036020	HG1038S	09/02/04	09/03/04
R30-880-006	1037-12	.0736J	1	26.2	.136	.0447	09/21/04 12:54	09/20/04 17:00	M471036030	M471036020	HG1038S	09/02/04	09/03/04
R30-880-007	1037-13	.0394J	1	11.9	.114	.0375	09/21/04 12:57	09/20/04 17:00	M471036031	M471036020	HG1038S	09/02/04	09/03/04
R30-880-008	1037-14	ND	1	23.4	.131	.0431	09/21/04 13:03	09/20/04 17:00	M471036034	M471036032	HG1038S	09/02/04	09/03/04
R30-880-009	1037-15	ND	1	11.1	.112	.0371	09/21/04 13:06	09/20/04 17:00	M471036035	M471036032	HG1038S	09/02/04	09/03/04
DUP032-0.0-0.5	1037-16	ND	1	10.2	.111	.0367	09/21/04 13:08	09/20/04 17:00	M471036036	M471036032	HG1038S	09/02/04	09/03/04
DUP033	1037-17	.0389J	1	8.1	.109	.0359	09/21/04 13:10	09/20/04 17:00	M471036037	M471036032	HG1038S	09/02/04	09/03/04
R30-1020-002-0.0-0.5	1037-18	.0445J	1	12.8	.115	.0378	09/21/04 13:12	09/20/04 17:00	M471036038	M471036032	HG1038S	09/02/04	09/03/04
R30-1020-002-0.0-0.5MS	1037-18M	.898	1	12.8	.115	.0378	09/21/04 13:14	09/20/04 17:00	M471036039	M471036032	HG1038S	09/02/04	09/03/04
R30-1020-002-0.0-0.5MSD	1037-18S	.916	1	12.8	.115	.0378	09/21/04 13:16	09/20/04 17:00	M471036041	M471036032	HG1038S	09/02/04	09/03/04
R30-1020-001-0.0-0.5	1037-19	.0559J	1	9.9	.111	.0366	09/21/04 13:18	09/20/04 17:00	M471036042	M471036032	HG1038S	09/02/04	09/03/04
R30-1020-001-0.5-1.5	1037-20	.0637J	1	11.1	.112	.0371	09/21/04 13:21	09/20/04 17:00	M471036043	M471036032	HG1038S	09/02/04	09/03/04
MBLK2S	HG1039SB	ND	1	NA	.1	.033	09/21/04 13:27	09/20/04 17:00	M471036045	M471036043	HG1039S	NA	09/20/04
LCS2S	HG1039SL	.825	1	NA	.1	.033	09/21/04 13:29	09/20/04 17:00	M471036046	M471036043	HG1039S	NA	09/20/04
LCD2S	HG1039SC	.823	1	NA	.1	.033	09/21/04 13:32	09/20/04 17:00	M471036047	M471036043	HG1039S	NA	09/20/04
R30-1020-002-0.5-1.5	1037-21	ND	1	19.2	.124	.0408	09/21/04 13:34	09/20/04 17:00	M471036048	M471036043	HG1039S	09/02/04	09/03/04

7084

TOC BY WALKLEY-BLACK METHOD

Client : MATRIX ENVIRONMENTAL SERVICES
Project : MCCELLELLAN, AL
Batch No. : 041037

Matrix : SOIL
Instrument ID : NA

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/kg)	DLF MOIST	RL (mg/kg)	MDL (mg/kg)	Analysis DATE/TIME	Extraction DATE/TIME	LFID	CAL REF	PREP BATCH	Collection DATE/TIME	Received DATE/TIME
MBLK1S	BC1001SB	ND	1	NA	1000	300	09/13/04 13:00	NA	BC1001S-04	NA	BC1001S	NA
LC31S	BC1001SL	2010	1	NA	1000	300	09/13/04 13:10	NA	BC1001S-05	NA	BC1001S	NA
R30-880-010	1037-01	ND	1	12.3	1140	342	09/13/04 13:20	NA	BC1001S-06	NA	BC1001S	09/02/04
R30-880-010DUP	1037-01D	ND	1	12.3	1140	342	09/13/04 13:30	NA	BC1001S-07	NA	BC1001S	09/02/04
R30-880-010MS	1037-01M	2050	1	12.3	1140	342	09/13/04 13:40	NA	BC1001S-08	NA	BC1001S	09/02/04
R30-880-001-0.0-0.5	1037-02R	9920	1	29.4	1420	425	09/13/04 14:00	NA	BC1001S-10	NA	BC1001S	09/02/04
R30-880-001-0.5-1.5	1037-03	2970	1	14.1	1160	349	09/13/04 14:10	NA	BC1001S-11	NA	BC1001S	09/02/04
R30-880-002-0.0-0.5	1037-04R	31230	1	16.1	1190	358	09/13/04 14:30	NA	BC1001S-13	NA	BC1001S	09/02/04
R30-880-002-0.5-1.5	1037-05	5000	1	23.5	1310	392	09/13/04 14:50	NA	BC1001S-14	NA	BC1001S	09/02/04
R30-880-003-0.0-0.5	1037-06	ND	1	25.3	1340	402	09/13/04 15:00	NA	BC1001S-15	NA	BC1001S	09/02/04
R30-880-003-0.5-1.5	1037-07	1050	1	10.3	1110	334	09/13/04 15:00	NA	BC1001S-16	NA	BC1001S	09/02/04
R30-880-004-0.0-0.5	1037-08	ND	1	9.0	1100	330	09/13/04 15:10	NA	BC1001S-17	NA	BC1001S	09/02/04
R30-880-004-0.5-1.5	1037-09	ND	1	12.0	1150	344	09/13/04 15:20	NA	BC1001S-18	NA	BC1001S	09/02/04
R30-880-005-0.0-0.5	1037-10R	30000	1	19.6	1240	373	09/13/04 15:40	NA	BC1001S-20	NA	BC1001S	09/02/04
MBLK2S	BC1002SB	ND	1	NA	1000	300	09/13/04 16:30	NA	BC1002S-04	NA	BC1002S	NA
LC32S	BC1002SL	1910	1	NA	1000	300	09/13/04 16:40	NA	BC1002S-05	NA	BC1002S	NA
R30-880-005-0.5-1.5	1037-11	3790	1	14.6	1170	351	09/13/04 16:50	NA	BC1002S-06	NA	BC1002S	09/02/04
R30-880-006	1037-12	ND	1	26.2	1360	467	09/13/04 17:00	NA	BC1002S-07	NA	BC1002S	09/02/04
R30-880-007	1037-13	ND	1	11.9	1140	341	09/13/04 17:10	NA	BC1002S-08	NA	BC1002S	09/02/04
R30-880-008	1037-14	ND	1	23.4	1310	392	09/13/04 17:20	NA	BC1002S-09	NA	BC1002S	09/02/04
R30-880-009	1037-15	ND	1	11.1	1120	337	09/13/04 17:30	NA	BC1002S-10	NA	BC1002S	09/02/04
DUP032-0.0-0.5	1037-16	ND	1	10.2	1110	334	09/13/04 17:40	NA	BC1002S-11	NA	BC1002S	09/02/04
R30-1020-002-0.0-0.5	1037-17	ND	1	8.1	1090	326	09/13/04 17:50	NA	BC1002S-12	NA	BC1002S	09/02/04
R30-1020-002-0.0-0.5	1037-18	ND	1	12.8	1150	344	09/13/04 18:00	NA	BC1002S-13	NA	BC1002S	09/02/04
R30-1020-002-0.0-0.5DUP	1037-18D	ND	1	12.8	1150	344	09/13/04 18:10	NA	BC1002S-14	NA	BC1002S	09/02/04
R30-1020-002-0.0-0.5MS	1037-18M	2410	1	12.8	1150	344	09/13/04 18:20	NA	BC1002S-15	NA	BC1002S	09/02/04
R30-1020-001-0.0-0.5	1037-19	ND	1	9.9	1110	333	09/13/04 18:30	NA	BC1002S-16	NA	BC1002S	09/02/04
R30-1020-001-0.5-1.5	1037-20	ND	1	11.1	1120	337	09/13/04 18:40	NA	BC1002S-17	NA	BC1002S	09/02/04
R30-1020-002-0.5-1.5	1037-21	ND	1	19.2	1240	371	09/13/04 18:50	NA	BC1002S-18	NA	BC1002S	09/02/04

8002

APPENDIX B2
Data Quality Summary
2014 Analytical Results

Appendix B2
Data Quality Summary:
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama
August 2014 Sampling Event

Prepared for:



Prepared by:



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November 2015

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ATTACHMENTS

B2-1	Laboratory Data Forms

LIST OF ABBREVIATIONS AND ACRONYMS

ADEM	Alabama Department of Environmental Management
ARBCA	<i>Alabama Risk-Based Corrective Action Guidance Manual</i>
CCAL	Continuing calibration
CCB	Continuing calibration blank
COC	Chain-of-custody
DQO	Data Quality Objective
DQS	Data Quality Summary
EB	Equipment blank
EMAX	EMAX Laboratories, Torrance, California
EPA	United States Environmental Protection Agency
ESV	Ecological Screening Value
FD	Field duplicate
ICAL	Initial calibration
ID	Identification
IDL	Instrument detection limit
IS	Internal standard
LCS	Laboratory control sample
LCSD	Laboratory control sample duplicate
MDA	McClellan Development Authority
MDL	Method detection limit
MES	Matrix Environmental Services, LLC
MS	Matrix spike
MSD	Matrix spike duplicate
PARCCS	Precision, accuracy, representativeness, completeness, comparability, and sensitivity
PSV	Preliminary Screening Value
QA	Quality assurance
QAP	<i>Quality Assurance Plan</i>
QC	Quality control
%R	Percent recovery
Range 30	Range 30 Impact Area, Parcels 88Q and 103Q
RL	Reporting limit
RPD	Relative percent difference
RSD	Relative standard deviation
Site	Range 30 Impact Area, Parcels 88Q and 103Q
SOP	Standard Operating Procedure

1.0 INTRODUCTION

Matrix Environmental Services, LLC (MES) has prepared this Data Quality Summary (DQS) on behalf of the McClellan Development Authority (MDA) in support of the Range 30 Impact Area, Parcels 88Q and 103Q (Range 30 or the Site) within McClellan, Anniston, Alabama, formerly known as Fort McClellan. The purpose of this document is to summarize the data quality of the investigative samples collected in support of the Resource Conservation Recovery Act (RCRA) Facility Investigation (RFI) Report. Specifically, this DQS addresses the data quality review for soil samples collected during the August 2014 sampling event. The approved methods used to conduct the investigation are discussed in the *Quality Assurance Plan (QAP)* (MES, 2004) which details the specifics of quality assurance (QA) and quality control (QC) with respect to sampling and data evaluation.

2.0 PROJECT DESCRIPTION

Project objectives and QA objectives in terms of precision, accuracy, representativeness, completeness, comparability, and sensitivity (PARCCS) are described in this section.

2.1 PROJECT OBJECTIVES

The objectives of the environmental investigation at the Site were to collect data from site media and provide a level of defensible data and information in sufficient detail to determine whether chemical contamination is present as a result of historical training activities and the nature and extent of the contamination. The objectives of the 2014 field activities were to collect additional surface soil and subsurface soil samples to provide a more robust data set and further define the nature and extent of contamination in surface soil and subsurface soil at the Site. To help meet these objectives, the following field activities were conducted:

- Collected fifteen surface soil (0 to 0.5 ft bgs) samples and analyzed them for metals by SW846 Method 6020A.
- Collected nine surface soil (0 to 0.5 ft bgs) and nine subsurface soil (0.5 to 1.5 ft bgs) co-located samples from nine locations, and analyzed them for metals by SW846 Method 6020A and explosives by SW846 Method 8330A.

2.2 DATA QUALITY LEVELS

During the field program, soil samples were collected and analyzed with definitive level methods for specific chemical analytes. Analyses performed using established analytical procedures and strict QC procedures produce definitive level data. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846) (EPA, 1986) were used to collect definitive level data for the Site. Analytical results produced were analyte-specific with confirmation of analyte identity and concentration. Definitive level data meeting quality criteria are suitable for site assessments, risk assessments, remedial design, and remediation efforts.

Screening level data (i.e., field measurements) were not collected during this investigation.

2.3 DATA QUALITY OBJECTIVES

QA objectives in terms of PARCCS are outlined below.

Precision is a measure of the reproducibility of a set of duplicate analytical results, usually under prescribed similar conditions. Precision, as discussed in Section A3.3.1 in the QAP, is expressed in terms of the relative percent difference (RPD) between duplicate determinations, or in terms of the relative standard deviation (RSD) when three or more determinations are made. Various measures of precision exist depending on the prescribed similar conditions.

Overall sampling and analysis precision was assessed using RPDs for duplicate environmental samples and matrix spike/matrix spike duplicates (MS/MSDs). The RPDs for laboratory control sample/laboratory control sample duplicate (LCS/LCSD) results were used to assess laboratory precision. RPD is defined as the difference between two measurements divided by their mean and expressed as a percent as shown in the following equation:

$$\text{RPD} = \frac{|X - Y|}{(X + Y) / 2} \times 100\%$$

where:

X = Primary sample concentration (primary field investigative sample, MS, or LCS)

Y = Duplicate sample concentration (laboratory duplicate, field duplicate [FD], MSD, or LCSD)

To evaluate precision, the RPDs for MS/MSDs, laboratory duplicates, and LCS/LCSDs were compared to laboratory historical limits. The RPDs for FDs were compared to the project precision goal of 50 percent for aqueous samples and 100 percent for soil samples.

The RSD is the standard deviation of a set of values divided by the average value expressed as a percent as shown in the following equation:

$$\text{RSD} = S / \bar{X} \times 100$$

where:

S = The standard deviation of the sample data

$\bar{X}$ = The arithmetic mean of the sample data

RSDs can be used to evaluate the linearity of the initial calibration (EPA, 1986).

Accuracy is a measure of the agreement of an analytical result with the true value. Accuracy, as discussed in Section A3.3.2 in the QAP, is typically 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

Analytical accuracy is assessed through the analysis of spikes such as surrogates, MS/MSDs and LCS/LCSDs, performance evaluation samples, standard reference materials and calibration check samples. Surrogates and MS/MSDs are spiked into the actual sample matrix and are accuracy indicators that take into account the nature of the matrix in question and the native concentration of the analyte spiked. Matrix variability or interferences from high concentrations of native compounds may adversely affect spike recovery and yield less than

conclusive data. Accuracy checks that focus on analytical method and consist of compounds spiked in a blank or non-interfering matrix (e.g., LCSs or calibration check samples) address the accuracy of the method or instrumentation at detecting the target analyte(s) at a certain quantification level and are not considered to be subject to matrix effects. The accuracy of sample results can also be affected by holding time violations.

Representativeness, as described in Section A3.3.3 in the QAP, is a qualitative parameter that expresses the degree to which sample data actually represent the matrix conditions. For example, in conducting groundwater monitoring, representativeness requires proper location of wells and the collection of samples under consistent, documented procedures. Wells are located based upon the results of the hydrogeologic study in progress and are designed to provide maximum coverage of the flow conditions. Requirements and procedures for sample collection and handling are designed to maximize sample representativeness. Representativeness can also be monitored by reviewing field documentation and by performing field QA audits.

Completeness, as discussed in Section A3.3.4 in the QAP, represents the percentage of valid data collected from a sampling/analytical program or measurement system compared to the amount achieved under optimal conditions. The completeness goal for investigative samples is 95 percent. Completeness is calculated using the following formula:

$$\text{Percent Complete} = \frac{\text{Valid Data}}{\text{Total Data}} \times 100\%$$

Valid data are identified during the data review process as being acceptable for use or usable as qualified. Invalid data are identified as rejected.

Comparability, as discussed in Section A3.3.5 of the QAP, is a qualitative parameter expressing the confidence with which one data set can be compared with another. Comparability for sampling and analysis tasks is achieved by:

- Specifying well-recognized techniques and accepted standard methods for sampling and analysis, and using well-trained sampling and analysis technicians to execute the prescribed methods consistently.
- Requiring that sampling and analysis personnel produce adequate documentation to record how the prescribed methods were actually executed.
- Noting non-conformances and corrective measures taken.

Specifying standardized laboratory methods helps to ensure that the data generated for a sampling event are comparable to past and future sampling events.

Sensitivity is used broadly here to describe the method detection limits (MDLs) or reporting limits (RLs) established to meet project-specific data quality objectives (DQOs). In addition, sensitivity can be used to describe the capability of a method or instrument to discriminate between measurement responses. Several limits have been established to describe sensitivity requirements as specified in Section A3.3.6 of the QAP. Reported instrument detection limits

(IDLs) and MDLs are typically based upon a reagent water matrix or purified solid, and ignore sample matrix interferences and the resulting effects on the limits. For this reason, published MDLs or IDLs may not be achievable for environmental samples. The QAP RLs were generated by the laboratory and may exceed Preliminary Screening Values (PSVs) or Ecological Screening Values (ESVs) (ADEM, 2008) due to instrument limitations. Section 6.2 discusses the comparisons between the PSVs and ESVs and the laboratory RLs and MDLs for this sampling event.

2.4 ANALYTICAL SERVICES

EMAX Laboratories, Inc (EMAX), Torrance, California, provided analytical services for the sampling conducted by MES.

2.4.1 Analytical Program

The QAP lists the EPA analytical methods used to meet definitive data requirements. Based on activities conducted at the Site during the August 2014 monitoring event, the methods used to analyze constituents of concern in samples during this sampling event were:

- Method SW8330A – Explosives by High Performance Liquid Chromatography (HPLC)
- Method SW6020A - Total Metals by Inductively Coupled Plasma/Mass Spectrometry (ICP/MS)
- Method SW7471A - Mercury by Cold Vapor Atomic Absorption

2.4.2 Quality Control

The QAP describes the analytical QC requirements. The results of the analytical QC data review for this sampling event are presented in Section 5.0.

3.0 DEVIATIONS FROM PLANNED FIELD ACTIVITIES

No deviations from the planned field activities were noted during the preparation of this DQS.

4.0 ASSESSMENT OF DATA QUALITY

Data quality is assessed through two review processes. The contracted analytical laboratory performs the first data review to assess compliance with QAP-approved analytical methods (MES, 2004) and with laboratory standard operating procedures. MES performs the second data review to assess compliance with the QA objectives, and to assess hard copy and electronic deliverable consistency and integrity.

4.1 LABORATORY DATA QUALITY ASSESSMENT

The laboratory data quality assessment includes an analytical data review to ensure accurate and complete data reporting and compliance with the analytical method specifications.

4.1.1 Laboratory Qualification of Data

The laboratory will flag analytical results, when necessary, to indicate potential impacts to data usability and to alert the user to special analytical conditions. More than one qualifier may be used to indicate multiple conditions or situations that apply to an individual result. The following laboratory qualifiers were used during this investigation:

FLAG	DESCRIPTION
J	Estimated value. The analyte is positively identified and the concentration is less than the RL but greater than the MDL.
U	Analyte is not detected above the RL.
V	Detected value.

4.2 MES DATA QUALITY AND USABILITY ASSESSMENT

The following sections describe the procedures that MES followed to assess the quality and usability of both field measurement and definitive data. Data assessment is complete when 100 percent of the information have been collected and reviewed. Based on the results of the review process, data are categorized as fully usable, usable as qualified, or rejected.

4.2.1 Data Review and Validation

MES reviewed the analytical data in accordance with the QAP (MES, 2004), analytical methods (EPA, 1986), and *USEPA Contract Laboratory Program National Functional Guidelines for Organic and Inorganic Data Review* (EPA, 2008 and 2010). The data review process included reviewing and evaluating 100 percent of the hard copy data for (1) extraction and analysis holding times, (2) surrogate recoveries, (3) blank detections, (4) LCS/LCSD recoveries and RPDs, (5) MS/MSD recoveries and RPDs, (6) FD RPDs, (7) laboratory duplicate RPDs, if applicable, (8) initial and continuing calibrations (ICALs and CCALs), (9) instrument tuning and performance, (10) reporting limits, and (11) completeness of the chain-of-custody (COC) forms.

Hard copy data packages were checked to verify that the following items were included:

- Case narrative
- Data summary sheets
- ICALs and CCALs
- Method or preparation blanks (at least one per QC batch)
- MS/MSD (5 percent of client samples)
- LCS/LCSD (one per QC batch)
- Duplicate analyses (laboratory duplicate sample, LCS/LCSD, MS/MSD, as applicable)
- Holding times
- Retention time window calculation (if applicable)
- Standard preparation sheets
- Linear range calculations (correlation coefficients)

The results of the review of the chemical data obtained during this investigation are included in Section 5.0. The laboratory data forms showing the validated results are included in Attachment B2-1.

4.2.2 MES Qualification of Data

Based on the data review, MES may assign final qualifiers to analytical results on both the hard copy results and in the database. The following final qualifiers may be assigned to the results to describe data quality and usability:

FLAG	DESCRIPTION
J	Estimated detection. The associated numerical value is the approximate concentration of the analyte in the sample.
UJ	Analyte was analyzed for, but was not detected. The reported quantitation limit is estimated.
U	Result was qualified as not detected above the RL or reported sample quantitation limit.

In addition to the qualifier, a sub-qualifier is applied to describe the specific multiple conditions or situations that apply to an individual result. These qualifiers and sub-qualifiers are collectively referred to as validation codes.

FLAG	DESCRIPTION
A	Internal standard area was outside method-specific control limits.
B	Result was qualified based on method blank, continuing calibration blank, or trip blank contamination.
C	Continuing calibration was outside method-specific control limits.
H	Holding time exceeded method criteria.
I	Initial calibration was outside method-specific control limits.
L	The LCS and LCSD recoveries were outside laboratory historical control limits.
M	The MS and MSD recoveries were outside laboratory historical control limits.

FLAG	DESCRIPTION
S	Surrogate recovery was outside laboratory historical control limits.
X	Result exceeded the calibration range of the instrument.
Q	Result was qualified based on reviewer judgment.

Whenever duplicate sets of results were reported by the laboratory due to dilutions, re-analyses, re-extractions, or dual column analytical methods, the MES reviewer chose the “most-preferred” results based on the data review. In the “Reportable Result” column shown on the hard copy sample data reports and the database, MES assigned a “Y” flag for the “most-preferred” results, and an “N” flag for the “least-preferred” results. When there was only one set of laboratory reported results, MES assigned a “Y” flag in the “Reportable Data” column. In Section 5.0, only the reportable data (flagged “Y”) are shown in Tables B2-5-2 to B2-5-9.

5.0 RESULTS OF QUALITY CONTROL ANALYSES

Table B2-5-1 lists samples and analytical methods included in the sampling event for the Site. To evaluate the data quality, the results were compared to method requirements and laboratory historical control limits.

Table B2-5-2 lists the analytical results that were qualified based on the data review process. Table B2-5-3 summarizes the number of records that were qualified for each analytical method. Based on the information in Tables B2-5-2 and B2-5-3, only 0.3 percent of the analytical data were qualified. None of the data were rejected. The results of the data review process are discussed further in the following sections.

5.1 QUALITY CONTROL PROCEDURES AND RESULTS OF QUALITY CONTROL ANALYSES

Two types of QC results were used to evaluate data quality: field QC samples were collected and analyzed to evaluate field sampling activities, and laboratory QC samples were analyzed to evaluate laboratory analytical procedures and maintain control of the analytical methods.

5.1.1 Field Quality Control Procedures and Analyses

Field QC samples included MS/MSD samples, FDs, and equipment blanks. The QAP was used as the guidance document to identify the appropriate number of field QC samples, procedures for their collection and analysis, and evaluation of results required for this sampling event. The evaluation procedures for the field QC sample analyses are summarized below.

5.1.1.1 Matrix Spike/Matrix Spike Duplicate Samples

MS and MSD samples are investigative samples spiked by the laboratory with known concentrations of target analytes. MS and MSD sample results are used to evaluate possible matrix interferences. The formulas used to calculate the percent recoveries and RPDs are presented in Section 2.3.

Accuracy was assessed by calculating the MS and MSD %Rs of the concentrations of the target analytes added to the investigative sample. The %Rs were then compared to laboratory historical control limits. When both the MS and MSD %Rs were outside laboratory historical control limits, MS/MSD qualifiers were applied only to the results for the investigative sample used for the MS/MSD. When only an MS was analyzed, qualifiers were applied when the MS %R was outside laboratory historical control limits. Low recoveries in an MS/MSD may indicate the matrix has negatively influenced the results. Constituent concentrations could be potentially higher in samples with low MS/MSD recoveries. High MS/MSD recoveries may indicate the matrix has positively influenced the results. Constituent concentrations may be potentially lower in samples with high MS/MSD recoveries.

Precision was assessed by calculating the RPDs for the MS/MSD sample pairs and laboratory duplicate samples. The MS/MSD and laboratory duplicate RPD values were reviewed to assess the precision of the analytical results based on the magnitude of the RPD values. In cases where a target analyte was not detected in at least one of the MS/MSD sample pair or laboratory duplicate sample pair, an RPD would not be valid, and therefore, was not calculated. Qualifiers were not applied based on the MS/MSD or laboratory duplicate RPD values, however, the MS/MSD and laboratory duplicate RPD values were compared to laboratory historical control limits to assess if further evaluation of the data was warranted.

For this investigation the following samples were collected and analyzed for the MS and MSD:

- R30-88Q-012 (0-0.5) for MS and MSD for Methods SW8330A, SW6020A, and SW7471A.
- R30-88Q-017 for Methods SW6020A and SW7471A.
- R30-103Q-004 (0.5-1.5) for MS and MSD for Methods SW8330A, SW6020A, and SW7471A.

The MS/MSD %Rs and RPDs met criteria, with the exception of the following:

- Sample R30-88Q-012 (0-0.5):
 - The MSD %R (129%) for aluminum was outside laboratory historical control limits. However, because the MS %R met criteria, no qualifiers were required.
 - The MS and MSD %Rs (72% and 74%) for antimony were outside laboratory historical control limits. Therefore, the antimony result for sample R30-88Q-012 (0-0.5) was qualified as estimated (JM).
 - The MS %R (240%) and RPD (68%) for barium, the MS and MSD %Rs (53% and 50%) for copper, the MS/MSD %Rs (61%/-73%) and RPD (2233%) for lead, and the MSD %R (305%) and RPD (120%) for manganese were outside laboratory historical control limits. However, because the spike amount was less than four times the sample concentration, the MS/MSDs for barium, copper, lead, and manganese could not be properly assessed; therefore no qualifiers were applied for these analytes.
- Sample R30-88Q-017:
 - The MS and MSD %Rs for aluminum (126% and 126%) and antimony (66% and 69%) were outside laboratory historical control limits. Therefore, the aluminum and antimony results for sample R30-88Q-017 were qualified as estimated (JM).
 - The MS and MSD %Rs for barium (41% and 34%) and lead (168% and 161%), and the MSD %R (149%) and RPD (66%) for manganese were outside laboratory historical control limits. However, because the spike amount was less than four times the sample concentration, the MS/MSDs for barium, lead, and manganese could not be properly assessed; therefore no qualifiers were applied for these analytes.
 - The MS %R (132%) and RPD (30.6%) for copper were outside laboratory historical control limits. However, because the MSD %R met criteria, no qualifiers were required.

- Sample R30-103Q-004 (0.5-1.5):
 - The MSD %R (66%) and RPD (25.2%) for antimony were outside laboratory historical control limits. However, because the MS %R met criteria, no qualifiers were required.
 - The MS %R (74%) for iron was outside laboratory historical control limits. However, because the MSD %R met criteria, no qualifiers were required.
 - The MS and MSD %Rs (-401%/-308%) and RPD (26.2%) for manganese were outside laboratory historical control limits. However, because the spike amount was less than four times the sample concentration, the MS/MSDs for manganese could not be properly assessed; therefore no qualifiers were applied for manganese.

Table B2-5-2 shows the sample results that were qualified as estimated detects (JM) because of MS and MSD percent recovery data that were outside laboratory historical control limits.

A summary of the MS/MSD %R and RPD data is shown in Table B2-5-4. Because 88 percent of the MS and MSD percent recovery results, and 93 percent of the MS/MSD RPD results were within the laboratory control limits, the overall accuracy of the analytical results and variability of the precision measurements are considered to be acceptable.

5.1.1.2 Field Duplicate Samples

FD samples were collected and analyzed as specified in the QAP (Section A6.3.5). FD samples are independent samples collected simultaneously or in immediate succession with the original investigative samples such that they are expected to be equally representative of the medium at the time of sampling. These samples provide precision information for the entire measurement system, including sample collection, handling, shipping, storage, preparation, and analysis. The precision of FD pairs was assessed by calculating the RPDs using the equation in Section 2.3. In cases where a target analyte was not detected in either sample or was detected in only one of the samples, an RPD would not be valid, and therefore, was not calculated.

Four groundwater FD samples were collected for this sampling event. Table B2-5-5 lists the original station name from the COC forms (i.e. COC identifications (IDs) used to disguise the sample's identity when the sample was sent to the laboratory), the parent station name, and the methods analyzed. The results for the FD and associated investigative sample analyses were reviewed to assess the precision of the analytical results based on the magnitude of the RPD values. Table B2-5-6 shows the RPDs calculated for the investigative and FD sample pair. The criterion of 100 percent for soil samples was used to assess if further evaluation of the data was warranted. None of the RPD values exceeded 100 percent. Therefore, the overall variability of the precision measurements is considered acceptable.

5.1.1.3 Equipment Blank Analyses

Equipment blanks (EBs) consist of a sample of distilled water poured into, over, or pumped through a sampling device. EBs are collected in a sample container and transported to the laboratory for analysis. EBs are used to assess the effectiveness of equipment decontamination procedures. EBs were collected once per week of sampling and analyzed for the same laboratory analyses requested for the associated investigative samples collected

during that same week (MES, 2004). One equipment blank sample was collected for the sampling event associated with this report. Calcium, iron, manganese, and nickel were detected in the EB associated with the August 2014 sampling event (Table B2-5-7). Calcium, iron, manganese, and nickel were also detected in several investigative samples. However, because it could not be determined which investigative samples were directly affected by the EB sample or the extent of the possible affect, no qualifiers were applied based on EB sample results.

5.1.2 Laboratory Quality Control Procedures and Analyses

Laboratory QC checks include internal system checks and QC samples used to monitor the possible effect of laboratory activities on sample results. The analytical method and method-specific standard operating procedures (SOPs) developed by the laboratory define the types of laboratory QC checks required. QC procedures followed by the laboratory include sample container inspection, COC documentation review, sample holding time review, LCS/LCSD analyses, method blank analyses, and surrogate spike percent recovery evaluation. The laboratories are also responsible for analytical instrument calibration, which includes method-specific criteria for initial and continuing calibrations for external and internal standard calibration procedures.

5.1.2.1 Initial Sample Inspection and Chain-of-Custody Documentation

The laboratory inspected the shipping containers upon receipt and compared the contents with the COC forms associated with each cooler. Information from the sample check-in procedure was recorded on the Sample Receipt Form, including sample receipt anomalies. These forms were used by the laboratory to document that sample identifications listed on the COC forms agreed with the samples contained in the coolers. The laboratory verified that COC forms were filled out properly, sample containers were not broken, custody seals were intact, the pH met method-specific criteria for water samples (if applicable), and cooler temperatures were maintained at 4 ± 2 degrees Celsius. The completed forms are included in the laboratory analytical packages and were reviewed during the data review process. The samples arrived at the laboratory at the proper temperature, and no sample containers were damaged during transit.

MES compared the data on the COC forms with the laboratory reports and documented any differences. If minor discrepancies were found and verified by the laboratory, the laboratory reports and MES electronic databases were corrected. In addition to the COC checks, MES reviewers verified approximately 10 percent of the laboratory hard copy reports against the laboratory electronic data deliverables.

5.1.2.2 Holding Times

Samples were shipped regularly in coordination with the analytical laboratory to ensure analyses were conducted within the required holding times. The time elapsed between sample collection and sample extraction/analysis was calculated as part of the review process to

evaluate if holding times were met. Holding time criteria were met for this sampling event, therefore, accuracy of the analytical results is acceptable with regards to holding time.

5.1.2.3 Laboratory Control Sample/Laboratory Control Sample Duplicate

The laboratory analyzed LCS/LCSD pairs with each analytical batch of field samples to assess internal precision and accuracy. LCS/LCSD pairs consisted of analyte-free water spiked with selected target constituents of known concentration. The LCS/LCSD %Rs and RPDs are used to determine laboratory accuracy and precision, respectively. The formulas used to calculate the %Rs and RPDs are presented in Section 2.3. The %Rs and RPDs were then compared to laboratory historical control limits. When the LCS and LCSD %Rs were outside laboratory historical control limits, the LCS/LCSD qualifications were applied to investigative samples within the same analytical batch. Qualifiers were applied only when both the LCS and LCSD %Rs were outside laboratory historical control limits. In cases where only an LCS was analyzed, qualifiers were applied when the LCS %R was outside laboratory historical control limits. Qualifiers were not applied based on LCS/LCSD RPD values, however, the LCS/LCSD RPD values were compared to laboratory historical control limits to assess if further evaluation of the data was warranted. For this sampling event, MES reviewed the LCS/LCSD %Rs and RPDs for Methods SW8330A, SW6020A, and SW7471A.

Table B2-5-8 shows the LCS/LCSD percent recovery and RPD data. The LCS and LCSD percent recoveries met criteria, therefore, no qualifiers were required. Of the 136 LCS/LCSD comparisons, none of the RPD values exceeded the laboratory control limits. One hundred percent of the LCS/LCSD percent recoveries and one hundred percent of the RPD results were within the laboratory control limits, therefore, the overall accuracy and precision measurements are considered to be acceptable.

5.1.2.4 Method Blank and Continuing Calibration Blank Samples

Method blanks are prepared and analyzed by the laboratory to assess the level of background interferences and possible contamination in the analytical system. The method blank must be carried through the complete procedure and contain analyte-free reagents in the same volumes as used in processing the samples. The goal is to conduct investigative sample analysis in such a manner that sample contamination is not introduced by the analytical methods, equipment, or reagents. If such contamination occurs, it is usually identified by the detection of target analytes at trace or low concentrations in the method blanks. When these detections are found, the laboratory investigates the source, qualifies the affected data as appropriate according to the magnitude of the detections, and implements corrective measures as appropriate. For this investigation, method blanks were prepared and analyzed with each analytical batch for Methods SW8330A, SW6020A, and SW7471A.

Continuing calibration blanks (CCBs) are used to check the instrument calibration and level of background interferences. CCBs are prepared by acidifying reagent water to the same concentrations of the acids used in the calibration standards and investigative samples. For this

investigation, CCBs were analyzed for Methods SW6020A and SW7471A to evaluate if any analytes detected in the CCBs impacted the concentrations of the associated samples.

When an explosive or metal target analyte was detected in the sample and associated method blank or CCB, affected sample results with concentrations $> \text{MDL}$ but $\leq \text{RL}$ were qualified as non-detect (UB) at the RL; associated sample results with concentrations $> \text{RL}$ but $< 5x$ the blank concentration were qualified as non-detect (UB) at the sample concentration; for sample results with concentrations $> \text{RL}$ and $> 5x$ the blank concentration, no qualifiers were required.

No target analytes were detected in the method blanks or CCBs for this sampling event.

5.1.2.5 Surrogate Recovery

Surrogate spike compounds were added to investigative samples during organic analyses to assess the individual matrix effect of investigative samples and to monitor overall analytical system performance. Surrogate recoveries that are outside the laboratory historical control limits may indicate performance problems with the analytical system and extraction procedures, or significant matrix effects when evaluated in conjunction with the MS/MSD results. MES reviewers used laboratory historical control limits to assess percent recoveries for surrogate spike constituents. For sample results affected by surrogate percent recoveries less than the lower control limit, detects were qualified as estimated (JS) and may be biased low, and non-detects were qualified as estimated (UJS) and may be potential false negatives. For sample results affected by surrogate percent recoveries greater than the upper control limit, detects were qualified as estimated (JS) and may be biased high. No qualifiers are required for non-detect results based on high surrogate recoveries.

A summary of the surrogate percent recovery data is provided in Table B2-5-9. No qualifiers were required for sample results based on surrogate recoveries.

5.1.2.6 Internal Standards

Adherence to method-specific internal standards (ISs) criteria ensures that GC/MS sensitivity and response are stable during each analysis. SW-846 (EPA, 1986) recommended ISs are often brominated, fluorinated, or stable isotopically labeled analogs of specific target compounds, or are closely related compounds whose presence in environmental samples is unlikely. The IS spike solution is added after the preparation or extraction of a sample. ISs are used in internal calibration methods to correct sample results affected by column injection loss, purging loss, or viscosity effects. ISs are added to environmental samples, control standards, and blanks, in accordance with method requirements and laboratory SOPs (MES, 2004). No qualifiers were required for samples based on the IS data.

5.1.2.7 Initial and Continuing Calibration

The calibration of an analytical instrument involves the delineation of the relationship between the response of the instrument and the concentration of an analyte introduced into the

instrument. An ICAL is performed on an analytical instrument prior to the analysis of samples to ensure that the equipment is capable of producing acceptable qualitative and quantitative data. The CCAL is the verification of the ICAL at periodic intervals. The CCAL demonstrates that the instrument is capable of acceptable performance during the course of the analytical analysis. Review of the ICAL data included the evaluation of the correlation coefficients and relative standard deviations. Review of the CCAL data included the evaluation of the percent difference between the concentration of the CCAL standard and the expected concentration. For sample results associated with CCAL data that did not meet method-specific criteria, detects and non-detects were qualified as estimated (JC and UJC, respectively). No qualifiers were required for samples based on ICAL and CCAL data.

5.2 SUMMARY OF DATA QUALITY INDICATORS

A summary of the data quality indicators in terms of the PARCCS are described in this section.

5.2.1 Precision

As discussed in Section 2.3, the precision evaluation included field precision (FDs), laboratory precision (LCS/LCSDs), and combined field/laboratory precision (MS/MSDs). The MS/MSD, FD, and LCS/LCSD RPDs are discussed in Sections 5.1.1.1, 5.1.1.2, and 5.1.2.3 of this report, respectively. Based on this evaluation, the precision of the data is acceptable for its intended use.

5.2.2 Accuracy

As discussed in Section 2.3, the accuracy evaluation included a comparison of spike recoveries from field samples (surrogate and MS/MSD spikes) and laboratory QC samples (LCS and LCSD), and assessing holding time. The MS/MSD, LCS/LCSD, and surrogate spike recoveries are discussed in Sections 5.1.1.1, 5.1.2.3, and 5.1.2.5, respectively, and holding time is discussed in Section 5.1.2.2. Recoveries from MS/MSDs, LCS/LCSD and surrogate percent recoveries were compared to laboratory historical control limits to determine a laboratory's ability to accurately determine both qualitative and quantitative results. The investigative sample results were within the required percent recovery limits, except as noted. The investigative sample results were within the required holding time limits. Based on this evaluation, the accuracy of the data is acceptable for its intended use.

5.2.3 Representativeness

Representativeness is the degree to which the data accurately and precisely portray the environmental conditions being studied. For this investigation, sampling procedures and locations were selected to accurately represent overall Site conditions and were biased toward areas that were likely to exhibit evidence of past releases. Sampling was conducted using known, approved field procedures to minimize variability introduced during field sampling. The investigative and FD analyses indicate that the overall combined variability introduced by

the sampling procedures, sample matrix, and laboratory analysis is acceptable, and the FD samples are representative of the data associated with the investigative sample.

5.2.4 Completeness

Completeness refers to the amount of valid data obtainable from a measurement system compared to the expected amount of data. Data that have not been qualified as rejected during the data validation process are considered to be valid. As presented in the QAP (MES, 2004), a completeness goal of 95 percent was established for investigations. Of the 1131 investigative and field duplicate sample records from the sampling event, no records were qualified as rejected based on MES' review of the data. Therefore a completeness of 100 percent was calculated for the sampling event, which exceeds project goals. One hundred percent of the results are usable and are acceptable for their intended use.

5.2.5 Comparability

Comparability expresses the confidence with which one data set can be compared to another. Comparability objectives were met by minimizing the number of contract laboratories used, using EPA methods for analyses, and reporting results in standardized units. The comparability objective for the project was fulfilled.

6.0 REPORTING LIMITS AND DATA USES

This section discusses the laboratory reporting limits and how they compare to PSVs and ESVs.

6.1 LABORATORY REPORTING LIMITS

EMAX confirms reporting limits on an annual or quarterly basis by performing MDL studies. The MDL is defined as the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero and is generated from the analysis of a sample in a given matrix containing the analyte (40 Code of Federal Regulations, Chapter 1, Part 136, Appendix B). The reporting limit is defined as the lowest concentration of the target analyte required to be reported. This value is based on project-specific criteria.

The laboratory reports detections that are below the reporting limit as estimated values by assigning a flag to the analytical result. This flag is assigned because the laboratory cannot accurately quantify analyte concentrations at levels below the reporting limit. For detections in the concentration range between the MDL and the reporting limit, the laboratory is confident of the analyte identification and detection but can only estimate the analyte concentration.

6.2 COMPARISON OF LABORATORY REPORTING LIMITS TO PSVs AND ESVs

For this assessment, the laboratory RLs and MDLs were compared to PSVs and ESVs, shown in Table B2-6-1. The laboratory RLs and MDLs for the investigative samples were equal to or lower than the PSVs and ESVs with the exception of chromium, thallium, 1,3,5-trinitrobenzene, and 2,6-dinitrotoluene in soil; and cobalt, 1,3-dinitrobenzene, 2,4-dinitrotoluene, 2,6-dinitrotoluene, 2-nitrotoluene, 3-nitrotoluene, and nitrobenzene in water. These limits were above the PSVs or ESVs due to limitations with the analytical method. If a PSV and ESV were not available for comparison for a particular analyte, that analyte was not shown in Table B2-6-1.

7.0 CONCLUSIONS

This DQS presents in specific terms the QA and QC practices used to achieve the project objectives for the Site during the August 2014 sampling event. Samples were collected and analyzed in accordance with EPA methods and using laboratory-specific QA/QC procedures. These procedures were followed to generate legally and technically defensible data.

Some of the quality issues addressed in Section 5.0 of this report resulted in qualification of investigative sample results. Three sample results were qualified based on MS/MSD recovery data (Table B2-5-2). Based on this review, the analytical data generated for this sampling event are acceptable and adequate to fulfill program objectives.

8.0 REFERENCES

- Alabama Department of Environmental Management (ADEM). 2008. *Alabama Risk-Based Corrective Action Guidance Manual (ARBCA), Revision 2*. April.
- Matrix Environmental Services, LLC (MES). 2004. *Quality Assurance Project Plan (Appendix A of the Installation Wide Sampling and Analysis Plan)*. January.
- U.S. Environmental Protection Agency (EPA). 1986. *Test Methods for Evaluating Solid Waste-Physical Chemical Methods*. Office of Solid Waste, Washington, D.C., SW-846, 3rd Edition. Update I, 1992, Updates II, IIA, and III 1996, Updates IIIA and IIIB 2002.
- EPA. 1994. *Guidance for the Data Quality Objectives Process*, EPA/600/R-96/055. September.
- EPA. 2008. *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review*. June.
- EPA. 2010. *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*. January.

TABLES

Table B2-5-1: Sample Index
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Site Name	Station Name	QC Code	Matrix	Sample Date	Lab	Delivery Group	Laboratory Sample ID	Method
RANGE 30 IMPACT AREA	R30-103Q-001 (0.5-1.5)	NS	SO	8/21/14	EMXT	14H167	H167-03	D2216
RANGE 30 IMPACT AREA	R30-103Q-001 (0.5-1.5)	NS	SO	8/21/14	EMXT	14H167	H167-03	SW6020A
RANGE 30 IMPACT AREA	R30-103Q-001 (0.5-1.5)	NS	SO	8/21/14	EMXT	14H167	H167-03	SW7471A
RANGE 30 IMPACT AREA	R30-103Q-001 (0.5-1.5)	NS	SO	8/21/14	EMXT	14H167	H167-03	SW8330
RANGE 30 IMPACT AREA	R30-103Q-001 (0-0.5)	NS	SO	8/21/14	EMXT	14H167	H167-02	D2216
RANGE 30 IMPACT AREA	R30-103Q-001 (0-0.5)	NS	SO	8/21/14	EMXT	14H167	H167-02	SW6020A
RANGE 30 IMPACT AREA	R30-103Q-001 (0-0.5)	NS	SO	8/21/14	EMXT	14H167	H167-02	SW7471A
RANGE 30 IMPACT AREA	R30-103Q-001 (0-0.5)	NS	SO	8/21/14	EMXT	14H167	H167-02	SW8330
RANGE 30 IMPACT AREA	R30-103Q-002 (0.5-1.5)	NS	SO	8/21/14	EMXT	14H167	H167-05	D2216
RANGE 30 IMPACT AREA	R30-103Q-002 (0.5-1.5)	NS	SO	8/21/14	EMXT	14H167	H167-05	SW6020A
RANGE 30 IMPACT AREA	R30-103Q-002 (0.5-1.5)	NS	SO	8/21/14	EMXT	14H167	H167-05	SW7471A
RANGE 30 IMPACT AREA	R30-103Q-002 (0.5-1.5)	NS	SO	8/21/14	EMXT	14H167	H167-05	SW8330
RANGE 30 IMPACT AREA	R30-103Q-002 (0-0.5)	NS	SO	8/21/14	EMXT	14H167	H167-04	D2216
RANGE 30 IMPACT AREA	R30-103Q-002 (0-0.5)	NS	SO	8/21/14	EMXT	14H167	H167-04	SW6020A
RANGE 30 IMPACT AREA	R30-103Q-002 (0-0.5)	NS	SO	8/21/14	EMXT	14H167	H167-04	SW7471A
RANGE 30 IMPACT AREA	R30-103Q-002 (0-0.5)	NS	SO	8/21/14	EMXT	14H167	H167-04	SW8330
RANGE 30 IMPACT AREA	R30-103Q-003 (0.5-1.5)	NS	SO	8/21/14	EMXT	14H167	H167-07	D2216
RANGE 30 IMPACT AREA	R30-103Q-003 (0.5-1.5)	NS	SO	8/21/14	EMXT	14H167	H167-07	SW6020A
RANGE 30 IMPACT AREA	R30-103Q-003 (0.5-1.5)	NS	SO	8/21/14	EMXT	14H167	H167-07	SW7471A
RANGE 30 IMPACT AREA	R30-103Q-003 (0.5-1.5)	NS	SO	8/21/14	EMXT	14H167	H167-07	SW8330
RANGE 30 IMPACT AREA	R30-103Q-003 (0-0.5)	NS	SO	8/21/14	EMXT	14H167	H167-06	D2216
RANGE 30 IMPACT AREA	R30-103Q-003 (0-0.5)	NS	SO	8/21/14	EMXT	14H167	H167-06	SW6020A
RANGE 30 IMPACT AREA	R30-103Q-003 (0-0.5)	NS	SO	8/21/14	EMXT	14H167	H167-06	SW7471A
RANGE 30 IMPACT AREA	R30-103Q-003 (0-0.5)	NS	SO	8/21/14	EMXT	14H167	H167-06	SW8330
RANGE 30 IMPACT AREA	R30-103Q-004 (0.5-1.5)	NS	SO	8/21/14	EMXT	14H167	H167-09	D2216
RANGE 30 IMPACT AREA	R30-103Q-004 (0.5-1.5)	NS	SO	8/21/14	EMXT	14H167	H167-09	SW6020A
RANGE 30 IMPACT AREA	R30-103Q-004 (0.5-1.5)	NS	SO	8/21/14	EMXT	14H167	H167-09	SW7471A
RANGE 30 IMPACT AREA	R30-103Q-004 (0.5-1.5)	NS	SO	8/21/14	EMXT	14H167	H167-09	SW8330
RANGE 30 IMPACT AREA	R30-103Q-004 (0.5-1.5)	MSD	SO	8/21/14	EMXT	14H167	H167-09S	SW6020A
RANGE 30 IMPACT AREA	R30-103Q-004 (0.5-1.5)	MSD	SO	8/21/14	EMXT	14H167	H167-09S	SW7471A

Table B2-5-1: Sample Index
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Site Name	Station Name	QC Code	Matrix	Sample Date	Lab	Delivery Group	Laboratory Sample ID	Method
RANGE 30 IMPACT AREA	R30-103Q-004 (0.5-1.5)	MSD	SO	8/21/14	EMXT	14H167	H167-09S	SW8330
RANGE 30 IMPACT AREA	R30-103Q-004 (0.5-1.5)	MS	SO	8/21/14	EMXT	14H167	H167-09M	SW6020A
RANGE 30 IMPACT AREA	R30-103Q-004 (0.5-1.5)	MS	SO	8/21/14	EMXT	14H167	H167-09M	SW7471A
RANGE 30 IMPACT AREA	R30-103Q-004 (0.5-1.5)	MS	SO	8/21/14	EMXT	14H167	H167-09M	SW8330
RANGE 30 IMPACT AREA	R30-103Q-004 (0-0.5)	NS	SO	8/21/14	EMXT	14H167	H167-08	D2216
RANGE 30 IMPACT AREA	R30-103Q-004 (0-0.5)	NS	SO	8/21/14	EMXT	14H167	H167-08	SW6020A
RANGE 30 IMPACT AREA	R30-103Q-004 (0-0.5)	NS	SO	8/21/14	EMXT	14H167	H167-08	SW7471A
RANGE 30 IMPACT AREA	R30-103Q-004 (0-0.5)	NS	SO	8/21/14	EMXT	14H167	H167-08	SW8330
RANGE 30 IMPACT AREA	R30-103Q-005 (0.5-1.5)	NS	SO	8/21/14	EMXT	14H167	H167-11	D2216
RANGE 30 IMPACT AREA	R30-103Q-005 (0.5-1.5)	NS	SO	8/21/14	EMXT	14H167	H167-11	SW6020A
RANGE 30 IMPACT AREA	R30-103Q-005 (0.5-1.5)	NS	SO	8/21/14	EMXT	14H167	H167-11	SW7471A
RANGE 30 IMPACT AREA	R30-103Q-005 (0.5-1.5)	NS	SO	8/21/14	EMXT	14H167	H167-11	SW8330
RANGE 30 IMPACT AREA	R30-103Q-005 (0.5-1.5)	FD	SO	8/21/14	EMXT	14H167	H167-12	D2216
RANGE 30 IMPACT AREA	R30-103Q-005 (0.5-1.5)	FD	SO	8/21/14	EMXT	14H167	H167-12	SW6020A
RANGE 30 IMPACT AREA	R30-103Q-005 (0.5-1.5)	FD	SO	8/21/14	EMXT	14H167	H167-12	SW7471A
RANGE 30 IMPACT AREA	R30-103Q-005 (0.5-1.5)	FD	SO	8/21/14	EMXT	14H167	H167-12	SW8330
RANGE 30 IMPACT AREA	R30-103Q-005 (0-0.5)	NS	SO	8/21/14	EMXT	14H167	H167-10	D2216
RANGE 30 IMPACT AREA	R30-103Q-005 (0-0.5)	NS	SO	8/21/14	EMXT	14H167	H167-10	SW6020A
RANGE 30 IMPACT AREA	R30-103Q-005 (0-0.5)	NS	SO	8/21/14	EMXT	14H167	H167-10	SW7471A
RANGE 30 IMPACT AREA	R30-103Q-005 (0-0.5)	NS	SO	8/21/14	EMXT	14H167	H167-10	SW8330
RANGE 30 IMPACT AREA	R30-103Q-006 (0.5-1.5)	NS	SO	8/20/14	EMXT	14H166	H166-08	D2216
RANGE 30 IMPACT AREA	R30-103Q-006 (0.5-1.5)	NS	SO	8/20/14	EMXT	14H166	H166-08N	SW6020A
RANGE 30 IMPACT AREA	R30-103Q-006 (0.5-1.5)	NS	SO	8/20/14	EMXT	14H166	H166-08	SW7471A
RANGE 30 IMPACT AREA	R30-103Q-006 (0.5-1.5)	NS	SO	8/20/14	EMXT	14H166	H166-08	SW8330
RANGE 30 IMPACT AREA	R30-103Q-006 (0-0.5)	NS	SO	8/20/14	EMXT	14H166	H166-07	D2216
RANGE 30 IMPACT AREA	R30-103Q-006 (0-0.5)	NS	SO	8/20/14	EMXT	14H166	H166-07N	SW6020A
RANGE 30 IMPACT AREA	R30-103Q-006 (0-0.5)	NS	SO	8/20/14	EMXT	14H166	H166-07	SW7471A
RANGE 30 IMPACT AREA	R30-103Q-006 (0-0.5)	NS	SO	8/20/14	EMXT	14H166	H166-07	SW8330
RANGE 30 IMPACT AREA	R30-103Q-007 (0.5-1.5)	NS	SO	8/20/14	EMXT	14H166	H166-19	D2216
RANGE 30 IMPACT AREA	R30-103Q-007 (0.5-1.5)	NS	SO	8/20/14	EMXT	14H166	H166-19N	SW6020A

Table B2-5-1: Sample Index
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Site Name	Station Name	QC Code	Matrix	Sample Date	Lab	Delivery Group	Laboratory Sample ID	Method
RANGE 30 IMPACT AREA	R30-103Q-007 (0.5-1.5)	NS	SO	8/20/14	EMXT	14H166	H166-19	SW7471A
RANGE 30 IMPACT AREA	R30-103Q-007 (0.5-1.5)	NS	SO	8/20/14	EMXT	14H166	H166-19	SW8330
RANGE 30 IMPACT AREA	R30-103Q-007 (0-0.5)	NS	SO	8/20/14	EMXT	14H166	H166-18	D2216
RANGE 30 IMPACT AREA	R30-103Q-007 (0-0.5)	NS	SO	8/20/14	EMXT	14H166	H166-18I	SW6020A
RANGE 30 IMPACT AREA	R30-103Q-007 (0-0.5)	NS	SO	8/20/14	EMXT	14H166	H166-18N	SW6020A
RANGE 30 IMPACT AREA	R30-103Q-007 (0-0.5)	NS	SO	8/20/14	EMXT	14H166	H166-18	SW7471A
RANGE 30 IMPACT AREA	R30-103Q-007 (0-0.5)	NS	SO	8/20/14	EMXT	14H166	H166-18	SW8330
RANGE 30 IMPACT AREA	R30-103Q-008	NS	SO	8/21/14	EMXT	14H167	H167-13	D2216
RANGE 30 IMPACT AREA	R30-103Q-008	NS	SO	8/21/14	EMXT	14H167	H167-13	SW6020A
RANGE 30 IMPACT AREA	R30-103Q-008	NS	SO	8/21/14	EMXT	14H167	H167-13	SW7471A
RANGE 30 IMPACT AREA	R30-103Q-009	NS	SO	8/20/14	EMXT	14H166	H166-09	D2216
RANGE 30 IMPACT AREA	R30-103Q-009	NS	SO	8/20/14	EMXT	14H166	H166-09N	SW6020A
RANGE 30 IMPACT AREA	R30-103Q-009	NS	SO	8/20/14	EMXT	14H166	H166-09	SW7471A
RANGE 30 IMPACT AREA	R30-103Q-010	NS	SO	8/20/14	EMXT	14H166	H166-10	D2216
RANGE 30 IMPACT AREA	R30-103Q-010	NS	SO	8/20/14	EMXT	14H166	H166-10N	SW6020A
RANGE 30 IMPACT AREA	R30-103Q-010	NS	SO	8/20/14	EMXT	14H166	H166-10	SW7471A
RANGE 30 IMPACT AREA	R30-103Q-011	NS	SO	8/21/14	EMXT	14H167	H167-14	D2216
RANGE 30 IMPACT AREA	R30-103Q-011	NS	SO	8/21/14	EMXT	14H167	H167-14	SW6020A
RANGE 30 IMPACT AREA	R30-103Q-011	NS	SO	8/21/14	EMXT	14H167	H167-14	SW7471A
RANGE 30 IMPACT AREA	R30-103Q-012	NS	SO	8/20/14	EMXT	14H166	H166-20	D2216
RANGE 30 IMPACT AREA	R30-103Q-012	NS	SO	8/20/14	EMXT	14H166	H166-20I	SW6020A
RANGE 30 IMPACT AREA	R30-103Q-012	NS	SO	8/20/14	EMXT	14H166	H166-20N	SW6020A
RANGE 30 IMPACT AREA	R30-103Q-012	NS	SO	8/20/14	EMXT	14H166	H166-20	SW7471A
RANGE 30 IMPACT AREA	R30-103Q-013	NS	SO	8/21/14	EMXT	14H167	H167-15	D2216
RANGE 30 IMPACT AREA	R30-103Q-013	NS	SO	8/21/14	EMXT	14H167	H167-15	SW6020A
RANGE 30 IMPACT AREA	R30-103Q-013	NS	SO	8/21/14	EMXT	14H167	H167-15	SW7471A
RANGE 30 IMPACT AREA	R30-103Q-014	NS	SO	8/20/14	EMXT	14H166	H166-11	D2216
RANGE 30 IMPACT AREA	R30-103Q-014	NS	SO	8/20/14	EMXT	14H166	H166-11I	SW6020A
RANGE 30 IMPACT AREA	R30-103Q-014	NS	SO	8/20/14	EMXT	14H166	H166-11N	SW6020A
RANGE 30 IMPACT AREA	R30-103Q-014	NS	SO	8/20/14	EMXT	14H166	H166-11	SW7471A

Table B2-5-1: Sample Index
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Site Name	Station Name	QC Code	Matrix	Sample Date	Lab	Delivery Group	Laboratory Sample ID	Method
RANGE 30 IMPACT AREA	R30-103Q-015	NS	SO	8/21/14	EMXT	14H167	H167-16	D2216
RANGE 30 IMPACT AREA	R30-103Q-015	NS	SO	8/21/14	EMXT	14H167	H167-16	SW6020A
RANGE 30 IMPACT AREA	R30-103Q-015	NS	SO	8/21/14	EMXT	14H167	H167-16	SW7471A
RANGE 30 IMPACT AREA	R30-103Q-016	NS	SO	8/20/14	EMXT	14H166	H166-12	D2216
RANGE 30 IMPACT AREA	R30-103Q-016	NS	SO	8/20/14	EMXT	14H166	H166-12N	SW6020A
RANGE 30 IMPACT AREA	R30-103Q-016	NS	SO	8/20/14	EMXT	14H166	H166-12	SW7471A
RANGE 30 IMPACT AREA	R30-103Q-016	FD	SO	8/20/14	EMXT	14H166	H166-21	D2216
RANGE 30 IMPACT AREA	R30-103Q-016	FD	SO	8/20/14	EMXT	14H166	H166-21N	SW6020A
RANGE 30 IMPACT AREA	R30-103Q-016	FD	SO	8/20/14	EMXT	14H166	H166-21	SW7471A
RANGE 30 IMPACT AREA	R30-88Q-011 (0.5-1.5)	NS	SO	8/20/14	EMXT	14H166	H166-03	D2216
RANGE 30 IMPACT AREA	R30-88Q-011 (0.5-1.5)	NS	SO	8/20/14	EMXT	14H166	H166-03N	SW6020A
RANGE 30 IMPACT AREA	R30-88Q-011 (0.5-1.5)	NS	SO	8/20/14	EMXT	14H166	H166-03	SW7471A
RANGE 30 IMPACT AREA	R30-88Q-011 (0.5-1.5)	NS	SO	8/20/14	EMXT	14H166	H166-03	SW8330
RANGE 30 IMPACT AREA	R30-88Q-011 (0-0.5)	NS	SO	8/20/14	EMXT	14H166	H166-01	D2216
RANGE 30 IMPACT AREA	R30-88Q-011 (0-0.5)	NS	SO	8/20/14	EMXT	14H166	H166-01N	SW6020A
RANGE 30 IMPACT AREA	R30-88Q-011 (0-0.5)	NS	SO	8/20/14	EMXT	14H166	H166-01	SW7471A
RANGE 30 IMPACT AREA	R30-88Q-011 (0-0.5)	NS	SO	8/20/14	EMXT	14H166	H166-01	SW8330
RANGE 30 IMPACT AREA	R30-88Q-011 (0-0.5)	FD	SO	8/20/14	EMXT	14H166	H166-02	D2216
RANGE 30 IMPACT AREA	R30-88Q-011 (0-0.5)	FD	SO	8/20/14	EMXT	14H166	H166-02N	SW6020A
RANGE 30 IMPACT AREA	R30-88Q-011 (0-0.5)	FD	SO	8/20/14	EMXT	14H166	H166-02	SW7471A
RANGE 30 IMPACT AREA	R30-88Q-011 (0-0.5)	FD	SO	8/20/14	EMXT	14H166	H166-02	SW8330
RANGE 30 IMPACT AREA	R30-88Q-012 (0.5-1.5)	NS	SO	8/20/14	EMXT	14H166	H166-14	D2216
RANGE 30 IMPACT AREA	R30-88Q-012 (0.5-1.5)	NS	SO	8/20/14	EMXT	14H166	H166-14N	SW6020A
RANGE 30 IMPACT AREA	R30-88Q-012 (0.5-1.5)	NS	SO	8/20/14	EMXT	14H166	H166-14	SW7471A
RANGE 30 IMPACT AREA	R30-88Q-012 (0.5-1.5)	NS	SO	8/20/14	EMXT	14H166	H166-14	SW8330
RANGE 30 IMPACT AREA	R30-88Q-012 (0-0.5)	NS	SO	8/20/14	EMXT	14H166	H166-13	D2216
RANGE 30 IMPACT AREA	R30-88Q-012 (0-0.5)	NS	SO	8/20/14	EMXT	14H166	H166-13N	SW6020A
RANGE 30 IMPACT AREA	R30-88Q-012 (0-0.5)	NS	SO	8/20/14	EMXT	14H166	H166-13	SW7471A
RANGE 30 IMPACT AREA	R30-88Q-012 (0-0.5)	NS	SO	8/20/14	EMXT	14H166	H166-13	SW8330
RANGE 30 IMPACT AREA	R30-88Q-012 (0-0.5)	MSD	SO	8/20/14	EMXT	14H166	H166-13S	SW6020A

Table B2-5-1: Sample Index
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Site Name	Station Name	QC Code	Matrix	Sample Date	Lab	Delivery Group	Laboratory Sample ID	Method
RANGE 30 IMPACT AREA	R30-88Q-012 (0-0.5)	MSD	SO	8/20/14	EMXT	14H166	H166-13S	SW7471A
RANGE 30 IMPACT AREA	R30-88Q-012 (0-0.5)	MSD	SO	8/20/14	EMXT	14H166	H166-13S	SW8330
RANGE 30 IMPACT AREA	R30-88Q-012 (0-0.5)	MS	SO	8/20/14	EMXT	14H166	H166-13M	SW6020A
RANGE 30 IMPACT AREA	R30-88Q-012 (0-0.5)	MS	SO	8/20/14	EMXT	14H166	H166-13M	SW7471A
RANGE 30 IMPACT AREA	R30-88Q-012 (0-0.5)	MS	SO	8/20/14	EMXT	14H166	H166-13M	SW8330
RANGE 30 IMPACT AREA	R30-88Q-013	NS	SO	8/20/14	EMXT	14H166	H166-15	D2216
RANGE 30 IMPACT AREA	R30-88Q-013	NS	SO	8/20/14	EMXT	14H166	H166-15N	SW6020A
RANGE 30 IMPACT AREA	R30-88Q-013	NS	SO	8/20/14	EMXT	14H166	H166-15	SW7471A
RANGE 30 IMPACT AREA	R30-88Q-014	NS	SO	8/20/14	EMXT	14H166	H166-04	D2216
RANGE 30 IMPACT AREA	R30-88Q-014	NS	SO	8/20/14	EMXT	14H166	H166-04N	SW6020A
RANGE 30 IMPACT AREA	R30-88Q-014	NS	SO	8/20/14	EMXT	14H166	H166-04	SW7471A
RANGE 30 IMPACT AREA	R30-88Q-014	LD	SO	8/20/14	EMXT	14H166	H166-04D	D2216
RANGE 30 IMPACT AREA	R30-88Q-014	FD	SO	8/20/14	EMXT	14H166	H166-16	D2216
RANGE 30 IMPACT AREA	R30-88Q-014	FD	SO	8/20/14	EMXT	14H166	H166-16N	SW6020A
RANGE 30 IMPACT AREA	R30-88Q-014	FD	SO	8/20/14	EMXT	14H166	H166-16	SW7471A
RANGE 30 IMPACT AREA	R30-88Q-015	NS	SO	8/21/14	EMXT	14H167	H167-01	D2216
RANGE 30 IMPACT AREA	R30-88Q-015	NS	SO	8/21/14	EMXT	14H167	H167-01	SW6020A
RANGE 30 IMPACT AREA	R30-88Q-015	NS	SO	8/21/14	EMXT	14H167	H167-01	SW7471A
RANGE 30 IMPACT AREA	R30-88Q-016	NS	SO	8/20/14	EMXT	14H166	H166-05	D2216
RANGE 30 IMPACT AREA	R30-88Q-016	NS	SO	8/20/14	EMXT	14H166	H166-05N	SW6020A
RANGE 30 IMPACT AREA	R30-88Q-016	NS	SO	8/20/14	EMXT	14H166	H166-05	SW7471A
RANGE 30 IMPACT AREA	R30-88Q-017	NS	SO	8/20/14	EMXT	14H166	H166-17	D2216
RANGE 30 IMPACT AREA	R30-88Q-017	NS	SO	8/20/14	EMXT	14H166	H166-17N	SW6020A
RANGE 30 IMPACT AREA	R30-88Q-017	NS	SO	8/20/14	EMXT	14H166	H166-17	SW7471A
RANGE 30 IMPACT AREA	R30-88Q-017	MSD	SO	8/20/14	EMXT	14H166	H166-17S	SW6020A
RANGE 30 IMPACT AREA	R30-88Q-017	MSD	SO	8/20/14	EMXT	14H166	H166-17S	SW7471A
RANGE 30 IMPACT AREA	R30-88Q-017	MS	SO	8/20/14	EMXT	14H166	H166-17M	SW6020A
RANGE 30 IMPACT AREA	R30-88Q-017	MS	SO	8/20/14	EMXT	14H166	H166-17M	SW7471A
RANGE 30 IMPACT AREA	R30-88Q-018	NS	SO	8/20/14	EMXT	14H166	H166-06	D2216
RANGE 30 IMPACT AREA	R30-88Q-018	NS	SO	8/20/14	EMXT	14H166	H166-06N	SW6020A

Table B2-5-1: Sample Index
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Site Name	Station Name	QC Code	Matrix	Sample Date	Lab	Delivery Group	Laboratory Sample ID	Method
RANGE 30 IMPACT AREA	R30-88Q-018	NS	SO	8/20/14	EMXT	14H166	H166-06	SW7471A
MCCLELLAN FIELD QC	Equipment Blank (EB079)	EB	W	8/21/14	EMXT	14H167	H167-17	SW6020A
MCCLELLAN FIELD QC	Equipment Blank (EB079)	EB	W	8/21/14	EMXT	14H167	H167-17	SW7470A
MCCLELLAN FIELD QC	Equipment Blank (EB079)	EB	W	8/21/14	EMXT	14H167	H167-17	SW8330

Notes:

EMXT = EMAX Laboratories, Torrance, CA

EB = Equipment Blank

FD = Field duplicate

ID = Identification

MS = Matrix spike

MSD = Matrix spike duplicate

NS = Normal sample

QC = Quality Control

SO = Soil

W = Water

**Table B2-5-2: Summary of Final Qualifiers
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Station Name	QC Code	Matrix	Sample Date	Delivery Group	Lab ID	Method	Parameter Name	Value	Lab Flag	Validation Code	Units	Detected Result
R30-88Q-012 (0-0.5)	NS	SO	8/20/14	14H166	H166-13N	SW6020A	Antimony	2.48	V	JM	mg/kg	Y
R30-88Q-017	NS	SO	8/20/14	14H166	H166-17N	SW6020A	Aluminum	8320	V	JM	mg/kg	Y
R30-88Q-017	NS	SO	8/20/14	14H166	H166-17N	SW6020A	Antimony	0.644	V	JM	mg/kg	Y

Notes:

mg/kg = milligrams per kilogram

NS = Normal sample

QC = Quality Control

SO = soil

Lab Flags:

V = Detected value.

Validation Qualifiers:

J = Estimated detection. The associated numerical value is the approximate concentration of the analyte in the sample.

Validation Sub-qualifiers:

M = The MS and MSD recoveries were outside laboratory historical control limits.

**Table B2-5-3: Qualified Data Summary
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Lab	QC Code	Matrix	Method	Non- Qualified Results	JM
EMXT	NS	SO	SW6020A	723	3
EMXT	NS	SO	SW7471A	33	
EMXT	NS	SO	SW8330	252	
EMXT	FD	SO	SW6020A	88	
EMXT	FD	SO	SW7471A	4	
EMXT	FD	SO	SW8330	28	
EMXT	EB	W	SW6020A	22	
EMXT	EB	W	SW7470A	1	
EMXT	EB	W	SW8330	14	

Notes:

EB = Equipment Blank

FD = Field duplicate

NS = Normal sample

QC = Quality Control

SO = Soil

W = Water

Validation Qualifiers:

J = Estimated detection. The associated numerical value is the approximate concentration of the analyte in the sample.

Validation Sub-qualifiers:

M = The MS and MSD recoveries were outside laboratory historical control limits.

Table B2-5-4: Summary of MS/MSD Recoveries and RPDs
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Station Name	Matrix	Sample Date	Delivery Group	Method	Parameter Name	MS %R	MSD %R	%R LCL	%R UCL	RPD	RPD Limit
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Aluminum	100	111	75	125	10.4	20
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Antimony	85	66	75	125	25.2	20
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Arsenic	98	97	75	125	1.0	20
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Barium	97	98	75	125	1.0	20
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Beryllium	91	91	75	125	0.0	20
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Cadmium	96	96	75	125	0.0	20
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Calcium	98	99	75	125	1.0	20
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Chromium	97	96	75	125	1.0	20
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Cobalt	92	93	75	125	1.1	20
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Copper	88	88	75	125	0.0	20
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Iron	74	89	75	125	18.4	20
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Lead	91	89	75	125	2.2	20
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Magnesium	97	98	75	125	1.0	20
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Manganese	-401	-308	75	125	26.2	20
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Nickel	92	92	75	125	0.0	20
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Potassium	100	99	75	125	1.0	20
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Selenium	94	95	75	125	1.1	20
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Silver	95	96	75	125	1.0	20
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Sodium	95	96	75	125	1.0	20
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Thallium	95	96	75	125	1.0	20
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Vanadium	94	97	75	125	3.1	20
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Zinc	90	89	75	125	1.1	20
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW7471A	Mercury	106	104	80	120	1.9	20
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW8330	1,3,5-Trinitrobenzene	89	91	71	132	2.2	50
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW8330	1,3-Dinitrobenzene	98	97	69	130	1.0	50
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW8330	2,4,6-Trinitrotoluene	88	90	44	106	2.2	50
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW8330	2,4-Dinitrotoluene	97	92	62	132	5.3	50
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW8330	2,6-Dinitrotoluene	95	87	65	125	8.8	50
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW8330	2-Amino-4,6-Dinitrotoluene	95	94	66	126	1.1	50
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW8330	2-Nitrotoluene	89	86	59	125	3.4	50
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW8330	3-Nitrotoluene	88	90	62	122	2.2	50
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW8330	4-Amino-2,6-Dinitrotoluene	85	82	72	150	3.6	50
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW8330	4-Nitrotoluene	85	94	58	128	10.1	50

Table B2-5-4: Summary of MS/MSD Recoveries and RPDs
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Station Name	Matrix	Sample Date	Delivery Group	Method	Parameter Name	MS %R	MSD %R	%R LCL	%R UCL	RPD	RPD Limit
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW8330	HMX	89	90	60	133	1.1	50
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW8330	Nitrobenzene	103	99	67	128	4.0	50
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW8330	RDX	92	95	59	129	3.2	50
R30-103Q-004 (0.5-1.5)	SO	8/21/14	14H167	SW8330	Tetryl	86	85	37	120	1.2	50
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW6020A	Aluminum	122	129	75	125	5.6	20
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW6020A	Antimony	72	74	75	125	2.7	20
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW6020A	Arsenic	98	98	75	125	0.0	20
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW6020A	Barium	240	118	75	125	68.2	20
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW6020A	Beryllium	97	99	75	125	2.0	20
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW6020A	Cadmium	96	97	75	125	1.0	20
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW6020A	Calcium	99	99	75	125	0.0	20
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW6020A	Chromium	97	98	75	125	1.0	20
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW6020A	Cobalt	97	97	75	125	0.0	20
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW6020A	Copper	53	50	75	125	5.8	20
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW6020A	Iron	90	101	75	125	11.5	20
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW6020A	Lead	61	-73	75	125	2233	20
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW6020A	Magnesium	102	101	75	125	1.0	20
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW6020A	Manganese	76	305	75	125	120	20
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW6020A	Nickel	91	94	75	125	3.2	20
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW6020A	Potassium	100	101	75	125	1.0	20
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW6020A	Selenium	96	95	75	125	1.0	20
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW6020A	Silver	101	102	75	125	1.0	20
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW6020A	Sodium	97	97	75	125	0.0	20
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW6020A	Thallium	95	95	75	125	0.0	20
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW6020A	Vanadium	96	98	75	125	2.1	20
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW6020A	Zinc	85	88	75	125	3.5	20
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW7471A	Mercury	92	93	80	120	1.1	20
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW8330	1,3,5-Trinitrobenzene	94	95	71	132	1.1	50
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW8330	1,3-Dinitrobenzene	96	97	69	130	1.0	50
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW8330	2,4,6-Trinitrotoluene	97	97	44	106	0.0	50
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW8330	2,4-Dinitrotoluene	95	93	62	132	2.1	50
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW8330	2,6-Dinitrotoluene	94	89	65	125	5.5	50
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW8330	2-Amino-4,6-Dinitrotoluene	96	94	66	126	2.1	50

Table B2-5-4: Summary of MS/MSD Recoveries and RPDs
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Station Name	Matrix	Sample Date	Delivery Group	Method	Parameter Name	MS %R	MSD %R	%R LCL	%R UCL	RPD	RPD Limit
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW8330	2-Nitrotoluene	83	84	59	125	1.2	50
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW8330	3-Nitrotoluene	91	84	62	122	8.0	50
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW8330	4-Amino-2,6-Dinitrotoluene	87	83	72	150	4.7	50
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW8330	4-Nitrotoluene	95	83	58	128	13.5	50
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW8330	HMX	102	94	60	133	8.2	50
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW8330	Nitrobenzene	98	96	67	128	2.1	50
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW8330	RDX	100	95	59	129	5.1	50
R30-88Q-012 (0-0.5)	SO	8/20/14	14H166	SW8330	Tetryl	89	92	37	120	3.3	50
R30-88Q-017	SO	8/20/14	14H166	SW6020A	Aluminum	126	126	75	125	0.0	20
R30-88Q-017	SO	8/20/14	14H166	SW6020A	Antimony	66	69	75	125	4.4	20
R30-88Q-017	SO	8/20/14	14H166	SW6020A	Arsenic	94	95	75	125	1.1	20
R30-88Q-017	SO	8/20/14	14H166	SW6020A	Barium	41	34	75	125	18.7	20
R30-88Q-017	SO	8/20/14	14H166	SW6020A	Beryllium	95	97	75	125	2.1	20
R30-88Q-017	SO	8/20/14	14H166	SW6020A	Cadmium	92	91	75	125	1.1	20
R30-88Q-017	SO	8/20/14	14H166	SW6020A	Calcium	91	85	75	125	6.8	20
R30-88Q-017	SO	8/20/14	14H166	SW6020A	Chromium	90	89	75	125	1.1	20
R30-88Q-017	SO	8/20/14	14H166	SW6020A	Cobalt	91	92	75	125	1.1	20
R30-88Q-017	SO	8/20/14	14H166	SW6020A	Copper	132	97	75	125	30.6	20
R30-88Q-017	SO	8/20/14	14H166	SW6020A	Iron	86	83	75	125	3.6	20
R30-88Q-017	SO	8/20/14	14H166	SW6020A	Lead	168	161	75	125	4.3	20
R30-88Q-017	SO	8/20/14	14H166	SW6020A	Magnesium	97	97	75	125	0.0	20
R30-88Q-017	SO	8/20/14	14H166	SW6020A	Manganese	75	149	75	125	66.1	20
R30-88Q-017	SO	8/20/14	14H166	SW6020A	Nickel	95	94	75	125	1.1	20
R30-88Q-017	SO	8/20/14	14H166	SW6020A	Potassium	96	95	75	125	1.0	20
R30-88Q-017	SO	8/20/14	14H166	SW6020A	Selenium	91	90	75	125	1.1	20
R30-88Q-017	SO	8/20/14	14H166	SW6020A	Silver	96	96	75	125	0.0	20
R30-88Q-017	SO	8/20/14	14H166	SW6020A	Sodium	93	92	75	125	1.1	20
R30-88Q-017	SO	8/20/14	14H166	SW6020A	Thallium	90	91	75	125	1.1	20
R30-88Q-017	SO	8/20/14	14H166	SW6020A	Vanadium	93	93	75	125	0.0	20
R30-88Q-017	SO	8/20/14	14H166	SW6020A	Zinc	95	86	75	125	9.9	20
R30-88Q-017	SO	8/20/14	14H166	SW7471A	Mercury	93	93	80	120	0.0	20

Notes:

**Table B2-5-4: Summary of MS/MSD Recoveries and RPDs
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Station Name	Sample Matrix	Delivery Date	Group	Method	Parameter Name	MS %R	MSD %R	%R LCL	%R UCL	RPD	RPD Limit
%R = Percent recovery											
LCL = Lower control limit											
UCL = Upper control limit											
MS = Matrix spike											
MSD = Matrix spike duplicate											
RPD = Relative percent difference											
SO = Soil											

**Table B2-5-5: Field Duplicate Cross Reference
Range 30 Impact Area, Parcels 88Q and 103Q,
McClellan, Anniston, Alabama**

Matrix	COC ID	Parent Station Name	COC Number	Sample Date	Delivery Group	Method
SO	DUP180	R30-88Q-011 (0-0.5)	3946	8/20/14	14H166	D2216
SO	DUP180	R30-88Q-011 (0-0.5)	3946	8/20/14	14H166	SW6020A
SO	DUP180	R30-88Q-011 (0-0.5)	3946	8/20/14	14H166	SW7471A
SO	DUP180	R30-88Q-011 (0-0.5)	3946	8/20/14	14H166	SW8330
SO	DUP181	R30-88Q-014	3953	8/20/14	14H166	D2216
SO	DUP181	R30-88Q-014	3953	8/20/14	14H166	SW6020A
SO	DUP181	R30-88Q-014	3953	8/20/14	14H166	SW7471A
SO	DUP182	R30-103Q-005 (0.5-1.5)	3970	8/21/14	14H167	D2216
SO	DUP182	R30-103Q-005 (0.5-1.5)	3970	8/21/14	14H167	SW6020A
SO	DUP182	R30-103Q-005 (0.5-1.5)	3970	8/21/14	14H167	SW7471A
SO	DUP182	R30-103Q-005 (0.5-1.5)	3970	8/21/14	14H167	SW8330
SO	DUP183	R30-103Q-016	3984	8/20/14	14H166	D2216
SO	DUP183	R30-103Q-016	3984	8/20/14	14H166	SW6020A
SO	DUP183	R30-103Q-016	3984	8/20/14	14H166	SW7471A

Notes:

-- = Not applicable

AA = Air

COC = Chain-of-Custody

ID = Identification

WG = Groundwater

Table B2-5-6: Comparison of Investigative and Field Duplicate Sample Detections
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Station Name	Matrix	Sample Date	Delivery Group	Method	Parameter Name	FD Value	FD Lab Flag	NS Value	NS Lab Flag	Units	RPD	MDL	RL
R30-103Q-005 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Aluminum	4250	V	3930	V	mg/kg	7.8	9.89	98.9
R30-103Q-005 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Antimony	0.449	J	0.375	J	mg/kg	18.0	0.198	0.494
R30-103Q-005 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Arsenic	1.64	V	1.31	V	mg/kg	22.4	0.099	0.494
R30-103Q-005 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Barium	48.2	V	48	V	mg/kg	0.4	0.099	0.494
R30-103Q-005 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Beryllium	0.282	J	0.219	J	mg/kg	25.1	0.099	0.494
R30-103Q-005 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Cadmium	0.115	J	0.113	J	mg/kg	1.8	0.099	0.494
R30-103Q-005 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Calcium	122	V	121	V	mg/kg	0.8	19.8	98.9
R30-103Q-005 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Chromium	5.9	V	10	V	mg/kg	51.6	0.099	0.494
R30-103Q-005 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Cobalt	2.83	V	2.56	V	mg/kg	10.0	0.099	0.494
R30-103Q-005 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Copper	6.38	V	5.41	V	mg/kg	16.5	0.198	0.494
R30-103Q-005 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Iron	3240	V	2510	V	mg/kg	25.4	9.89	98.9
R30-103Q-005 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Lead	29.8	V	23.7	V	mg/kg	22.8	0.099	0.494
R30-103Q-005 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Magnesium	233	V	218	V	mg/kg	6.7	19.8	98.9
R30-103Q-005 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Manganese	240	V	204	V	mg/kg	16.2	0.198	0.494
R30-103Q-005 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Nickel	4.08	V	6.2	V	mg/kg	41.2	0.099	0.494
R30-103Q-005 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Potassium	141	V	130	V	mg/kg	8.1	19.8	98.9
R30-103Q-005 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Vanadium	6.09	V	5.45	V	mg/kg	11.1	0.247	0.494
R30-103Q-005 (0.5-1.5)	SO	8/21/14	14H167	SW6020A	Zinc	7.04	V	6.54	V	mg/kg	7.4	0.989	1.98
R30-103Q-016	SO	8/20/14	14H166	SW6020A	Aluminum	12200	V	11800	V	mg/kg	3.3	10.3	103
R30-103Q-016	SO	8/20/14	14H166	SW6020A	Antimony	0.686	V	0.593	V	mg/kg	14.5	0.206	0.515
R30-103Q-016	SO	8/20/14	14H166	SW6020A	Arsenic	2.6	V	2.53	V	mg/kg	2.7	0.103	0.515
R30-103Q-016	SO	8/20/14	14H166	SW6020A	Barium	24	V	23.2	V	mg/kg	3.4	0.103	0.515
R30-103Q-016	SO	8/20/14	14H166	SW6020A	Beryllium	0.252	J	0.246	J	mg/kg	2.4	0.103	0.515
R30-103Q-016	SO	8/20/14	14H166	SW6020A	Calcium	136	V	118	V	mg/kg	14.2	20.6	103
R30-103Q-016	SO	8/20/14	14H166	SW6020A	Chromium	6.86	V	6.84	V	mg/kg	0.3	0.103	0.515
R30-103Q-016	SO	8/20/14	14H166	SW6020A	Cobalt	3.04	V	3.09	V	mg/kg	1.6	0.103	0.515
R30-103Q-016	SO	8/20/14	14H166	SW6020A	Copper	48.6	V	42.4	V	mg/kg	13.6	0.206	0.515
R30-103Q-016	SO	8/20/14	14H166	SW6020A	Iron	6640	V	6470	V	mg/kg	2.6	10.3	103
R30-103Q-016	SO	8/20/14	14H166	SW6020A	Lead	151	V	137	V	mg/kg	9.7	0.103	0.515
R30-103Q-016	SO	8/20/14	14H166	SW6020A	Magnesium	272	V	265	V	mg/kg	2.6	20.6	103

Table B2-5-6: Comparison of Investigative and Field Duplicate Sample Detections
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Station Name	Matrix	Sample Date	Delivery Group	Method	Parameter Name	FD Value	FD Lab Flag	NS Value	NS Lab Flag	Units	RPD	MDL	RL
R30-103Q-016	SO	8/20/14	14H166	SW6020A	Manganese	207	V	208	V	mg/kg	0.5	0.206	0.515
R30-103Q-016	SO	8/20/14	14H166	SW6020A	Nickel	8.78	V	8.03	V	mg/kg	8.9	0.103	0.515
R30-103Q-016	SO	8/20/14	14H166	SW6020A	Potassium	230	V	215	V	mg/kg	6.7	20.6	103
R30-103Q-016	SO	8/20/14	14H166	SW6020A	Thallium	0.125	J	0.122	J	mg/kg	2.4	0.103	0.515
R30-103Q-016	SO	8/20/14	14H166	SW6020A	Vanadium	14.7	V	14.3	V	mg/kg	2.8	0.258	0.515
R30-103Q-016	SO	8/20/14	14H166	SW6020A	Zinc	17.2	V	14.4	V	mg/kg	17.7	1.03	2.06
R30-103Q-016	SO	8/20/14	14H166	SW7471A	Mercury	0.0493	J	0.0561	J	mg/kg	12.9	0.021	0.105
R30-88Q-011 (0-0.5)	SO	8/20/14	14H166	SW6020A	Aluminum	12800	V	11700	V	mg/kg	9.0	10.8	108
R30-88Q-011 (0-0.5)	SO	8/20/14	14H166	SW6020A	Arsenic	5.63	V	5.43	V	mg/kg	3.6	0.108	0.539
R30-88Q-011 (0-0.5)	SO	8/20/14	14H166	SW6020A	Barium	21.2	V	19.3	V	mg/kg	9.4	0.108	0.539
R30-88Q-011 (0-0.5)	SO	8/20/14	14H166	SW6020A	Beryllium	0.188	J	0.179	J	mg/kg	4.9	0.108	0.539
R30-88Q-011 (0-0.5)	SO	8/20/14	14H166	SW6020A	Cadmium	0.144	J	0.142	J	mg/kg	1.4	0.108	0.539
R30-88Q-011 (0-0.5)	SO	8/20/14	14H166	SW6020A	Calcium	70.4	J	58.7	J	mg/kg	18.1	21.6	108
R30-88Q-011 (0-0.5)	SO	8/20/14	14H166	SW6020A	Chromium	20.9	V	19.6	V	mg/kg	6.4	0.108	0.539
R30-88Q-011 (0-0.5)	SO	8/20/14	14H166	SW6020A	Cobalt	1.22	V	1.09	V	mg/kg	11.3	0.108	0.539
R30-88Q-011 (0-0.5)	SO	8/20/14	14H166	SW6020A	Copper	6.47	V	5.96	V	mg/kg	8.2	0.216	0.539
R30-88Q-011 (0-0.5)	SO	8/20/14	14H166	SW6020A	Iron	14800	V	14300	V	mg/kg	3.4	10.8	108
R30-88Q-011 (0-0.5)	SO	8/20/14	14H166	SW6020A	Lead	8.08	V	7.34	V	mg/kg	9.6	0.108	0.539
R30-88Q-011 (0-0.5)	SO	8/20/14	14H166	SW6020A	Magnesium	239	V	212	V	mg/kg	12.0	21.6	108
R30-88Q-011 (0-0.5)	SO	8/20/14	14H166	SW6020A	Manganese	138	V	119	V	mg/kg	14.8	0.216	0.539
R30-88Q-011 (0-0.5)	SO	8/20/14	14H166	SW6020A	Nickel	4.06	V	3.58	V	mg/kg	12.6	0.108	0.539
R30-88Q-011 (0-0.5)	SO	8/20/14	14H166	SW6020A	Potassium	258	V	225	V	mg/kg	13.7	21.6	108
R30-88Q-011 (0-0.5)	SO	8/20/14	14H166	SW6020A	Selenium	0.119	J	0.114	J	mg/kg	4.3	0.108	0.539
R30-88Q-011 (0-0.5)	SO	8/20/14	14H166	SW6020A	Vanadium	33.1	V	31.2	V	mg/kg	5.9	0.27	0.539
R30-88Q-011 (0-0.5)	SO	8/20/14	14H166	SW6020A	Zinc	11	V	9.46	V	mg/kg	15.1	1.08	2.16
R30-88Q-011 (0-0.5)	SO	8/20/14	14H166	SW7471A	Mercury	0.0411	J	0.0334	J	mg/kg	20.7	0.022	0.108
R30-88Q-014	SO	8/20/14	14H166	SW6020A	Aluminum	6400	V	6520	V	mg/kg	1.9	10.6	106
R30-88Q-014	SO	8/20/14	14H166	SW6020A	Antimony	2.67	V	3.04	V	mg/kg	13.0	0.212	0.531
R30-88Q-014	SO	8/20/14	14H166	SW6020A	Arsenic	1.98	V	2.02	V	mg/kg	2.0	0.106	0.531
R30-88Q-014	SO	8/20/14	14H166	SW6020A	Barium	103	V	101	V	mg/kg	2.0	0.106	0.531

**Table B2-5-6: Comparison of Investigative and Field Duplicate Sample Detections
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Station Name	Matrix	Sample Date	Delivery Group	Method	Parameter Name	FD Value	FD Lab Flag	NS Value	NS Lab Flag	Units	RPD	MDL	RL
R30-88Q-014	SO	8/20/14	14H166	SW6020A	Beryllium	0.445	J	0.438	J	mg/kg	1.6	0.106	0.531
R30-88Q-014	SO	8/20/14	14H166	SW6020A	Cadmium	0.11	J	0.127	J	mg/kg	14.3	0.106	0.531
R30-88Q-014	SO	8/20/14	14H166	SW6020A	Calcium	288	V	280	V	mg/kg	2.8	21.2	106
R30-88Q-014	SO	8/20/14	14H166	SW6020A	Chromium	5.53	V	5.48	V	mg/kg	0.9	0.106	0.531
R30-88Q-014	SO	8/20/14	14H166	SW6020A	Cobalt	2.43	V	2.48	V	mg/kg	2.0	0.106	0.531
R30-88Q-014	SO	8/20/14	14H166	SW6020A	Copper	78.8	V	83.9	V	mg/kg	6.3	0.212	0.531
R30-88Q-014	SO	8/20/14	14H166	SW6020A	Iron	3960	V	3990	V	mg/kg	0.8	10.6	106
R30-88Q-014	SO	8/20/14	14H166	SW6020A	Lead	624	V	578	V	mg/kg	7.7	0.106	0.531
R30-88Q-014	SO	8/20/14	14H166	SW6020A	Magnesium	258	V	259	V	mg/kg	0.4	21.2	106
R30-88Q-014	SO	8/20/14	14H166	SW6020A	Manganese	823	V	846	V	mg/kg	2.8	0.212	0.531
R30-88Q-014	SO	8/20/14	14H166	SW6020A	Nickel	9.52	V	9.65	V	mg/kg	1.4	0.106	0.531
R30-88Q-014	SO	8/20/14	14H166	SW6020A	Potassium	158	V	156	V	mg/kg	1.3	21.2	106
R30-88Q-014	SO	8/20/14	14H166	SW6020A	Selenium	0.233	J	0.216	J	mg/kg	7.6	0.106	0.531
R30-88Q-014	SO	8/20/14	14H166	SW6020A	Vanadium	8.33	V	8.28	V	mg/kg	0.6	0.265	0.531
R30-88Q-014	SO	8/20/14	14H166	SW6020A	Zinc	33.5	V	31.7	V	mg/kg	5.5	1.06	2.12
R30-88Q-014	SO	8/20/14	14H166	SW7471A	Mercury	0.042	J	0.0406	J	mg/kg	3.4	0.022	0.109

Notes:

FD = Field duplicate

MDL = Method detection limit

mg/kg = milligrams per kilogram

NS = Normal sample

RL = Reporting limit

RPD = Relative percent difference

SO = Soil

Lab Flag:

J = Estimated value. The analyte is positively identified and the concentration is less than the reporting limit, but greater than the method detection limit.

V = Detected value.

**Table B2-5-7: Summary of Field Quality Control Blank Sample Detections
Range 30 Impact Area, Parcels 88Q and 103Q,
McClellan, Anniston, Alabama**

Station Name	COC ID	QC Code	Matrix	Sample Date	Delivery Group	Method	Parameter Name	Value	Lab Flag	Units	MDL	RL
EQUIPMENT BLANK	EB079	EB	W	8/21/14	14H167	SW6020A	Calcium	51.1	J	µg/L	25	100
EQUIPMENT BLANK	EB079	EB	W	8/21/14	14H167	SW6020A	Iron	11.2	J	µg/L	10	100
EQUIPMENT BLANK	EB079	EB	W	8/21/14	14H167	SW6020A	Manganese	2.91	V	µg/L	0.2	1
EQUIPMENT BLANK	EB079	EB	W	8/21/14	14H167	SW6020A	Nickel	0.308	J	µg/L	0.2	1

Notes:

COC ID = Chain-of-Custody Identification

EB = Equipment blank

MDL = Method detection limit

µg/L = micrograms per liter

QC = Quality Control

RL = Reporting limit

W = Water

Lab Flags:

J = Estimated value. The analyte is positively identified and the concentration is less than the RL, but greater than the MDL.

V = Detected value

**Table B2-5-8: Summary of LCS/LCSD Recoveries and RPDs
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Method	Delivery Group	Analysis Date	Analytical Batch	Matrix	Parameter Name	LCS %R	LCSD %R	LCL	UCL	RPD	RPD Limit
SW6020A	14H167	9/8/14	IMI007S	SO	Aluminum	94	94	80	120	0.0	20
SW6020A	14H167	9/8/14	IMI007S	SO	Antimony	94	94	80	120	0.0	20
SW6020A	14H167	9/8/14	IMI007S	SO	Arsenic	96	96	80	120	0.0	20
SW6020A	14H167	9/8/14	IMI007S	SO	Barium	99	100	80	120	1.0	20
SW6020A	14H167	9/8/14	IMI007S	SO	Beryllium	89	89	80	120	0.0	20
SW6020A	14H167	9/8/14	IMI007S	SO	Cadmium	94	92	80	120	2.2	20
SW6020A	14H167	9/8/14	IMI007S	SO	Calcium	100	99	80	120	1.0	20
SW6020A	14H167	9/8/14	IMI007S	SO	Chromium	99	97	80	120	2.0	20
SW6020A	14H167	9/8/14	IMI007S	SO	Cobalt	94	94	80	120	0.0	20
SW6020A	14H167	9/8/14	IMI007S	SO	Copper	92	90	80	120	2.2	20
SW6020A	14H167	9/8/14	IMI007S	SO	Iron	95	94	80	120	1.1	20
SW6020A	14H167	9/8/14	IMI007S	SO	Lead	90	89	80	120	1.1	20
SW6020A	14H167	9/8/14	IMI007S	SO	Magnesium	97	96	80	120	1.0	20
SW6020A	14H167	9/8/14	IMI007S	SO	Manganese	96	96	80	120	0.0	20
SW6020A	14H167	9/8/14	IMI007S	SO	Nickel	95	94	80	120	1.1	20
SW6020A	14H167	9/8/14	IMI007S	SO	Potassium	104	102	80	120	1.9	20
SW6020A	14H167	9/8/14	IMI007S	SO	Selenium	96	94	80	120	2.1	20
SW6020A	14H167	9/8/14	IMI007S	SO	Silver	93	92	75	120	1.1	20
SW6020A	14H167	9/8/14	IMI007S	SO	Sodium	98	96	80	120	2.1	20
SW6020A	14H167	9/8/14	IMI007S	SO	Thallium	95	92	80	120	3.2	20
SW6020A	14H167	9/8/14	IMI007S	SO	Vanadium	96	94	80	120	2.1	20
SW6020A	14H167	9/8/14	IMI007S	SO	Zinc	89	89	80	120	0.0	20
SW6020A	14H167	9/9/14	IMI005W	W	Aluminum	93	90	80	120	3.3	20
SW6020A	14H167	9/9/14	IMI005W	W	Antimony	97	96	80	120	1.0	20
SW6020A	14H167	9/9/14	IMI005W	W	Arsenic	99	96	80	120	3.1	20
SW6020A	14H167	9/9/14	IMI005W	W	Barium	99	97	80	120	2.0	20
SW6020A	14H167	9/9/14	IMI005W	W	Beryllium	94	91	80	120	3.2	20
SW6020A	14H167	9/9/14	IMI005W	W	Cadmium	95	93	80	120	2.1	20
SW6020A	14H167	9/9/14	IMI005W	W	Calcium	101	98	80	120	3.0	20
SW6020A	14H167	9/9/14	IMI005W	W	Chromium	98	95	80	120	3.1	20
SW6020A	14H167	9/9/14	IMI005W	W	Cobalt	97	94	80	120	3.1	20
SW6020A	14H167	9/9/14	IMI005W	W	Copper	97	93	80	120	4.2	20
SW6020A	14H167	9/9/14	IMI005W	W	Iron	96	94	80	120	2.1	20

**Table B2-5-8: Summary of LCS/LCSD Recoveries and RPDs
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Method	Delivery Group	Analysis Date	Analytical Batch	Matrix	Parameter Name	LCS %R	LCSD %R	LCL	UCL	RPD	RPD Limit
SW6020A	14H167	9/9/14	IMI005W	W	Lead	94	94	80	120	0.0	20
SW6020A	14H167	9/9/14	IMI005W	W	Magnesium	95	92	80	120	3.2	20
SW6020A	14H167	9/9/14	IMI005W	W	Manganese	95	92	80	120	3.2	20
SW6020A	14H167	9/9/14	IMI005W	W	Nickel	95	93	80	120	2.1	20
SW6020A	14H167	9/9/14	IMI005W	W	Potassium	102	99	80	120	3.0	20
SW6020A	14H167	9/9/14	IMI005W	W	Selenium	98	96	80	120	2.1	20
SW6020A	14H167	9/9/14	IMI005W	W	Silver	97	94	80	120	3.1	20
SW6020A	14H167	9/9/14	IMI005W	W	Sodium	97	96	80	120	1.0	20
SW6020A	14H167	9/9/14	IMI005W	W	Thallium	91	91	80	120	0.0	20
SW6020A	14H167	9/9/14	IMI005W	W	Vanadium	98	95	80	120	3.1	20
SW6020A	14H167	9/9/14	IMI005W	W	Zinc	97	97	80	120	0.0	20
SW6020A	14H166	9/22/14	IMI012S	SO	Aluminum	96	98	80	120	2.1	20
SW6020A	14H166	9/22/14	IMI012S	SO	Antimony	98	99	80	120	1.0	20
SW6020A	14H166	9/22/14	IMI012S	SO	Arsenic	101	103	80	120	2.0	20
SW6020A	14H166	9/22/14	IMI012S	SO	Barium	100	102	80	120	2.0	20
SW6020A	14H166	9/22/14	IMI012S	SO	Beryllium	96	98	80	120	2.1	20
SW6020A	14H166	9/22/14	IMI012S	SO	Cadmium	95	97	80	120	2.1	20
SW6020A	14H166	9/22/14	IMI012S	SO	Calcium	101	103	80	120	2.0	20
SW6020A	14H166	9/22/14	IMI012S	SO	Chromium	99	101	80	120	2.0	20
SW6020A	14H166	9/22/14	IMI012S	SO	Cobalt	98	99	80	120	1.0	20
SW6020A	14H166	9/22/14	IMI012S	SO	Copper	97	99	80	120	2.0	20
SW6020A	14H166	9/22/14	IMI012S	SO	Iron	97	99	80	120	2.0	20
SW6020A	14H166	9/22/14	IMI012S	SO	Lead	98	98	80	120	0.0	20
SW6020A	14H166	9/22/14	IMI012S	SO	Magnesium	98	100	80	120	2.0	20
SW6020A	14H166	9/22/14	IMI012S	SO	Manganese	102	104	80	120	1.9	20
SW6020A	14H166	9/22/14	IMI012S	SO	Nickel	98	100	80	120	2.0	20
SW6020A	14H166	9/22/14	IMI012S	SO	Potassium	100	103	80	120	3.0	20
SW6020A	14H166	9/22/14	IMI012S	SO	Selenium	98	101	80	120	3.0	20
SW6020A	14H166	9/22/14	IMI012S	SO	Silver	99	101	75	120	2.0	20
SW6020A	14H166	9/22/14	IMI012S	SO	Sodium	96	100	80	120	4.1	20
SW6020A	14H166	9/22/14	IMI012S	SO	Thallium	97	98	80	120	1.0	20
SW6020A	14H166	9/22/14	IMI012S	SO	Vanadium	97	99	80	120	2.0	20
SW6020A	14H166	9/22/14	IMI012S	SO	Zinc	95	96	80	120	1.0	20

**Table B2-5-8: Summary of LCS/LCSD Recoveries and RPDs
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Method	Delivery Group	Analysis Date	Analytical Batch	Matrix	Parameter Name	LCS %R	LCSD %R	LCL	UCL	RPD	RPD Limit
SW6020A	14H166	9/22/14	IMI014S	SO	Aluminum	102	99	80	120	3.0	20
SW6020A	14H166	9/22/14	IMI014S	SO	Antimony	101	98	80	120	3.0	20
SW6020A	14H166	9/22/14	IMI014S	SO	Arsenic	106	101	80	120	4.8	20
SW6020A	14H166	9/22/14	IMI014S	SO	Barium	104	101	80	120	2.9	20
SW6020A	14H166	9/22/14	IMI014S	SO	Beryllium	102	100	80	120	2.0	20
SW6020A	14H166	9/22/14	IMI014S	SO	Cadmium	98	95	80	120	3.1	20
SW6020A	14H166	9/22/14	IMI014S	SO	Calcium	104	100	80	120	3.9	20
SW6020A	14H166	9/22/14	IMI014S	SO	Chromium	102	98	80	120	4.0	20
SW6020A	14H166	9/22/14	IMI014S	SO	Cobalt	99	96	80	120	3.1	20
SW6020A	14H166	9/22/14	IMI014S	SO	Copper	99	96	80	120	3.1	20
SW6020A	14H166	9/22/14	IMI014S	SO	Iron	99	95	80	120	4.1	20
SW6020A	14H166	9/22/14	IMI014S	SO	Lead	99	94	80	120	5.2	20
SW6020A	14H166	9/22/14	IMI014S	SO	Magnesium	104	101	80	120	2.9	20
SW6020A	14H166	9/22/14	IMI014S	SO	Manganese	103	100	80	120	3.0	20
SW6020A	14H166	9/22/14	IMI014S	SO	Nickel	100	96	80	120	4.1	20
SW6020A	14H166	9/22/14	IMI014S	SO	Potassium	105	101	80	120	3.9	20
SW6020A	14H166	9/22/14	IMI014S	SO	Selenium	99	95	80	120	4.1	20
SW6020A	14H166	9/22/14	IMI014S	SO	Silver	104	101	75	120	2.9	20
SW6020A	14H166	9/22/14	IMI014S	SO	Sodium	101	96	80	120	5.1	20
SW6020A	14H166	9/22/14	IMI014S	SO	Thallium	98	94	80	120	4.2	20
SW6020A	14H166	9/22/14	IMI014S	SO	Vanadium	100	96	80	120	4.1	20
SW6020A	14H166	9/22/14	IMI014S	SO	Zinc	93	90	80	120	3.3	20
SW7470A	14H167	8/29/14	HGH026W	W	Mercury	97	98	80	120	1.0	20
SW7471A	14H166	9/12/14	HGI018S	SO	Mercury	91	90	80	120	1.1	20
SW7471A	14H166	9/12/14	HGI018S	SO	Mercury	91	93	80	120	2.2	20
SW7471A	14H166	9/12/14	HGI020S	SO	Mercury	92	90	80	120	2.2	20
SW7471A	14H166	9/12/14	HGI020S	SO	Mercury	92	93	80	120	1.1	20
SW7471A	14H167	9/17/14	HGI023S	SO	Mercury	103	105	80	120	1.9	20
SW8330	14H167	8/25/14	EXH017W	W	1,3,5-Trinitrobenzene	89	86	53	135	3.4	30
SW8330	14H167	8/25/14	EXH017W	W	1,3-Dinitrobenzene	85	85	54	120	0.0	30
SW8330	14H167	8/25/14	EXH017W	W	2,4,6-Trinitrotoluene	90	91	37	120	1.1	30
SW8330	14H167	8/25/14	EXH017W	W	2,4-Dinitrotoluene	92	92	58	136	0.0	30

**Table B2-5-8: Summary of LCS/LCSD Recoveries and RPDs
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Method	Delivery Group	Analysis Date	Analytical Batch	Matrix	Parameter Name	LCS %R	LCSD %R	LCL	UCL	RPD	RPD Limit
SW8330	14H167	8/25/14	EXH017W	W	2,6-Dinitrotoluene	91	84	52	144	8.0	30
SW8330	14H167	8/25/14	EXH017W	W	2-Amino-4,6-Dinitrotoluene	90	92	53	120	2.2	30
SW8330	14H167	8/25/14	EXH017W	W	2-Nitrotoluene	78	83	52	120	6.2	30
SW8330	14H167	8/25/14	EXH017W	W	3-Nitrotoluene	86	90	48	136	4.5	30
SW8330	14H167	8/25/14	EXH017W	W	4-Amino-2,6-Dinitrotoluene	85	89	58	159	4.6	30
SW8330	14H167	8/25/14	EXH017W	W	4-Nitrotoluene	80	87	46	136	8.4	30
SW8330	14H167	8/25/14	EXH017W	W	HMX	74	78	45	140	5.3	30
SW8330	14H167	8/25/14	EXH017W	W	Nitrobenzene	81	82	49	120	1.2	30
SW8330	14H167	8/25/14	EXH017W	W	RDX	76	77	39	120	1.3	30
SW8330	14H167	8/25/14	EXH017W	W	Tetryl	95	86	21	120	9.9	30
SW8330	14H166	8/29/14	EXH019S	SO	1,3,5-Trinitrobenzene	95	92	71	132	3.2	50
SW8330	14H167	8/29/14	EXH019S	SO	1,3,5-Trinitrobenzene	95	92	71	132	3.2	50
SW8330	14H166	8/29/14	EXH019S	SO	1,3-Dinitrobenzene	98	96	69	130	2.1	50
SW8330	14H167	8/29/14	EXH019S	SO	1,3-Dinitrobenzene	98	96	69	130	2.1	50
SW8330	14H166	8/29/14	EXH019S	SO	2,4,6-Trinitrotoluene	94	89	44	106	5.5	50
SW8330	14H167	8/29/14	EXH019S	SO	2,4,6-Trinitrotoluene	94	89	44	106	5.5	50
SW8330	14H166	8/29/14	EXH019S	SO	2,4-Dinitrotoluene	98	94	62	132	4.2	50
SW8330	14H167	8/29/14	EXH019S	SO	2,4-Dinitrotoluene	98	94	62	132	4.2	50
SW8330	14H166	8/29/14	EXH019S	SO	2,6-Dinitrotoluene	92	91	65	125	1.1	50
SW8330	14H167	8/29/14	EXH019S	SO	2,6-Dinitrotoluene	92	91	65	125	1.1	50
SW8330	14H166	8/29/14	EXH019S	SO	2-Amino-4,6-Dinitrotoluene	94	93	66	126	1.1	50
SW8330	14H167	8/29/14	EXH019S	SO	2-Amino-4,6-Dinitrotoluene	94	93	66	126	1.1	50
SW8330	14H166	8/29/14	EXH019S	SO	2-Nitrotoluene	92	89	59	125	3.3	50
SW8330	14H167	8/29/14	EXH019S	SO	2-Nitrotoluene	92	89	59	125	3.3	50
SW8330	14H166	8/29/14	EXH019S	SO	3-Nitrotoluene	87	96	62	122	9.8	50
SW8330	14H167	8/29/14	EXH019S	SO	3-Nitrotoluene	87	96	62	122	9.8	50
SW8330	14H166	8/29/14	EXH019S	SO	4-Amino-2,6-Dinitrotoluene	84	85	72	150	1.2	50
SW8330	14H167	8/29/14	EXH019S	SO	4-Amino-2,6-Dinitrotoluene	84	85	72	150	1.2	50
SW8330	14H166	8/29/14	EXH019S	SO	4-Nitrotoluene	87	87	58	128	0.0	50
SW8330	14H167	8/29/14	EXH019S	SO	4-Nitrotoluene	87	87	58	128	0.0	50
SW8330	14H166	8/29/14	EXH019S	SO	HMX	89	87	60	133	2.3	50
SW8330	14H167	8/29/14	EXH019S	SO	HMX	89	87	60	133	2.3	50

**Table B2-5-8: Summary of LCS/LCSD Recoveries and RPDs
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Method	Delivery Group	Analysis Date	Analytical Batch	Matrix	Parameter Name	LCS %R	LCSD %R	LCL	UCL	RPD	RPD Limit
SW8330	14H166	8/29/14	EXH019S	SO	Nitrobenzene	99	96	67	128	3.1	50
SW8330	14H167	8/29/14	EXH019S	SO	Nitrobenzene	99	96	67	128	3.1	50
SW8330	14H166	8/29/14	EXH019S	SO	RDX	97	93	59	129	4.2	50
SW8330	14H167	8/29/14	EXH019S	SO	RDX	97	93	59	129	4.2	50
SW8330	14H166	8/29/14	EXH019S	SO	Tetryl	93	90	37	120	3.3	50
SW8330	14H167	8/29/14	EXH019S	SO	Tetryl	93	90	37	120	3.3	50

Notes:

LCL = Lower control limit

LCS = Laboratory control sample

LCSD = Laboratory control sample duplicate

RPD = Relative percent difference

UCL = Upper control limit

SO = Soil

W = Water

%R = Percent recovery

Table B2-5-9: Summary of Surrogate Recoveries
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama

Station Name	Sample Date	Matrix	QC Code	Delivery Group	Method	Parameter Name	%R	LCL	UCL
EQUIPMENT BLANK	8/21/14	W	EB	14H167	SW8330	3,4-Dinitrotoluene	115	50	150
R30-103Q-001 (0.5-1.5)	8/21/14	SO	NS	14H167	SW8330	3,4-Dinitrotoluene	116	50	150
R30-103Q-001 (0-0.5)	8/21/14	SO	NS	14H167	SW8330	3,4-Dinitrotoluene	111	50	150
R30-103Q-002 (0.5-1.5)	8/21/14	SO	NS	14H167	SW8330	3,4-Dinitrotoluene	115	50	150
R30-103Q-002 (0-0.5)	8/21/14	SO	NS	14H167	SW8330	3,4-Dinitrotoluene	106	50	150
R30-103Q-003 (0.5-1.5)	8/21/14	SO	NS	14H167	SW8330	3,4-Dinitrotoluene	110	50	150
R30-103Q-003 (0-0.5)	8/21/14	SO	NS	14H167	SW8330	3,4-Dinitrotoluene	111	50	150
R30-103Q-004 (0.5-1.5)	8/21/14	SO	NS	14H167	SW8330	3,4-Dinitrotoluene	109	50	150
R30-103Q-004 (0-0.5)	8/21/14	SO	NS	14H167	SW8330	3,4-Dinitrotoluene	106	50	150
R30-103Q-005 (0.5-1.5)	8/21/14	SO	NS	14H167	SW8330	3,4-Dinitrotoluene	111	50	150
R30-103Q-005 (0.5-1.5)	8/21/14	SO	FD	14H167	SW8330	3,4-Dinitrotoluene	112	50	150
R30-103Q-005 (0-0.5)	8/21/14	SO	NS	14H167	SW8330	3,4-Dinitrotoluene	109	50	150
R30-103Q-006 (0.5-1.5)	8/20/14	SO	NS	14H166	SW8330	3,4-Dinitrotoluene	117	50	150
R30-103Q-006 (0-0.5)	8/20/14	SO	NS	14H166	SW8330	3,4-Dinitrotoluene	104	50	150
R30-103Q-007 (0.5-1.5)	8/20/14	SO	NS	14H166	SW8330	3,4-Dinitrotoluene	105	50	150
R30-103Q-007 (0-0.5)	8/20/14	SO	NS	14H166	SW8330	3,4-Dinitrotoluene	114	50	150
R30-88Q-011 (0.5-1.5)	8/20/14	SO	NS	14H166	SW8330	3,4-Dinitrotoluene	106	50	150
R30-88Q-011 (0-0.5)	8/20/14	SO	NS	14H166	SW8330	3,4-Dinitrotoluene	112	50	150
R30-88Q-011 (0-0.5)	8/20/14	SO	FD	14H166	SW8330	3,4-Dinitrotoluene	116	50	150
R30-88Q-012 (0.5-1.5)	8/20/14	SO	NS	14H166	SW8330	3,4-Dinitrotoluene	115	50	150
R30-88Q-012 (0-0.5)	8/20/14	SO	NS	14H166	SW8330	3,4-Dinitrotoluene	112	50	150

Notes:

EB = Equipment blank

FD = Field duplicate

LCL = Lower control limit

NS = Normal sample

QC = Quality control

%R = Percent recovery

SO = Soil

UCL = Upper control limit

W = Water

**Table B2-6-1: Reporting Limits and Method Detection Limits Compared to PSVs and ESVs
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Matrix	Method	Parameter Name	Units	RS PSV	Ind/Com PSV	ESV
SO	SW6020A	Aluminum	mg/kg	7,700	110,000	50
SO	SW6020A	Antimony	mg/kg	3.1	47	0.27
SO	SW6020A	Arsenic	mg/kg	0.68	3.0	18
SO	SW6020A	Barium	mg/kg	1,500	22,000	330
SO	SW6020A	Beryllium	mg/kg	16	230	21
SO	SW6020A	Cadmium	mg/kg	7.1	98	0.36
SO	SW6020A	Chromium	mg/kg	0.3*	6.3*	26.0
SO	SW6020A	Cobalt	mg/kg	2.3	35	13
SO	SW6020A	Copper	mg/kg	310	4700	28
SO	SW6020A	Iron	mg/kg	5,500	82,000	200
SO	SW6020A	Lead	mg/kg	400	800	11
SO	SW6020A	Magnesium	mg/kg	--	--	4,400
SO	SW6020A	Manganese	mg/kg	180	2,600	220
SO	SW6020A	Nickel	mg/kg	150	2,200	38
SO	SW6020A	Selenium	mg/kg	39	580	0.52
SO	SW6020A	Silver	mg/kg	39	580	4.2
SO	SW6020A	Thallium	mg/kg	0.078	1.2	1
SO	SW6020A	Vanadium	mg/kg	39	580	7.8
SO	SW6020A	Zinc	mg/kg	2,300	35,000	46
SO	SW7471A	Mercury	mg/kg	0.94	4.0	0.1
SO	SW8330	1,3,5-Trinitrobenzene	ug/kg	220,000	3,200,000	376
SO	SW8330	1,3-Dinitrobenzene	ug/kg	630	8,200	655
SO	SW8330	2,4,6-Trinitrotoluene	ug/kg	3,600	51,000	--
SO	SW8330	2,4-Dinitrotoluene	ug/kg	1,700	7,400	1,280
SO	SW8330	2,6-Dinitrotoluene	ug/kg	360	1,500	33
SO	SW8330	2-Amino-4,6-Dinitrotoluene	ug/kg	15,000	230,000	--
SO	SW8330	2-Nitrotoluene	ug/kg	3,200	15,000	--
SO	SW8330	3-Nitrotoluene	ug/kg	630	8,200	--
SO	SW8330	4-Amino-2,6-Dinitrotoluene	ug/kg	15,000	230,000	--
SO	SW8330	4-Nitrotoluene	ug/kg	25,000	140,000	--
SO	SW8330	HMX	ug/kg	390,000	5,700,000	--
SO	SW8330	Nitrobenzene	ug/kg	5,100	22,000	40,000
SO	SW8330	RDX	ug/kg	6,100	28,000	--
SO	SW8330	Tetryl	ug/kg	16,000	230,000	--

Matrix	Method	Parameter Name	Units	PSV
W	SW6020A	Aluminum	µg/L	2000
W	SW6020A	Antimony	µg/L	6
W	SW6020A	Arsenic	µg/L	10
W	SW6020A	Barium	µg/L	2000
W	SW6020A	Beryllium	µg/L	4
W	SW6020A	Cadmium	µg/L	5
W	SW6020A	Calcium	µg/L	--
W	SW6020A	Chromium	µg/L	100
W	SW6020A	Cobalt	µg/L	0.6
W	SW6020A	Copper	µg/L	1300
W	SW6020A	Iron	µg/L	1400

**Table B2-6-1: Reporting Limits and Method Detection Limits Compared to PSVs and ESVs
Range 30 Impact Area, Parcels 88Q and 103Q
McClellan, Anniston, Alabama**

Matrix	Method	Parameter Name	Units	PSV
W	SW6020A	Lead	µg/L	15
W	SW6020A	Manganese	µg/L	43
W	SW6020A	Nickel	µg/L	39
W	SW6020A	Selenium	µg/L	50
W	SW6020A	Silver	µg/L	9.4
W	SW6020A	Thallium	µg/L	2
W	SW6020A	Vanadium	µg/L	8.6
W	SW6020A	Zinc	µg/L	600
W	SW7470A	Mercury	µg/L	2
W	SW8330	1,3,5-Trinitrobenzene	µg/L	59
W	SW8330	1,3-Dinitrobenzene	µg/L	0.2
W	SW8330	2,4,6-Trinitrotoluene	µg/L	0.98
W	SW8330	2,4-Dinitrotoluene	µg/L	0.24
W	SW8330	2,6-Dinitrotoluene	µg/L	0.048
W	SW8330	2-Amino-4,6-Dinitrotoluene	µg/L	3.9
W	SW8330	2-Nitrotoluene	µg/L	0.31
W	SW8330	3-Nitrotoluene	µg/L	0.17
W	SW8330	4-Amino-2,6-Dinitrotoluene	µg/L	3.9
W	SW8330	4-Nitrotoluene	µg/L	4.2
W	SW8330	HMX	µg/L	100
W	SW8330	Nitrobenzene	µg/L	0.14
W	SW8330	RDX	µg/L	0.7
W	SW8330	Tetryl	µg/L	3.9

Notes:

ESV = Ecological screening value (updated June 2011)

MDL = Method detection limit

µg/L = micrograms per liter

mg/kg = milligrams per kilogram

µg/kg = micrograms per kilogram

PSV = Preliminary Screening Value (RSLs dated June 2015, TR=1E-6, HQ=0.1)

RL = Reporting limit

SO = Soil

W = Water

* PSV for Cr VI shown

Indicates the limit is greater than the PSV.

Indicates the limit is greater than the ESV.

ATTACHMENT B2-1
Laboratory Data Forms

METHOD SW8330
EXPLOSIVES

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=====
Client      : MATRIX ENVIRONMENTAL SERVICES      Date Collected: 08/20/14
Project     : MCCLELLAN, AL                     Date Received: 08/22/14
Batch No.   : 14H166                           Date Extracted: 08/26/14 19:29
Sample ID   : R30-88Q-011 (0-0.5)              Date Analyzed: 08/29/14 02:53
Lab Samp ID : H166-01                          Dilution Factor: 1
Lab File ID : XH28032A                         Matrix       : SOIL
Ext Btch ID : EXH019S                          % Moisture    : NA
Calib. Ref. : XH28028A                         Instrument ID : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)
-----	-----	-----	-----
HMX	ND	400	100
RDX	ND	400	100
1,3,5-TNB	ND	400	100
1,3-DNB	ND	400	100
TETRYL	ND	400	100
NITROBENZENE	ND	400	100
2,4,6-TNT	ND	400	100
4-AM-2,6-DNT	ND	400	100
2-AM-4,6-DNT	ND	400	100
2,6-DNT	ND	400	100
2,4-DNT	ND	400	100
2-NITROTOLUENE	ND	400	100
3-NITROTOLUENE	ND	400	100
4-NITROTOLUENE	ND	400	100

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
-----	-----	-----	-----	-----
3,4-DNT	2240	2000	112	50-150

RL: Reporting Limit

Note: All positive results are confirmed by Biphenyl column

9

9/29/14
L

6004

METHOD SW8330
EXPLOSIVES

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=====
Client      : MATRIX ENVIRONMENTAL SERVICES      Date Collected: 08/20/14
Project     : MCCLELLAN, AL                     Date Received: 08/22/14
Batch No.   : 14H166                           Date Extracted: 08/26/14 19:29
Sample ID   : DUP180                           Date Analyzed: 08/29/14 03:24
Lab Samp ID: H166-02                           Dilution Factor: 1
Lab File ID: XH28033A                          Matrix          : SOIL
Ext Btch ID: EXH019S                          % Moisture      : NA
Calib. Ref.: XH28028A                         Instrument ID   : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)
-----	-----	-----	-----
HMX	ND	400	100
RDX	ND	400	100
1,3,5-TNB	ND	400	100
1,3-DNB	ND	400	100
TETRYL	ND	400	100
NITROBENZENE	ND	400	100
2,4,6-TNT	ND	400	100
4-AM-2,6-DNT	ND	400	100
2-AM-4,6-DNT	ND	400	100
2,6-DNT	ND	400	100
2,4-DNT	ND	400	100
2-NITROTOLUENE	ND	400	100
3-NITROTOLUENE	ND	400	100
4-NITROTOLUENE	ND	400	100

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
-----	-----	-----	-----	-----
3,4-DNT	2320	2000	116	50-150

RL: Reporting Limit

Note: All positive results are confirmed by Biphenyl column

9/12/14
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6005

METHOD SW8330
EXPLOSIVES

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=====
Client      : MATRIX ENVIRONMENTAL SERVICES      Date Collected: 08/20/14
Project     : MCCLELLAN, AL                     Date Received: 08/22/14
Batch No.   : 14H166                             Date Extracted: 08/26/14 19:29
Sample ID:  R30-880-011 (0.5-1.5)              Date Analyzed: 08/29/14 03:56
Lab Samp ID: H166-03                           Dilution Factor: 0.99
Lab File ID: XH28034A                          Matrix          : SOIL
Ext Btch ID: EXH019S                           % Moisture      : NA
Calib. Ref.: XH28028A                          Instrument ID   : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)
-----	-----	-----	-----
HMX	ND	400	99
RDX	ND	400	99
1,3,5-TNB	ND	400	99
1,3-DNB	ND	400	99
TETRYL	ND	400	99
NITROBENZENE	ND	400	99
2,4,6-TNT	ND	400	99
4-AM-2,6-DNT	ND	400	99
2-AM-4,6-DNT	ND	400	99
2,6-DNT	ND	400	99
2,4-DNT	ND	400	99
2-NITROTOLUENE	ND	400	99
3-NITROTOLUENE	ND	400	99
4-NITROTOLUENE	ND	400	99

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
-----	-----	-----	-----	-----
3,4-DNT	2090	1980	106	50-150

RL: Reporting Limit

Note: All positive results are confirmed by Biphenyl column

9/29/14
2

METHOD SW8330
EXPLOSIVES

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=====
Client      : MATRIX ENVIRONMENTAL SERVICES      Date Collected: 08/20/14
Project     : MCCLELLAN, AL                     Date Received: 08/22/14
Batch No.   : 14H166                           Date Extracted: 08/26/14 19:29
Sample ID:  R30-103Q-006 (0-0.5)               Date Analyzed: 08/29/14 04:27
Lab Samp ID: H166-07                           Dilution Factor: 0.99
Lab File ID: XH28035A                          Matrix          : SOIL
Ext Btch ID: EXH019S                           % Moisture      : NA
Calib. Ref.: XH28028A                          Instrument ID   : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)
HMX	ND	400	99
RDX	ND	400	99
1,3,5-TNB	ND	400	99
1,3-DNB	ND	400	99
TETRYL	ND	400	99
NITROBENZENE	ND	400	99
2,4,6-TNT	ND	400	99
4-AM-2,6-DNT	ND	400	99
2-AM-4,6-DNT	ND	400	99
2,6-DNT	ND	400	99
2,4-DNT	ND	400	99
2-NITROTOLUENE	ND	400	99
3-NITROTOLUENE	ND	400	99
4-NITROTOLUENE	ND	400	99

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DNT	2060	1980	104	50-150

RL: Reporting Limit

Note: All positive results are confirmed by Biphenyl column

9/17/14
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METHOD SW8330
EXPLOSIVES

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=====
Client      : MATRIX ENVIRONMENTAL SERVICES      Date Collected: 08/20/14
Project     : MCCLELLAN, AL                     Date Received: 08/22/14
Batch No.   : 14H166                           Date Extracted: 08/26/14 19:29
Sample ID:  R30-103Q-006 (0.5-1.5)             Date Analyzed: 08/29/14 04:59
Lab Samp ID: H166-08                           Dilution Factor: 1
Lab File ID: XH28036A                          Matrix          : SOIL
Ext Btch ID: EXH019S                          % Moisture      : NA
Calib. Ref.: XH28028A                         Instrument ID   : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)
-----	-----	-----	-----
HMX	ND	400	100
RDX	ND	400	100
1,3,5-TNB	ND	400	100
1,3-DNB	ND	400	100
TETRYL	ND	400	100
NITROBENZENE	ND	400	100
2,4,6-TNT	ND	400	100
4-AM-2,6-DNT	ND	400	100
2-AM-4,6-DNT	ND	400	100
2,6-DNT	ND	400	100
2,4-DNT	ND	400	100
2-NITROTOLUENE	ND	400	100
3-NITROTOLUENE	ND	400	100
4-NITROTOLUENE	ND	400	100

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
-----	-----	-----	-----	-----
3,4-DNT	2350	2000	117	50-150

RL: Reporting Limit

Note: All positive results are confirmed by Biphenyl column

9/29/14
SW

METHOD SW8330
EXPLOSIVES

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=====
Client      : MATRIX ENVIRONMENTAL SERVICES      Date Collected: 08/20/14
Project     : MCCLELLAN, AL                     Date Received: 08/22/14
Batch No.   : 14H166                           Date Extracted: 08/26/14 19:29
Sample ID:  R30-880-012 (0-0.5)                Date Analyzed: 08/29/14 07:04
Lab Samp ID: H166-13                           Dilution Factor: 1
Lab File ID: XH28040A                          Matrix          : SOIL
Ext Btch ID: EXH019S                           % Moisture      : NA
Calib. Ref.: XH28039A                          Instrument ID   : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)
HMX	ND	400	100
RDX	ND	400	100
1,3,5-TNB	ND	400	100
1,3-DNB	ND	400	100
TETRYL	ND	400	100
NITROBENZENE	ND	400	100
2,4,6-TNT	ND	400	100
4-AM-2,6-DNT	ND	400	100
2-AM-4,6-DNT	ND	400	100
2,6-DNT	ND	400	100
2,4-DNT	ND	400	100
2-NITROTOLUENE	ND	400	100
3-NITROTOLUENE	ND	400	100
4-NITROTOLUENE	ND	400	100

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DNT	2230	2000	112	50-150

RL: Reporting Limit

Note: All positive results are confirmed by Biphenyl column

9/29/14
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METHOD SW8330
EXPLOSIVES

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=====
Client      : MATRIX ENVIRONMENTAL SERVICES
Project     : MCCLELLAN, AL
Batch No.   : 14H166
Sample ID   : R30-880-012 (0.5-1.5)
Lab Samp ID : H166-14
Lab File ID : XH28037A
Ext Btch ID : EXH019S
Calib. Ref. : XH28028A

Date Collected: 08/20/14
Date Received: 08/22/14
Date Extracted: 08/26/14 19:29
Date Analyzed: 08/29/14 05:30
Dilution Factor: 0.99
Matrix      : SOIL
% Moisture  : NA
Instrument ID : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)
-----	-----	-----	-----
HMX	ND	400	99
RDX	ND	400	99
1,3,5-TNB	ND	400	99
1,3-DNB	ND	400	99
TETRYL	ND	400	99
NITROBENZENE	ND	400	99
2,4,6-TNT	ND	400	99
4-AM-2,6-DNT	ND	400	99
2-AM-4,6-DNT	ND	400	99
2,6-DNT	ND	400	99
2,4-DNT	ND	400	99
2-NITROTOLUENE	ND	400	99
3-NITROTOLUENE	ND	400	99
4-NITROTOLUENE	ND	400	99

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
-----	-----	-----	-----	-----
3,4-DNT	2280	1980	115	50-150

RL: Reporting Limit

Note: All positive results are confirmed by Biphenyl column

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METHOD SW8330
EXPLOSIVES

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=====
Client      : MATRIX ENVIRONMENTAL SERVICES
Project     : MCCLELLAN, AL
Batch No.   : 14H166
Sample ID   : R30-103Q-007 (0-0.5)
Lab Samp ID : H166-18
Lab File ID : XH28038A
Ext Btch ID : EXH019S
Calib. Ref. : XH28028A

Date Collected: 08/20/14
Date Received: 08/22/14
Date Extracted: 08/26/14 19:29
Date Analyzed: 08/29/14 06:02
Dilution Factor: 0.99
Matrix      : SOIL
% Moisture  : NA
Instrument ID : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)
HMX	ND	400	99
RDX	ND	400	99
1,3,5-TNB	ND	400	99
1,3-DNB	ND	400	99
TETRYL	ND	400	99
NITROBENZENE	ND	400	99
2,4,6-TNT	ND	400	99
4-AM-2,6-DNT	ND	400	99
2-AM-4,6-DNT	ND	400	99
2,6-DNT	ND	400	99
2,4-DNT	ND	400	99
2-NITROTOLUENE	ND	400	99
3-NITROTOLUENE	ND	400	99
4-NITROTOLUENE	ND	400	99

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DNT	2260	1980	114	50-150

RL: Reporting Limit

Note: All positive results are confirmed by Biphenyl column

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METHOD SW8330
EXPLOSIVES

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=====
Client   : MATRIX ENVIRONMENTAL SERVICES      Date Collected: 08/20/14
Project  : MCCLELLAN, AL                     Date Received: 08/22/14
Batch No. : 14H166                           Date Extracted: 08/26/14 19:29
Sample ID: R30-103Q-007 (0.5-1.5)           Date Analyzed: 08/29/14 08:39
Lab Samp ID: H166-19                         Dilution Factor: 1
Lab File ID: XH28043A                       Matrix : SOIL
Ext Btch ID: EXH019S                        % Moisture : NA
Calib. Ref.: XH28039A                       Instrument ID : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)
-----	-----	-----	-----
HMX	ND	400	100
RDX	ND	400	100
1,3,5-TNB	ND	400	100
1,3-DNB	ND	400	100
TETRYL	ND	400	100
NITROBENZENE	ND	400	100
2,4,6-TNT	ND	400	100
4-AM-2,6-DNT	ND	400	100
2-AM-4,6-DNT	ND	400	100
2,6-DNT	ND	400	100
2,4-DNT	ND	400	100
2-NITROTOLUENE	ND	400	100
3-NITROTOLUENE	ND	400	100
4-NITROTOLUENE	ND	400	100

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
-----	-----	-----	-----	-----
3,4-DNT	2110	2000	105	50-150

RL: Reporting Limit

Note: All positive results are confirmed by Biphenyl column

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METHOD SW6020A
METALS BY ICP-MS

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	08/20/14
Project	: MCCLELLAN, AL	Date Received:	08/22/14
SDG NO.	: 14H166	Date Extracted:	09/05/14 17:30
Sample ID:	R30-B8Q-011 (0-0.5)	Date Analyzed:	09/22/14 20:07
Lab Samp ID:	H166-01N	Dilution Factor:	0.995
Lab File ID:	F6I18021	Matrix	: SOIL
Ext Btch ID:	IM1012S	% Moisture	: 7.7
Calib. Ref.:	F6I18016	Instrument ID	: T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	11700	108	10.8
Antimony	ND	0.539	0.216
Arsenic	5.43	0.539	0.108
Barium	19.3	0.539	0.108
Beryllium	0.179J	0.539	0.108
Cadmium	0.142J	0.539	0.108
Calcium	58.7J	108	21.6
Chromium	19.6	0.539	0.108
Cobalt	1.09	0.539	0.108
Copper	5.96	0.539	0.216
Iron	14300	108	10.8
Lead	7.34	0.539	0.108
Magnesium	212	108	21.6
Manganese	119	0.539	0.216
Nickel	3.58	0.539	0.108
Potassium	225	108	21.6
Selenium	0.114J	0.539	0.108
Silver	ND	0.539	0.108
Sodium	ND	108	21.6
Thallium	ND	0.539	0.108
Vanadium	31.2	0.539	0.270
Zinc	9.46	2.16	1.08

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METHOD SW6020A
METALS BY ICP-MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 08/20/14
Project : MCCLELLAN, AL	Date Received: 08/22/14
SDG NO. : 14H166	Date Extracted: 09/05/14 17:30
Sample ID: DUP180	Date Analyzed: 09/22/14 20:11
Lab Samp ID: H166-02N	Dilution Factor: 0.962
Lab File ID: F6I18022	Matrix : SOIL
Ext Btch ID: IMI012S	% Moisture : 8.0
Calib. Ref.: F6I18016	Instrument ID : T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	12800	105	10.5
Antimony	ND	0.523	0.209
Arsenic	5.63	0.523	0.105
Barium	21.2	0.523	0.105
Beryllium	0.188J	0.523	0.105
Cadmium	0.144J	0.523	0.105
Calcium	70.4J	105	20.9
Chromium	20.9	0.523	0.105
Cobalt	1.22	0.523	0.105
Copper	6.47	0.523	0.209
Iron	14800	105	10.5
Lead	8.08	0.523	0.105
Magnesium	239	105	20.9
Manganese	138	0.523	0.209
Nickel	4.06	0.523	0.105
Potassium	258	105	20.9
Selenium	0.119J	0.523	0.105
Silver	ND	0.523	0.105
Sodium	ND	105	20.9
Thallium	0.108J	0.523	0.105
Vanadium	33.1	0.523	0.261
Zinc	11.0	2.09	1.05



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METHOD SW6020A
METALS BY ICP-MS

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	08/20/14
Project	: MCCLELLAN, AL	Date Received:	08/22/14
SDG NO.	: 14H166	Date Extracted:	09/05/14 17:30
Sample ID:	R30-88Q-011 (0.5-1.5)	Date Analyzed:	09/22/14 20:16
Lab Samp ID:	H166-03N	Dilution Factor:	0.948
Lab File ID:	F6118023	Matrix	: SOIL
Ext Btch ID:	IMI012S	% Moisture	: 10.5
Calib. Ref.:	F6118016	Instrument ID	: T-1F6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	14300	106	10.6
Antimony	ND	0.530	0.212
Arsenic	6.04	0.530	0.106
Barium	22.1	0.530	0.106
Beryllium	0.202J	0.530	0.106
Cadmium	0.170J	0.530	0.106
Calcium	66.4J	106	21.2
Chromium	21.2	0.530	0.106
Cobalt	0.936	0.530	0.106
Copper	9.44	0.530	0.212
Iron	16000	106	10.6
Lead	8.03	0.530	0.106
Magnesium	238	106	21.2
Manganese	124	0.530	0.212
Nickel	4.34	0.530	0.106
Potassium	238	106	21.2
Selenium	0.121J	0.530	0.106
Silver	ND	0.530	0.106
Sodium	ND	106	21.2
Thallium	0.111J	0.530	0.106
Vanadium	34.9	0.530	0.265
Zinc	10.3	2.12	1.06

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METHOD SW6020A
METALS BY ICP-MS

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	08/20/14
Project	: MCCLELLAN, AL	Date Received:	08/22/14
SDG NO.	: 14H166	Date Extracted:	09/05/14 17:30
Sample ID:	R30-88Q-014	Date Analyzed:	09/22/14 20:20
Lab Samp ID:	H166-04N	Dilution Factor:	0.971
Lab File ID:	F6I18024	Matrix	: SOIL
Ext Btch ID:	IMI012S	% Moisture	: 8.5
Calib. Ref.:	F6I18016	Instrument ID	: T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	6520	106	10.6
Antimony	3.04	0.531	0.212
Arsenic	2.02	0.531	0.106
Barium	101	0.531	0.106
Beryllium	0.438J	0.531	0.106
Cadmium	0.127J	0.531	0.106
Calcium	280	106	21.2
Chromium	5.48	0.531	0.106
Cobalt	2.48	0.531	0.106
Copper	83.9	0.531	0.212
Iron	3990	106	10.6
Lead	578	0.531	0.106
Magnesium	259	106	21.2
Manganese	846	0.531	0.212
Nickel	9.65	0.531	0.106
Potassium	156	106	21.2
Selenium	0.216J	0.531	0.106
Silver	ND	0.531	0.106
Sodium	ND	106	21.2
Thallium	ND	0.531	0.106
Vanadium	8.28	0.531	0.265
Zinc	31.7	2.12	1.06

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METHOD SW6020A
METALS BY ICP-MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 08/20/14
Project : MCCLELLAN, AL	Date Received: 08/22/14
SDG NO. : 14H166	Date Extracted: 09/05/14 17:30
Sample ID: R30-88Q-016	Date Analyzed: 09/22/14 20:24
Lab Samp ID: H166-05M	Dilution Factor: 0.976
Lab File ID: F6118025	Matrix : SOIL
Ext Btch ID: IMI012S	% Moisture : 5.3
Calib. Ref.: F6118016	Instrument ID : T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	6460	103	10.3
Antimony	2.78	0.515	0.206
Arsenic	1.92	0.515	0.103
Barium	102	0.515	0.103
Beryllium	0.465J	0.515	0.103
Cadmium	0.156J	0.515	0.103
Calcium	257	103	20.6
Chromium	3.95	0.515	0.103
Cobalt	2.11	0.515	0.103
Copper	180	0.515	0.206
Iron	3150	103	10.3
Lead	634	0.515	0.103
Magnesium	284	103	20.6
Manganese	795	0.515	0.206
Nickel	13.1	0.515	0.103
Potassium	170	103	20.6
Selenium	0.158J	0.515	0.103
Silver	ND	0.515	0.103
Sodium	ND	103	20.6
Thallium	ND	0.515	0.103
Vanadium	6.71	0.515	0.258
Zinc	40.4	2.06	1.03

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METHOD SW6020A
METALS BY ICP-MS

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	08/20/14
Project	: MCCLELLAN, AL	Date Received:	08/22/14
SDG NO.	: 14H166	Date Extracted:	09/05/14 17:30
Sample ID:	R30-88Q-018	Date Analyzed:	09/22/14 20:28
Lab Samp ID:	H166-06N	Dilution Factor:	0.957
Lab File ID:	F6118026	Matrix	: SOIL
Ext Btch ID:	IMI012S	% Moisture	: 5.4
Calib. Ref.:	F6118016	Instrument ID	: T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	4600	101	10.1
Antimony	0.372J	0.506	0.202
Arsenic	1.41	0.506	0.101
Barium	62.8	0.506	0.101
Beryllium	0.415J	0.506	0.101
Cadmium	ND	0.506	0.101
Calcium	159	101	20.2
Chromium	3.35	0.506	0.101
Cobalt	1.57	0.506	0.101
Copper	55.3	0.506	0.202
Iron	2550	101	10.1
Lead	407	0.506	0.101
Magnesium	230	101	20.2
Manganese	213	0.506	0.202
Nickel	3.30	0.506	0.101
Potassium	137	101	20.2
Selenium	0.155J	0.506	0.101
Silver	ND	0.506	0.101
Sodium	ND	101	20.2
Thallium	ND	0.506	0.101
Vanadium	4.87	0.506	0.253
Zinc	22.5	2.02	1.01

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METHOD SW6020A
METALS BY ICP-MS

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	08/20/14
Project	: MCCLELLAN, AL	Date Received:	08/22/14
SDG NO.	: 14H166	Date Extracted:	09/05/14 17:30
Sample ID:	R30-103Q-006 (0-0.5)	Date Analyzed:	09/22/14 20:45
Lab Samp ID:	H166-07N	Dilution Factor:	0.962
Lab File ID:	F6118030	Matrix	: SOIL
Ext Btch ID:	IMI0125	% Moisture	: 9.6
Calib. Ref.:	F6118028	Instrument ID	: T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	19500	106	10.6
Antimony	0.312J	0.532	0.213
Arsenic	6.02	0.532	0.106
Barium	86.5	0.532	0.106
Beryllium	0.518J	0.532	0.106
Cadmium	0.243J	0.532	0.106
Calcium	222	106	21.3
Chromium	20.0	0.532	0.106
Cobalt	7.17	0.532	0.106
Copper	8.82	0.532	0.213
Iron	17000	106	10.6
Lead	36.9	0.532	0.106
Magnesium	543	106	21.3
Manganese	779	0.532	0.213
Nickel	8.79	0.532	0.106
Potassium	536	106	21.3
Selenium	0.253J	0.532	0.106
Silver	ND	0.532	0.106
Sodium	ND	106	21.3
Thallium	0.277J	0.532	0.106
Vanadium	35.3	0.532	0.266
Zinc	23.6	2.13	1.06

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METHOD SW6020A
METALS BY ICP-MS

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	08/20/14
Project	: MCCLELLAN, AL	Date Received:	08/22/14
SDG NO.	: 14H166	Date Extracted:	09/05/14 17:30
Sample ID:	R30-103Q-006 (0.5-1.5)	Date Analyzed:	09/22/14 20:50
Lab Samp ID:	H166-08N	Dilution Factor:	0.985
Lab File ID:	F6I18031	Matrix	: SOIL
Ext Btch ID:	IMI012S	% Moisture	: 9.9
Calib. Ref.:	F6I18028	Instrument ID	: T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	21900	109	10.9
Antimony	ND	0.547	0.219
Arsenic	6.20	0.547	0.109
Barium	73.8	0.547	0.109
Beryllium	0.415J	0.547	0.109
Cadmium	0.229J	0.547	0.109
Calcium	203	109	21.9
Chromium	18.0	0.547	0.109
Cobalt	6.82	0.547	0.109
Copper	7.99	0.547	0.219
Iron	18300	109	10.9
Lead	18.7	0.547	0.109
Magnesium	581	109	21.9
Manganese	379	0.547	0.219
Nickel	8.87	0.547	0.109
Potassium	546	109	21.9
Selenium	0.231J	0.547	0.109
Silver	ND	0.547	0.109
Sodium	ND	109	21.9
Thallium	0.263J	0.547	0.109
Vanadium	39.1	0.547	0.273
Zinc	19.5	2.19	1.09

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METHOD SW6020A
METALS BY ICP-MS

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	08/20/14
Project	: MCCLELLAN, AL	Date Received:	08/22/14
SDG NO.	: 14H166	Date Extracted:	09/05/14 17:30
Sample ID:	R30-103Q-009	Date Analyzed:	09/22/14 20:54
Lab Samp ID:	H166-09N	Dilution Factor:	0.966
Lab File ID:	F6I18032	Matrix	: SOIL
Ext Btch ID:	IMI0125	% Moisture	: 6.1
Calib. Ref.:	F6I18028	Instrument ID	: T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	5040	103	10.3
Antimony	0.247J	0.514	0.206
Arsenic	2.39	0.514	0.103
Barium	36.1	0.514	0.103
Beryllium	0.178J	0.514	0.103
Cadmium	ND	0.514	0.103
Calcium	255	103	20.6
Chromium	13.3	0.514	0.103
Cobalt	2.66	0.514	0.103
Copper	4.22	0.514	0.206
Iron	7390	103	10.3
Lead	8.21	0.514	0.103
Magnesium	249	103	20.6
Manganese	131	0.514	0.206
Nickel	3.17	0.514	0.103
Potassium	173	103	20.6
Selenium	0.118J	0.514	0.103
Silver	ND	0.514	0.103
Sodium	ND	103	20.6
Thallium	ND	0.514	0.103
Vanadium	12.3	0.514	0.257
Zinc	13.7	2.06	1.03

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METHOD SW6020A
METALS BY ICP-MS

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	08/20/14
Project	: MCCLELLAN, AL	Date Received:	08/22/14
SDG NO.	: 14H166	Date Extracted:	09/05/14 17:30
Sample ID:	R30-103Q-010	Date Analyzed:	09/22/14 20:58
Lab Samp ID:	H166-10N	Dilution Factor:	1.00
Lab File ID:	F6I18033	Matrix	: SOIL
Ext Btch ID:	IMI0125	% Moisture	: 8.4
Calib. Ref.:	F6I18028	Instrument ID	: T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	10900	109	10.9
Antimony	0.293J	0.546	0.218
Arsenic	4.12	0.546	0.109
Barium	67.5	0.546	0.109
Beryllium	0.359J	0.546	0.109
Cadmium	0.154J	0.546	0.109
Calcium	619	109	21.8
Chromium	12.8	0.546	0.109
Cobalt	3.59	0.546	0.109
Copper	16.0	0.546	0.218
Iron	10500	109	10.9
Lead	16.1	0.546	0.109
Magnesium	377	109	21.8
Manganese	1070	0.546	0.218
Nickel	4.93	0.546	0.109
Potassium	258	109	21.8
Selenium	0.192J	0.546	0.109
Silver	ND	0.546	0.109
Sodium	ND	109	21.8
Thallium	0.183J	0.546	0.109
Vanadium	21.4	0.546	0.273
Zinc	23.8	2.18	1.09

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METHOD SW6020A
METALS BY ICP-MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 08/20/14
Project : MCCLELLAN, AL	Date Received: 08/22/14
SDG NO. : 14H166	Date Extracted: 09/05/14 17:30
Sample ID: R30-1030-014	Date Analyzed: 09/22/14 21:03 # 09/23/14 14:04
Lab Samp ID: H166-11N #H166-11I	Dilution Factor: 0.966 # 4.83
Lab File ID: F6118034 #F6119018	Matrix : SOIL
Ext Btch ID: IM1012S	% Moisture : 10.1
Calib. Ref.: F6118028 #F6119016	Instrument ID : T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	15800	107	10.7
Antimony	ND	0.537	0.215
Arsenic	5.45	0.537	0.107
Barium	178	0.537	0.107
Beryllium	1.11	0.537	0.107
Cadmium	0.322J	0.537	0.107
Calcium	919	107	21.5
Chromium	9.96	0.537	0.107
Cobalt	6.16	0.537	0.107
Copper	5.46	0.537	0.215
Iron	9090	107	10.7
Lead	26.9	0.537	0.107
Magnesium	544	107	21.5
# Manganese	2880	2.69	1.07
Nickel	7.77	0.537	0.107
Potassium	408	107	21.5
Selenium	0.316J	0.537	0.107
Silver	ND	0.537	0.107
Sodium	ND	107	21.5
Thallium	0.238J	0.537	0.107
Vanadium	19.9	0.537	0.269
Zinc	20.9	2.15	1.07

Members of the Associated File

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METHOD SW6020A
METALS BY ICP-MS

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	08/20/14
Project	: MCCLELLAN, AL	Date Received:	08/22/14
SDG NO.	: 14H166	Date Extracted:	09/05/14 17:30
Sample ID:	R30-103Q-016	Date Analyzed:	09/22/14 21:07
Lab Samp ID:	H166-12N	Dilution Factor:	0.971
Lab File ID:	F6I18035	Matrix	: SOIL
Ext Btch ID:	IMI012S	% Moisture	: 5.8
Calib. Ref.:	F6I18028	Instrument ID	: T-1F6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	11800	103	10.3
Antimony	0.593	0.515	0.206
Arsenic	2.53	0.515	0.103
Barium	23.2	0.515	0.103
Beryllium	0.246J	0.515	0.103
Cadmium	ND	0.515	0.103
Calcium	118	103	20.6
Chromium	6.84	0.515	0.103
Cobalt	3.09	0.515	0.103
Copper	42.4	0.515	0.206
Iron	6470	103	10.3
Lead	137	0.515	0.103
Magnesium	265	103	20.6
Manganese	208	0.515	0.206
Nickel	8.03	0.515	0.103
Potassium	215	103	20.6
Selenium	ND	0.515	0.103
Silver	ND	0.515	0.103
Sodium	ND	103	20.6
Thallium	0.122J	0.515	0.103
Vanadium	14.3	0.515	0.258
Zinc	14.4	2.06	1.03

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METHOD SW6020A
METALS BY ICP-MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 08/20/14
Project : MCCLELLAN, AL	Date Received: 08/22/14
SDG NO. : 14H166	Date Extracted: 09/05/14 17:30
Sample ID: R30-88Q-012 (0-0.5)	Date Analyzed: 09/22/14 21:40
Lab Samp ID: H166-13N	Dilution Factor: 0.966
Lab File ID: F6118043	Matrix : SOIL
Ext Btch ID: IMI012S	% Moisture : 4.6
Calib. Ref.: F6118040	Instrument ID : T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	8010	101	10.1
Antimony	2.48 <i>SM</i>	0.506	0.203
Arsenic	2.49	0.506	0.101
Barium	134	0.506	0.101
Beryllium	0.600	0.506	0.101
Cadmium	0.223J	0.506	0.101
Calcium	255	101	20.3
Chromium	5.33	0.506	0.101
Cobalt	2.61	0.506	0.101
Copper	134	0.506	0.203
Iron	4070	101	10.1
Lead	612	0.506	0.101
Magnesium	367	101	20.3
Manganese	1210	0.506	0.203
Nickel	17.6	0.506	0.101
Potassium	200	101	20.3
Selenium	0.197J	0.506	0.101
Silver	ND	0.506	0.101
Sodium	ND	101	20.3
Thallium	0.117J	0.506	0.101
Vanadium	8.79	0.506	0.253
Zinc	34.2	2.03	1.01

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METHOD SW6020A
METALS BY ICP-MS

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	08/20/14
Project	: MCCLELLAN, AL	Date Received:	08/22/14
SDG NO.	: 14H166	Date Extracted:	09/05/14 17:30
Sample ID:	R30-88Q-012 (0.5-1.5)	Date Analyzed:	09/22/14 21:45
Lab Samp ID:	H166-14N	Dilution Factor:	0.995
Lab File ID:	F6118044	Matrix	: SOIL
Ext Btch ID:	IMI012S	% Moisture	: 3.4
Calib. Ref.:	F6118040	Instrument ID	: T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	7700	103	10.3
Antimony	0.820	0.515	0.206
Arsenic	2.26	0.515	0.103
Barium	96.9	0.515	0.103
Beryllium	0.464J	0.515	0.103
Cadmium	0.149J	0.515	0.103
Calcium	138	103	20.6
Chromium	6.67	0.515	0.103
Cobalt	2.45	0.515	0.103
Copper	15.7	0.515	0.206
Iron	4590	103	10.3
Lead	89.4	0.515	0.103
Magnesium	344	103	20.6
Manganese	567	0.515	0.206
Nickel	6.81	0.515	0.103
Potassium	173	103	20.6
Selenium	0.168J	0.515	0.103
Silver	ND	0.515	0.103
Sodium	ND	103	20.6
Thallium	ND	0.515	0.103
Vanadium	9.96	0.515	0.258
Zinc	14.1	2.06	1.03

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METHOD SW6020A
METALS BY ICP-MS

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	08/20/14
Project	: MCCLELLAN, AL	Date Received:	08/22/14
SDG NO.	: 14H166	Date Extracted:	09/05/14 17:30
Sample ID:	R30-88Q-013	Date Analyzed:	09/22/14 21:49
Lab Samp ID:	H166-15N	Dilution Factor:	0.976
Lab File ID:	F6I18045	Matrix	: SOIL
Ext Btch ID:	IMI012S	% Moisture	: 9.0
Calib. Ref.:	F6I18040	Instrument ID	: T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	13600	107	10.7
Antimony	0.320J	0.536	0.215
Arsenic	5.62	0.536	0.107
Barium	19.7	0.536	0.107
Beryllium	0.181J	0.536	0.107
Cadmium	0.171J	0.536	0.107
Calcium	211	107	21.5
Chromium	26.3	0.536	0.107
Cobalt	1.33	0.536	0.107
Copper	10.2	0.536	0.215
Iron	15600	107	10.7
Lead	40.4	0.536	0.107
Magnesium	248	107	21.5
Manganese	158	0.536	0.215
Nickel	4.10	0.536	0.107
Potassium	258	107	21.5
Selenium	0.133J	0.536	0.107
Silver	ND	0.536	0.107
Sodium	ND	107	21.5
Thallium	ND	0.536	0.107
Vanadium	34.2	0.536	0.268
Zinc	10.8	2.15	1.07

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Z

METHOD SW6020A
METALS BY ICP-MS

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	08/20/14
Project	: MCCLELLAN, AL	Date Received:	08/22/14
SDG NO.	: 14H166	Date Extracted:	09/05/14 17:30
Sample ID:	DUP181	Date Analyzed:	09/22/14 21:53
Lab Samp ID:	H166-16N	Dilution Factor:	0.990
Lab File ID:	F6118046	Matrix	: SOIL
Ext Btch ID:	IMI012S	% Moisture	: 8.0
Calib. Ref.:	F6118040	Instrument ID	: T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	6400	108	10.8
Antimony	2.67	0.538	0.215
Arsenic	1.98	0.538	0.108
Barium	103	0.538	0.108
Beryllium	0.445J	0.538	0.108
Cadmium	0.110J	0.538	0.108
Calcium	288	108	21.5
Chromium	5.53	0.538	0.108
Cobalt	2.43	0.538	0.108
Copper	78.8	0.538	0.215
Iron	3960	108	10.8
Lead	624	0.538	0.108
Magnesium	258	108	21.5
Manganese	823	0.538	0.215
Nickel	9.52	0.538	0.108
Potassium	158	108	21.5
Selenium	0.233J	0.538	0.108
Silver	ND	0.538	0.108
Sodium	ND	108	21.5
Thallium	ND	0.538	0.108
Vanadium	8.33	0.538	0.269
Zinc	33.5	2.15	1.08

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METHOD SW6020A
METALS BY ICP-MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 08/20/14
Project : MCCLELLAN, AL	Date Received: 08/22/14
SDG NO. : 14H166	Date Extracted: 09/09/14 15:45
Sample ID: R30-880-017	Date Analyzed: 09/22/14 22:53
Lab Samp ID: H166-17N	Dilution Factor: 0.985
Lab File ID: F6I18060	Matrix : SOIL
Ext Btch ID: IMI014S	% Moisture : 6.6
Calib. Ref.: F6I18052	Instrument ID : T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
.....			
Aluminum	8320 JM	105	10.5
Antimony	0.644 JM	0.527	0.211
Arsenic	2.70	0.527	0.105
Barium	213	0.527	0.105
Beryllium	0.568	0.527	0.105
Cadmium	0.151J	0.527	0.105
Calcium	1800	105	21.1
Chromium	6.68	0.527	0.105
Cobalt	3.35	0.527	0.105
Copper	38.6	0.527	0.211
Iron	4600	105	10.5
Lead	212	0.527	0.105
Magnesium	417	105	21.1
Manganese	1220	0.527	0.211
Nickel	11.0	0.527	0.105
Potassium	238	105	21.1
Selenium	0.218J	0.527	0.105
Silver	ND	0.527	0.105
Sodium	ND	105	21.1
Thallium	0.132J	0.527	0.105
Vanadium	10.4	0.527	0.264
Zinc	22.6	2.11	1.05

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METHOD SW6020A
METALS BY ICP-MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 08/20/14
Project : MCCLELLAN, AL	Date Received: 08/22/14
SDG NO. : 14H166	Date Extracted: 09/05/14 17:30
Sample ID: R30-103Q-007 (0-0.5)	Date Analyzed: 09/22/14 21:57 # 09/23/14 14:09
Lab Samp ID: H166-18N #H166-18I	Dilution Factor: 0.948 # 4.74
Lab File ID: F6I18047 #F6I19019	Matrix : SOIL
Ext Btch ID: IMI0125	% Moisture : 6.1
Calib. Ref.: F6I18040 #F6I19016	Instrument ID : T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	4660	101	10.1
Antimony	5.62	0.505	0.202
Arsenic	1.78	0.505	0.101
Barium	63.9	0.505	0.101
Beryllium	0.303J	0.505	0.101
Cadmium	ND	0.505	0.101
Calcium	304	101	20.2
Chromium	5.18	0.505	0.101
Cobalt	3.14	0.505	0.101
Copper	263	0.505	0.202
Iron	3350	101	10.1
# Lead	1480	2.52	0.505
Magnesium	234	101	20.2
Manganese	462	0.505	0.202
Nickel	42.4	0.505	0.101
Potassium	184	101	20.2
Selenium	0.139J	0.505	0.101
Silver	ND	0.505	0.101
Sodium	ND	101	20.2
Thallium	0.103J	0.505	0.101
Vanadium	7.27	0.505	0.252
Zinc	29.1	2.02	1.01

Members of the Associated File

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METHOD SW6020A
METALS BY ICP-MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 08/20/14
Project : MCCLELLAN, AL	Date Received: 08/22/14
SOG NO. : 14H166	Date Extracted: 09/05/14 17:30
Sample ID: R30-103Q-007 (0.5-1.5)	Date Analyzed: 09/22/14 22:02
Lab Samp ID: H166-19N	Dilution Factor: 0.962
Lab File ID: F6118048	Matrix : SOIL
Ext Btch ID: IMI012S	% Moisture : 4.2
Calib. Ref.: F6118040	Instrument ID : T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	5220	100	10.0
Antimony	2.59	0.502	0.201
Arsenic	1.59	0.502	0.100
Barium	59.6	0.502	0.100
Beryllium	0.289J	0.502	0.100
Cadmium	0.105J	0.502	0.100
Calcium	222	100	20.1
Chromium	4.86	0.502	0.100
Cobalt	2.83	0.502	0.100
Copper	66.3	0.502	0.201
Iron	3140	100	10.0
Lead	464	0.502	0.100
Magnesium	257	100	20.1
Manganese	303	0.502	0.201
Nickel	16.4	0.502	0.100
Potassium	173	100	20.1
Selenium	0.131J	0.502	0.100
Silver	ND	0.502	0.100
Sodium	ND	100	20.1
Thallium	ND	0.502	0.100
Vanadium	7.15	0.502	0.251
Zinc	19.6	2.01	1.00



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METHOD SW6020A
METALS BY ICP-MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 08/20/14
Project : MCCLELLAN, AL	Date Received: 08/22/14
SDG NO. : 14H166	Date Extracted: 09/05/14 17:30
Sample ID: R30-103Q-012	Date Analyzed: 09/22/14 22:06 # 09/23/14 14:13
Lab Samp ID: H166-20N #H166-20I	Dilution Factor: 0.962 # 4.81
Lab File ID: F6118049 #F6119020	Matrix : SOIL
Ext Btch ID: IMI012S	% Moisture : 11.4
Calib. Ref.: F6118040 #F6119016	Instrument ID : T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	21700	109	10.9
Antimony	0.428J	0.543	0.217
Arsenic	6.66	0.543	0.109
Barium	161	0.543	0.109
Beryllium	0.697	0.543	0.109
Cadmium	0.251J	0.543	0.109
Calcium	827	109	21.7
Chromium	14.1	0.543	0.109
Cobalt	7.84	0.543	0.109
Copper	10.9	0.543	0.217
Iron	14900	109	10.9
Lead	48.2	0.543	0.109
Magnesium	670	109	21.7
# Manganese	2070	2.71	1.09
Nickel	10.2	0.543	0.109
Potassium	562	109	21.7
Selenium	0.310J	0.543	0.109
Silver	ND	0.543	0.109
Sodium	ND	109	21.7
Thallium	0.306J	0.543	0.109
Vanadium	31.9	0.543	0.271
Zinc	35.7	2.17	1.09

Members of the Associated File

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METHOD SW6020A
METALS BY ICP-MS

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	08/20/14
Project	: MCCLELLAN, AL	Date Received:	08/22/14
SDG NO.	: 14H166	Date Extracted:	09/05/14 17:30
Sample ID:	DUP183	Date Analyzed:	09/22/14 22:10
Lab Samp ID:	H166-21N	Dilution Factor:	0.980
Lab File ID:	F6118050	Matrix	: SOIL
Ext Btch ID:	IMI012S	% Moisture	: 8.0
Calib. Ref.:	F6118040	Instrument ID	: T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
.....			
Aluminum	12200	107	10.7
Antimony	0.686	0.533	0.213
Arsenic	2.60	0.533	0.107
Barium	24.0	0.533	0.107
Beryllium	0.252J	0.533	0.107
Cadmium	0.107J	0.533	0.107
Calcium	136	107	21.3
Chromium	6.86	0.533	0.107
Cobalt	3.04	0.533	0.107
Copper	48.6	0.533	0.213
Iron	6640	107	10.7
Lead	151	0.533	0.107
Magnesium	272	107	21.3
Manganese	207	0.533	0.213
Nickel	8.78	0.533	0.107
Potassium	230	107	21.3
Selenium	ND	0.533	0.107
Silver	ND	0.533	0.107
Sodium	ND	107	21.3
Thallium	0.125J	0.533	0.107
Vanadium	14.7	0.533	0.266
Zinc	17.2	2.13	1.07

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METHOD 7471A
MERCURY BY COLD VAPOR

Client : MATRIX ENVIRONMENTAL SERVICES
Project : MCLELLAN, AL
Batch No. : 14H166

Matrix : SOIL
InstrumentID : 47

CLIENT SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/kg)	DIL'N FACTOR	MOIST (%)	LOG (mg/kg)	LOD (mg/kg)	ANALYSIS DATE/TIME	PREPARATION DATE/TIME	DATA FILE ID	CAL REF	PREP BATCH	COLLECTION DATE/TIME	RECEIVED DATE/TIME
MBLK1S	HG10185B	ND	1	NA	0.1	0.02	09/12/1411:04	09/11/1418:00	M471008011	M471008	HG1018S	NA	NA
LCS1S	HG10185L	0.379	1	NA	0.0998	0.02	09/12/1411:06	09/11/1418:00	M471008012	M471008	HG1018S	NA	NA
LCD1S	HG10185C	0.376	1	NA	0.0998	0.02	09/12/1411:08	09/11/1418:00	M471008013	M471008	HG1018S	NA	NA
R30-880-012 (0-0.5)	H166-13	0.0349J	1	4.6	0.105	0.021	09/12/1411:14	09/11/1418:00	M471008015	M471008	HG1018S	08/20/1409:40	08/22/14
R30-880-012 (0-0.5)MS	H166-13M	0.437	1	4.6	0.105	0.021	09/12/1411:18	09/11/1418:00	M471008017	M471008	HG1018S	08/20/1409:40	08/22/14
R30-880-012 (0-0.5)MSD	H166-13S	0.440	1	4.6	0.104	0.0209	09/12/1411:20	09/11/1418:00	M471008018	M471008	HG1018S	08/20/1409:40	08/22/14
R30-880-017	H166-17	0.0378J	1	6.6	0.107	0.0214	09/12/1411:24	09/11/1418:00	M471008020	M471008	HG1018S	08/20/1411:10	08/22/14
R30-880-017MS	H166-17M	0.452	1	6.6	0.107	0.0213	09/12/1411:32	09/11/1418:00	M471008024	M471008	HG1018S	08/20/1411:10	08/22/14
R30-880-017MSD	H166-17S	0.450	1	6.6	0.106	0.0213	09/12/1411:34	09/11/1418:00	M471008025	M471008	HG1018S	08/20/1411:45	08/22/14
R30-880-011 (0-0.5)	H166-01	0.0334J	1	7.7	0.108	0.0217	09/12/1411:36	09/11/1418:00	M471008027	M471008	HG1018S	08/20/1411:50	08/22/14
DUP180	H166-02	0.0411J	1	8.0	0.108	0.0216	09/12/1411:38	09/11/1418:00	M471008026	M471008	HG1018S	08/20/1411:20	08/22/14
R30-880-011 (0.5-1.5)	H166-03	0.0349J	1	10.5	0.111	0.0222	09/12/1411:40	09/11/1418:00	M471008028	M471008	HG1018S	08/20/1413:50	08/22/14
R30-880-014	H166-04	0.0406J	1	8.5	0.109	0.0218	09/12/1411:42	09/11/1418:00	M471008029	M471008	HG1018S	08/20/1414:25	08/22/14
R30-880-016	H166-05	0.0412J	1	5.3	0.105	0.021	09/12/1411:44	09/11/1418:00	M471008030	M471008	HG1018S	08/20/1414:50	08/22/14
R30-880-018	H166-06	0.0401J	1	5.4	0.106	0.0212	09/12/1411:46	09/11/1418:00	M471008031	M471008	HG1018S	08/20/1414:50	08/22/14
R30-1030-006 (0-0.5)	H166-07	0.0605J	1	9.6	0.111	0.0221	09/12/1411:48	09/11/1418:00	M471008032	M471008	HG1018S	08/20/1414:50	08/22/14
R30-1030-006 (0.5-1.5)	H166-08	0.0827J	1	9.9	0.11	0.0219	09/12/1411:54	09/11/1418:00	M471008035	M471008	HG1018S	08/20/1414:25	08/22/14
R30-1030-009	H166-09	0.0305J	1	6.1	0.106	0.0212	09/12/1411:56	09/11/1418:00	M471008036	M471008	HG1018S	08/20/1414:50	08/22/14
R30-1030-010	H166-10	0.0540J	1	8.4	0.109	0.0218	09/12/1411:58	09/11/1418:00	M471008037	M471008	HG1018S	08/20/1414:50	08/22/14
R30-1030-014	H166-11	0.0557J	1	10.1	0.111	0.0221	09/12/1412:00	09/11/1418:00	M471008038	M471008	HG1018S	08/20/1414:50	08/22/14
R30-1030-016	H166-12	0.0561J	1	5.8	0.105	0.0209	09/12/1412:02	09/11/1418:00	M471008039	M471008	HG1018S	08/20/1414:50	08/22/14
R30-880-012 (0.5-1.5)	H166-14	0.0316J	1	3.4	0.104	0.0207	09/12/1412:04	09/11/1418:00	M471008040	M471008	HG1018S	08/20/1414:50	08/22/14
R30-880-013	H166-15	0.0407J	1	9.0	0.11	0.0219	09/12/1412:06	09/11/1418:00	M471008041	M471008	HG1018S	08/20/1414:50	08/22/14
DUP181	H166-16	0.0420J	1	8.0	0.106	0.0212	09/12/1412:09	09/11/1418:00	M471008042	M471008	HG1018S	08/20/1414:50	08/22/14
R30-1030-007 (0-0.5)	H166-18	0.0248J	1	6.1	0.106	0.0213	09/12/1412:10	09/11/1418:00	M471008043	M471008	HG1018S	08/20/1414:50	08/22/14
R30-1030-007 (0.5-1.5)	H166-19	0.0260J	1	4.2	0.104	0.0208	09/12/1412:13	09/11/1418:00	M471008044	M471008	HG1018S	08/20/1414:50	08/22/14
R30-1030-012	H166-20	0.0948J	1	11.4	0.113	0.0226	09/12/1412:19	09/11/1418:00	M471008047	M471008	HG1018S	08/20/1414:10	08/22/14
MBLK2S	HG10205B	ND	1	NA	0.1	0.02	09/12/1413:36	09/11/1418:30	M471008085	M471008	HG1020S	NA	NA
LCS2S	HG10205L	0.385	1	NA	0.1	0.02	09/12/1413:38	09/11/1418:30	M471008086	M471008	HG1020S	NA	NA
LCD2S	HG10205C	0.388	1	NA	0.1	0.02	09/12/1413:40	09/11/1418:30	M471008087	M471008	HG1020S	NA	NA
DUP183	H166-21	0.0493J	1	8.0	0.107	0.0213	09/12/1414:30	09/11/1418:30	M471008112	M471008	HG1020S	08/20/1410:00	08/22/14

9/29/14
N

METHOD SW8330
EXPLOSIVES

```

=====
Client      : MATRIX ENVIRONMENTAL SERVICES      Date Collected: 08/21/14
Project     : MCCLELLAN, AL                     Date Received: 08/22/14
Batch No.   : 14H167                           Date Extracted: 08/26/14 19:29
Sample ID   : R30-103Q-001 (0-0.5)             Date Analyzed: 08/29/14 09:10
Lab Samp ID : H167-02                          Dilution Factor: 1
Lab File ID : XH28044A                        Matrix       : SOIL
Ext Btch ID : EXH019S                        % Moisture    : NA
Calib. Ref. : XH28039A                       Instrument ID : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)
-----	-----	-----	-----
HMX	ND	400	100
RDX	ND	400	100
1,3,5-TNB	ND	400	100
1,3-DNB	ND	400	100
TETRYL	ND	400	100
NITROBENZENE	ND	400	100
2,4,6-TNT	ND	400	100
4-AM-2,6-DNT	ND	400	100
2-AM-4,6-DNT	ND	400	100
2,6-DNT	ND	400	100
2,4-DNT	ND	400	100
2-NITROTOLUENE	ND	400	100
3-NITROTOLUENE	ND	400	100
4-NITROTOLUENE	ND	400	100

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
-----	-----	-----	-----	-----
3,4-DNT	2220	2000	111	50-150

RL: Reporting Limit

Note: All positive results are confirmed by Biphenyl column

9/25/14
SW

6004

METHOD SW8330
EXPLOSIVES

```

=====
Client      : MATRIX ENVIRONMENTAL SERVICES      Date Collected: 08/21/14
Project     : MCCLELLAN, AL                     Date Received: 08/22/14
Batch No.   : 14H167                           Date Extracted: 08/26/14 19:29
Sample ID:  R30-103Q-001 (0.5-1.5)             Date Analyzed: 08/29/14 09:42
Lab Samp ID: H167-03                           Dilution Factor: 0.99
Lab File ID: XH28045A                           Matrix       : SOIL
Ext Btch ID: EXH019S                           % Moisture    : NA
Calib. Ref.: XH28039A                           Instrument ID : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)
HMX	ND	400	99
RDX	ND	400	99
1,3,5-TNB	ND	400	99
1,3-DNB	ND	400	99
TETRYL	ND	400	99
NITROBENZENE	ND	400	99
2,4,6-TNT	ND	400	99
4-AM-2,6-DNT	ND	400	99
2-AM-4,6-DNT	ND	400	99
2,6-DNT	ND	400	99
2,4-DNT	ND	400	99
2-NITROTOLUENE	ND	400	99
3-NITROTOLUENE	ND	400	99
4-NITROTOLUENE	ND	400	99

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DNT	2310	1980	116	50-150

RL: Reporting Limit

Note: All positive results are confirmed by Biphenyl column

912114
L

6005

METHOD SW8330
EXPLOSIVES

```

=====
Client      : MATRIX ENVIRONMENTAL SERVICES      Date Collected: 08/21/14
Project     : MCCLELLAN, AL                     Date Received: 08/22/14
Batch No.   : 14H167                           Date Extracted: 08/26/14 19:29
Sample ID   : R30-103Q-002 (0-0.5)             Date Analyzed: 08/29/14 10:13
Lab Samp ID : H167-04                           Dilution Factor: 1
Lab File ID : XH28046A                         Matrix       : SOIL
Ext Btch ID : EXH019S                          % Moisture    : NA
Calib. Ref. : XH28039A                        Instrument ID : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)
-----	-----	-----	-----
HMX	ND	400	100
RDX	ND	400	100
1,3,5-TNB	ND	400	100
1,3-DNB	ND	400	100
TETRYL	ND	400	100
NITROBENZENE	ND	400	100
2,4,6-TNT	ND	400	100
4-AM-2,6-DNT	ND	400	100
2-AM-4,6-DNT	ND	400	100
2,6-DNT	ND	400	100
2,4-DNT	ND	400	100
2-NITROTOLUENE	ND	400	100
3-NITROTOLUENE	ND	400	100
4-NITROTOLUENE	ND	400	100

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
-----	-----	-----	-----	-----
3,4-DNT	2130	2000	106	50-150

RL: Reporting Limit

Note: All positive results are confirmed by Biphenyl column

9/29/14

L

6006

METHOD SW8330
EXPLOSIVES

```

=====
Client      : MATRIX ENVIRONMENTAL SERVICES      Date Collected: 08/21/14
Project     : MCCLELLAN, AL                     Date Received: 08/22/14
Batch No.   : 14H167                           Date Extracted: 08/26/14 19:29
Sample ID:  R30-103Q-002 (0.5-1.5)             Date Analyzed: 08/29/14 10:45
Lab Samp ID: H167-05                           Dilution Factor: 1
Lab File ID: XH28047A                          Matrix       : SOIL
Ext Btch ID: EXH019S                           % Moisture    : NA
Calib. Ref.: XH28039A                          Instrument ID : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)
HMX	ND	400	100
RDX	ND	400	100
1,3,5-TNB	ND	400	100
1,3-DNB	ND	400	100
TETRYL	ND	400	100
NITROBENZENE	ND	400	100
2,4,6-TNT	ND	400	100
4-AM-2,6-DNT	ND	400	100
2-AM-4,6-DNT	ND	400	100
2,6-DNT	ND	400	100
2,4-DNT	ND	400	100
2-NITROTOLUENE	ND	400	100
3-NITROTOLUENE	ND	400	100
4-NITROTOLUENE	ND	400	100

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DNT	2290	2000	115	50-150

RL: Reporting Limit

Note: All positive results are confirmed by Biphenyl column

9/29/14
W

METHOD SW8330
EXPLOSIVES

```

=====
Client      : MATRIX ENVIRONMENTAL SERVICES      Date Collected: 08/21/14
Project     : MCCLELLAN, AL                     Date Received: 08/22/14
Batch No.   : 14H167                           Date Extracted: 08/26/14 19:29
Sample ID:  R30-103Q-003 (0-0.5)               Date Analyzed: 08/29/14 11:16
Lab Samp ID: H167-06                           Dilution Factor: 1
Lab File ID: XH28048A                          Matrix          : SOIL
Ext Btch ID: EXH019S                           % Moisture      : NA
Calib. Ref.: XH28039A                          Instrument ID   : T-081
=====

```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)
-----	-----	-----	-----
HMX	ND	400	100
RDX	ND	400	100
1,3,5-TNB	ND	400	100
1,3-DNB	ND	400	100
TETRYL	ND	400	100
NITROBENZENE	ND	400	100
2,4,6-TNT	ND	400	100
4-AM-2,6-DNT	ND	400	100
2-AM-4,6-DNT	ND	400	100
2,6-DNT	ND	400	100
2,4-DNT	ND	400	100
2-NITROTOLUENE	ND	400	100
3-NITROTOLUENE	ND	400	100
4-NITROTOLUENE	ND	400	100

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
-----	-----	-----	-----	-----
3,4-DNT	2230	2000	111	50-150

RL: Reporting Limit

Note: All positive results are confirmed by Biphenyl column

9/29/14
SW

METHOD SW8330
EXPLOSIVES

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=====
Client      : MATRIX ENVIRONMENTAL SERVICES      Date Collected: 08/21/14
Project     : MCCLELLAN, AL                     Date Received: 08/22/14
Batch No.   : 14H167                           Date Extracted: 08/26/14 19:29
Sample ID   : R30-103Q-003 (0.5-1.5)           Date Analyzed: 08/29/14 11:48
Lab Samp ID : H167-07                          Dilution Factor: 1
Lab File ID : XH28049A                        Matrix       : SOIL
Ext Btch ID : EXH019S                        % Moisture    : NA
Calib. Ref.: XH28039A                        Instrument ID : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)
HMX	ND	400	100
RDX	ND	400	100
1,3,5-TNB	ND	400	100
1,3-DNB	ND	400	100
TETRYL	ND	400	100
NITROBENZENE	ND	400	100
2,4,6-TNT	ND	400	100
4-AM-2,6-DNT	ND	400	100
2-AM-4,6-DNT	ND	400	100
2,6-DNT	ND	400	100
2,4-DNT	ND	400	100
2-NITROTOLUENE	ND	400	100
3-NITROTOLUENE	ND	400	100
4-NITROTOLUENE	ND	400	100

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DNT	2190	2000	110	50-150

RL: Reporting Limit

Note: All positive results are confirmed by Biphenyl column

9129114
5

6009

METHOD SW8330
EXPLOSIVES

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=====
Client      : MATRIX ENVIRONMENTAL SERVICES      Date Collected: 08/21/14
Project     : MCCLELLAN, AL                     Date Received: 08/22/14
Batch No.   : 14H167                           Date Extracted: 08/26/14 19:29
Sample ID:  R30-103Q-004 (0-0.5)               Date Analyzed: 08/29/14 12:51
Lab Samp ID: H167-08                           Dilution Factor: 1
Lab File ID: XH28051A                          Matrix          : SOIL
Ext Btch ID: EXH019S                           % Moisture       : NA
Calib. Ref.: XH28050A                          Instrument ID    : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)
-----	-----	-----	-----
HMX	ND	400	100
RDX	ND	400	100
1,3,5-TNB	ND	400	100
1,3-DNB	ND	400	100
TETRYL	ND	400	100
NITROBENZENE	ND	400	100
2,4,6-TNT	ND	400	100
4-AM-2,6-DNT	ND	400	100
2-AM-4,6-DNT	ND	400	100
2,6-DNT	ND	400	100
2,4-DNT	ND	400	100
2-NITROTOLUENE	ND	400	100
3-NITROTOLUENE	ND	400	100
4-NITROTOLUENE	ND	400	100

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
-----	-----	-----	-----	-----
3,4-DNT	2120	2000	106	50-150

RL: Reporting Limit

Note: All positive results are confirmed by Biphenyl column

9129114
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6010

METHOD SW8330
EXPLOSIVES

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=====
Client      : MATRIX ENVIRONMENTAL SERVICES      Date Collected: 08/21/14
Project     : MCCLELLAN, AL                     Date Received: 08/22/14
Batch No.   : 14H167                           Date Extracted: 08/26/14 19:29
Sample ID:  R30-103Q-004 (0.5-1.5)             Date Analyzed: 08/29/14 13:23
Lab Samp ID: H167-09                           Dilution Factor: 1
Lab File ID: XH28052A                          Matrix          : SOIL
Ext Btch ID: EXH019S                           % Moisture       : NA
Calib. Ref.: XH28050A                          Instrument ID    : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)
-----	-----	-----	-----
HMX	ND	400	100
RDX	ND	400	100
1,3,5-TNB	ND	400	100
1,3-DNB	ND	400	100
TETRYL	ND	400	100
NITROBENZENE	ND	400	100
2,4,6-TNT	ND	400	100
4-AM-2,6-DNT	ND	400	100
2-AM-4,6-DNT	ND	400	100
2,6-DNT	ND	400	100
2,4-DNT	ND	400	100
2-NITROTOLUENE	ND	400	100
3-NITROTOLUENE	ND	400	100
4-NITROTOLUENE	ND	400	100

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
-----	-----	-----	-----	-----
3,4-DNT	2180	2000	109	50-150

RL: Reporting Limit

Note: All positive results are confirmed by Biphenyl column

9/29/14
SW

METHOD SW8330
EXPLOSIVES

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=====
Client      : MATRIX ENVIRONMENTAL SERVICES      Date Collected: 08/21/14
Project     : MCCLELLAN, AL                     Date Received: 08/22/14
Batch No.   : 14H167                           Date Extracted: 08/26/14 19:29
Sample ID:  R30-103Q-005 (0-0.5)               Date Analyzed: 08/29/14 14:57
Lab Samp ID: H167-10                           Dilution Factor: 0.99
Lab File ID: XH28055A                         Matrix       : SOIL
Ext Btch ID: EXH019S                          % Moisture    : NA
Calib. Ref.: XH28050A                         Instrument ID : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)
-----	-----	-----	-----
HMX	ND	400	99
RDX	ND	400	99
1,3,5-TNB	ND	400	99
1,3-DNB	ND	400	99
TETRYL	ND	400	99
NITROBENZENE	ND	400	99
2,4,6-TNT	ND	400	99
4-AM-2,6-DNT	ND	400	99
2-AM-4,6-DNT	ND	400	99
2,6-DNT	ND	400	99
2,4-DNT	ND	400	99
2-NITROTOLUENE	ND	400	99
3-NITROTOLUENE	ND	400	99
4-NITROTOLUENE	ND	400	99

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
-----	-----	-----	-----	-----
3,4-DNT	2160	1980	109	50-150

RL: Reporting Limit

Note: All positive results are confirmed by Biphenyl column

9/29/14

2

6012

METHOD SW8330
EXPLOSIVES

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=====
Client      : MATRIX ENVIRONMENTAL SERVICES      Date Collected: 08/21/14
Project     : MCCLELLAN, AL                     Date Received: 08/22/14
Batch No.   : 14H167                           Date Extracted: 08/26/14 19:29
Sample ID   : R30-103Q-005 (0.5-1.5)           Date Analyzed: 08/29/14 15:29
Lab Samp ID : H167-11                          Dilution Factor: 0.99
Lab File ID : XH28056A                        Matrix       : SOIL
Ext Btch ID : EXH019S                         % Moisture    : NA
Calib. Ref. : XH28050A                       Instrument ID : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)
-----	-----	-----	-----
HMX	ND	400	99
RDX	ND	400	99
1,3,5-TNB	ND	400	99
1,3-DNB	ND	400	99
TETRYL	ND	400	99
NITROBENZENE	ND	400	99
2,4,6-TNT	ND	400	99
4-AM-2,6-DNT	ND	400	99
2-AM-4,6-DNT	ND	400	99
2,6-DNT	ND	400	99
2,4-DNT	ND	400	99
2-NITROTOLUENE	ND	400	99
3-NITROTOLUENE	ND	400	99
4-NITROTOLUENE	ND	400	99

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
-----	-----	-----	-----	-----
3,4-DNT	2200	1980	111	50-150

RL: Reporting Limit

Note: All positive results are confirmed by Biphenyl column

9/29/14

2

6013

METHOD SW8330
EXPLOSIVES

```

=====
Client      : MATRIX ENVIRONMENTAL SERVICES      Date Collected: 08/21/14
Project     : MCCLELLAN, AL                     Date Received: 08/22/14
Batch No.   : 14H167                           Date Extracted: 08/26/14 19:29
Sample ID   : DUP182                           Date Analyzed: 08/29/14 16:00
Lab Samp ID : H167-12                          Dilution Factor: 1
Lab File ID : XH28057A                        Matrix       : SOIL
Ext Btch ID : EXH019S                        % Moisture    : NA
Calib. Ref. : XH28050A                       Instrument ID : T-081
=====
  
```

PARAMETERS	RESULTS (ug/kg)	RL (ug/kg)	MDL (ug/kg)
-----	-----	-----	-----
HMX	ND	400	100
RDX	ND	400	100
1,3,5-TNB	ND	400	100
1,3-DNB	ND	400	100
TETRYL	ND	400	100
NITROBENZENE	ND	400	100
2,4,6-TNT	ND	400	100
4-AM-2,6-DNT	ND	400	100
2-AM-4,6-DNT	ND	400	100
2,6-DNT	ND	400	100
2,4-DNT	ND	400	100
2-NITROTOLUENE	ND	400	100
3-NITROTOLUENE	ND	400	100
4-NITROTOLUENE	ND	400	100

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
-----	-----	-----	-----	-----
3,4-DNT	2250	2000	112	50-150

RL: Reporting Limit

Note: All positive results are confirmed by Biphenyl column

9/29/14
SW

METHOD SW8330
EXPLOSIVES

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=====
Client      : MATRIX ENVIRONMENTAL SERVICES
Project     : MCCLELLAN, AL
Batch No.   : 14H167
Sample ID   : E8079
Lab Samp ID : H167-17
Lab File ID : XH25006A
Ext Btch ID : EXH017W
Calib. Ref.: XH25002A

Date Collected: 08/21/14
Date Received: 08/22/14
Date Extracted: 08/22/14 17:12
Date Analyzed: 08/25/14 13:58
Dilution Factor: 1
Matrix      : WATER
% Moisture  : NA
Instrument ID : T-081
=====
  
```

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
HMX	ND	0.40	0.20
RDX	ND	0.40	0.20
1,3,5-TNB	ND	0.40	0.20
1,3-DNB	ND	0.40	0.20
TETRYL	ND	0.40	0.20
NITROBENZENE	ND	0.40	0.20
2,4,6-TNT	ND	0.40	0.20
4-AM-2,6-DNT	ND	0.60	0.20
2-AM-4,6-DNT	ND	0.40	0.20
2,6-DNT	ND	0.40	0.20
2,4-DNT	ND	0.40	0.20
2-NITROTOLUENE	ND	0.40	0.20
3-NITROTOLUENE	ND	0.60	0.20
4-NITROTOLUENE	ND	0.60	0.20

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
3,4-DNT	4.62	4.000	115	50-150

RL: Reporting Limit

Note: All positive results are confirmed by Biphenyl column

9/24/14
L

METHOD SM6020A
METALS BY ICP-MS

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	08/21/14
Project	: MCCLELLAN, AL	Date Received:	08/22/14
SDG NO.	: 14H167	Date Extracted:	09/04/14 16:50
Sample ID:	R30-88Q-015	Date Analyzed:	09/08/14 21:38
Lab Samp ID:	H167-01	Dilution Factor:	0.990
Lab File ID:	F6I04086	Matrix	: SOIL
Ext Btch ID:	IHI007S	% Moisture	: 6.3
Calib. Ref.:	F6I04081	Instrument ID	: T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	5890	106	10.6
Antimony	0.479J	0.528	0.211
Arsenic	1.75	0.528	0.106
Barium	135	0.528	0.106
Beryllium	0.405J	0.528	0.106
Cadmium	0.116J	0.528	0.106
Calcium	360	106	21.1
Chromium	3.85	0.528	0.106
Cobalt	1.84	0.528	0.106
Copper	39.3	0.528	0.211
Iron	3340	106	10.6
Lead	178	0.528	0.106
Magnesium	281	106	21.1
Manganese	935	0.528	0.211
Nickel	11.3	0.528	0.106
Potassium	158	106	21.1
Selenium	0.171J	0.528	0.106
Silver	ND	0.528	0.106
Sodium	ND	106	21.1
Thallium	ND	0.528	0.106
Vanadium	6.95	0.528	0.264
Zinc	15.1	2.11	1.06

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METHOD SW6020A
METALS BY ICP-MS

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	08/21/14
Project	: MCCLELLAN, AL	Date Received:	08/22/14
SDG NO.	: 14H167	Date Extracted:	09/04/14 16:50
Sample ID:	R30-103Q-001 (0-0.5)	Date Analyzed:	09/08/14 21:42
Lab Samp ID:	H167-02	Dilution Factor:	0.990
Lab File ID:	F6104087	Matrix	: SOIL
Ext Btch ID:	IMI007S	% Moisture	: 9.8
Calib. Ref.:	F6104081	Instrument ID	: T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	14000	110	11.0
Antimony	0.247J	0.549	0.220
Arsenic	4.07	0.549	0.110
Barium	62.5	0.549	0.110
Beryllium	0.353J	0.549	0.110
Cadmium	0.118J	0.549	0.110
Calcium	279	110	22.0
Chromium	12.1	0.549	0.110
Cobalt	4.81	0.549	0.110
Copper	5.02	0.549	0.220
Iron	10800	110	11.0
Lead	17.9	0.549	0.110
Magnesium	462	110	22.0
Manganese	347	0.549	0.220
Nickel	6.28	0.549	0.110
Potassium	346	110	22.0
Selenium	0.163J	0.549	0.110
Silver	ND	0.549	0.110
Sodium	ND	110	22.0
Thallium	0.170J	0.549	0.110
Vanadium	22.6	0.549	0.274
Zinc	17.4	2.20	1.10

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METHOD SW6020A
METALS BY ICP-MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 08/21/14
Project : MCCLELLAN, AL	Date Received: 08/22/14
SDG NO. : 14H167	Date Extracted: 09/04/14 16:50
Sample ID: R30-103Q-001 (0.5-1.5)	Date Analyzed: 09/08/14 21:46
Lab Samp ID: H167-03	Dilution Factor: 0.957
Lab File ID: F6I04088	Matrix : SOIL
Ext Btch ID: IMI007S	% Moisture : 9.1
Calib. Ref.: F6I04081	Instrument ID : T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	19500	105	10.5
Antimony	0.258J	0.526	0.211
Arsenic	6.00	0.526	0.105
Barium	63.3	0.526	0.105
Beryllium	0.396J	0.526	0.105
Cadmium	0.232J	0.526	0.105
Calcium	246	105	21.1
Chromium	29.2	0.526	0.105
Cobalt	5.56	0.526	0.105
Copper	6.34	0.526	0.211
Iron	16800	105	10.5
Lead	13.6	0.526	0.105
Magnesium	558	105	21.1
Manganese	221	0.526	0.211
Nickel	8.24	0.526	0.105
Potassium	437	105	21.1
Selenium	0.213J	0.526	0.105
Silver	ND	0.526	0.105
Sodium	ND	105	21.1
Thallium	0.199J	0.526	0.105
Vanadium	33.1	0.526	0.263
Zinc	17.2	2.11	1.05

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METHOD SW6020A
METALS BY ICP-MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 08/21/14
Project : MCCLELLAN, AL	Date Received: 08/22/14
SDG NO. : 14H167	Date Extracted: 09/04/14 16:50
Sample ID: R30-103Q-002 (0-0.5)	Date Analyzed: 09/08/14 21:51
Lab Samp ID: H167-04	Dilution Factor: 0.990
Lab File ID: F6104089	Matrix : SOIL
Ext Btch ID: IM1007S	% Moisture : 10.3
Calib. Ref.: F6104081	Instrument ID : T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	19700	110	11.0
Antimony	0.388J	0.552	0.221
Arsenic	6.27	0.552	0.110
Barium	43.1	0.552	0.110
Beryllium	0.317J	0.552	0.110
Cadmium	0.203J	0.552	0.110
Calcium	458	110	22.1
Chromium	17.5	0.552	0.110
Cobalt	3.81	0.552	0.110
Copper	8.00	0.552	0.221
Iron	17700	110	11.0
Lead	17.3	0.552	0.110
Magnesium	470	110	22.1
Manganese	917	0.552	0.221
Nickel	7.28	0.552	0.110
Potassium	443	110	22.1
Selenium	0.192J	0.552	0.110
Silver	ND	0.552	0.110
Sodium	ND	110	22.1
Thallium	0.241J	0.552	0.110
Vanadium	37.8	0.552	0.276
Zinc	16.5	2.21	1.10

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METHOD SW6020A
METALS BY ICP-MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 08/21/14
Project : MCCLELLAN, AL	Date Received: 08/22/14
SDG NO. : 14H167	Date Extracted: 09/04/14 16:50
Sample ID: R30-103Q-002 (0.5-1.5)	Date Analyzed: 09/08/14 21:55
Lab Samp ID: H167-05	Dilution Factor: 0.943
Lab File ID: F6I04090	Matrix : SOIL
Ext Btch ID: IMI007S	% Moisture : 9.6
Calib. Ref.: F6I04081	Instrument ID : T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	11100	104	10.4
Antimony	ND	0.522	0.209
Arsenic	2.49	0.522	0.104
Barium	22.6	0.522	0.104
Beryllium	0.132J	0.522	0.104
Cadmium	0.135J	0.522	0.104
Calcium	292	104	20.9
Chromium	12.0	0.522	0.104
Cobalt	1.09	0.522	0.104
Copper	5.37	0.522	0.209
Iron	8380	104	10.4
Lead	8.86	0.522	0.104
Magnesium	225	104	20.9
Manganese	170	0.522	0.209
Nickel	11.7	0.522	0.104
Potassium	274	104	20.9
Selenium	ND	0.522	0.104
Silver	ND	0.522	0.104
Sodium	ND	104	20.9
Thallium	0.113J	0.522	0.104
Vanadium	20.7	0.522	0.261
Zinc	7.07	2.09	1.04

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METHOD SW6020A
METALS BY ICP-MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 08/21/14
Project : MCCLELLAN, AL	Date Received: 08/22/14
SDG NO. : 14H167	Date Extracted: 09/04/14 16:50
Sample ID: R30-103Q-003 (0-0.5)	Date Analyzed: 09/08/14 21:59
Lab Samp ID: H167-06	Dilution Factor: 1.00
Lab File ID: F6I04091	Matrix : SOIL
Ext Btch ID: IMI007S	% Moisture : 13.5
Calib. Ref.: F6I04081	Instrument ID : T-1F6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	15400	116	11.6
Antimony	0.501J	0.578	0.231
Arsenic	15.0	0.578	0.116
Barium	34.9	0.578	0.116
Beryllium	0.275J	0.578	0.116
Cadmium	0.447J	0.578	0.116
Calcium	174	116	23.1
Chromium	34.3	0.578	0.116
Cobalt	2.45	0.578	0.116
Copper	8.86	0.578	0.231
Iron	38800	116	11.6
Lead	20.2	0.578	0.116
Magnesium	233	116	23.1
Manganese	279	0.578	0.231
Nickel	5.63	0.578	0.116
Potassium	264	116	23.1
Selenium	0.304J	0.578	0.116
Silver	ND	0.578	0.116
Sodium	ND	116	23.1
Thallium	0.162J	0.578	0.116
Vanadium	69.9	0.578	0.289
Zinc	16.8	2.31	1.16

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METHOD SW6020A
METALS BY ICP-MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 08/21/14
Project : MCCLELLAN, AL	Date Received: 08/22/14
SDG NO. : 14H167	Date Extracted: 09/04/14 16:50
Sample ID: R30-103Q-003 (0.5-1.5)	Date Analyzed: 09/08/14 22:17
Lab Samp ID: H167-07	Dilution Factor: 0.990
Lab File ID: F6104095	Matrix : SOIL
Ext Btch ID: IMI007S	% Moisture : 13.4
Calib. Ref.: F6104093	Instrument ID : T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	15100	114	11.4
Antimony	0.805	0.572	0.229
Arsenic	23.9	0.572	0.114
Barium	80.0	0.572	0.114
Beryllium	0.354J	0.572	0.114
Cadmium	0.474J	0.572	0.114
Calcium	76.1J	114	22.9
Chromium	87.1	0.572	0.114
Cobalt	4.04	0.572	0.114
Copper	9.89	0.572	0.229
Iron	55300	114	11.4
Lead	34.8	0.572	0.114
Magnesium	202	114	22.9
Manganese	451	0.572	0.229
Nickel	7.24	0.572	0.114
Potassium	210	114	22.9
Selenium	0.364J	0.572	0.114
Silver	0.119J	0.572	0.114
Sodium	ND	114	22.9
Thallium	0.204J	0.572	0.114
Vanadium	89.7	0.572	0.286
Zinc	18.8	2.29	1.14

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7009

METHOD SW6020A
METALS BY ICP-MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 08/21/14
Project : MCCLELLAN, AL	Date Received: 08/22/14
SDG NO. : 14H167	Date Extracted: 09/04/14 16:50
Sample ID: R30-103Q-004 (0-0.5)	Date Analyzed: 09/08/14 22:21
Lab Samp ID: H167-08	Dilution Factor: 0.943
Lab File ID: F6104096	Matrix : SOIL
Ext Btch ID: IM1007S	% Moisture : 7.3
Calib. Ref.: F6104093	Instrument ID : T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	4570	102	10.2
Antimony	ND	0.509	0.203
Arsenic	3.80	0.509	0.102
Barium	14.1	0.509	0.102
Beryllium	ND	0.509	0.102
Cadmium	ND	0.509	0.102
Calcium	120	102	20.3
Chromium	8.44	0.509	0.102
Cobalt	0.796	0.509	0.102
Copper	1.82	0.509	0.203
Iron	6930	102	10.2
Lead	4.47	0.509	0.102
Magnesium	111	102	20.3
Manganese	193	0.509	0.203
Nickel	1.48	0.509	0.102
Potassium	183	102	20.3
Selenium	ND	0.509	0.102
Silver	ND	0.509	0.102
Sodium	ND	102	20.3
Thallium	ND	0.509	0.102
Vanadium	16.1	0.509	0.254
Zinc	4.39	2.03	1.02

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METHOD SW6020A
METALS BY ICP-MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 08/21/14
Project : MCCLELLAN, AL	Date Received: 08/22/14
SDG NO. : 14H167	Date Extracted: 09/04/14 16:50
Sample ID: R30-103Q-004 (0.5-1.5)	Date Analyzed: 09/08/14 22:38
Lab Samp ID: H167-09	Dilution Factor: 0.966
Lab File ID: F6I04100	Matrix : SOIL
Ext Btch ID: IMI0075	% Moisture : 7.1
Calib. Ref.: F6I04093	Instrument ID : T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	11100	104	10.4
Antimony	ND	0.520	0.208
Arsenic	5.32	0.520	0.104
Barium	40.9	0.520	0.104
Beryllium	0.222J	0.520	0.104
Cadmium	0.182J	0.520	0.104
Calcium	149	104	20.8
Chromium	12.6	0.520	0.104
Cobalt	2.29	0.520	0.104
Copper	3.59	0.520	0.208
Iron	11500	104	10.4
Lead	8.72	0.520	0.104
Magnesium	255	104	20.8
Manganese	534	0.520	0.208
Nickel	4.08	0.520	0.104
Potassium	295	104	20.8
Selenium	0.128J	0.520	0.104
Silver	ND	0.520	0.104
Sodium	ND	104	20.8
Thallium	0.119J	0.520	0.104
Vanadium	26.3	0.520	0.260
Zinc	9.33	2.08	1.04

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METHOD SW6020A
METALS BY ICP-MS

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	08/21/14
Project	: MCCLELLAN, AL	Date Received:	08/22/14
SDG NO.	: 14H167	Date Extracted:	09/04/14 16:50
Sample ID:	R30-103Q-005 (0-0.5)	Date Analyzed:	09/08/14 22:47
Lab Samp ID:	H167-10	Dilution Factor:	0.990
Lab File ID:	F6104102	Matrix	: SOIL
Ext Btch ID:	IHI007S	% Moisture	: 3.7
Calib. Ref.:	F6104093	Instrument ID	: T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	4070	103	10.3
Antimony	0.845	0.514	0.206
Arsenic	1.60	0.514	0.103
Barium	68.7	0.514	0.103
Beryllium	0.312J	0.514	0.103
Cadmium	0.176J	0.514	0.103
Calcium	153	103	20.6
Chromium	2.98	0.514	0.103
Cobalt	2.89	0.514	0.103
Copper	25.6	0.514	0.206
Iron	2480	103	10.3
Lead	194	0.514	0.103
Magnesium	219	103	20.6
Manganese	489	0.514	0.206
Nickel	5.86	0.514	0.103
Potassium	151	103	20.6
Selenium	0.125J	0.514	0.103
Silver	ND	0.514	0.103
Sodium	ND	103	20.6
Thallium	ND	0.514	0.103
Vanadium	5.22	0.514	0.257
Zinc	15.0	2.06	1.03

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METHOD SW6020A
METALS BY ICP-MS

Client : MATRIX ENVIRONMENTAL SERVICES Date Collected: 08/21/14
Project : MCCLELLAN, AL Date Received: 08/22/14
SDG NO. : 14H167 Date Extracted: 09/04/14 16:50
Sample ID: R30-1030-005 (0.5-1.5) Date Analyzed: 09/08/14 22:51
Lab Samp ID: H167-11 Dilution Factor: 0.962
Lab File ID: F6104103 Matrix : SOIL
Ext Btch ID: IM10075 % Moisture : 2.7
Calib. Ref.: F6104093 Instrument ID : T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	3930	98.9	9.89
Antimony	0.375J	0.494	0.198
Arsenic	1.31	0.494	0.0989
Barium	48.0	0.494	0.0989
Beryllium	0.219J	0.494	0.0989
Cadmium	0.113J	0.494	0.0989
Calcium	121	98.9	19.8
Chromium	10.0	0.494	0.0989
Cobalt	2.56	0.494	0.0989
Copper	5.41	0.494	0.198
Iron	2510	98.9	9.89
Lead	23.7	0.494	0.0989
Magnesium	218	98.9	19.8
Manganese	204	0.494	0.198
Nickel	6.20	0.494	0.0989
Potassium	130	98.9	19.8
Selenium	ND	0.494	0.0989
Silver	ND	0.494	0.0989
Sodium	ND	98.9	19.8
Thallium	ND	0.494	0.0989
Vanadium	5.45	0.494	0.247
Zinc	6.54	1.98	0.989

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METHOD SW6020A
METALS BY ICP-MS

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	08/21/14
Project	: MCCLELLAN, AL	Date Received:	08/22/14
SDG NO.	: 14H167	Date Extracted:	09/04/14 16:50
Sample ID:	DUP182	Date Analyzed:	09/08/14 23:08
Lab Samp ID:	H167-12	Dilution Factor:	0.990
Lab File ID:	F6104107	Matrix	: SOIL
Ext Btch ID:	IMI007S	% Moisture	: 2.7
Calib. Ref.:	F6104105	Instrument ID	: T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	4250	102	10.2
Antimony	0.449J	0.509	0.203
Arsenic	1.64	0.509	0.102
Barium	48.2	0.509	0.102
Beryllium	0.282J	0.509	0.102
Cadmium	0.115J	0.509	0.102
Calcium	122	102	20.3
Chromium	5.90	0.509	0.102
Cobalt	2.83	0.509	0.102
Copper	6.38	0.509	0.203
Iron	3240	102	10.2
Lead	29.8	0.509	0.102
Magnesium	233	102	20.3
Manganese	240	0.509	0.203
Nickel	4.08	0.509	0.102
Potassium	141	102	20.3
Selenium	0.105J	0.509	0.102
Silver	ND	0.509	0.102
Sodium	ND	102	20.3
Thallium	ND	0.509	0.102
Vanadium	6.09	0.509	0.254
Zinc	7.04	2.03	1.02

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METHOD SW6020A
METALS BY ICP-MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 08/21/14
Project : MCCLELLAN, AL	Date Received: 08/22/14
SDG NO. : 14H167	Date Extracted: 09/04/14 16:50
Sample ID: R30-1030-008	Date Analyzed: 09/08/14 23:12
Lab Samp ID: H167-13	Dilution Factor: 0.976
Lab File ID: F6104108	Matrix : SOIL
Ext Btch ID: IMI007S	% Moisture : 21.2
Calib. Ref.: F6104105	Instrument ID : T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	15300	124	12.4
Antimony	0.279J	0.619	0.248
Arsenic	5.62	0.619	0.124
Barium	121	0.619	0.124
Beryllium	0.556J	0.619	0.124
Cadmium	0.280J	0.619	0.124
Calcium	576	124	24.8
Chromium	12.4	0.619	0.124
Cobalt	4.90	0.619	0.124
Copper	5.58	0.619	0.248
Iron	12600	124	12.4
Lead	21.5	0.619	0.124
Magnesium	442	124	24.8
Manganese	1450	0.619	0.248
Nickel	6.65	0.619	0.124
Potassium	367	124	24.8
Selenium	0.237J	0.619	0.124
Silver	ND	0.619	0.124
Sodium	ND	124	24.8
Thallium	0.212J	0.619	0.124
Vanadium	26.4	0.619	0.310
Zinc	18.0	2.48	1.24

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METHOD SW6020A
METALS BY ICP-MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 08/21/14
Project : MCCLELLAN, AL	Date Received: 08/22/14
SDG NO. : 14H167	Date Extracted: 09/04/14 16:50
Sample ID: R30-103Q-011	Date Analyzed: 09/08/14 23:17
Lab Samp ID: H167-14	Dilution Factor: 0.971
Lab File ID: F6104109	Matrix : SOIL
Ext Btch ID: IM1007S	% Moisture : 10.4
Calib. Ref.: F6104105	Instrument ID : T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	11000	108	10.8
Antimony	0.921	0.542	0.217
Arsenic	10.6	0.542	0.108
Barium	48.0	0.542	0.108
Beryllium	0.402J	0.542	0.108
Cadmium	0.284J	0.542	0.108
Calcium	147	108	21.7
Chromium	19.8	0.542	0.108
Cobalt	3.28	0.542	0.108
Copper	16.2	0.542	0.217
Iron	24400	108	10.8
Lead	78.7	0.542	0.108
Magnesium	245	108	21.7
Manganese	372	0.542	0.217
Nickel	7.52	0.542	0.108
Potassium	416	108	21.7
Selenium	0.224J	0.542	0.108
Silver	ND	0.542	0.108
Sodium	ND	108	21.7
Thallium	0.145J	0.542	0.108
Vanadium	37.3	0.542	0.271
Zinc	15.5	2.17	1.08



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METHOD SM6020A
METALS BY ICP-MS

Client : MATRIX ENVIRONMENTAL SERVICES	Date Collected: 08/21/14
Project : MCCLELLAN, AL	Date Received: 08/22/14
SDG NO. : 14H167	Date Extracted: 09/04/14 16:50
Sample ID: R30-103Q-013	Date Analyzed: 09/08/14 23:21
Lab Samp ID: H167-15	Dilution Factor: 0.995
Lab File ID: F6I04110	Matrix : SOIL
Ext Btch ID: IMI007S	% Moisture : 6.6
Calib. Ref.: F6I04105	Instrument ID : T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	11900	107	10.7
Antimony	0.293J	0.533	0.213
Arsenic	4.57	0.533	0.107
Barium	55.8	0.533	0.107
Beryllium	0.369J	0.533	0.107
Cadmium	0.196J	0.533	0.107
Calcium	340	107	21.3
Chromium	9.91	0.533	0.107
Cobalt	3.53	0.533	0.107
Copper	8.18	0.533	0.213
Iron	10200	107	10.7
Lead	24.5	0.533	0.107
Magnesium	362	107	21.3
Manganese	713	0.533	0.213
Nickel	5.34	0.533	0.107
Potassium	312	107	21.3
Selenium	0.174J	0.533	0.107
Silver	ND	0.533	0.107
Sodium	ND	107	21.3
Thallium	0.144J	0.533	0.107
Vanadium	22.5	0.533	0.266
Zinc	14.5	2.13	1.07

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METHOD SW6020A
METALS BY ICP-MS

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	08/21/14
Project	: MCCLELLAN, AL	Date Received:	08/22/14
SDG NO.	: 14H167	Date Extracted:	09/04/14 16:50
Sample ID:	R30-103Q-015	Date Analyzed:	09/08/14 23:25
Lab Samp ID:	H167-16	Dilution Factor:	0.922
Lab File ID:	F6104111	Matrix	: SOIL
Ext Btch ID:	JH1007S	% Moisture	: 10.4
Calib. Ref.:	F6104105	Instrument ID	: T-IF6

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Aluminum	12800	103	10.3
Antimony	2.69	0.515	0.206
Arsenic	6.03	0.515	0.103
Barium	70.6	0.515	0.103
Beryllium	0.458J	0.515	0.103
Cadmium	0.239J	0.515	0.103
Calcium	552	103	20.6
Chromium	12.4	0.515	0.103
Cobalt	4.60	0.515	0.103
Copper	64.6	0.515	0.206
Iron	16800	103	10.3
Lead	336	0.515	0.103
Magnesium	457	103	20.6
Manganese	776	0.515	0.206
Nickel	12.2	0.515	0.103
Potassium	402	103	20.6
Selenium	0.212J	0.515	0.103
Silver	ND	0.515	0.103
Sodium	ND	103	20.6
Thallium	0.188J	0.515	0.103
Vanadium	28.4	0.515	0.257
Zinc	28.6	2.06	1.03

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METHOD SW6020A
METALS BY ICP-MS

Client	: MATRIX ENVIRONMENTAL SERVICES	Date Collected:	08/21/14
Project	: MCCLELLAN, AL	Date Received:	08/22/14
SDG NO.	: 14H167	Date Extracted:	09/04/14 11:00
Sample ID:	EB079	Date Analyzed:	09/09/14 16:04
Lab Samp ID:	H167-17	Dilution Factor:	1
Lab File ID:	F6105033	Matrix	: WATER
Ext Btch ID:	IMI005W	% Moisture	: NA
Calib. Ref.:	F6105028	Instrument ID	: T-IF6

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
Aluminum	ND	100	20.0
Antimony	ND	1.00	0.500
Arsenic	ND	1.00	0.200
Barium	ND	1.00	0.500
Beryllium	ND	1.00	0.100
Cadmium	ND	1.00	0.200
Calcium	51.1J	100	25.0
Chromium	ND	1.00	0.200
Cobalt	ND	1.00	0.200
Copper	ND	1.00	0.500
Iron	11.2J	100	10.0
Lead	ND	1.00	0.100
Magnesium	ND	100	10.0
Manganese	2.91	1.00	0.200
Nickel	0.308J	1.00	0.200
Potassium	ND	100	20.0
Selenium	ND	1.00	0.300
Silver	ND	1.00	0.200
Sodium	ND	100	50.0
Thallium	ND	1.00	0.200
Vanadium	ND	1.00	0.500
Zinc	ND	20.0	10.0

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METH00 7471A
MERCURY BY COLD VAPOR

Client : MATRIX ENVIRONMENTAL SERVICES
Project : MCLELLAN, AL
Batch No. : 14H167

Matrix : SOIL
Instrument ID : 47

CLIENT SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/kg)	DIL 'N FACTOR (x)	MOIST (%)	LOQ (mg/kg)	LOD (mg/kg)	ANALYSIS DATE/TIME	PREPARATION DATE/TIME	DATA FILE ID	CAL REF	PREP BATCH	COLLECTION DATE/TIME	RECEIVED DATE/TIME
H8LX1S	H8L023S8	ND	1	NA	0.1	0.02	09/17/1411:27	09/16/1417:45	M471011011	M471011	H61023S	NA	NA
LCS1S	H61023S1	0.428	1	NA	0.1	0.02	09/17/1411:29	09/16/1417:45	M471011012	M471011	H61023S	NA	NA
LCS1S	H61023S1	0.437	1	NA	0.1	0.02	09/17/1411:31	09/16/1417:45	M471011013	M471011	H61023S	NA	NA
R30-1030-004 (0.5-1.5)	H167-09	0.0542J	1	7.1	0.107	0.0213	09/17/1411:35	09/16/1417:45	M471011015	M471011	H61023S	08/21/1410:40	08/22/14
R30-1030-004 (0.5-1.5)MS	H167-09H	0.530	1	7.1	0.107	0.0215	09/17/1411:39	09/16/1417:45	M471011017	M471011	H61023S	08/21/1410:40	08/22/14
R30-1030-004 (0.5-1.5)MSD	H167-09S	0.522	1	7.1	0.108	0.0215	09/17/1411:41	09/16/1417:45	M471011018	M471011	H61023S	08/21/1410:40	08/22/14
R30-880-015	H167-01	0.0366J	1	6.3	0.107	0.0213	09/17/1411:43	09/16/1417:45	M471011019	M471011	H61023S	08/21/1411:45	08/22/14
R30-1030-001 (0-0.5)	H167-02	0.0324J	1	9.8	0.111	0.0221	09/17/1411:45	09/16/1417:45	M471011020	M471011	H61023S	08/21/1409:10	08/22/14
R30-1030-001 (0.5-1.5)	H167-03	0.158	1	9.1	0.109	0.0218	09/17/1411:51	09/16/1417:45	M471011023	M471011	H61023S	08/21/1409:15	08/22/14
R30-1030-002 (0-0.5)	H167-04	0.0805J	1	10.3	0.111	0.0223	09/17/1411:53	09/16/1417:45	M471011024	M471011	H61023S	08/21/1409:40	08/22/14
R30-1030-002 (0.5-1.5)	H167-05	0.0477J	1	9.6	0.11	0.0221	09/17/1411:55	09/16/1417:45	M471011025	M471011	H61023S	08/21/1409:45	08/22/14
R30-1030-003 (0-0.5)	H167-06	0.0919J	1	13.5	0.116	0.0232	09/17/1411:57	09/16/1417:45	M471011026	M471011	H61023S	08/21/1409:55	08/22/14
R30-1030-003 (0.5-1.5)	H167-07	0.0834J	1	13.4	0.115	0.0229	09/17/1411:59	09/16/1417:45	M471011027	M471011	H61023S	08/21/1410:00	08/22/14
R30-1030-004 (0-0.5)	H167-08	0.0273J	1	7.3	0.107	0.0214	09/17/1412:01	09/16/1417:45	M471011028	M471011	H61023S	08/21/1410:35	08/22/14
R30-1030-005 (0-0.5)	H167-10	0.0243J	1	3.7	0.103	0.0207	09/17/1412:03	09/16/1417:45	M471011029	M471011	H61023S	08/21/1411:00	08/22/14
R30-1030-005 (0.5-1.5)	H167-11	ND	1	2.7	0.102	0.0204	09/17/1412:05	09/16/1417:45	M471011030	M471011	H61023S	08/21/1411:05	08/22/14
DUP182	H167-12	ND	1	2.7	0.101	0.0203	09/17/1412:07	09/16/1417:45	M471011031	M471011	H61023S	08/21/1411:05	08/22/14
R30-1030-008	H167-13	0.0542J	1	21.2	0.127	0.0254	09/17/1412:09	09/16/1417:45	M471011032	M471011	H61023S	08/21/1409:25	08/22/14
R30-1030-011	H167-14	0.0428J	1	10.4	0.111	0.0223	09/17/1412:15	09/16/1417:45	M471011035	M471011	H61023S	08/21/1410:25	08/22/14
R30-1030-013	H167-15	0.0529J	1	6.6	0.107	0.0215	09/17/1412:17	09/16/1417:45	M471011036	M471011	H61023S	08/21/1414:40	08/22/14
R30-1030-015	H167-16	0.0574J	1	10.4	0.112	0.0224	09/17/1412:19	09/16/1417:45	M471011037	M471011	H61023S	08/21/1411:25	08/22/14

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METHOD 7470A
MERCURY BY COLD VAPOR

Client : MATRIX ENVIRONMENTAL SERVICES
Project : MCCLELLAN, AL
Batch No. : 14H167

Matrix : WATER
InstrumentID : 47

CLIENT SAMPLE ID	EMAX SAMPLE ID	RESULTS (ug/L)	DIL 'N FACTOR (x)	MOIST (%)	LOQ (ug/L)	LOD (ug/L)	ANALYSIS DATE/TIME	PREPARATION DATE/TIME	DATA FILE ID	CAL REF	PREP BATCH	COLLECTION DATE/TIME	RECEIVED DATE/TIME
HBLK1W	HGH026MB	ND	1	NA	0.4	0.1	08/29/1417:41	08/29/1413:20	M47H018037	M47H018	HGH026W	NA	NA
LCS1W	HGH026ML	2.43	1	NA	0.4	0.1	08/29/1417:43	08/29/1413:20	M47H018038	M47H018	HGH026W	NA	NA
LCD1W	HGH026MC	2.45	1	NA	0.4	0.1	08/29/1417:45	08/29/1413:20	M47H018039	M47H018	HGH026W	NA	NA
EB079	HI67-17	ND	1	NA	0.4	0.1	08/29/1418:34	08/29/1413:20	M47H018063	M47H018	HGH026W	08/21/1414:00	08/22/14

APPENDIX C
Statistical Comparison of Site and Background Data
for Metals

Appendix C

Statistical Comparison of Site and Background Data and Geochemical Evaluation of Metals

Resource Conservation Recovery Act Facility Investigation Report Range 30 Impact Area, Parcels 88Q and 103Q McClellan, Anniston, Alabama

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November 2015

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1.0 INTRODUCTION

This report presents a statistical evaluation of metals results for the Range 30 Impact Area, Parcels 88Q and 103Q (Range 30 or the Site) within McClellan, Anniston, Alabama (McClellan). The metals analytical results presented in Tables 5-1 and 5-3 of the Range 30 Resource Conservation Recovery Act Facility Investigation (RFI) Report were included in the statistical evaluation. The statistical evaluation consisted of a multi-tiered approach (Tier 1, Tier 2 and Tier 3) to identify metals that may be present at elevated concentrations as a result of site-related activities. Statistical evaluations were performed for metals in surface soil and subsurface soil. In the first step of the comparison, the maximum detected concentration (MDC) of each metal was compared to two times the arithmetic mean of the background data (background screening value) reported by Science Applications International Corporation (SAIC, 1998). Any metal that had a MDC greater than the background screening value was carried forward through the Tier 2 evaluation, which included the Wilcoxon Rank Sum Test and comparison to the corresponding background upper tolerance limit value (UTL) (also known as the Hot Measurement Test). Analytical results for metals failing the Tier 2 evaluation were carried through to the Tier 3, i.e. geochemical, evaluation. The Tier 3 evaluation was performed to determine if elevated concentrations were naturally occurring or if they contained a component of contamination. Tier 3 is a graphical assessment of relative concentrations of elements typically associated in soil. The Tier 3 evaluation served as the final evaluation to identify metals having anomalously elevated concentrations. Additional description of the multi-tiered statistical processes is provided in the following sections.

2.0 SITE AND BACKGROUND STATISTICAL PROCEDURES

Contamination can be caused by a variety of processes that yield different spatial distributions of elevated contaminant concentrations. Slight but pervasive contamination can occur from non-point-source releases, and can result in slight increases in contaminant concentrations in a large percentage of samples. Localized, or “hot-spot,” contamination can result in elevated concentrations in a small percentage of the total number of site samples. No single two-sample statistical comparison test is sensitive to both of these modes of contamination. For this reason, the use of several simultaneous tests is recommended for a valid and complete comparison of site versus background distributions (U.S. Environmental Protection Agency [EPA], 1989, 1992, and 1994; U.S. Navy [Navy], 2002).

Analytes that fail the Tier 1 and Tier 2 comparisons are subject to the Tier 3 evaluation to determine if the elevated concentrations are due to natural processes or if they represent potential contamination. This section describes the statistical techniques that were employed in the Tiers 1 and 2 site-to-background comparisons.

2.1 Tier 1

In the Tier 1 step of the background screening process, the MDC of the site data set is compared to the background screening value of two times the background mean (SAIC, 1998). Elements for which the site MDC does not exceed the background screening value (BSV) are considered to be present at background concentrations, and are not considered site-related chemicals. Elements for which the site MDC exceeds the BSV undergo further evaluation (Tier 2).

2.2 Tier 2

The Tier 2 evaluation assesses whether metal concentrations at the Site are statistically similar to background concentrations. Tier 2 consists of two complementary statistical tests: a) the hot measurement test and b) the Wilcoxon Rank Sum (WRS) Test. These statistical tests are described in the following subsections. Metals that fail either of these statistical tests are subjected to the Tier 3 evaluation. If the WRS test cannot be performed due to a high number of nondetects in the data set (as described in Section 2.2.2), then the Tier 2 evaluation is based on the hot measurement test alone.

2.2.1 Hot Measurement Test

The hot measurement test consists of comparing each site measurement to a concentration value that is representative of the upper limit of the background distribution (EPA, 1994). This test is performed in instances where the maximum site sample value is a nondetect or the percentage of nondetect sample values exceeds 50 percent. For this test, a site sample with a concentration above the background screening value would, ideally, have a low probability of being a member of the background population, and would be an indicator of contamination. It is important to select such a background screening value carefully so that the probability of falsely identifying site samples as contaminated or uncontaminated is minimized.

The 95th upper tolerance limit (95th UTL) is recommended as a screening value for normally or lognormally distributed analytes and the 95th percentile is recommended as a screening value for nonparametrically distributed analytes (EPA, 1989, 1992, and 1994). Site samples with concentrations above these values are not necessarily contaminated, but should be considered suspect. To perform the test, each analyte's site MDC is compared to the background 95th UTL or 95th percentile, in accordance with the type of background distribution. If the site MDC exceeds the 95th UTL or 95th percentile as appropriate, then that analyte will undergo a Tier 3 evaluation.

2.2.2 Wilcoxon Rank Sum Test

The nonparametric WRS test is designed to detect a difference between the medians of two data sets, and has been recommended for use in site-to-background comparisons to identify slight but pervasive contamination (EPA, 2000; Navy, 2002). The WRS test is performed when the site and background data sets each contain less than 50 percent nondetects (i.e., measurements reported as not detected below the method detection limit). The WRS test is not performed on data sets containing 50 percent or more nondetects. The medians of such data sets are unknown, and hence the test results would not yield reliable results.

The WRS test compares two data sets of size n and m ($n > m$), and tests the null hypothesis that the samples are drawn from populations with distributions having the same medians. To perform the test, the two sets of observations are pooled and arranged in order from smallest to largest. Each observation is assigned a rank; that is, the smallest is ranked 1, the next largest is ranked 2, and so on up to the largest observation, which is ranked $(n + m)$. If ties occur between or within samples, each one is assigned the mid-rank. Next, the sum of the ranks of smaller data set m is calculated. Then the test statistic Z is determined,

$$Z = \frac{W - m(m + n + 1) / 2}{\sqrt{mn(m + n + 1) / 12}}$$

Where:

- W = Sum of the ranks of the smaller data set
- m = Number of data points in smaller group
- n = Number of data points in larger group.

The test statistic Z is used to find the two-sided significance. For instance, if the test statistic yields a probability of a Type I error (p-level) less than 0.05, then there is a statistically significant difference between the medians at the 95 percent confidence level. A Type I error involves rejecting the null hypothesis when it is true. If the p-level is greater than 0.05, then there is no reasonable justification to reject the null hypothesis at the 95 percent confidence level. It can therefore be concluded that the medians of the two data sets are similar, and it can be assumed to be drawn from the same population.

If the p-level is less than 0.05, then the medians of the two distributions are significantly different at the 95 percent confidence level. This can occur if the site data are shifted higher or lower than the background data. If the site data are shifted higher relative to background, then contamination may be indicated, and the analyte in question will be carried on for the Tier 3 geochemical evaluation; however, if the site data are shifted lower relative to background, then

contamination is not indicated. If the p-level is greater than 0.05, then pervasive site contamination is not suspected.

Box Plots

The box plot comparison is a graphical method recommended by the EPA to visualize and compare two or more sets of data (EPA, 1989 and 1992). These plots provide a summary view of the entire data set, including the overall location and degree of symmetry. Box plots provide a means to visually contrast and compare the distributional characteristics of observed values and are particularly useful when comparing many groups of data. Box plots display the median, 25th percentile, 75th percentile, and values far removed from the rest. The solid line drawn within the box indicates the median. The ends of the box indicate the 25th and 75th percentiles (interquartile range). The 'whiskers', extending from both ends of the box, indicate the highest and lowest values. Nondetect results are set equal to the method detection limit for plotting purposes.

For each analyte, box plots of site and background data are placed side by side to visually compare the distributions and qualitatively determine whether the data sets are similar or distinct. Accordingly, the box plots are a necessary adjunct to the WRS test. As described previously, the WRS test may indicate that the medians of the site and background data sets are significantly different. Examination of the box plots identifies whether that difference is caused by site data that are shifted higher or lower relative to background.

For this investigation, the p-levels and box plots were generated using the statistical analysis software STATGRAPHICS Centurion XVII®.

3.0 TIER 3 GEOCHEMICAL EVALUATION METHODOLOGY

Naturally occurring trace element concentrations in environmental media commonly exceed screening criteria. Trace element distributions in uncontaminated soil tend to have very large ranges (two to three orders of magnitude are not uncommon), and are highly right-skewed, resembling lognormal distributions. These trace elements are naturally associated with specific soil-forming minerals, and the preferential enrichment of a sample with these minerals will result in elevated trace element concentrations. It is thus important to be able to identify these naturally high concentrations and distinguish them from potential contamination. Geochemical processes transport and redistribute naturally occurring metals in the geologic environment. Therefore, geochemical knowledge is necessary to understand the origins of natural background chemicals in soils, and to differentiate between background metals and metals that may be associated with a chemical release.

The Tier 3 geochemical evaluation takes into account relative proportions of metals in surface soil and subsurface soil. Geochemical and statistical methods are used to distinguish between background concentrations and concentrations that represent a release. To explore the elemental associations and identify potentially contaminated samples, correlation (scatter) plots are constructed between suspected contaminant (trace) metals and non-contaminant (reference) metals. If a plot indicates strong correlation between the two metals, then the plots can be used to evaluate background. Reference metals represent background conditions and can be identified on the basis of site-specific soil characteristics and geochemistry. Knowledge of natural geochemical conditions and relationships in the media is required to select suitable reference metals. Because certain groups of metals tend to occur together in natural rocks, soils, and sediments, the relationships between trace metals or two suspected contaminant metals can also be used.

If an analyte fails either of the Tier 2 statistical tests, described in Section 2.0, then the Tier 3 evaluation is performed to identify if the elevated concentrations are caused by natural processes or elevated due to contamination. This section describes the concepts and techniques that were employed in the Tier 3 geochemical evaluations for the Site.

3.1 Soil and Sediment

The metals that occur naturally in soil and sediment originate in the minerals that form the rocks of the earth's crust. The background chemical concentrations in soil and sediment are controlled by the chemical composition of the parent rocks (or parent soil) and the geochemical processes that occur during soil formation and sediment deposition, such as weathering and natural enrichment. Certain metals tend to occur together in natural rocks, soils, and these geochemical relationships can be characterized and used to evaluate soil and sediment background conditions. Other chemical parameters such as grain size and total organic carbon (TOC) also may be correlated with chemical concentrations in soil and sediment. Natural geochemical and geological relationships can be characterized and used to estimate the chemical concentration ranges that represent background conditions. The following subsections describe the geochemical and geological characteristics relevant to background analysis and the selection of reference metals in soil and sediment based on these geochemical and geological relationships.

3.1.1 Geochemical and Geological Relationships in Soil and Sediment

Ten chemical elements, oxygen, silicon, aluminum, iron, calcium, sodium, potassium, magnesium, titanium, and phosphorus, account for more than 99% of the mass of the earth's crust. Elements classified as heavy metals (including antimony, arsenic, cadmium, chromium, cobalt, copper, lead, manganese, mercury, molybdenum, nickel, selenium, silver, tin, thallium, vanadium, and zinc) most commonly occur as trace constituents of the principal rock-forming minerals. However, heavy metals may be highly concentrated in ore minerals such as galena (lead) and cinnabar (mercury). Different types of rocks can have very different average metals concentrations and ranges (Navy, 2003).

Rocks are classified as igneous, sedimentary, or metamorphic. Igneous rocks are common parent rocks for soil formation, and are the original sources of the geologic materials that form most sedimentary and metamorphic rocks. Although most of the earth's crust consists of igneous and metamorphic rocks, sedimentary rocks account for approximately 75 percent of the rocks exposed on the earth's surface, and therefore, are the most common parent rocks for soil formation.

Sedimentary rocks are formed by lithification (consolidation into rock) of sediments. These sediments can include fragments of igneous rocks and resistant primary minerals, secondary minerals such as clays, or chemical precipitates such as calcium carbonate. The physical and chemical redistribution that occurs during sedimentary processes can concentrate elements within rocks composed of only one mineral, or simple assemblages of minerals. For example, aluminum is concentrated in bauxite; iron is concentrated in sedimentary oxides, carbonates, and silicates; calcium is concentrated in limestone and gypsum; and high concentrations of sodium and potassium occur in evaporates (sediments deposited when salts precipitate from surface waters). Preferential precipitation due to differences in solubility and redox conditions may segregate minerals and chemical elements in layered sedimentary rocks. For example, manganese is precipitated in sedimentary environments under oxidizing conditions. Vanadium may be precipitated under reducing conditions, because it tends to be less soluble in its lower oxidation state (Navy, 2003).

Metal concentrations in sedimentary rocks depend on the mineralogy of the sediments, the metal concentrations in the water in which the sediments were deposited, and the sorptive properties of the mineral grains. Sandstones consist primarily of quartz grains and usually have very low metal concentrations because trace metals do not readily substitute for silicon atoms in the crystal matrix and the sand grains have very low sorptive capacities. Fine-grained sedimentary rocks tend to be enriched in metals due to adsorption of cations to clay and fine-grained organic matter. For example, shale (the sedimentary rock that forms when clay is lithified) tends to have relatively high concentrations of heavy metals. Black shales, which contain both clay and organic particles, tend to have even higher concentrations of heavy metals due to the additional sorptive capacity provided by the organic matter. Sedimentary rocks containing organic matter tend to be enriched in heavy metals including arsenic, cobalt, copper, nickel, molybdenum, and vanadium (Navy, 2002 and 2003).

Soils and sediments are formed by the gradual breakdown of the rocks that form the earth's crust through physical and chemical weathering processes. The physical and chemical breakdown of

rocks and minerals that occur during weathering creates soils with distinct geochemical characteristics. The distribution of metals in soil and sediment depends primarily on the chemical composition of the minerals that make up the source (parent) rock from which the soil and sediment are derived. Therefore, the natural geochemical relationships that exist in the parent rock usually are reflected in the soil and sediment. Soils and sediments formed by weathering and erosion of metal-enriched sedimentary rocks will also have elevated metal concentrations.

Physical weathering is the mechanical disintegration of rock by natural forces. Chemical weathering, the most important process in soil and sediment formation, mobilizes the chemical elements that make up rock-forming minerals. Chemical weathering reactions include dissolution, hydration, oxidation, and acid titration, all of which occur in the presence of water. Acid titration dissolves and mobilizes metallic cations within minerals and replaces them with hydrogen ions supplied by natural carbonic and organic acids in water flowing over and through the rock. The removal of metallic cations alter the primary rock-forming minerals, forming secondary minerals that are depleted in metals. Because aluminum is relatively stable compared to the other metals within the primary minerals, cation replacement tends to convert the primary minerals to aluminosilicates (e.g., clay minerals). Metals removed from the primary minerals are transported in solution until they precipitate as metal oxides and hydroxides, or are adsorbed onto the surface of clay and organic particles.

Soils and sediments consist of three basic components: inorganic material (i.e., minerals), organic material, and water. Air is also a basic component of soil. The inorganic fraction typically makes up the greatest portion of the overall soil and sediment mass and includes remnants of the original parent rock and secondary minerals formed through weathering. Mineral grain sizes in most soils and sediments are predominantly in the sand, silt, and clay ranges. The organic fraction of soil and sediment is composed of plants and animals (including microorganisms) that cycle chemical nutrients within the soil and sediment, the waste products released from plants and animals, and their dead remains. The water fraction fills the pore spaces between minerals and sediment grains. In soils, the air fraction fills pore space not occupied by water. Oxygen and carbon dioxide are used by soil and sediment organisms and affect redox conditions and pH within the soil and sediments (Navy, 2002 and 2003).

Chemical properties of soil and sediment that influence the distribution of metals include (Navy, 2002 and 2003):

- pH of the aqueous phase - Low pH (acidic) conditions tend to dissolve and mobilize metals, whereas high pH (basic) conditions favor metal precipitation, resulting in increased metals concentrations in the soil and sediment relative to water. The pH also affects the electric charge on the surface of mineral and sediment particles, particularly clays. Within the normal pH range (6 to 8), clay particles have a strongly negative net surface charge, and therefore, attract positively charged metal ions.
- Oxidation-reduction (redox) potential of the aqueous phase - Redox conditions within the soil and sediment affect the solubility and transport of metals. Under reducing conditions, most metallic ions tend to remain in solution, and therefore, are relatively mobile. Under oxidizing conditions, metallic ions are oxidized (i.e., they lose electrons) and tend to combine with nonmetallic ions (e.g., oxygen); these combined ions form compounds that precipitate out of

solution. For example, under oxidizing conditions, the manganese ion Mn^{2+} tends to lose electrons and form Mn^{4+} , which combines with oxygen and precipitates as MnO_2

- Ionic strength of the aqueous phase - Ionic strength affects the tendency of metals to precipitate out or remain in solution. A solution with high ionic strength has a high concentration of dissolved salts. Salts dissociate into ions in solution. The major cations formed when common salts dissociate are potassium, sodium, and calcium. The major anions are chloride, sulfate, carbonate, and bicarbonate. Increased salt content leads to increased mineral solubility. If the ionic strength of the pore water is high (as in seawater), metallic ions will tend to remain in solution. If the ionic strength of pore water is low (as in fresh water), metals will tend to precipitate out of solution resulting in higher concentrations in the soil and sediment.
- TOC concentrations - Soils and sediments with a high percentage of organic material (high TOC) will tend to have higher metal concentrations due to higher sorptive capacity.

Concentrations of naturally occurring metals are closely related to soil mineralogy and particle size. Extremely fine-grained soil particles, including clay minerals and organic matter, have greater sorption capacity (ability to attract ions) than large particles such as sand. Therefore, metal concentrations in soil tend to be inversely proportional to grain size. The rate and extent of adsorption increases as the surface area of the sorptive medium increases. Therefore, fine-grained media (e.g., clays), which have higher surface area/mass ratios, have relatively greater sorption capacities than coarse-grained media (e.g., sand) that have low surface area/mass ratios. In addition to large surface area/mass ratios, clays and organic colloids tend to be highly charged relative to their surface areas. Therefore, metal concentrations tend to be highest in soils and sediments that contain high percentages of clay and organic material; silts tend to have moderate sorption capacity and metal concentrations, and sands and gravels have low sorption capacity and relatively low metal concentrations.

Vegetation also can affect the distribution of background metals in soil. Some metals, including silver, arsenic, cadmium, copper, mercury, lead, antimony, and zinc, can be significantly concentrated in surface soils due to uptake by plants and adsorption by organic matter. Differences in vegetation density on the Site can be useful to identify geochemical relationships for background analysis.

In rocks of the same type, certain groups of analytes are often highly correlated; i.e., their concentration ratios tend to be relatively constant. In addition, although their concentrations may vary considerably among different rock types, certain elements still tend to be correlated. For example, nickel/chromium concentration ratios tend to be relatively constant among rocks classified as granite, shale, clay, and basalt. Elemental correlation (such as nickel and chromium) is common for many pairs and groups of metals, and therefore, provides a useful tool for background analysis. If correlation exists, background ranges of metals can be defined based on the relatively constant ratios of one metal to another. If a metal is found at an elevated concentration that does not fit the background ratio, a chemical release may be suspected.

The electronic structure and chemical properties of the metals, as reflected in the periodic table, can be useful to predict the distribution and association of metals in geologic materials. Metals with the ability to substitute for each other in the crystalline structure of minerals are commonly

associated in the geological environment. This substitution is governed by the ionic charge, ionic radius, and electronegativity of the major element and the trace element replacing it.

3.1.2 Potential Reference Metals for Soil and Sediment

Reference metals represent the minerals to which trace metals may be adsorbed. Aluminum, iron, calcium, magnesium, potassium, and sodium are major components of the minerals that form the rocks of the earth's crust, and therefore, are major constituents of most soils and sediments. Unless a release is suspected at a site, concentrations of these metals will most likely be within the background range (Navy, 2002 and 2003).

Aluminum is the most commonly used reference metal. Aluminum is a very useful reference metal for background analysis in soils and sediments because concentrations of certain metals in natural (uncontaminated) soil and sediment often are directly proportional to aluminum concentrations. Aluminum in soil and sediment tends to concentrate in the finer grain size fractions as clay minerals. In addition, aluminum is the most abundant naturally occurring metal, is highly refractory (i.e., resistant to weathering), and its concentrations are generally not influenced by chemical releases. Divalent cations, such as barium, cadmium, lead, and zinc, have an affinity to adsorb on clay minerals, which tends to maintain a net negative surface charge. Because clay minerals have a strong affinity for metallic cations, metal concentrations in soils and sediments that contain large quantities of clay often tend to be a function of aluminum concentrations (Navy, 2003).

Iron can also be a useful reference metal for background analysis. Weathering of rocks with high iron concentrations (e.g., basalts) results in the formation of stable clay minerals and iron oxides that also tend to adsorb other metals, therefore, natural metal concentrations also show a high degree of correlation with iron in many soils and sediments. Anions, such as arsenic, selenium, and vanadium, have an affinity to adsorb on iron oxides, which tends to maintain a net positive surface charge. Iron in soil and sediment tends to concentrate in the finer grain size fractions as oxide minerals. However, iron is more reactive than aluminum and tends to be remobilized in reducing environments. Under anaerobic conditions, iron is reduced to a soluble form, and tends to migrate within the porewater between soil and sediment particles. Aluminum is less reactive and has lower reduction potential than iron, therefore, if anaerobic conditions exist, aluminum is usually a better reference element. Concentrations of iron and aluminum may vary from sample to sample based on grain size, but they are usually present at a fixed ratio. Site-related activities may result in iron contamination from rust or machinery. In cases, where Site samples exhibit anomalously high iron/aluminum ratios, indicating possible iron contamination, iron would not be a suitable reference metal. The evaluation of iron versus (vs) aluminum can aid in determining whether there is iron contamination at the site. If a strong correlation between iron and aluminum is observed, iron may be a suitable reference metal (Navy, 2002 and 2003).

Calcium and magnesium may also serve as reference metals for background analysis. Calcium and magnesium are primary constituents of carbonate minerals, such as limestone and dolomite. Calcium and magnesium have similar chemical properties and magnesium will often substitute for calcium in minerals. Magnesium is also a common component of clay minerals. Thus,

positive correlations between calcium and magnesium, and aluminum and magnesium are commonly observed in uncontaminated soils.

In instances where manganese oxides are present, manganese may also be a reference metal. The concentration of manganese can serve as a qualitative indicator of the amounts of manganese oxide minerals in soil and sediment samples. Manganese oxides have an affinity for divalent cations, such as barium, cobalt, and lead.

Potassium and sodium may also serve as reference metals for background analysis. Potassium and sodium are common components of clay minerals and arkosic soils.

Site-specific geology and geochemistry should be considered when selecting the reference metals for a specific site. Information regarding site-specific historical activities can also aid in a background analysis. The site-specific geology, geochemistry, and historical activities can also assist in establishing what analyte associations to expect at the site. Suitable reference metals for a site can be identified after carefully evaluating the relationship between a potential reference metal and a suspected contaminant.

3.2 Statistical Methods Used in Tier 3 Evaluation

The Tier 3 geochemical evaluation consists of two types of tests used in conjunction to aid in identifying metal contaminants. These tests are described as follows.

3.2.1 Regression (Scatter) Plots

The Tier 3 evaluation is performed by first constructing scatter plots of two metals showing statistical associations or correlations. For this investigation, the scatter plots were generated using the statistical analysis software STATGRAPHICS Plus[®]. The scatter plot provides a graphic representation of the characteristics and strength of the relationship between two metals. In order to establish a reliable and defensible estimate of the background concentration range, a strong geochemical relationship between two metals should be identified. The evaluation includes the generation of plots in which detected concentrations of the suspected contaminant metal are plotted on the y-axis, and the corresponding detected concentrations of the reference metal are plotted on the x-axis. The method can be used with as few as three data points (i.e., three concentration values for each of two metals) (Navy, 2002), however, to obtain a more robust statistical evaluation a minimum of four points were used for this investigation. Plots with p-values less than 0.01 indicate a statistically significant relationship between the two metals at the 99 percent confidence level. Correlation exists between the two metals plotted if the data tend to occur along or near a straight line. Linear regressions were used to plot the best-fit straight line through the data. Ninety-five percent prediction limits were plotted alongside the linear regression to identify elevated metal concentrations that may be site-related. A 95 percent prediction limit is the range within which the y-value (suspected contaminant metal) that corresponds to a given x-value (reference metal) is predicted to fall 95 percent of the time. The slope of a best-fit line through the plotted sample values is equal to the average metal/metal ratio. If the metal concentrations plot on the same linear trend, then it is most probable that the observed concentrations are natural. If an individual site sample concentration plots above the

trend displayed by the uncontaminated samples, then there is evidence that the sample has an excess metal contribution.

Because metal concentrations in natural rocks, soils, and sediments tend to be lognormally distributed (Navy, 2002 and 2003), the linear regression plots were constructed with respect to a log scale. A log scale regression plot tends to make outliers (i.e., data points that do not fit the background population distribution) more visible. Log-scale or log-transformation is appropriate for most situations encountered during background analysis. Log-scale plotting is often appropriate even though some of the datasets may not be lognormally distributed. If data from a normal population distribution are log-transformed and graphed, it will still be possible to identify outliers.

Regression plots showing a strong correlation between a suspected contaminant metal and a reference metal is a strong indication that the suspected contaminant metal is present at background levels. Two or more scatter plots using different reference metals can aid in identifying a strong relationship that can be used to estimate the background range of the suspected contaminant metal. Because metals tend to occur together in natural rock, soil, and sediment minerals, regression plots between suspected contaminant metals were also conducted. If two suspected contaminant metals are associated, the geochemical factors that may result in their association in the natural environment is evaluated. High metal concentrations that do not fit an observed strong relationship are likely to represent contamination.

The scatter plots were first assessed by ascertaining whether the two metals had a statistically significant relationship, as determined by STATGRAPHICS Centurion XVII[®]. The scatter plots were then examined and interpreted by looking at the overall pattern of the relationship and for any deviations (i.e., outliers) from the pattern. The overall pattern can be described in terms of form (e.g. linear relationship), direction (e.g. slope of the best-fit line through the data), and strength (e.g., degree of correlation). The data points that fit the overall pattern are likely to represent natural concentrations of the suspected contaminant metal, whereas the outliers are part of a separate population and are likely to represent contamination. The highest concentration that fits the linear relationship represents the estimated upper bound of the background concentration range; i.e., the estimated upper bound of the background range is the concentration value associated with the highest data point within the 95% prediction interval. Data points outside the 95% prediction interval and with concentrations greater than the maximum concentrations inside the 95% prediction interval are considered outliers. Data points outside the 95% prediction interval but with concentrations equal to or less than the maximum concentrations inside the 95% prediction interval were considered to be within the background range, and therefore, were not considered outliers. The strength of the relationship is shown by the correlation coefficient and by looking at the linear relationship. A linear relationship is considered strong if the data points lie close to the regression line, whereas, the relationship is considered weak if they are widely scattered about the line. The correlation coefficient is used primarily to quantify the strength of the relationship. The correlation coefficients for each metal pair were tabulated to determine which metal pairs showed the highest correlation. Metal pairs with strong correlation coefficients (i.e. greater than or equal to 0.5) warranted further evaluation. However, metal pairs with correlation coefficients less than 0.5 may require further evaluation if the corresponding metal associations are expected due to local or regional geochemical characteristics (Navy, 2003).

A linear trend with a positive slope (positive correlation) between a trace metal (y-axis) and reference metal (x-axis) indicates the trace metal is associated with the mineral the reference metal represents (e.g. aluminum and clay minerals), and therefore, is naturally occurring. A sample that plots above the linear trend contains an excess concentration of the trace metal and may contain a component of contamination. Ratio plots (described in the following subsection) are a useful tool for interpreting the relationship between trace and reference metals and for identifying anomalous samples that may contain a component of contamination.

Redox-sensitive metals (such as arsenic, iron, and manganese) in samples from low-redox areas could display a higher degree of scatter on correlation plots and a wider range of ratios on ratio plots (Shaw, 2005a). Plots of trace metal concentrations vs redox indicators such as DO, redox potential, iron/aluminum ratios, or sums of organic contaminants can be useful to evaluate the effects of local redox conditions on trace metals.

3.2.2 Ratio Plots

Site samples with a trace metal present as a contaminant will exhibit anomalously high trace-vs-reference metal ratios compared to background trace-vs-reference metal ratios. However, these elevated ratios may not always be apparent in correlation plots. Therefore, ratio plots, which display trace metal concentrations for site and background samples on the y-axis and the trace/reference metal ratios on the x-axis, are used in conjunction with the regression plots to aid in identifying metal contaminants. Ratio plots assist in identifying samples with anomalously high ratios relative to the background.

Theoretically, the result of the ratio calculation would be the same in the samples, causing the background data to plot as a narrow vertical line. Any data that plotted to the right of the narrow vertical line would be considered as having an enriched ratio, indicative of site-related contamination. Data plotted to the left of the vertical line would indicate consistency with the background (i.e., natural conditions). However, natural variability and analytical uncertainty can produce some scatter in the point on a ratio plot. On ratio plots, vertical trends should only be expected in cases where the trace metal adsorption is a linear process, and where the trace metal concentrations are controlled exclusively by adsorption on a given mineral type. However, non-vertical trends are much more common in ratio plots because adsorption process often are not linear and because trace metals often have affinities for more than one type of sorptive surface. The presence of competing ions and differences in pH and redox conditions among the sample locations can add to the natural variability of metal ratios. Therefore, the vertical line representing the background data was drawn through the highest background sample result, consistent with the approach used by Shaw Environmental (EPA, 2005). Site samples that fell to the right of the vertical line drawn through the maximum ratio in the background data were recognized as site-related. Site samples that fell to the left of the vertical line drawn through the maximum ratio in the background data were recognized as naturally occurring.

The ratio plots were used in conjunction with the correlation (regression) plots to aid in identifying metal contaminants. Site samples that plotted above the trend on the regression plots and to the right of the vertical line on the ratio plots for the same trace to reference metal comparisons were considered to be contaminants at the Site.

4.0 RESULTS OF THE TIER 1 AND TIER 2 EVALUATIONS

This section presents the results of the site-to-background comparisons for metals in the surface soil and subsurface soil at the Site. The metals analytical results used in the Tier 1 and Tier 2 evaluations are presented in Tables 5-1 and 5-3 of the Range 30 RFI Report. Metals results that were flagged with a “B” indicating the analyte concentration was due to an associated laboratory method or calibration blank were considered to be not detected.

4.1 Surface Soil

Twenty-two metals were evaluated in the surface soil data set. Because silver was not detected in surface soil at the Site, no further evaluation was required for silver. Table C1 summarizes the surface soil statistical site-to-background comparison results.

4.1.1 Tier 1 Evaluation Results for Surface Soil

As shown in Table C1, the MDCs for antimony, arsenic, barium, beryllium, cadmium, copper, lead, manganese, mercury, nickel, selenium, vanadium, and zinc were above their respective BSVs. These metals were carried forward to the Tier 2 evaluation.

The MDCs for aluminum, calcium, and iron were also above their respective BSVs, however, these analytes are considered essential macronutrients with minimal human or ecological toxicity. Because the MDCs for aluminum, calcium, and iron were less than ten times their respective BSVs, they were not carried forward to the Tier 2 or Tier 3 evaluations.

4.1.2 Tier 2 Evaluation Results for Surface Soil

Table C1 presents a summary of the Tier 2 evaluation results. The box plots for surface soil are presented in Attachment C1. Antimony, barium, cadmium, copper, lead, nickel, selenium, and zinc failed one or both of the Tier 2 (i.e., hot measurement or WRS) tests. Therefore, these metals were carried forward to the Tier 3 evaluation.

4.2 Subsurface Soil

Twenty-three metals were evaluated in the subsurface soil data set. Table C1 summarizes the subsurface soil statistical site-to-background comparison results.

4.2.1 Tier 1 Evaluation Results for Subsurface Soil

As shown in Table C1, the MDCs for antimony, arsenic, cadmium, chromium, copper, lead, mercury, nickel, vanadium, and zinc had MDCs above their respective BSVs. These metals were carried forward to the Tier 2 evaluation.

The MDCs for iron and potassium were also above their respective BSVs, however, these analytes are considered essential macronutrients with minimal human or ecological toxicity.

Because the MDCs for iron and potassium were less than ten times their respective BSVs, they were not carried forward to the Tier 2 or Tier 3 evaluations.

4.2.2 Tier 2 Evaluation Results for Subsurface Soil

Table C1 presents a summary of the Tier 2 evaluation results. The box plots for subsurface soil are presented in Attachment C1. Antimony, cadmium, chromium, copper, lead, mercury, and nickel failed one or both of the Tier 2 (i.e., hot measurement or WRS) tests. Therefore, these metals were carried forward to the Tier 3 evaluation.

5.0 RESULTS OF THE TIER 3 EVALUATION

This section provides the results of the Tier 3 evaluation of metals in surface soil and subsurface soil. The metals analytical results used in the Tier 3 evaluations are presented in Tables 5-1 and 5-3 of the Range 30 RFI Report. Metals results that were flagged with a “B” indicating the analyte concentration was due to an associated laboratory method or calibration blank were considered to be not detected. Regression (scatter) and ratio plots were constructed for each applicable metal-to-metal association. The step-by-step procedures taken during the Tier 3 assessment are illustrated in Figure C1. Table C2 presents a summary of the correlation coefficients for the metal pairs evaluated by the geochemical regression analysis method for surface soil and subsurface soil. The following subsections discuss the results of the Tier 3 evaluation.

5.1 Tier 3 Evaluation Results for Surface Soil

A Tier 3 evaluation was performed for antimony, barium, cadmium, copper, lead, nickel, selenium, and zinc in surface soil at the Site. The Tier 3 evaluation for surface soil is summarized in Table C3. Attachment C2 presents the regression (scatter) and ratio plots for surface soil. Up to two representative plots for each subject metal are presented in Attachment C2.

5.1.1 Site Reference Metals for Surface Soil

Potential reference metals for surface and depositional soil at the Site include aluminum, calcium, iron, magnesium, manganese, and potassium. Attachment C2 presents the regression plots for aluminum vs iron, aluminum vs magnesium, calcium vs magnesium, calcium vs manganese, aluminum vs potassium, and iron vs potassium in surface soil at the Site. The linear trends with positive slopes suggest that aluminum, calcium, iron, magnesium, manganese, and potassium are naturally occurring and were used as reference metals for the geochemical evaluation for surface soil at the Site. Some trace metals have a very strong affinity for a particular type of mineral, whereas other metals will partition themselves between several minerals. It is expected that trace metals that are naturally occurring at the Site would show a correlation with at least one of the reference metals.

5.1.2 Statistical Test Results for Surface Soil

The correlation coefficients for the geochemical regression analyses and the Tier 3 evaluation for surface soil are summarized in Tables C2 and C3, respectively. The results of the Tier 3 evaluation for surface soil are described below.

- Antimony showed moderately strong to strong correlations with trace metals copper, lead, nickel, and zinc, but none of the reference metals. The strong correlation between antimony and copper and lead may be indicative of Site-related contamination of metals associated with munitions. Attachment C2 presents the regression plots for antimony vs copper and lead in surface soil. Antimony has an affinity to adsorb on the surfaces of iron oxides and clays. The ratio plots for antimony vs the reference metals indicated that the antimony concentrations for several samples were greater than the background range for at least one of

the reference metals. The ratio plots for antimony vs aluminum and iron in surface soil are presented in Attachment C2. Because they were greater than the background range, the antimony concentrations for samples R30-88Q-010, R30-88Q-012, R30-88Q-014 to R30-88Q-018, R30-103Q-005, R30-103Q-007, R30-103Q-015, and R30-103Q-016 are considered contaminants in surface soil at the Site.

- Barium showed moderate to strong correlations with reference metals calcium, magnesium, and manganese; and moderately strong correlations with trace metals lead, nickel, and zinc. Attachment C2 presents the regression and ratio plots for barium vs calcium and manganese in surface soil. The regression plots showed no outliers above the 95% prediction limits. Therefore, barium is considered to be naturally occurring in surface soil at the Site.
- Cadmium showed moderately strong correlations with reference metal iron, and trace metals mercury and selenium. Attachment C2 presents the regression plot for cadmium vs iron. The regression plots showed no outliers above the 95% prediction limits. Therefore, cadmium is considered to be naturally occurring in surface soil at the Site.
- Copper showed moderately strong to strong correlations with trace metals antimony, lead, nickel, and zinc, but none of the reference metals. The strong correlation between copper and antimony and lead may be indicative of Site-related contamination of metals associated with munitions. Attachment C2 presents the regression plots for antimony vs copper, and copper vs lead and nickel in surface soil. Copper is a divalent cation with an affinity to adsorb on the surfaces of iron oxides and clays. The ratio plots for copper vs the reference metals indicated that the copper concentrations for several samples were greater than the background range for at least one of the reference metals. The ratio plots for copper vs aluminum and iron in surface soil are presented in Attachment C2. Because they were greater than the background range, the copper concentrations for samples R30-88Q-003, R30-88Q-010, R30-88Q-012, R30-88Q-014 to R30-88Q-018, R102Q-001, R102Q-002, R30-103Q-005, R30-103Q-007, R30-103Q-011, R30-103Q-015, and R30-103Q-016 are considered contaminants in surface soil at the Site.
- Lead showed moderately strong to strong correlations with trace metals antimony, copper, nickel, and zinc, but none of the reference metals. The strong correlation between lead and antimony and copper may be indicative of Site-related contamination of metals associated with munitions. Attachment C2 presents the regression plots for antimony vs lead and copper vs lead in surface soil. Lead is a divalent cation with an affinity to adsorb to manganese oxides, clays, and limestone. The ratio plots for lead vs the reference metals indicated that the lead concentrations for several samples were greater than the background range for at least one of the reference metals. The ratio plots for lead vs calcium and magnesium in surface soil are presented in Attachment C2. Because they were greater than the background range, the lead concentrations for samples R30-88Q-003, R30-88Q-010, R30-88Q-012, R30-88Q-014 to R30-88Q-018, R102Q-001, R102Q-002, R30-103Q-005, R30-103Q-007, R30-103Q-011, R30-103Q-015, and R30-103Q-016 are considered contaminants in surface soil at the Site.
- Nickel showed relatively weak to moderately strong correlations with reference metals calcium, magnesium, and manganese, and several trace metals. One common outlier, R30-103Q-007, was greater than the 95 percent (%) prediction limit on the regression plot and the background range on the ratio plot for nickel vs calcium and magnesium. Attachment C2 presents the regression and ratio plots for nickel vs calcium and magnesium,

and the regression plot for nickel vs iron in surface soil. Therefore, the nickel concentration in surface soil sample R30-103Q-007 is considered a contaminant at the Site.

- Selenium showed moderately strong correlations with reference metals aluminum, iron, magnesium, and potassium, and a few trace metals. The regression plots for selenium vs the reference metals showed no outliers above the 95% prediction limits, with the exception of one outlier for the selenium vs iron regression plot. Ratio plots could not be produced for selenium due to the low number of background detects. Therefore, the selenium concentration in surface soil sample R30-102Q-002 is considered a contaminant at the Site.
- Zinc showed relatively weak to moderately strong correlations with reference metals calcium, magnesium, and manganese, and several trace metals. The regression plots showed no outliers above the 95% prediction limits, with the exception of one outlier for the zinc vs magnesium regression plot. However, the sample concentration for the outlier sample point on the regression plot was within the background range on the associated ratio plot. Attachment C2 shows the regression plot for zinc vs calcium, and the regression and ratio plots for zinc vs magnesium. Therefore, zinc is considered to be naturally occurring in surface soil at the Site.

5.2 Tier 3 Evaluation Results for Subsurface Soil

A Tier 3 evaluation was performed for antimony, cadmium, chromium, copper, lead, mercury, and nickel in subsurface soil at the Site. The Tier 3 evaluation for subsurface soil is summarized in Table C4. Attachment C3 presents the regression (scatter) and ratio plots for subsurface soil. Up to two representative plots for each subject metal are presented in Attachment C3.

5.2.1 Site Reference Metals for Subsurface Soil

Potential reference metals for subsurface soil at the Site include aluminum, calcium, iron, magnesium, manganese, and potassium. Attachment C3 presents the regression plots for aluminum vs iron, magnesium, and potassium, magnesium vs potassium, and calcium vs magnesium in subsurface soil at the Site. The linear trends with positive slopes suggest that aluminum, calcium, iron, magnesium, and potassium are naturally occurring and were used as reference metals for the geochemical evaluation for subsurface soil at the Site. Some trace metals have a very strong affinity for a particular type of mineral, whereas other metals will partition themselves between several minerals. It is expected that trace metals that are naturally occurring at the Site would show a correlation with at least one of the reference metals.

5.2.2 Statistical Test Results for Subsurface Soil

The correlation coefficients for the geochemical regression analyses and the Tier 3 evaluation for subsurface soil are summarized in Tables C2 and C4, respectively. The results of the Tier 3 evaluation for subsurface soil are described below.

- Antimony showed strong correlations with trace metals copper and lead, but no correlations with any of the reference metals. The strong correlation between antimony and copper and lead may be indicative of Site-related contamination of metals associated with munitions. Attachment C3 presents the regression plots for antimony vs copper and lead in surface soil.

Antimony has an affinity to adsorb on the surfaces of iron oxides and clays. The ratio plots for antimony vs the reference metals indicated that the antimony concentrations for several samples were greater than the background range for at least one of the reference metals. The ratio plots for antimony vs calcium and iron in subsurface soil are presented in Attachment C3. Because they were greater than the background range, the antimony concentrations for samples R30-88Q-003, R30-88Q-012, R30-103Q-003, R30-103Q-005, and R30-103Q-007 are considered contaminants in subsurface soil at the Site.

- Cadmium showed moderately strong to strong correlations with reference metals aluminum and iron, and trace metals chromium and selenium. Attachment C3 presents the regression plots for cadmium vs aluminum and iron. The regression plots showed no outliers above the 95% prediction limits. Therefore, cadmium is considered to be naturally occurring in subsurface soil at the Site.
- Chromium showed moderately strong to strong correlations with reference metals aluminum and iron, and trace metals cadmium and mercury. One outlier was found with the regression plot for chromium vs aluminum, however, no outliers were found on the associated ratio plot for chromium vs aluminum. Attachment C3 presents the regression and ratio plots for chromium vs aluminum, and the regression plot for chromium vs iron in subsurface soil. Therefore, chromium is considered to be naturally occurring in subsurface soil at the Site.
- Copper showed moderately strong to strong correlations with trace metals antimony, lead, and zinc, but none of the reference metals. The strong correlation between copper and antimony and lead may be indicative of Site-related contamination of metals associated with munitions. Attachment C3 presents the regression plots for antimony vs copper, and copper vs lead in subsurface soil. Copper is a divalent cation with an affinity to adsorb on the surfaces of iron oxides and clays. The ratio plots for copper vs the reference metals indicated that the copper concentrations for several samples were greater than the background range for at least one of the reference metals. The ratio plots for copper vs aluminum and iron in subsurface soil are presented in Attachment C3. Because they were greater than the background range, the copper concentrations for samples R30-88Q-003, R30-88Q-012, R102Q-001, R30-103Q-005, and R30-103Q-007 are considered contaminants in subsurface soil at the Site.
- Lead showed strong correlations with trace metals antimony and copper, nickel, but none of the reference metals. The strong correlation between lead and antimony and copper may be indicative of Site-related contamination of metals associated with munitions. Attachment C3 presents the regression plots for antimony vs lead and copper vs lead in subsurface soil. Lead is a divalent cation with an affinity to adsorb to manganese oxides, clays, and limestone. The ratio plots for lead vs the reference metals indicated that the lead concentrations for several samples were greater than the background range for at least one of the reference metals. The ratio plots for lead vs calcium and magnesium in subsurface soil are presented in Attachment C3. Because they were greater than the background range, the lead concentrations for samples R30-88Q-003, R30-88Q-012, R102Q-001, R30-103Q-003, and R30-103Q-007 are considered contaminants in surface soil at the Site.
- Mercury showed moderately strong correlations with reference metals aluminum and potassium, and trace metal chromium. The regression plots for mercury vs aluminum and potassium in subsurface soil are presented in Attachment C3. The regression plots showed

no outliers above the 95% prediction limits. Therefore, mercury is considered to be naturally occurring in subsurface soil at the Site.

- Nickel showed a moderately strong correlation with reference metal calcium. Attachment C3 presents the regression plot for nickel vs calcium in subsurface soil. The regression plot showed no outliers above the 95% prediction limits. Therefore, nickel is considered to be naturally occurring in subsurface soil at the Site.

6.0 METALS STATISTICAL EVALUATION SUMMARY

Based on the Tiers 1, 2, and 3 statistical evaluations, the following metals were identified as site-related and are considered contaminants at the Site.

- Surface Soil Contaminants:
 - o Antimony
 - o Copper
 - o Lead
 - o Nickel
 - o Selenium
- Subsurface Soil Contaminants:
 - o Antimony
 - o Copper
 - o Lead

Table C5 summarizes the list of metal contaminants and affected samples at the Site based on the statistical analyses.

7.0 REFERENCES

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TABLES

FIGURES

Table C1: Summary of Tiers 1 and 2 Metals Evaluations
Range 30 Impact Area, Parcels 88Q and 103Q, McClellan, Anniston, Alabama

Appendix C

Metal Detects FOD Bkg %NDs MDC				Tier 1 Evaluation			Tier 2 Evaluation								Perform Tier 3 Test
				MDC > BSV BSV Tier I			Hot Measurement Test			WRS Test		Box Plot	WRS/Box Plot	Tier 2	
							UTL	UTL	HM Test	p-value	p-value < 0.05	Site median > Bkg median			
Surface Soil (mg/kg)															
Aluminum	30/30	0	31400	16,478	Y	Pass*	--	--	--	--	--	--	--	--	No
Antimony	22/30	30.4	5.62	1.96	Y	Fail	0.999	Y	Fail	1.21E-04	Y	Y	Fail	Fail	Yes
Arsenic	30/30	0	15	13.4	Y	Fail	25.7	N	Pass	0.94355	N	Y	Pass	Pass	No
Barium	30/30	0	213	121	Y	Fail	196	Y	Fail	0.22650	N	Y	Pass	Fail	Yes
Beryllium	28/30	0	1.11	0.77	Y	Fail	1.19	N	Pass	0.727950	N	Y	Pass	Pass	No
Cadmium	19/30	34.9	0.447	0.34	Y	Fail	0.133	Y	Fail	1.07E-11	Y	Y	Fail	Fail	Yes
Calcium	30/30	6.1	1800	1689	Y	Pass*	--	--	--	--	--	--	--	--	No
Chromium	30/30	1.5	34.3	36.4	N	Pass	--	--	--	--	--	--	--	--	No
Cobalt	28/30	3.0	7.84	14.3	N	Pass	--	--	--	--	--	--	--	--	No
Copper	30/30	1.5	263	12.6	Y	Fail	22.5	Y	Fail	2.5E-06	Y	Y	Fail	Fail	Yes
Iron	30/30	0	38800	34,207	Y	Pass*	--	--	--	--	--	--	--	--	No
Lead	30/30	0	1480	37.4	Y	Fail	59.7	Y	Fail	0.000	Y	Y	Fail	Fail	Yes
Magnesium	30/30	0	743	1,056	N	Pass	--	--	--	--	--	--	--	--	No
Manganese	30/30	0	2880	1461	Y	Fail	4,732	N	Pass	0.404	N	Y	Pass	Pass	No
Mercury	26/30	68.2	0.0948	0.08	Y	Fail	0.117	N	Pass	NP	--	--	NP	Pass	No
Nickel	30/30	21.2	42.4	10.1	Y	Fail	13.7	Y	Fail	0.000498	Y	Y	Fail	Fail	Yes
Potassium	30/30	15.2	813	822	N	Pass	--	--	--	--	--	--	--	--	No
Selenium	23/30	98.5	0.612	0.48	Y	Fail	0.288	Y	Fail	NP	--	--	NP	Fail	Yes
Silver	0/30	--	--	--	--	--	--	--	--	--	--	--	--	--	No
Sodium	6/30	6.1	43.7	628	N	Pass	--	--	--	--	--	--	--	--	No
Thallium	15/30	19.4	0.306	1.42	N	Pass	--	--	--	--	--	--	--	--	No
Vanadium	30/30	0	69.9	58.6	Y	Fail	98.1	N	Pass	0.5194	N	Y	Pass	Pass	No
Zinc	30/30	9.1	40.4	40.0	Y	Fail	71.2	N	Pass	3.3E-02	Y	Y	Fail	Fail	Yes
Subsurface Soil (mg/kg)															
Aluminum	12/12	0	26100	13,692	Y	Pass*	--	--	--	--	--	--	--	--	No
Antimony	6/12	27.8	3.48	1.4	Y	Fail	0.782	Y	Fail	0.180631	N	Y	Pass	Fail	Yes
Arsenic	12/12	5.5	23.9	16.3	Y	Fail	53.2	N	Pass	0.99347	N	Y	Pass	Pass	No
Barium	12/12	0	96.9	243	N	Pass	--	--	--	--	--	--	--	--	No

Table C1: Summary of Tiers 1 and 2 Metals Evaluations
Range 30 Impact Area, Parcels 88Q and 103Q, McClellan, Anniston, Alabama

Appendix C

Metal Detects FOD Bkg %NDs MDC				Tier 1 Evaluation			Tier 2 Evaluation								Perform Tier 3 Test
				MDC > BSV BSV Tier I			Hot Measurement Test			WRS Test		Box Plot	WRS/Box Plot	Tier 2	
							UTL	UTL	HM Test	p-value	p-value < 0.05	Site median > Bkg median			
Beryllium	12/12	4	0.464	0.84	N	Pass	--	--	--	--	--	--	--	--	No
Cadmium	9/12	42.3	0.474	0.22	Y	Fail	0.187	Y	Fail	0.000010	Y	Y	Fail	Fail	Yes
Calcium	12/12	32.7	292	617	N	Pass	--	--	--	--	--	--	--	--	No
Chromium	12/12	1.8	87.1	38.2	Y	Fail	53.0	Y	Fail	0.567073	N	N	Pass	Fail	Yes
Cobalt	11/12	7.3	6.82	17.1	N	Pass	--	--	--	--	--	--	--	--	No
Copper	12/12	0	89.2	19.6	Y	Fail	34.2	Y	Fail	1.0E-01	N	Y	Pass	Fail	Yes
Iron	12/12	0	55300	44,726	Y	Pass*	--	--	--	--	--	--	--	--	No
Lead	12/12	0	464	40.0	Y	Fail	60.7	Y	Fail	0.00444	Y	Y	Fail	Fail	Yes
Magnesium	12/12	7.2	676	831	N	Pass	--	--	--	--	--	--	--	--	No
Manganese	12/12	1.8	567	1274	N	Pass	--	--	--	--	--	--	--	--	No
Mercury	9/12	52.7	0.158	0.06	Y	Fail	0.093	Y	Fail	NP	--	--	NP	Fail	Yes
Nickel	12/12	18.2	16.4	12.7	Y	Fail	27.4	N	Pass	0.00455	Y	Y	Fail	Fail	Yes
Potassium	12/12	20	887	723	Y	Pass*	--	--	--	--	--	--	--	--	No
Selenium	7/12	98.2	0.364	0.48	N	Pass	--	--	--	--	--	--	--	--	No
Silver	1/12	38.2	0.119	0.24	N	Pass	--	--	--	--	--	--	--	--	No
Sodium	3/12	1.8	43.4	707	N	Pass	--	--	--	--	--	--	--	--	No
Thallium	6/12	13.0	0.263	1.62	N	Pass	--	--	--	--	--	--	--	--	No
Vanadium	12/12	0	89.7	65.0	Y	Fail	90.1	N	Pass	0.5183	N	Y	Pass	Pass	No
Zinc	12/12	21.8	35.1	34.8	Y	Fail	82.1	N	Pass	3.0E-01	N	Y	Pass	Pass	No

Notes:

Bkg = background

BSV = background screening value (2x Mean Background)

FOD = frequency of detection

HM = Hot Measurement

MDC = maximum detected concentration

mg/kg = milligram per kilogram

NA = Not available

ND = not detected

NP = not performed due to non-detects > 50% of data set

UTL = 95th upper tolerance limit for lognormal or normal distributions; 95th percentile for nonparametric background distributions

WRS = Wilcoxon Rank Sum

-- = not required/applicable

% = percent

* = Macronutrient with MDC < 10x BSV.

Table C2: Geochemical Regression Analysis (Scatter Plots) - Summary of Correlation Coefficients
Range 30 Impact Area, Parcels 88Q and 103Q, McClellan, Anniston, Alabama

Appendix C

Surface Soil	Al	Sb	Ba	Cd	Ca	Cr	Cu	Fe	Pb	Mg	Mn	Hg	Ni	K	Se	Zn
Reference Metals																
Aluminum		--	--	--	*	--	--	0.768	--	0.786	*	--	--	0.800	--	--
Calcium	*	--	--	--		--	--	*	--	0.457	0.836	--	--	*	--	--
Iron	0.768	--	--	--	*	--	--		--	*	*	--	--	0.695	--	--
Magnesium	0.786	--	--	--	0.457	--	--	*	--		0.390	--	--	0.623	--	--
Manganese	*	--	--	--	0.836	--	--	*	--	0.390		--	--	*	--	--
Potassium	0.800	--	--	--	*	--	--	0.695	--	0.623	*	--	--		--	--
Suspected Contaminants																
Antimony	*		*	*	*	*	0.848	*	0.836	*	*	*	0.737	*	*	0.603
Barium	*	*		*	0.794	*	*	*	0.407	0.453	0.885	*	0.563	*	*	0.629
Cadmium	*	*	*		*	*	*	0.599	*	*	*	0.713	*	*	0.630	*
Copper	*	0.848	*	*	*	*		*	0.962	*	*	*	0.728	*	*	0.689
Lead	*	0.836	0.407	*	*	*	0.962	*		*	*	*	0.687	*	*	0.645
Nickel	*	0.737	0.563	*	0.391	*	0.728	*	0.687	0.546	0.452	*		*	*	0.809
Selenium	0.704	*	*	0.630	*	*	*	0.457	*	0.724	*	0.585	*	0.710		0.456
Zinc	*	0.603	0.629	*	0.431	*	0.689	*	0.645	0.699	0.462	*	0.809	*	0.456	

Subsurface Soil	Al	Sb	Ba	Cd	Ca	Cr	Cu	Fe	Pb	Mg	Mn	Hg	Ni	K	Se	Zn
Reference Metals																
Aluminum		--	--	--	*	--	--	0.809	--	0.681	*	--	--	0.794	--	--
Calcium	*	--	--	--		--	--	*	--	0.352	*	--	--	*	--	--
Iron	0.809	--	--	--	*	--	--		--	*	*	--	--	*	--	--
Magnesium	0.681	--	--	--	0.352	--	--	*	--		*	--	--	0.738	--	--
Manganese	*	--	--	--	*	--	--	*	--	*		--	--	*	--	--
Potassium	0.794	--	--	--	*	--	--	*	--	0.738	*	--	--		--	--
Suspected Contaminants																
Antimony	*		*	*	*	*	0.961	*	0.961	*	*	*	*	*	*	*
Cadmium	0.724	*	*		*	0.925	*	0.936	*	*	*	*	*	*	0.874	*
Chromium	0.630	*	*	0.925	*		*	0.909	*	*	*	0.710	*	*	*	*
Copper	*	0.961	*	*	*	*		*	0.940	*	*	*	*	*	*	0.661
Lead	*	0.961	*	*	*	*	0.940	*		*	*	*	*	*	*	*
Mercury	0.788	*	*	*	*	0.710	*	*	*	*	*		*	0.680	*	*
Nickel	*	*	*	*	0.616	*	*	*	*	*	*	*		*	*	*

Table C2: Geochemical Regression Analysis (Scatter Plots) - Summary of Correlation Coefficients
Range 30 Impact Area, Parcels 88Q and 103Q, McClellan, Anniston, Alabama

Appendix C

Correlation coefficients shown are from scatter plots with respect to a log scale.

* = Scatter plot showed no positive correlation or an extremely weak correlation between the two metals.

-- = not required

NP = Not performed due to low number of investigative sample detects.

Table C3: Summary of Tier 3 Evaluation - Surface Soil
Range 30 Impact Area, Parcels 88Q and 103Q, McClellan, Anniston, Alabama

Appendix C

Surface Soil														
Geochemical Regression Analysis (Scatter Plot)														
Suspected Contaminants	Al	Sb	Ba	Cd	Ca	Cu	Fe	Pb	Mg	Mn	Ni	K	Se	Zn
Antimony	*		*	*	*	oks	*	oks	*	*	oks	*	*	oks
Barium	*	*		*	oks	*	*	oks	oks	oks	oks	*	*	oks
Cadmium	*	*	*		*	*	oks	*	*	*	*	*	oks	*
Copper	*	oks	*	*	*		*	oks	*	*	oks	*	*	oks
Lead	*	oks	oks	*	*	oks	*		*	*	oks	*	*	oks
Nickel	*	oks	--	*	R30-103Q-007	oks	*	oks	R30-103Q-007	R30-103Q-007		*	*	R30-103Q-007
Selenium	oks	*	*	oks	*	*	R30-102Q-002	*	oks	*	*	oks		R30-102Q-002
Zinc	*	oks	oks	*	oks	oks	*	oks	R30-88Q-016	oks	oks	*	--	
Site-to-Background Comparison Ratio Analysis														
Suspected Contaminants	Al	Sb	Ba	Cd	Ca	Cu	Fe	Pb	Mg	Mn	Ni	K	Se	Zn
Antimony	R30-88Q-014, -016; R30-103Q-007		--	--	R30-88Q-010, -012, -014, -016; R30-103Q-007	N	R30-88Q-010, -012, -014 to -018; R30-103Q-005,	N	okr	okr	N	R30-88Q-012, -014, -016; R30-103Q-007	--	N
Barium	--	--		--	N	--	--	N	N	N	N	--	--	N
Cadmium	--	--	--		--	--	N	--	--	--	--	--	N	--
Copper	R30-88Q-003, -012, -014 to -018; R30-103Q-005, -007, -015, -016	N	--	--	R30-88Q-003, -010, -012, -014, -015, -016, -018; R30-102Q-001, -002; R30-103Q-005, -007,		R30-88Q-003, -012, -014 to -018; R30-102Q-001; R30-103Q-005,	N	R30-88Q-003, -012, -014 to -018; R30-102Q-001; R30-103Q-005,	okr	N	R30-88Q-012, -014 to -018; R30-103Q-005, -007, -015, -016	--	N
Lead	R30-88Q-003, -012, -014 to -018; R30-103Q-005, -007, -015	N	N	--	R30-88Q-003, -010, -012, -014, -015, -016, -018; R30-102Q-001, -002; R30-103Q-005, -007,	N	R30-88Q-003, -012, -014 to -018; R30-102Q-001; R30-103Q-005,		R30-88Q-003, -012, -014 to -018; R30-102Q-001; R30-103Q-005,	R30-88Q-003, -010, -014, -016, -018; R30-102Q-001; R30-103Q-007, -016	N	R30-88Q-012, -014 to -018; R30-102Q-001; R30-103Q-005, -007, -015, -016	--	N
Nickel	--	N	--	--	7 outliers, including R30-103Q-007	N	--	N	R30-103Q-007	okr		--	--	--
Selenium	N	--	--	N	--	--	NP	--	N	--	--	N		--
Zinc	--	N	N	--	N	N	--	N	okr	N	N	--	--	

Table C3: Summary of Tier 3 Evaluation - Surface Soil
Range 30 Impact Area, Parcels 88Q and 103Q, McClellan, Anniston, Alabama

Appendix C

Notes:

* = Scatter plot showed no positive correlation or an extremely weak correlation between the two metals.

-- = site-to-background ratio test was not required

N = Because the scatter plot met criteria and showed no outliers, the ratio plot was not considered necessary for evaluation.

NP = could not be performed due to low number of background detects

oks = Scatter plot indicates no outliers, site sample concentrations are within the 95% prediction limits or less than the maximum concentrations within the 95% interval.

okr = Ratio plot indicates the site sample concentrations are within background range.

Sample IDs shown in tables had concentrations either above the 95% prediction interval and greater than the maximum concentrations inside the 95% prediction interval for the scatter plot or above the background range for the ratio plot.

Table C4: Summary of Tier 3 Evaluation - Subsurface Soil
Range 30 Impact Area, Parcels 88Q and 103Q, McClellan, Anniston, Alabama

Subsurface Soil													
Geochemical Regression Analysis (Scatter Plot)													
Suspected Contaminants	Al	Sb	Cd	Ca	Cr	Cu	Fe	Pb	Mg	Mn	Hg	Ni	K
Antimony	*		*	*	*	oks	*	oks	*	*	*	*	*
Cadmium	oks	*		*	oks	*	oks	*	*	*	*	*	*
Chromium	R30-103Q-003	*	oks	*		*	oks	*	*	*	oks	*	*
Copper	*	oks	*	*	*		*	oks	*	*	*	*	*
Lead	*	oks	*	*	*	oks	*		*	*	*	*	*
Mercury	oks	*	*	*	oks	*	*	*	*	*		*	oks
Nickel	*	*	*	oks	*	*	*	*	*	*	*		*
Site-to-Background Comparison Ratio Analysis													
Suspected Contaminants	Al	Sb	Cd	Ca	Cr	Cu	Fe	Pb	Mg	Mn	Hg	Ni	K
Antimony	R30-88Q-003; R30-103Q-007		--	R30-88Q-003, -012; R30-103Q-003, -007	--	N	R30-88Q-003, -012; R30-103Q-005, -007	N	R30-88Q-003; R30-103Q-007	okr	--	--	R30-103Q-007
Cadmium	N	--		--	N	--	N	--	--	--	--	--	--
Chromium	okr	--	N	--		--	N	--	--	--	N	--	--
Copper	R30-103Q-007	N	--	R30-88Q-003	--		R30-88Q-003, -012; R30-102Q-001; R30-103Q-005, -007	N	R30-88Q-003; R30-103Q-007	okr	--	--	R30-103Q-007
Lead	R30-103Q-007	N	--	R30-88Q-003, -012; R30-102Q-001; R30-103Q-003, -007	--	N	R30-88Q-003, -012; R30-102Q-001; R30-103Q-007		R30-88Q-003, -012; R30-102Q-001; R30-103Q-007	R30-88Q-003; R30-102Q-001	--	--	R30-103Q-007
Mercury	N	--	--	--	N	--	--	--	--	--		--	N
Nickel	--	--	--	N	--	--	--	--	--	--	--		--

Notes:

* = Scatter plot showed no positive correlation or an extremely weak correlation between the two metals.

-- = site-to-background ratio test was not required

N = Because the scatter plot met criteria and showed no outliers, the ratio plot was not considered necessary for evaluation.

oks = Scatter plot indicates no outliers, site sample concentrations are within the 95% prediction limits or less than the maximum concentrations within the 95% interval.

okr = Ratio plot indicates the site sample concentrations are within background range.

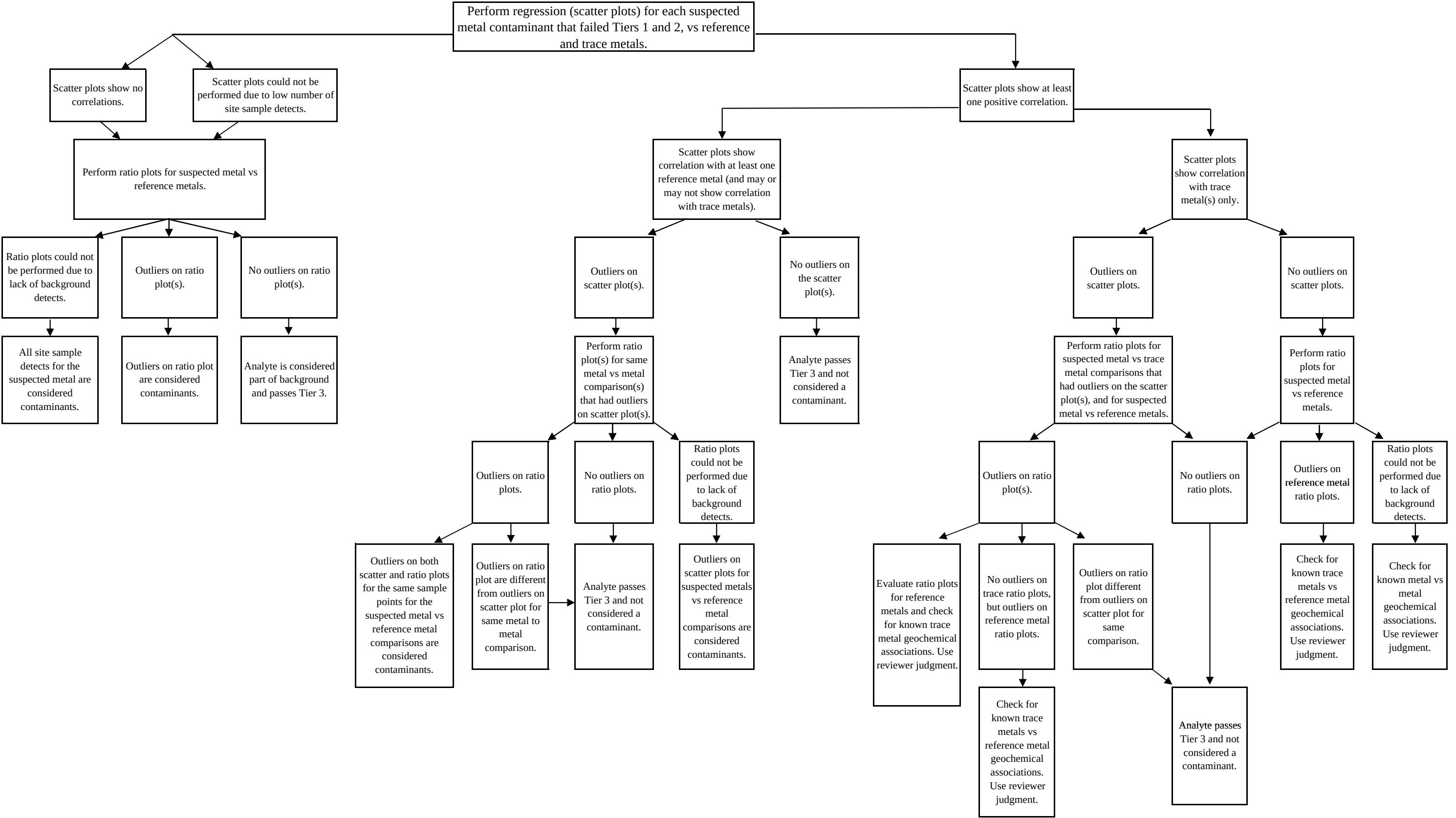
Sample IDs shown in tables had concentrations either above the 95% prediction interval and greater than the maximum concentrations inside the 95% prediction interval for the scatter plot or above the background range for the ratio plot.

**Table C5: Summary of Metal Contaminants
Range 30 Impact Area, Parcels 88Q and 103Q,
McClellan, Anniston, Alabama**

Surface Soil Contaminants	
Antimony	R30-88Q-010, R30-88Q-012, R30-88Q-014 to R30-88Q-018; R30-103Q-005, R30-103Q-007, R30-103Q-015, R30-103Q-016
Copper	R30-88Q-003, R30-88Q-010, R30-88Q-012, R30-88Q-014 to R30-88Q-018; R30-102Q-001, R30-102Q-002; R30-103Q-005, R30-103Q-007, R30-103Q-011, R30-103Q-015, R30-103Q-016
Lead	R30-88Q-003, R30-88Q-010, R30-88Q-012, R30-88Q-014 to R30-88Q-018; R30-102Q-001, R30-102Q-002; R30-103Q-005, R30-103Q-007, R30-103Q-011, R30-103Q-015, R30-103Q-016
Nickel	R30-103Q-007
Selenium	R30-102Q-002

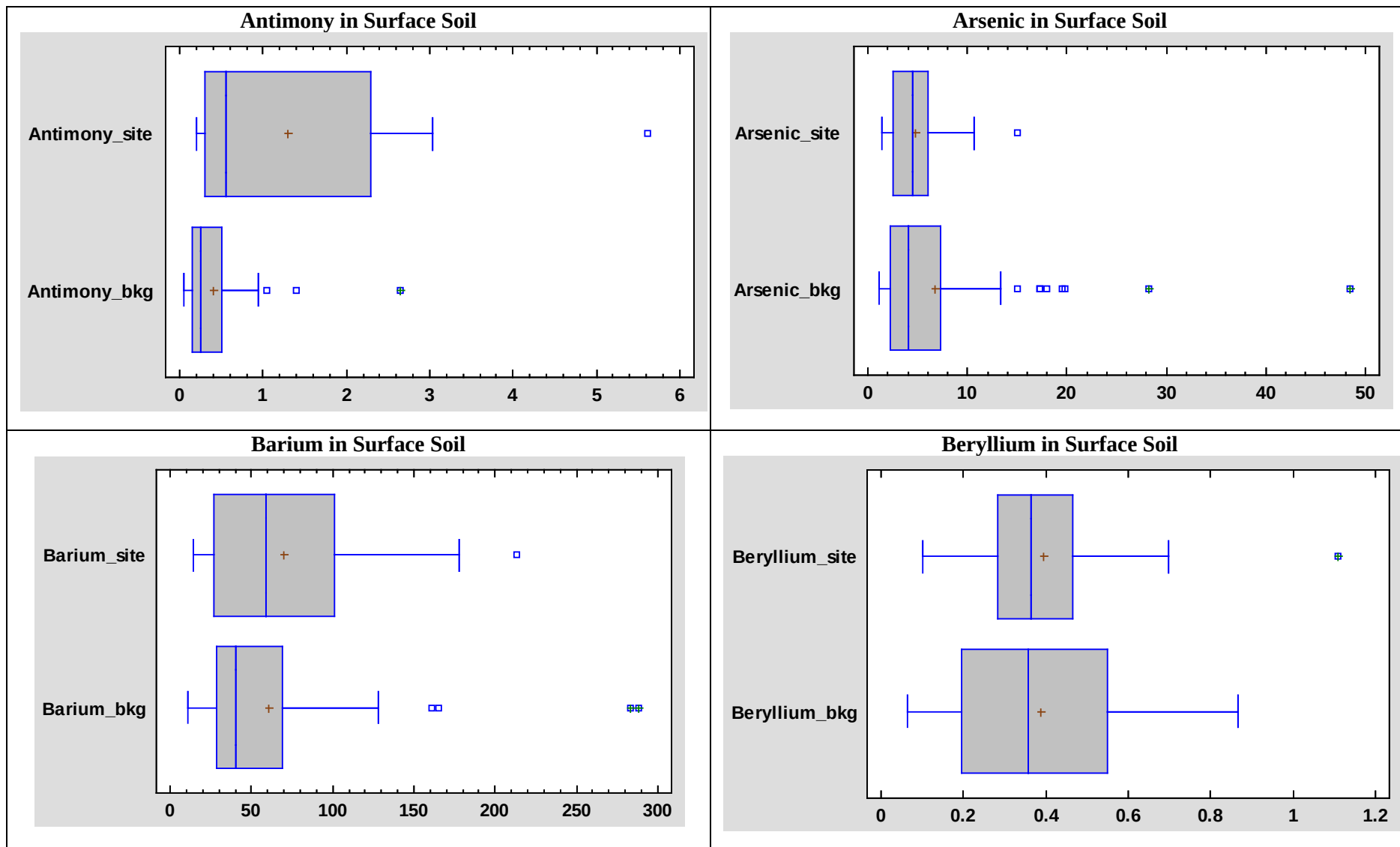
Subsurface Soil Contaminants	
Antimony	R30-88Q-003, R30-88Q-012; R30-103Q-003, R30-103Q-005, R30-103Q-007
Copper	R30-88Q-003, R30-88Q-012; R30-102Q-001; R30-103Q-005, R30-103Q-007
Lead	R30-88Q-003, R30-88Q-012; R30-102Q-001; R30-103Q-003, R30-103Q-007

Figure C1: Tier 3 Evaluation Flow Chart

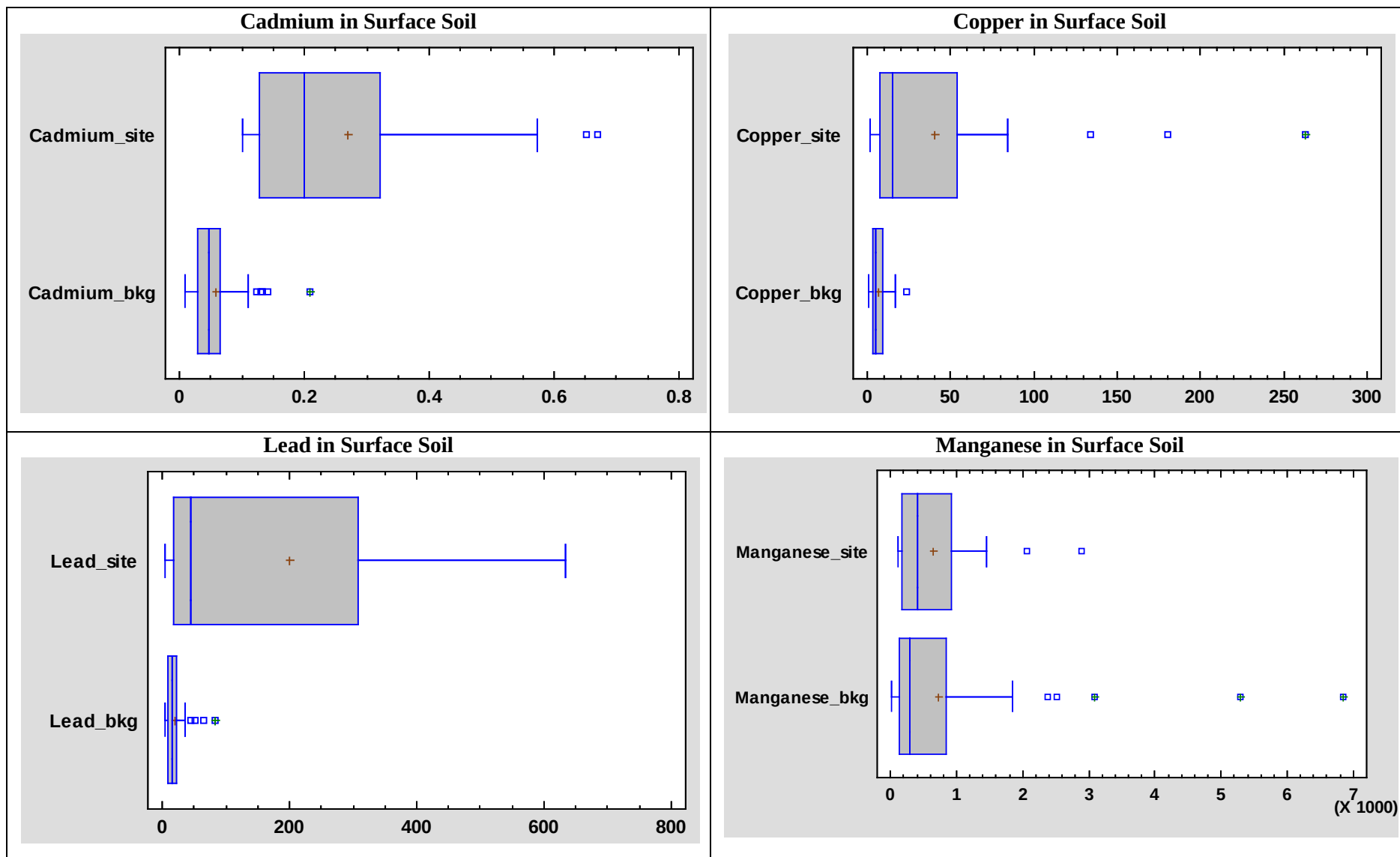


ATTACHMENT C1

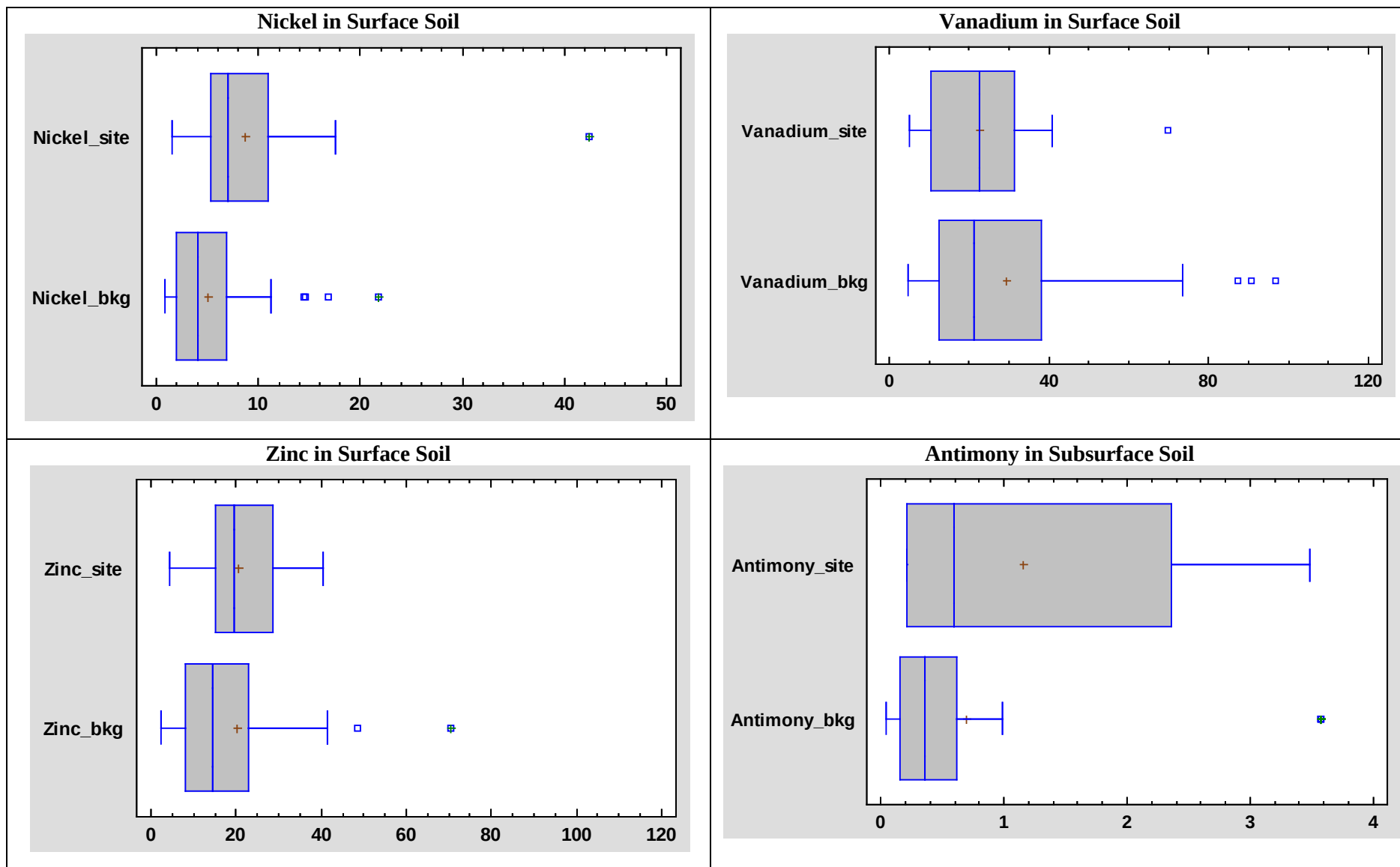
Tier 2 Box Plot Comparisons



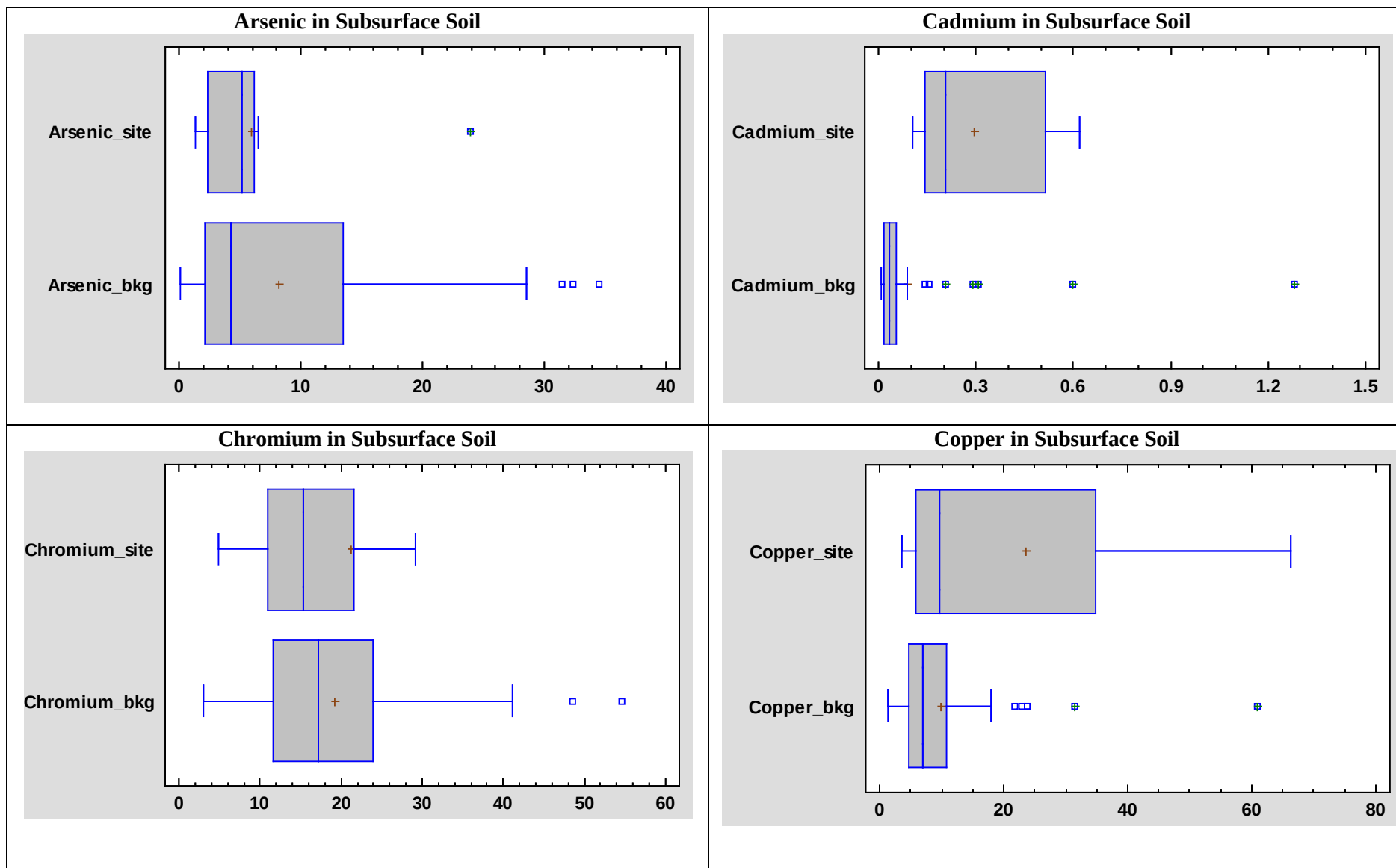
Tier 2 Box Plot Comparisons



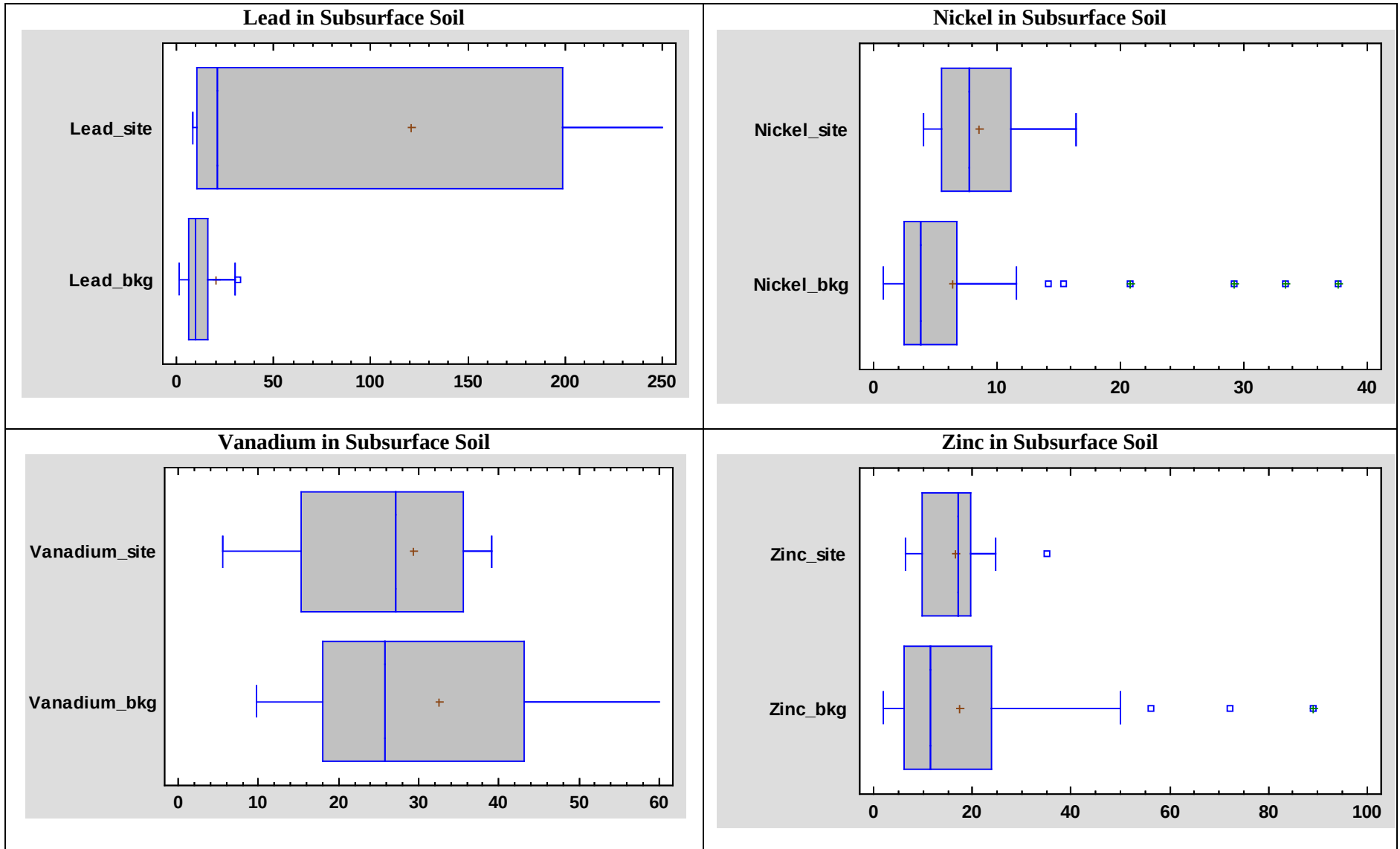
Tier 2 Box Plot Comparisons



Tier 2 Box Plot Comparisons

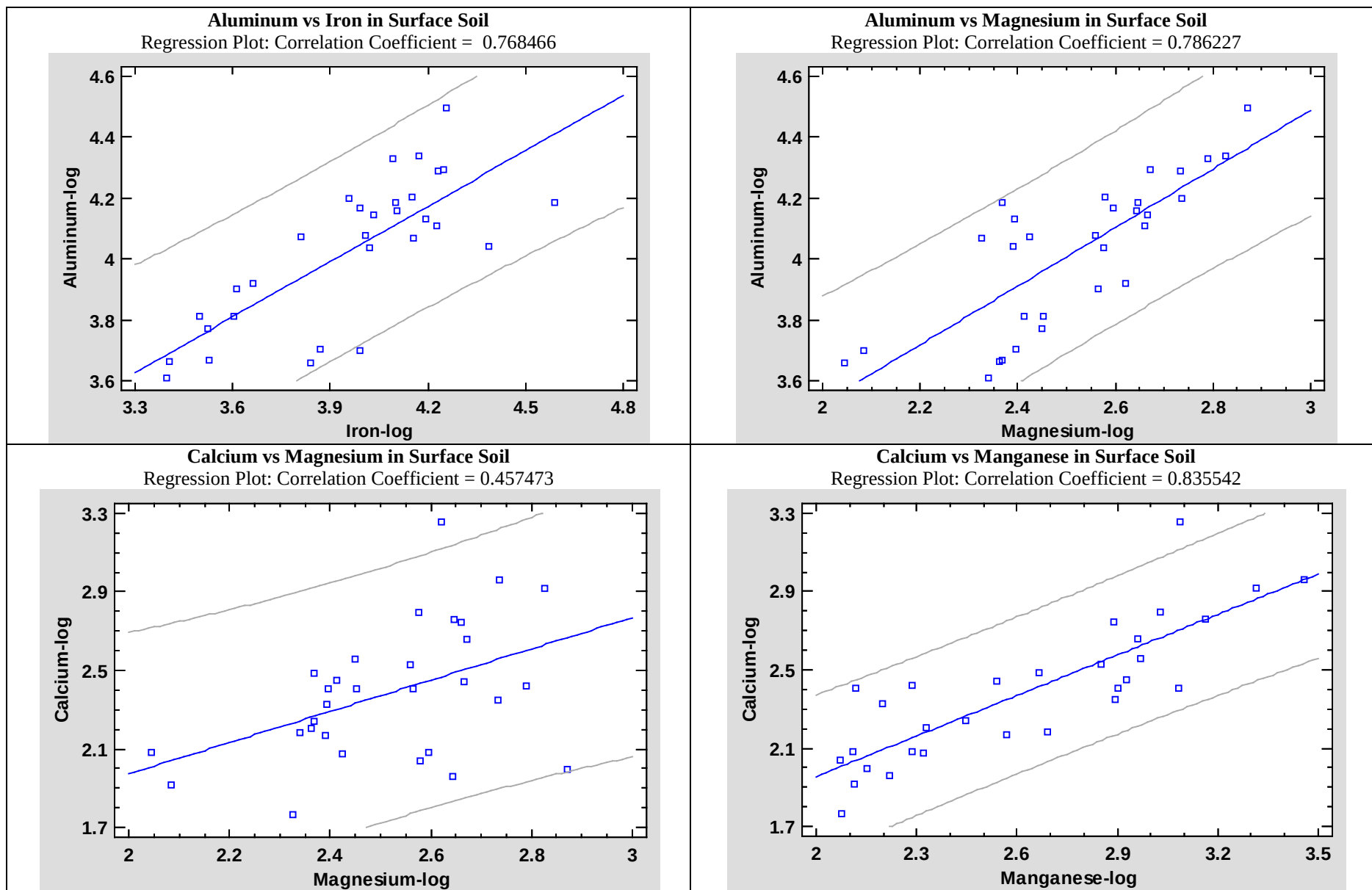


Tier 2 Box Plot Comparisons



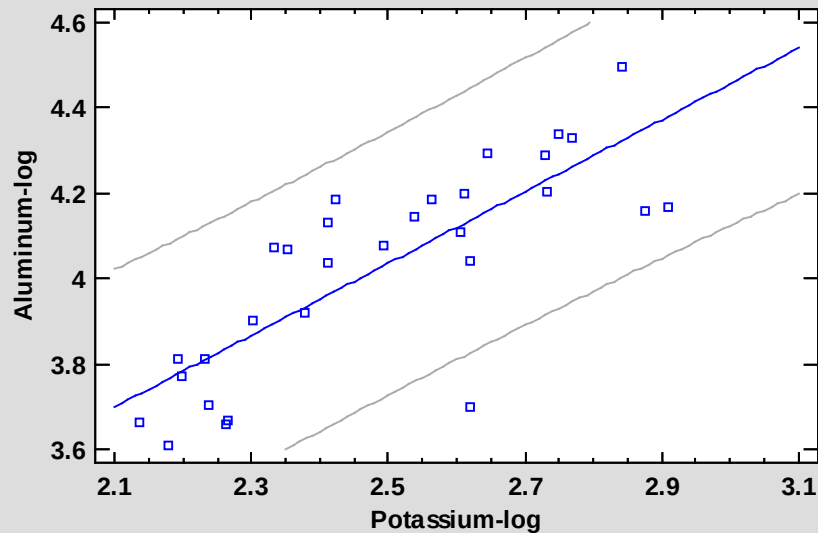
ATTACHMENT C2

Tier 3 Plots - Surface Soil

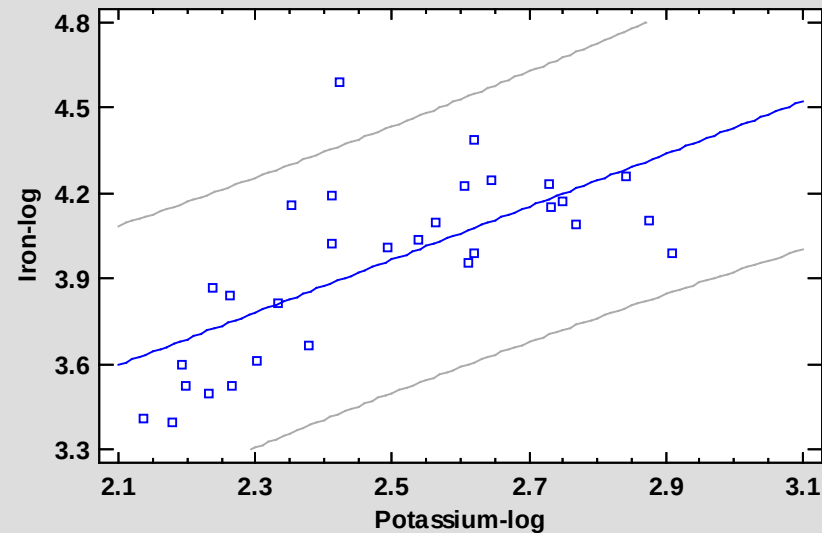


Tier 3 Plots - Surface Soil

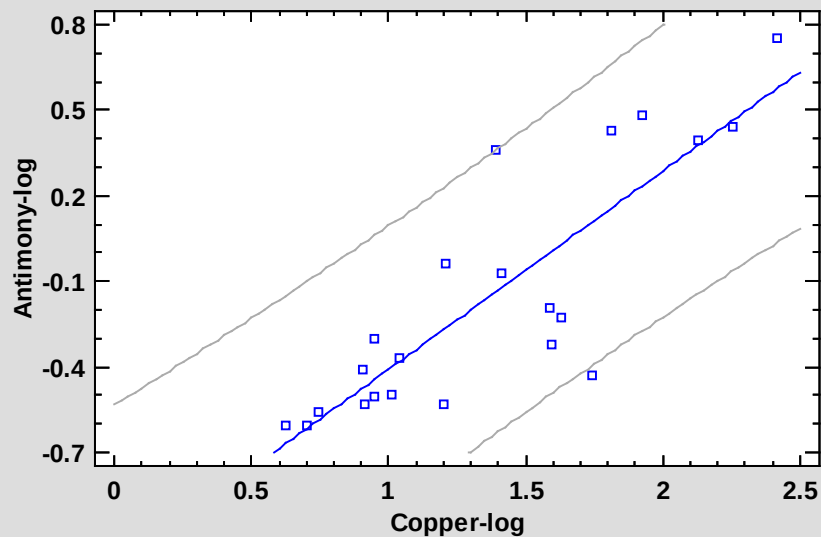
Aluminum vs Potassium in Surface Soil
Regression Plot: Correlation Coefficient = 0.79983



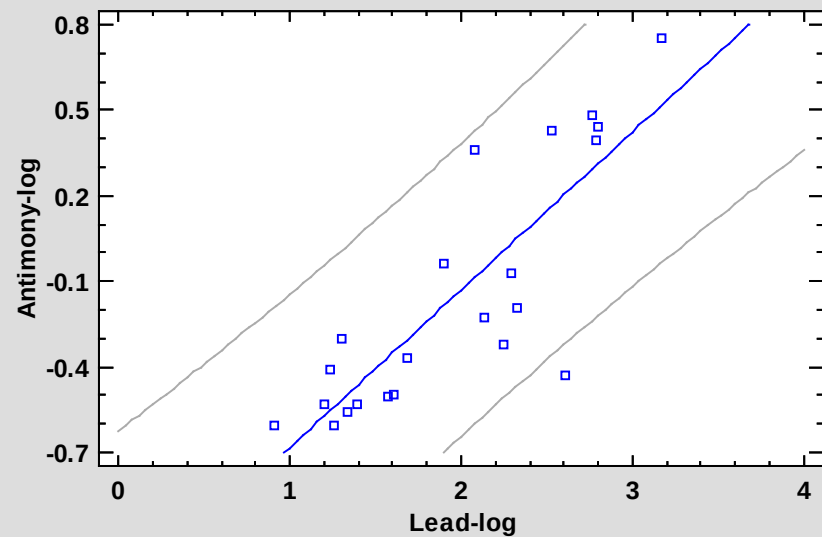
Iron vs Potassium in Surface Soil
Regression Plot: Correlation Coefficient = 0.694871



Antimony vs Copper in Surface Soil
Regression Plot: Correlation Coefficient = 0.847633

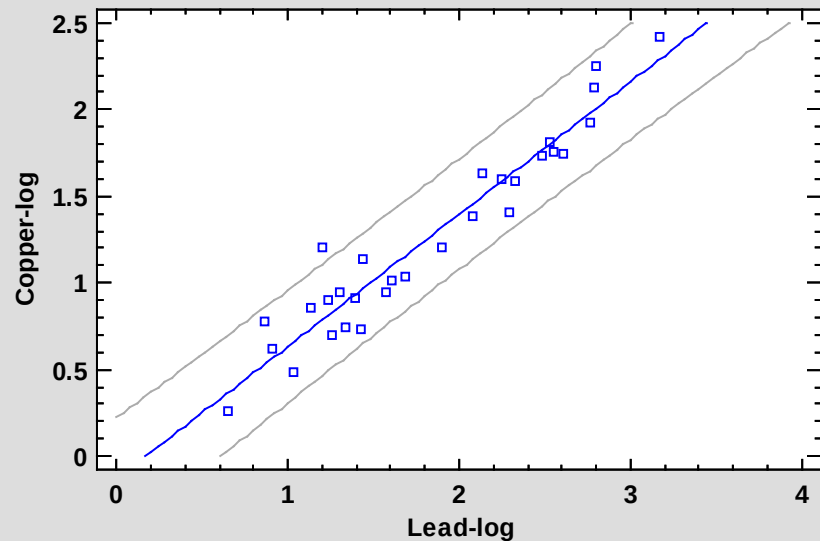


Antimony vs Lead in Surface Soil
Regression Plot: Correlation Coefficient = 0.83623

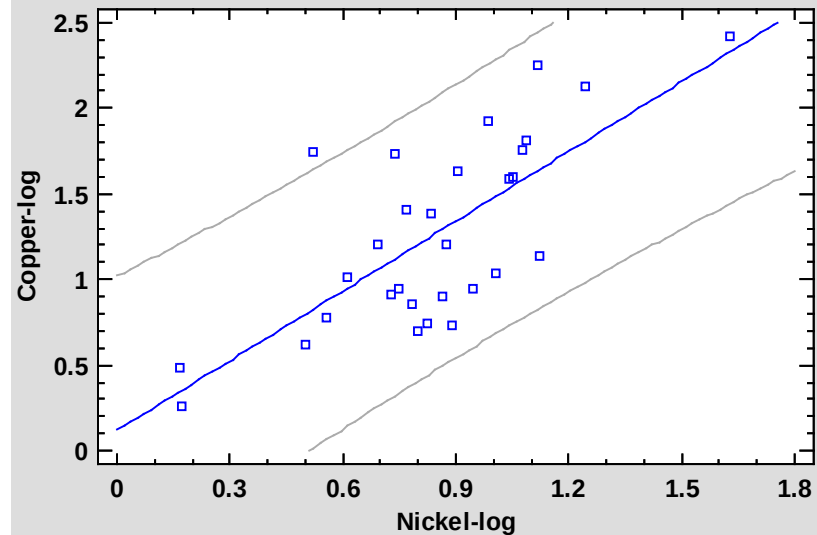


Tier 3 Plots - Surface Soil

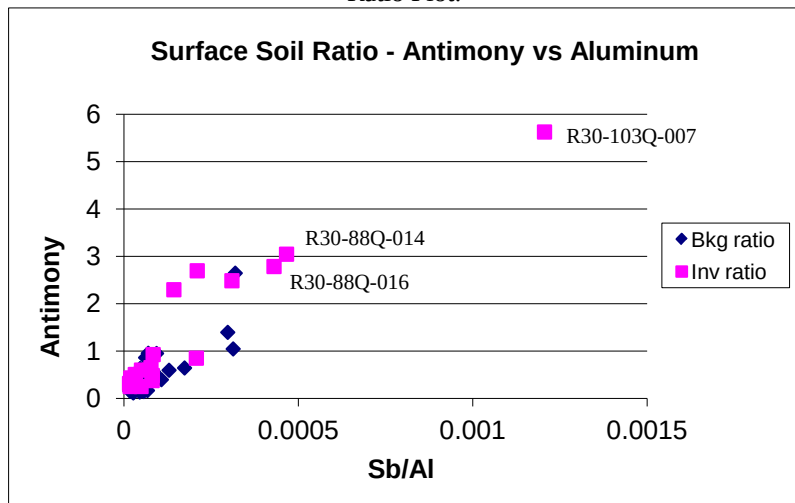
Copper vs Lead in Surface Soil
Regression Plot: Correlation Coefficient = 0.961901



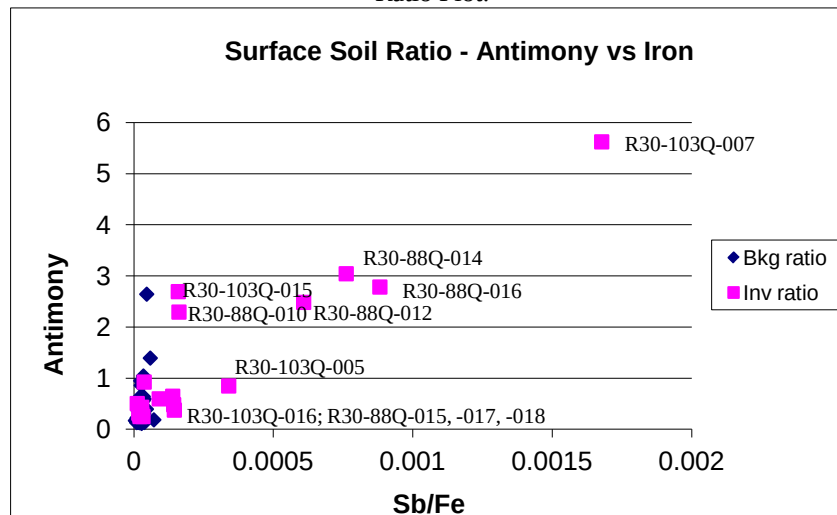
Copper vs Nickel in Surface Soil
Regression Plot: Correlation Coefficient = 0.728478



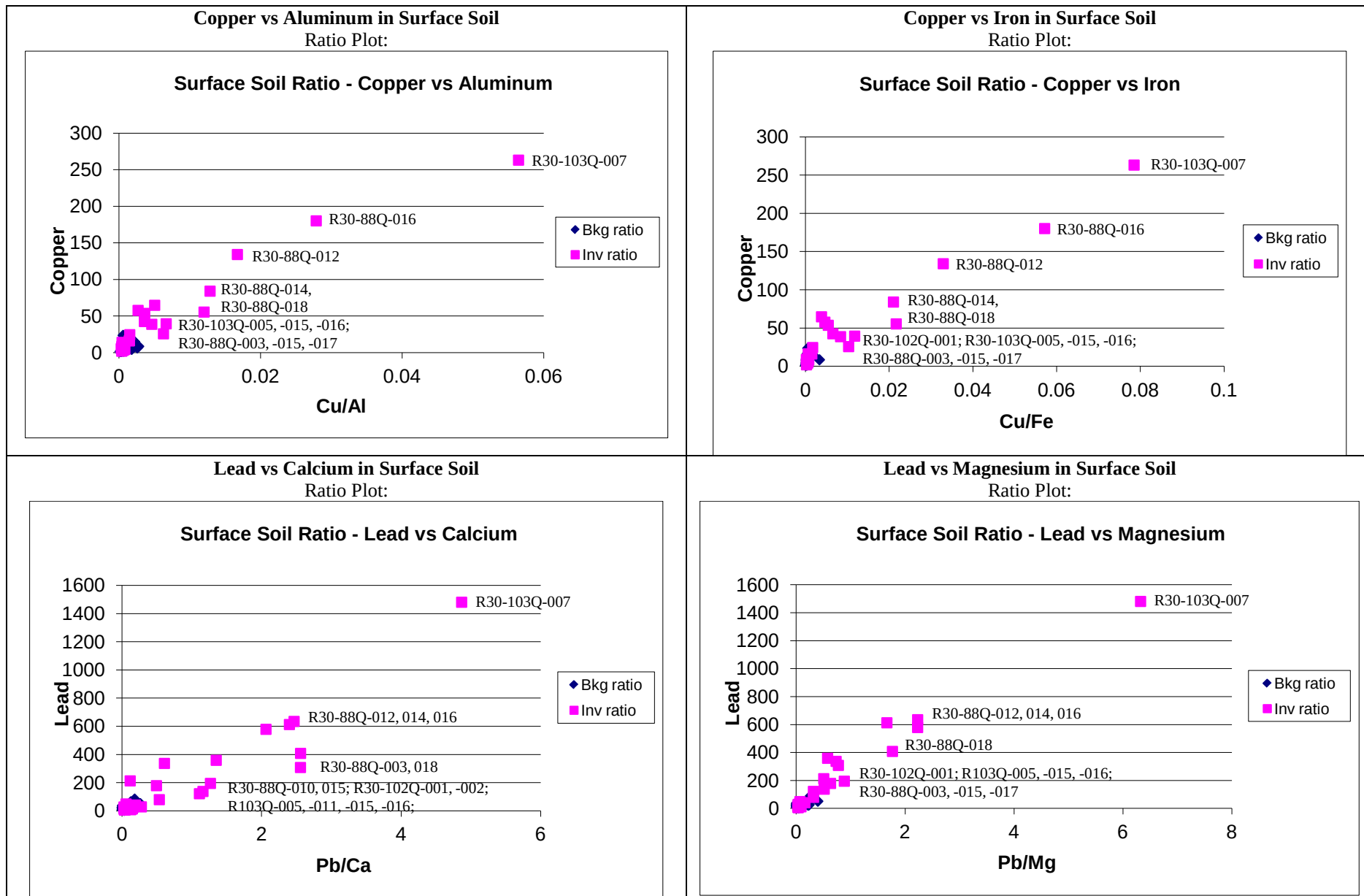
Antimony vs Aluminum in Surface Soil
Ratio Plot:



Antimony vs Iron in Surface Soil
Ratio Plot:

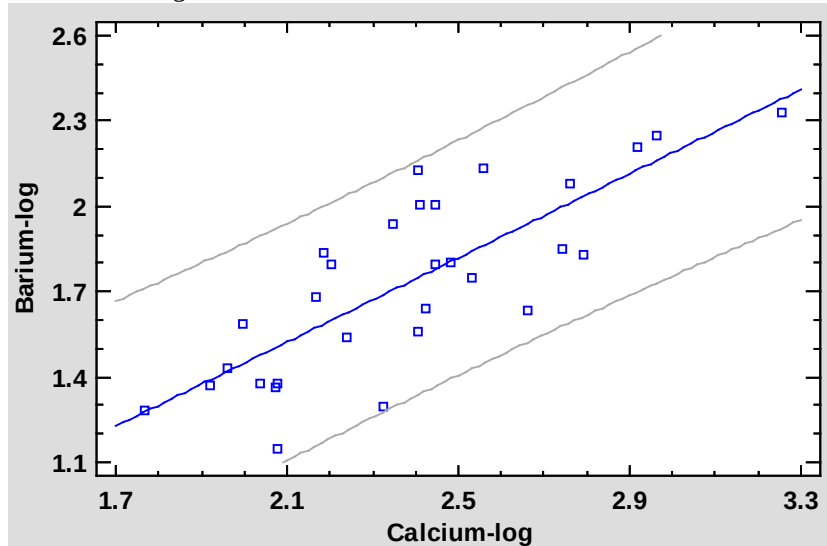


Tier 3 Plots - Surface Soil

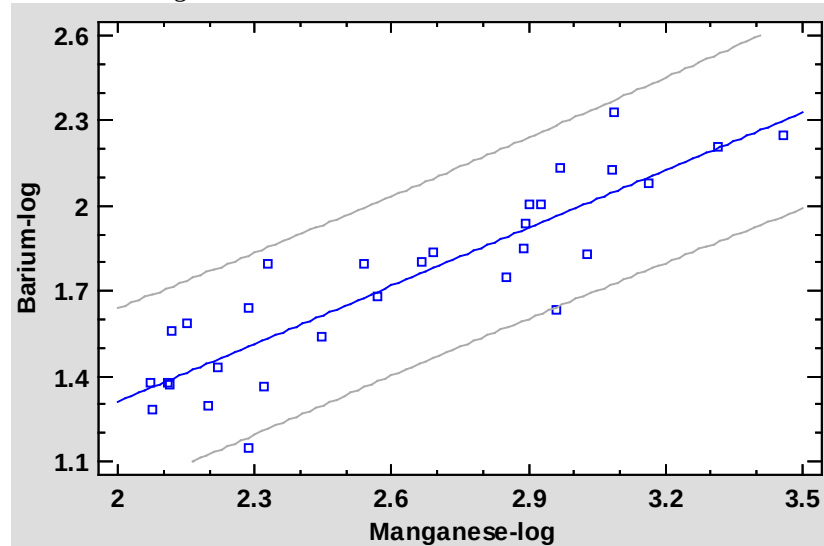


Tier 3 Plots - Surface Soil

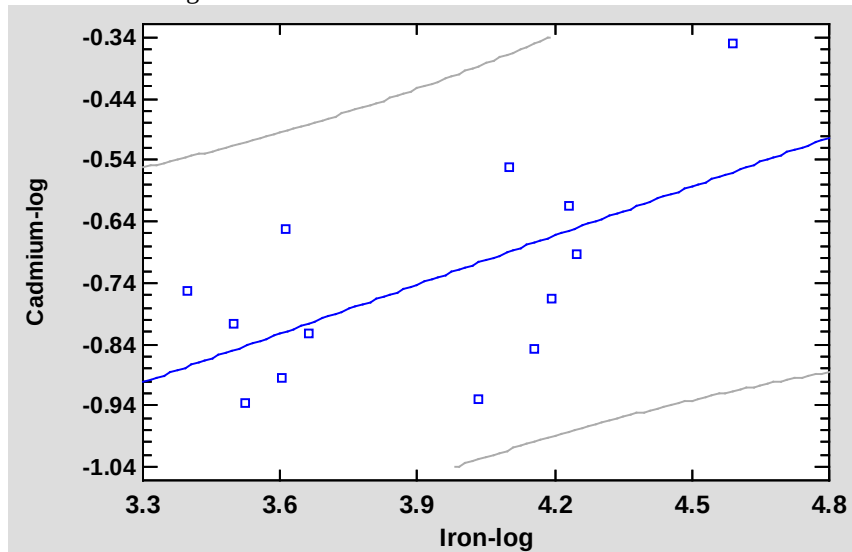
Barium vs Calcium in Surface Soil
Regression Plot: Correlation Coefficient = 0.794364



Barium vs Manganese in Surface Soil
Regression Plot: Correlation Coefficient = 0.884551



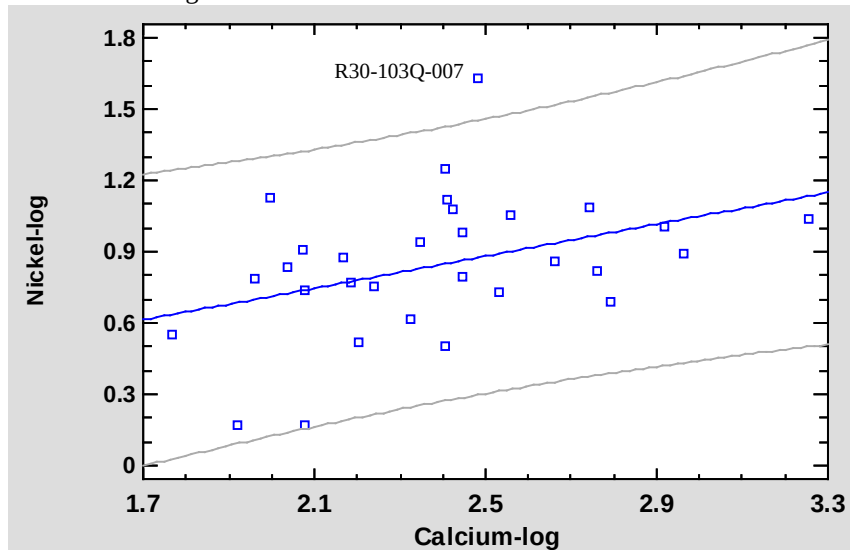
Cadmium vs Iron in Surface Soil
Regression Plot: Correlation Coefficient = 0.598841



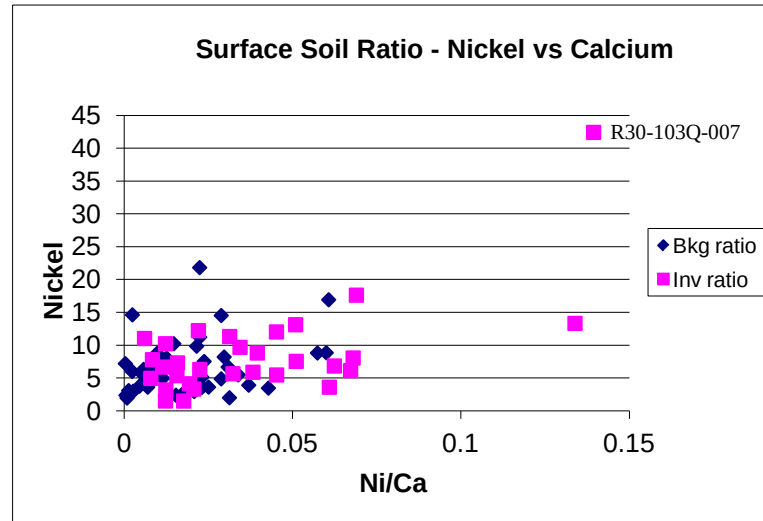
Tier 3 Plots - Surface Soil

Nickel vs Calcium in Surface Soil

Regression Plot: Correlation Coefficient = 0.39085

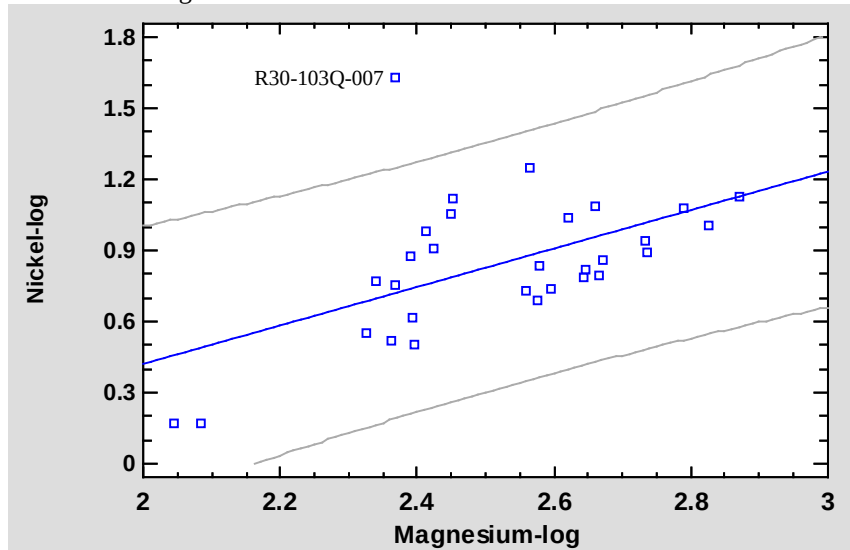


Ratio Plot:

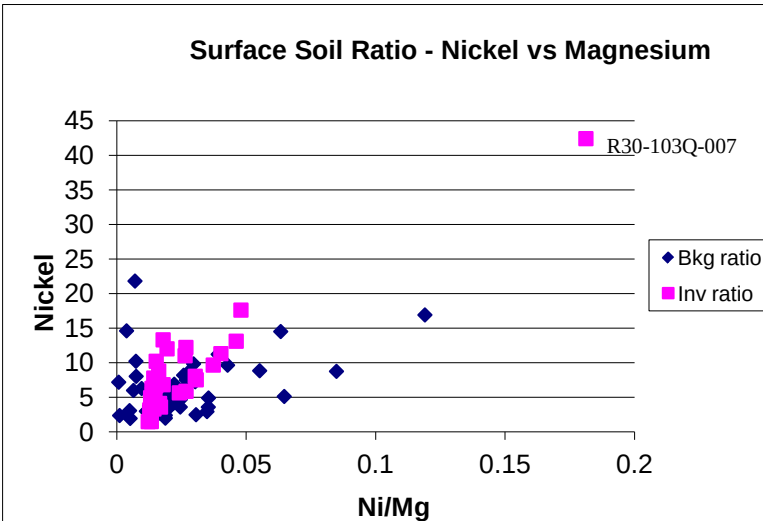


Nickel vs Magnesium in Surface Soil

Regression Plot: Correlation Coefficient = 0.545538

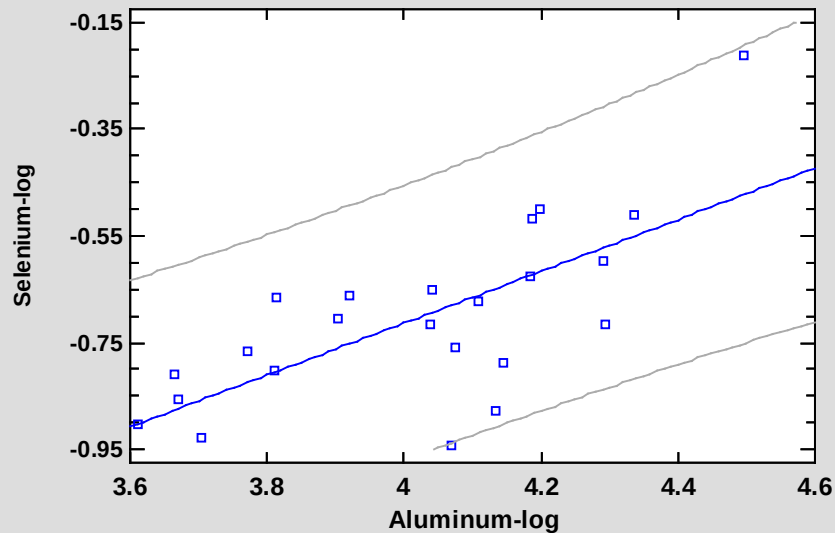


Ratio Plot:

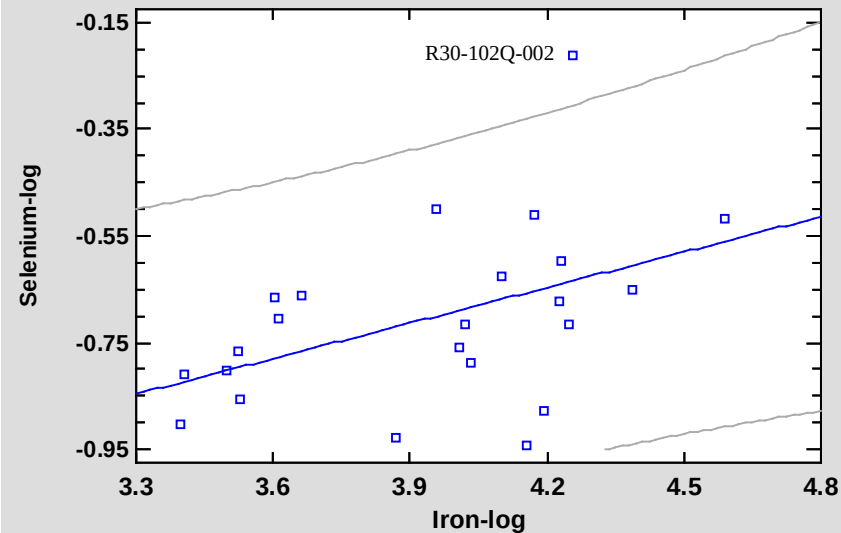


Tier 3 Plots - Surface Soil

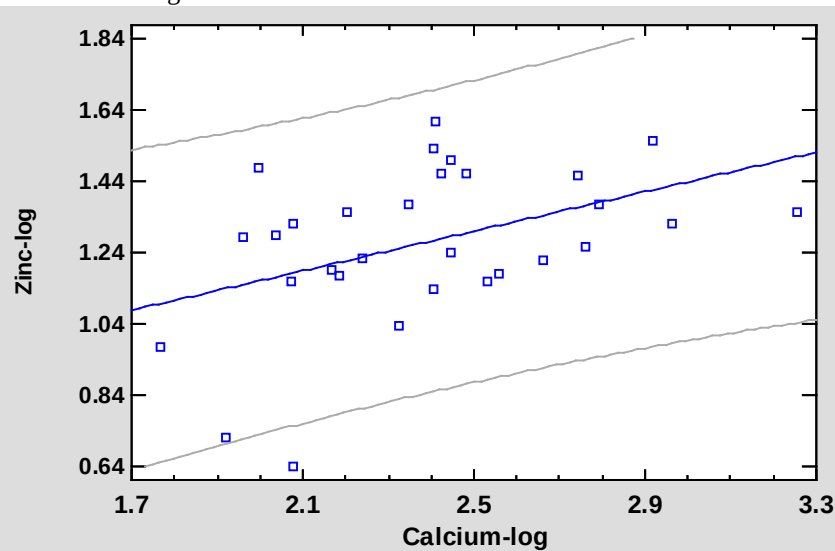
Selenium vs Aluminum in Surface Soil
Regression Plot: Correlation Coefficient = 0.704228



Selenium vs Iron in Surface Soil
Regression Plot: Correlation Coefficient = 0.457286

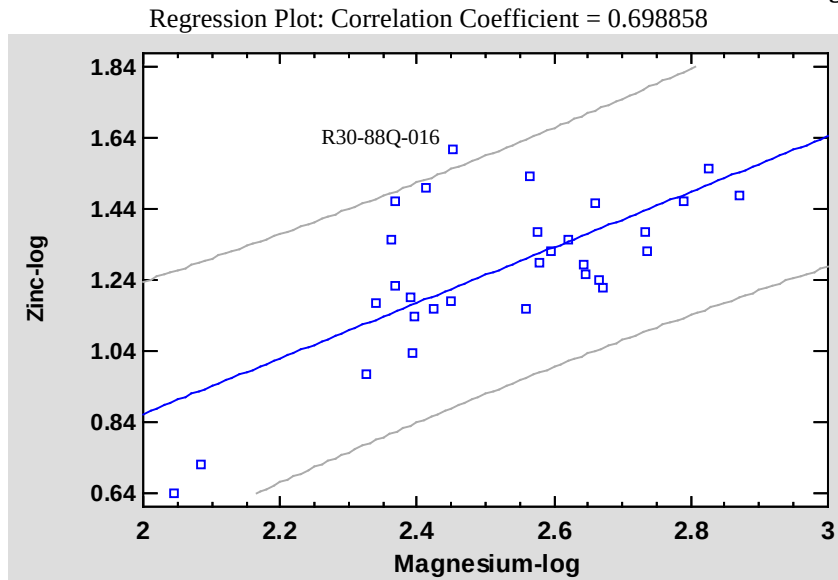


Zinc vs Calcium in Surface Soil
Regression Plot: Correlation Coefficient = 0.431106

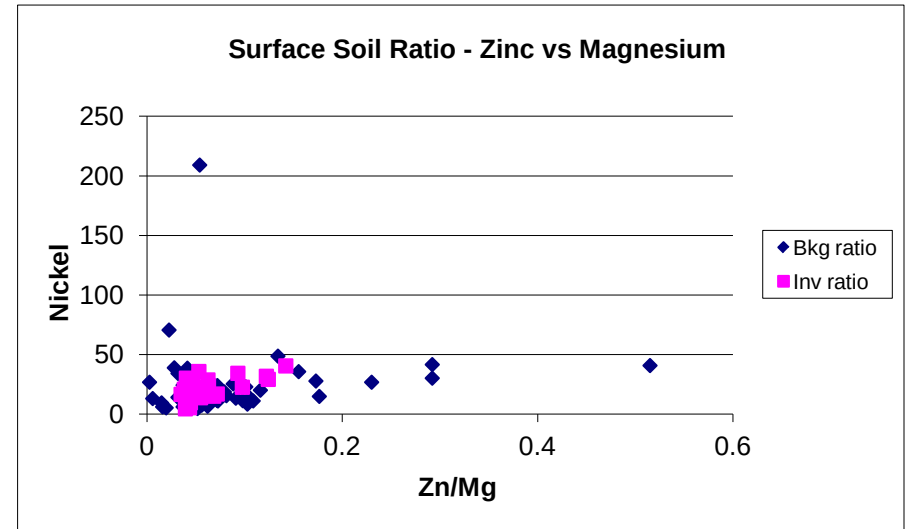


Tier 3 Plots - Surface Soil

Zinc vs Magnesium in Surface Soil

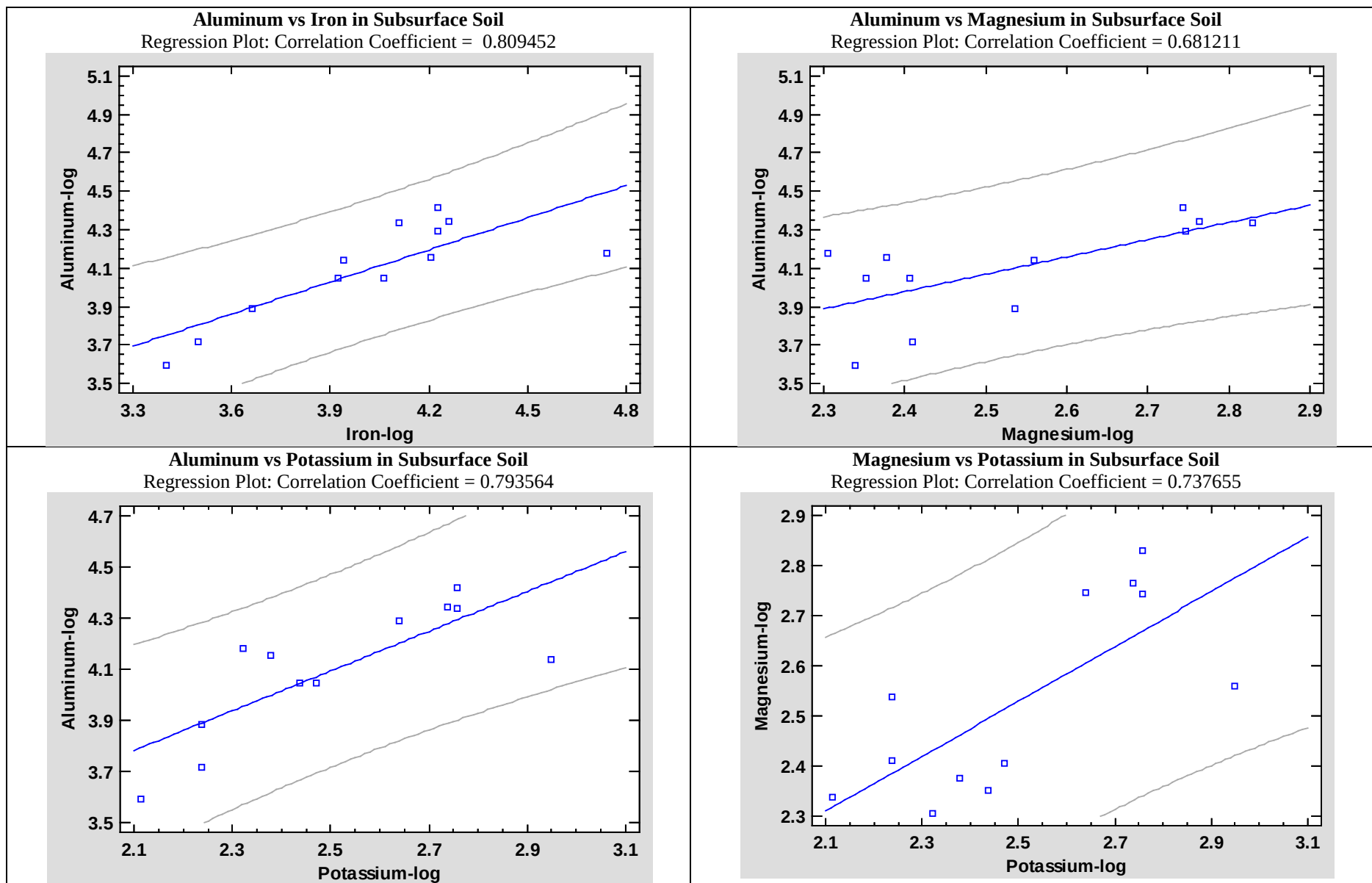


Ratio Plot:



ATTACHMENT C3

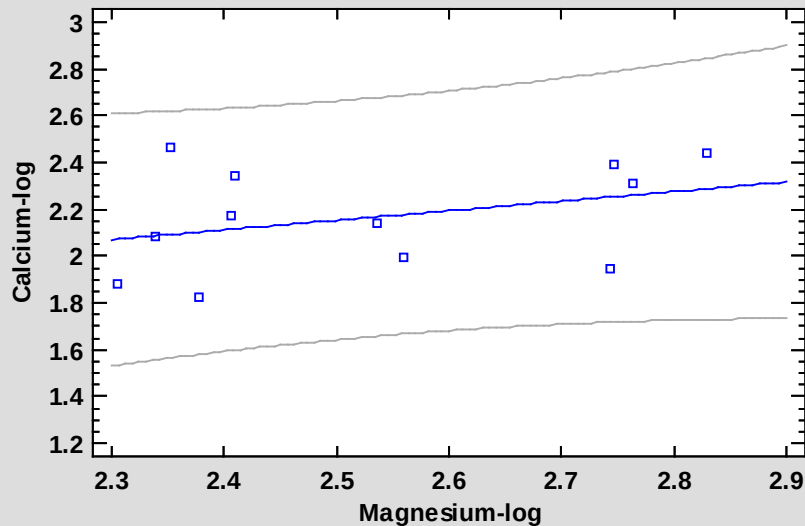
Tier 3 Plots - Subsurface Soil



Tier 3 Plots - Subsurface Soil

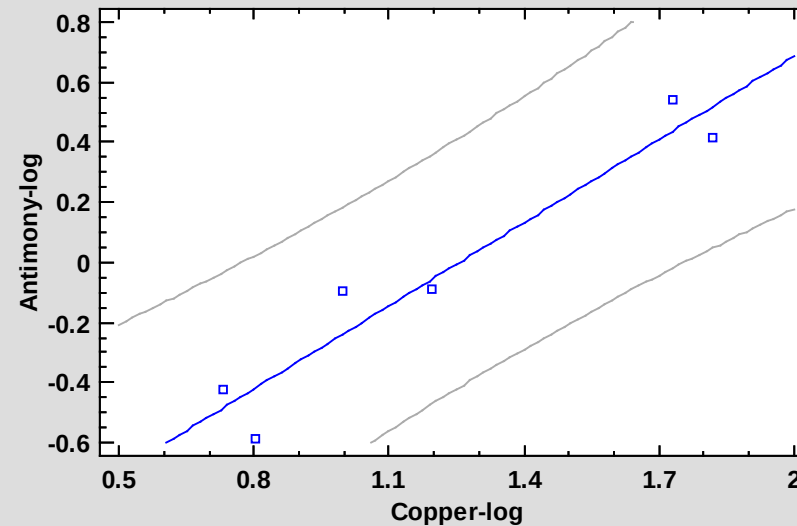
Calcium vs Magnesium in Subsurface Soil

Regression Plot: Correlation Coefficient = 0.352427



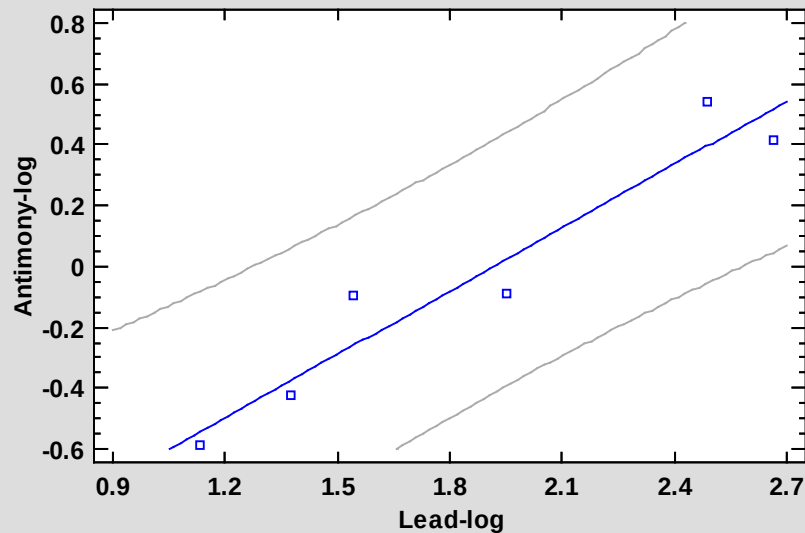
Antimony vs Copper in Subsurface Soil

Regression Plot: Correlation Coefficient = 0.960931



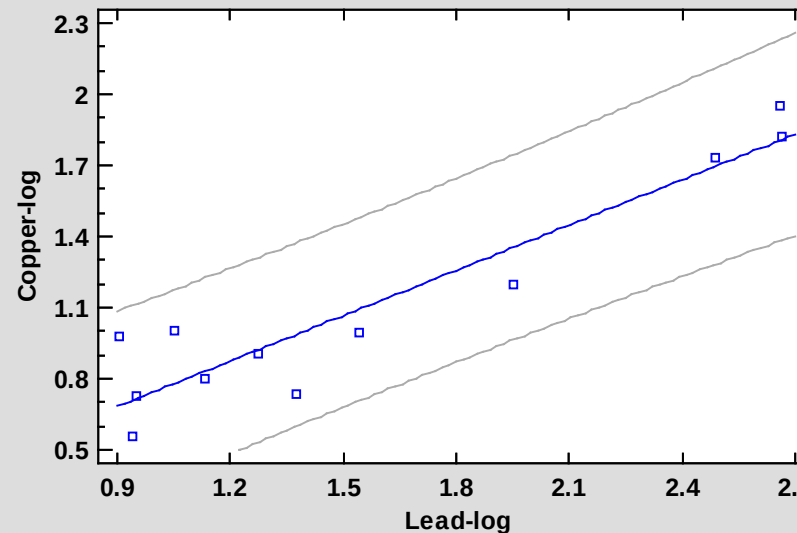
Antimony vs Lead in Subsurface Soil

Regression Plot: Correlation Coefficient = 0.960849

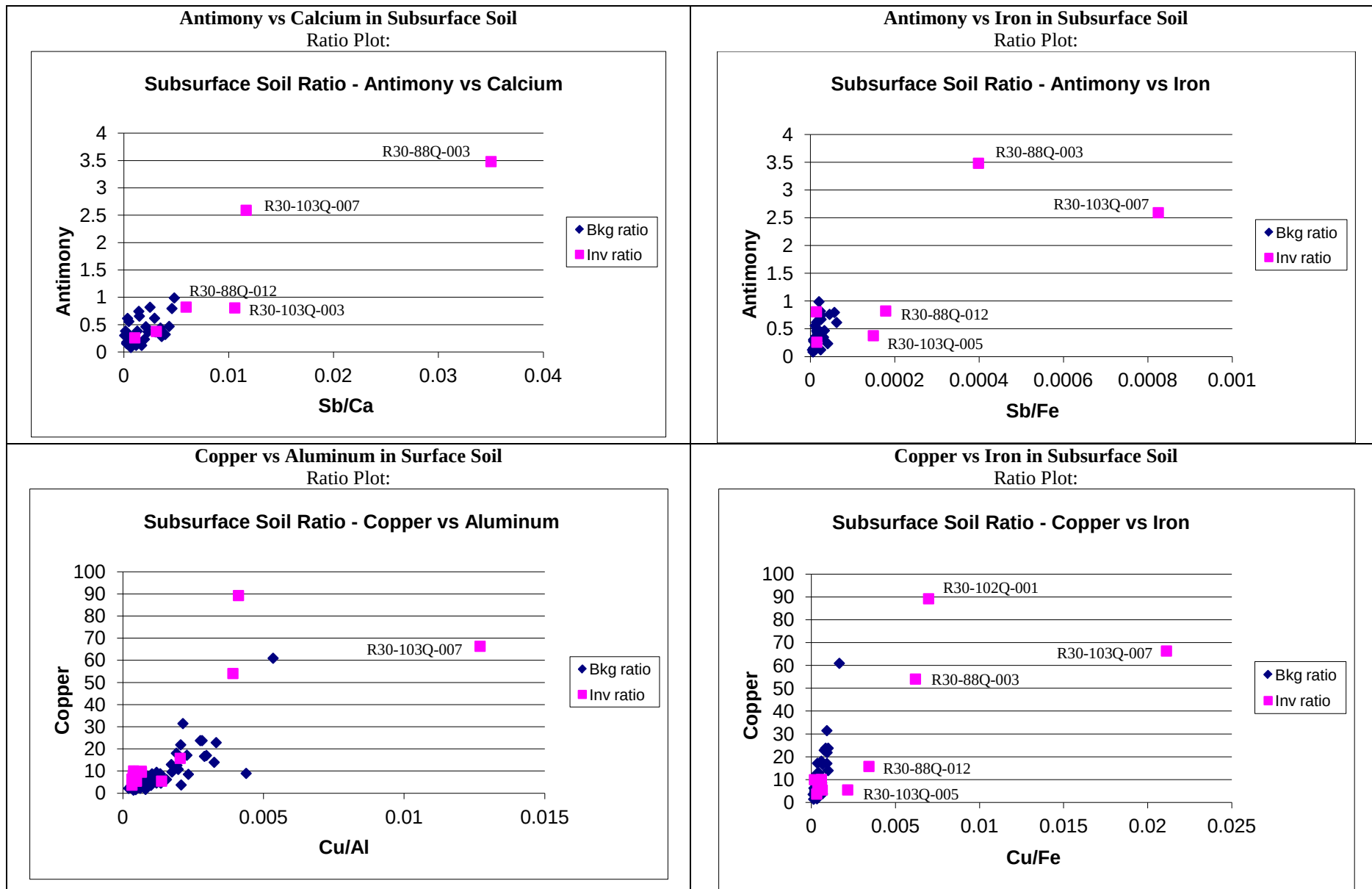


Copper vs Lead in Subsurface Soil

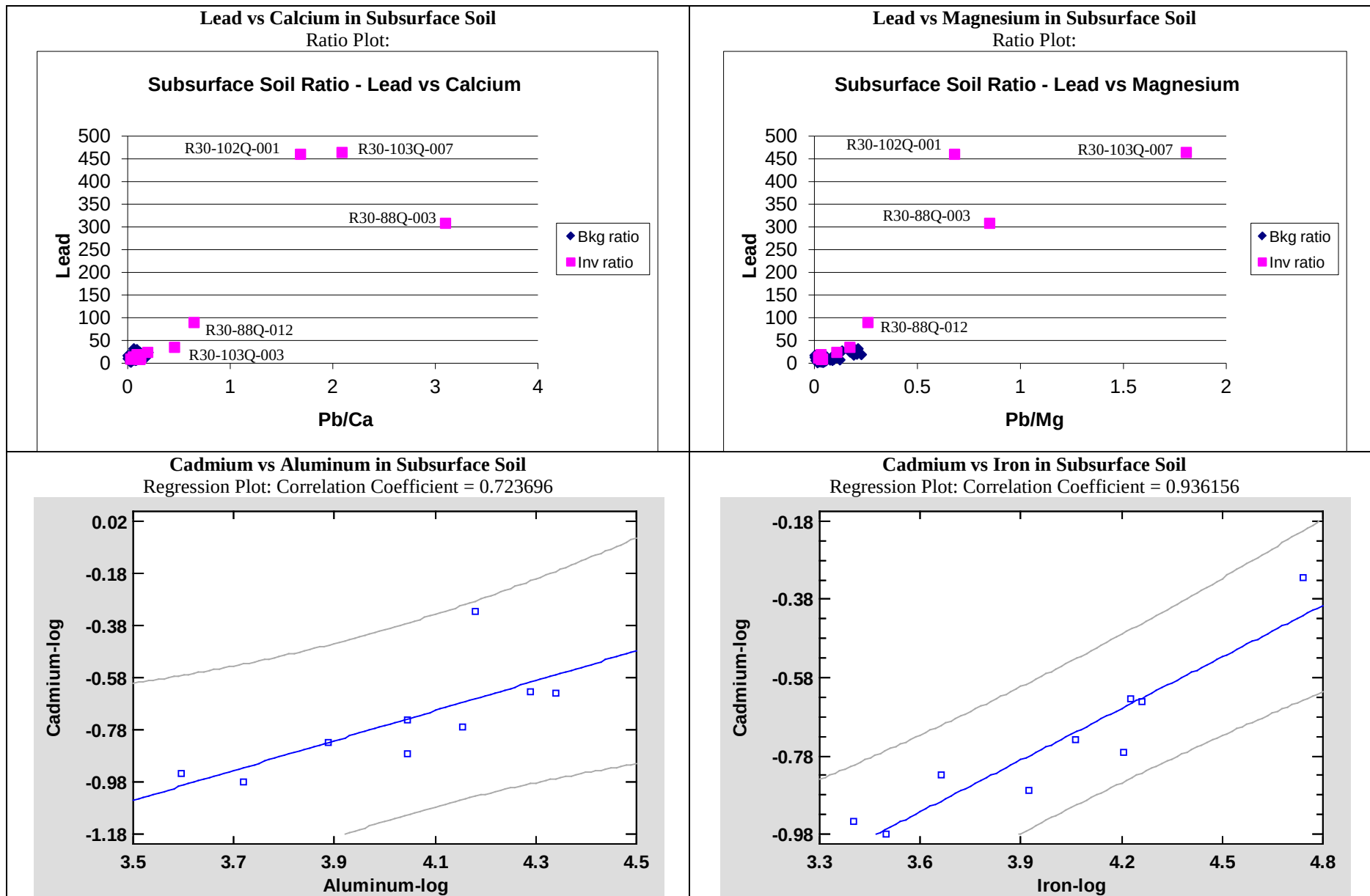
Regression Plot: Correlation Coefficient = 0.940134



Tier 3 Plots - Subsurface Soil



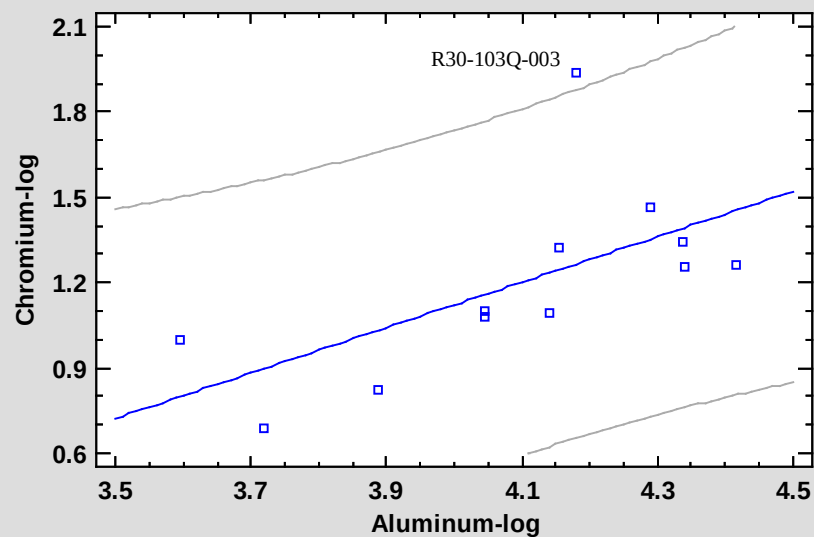
Tier 3 Plots - Subsurface Soil



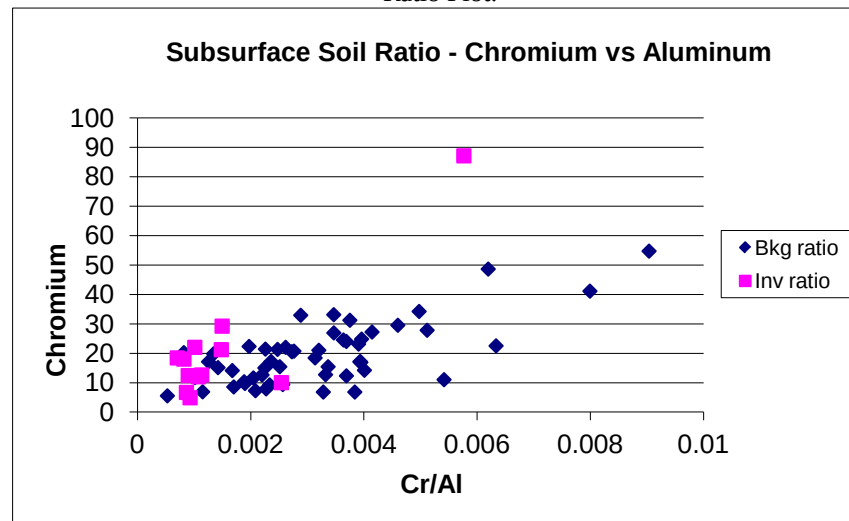
Tier 3 Plots - Subsurface Soil

Chromium vs Aluminum in Subsurface Soil

Regression Plot: Correlation Coefficient = 0.62969

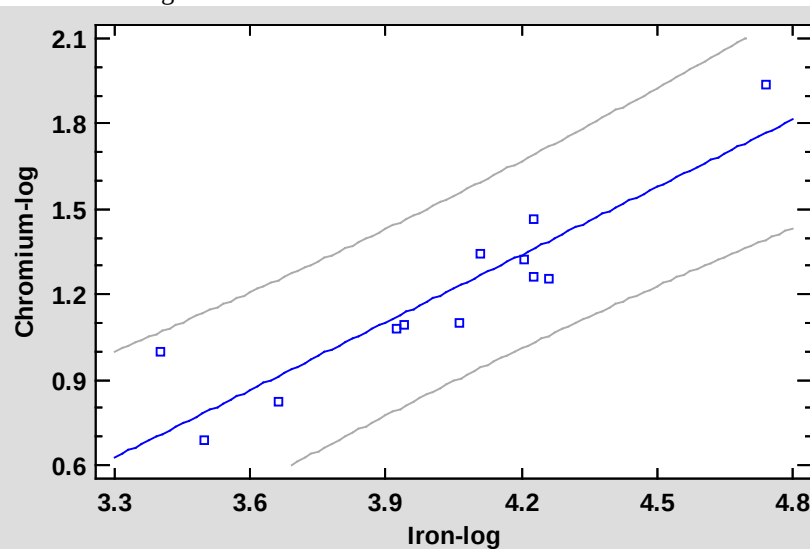


Ratio Plot:



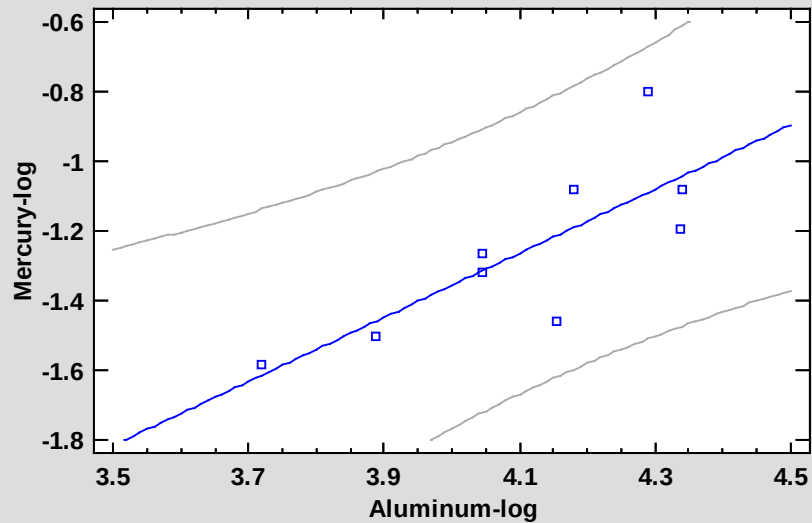
Chromium vs Iron in Subsurface Soil

Regression Plot: Correlation Coefficient = 0.909471

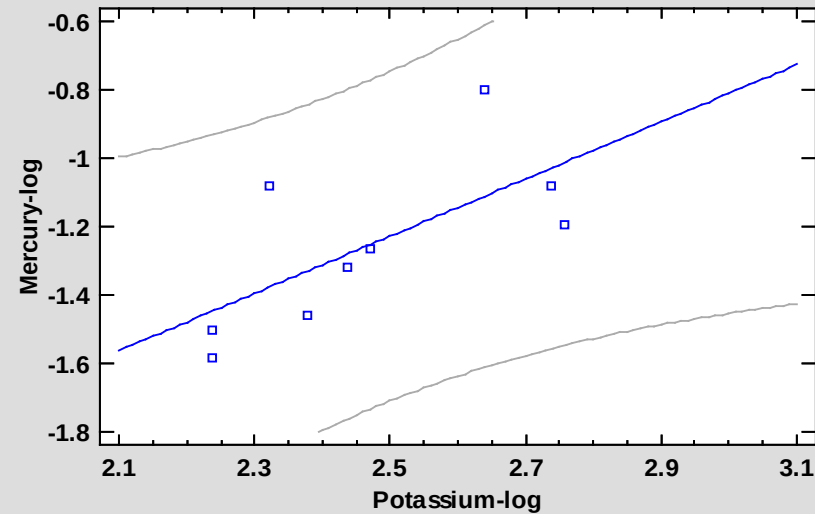


Tier 3 Plots - Subsurface Soil

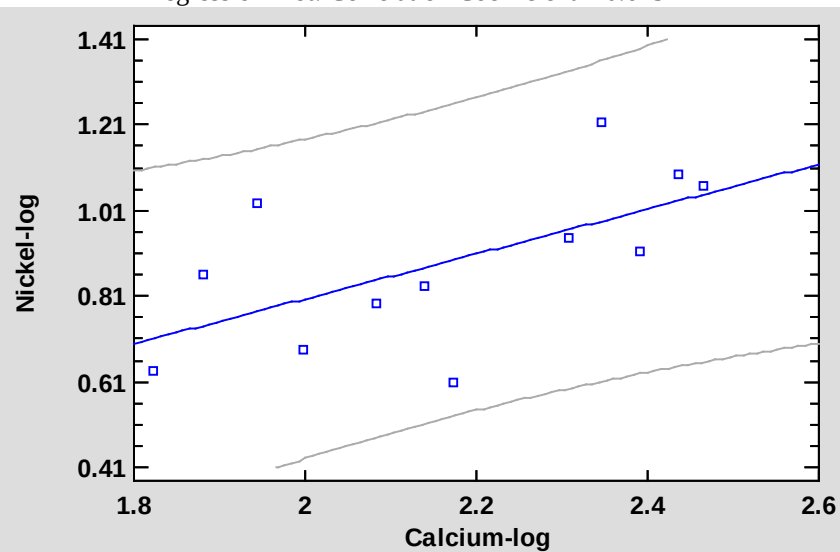
Mercury vs Aluminum in Subsurface Soil
Regression Plot: Correlation Coefficient = 0.787734



Mercury vs Potassium in Subsurface Soil
Regression Plot: Correlation Coefficient = 0.680436



Nickel vs Calcium in Subsurface Soil
Regression Plot: Correlation Coefficient = 0.615711



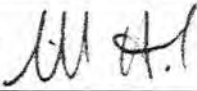
APPENDIX D
Field Documentation

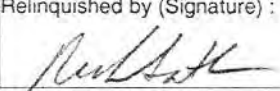
Chain of Custody

McClellan		Site: Range 30 <u>Impact Area</u>		COC#: 1842	
Lab: EMAX		SMCode (circle): Grab(G), Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)		Station: R30-88Q-003	
Sample Date: 1/2/02		Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C), Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G)		StationType: BH	
				QCCode: NS	
				Matrix: Soil	
				Task#: 03.094.016.02	
				CoolerID:	
Contractor: MES		TBLot: _____		SampleTop: _____	
Sampler Signature(s): <i>[Signature]</i>		EBLot: _____		SampleBottom (Units): _____	
ABLot: _____					
Time:	Label#:	Bottle, Preservative:	Method:		
1225	1	1 x 8 oz jar, none	ASTM D421/D422 Grain Size		
Subsurface Soil Sample					
White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)					

Relinquished by (Signature): <i>[Signature]</i>	Date/Time: 1/2/02 1930	Received by (Signature):
Relinquished by (Signature):	Date/Time:	Received by (Signature):
Relinquished by (Signature): 8457 7482	Date/Time: 0182	Received by (Signature):
Airbill Number:		

Chain of Custody

McClellan		Site: Range 30 Impact Area		COC#: 1841	
Lab: EMAX		SMCode (circle): Grab(G), ~~Composite(C)~~ Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)		Station: R30-88Q-003	
Sample Date: 9/2/04		Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C) Submersible Pump (SU), Encore(EN), Hydropunch(HP), ~~Spoon(SN)~~ Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G)		StationType: BH	
				QCCode: NS	
				Matrix: Soil	
				Task#: 03.094.016.02	
				CoolerID:	
Contractor: MES		TBLot: _____		SampleTop:	
Sampler Signature(s): 		EBLot: _____		SampleBottom (Units):	
		ABLot: _____		0.5 1.5	
Time:	Label#:	Bottle, Preservative:	Method:		
1225	1	1 x 8 oz jar, none	6010, 7000 Metals; 8330 Explosives; 415.1 TOC		
1225	2	0 x none, none	Percent Moisture		
Subsurface Soil Sample					
White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)					

Relinquished by (Signature) : 	Date/Time: 9/2/04 1930	Received by (Signature) :
Relinquished by (Signature) :	Date/Time:	Received by (Signature) :
Relinquished by (Signature) :	Date/Time:	Received by (Signature) :

Airbill Number: 8457 7482 0182

Chain of Custody

McClellan		Site: Range 30 Impact Area		COC#: 1840	
Lab: EMAX		SMCode (circle): Grab(G), Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)		Station: R30-88Q-003	
Sample Date: 9/2/04		Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C), Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G)		StationType: BH	
				QCCode: NS	
				Matrix: Soil	
				Task#: 03.094.016.02	
				CoolerID:	
Contractor: MES		TBLot: =		SampleTop: 0.0	
Sampler Signature(s): [Signature]		EBLot: =		SampleBottom (Units): 0.5	
ABLot: =					
Time:	Label#:	Bottle, Preservative:	Method:		
1270	1	1 x 8 oz jar, none	ASTM D421/D422 Grain Size		
Surface Soil Sample					
White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)					

Relinquished by (Signature): [Signature]	Date/Time: 9/2/04 1930	Received by (Signature):
Relinquished by (Signature):	Date/Time:	Received by (Signature):
Relinquished by (Signature):	Date/Time:	Received by (Signature):
Airbill Number: 2457 7482 0182		

Chain of Custody

McClellan		Site: Range 30 Impact Area		COC#: 1839	
Lab: EMAX		SMCode (circle): Grab(G), <u>Composite (C)</u> , Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)		Station: R30-88Q-003	
Sample Date: 9/2/04		Sampling Technique (circle): Bailer(B), Bladder Pump(BP), <u>Core(C)</u> , Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G)		StationType: BH	
				QCCode: NS	
				Matrix: Soil	
				Task#: 03.094.016.02	
				CoolerID:	
Contractor: MES		TBLot: <u> </u>		SampleTop: <u>0.0</u>	
Sampler Signature(s): <u>MH</u>		EBLot: <u> </u>		SampleBottom (Units): <u>0.5</u>	
ABLot: <u> </u>					
Time:	Label#:	Bottle, Preservative:	Method:		
1220	1	1 x 8 oz jar, none	6010, 7000 Metals; 8330 Explosives; 415.1 TOC		
1220	2	0 x none, none	Percent Moisture		
Surface Soil Sample					
White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)					

Relinquished by (Signature): <u>[Signature]</u>	Date/Time: 9/2/04 1930	Received by (Signature):
Relinquished by (Signature):	Date/Time:	Received by (Signature):
Relinquished by (Signature):	Date/Time:	Received by (Signature):
Airbill Number: 8457 7482 0182		

Chain of Custody

McClellan		Site: Range 30 Impact Area		COC#: 1875	
Lab: EMAX		SMCode (circle): Grab(G), ~~Composite(C)~~ , Discrete(D), Disturbed(S), Undiscrete(U), Unknown(z)		Station: DUP032	
Sample Date: 9/2/04		Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C), Submersible Pump(SU), Encore(EN), Hydropunch(HP), ~~Spoon(SN)~~ , Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G)		StationType: BH	
				QCCode: FD	
				Matrix: Soil	
				Task#: 03.094.016.02	
				CoolerID:	
Contractor: MES		TBLot: _____		SampleTop:	
Sampler Signature(s): <i>[Signature]</i>		EBLot: _____		SampleBottom (Units):	
		ABLot: _____		<i>φφ</i> <i>φ.5</i>	
Time:	Label#:	Bottle, Preservative:	Method:		
122φ	1	1 x 8 oz jar, none	ASTM D421/D422 Grain Size		
Surface Soil Sample DUP032 = R30-88Q-003 <i>guc 9/31/04</i>					
White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Management)					

Relinquished by (Signature) :	Date/Time:	Received by (Signature) :
<i>[Signature]</i>	9/2/04 1930	
Relinquished by (Signature) :	Date/Time:	Received by (Signature) :
Relinquished by (Signature) :	Date/Time:	Received by (Signature) :
Airbill Number: 8457 7482 0116		

Chain of Custody

McClellan		Site: Range 30 Impact Area		COC#: 1874	
Lab: EMAX		SMCode (circle): Grab(G), <u>Composite (C)</u> , Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)		Station: DUP032	
Sample Date: 9/2/04		Sampling Technique (circle): Bailer(B), Bladder Pump(BP), <u>Core(C)</u> , Submersible Pump (SU), Encore(EN), Hydropunch(HP), <u>Spoon(SN)</u> , Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G)		StationType: BH	
				QCCode: FD	
				Matrix: Soil	
				Task#: 03.094.016.02	
				CoolerID:	
Contractor: MES		TBLot:		SampleTop:	SampleBottom (Units):
Sampler Signature(s): <i>[Signature]</i>		EBLot:		<i>[Signature]</i>	<i>0.5</i>
		ABLot:			
Time:	Label#:	Bottle, Preservative:	Method:		
1220	1	1 x 8 oz jar, none	6010, 7000 Metals; 8330 Explosives; 415.1 TOC		
1220	2	0 x none, none	Percent Moisture		
Surface Soil Sample DUP032 = R30-88Q-003 <i>ju 8/31/04</i> White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)					

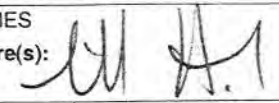
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Airbill Number: 8457 7482 0116		

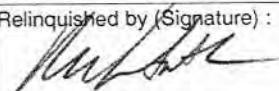
Chain of Custody

McClellan		Site: Range 30 Impact Area		COC#: 1863	
Lab: EMAX		SMCode (circle): <u>Grab(G)</u> , Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)		Station: R30-88Q-008	
Sample Date: 9/2/04		Sampling Technique (circle): Bailer(B), Bladder Pump(BP), <u>Gore(C)</u> , Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G)		StationType: SED	
				QCCode: NS	
				Matrix: Sediment	
				Task#: 03.094.016.02	
				CoolerID:	
Contractor: MES		TBLot: <u> </u>		SampleTop: NA	SampleBottom (Units): NA
Sampler Signature(s): <u> </u>		EBLot: <u> </u>			
		ABLot: <u> </u>			
Time:	Label#:	Bottle, Preservative:	Method:		
1445	1	1 x 8 oz jar, none	6010, 7000 Metals; 8330 Explosives; 415.1 TOC		
1445	2	0 x none, none	Percent Moisture		
White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)					

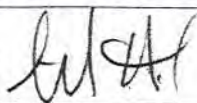
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Airbill Number: 8457 7452 0116		

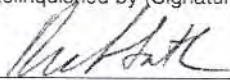
Chain of Custody

McClellan		Site: Range 30 Impact Area		COC#: 1864	
Lab: EMAX		SMCode (circle): <u>Grab(G)</u> Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)		Station: R30-88Q-008	
Sample Date: 9/2/04		Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C) Submersible Pump (SU), Encore(EN), Hydropunch(HP), <u>Spoon(SN)</u> , Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), <u>Grab(G)</u>		StationType: SED	
				QCCode: NS	
				Matrix: Sediment	
				Task#: 03.094.016.02	
				CoolerID:	
Contractor: MES		TBLot:		SampleTop:	SampleBottom (Units):
Sampler Signature(s): 		EBLot:		<u>NA</u>	<u>NA</u>
		ABLot:			
Time:	Label#:	Bottle, Preservative:	Method:		
1445	1	1 x 8 oz jar, none	ASTM D421/D422 Grain Size		
White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)					

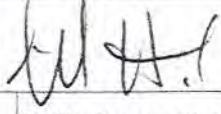
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Airbill Number: 8457 7482	0116	

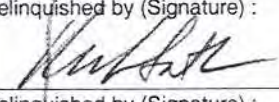
Chain of Custody

McClellan		Site: Range 30 Impact Area		COC#: 1865	
Lab: EMAX		SMCode (circle): ~~Grab(G)~~ , Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)		Station: R30-88Q-009	
Sample Date: 9/2/04		Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C), Submersible Pump (SU), Encore(EN), Hydropunch(HP), ~~Spoon(SN)~~ Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G)		StationType: SED	
				QCCode: NS	
				Matrix: Sediment	
				Task#: 03.094.016.02	
				CoolerID:	
Contractor: MES		TBLot: 		SampleTop: NA	
Sampler Signature(s):		EBLot: 		SampleBottom (Units): NA	
ABLot: 					
Time:	Label#:	Bottle, Preservative:	Method:		
1451	1	1 x 8 oz jar, none	6010, 7000 Metals; 8330 Explosives; 415.1 TOC		
1451	2	0 x none, none	Percent Moisture		
White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)					

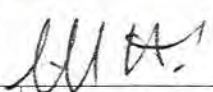
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	9/2/04 1930	
Relinquished by (Signature) :	Date/Time:	Received by (Signature) :
Relinquished by (Signature) :	Date/Time:	Received by (Signature) :
Airbill Number: 2457 7482 0116		

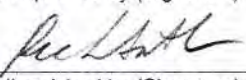
Chain of Custody

McClellan		Site: Range 30 Impact Area		COC#: 1866	
Lab: EMAX		SMCode (circle): <u>Grab(G)</u> , Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)		Station: R30-88Q-009	
Sample Date: 9/2/04		Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C), Submersible Pump (SU), Encore(EN), Hydropunch(HP), <u>Spoon(SN)</u> , Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G)		StationType: SED	
				QCCode: NS	
				Matrix: Sediment	
				Task#: 03.094.016.02	
				CoolerID:	
Contractor: MES		TBLot: _____		SampleTop:	SampleBottom (Units):
Sampler Signature(s): 		EBLot: _____		NA	NA
		ABLot: _____			
Time:	Label#:	Bottle, Preservative:	Method:		
1451	1	1 x 8 oz jar, none	ASTM D421/D422 Grain Size		
White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)					

Relinquished by (Signature) : 	Date/Time: 9/2/04 1930	Received by (Signature) :
Relinquished by (Signature) :	Date/Time:	Received by (Signature) :
Relinquished by (Signature) :	Date/Time:	Received by (Signature) :
Airbill Number: 8457 7482 0116		

Chain of Custody

McClellan		Site: Range 30 Impact Area		COC#: 1868	
Lab: EMAX		SMCode (circle): ~~Grab(G)~~ Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)		Station: R30-88Q-010	
Sample Date: 9/2/04		Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C), Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(S), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G)		StationType: SED	
				QCCode: NS	
				Matrix: Sediment	
				Task#: 03.094.016.02	
				CoolerID:	
Contractor: MES		TBLot: _____		SampleTop:	
Sampler Signature(s): 		EBLot: _____		SampleBottom (Units):	
		ABLot: _____		NA NA	
Time:	Label#:	Bottle, Preservative:	Method:		
1425	1	1 x 8 oz jar, none	ASTM D421/D422 Grain Size		
White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)					

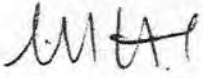
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Airbill Number: 8457 7482 0116		

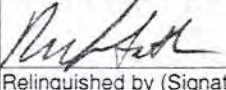
Chain of Custody

McClellan		Site: Range 30 Impact Area		COC#: 1867	
Lab: EMAX		SMCode (circle): Grab(G), Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)		Station: R30-88Q-010	
Sample Date: 9/2/04		Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C), Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G)		StationType: SED	
Contractor: MES		TBLot: <u> </u>		Matrix: Sediment	
Sampler Signature(s): <u>W.H.</u>		EBLot: <u> </u>		Task#: 03.094.016.02	
		ABLot: <u> </u>		CoolerID:	
Time:	Label#:	Bottle, Preservative:	Method:		
1425	1	1 x 8 oz jar, none	6010, 7000 Metals; 8330 Explosives; 415.1 TOC		
1425	2	0 x none, none	Percent Moisture		
White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)					

Relinquished by (Signature): <u> </u>	Date/Time: 9/2/04 1930	Received by (Signature):
Relinquished by (Signature):	Date/Time:	Received by (Signature):
Relinquished by (Signature):	Date/Time:	Received by (Signature):
Airbill Number: 8457 7462 0116		

Chain of Custody

McClellan		Site: Range 30 Impact Area		COC#: 1885	
Lab: EMAX		SMCode (circle): ~~Grab(G)~~ , Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)		Station: R30-88Q-010	
Sample Date: 9/2/04		Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C), Submersible Pump (SU), Encore(EN), Hydropunch(HP), ~~Spoon(SN)~~ , Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G)		StationType: SED	
				QCCode: MSD	
				Matrix: Sediment	
				Task#: 03.094.016.02	
				CoolerID:	
Contractor: MES		TBLot: _____		SampleTop:	
Sampler Signature(s): 		EBLot: _____		SampleBottom (Units):	
		ABLot: _____		NA	
Time:	Label#:	Bottle, Preservative:	Method:		
1425	1	1 x 8 oz jar, none	6010, 7000 Metals; 8330 Explosives; 415.1 TOC		
1425	2	0 x none, none	Percent Moisture		
White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)					

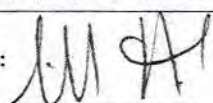
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Relinquished by (Signature):	Date/Time:	Received by (Signature):
Airbill Number: 157 7482 0116		

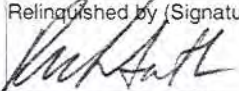
Chain of Custody

McClellan		Site: Range 30 Impact Area		COC#: 1884	
Lab: EMAX		SMCode (circle): <u>Grab(G)</u> , Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)		Station: R30-88Q-010	
Sample Date: 9/2/04		Sampling Technique (circle): Bailer(B), Bladder Pump(BP), <u>Core(C)</u> , Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G)		StationType: SED	
				QCCode: MS	
				Matrix: Sediment	
				Task#: 03.094.016.02	
				CoolerID:	
Contractor: MES		TBLot: <u> </u>		SampleTop:	
Sampler Signature(s): <u>[Signature]</u>		EBLot: <u> </u>		SampleBottom (Units):	
		ABLot: <u> </u>		<u>NA</u>	
Time:	Label#:	Bottle, Preservative:	Method:		
1475	1	1 x 8 oz jar, none	ASTM D421/D422 Grain Size		
White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)					

Relinquished by (Signature) : <u>[Signature]</u>	Date/Time: 9/2/04 1930	Received by (Signature) :
Relinquished by (Signature) :	Date/Time:	Received by (Signature) :
Relinquished by (Signature) :	Date/Time:	Received by (Signature) :
Airbill Number: 8457 7482 0116		

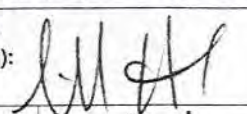
Chain of Custody

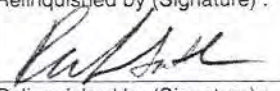
McClellan		Site: Range 30 Impact Area		COC#: 1883	
Lab: EMAX		SMCode (circle): ~~Grab(G)~~ , Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)		Station: R30-88Q-010	
Sample Date: 9/2/04		Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C), Submersible Pump (SU), Encore(EN), Hydropunch(HP), ~~Spoon(SN)~~ , Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G)		StationType: SED	
				QCCode: MS	
				Matrix: Sediment	
				Task#: 03.094.016.02	
				CoolerID:	
Contractor: MES		TBLot: <u> </u>		SampleTop:	
Sampler Signature(s): 		EBLot: <u> </u>		SampleBottom (Units):	
		ABLot: <u> </u>		NA	
Time:	Label#:	Bottle, Preservative:	Method:		
1425	1	1 x 8 oz jar, none	6010, 7000 Metals; 8330 Explosives; 415.1 TOC		
1425	2	0 x none, none	Percent Moisture		
White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)					

Relinquished by (Signature): 	Date/Time: 9/2/04 1930	Received by (Signature):
Relinquished by (Signature):	Date/Time:	Received by (Signature):
Relinquished by (Signature):	Date/Time:	Received by (Signature):
Airbill Number: 8457 7482 0116		

Chain of Custody

COC#: 1886

McClellan	Site: Range 30 Impact Area		Station: R30-88Q-010	
Lab: EMAX	SMCode (circle): ~~Grab(G)~~ Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)		StationType: SED	
Sample Date: 9/2/04	Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C) Submersible Pump (SU), Encore(EN), Hydropunch(HP), ~~Spoon(SN)~~ Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), ~~Grab(G)~~		QCCode: MSD	
Contractor: MES		TBLot:	SampleTop:	SampleBottom (Units):
Sampler Signature(s): 		EBLot: 	NA	NA
Time:	Label#: 1	Bottle, Preservative: 1 x 8 oz jar, none	Method: ASTM D421/D422 Grain Size	
White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Management)				

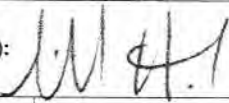
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Airbill Number: 8457 7182 0116		

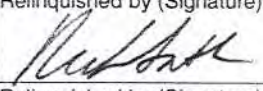
Chain of Custody

McClellan		Site: Range 30 Impact Area		COC#: 1853	
Lab: EMAX		SMCode (circle): Grab(G), <u>Composite (C)</u> , Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)		Station: R30-102Q-001	
Sample Date: 9/2/04		Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C), Submersible Pump (SU), Encore(EN), Hydropunch(HP), <u>Spoon(SN)</u> , Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), <u>Grab(G)</u>		StationType: BH	
				QCCode: NS	
				Matrix: Soil	
				Task#: 03.094.016.02	
				CoolerID:	
Contractor: MES		TBLot: _____		SampleTop:	SampleBottom (Units):
Sampler Signature(s): <i>[Signature]</i>		EBLot: _____		4.5	1.5
		ABLot: _____			
Time:	Label#:	Bottle, Preservative:	Method:		
1154					
1154	1	1 x 8 oz jar, none	6010, 7000 Metals; 8330 Explosives; 415.1 TOC		
1154	2	0 x none, none	Percent Moisture		
Subsurface Soil Sample					
White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)					

Relinquished by (Signature): <i>[Signature]</i>	Date/Time: 9/2/01 1930	Received by (Signature):
Relinquished by (Signature):	Date/Time:	Received by (Signature):
Relinquished by (Signature):	Date/Time:	Received by (Signature):
Airbill Number: 8457 7482 0182		

Chain of Custody

McClellan		Site: Range 30 Impact Area		COC#: 1852	
Lab: EMAX	SMCode (circle): Grab(G), <u>Composite(C)</u> , Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)		Station: R30-102Q-001		
Sample Date: 9/2/04	Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C), Submersible Pump (SU), Encore(EN), Hydropunch(HP), <u>Spoon(S)</u> , Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G)		StationType: BH		
			QCCode: NS		
			Matrix: Soil		
			Task#: 03.094.016.02		
			CoolerID:		
Contractor: MES	Sampler Signature(s): 	TBLot: _____	SampleTop: $\phi.\phi$	SampleBottom (Units): $\phi.5$	
		EBLot: _____			
		ABLot: _____			
Time:	Label#:	Bottle, Preservative:	Method:		
114 ϕ	1	1 x 8 oz jar, none	ASTM D421/D422 Grain Size		
Surface Soil Sample					
White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)					

Relinquished by (Signature): 	Date/Time: 9/2/04 1730	Received by (Signature):
Relinquished by (Signature):	Date/Time:	Received by (Signature):
Relinquished by (Signature):	Date/Time:	Received by (Signature):
Airbill Number: 8457 7482 0182		

Chain of Custody

McClellan		Site: Range 30 Impact Area		COC#: 1851	
Lab: EMAX		SMCode (circle): Grab(G), <u>Composite (C)</u> , Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)		Station: R30-102Q-001	
Sample Date: 9/2/04		Sampling Technique (circle): Bailer(B), Bladder Pump(BP), <u>Core (C)</u> , Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G)		StationType: BH	
				QCCode: NS	
				Matrix: Soil	
				Task#: 03.094.016.02	
				CoolerID:	
Contractor: MES		TBLot: _____		SampleTop:	
Sampler Signature(s): <i>M.H.L.</i>		EBLot: _____		SampleBottom (Units):	
		ABLot: _____		<i>0.0</i> <i>0.5</i>	
Time:	Label#:	Bottle, Preservative:	Method:		
<i>11-40</i>	1	1 x 8 oz jar, none	6010, 7000 Metals; 8330 Explosives; 415.1 TOC		
<i>11-40</i>	2	0 x none, none	Percent Moisture		
Surface Soil Sample					
White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)					

Relinquished by (Signature) : <i>[Signature]</i>	Date/Time: 9/2/04 1930	Received by (Signature) :
Relinquished by (Signature) :	Date/Time:	Received by (Signature) :
Relinquished by (Signature) :	Date/Time:	Received by (Signature) :
Airbill Number: <i>2457 7482 0182</i>		

Chain of Custody

McClellan		Site: Range 30 Impact Area		COC#: 1854	
Lab: EMAX		SMCode (circle): Grab(G), <u>Composite(G)</u> , Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)		Station: R30-102Q-001	
Sample Date: 9/2/04		Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C), Submersible Pump (SU), Encore(EN), Hydropunch(HP), <u>Spoon(SN)</u> , Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G)		StationType: BH	
				QCCode: NS	
				Matrix: Soil	
				Task#: 03.094.016.02	
				CoolerID:	
Contractor: MES		TBLot: _____		SampleTop:	SampleBottom (Units):
Sampler Signature(s): H Schank		EBLot: _____		0.5	1.5
		ABLot: _____			
Time:	Label#:	Bottle, Preservative:	Method:		
1154	1	1 x 8 oz jar, none	ASTM D421/D422 Grain Size		
Subsurface Soil Sample					
White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)					

Relinquished by (Signature): 	Date/Time: 9/2/04 1730	Received by (Signature):
Relinquished by (Signature):	Date/Time:	Received by (Signature):
Relinquished by (Signature):	Date/Time:	Received by (Signature):
Airbill Number: 8457 7482 0182		

Chain of Custody

McClellan		Site: Range 30 Impact Area		COC#: 1855	
Lab: EMAX		SMCode (circle): Grab(G), Composite(C), Discrete(D), Disturbed(S), Undiscrete(U), Unknown(Z)		Station: R30-102Q-002	
Sample Date: 9/2/04		Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C), Submersible Pump(SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G)		StationType: BH	
Contractor: MES		TBLot: _____		Matrix: Soil	
Sampler Signature(s): <i>A. Schantz</i>		EBLot: _____		Task#: 03.094.016.02	
		ABLot: _____		CoolerID:	
Time:	Label#:	Bottle, Preservative:	SampleTop: SampleBottom (Units): FT		
1200	1	1 x 8 oz jar, none	6010, 7000 Metals; 8330 Explosives; 415.1 TOC		
1200	2	0 x none, none	Percent Moisture		
Surface Soil Sample					
White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)					

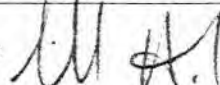
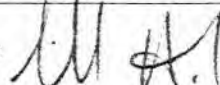
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Relinquished by (Signature):	Date/Time:	Received by (Signature):
Airbill Number: 8457 1482 0182		

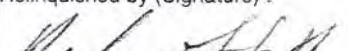
Chain of Custody

McClellan		Site: Range 30 Impact Area		COC#: 1858	
Lab: EMAX		SMCode (circle): Grab(G), <u>Composite (C)</u> , Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)		Station: R30-102Q-002	
Sample Date: 9/2/04		Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C), Submersible Pump (SU), Encore(EN), Hydropunch(HP), <u>Spoon(SN)</u> , Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G)		StationType: BH	
				QCCode: NS	
				Matrix: Soil	
				Task#: 03.094.016.02	
				CoolerID:	
Contractor: MES		TBLot: <u> </u>		SampleTop: <u>0.5</u>	SampleBottom (Units): <u>1.5 ft</u>
Sampler Signature(s): <u>[Signature]</u>		EBLot: <u> </u>			
		ABLot: <u> </u>			
Time:	Label#:	Bottle, Preservative:	Method:		
1205	1	1 x 8 oz jar, none	ASTM D421/D422 Grain Size		
Subsurface Soil Sample					
White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)					

Relinquished by (Signature) :	Date/Time:	Received by (Signature) :
<u>[Signature]</u>	9/2/04 1930	
Relinquished by (Signature) :	Date/Time:	Received by (Signature) :
Relinquished by (Signature) :	Date/Time:	Received by (Signature) :
Airbill Number: <u>8457 7482 0116</u>		

Chain of Custody

Chain of Custody				COC#: 1857	
McClellan Lab: EMAX		Site: Range 30 Impact Area		Station: R30-102Q-002	
		SMCode (circle): Grab(G), <u>Composite (C)</u> , Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)		StationType: BH	
Sample Date: 9/2/04		Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C), Submersible Pump (SU), Encore(EN), Hydropunch(HP), <u>Spoon(SN)</u> , Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G)		QCCode: NS	
Contractor: MES		TBLot: _____		Matrix: Soil	
Sampler Signature(s): 		EBLot: _____		Task#: 03.094.016.02	
		ABLot: _____		CoolerID:	
Contractor: MES		SampleTop:		SampleBottom (Units):	
Sampler Signature(s): 		EBLot: _____		Task#: 03.094.016.02	
		ABLot: _____		CoolerID:	
Time:	Label#:	Bottle, Preservative:	Method:		
1205	1	1 x 8 oz jar, none	6010, 7000 Metals; 8330 Explosives; 415.1 TOC		
1205	2	0 x none, none	Percent Moisture		
Subsurface Soil Sample					
White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Management)					

Relinquished by (Signature): 	Date/Time: 9/2/01 1930	Received by (Signature):
Relinquished by (Signature):	Date/Time:	Received by (Signature):
Relinquished by (Signature):	Date/Time:	Received by (Signature):
Airbill Number: 8457 7482 0182		

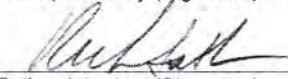
Chain of Custody

McClellan		Site: Range 30 Impact Area		COC#: 1856	
Lab: EMAX		SMCode (circle): Grab(G), Composite(C), Discrete(D), Disturbed(S), Undiscrete(U), Unknown(Z)		Station: R30-102Q-002	
Sample Date: 9/2/04		Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C), Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G)		StationType: BH	
				QCCode: NS	
				Matrix: Soil	
				Task#: 03.094.016.02	
				CoolerID:	
Contractor: MES		TBLot:		SampleTop:	SampleBottom (Units):
Sampler Signature(s): <i>[Signature]</i>		EBLot:		<i>4.4</i>	<i>4.5</i>
		ABLot:			
Time:	Label#:	Bottle, Preservative:	Method:		
1200	1	1 x 8 oz jar, none	ASTM D421/D422 Grain Size		
Surface Soil Sample White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)					

Relinquished by (Signature): <i>[Signature]</i>	Date/Time: 9/2/04 1930	Received by (Signature):
Relinquished by (Signature):	Date/Time:	Received by (Signature):
Relinquished by (Signature):	Date/Time:	Received by (Signature):
Airbill Number: 8457 7482 0182		

Chain of Custody

McClellan		Site: Range 30 Impact Area		COC#: 1879	
Lab: EMAX		SMCode (circle): Grab(G), <u>Composite (C)</u> , Discrete(D), Disturbed(S), Undiscrete (U), Unknown(Z)		Station: R30-102Q-002	
Sample Date: 9/2/04		Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C), Submersible Pump (SU), Encore(EN), Hydropunch(HP), <u>Spoon(SN)</u> , Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G)		StationType: BH	
				QCCode: MS	
				Matrix: Soil	
				Task#: 03.094.016.02	
				CoolerID:	
Contractor: MES		TBLot: —		SampleTop:	SampleBottom (Units): FT
Sampler Signature(s): A Schank		EBLot: —		φ.φ	φ.5
ABLot: —					
Time:	Label#:	Bottle, Preservative:	Method:		
1200	1	1 x 8 oz jar, none	6010, 7000 Metals; 8330 Explosives; 415.1 TOC		
1200	2	0 x none, none	Percent Moisture		
Surface Soil Sample					
White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)					

Relinquished by (Signature) : 	Date/Time: 9/2/01 1930	Received by (Signature) :
Relinquished by (Signature) :	Date/Time:	Received by (Signature) :
Relinquished by (Signature) :	Date/Time:	Received by (Signature) :
Airbill Number: 8457 7182 0116		

Chain of Custody

McClellan		Site: Range 30 Impact Area		COC#: 1882	
Lab: EMAX		SMCode (circle): Grab(G), Composite(C), Discrete(D), Disturbed(S), Undiscrete(U), Unknown(z)		Station: R30-102Q-002	
Sample Date: 9/2/04		Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C), Submersible Pump(SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G)		StationType: BH	
				QCCode: MSD	
				Matrix: Soil	
				Task#: 03.094.016.02	
				CoolerID:	
Contractor: MES		TBLot: =		SampleTop: SampleBottom (Units):	
Sampler Signature(s): H Schenk		EBLot: =		φ φ φ.5	
ABLot: =					
Time:	Label#:	Bottle, Preservative:	Method:		
1200	1	1 x 8 oz jar, none	ASTM D421/D422 Grain Size		
Surface Soil Sample					
White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)					

Relinquished by (Signature): [Signature]	Date/Time: 9/2/04 1930	Received by (Signature):
Relinquished by (Signature):	Date/Time:	Received by (Signature):
Relinquished by (Signature):	Date/Time:	Received by (Signature):
Airbill Number: 8457 7482 0116		

Chain of Custody

McClellan		Site: Range 30 Impact Area		COC#: 1881	
Lab: EMAX		SMCode (circle): Grab(G), Composite(C), Discrete(D), Disturbed(S), Undiscrete(U), Unknown(z)		Station: R30-102Q-002	
Sample Date: 9/2/04		Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C), Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G)		StationType: BH	
				QCCode: MSD	
				Matrix: Soil	
				Task#: 03.094.016.02	
				CoolerID:	
Contractor: MES		TBLot: _____		SampleTop:	SampleBottom (Units): FT
Sampler Signature(s): <i>MSchank</i>		EBLot: _____		<i>φ φ</i>	<i>φ 5</i>
		ABLot: _____			
Time:	Label#:	Bottle, Preservative:	Method:		
1200	1	1 x 8 oz jar, none	6010, 7000 Metals; 8330 Explosives; 415.1 TOC		
1200	2	0 x none, none	Percent Moisture		
Surface Soil Sample					
White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)					

Relinquished by (Signature): <i>[Signature]</i>	Date/Time: 9/2/04 1930	Received by (Signature):
Relinquished by (Signature):	Date/Time:	Received by (Signature):
Relinquished by (Signature):	Date/Time:	Received by (Signature):
Airbill Number: 8457 7482 0116		

Chain of Custody

McClellan		Site: Range 30 Impact Area		COC#: 1880	
Lab: EMAX		SMCode (circle): Grab(G), <u>Composite (C)</u> , Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)		Station: R30-102Q-002	
Sample Date: 9/2/04		Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C), Submersible Pump (SU), Encore(EN), Hydropunch(HP), <u>Spoon(SN)</u> , Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G)		StationType: BH	
				QCCode: MS	
				Matrix: Soil	
				Task#: 03.094.016.02	
				CoolerID:	
Contractor: MES		TBLot: —		SampleTop:	
Sampler Signature(s): H Schenk		EBLot: —		SampleBottom (Units): FT	
		ABLot: —		4 4 4 5	
Time:	Label#:	Bottle, Preservative:	Method:		
1200	1	1 x 8 oz jar, none	ASTM D421/D422 Grain Size		
Surface Soil Sample White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)					

Relinquished by (Signature): 	Date/Time: 9/2/04 1930	Received by (Signature):
Relinquished by (Signature):	Date/Time:	Received by (Signature):
Relinquished by (Signature):	Date/Time:	Received by (Signature):
Airbill Number: 8457 7482 0116		

Chain of Custody

14H166

COC#: 3945

Station: R30-88Q-011 (0-0.5)

StationType: SS

QCCode: NS

Matrix: Soil

Task#: 14.094.14-30.1

CoolerID: A

McClellan

Site: Range 30 Impact Area

Lab: EMAX

SMCode (circle): Grab(G), Composite (C), Discrete(D), Disturbed(S),
Undiscrete (U), Unknown(z)

Sample Date:

8/20/14

Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C)
Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand
Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB

Contractor: MES

Sampler Signature(s):

Joe for Joseph Owens

TBLot:

NA

EBLot:

EB062114

ABLot:

NA

SampleTop:

0.0

SampleBottom (Units):

0.5 ft

Time:

Label#:

Bottle, Preservative:

Method:

1

1 x 8 oz jar, none

6020A, 7471B Metals; 8330A Explosives

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Management)

Temp -5.4°C

Relinquished by (Signature):

Jennifer Keup

Date/Time:

8/20/14 1600

Received by (Signature):

Custody Fridge

Relinquished by (Signature):

Jennifer Keup

Date/Time:

8/21/14 1600

Received by (Signature):

Fed Ex

Relinquished by (Signature):

Date/Time:

8/22/14 09:30 EMAX

Received by (Signature):

Temp 23.0°C

Airbill Number:

Chain of Custody

14H16G

COC#: 3946

McClellan

Site: Range 30 Impact Area

Station: DUP180

Lab: EMAX

SMCode (circle): Grab(G), Composite (C), Discrete(D), Disturbed(S),
Undiscrete (U), Unknown(z)

StationType: SS

QCCode: FD

Sample Date:

8/20/14

Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C)
Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand
Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB

Matrix: Soil

Task#: 14.094.14-30.1

CoolerID: A

Contractor: MES

TBLot: NA

SampleTop: SampleBottom (Units):

Sampler Signature(s):

Joe for Joseph Owens

EBLot: E3092114

ABLot: NA

0.0

0.5 ft

Time:

Label#: Bottle, Preservative:

Method:

②

1145

1

1 x 8 oz jar, none

6020A, 7471B Metals; 8330A Explosives

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Management)

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Jennifer Keup

8/20/14 1600

Custody Fringe

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Jennifer Keup

8/21/14 1600

Fed EX

Relinquished by (Signature):

Date/Time:

Received by (Signature):

8/22/14 0930 EMAX nys

Airbill Number:

Chain of Custody

14H 166

COC#: 3947

McClellan	Site: Range 30 Impact Area	Station: R30-88Q-011 (0.5-1.5)
Lab: EMAX	SMCode (circle): <u>Grab(G)</u> Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)	StationType: DS
Sample Date: 8/20/14	Sampling Technique (circle): <u>Submersible Pump (SU)</u> Bailer(B), Bladder Pump(BP), Core(C), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB	QCCode: NS
Contractor: MES	TBLot: NA	Matrix: Soil
Sampler Signature(s): <i>Joe for Joseph Owens</i>	EBLot: E8002114	Task#: 14.094.14-30.1
	ABLot: NA	CoolerID: A
Time:	Label#: Bottle, Preservative:	SampleTop: 0.5 SampleBottom (Units): 1.5 ft
	Method:	

3

1145 1 1 x 8 oz jar, none 6020A, 7471B Metals; 8330A Explosives

1150 Joe 8/20/14

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Management)

Relinquished by (Signature): <i>Jennifer Keup</i>	Date/Time: 8/20/14 1600	Received by (Signature): <i>Custody Fridge</i>
Relinquished by (Signature): <i>Jennifer Keup</i>	Date/Time: 8/21/14 1600	Received by (Signature): <i>Fed Ex</i>
Relinquished by (Signature): <i>Jennifer Keup</i>	Date/Time: 8/22/14 09:30	Received by (Signature): <i>EMAX</i>

Airbill Number:

Chain of Custody

14H166

COC#: 3952

McClellan	Site: Range 30 Impact Area	Station: R30-88Q-014
Lab: EMAX	SMCode (circle): <u>Grab</u> (G), Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)	StationType: SS
Sample Date: 8/20/14	Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C) Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB	QCCode: NS
Contractor: MES	TBLot: NA	Matrix: Soil
Sampler Signature(s):	EBLot: E8092114	Task#: 14.094.14-30.1
	ABLot: NA	CoolerID: A
Time:	Label#: 1	SampleTop: 0
	Bottle, Preservative:	SampleBottom (Units): 0.5 ft
	Method:	
④ 0922	1 x 8 oz jar, none	
	6020A, 7471B Metals	

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

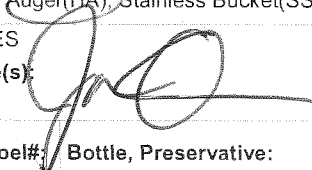
White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Management)

Relinquished by (Signature):	Date/Time: 8/20/14 1600	Received by (Signature): Custody Fridge
Relinquished by (Signature):	Date/Time: 8/21/14 1600	Received by (Signature): Fed Ex
Relinquished by (Signature):	Date/Time: 8/22/14 0930	Received by (Signature): EMAX
Airbill Number:		

Chain of Custody

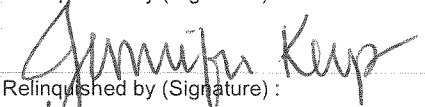
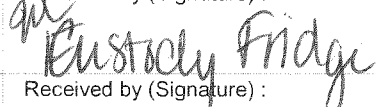
COC#: 3955

14H166

McClellan	Site: Range 30 Impact Area	Station: R30-88Q-016
Lab: EMAX	SMCode (circle): <u>Grab(G)</u> , Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)	StationType: SS
Sample Date: 08/20/14	Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C) Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB	QCCode: NS
Contractor: MES	TBLot: NA	Matrix: Soil
Sampler Signature(s): 	EBLot: EBO02114	Task#: 14.094.14-30.1
	ABLot: NA	CoolerID: A
Time:	Label#: 1	SampleTop: 0 SampleBottom (Units): 0.5 ft
	Bottle, Preservative: 1 x 8 oz jar, none	
	Method: 6020A, 7471B Metals	

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Management)

Relinquished by (Signature): 	Date/Time: 8/20/14 1600	Received by (Signature): 
Relinquished by (Signature): 	Date/Time: 8/20/14 1600	Received by (Signature): Fed Ex
Relinquished by (Signature):	Date/Time: 8/22/14 09:30	Received by (Signature): EMAX 

Airbill Number:

Chain of Custody

14H166

COC#: 3958

McClellan

Site: Range 30 Impact Area

Station: R30-88Q-018

Lab: EMAX

SMCode (circle): Grab(G), Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)

StationType: SS

QCCode: NS

Sample Date:

Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C) Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB

Matrix: Soil

Task#: 14.094.14-30.1

CoolerID: A

Contractor: MES

TBLot: NA

SampleTop: SampleBottom (Units):

Sampler Signature(s):

EBLot: EB092114

0

0.5 ft

ABLot: NA

Time:

Label#:

Bottle, Preservative:

Method:

⑥ 1055

1

1 x 8 oz jar, none

6020A, 7471B Metals

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Management)

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Relinquished by (Signature):

Date/Time:

Received by (Signature):

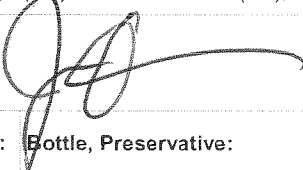
8/22/14 09:30 EMAX

Airbill Number:

Chain of Custody

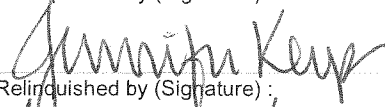
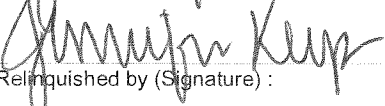
14H166

COC#: 3971

McClellan	Site: Range 30 Impact Area	Station: R30-103Q-006 (0-0.5)
Lab: EMAX	SMCode (circle): Grab(G), Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)	StationType: SS
Sample Date: 8/20/14	Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C) Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB	QCCode: NS
Contractor: MES	TBLot: NA	Matrix: Soil
Sampler Signature(s): 	EBLot: EB082114	Task#: 14.094.14-30.1
	ABLot: NA	CoolerID: A
Time:	Label#: Bottle, Preservative:	SampleTop: 0 SampleBottom (Units): 0.5 ft
Method:		
⑦ 1420	1 1 x 8 oz jar, none	6020A, 7471B Metals; 8330A Explosives

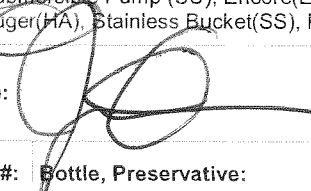
QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Management)

Relinquished by (Signature): 	Date/Time: 8/20/14 1600	Received by (Signature): Custody Fridge
Relinquished by (Signature): 	Date/Time: 8/21/14 1600	Received by (Signature): Fed EX
Relinquished by (Signature): 	Date/Time: 8/22/14 09:30	Received by (Signature): EMAX 
Airbill Number:		

Chain of Custody

14H166

McClellan	Site: Range 30 Impact Area	COC#: 3972
Lab: EMAX	SMCode (circle): <u>Grab(G)</u> , Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)	Station: R30-103Q-006 (0.5-1.5)
Sample Date: 8/20/14	Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C), Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB	StationType: DS
Contractor: MES	TBLot: NA	QCCode: NS
Sampler Signature(s): 	EBLot: EB002114	Matrix: Soil
	ABLot: NA	Task#: 14.094.14-30.1
		CoolerID: A
Time:	Label#: 1	SampleTop: 0.5
Bottle, Preservative:	Method:	SampleBottom (Units): 1.5 ft

⑧ 1420 1 x 8 oz jar, none 6020A, 7471B Metals; 8330A Explosives

1425 gnu 8/22/14
QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Management)

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Relinquished by (Signature):

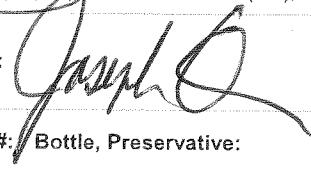
Date/Time:

Received by (Signature):

Airbill Number:

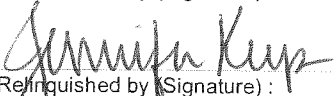
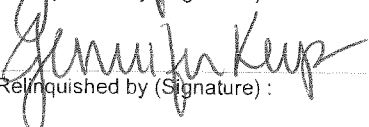
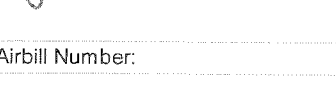
Chain of Custody

14H166

McClellan		Site: Range 30 Impact Area		COC#: 3976	
Lab: EMAX		SMCode (circle): <u>Grab(G)</u> , Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)		Station: R30-103Q-009	
Sample Date: 8/20/14		Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C), Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB		StationType: SS	
Contractor: MES		TBLot: NA		QCCode: NS	
Sampler Signature(s): 		EBLot: EB082114		Matrix: Soil	
		ABLot: NA		Task#: 14.094.14-30.1	
Time: 1350		Label#: 1		CoolerID: A	
		Bottle, Preservative: 1 x 8 oz jar, none		SampleTop: 0	
		Method: 6020A, 7471B Metals		SampleBottom (Units): 0.5 fl	

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Management)

Relinquished by (Signature): 	Date/Time: 8/20/14 1600	Received by (Signature): Custody Fridge
Relinquished by (Signature): 	Date/Time: 8/21/14 1600	Received by (Signature): Fed Ex
Relinquished by (Signature): 	Date/Time: 8/22/14 09:30	Received by (Signature): EMAX 
Airbill Number:		

Chain of Custody

14H166

COC#: 3977

McClellan	Site: Range 30 Impact Area	Station: R30-103Q-010
Lab: EMAX	SMCode (circle): <u>Grab</u> (G), Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)	StationType: SS
Sample Date: 8/20/14	Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C) Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB	QCCode: NS
Contractor: MES	TBLot: NA	Matrix: Soil
Sampler Signature(s): <i>Joseph A.</i>	EBLot: EB092114	Task#: 14.094.14-30.1
	ABLot: NA	CoolerID: A
Time:	Label#: 1	SampleTop: 0
	Bottle, Preservative: 1 x 8 oz jar, none	SampleBottom (Units): 0.5 ft
	Method: 6020A, 7471B Metals	

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Management)

Relinquished by (Signature): <i>Jennifer Keyp</i>	Date/Time: 8/20/14 1600	Received by (Signature): <i>Custody Fridge</i>
Relinquished by (Signature): <i>Jennifer Keyp</i>	Date/Time: 8/21/14 1600	Received by (Signature): <i>Fed Ex</i>
Relinquished by (Signature):	Date/Time: 8/22/14 09:30	Received by (Signature): <i>EMAX</i>
Airbill Number:		

Chain of Custody

COC#: 3981

14H166

McClellan	Site: Range 30 Impact Area	Station: R30-103Q-014
Lab: EMAX	SMCode (circle): Grab(G), Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)	StationType: SS
Sample Date: 8/20/14	Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C) Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB	QCCode: NS
Contractor: MES	TBLot: NA	Matrix: Soil
Sampler Signature(s):	EBLot: EB082114	Task#: 14.094.14-30.1
	ABLot: NA	CoolerID: A
Time: 1450	Label#: 1	SampleTop: 0
	Bottle, Preservative: 1 x 8 oz jar, none	SampleBottom (Units): 0.5 ft
	Method: 6020A, 7471B Metals	

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Management)

Relinquished by (Signature):	Date/Time: 8/20/14 1600	Received by (Signature): Custody Fridge
Relinquished by (Signature):	Date/Time: 8/21/14 1600	Received by (Signature): Fed Ex
Relinquished by (Signature):	Date/Time: 8/22/14 09:30	Received by (Signature): EMAX
Airbill Number:		

Chain of Custody

COC#: 3983

14H166

McClellan	Site: Range 30 Impact Area	Station: R30-103Q-016
Lab: EMAX	SMCode (circle): <u>Grab(G)</u> Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)	StationType: SS
Sample Date: 8/20/14	Sampling Technique (circle): <u>Submersible Pump (SU)</u> Bailer(B), Bladder Pump(BP), Core(C), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB	QCCode: NS
Contractor: MES	TBLot: NA	Matrix: Soil
Sampler Signature(s): <i>Joe for Joseph Owens</i>	EBLot: E3062114	Task#: 14.094.14-30.1
	ABLot: NA	CoolerID: A
Time:	Label#: Bottle, Preservative:	SampleTop: 0 SampleBottom (Units): 0.5 ft
12	1	1 x 8 oz jar, none
1000		6020A, 7471B Metals

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Management)

Relinquished by (Signature): <i>Samir Karp</i>	Date/Time: 8/20/14 1600	Received by (Signature): <i>Custody Fridge</i>
Relinquished by (Signature): <i>Samir Karp</i>	Date/Time: 8/21/14 1600	Received by (Signature): <i>Fed Ex</i>
Relinquished by (Signature): <i>Samir Karp</i>	Date/Time: 8/22/14 09:30	Received by (Signature): <i>EMAX</i>
Airbill Number:		

Chain of Custody

COC#: 3948

14H166

McClellan	Site: Range 30 Impact Area	Station: R30-88Q-012 (0-0.5)
Lab: EMAX	SMCode (circle): <u>Grab(G)</u> Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)	StationType: SS
Sample Date: 8/20/14	Sampling Technique (circle): <u>Auger(HA)</u> Bailer(B), Bladder Pump(BP), Core(C) Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA) Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB	QCCode: NS
Contractor: MES	TBLot: NA	Matrix: Soil
Sampler Signature(s): <i>Joseph Owens</i>	EBLot: E8082114	Task#: 14.094.14-30.1
	ABLot: NA	CoolerID:
Time:	Label# 1	SampleTop: 0
	Bottle, Preservative: 1 x 8 oz jar, none	SampleBottom (Units): 0.5 ft
		Method: 6020A, 7471B Metals; 8330A Explosives

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Management)

Temp # 2 3.0°C

Relinquished by (Signature): <i>Jimmie Karp</i>	Date/Time: 8/20/14 11:00	Received by (Signature): <i>Custody Fridge</i>
Relinquished by (Signature): <i>Jimmie Karp</i>	Date/Time: 8/21/14 11:00	Received by (Signature): <i>Fed Ex</i>
Relinquished by (Signature):	Date/Time: 8/22/14 09:10	Received by (Signature): <i>EMAX</i>
Airbill Number:		

Chain of Custody

14H166

COC#: 3949

Station: R30-88Q-012 (0-0.5)

StationType: SS

QCCode: MS/MSD

Matrix: Soil

Task#: 14.094.14-30.1

CoolerID:

McClellan

Site: Range 30 Impact Area

Lab: EMAX

SMCode (circle): Grab(G), Composite (C), Discrete(D), Disturbed(S),
Undiscrete (U), Unknown(z)

Sample Date:

8/20/14

Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C)
Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand
Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB

Contractor: MES

TBLot: NA

SampleTop: SampleBottom (Units):

Sampler Signature(s):

Joe fn Joseph OWENS

EBLot: E3092114

ABLot: NA

0

0.5 ft

Time:

Label#: Bottle, Preservative:

Method:

13

0940

1

2 x 8 oz jar, none

6020A, 7471B Metals; 8330A Explosives

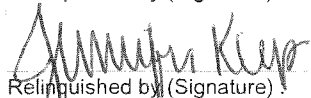
QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
 StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Management)

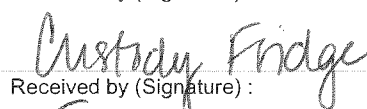
Relinquished by (Signature):

Date/Time:

Received by (Signature):



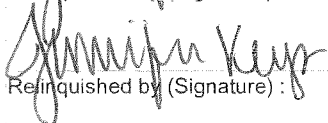
8/20/14 1600



Relinquished by (Signature):

Date/Time:

Received by (Signature):



8/21/14 1600



Relinquished by (Signature):

Date/Time:

Received by (Signature):

8/22/14 0930



Airbill Number:

Chain of Custody

COC#: 3950

14H166

McClellan	Site: Range 30 Impact Area	Station: R30-88Q-012 (0.5-1.5)
Lab: EMAX	SMCode (circle): <u>Grab(G)</u> , Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)	StationType: DS
Sample Date: 8/20/14	Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C), Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), <u>Stainless Bucket(SS)</u> , Peristaltic Pump(PP), Grab(G), PDB	QCCode: NS
Contractor: MES	TBLot: NA	Matrix: Soil
Sampler Signature(s): <i>Joseph Owens</i>	EBLot: EBOG 2114	Task#: 14.094.14-30.1
	ABLot: NA	CoolerID:
Time:	SampleTop: 0.5	SampleBottom (Units): 1.5 ft
Label#: 1	Bottle, Preservative: 1 x 8 oz jar, none	
(14) 0945		
6020A, 7471B Metals; 8330A Explosives		

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

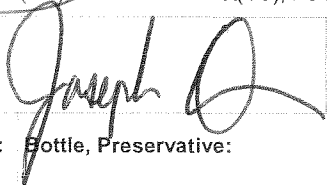
White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Management)

Relinquished by (Signature): <i>Jennifer Kemp</i>	Date/Time: 8/20/14 1600	Received by (Signature): <i>Custody Fridge</i>
Relinquished by (Signature): <i>Jennifer Kemp</i>	Date/Time: 8/21/14 1600	Received by (Signature): <i>FedEx</i>
Relinquished by (Signature): <i>Jennifer Kemp</i>	Date/Time: 8/22/14 0930	Received by (Signature): <i>EMAX</i>
Airbill Number:		

Chain of Custody

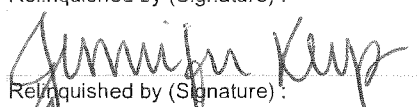
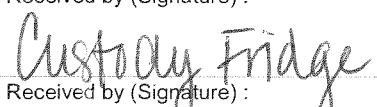
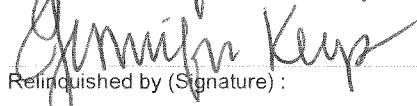
COC#: 3951

14H166

McClellan	Site: Range 30 Impact Area	Station: R30-88Q-013
Lab: EMAX	SMCode (circle): <u>Grab(G)</u> , Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)	StationType: SS
Sample Date: 8/20/2014	Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C), Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB	QCCode: NS
Contractor: MES	TBLot: NA	Matrix: Soil
Sampler Signature(s): 	EBLot: EB082114	Task#: 14.094.14-30.1
	ABLot: NA	CoolerID:
Time:	Label#: Bottle, Preservative:	SampleTop: 0 SampleBottom (Units): 0.5 ft
Method:		
(15) 1130	1	1 x 8 oz jar, none
		6020A, 7471B Metals

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Management)

Relinquished by (Signature): 	Date/Time: 8/20/14 1600	Received by (Signature): 
Relinquished by (Signature): 	Date/Time: 8/21/14 1600	Received by (Signature): 
Relinquished by (Signature):	Date/Time: 8/22/14 09:30	Received by (Signature): 

Airbill Number:

Chain of Custody

14H166

COC#: 3953

Station: DUP181

StationType: SS

QCCode: FD

Matrix: Soil

Task#: 14.094.14-30.1

CoolerID:

McClellan

Site: Range 30 Impact Area

Lab: EMAX

SMCode (circle): Grab(G), Composite (C), Discrete(D), Disturbed(S),
Undiscrete (U), Unknown(z)

Sample Date:

Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C)
Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand
Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB

Contractor: MES

TBLot: NA

SampleTop: SampleBottom (Units):

Sampler Signature(s):

EBLot: EB082114

ABLot: NA

Time:

Label#: Bottle, Preservative:

Method:

(16) 0922

1 1 x 8 oz jar, none

6020A, 7471B Metals

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Management)

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Relinquished by (Signature):

Date/Time:

Received by (Signature):

8/22/14 0930 EMAX

Airbill Number:

Chain of Custody

U4H166

COC#: 3956

McClellan

Site: Range 30 Impact Area

Station: R30-88Q-017

Lab: EMAX

SMCode (circle): Grab(G), Composite (C), Discrete(D), Disturbed(S),
Undiscrete (U), Unknown(z)

StationType: SS

QCCode: NS

Sample Date:

Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C)
Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand
Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB

Matrix: Soil

Task#: 14.094.14-30.1

CoolerID:

Contractor: MES

TBLot: NA

SampleTop: SampleBottom (Units):

Sampler Signature(s):

EBLot: EB062114

ABLot: NA

0

0.5 ft

Time:

Label#: Bottle, Preservative:

Method:

(17)

1110

1

1 x 8 oz jar, none

6020A, 7471B Metals

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Management)

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Airbill Number:

Chain of Custody

14H166

COC#: 3957

Station: R30-88Q-017

StationType: SS

QCCode: MS/MSD

Matrix: Soil

Task#: 14.094.14-30.1

CoolerID:

McClellan

Site: Range 30 Impact Area

Lab: EMAX

SMCode (circle): Grab(G), Composite (C), Discrete(D), Disturbed(S),
Undiscrete (U), Unknown(z)

Sample Date:

8/20/14

Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C)
Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand
Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB

Contractor: MES

TBLot: NA

SampleTop: SampleBottom (Units):

Sampler Signature(s):

EBLot: EB092114

ABLot: NA

0

0.5 ft

Time:

Label#: Bottle, Preservative:

Method:

1

1 x 8 oz jar, none

6020A, 7471B Metals

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Management)

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Jennifer Kemp

8/20/14 1600

Custody Fridge

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Jennifer Kemp

8/21/14 1600

Fed Ex

Relinquished by (Signature):

Date/Time:

Received by (Signature):

8/22/14 0930

EMAX no

Airbill Number:

Chain of Custody

14H166

COC#: 3973

Station: R30-103Q-007 (0-0.5)

StationType: SS

QCCode: NS

Matrix: Soil

Task#: 14.094.14-30.1

CoolerID:

McClellan

Site: Range 30 Impact Area

Lab: EMAX

SMCode (circle): Grab(G) Composite (C), Discrete(D), Disturbed(S),
Undiscrete (U), Unknown(z)

Sample Date:

Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C)
Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand
Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB

Contractor

MES

Sampler Signature(s):

TBLot: NA

EBLot: ~~EB002014~~

ABLot: NA EB002114

SampleTop: SampleBottom (Units):

0

0.5 ft

Time:

Label#: Bottle, Preservative:

Method:

(18) 0900 1 1 x 8 oz jar, none
6020A, 7471B Metals; 8330A Explosives

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Management)

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Airbill Number:

Chain of Custody

COC#: 3974

McClellan
Lab: EMAX

Site: Range 30 Impact Area

Station: R30-103Q-007 (0.5-1.5)

StationType: DS

QCCode: NS

Sample Date:

Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C)
Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand
Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB

Matrix: Soil

Task#: 14.094.14-30.1

CoolerID:

Contractor: MES

Sampler Signature(s):

TBLot: NA

EBLot: 68062114

ABLot: NA

SampleTop:

SampleBottom (Units):

0.5

1.5 ft

Time:

Label#:

Bottle, Preservative:

Method:

1

1 x 8 oz jar, none

6020A, 7471B Metals; 8330A Explosives

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment
Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep,
SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)

Relinquished by (Signature) :

Date/Time:

Received by (Signature) :

Relinquished by (Signature) :

Date/Time:

Received by (Signature) :

Relinquished by (Signature) :

Date/Time:

Received by (Signature) :

Airbill Number:

Chain of Custody

COC#: 3979

Station: R30-103Q-012

StationType: SS

QCCode: NS

Matrix: Soil

Task#: 14.094.14-30.1

CoolerID:

McClellan

Lab: EMAX

Site: Range 30 Impact Area

SMCode (circle): Grab(G), Composite (C), Discrete(D), Disturbed(S),
Undiscrete (U), Unknown(z)

Sample Date:

Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C)
Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand
Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB

Contractor: MES

Sampler Signature(s):

TBLot: NA

EBLot: EB062114

ABLot: NA

SampleTop: SampleBottom (Units):

0

0.5 A

Time:

Label#: Bottle, Preservative:

Method:

1

1 x 8 oz jar, none

6020A, 7471B Metals

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Management)

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Airbill Number:

Chain of Custody

14H166

McClellan	Site: Range 30 Impact Area	COC#: 3984
Lab: EMAX	SMCode (circle): <u>Grab(G)</u> , Composite(C), Discrete(D), Disturbed(S), Undiscrete(U), Unknown(z)	Station: DUP183
Sample Date: 8/20/14	Sampling Technique (circle): <u>Submersible Pump (SU)</u> , Bailer(B), Bladder Pump(BP), Core(C), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB	StationType: SS
Contractor: MES	TBLot: NA	QCCode: FD
Sampler Signature(s): <i>Joseph Owens</i>	EBLot: EB082114	Matrix: Soil
	ABLot: NA	Task#: 14.094.14-30.1
Time: 1000	Label#: 1	CoolerID:
Bottle, Preservative:	Method:	SampleTop: 0
1 x 8 oz jar, none		SampleBottom (Units): 0.5 ft
6020A, 7471B Metals		

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
 StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Management)

Relinquished by (Signature): <i>Jennifer Karp</i>	Date/Time: 8/20/14 11:00	Received by (Signature): <i>Custody Fridge</i>
Relinquished by (Signature): <i>Jennifer Karp</i>	Date/Time: 8/21/14 11:00	Received by (Signature): <i>Fed Ex</i>
Relinquished by (Signature):	Date/Time: 8/22/14 09:30	Received by (Signature): <i>EMAX</i>
Airbill Number:		

Chain of Custody

COC#: 3954

Station: R30-88Q-015

StationType: SS

QCCode: NS

Matrix: Soil

Task#: 14.094.14-30.1

CoolerID:

McClellan

Site: Range 30 Impact Area

Lab: EMAX

SMCode (circle): Grab(G), Composite (C), Discrete(D), Disturbed(S),
Undiscrete (U), Unknown(z)

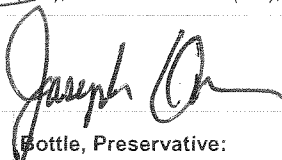
Sample Date:

8/21/2014

Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C)
Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand
Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB

Contractor: MES

Sampler Signature(s):



TBLot:

NA

EBLot:

EB082114

ABLot:

NA

SampleTop: SampleBottom (Units):

0

0.5 ft

Time:

Label#: Bottle, Preservative:

Method:

1

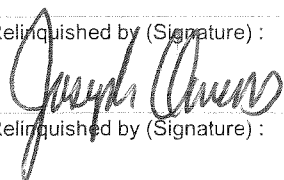
1 x 8 oz jar, none

6020A, 7471B Metals

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Management)

Relinquished by (Signature):



Date/Time:

8/21/14 1600

Received by (Signature):

FedEx

Relinquished by (Signature):

Date/Time:

8/22/14 09:30

Received by (Signature):



Relinquished by (Signature):

Date/Time:

Received by (Signature):

Airbill Number:

Temp - 3.0°C

Chain of Custody

COC#: 3959

Station: R30-103Q-001 (0-0.5)

StationType: SS

QCCode: NS

Matrix: Soil

Task#: 14.094.14-30.1

CoolerID:

McClellan

Site: Range 30 Impact Area

Lab: EMAX

SMCode (circle): Grab(G), Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)

Sample Date:

Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C), Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB

Contractor: MES

TBLot: NA

SampleTop: SampleBottom (Units):

Sampler Signature(s): *Joe for Joseph Owens*

EBLot: EB092114

ABLot: NA

0

0.5 ft

Time:

Label#:

Bottle, Preservative:

Method:

1

1 x 8 oz jar, none

6020A, 7471B Metals; 8330A Explosives

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Management)

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Airbill Number:

14H167

Chain of Custody

COC#: 3960

McClellan	Site: Range 30 Impact Area	Station: R30-103Q-001 (0.5-1.5)	
Lab: EMAX	SMCode (circle): <u>Grab(B)</u> , Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)	StationType: DS	
Sample Date: 8/21/14	Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C), Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB	QCCode: NS	
Contractor: MES	TBLot: NA	Matrix: Soil	Task#: 14.094.14-30.1
Sampler Signature(s): 	EBLot: EB082114	CoolerID:	
	ABLot: NA	SampleTop: 0.5	SampleBottom (Units): 1.5

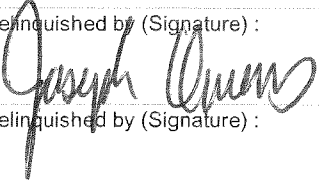
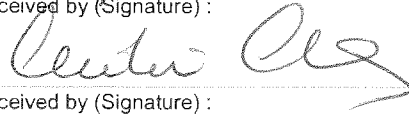
Time:	Label#: Bottle, Preservative:	Method:

3

0915	1	1 x 8 oz jar, none	6020A, 7471B Metals; 8330A Explosives

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
 StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)

Relinquished by (Signature): 	Date/Time: 8/21/14 1600	Received by (Signature): FedEx
Relinquished by (Signature):	Date/Time: 8/22/14 09:30	Received by (Signature): 
Relinquished by (Signature):	Date/Time:	Received by (Signature):

Airbill Number:

14H167

Chain of Custody

COC#: 3961

McClellan	Site: Range 30 Impact Area	Station: R30-103Q-002 (0-0.5)	
Lab: EMAX	SMCode (circle): <u>Grab(G)</u> , Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)	StationType: SS	
Sample Date: 8/21/14	Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C), Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB	QCCode: NS	
Contractor: MES	TBLot: NA	Matrix: Soil	CoolerID:
Sampler Signature(s): <i>Joseph Q</i>	EBLot: B052114 ABLot: NA	Task#: 14.094.14-30.1	
		SampleTop: 0	SampleBottom (Units): 0.5 ft
Time:	Label#: 1	Bottle, Preservative: 1 x 8 oz jar, none	Method:
0940		6020A, 7471B Metals; 8330A Explosives	

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
 StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)

Relinquished by (Signature): <i>Joseph Q</i>	Date/Time: 8/21/14 1600	Received by (Signature): <i>FedEx</i>
Relinquished by (Signature):	Date/Time: 8/22/14 09:30	Received by (Signature): <i>Clinton</i>
Relinquished by (Signature):	Date/Time:	Received by (Signature):
Airbill Number:		

Chain of Custody

14H167

COC#: 3962

McClellan

Site: Range 30 Impact Area

Station: R30-103Q-002 (0.5-1.5)

Lab: EMAX

SMCode (circle): Grab(G), Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)

StationType: DS

QCCode: NS

Sample Date:

Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C) Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB

Matrix: Soil

Task#: 14.094.14-30.1

CoolerID:

Contractor: MES

Sampler Signature(s):

TBLot:

EBLot:

ABLot:

SampleTop: SampleBottom (Units):

Time:

Label#:

Bottle, Preservative:

Method:

0945

1

1 x 8 oz jar, none

6020A, 7471B Metals; 8330A Explosives

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Management)

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Airbill Number:

14H/67

Chain of Custody

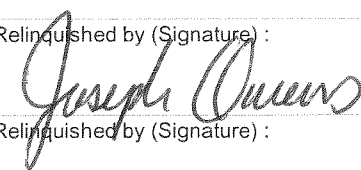
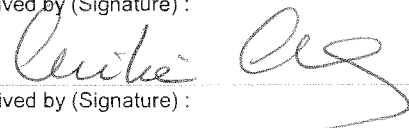
COC#: 3963

McClellan	Site: Range 30 Impact Area	Station: R30-103Q-003 (0-0.5)	
Lab: EMAX	SMCode (circle): <u>Grab(G)</u> , Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)	StationType: SS	
Sample Date: 8/21/14	Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C), Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB	QCCode: NS	
Contractor: MES	TBLot: NA	Matrix: Soil	CoolerID:
Sampler Signature(s): 	EBLot: EB082114	Task#: 14.094.14-30.1	
	ABLot: NA	SampleTop: 0	SampleBottom (Units): 0.5 A

Time:	Label#: 0955	Bottle, Preservative: 1	Method:
		1 x 8 oz jar, none	
		6020A, 7471B Metals; 8330A Explosives	

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
 StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)

Relinquished by (Signature): 	Date/Time: 8/21/14 1600	Received by (Signature): FedEx
Relinquished by (Signature):	Date/Time: 8/22/14 09:30	Received by (Signature): 
Relinquished by (Signature):	Date/Time:	Received by (Signature):

Airbill Number:

Chain of Custody

14 H/67

McClellan		Site: Range 30 Impact Area		COC#: 3964	
Lab: EMAX		SMCode (circle): <u>Grab(G)</u> , Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)		Station: R30-103Q-003 (0.5-1.5)	
Sample Date: 8/21/14		Sampling Technique (circle): <u>Auger(HA)</u> , Bailer(B), Bladder Pump(BP), Core(C), Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand		StationType: DS	
Contractor: MES		TBLot: NA		QCCode: NS	
Sampler Signature(s): <i>Joseph Owens</i>		EBLot: EB082114		Matrix: Soil	
		ABLot: NA		Task#: 14.094.14-30.1	
				CoolerID:	
Time:	Label#: 1	Bottle, Preservative: 1 x 8 oz jar, none	Method:	SampleTop: 0.5	SampleBottom (Units): 1.5 ft
7 0955		6020A, 7471B Metals; 8330A Explosives			
1000 gms 8/21/14					
QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)					

Relinquished by (Signature): <i>Joseph Owens</i>	Date/Time: 8/21/14 1600	Received by (Signature): <i>FedEx</i>
Relinquished by (Signature):	Date/Time: 8/22/14 09:30	Received by (Signature): <i>Center</i>
Relinquished by (Signature):	Date/Time:	Received by (Signature):
Airbill Number:		

Chain of Custody

14H167

McClellan		Site: Range 30 Impact Area		COC#: 3965	
Lab: EMAX		SMCode (circle): <u>Grab(G)</u> , Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)		Station: R30-103Q-004 (0-0.5)	
Sample Date: 8/21/14		Sampling Technique (circle): <u>Grab(G)</u> , Bailer(B), Bladder Pump(BP), Core(C), Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB		StationType: SS	
Contractor: MES		TBLot: NA		Matrix: Soil	
Sampler Signature(s):		EBLot: EB082114		Task#: 14.094.14-30.1	
		ABLot: NA		CoolerID:	
Time:	Label#: 1	Bottle, Preservative:	Method:	SampleTop: 0	SampleBottom (Units): 0.5 ft
1035	1	1 x 8 oz jar, none			
6020A, 7471B Metals; 8330A Explosives					

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
 StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)

Relinquished by (Signature):	Date/Time: 8/21/14 1600	Received by (Signature):
Relinquished by (Signature):	Date/Time: 8/22/14 09:30	Received by (Signature):
Relinquished by (Signature):	Date/Time:	Received by (Signature):

Airbill Number:

Chain of Custody

14H167

COC#: 3966

Station: R30-103Q-004 (0.5-1.5)

StationType: DS

QCCode: NS

Matrix: Soil

Task#: 14.094.14-30.1

CoolerID:

McClellan

Site: Range 30 Impact Area

Lab: EMAX

SMCode (circle): Grab(G), Composite (C), Discrete(D), Disturbed(S),
Undiscrete (U), Unknown(z)

Sample Date:

Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C)
Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand
Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB

Contractor: MES

TBLot: N/A

SampleTop: SampleBottom (Units):

Sampler Signature(s):

EBLot: EB082114

ABLot: N/A

0.5

1.5

Time:

Label#: Bottle, Preservative:

Method:

1 1 x 8 oz jar, none

6020A, 7471B Metals; 8330A Explosives

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Management)

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Airbill Number:

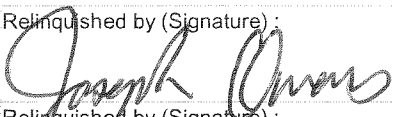
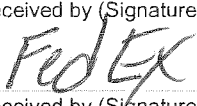
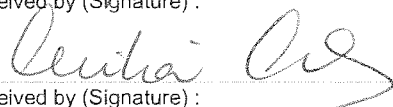
Chain of Custody

14H167

McClellan		Site: Range 30 Impact Area		COC#: 3967	
Lab: EMAX		SMCode (circle): <u>Grab(G)</u> , Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)		Station: R30-103Q-004 (0.5-1.5)	
Sample Date: 8/21/14		Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C) Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB		StationType: DS	
Contractor: MES		TBLot: NA		QCCode: MS/MSD	
Sampler Signature(s): 		EBLot: EB082114		Matrix: Soil	
		ABLot: NA		Task#: 14.094.14-30.1	
				CoolerID:	
		SampleTop: 0.5		SampleBottom (Units): 1.5	
Time:		Label#: Bottle, Preservative:		Method:	
9 1040		1		2 x 8 oz jar, none	
6020A, 7471B Metals; 8330A Explosives					

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
 StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)

Relinquished by (Signature): 	Date/Time: 8/21/14 1100	Received by (Signature): 
Relinquished by (Signature): 	Date/Time: 8/22/14 0930	Received by (Signature): 
Relinquished by (Signature):	Date/Time:	Received by (Signature):
Airbill Number:		

Chain of Custody

14 H167

COC#: 3968

McClellan

Site: Range 30 Impact Area

Station: R30-103Q-005 (0-0.5)

Lab: EMAX

SMCode (circle): Grab(G), Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)

StationType: SS

QCCode: NS

Sample Date:

Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C) Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB

Matrix: Soil

Task#: 14.094.14-30.1

CoolerID:

Contractor: MES

TBLot: NA

SampleTop: SampleBottom (Units):

Sampler Signature(s):

EBLot: EB082114

ABLot: NA

0

0.5 ft

Time:

Label#

Bottle, Preservative:

Method:

1100

1

1 x 8 oz jar, none

6020A, 7471B Metals; 8330A Explosives

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Management)

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Airbill Number:

Chain of Custody

14H167

COC#: 3969

Station: R30-103Q-005 (0.5-1.5)

StationType: DS

QCCode: NS

Matrix: Soil

Task#: 14.094.14-30.1

CoolerID:

McClellan

Lab: EMAX

Sample Date:

8/21/14

Site: Range 30 Impact Area

SMCode (circle): Grab(G), Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)

Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C) Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB

Contractor: MES

Sampler Signature(s):

TBLot: NA

EBLot: EB062114

ABLot: NA

SampleTop: SampleBottom (Units):

0.5 1.5 ft

Time:

Label#:

Bottle, Preservative:

Method:

1

1 x 8 oz jar, none

6020A, 7471B Metals; 8330A Explosives

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Relinquished by (Signature):

Date/Time:

Received by (Signature):

Airbill Number:

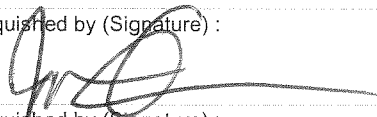
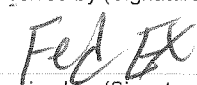
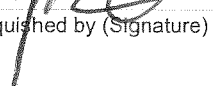
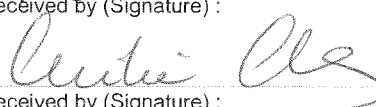
Chain of Custody

14H167

McClellan		Site: Range 30 Impact Area		COC#: 3970	
Lab: EMAX		SMCode (circle): Grab(G), Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)		Station: DUP182	
Sample Date: 8/21/14		Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C) Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB		StationType: DS	
Contractor: MES		TBLot: NA		QCCode: FD	
Sampler Signature(s): 		EBLot: EB082114		Matrix: Soil	
		ABLot: NA		Task#: 14.094.14-30.1	
				CoolerID:	
Time:		Label#: 1		SampleTop: 0.5	
		Bottle, Preservative:		SampleBottom (Units): 1.5 ft	
		Method:			
1105		1 x 8 oz jar, none		6020A, 7471B Metals; 8330A Explosives	

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
 StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)

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14 H/67

Chain of Custody

COC#: 3975

McClellan	Site: Range 30 Impact Area	Station: R30-103Q-008	
Lab: EMAX	SMCode (circle): <u>Grab</u> (G), Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)	StationType: SS	
Sample Date: 8/21/14	Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C) Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB	QCCode: NS	
Contractor: MES	TBLot: NA	Matrix: Soil	Task#: 14.094.14-30.1
Sampler Signature(s):	EBLot: EB082114	CoolerID:	
	ABLot: NA	SampleTop: 0	SampleBottom (Units): 0.5
Time:	Label#: Bottle, Preservative:	Method:	
0925	1 1 x 8 oz jar, none	6020A, 7471B Metals	

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
 StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

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144167

Chain of Custody

COC#: 3978

McClellan

Site: Range 30 Impact Area

Station: R30-103Q-011

Lab: EMAX

SMCode (circle): Grab(G), Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)

StationType: SS

QCCode: NS

Sample Date:

Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C) Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB

Matrix: Soil

Task#: 14.094.14-30.1

CoolerID:

Contractor: MES

TBLot: NA
EBLot: E8082114
ABLot: NA

SampleTop: SampleBottom (Units):

Sampler Signature(s):

Time:

Label#:

Bottle, Preservative:

Method:

1

1 x 8 oz jar, none

6020A, 7471B Metals

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

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Airbill Number:

14H/67

Chain of Custody

COC#: 3980

Station: R30-103Q-013

StationType: SS

QCCode: NS

Matrix: Soil

Task#: 14.094.14-30.1

CoolerID:

McClellan

Lab: EMAX

Site: Range 30 Impact Area

SMCode (circle): Grab(G), Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)

Sample Date:

8/20/14

Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C) Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB

Contractor: MES

Sampler Signature(s):

TBLot: NA

EBLot: EB082114

ABLot: NA

SampleTop: SampleBottom (Units):

0

0.5 ft

Time:

Label#:

Bottle, Preservative:

Method:

15
1440

1

1 x 8 oz jar, none

6020A, 7471B Metals

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

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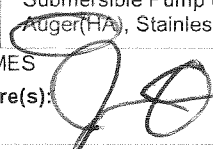
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Chain of Custody

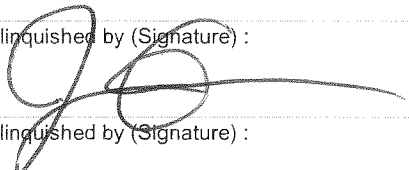
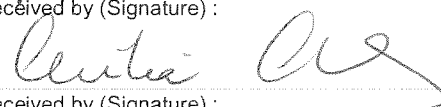
14H167

COC#: 3982

McClellan	Site: Range 30 Impact Area	Station: R30-103Q-015
Lab: EMAX	SMCode (circle): <u>Grab(G)</u> , Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)	StationType: SS
Sample Date: 8/21/14	Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C) Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB	QCCode: NS
Contractor: MES	TBLot: NA	Matrix: Soil
Sampler Signature(s): 	EBLot: E8082114	Task#: 14.094.14-30.1
	ABLot: NA	CoolerID:
Time:	Label#: Bottle, Preservative:	SampleTop: SampleBottom (Units):
1125	1	0 0.5 ft
Method: 6020A, 7471B Metals		

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
 StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)

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Airbill Number:

Chain of Custody

14H167

COC#: 3986

McClellan

Site: Range 30 Impact Area

Station: EB079

Lab: EMAX

SMCode (circle): Grab(G), Composite (C), Discrete(D), Disturbed(S), Undiscrete (U), Unknown(z)

StationType: WQ

QCCode: EB

Sample Date:

Sampling Technique (circle): Bailer(B), Bladder Pump(BP), Core(C) Submersible Pump (SU), Encore(EN), Hydropunch(HP), Spoon(SN), Hand Auger(HA), Stainless Bucket(SS), Peristaltic Pump(PP), Grab(G), PDB

Matrix: Water

Task#: 14.094.14-30.1

CoolerID:

Contractor: MES

TBLot: NA

SampleTop: SampleBottom (Units):

Sampler Signature(s): *Joseph O.*

EBL: *140082114*

ABLot: NA

Time:

Label#: Bottle, Preservative:

Method:

1 1 x 250 ml poly, HNO3 6020A, 7470A Metals
1 2 x 250 ml amber, none 8330A Explosives

QCCode: NS = Investigative Sample, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water, SP = Seep
StationType: MW = Monitoring Well, BH = Bore Hole, DS = IDW Soil, SD = Sediment Point, SW = Surface Water, SE = Seep, SS = Surface Soil

White Original COC (Lab Copy) - Yellow COC (Field Office) - Pink COC (Data Managment)

Relinquished by (Signature): *Joseph O.*

Date/Time:

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Date/Time:

Received by (Signature):

8/22/14 09:30

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Date/Time:

Received by (Signature):

Airbill Number:

APPENDIX E
Response to ADEMs Comments

Gwen Tulley

From: Gerald Hardy
Sent: Tuesday, August 06, 2019 3:11 PM
To: Gwen Tulley
Subject: FW: Range 30 RFI Responses to Comments

Wm. Gerald Hardy, PE. Onsite Project Manager
Matrix Environmental Services, LLC.

283 Rucker Street | Anniston, AL 36205 | Office 256.847.0780 | Cell 334.328.2218 | Fax 256.847.0905
gerald_hardy@matrixdesigngroup.com
matrixdesigngroup.com

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From: Gerald Hardy
Sent: Friday, August 2, 2019 10:07 AM
To: Little, Brandi <BLittle@adem.alabama.gov>
Cc: Richard Satkin <richard_satkin@matrixdesigngroup.com>
Subject: Re: Range 30 RFI Responses to Comments

Brandi

Since the reuse plan for the area of McClellan containing Range 30 does not include residential we would agree to impose a "no residential use" restriction for Range 30 in the Environmental Covenant. Thanks!

Wm. Gerald Hardy
334-328-2218

From: Little, Brandi <BLittle@adem.alabama.gov>
Sent: Thursday, August 1, 2019 5:03:35 PM
To: Gerald Hardy <Gerald_Hardy@matrixdesigngroup.com>
Subject: RE: Range 30 RFI Responses to Comments

Thanks, Gerald. One last question...it appears that the exposure domain selected for residential representative concentrations is 10 acres (AOI 1+2). That would be too large to rule out unrestricted. I agree that nature and extent have been defined and that remediation at R30-103Q-007 would benefit eco risk, but I don't think I would be able to grant you NFA for the resident until you ran the numbers with 1/3 acre-1 acre or if you place a restriction on residential use. Do you agree or am I missing something?

Brandi Little

Brandi Little
Land Division, Governmental Hazardous Waste Branch
334-274-4226

From: Gerald Hardy [mailto:Gerald_Hardy@matrixdesigngroup.com]
Sent: Monday, July 29, 2019 3:40 PM
To: Little, Brandi <BLittle@adem.alabama.gov>
Cc: Richard Satkin <richard_satkin@matrixdesigngroup.com>; Gwen Tulley <gwen_tulley@matrixdesigngroup.com>; Gerald Hardy <Gerald_Hardy@matrixdesigngroup.com>
Subject: RE: Range 30 RFI Responses to Comments

Brandi
Responses to your questions are included below.

Wm. Gerald Hardy, PE. Onsite Project Manager
Matrix Environmental Services, LLC.
283 Rucker Street | Anniston, AL 36205 | Office 256.847.0780 | Cell 334.328.2218 | Fax 256.847.0905
gerald_hardy@matrixdesigngroup.com
matrixdesigngroup.com

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From: Little, Brandi <BLittle@adem.alabama.gov>
Sent: Friday, July 26, 2019 1:10 PM
To: Gerald Hardy <Gerald_Hardy@matrixdesigngroup.com>
Subject: FW: Range 30 RFI Responses to Comments

Gerald,
I finished my review of the responses to comments and wanted to respond informally to eliminate the back and forth of evaluations, etc.

Specific Comment 3 – At the bottom of the revised Page 5-5, it said that one lead exceedance was in sample R30-88Q-007 (Figure 5-4). Shouldn't it actually be sample R30-103Q-007 on Figure 5-3? **You are correct. A revised page 5-5 is attached in red line/strike out.**

Specific Comment 10 – The first part of my comment asked to clarify why all surface soil samples with metals exceeding ESVs were not included in Table 5-5. I don't think that was addressed in the responses or in the table. I have the following samples as exceeding:

R30-88Q-009 – lead - 13.6
R30-88Q-013 – lead – 40.4; antimony – 0.320J
R30-103Q-001 – lead – 17.9
R30-103Q-002 – lead – 17.3; antimony – 0.388J
R30-103Q-003 – lead – 20.2; antimony – 0.501J
R30-103Q-006 – lead – 36.9; antimony – 0.312J
R30-103Q-008 – lead – 21.5; antimony – 0.279J
R30-103Q-010 – lead – 16.1; antimony – 0.293J
R30-103Q-012 – lead – 48.2; antimony – 0.428J
R30-103Q-013 – lead – 24.5; antimony – 0.293J
R30-103Q-014 – lead – 26.9

I believe that none of these samples passed the Tier 3 stats evaluation.

Specific Comment 11 – The first part of my comment asked to clarify why all subsurface soil samples with metals exceeding ESVs were not included in Table 5-6. I don't think that was addressed in the responses or the table. I have the following samples as exceeding:

R30-102Q-002 – lead – 11.3

R30-103Q-001 – lead – 13.6

R30-103Q-006 – lead – 18.7

Again, I believe that none of these samples passed the Tier 3 stats evaluation.

Thank you! I hope to discuss this with Ashley and Jason when they get back next week and get a letter out to you.

Brandi

Brandi Little

Brandi Little

Land Division, Governmental Hazardous Waste Branch

Alabama Department of Environmental Management

1400 Coliseum Boulevard

Montgomery, Alabama 36110

334-274-4226

blittle@adem.alabama.gov



adem.alabama.gov

Gwen Tulley

From: Gerald Hardy
Sent: Monday, July 29, 2019 3:40 PM
To: Little, Brandi
Cc: Richard Satkin; Gwen Tulley; Gerald Hardy
Subject: RE: Range 30 RFI Responses to Comments
Attachments: Rev3_R30 RFI revised page 5-5 (003).pdf

Follow Up Flag: Flag for follow up
Flag Status: Flagged

Brandi
Responses to your questions are included below.

Wm. Gerald Hardy, PE. Onsite Project Manager
Matrix Environmental Services, LLC.

283 Rucker Street | Anniston, AL 36205 | Office 256.847.0780 | Cell 334.328.2218 | Fax 256.847.0905
gerald_hardy@matrixdesigngroup.com
matrixdesigngroup.com

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From: Little, Brandi <BLittle@adem.alabama.gov>
Sent: Friday, July 26, 2019 1:10 PM
To: Gerald Hardy <Gerald_Hardy@matrixdesigngroup.com>
Subject: FW: Range 30 RFI Responses to Comments

Gerald,
I finished my review of the responses to comments and wanted to respond informally to eliminate the back and forth of evaluations, etc.

Specific Comment 3 – At the bottom of the revised Page 5-5, it said that one lead exceedance was in sample R30-88Q-007 (Figure 5-4). Shouldn't it actually be sample R30-103Q-007 on Figure 5-3? **You are correct. A revised page 5-5 is attached in red line/strike out.**

Specific Comment 10 – The first part of my comment asked to clarify why all surface soil samples with metals exceeding ESVs were not included in Table 5-5. I don't think that was addressed in the responses or in the table. I have the following samples as exceeding:

R30-88Q-009 – lead - 13.6
R30-88Q-013 – lead – 40.4; antimony – 0.320J
R30-103Q-001 – lead – 17.9
R30-103Q-002 – lead – 17.3; antimony – 0.388J
R30-103Q-003 – lead – 20.2; antimony – 0.501J
R30-103Q-006 – lead – 36.9; antimony – 0.312J
R30-103Q-008 – lead – 21.5; antimony – 0.279J
R30-103Q-010 – lead – 16.1; antimony – 0.293J
R30-103Q-012 – lead – 48.2; antimony – 0.428J
R30-103Q-013 – lead – 24.5; antimony – 0.293J

R30-103Q-014 – lead – 26.9

I believe that none of these samples passed the Tier 3 stats evaluation.

Specific Comment 11 – The first part of my comment asked to clarify why all subsurface soil samples with metals exceeding ESVs were not included in Table 5-6. I don't think that was addressed in the responses or the table. I have the following samples as exceeding:

R30-102Q-002 – lead – 11.3

R30-103Q-001 – lead – 13.6

R30-103Q-006 – lead – 18.7

Again, I believe that none of these samples passed the Tier 3 stats evaluation.

Thank you! I hope to discuss this with Ashley and Jason when they get back next week and get a letter out to you.
Brandi

Brandi Little

Brandi Little
Land Division, Governmental Hazardous Waste Branch
Alabama Department of Environmental Management
1400 Coliseum Boulevard
Montgomery, Alabama 36110
334-274-4226
blittle@adem.alabama.gov



adem.alabama.gov

**Responses to ADEM Review Comments dated 29 June 2018 to
Revision 2, RCRA Facility Investigation Report for the Range 30 Impact Area,
Parcels 88Q and 103Q
dated October 11, 2016
Fort McClellan, Alabama**

To facilitate the Department's review, please return a copy of the Department's comments with annotations in the left margin which identify the RFI Report revised pages, figures, tables, etc. where the MDA's response to each comment item is recorded.

General Comments

Page #	Comments and Responses
ES-1, 2-1, 2-4, 7-5	Comment 1. Acronyms are presented throughout the text, but some are not identified when first mentioned. Please revise the text to identify the following acronyms when they first appear: TOC, PSV, EE/CA, MRA and LUC. Response 1. Acronym first occurrences were spelled out as requested.
List of Acronyms and Abbreviations	Comment 2. The document includes a List of Acronyms and Abbreviations; however, all acronyms and abbreviations are not included. Please revise the list to include the following: AOI, BCT, BERA, BGR, Eco-SSL, IMR, LUC, MOUT, MRA, MRS, NHANES, PSL, PSV, RBTL, RC, RM, ROE, RSL, SCEM, SSL and SSSL Response 2. The List of Acronyms and Abbreviations has been updated accordingly.

Specific Comments

3-1, 3-4, 10-4	Comment 1. <u>Page 3-1, Section 3.0, Previous Investigations.</u> The text lists previous investigations performed at the site, including site investigations and the 2003 engineering evaluation/cost analysis (EE/CA) report for the Alpha Area. Please clarify why this list does not include the 2006 Supplemental EE/CA for the Alpha Area. Response 1. The Supplemental EE/CA transects only included the easternmost couple of acres of Range 30 and no MEC was encountered in or near this area - which was recommended for no further action for explosive hazard. The citation was added and a new Section 3.5 was inserted which describes the findings of the Supplemental EE/CA.
5-2	Comment 2. <u>Page 5-2, Section 5.2.2, Subsurface Soil Analytical Results, Paragraph 2.</u> The text in the third bullet lists the copper detection range from 3.59 milligrams per kilogram (mg/kg) to 66.3 mg/kg. Table 5-3 shows a detection for copper outside of this range in monitoring well R30-102Q-001 (89.2 mg/kg). Please address. Response 2. Copper max result corrected in text as indicated.
5-5, 5-6	Comment 3. <u>Pages 5-5 and 5-6, Section 5.4, Nature and Extent Conclusions.</u> The text lists the contaminants considered to be human health constituents of potential concern (COPC) and constituents of potential ecological concern (COPEC). Each constituent listed has a corresponding

	figure to which the reader is directed with the exception of selenium as a COPEC in surface soil, lead as a COPC in surface soil, and lead as a COPEC in subsurface soil. Please address. Response 3. ESV exceedances for all soil analytes are depicted on Figures 5-2 and 5-4. Figure references were added to the text for selenium and lead for consistency.
7-2, Table 7-1	Comment 4. <u>Page 7-2, Section 7.1.3, Exposure Domains.</u> The text describes exposure domains and states that areas of interest (AOI) and exposure domains are presented in Table 7-1. The text continues by stating that the AOI locations are shown in Figure 7-3. The size of the exposure domain and each AOI is not presented in this section, Table 7-1 nor Figure 7-3. Please provide exposure domain sizes in the text. Response 4. The text has been revised to note that AOI #1 is 8.7 acres and AOI #2 is 1.3 acres and the sizes of the associated exposure units are included in Table 7-1. Exposure domain sizes in acres have been added to Table 7-1.
8-4, Appendix D	Comment 5. <u>Page 8-4, Section 8.3.3, COPECs Compared to Ecological Risk-Based Remedial Goals.</u> The text states that “because surface soil sample R30-103Q-007 showed an anomalously high lead concentration compared to the other surface and subsurface soil samples at the Site, an assessment was made using a RC [representative concentration] calculated for lead in total soil within AOIs 1 and 2, without the lead value for surface soil sample R30-103Q-007. The RC for lead in total soil within AOIs 1 and 2 without surface soil sample R30-103Q-007 was 445 mg/kg, less than the 500 mg/kg Eco-RBRG [ecological risk-based remedial goal] for lead. Therefore, it appears that the lead contamination that may pose an increased risk to ecological receptors is confined to a small area in the vicinity of surface soil sample R30-103Q-007 (0-0.5), located in the central portion of the Site.” Please clarify which guidance document MDA consulted in order to make this assessment which allows for the exclusion of sample R30-103Q-007 (1,480 mg/kg lead) for calculating the RCs. Response 5. EPA has done extensive evaluation of the effect of statistical outliers, which are “are suspected of misrepresenting the population from which they were collected” and that not removing true outliers leads to “a distortion of estimates of population parameters ¹. ProUCL software guidance² states that “The inclusion of outliers in the computation of the various decision statistics tends to yield inflated values of those decision statistics, which can lead to poor decisions.” For this reason, ProUCL provides modalities for statistically identifying outliers and suggests that the user identify outliers and calculate statistics with and without them in order to support a good decision. Attachment A presents the ProUCL outputs. The first output is from outlier testing performed on the lead soil database, which identifies the 1,480 mg/kg value as an outlier at both the 1 percent and 5 percent significance

¹ EPA 2000. Guidance for Data Quality Assessment. Practical Methods for Data Analysis. EPA QA/G-9. QA00 Update.

² EPA 2015. ProUCL Version 5.1.002 User Guide. Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations. EPA/600/R-07/041.

	levels. The second output presents the Upper Confidence Limit (UCL) on the mean (the statistic used to derive the RC) calculated both with and without this data point. The resulting UCLs are 445 mg/kg and 314 mg/kg, respectively. These results demonstrate that removing the one outlier does reduce the RC by about 30 percent. However, even including the outlier and biasing the RC upward it is still below the Eco-RBRG of 500 mg/kg. Attachment A has been included in Appendix E. Additionally, “in accordance with EPA ProUCL guidance for data outliers (EPA, 2015)” has been added to the text.
N/A	Comment 6. <u>Table 5-1: Summary of Metals and Explosives Analytical Results for Surface Soil.</u> The footnotes at the end of this table list lab flags. One lab flag is listed as “U^ = lab flag updated by MES data reviewer; analyte is not detected above the RL.” Please clarify in which situations Matrix would need to update the lab flag of a constituent. Response 6. Based on National Functional Guidelines, when there is a blank detection > RL and the sample detection is between the MDL and the RL, the result is reported as less than the RL and qualified U^. The comment has been updated accordingly.
N/A	Comment 7. <u>Table 5-1: Summary of Metals and Explosives Analytical Results for Surface Soil.</u> Please clarify why a contaminant that is non-detect, according to laboratory data presented in Appendix B.1 and B.2, would be presented in Table 5-1 as less than the reporting limit (RL) instead of the method detection limit (MDL). Response 7. Data is reported as less than the reporting limit because that is a more accurate value and is typically calibrated to that concentration. Concentrations between the RL and MDL are considered estimated. MDLs were calculated historically.
N/A	Comment 8. <u>Table 5-3: Summary of Metals and Explosives Analytical Results for Subsurface Soil.</u> The footnotes at the end of this table lists lab flags. One lab flag is listed as “U^ = lab flag updated by MES data reviewer; analyte is not detected above the RL.” Please clarify in which situations Matrix would need to update the lab flag of a constituent. Response 8. Based on National Functional Guidelines, when there is a blank detection > RL and the sample detection is between the MDL and the RL, the result is reported as less than the RL and qualified U^.
N/A	Comment 9. <u>Table 5-3: Summary of Metals and Explosives Analytical Results for Subsurface Soil.</u> Please clarify why a contaminant that is non-detect, according to laboratory data presented in Appendix B.1 and B.2, would be presented in Table 5-3 as less than the reporting limit (RL) instead of the method detection limit (MDL). Response 9. Data is reported as less than the reporting limit because that is a more accurate value and is typically calibrated to that concentration. Concentrations between the RL and MDL are considered estimated. MDLs were calculated historically.
Table 5-5, Figure 5-	Comment 10. <u>Table 5-5: Metal Contaminants in Surface Soil Compared to PSVs and ESVs.</u> Please clarify why all surface soil samples with metals exceeding ecological screening values (ESV) were not included in Table 5-5. Please also clarify why the value for antimony in sample R30-103Q-011

2	(0.921 mg/kg) is not included with the other exceedances shown when it exceeds the ESV of 0.27 mg/kg. Response 10. Table typo. 5-5 and Figure 5-2 have been corrected accordingly.
Table 5-6 Figure 5-4	Comment 11. <u>Table 5-6: Metal Contaminants in Subsurface Soil Compared to PSVs and ESVs.</u> Please clarify why all subsurface soil samples with metals exceeding ESVs were not included in Table 5-6. Please also clarify why the value for lead in sample R30-103Q-005 (23.7 mg/kg) is not included with the other exceedances shown when it exceeds the ESV of 11 mg/kg. Response 11. Table typo. Table 5-6 and Figure 5-4 have been corrected accordingly.
Table 7-2, Appendix D.	Comment 12. <u>Table 7-2: Representative Concentrations.</u> This table presents the RCs for all five exposure domains for this site. Please provide the calculations used to determine each RC. Response 12. ProUCL input and output files for the RC calculations are provided in Attachment B which has been included in Appendix E. The most recent version of ProUCL (5.1) EPA, 2015) was used to update the RCs and there are trivial differences which do not impact the text. Table 7-2 has been updated accordingly.
Table 7-3	Comment 13. <u>Table 7-3: Human Health Cumulative Risk.</u> The name of the table includes “Chemical Laundry” instead of “Range 30 Impact Area.” Please address. Response 13. Typo in header changed to “Range 30 Impact Area”.
Figure 5-4	Comment 14. <u>Figure 5-4: Subsurface Soil Constituents of Potential Concern Exceeding ESVs.</u> This figure shows soil sample locations with metals exceeding ESV values. The value presented for antimony in sample R30-103Q-007 is 2.59J mg/kg. The value given for antimony in that sample location in Table 5-3 and in Appendix B.2 is 2.59 mg/kg. Please address. Response 14. Typo, the J flag has been removed from the figure box.
N/A	Comment 15. <u>Appendix B1 – Data Quality Summary 2004 Analytical Results.</u> In Attachment B1-1 of this Appendix, the laboratory results for sample R30-88Q-009 for antimony is listed as 3.75J mg/kg. This value is crossed out by the Matrix data reviewer and “11.2 UB” is handwritten in its place. In Table 5-1, this value for antimony is presented as 11.2U[^](UB). Please clarify why the value for antimony was changed. Response 15. Based on National Functional Guidelines, when there is a blank detection > RL and the sample detection is between the MDL and the RL, the result is reported as less than the RL and qualified U[^]. UB was added to further indicate the analyte is considered not detected based on a detection in an associated blank.
N/A	Comment 16. <u>Appendix B1 – Data Quality Summary 2004 Analytical Results.</u> In Attachment B1-1 of this Appendix, the laboratory results for sample R30-102Q-002 for antimony is listed as 5.18J mg/kg. This value is crossed out by the Matrix data reviewer and “11.5 UJBM” is handwritten in its place. In Table 5-1, this value for antimony is presented as 11.5U[^](UJBM). Please clarify why the value for antimony was changed. Response 16. Based on National Functional Guidelines, when there is a

	blank detection > RL and the sample detection is between the MDL and the RL, the result is reported as less than the RL and qualified U [^] . UJBM was added to further indicate the analyte is considered not detected based on a detection in an associated blank and UJ and M are to indicate that QC failed low and RL is considered estimated.
N/A	Comment 17. <u>Appendix B1 – Data Quality Summary 2004 Analytical Results.</u> Please clarify why in Attachment B1-1 of this Appendix the sampling matrix of soil is crossed out for samples R30-88Q-008 and R30-88Q-009 and “sediment” is handwritten in its place. Response 17. Correct matrix is sediment. The matrix was correct on the explosive results and needed to be corrected on the metals results.

N/A – no text/table/figure change was required.

	A	B	C	D	E	F	G	H	I	J	K	L
1					Outlier Tests for Selected Uncensored Variables							
2	User Selected Options											
3	Date/Time of Computation			ProUCL 5.19/4/2018 4:27:11 PM								
4				From File	WorkSheet.xls							
5				Full Precision	OFF							
6												
7												
8	Rosner's Outlier Test for Pb (mg/kg)											
9												
10												
11	Mean			199.2								
12	Standard Deviation			309.4								
13	Number of data			30								
14	Number of suspected outliers			1								
15												
16				Potential	Obs.	Test	Critical	Critical				
17	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
18	1	199.2	304.2	1480	21	4.211	2.91	3.24				
19												
20	For 5% Significance Level, there is 1 Potential Outlier											
21	Potential outliers is: 1480											
22												
23	For 1% Significance Level, there is 1 Potential Outlier											
24	Potential outliers is: 1480											
25												

	A	B	C	D	E	F	G	H	I	J	K	L
1	UCL Statistics for Uncensored Full Data Sets											
2												
3	User Selected Options											
4	Date/Time of Computation			ProUCL 5.19/4/2018 4:42:06 PM								
5	From File			WorkSheet.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10												
11	Pb (mg/kg) - All											
12												
13	General Statistics											
14	Total Number of Observations				30		Number of Distinct Observations				30	
15							Number of Missing Observations				0	
16	Minimum				4.47		Mean				199.2	
17	Maximum				1480		Median				44.3	
18	SD				309.4		Std. Error of Mean				56.48	
19	Coefficient of Variation				1.553		Skewness				2.784	
20												
21	Normal GOF Test											
22	Shapiro Wilk Test Statistic				0.656		Shapiro Wilk GOF Test					
23	5% Shapiro Wilk Critical Value				0.927		Data Not Normal at 5% Significance Level					
24	Lilliefors Test Statistic				0.265		Lilliefors GOF Test					
25	5% Lilliefors Critical Value				0.159		Data Not Normal at 5% Significance Level					
26	Data Not Normal at 5% Significance Level											
27												
28	Assuming Normal Distribution											
29	95% Normal UCL					95% UCLs (Adjusted for Skewness)						
30	95% Student's-t UCL				295.1		95% Adjusted-CLT UCL (Chen-1995)				322.7	
31							95% Modified-t UCL (Johnson-1978)				299.9	
32												
33	Gamma GOF Test											
34	A-D Test Statistic				1.038		Anderson-Darling Gamma GOF Test					
35	5% A-D Critical Value				0.803		Data Not Gamma Distributed at 5% Significance Level					
36	K-S Test Statistic				0.187		Kolmogorov-Smirnov Gamma GOF Test					
37	5% K-S Critical Value				0.168		Data Not Gamma Distributed at 5% Significance Level					
38	Data Not Gamma Distributed at 5% Significance Level											
39												
40	Gamma Statistics											
41	k hat (MLE)				0.57		k star (bias corrected MLE)				0.535	
42	Theta hat (MLE)				349.7		Theta star (bias corrected MLE)				372.4	
43	nu hat (MLE)				34.17		nu star (bias corrected)				32.09	
44	MLE Mean (bias corrected)				199.2		MLE Sd (bias corrected)				272.3	
45							Approximate Chi Square Value (0.05)				20.14	
46	Adjusted Level of Significance				0.041		Adjusted Chi Square Value				19.6	
47												
48	Assuming Gamma Distribution											
49	95% Approximate Gamma UCL (use when n>=50))				317.3		95% Adjusted Gamma UCL (use when n<50)				326.1	
50												
51	Lognormal GOF Test											
52	Shapiro Wilk Test Statistic				0.947		Shapiro Wilk Lognormal GOF Test					

	A	B	C	D	E	F	G	H	I	J	K	L	
53	5% Shapiro Wilk Critical Value					0.927	Data appear Lognormal at 5% Significance Level						
54	Lilliefors Test Statistic					0.144	Lilliefors Lognormal GOF Test						
55	5% Lilliefors Critical Value					0.159	Data appear Lognormal at 5% Significance Level						
56	Data appear Lognormal at 5% Significance Level												
57													
58	Lognormal Statistics												
59	Minimum of Logged Data					1.497	Mean of logged Data					4.201	
60	Maximum of Logged Data					7.3	SD of logged Data					1.593	
61													
62	Assuming Lognormal Distribution												
63	95% H-UCL					630.9	90% Chebyshev (MVUE) UCL					460.9	
64	95% Chebyshev (MVUE) UCL					571.1	97.5% Chebyshev (MVUE) UCL					724	
65	99% Chebyshev (MVUE) UCL					1024							
66													
67	Nonparametric Distribution Free UCL Statistics												
68	Data appear to follow a Discernible Distribution at 5% Significance Level												
69													
70	Nonparametric Distribution Free UCLs												
71	95% CLT UCL					292.1	95% Jackknife UCL					295.1	
72	95% Standard Bootstrap UCL					290.2	95% Bootstrap-t UCL					355.1	
73	95% Hall's Bootstrap UCL					452.9	95% Percentile Bootstrap UCL					293.7	
74	95% BCA Bootstrap UCL					324.4							
75	90% Chebyshev(Mean, Sd) UCL					368.6	95% Chebyshev(Mean, Sd) UCL					445.4	
76	97.5% Chebyshev(Mean, Sd) UCL					551.9	99% Chebyshev(Mean, Sd) UCL					761.1	
77													
78	Suggested UCL to Use												
79	95% Chebyshev (Mean, Sd) UCL					445.4							
80													
81	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.												
82	Recommendations are based upon data size, data distribution, and skewness.												
83	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).												
84	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.												
85													
86													
87	Pb (mg/kg) - Minus Outlier												
88													
89	General Statistics												
90	Total Number of Observations					29	Number of Distinct Observations					29	
91							Number of Missing Observations					0	
92	Minimum					4.47	Mean					155	
93	Maximum					634	Median					40.4	
94	SD					196.2	Std. Error of Mean					36.44	
95	Coefficient of Variation					1.266	Skewness					1.399	
96													
97	Normal GOF Test												
98	Shapiro Wilk Test Statistic					0.752	Shapiro Wilk GOF Test						
99	5% Shapiro Wilk Critical Value					0.926	Data Not Normal at 5% Significance Level						
100	Lilliefors Test Statistic					0.259	Lilliefors GOF Test						
101	5% Lilliefors Critical Value					0.161	Data Not Normal at 5% Significance Level						
102	Data Not Normal at 5% Significance Level												
103													
104	Assuming Normal Distribution												

A	B	C	D	E	F	G	H	I	J	K	L
105	95% Normal UCL					95% UCLs (Adjusted for Skewness)					
106	95% Student's-t UCL				217	95% Adjusted-CLT UCL (Chen-1995)					225
107						95% Modified-t UCL (Johnson-1978)					218.6
108											
109	Gamma GOF Test										
110	A-D Test Statistic				1.09	Anderson-Darling Gamma GOF Test					
111	5% A-D Critical Value				0.795	Data Not Gamma Distributed at 5% Significance Level					
112	K-S Test Statistic				0.187	Kolmogorov-Smirnov Gamma GOF Test					
113	5% K-S Critical Value				0.17	Data Not Gamma Distributed at 5% Significance Level					
114	Data Not Gamma Distributed at 5% Significance Level										
115											
116	Gamma Statistics										
117	k hat (MLE)				0.644	k star (bias corrected MLE)					0.6
118	Theta hat (MLE)				240.6	Theta star (bias corrected MLE)					258.1
119	nu hat (MLE)				37.36	nu star (bias corrected)					34.83
120	MLE Mean (bias corrected)				155	MLE Sd (bias corrected)					200
121						Approximate Chi Square Value (0.05)					22.33
122	Adjusted Level of Significance				0.0407	Adjusted Chi Square Value					21.73
123											
124	Assuming Gamma Distribution										
125	95% Approximate Gamma UCL (use when n>=50))				241.8	95% Adjusted Gamma UCL (use when n<50)					248.4
126											
127	Lognormal GOF Test										
128	Shapiro Wilk Test Statistic				0.931	Shapiro Wilk Lognormal GOF Test					
129	5% Shapiro Wilk Critical Value				0.926	Data appear Lognormal at 5% Significance Level					
130	Lilliefors Test Statistic				0.145	Lilliefors Lognormal GOF Test					
131	5% Lilliefors Critical Value				0.161	Data appear Lognormal at 5% Significance Level					
132	Data appear Lognormal at 5% Significance Level										
133											
134	Lognormal Statistics										
135	Minimum of Logged Data				1.497	Mean of logged Data					4.094
136	Maximum of Logged Data				6.452	SD of logged Data					1.508
137											
138	Assuming Lognormal Distribution										
139	95% H-UCL				459.9	90% Chebyshev (MVUE) UCL					356.4
140	95% Chebyshev (MVUE) UCL				439.4	97.5% Chebyshev (MVUE) UCL					554.5
141	99% Chebyshev (MVUE) UCL				780.7						
142											
143	Nonparametric Distribution Free UCL Statistics										
144	Data appear to follow a Discernible Distribution at 5% Significance Level										
145											
146	Nonparametric Distribution Free UCLs										
147	95% CLT UCL				214.9	95% Jackknife UCL					217
148	95% Standard Bootstrap UCL				214.6	95% Bootstrap-t UCL					232.3
149	95% Hall's Bootstrap UCL				220.1	95% Percentile Bootstrap UCL					212.9
150	95% BCA Bootstrap UCL				221						
151	90% Chebyshev(Mean, Sd) UCL				264.3	95% Chebyshev(Mean, Sd) UCL					313.8
152	97.5% Chebyshev(Mean, Sd) UCL				382.6	99% Chebyshev(Mean, Sd) UCL					517.6
153											
154	Suggested UCL to Use										
155	95% Chebyshev (Mean, Sd) UCL				313.8						
156											

	A	B	C	D	E	F	G	H	I	J	K	L
157	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
158	Recommendations are based upon data size, data distribution, and skewness.											
159	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
160	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
161												

McClellan, Anniston, Alabama

Parameter Name														
	88Q-003 (0-0.5 ft bgs)	88Q-012 (0-0.5 ft bgs)	88Q-014 (0-0.5 ft bgs)	88Q-016 (0-0.5 ft bgs)	88Q-018 (0-0.5 ft bgs)	102Q-001 (0-0.5 ft bgs)	102Q-002 (0-0.5 ft bgs)	103Q-007 (0-0.5 ft bgs)	103Q-016 (0-0.5 ft bgs)	88Q-003 (0.5-1.5 ft bgs)	88Q-012 (0.5-1.5 ft bgs)	102Q-001 (0.5-1.5 ft bgs)	102Q-002 (0.5-1.5 ft bgs)	103Q-007 (0.5-1.5 ft bgs)
	9/2/2004	8/20/2014	8/20/2014	8/20/2014	8/20/2014	9/2/2004	9/2/2004	8/20/2014	8/20/2014	9/2/2004	8/20/2014	9/2/2004	9/2/2004	8/20/2014
Antimony	< 13.4	2.48	3.04	2.78	0.372	11.1 U	11.5 U	5.62	0.593	3.48	0.82	11.2 U	12.4 U	2.59
Lead	307	612	578	634	407	358	27.6	1480	137	308	89.4	460	11.3	464
(# observations)														
Current Trespasser														
9	< 13.4	2.48	3.04	2.78	0.372	11.1 U	11.5 U	5.62	0.593					
9	307	612	578	634	407	358	27.6	1480	137					
Future Trespasser														
6		2.48	3.04	2.78	0.372			5.62	0.593					
6		612	578	634	407			1480	137					
Future Trespasser (subsurf)														
2											0.82			2.59
2											89.4			464
Future Site Worker														
6	< 13.4					11.1 U	11.5 U			3.48		11.2 U	12.4 U	
6	307					358	27.6			308		460	11.3	
Future Construction Worker														
6	< 13.4					11.1 U	11.5 U			3.48		11.2 U	12.4 U	
6	307					358	27.6			308		460	11.3	
Future Site Resident														
14	< 13.4	2.48	3.04	2.78	0.372	11.1 U	11.5 U	5.62	0.593	3.48	0.82	11.2 U	12.4 U	2.59
14	307	612	578	634	407	358	27.6	1480	137	308	89.4	460	11.3	464

[illegible]

	A	B	C	D	E	F	G	H	I	J	K	L
1	UCL Statistics for Data Sets with Non-Detects											
2												
3	User Selected Options											
4	Date/Time of Computation			ProUCL 5.19/16/2018 9:34:51 PM								
5	From File			Data_for_ProUCL.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10	Current Trespasser Sb											
11												
12	General Statistics											
13	Total Number of Observations				9		Number of Distinct Observations				9	
14	Number of Detects				6		Number of Non-Detects				3	
15	Number of Distinct Detects				6		Number of Distinct Non-Detects				3	
16	Minimum Detect				0.372		Minimum Non-Detect				11.1	
17	Maximum Detect				5.62		Maximum Non-Detect				13.4	
18	Variance Detects				3.654		Percent Non-Detects				33.33%	
19	Mean Detects				2.481		SD Detects				1.911	
20	Median Detects				2.63		CV Detects				0.77	
21	Skewness Detects				0.646		Kurtosis Detects				0.551	
22	Mean of Logged Detects				0.543		SD of Logged Detects				1.055	
23												
24	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use											
25	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.											
26	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).											
27	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1											
28												
29	Normal GOF Test on Detects Only											
30	Shapiro Wilk Test Statistic				0.915		Shapiro Wilk GOF Test					
31	5% Shapiro Wilk Critical Value				0.788		Detected Data appear Normal at 5% Significance Level					
32	Lilliefors Test Statistic				0.218		Lilliefors GOF Test					
33	5% Lilliefors Critical Value				0.325		Detected Data appear Normal at 5% Significance Level					
34	Detected Data appear Normal at 5% Significance Level											
35												
36	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
37	KM Mean				2.481		KM Standard Error of Mean				0.78	
38	KM SD				1.745		95% KM (BCA) UCL				3.784	
39	95% KM (t) UCL				3.932		95% KM (Percentile Bootstrap) UCL				3.736	
40	95% KM (z) UCL				3.764		95% KM Bootstrap t UCL				4.148	
41	90% KM Chebyshev UCL				4.822		95% KM Chebyshev UCL				5.882	
42	97.5% KM Chebyshev UCL				7.354		99% KM Chebyshev UCL				10.25	
43												
44	Gamma GOF Tests on Detected Observations Only											
45	A-D Test Statistic				0.409		Anderson-Darling GOF Test					
46	5% A-D Critical Value				0.708		Detected data appear Gamma Distributed at 5% Significance Level					
47	K-S Test Statistic				0.274		Kolmogorov-Smirnov GOF					
48	5% K-S Critical Value				0.337		Detected data appear Gamma Distributed at 5% Significance Level					
49	Detected data appear Gamma Distributed at 5% Significance Level											
50												
51	Gamma Statistics on Detected Data Only											
52	k hat (MLE)				1.512		k star (bias corrected MLE)				0.867	
53	Theta hat (MLE)				1.64		Theta star (bias corrected MLE)				2.86	
54	nu hat (MLE)				18.15		nu star (bias corrected)				10.41	

	A	B	C	D	E	F	G	H	I	J	K	L	
55	Mean (detects)					2.481							
56													
57	Gamma ROS Statistics using Imputed Non-Detects												
58	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs												
59	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)												
60	For such situations, GROS method may yield incorrect values of UCLs and BTVs												
61	This is especially true when the sample size is small.												
62	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates												
63	Minimum					0.372	Mean					2.366	
64	Maximum					5.62	Median					2.136	
65	SD					1.521	CV					0.643	
66	k hat (MLE)					2.183	k star (bias corrected MLE)					1.529	
67	Theta hat (MLE)					1.084	Theta star (bias corrected MLE)					1.547	
68	nu hat (MLE)					39.29	nu star (bias corrected)					27.53	
69	Adjusted Level of Significance (β)					0.0231							
70	Approximate Chi Square Value (27.53, α)					16.56	Adjusted Chi Square Value (27.53, β)					14.79	
71	95% Gamma Approximate UCL (use when n>=50)					3.933	95% Gamma Adjusted UCL (use when n<50)					4.402	
72													
73	Estimates of Gamma Parameters using KM Estimates												
74	Mean (KM)					2.481	SD (KM)					1.745	
75	Variance (KM)					3.045	SE of Mean (KM)					0.78	
76	k hat (KM)					2.021	k star (KM)					1.422	
77	nu hat (KM)					36.39	nu star (KM)					25.59	
78	theta hat (KM)					1.227	theta star (KM)					1.745	
79	80% gamma percentile (KM)					3.861	90% gamma percentile (KM)					5.238	
80	95% gamma percentile (KM)					6.58	99% gamma percentile (KM)					9.621	
81													
82	Gamma Kaplan-Meier (KM) Statistics												
83	Approximate Chi Square Value (25.59, α)					15.06	Adjusted Chi Square Value (25.59, β)					13.39	
84	95% Gamma Approximate KM-UCL (use when n>=50)					4.214	95% Gamma Adjusted KM-UCL (use when n<50)					4.741	
85													
86	Lognormal GOF Test on Detected Observations Only												
87	Shapiro Wilk Test Statistic					0.881	Shapiro Wilk GOF Test						
88	5% Shapiro Wilk Critical Value					0.788	Detected Data appear Lognormal at 5% Significance Level						
89	Lilliefors Test Statistic					0.302	Lilliefors GOF Test						
90	5% Lilliefors Critical Value					0.325	Detected Data appear Lognormal at 5% Significance Level						
91	Detected Data appear Lognormal at 5% Significance Level												
92													
93	Lognormal ROS Statistics Using Imputed Non-Detects												
94	Mean in Original Scale					2.228	Mean in Log Scale					0.543	
95	SD in Original Scale					1.558	SD in Log Scale					0.834	
96	95% t UCL (assumes normality of ROS data)					3.193	95% Percentile Bootstrap UCL					3.097	
97	95% BCA Bootstrap UCL					3.19	95% Bootstrap t UCL					3.523	
98	95% H-UCL (Log ROS)					5.706							
99													
100	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution												
101	KM Mean (logged)					0.543	KM Geo Mean					1.721	
102	KM SD (logged)					0.963	95% Critical H Value (KM-Log)					3.158	
103	KM Standard Error of Mean (logged)					0.431	95% H-UCL (KM -Log)					8.026	
104	KM SD (logged)					0.963	95% Critical H Value (KM-Log)					3.158	
105	KM Standard Error of Mean (logged)					0.431							
106													
107	DL/2 Statistics												
108	DL/2 Normal						DL/2 Log-Transformed						

	A	B	C	D	E	F	G	H	I	J	K	L
109	Mean in Original Scale					3.654	Mean in Log Scale					0.958
110	SD in Original Scale					2.34	SD in Log Scale					1.042
111	95% t UCL (Assumes normality)					5.104	95% H-Stat UCL					15.33
112	DL/2 is not a recommended method, provided for comparisons and historical reasons											
113												
114	Nonparametric Distribution Free UCL Statistics											
115	Detected Data appear Normal Distributed at 5% Significance Level											
116												
117	Suggested UCL to Use											
118	95% KM (t) UCL					3.932						
119												
120	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
121	Recommendations are based upon data size, data distribution, and skewness.											
122	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
123	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
124												
125												

	A	B	C	D	E	F	G	H	I	J	K	L
126	Current Trespasser Pb											
127												
128	General Statistics											
129	Total Number of Observations				9		Number of Distinct Observations				9	
130							Number of Missing Observations				0	
131	Minimum				27.6		Mean				504.5	
132	Maximum				1480		Median				407	
133	SD				421		Std. Error of Mean				140.3	
134	Coefficient of Variation				0.834		Skewness				1.642	
135												
136	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use											
137	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.											
138	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).											
139	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1											
140												
141	Normal GOF Test											
142	Shapiro Wilk Test Statistic				0.85		Shapiro Wilk GOF Test					
143	5% Shapiro Wilk Critical Value				0.829		Data appear Normal at 5% Significance Level					
144	Lilliefors Test Statistic				0.268		Lilliefors GOF Test					
145	5% Lilliefors Critical Value				0.274		Data appear Normal at 5% Significance Level					
146	Data appear Normal at 5% Significance Level											
147												
148	Assuming Normal Distribution											
149	95% Normal UCL					95% UCLs (Adjusted for Skewness)						
150	95% Student's-t UCL				765.5		95% Adjusted-CLT UCL (Chen-1995)				817.4	
151							95% Modified-t UCL (Johnson-1978)				778.3	
152												
153	Gamma GOF Test											
154	A-D Test Statistic				0.323		Anderson-Darling Gamma GOF Test					
155	5% A-D Critical Value				0.736		Detected data appear Gamma Distributed at 5% Significance Level					
156	K-S Test Statistic				0.182		Kolmogorov-Smirnov Gamma GOF Test					
157	5% K-S Critical Value				0.285		Detected data appear Gamma Distributed at 5% Significance Level					
158	Detected data appear Gamma Distributed at 5% Significance Level											
159												
160	Gamma Statistics											
161	k hat (MLE)				1.383		k star (bias corrected MLE)				0.996	
162	Theta hat (MLE)				364.9		Theta star (bias corrected MLE)				506.6	
163	nu hat (MLE)				24.89		nu star (bias corrected)				17.92	
164	MLE Mean (bias corrected)				504.5		MLE Sd (bias corrected)				505.6	
165						Approximate Chi Square Value (0.05)					9.336	
166	Adjusted Level of Significance				0.0231		Adjusted Chi Square Value				8.062	
167												
168	Assuming Gamma Distribution											
169	95% Approximate Gamma UCL (use when n>=50))				968.6		95% Adjusted Gamma UCL (use when n<50)				1122	
170												
171	Lognormal GOF Test											
172	Shapiro Wilk Test Statistic				0.883		Shapiro Wilk Lognormal GOF Test					
173	5% Shapiro Wilk Critical Value				0.829		Data appear Lognormal at 5% Significance Level					
174	Lilliefors Test Statistic				0.245		Lilliefors Lognormal GOF Test					
175	5% Lilliefors Critical Value				0.274		Data appear Lognormal at 5% Significance Level					
176	Data appear Lognormal at 5% Significance Level											
177												
178	Lognormal Statistics											
179	Minimum of Logged Data				3.318		Mean of logged Data				5.82	

[illegible]

	A	B	C	D	E	F	G	H	I	J	K	L
207	Future Trespasser Sb											
208												
209	General Statistics											
210	Total Number of Observations				6	Number of Distinct Observations				6		
211						Number of Missing Observations				0		
212	Minimum				0.372	Mean				2.481		
213	Maximum				5.62	Median				2.63		
214	SD				1.911	Std. Error of Mean				0.78		
215	Coefficient of Variation				0.77	Skewness				0.646		
216												
217	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use											
218	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.											
219	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).											
220	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1											
221												
222	Normal GOF Test											
223	Shapiro Wilk Test Statistic				0.915	Shapiro Wilk GOF Test						
224	5% Shapiro Wilk Critical Value				0.788	Data appear Normal at 5% Significance Level						
225	Lilliefors Test Statistic				0.218	Lilliefors GOF Test						
226	5% Lilliefors Critical Value				0.325	Data appear Normal at 5% Significance Level						
227	Data appear Normal at 5% Significance Level											
228												
229	Assuming Normal Distribution											
230	95% Normal UCL					95% UCLs (Adjusted for Skewness)						
231	95% Student's-t UCL				4.053	95% Adjusted-CLT UCL (Chen-1995)				3.984		
232						95% Modified-t UCL (Johnson-1978)				4.088		
233												
234	Gamma GOF Test											
235	A-D Test Statistic				0.409	Anderson-Darling Gamma GOF Test						
236	5% A-D Critical Value				0.708	Detected data appear Gamma Distributed at 5% Significance Level						
237	K-S Test Statistic				0.274	Kolmogorov-Smirnov Gamma GOF Test						
238	5% K-S Critical Value				0.337	Detected data appear Gamma Distributed at 5% Significance Level						
239	Detected data appear Gamma Distributed at 5% Significance Level											
240												
241	Gamma Statistics											
242	k hat (MLE)				1.512	k star (bias corrected MLE)				0.867		
243	Theta hat (MLE)				1.64	Theta star (bias corrected MLE)				2.86		
244	nu hat (MLE)				18.15	nu star (bias corrected)				10.41		
245	MLE Mean (bias corrected)				2.481	MLE Sd (bias corrected)				2.664		
246						Approximate Chi Square Value (0.05)				4.198		
247	Adjusted Level of Significance				0.0122	Adjusted Chi Square Value				2.9		
248												
249	Assuming Gamma Distribution											
250	95% Approximate Gamma UCL (use when n>=50))				6.15	95% Adjusted Gamma UCL (use when n<50)				8.903		
251												
252	Lognormal GOF Test											
253	Shapiro Wilk Test Statistic				0.881	Shapiro Wilk Lognormal GOF Test						
254	5% Shapiro Wilk Critical Value				0.788	Data appear Lognormal at 5% Significance Level						
255	Lilliefors Test Statistic				0.302	Lilliefors Lognormal GOF Test						
256	5% Lilliefors Critical Value				0.325	Data appear Lognormal at 5% Significance Level						
257	Data appear Lognormal at 5% Significance Level											
258												
259	Lognormal Statistics											
260	Minimum of Logged Data				-0.989	Mean of logged Data				0.543		

	A	B	C	D	E	F	G	H	I	J	K	L
261	Maximum of Logged Data					1.726	SD of logged Data					1.055
262												
263	Assuming Lognormal Distribution											
264	95% H-UCL					23.1	90% Chebyshev (MVUE) UCL					6.039
265	95% Chebyshev (MVUE) UCL					7.568	97.5% Chebyshev (MVUE) UCL					9.69
266	99% Chebyshev (MVUE) UCL					13.86						
267												
268	Nonparametric Distribution Free UCL Statistics											
269	Data appear to follow a Discernible Distribution at 5% Significance Level											
270												
271	Nonparametric Distribution Free UCLs											
272	95% CLT UCL					3.764	95% Jackknife UCL					4.053
273	95% Standard Bootstrap UCL					3.663	95% Bootstrap-t UCL					4.223
274	95% Hall's Bootstrap UCL					4.203	95% Percentile Bootstrap UCL					3.72
275	95% BCA Bootstrap UCL					3.842						
276	90% Chebyshev(Mean, Sd) UCL					4.822	95% Chebyshev(Mean, Sd) UCL					5.882
277	97.5% Chebyshev(Mean, Sd) UCL					7.354	99% Chebyshev(Mean, Sd) UCL					10.25
278												
279	Suggested UCL to Use											
280	95% Student's-t UCL					4.053						
281												
282	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
283	Recommendations are based upon data size, data distribution, and skewness.											
284	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
285	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
286												
287												

	A	B	C	D	E	F	G	H	I	J	K	L
288	Future Trespasser Pb											
289												
290	General Statistics											
291	Total Number of Observations				6		Number of Distinct Observations				6	
292							Number of Missing Observations				0	
293	Minimum				137		Mean				641.3	
294	Maximum				1480		Median				595	
295	SD				451.1		Std. Error of Mean				184.2	
296	Coefficient of Variation				0.703		Skewness				1.465	
297												
298	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use											
299	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.											
300	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).											
301	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1											
302												
303	Normal GOF Test											
304	Shapiro Wilk Test Statistic				0.851		Shapiro Wilk GOF Test					
305	5% Shapiro Wilk Critical Value				0.788		Data appear Normal at 5% Significance Level					
306	Lilliefors Test Statistic				0.34		Lilliefors GOF Test					
307	5% Lilliefors Critical Value				0.325		Data Not Normal at 5% Significance Level					
308	Data appear Approximate Normal at 5% Significance Level											
309												
310	Assuming Normal Distribution											
311	95% Normal UCL					95% UCLs (Adjusted for Skewness)						
312	95% Student's-t UCL				1012		95% Adjusted-CLT UCL (Chen-1995)				1062	
313							95% Modified-t UCL (Johnson-1978)				1031	
314												
315	Gamma GOF Test											
316	A-D Test Statistic				0.377		Anderson-Darling Gamma GOF Test					
317	5% A-D Critical Value				0.703		Detected data appear Gamma Distributed at 5% Significance Level					
318	K-S Test Statistic				0.255		Kolmogorov-Smirnov Gamma GOF Test					
319	5% K-S Critical Value				0.335		Detected data appear Gamma Distributed at 5% Significance Level					
320	Detected data appear Gamma Distributed at 5% Significance Level											
321												
322	Gamma Statistics											
323	k hat (MLE)				2.419		k star (bias corrected MLE)				1.321	
324	Theta hat (MLE)				265.1		Theta star (bias corrected MLE)				485.7	
325	nu hat (MLE)				29.03		nu star (bias corrected)				15.85	
326	MLE Mean (bias corrected)				641.3		MLE Sd (bias corrected)				558.1	
327							Approximate Chi Square Value (0.05)				7.854	
328	Adjusted Level of Significance				0.0122		Adjusted Chi Square Value				5.938	
329												
330	Assuming Gamma Distribution											
331	95% Approximate Gamma UCL (use when n>=50))				1294		95% Adjusted Gamma UCL (use when n<50)				1711	
332												
333	Lognormal GOF Test											
334	Shapiro Wilk Test Statistic				0.915		Shapiro Wilk Lognormal GOF Test					
335	5% Shapiro Wilk Critical Value				0.788		Data appear Lognormal at 5% Significance Level					
336	Lilliefors Test Statistic				0.227		Lilliefors Lognormal GOF Test					
337	5% Lilliefors Critical Value				0.325		Data appear Lognormal at 5% Significance Level					
338	Data appear Lognormal at 5% Significance Level											
339												
340	Lognormal Statistics											
341	Minimum of Logged Data				4.92		Mean of logged Data				6.243	

	A	B	C	D	E	F	G	H	I	J	K	L
371	Future Site Worker Sb											
372												
373	General Statistics											
374	Total Number of Observations				6		Number of Distinct Observations				6	
375	Number of Detects				1		Number of Non-Detects				5	
376	Number of Distinct Detects				1		Number of Distinct Non-Detects				5	
377												
378	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!											
379	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).											
380												
381	The data set for variable Future Site Worker Sb was not processed!											
382												
383												
384												

	A	B	C	D	E	F	G	H	I	J	K	L
385	Future Site Worker Pb											
386												
387	General Statistics											
388	Total Number of Observations				6		Number of Distinct Observations				6	
389							Number of Missing Observations				0	
390	Minimum				11.3		Mean				245.3	
391	Maximum				460		Median				307.5	
392	SD				183.7		Std. Error of Mean				74.99	
393	Coefficient of Variation				0.749		Skewness				-0.548	
394												
395	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use											
396	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.											
397	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).											
398	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1											
399												
400	Normal GOF Test											
401	Shapiro Wilk Test Statistic				0.862		Shapiro Wilk GOF Test					
402	5% Shapiro Wilk Critical Value				0.788		Data appear Normal at 5% Significance Level					
403	Lilliefors Test Statistic				0.298		Lilliefors GOF Test					
404	5% Lilliefors Critical Value				0.325		Data appear Normal at 5% Significance Level					
405	Data appear Normal at 5% Significance Level											
406												
407	Assuming Normal Distribution											
408	95% Normal UCL					95% UCLs (Adjusted for Skewness)						
409	95% Student's-t UCL			396.4		95% Adjusted-CLT UCL (Chen-1995)				350.7		
410						95% Modified-t UCL (Johnson-1978)				393.6		
411												
412	Gamma GOF Test											
413	A-D Test Statistic			0.767		Anderson-Darling Gamma GOF Test						
414	5% A-D Critical Value			0.717		Data Not Gamma Distributed at 5% Significance Level						
415	K-S Test Statistic			0.382		Kolmogorov-Smirnov Gamma GOF Test						
416	5% K-S Critical Value			0.342		Data Not Gamma Distributed at 5% Significance Level						
417	Data Not Gamma Distributed at 5% Significance Level											
418												
419	Gamma Statistics											
420	k hat (MLE)			0.92		k star (bias corrected MLE)				0.571		
421	Theta hat (MLE)			266.8		Theta star (bias corrected MLE)				429.7		
422	nu hat (MLE)			11.04		nu star (bias corrected)				6.851		
423	MLE Mean (bias corrected)			245.3		MLE Sd (bias corrected)				324.7		
424						Approximate Chi Square Value (0.05)				2.089		
425	Adjusted Level of Significance			0.0122		Adjusted Chi Square Value				1.272		
426												
427	Assuming Gamma Distribution											
428	95% Approximate Gamma UCL (use when n>=50))				804.5		95% Adjusted Gamma UCL (use when n<50)				1321	
429												
430	Lognormal GOF Test											
431	Shapiro Wilk Test Statistic			0.772		Shapiro Wilk Lognormal GOF Test						
432	5% Shapiro Wilk Critical Value			0.788		Data Not Lognormal at 5% Significance Level						
433	Lilliefors Test Statistic			0.373		Lilliefors Lognormal GOF Test						
434	5% Lilliefors Critical Value			0.325		Data Not Lognormal at 5% Significance Level						
435	Data Not Lognormal at 5% Significance Level											
436												
437	Lognormal Statistics											
438	Minimum of Logged Data			2.425		Mean of logged Data				4.869		

	A	B	C	D	E	F	G	H	I	J	K	L
468	Future Cons. Worker Sb											
469												
470	General Statistics											
471	Total Number of Observations				6		Number of Distinct Observations				6	
472	Number of Detects				1		Number of Non-Detects				5	
473	Number of Distinct Detects				1		Number of Distinct Non-Detects				5	
474												
475	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!											
476	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).											
477												
478	The data set for variable Future Cons. Worker Sb was not processed!											
479												
480												
481												

	A	B	C	D	E	F	G	H	I	J	K	L
482	Future Cons. Worker Pb											
483												
484	General Statistics											
485	Total Number of Observations				6		Number of Distinct Observations				6	
486							Number of Missing Observations				0	
487	Minimum				11.3		Mean				245.3	
488	Maximum				460		Median				307.5	
489	SD				183.7		Std. Error of Mean				74.99	
490	Coefficient of Variation				0.749		Skewness				-0.548	
491												
492	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use											
493	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.											
494	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).											
495	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1											
496												
497	Normal GOF Test											
498	Shapiro Wilk Test Statistic				0.862		Shapiro Wilk GOF Test					
499	5% Shapiro Wilk Critical Value				0.788		Data appear Normal at 5% Significance Level					
500	Lilliefors Test Statistic				0.298		Lilliefors GOF Test					
501	5% Lilliefors Critical Value				0.325		Data appear Normal at 5% Significance Level					
502	Data appear Normal at 5% Significance Level											
503												
504	Assuming Normal Distribution											
505	95% Normal UCL					95% UCLs (Adjusted for Skewness)						
506	95% Student's-t UCL				396.4		95% Adjusted-CLT UCL (Chen-1995)				350.7	
507							95% Modified-t UCL (Johnson-1978)				393.6	
508												
509	Gamma GOF Test											
510	A-D Test Statistic				0.767		Anderson-Darling Gamma GOF Test					
511	5% A-D Critical Value				0.717		Data Not Gamma Distributed at 5% Significance Level					
512	K-S Test Statistic				0.382		Kolmogorov-Smirnov Gamma GOF Test					
513	5% K-S Critical Value				0.342		Data Not Gamma Distributed at 5% Significance Level					
514	Data Not Gamma Distributed at 5% Significance Level											
515												
516	Gamma Statistics											
517	k hat (MLE)				0.92		k star (bias corrected MLE)				0.571	
518	Theta hat (MLE)				266.8		Theta star (bias corrected MLE)				429.7	
519	nu hat (MLE)				11.04		nu star (bias corrected)				6.851	
520	MLE Mean (bias corrected)				245.3		MLE Sd (bias corrected)				324.7	
521							Approximate Chi Square Value (0.05)				2.089	
522	Adjusted Level of Significance				0.0122		Adjusted Chi Square Value				1.272	
523												
524	Assuming Gamma Distribution											
525	95% Approximate Gamma UCL (use when n>=50))				804.5		95% Adjusted Gamma UCL (use when n<50)				1321	
526												
527	Lognormal GOF Test											
528	Shapiro Wilk Test Statistic				0.772		Shapiro Wilk Lognormal GOF Test					
529	5% Shapiro Wilk Critical Value				0.788		Data Not Lognormal at 5% Significance Level					
530	Lilliefors Test Statistic				0.373		Lilliefors Lognormal GOF Test					
531	5% Lilliefors Critical Value				0.325		Data Not Lognormal at 5% Significance Level					
532	Data Not Lognormal at 5% Significance Level											
533												
534	Lognormal Statistics											
535	Minimum of Logged Data				2.425		Mean of logged Data				4.869	

	A	B	C	D	E	F	G	H	I	J	K	L
536	Maximum of Logged Data					6.131	SD of logged Data					1.579
537												
538	Assuming Lognormal Distribution											
539	95% H-UCL				35303	90% Chebyshev (MVUE) UCL					915.4	
540	95% Chebyshev (MVUE) UCL				1182	97.5% Chebyshev (MVUE) UCL					1552	
541	99% Chebyshev (MVUE) UCL				2280							
542												
543	Nonparametric Distribution Free UCL Statistics											
544	Data appear to follow a Discernible Distribution at 5% Significance Level											
545												
546	Nonparametric Distribution Free UCLs											
547	95% CLT UCL				368.7	95% Jackknife UCL					396.4	
548	95% Standard Bootstrap UCL				359.3	95% Bootstrap-t UCL					382.2	
549	95% Hall's Bootstrap UCL				331.1	95% Percentile Bootstrap UCL					350	
550	95% BCA Bootstrap UCL				345.6							
551	90% Chebyshev(Mean, Sd) UCL				470.3	95% Chebyshev(Mean, Sd) UCL					572.2	
552	97.5% Chebyshev(Mean, Sd) UCL				713.6	99% Chebyshev(Mean, Sd) UCL					991.4	
553												
554	Suggested UCL to Use											
555	95% Student's-t UCL				396.4							
556												
557	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
558	Recommendations are based upon data size, data distribution, and skewness.											
559	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
560	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
561												
562	Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be											
563	reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.											
564												

	A	B	C	D	E	F	G	H	I	J	K	L
565	Future Resident Sb											
566												
567	General Statistics											
568	Total Number of Observations				14		Number of Distinct Observations				14	
569	Number of Detects				9		Number of Non-Detects				5	
570	Number of Distinct Detects				9		Number of Distinct Non-Detects				5	
571	Minimum Detect				0.372		Minimum Non-Detect				11.1	
572	Maximum Detect				5.62		Maximum Non-Detect				13.4	
573	Variance Detects				2.75		Percent Non-Detects				35.71%	
574	Mean Detects				2.419		SD Detects				1.658	
575	Median Detects				2.59		CV Detects				0.685	
576	Skewness Detects				0.546		Kurtosis Detects				0.443	
577	Mean of Logged Detects				0.584		SD of Logged Detects				0.92	
578												
579	Normal GOF Test on Detects Only											
580	Shapiro Wilk Test Statistic				0.918		Shapiro Wilk GOF Test					
581	5% Shapiro Wilk Critical Value				0.829		Detected Data appear Normal at 5% Significance Level					
582	Lilliefors Test Statistic				0.181		Lilliefors GOF Test					
583	5% Lilliefors Critical Value				0.274		Detected Data appear Normal at 5% Significance Level					
584	Detected Data appear Normal at 5% Significance Level											
585												
586	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
587	KM Mean				2.419		KM Standard Error of Mean				0.553	
588	KM SD				1.564		95% KM (BCA) UCL				3.308	
589	95% KM (t) UCL				3.398		95% KM (Percentile Bootstrap) UCL				3.309	
590	95% KM (z) UCL				3.329		95% KM Bootstrap t UCL				3.562	
591	90% KM Chebyshev UCL				4.078		95% KM Chebyshev UCL				4.829	
592	97.5% KM Chebyshev UCL				5.872		99% KM Chebyshev UCL				7.92	
593												
594	Gamma GOF Tests on Detected Observations Only											
595	A-D Test Statistic				0.513		Anderson-Darling GOF Test					
596	5% A-D Critical Value				0.731		Detected data appear Gamma Distributed at 5% Significance Level					
597	K-S Test Statistic				0.278		Kolmogorov-Smirnov GOF					
598	5% K-S Critical Value				0.283		Detected data appear Gamma Distributed at 5% Significance Level					
599	Detected data appear Gamma Distributed at 5% Significance Level											
600												
601	Gamma Statistics on Detected Data Only											
602	k hat (MLE)				1.819		k star (bias corrected MLE)				1.287	
603	Theta hat (MLE)				1.33		Theta star (bias corrected MLE)				1.88	
604	nu hat (MLE)				32.75		nu star (bias corrected)				23.16	
605	Mean (detects)				2.419							
606												
607	Gamma ROS Statistics using Imputed Non-Detects											
608	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
609	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
610	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
611	This is especially true when the sample size is small.											
612	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
613	Minimum				0.372		Mean				2.312	
614	Maximum				5.62		Median				2.119	
615	SD				1.309		CV				0.566	
616	k hat (MLE)				2.727		k star (bias corrected MLE)				2.19	
617	Theta hat (MLE)				0.848		Theta star (bias corrected MLE)				1.056	
618	nu hat (MLE)				76.35		nu star (bias corrected)				61.32	

	A	B	C	D	E	F	G	H	I	J	K	L
619	Adjusted Level of Significance (β)					0.0312						
620	Approximate Chi Square Value (61.32, α)					44.31	Adjusted Chi Square Value (61.32, β)					42.4
621	95% Gamma Approximate UCL (use when $n \geq 50$)					3.2	95% Gamma Adjusted UCL (use when $n < 50$)					3.344
622												
623	Estimates of Gamma Parameters using KM Estimates											
624	Mean (KM)					2.419	SD (KM)					1.564
625	Variance (KM)					2.445	SE of Mean (KM)					0.553
626	k hat (KM)					2.394	k star (KM)					1.929
627	nu hat (KM)					67.04	nu star (KM)					54.01
628	theta hat (KM)					1.01	theta star (KM)					1.254
629	80% gamma percentile (KM)					3.638	90% gamma percentile (KM)					4.746
630	95% gamma percentile (KM)					5.805	99% gamma percentile (KM)					8.16
631												
632	Gamma Kaplan-Meier (KM) Statistics											
633	Approximate Chi Square Value (54.01, α)					38.13	Adjusted Chi Square Value (54.01, β)					36.36
634	95% Gamma Approximate KM-UCL (use when $n \geq 50$)					3.428	95% Gamma Adjusted KM-UCL (use when $n < 50$)					3.594
635												
636	Lognormal GOF Test on Detected Observations Only											
637	Shapiro Wilk Test Statistic					0.882	Shapiro Wilk GOF Test					
638	5% Shapiro Wilk Critical Value					0.829	Detected Data appear Lognormal at 5% Significance Level					
639	Lilliefors Test Statistic					0.304	Lilliefors GOF Test					
640	5% Lilliefors Critical Value					0.274	Detected Data Not Lognormal at 5% Significance Level					
641	Detected Data appear Approximate Lognormal at 5% Significance Level											
642												
643	Lognormal ROS Statistics Using Imputed Non-Detects											
644	Mean in Original Scale					2.196	Mean in Log Scale					0.584
645	SD in Original Scale					1.338	SD in Log Scale					0.721
646	95% t UCL (assumes normality of ROS data)					2.829	95% Percentile Bootstrap UCL					2.784
647	95% BCA Bootstrap UCL					2.87	95% Bootstrap t UCL					2.978
648	95% H-UCL (Log ROS)					3.735						
649												
650	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
651	KM Mean (logged)					0.584	KM Geo Mean					1.794
652	KM SD (logged)					0.867	95% Critical H Value (KM-Log)					2.58
653	KM Standard Error of Mean (logged)					0.307	95% H-UCL (KM -Log)					4.858
654	KM SD (logged)					0.867	95% Critical H Value (KM-Log)					2.58
655	KM Standard Error of Mean (logged)					0.307						
656												
657	DL/2 Statistics											
658	DL/2 Normal						DL/2 Log-Transformed					
659	Mean in Original Scale					3.684	Mean in Log Scale					1.012
660	SD in Original Scale					2.206	SD in Log Scale					0.937
661	95% t UCL (Assumes normality)					4.728	95% H-Stat UCL					8.581
662	DL/2 is not a recommended method, provided for comparisons and historical reasons											
663												
664	Nonparametric Distribution Free UCL Statistics											
665	Detected Data appear Normal Distributed at 5% Significance Level											
666												
667	Suggested UCL to Use											
668	95% KM (t) UCL					3.398						
669												
670	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
671	Recommendations are based upon data size, data distribution, and skewness.											
672	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											

	A	B	C	D	E	F	G	H	I	J	K	L
673	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
674												
675												

	A	B	C	D	E	F	G	H	I	J	K	L
676	Future Resident Pb											
677												
678	General Statistics											
679	Total Number of Observations				14		Number of Distinct Observations				14	
680							Number of Missing Observations				0	
681	Minimum				11.3		Mean				419.5	
682	Maximum				1480		Median				382.5	
683	SD				369.5		Std. Error of Mean				98.74	
684	Coefficient of Variation				0.881		Skewness				1.822	
685												
686	Normal GOF Test											
687	Shapiro Wilk Test Statistic				0.828		Shapiro Wilk GOF Test					
688	5% Shapiro Wilk Critical Value				0.874		Data Not Normal at 5% Significance Level					
689	Lilliefors Test Statistic				0.209		Lilliefors GOF Test					
690	5% Lilliefors Critical Value				0.226		Data appear Normal at 5% Significance Level					
691	Data appear Approximate Normal at 5% Significance Level											
692												
693	Assuming Normal Distribution											
694	95% Normal UCL					95% UCLs (Adjusted for Skewness)						
695	95% Student's-t UCL				594.4		95% Adjusted-CLT UCL (Chen-1995)				633.3	
696							95% Modified-t UCL (Johnson-1978)				602.4	
697												
698	Gamma GOF Test											
699	A-D Test Statistic				0.5		Anderson-Darling Gamma GOF Test					
700	5% A-D Critical Value				0.758		Detected data appear Gamma Distributed at 5% Significance Level					
701	K-S Test Statistic				0.221		Kolmogorov-Smirnov Gamma GOF Test					
702	5% K-S Critical Value				0.235		Detected data appear Gamma Distributed at 5% Significance Level					
703	Detected data appear Gamma Distributed at 5% Significance Level											
704												
705	Gamma Statistics											
706	k hat (MLE)				1.103		k star (bias corrected MLE)				0.914	
707	Theta hat (MLE)				380.4		Theta star (bias corrected MLE)				458.9	
708	nu hat (MLE)				30.88		nu star (bias corrected)				25.6	
709	MLE Mean (bias corrected)				419.5		MLE Sd (bias corrected)				438.8	
710						Approximate Chi Square Value (0.05)				15.07		
711	Adjusted Level of Significance				0.0312		Adjusted Chi Square Value				14	
712												
713	Assuming Gamma Distribution											
714	95% Approximate Gamma UCL (use when n>=50))				712.6		95% Adjusted Gamma UCL (use when n<50)				766.7	
715												
716	Lognormal GOF Test											
717	Shapiro Wilk Test Statistic				0.863		Shapiro Wilk Lognormal GOF Test					
718	5% Shapiro Wilk Critical Value				0.874		Data Not Lognormal at 5% Significance Level					
719	Lilliefors Test Statistic				0.276		Lilliefors Lognormal GOF Test					
720	5% Lilliefors Critical Value				0.226		Data Not Lognormal at 5% Significance Level					
721	Data Not Lognormal at 5% Significance Level											
722												
723	Lognormal Statistics											
724	Minimum of Logged Data				2.425		Mean of logged Data				5.522	
725	Maximum of Logged Data				7.3		SD of logged Data				1.319	
726												
727	Assuming Lognormal Distribution											
728	95% H-UCL				2031		90% Chebyshev (MVUE) UCL				1175	
729	95% Chebyshev (MVUE) UCL				1464		97.5% Chebyshev (MVUE) UCL				1864	

[illegible]

Response to ADEM Review Comments Dated 1/28/2014
Draft Revision 1, RCRA Facility Investigation (RFI) Range 30 Impact Area, Parcels 88Q and 103Q, dated August 29, 2012
McClellan, Anniston, Alabama

<i>Comment</i>	<i>Response to Comment</i>
General Comments	
1. When conducting the original investigation in 2004, MDA collected 8 surface soil and 5 subsurface soil samples in what was considered the Range 30 Firing Line, an area where the Army already achieved no further action. In this revised RFI, MDA presented the same 2004 data for the Range 30 Impact Area; therefore, the samples presented are outside of the area being addressed in the revised document. No additional surface/subsurface soil samples were collected in the correct area after MDA determined the original investigation samples were taken in the previously addressed Firing Line. Please clarify why additional samples were not collected in the correct area once the error was discovered.	We acknowledge issues occurred as part of this investigation. However, the samples collected within the parcel boundaries of 88Q and 103Q represent the area that is the subject of this RFI. Two surface and subsurface soil locations from the Firing Line Area, R30-88Q-001 and R30-88Q-002, were selected to verify the detected elevated concentrations of copper or lead in soil samples identified during the <i>Range 30 Firing Line SI</i> adjacent to sample locations HR-88Q-GP24 and HR-88Q-GP03, respectively. The report will be revised to remove the locations from the discussion. Additional samples will be collected to provide a more spatially representative picture of the parcels. See attached Figure.
2. Please explain why no surface water or groundwater data was collected at the Impact Area.	No surface water samples were collected as the only surface water within the Site is intermittent and due to ponding following heavy rainfall. Metals and explosive compound generally do not migrate easily from soil to groundwater. Additionally, groundwater samples were collected during the Range 30 Firing Line investigation. This site is adjacent and down gradient from the Impact Area. Concentrations detected in groundwater collected during the SI were not considered site-related or did not pose an increased risk to human health therefore groundwater was not considered as a media of concern for the Impact Area. Based on the meeting conducted on April 8, 2014, the report will be revised to better explain why surface water and groundwater samples were not collected or necessary as part of the this investigation.
3. In accordance with the Alabama Environmental Investigation and Remediation Guidance (AEIRG), MDA should ensure that all soil samples be analyzed using USEPA approved methods as described in USEPA Test	Comment noted. See responses to Specific Comments 5 through 10.

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<i>Comment</i>	<i>Response to Comment</i>
Methods for Evaluating Solid Waste, Physical/Chemical Method, SW-846 (latest edition). The method detection limits (MDL) should be less than or equal to the SSLs. Please refer to Comments 5-10 and address.	
<i>Specific Comments</i>	
1. Page 1-1: The text states that although Parcels 88Q and 103Q cover “several hundred acres, this RFI is limited to an approximately 35-acre portion of the impact area.” Please clarify why the RFI is limited only to 35 acres.	This was an inaccurate explanation of the intentions of this investigation. Sampling was biased toward the areas within the range fan that were considered the worst-case locations and corresponded to areas where bullets or bullet fragments were observed. Additional samples will be collected to provide a more spatially representative picture of the parcels.
2. Page 3-2: The text states that the Army’s previous investigation for the Firing Line consisted of a 24-acre area and the analysis of 39 surface soil samples, 3 subsurface soil samples, two surface water/sediment samples, one depositional soil sample and the installation/sampling of 5 groundwater monitoring wells. According to Figure 4-1, MDA’s eight soil sample locations are located within or along the boundary of the Firing Line area previously addressed by the Army. It appears to the Department that soil samples located within the larger Impact Area are needed to adequately define the nature and extent of contamination being addressed as part of this investigation. Please address. Please also discuss the adequacy of MDA’s 13 soil samples on a 35-acre area versus the Army’s 72 soil samples on a 24-acre area.	As noted in the response above, a biased sampling approach was used. Because the hillside was used as the backstop for the range, it is believed that the bottom of the hill would represent the worst-case scenario as bullets would likely roll down the steep hill or would be pushed down hill by erosion or rain events. Additional samples will be collected to provide a more spatially representative picture of the parcels.
3. Pages 4-2 and 4-3: The text states that MDA applied the Army’s three-tiered approach for evaluating nature and extent of metals contamination at the site. Those metals that failed all three tiers were compared to site-specific screening levels (SSLs) and ecological screening values (ESVs). Since the sampling data was collected in 2004 but	Contamination can be caused by a variety of processes that yield different spatial distributions of elevated contaminant concentrations. Slight but pervasive contamination can occur from non-point-source releases, and can result in slight increases in contaminant concentrations in a large percentage of samples. Localized, or “hot-spot,” contamination can result in elevated concentrations in a small percentage of the total number of site samples. No single two-sample

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<i>Comment</i>	<i>Response to Comment</i>
not submitted until 2012, the department requests that MDA revise the data presented to meet the requirements of ARBCA (Alabama Risk-Based Corrective Action). Please Address.	statistical comparison test is sensitive to both of these modes of contamination. For this reason, the use of several simultaneous tests is recommended for a valid and complete comparison of site versus background distributions (U.S. Environmental Protection Agency [EPA], 1989, 1992, and 1994; U.S. Navy [Navy], 2002). The three-tiered approach used in the RFI refers to the statistical evaluation process used to assess if detection concentrations are background or site-related. • Tier 1 compares the maximum detected concentration (MDC) to the Background Screening Value (BSV). The BSV is two times the background mean. MDC less than the BSV are considered background. Elements for which the site MDC exceeds the BSV undergo further evaluation (Tier 2). • The Tier 2 evaluation assesses whether metal concentrations at the Site are statistically similar to background concentrations. Tier 2 consists of two complementary statistical tests: a) the hot measurement test and b) the Wilcoxon Rank Sum (WRS) Test. Metals that fail either of these statistical tests are subjected to the Tier 3 evaluation. • The Tier 3 geochemical evaluation takes into account relative proportions of metals in soils. Geochemical and statistical methods are used to distinguish between background concentrations and concentrations that represent a release. Analytes that fail the Tier 1 and Tier 2 comparisons are subject to the Tier 3 evaluation to determine if the elevated concentrations are due to natural processes or if they represent potential contamination. This section describes the statistical techniques that were employed in the Tiers 1 and 2 site-to-background comparisons. Based on our meeting with ADEM on April 8, 2014, we have reviewed both ARBCA and AEIRG for guidance about the assessment of background versus anthropogenic concentrations. Section 5.1 of ARBCA discusses the initial site

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<i>Comment</i>	<i>Response to Comment</i>
	characterization and references Section 4.4 of the AEIRG for assessing if a natural or an anthropogenic background source exists. Section 4.4 of the AEIRG indicates that if the contaminant of potential concern is less than 2 times the background level, then the contaminant should be eliminated as a concern. This assessment is consistent with the Tier 1 process that is already in use. We propose to use the 3-tiered process we have been using as it is conservative and evaluates the results through many statistical tests to assess if the concentrations are site-related including an evaluation of results to geochemical concentrations to account for the site's specific geology. See Appendix C of the RFI report for additional details of this evaluation. The RFI report was originally submitted in February 2005 prior to ARBCA. Due to receipt of ADEM comments, revision of SSSLs and ESVs, updated statistical evaluation process, the report went through several iterations prior to its submittal in August 2012. Because additional samples will be collected to provide a more spatially representative data set, this background evaluation would be done and would encompass the results from both the 2004 sampling event and the currently planned event. The remaining steps in the ARBCA evaluation process (comparison of concentrations to PSVs, etc) would be completed to ensure compliance with current standards.
4. Page 5-1: Please insert the punctuation that is missing at the end of Paragraph 2. Also, in Paragraph 5, the text states that subsurface soil analytical results are presented in Table 5-2, but those results are presented in Table 5-3. Please revise.	Agreed. Change will be made in the revised version of the report.
5. Page 5-1 and 5-2: The text states in Section 5.2.1 that "no explosive compounds were detected in the surface soil samples." According to the analytical results in Table 5-1,	Based on our meeting with ADEM on April 8, 2014, we have concluded that there was a unit conversion error. The concentrations provided by the laboratory for analytes in the 8330 list are presented in ug/kg while the SSSL list submitted to

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<i>Comment</i>	<i>Response to Comment</i>
all of the explosive sample results were listed as <400 µg/kg. However, according to the list of SSSLs that Matrix provided to ADEM for soil, it appears that all of the explosive compounds at the Impact Area have residential SSSL values that range between 0.464 (4-Amino-2,6-Dinitrotoluene) and 375 µg/kg (HMX), which are all lower than 400 µg/kg making it difficult to draw conclusions about whether or not explosives are present in surface soil. Please address.	ADEM presents the values in mg/kg. Therefore, the comparison of the non-detects at the reporting limit of 400 ug/kg should be compared to 464 µg/kg and 375,000 µg/kg for 4-Amino-2,6-Dinitrotoluene and HMX, respectively.
6. Page 5-1: The text states that “cadmium, silver and thallium were not detected in surface soil samples.” The results for thallium are presented in Table 5-1 as <2.22 µg/kg, <2.29 µg/kg, etc. According to the list of SSSLs that Matrix provided to ADEM for soil, it appears that the residential SSSL for thallium is 0.547 µg/kg, which is less than any of the values presented in the table making it difficult to draw conclusions about whether or not thallium is present in surface soil. Please address.	Agreed. Additional samples will be collected. Samples will be analyzed by SW6020A (ICP/MS). The MDL for thallium analyzed by this method is 0.05 mg/kg and has a reporting limit of 0.5 mg/kg. The residential RSL for this constituent is 0.078 mg/kg and is greater than the laboratory’s MDL.
7. Page 5-2: The text states that “antimony was detected in only two of the eight surface soil samples.” Four of the results for antimony presented in Table 5-1 are < 14.2 µg/kg, <13.4 µg/kg, < 11.1 µg/kg and < 13.1 µg/kg. According to the list of SSSLs that Matrix Provided to ADEM for soil, it appears that the residential SSSL for antimony is 3.11, which is less than the other listed values making it difficult to draw conclusions about whether or not antimony is present in surface soil. Please address.	Disagree. Though the reporting limit for antimony was greater than the SSSL (3.11 mg/kg), the MDL for this compound was 2 mg/kg. Therefore, if antimony concentrations were detected above the MDL, these values would have been presented, albeit with a J flag to indicate the concentration is considered estimated and the associated numerical value is the approximate concentration of the analyte in the sample.
8. Page 5-2: The text states in Section 5.2.2 that “no explosive compounds were detected in the subsurface soil samples.” According to the analytical results in Table 5-3, all of the explosive sample results were listed as < 400 µg/kg. However, according to the list of SSSLs that Matrix provided to ADEM for soil, it appears that all of the	Based on our meeting with ADEM on April 8, 2014, we have concluded that there was a unit conversion error. The concentrations provided by the laboratory for analytes in the 8330 list are presented in ug/kg while the SSSL list submitted to ADEM presents the values in mg/kg. Therefore, the comparison of the non-detects at the reporting limit of 400 ug/kg should be compared to 464 µg/kg and 375,000 µg/kg for 4-Amino-2,6-Dinitrotoluene and HMX, respectively.

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<i>Comment</i>	<i>Response to Comment</i>
explosive compounds at the Impact Area have residential SSSL values that range between 0.464 (4-Amino-2,6-Dinitrotoluene) and 375 µg/kg (HMX, which are all lower than 400 µg/kg making it difficult to draw conclusions about whether or not explosives are present in surface soil. Please address.	
9. Page 5-2: The text states that “cadmium, silver, selenium and thallium were not detected in subsurface soil samples.” The results for thallium are presented in Table 5-3 as < 2.25 µg/kg, < 2.48 µg/kg, etc. According to the list of SSSLs that Matrix provided to ADEM for soil, it appears that the residential SSSL for thallium is 0.547 µg/kg, which is less than any of the values presented in the table making it difficult to draw conclusions about whether or not thallium is present in subsurface soil. Please address	Agreed. Additional samples will be collected. Samples will be analyzed by SW6020A (ICP/MS). The MDL for thallium analyzed by this method is 0.05 mg/kg and has a reporting limit of 0.5 mg/kg. The residential RSL for this constituent is 0.078 mg/kg and is greater than the laboratory’s MDL.
10. Page 5-2: The text states that “antimony was only detected in one of the five subsurface soil samples.” Two of the results for antimony presented in Table 5-3 are < 11.6 µg/kg and 13.1 µg/kg. According to the list of SSSLs that Matrix provided to ADEM for soil, it appears that the residential SSSL for antimony is 3.11, which is less than the other listed values making it difficult to draw conclusions about whether or not antimony is present in subsurface soil. Please address.	Disagree. Though the reporting limit for antimony was greater than the SSSL (3.11 mg/kg), the MDL for this compound was 2 mg/kg. Therefore, if antimony concentrations were detected above the MDL, these values would have been presented, albeit with a J flag to indicate the concentration is considered estimated and the associated numerical value is the approximate concentration of the analyte in the sample.
11. Page 5-2: Since this revised document addresses the Impact Area, it is unclear what purpose Section 5.2.3 serves as it compares soil sampling results collected by the Army and MDA at the Firing Line. Please clarify.	Agreed. This section will be deleted in the revised version of the report.
12. Page 5-2: The text states that “metal contaminants exceeding residential SSSLs or ESVs were considered to be contaminants of potential concern (COPCs) at the Site. No concentrations of the contaminants exceeded the residential SSSLs” in surface soil. However, in Table 5-1,	Appendix C of the report outlines the background screening process. The MDC for aluminum was greater than the BSV, however, this analyte is considered an essential macronutrient with minimal human or ecological toxicity. Because the MDC for aluminum was less than ten times the BSV, it was not carried forward to the Tier 2 or Tier 3 evaluations. The MDCs for arsenic, chromium, iron,

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aluminum, arsenic, chromium, iron and manganese appear to exceed the residential SSSLs in one or more samples. Antimony and thallium results are inconclusive. Please address.	manganese, and vanadium were less than their respective BSVs and so were not carried forward to the Tier 2 or Tier 3 evaluations. Though the reporting limit for antimony was greater than the SSSL (3.11 mg/kg), the MDL for this compound was 2 mg/kg. Therefore, if antimony concentrations were detected above the MDL, these values would have been presented, albeit with a J flag to indicate the concentration is considered estimated and the associated numerical value is the approximate concentration of the analyte in the sample. Page 5-2 will be revised to clarify. With respect to thallium, additional samples will be collected. Samples will be analyzed by SW6020A (ICP/MS). The MDL for thallium analyzed by this method is 0.05 mg/kg and has a reporting limit of 0.5 mg/kg. The residential RSL for this constituent is 0.078 mg/kg and is greater than the laboratory's MDL. See also the response to Comment 3.
13. Page 5-4: The text states that "Antimony and lead exceeded the residential SSSLs" in subsurface soil. However, in Table 5-3, aluminum, arsenic, chromium, iron and manganese also appear to exceed the residential SSSLs in one or more samples. Thallium results are inconclusive. Please address.	The MDC for aluminum was greater than the BSV, however, this analyte is considered an essential macronutrient with minimal human or ecological toxicity. Because the MDC for aluminum was less than ten times the BSV, it was not carried forward to the Tier 2 or Tier 3 evaluations. The MDCs for arsenic, chromium, and iron were less than their respective BSVs and so were not carried forward to the Tier 2 or Tier 3 evaluations. Manganese was eliminated during the Tier 3 evaluation. Though the reporting limit for antimony was greater than the SSSL (3.11 mg/kg), the MDL for this compound was 2 mg/kg. Therefore, if antimony concentrations were detected above the MDL, these values would have been presented, albeit with a J flag to indicate the concentration is considered estimated and the associated numerical value is the approximate concentration of the analyte in the sample. Page 5-4 will be revised to clarify.

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	With respect to thallium, additional samples will be collected. Samples will be analyzed by SW6020A (ICP/MS). The MDL for thallium analyzed by this method is 0.05 mg/kg and has a reporting limit of 0.5 mg/kg. The residential RSL for this constituent is 0.078 mg/kg and is greater than the laboratory's MDL. See also the response to Comment 3.
14. Tables: Please include the comparison values (background, SSSL, ESV, etc.) in tables containing analytical data in order to help the reviewer.	Text and tables will be changed for the revised report.
15. Table 5-5: As noted in Specific Comment 11, it is unclear to ADEM what purpose this table serves as it addresses sample locations outside of the Impact Area.	Agreed. This table will be deleted in the revised version of the report.
16. Figure 1-2: Please explain why the hatched "Range 30 Impact Area – Investigation Area" is different from the Impact Area parcels.	Agreed. This will be removed from the revised version of the report.