F I N A L

Dredge Spoil Areas 4, 5, and 6 Remedial Investigation Report Former Raritan Arsenal Edison, New Jersey

Prepared for

U.S. Army Engineering and Support Center, Huntsville



FUDS Project Number: C02NJ008403
U.S. Army Corps of Engineers

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Prepared by

CH2M HILL, Inc.
2411 Dulles Corner Park, Suite 500
Herndon, VA 20171

November 2020

Approved By

DIGITAL SIGNATURE

11/16/2020

Sarah Meyers
Project Manager

Approved By

11/16/2020

George DeMetropolis, PhD, CMQ/OE, CQA
WERS Program QC Manager

Revision Summary

Revision Number	Summary of Revisions
1 (July 2019)	Performed separate MEC risk analysis for DSAs 4 and 6. Recommend FS for DSAs 4 and 6.
2 (November 2020)	Editorial and formatting changes in response to backcheck comments in NJDEP letter dated 10/15/2019 (Ralph Rodrigues, NJDEP Emergency Management Program).

Executive Summary

ES.0.1 There are six dredge spoil areas (DSAs) associated with the former Raritan Arsenal Munitions Response Site (MRS; hereinafter referred to as the former Arsenal) in Edison, New Jersey. Figure ES-1 depicts the locations of these DSAs within the former Arsenal. These areas are underlain by dredge spoils that were removed from the Raritan River and deposited during historical dredging operations. This remedial investigation (RI) focuses on DSAs 4, 5, and 6, which comprise 322 acres of land located outside the boundary of the MRS. DSA 5 is located on the southern shoreline of the Raritan River directly across from the former Arsenal, and DSAs 4 and 6 are two small islands (collectively known as Crab Island) located in the Raritan River. The three DSAs are predominantly flat, low-lying, densely vegetated, undeveloped marsh land. Under current conditions, except for the areas near roads and buildings along the roads, most of the land area that comprises DSAs 4, 5, and 6 is difficult to access because of dense vegetation and the presence of stream channels, soft mudflats, and standing water. The marshy islands of DSAs 4 and 6 are not easily accessed due to their location in the Raritan River and the very soft, swampy nature of the terrain.

ES.0.2 An RI was performed for DSAs 4, 5, and 6 because previous removal actions conducted within the DSAs, indicate that munitions and explosives of concern (MEC) may have been embedded within the sediments that were dredged from the Raritan River in the vicinity of the Area 13 dock. A removal action performed in 1993 in the northeastern portion of DSA 5 removed 231 French Rifle grenades and 14 Mk II hand grenades from the area. MEC items may have been lost or dumped in the Raritan River during unloading and loading of cargo ships at the Area 13 dock because of cargo shifts during transport, or because of the potential for the incomplete recovery of items from a sunken barge. Items lost in the river would have become lodged within the river sediments. During subsequent dredging operations, the sediments and associated items may have been emplaced within the DSAs. The characterization of MEC items removed from DSAs on the former Arsenal, specifically Area 12, suggests that because the munitions items spilled into the river at the former dock area were packed for overseas shipment, they did not contain full explosive loads. Another important component of the conceptual site models for the DSAs, which are supported by results of this RI, is that historical dredging of the Raritan River also included removal of hundreds of thousands of cubic yards of sediment from channels located upstream and downstream of the former Arsenal where MEC is not likely to have been present; therefore, large areas of the DSAs likely do not contain any MEC.

ES.0.3 Surface clearance, digital geophysical mapping (DGM), intrusive investigations of select anomalies, and associated field support activities were performed as part of this RI to collect data to evaluate the nature and extent of potential MEC and munitions constituents (MC) contamination in DSAs 4, 5, and 6. No MEC items were identified on the surface of DSAs 4, 5, and 6. No MEC items were identified during the intrusive and Time-Domain Electromagnetic Towed Array Detection System (TEMTADS) geophysical-based anomaly investigations performed in DSA 5. No further action (NFA) is recommended for MEC in DSA 5. A low density and low total number of DGM anomalies (15 total, including quality control seeds) were identified in DSAs 4 and 6. Although DSAs 4 and 6 were solid enough (partially frozen) in March 2014 to perform a surface clearance and DGM survey, during reacquisition at DSAs 4 and 6 in June 2014 the islands were so soft that investigation personnel sunk into the mud up to their waist. These conditions presented a safety hazard for investigation personnel so the DSA 4 and 6 anomalies could not be characterized. Although the islands have limited accessibility under current surrounding land use, the Lower Raritan Green Infrastructure Master Plan shows that areas adjacent to the islands, located on the former Raritan Arsenal, may be developed in the future for public recreational use. The potential future recreational use includes a kayak trail that could increase access to the islands. Because the anomalies in DSAs 4 and 6 could not be characterized during the RI and the potential presence of munitions items on the islands is suspected based on anecdotal evidence,

a Feasibility Study is recommended to determine what actions should be evaluated to mitigate the potential MEC hazard at DSAs 4 and 6.

ES.0.4 Soil sampling performed in the DSA 5 removal action area (RAA) showed that MC was not detected at concentrations that would suggest a release occurred related to the MEC items that were formerly present in the area. This conclusion is further supported by a human health risk screening (HHRS) and ecological risk screening evaluation performed using the data collected from the RAA. The results of the HHRS indicate that the potential risks for MC detected in surface and subsurface soil are within acceptable levels for an industrial scenario and a residential (unrestricted) scenario. No risk to ecological receptors from exposure to contaminants in surface or subsurface soils was identified. Therefore, the former RAA within DSA 5 is recommended for NFA based on the results of the HHRS and the ecological screening.

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Acronyms and Abbreviations

2,4,6-TNT	2,4,6-trinitrotoluene
ASR	Archival Search Report
bgs	below ground surface
BTV	background threshold value
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	*Code of Federal Regulations*
CH2M	CH2M HILL, Inc.
cm	centimeter(s)
COPC	chemical of potential concern
CSM	conceptual site model
CMUA	Concentrated Munitions Use Area
Dames & Moore	Dames & Moore, Inc.
DERP-FUDS	Defense Environmental Restoration Program for Formerly Used Defense Sites
DGM	digital geophysical mapping
DMM	discarded military munitions
DoA	Department of the Army
DoD	U.S. Department of Defense
DQO	data quality objective
DSA	dredge spoil area
EcoSSL	ecological soil screening level
ELCR	excess lifetime cancer risk
EMI	electromagnetic induction
EODT	EOD Technology, Inc.
EPA	U.S. Environmental Protection Agency
EPC	exposure point concentration
ESV	ecological screening value
FS	feasibility study
GSV	geophysical system verification
HE	high explosive
HHRS	human health risk screening
HI	hazard index
HQ	hazard quotient
ID	identification
ISO	industry standard object
IVS	instrument verification strip
m	meter(s)

MC	munitions constituents
MD	munitions debris
MEC	munitions and explosives of concern
mg/kg	milligram(s) per kilogram
mm	millimeter(s)
MMRP	Military Munitions Response Program
MPC	measurement performance criteria
MPPEH	material potentially presenting an explosive hazard
MQO	measurement quality objective
MR	munitions response
MRS	munitions response site
MRSIMS	Munitions Response Site Information Management System
mV	millivolt(s)
NFA	no further action
NJDEP	New Jersey Department of Environmental Protection
OE	ordnance and explosives
QC	quality control
RAA	removal action area
RI	remedial investigation
Roy F. Weston	Roy F. Weston, Inc.
RSL	regional screening level
RTK-GPS	real-time kinematic global positioning system
SSL	soil screening level
SRS	soil remediation standard
TEMTADS	Time-domain Electromagnetic Towed Array Detection System
TOI	target of interest
USACE	U.S. Army Corps of Engineers
UCL	upper confidence limit
UTL	upper tolerance limit
UU/UE	unlimited use and unrestricted exposure
UXB	UXB International, Inc.
UXO	unexploded ordnance
WERS	Worldwide Environmental Remediation Services
Weston	Weston Solutions, Inc.

SECTION 1

Introduction

1.0.1 This report documents the remedial investigation (RI) performed for Dredge Spoil Areas (DSAs) 4, 5, and 6 at the former Raritan Arsenal Munitions Response Site (MRS; hereinafter referred to as the former Arsenal) in Edison, New Jersey. CH2M HILL, Inc. (CH2M) is performing RIs for Areas 1, 6, 6A, 6B, 9, 10, 11, 12, 13, 16, 18D, 19, and DSAs at the former Arsenal. Tables 1-1 and 1-2 present a summary of the areas and DSA. The former Arsenal constitutes one MRS that includes several areas of interest that are in various stages of investigation or remediation (Figure 1-1). DSAs 4, 5, and 6 have been broken out into a separate RI because their locations do not coincide or overlap with existing investigation areas at the former Arsenal. Information pertaining to DSAs 1, 2, and 3 will be included with the RI reports for Areas 6, 6A, and 6B, Area 11, and Area 12, respectively, because of their overlapping geographical area (Figure 1-1). The RIs for the other areas will be discussed in separate RI reports.

1.0.2 The RI was performed under the Defense Environmental Restoration Program for Formerly Used Defense Sites (DERP-FUDS). This document was prepared in accordance with the Performance Work Statement, Revision 2, dated August 24, 2011, for the U.S. Army Engineering and Support Center, Huntsville, Alabama, as part of Contract Number W912DY-09-D-0060, Task Order 003, and the U.S. Army Corps of Engineers (USACE), New York and New England Districts, using Data Item Description Worldwide Environmental Remediation Services (WERS)-010.02, August 2012; USACE Engineer Pamphlet 1110-1-18 (USACE, 2000); *Munitions Response Remedial Investigation/Feasibility Study Guidance* (Department of the Army [DoA], 2009); and the *Remedial Investigation/Feasibility Study Work Plan, Former Raritan Arsenal, Edison, New Jersey* (RI/FS Work Plan; Final [Revision 3][1]) (CH2M, 2016).

1.0.3 This project is being executed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act and, to the extent applicable, the National Oil and Hazardous Pollution Contingency Plan (40 *Code of Federal Regulations* [CFR] Part 300); the Military Munitions Response Program (MMRP); and all applicable U.S. Department of Defense (DoD), DoA, and USACE regulations and guidance.

1.1 Purpose and Scope

1.1.1 The purpose of the RI for DSAs 4, 5, and 6 is to characterize the nature and extent of munitions and explosives of concern (MEC) and munitions constituents (MC) within these areas only as they relate to known/documented DoD releases. The data evaluation and conclusions of this RI are supported by human health risk screening (HHRS) and ecological risk screening evaluations of MC data collected from DSA 5. The RI fieldwork for DSAs 4, 5, and 6 was conducted between November 2013 and August 2017 in accordance with methodologies and protocols set forth in the RI/FS Work Plan (CH2M, 2016), which was reviewed and approved by USACE, New York District.

1.2 Property Description

1.2.1 The former Arsenal is located in Middlesex County, New Jersey, on the northern bank of the Raritan River. Most of the land area lies within Edison Township and a smaller portion within Woodbridge Township. The former Arsenal is bordered to the north and northwest by Woodbridge

[1] Two versions of a Final Work Plan were used to complete the RI/FS work at DSAs 4, 5, and 6. The Final Work Plan prepared in 2013 described the procedures for MEC investigation only, which was subsequently used to perform the MEC investigation work in 2013 and 2014. The only difference between the 2013 and 2016 Work Plans is that the Work Plan that was finalized in 2016 contained a QAPP Addendum, which described the site-specific procedures for MC sampling for the RI/FS. As such, the 2016 version of the Work Plan supersedes the 2013 version, and is cited as such in this document. The MC sampling work was subsequently completed in 2017.

Avenue, to the southwest by Mill Road and the Industrial Land Reclamation Landfill, and to the south and east by the Raritan River (Figure 1-1). There are six DSAs associated with the former Arsenal. The total land area of the DSAs is 645 acres, with 323 acres located within the boundary of the former Arsenal and 322 acres located outside the boundary (Table 1-3). DSAs 4, 5, and 6 are located outside the boundary of the MRS (Figure 1-2). DSA 5 is located on the south shoreline of the Raritan River directly across from the former Arsenal, and DSAs 4 and 6 comprise two small islands (collectively known as Crab Island) located within the Raritan River (Figure 1-2).

1.3 Historical Information

1.3.1 The DSAs were established by USACE in April 2012 during development of the RI/FS Work Plan because previous investigation data and historical reports (Roy F. Weston, Inc. [Roy F. Weston], 2002) reported the presence of fill material across various areas of the former Arsenal that appeared to be dredge spoils from the river (CH2M, 2016). For purposes of investigation, USACE considered the DSA to comprise six individual areas identified as DSAs 1 through 6 (Figure 1-2). Roy F. Weston (2002) defined the boundaries between the DSAs on the former Arsenal based on a review of subsurface data collected during previous investigations and other physical observations. The limits of DSA 5 were defined based on an historical map showing the permitted limits of dredge disposal along the southern shoreline of the river, and the limits of DSAs 4 and 6 were defined based on the physical limits of the islands.

1.3.2 According to Roy F. Weston (2002), "A 300-foot wide, 25-foot-deep channel has historically been maintained by USACE from Raritan Bay upriver to immediately downstream of the former Arsenal." A section of the river approximately adjacent to Area 6 and downstream of the former dock at Area 13 was dredged to maintain a turning basin, which vessels used for turning around in the channel after picking up supplies from the former Arsenal. The early (pre-1933) dredge channel continued upstream beyond and immediately adjacent to the former Arsenal, whereas more recent dredging activities (World War II [WWII]-era to 1991) were focused on maintaining a channel downstream of the turning basin toward Raritan Bay. Records indicate that the area adjacent to the former dock in Area 13 was dredged at least once in late 1944, but the channel in this area was likely maintained by dredging throughout the WWI and WWII eras (Roy F. Weston, 2002). Additionally, in 1975, USACE increased the depth of the channel at this location by approximately 14 feet by dredging. Reportedly, since 1975, the Raritan River near Area 13 has been subject to periodic maintenance dredging, with the most recent event occurring in 1992.

1.3.3 Historical records indicate that up until approximately 1956 material from dredging was disposed of within the property boundary of the former Arsenal as well as in areas outside the former Arsenal (Roy F. Weston, 2002). The records state that dredge spoils were disposed of within a portion of the facility referred to as Area G, which encompassed Area 14 as well as a portion of Area 6, Area 12, and the land area between Areas 6, 11, and 16 (Roy F. Weston, 2002). Historical maps show that the permitted limits of dredge disposal extended along the south shoreline of the Raritan River and refer to this as Area H (86th Congress, 2nd Session. House Document No. 435. 1960). Area H is now identified as DSA 5. In 1975 USACE increased the depth of the Raritan River adjacent to Area 13 and the dredge spoils from this project were most likely placed within Areas 11, 12, 14, or the "Spoils Area," which is an 8-acre parcel of land located within the northeast portion of DSA 5. The Spoils Area was being used by the Town of Sayreville during installation of a sewer plant effluent diffuser in the river bed (UXB International, Inc. [UXB], 1994). Anecdotal evidence suggests that dredge materials were also disposed of on Crab Island, which is located within the Raritan River and is identified for purposes of this RI as DSAs 4 and 6.

1.3.4 Historical reports indicate that munitions items were observed in material dredged from the Raritan River. For instance, in May 1923, a suction dredge was used to dredge 1,200 feet of frontage along the arsenal pier (Area 13) to depths of 8 to 10 feet (Dames & Moore, Inc. [Dames & Moore],

1993). The project was repeatedly delayed due to the number of grenades and boxes of grenades that were encountered, which caused pipe and pump plugging (Dames & Moore, 1993). The spoils from the May 1923 dredging event were reportedly disposed of in an area behind the Area 13 warehouses (presumed to be Area 11) (Dames & Moore, 1993).

1.3.5 The primary source of munitions in the Raritan River is from munitions that were lost or dumped in the Raritan River near the Area 13 pier loading area (Dames & Moore, 1993). Conceptually, the items may have been spilled into the river and subsequently lodged within river sediments during the unloading and loading of cargo ships, or possibly as a result of cargo shifts. Additionally, the Archival Search Report (ASR) indicates that an ammunition barge, the Frederick Star #9, sank at the Raritan pier on December 12, 1926 (Dames & Moore, 1993). The barge carried "33,282 pounds of 75-mm shrapnel and 3,600 3-inch anti-aircraft projectiles" (Dames & Moore, 1993). A recovery effort was performed, and on February 2, 1927, the Chief of Ordnance directed the Arsenal to inspect every box of ammunition retrieved from the sunken Frederick Star #9 to ensure that they had remained airtight. On February 4, 1927, the Arsenal notified the Chief of Ordnance that the "salvage of 75-mm rounds from the sunken barge was half completed" and that "the recovered rounds were in good shape after being submerged for approximately 3 weeks. Most of the rounds retrieved were still packed in their boxes; however, at least 26 rounds were discovered to be loose" (Dames & Moore, 1993). The ASR did not locate a final report that indicated whether all the ammunition on the sunken Frederick Star #9 was recovered.

1.4 Previous Investigations

1.4.1 DSAs 4, 5, and 6 have not been previously investigated with the exception of one MEC removal action that was performed in DSA 5. In 1993, UXB completed a removal action in the northeast portion of DSA 5 (i.e., the "Spoils Area") (Figure 1-2). The removal action area (RAA) is reported as 4.5 acres in size. The *Final Removal Report, Ordnance Removal Action at Spoils Area, Area 3A, Area 4, and Area 11* (UXB, 1994) indicates that from July through October 1993, 245 items, comprising 231 French Rifle grenades and 14 Mk II hand grenades, were removed from the Spoils Area. The investigation was performed in stages with unexploded ordnance (UXO)-qualified technicians sweeping the area in search lanes with magnetometers and investigating all contacts to a depth of 24 inches. After completing the sweep, the soils from ground surface to 20 inches below grade were then removed and the area, now at a lower elevation, was swept again with anomalies being investigated to depths of 44 inches below original grade and soils again being removed to 40 inches below original grade. This process continued until no additional anomalies were identified during magnetometer sweeps of the area. A record of the item depths was not provided; however, the report does indicate that the excavation went deeper than 44 inches, although the final depth is not identified. There was no indication of breached or deteriorated items present nor was there any indication of soil contamination noted in the report. Soils removed during the operation were placed in a temporary stockpile and then placed back into the area after completion of the work. No MC samples were collected.

SECTION 2

Physical Characteristics of the Study Area

2.0.1 This section presents the physical characteristics of DSAs 4, 5, and 6 and discusses the land use, surface features, geology, hydrogeology, and ecology associated with this area.

2.1 Land Use

2.1.1 The land area of DSAs 4, 5, and 6 is composed of predominately flat, low-lying, densely vegetated, marsh land. Overall, the DSA is considered as an undeveloped wetland that is currently owned by various entities. Under current conditions, except for the areas near roads and buildings along the roads, most of the DSA is difficult to access because of dense vegetation and presence of stream channels in the wetland portions of the DSA. The marshy islands of DSAs 4 and 6 are not easily accessed due to their location in the Raritan River and due to the very soft, swampy nature of the terrain. Both islands are undeveloped. DSA 5 is also mostly undeveloped except for the south-central margin of the area, which contains residential housing units.

2.2 Surface Features

2.2.1 The surface of DSAs 4, 5, and 6 is vegetated marshland consisting of common reed marsh, saltwater cordgrass, and marsh hay. DSAs 4, 5, and 6 experience significant tidal inundation from the Raritan River, are cross-cut by channels, and contain mud flats.

2.3 Geology

2.3.1 Historical and anecdotal information suggests that DSAs 4, 5, and 6 are underlain by dredge deposits. Boring profiles taken within the DSAs located on the former Arsenal show dark gray silt material, and observations of shells of ribbed mussels (*Modiolus demissus*) at the surface and at depth suggest that the dredge material originated from estuarine waters. The exact thickness of the dredge material within DSAs 4, 5, and 6 is unknown.

2.4 Hydrogeology

2.4.1 Depth to groundwater in DSAs 4, 5, and 6 is very shallow (estimated at less than 1 to 5 feet) and tidal streams and standing water are frequently encountered.

2.5 Ecology

2.5.1 The habitat within the DSA is a combination of old field habitat, estuarine emergent wetland (*Phragmites*) habitat, open water habitat of the Raritan River, and a small portion of developed habitat (Weston, 2008). The marshes are dominated by common reed marsh, saltwater cordgrass, and marsh hay (Dames & Moore, 1993). On dredged spoil substrates observed within the former Arsenal, the plant communities consist of fewer species with lower vigor, which may be due to unfavorable soil conditions such as low nutrient availability, soil moisture problems, and unfavorable pH or iron content (Dames & Moore, 1993). Periodic flooding of the river may also affect plant communities in the relatively low-lying DSAs.

SECTION 3

Conceptual Site Model

3.0.1 The conceptual site model (CSM) relates potentially exposed receptor populations with potential source areas based upon physical site characteristics and complete exposure pathways. Important components of the CSM are the identification of potential source areas, methods of interaction (i.e., transport pathways, access, exposure media, exposure pathways, and routes), and receptor groups. Actual or potential exposures of receptors associated with a site are determined by identifying the most likely, and most important, pathways of release, transport, and interaction. A complete exposure pathway has three components: (1) a source that results in a release to the environment; (2) a method of interaction or pathway of transport through an environmental medium; and (3) a receptor.

3.1 Potential Source Areas

3.1.1 Previous investigations and removal actions conducted within the DSAs, including DSA 5, indicate that MEC may have been embedded within the sediments that were dredged from the Raritan River in the vicinity of the Area 13 dock (Figure 3-1). Originally, the MEC items may have been lost or dumped in the Raritan River during unloading and loading of cargo ships at the Area 13 dock as a result of cargo shifts during transport or because of the potential for the incomplete recovery of items sunk along with the Frederick Start #9. Items lost in the river would become lodged within the river sediments. During subsequent dredging operations, the sediments and any associated items would have subsequently been emplaced within the DSAs. The MEC items found during the removal action at DSA 5 consisted of 231 French Rifle grenades and 14 Mk II hand grenades. An important component of the CSM, which is supported by results of this RI, is that historical dredging of the Raritan River also included removal of hundreds of thousands of cubic yards of sediment from channels located upstream and downstream of the former Arsenal where MEC is not likely to have been present; therefore, large areas of the DSAs likely do not contain any MEC.

3.1.2 In addition, the majority of munitions items recovered from dredge deposits on the Raritan Arsenal have been classified as Material Determined as Safe because items packed for shipment would not have contained explosive filler. For example, the majority of ordnance and explosives (OE) items identified at Area 12 during the 2005 removal action were unfired munitions that were staged at the Raritan Arsenal for later shipment to other locations. The most common items found at the site were WWI and WWII-era grenades, specifically French VB rifle grenades and U.S. MK II hand grenades. For reasons not documented in the historical records, but consistent with safe packaging and shipping practices, the grenades in Area 12 rarely contained full explosive loads. The VB rifle grenades at the site typically contained the fuze mechanism and the explosives associated with the fuze but rarely contained the 0.11-pound of 2,4,6-trinitrotoluene (2,4,6-TNT) that make up the grenade's main explosive charge. The MK II hand grenades found were typically metal grenade bodies with no explosives. Instead of a "full up" grenade, the bodies were typically found to contain fuel oil with a wooden plug placed in the grenade's fuze well. As mentioned previously, there is no documentation establishing the reason for the fuel oil and wooden plugs found in these grenades, but, as with the VB rifle grenades, it would be consistent with safe packaging for shipment overseas (EOD Technology, Inc. [EODT], 2005).

3.1.3 A potential secondary source of contamination is environmental media potentially contaminated by MC associated with munitions. Munitions items have the potential to release both metals and explosives (inclusive of any associated degradation or breakdown products). If present, MC-related impacts would likely be located within the sediment and/or soil as a result of deterioration and subsequent breaching or degradation of munitions items over time. The MC-related impacts would

likely be directly associated with the munitions items; however, the historical releases of MC may or may not remain at the release locations because of soil erosion, entrainment of impacted sediment particles by river flow, or by the physical transport of sediments during dredging.

3.2 Transport Pathways

3.2.1 A transport pathway describes the mechanisms whereby site-related constituents (including MEC), once released, may be transported from a source area to an exposure media (such as surface soil) where receptor exposures may occur. The primary mechanisms for transport of constituents from the potential source areas are:

- Direct deposit of munitions on the surface by past dredge disposal operations (i.e., items originally placed at ground surface level by past dredge disposal remain at the surface and no physical transport of the items is involved in this process)
- Transport or migration of munitions items by erosion, soil/sediment disturbance, or souvenir hunters/collectors
- Transport of contaminated soil/sediment particulates to downgradient areas via overland surface runoff due to soil erosion or entrainment of sediment particles in the river
- Transport of contaminated soil particulates via wind or soil/sediment-disturbing activities to surrounding terrestrial areas and/or surface water bodies
- Leaching of chemicals from surface/subsurface soils into groundwater via infiltrating precipitation (and potential discharge of contaminated groundwater into downgradient surface water bodies)
- Uptake by biota from soil/sediment and transfer to upper-level receptors

3.3 Exposure Pathways

3.3.1 An exposure pathway describes the mechanisms whereby receptors come into contact with site-related constituents or hazards. Exposure, and thus potential risk, can only occur if a complete exposure pathways exist.

3.3.1 Munitions and Explosives of Concern

3.3.1.1 In the case of MEC, the potential risk is the explosive hazard. MEC is generally stationary and typically requires both access and action by a receptor to complete the exposure pathway. That is, potential receptors must not only have access to an area that contains MEC, but the receptor's activities must be such that there is interaction with the MEC item sufficient to cause an unintentional detonation. Available tools for a MEC hazard assessment limit evaluations of risk to human receptors only; the tool is also limited to terrestrial sites only. Humans are known to actively interact with MEC and death and maiming are known to occur. There are no known data to indicate that ecological receptors actively interact with MEC in a manner to cause an unintentional detonation—although the possibility cannot be excluded, the probability is considered negligible.

3.3.1.2 With the exception of a small portion along the south-central margin of DSA 5, DSAs 4, 5, and 6 are currently undeveloped and largely inaccessible. If MEC are present in the developed portion of DSA 5, then a resident, occasional maintenance worker, industrial/commercial worker, recreator/trespasser, or construction worker could potentially be exposed to surface and/or subsurface items (Figure 3-2). Interaction with MEC items in this area may include treading underfoot on MEC items located on the surface or near-subsurface and during the performance of intrusive actions that could encounter subsurface MEC. There has also been a history of utility construction in the eastern portion of DSA 5, so construction and/or maintenance workers in this area could also be exposed to MEC through

similar mechanisms. The current exposure pathways for DSAs 4 and 6 include recreators/trespassers. It is also known that there is underwater infrastructure (e.g. utility lines) in the Raritan River adjacent to the former Arsenal property. The presence of nearby infrastructure suggests that the islands could be accessed by construction workers for infrastructure repairs and/or construction of new infrastructure.

3.3.1.3 Future land use is expected to be the same as current land use in DSAs 4, 5, and 6, so the MEC exposure pathways are anticipated to be the same as under the current land use scenario. One thing that may change in the future is accessibility to the islands in the Raritan River, including DSAs 4 and 6. Although the islands have limited accessibility under current surrounding land use, the Lower Raritan Green Infrastructure Master Plan shows that areas adjacent to the islands, located on the former Raritan Arsenal, may be developed in the future for public recreational use. The potential future recreational use includes a kayak trail that could increase access to the islands. The pathway analysis for exposure to potential MEC in DSAs 4, 5, and 6 is illustrated on Figure 3-2.

3.3.2 Munitions Constituents

3.3.2.1 Human Health Exposures

3.3.2.1.1 The land use and exposure profile for DSAs 4, 5, and 6 is generally consistent with sites that include dredge spoils and wetlands located along the river front of the former Arsenal, including Areas 6, 6A, 6B, 11, and 12. In general, the DSA is considered a predominately undeveloped wetland and this description especially applies to DSAs 4, 5, and 6. Under current conditions, most of DSAs 4, 5, and 6 are difficult to access because there are no roads and within the marsh there is dense vegetation and the presence of numerous stream channels greatly inhibits travel. DSAs 4 and 6 are islands located in the Raritan River that have no developed areas for boat access. An occasional maintenance worker or recreational user/trespasser could potentially access various areas of the DSAs 4, 5, and 6 under current conditions, but this scenario is considered unlikely based on the conditions encountered. A small portion of DSA 5 is currently developed and contains residential housing with nearby industrial facilities. Future use is expected to remain the same across DSAs 4, 5, and 6 except as described in Section 3.3.1.3. The pathway analysis for human exposure to potential MC in DSAs 4, 5, and 6 is illustrated on Figure 3-3.

3.3.2.2 Ecological Exposures

3.3.2.2.1 Exposures for ecological receptors are typically limited to surface water, surface sediment, and surface soil. Groundwater is generally considered only as a transport medium because there are no ecological exposures to groundwater until it discharges to a water body or surfaces as a seep, at which case it transitions to surface water. Therefore, groundwater is not considered as part of the ecological exposure scenario.

3.3.2.2.2 The habitat within the DSA is a combination of old field habitat, estuarine emergent wetland (*Phragmites*) habitat, open water habitat of the Raritan River, and a small portion of developed habitat (Weston, 2008). The marshes are dominated by common reed marsh, saltwater cordgrass, and marsh hay (Dames & Moore, 1993). On dredged spoil substrates, the plant communities consist of fewer species with lower vigor, which may be due to unfavorable soil conditions such as low nutrient availability, soil moisture problems, and unfavorable pH or iron content (Dames & Moore, 1993). Periodic flooding of the river may also affect plant communities in the relatively low-lying dredge spoil areas. Based on the habitats and biota present, and what is known about the nature of the potential source area, there are potentially complete exposure pathways for primarily aquatic and semi-aquatic receptors (e.g., aquatic invertebrates, fish, and semi-aquatic bird species) associated with the Raritan River. Terrestrial habitats in DSA 5 are developed and are unlikely to provide viable habitat for most wildlife species.

3.3.2.2.3 An exposure route describes the specific mechanism(s) by which a receptor is exposed to a chemical present in an environmental medium. Lower trophic level receptors, such as aquatic invertebrates are exposed mainly via direct contact with contaminated sediment or surface water. The primary routes of potential exposure for fish at DSAs 4, 5, and 6 are expected to be:

- Direct contact with and ingestion of contaminated abiotic media (surface water or sediment)
- Ingestion of contaminated animal or plant tissues for chemicals that have entered food webs

3.3.2.2.4 The primary routes of potential exposure for upper trophic level receptors (primarily semi-aquatic birds) at DSAs 4, 5, and 6 are expected to be:

- Incidental ingestion of contaminated abiotic media (sediment) during feeding activities
- Ingestion of contaminated water
- Ingestion of contaminated plant and/or animal tissues for chemicals which have entered food webs
- Direct (dermal) contact with contaminated abiotic media (sediment or surface water)

3.3.2.2.5 Based upon the general fate properties (e.g., relatively high adsorption to solids) of the site-related chemicals present and the protection offered by hair or feathers, potential dermal exposures for upper trophic level receptors are not considered significant relative to ingestion exposures. Incidental ingestion of sediment and/or water during feeding, preening, or grooming activities is, however, and will be considered in the risk estimates. The pathway analysis for ecological exposure to potential MC in DSAs 4, 5, and 6 is illustrated on Figure 3-4.

SECTION 4

Site Characterization

4.0.1 The investigation at DSAs 4, 5, and 6 was conducted in accordance with the overall three-phase investigation approach for the project described in the RI/FS Work Plan (CH2M, 2016):

- Phase I: Activities consisted of digital geophysical mapping (DGM) and selecting anomalies for intrusive investigation. This phase of work required a land survey to mark boundaries for investigation and establish grid and boundary stakes. Surface clearance and vegetation reduction activities were also performed.
- Phase II: UXO-qualified personnel intrusively investigated anomalies to characterize the nature of the anomaly sources and whether any items may have released MC to the environment through breaching or degradation.
- Phase III: During this phase of work, per the RI/FS Work Plan, MC samples were to be collected to investigate the nature and extent of potential releases that may be associated with MEC finds identified as being breached or degraded, if warranted, based on the Phase II results. MEC were not found in DSAs 4, 5, and 6 during Phase II so Phase III sampling in these areas was not warranted; however, samples were collected from the former RAA in DSA 5 during the Phase III event to address the lack of MC samples at this location.

4.1 MEC Characterization

4.1.1 This section provides a description of the investigative methods used at DSAs 4, 5, and 6, including the DGM and associated data interpretation, anomaly reacquisition, and intrusive investigation. Due to safety concerns associated with access in DSAs 4 and 6, the Phase II anomaly investigation was not able to be completed in these two areas. Two phases of DGM were performed in DSA 5 because intrinsic noise in the towed array system identified in the initial data collected in December 2013 affected the selection of anomalies within the low amplitude range[2]. DSA 5 was subsequently resurveyed in February 2014. The timeframes for investigation in each area are provided in Table 4-1.

4.1.2 The statistical sampling design for the DSAs is based on a multi-stage sampling technique with utilization of both systematic sampling and simple random sampling methods at various stages of the investigation. The investigation approach was developed with involvement of USACE and NJDEP during a meeting held on September 5, 2013. A presentation from that meeting is provided in Appendix A. In summary, a systematic random sampling method was used to divide each site into transects to achieve 95% confidence that at least 95% of the remainder of each site has no DMM. At this stage each individual DSA was subdivided in a similar fashion and Visual Sampling Plan (VSP) was used to determine the quantity of transects that were needed to be surveyed in each area to achieve the desired confidence level. Transects were then distributed across each area to exceed the total transect length calculated by VSP with each area oversampled by at least 25% to increase confidence in the results. Slide 7 of the meeting presentation included in Appendix A summarizes the results (calculated and proposed transect lengths) from the first stage of the statistical sampling design. The DGM survey of the transects then established units for the 2nd stage of the statistical sampling. The second stage of sampling utilized simple random sampling (using the Estimating a Proportion method as explained in Section 4.1.5.3) to

[2] The sequence of DGM investigation and data interpretation in DSA 5, along with a root cause analysis for the resurvey, is further explained in Appendix A.

select the anomalies for intrusive investigation to achieve 95% confidence in the nature of the anomaly sources within the surveyed population.

4.1.1 Digital Geophysical Mapping

4.1.1.1 The objective of the DGM was to characterize the extent of geophysical anomalies that may be indicative of MEC and/or material potentially presenting an explosive hazard (MPPEH) within DSAs 4, 5, and 6. DGM and associated quality control (QC) was performed by NAEVA with additional QC performed by CH2M's munitions response (MR) QC Geophysicists. A summary of the work performed is provided below. Appendix A contains the DGM report and data for the terrestrial investigation areas including DSAs 4, 5, and 6.

4.1.2 Geophysical Techniques

4.1.2.1 The specific geophysical instruments used during the RI are described in the following sections.

4.1.2.1 DGM Instrumentation

4.1.2.1.1 The Geonics EM61-MK2 (EM61) was used exclusively for the DGM work completed at DSAs 4, 5, and 6. The EM61-MK2 is a high-resolution time-domain electromagnetic instrument designed to detect, with high spatial resolution, shallow ferrous and nonferrous metallic objects. The EM61-MK2's transmitter generates a pulsed primary magnetic field, which then induces eddy currents in nearby metallic objects. For this project the EM61-MK2 was used to measure eddy currents at four distinct time intervals. Measurement using earlier time gates provided enhanced detection of smaller metallic objects. Using real-time kinematic global positioning system (RTK-GPS) for data positioning, a final target resolution of approximately 50 centimeters (cm) is expected after correction of other potential intrinsic positioning errors.

4.1.2.1.2 In DSAs 4 and 6, the EM61-MK2 surveys were conducted using a modified person-portable EM61-MK2 instrument, which was mounted to a sled and pulled through the marshy islands using an amphibious ARGO utility task vehicle. In DSA 5, DGM was performed by a vehicular towed array system consisting of three EM61-MK2 time domain electromagnetic induction detector coils mounted side by side and towed behind an ARGO utility task vehicle. Short sections of three transects located in DSA 5 that were not accessible to the towed-array system were surveyed with a person-portable single-coil EM61-MK2. Positioning of the DGM in all three areas was controlled through the use of RTK-GPS.

4.1.2.1.3 The DGM was conducted along 1-meter-wide (m; DSAs 4 and 6) or 3-m-wide (DSA 5) transects nominally spaced at 100-m intervals across DSAs 4 and 6 and the majority of DSA 5 (Figure 4-1). An exception to the standard transect spacing was planned and implemented across the former RAA in the northeastern portion of DSA 5. The DGM transects in this location were nominally spaced at 30-m intervals. Small gaps in the DGM survey coverage were caused by the presence of canals and berms throughout the survey area of DSA 5 and by the presence of very soft mudflats in DSA 4. Larger sections of DSA 5 could not be surveyed due to a housing development in the south-central portion of the area and canals and standing water that could not be safely crossed in the far western portion of DSA 5.

4.1.2.2 Analog Instrumentation

4.1.2.2.1 Handheld analog geophysical instruments were used for anomaly avoidance during site setup and for instrument-assisted visual reconnaissance during the intrusive anomaly investigations operations. Analog instruments were used for intrusive investigation work only in DSA 5 because the soft, swampy island terrain of DSAs 4 and 6 prevented access by investigation personnel.

All-metals Detectors

4.1.2.2.2 All-metals detectors are metal detectors that use electromagnetic fields to detect both ferrous and nonferrous metals. In application, the operator sweeps the instrument back and forth across the

area of interest and monitors the change in pitch of the sound emanating from the instrument. The change in pitch is the system response produced in the presence of nonferrous and ferrous metallic items. The White's XLT all-metals detector was used during the RI/FS.

Schonstedt GA-52Cx

4.1.2.2.3 The Schonstedt GA-52Cx fluxgate gradiometer is a handheld analog magnetometer used during the RI/FS. The instrument detects ferrous objects and ferromagnetic minerals and provides an audible signal that represents the magnitude and direction of the local magnetic field. In application, the operator sweeps the instrument back and forth across the area of interest and monitors the change in pitch of the sound emanating from the instrument. The change in pitch is the response to a secondary magnetic field produced by a ferrous metallic item. The Schonstedt was used in combination with an all-metals detector during the RI/FS.

4.1.2.3 Analog Geophysical Systems Quality Control

4.1.2.3.1 A rigorous QC program was implemented for analog geophysical system operations to ensure that instruments and processes were within specific standards. Table 4-2 outlines the QC tests performed, their applicability to specific operations, the performance standards, frequency of performance and the consequence of failure. Additional detail on QC methods, field QC Inspections, and corrective action processes is provided in Section 4, *Quality Control Plan*, of the RI/FS Work Plan (CH2M, 2016).

4.1.2.4 DGM Data Quality Objectives

4.1.2.4.1 The data quality objectives (DQOs) for investigation of the DSAs, as specified in the RI Work Plan, are described in Table 4-3a. The DQOs were met for the investigation at DSA 5. The DQOs were not met during the investigation of DSAs 4 and 6 because the nature of the subsurface anomalies identified by DGM could not be investigated due to unsafe site conditions and could not be characterized. The measurement performance criteria (MPC), and the test methods specific to the DGM surveys are summarized in Table 4-3b. A QC program was applied to the DGM operations to ensure all DQOs specific to the DGM surveys were accomplished. Exhibit 1 shows an overall chart of the QC steps.

4.1.2.4.2 The geophysical systems were field tested as specified in the Geophysical Investigation Plan included in the RI/FS Work Plan (CH2M, 2016). A summary of the tests performed for DGM instrumentation is presented in Table 4-4. The geophysical subcontractors and CH2M performed QC of geophysical data and data deliverables at each step of the processing path. Results were checked by the subcontractor's QC geophysicist before delivery to CH2M and subsequently checked by the CH2M QC geophysicist. Additional details on QC field testing are provided in the geophysical investigation report (Appendix A).

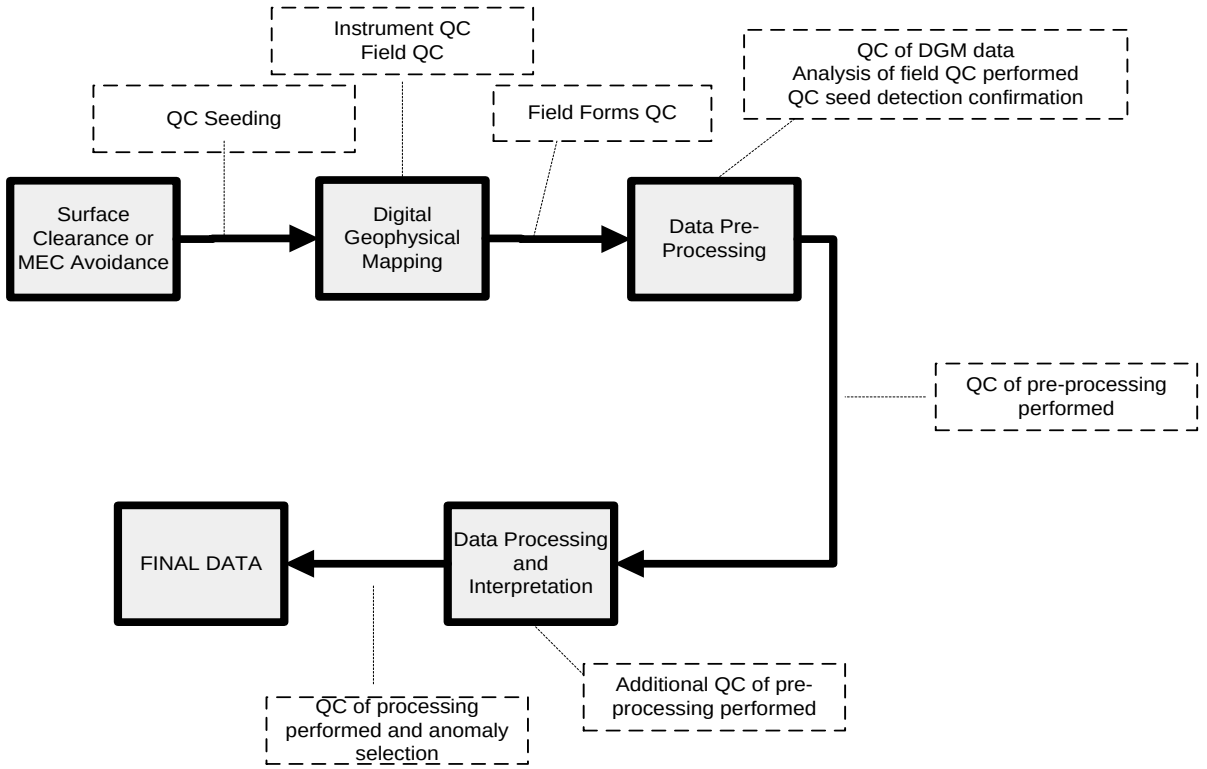


Exhibit 1. Overview of DGM Process Quality Control

4.1.2.5 Geophysical System Verification

4.1.2.5.1 The geophysical system verification (GSV) process was used to validate EM61-MK2 towed-array and person-portable systems prior to and during use for site surveys. The GSV is a physics-based presumptively selected technology process in which signal strength and sensor performance are compared to known response curves of industry standard objects (ISOs) to verify DGM systems prior to and during site surveys. The process is designed to perform initial verification of EM61-MK2 systems using an instrument verification strip (IVS) followed by a blind seeding program for continued verification throughout the field operations.

4.1.2.5.2 The ISOs used were 1-inch (2.54-cm) by 4-inch (10.16-cm) steel pipes[3]. The IVS test was conducted in accordance with the RI/FS Work Plan (CH2M, 2016) as described in the IVS Report (Appendix B). The EM61 was verified as being within industry standards and meeting project measurement quality objectives (MQOs).

4.1.2.5.3 ISOs were also placed as blind seeds in the shallow subsurface at locations unknown to DGM survey and data processing personnel. QC seed items were placed such that, on average, one seed item was encountered for each day of DGM survey. (Note that QC seeds were not placed in wetlands because of logistical constraints.) The seed locations were checked using a handheld analog geophysical instrument to confirm that no existing anomalies were present at the seed location. Once placed, the orientation and inclination were recorded and depth to center of mass and locations of all seeded items was surveyed, and the locations provided to the CH2M QC Geophysicist. The items were placed at easily detectable depths to have a signal-to-noise ratio that allows comparison to known industry standard target values. Detection of the QC seed items was monitored by the CH2M QC Geophysicist. All blind seeds were successfully detected, selected and recovered during the DGM surveys and intrusive investigation processes.

[3] McMaster-Carr online catalog part number 44615K466. http://www.mcmaster.com/.

4.1.2.5.4 The systems were also validated through the process illustrated in Exhibit 1 and the criteria shown in Table 4-3b in accordance with the Geophysical Investigation Plan (Attachment F of the RI/FS Work Plan).

4.1.2.6 Data Interpretation

4.1.2.6.1 Each set of data was evaluated with respect to anomaly characteristics such as amplitude, size, shape, noise, and positional data) as detailed in the Geophysical Investigation Report (Appendix A).

4.1.2.6.2 A threshold value of 3 millivolts (mV) in Channel 2 was chosen based on the need to target small munitions items and characterize MEC or MPPEH present. Production and daily static test data were monitored to ensure the threshold level was sufficiently above local background and noise levels, and targets were selected from geophysical data using the UX-Detect module. The UX-Detect module within Oasis Montaj identifies peak amplitude responses associated with, but not limited to, munitions. Single-source anomalies may generate multiple target designations depending on shape and orientation. Initial target selections were auto-selected using the Blakely Test within the UX-Detect module based on the Channel 2 data of the EM61-MK2 bottom coil. Data profiles corresponding to the anomalies selected by Geosoft were then analyzed by trained geophysicists, with the targets evaluated as to their validity and position. Targets found to be invalid or incorrectly located were removed or adjusted. Additionally, anomalies that were not selected by the UX-Detect module, yet deemed to represent potential MEC targets, were manually selected. All selected anomalies that occurred at or above the targeting threshold of 3 mV were identified using a unique identification (ID) number. If a target response exhibited adequate decay yet was below the targeting threshold, it was selected as a target and noted as a below-threshold pick.

4.1.3 DGM Data Collection Support

4.1.3.1 The following major activities were conducted as part of the terrestrial DGM for the RI/FS:

- Performed surface clearance to ensure site activity safety and remove surface metal that would impede subsurface target detection
- Performed vegetation reduction in conjunction with anomaly avoidance to prepare transects for geophysical operations
- Established an IVS using anomaly avoidance for DGM system validation
- Established survey stakes incorporating anomaly avoidance procedures as survey control for DGM crews
- Buried “blind” QC seeds (except in wetland areas due to access)
- Processed and interpreted DGM data and selected statistically representative sample of DGM anomalies potentially representing munitions

4.1.4 DGM Results – DSA 4

4.1.4.1 No MEC/MPPEH or munitions debris (MD) was identified on the surface at DSA 4 during the surface clearance. To include anomalies potentially related to munitions components at DSA 4, as well as those potentially representing fully intact munitions items, a threshold of 3 mV in the second EM61-MK2 time gate was selected for anomaly identification. A total of nine anomalies were identified as either Type 1 or Type 6 anomalies along the DGM transects (Table 4-5; Figure 4-1). One of the anomalies was related to a QC seed item, so eight anomalies with unknown metallic sources that could potentially be MEC or MPPEH in the subsurface were detected. A low density of anomalies was detected in DSA 4 so a geostatistical analysis was not performed and all anomalies were slated for intrusive investigation;

however, the anomalies at DSA 4 could not be investigated due to safety concerns associated with the very soft nature of the island terrain.

4.1.5 DGM Results – DSA 5

4.1.5.1 No MEC/MPPEH or MD was identified on the surface at DSA 5 during the surface clearance. The investigation at DSA 5 included two phases of DGM, a Time-domain Electromagnetic Towed Array Detection System (TEMTADS 2x2) investigation, and the subsequent intrusive investigation, which was based on the second phase of DGM work and the TEMTADS survey results. The initial phase of DGM work occurred in December 2013 and a total of 543 Type 1 anomalies were detected. Two hundred twenty-five (225) of the 543 anomalies were selected for investigation (using the Estimating a Proportion method process explained in Section 4.1.5.2), to achieve a 95 percent confidence in characterizing the makeup of the anomaly population. The TEMTADS 2x2 investigation was then used in DSA 5 to characterize a select set of anomalies located in close proximity to buildings that would require evacuations if the anomalies were to be intrusively investigated. The TEMTADS 2x2 investigation locations were selected based on the initial DGM data and it was subsequently determined that intrinsic noise in the initial DGM data set affected the selection of anomalies in the low amplitude range (i.e., a greater number of Type 1 anomalies were indicated in the data than were actually present). A second phase of DGM was subsequently performed in late February 2014 and a new set of anomalies were selected for investigation with consideration of the TEMTADS survey results. The text in Sections 4.1.5.1 through 4.1.5.3 provides an explanation of the DGM survey and anomaly selection process with focus on the second phase of DGM work, which is used to characterize DSA 5. The TEMTADS survey methods and results are explained in Section 4.1.5.4.

4.1.5.1 DSA 5 Anomaly Detection

4.1.5.1.1 During the second phase of DGM work at DSA 5, a total of 91 anomalies[4] were detected using a threshold of 3 mV in the second EM61-MK2 time gate. Three of the identified anomalies were related to QC seed items, so there was a total of 88 anomalies identified that could potentially be MEC or MPPEH in the subsurface. As explained in Section 4.1.5.4, a total of 23 real anomalies were characterized by TEMTADS prior to the second phase of DGM investigation, so in total there were 111 real anomalies detected within DSA 5. The DGM mosaic maps provided in Appendix A show a relatively high density of anomalies in the west portion of DSA 5 and a relatively lower density of anomalies in the central and eastern portions of DSA 5.

4.1.5.2 Statistical Selection of Geophysical Anomalies

4.1.5.2.1 To determine if the identified DGM anomalies are related to munitions items, a statistically representative subset of the identified anomalies must be investigated. The Estimating a Proportion method, described below, was used to calculate the number of randomly selected DGM anomalies that should be characterized to estimate, with a 95 percent confidence level and ± 5 percent sampling error, the proportion of munitions-related to non-munitions-related items within the population of anomalies detected along the DGM transects.

[4] The total number of anomalies detected during the second phase of DGM work includes all point source anomalies as well as suspected culture requested to be investigated by USACE, anomalies selected below the established threshold because they are suspected to be metallic in nature, and anomalies present in the 2013 and 2104 data even if the anomaly was detected below the 3-mV threshold in one of the data sets.

4.1.5.3 Estimating a Proportion Method

4.1.5.3.1 When a population size is large or unknown, the necessary sample size of DGM anomalies to be characterized can be estimated using the following statistical sample size formula:

$$n_0 = \frac{Z_\alpha^2 pq}{e^2}$$

Z_α = desired confidence level
p = proportion of DGM anomalies classified as munitions-related
q = proportion of DGM anomalies classified as non-munitions-related (q = 1-p)
e = acceptable margin of error for proportion being estimated
n_0 = statistical sample size for a large population

4.1.5.3.2 To conservatively estimate the variance of proportional variables (i.e., munitions-related or non-munitions-related), pq (in the equation above), a population proportion of 50 percent (p=0.5) was estimated to maximize the variance, and subsequently maximize the sample size. Using a z-statistic for a 95 percent confidence level (Z_α=1.96) and a margin of error of 5 percent (e=0.05), the solution for n_0 becomes:

$$n_0 = \frac{Z_\alpha^2 pq}{e^2} = \frac{1.96_\alpha^2 (0.5)(0.5)}{0.05^2} = 384$$

4.1.5.3.3 A maximum of 384 randomly selected DGM anomalies was estimated for classifying, with 95 percent confidence level and ± 5 percent sampling error, the proportion of munitions-related to non-munitions-related DGM anomalies in a large or unknown population.

4.1.5.3.4 Following the estimation of the population size above, the following finite population correction was used to reduce the number of anomalies required to obtain the same confidence level:

$$n_1 = \frac{n_0}{1 + \left(\frac{n_0}{N}\right)}$$

n_1 = adjusted statistical sample size for a finite population
n_0 = statistical sample size for a large population
N = size of the population (number of DGM anomalies)

4.1.5.3.5 The results of this calculation for various population sizes at a 95 percent confidence level are shown on Figure 4-2 (figure is shown here to facilitate ease of review).

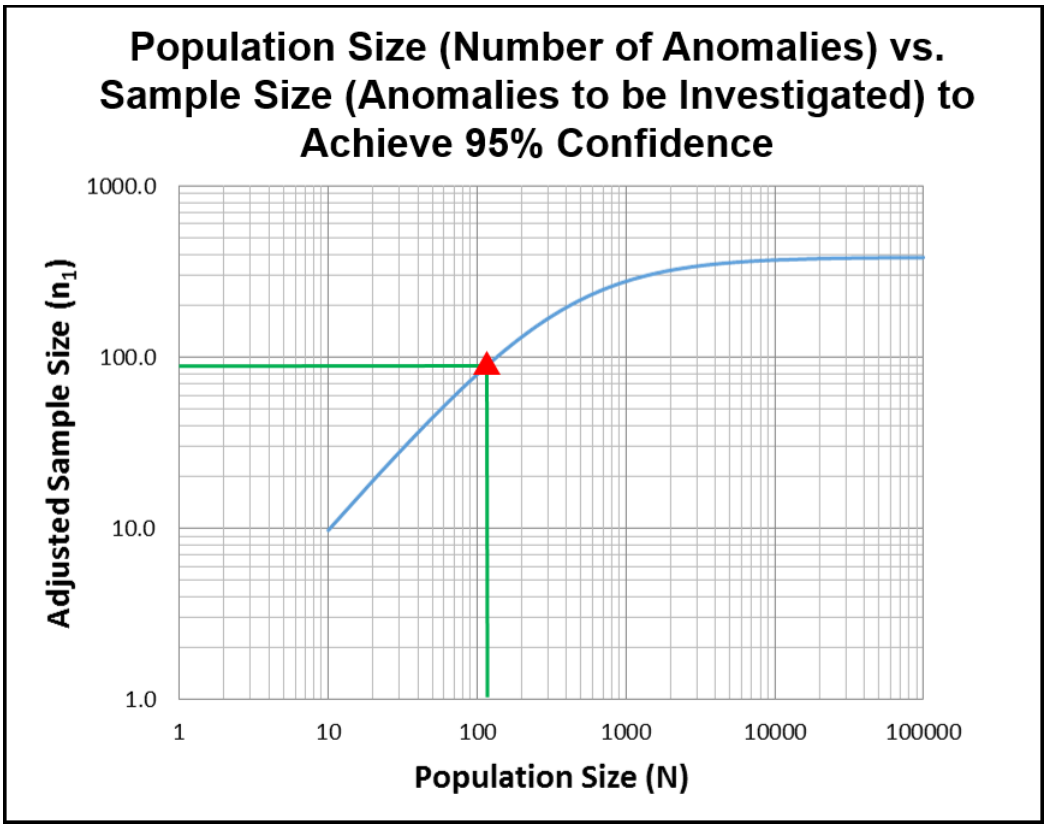


Figure 4-2. Estimating a Proportion Sample Size

4.1.5.3.6 The finite population correction equation used a random number selector process and excluded the anomalies related to QC seed items. This means that of the 114 anomalies identified along the DGM transects, 111 anomalies were used as the population size ("N" in the equation) to calculate the finite population correction:

$$n_1 = \frac{n_0}{1+\left(\frac{n_0}{N}\right)} = \frac{384}{1+\frac{384}{111}} = 86$$

4.1.5.3.7 The result shows that investigating and classifying 86 anomalies will provide a statistically derived estimate of the distribution of munitions-related to non-munitions-related items present among the anomalies identified along the DGM transects at 95 percent confidence level and within ± 5 percent sampling error. The randomly selected anomalies are shown on Figure 4-1.

4.1.5.4 TEMTADS 2x2

4.1.5.4.1 TEMTADS 2x2 was performed as part of the investigations at DSA 5 to reduce the number closures and/or evacuations that would have to be performed to investigate anomalies located in close proximity to active businesses or residential areas. The TEMTADS 2x2 is an advanced electromagnetic induction (EMI) sensor that supports the use of advanced analyses for classification of buried metal at MRSs. The objective of the TEMTADS 2x2 data collection and analysis is to classify, without intrusive investigation, pre-identified geophysical anomalies with the intent of determining which anomalies may represent targets of interest (TOI) (either UXO, discarded military munitions [DMM], or practice munitions items).

4.1.5.4.2 Details of the TEMTADS data collection, QC procedures, data analysis, and results are provided in Appendix C. The key components of the TEMTADS effort at DSA 5 consisted of the following:

1. Collection of TEMTADS data over anomalies selected from previously collected EM61-MK2 data.
2. Analysis of the data using physics-based models to extract target parameters or "features" such as size, shape, and materials properties.
3. Use of extracted parameters directly, and/or by comparison with a "library" of known munitions items, to construct a ranked (i.e., prioritized) anomaly list.

4.1.5.4.3 Of the 543 anomalies initially identified during the first phase of DGM at DSA 5, a total of 30 anomalies were selected for TEMTADS investigation. All the selected anomalies were investigated with TEMTADS, along with one QC seed. Three "Looks Like TOI" items, including the QC seed, were identified based on a comparison of the items' measured geophysical characteristics to a library of geophysical characteristics of munitions items. Disregarding the QC seed, the remaining two "Looks Like TOI" items were identified to match a 105-millimeter (mm) projectile and a grenade. The remainder of the TEMTADS classifications for DSA 5 consisted of: one anomaly classified as "Could Not Analyze," 13 anomalies classified as "Inconclusive," and 14 anomalies classified as "Does Not Look Like TOI." The locations of the 31 anomalies and their TEMTADS classification is presented on Figure 4-3. All anomalies classified as "Looks Like TOI," "Could Not Analyze," and "Inconclusive" (18 total including one QC seed) were scheduled for subsequent characterization by intrusive investigation.

4.1.5.4.4 The second phase of the DGM survey was conducted after the 31 anomalies were interrogated by TEMTADS. A check of the anomalies detected during the second survey indicated that eight of the TEMTADS interrogations were conducted over locations where an anomaly was not detected during the second survey (Table 4-6). The TEMTADS classification at each of these eight locations was "Does Not Look Like TOI;" however, these results are not considered in the characterization of DSA 5 since the interrogations were performed over locations where targets were selected from intrinsic noise in the data. The remaining 23 TEMTADS interrogation locations were either intrusively investigated (18 locations) or the interrogation location corresponds with a real anomaly detected during the second DGM survey (Table 4-6).

4.1.6 DGM Results – DSA 6

4.1.6.1 No MEC/MPPEH or MD was identified on the surface at DSA 6 during the surface clearance. To include anomalies potentially related to munitions components at DSA 6, as well as those potentially representing fully intact munitions items, a threshold of 3 mV in the second EM61-MK2 time gate was selected for anomaly identification. A total of five anomalies identified as either Type 1 or Type 6 were identified along the DGM transects (Figure 4-1; Table 4-6). One of the anomalies was related to a QC seed item, so four anomalies with unknown metallic sources that could potentially be MEC or MPPEH in the subsurface were detected. Because of the low density of anomalies in the area, a geostatistical analysis was not performed and all anomalies were slated for intrusive investigation; however, the anomalies at DSA 6 could not be investigated due to safety concerns associated with the very soft nature of the island terrain.

4.1.7 Anomaly Reacquisition

4.1.7.1 Following the completion of the DGM and data evaluation, the intrusive investigation of the selected anomalies (Phase II investigation) was initiated with the anomaly reacquisition. Although DSAs 4 and 6 were solid enough (partially frozen) in March 2014 to perform a surface clearance and DGM survey, during reacquisition at DSAs 4 and 6 in June 2014 the islands were so soft that investigation personnel sunk into the mud up to their waist. Therefore, due to safety concerns associated with access in DSAs 4 and 6, reacquisition was only performed for DSA 5. A list of target anomalies and their

coordinates was generated and provided to the advance intrusive investigation team for reacquisition using an RTK-GPS. The locations of each selected anomaly were flagged by the anomaly reacquisition team using a blue polyvinyl chloride survey flag placed 1 foot north of the actual field location. Each flag was marked with a unique anomaly ID.

4.1.8 Evacuations

4.1.8.1 The TEMTADS data were used to classify metallic items in the subsurface to reduce the number of potential closures and/or evacuations that would be required to safely investigate the anomaly sources detected in DSA 5. Thirty-one anomalies were surveyed by TEMTADS within 450 feet of the residential area that borders DSA 5 along its southern edge. Fifteen of the anomalies could not be eliminated as possible munitions-related items. These 15 anomalies had to be intrusively investigated, requiring evacuations for residences that were encumbered by the 450-foot exclusion zone. The evacuations were coordinated by CH2M and USACE in cooperation with the Sayreville Office of Emergency Management. Residents were notified in advance of the work and special accommodations were made, as needed, since the residents were required to be out of their homes from 9:00 a.m. to 3:00 p.m. on June 9, 2014. The intrusive investigation work requiring evacuations was completed on June 9, 2014.

4.1.9 Intrusive Investigation

4.1.9.1 After reacquisition, the intrusive investigation team mobilized to DSA 5. The investigation team used a Whites XLT all-metals detector and an EM61-MK2 time domain portable metal detector to locate each anomaly based on the proximity of the survey flag placed by the reacquisition team. The following general procedure was used to manually investigate anomalies:

- Each anomaly was considered to be MEC/MPPEH until it was excavated and identified. Each excavation was initiated adjacent to the anomaly and continued downward until the excavation reached a depth below the top of the item as determined by frequent inspection with geophysical instruments.
- The investigation team then expanded the excavation sidewall to expose the metallic item for inspection and identification without moving or disturbing the item.

4.1.9.2 Once an item was removed (when possible) from its location, the location was rechecked with the EM61-MK2 to ensure that no other items were present.

4.1.9.1 Accountability and Records Management of MEC

4.1.9.1.1 The intrusive investigation was documented through the use of the CH2M Munitions Response Site Information Management System (MRSIMS), which is a cradle-to-grave data management system designed to track and query data for MR projects. MRSIMS operates in a multiple contractor-capable environment with tools for digital data capture, storage, analysis, and quality control. Field operations data were captured using handheld devices and mobile forms-based software. The data were then transferred to and validated within a centralized relational database before being distributed. Manual dig sheets were also maintained as a backup and for QC purposes.

4.1.9.2 Quality Control

4.1.9.2.1 QC methods for the MEC investigation included equipment checks, process and procedural checks, QC seeds and inspection of intrusive investigation operations per the QC Plan in the RI/FS Work Plan (CH2M, 2016). There were no QC failures identified during the intrusive investigation conducted at DSA 5.

4.2 MC Characterization

4.2.1 According to the RI/FS Work Plan (CH2M, 2016), the primary objective of Phase III was to perform MC sampling to determine the nature and extent of potential releases that may be associated with MEC finds, if warranted, based on observations about the condition of items recovered during the Phase II investigation. Since MEC were not found during the Phase II investigation at DSA 5, there is no source of MC and, therefore, MC sampling to achieve this objective was not performed.

4.2.2 A secondary objective of the Phase III investigation, specific to DSA 5, is to test for the presence of MC potentially associated with the previous MEC RAA performed by UXB in 1993. The removal action focused only on removing MEC items and MC were not sampled at that time. The condition of the removed items was not thoroughly documented; therefore, MC sampling in the area was performed on August 31, 2016.

4.2.3 The DSA 5 RAA area is documented to be 4.5 acres in size (Figure 4-4). From July through October 1993, 245 items were removed from the DSA, consisting of 231 French Rifle grenades and 14 Mk II hand grenades (UXB, 1994). There was no indication of breached or deteriorated items noted nor was there any indication of soil contamination. A record of the item depths was not found, but the report does indicate that the excavation went deeper than 44 inches although the final depth is not documented in the report. Soils removed from the excavation were placed in a temporary stockpile and placed back into the excavation after completion of the MEC/MPPEH removal.

4.2.4 Based on the historical information, a 4.5-acre grid was established across the RAA and eight primary sample locations were chosen by randomly locating one sample within each of the eight sample grid cells (Figure 4-4). Two additional locations, SB41 and SB42, were selected at the time of sampling. No evidence of soil contamination was observed in the field so the two additional boring locations were selected to fill spatial data gaps. The sample depths for all borings were designed to fall within the depth interval at which the removal action is known to have occurred. Two samples were collected by hand auger from each boring; 10 surface soil samples were collected from 0 to 0.5 feet below ground surface (bgs) and 10 subsurface soil samples were collected from depths of 1 to 3 feet. Soil samples were analyzed by a fixed laboratory using Method SW-846 8330B for explosives and Method SW-846 6010B for select metals (barium, chromium, iron, lead, manganese, molybdenum, nickel, and vanadium). The select metals were chosen based on review of known metals associated with the previous ordnance items recovered from the area (French Rifle grenades and Mk II hand grenades).

Remedial Investigation Results

5.0.1 Results of the intrusive anomaly investigations for DSAs 4, 5, and 6 are discussed in Sections 5.1, 5.2, and 5.3, respectively. The intrusive investigation results for DSAs 4, 5, and 6 are shown on Figure 5-1.

5.1 DSA 4 Results

5.1.1 No MEC/MPPEH or MD was identified at DSA 4 during the surface clearance in March 2014. The nine anomaly locations detected in DSA 4 were not able to be intrusively investigated because the islands were so soft that investigation personnel sunk into the mud up to their waist and therefore the island was unsafe to access.

5.2 DSA 5 Results

5.2.1 No MEC/MPPEH or MD was identified in DSA 5 (Table 5-1; Figure 5-1). All anomalies in DSA 5 consisted of nonmunitions scrap such as rebar, pipe, wire, fence post, angle iron, and other miscellaneous pieces of scrap metal. A survey monument was also found and several anomalies are associated with an old steel plank roadway. Depth of the recovered anomalies ranged from 0 inches (at ground surface) to 48 inches bgs. All the nonmunitions scrap items were either left in place or disposed of in a scrap bin as appropriate. The investigation record for DSA 5, as presented in Table 5-1, shows that four QC seeds were recovered during intrusive operations at DSA 5 and that one of the proposed anomaly investigation locations was observed to be under water. The QC seeds were returned to the UXO QC specialist, who also performed QC of the completed dig locations and verified that the intrusive operations were conducted in accordance with the RI/FS Work Plan documents.

5.2.2 Including the intrusive investigation and TEMTADS survey results, a total of 83 actual anomaly locations were investigated and are used to characterize DSA 5 (Tables 4-6 and 5-1). The number of anomalies characterized equates to a greater than 90 percent confidence that there are no MEC items within the population of anomalies detected at DSA 5. The total anomaly count includes 78 anomaly locations that were intrusively investigated (Table 5-1) as well as five anomaly locations that were surveyed by TEMTADS 2x2 and were classified as “Does Not Look Like TOI” (Table 3-6). The five “Does Not Look Like TOI” TEMTADS 2x2 locations were verified to be located less than 1 m from the location of an actual anomaly detected during the second-phase DGM work, which serves as a verification that the TEMTADS 2x2 data were collected over an actual anomaly. These five “Does Not Look Like TOI” locations were not further investigated by intrusive operations.

5.2.1 Removal Action Area MC Sampling Results

5.2.1.1 Ten surface and 10 subsurface soil samples were collected from the DSA 5 RAA and analyzed for explosives and select metals. For purposes of identifying the presence/absence of potential impacts, the analytical results for the surface and subsurface soil samples are compared to U.S. Environmental Protection Agency (EPA) Residential and Industrial Soil Regional Screening Levels (RSLs), New Jersey Department of Environmental Protection (NJDEP) Soil Remediation Standards (SRS) for Residential and Non-Residential Direct Contact, Soil Screening Levels (SSLs) to assess the soil to groundwater leachability pathway, and background threshold values (BTVs) for the DSAs (Tables 5-2 and 5-3). The data are further evaluated through human health and ecological risk screening evaluations as described in Sections 6 and 8, respectively. The BTVs were developed based on results of the Phase III sampling effort performed in the DSAs for this RI as documented in Appendix D. Screening results for individual surface

and subsurface soil samples are provided in Tables 5-4 and 5-5, respectively. The laboratory and data validation reports are provided in Appendix E.

5.2.1.2 Explosive constituents were detected in less than half of the surface and subsurface soil samples collected from the RAA (Tables 5-2 and 5-3). None of the detected explosive compound concentrations exceed the RSL or NJDEP criteria. Infrequent SSL exceedances were identified for 4-nitrotoluene and nitrobenzene in surface soil and 4-nitrotoluene and nitroglycerin in subsurface soil. Explosives constituents were detected in surface soil samples collected from locations SS33, SS38, SS40, and SS41 (Table 5-4). The detected constituents in surface soil include: 1,3,5-trinitrobenzene, 2-amino-4,6-dinitrotoluene (2,4,6-dinitrotoluene), 4-nitrotoluene, and nitrobenzene. Explosives constituents were detected in the subsurface soil samples collected from locations SB38, SB40, and SB41 (Table 5-5). The detected constituents in subsurface soil include nitrocellulose[5], 4-nitrotoluene, and nitroglycerine. Explosive constituents were detected in samples collected from the central and southwestern portions of the RAA; however, there are other samples collected from these same general areas (e.g., SB37, SB39, and SB42) that did not contain explosives. 4-Nitrotoluene was the only explosive constituent detected in both surface and subsurface soil at locations SS40/SB40 and SS41/SB41. Overall, the low magnitude and frequency of the explosive compound detections suggests that the soils do not appear to have been impacted by a release from MEC formerly recovered from the area.

5.2.1.3 The selected metals were detected in surface and subsurface soil at all 10 sample locations, but only three of the constituents, iron, manganese, and vanadium, exceeded the residential RSLs (Table 5-3). Vanadium is the only one of these three metals to exceed the NJDEP residential direct contact SRS values as well and none of the metals concentrations exceeded the nonresidential direct contact NJDEP SRS values. Iron, manganese, and vanadium concentrations exceed the residential RSLs at all 10 of the subsurface soil locations and all but one (SS34) of the surface soil locations. Overall, the concentrations of three metals exceeded the background upper tolerance limits (UTLs) calculated for the DSAs. In surface soil, manganese exceeded the background UTL at one location (SS40) and vanadium exceeded the background UTL at two locations (SS36 and SS38). In subsurface soil, iron exceeded its background UTL at three locations: SB37, SB40, and SB41 (Table 5-5). Although background UTL exceedances were identified, the sample concentrations are within the same order of magnitude as the background UTL and in some cases, only nominally exceed the background value. For instance, vanadium was detected at concentrations of 120 milligrams per kilogram (mg/kg) and 123 mg/kg at locations SS38 and SS40, respectively, and the background UTL for vanadium is 119 mg/kg. The concentrations of iron, manganese, and vanadium in site soil were further evaluated using tests of central tendency and permutation tests to determine if site concentrations were statistically greater than background levels, as described in Section 5.4.

5.2.1.4 Exceedances of SSLs for groundwater leachability were also identified in the surface and subsurface soil samples collected from the DSA 5 RAA. In surface soil, the detected concentrations of 4-nitrotoluene (two samples), nitrobenzene (one sample), iron (10 samples), lead (nine samples), and manganese (seven samples) were found to exceed SSLs (Table 5-2). In subsurface soil, the detected concentrations of 4-nitrotoluene (one sample), nitroglycerin (one sample), iron (10 samples), lead (nine samples), and manganese (four samples) were found to exceed SSLs (Table 5-3). Although the SSL exceedances were identified, for the reasons discussed above, the concentrations of these constituents in the RAA do not appear to be derived from a release related to MEC/MPPEH items that were formerly present in the RAA. Because potential impacts do not appear to be tied to a documented DoD release, no further evaluation of groundwater will be performed.

[5] Nitrocellulose analyzed by EPA USATHAMA/353.2 Modified.

5.3 DSA 6 Results

5.3.1 No MEC/MPPEH or MD was identified at DSA 6 during the surface clearance in March 2014. The five anomaly locations detected in DSA 6 were not able to be intrusively investigated because the island was so soft that investigation personnel sunk into the mud up to their waist and therefore the island was unsafe to access.

5.4 Site-to-Background Statistical Comparison

5.4.1 Three metals (iron, manganese, and vanadium) were detected in site soil at concentrations greater than their respective BTVs. Therefore, tests of central tendency were performed to determine with statistical confidence whether the concentrations of these three metals at DSA 5 are different, on average, from background concentrations. The appropriate type of central tendency comparison test is determined based on the statistical distribution of the two data sets. For cases where both data sets appear to be normally distributed, a t-test can be run on the raw data to determine whether the means of the two populations appear to be different from one another. The specific form of t-test (Student's t-test or Welch's t-test) is determined based upon whether the variances of the data sets can be considered equal. If the distributions of the data sets do not coincide or if they all are nonparametric, then the nonparametric Wilcoxon Rank Sum test typically is used for comparison of central tendency. This is a nonparametric version of a two-sample t-test and calculates whether the medians of the two distributions are different or similar.

5.4.2 A two-sample randomization (permutation) test for location based on the population means also was performed. A randomization test works by simply enumerating all possible outcomes under the null hypothesis, then seeing where the observed outcome fits in (Conover, 1999; Manly, 2007). A randomization test is also called a permutation test, because it involves permuting the observations during the enumeration procedure. For a one-sided upper alternative test, the calculated probability (commonly referred to as the p-value) is computed as the proportion of times that the differences of the means (or medians) in the permutation distribution are greater than or equal to the observed difference in means (or medians).

5.4.3 The comparisons were performed using a common null hypothesis that concentrations of each metal in the onsite sample population are less than or equal to background concentration levels. The tests were conducted using a significance level of 0.05 (corresponding to a 95 percent confidence level). If the calculated probability (p-value) from a test is below 0.05, a conclusion is drawn to reject the null hypothesis and instead determine that a significant test result exists. In these tests, a p-value is calculated, which is essentially the probability that the observed differences between the centers of the two sample sets occurred merely due to random variability in the data, or whether those differences are an indication that the center of the site population is greater than background.

5.4.4 Table 5-6 presents the results of the central tendency tests conducted using the surface and subsurface soil data (0 to 10 feet bgs) collected from DSA 5 and the surface and subsurface soil data (0 to 10 feet bgs) collected from the background reference areas (refer to Appendix D). Table 5-6 also includes the results of the Shapiro-Wilk test for normality and the F-test for equal variance. The concentrations of iron, manganese, and vanadium at DSA 5 were determined to be statistically greater than background.

SECTION 6

Human Health Risk Screening

6.0.1 An HHRS was conducted for the former RAA at DSA 5 to evaluate potential risks to human health associated with current and future exposures to MC. Although MEC was not identified at DSA 5, MC sampling was completed during the Phase III event to address the lack of MC samples at the former RAA. The results of the HHRS will be used in the site management decision-making process and will be used to support a request for no further action (NFA), as warranted.

6.0.2 This HHRS uses a streamlined approach to estimate potential risks associated with exposure to surface and subsurface soil at the former RAA within DSA 5. The HHRS was comprised of two main steps: 1) selection of chemicals of potential concern (COPCs) and 2) estimation of potential carcinogenic risks and noncarcinogenic hazards. Each of these steps is discussed below.

6.1 Exposure Setting and Potential Receptors

6.1.1 DSA 5 is considered a predominantly undeveloped wetland with areas that are difficult to access due to the presence of numerous stream channels and dense vegetation. The former RAA where the soil samples were collected is located in the northeast portion of DSA 5. Potential receptors within the former RAA under a current scenario include maintenance workers. Future use is expected to remain the same as current use; however, if the area is developed in the future, potential receptors would include maintenance workers, industrial/commercial workers, construction workers, recreational users/trespassers, and residents. Potential receptors could be exposed to soil at the former RAA through ingestion, dermal contact, and inhalation exposures.

6.1.2 A small portion of DSA 5 is currently developed and contains residential housing. It is unlikely the former RAA would also be developed for residential use; however, a residential scenario was included in the HHRS to evaluate an unrestricted land use scenario and provide information for site management decisions.

6.2 Selection of Chemicals of Potential Concern

6.2.1 A total of 10 surface soil samples (0 to 0.5 feet bgs) and 10 subsurface soil samples (1 to 3 feet bgs) collected from the former RAA were included in the HHRS. As mentioned in Section 4.2, the soil samples were collected in August 2016 and analyzed for explosives and select metals (barium, chromium, iron, lead, manganese, molybdenum, nickel, and vanadium). Chemicals that were not detected in the surface or subsurface soil samples were not included in the COPC screening.

6.2.2 The maximum detected concentration of each constituent in surface and subsurface soil was compared to the EPA's RSLs (EPA, 2018) for industrial and residential soil, as provided in Tables 6-1 and 6-2. RSLs for noncarcinogenic effects were based on a hazard index (HI) of 0.1 to account for the presence of multiple constituents acting on the same target organ. RSLs for carcinogenic effects were based on an excess lifetime cancer risk (ELCR) of 1×10^{-6}. If the maximum detected concentration exceeded the RSL, the constituent was selected as a COPC and was evaluated further in the HHRS. The BTVs established for the DSAs (Appendix D) were included in the COPC selection tables for informational purposes and were not used in the COPC screening, in accordance with the risk assessment approach provided in the RI/FS Work Plan (CH2M, 2016).

6.2.3 The following COPCs were identified for surface and subsurface soil at the former RAA within DSA 5:

- **Surface Soil:** Three metals (iron, manganese, and vanadium) were identified as COPCs for a residential scenario and no COPCs were identified for an industrial scenario (Table 6-1).
- **Subsurface Soil:** Three metals (iron, manganese, and vanadium) were identified as COPCs for a residential scenario and one metal (iron) was identified as a COPC for an industrial scenario (Table 6-2).

6.2.4 Manganese and vanadium were detected in surface soil at concentrations greater than their respective BTVs but their concentrations in subsurface soil were less than the BTVs. Iron was detected in surface soil at concentrations less than the BTV but detections of iron in subsurface soil exceeded the BTV. As described in Section 5.4, the concentrations of iron, manganese, and vanadium in site soil were determined to be statistically greater than background based on the results of the central tendency tests and permutation tests.

6.3 Approach Used to Estimate Potential Risks and Hazards

6.3.1 Potential human health risks are discussed separately for carcinogenic and noncarcinogenic COPCs because of the different toxicological endpoints, relevant exposure durations, and methods used to estimate risks. The COPCs (iron, manganese, and vanadium) identified in the HHRS have not been identified by the EPA as carcinogens and do not have carcinogenic toxicity values. Therefore, potential ELCRs were not estimated for the COPCs. Noncarcinogenic hazards were calculated for the COPCs using a ratio of the EPA's RSL (EPA, 2018) and the site-specific exposure point concentration (EPC).

6.3.2 The EPC for each COPC was calculated as the lower value of the maximum detected concentration and the 95 percent upper confidence limit (UCL). The EPA's ProUCL software was used to calculate the UCLs, and the recommendations provided by ProUCL were followed to select the appropriate UCL for each COPC. The ProUCL output for surface and subsurface soil is provided in Appendix F.

6.3.3 The noncarcinogenic hazard quotient (HQ) assumes that there is a level of exposure below which it is unlikely for even sensitive populations to experience adverse health effects. If the exposure level exceeds this threshold, there is the potential for noncancer health effects to occur. To assess the potential for noncarcinogenic health effects posed by exposure to multiple COPCs and exposure routes, an HI approach was used (EPA, 1989). This approach assumes that noncarcinogenic hazards associated with exposure to more than one COPC and/or exposure route are additive.

6.3.4 The RSLs incorporate multiple exposure routes (ingestion, dermal contact, and/or inhalation) and are therefore, based on an HI approach. The following equation was used to calculate a noncarcinogenic HI for each COPC:

$$HI = \frac{EPC}{RSL}$$

HI = Hazard Index (unitless)
EPC = Exposure Point Concentration (mg/kg)
RSL = Noncarcinogenic Regional Screening Level, based on an HI of 1 (mg/kg)

6.3.5 A cumulative HI was estimated by summing the HIs estimated for each COPC in surface and subsurface soil. The cumulative HIs were compared to the EPA's acceptable HI of 1 (EPA, 1989). Generally, if an estimated HI exceeds 1, there is the potential for adverse noncarcinogenic effects on the target organ associated with the HI exceedance. Therefore, target organs were identified for each constituent if the cumulative HI was greater than 1.

6.4 Summary of Potential Risks and Hazards

6.4.1 The estimated noncarcinogenic HIs for the COPCs identified in surface soil and subsurface soil are provided in Tables 6-3 through 6-5 and are summarized below for the industrial and residential exposure scenarios:

- **Industrial Scenario (Subsurface Soil):** Potential HIs were not estimated for surface soil because no COPCs were identified in surface soil for an industrial scenario. The HI for the one subsurface soil COPC (iron) was estimated at 0.1, which is less than the EPA's acceptable HI of 1 (Table 6-3).
- **Residential Scenario (Surface Soil):** The cumulative HI for the three surface soil COPCs (iron, manganese, and vanadium) was estimated at 2; however, there is no common target organ among the COPCs and the individual HIs for each COPC and target organ were less than or equal to the EPA's acceptable HI of 1 (Table 6-4).
- **Residential Scenario (Subsurface Soil):** The cumulative HI for the three subsurface soil COPCs (iron, manganese, and vanadium) was estimated at 2; however, there is no common target organ among the COPCs and the individual HIs for each COPC and target organ were less than or equal to the EPA's acceptable HI of 1 (Table 6-5).

6.4.2 Overall, the results of the HHRS indicate that the potential risks for MC detected in surface and subsurface soil are within acceptable levels for an industrial scenario and a residential (unrestricted) scenario. Therefore, the former RAA within DSA 5 is recommended for NFA based on the results of the HHRS.

SECTION 7

MEC Risk Management Methodology

7.0.1 In accordance with *Trial Period for Risk Management Methodology at FUDS MMRP Projects* (USACE, 2017b), a risk assessment was performed to evaluate if there are acceptable or unacceptable site conditions due to potential MEC presence at DSAs 4, 5, and 6. The risk assessment was performed to satisfy the requirements of 40 CFR § 300.175(d)(4).

7.0.2 The MEC Risk Management Methodology was applied to differentiate acceptable versus unacceptable site conditions. Using the site-specific CSM data, the risk assessment evaluated the likelihood of encounter, severity of encounter, and likelihood of detonation. This information was used to support the acceptable/unacceptable risk determination for a site. The risk assessment consists of four matrices:

- Matrix 1: Evaluates the likelihood of an MEC encounter based on access conditions and the amount of MEC.
- Matrix 2: Evaluates the severity of an incident based on the likelihood of encounter (determined in Matrix 1) and severity associated with unintentional detonation of the MEC items at the site.
- Matrix 3: Evaluates the likelihood of detonation based on MEC sensitivity and the likelihood to impart energy on an item.
- Matrix 4: Identifies acceptable or unacceptable site conditions, based on the results from Matrices 2 and 3.

7.0.3 The MEC Risk Management Methodology considered site-specific current or reasonably anticipated future land use scenarios.

7.1 DSA 5

7.1.1 Likelihood of Encounter

7.1.1.1 Matrix 1, the likelihood of a MEC encounter (see Table 7-1), is based on the access conditions and amount of MEC present.

Table 7-1. DSA 5: Matrix 1 – Likelihood of Encounter
Remedial Investigation Report, Former Raritan Arsenal, Edison, New Jersey

		Access Conditions (frequency of use)			
Likelihood of Encounter, Matrix 1: Amount of MEC vs. Access Conditions		**Regular** (e.g., daily use, open access)	**Often** (e.g., less regular or periodic use, some access)	**Intermittent** (e.g., some irregular use, or access limited)	**Rare** (e.g., very limited use, access prevented)
Amount of MEC	• MEC are visible on the surface and detected in the subsurface.	Frequent	Frequent	Likely	Occasional
	• The area is identified as a Concentrated Munitions Use Area (CMUA) where MEC are known or suspected (e.g., MD indicative of MEC are identified) to be present in surface and subsurface.	Frequent	Likely	Occasional	Seldom

Table 7-1. DSA 5: Matrix 1 – Likelihood of Encounter
Remedial Investigation Report, Former Raritan Arsenal, Edison, New Jersey

	Likelihood of Encounter, Matrix 1: Amount of MEC vs. Access Conditions	Access Conditions (frequency of use)			
		Regular (e.g., daily use, open access)	**Often** (e.g., less regular or periodic use, some access)	**Intermittent** (e.g., some irregular use, or access limited)	**Rare** (e.g., very limited use, access prevented)
Amount of MEC (cont.)	• MEC presence based on physical evidence (e.g., MD indicative of MEC), although the area is not a CMUA; or • The MEC concentration is below a project-specific threshold to support this selection (e.g., less than 1.0/acre at 95% confidence).	Likely	Occasional	Seldom	Unlikely
	• MEC presence is based on isolated historical discoveries (e.g., EOD report) prior to investigation; or • A DERP response action has been conducted to physically remove MEC and known or suspected hazard remains to support this selection (e.g., surface removal where subsurface not addressed); or • The MEC concentration is below a project-specific threshold to support this selection (e.g., less than 0.5/acre at 95% confidence).	Occasional	Seldom	Unlikely	Unlikely
	• MEC presence is suspected based on historical evidence of munitions use only; or • A DERP response action has been conducted to physically remove surface and subsurface MEC (evidence that some residual hazard remains to support this selection); or • The MEC concentration is below a project-specific threshold to support this selection (e.g., less than 0.25/acre at 95% confidence).	Seldom	Seldom	Unlikely	Unlikely
	• **Investigation of the MRS did not identify evidence of MEC presence**; or • A DERP response action has been conducted that will achieve unlimited use and unrestricted exposure (UU/UE).	***Unlikely***	Unlikely	Unlikely	Unlikely

7.1.1.2 **Access Conditions:** Access conditions are selected based on considerations of the access and frequency of use for the MRS. The land area of DSA 5 consists of predominately flat, low-lying, densely vegetated, marsh land. The preponderance of the land area is an undeveloped wetland that is currently owned by various entities. Under current conditions, except for the areas near roads and building along the roads, most of the DSA land area is difficult to access due to the presence of dense vegetation and stream channels in wetland areas. DSA 5 is also mostly undeveloped except for the south-central margin of the area, which contains residential housing units. Future land use is not anticipated to change. No known access restrictions (fencing, signage, etc.) are in place at DSA 5. As shown on the graphical CSM

(Figure 7-1) current potential receptors include maintenance and industrial/commercial workers as well as recreational users/trespassers and residents. Because DSA 5 is being assessed as a single site in which residential receptors are present in a portion of the site, the MEC risk assessment conservatively assumed "Regular" access (e.g., daily use, open access) for the project site.

7.1.1.3 **Amount of MEC:** The amount of MEC was determined using the results of the removal action performed in DSA 5 in 1993 and RI characterization data. As discussed in Section 4, *Site Characterization*, 231 French Rifle grenades and 14 Mk II hand grenades were recovered from a 4.5-acre area within DSA 5 during a 1993 removal action. Other portions of DSA 5 have not been subject to previous investigations or removal actions. The MEC investigation as part of this RI within DSA 5 resulted in no MEC/MPPEH or MD found. All anomalies in DSA 5 consisted of non-munitions-related scrap such as rebar, pipe, wire, fencepost, angle iron and other miscellaneous pieces of scrap metal. The RI data also provides verification that the MEC/MPPEH was removed from the 1993 removal action area.

7.1.1.4 Based on a selected Access Condition of "Regular" and selected Amount of MEC description of a site where "Investigation of the MRS did not identify evidence of MEC presence", the likelihood of encountering MEC in DSA 5 is considered "Unlikely" (see Table 7-1).

7.1.2 Severity of Incident

7.1.2.1 Matrix 2, the severity of an unintentional MEC detonation (see Table 7-2), is based on the likelihood of encounter (discussed above) and the severity associated with specific munitions items.

Severity Associated with Specific Munitions Items:

7.1.2.2 As identified in Section 4.1, the types of MEC identified and removed from DSA 5 include French Rifle grenades and Mk II hand grenades. Note however, that though not specifically documented in the 1994 Final Removal Report for DSA 5, grenades of this type found at other locations on the former Arsenal rarely contained full explosive loads (consistent with safe packaging and shipping practices). For instance, the VB rifle grenades removed from Area 12 typically contained the fuze mechanism and the explosives associated with the fuze but rarely contained the 0.11-pound of 2,4,6-TNT that make up the grenade's main explosive charge. The MK II hand grenades also found in Area 12 were typically metal grenade bodies with no explosives. Instead of a "full up" grenade, the bodies were typically found to contain fuel oil with a wooden plug placed in the grenade's fuze well.

7.1.2.3 Therefore, based on the MEC items found to date, the risk assessment assumed "Modest" severity, which means an incident may result in one or more injuries resulting in emergency medical treatment, without hospitalization. Given the Likelihood of Encounter (i.e., "Unlikely") and Severity Associated with Specific Munitions Items (i.e., "Modest") factors, the Severity of Incident for DSA 5 is considered a "D."

Table 7-2. DSA 5: Matrix 2 – Severity of Incident
Remedial Investigation Report, Former Raritan Arsenal, Edison, New Jersey

Severity of Explosive Incident, Matrix 2: Severity vs. Likelihood of Encounter		**Likelihood of Encounter**				
		Frequent Regular, or inevitable occurrences	**Likely** Several or numerous occurrences	**Occasional** Sporadic or intermittent occurrences	**Seldom** Infrequent, rare occurrences	**Unlikely** Not probable
Severity Associated with Specific Munitions Items	Catastrophic/Critical: May result in 1 or more deaths, permanent total or partial disability, or hospitalization	A	A	B	B	D
	Modest: May result in 1 (or more) injury resulting in emergency medical	B	B	B	C	***D***

Table 7-2. DSA 5: Matrix 2 – Severity of Incident
Remedial Investigation Report, Former Raritan Arsenal, Edison, New Jersey

Severity of Explosive Incident, Matrix 2: Severity vs. Likelihood of Encounter	Likelihood of Encounter				
	Frequent Regular, or inevitable occurrences	**Likely** Several or numerous occurrences	**Occasional** Sporadic or intermittent occurrences	**Seldom** Infrequent, rare occurrences	**Unlikely** Not probable
treatment, without hospitalization					
Minor: May result in 1 or more injuries requiring first aid or medical treatment	B	C	C	C	D
Improbable: No injury is anticipated	D	D	D	D	D

"A" indicates conditions most likely to result in determination of an unacceptable risk.

"D" indicates conditions most likely to result in determination of an acceptable risk.

7.1.3 Likelihood of Detonation

7.1.3.1 Matrix 3, the likelihood of detonation (see Table 7-3), is based on the sensitivity of munitions items and the likelihood for energy to be imparted on an item.

7.1.3.2 **Sensitivity:** As identified in Section 5, *Remedial Investigation Results*, 231 French Rifle grenades and 14 Mk II hand grenades were removed from DSA 5 during the 1993 removal action. Though there is evidence to suggest that these did not contain high explosives (HE), the sensitivity of MEC was selected as "Moderate," which includes HE or pyrotechnics.

7.1.3.3 **Likelihood to Impart Energy:** This factor takes into consideration the known activities at the site that may cause an interaction that result in energy being imparted on a munitions item by human activity. The current land use of DSA 5 is primarily undeveloped, though a small portion of DSA 5 contains residential housing. Under current conditions, except for the areas near roads and buildings along the roads, most of DSA 5 is difficult to access because of dense vegetation and presence of stream channels in the wetland portions of the DSA. Future land use is anticipated to remain similar. Given the completion of a removal action and RI that found no evidence of MEC in DSA 5, the likelihood to impart energy on an item was selected as "Modest."

7.1.3.4 Based on the selected Sensitivity and Likelihood to Impart Energy factors, the Likelihood of Detonation is considered a "2."

Table 7-3. DSA 5: Matrix 3 – Likelihood of Detonation
Remedial Investigation Report, Former Raritan Arsenal, Edison, New Jersey

Likelihood of Detonation, Matrix 3: Munitions Sensitivity vs. Likelihood of Energy to be Imparted		Likelihood to Impart Energy on an Item		
		High e.g., areas planned for development, or seasonally tilled	**Modest** e.g., undeveloped, wildlife refuge, parks	**Inconsequential** e.g., not anticipated, prevented, mitigated
Sensitivity Susceptibility to Detonation	High (e.g., classified as sensitive)	1	1	3
	Moderate (e.g., HE or pyrotechnics)	1	***2***	3
	Low (e.g., propellant or bulk secondary explosives)	1	3	3

Table 7-3. DSA 5: Matrix 3 – Likelihood of Detonation
Remedial Investigation Report, Former Raritan Arsenal, Edison, New Jersey

	Likelihood to Impart Energy on an Item		
Likelihood of Detonation, Matrix 3: Munitions Sensitivity vs. Likelihood of Energy to be Imparted	**High** e.g., areas planned for development, or seasonally tilled	**Modest** e.g., undeveloped, wildlife refuge, parks	**Inconsequential** e.g., not anticipated, prevented, mitigated
Not Sensitive	2	3	3

7.1.4 Acceptable and Unacceptable Site Conditions

7.1.4.1 Matrix 4 (see Table 7-4) provides the overall risk for the site and differentiates "Acceptable" from "Unacceptable" conditions. The results from Matrices 2 and 3 are used to determine acceptable or unacceptable site conditions.

Table 7-4. DSA 5: Matrix 4 – Acceptable and Unacceptable Site Conditions
Remedial Investigation Report, Former Raritan Arsenal, Edison, New Jersey

Acceptable and Unacceptable Site Conditions		**Result from Matrix 2**			
		A	B	C	D
Result from Matrix 3	1	Unacceptable	Unacceptable	Unacceptable	Acceptable
	2	Unacceptable	Unacceptable	Acceptable	***Acceptable***
	3	Unacceptable	Acceptable	Acceptable	Acceptable

Note: Multiple conditions may exist within an MRS, such that unique baselines risks can be established for the multiple explosive hazards that are present within the same property. Acceptable conditions indicate input factors are collectively determined to support a negligible risk. Project teams shall consider the nature of the specific item within the MRS and the probability to encounter to support the selection on the scale.

7.1.4.2 As discussed above, Matrix 2 (Severity of Incident) scored a "D" and Matrix 3 (Likelihood of Detonation) scored a "2." As such, the Risk Assessment for DSA 5 is identified as "Acceptable" site conditions.

7.1.5 Risk Assessment Findings

7.1.5.1 As summarized in Table 7-5, the human health risk due to the possible presence of MEC for DSA 5 is determined to be "Acceptable," is recommended for NFA, and should proceed directly to the CERCLA Proposed Plan and Record of Decision.

Table 7-5. DSA 5: MEC Risk Management Methodology Summary
Remedial Investigation Report, Former Raritan Arsenal, Edison, New Jersey

Risk Management Matrix	**DSA 5**
Matrix 1	Unlikely
Matrix 2	D
Matrix 3	2
Matrix 4	D-2
Risk Determination	Acceptable

7.1.6 Revised Conceptual Site Model

7.1.6.1 A CSM describes the MRS and its environment, both natural and human-made, that is based on existing knowledge. It describes sources of MEC known or suspected to be present on the MRS, potential receptors, and the interactions that link them. The CSM illustrates the current and potential future exposure pathways based on the information provided in this RI. The components of the CSM are presented below.

7.1.6.2 The revised CSM for DSA 5 based on review of historical documents and this RI is provided as Figure 7-1.

7.1.7 Nature and Extent of MEC (MEC Source)

7.1.7.1 The potential presence of MEC within the bounds of DSA 5 is based on historical use for disposition of dredge material which may contain MEC. A removal action was completed within DSA 5 in 1993 resulting in the removal and disposition of over 200 MEC items within the 4.5-acre removal action area within DSA 5. The RI was completed across DSA 5 to define the nature and extent of MEC. DSA 5 was subject to anomaly investigation and no evidence of residual MEC was found. These findings indicate that DSA 5 has a low likelihood of MEC due to the weight-of evidence evaluation.

7.1.8 Media of Concern (MEC Interaction)

7.1.8.1 The RI identified no evidence of MEC. Based on the findings of the RI, MEC are no longer suspected to be present in site soils (surface or subsurface).

7.1.9 Potential Receptors

7.1.9.1 Potential receptors at DSA 5 include the following:

- Maintenance workers – may be exposed to surface MEC (i.e., exposed to the surface via frost heave or erosion) when accessing or performing maintenance at the site.
- Industrial/Commercial Workers – work primarily indoors and do not participate in intrusive activities but may have limited exposure to surface MEC (i.e., exposed to the surface via frost heave or erosion).
- Recreational Users/Trespassers – may be exposed to surface MEC (i.e., exposed to the surface via frost heave or erosion) when recreating.
- Construction/Utility Workers – may be exposed to potential surface (i.e., exposed to the surface via frost heave or erosion) and subsurface MEC when performing construction or utility work that involves soil removal/excavation activities.
- Residents – are assumed to have unlimited site access to DSA 5 and therefore may be exposed to surface MEC (i.e., exposed to the surface via frost heave or erosion) and subsurface MEC.

7.1.10 Summary of MEC Exposure Routes

7.1.10.1 Based on a past removal action and the results of the RI, minimal potential exists for MEC exposure at DSA 5. The data from the 2013 to 2017 RI field effort suggest that MEC have been removed from within DSA 5. Consequently, the CSM in Figure 7-1 reflects incomplete MEC exposure pathways for all current and future receptors.

7.2 DSAs 4 and 6

7.2.1 Likelihood of Encounter

7.2.1.1 Matrix 1, the likelihood of a MEC encounter (see Table 7-6), is based on the access conditions and amount of MEC present.

7.2.1.2 **Access Conditions:** Access conditions are selected based on considerations of the access and frequency of use for the MRS. The land area of DSAs 4 and 6 consists of predominately flat, low-lying, densely vegetated, marsh land that exist as underwater islands or sandbars in the Raritan River. The marshy islands of DSAs 4 and 6 are not easily accessed due to their location in the Raritan River and due to the very soft, swampy nature of the terrain. Both islands are undeveloped. Future land use is not anticipated to change. The islands were solid enough (partially frozen) in March 2014 to perform a surface clearance and DGM survey; however, in June 2014 the islands were so soft that investigation personnel sunk into the mud up to their waist. No known access restrictions (fencing, signage, etc.) are in place at DSAs 4 and 6. As shown on the graphical CSM (Figure 7-2) current potential receptors include maintenance and industrial/commercial workers as well as recreational users/trespassers. Although the islands have limited accessibility under current use surrounding land use, the Lower Raritan Green Infrastructure Master Plan shows that areas adjacent to the islands, located on the former Raritan Arsenal, may be developed in the future for public recreational use. The potential future recreational use includes a kayak trail that could increase access to the islands. Based on the potential increase in accessibility/use in the future, the MEC risk assessment conservatively assumed “Often” access (e.g., periodic use, some access) for DSAs 4 and 6.

7.2.1.3 **Amount of MEC:** DSAs 4 and 6 have not been subject to previous investigations or removal actions. As part of the recent RI, nine and five anomalies were identified for investigation in DSAs 4 and 6, respectively. However, due to the soft and swampy terrain, the identified anomalies could not be safely excavated and investigated. The potential presence of munitions items on the islands is suspected based on anecdotal evidence.

7.2.1.4 Based on a selected Access Condition of “Often” and selected Amount of MEC description of a site where “MEC presence is suspected based on historical evidence of munitions use only”, the likelihood of encountering MEC in DSAs 4 and 6 is considered “Seldom” (see Table 7-6).

Table 7-6. DSAs 4 and 6: Matrix 1 – Likelihood of Encounter
Remedial Investigation Report, Former Raritan Arsenal, Edison, New Jersey

Likelihood of Encounter, Matrix 1: Amount of MEC vs. Access Conditions		Access Conditions (frequency of use)			
		Regular (e.g., daily use, open access)	**Often** (e.g., less regular or periodic use, some access)	**Intermittent** (e.g., some irregular use, or access limited)	**Rare** (e.g., very limited use, access prevented)
Amount of MEC	• MEC are visible on the surface and detected in the subsurface.	Frequent	Frequent	Likely	Occasional
	• The area is identified as a Concentrated Munitions Use Area (CMUA) where MEC are known or suspected (e.g., MD indicative of MEC are identified) to be present in surface and subsurface.	Frequent	Likely	Occasional	Seldom
Amount of MEC (cont.)	• MEC presence based on physical evidence (e.g., MD indicative of MEC), although the area is not a CMUA; or • The MEC concentration is below a project-specific threshold to support this selection (e.g., less than 1.0/acre at 95% confidence).	Likely	Occasional	Seldom	Unlikely
	• MEC presence is based on isolated historical discoveries (e.g., EOD report) prior to investigation; or • A DERP response action has been conducted to physically remove MEC and known or suspected hazard remains to support this selection (e.g., surface removal where subsurface not addressed); or • The MEC concentration is below a project-specific threshold to support this selection (e.g., less than 0.5/acre at 95% confidence).	Occasional	Seldom	Unlikely	Unlikely
	• ***MEC presence is suspected based on historical evidence of munitions use only;*** or • A DERP response action has been conducted to physically remove surface and subsurface MEC (evidence that some residual hazard remains to support this selection); or • The MEC concentration is below a project-specific threshold to support this selection (e.g., less than 0.25/acre at 95% confidence).	Seldom	***Seldom***	Unlikely	Unlikely
	• Investigation of the MRS did not identify evidence of MEC presence; or • A DERP response action has been conducted that will achieve unlimited use and unrestricted exposure (UU/UE).	Unlikely	Unlikely	Unlikely	Unlikely

7.2.2 Severity of Incident

7.2.2.1 Matrix 2, the severity of an unintentional MEC detonation (see Table 7-7), is based on the likelihood of encounter (discussed above) and the severity associated with specific munitions items.

Severity Associated with Specific Munitions Items:

7.2.2.2 No MEC is known to have been recovered from DSAs 4 and 6; however, the potential presence of munitions items on the islands is suspected based on anecdotal evidence. As identified in Section 5, *Remedial Investigation Results*, 231 French Rifle grenades and 14 Mk II hand grenades were removed from DSA 5 during the 1993 removal action; these types of items would result in "Moderate" as the Sensitivity of MEC in Matrix 2. As shown on Table 1-1 and Figure 1-1, there are three other areas identified as DSAs at the former Raritan Arsenal:

- DSA1: No MEC items are known to have been found at DSA1 and numerous investigations have been conducted there.
- DSA2/Area 11: Amongst the thousands of MEC items that have been recovered during past removal actions at DSA2/Area 11 are 2.36-inch rockets, which would result in "Catastrophic/Critical" as the Sensitivity of MEC in Matrix 2.
- DSA3/Area 12: The types of MEC identified at DSA3/Area 12 have included adapter boosters and parts; blasting caps; bombs, 20-mm, 75-mm, 3-inch, 4.7-inch cartridge cases; firing device; signal flare; MK II fuze grenades; a variety of fuzes; M1A1 mines; 20-mm, 37-mm, 57-mm, 75-mm, 105-mm, 155-mm, 3-inch, and 8-inch projectiles; 3-inch Stokes mortars; 6-inch neutron mortars; and small arms items. Taking into consideration these items recovered at DSA3/Area 12 would result in "Catastrophic/Critical" as the Sensitivity of MEC in Matrix 2.

7.2.2.3 To be conservative in the risk evaluation of DSAs 4 and 6, where no MEC is known to have been recovered, the types of items at the other DSAs were considered and therefore "Catastrophic/Critical", which means an incident may result in one or more deaths, permanent total or partial disability, or hospitalization, was selected as the Sensitivity of MEC in Matrix 2.

7.2.2.4 Given the Likelihood of Encounter from Matrix 1 (i.e., "Seldom") and Severity Associated with Specific Munitions Items (i.e., "Catastrophic/Critical") factors, the Severity of Incident for DSAs 4 and 6 is considered a "B."

Table 7-7. DSAs 4 and 6: Matrix 2 – Severity of Incident
Remedial Investigation Report, Former Raritan Arsenal, Edison, New Jersey

Severity of Explosive Incident, Matrix 2: Severity vs. Likelihood of Encounter		**Likelihood of Encounter**				
		Frequent Regular, or inevitable occurrences	**Likely** Several or numerous occurrences	**Occasional** Sporadic or intermittent occurrences	**Seldom** Infrequent, rare occurrences	**Unlikely** Not probable
Severity Associated with Specific Munitions Items	***Catastrophic/Critical: May result in 1 or more deaths, permanent total or partial disability, or hospitalization***	A	A	B	***B***	D
	Modest: May result in 1 (or more) injury resulting in emergency medical treatment, without hospitalization	B	B	B	C	D
	Minor: May result in 1 or more injuries	B	C	C	C	D

Table 7-7. DSAs 4 and 6: Matrix 2 – Severity of Incident
Remedial Investigation Report, Former Raritan Arsenal, Edison, New Jersey

Severity of Explosive Incident, Matrix 2: Severity vs. Likelihood of Encounter	**Likelihood of Encounter**				
	Frequent Regular, or inevitable occurrences	**Likely** Several or numerous occurrences	**Occasional** Sporadic or intermittent occurrences	**Seldom** Infrequent, rare occurrences	**Unlikely** Not probable
requiring first aid or medical treatment					
Improbable: No injury is anticipated	D	D	D	D	D

"A" indicates conditions most likely to result in determination of an unacceptable risk.

"D" indicates conditions most likely to result in determination of an acceptable risk.

7.2.3 Likelihood of Detonation

7.2.3.1 Matrix 3, the likelihood of detonation (see Table 7-8), is based on the sensitivity of munitions items and the likelihood for energy to be imparted on an item.

7.2.3.2 **Sensitivity:** No MEC is known to have been recovered from DSAs 4 and 6. Taking into consideration the types of MEC recovered from the other DSAs as discussed in Section 7.2.2 above, the sensitivity of MEC was selected as "Moderate".

7.2.3.3 **Likelihood to Impart Energy:** This factor takes into consideration the known activities at the site that may cause an interaction that results in energy being imparted on a munitions item by human activity. The current land use of DSAs 4 and 6 is undeveloped. Future land use is anticipated to remain similar. The marshy islands of DSAs 4 and 6 are not easily accessed due to their location in the Raritan River and due to the very soft, swampy nature of the terrain. Although the islands have limited accessibility under current surrounding land use, the Lower Raritan Green Infrastructure Master Plan shows that areas adjacent to the islands, located on the former Raritan Arsenal, may be developed in the future for public recreational use. The potential future recreational use includes a kayak trail that could increase access to the islands. Additionally, it is known that there is underwater infrastructure (e.g. utility lines) in the Raritan River adjacent to the former Arsenal property. The presence of nearby infrastructure increases the possibility that the islands could be accessed by future workers for infrastructure repairs and/or construction of new infrastructure. Based on these considerations, the likelihood to impart energy on an item was selected as "Modest".

7.2.3.4 Based on the selected Sensitivity and Likelihood to Impart Energy factors, the Likelihood of Detonation is considered a "2."

Table 7-8. DSAs 4 and 6: Matrix 3 – Likelihood of Detonation
Remedial Investigation Report, Former Raritan Arsenal, Edison, New Jersey

Likelihood of Detonation, Matrix 3: Munitions Sensitivity vs. Likelihood of Energy to be Imparted		**Likelihood to Impart Energy on an Item**		
		High e.g., areas planned for development, or seasonally tilled	**Modest** e.g., undeveloped, wildlife refuge, parks	**Inconsequential** e.g., not anticipated, prevented, mitigated
Sensitivity Susceptibility to Detonation	High (e.g., classified as sensitive)	1	1	3
	Moderate (e.g., HE or pyrotechnics)	1	***2***	3
	Low (e.g., propellant or bulk secondary explosives)	1	3	3

Table 7-8. DSAs 4 and 6: Matrix 3 – Likelihood of Detonation
Remedial Investigation Report, Former Raritan Arsenal, Edison, New Jersey

Likelihood of Detonation, Matrix 3: Munitions Sensitivity vs. Likelihood of Energy to be Imparted	Likelihood to Impart Energy on an Item		
	High e.g., areas planned for development, or seasonally tilled	**Modest** e.g., undeveloped, wildlife refuge, parks	**Inconsequential** e.g., not anticipated, prevented, mitigated
Not Sensitive	2	3	3

7.2.4 Acceptable and Unacceptable Site Conditions

7.2.4.1 Matrix 4 (see Table 7-9) provides the overall risk for DSAs 4 and 6 and differentiates "Acceptable" from "Unacceptable" conditions. The results from Matrices 2 and 3 are used to determine acceptable or unacceptable site conditions.

Table 7-9. DSAs 4 and 6: Matrix 4 – Acceptable and Unacceptable Site Conditions
Remedial Investigation Report, Former Raritan Arsenal, Edison, New Jersey

Acceptable and Unacceptable Site Conditions		Result from Matrix 2			
		A	B	C	***D***
Result from Matrix 3	1	Unacceptable	Unacceptable	Unacceptable	Acceptable
	2	Unacceptable	***Unacceptable***	Acceptable	Acceptable
	3	Unacceptable	Acceptable	Acceptable	Acceptable

Note: Multiple conditions may exist within an MRS, such that unique baselines risks can be established for the multiple explosive hazards that are present within the same property. Acceptable conditions indicate input factors are collectively determined to support a negligible risk. Project teams shall consider the nature of the specific item within the MRS and the probability to encounter to support the selection on the scale.

7.2.4.2 As discussed above, Matrix 2 (Severity of Incident) scored a "B" and Matrix 3 (Likelihood of Detonation) scored a "2." As such, the Risk Assessment for DSAs 4 and 6 is identified as "Unacceptable" site conditions.

7.2.5 Risk Assessment Findings

7.2.5.1 As summarized in Table 7-10, the human health risk due to the possible presence of MEC for DSAs 4 and 6 is determined to be "Unacceptable" using the risk management methodology, and an FS is recommended for MEC.

Table 7-10. DSAs 4 and 6: MEC Risk Management Methodology Summary
Remedial Investigation Report, Former Raritan Arsenal, Edison, New Jersey

Risk Management Matrix	DSAs 4 and 6
Matrix 1	Seldom
Matrix 2	B
Matrix 3	2
Matrix 4	B-2
Risk Determination	Unacceptable

7.2.6 Revised Conceptual Site Model

7.2.6.1 A CSM describes the MRS and its environment, both natural and human-made, that is based on existing knowledge. It describes sources of MEC known or suspected to be present on the MRS, potential receptors, and the interactions that link them. The CSM illustrates the current and potential future exposure pathways based on the information provided in this RI. The components of the CSM are presented below.

7.2.6.2 The revised CSM for DSAs 4 and 6 based on review of historical documents and this RI is provided as Figure 7-2.

7.2.7 Nature and Extent of MEC (MEC Source)

7.2.7.1 The potential presence of MEC within the bounds of DSAs 4 and 6 is based on anecdotal evidence documented in the ASR of "one report from an interviewee of ordnance being disposed of on Crab Island. The interviewee considered all of the islands in the Raritan River near the Arsenal dock to be Crab Island." (Dames & Moore, 1993) DSAs 4 and 6 have not undergone previous investigation or removal. The RI was completed across DSAs 4 and 6 to define the nature and extent of MEC. Only a small number of anomalies were identified in DSAs 4 and 6, but they could not be intrusively investigated due to safety and accessibility.

7.2.8 Media of Concern (MEC Interaction)

7.2.8.1 No MEC was identified on the surface of DSAs 4 and 6 during the RI. The anomalies detected could not be intrusively investigated and may represent MEC in the subsurface. Due to the location of DSAs 4 and 6 in the Raritan River, the sediment surface is subject to natural scouring due to water movement, weather conditions, etc., which could cause subsurface MEC (if present) to be exposed at the surface. Therefore, at DSAs 4 and 6 surface and subsurface sediment are the media of concern for potential interaction with MEC (if any is present).

7.2.9 Potential Receptors

7.2.9.1 Potential receptors at DSAs 4 and 6 include the following:

- Recreational Users/Trespassers – may be exposed to surface MEC (i.e., exposed to the surface via natural scouring of the river bottom) when recreating in the river (e.g, kayaking).
- Construction/Utility Workers – may be exposed to potential surface (i.e., exposed to the surface via natural scouring of the river bottom) and subsurface MEC if performing construction or utility work that involves intrusive activities at the islands, although there are no known future plans for construction or utility work at the islands.

7.2.10 Summary of MEC Exposure Routes

7.2.10.1 Based on anecdotal evidence about the presence of munitions items on DSAs 4 and 6, the fact that the identified anomalies could not be characterized during the RI, and a potential for an increase in accessibility of the islands in the future the CSM in Figure 7-2 reflects potentially complete MEC exposure pathways for all current and future receptors.

7.3 Remedial Investigation Findings

7.3.1 Based on the results of the MEC Risk Management Methodology and the revised CSM, the RI findings are as summarized in Table 7-6.

Table 7-11. DSAs 4, 5, and 6 RI Findings

Remedial Investigation Report, Former Raritan Arsenal, Edison, New Jersey

MRSs	Findings	Acreage
DSA 5	NFA Feasibility Study not warranted	228
DSAs 4 and 6	Proceed to Feasibility Study	94

SECTION 8

Ecological Risk Screening

8.0.1 To evaluate potential for risk to ecological receptors, concentrations of analytes detected in surface and subsurface soil samples collected from the former RAA in DSA 5 were compared Region 4 ecological screening values (ESVs) for soil (EPA, 2018). HQs were calculated for each analyte by dividing the maximum detected concentration by the ESV. An HQ of greater than 1 suggests that the potential for risk exists. Results of the data screening are presented in Tables 8-1 and 8-2.

8.0.2 Concentrations of analytes in surface soil were generally less than ESVs, consistent with background, or had a low magnitude of exceedance of the BTV or the ESV. While several detections of manganese exceed the ESV, only 1 of 10 concentrations (728 mg/kg) exceeded the BTV (597 mg/kg) and the mean manganese concentration (385 mg/kg) was less than the BTV. Additionally, the selected ESV for manganese (220 mg/kg) was based on the ecological soil screening value (EcoSSL) for plants. EcoSSLs for invertebrates (450 mg/kg), mammals (4,000 mg/kg), and birds (4,300 mg/kg) were less conservative and were all higher than the mean manganese concentration. Vanadium concentrations in surface soil also exceeded the ESV in several locations but only two of the 10 concentrations (120 mg/kg and 123 mg/kg) exceeded the BTV (119 mg/kg). Meanwhile, the mean vanadium concentration (98.6 mg/kg) was less than the BTV. Additionally, the selected vanadium ESV (7.8 mg/kg) was based on the ecoSSL for birds and was noted in the source document as being well below typical background concentrations in the United States. The ecoSSL value for mammals was two orders of magnitude higher (280 mg/kg) than that for the bird (7.8 mg/kg) and would not result in predicted risk. Overall, considering only one to two samples for each analyte exceeded the BTV and the ESVs were considered conservative, risk to terrestrial receptors exposed to surface soils was considered low.

8.0.3 In subsurface soils, concentrations were generally consistent with background, less than the ESV, or detected infrequently. While iron exceeded the BTV in three of 10 samples and a screening level is not available, iron is typically not toxic to plants in soils with pH ranging from 5 to 8. Consequently, no risk to ecological receptors from exposure to contaminants in surface or subsurface soils was identified.

SECTION 9

Summary and Recommendation

9.0.1 There are six DSAs associated with the former Raritan Arsenal MRS (see Figure 1-2). These areas are underlain by dredge spoils that were removed from the Raritan River and deposited during historical dredging operations. This RI focuses on DSAs 4, 5, and 6, which comprise 322 acres of land located outside the boundary of the MRS. DSA 5 is located on the southern shoreline of the Raritan River directly across from the former Arsenal and DSAs 4 and 6 are two small islands (collectively known as Crab Island) located within the Raritan River. These three DSAs are predominately flat, low-lying, densely vegetated, undeveloped marsh land. Under current conditions, except for the areas near roads and buildings along the roads, most of the land area that comprises DSAs 4, 5, and 6 is difficult to access because of dense vegetation and the presence of stream channels, soft mudflats, and standing water. The marshy islands of DSAs 4 and 6 are not easily accessed due to their location in the Raritan River and due to the very soft, swampy nature of the terrain.

9.0.2 An RI was performed for DSAs 4, 5, and 6 because previous removal actions conducted within the DSAs, including DSA 5, indicate that MEC may have been embedded within the sediments that were dredged from the Raritan River in the vicinity of the Area 13 dock. A removal action performed in 1993 in the northeastern portion of DSA 5 removed 231 French Rifle grenades and 14 Mk II hand grenades from the area. MEC items may have been lost or dumped in the Raritan River during unloading and loading of cargo ships at the Area 13 dock, as a result of cargo shifts during transport, or because of the potential for the incomplete recovery of items from a sunken barge. Items lost in the river would become lodged within the river sediments. During subsequent dredging operations, the sediments and associated items may have been emplaced within the DSAs. The characterization of MEC items removed from DSAs on the former Arsenal, specifically Area 12, suggests that because the munitions items spilled into the river at the former dock area were packed for overseas shipment, they did not contain full explosive loads. Another important component of the CSM for the DSAs, supported by results of this RI, is that historical dredging of the Raritan River also included removal of hundreds of thousands of cubic yards of sediment from channels located upstream and downstream of the former Arsenal where MEC are not likely to have been present; therefore, large areas of the DSAs likely do not contain any MEC.

9.0.3 Surface clearance, digital geophysical mapping (DGM), intrusive investigations of select anomalies, and associated field support activities were performed as part of this RI to collect data to evaluate the nature and extent of potential MEC and munitions constituents (MC) contamination in DSAs 4, 5, and 6. No MEC items were identified on the surface of DSAs 4, 5, and 6. No MEC items were identified during the intrusive and Time-Domain Electromagnetic Towed Array Detection System (TEMTADS) geophysical-based anomaly investigations performed in DSA 5. No further action (NFA) is recommended for MEC in DSA 5. A low density and low total number of DGM anomalies (15 total, including quality control seeds) were identified in DSAs 4 and 6. Although DSAs 4 and 6 were solid enough (partially frozen) in March 2014 to perform a surface clearance and DGM survey, during reacquisition at DSAs 4 and 6 in June 2014 the islands were so soft that investigation personnel sunk into the mud up to their waist. These conditions presented a safety hazard for investigation personnel so the DSA 4 and 6 anomalies could not be characterized. Although the islands have limited accessibility under current surrounding land use, the Lower Raritan Green Infrastructure Master Plan shows that areas adjacent to the islands, located on the former Raritan Arsenal, may be developed in the future for public recreational use. The potential future recreational use includes a kayak trail that could increase access to the islands. Because the anomalies in DSAs 4 and 6 could not be characterized during the RI and the potential presence of munitions items on the islands is suspected based on anecdotal evidence, a Feasibility Study is recommended to determine what actions should be evaluated to mitigate the potential MEC hazard at DSAs 4 and 6.

9.0.4 Soil sampling performed in the DSA 5 RAA showed that MC were not detected at concentrations that would suggest a release occurred related to the MEC items that were formerly present in the area. This conclusion is further supported by an HHRS and ecological risk screening evaluation performed using the data collected from the RAA. The results of the HHRS indicate that the potential risks for MC detected in surface and subsurface soil are within acceptable levels for an industrial scenario and a residential (unrestricted) scenario. No risk to ecological receptors from exposure to contaminants in surface or subsurface soils was identified. Therefore, the former RAA within DSA 5 is recommended for NFA based on the results of the HHRS and ecological risk screening.

SECTION 10

References

CH2M HILL, Inc. (CH2M). 2016. *Remedial Investigation/Feasibility Study Work Plan, Former Raritan Arsenal, Edison, New Jersey*. Final (Revision 3). October.

Conover, W.J. 1999. *Practical Nonparametric Statistics*. Third Edition. John Wiley & Sons, New York.

Dames & Moore, Inc. 1993. *Archival Search Report, Former Raritan Arsenal*. July.

Department of the Army (DoA). 2009. *Munitions Response Remedial Investigation/Feasibility Study Guidance*. November.

EOD Technology, Inc. (EODT). 2005. *Site Specific Final Report for the Ordnance and Explosives (OE) Removal Action, Areas 11 and 12, Former Raritan Arsenal, Edison, New Jersey*. December.

Manly, B.F.J. 2007. *Randomization, Bootstrap and Monte Carlo Methods in Biology*. Third Edition. Chapman & Hall, New York.

Roy F. Weston, Inc. 2000. *Draft Supplemental 2 Phase II Remedial Investigation Report, Former Raritan Arsenal, Edison, New Jersey*. May.

U.S. Army Corps of Engineers (USACE). 2000. Engineer Pamphlet 1110-1-18, *Ordnance and Explosives Response*. April.

U.S. Army Corps of Engineers (USACE). 2017a. *Risk Management Methodology at Formerly Used Defense Sites (FUDS) Military Munitions Response Program Projects.* January 3.

U.S. Army Corps of Engineers (USACE). 2017b. *Trial Period for Risk Management Methodology at Formerly Used Defense Sites (FUDS) Military Munitions Response Program (MMRP) Projects*. January 3.

U.S. Environmental Protection Agency (EPA). 1989. *Risk Assessment Guidance for Superfund: Volume II, Environmental Evaluation Manual*. Office of Emergency and Remedial Response. EPA/540/1-89/001.

U.S. Environmental Protection Agency (EPA). 2018. *Regional Screening Levels for Chemical Contaminants at Superfund Sites*. June.

UXB International, Inc. (UXB). 1994. *Final Removal Report, Ordnance Removal Action at Spoils Area, Area 3A, Area 4, and Area 11*. Former Raritan Arsenal, Edison, New Jersey.

Weston Solutions, Inc. (Weston). 2008. *Baseline Ecological Risk Assessment Report, Former Raritan Arsenal, Edison, New Jersey*. March.

Tables

Table 1-1. Areas of Investigation at the Former Raritan Arsenal

DSAs 4, 5, and 6 RI Report, Former Raritan Arsenal, Edison, New Jersey

Area Name	Approximate Acreage	Description
Area 5	10 acres	Located in the central-eastern portion of the former Arsenal, this area consists of the Former Chemical/Mustard Disposal Area.
Area 6, 6A, 6B, DSA 1, and Surrounding Areas	236 acres	Located in the southeastern portion of the former Arsenal, this area comprises the Former Burning Ground and Impoundment Areas, as well as an area of additional dredge deposits/spoils referred to as DSA 1.
Areas 9 and 19	350 acres	Located in the central western portion of the former Arsenal, this area comprises Area 9 (Former Magazine H-65 Explosion Area) and Area 19 (Former Magazine Area).
Area 10	143 acres	Located on the western side of the former Arsenal, this area comprises the Former Wastewater Treatment and Magazine Area.
Area 11, DSA 2, and Surrounding Areas	130 acres	Located in the south-central portion of the former Arsenal, this area comprises the Former Dredged Material and Explosives Disposal Area, as well as an area of additional dredge deposits/spoils referred to as DSA 2.
Area 12, OB/OD, DSA 3, and Surrounding Areas	235 acres	Located in the southwestern portion of the former Arsenal, this area comprises the Former Dredged Material and Explosives Detonation Area, an area referred to as OB/OD, which presents the maximum "kick-out" distances of munitions from former explosive detonation operations, and an area of additional dredge deposits/spoils beyond the boundary of Area 12 referred to as DSA 3.
Area 13	23 acres	Located in the south-central portion of the former Arsenal, this area comprises a thin strip of land alongside the dock, the Submerged Dock Area and approximately 17 acres of the Raritan River adjacent to the dock.
Areas 16, 16A, and Surrounding Areas	352 acres	Located in the southwest portion of the former Arsenal, this area comprises the Former Magazine Area.
Area 18D, Middlesex Interfaith Partners, and Beechwood Development	104 acres	Located in the northwest portion of the former Arsenal, between Middlesex County College and the EPA/GSA Property, this area comprises the Trench of Shell Casings and the Beechwood Trench, a condominium complex referred to as the Beechwood Development, and homeless shelter referred to as Middlesex Interfaith Partners.
DSAs 4 and 6	94 acres	DSAs 4 and 6 are located in the center of the Raritan River, south of the former Arsenal. These areas comprise discontinuous islands where it was speculated that dredge deposits/spoils were placed.
DSA 5	228 acres	DSA 5 is also located to the south of the former Arsenal and encompasses the maximum extent of area permissible to dispose of dredge deposits/spoils on the southern shore of the Raritan River. DSA 5 also comprises the "Spoils Area," which is an 8-acre parcel of spoils.
U.S. EPA/GSA Property	178 acres	Located in the north-central portion of the former Arsenal, this area comprises Areas 1, 18A, 18B, 18C, 18E, 18F, and 18G.
Commercial/Industrial Area	1,233 acres	Located in the center of the former Arsenal, this area comprises Areas 2, 3, 4, 7, 8, 15, and 20, in addition to the Owens Illinois Area, Building 151, the Inland Container Corporation, and the area in the far north of the former Arsenal referred to as the Exclusion Area.
Middlesex County College	169 acres	Located in the northwest corner of the former Arsenal, this area contains Areas 17, 17A, X, H, W, Building 118, and additional areas such as the High Traffic Area, UST removal areas, and the PCB Transformer Areas.
Total Area	**3,485 acres**	

Table 1-1. Areas of Investigation at the Former Raritan Arsenal

DSAs 4, 5, and 6 RI Report, Former Raritan Arsenal, Edison, New Jersey

DSA = dredge spoil area
EPA = U.S. Environmental Protection Agency
GSA = General Services Administration
OB/OD = open burn/open detonation
PCB = polychlorinated biphenyl
UST = underground storage tank

Table 1-2. Other Areas at the Former Raritan Arsenal

DSAs 4, 5, and 6 RI Report, Former Raritan Arsenal, Edison, New Jersey

Area Name	Approximate Acreage	Description
Capped Area 14 (Ineligible)	189 acres	Located in the eastern portion of the former Arsenal, this was former marshland and used for deposition of dredged material from the Raritan River. The land owner (FBC) obtained NJDEP approval to construct a large package distribution complex on this site; with the backfilling, building, pavement, and landscaping serving to cap soil contamination.
Army Reserve Center (Ineligible)	9 acres	Located to the west of the former Arsenal, these two noncontiguous areas are an active Army Reserve Center.
Total Area	**198 acres**	

FBC = Federal Business Centers
NJDEP = New Jersey Department of Environmental Conservation

Table 1-3. Dredge Spoil Areas Acreage

DSAs 4, 5, and 6, Remedial Investigation Report, Former Raritan Arsenal, Edison, New Jersey

Area	Acreage
DSA 1	89
DSA 2	65
DSA 3	169
DSA 4	78
DSA 5	228
DSA 6	16
Total	**645**

Table 4-1. Dates of Investigation

DSAs 4, 5, and 6, Remedial Investigation Report, Former Raritan Arsenal, Edison, New Jersey

Area	Phase I	Phase II	Phase III
DSA 4	March 27-28, 2014	--	--
DSA 5	December 13-18, 2013 (Initial Phase) February 24-27, 2014 (Remobilization)	May 23; June 1, 4, and 9, 2014	August 31, 2016
DSA 6	March 27, 2014	--	--

Table 4-2. Analog Operations Quality Control Tests and Acceptance Criteria

DSAs 4, 5, and 6, Remedial Investigation Report, Former Raritan Arsenal, Edison, New Jersey

Analog System Quality Control Test	Applicability	Acceptance Criteria	Frequency	Consequence of Failure
Repeatability (instrument functionality)	All analog system operations	All items in test strip detected (trains ear daily to items of interest)	Once daily per instrument or after battery change or other modification	Remedial training if due to operator error, or replacement of faulty equipment

Table 4-3a. Data Quality Objectives – DSA

DSAs 4, 5, and 6, Remedial Investigation Report, Former Raritan Arsenal, Edison, New Jersey

Step	Data Quality Objective
1. State the problem.	There is potential for MEC to be present within the DSA. The dredge spoils from the Raritan River that contained DMM were disposed of within DSA 1 through DSA 6.
2. Identify the goal of the study.	The goal of the RI is to define the nature and extent of MEC potentially associated with the DSA.
3. Identify information inputs.	Portions of land in the DSA have not been previously investigated, with the exception of the MEC removal action performed at DSA 5, as discussed in the CSM presented in Section 1.9.10 of the RI Work Plan**.** Additional DGM surveys and intrusive investigations will be performed.
4. Define the boundaries of the study.	The current boundary of the DSA (321 acres within the boundary of the former Arsenal and 322 acres outside of the Arsenal boundary) is depicted on Figure 1-2. The area was delineated based on the locations of the dredge spoils. The DSAs are in the southeastern portion of the former Arsenal (DSA 1 through DSA 6), on the south shoreline of the Raritan River directly across from the former Arsenal (DSA 5), and on two small islands within the Raritan River (DSAs 4 and 6). The limits of the dredge spoil disposal also encompass portions of Areas 6, 6A, 11, and 12 **(**Figure 1-2).
5. Develop the analytic approach.	MEC characterization data will be collected for the DSA because the area has not been previously investigated. The characterization will include: • DGM data collected along transects • Data processing and anomaly selection • Geostatistical analysis of anomaly densities • Selection of statistically significant set of anomalies for investigation • Investigation of anomalies • MC sampling (as applicable)
6. Specify performance or acceptance criteria.	The investigation will be acceptable by ensuring that the appropriate instrumentation, positioning, processing, anomaly selection, GSV, and procedures defined in the RI Work Plan are used. The GIP (see Appendix F of the RI Work Plan) further defines the measurement quality objectives for DGM efforts.
7. Develop the plan for obtaining data.	Previous investigations located within the dredge spoils at Areas 6, 6A, 11, and 12 have been evaluated; however, the data are insufficient to characterize the entire DSA. Geophysical (EM61-MK2) surveys will be performed along 100-m spaced transects across each DSA. Several DSAs have been grouped by one boundary to facilitate MR operations because the areas: 1) share the same MGFD; and 2) have overlapping acreage or are located close to each other. The grouped areas are referred to as the Northern Area and the Southern Area. The Northern Area encompasses Area 12, the OB/OD Kick Out Boundary, Area 13, and DSAs 2, 3, and 4. The Southern Area includes DSAs 5 and 6. Geophysical (EM61-MK2) surveys will be performed along 100-m spaced transects across each DSA. The transects will be reduced to 30 m in areas where MEC have previously been identified and removed and where adequate geophysical mapping has not been completed during the MEC removal action in the "Spoils Area" within the northeast section of DSA 5. The transect spacing will also be reduced to 5 m in areas that could potentially contain burial pits (for example, Area 6A) and have not been previously surveyed or otherwise investigated. A statistically significant portion of the geophysical anomalies will be intrusively investigated. The MEC investigation details for the DSA are described further in Section 3 of the RI Work Plan.

CSM = conceptual site model
DGM = digital geophysical mapping
DMM = discarded military munitions
GSV = geophysical system verification
m = meters
MC = munitions constituents
MGFD = munition with the greatest fragmentation distance
MEC = munitions and explosives of concern

Table 4-3b. Project Measurement Quality Objectives for Terrestrial DGM

DSAs 4, 5, and 6, Remedial Investigation Report, Former Raritan Arsenal, Edison, New Jersey

MQO	Measurement Performance Criteria	Test Method	Results[a]
General System Function			
DGM Systems Positioning. Accurate positioning information is provided to DGM system.	The positional error of the system at known locations will not exceed 10 cm (4 inches).	Results of QC Test #2 (**System Positioning**) evaluated for compliance.	All positions were within 10 cm.
Repeatability. Repeatable and accurate data are being obtained from DGM system.	Response to industry standard object (ISO) will not vary more than ±20 percent from known response for specific distance from sensors in static tests conducted at the beginning and end of each survey day. Response of repeat line is comparable to original line data (qualitative determination).	Results of QC Test #5 (**Static Background and Static Spike**) evaluated quantitatively and compared to published response values for compliance.	All ISO responses were within the ±20 percent from known responses for specific distances.
DGM Surveys			
Downline Data Density. Downline data density is sufficient to detect MEC items.	Over 98 percent of possible sensor readings are captured along a survey transect with a spacing of no greater than 0.2-meter (m; 0.7-foot [ft]) between points. A data gap greater than 0.6-m (2-ft) will not meet the measurement quality objective (MQO).	Results of DGM surveys quantitatively evaluated for compliance.	Average down line data density was achieved, with no readings greater than 0.61-m apart.
Dynamic Detection Repeatability.	Repeat data are comparable to original data. The number of anomalies on the repeat segment will be within 20% of the original data.	At least 2% of the survey area repeated and evaluated for compliance.	Number of anomalies was within 20% of the original data for comprehensive surveys.
Dynamic Positioning Accuracy. Positioning of detected anomalies is accurate.	An anomaly will be identified within 1 m of each blind seed item.	Results of DGM surveys evaluated to verify that all blind seeds have an anomaly location selected within this standard or can be otherwise explained.	All blind seeds were detected within a 1-m radius.

[a] See the Terrestrial Geophysical Report in Appendix A for further details of the test results.

Table 4-4. DGM Instruments Standardization Tests and Acceptance Criteria

DSAs 4, 5, and 6, Remedial Investigation Report, Former Raritan Arsenal, Edison, New Jersey

Test	Test Description	Acceptance Criteria	Corrective Measure on Failure[a]	Power On	Beginning of Day	Beginning and End of Day	2% of Total Area Surveyed or Daily IVS
1	Equipment Warm-up	Equipment-specific (typically 10 minutes)	Recollect data collected within 10-minute warm-up period.	X			
2	Record Sensor Positions (applicable only to those surveys for which GPS is used)	± 10 cm (4 inches) for RTK and 1 m for sub-meter system	Recollect data from that test until test that passes criteria is completed.		X		
3	Personnel Test (applicable only to man-portable EM61-MK2 surveys)	Based on instrument used. Personnel, clothing, etc., should have no effect on instrument response.	Recollect data from that test until test that passes criteria is completed.		X		
4	Cable Shake Test	Data profile does not exhibit data spikes.	Recollect data from that test until test that passes criteria is completed.		X		
5	Static Background and Static Spike (applicable to EM61-MK2 surveys only)	± 20% of standard item response, after background correction	Recollect data from that test until test that passes criteria is completed.			X	
6	Dynamic Detection Repeatability	(a) the number of anomalies on the repeat segment is within 20% of the original data, and (b) the test item (in instrument verification strip [IVS] or transect data) anomaly characteristics (peak response and size) are repeatable within 25% (For transect EM61-MK2 surveys only [b] will apply.)	Recollect data from that test until test that passes criteria is completed.				X

[a] No failures were experienced for the DSAs 4, 5, and 6 investigation.

Table 4-5. Anomalies Detected in DSA 4

DSAs 4, 5, and 6, Remedial Investigation Report, Former Raritan Arsenal, Edison, New Jersey

Anomaly ID	Easting (meters)	Northing (meters)	Amplitude (mv)	Type
TDSA4-6-00001	555996.55	4481701.64	10.55	1
TDSA4-6-00002	555994.70	4481710.05	31.52	1
TDSA4-7-00001	556098.41	4481638.68	3.96	6
TDSA4-7-00002	556081.04	4481732.23	3.60	6
TDSA4-8-00001	556196.34	4481752.89	46.95	1
TDSA4-10-00001	556395.16	4481864.59	208.58	1
TDSA4-17-00001	557091.95	4482585.05	90.31	1
TDSA4-18-00001	557180.32	4482609.87	157.27	1
TDSA4-19-00002	557232.35	4482733.58	36.17	1

Notes:

Type 1 = Point Source Anomaly

Type 6 = Anomaly Selected Below Established Threshold

Table 4-6. DSA 5 TEMTADS Results

DSAs 4, 5, and 6 RI Report, Former Raritan Arsenal, Edison, New Jersey

Anomaly ID	TEMTADS ID	Easting (meters)	Northing (meters)	DGM Amplitude (mV)	TEMTADS 2x2 Result	Intrusive Investigation Result
TDSA5-12-00080	1463_001_03	556038	4481127	61.74	Could Not Analyze	Pipe
TDSA5R-12-00009	1460_001_01	556037	4481150	55.58	Looks Like TOI	QC Seed
TDSA5-17-00004	1471_002_01	556586	4481130	11.35	Looks Like TOI	Scrap Metal
TDSA5-9-00066	1451_002_01	555755	4481040	1059.91	Looks Like TOI	Angle Iron
TDSA5-10-00036	1453_002_01	555880	4481019	138.20	Inconclusive	Scrap Metal
TDSA5-11-00021	1456_002_01	555976	4481016	225.76	Inconclusive	Scrap Metal
TDSA5-8-00005	1447_002_01	555695	4480890	80.75	Inconclusive	Scrap Metal
TDSA5-6-00003	1438_002_01	555507	4480773	44.06	Inconclusive	Scrap Metal
TDSA5-8-00060	1443_002_01	555671	4480972	96.38	Inconclusive	Scrap Metal
TDSA5-11-00019	1455_002_01	555975	4481014	9.34	Inconclusive	Scrap Metal
TDSA5-14A-00003	1466_001_03	556213	4481196	226.57	Inconclusive	Scrap Metal
TDSA5-12-00081	1462_002_01	556038	4481129	32.73	Inconclusive	Fence Post
TDSA5-12-00083	1461_001_01	556037	4481136	72.43	Inconclusive	Rebar
TDSA5-12-00079	1464_001_01	556040	4481118	65.97	Inconclusive	Scrap Metal
TDSA5-11-00004	1458_002_01	555983	4480997	55.41	Inconclusive	Roadway
TDSA5-7-00006	1441_001_05	555602	4480839	7445.05	Inconclusive	Slag
TDSA5-9-00004	1452_001_01	555779	4480994	2219.87	Inconclusive	Scrap Metal
TDSA5-11-00003	1459_001_01	555984	4480997	115.26	Does Not Look Like TOI	Scrap Metal
Anomalies Not Intrusively Investigated (TEMTADS Result Only) – Anomaly Detected During 2nd DGM Survey						
Initial Anomaly ID	**TEMTADS ID**	**Easting (Meters)**	**Northing (meters)**	**Initial DGM Amplitude (mV)**	**TEMTADs 2x2 Result**	**2nd Survey Anomaly ID (DGM Amplitude)**
TDSA5-6-00004	1437_001_01	555506	4480779	178.28	Does Not Look Like TOI	TDSA5R-6 (289.3 mV)
TDSA5-8-00008	1445_001_01	555688	4480907	600.16	Does Not Look Like TOI	TDSA5R-8 (629.7 mV)
TDSA5-9-00067	1450_001_01	555752	4481042	1025.94	Does Not Look Like TOI	TDSA5R-9 (805.0 mV)
TDSA5-8-00006	1446_001_01	555693	4480898	1996.63	Does Not Look Like TOI	TDSA5R-8 (1982.9 mV)
TDSA5-8-00035	1444_001_02	555680	4480945	40.04	Does Not Look Like TOI	TDSA5R-8 (15.1 mV)
Anomalies Not Intrusively Investigated (TEMTADS Result Only) – Anomaly Not Detected During 2nd DGM Survey						
Initial Anomaly ID	**TEMTADS ID**	**Easting (meters)**	**Northing (meters)**	**Initial DGM Amplitude (mV)**	**TEMTADs 2x2 Result**	**--**
TDSA5-11-00022	1454_001_01	555973	4481017	220.93	Does Not Look Like TOI	Anomaly not detected at these locations during 2nd DGM Survey
TDSA5-11-00010	1457_001_01	555980	4481004	43.03	Does Not Look Like TOI	
TDSA5-7-00004	1440_003_01	555600	4480838	380.07	Does Not Look Like TOI	
TDSA5-14-00002	1467_001_01	556242	4481146	5.35	Does Not Look Like TOI	
TDSA5-8-00254	1439_001_01	555601	4481174	10.39	Does Not Look Like TOI	
TDSA5-8-00222	1442_001_01	555618	4481129	17.35	Does Not Look Like TOI	
TDSA5-14-00005	1465_001_01	556202	4481253	4.31	Does Not Look Like TOI	
TDSA5-15-00019	1468_001_01	556330	4481189	5.68	Does Not Look Like TOI	

mV = millivolts

TOI = target of interest

Table 4-7. Anomalies Detected in DSA 6

DSAs 4, 5, and 6, Remedial Investigation Report, Former Raritan Arsenal, Edison, New Jersey

Anomaly ID	Easting (meters)	Northing (meters)	Amplitude (mv)	Type
TDSA6-1-00001	554896.74	4481457.26	44.79	1
TDSA6-3-00001	555098.67	4481417.07	23.59	1
TDSA6-3-00002	555095.56	4481486.76	3.64	6
TDSA6-3-00003	555096.37	4481492.15	11.47	1
TDSA6-4-00001	555196.27	4481439.33	72.56	1

Notes:

Type 1 = Point Source Anomaly

Type 6 = Anomaly Selected Below Established Threshold

Table 5-1. DSA 5 Intrusive Investigation Results

DSAs 4, 5, and 6 RI Report, Former Raritan Arsenal, Edison, New Jersey

Anomaly ID	Easting (meters)	Northing (meters)	Amplitude (mV)	Investigation Date	Classification	Description	Quantity	Depth (inches)	Estimated Weight (lbs)	Disposition	QC Date	QC Comments
T30DSA5R-4-00003	557381.10	4481812.88	50.62	04-Jun-14	QC Seed	QC Seed	1	2	1	Returned To QC	05-Jun-14	QC approved per UXOQC
T30DSA5R-6-00002	557171.36	4481731.78	20.76	04-Jun-14	Non-Munitions Scrap	Scrap Metal	1	4	1	Scrap Bin	05-Jun-14	QC approved per UXOQC
T30DSA5R-6-00004	557243.08	4481797.66	89.86	04-Jun-14	Non-Munitions Scrap	Scrap Metal	1	3	0	Left in Place	05-Jun-14	QC approved per UXOQC
T30DSA5R-6-00006	557389.86	4481896.09	7.73	04-Jun-14	Non-Munitions Scrap	Scrap Metal	1	6	0.5	Scrap Bin	05-Jun-14	QC approved per UXOQC
T30DSA5R-7-00002	557217.86	4481802.48	7.53	04-Jun-14	Non-Munitions Scrap	Scrap Metal	1	8	0.5	Scrap Bin	05-Jun-14	QC approved per UXOQC
T30DSA5R-7-00004	557327.84	4481887.05	29.54	04-Jun-14	Non-Munitions Scrap	Scrap Metal	1	1	0	Left in Place	05-Jun-14	QC approved per UXOQC
T30DSA5R-7-00006	557329.86	4481888.92	61.70	04-Jun-14	Non-Munitions Scrap	Scrap Metal	1	1	0	Left in Place	05-Jun-14	QC approved per UXOQC
T30DSA5R-7-00009	557386.71	4481947.49	124.94	04-Jun-14	Non-Munitions Scrap	Nail	25	4	1	Scrap Bin	05-Jun-14	QC approved per UXOQC
T30DSA5R-7-00010	557388.01	4481948.91	27.33	04-Jun-14	Non-Munitions Scrap	Nail	1	8	0.1	Scrap Bin	05-Jun-14	QC approved per UXOQC
T30DSA5R-7-00011	557390.75	4481952.97	13.45	04-Jun-14	Non-Munitions Scrap	Scrap Metal	1	3	0.5	Scrap Bin	05-Jun-14	QC approved per UXOQC
T30DSA5R-6-000007	557392.14	4481899.41	6.81	04-Jun-14	Non-Munitions Scrap	Scrap Metal	1	8	0.25	Scrap Bin	05-Jun-14	QC approved per UXOQC
TDSA5-6-00003	555507.00	4480773.15	44.06	09-Jun-14	Non-Munitions Scrap	Scrap Metal	1	1	0.5	Scrap Bin	12-Jun-14	QC approved per UXOQC
TDSA5-7-00006	555601.35	4480838.70	7445.05	09-Jun-14	Non-Munitions Scrap	Huge piece of slag	1	0	200	Left in Place	12-Jun-14	QC approved per UXOQC
TDSA5-8-00005	555695.55	4480889.40	80.75	09-Jun-14	Non-Munitions Scrap	Scrap Metal	1	18	2	Scrap Bin	12-Jun-14	QC approved per UXOQC
TDSA5-8-00060	555671.40	4480971.45	96.38	09-Jun-14	Non-Munitions Scrap	Scrap Metal	1	8	4	Scrap Bin	12-Jun-14	QC approved per UXOQC
TDSA5-9-00004	555778.80	4480994.25	2219.87	09-Jun-14	Non-Munitions Scrap	Scrap Metal	1	9	0.25	Scrap Bin	12-Jun-14	QC approved per UXOQC
TDSA5-9-00066	555754.35	4481039.40	1059.91	09-Jun-14	Non-Munitions Scrap	Angle iron	1	4	0	Left in Place	12-Jun-14	QC approved per UXOQC
TDSA5-10-00036	555880.05	4481019.00	138.20	09-Jun-14	Non-Munitions Scrap	Scrap Metal	1	12	5	Scrap Bin	12-Jun-14	QC approved per UXOQC
TDSA5-11-00003	555984.00	4480996.65	115.26	09-Jun-14	Non-Munitions Scrap	Scrap Metal	1	3	0.25	Scrap Bin	12-Jun-14	QC approved per UXOQC
TDSA5-11-00004	555982.20	4480996.94	55.41	09-Jun-14	Other	Roadway	1	0	0	Not Applicable	12-Jun-14	QC approved per UXOQC
TDSA5-11-00019	555975.15	4481013.79	9.34	09-Jun-14	Non-Munitions Scrap	Scrap Metal	1	1	0.5	Scrap Bin	12-Jun-14	QC approved per UXOQC
TDSA5-11-00021	555975.75	4481015.70	225.76	09-Jun-14	Non-Munitions Scrap	Scrap Metal	1	3	0	Left in Place	12-Jun-14	QC approved per UXOQC
TDSA5-12-00079	556040.10	4481117.85	65.97	09-Jun-14	Non-Munitions Scrap	Scrap Metal	1	6	0.5	Scrap Bin	12-Jun-14	QC approved per UXOQC
TDSA5-12-00080	556038.75	4481127.00	61.74	09-Jun-14	Non-Munitions Scrap	Pipe	1	18	1	Left in Place	12-Jun-14	QC approved per UXOQC
TDSA5-12-00081	556038.45	4481129.40	32.73	09-Jun-14	Non-Munitions Scrap	Fence Post	1	12	0	Left in Place	12-Jun-14	QC approved per UXOQC
TDSA5-12-00083	556037.10	4481135.85	72.43	09-Jun-14	Non-Munitions Scrap	Rebar	1	18	0	Left in Place	12-Jun-14	QC approved per UXOQC
TDSA5-14A-00003	556212.73	4481196.54	226.57	09-Jun-14	Non-Munitions Scrap	Scrap Metal	1	6	1	Scrap Bin	12-Jun-14	QC approved per UXOQC
TDSA5-17-00004	556586.10	4481129.55	11.35	09-Jun-14	Non-Munitions Scrap	Scrap Metal	1	3	1	Scrap Bin	12-Jun-14	QC approved per UXOQC
TDSA5R-4-00031	555220.50	4481205.00	631.38	01-Jun-14	Non-Munitions Scrap	Perforated Steel Planking	1	0	0	Left in Place	05-Jun-14	QC approved per UXOQC
TDSA5R-4-00033	555219.90	4481208.00	765.36	01-Jun-14	Non-Munitions Scrap	Perforated Steel Planking	1	0	0	Left in Place	05-Jun-14	QC approved per UXOQC
TDSA5R-4-00034	555220.95	4481209.65	770.48	01-Jun-14	Non-Munitions Scrap	Perforated Steel Planking	1	0	0	Left in Place	05-Jun-14	QC approved per UXOQC
TDSA5R-4-00035	555220.95	4481212.20	585.61	01-Jun-14	Non-Munitions Scrap	Perforated Steel Planking	1	0	0	Left in Place	05-Jun-14	QC approved per UXOQC
TDSA5R-4-00036	555219.95	4481215.00	659.24	04-Jun-14	Non-Munitions Scrap	Perforated Steel Planking	1	0	0	Left in Place	05-Jun-14	QC approved per UXOQC
TDSA5R-4-00037	555220.50	4481216.40	731.63	04-Jun-14	Non-Munitions Scrap	Perforated Steel Planking	1	0	0	Left in Place	05-Jun-14	QC approved per UXOQC
TDSA5R-4-00038	555219.30	4481217.60	420.37	04-Jun-14	Non-Munitions Scrap	Perforated Steel Planking	1	0	0	Left in Place	05-Jun-14	QC approved per UXOQC
TDSA5R-4-00041	555218.40	4481224.05	370.90	04-Jun-14	Non-Munitions Scrap	Perforated Steel Planking	1	0	0	Left in Place	05-Jun-14	QC approved per UXOQC
TDSA5R-4-00042	555218.55	4481225.85	361.94	04-Jun-14	Non-Munitions Scrap	Perforated Steel Planking	1	0	0	Left in Place	05-Jun-14	QC approved per UXOQC
TDSA5R-04-00043	555216.30	4481226.30	602.51	04-Jun-14	Non-Munitions Scrap	Perforated Steel Planking	1	0	0	Left in Place	05-Jun-14	QC approved per UXOQC
TDSA5R-4-00044	555215.85	4481227.90	599.50	04-Jun-14	Non-Munitions Scrap	Perforated Steel Planking	1	0	0	Left in Place	05-Jun-14	QC approved per UXOQC
TDSA5R-4-00045	555217.65	4481227.95	449.71	04-Jun-14	Non-Munitions Scrap	Perforated Steel Planking	1	0	0	Left in Place	05-Jun-14	QC approved per UXOQC
TDSA5R-4-00046	555214.50	4481230.35	447.24	04-Jun-14	Non-Munitions Scrap	Perforated Steel Planking	1	0	0	Left in Place	05-Jun-14	QC approved per UXOQC
TDSA5R-4-00047	555216.30	4481231.40	605.13	04-Jun-14	Non-Munitions Scrap	Perforated Steel Planking	1	0	0	Left in Place	05-Jun-14	QC approved per UXOQC

Table 5-1. DSA 5 Intrusive Investigation Results

DSAs 4, 5, and 6 RI Report, Former Raritan Arsenal, Edison, New Jersey

Anomaly ID	Easting (meters)	Northing (meters)	Amplitude (mV)	Investigation Date	Classification	Description	Quantity	Depth (inches)	Estimated Weight (lbs)	Disposition	QC Date	QC Comments
TDSA5R-4-00066	555207.75	4481259.30	261.34	04-Jun-14	Non-Munitions Scrap	Scrap Metal	1	4	1	Scrap Bin	05-Jun-14	QC approved per UXOQC
TDSA5R-5-00057	555322.40	4481164.85	158.64	04-Jun-14	Non-Munitions Scrap	Scrap Metal	1	1	1	Scrap Bin	05-Jun-14	QC approved per UXOQC
TDSA5R-6-00001	555508.05	4480764.30	53.18	04-Jun-14	Non-Munitions Scrap	Scrap Metal	1	4	0.25	Scrap Bin	05-Jun-14	QC approved per UXOQC
TDSA5R-6-00003	555506.40	4480768.35	184.64	04-Jun-14	Non-Munitions Scrap	Survey Monument	1	0	0	Left in Place	05-Jun-14	QC approved per UXOQC
TDSA5R-6-00004	555508.80	4480771.35	74.32	04-Jun-14	Non-Munitions Scrap	Scrap Metal	1	1	0.25	Scrap Bin	05-Jun-14	QC approved per UXOQC
TDSA5R-6-00005	555506.70	4480771.80	141.54	04-Jun-14	Non-Munitions Scrap	Wire	1	3	0.1	Scrap Bin	05-Jun-14	QC approved per UXOQC
TDSA5R-6-00006	555506.70	4480773.30	89.87	04-Jun-14	Non-Munitions Scrap	Scrap Metal	1	1	0.5	Scrap Bin	05-Jun-14	QC approved per UXOQC
TDSA5R-6-00007	555506.25	4480775.55	91.75	04-Jun-14	Non-Munitions Scrap	Scrap Metal	1	1	1	Scrap Bin	05-Jun-14	QC approved per UXOQC
TDSA5R-6-00074	555462.41	4480940.56	33.71	04-Jun-14	Non-Munitions Scrap	Scrap Metal	1	0	0.25	Scrap Bin	05-Jun-14	QC approved per UXOQC
TDSA5R-6-00251	555404.25	4481219.10	32.96	04-Jun-14	Non-Munitions Scrap	Scrap Metal	1	1	0.1	Scrap Bin	05-Jun-14	QC approved per UXOQC
TDSA5R-7-00001	555602.40	4480834.20	630.22	04-Jun-14	Not Investigated	Underwater	1	48	0	Left in Place	05-Jun-14	QC approved per UXOQC
TDSA5R-7-00004	555597.89	4480841.34	1040.31	04-Jun-14	Non-Munitions Scrap	Scrap Metal	1	5	10	Scrap Bin	05-Jun-14	QC approved per UXOQC
TDSA5R-7-00005	555599.20	4480843.05	3476.37	04-Jun-14	Non-Munitions Scrap	Concrete w/rebar	1	6	0	Left in Place	05-Jun-14	QC approved per UXOQC
TDSA5R-9-00147	555708.30	4481143.35	34.99	09-Jun-14	QC Seed	QC Seed	1	3	0.5	Returned To QC	12-Jun-14	QC approved per UXOQC
TDSA5R-10-00001	555882.30	4481006.10	215.07	09-Jun-14	Non-Munitions Scrap	Hot Rocks / Curb	1	6	0	Left in Place	12-Jun-14	QC approved per UXOQC
TDSA5R-11-00001	555975.95	4481013.90	70.76	09-Jun-14	Non-Munitions Scrap	Scrap Metal	1	1	0.5	Scrap Bin	12-Jun-14	QC approved per UXOQC
TDSA5R-11-00003	555974.25	4481017.35	24.31	09-Jun-14	Non-Munitions Scrap	Rebar	1	1	3	Scrap Bin	12-Jun-14	QC approved per UXOQC
TDSA5R-12-00001	556044.30	4481095.80	7.91	23-May-14	Non-Munitions Scrap	Scrap Metal	1	1	0.25	Scrap Bin	24-May-14	QC approved per UXOQC
TDSA5R-12-00003	556040.31	4481114.11	16.85	23-May-14	Non-Munitions Scrap	Scrap Metal	1	1	0.1	Scrap Bin	24-May-14	QC approved per UXOQC
TDSA5R-12-00004	556041.60	4481115.10	277.65	23-May-14	Non-Munitions Scrap	Scrap Metal	1	1	5	Scrap Bin	24-May-14	QC approved per UXOQC
TDSA5R-12-00005	556040.04	4481117.83	35.42	23-May-14	Non-Munitions Scrap	Scrap Metal	1	2	0.25	Scrap Bin	24-May-14	QC approved per UXOQC
TDSA5R-12-00006	556038.76	4481127.25	39.83	23-May-14	Non-Munitions Scrap	Fence post	1	9	0.1	Left in Place	24-May-14	QC approved per UXOQC
TDSA5R-12-00008	556037.10	4481136.00	60.16	23-May-14	Non-Munitions Scrap	Fence post	1	18	0.1	Left in Place	24-May-14	QC approved per UXOQC
TDSA5R-12-00009	556036.50	4481149.50	55.58	23-May-14	QC Seed	QC Seed	1	2	0.5	Returned To QC	24-May-14	QC approved per UXOQC
TDSA5R-12-00011	556029.29	4481176.16	29.27	23-May-14	Non-Munitions Scrap	Scrap Metal	1	2	0.1	Scrap Bin	24-May-14	QC approved per UXOQC
TDSA5R-12-00012	556029.09	4481178.08	12.66	23-May-14	Non-Munitions Scrap	Scrap Metal	1	2	0.25	Scrap Bin	24-May-14	QC approved per UXOQC
TDSA5R-12-00015	556031.95	4481217.01	79.25	23-May-14	Non-Munitions Scrap	Scrap Metal	1	4	5	Scrap Bin	24-May-14	QC approved per UXOQC
TDSA5R-14-00001	556193.10	4481270.10	32.46	23-May-14	Non-Munitions Scrap	Scrap Metal	1	4	5	Scrap Bin	24-May-14	QC approved per UXOQC
TDSA5R-16-00001	556404.31	4481303.77	14.93	23-May-14	QC Seed	QC Seed	1	6	1	Returned To QC	24-May-14	QC approved per UXOQC
TDSA5R-17-00001	556587.30	4481127.30	8.78	23-May-14	Non-Munitions Scrap	Radio parts	1	5	1	Scrap Bin	24-May-14	QC approved per UXOQC
TDSA5R-17-00002	556585.96	4481129.63	4.80	23-May-14	Non-Munitions Scrap	Angle iron	1	4	0.25	Scrap Bin	24-May-14	QC approved per UXOQC
TDSA5R-19-00001	556703.70	4481410.95	69.50	23-May-14	Non-Munitions Scrap	Scrap Metal	1	1	0.5	Scrap Bin	24-May-14	QC approved per UXOQC
TDSA5R-20-00002	556823.40	4481372.25	5.24	23-May-14	Non-Munitions Scrap	Scrap Metal	1	1	0.1	Scrap Bin	24-May-14	QC approved per UXOQC
TDSA5R-22A-00003	557072.40	4481273.25	4.27	04-Jun-14	Non-Munitions Scrap	Scrap Metal	1	2	0.1	Scrap Bin	05-Jun-14	QC approved per UXOQC
TDSA5R-22A-00007	557005.35	4481544.75	82.27	04-Jun-14	Non-Munitions Scrap	Scrap Metal	3	4	4	Scrap Bin	05-Jun-14	QC approved per UXOQC
TDSA5R-22A-00008	557004.10	4481544.98	17.65	04-Jun-14	Non-Munitions Scrap	Aluminum can	1	2	0.1	Scrap Bin	05-Jun-14	QC approved per UXOQC
TDSA5R-22A-00009	557004.06	4481557.74	18.14	04-Jun-14	Non-Munitions Scrap	Nail	1	3	0.25	Scrap Bin	05-Jun-14	QC approved per UXOQC
TDSA5R-22A-00010	557002.95	4481557.80	5.40	04-Jun-14	Non-Munitions Scrap	Scrap Metal	1	1	0.1	Scrap Bin	05-Jun-14	QC approved per UXOQC
TDSA5R-22A-00011	557004.75	4481558.55	82.59	04-Jun-14	Non-Munitions Scrap	Scrap Metal	1	6	5	Scrap Bin	05-Jun-14	QC approved per UXOQC
TDSA5R-24-00001	557257.80	4481317.20	6.71	04-Jun-14	Non-Munitions Scrap	Scrap Metal	1	4	1	Scrap Bin	05-Jun-14	QC approved per UXOQC
TDSA5R-24-00006	557224.41	4481457.97	10.97	04-Jun-14	Non-Munitions Scrap	Scrap Metal	1	6	2	Scrap Bin	05-Jun-14	QC approved per UXOQC

mV = millivolts QC = quality control

lbs = pounds UXO = unexploded ordnance

Table 5-2. Data Summary and Screening – Surface Soil

DSAs 4, 5, and 6 RI Report, Former Raritan Arsenal, Edison, New Jersey

Parameter Name	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Location of Maximum Concentration	FOD	BTV [1] (mg/kg)	Percentage of Results Exceeding BTV (%)	Residential Soil RSL [2] (mg/kg)	Number of RSL Exceedances	SSL [3] (Soil-To-Groundwater Leachability) (mg/kg)	Number of SSL Exceedances	NJDEP Residential Direct Contact SRS [4] (mg/kg)	Number of NJDEP Residential SRS Exceedances	NJDEP Non-Residential Direct Contact SRS [4] (mg/kg)	Number of NJDEP Non-residential SRS Exceedances
1,3,5-Trinitrobenzene	0.0891	0.0891	DSA-SS33-000.5	1 / 10	--	--	220	0	21	0	--	--	--	--
2-Amino-4,6-dinitrotoluene	0.0374	0.0374	DSA-SS38-000.5	1 / 10	--	--	15	0	0.3	0	--	--	--	--
4-Nitrotoluene	0.0475	0.13	DSA-SS40-000.5	2 / 10	--	--	25	0	0.04	2	--	--	--	--
Nitrobenzene	0.13	0.13	DSA-SS40-000.5	1 / 10	--	--	5.1	0	0.00092	1	5	0	14	0
Barium	47	135	DSA-SS39-000.5	10 / 10	216.7	0	1500	0	820	0	16000	0	59000	0
Chromium	42.9	155	DSA-SS38-000.5	10 / 10	201.3	0	12000	0	1800000	0	--	--	--	--
Iron	24800	61900	DSA-SS36-000.5	10 / 10	66999	0	5500	10	3500	10	--	--	--	--
Lead	77.3	253	DSA-SS36-000.5, DSA-SS38-000.5	10 / 10	294	0	400	0	140	9	400	0	800	0
Manganese	144	728	DSA-SS40-000.5	10 / 10	596.7	10	180	9	280	7	11000	0	5900	0
Molybdenum	1.92	3.11	DSA-SS36-000.5	9 / 10	11.94	0	39	0	20	0	--	--	--	--
Nickel	12.4	39	DSA-SS38-000.5	10 / 10	51.85	0	150	0	260	0	1600	0	23000	0
Vanadium	35.1	123	DSA-SS38-000.5	10 / 10	119	20	39	9	860	0	78	9	1100	0

Notes:

Only analytes detected in surface soil (0-0.5 feet bgs) are included in this table.

[1] Background soil values are the 95/95 Upper Tolerance Limit (UTL) for the Dredge Spoil Areas (DSAs). Refer to Appendix D for the DSA background sampling approach and derivation of the 95/95 UTLs.

[2] EPA's Regional Screening Levels (RSLs) for residential soil, based on a carcinogenic risk of $1x10^{-6}$ and hazard index (HI) of 1. May 2018. https://www.epa.gov/risk/regional-screening-levels-rsls.

[3] EPA's Soil Screening Levels (SSLs) for the soil-to-groundwater leachability pathway, based on a dilution attenuation factor (DAF) of 10. May 2018. https://www.epa.gov/risk/regional-screening-levels-rsls.

[4] NJDEP Residential and Non-Residential Direct Contact Soil Remediation Standards (SRS). September 2017. https://www.nj.gov/dep/srp/guidance/rs.

BTV = Background Threshold Value
FOD = Frequency of Detection
mg/kg = milligrams per kilogram
NJDEP = New Jersey Department of Environmental Protection
RSL = Regional Screening Level
SSL = Soil Screening Level
SRS = Soil Remediation Standard

Table 5-3. Data Summary and Screening – Subsurface Soil

DSAs 4, 5, and 6 RI Report, Former Raritan Arsenal, Edison, New Jersey

Parameter Name	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Location of Maximum Concentration	FOD	BTV [1] (mg/kg)	Percentage of Results Exceeding BTV (%)	Residential Soil RSL [2] (mg/kg)	Number of RSL Exceedances	SSL [3] (Soil-To-Groundwater Leachability) (mg/kg)	Number of SSL Exceedances	NJDEP Residential Direct Contact SRS [4] (mg/kg)	Number of NJDEP Residential SRS Exceedances	NJDEP Non-Residential Direct Contact SRS [4] (mg/kg)	Number of NJDEP Non-residential SRS Exceedances
4-Nitrotoluene	0.0253	0.0454	DSA-SB40-0103	2 / 10	--	--	25	0	0.04	1	--	--	--	--
Nitrocellulose	708	708	DSA-SB40-0103	1 / 10	--	--	19000000	0	130000	0	--	--	--	--
Nitroglycerin	0.0566	0.0566	DSA-SB40-0103	1 / 10	--	--	0.63	0	0.0085	1	--	--	--	--
Barium	72.8	170	DSA-SB41-0103	10 / 10	216.7	0	1500	0	820	0	16000	0	59000	0
Chromium	70.4	172	DSA-SB33-0103	10 / 10	201.3	0	12000	0	1800000	0	--	--	--	--
Iron	38300	86200	DSA-SB41-0103	10 / 10	66999	30	5500	10	3500	10	--	--	--	--
Lead	107	272	DSA-SB40-0103	10 / 10	294	0	400	0	140	9	400	0	800	0
Manganese	192	566	DSA-SB33-0103	10 / 10	596.7	0	180	10	280	4	11000	0	5900	0
Molybdenum	2.04	3.02	DSA-SB36-0103	10 / 10	11.94	0	39	0	20	0	--	--	--	--
Nickel	27.8	44	DSA-SB33-0103	10 / 10	51.85	0	150	0	260	0	1600	0	23000	0
Vanadium	52.6	118	DSA-SB40-0103	10 / 10	119	0	39	10	860	0	78	9	1100	0

Notes:

Only analytes detected in subsurface soil (1-3 feet bgs) are included in this table.

[1] Background soil values are the 95/95 Upper Tolerance Limit (UTL) for the Dredge Spoil Areas (DSAs). Refer to Appendix D for the DSA background sampling approach and derivation of the 95/95 UTLs.

[2] EPA's Regional Screening Levels (RSLs) for residential soil, based on a carcinogenic risk of $1x10^{-6}$ and hazard index (HI) of 1. May 2018. https://www.epa.gov/risk/regional-screening-levels-rsls.

[3] EPA's Soil Screening Levels (SSLs) for the soil-to-groundwater leachability pathway, based on a dilution attenuation factor (DAF) of 10. May 2018. https://www.epa.gov/risk/regional-screening-levels-rsls.

[4] NJDEP Residential and Non-Residential Direct Contact Soil Remediation Standards (SRS). September 2017. https://www.nj.gov/dep/srp/guidance/rs.

BTV = Background Threshold Value
FOD = Frequency of Detection
mg/kg = milligrams per kilogram
NJDEP = New Jersey Department of Environmental Protection
RSL = Regional Screening Level
SSL = Soil Screening Level
SRS = Soil Remediation Standard

Table 5-4. Sample-by-Sample Screening – Surface Soil

DSAs 4, 5, and 6 RI Report, Former Raritan Arsenal, Edison, New Jersey

Station ID	Sample ID	Matrix	Date Collected	Parameter Name	Result/ Qualifier		Units	BTV [1]		Residential Soil RSL [2]		SSL (Soil-to-Groundwater Leachability) [3]		NJDEP Residential Direct Contact SRS[4]		NJDEP Non-Residential Direct Contact SRS[4]	
								Value	Exceed	Value	Exceed	Value	Exceed	Value	Exceed	Value	Exceed
RAA-B1	DSA-SS33-000.5	SS	8/31/2016	1,3,5-Trinitrobenzene	0.0891	J	mg/kg	--	--	220000	No	21	No	--	--	--	--
RAA-B1	DSA-SS33-000.5	SS	8/31/2016	Barium	82.1	=	mg/kg	216.7	No	1500	No	820	No	16000	No	59000	No
RAA-B1	DSA-SS33-000.5	SS	8/31/2016	Chromium	141	=	mg/kg	201.3	No	12000	No	1800000	No	--	--	--	--
RAA-B1	DSA-SS33-000.5	SS	8/31/2016	Iron	56300	=	mg/kg	66999	No	5500	Yes	3500	Yes	--	--	--	--
RAA-B1	DSA-SS33-000.5	SS	8/31/2016	Lead	241	=	mg/kg	294	No	400	No	140	Yes	400	No	800	No
RAA-B1	DSA-SS33-000.5	SS	8/31/2016	Manganese	291	=	mg/kg	596.7	No	180	Yes	280	Yes	11000	No	5900	No
RAA-B1	DSA-SS33-000.5	SS	8/31/2016	Molybdenum	2.52	J	mg/kg	11.94	No	39	No	20	No	--	--	--	--
RAA-B1	DSA-SS33-000.5	SS	8/31/2016	Nickel	35.4	=	mg/kg	51.85	No	150	No	260	No	1600	No	23000	No
RAA-B1	DSA-SS33-000.5	SS	8/31/2016	Vanadium	97.4	=	mg/kg	119.2	No	39	Yes	860	No	78	Yes	1100	No
RAA-A1	DSA-SS34-000.5	SS	8/31/2016	Barium	47	=	mg/kg	216.7	No	1500	No	820	No	16000	No	59000	No
RAA-A1	DSA-SS34-000.5	SS	8/31/2016	Chromium	42.9	=	mg/kg	201.3	No	12000	No	1800000	No	--	--	--	--
RAA-A1	DSA-SS34-000.5	SS	8/31/2016	Iron	24800	=	mg/kg	66999	No	5500	Yes	3500	Yes	--	--	--	--
RAA-A1	DSA-SS34-000.5	SS	8/31/2016	Lead	77.3	=	mg/kg	294	No	400	No	140	No	400	No	800	No
RAA-A1	DSA-SS34-000.5	SS	8/31/2016	Manganese	144	=	mg/kg	596.7	No	180	No	280	No	11000	No	5900	No
RAA-A1	DSA-SS34-000.5	SS	8/31/2016	Nickel	12.4	=	mg/kg	51.85	No	150	No	260	No	1600	No	23000	No
RAA-A1	DSA-SS34-000.5	SS	8/31/2016	Vanadium	35.1	=	mg/kg	119.2	No	39	No	860	No	78	No	1100	No
RAA-A2	DSA-SS35-000.5	SS	8/31/2016	Barium	123	=	mg/kg	216.7	No	1500	No	820	No	16000	No	59000	No
RAA-A2	DSA-SS35-000.5	SS	8/31/2016	Chromium	150	=	mg/kg	201.3	No	12000	No	1800000	No	--	--	--	--
RAA-A2	DSA-SS35-000.5	SS	8/31/2016	Iron	58100	=	mg/kg	66999	No	5500	Yes	3500	Yes	--	--	--	--
RAA-A2	DSA-SS35-000.5	SS	8/31/2016	Lead	244	=	mg/kg	294	No	400	No	140	Yes	400	No	800	No
RAA-A2	DSA-SS35-000.5	SS	8/31/2016	Manganese	204	=	mg/kg	596.7	No	180	Yes	280	No	11000	No	5900	No
RAA-A2	DSA-SS35-000.5	SS	8/31/2016	Molybdenum	2.65	J	mg/kg	11.94	No	39	No	20	No	--	--	--	--
RAA-A2	DSA-SS35-000.5	SS	8/31/2016	Nickel	32.6	=	mg/kg	51.85	No	150	No	260	No	1600	No	23000	No
RAA-A2	DSA-SS35-000.5	SS	8/31/2016	Vanadium	111	=	mg/kg	119.2	No	39	Yes	860	No	78	Yes	1100	No
RAA-B2	DSA-SS36-000.5	SS	8/31/2016	Barium	119	=	mg/kg	216.7	No	1500	No	820	No	16000	No	59000	No
RAA-B2	DSA-SS36-000.5	SS	8/31/2016	Chromium	147	=	mg/kg	201.3	No	12000	No	1800000	No	--	--	--	--
RAA-B2	DSA-SS36-000.5	SS	8/31/2016	Iron	61900	=	mg/kg	66999	No	5500	Yes	3500	Yes	--	--	--	--
RAA-B2	DSA-SS36-000.5	SS	8/31/2016	Lead	253	=	mg/kg	294	No	400	No	140	Yes	400	No	800	No
RAA-B2	DSA-SS36-000.5	SS	8/31/2016	Manganese	400	=	mg/kg	596.7	No	180	Yes	280	Yes	11000	No	5900	No
RAA-B2	DSA-SS36-000.5	SS	8/31/2016	Molybdenum	3.11	J	mg/kg	11.94	No	39	No	20	No	--	--	--	--
RAA-B2	DSA-SS36-000.5	SS	8/31/2016	Nickel	35.3	=	mg/kg	51.85	No	150	No	260	No	1600	No	23000	No
RAA-B2	DSA-SS36-000.5	SS	8/31/2016	Vanadium	120	=	mg/kg	119.2	Yes	39	Yes	860	No	78	Yes	1100	No
RAA-C1	DSA-SS37-000.5	SS	8/31/2016	Barium	130	=	mg/kg	216.7	No	1500	No	820	No	16000	No	59000	No
RAA-C1	DSA-SS37-000.5	SS	8/31/2016	Chromium	126	=	mg/kg	201.3	No	12000	No	1800000	No	--	--	--	--
RAA-C1	DSA-SS37-000.5	SS	8/31/2016	Iron	56200	=	mg/kg	66999	No	5500	Yes	3500	Yes	--	--	--	--
RAA-C1	DSA-SS37-000.5	SS	8/31/2016	Lead	233	=	mg/kg	294	No	400	No	140	Yes	400	No	800	No
RAA-C1	DSA-SS37-000.5	SS	8/31/2016	Manganese	595	=	mg/kg	596.7	No	180	Yes	280	Yes	11000	No	5900	No

Table 5-4. Sample-by-Sample Screening – Surface Soil

DSAs 4, 5, and 6 RI Report, Former Raritan Arsenal, Edison, New Jersey

Station ID	Sample ID	Matrix	Date Collected	Parameter Name	Result/ Qualifier		Units	BTV [1]		Residential Soil RSL [2]		SSL (Soil-to-Groundwater Leachability) [3]		NJDEP Residential Direct Contact SRS[4]		NJDEP Non-Residential Direct Contact SRS[4]	
								Value	Exceed	Value	Exceed	Value	Exceed	Value	Exceed	Value	Exceed
RAA-C1	DSA-SS37-000.5	SS	8/31/2016	Molybdenum	2.24	J	mg/kg	11.94	No	39	No	20	No	--	--	--	--
RAA-C1	DSA-SS37-000.5	SS	8/31/2016	Nickel	38.9	=	mg/kg	51.85	No	150	No	260	No	1600	No	23000	No
RAA-C1	DSA-SS37-000.5	SS	8/31/2016	Vanadium	95.8	=	mg/kg	119.2	No	39	Yes	860	No	78	Yes	1100	No
RAA-C2	DSA-SS38-000.5	SS	8/31/2016	2-Amino-4,6-dinitrotoluene	0.0374	J	mg/kg	--	--	15000	No	0.3	No	--	--	--	--
RAA-C2	DSA-SS38-000.5	SS	8/31/2016	Barium	116	=	mg/kg	216.7	No	1500	No	820	No	16000	No	59000	No
RAA-C2	DSA-SS38-000.5	SS	8/31/2016	Chromium	155	=	mg/kg	201.3	No	12000	No	1800000	No	--	--	--	--
RAA-C2	DSA-SS38-000.5	SS	8/31/2016	Iron	61700	=	mg/kg	66999	No	5500	Yes	3500	Yes	--	--	--	--
RAA-C2	DSA-SS38-000.5	SS	8/31/2016	Lead	253	=	mg/kg	294	No	400	No	140	Yes	400	No	800	No
RAA-C2	DSA-SS38-000.5	SS	8/31/2016	Manganese	471	=	mg/kg	596.7	No	180	Yes	280	Yes	11000	No	5900	No
RAA-C2	DSA-SS38-000.5	SS	8/31/2016	Molybdenum	2.59	J	mg/kg	11.94	No	39	No	20	No	--	--	--	--
RAA-C2	DSA-SS38-000.5	SS	8/31/2016	Nickel	39	=	mg/kg	51.85	No	150	No	260	No	1600	No	23000	No
RAA-C2	DSA-SS38-000.5	SS	8/31/2016	Vanadium	123	=	mg/kg	119.2	Yes	39	Yes	860	No	78	Yes	1100	No
RAA-D4	DSA-SS39-000.5	SS	8/31/2016	Barium	135	=	mg/kg	216.7	No	1500	No	820	No	16000	No	59000	No
RAA-D4	DSA-SS39-000.5	SS	8/31/2016	Chromium	144	=	mg/kg	201.3	No	12000	No	1800000	No	--	--	--	--
RAA-D4	DSA-SS39-000.5	SS	8/31/2016	Iron	56800	=	mg/kg	66999	No	5500	Yes	3500	Yes	--	--	--	--
RAA-D4	DSA-SS39-000.5	SS	8/31/2016	Lead	239	=	mg/kg	294	No	400	No	140	Yes	400	No	800	No
RAA-D4	DSA-SS39-000.5	SS	8/31/2016	Manganese	317	=	mg/kg	596.7	No	180	Yes	280	Yes	11000	No	5900	No
RAA-D4	DSA-SS39-000.5	SS	8/31/2016	Molybdenum	2.29	J	mg/kg	11.94	No	39	No	20	No	--	--	--	--
RAA-D4	DSA-SS39-000.5	SS	8/31/2016	Nickel	33.1	=	mg/kg	51.85	No	150	No	260	No	1600	No	23000	No
RAA-D4	DSA-SS39-000.5	SS	8/31/2016	Vanadium	112	=	mg/kg	119.2	No	39	Yes	860	No	78	Yes	1100	No
RAA-D1	DSA-SS40-000.5	SS	8/31/2016	4-Nitrotoluene	0.13	J	mg/kg	--	--	25000	No	0.04	Yes	--	--	--	--
RAA-D1	DSA-SS40-000.5	SS	8/31/2016	Nitrobenzene	0.13	J	mg/kg	--	--	5100	No	0.00092	Yes	5	No	14	No
RAA-D1	DSA-SS40-000.5	SS	8/31/2016	Barium	131	=	mg/kg	216.7	No	1500	No	820	No	16000	No	59000	No
RAA-D1	DSA-SS40-000.5	SS	8/31/2016	Chromium	117	=	mg/kg	201.3	No	12000	No	1800000	No	--	--	--	--
RAA-D1	DSA-SS40-000.5	SS	8/31/2016	Iron	54500	=	mg/kg	66999	No	5500	Yes	3500	Yes	--	--	--	--
RAA-D1	DSA-SS40-000.5	SS	8/31/2016	Lead	210	=	mg/kg	294	No	400	No	140	Yes	400	No	800	No
RAA-D1	DSA-SS40-000.5	SS	8/31/2016	Manganese	728	=	mg/kg	596.7	Yes	180	Yes	280	Yes	11000	No	5900	No
RAA-D1	DSA-SS40-000.5	SS	8/31/2016	Molybdenum	1.92	J	mg/kg	11.94	No	39	No	20	No	--	--	--	--
RAA-D1	DSA-SS40-000.5	SS	8/31/2016	Nickel	37.7	=	mg/kg	51.85	No	150	No	260	No	1600	No	23000	No
RAA-D1	DSA-SS40-000.5	SS	8/31/2016	Vanadium	91.2	=	mg/kg	119.2	No	39	Yes	860	No	78	Yes	1100	No
RAA-SB41	DSA-SS41-000.5	SS	8/31/2016	4-Nitrotoluene	0.0475	J	mg/kg	--	--	25000	No	0.04	Yes	--	--	--	--
RAA-SB41	DSA-SS41-000.5	SS	8/31/2016	Barium	105	=	mg/kg	216.7	No	1500	No	820	No	16000	No	59000	No
RAA-SB41	DSA-SS41-000.5	SS	8/31/2016	Chromium	132	=	mg/kg	201.3	No	12000	No	1800000	No	--	--	--	--
RAA-SB41	DSA-SS41-000.5	SS	8/31/2016	Iron	57700	=	mg/kg	66999	No	5500	Yes	3500	Yes	--	--	--	--
RAA-SB41	DSA-SS41-000.5	SS	8/31/2016	Lead	226	=	mg/kg	294	No	400	No	140	Yes	400	No	800	No
RAA-SB41	DSA-SS41-000.5	SS	8/31/2016	Manganese	454	=	mg/kg	596.7	No	180	Yes	280	Yes	11000	No	5900	No
RAA-SB41	DSA-SS41-000.5	SS	8/31/2016	Molybdenum	2.39	J	mg/kg	11.94	No	39	No	20	No	--	--	--	--

Table 5-4. Sample-by-Sample Screening – Surface Soil

DSAs 4, 5, and 6 RI Report, Former Raritan Arsenal, Edison, New Jersey

Station ID	Sample ID	Matrix	Date Collected	Parameter Name	Result/ Qualifier		Units	BTV [1]		Residential Soil RSL [2]		SSL (Soil-to-Groundwater Leachability) [3]		NJDEP Residential Direct Contact SRS[4]		NJDEP Non-Residential Direct Contact SRS[4]	
								Value	Exceed	Value	Exceed	Value	Exceed	Value	Exceed	Value	Exceed
RAA-SB41	DSA-SS41-000.5	SS	8/31/2016	Nickel	36.4	=	mg/kg	51.85	No	150	No	260	No	1600	No	23000	No
RAA-SB41	DSA-SS41-000.5	SS	8/31/2016	Vanadium	105	=	mg/kg	119.2	No	39	Yes	860	No	78	Yes	1100	No
RAA-SB42	DSA-SS42-000.5	SS	8/31/2016	Barium	81.5	=	mg/kg	216.7	No	1500	No	820	No	16000	No	59000	No
RAA-SB42	DSA-SS42-000.5	SS	8/31/2016	Chromium	128	=	mg/kg	201.3	No	12000	No	1800000	No	--	--	--	--
RAA-SB42	DSA-SS42-000.5	SS	8/31/2016	Iron	53800	=	mg/kg	66999	No	5500	Yes	3500	Yes	--	--	--	--
RAA-SB42	DSA-SS42-000.5	SS	8/31/2016	Lead	225	=	mg/kg	294	No	400	No	140	Yes	400	No	800	No
RAA-SB42	DSA-SS42-000.5	SS	8/31/2016	Manganese	246	=	mg/kg	596.7	No	180	Yes	280	No	11000	No	5900	No
RAA-SB42	DSA-SS42-000.5	SS	8/31/2016	Molybdenum	2.16	J	mg/kg	11.94	No	39	No	20	No	--	--	--	--
RAA-SB42	DSA-SS42-000.5	SS	8/31/2016	Nickel	32.7	=	mg/kg	51.85	No	150	No	260	No	1600	No	23000	No
RAA-SB42	DSA-SS42-000.5	SS	8/31/2016	Vanadium	95.2	=	mg/kg	119.2	No	39	Yes	860	No	78	Yes	1100	No

Notes:

Only analytes and concentrations detected in surface soil (0-0.5 feet bgs) are included in this table.

[1] Background soil values are the 95/95 Upper Tolerance Limit (UTL) for the Dredge Spoil Areas (DSAs). Refer to Appendix D for the DSA background sampling approach and derivation of the 95/95 UTLs.

[2] EPA's Regional Screening Levels (RSL) for residential soil, based on a carcinogenic risk of $1x10^{-6}$ and hazard index (HI) of 1. May 2018. https://www.epa.gov/risk/regional-screening-levels-rsls.

[3] EPA's Soil Screening Levels (SSLs) for the soil-to-groundwater leachability pathway, based on a dilution attenuation factor (DAF) of 10. May 2018. ttps://www.epa.gov/risk/regional-screening-levels-rsls.

[4] NJDEP Residential and Non-Residential Direct Contact Soil Remediation Standards (SRS). September 2017. https://www.nj.gov/dep/srp/guidance/rs.

BTV = Background Threshold Value
J = result is estimated
mg/kg = milligrams per kilogram
NJDEP = New Jersey Department of Environmental Protection
RSL = Regional Screening Level
SSL = Soil Screening Level
SRS = Soil Remediation Standard

Table 5-5. Sample-by-Sample Screening – Subsurface Soil

DSAs 4, 5, and 6 RI Report, Former Raritan Arsenal, Edison, New Jersey

Station ID	Sample ID	Matrix	Date Collected	Parameter Name	Result/ Qualifier		Units	BTV [1]		Residential Soil RSL [2]		SSL (Soil-to-Groundwater Leachability) [3]		NJDEP Residential Direct Contact SRS[4]		NJDEP Non-Residential Direct Contact SRS[4]	
								Value	Exceed	Value	Exceed	Value	Exceed	Value	Exceed	Value	Exceed
RAA-B1	DSA-SB33-0103	SB	8/31/2016	Barium	167	=	mg/kg	216.7	No	1500	No	820	No	16000	No	59000	No
RAA-B1	DSA-SB33-0103	SB	8/31/2016	Chromium	172	=	mg/kg	201.3	No	12000	No	1800000	No	--	--	--	--
RAA-B1	DSA-SB33-0103	SB	8/31/2016	Iron	61200	=	mg/kg	66999	No	5500	Yes	3500	Yes	--	--	--	--
RAA-B1	DSA-SB33-0103	SB	8/31/2016	Lead	259	=	mg/kg	294	No	400	No	140	Yes	400	No	800	No
RAA-B1	DSA-SB33-0103	SB	8/31/2016	Manganese	299	=	mg/kg	596.7	No	180	Yes	280	Yes	11000	No	5900	No
RAA-B1	DSA-SB33-0103	SB	8/31/2016	Molybdenum	2.86	J	mg/kg	11.94	No	39	No	20	No	--	--	--	--
RAA-B1	DSA-SB33-0103	SB	8/31/2016	Nickel	35.5	=	mg/kg	51.85	No	150	No	260	No	1600	No	23000	No
RAA-B1	DSA-SB33-0103	SB	8/31/2016	Vanadium	108	=	mg/kg	119.2	No	39	Yes	860	No	78	Yes	1100	No
RAA-A1	DSA-SB34-0103	SB	8/31/2016	Barium	72.8	=	mg/kg	216.7	No	1500	No	820	No	16000	No	59000	No
RAA-A1	DSA-SB34-0103	SB	8/31/2016	Chromium	70.4	=	mg/kg	201.3	No	12000	No	1800000	No	--	--	--	--
RAA-A1	DSA-SB34-0103	SB	8/31/2016	Iron	38300	=	mg/kg	66999	No	5500	Yes	3500	Yes	--	--	--	--
RAA-A1	DSA-SB34-0103	SB	8/31/2016	Lead	107	=	mg/kg	294	No	400	No	140	No	400	No	800	No
RAA-A1	DSA-SB34-0103	SB	8/31/2016	Manganese	566	=	mg/kg	596.7	No	180	Yes	280	Yes	11000	No	5900	No
RAA-A1	DSA-SB34-0103	SB	8/31/2016	Molybdenum	2.04	J	mg/kg	11.94	No	39	No	20	No	--	--	--	--
RAA-A1	DSA-SB34-0103	SB	8/31/2016	Nickel	44	J	mg/kg	51.85	No	150	No	260	No	1600	No	23000	No
RAA-A1	DSA-SB34-0103	SB	8/31/2016	Vanadium	52.6	J	mg/kg	119.2	No	39	Yes	860	No	78	No	1100	No
RAA-A2	DSA-SB35-0103	SB	8/31/2016	Barium	133	=	mg/kg	216.7	No	1500	No	820	No	16000	No	59000	No
RAA-A2	DSA-SB35-0103	SB	8/31/2016	Chromium	148	=	mg/kg	201.3	No	12000	No	1800000	No	--	--	--	--
RAA-A2	DSA-SB35-0103	SB	8/31/2016	Iron	55900	=	mg/kg	66999	No	5500	Yes	3500	Yes	--	--	--	--
RAA-A2	DSA-SB35-0103	SB	8/31/2016	Lead	224	=	mg/kg	294	No	400	No	140	Yes	400	No	800	No
RAA-A2	DSA-SB35-0103	SB	8/31/2016	Manganese	225	=	mg/kg	596.7	No	180	Yes	280	No	11000	No	5900	No
RAA-A2	DSA-SB35-0103	SB	8/31/2016	Molybdenum	2.81	J	mg/kg	11.94	No	39	No	20	No	--	--	--	--
RAA-A2	DSA-SB35-0103	SB	8/31/2016	Nickel	31.7	=	mg/kg	51.85	No	150	No	260	No	1600	No	23000	No
RAA-A2	DSA-SB35-0103	SB	8/31/2016	Vanadium	104	=	mg/kg	119.2	No	39	Yes	860	No	78	Yes	1100	No
RAA-B2	DSA-SB36-0103	SB	8/31/2016	Barium	159	=	mg/kg	216.7	No	1500	No	820	No	16000	No	59000	No
RAA-B2	DSA-SB36-0103	SB	8/31/2016	Chromium	167	=	mg/kg	201.3	No	12000	No	1800000	No	--	--	--	--
RAA-B2	DSA-SB36-0103	SB	8/31/2016	Iron	64000	=	mg/kg	66999	No	5500	Yes	3500	Yes	--	--	--	--
RAA-B2	DSA-SB36-0103	SB	8/31/2016	Lead	250	=	mg/kg	294	No	400	No	140	Yes	400	No	800	No
RAA-B2	DSA-SB36-0103	SB	8/31/2016	Manganese	241	=	mg/kg	596.7	No	180	Yes	280	No	11000	No	5900	No
RAA-B2	DSA-SB36-0103	SB	8/31/2016	Molybdenum	3.02	J	mg/kg	11.94	No	39	No	20	No	--	--	--	--
RAA-B2	DSA-SB36-0103	SB	8/31/2016	Nickel	33.9	=	mg/kg	51.85	No	150	No	260	No	1600	No	23000	No
RAA-B2	DSA-SB36-0103	SB	8/31/2016	Vanadium	111	=	mg/kg	119.2	No	39	Yes	860	No	78	Yes	1100	No
RAA-C1	DSA-SB37-0103	SB	8/31/2016	Barium	156	=	mg/kg	216.7	No	1500	No	820	No	16000	No	59000	No
RAA-C1	DSA-SB37-0103	SB	8/31/2016	Chromium	152	=	mg/kg	201.3	No	12000	No	1800000	No	--	--	--	--
RAA-C1	DSA-SB37-0103	SB	8/31/2016	Iron	75900	=	mg/kg	66999	Yes	5500	Yes	3500	Yes	--	--	--	--
RAA-C1	DSA-SB37-0103	SB	8/31/2016	Lead	233	=	mg/kg	294	No	400	No	140	Yes	400	No	800	No
RAA-C1	DSA-SB37-0103	SB	8/31/2016	Manganese	304	=	mg/kg	596.7	No	180	Yes	280	Yes	11000	No	5900	No

Table 5-5. Sample-by-Sample Screening – Subsurface Soil

DSAs 4, 5, and 6 RI Report, Former Raritan Arsenal, Edison, New Jersey

Station ID	Sample ID	Matrix	Date Collected	Parameter Name	Result/ Qualifier		Units	BTV [1]		Residential Soil RSL [2]		SSL (Soil-to-Groundwater Leachability) [3]		NJDEP Residential Direct Contact SRS[4]		NJDEP Non-Residential Direct Contact SRS[4]	
								Value	Exceed	Value	Exceed	Value	Exceed	Value	Exceed	Value	Exceed
RAA-C1	DSA-SB37-0103	SB	8/31/2016	Molybdenum	2.65	J	mg/kg	11.94	No	39	No	20	No	--	--	--	--
RAA-C1	DSA-SB37-0103	SB	8/31/2016	Nickel	32.5	=	mg/kg	51.85	No	150	No	260	No	1600	No	23000	No
RAA-C1	DSA-SB37-0103	SB	8/31/2016	Vanadium	106	=	mg/kg	119.2	No	39	Yes	860	No	78	Yes	1100	No
RAA-C2	DSA-SB38-0103	SB	8/31/2016	Nitrocellulose	708	J	mg/kg	--	--	1.90E+10	No	130000	No	--	--	--	--
RAA-C2	DSA-SB38-0103	SB	8/31/2016	Barium	152	=	mg/kg	216.7	No	1500	No	820	No	16000	No	59000	No
RAA-C2	DSA-SB38-0103	SB	8/31/2016	Chromium	156	=	mg/kg	201.3	No	12000	No	1800000	No	--	--	--	--
RAA-C2	DSA-SB38-0103	SB	8/31/2016	Iron	66100	=	mg/kg	66999	No	5500	Yes	3500	Yes	--	--	--	--
RAA-C2	DSA-SB38-0103	SB	8/31/2016	Lead	251	=	mg/kg	294	No	400	No	140	Yes	400	No	800	No
RAA-C2	DSA-SB38-0103	SB	8/31/2016	Manganese	298	=	mg/kg	596.7	No	180	Yes	280	Yes	11000	No	5900	No
RAA-C2	DSA-SB38-0103	SB	8/31/2016	Molybdenum	2.8	J	mg/kg	11.94	No	39	No	20	No	--	--	--	--
RAA-C2	DSA-SB38-0103	SB	8/31/2016	Nickel	33.4	=	mg/kg	51.85	No	150	No	260	No	1600	No	23000	No
RAA-C2	DSA-SB38-0103	SB	8/31/2016	Vanadium	118	=	mg/kg	119.2	No	39	Yes	860	No	78	Yes	1100	No
RAA-D4	DSA-SB39-0103	SB	8/31/2016	Barium	141	=	mg/kg	216.7	No	1500	No	820	No	16000	No	59000	No
RAA-D4	DSA-SB39-0103	SB	8/31/2016	Chromium	146	=	mg/kg	201.3	No	12000	No	1800000	No	--	--	--	--
RAA-D4	DSA-SB39-0103	SB	8/31/2016	Iron	59600	=	mg/kg	66999	No	5500	Yes	3500	Yes	--	--	--	--
RAA-D4	DSA-SB39-0103	SB	8/31/2016	Lead	213	=	mg/kg	294	No	400	No	140	Yes	400	No	800	No
RAA-D4	DSA-SB39-0103	SB	8/31/2016	Manganese	242	=	mg/kg	596.7	No	180	Yes	280	No	11000	No	5900	No
RAA-D4	DSA-SB39-0103	SB	8/31/2016	Molybdenum	2.72	J	mg/kg	11.94	No	39	No	20	No	--	--	--	--
RAA-D4	DSA-SB39-0103	SB	8/31/2016	Nickel	31.3	=	mg/kg	51.85	No	150	No	260	No	1600	No	23000	No
RAA-D4	DSA-SB39-0103	SB	8/31/2016	Vanadium	102	=	mg/kg	119.2	No	39	Yes	860	No	78	Yes	1100	No
RAA-D1	DSA-SB40-0103	SB	8/31/2016	4-Nitrotoluene	0.0454	J	mg/kg	--	--	25000	No	0.04	Yes	--	--	--	--
RAA-D1	DSA-SB40-0103	SB	8/31/2016	Nitroglycerin	0.0566	J	mg/kg	--	--	630	No	0.0085	Yes	--	--	--	--
RAA-D1	DSA-SB40-0103	SB	8/31/2016	Barium	153	=	mg/kg	216.7	No	1500	No	820	No	16000	No	59000	No
RAA-D1	DSA-SB40-0103	SB	8/31/2016	Chromium	131	=	mg/kg	201.3	No	12000	No	1800000	No	--	--	--	--
RAA-D1	DSA-SB40-0103	SB	8/31/2016	Iron	69400	=	mg/kg	66999	Yes	5500	Yes	3500	Yes	--	--	--	--
RAA-D1	DSA-SB40-0103	SB	8/31/2016	Lead	272	=	mg/kg	294	No	400	No	140	Yes	400	No	800	No
RAA-D1	DSA-SB40-0103	SB	8/31/2016	Manganese	221	=	mg/kg	596.7	No	180	Yes	280	No	11000	No	5900	No
RAA-D1	DSA-SB40-0103	SB	8/31/2016	Molybdenum	2.43	J	mg/kg	11.94	No	39	No	20	No	--	--	--	--
RAA-D1	DSA-SB40-0103	SB	8/31/2016	Nickel	27.8	=	mg/kg	51.85	No	150	No	260	No	1600	No	23000	No
RAA-D1	DSA-SB40-0103	SB	8/31/2016	Vanadium	98.9	=	mg/kg	119.2	No	39	Yes	860	No	78	Yes	1100	No
RAA-SB41	DSA-SB41-0103	SB	8/31/2016	4-Nitrotoluene	0.0253	J	mg/kg	--	--	25000	No	0.04	No	--	--	--	--
RAA-SB41	DSA-SB41-0103	SB	8/31/2016	Barium	170	=	mg/kg	216.7	No	1500	No	820	No	16000	No	59000	No
RAA-SB41	DSA-SB41-0103	SB	8/31/2016	Chromium	152	=	mg/kg	201.3	No	12000	No	1800000	No	--	--	--	--
RAA-SB41	DSA-SB41-0103	SB	8/31/2016	Iron	86200	=	mg/kg	66999	Yes	5500	Yes	3500	Yes	--	--	--	--
RAA-SB41	DSA-SB41-0103	SB	8/31/2016	Lead	268	=	mg/kg	294	No	400	No	140	Yes	400	No	800	No
RAA-SB41	DSA-SB41-0103	SB	8/31/2016	Manganese	256	=	mg/kg	596.7	No	180	Yes	280	No	11000	No	5900	No
RAA-SB41	DSA-SB41-0103	SB	8/31/2016	Molybdenum	2.69	J	mg/kg	11.94	No	39	No	20	No	--	--	--	--

Table 5-5. Sample-by-Sample Screening – Subsurface Soil

DSAs 4, 5, and 6 RI Report, Former Raritan Arsenal, Edison, New Jersey

Station ID	Sample ID	Matrix	Date Collected	Parameter Name	Result/ Qualifier		Units	BTV [1]		Residential Soil RSL [2]		SSL (Soil-to-Groundwater Leachability) [3]		NJDEP Residential Direct Contact SRS[4]		NJDEP Non-Residential Direct Contact SRS[4]	
								Value	Exceed	Value	Exceed	Value	Exceed	Value	Exceed	Value	Exceed
RAA-SB41	DSA-SB41-0103	SB	8/31/2016	Nickel	29.5	=	mg/kg	51.85	No	150	No	260	No	1600	No	23000	No
RAA-SB41	DSA-SB41-0103	SB	8/31/2016	Vanadium	108	=	mg/kg	119.2	No	39	Yes	860	No	78	Yes	1100	No
RAA-SB42	DSA-SB42-0103	SB	8/31/2016	Barium	169	=	mg/kg	216.7	No	1500	No	820	No	16000	No	59000	No
RAA-SB42	DSA-SB42-0103	SB	8/31/2016	Chromium	146	=	mg/kg	201.3	No	12000	No	1800000	No	--	--	--	--
RAA-SB42	DSA-SB42-0103	SB	8/31/2016	Iron	65400	=	mg/kg	66999	No	5500	Yes	3500	Yes	--	--	--	--
RAA-SB42	DSA-SB42-0103	SB	8/31/2016	Lead	264	=	mg/kg	294	No	400	No	140	Yes	400	No	800	No
RAA-SB42	DSA-SB42-0103	SB	8/31/2016	Manganese	192	=	mg/kg	596.7	No	180	Yes	280	No	11000	No	5900	No
RAA-SB42	DSA-SB42-0103	SB	8/31/2016	Molybdenum	2.81	J	mg/kg	11.94	No	39	No	20	No	--	--	--	--
RAA-SB42	DSA-SB42-0103	SB	8/31/2016	Nickel	29.2	=	mg/kg	51.85	No	150	No	260	No	1600	No	23000	No
RAA-SB42	DSA-SB42-0103	SB	8/31/2016	Vanadium	109	=	mg/kg	119.2	No	39	Yes	860	No	78	Yes	1100	No

Notes:

Only analytes and concentrations detected in subsurface soil (1-3 feet bgs) are included in this table.

[1] Background soil values are the 95/95 Upper Tolerance Limit (UTL) for the Dredge Spoil Areas (DSAs). Refer to Appendix D for the DSA background sampling approach and derivation of the 95/95 UTLs.

[2] EPA's Regional Screening Levels (RSLs) for residential soil, based on a carcinogenic risk of $1x10^{-6}$ and hazard index (HI) of 1. May 2018. https://www.epa.gov/risk/regional-screening-levels-rsls.

[3] EPA's Soil Screening Levels (SSLs) for the soil-to-groundwater leachability pathway, based on a dilution attenuation factor (DAF) of 10. May 2018. https://www.epa.gov/risk/regional-screening-levels-rsls.

[4] NJDEP Residential and Non-Residential Direct Contact Soil Remediation Standards (SRS). September 2017. https://www.nj.gov/dep/srp/guidance/rs.

BTV = Background Threshold Value
J = result is estimated
mg/kg = milligrams per kilogram
NJDEP = New Jersey Department of Environmental Protection
RSL = Regional Screening Level
SSL = Soil Screening Level
SRS = Soil Remediation Standard

Table 5-6. Site-to-Background Comparison Results for Soil

DSAs 4, 5, and 6, Remedial Investigation Report, Former Raritan Arsenal, Edison, New Jersey

Parameter	No. of Site Samples	No. of Site Non-Detects	No. of Bkgrd Samples	No. of Bkgrd Non-Detects	Shapiro-Wilk Normality Test Site Samples (p-value)	Shapiro-Wilk Normality Test Bkgrd Samples (p-value)	F-Test for Equal Variance (p-value)	Student's t-test (p-value)	Welch's t-test (p-value)	Permutation Test on Mean (p-value)	Wilcoxon Rank Sum Test (p-value)	Do Site Conc. Exceed Bkgrd?	Basis of Decision	Log Transform Performed
Iron	20	0	32	0	0.030	0.098	0.574	0.000	0.000	0.000	0.000	Yes	NP, perm	No
Manganese	20	0	32	0	0.011	0.000	0.684	0.013	0.012	0.017	0.004	Yes	NP, perm	No
Vanadium	20	0	32	0	0.000	0.001	0.307	0.000	0.000	0.000	0.000	Yes	NP, perm	No

Notes:
Soil analytical data presented on this table include site and background samples collected from 0-10 feet bgs.
Bkgrd = background
Conc. = concentrations

Basis of Decision:
NP = nonparametric (Wilcoxon Rank Sum test)
perm = permutation test

Table 6-1. Selection of Chemicals of Potential Concern – Surface Soil at DSA 5

DSAs 4, 5, and 6 RI Report, Former Raritan Arsenal, Edison, New Jersey

CAS Number	Chemical	Minimum Detected Conc (mg/kg)		Maximum Detected Conc (mg/kg)		Location of Maximum Detected Conc	Frequency of Detection	Background Value [1] (mg/kg)	Industrial RSL [2] (mg/kg)		Residential RSL [3] (mg/kg)		Industrial COPC [4] (Yes/No)	Residential COPC [4] (Yes/No)
Explosives														
99-35-4	1,3,5-Trinitrobenzene	0.089	J	0.089	J	RAA-B1	1 / 10	NA	3200	n	220	n	No	No
35572-78-2	2-Amino-4,6-dinitrotoluene	0.037	J	0.037	J	RAA-C2	1 / 10	NA	230	n	15	n	No	No
99-99-0	4-Nitrotoluene	0.048	J	0.13	J	RAA-D1	2 / 10	NA	140	c	25	n	No	No
98-95-3	Nitrobenzene	0.13	J	0.13	J	RAA-D1	1 / 10	NA	22	c	5.1	c	No	No
Metals														
7440-39-3	Barium	47		135		RAA-D4	10 / 10	217	22000	n	1500	n	No	No
7440-47-3	Chromium	43		155		RAA-C2	10 / 10	201	180000	n	12000	n	No	No
7439-89-6	Iron	24800		61900		RAA-B2	10 / 10	66999	82000	n	5500	n	No	Yes
7439-92-1	Lead	77		253		RAA-B2, RAA-C2	10 / 10	294	800	n	400	L	No	No
7439-96-5	Manganese	144		728		RAA-D1	10 / 10	597	2600	n	180	n	No	Yes
7439-98-7	Molybdenum	1.9	J	3.1	J	RAA-B2	9 / 10	12	580	n	39	n	No	No
7440-02-0	Nickel	12		39		RAA-C2	10 / 10	52	2200	n	150	n	No	No
7440-62-2	Vanadium	35		123		RAA-C2	10 / 10	119	580	n	39	n	No	Yes

Notes:

[1] Background soil values are the 95% upper tolerance limit (UTL) with 95% coverage (95/95 UTL) for the dredge spoil areas (DSAs).

[2] EPA's Regional Screening Levels (May 2018) for Industrial Soil (Hazard Quotient = 0.1 and Risk = 1E-06).

[3] EPA's Regional Screening Levels (May 2018) for Residential Soil (Hazard Quotient = 0.1 and Risk = 1E-06).

[4] Chemical was selected as a COPC if the maximum detected concentration exceeded the RSL.

c = carcinogenic
COPC = chemical of potential concern
J = estimated value
L = action level is used for lead
mg/kg = milligrams per kilogram
n = noncarcinogenic
NA = not applicable/not available
RSL = residential screening level

Table 6-2. Selection of Chemicals of Potential Concern – Subsurface Soil at DSA 5

DSAs 4, 5, and 6 RI Report, Former Raritan Arsenal, Edison, New Jersey

CAS Number	Chemical	Minimum Detected Conc (mg/kg)		Maximum Detected Conc (mg/kg)		Location of Maximum Detected Conc	Frequency of Detection	Background Value [1] (mg/kg)	Industrial RSL [2] (mg/kg)		Residential RSL [3] (mg/kg)		Industrial COPC [4] (Yes/No)	Residential COPC [4] (Yes/No)
Explosives														
99-99-0	4-Nitrotoluene	0.025	J	0.045	J	RAA-D1	2 / 10	NA	140	c	25	n	No	No
9004-70-0	Nitrocellulose	708	J	708	J	RAA-C2	1 / 10	NA	250000000	n	19000000	n	No	No
55-63-0	Nitroglycerin	0.057	J	0.057	J	RAA-D1	1 / 10	NA	8.2	n	0.63	n	No	No
Metals														
7440-39-3	Barium	73		170		RAA-SB41	10 / 10	217	22000	n	1500	n	No	No
7440-47-3	Chromium	70		172		RAA-B1	10 / 10	201	180000	n	12000	n	No	No
7439-89-6	Iron	38300		86200		RAA-SB41	10 / 10	66999	82000	n	5500	n	Yes	Yes
7439-92-1	Lead	107		272		RAA-D1	10 / 10	294	800	n	400	L	No	No
7439-96-5	Manganese	192		566		RAA-A1	10 / 10	597	2600	n	180	n	No	Yes
7439-98-7	Molybdenum	2	J	3	J	RAA-B2	10 / 10	12	580	n	39	n	No	No
7440-02-0	Nickel	28		44	J	RAA-A1	10 / 10	52	2200	n	150	n	No	No
7440-62-2	Vanadium	53	J	118		RAA-C2	10 / 10	119	580	n	39	n	No	Yes

Notes:

[1] Background soil values are the 95% upper tolerance limit with 95% coverage (95/95 UTL) for the dredge spoil areas (DSAs).

[2] EPA's Regional Screening Levels (May 2018) for Industrial Soil (Hazard Quotient = 0.1 and Risk = 1E-06).

[3] EPA's Regional Screening Levels (May 2018) for Residential Soil (Hazard Quotient = 0.1 and Risk = 1E-06).

[4] Chemical was selected as a COPC if the maximum detected concentration exceeded the RSL.

mg/kg = milligram per kilogram
c = carcinogenic
COPC = chemical of potential concern
J = estimated value
NA = not applicable/not available
c = noncarcinogenic
L = action level is used for lead

Table 6-3. Industrial Carcinogenic Risks and Noncarcinogenic Hazards – Subsurface Soil at DSA 5

DSAs 4, 5, and 6 RI Report, Former Raritan Arsenal, Edison, New Jersey

CAS Number	Chemical of Potential Concern	Maximum Detected Conc (mg/kg)	95% UCL [1] (Distribution) (mg/kg)		95% UCL Rationale	EPC [2] (mg/kg)	Carcinogenic RSL [3] (mg/kg)	Noncarcinogenic RSL [3] (mg/kg)	ELCR [4]	HI [5]
Metal										
7439-89-6	Iron	86200	71489	N	95% Student's-t UCL	71489	NA	820000	NA	0.1

Notes:

[1] ProUCL, Version 5.1.002 used to determine distribution of data and calculate 95% UCL, following recommendations in User's Guide (EPA. June 2016. ProUCL, Version 5.1, Prepared by Lockheed Martin Environmental Services).

[2] EPC is the lower value of the maximum detected concentration and 95% UCL.

[3] EPA's Regional Screening Levels (May 2018) for Industrial Soil (Hazard Quotient = 1 and Risk = 1E-06).

[4] An ELCR was not calculated because a carcinogenic RSL is not available.

[5] Calculated using the following equation: HI = EPC / Noncarcinogenic RSL.

mg/kg = milligrams per kilogram
ELCR = excess lifetime cancer risk
EPC = exposure point concentration
HI = hazard index
NA = not applicable/not available
RSL = Regional Screening Level
UCL = upper confidence limit
N = normal distribution

Table 6-4. Residential Carcinogenic Risks and Noncarcinogenic Hazards – Surface Soil at DSA 5

DSAs 4, 5, and 6 RI Report, Former Raritan Arsenal, Edison, New Jersey

CAS Number	Chemical of Potential Concern	Maximum Detected Conc (mg/kg)	95% UCL [1] (Distribution) (mg/kg)		95% UCL Rationale	EPC [2] (mg/kg)	Carcinogenic RSL [3] (mg/kg)	Noncarcinogenic RSL [3] (mg/kg)	ELCR [4]	HI [5]	Target Organ
Metals											
7439-89-6	Iron	61900	60360	N	95% Student's-t UCL	60360	NA	55000	NA	1	Gastrointestinal
7439-96-5	Manganese	728	490	N	95% Student's-t UCL	490	NA	1800	NA	0.3	Nervous System
7440-62-2	Vanadium	123	113	N	95% Student's-t UCL	113	NA	390	NA	0.3	Dermal, Respiratory

Total HI = 2
Max Target Organ HI = 1 (Gastrointestinal)

Notes:

[1] ProUCL, Version 5.1.002 used to determine distribution of data and calculate 95% UCL, following recommendations in User's Guide (EPA. June 2016. ProUCL, Version 5.1, Prepared by Lockheed Martin Environmental Services).

[2] EPC is the lower value of the maximum detected concentration and 95% UCL.

[3] EPA's Regional Screening Levels (May 2018) for Residential Soil (Hazard Quotient = 1 and Risk = 1E-06).

[4] ELCRs were not calculated because carcinogenic RSLs are not available.

[5] Calculated using the following equation: HI = EPC / Noncarcinogenic RSL.

mg/kg = milligrams per kilogram
ELCR = excess lifetime cancer risk
EPC = exposure point concentration
HI = hazard index
NA = not applicable/not available
RSL = Regional Screening Level
UCL = upper confidence limit
N = Normal distribution

Table 6-5. Residential Carcinogenic Risks and Noncarcinogenic Hazards – Subsurface Soil at DSA 5

DSAs 4, 5, and 6 RI Report, Former Raritan Arsenal, Edison, New Jersey

CAS Number	Chemical of Potential Concern	Maximum Detected Conc (mg/kg)	95% UCL [1] (Distribution) (mg/kg)		95% UCL Rationale	EPC [2] (mg/kg)	Carcinogenic RSL [3] (mg/kg)	Noncarcinogenic RSL [3] (mg/kg)	ELCR [4]	HI [5]	Target Organ
Metals											
7439-89-6	Iron	86200	71489	N	95% Student's-t UCL	71489	NA	55000	NA	1	Gastrointestinal
7439-96-5	Manganese	566	350		95% Modified-t UCL	350	NA	1800	NA	0.2	Nervous System
7440-62-2	Vanadium	118	112	N	95% Student's-t UCL	112	NA	390	NA	0.3	Dermal, Respiratory

Total HI = 2
Max Target Organ HI = 1 (Gastrointestinal)

Notes:

[1] ProUCL, Version 5.1.002 used to determine distribution of data and calculate 95% UCL, following recommendations in User's Guide (EPA. June 2016. ProUCL, Version 5.1, Prepared by Lockheed Martin Environmental Services).

[2] EPC is the lower value of the maximum detected concentration and 95% UCL.

[3] EPA's Regional Screening Levels (May 2018) for Residential Soil (Hazard Quotient = 1 and Risk = 1E-06).

[4] ELCRs were not calculated because carcinogenic RSLs are not available.

[5] Calculated using the following equation: HI = EPC / Noncarcinogenic RSL.

mg/kg = milligrams per kilogram
ELCR = excess lifetime cancer risk
EPC = exposure point concentration
HI = hazard index
NA = not applicable/not available
RSL = Regional Screening Level
UCL = upper confidence limit
N = Normal distribution

Table 8-1. Data Summary and Ecological Soil Screening for DSA 5 – Surface Soil

DSAs 4, 5, and 6 RI Report, Former Raritan Arsenal, Edison, New Jersey

Parameter Name	Minimum Detected Concentration (mg/kg)	Mean Detected Concentration (mg/kg) [1]	Maximum Detected Concentration (mg/kg)	Location of Maximum Concentration	FOD	BTV [2] (mg/kg)	Number of BTV Exceedances	Ecological Screening Value (ESV) (mg/kg)	Source of ESV	Number of ESV Exceedances	Maximum-based Hazard Quotient	Retain as COPEC?	Rationale
1,3,5-Trinitrobenzene	0.0891	--	0.0891	RAA-B1	1 / 10	--	--	10	EPA, 2015	0	0.009	No	No exceedances of the ESV
2-Amino-4,6-dinitrotoluene	0.0374	--	0.0374	RAA-C2	1 / 10	--	--	14	EPA, 2015	0	0.003	No	No exceedances of the ESV
4-Nitrotoluene	0.0475	--	0.13	RAA-D1	2 / 10	--	--	0.14	EPA, 2015	0	0.93	No	No exceedances of the ESV
Nitrobenzene	0.13	--	0.13	RAA-D1	1 / 10	--	--	2.2	EPA, 2015	0	0.06	No	No exceedances of the ESV
Barium	47	--	135	RAA-D4	10 / 10	216.7	0	330	EPA, 2005a	0	0.41	No	Consistent with background, no exceedance of ESV
Chromium	42.9	--	155	RAA-C2	10 / 10	201.3	0	26	EPA, 2008	10	**6**	No	Consistent with background
Iron	24800	--	61900	RAA-B2	10 / 10	66999	0	NSV	--	--	--	No	Consistent with background
Lead	77.3	--	253	RAA-B2, RAA-C2	10 / 10	294	0	11	EPA, 2005b	10	**23**	No	Consistent with background
Manganese	144	385	728	RAA-D1	10 / 10	596.7	1	220	EPA, 2007a	8	**3.3**	No	See text
Molybdenum	1.92	--	3.11	RAA-B2	9 / 10	11.94	0	2	EPA, 2015	2	**1.6**	No	Consistent with background
Nickel	12.4	--	39	RAA-C2	10 / 10	51.85	0	38	EPA, 2007b	2	**1**	No	Consistent with background
Vanadium	35.1	98.6	123	RAA-C2	10 / 10	119	2	7.8	EPA, 2005c	10	**16**	No	See text

Notes:

Only analytes detected in surface soil (0-0.5 feet bgs) are included in this table.

Hazard quotients in bold exceed 1.

[1] Mean concentrations were only calculated for analytes that had a maximum concentration greater than the ESV and one or more concentrations greater than the BTV.

[2] Background soil values are the 95/95 Upper Tolerance Limit (UTL) for the Dredge Spoil Areas (DSAs). Refer to Appendix D for the DSA background sampling approach and derivation of the 95/95 UTLs.

BTV = Background Threshold Value
COPEC = contaminant of potential ecological concern
FOD = Frequency of Detection
mg/kg = milligrams per kilogram

References:

U.S. Environmental Protection Agency (EPA) 2015. *Supplemental Guidance to ERAGS: Region 4, Ecological Risk Assessment* . Originally published November 1995. August.

EPA. 2005a. *Ecological Soil Screening Levels for Barium* . February.

EPA. 2005b. *Ecological Soil Screening Levels for Lead* . March.

EPA. 2005c. *Ecological Soil Screening Levels for Vanadium* . April.

EPA. 2007a. *Ecological Soil Screening Levels for Manganese* . April.

EPA. 2007b. *Ecological Soil Screening Levels for Nickel* . March

EPA. 2008. *Ecological Soil Screening Levels for Chromium* . April.

Table 8-2. Data Summary and Ecological Soil Screening for DSA 5 – Subsurface Soil

DSAs 4, 5, and 6 RI Report, Former Raritan Arsenal, Edison, New Jersey

Parameter Name	Minimum Detected Concentration (mg/kg)	Maximum Detected Concentration (mg/kg)	Location of Maximum Concentration	FOD	BTV [(1)] (mg/kg)	Number of BTV Exceedances	Ecological Screening Value (ESV) (mg/kg)	Source of ESV	Number of ESV Exceedances	Maximum-based Hazard Quotient	Retain as COPEC?	Rationale
4-Nitrotoluene	0.0253	0.0454	RAA-D1	2 / 10	--	--	0.14	EPA, 2015	0	0.32	No	No exceedances of ESV
Nitrocellulose	708	708	RAA-C2	1 / 10	--	--	NSV	--	--	--	No	Only 1 detection out of 10 samples, isolated
Nitroglycerin	0.0566	0.0566	RAA-D1	1 / 10	--	--	13	EPA, 2015	0	0.004	No	No exceedances of ESV
Barium	72.8	170	RAA-SB41	10 / 10	216.7	0	330	EPA, 2005a	0	0.5	No	Consistent with background and no exceedances of ESV
Chromium	70.4	172	RAA-B1	10 / 10	201.3	0	26	EPA, 2008	10	**6.6**	No	Consistent with background
Iron	38300	86200	RAA-SB41	10 / 10	66999	3	NSV	--	--	--	No	Only 3 of 10 samples exceeded the BTV. Generally not toxic in soils with pH between 5 and 8.
Lead	107	272	RAA-D1	10 / 10	294	0	11	EPA, 2005b	10	**25**	No	Consistent with background
Manganese	192	566	RAA-A1	10 / 10	596.7	0	220	EPA, 2007a	9	**2.6**	No	Consistent with background
Molybdenum	2.04	3.02	RAA-B2	10 / 10	11.94	0	2	EPA, 2015	10	**1.5**	No	Consistent with background
Nickel	27.8	44	RAA-A1	10 / 10	51.85	0	38	EPA, 2007b	1	**1.2**	No	Consistent with background
Vanadium	52.6	118	RAA-C2	10 / 10	119	0	7.8	EPA, 2005c	10	**15**	No	Consistent with background

Notes:

Only analytes detected in subsurface soil (1-3 feet bgs) are included in this table.

Hazard quotients in bold exceed 1.

(1) Background soil values are the 95/95 Upper Tolerance Limit (UTL) for the Dredge Spoil Areas (DSAs). Refer to Appendix D for the DSA background sampling approach and derivation of the 95/95 UTLs.

BTV = Background Threshold Value
COPEC = contaminant of potential ecological concern
FOD = Frequency of Detection
mg/kg = milligrams per kilogram

References:

U.S. Environmental Protection Agency (EPA) 2015. *Supplemental Guidance to ERAGS: Region 4, Ecological Risk Assessment* . Originally published November 1995. August.

EPA. 2005a. *Ecological Soil Screening Levels for Barium* . February.

EPA. 2005b. *Ecological Soil Screening Levels for Lead* . March.

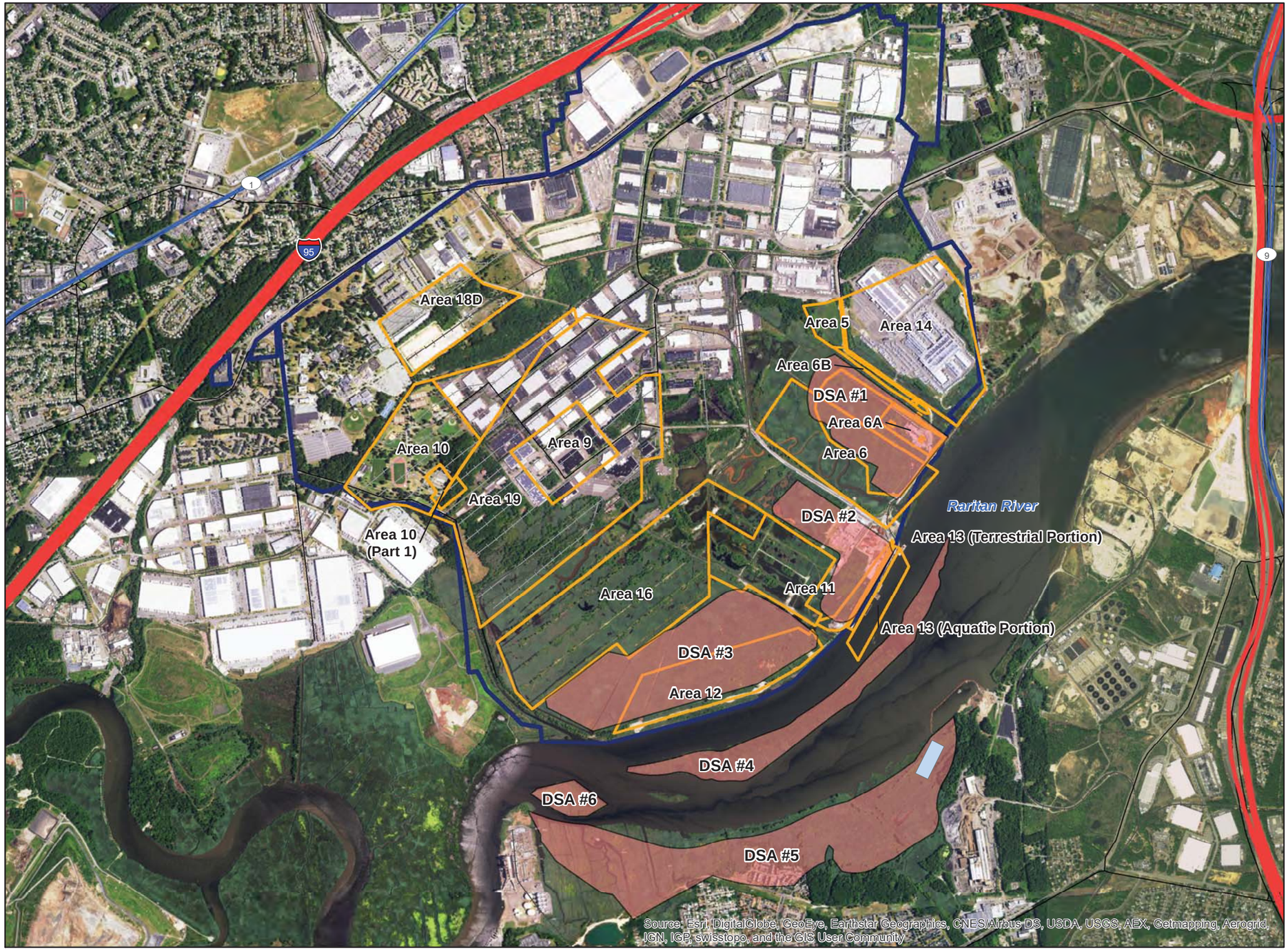
EPA. 2005c. *Ecological Soil Screening Levels for Vanadium* . April.

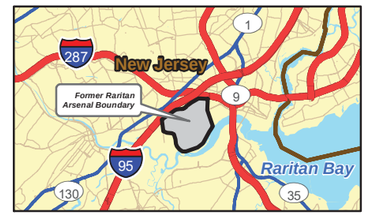
EPA. 2007a. *Ecological Soil Screening Levels for Manganese* . April.

EPA. 2007b. *Ecological Soil Screening Levels for Nickel* . March

EPA. 2008. *Ecological Soil Screening Levels for Chromium* . April.

Figures





Legend

- Area Boundary
- Dredge Spoil Areas
- Approximate Location of Spoils Area and 1994 UXB Removal Action Area
- Former Raritan Arsenal
- Interstate
- State Highway
- Local Road
- Railroads
- Historical Railroads

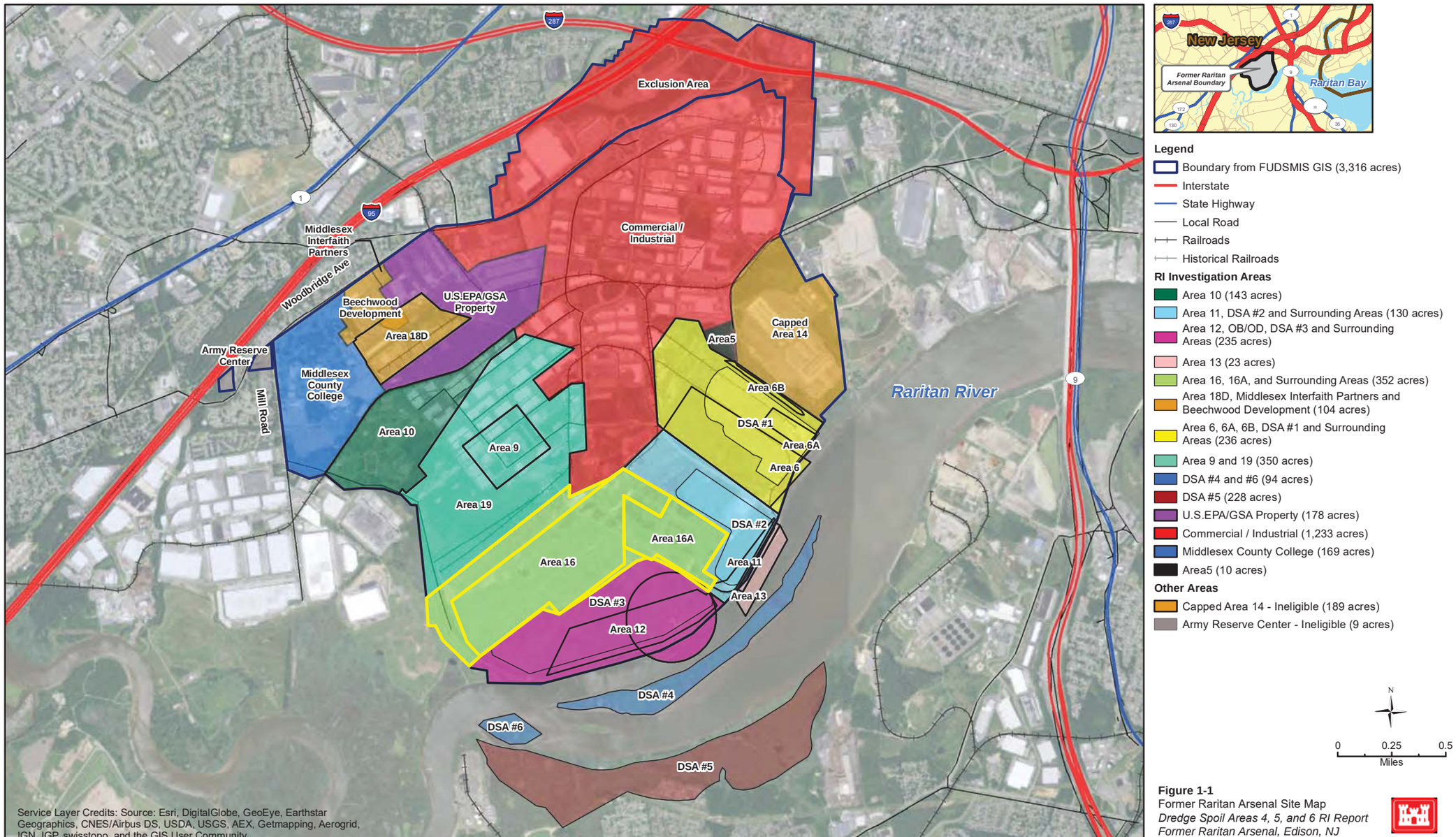
Note:
Area 5 and 14 shown for reference and are not being investigated as part of this RI/FS.

N

0 0.25 0.5
Miles

Figure ES-1
Dredge Spoil Areas
Dredge Spoil Areas 4, 5, and 6 RI Report
Former Raritan Arsenal, Edison, NJ

\\BROOKSIDE\GIS_SHARE\ENBG\00_PROJ\U\USACE\RARITANARSENAL20000437\MAPFILES\RARITANARSENAL_03_2013\RI\AREA13\FIGURE_1_2_DREDGE_DEPOSITS.MXD SASELAGE 3/24/2017 4:04:33 PM



Legend

- Boundary from FUDSMIS GIS (3,316 acres)
- Interstate
- State Highway
- Local Road
- Railroads
- Historical Railroads

RI Investigation Areas

- Area 10 (143 acres)
- Area 11, DSA #2 and Surrounding Areas (130 acres)
- Area 12, OB/OD, DSA #3 and Surrounding Areas (235 acres)
- Area 13 (23 acres)
- Area 16, 16A, and Surrounding Areas (352 acres)
- Area 18D, Middlesex Interfaith Partners and Beechwood Development (104 acres)
- Area 6, 6A, 6B, DSA #1 and Surrounding Areas (236 acres)
- Area 9 and 19 (350 acres)
- DSA #4 and #6 (94 acres)
- DSA #5 (228 acres)
- U.S.EPA/GSA Property (178 acres)
- Commercial / Industrial (1,233 acres)
- Middlesex County College (169 acres)
- Area5 (10 acres)

Other Areas

- Capped Area 14 - Ineligible (189 acres)
- Army Reserve Center - Ineligible (9 acres)

N

0 0.25 0.5
Miles

Figure 1-1
Former Raritan Arsenal Site Map
Dredge Spoil Areas 4, 5, and 6 RI Report
Former Raritan Arsenal, Edison, NJ

R:\RARITANARSENAL20000437\MAPFILES\RARITANARSENAL_03_2013\RI\AREA16\FIGURE1-1_RARITAN_CH2M.MXD CVONFREEDEN 12/2/2015 12:52:06 PM

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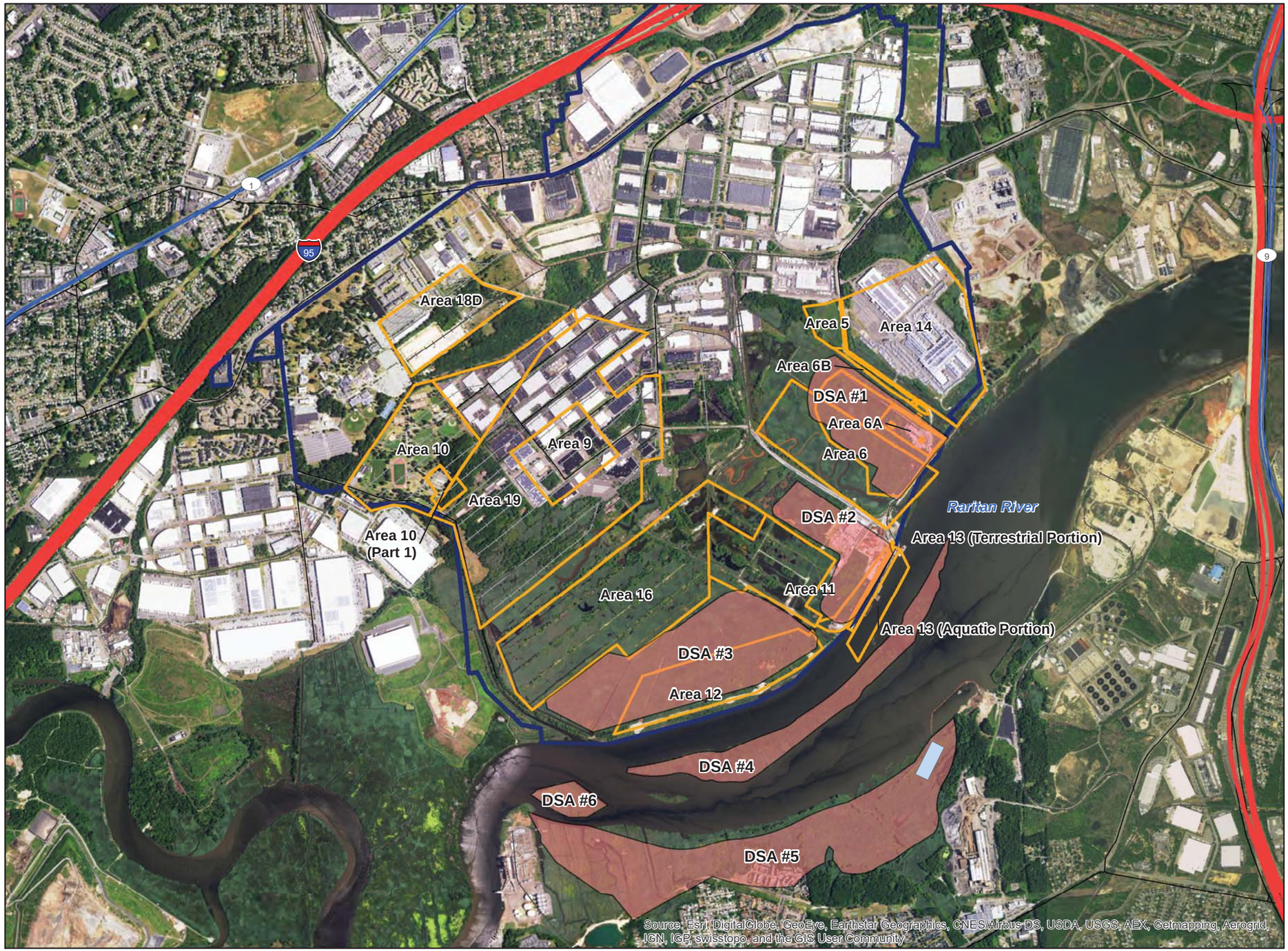
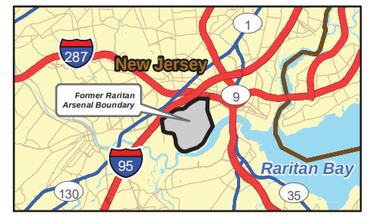
NOVEMBER 2020





Legend

- Area Boundary
- Dredge Spoil Areas
- Approximate Location of Spoils Area and 1994 UXB Removal Action Area
- Former Raritan Arsenal
- Interstate
- State Highway
- Local Road
- Railroads
- Historical Railroads

Note:
Area 5 and 14 shown for reference and are not being investigated as part of this RI/FS.

N

0 0.25 0.5
Miles

Figure 1-2
Dredge Spoil Areas
Dredge Spoil Areas 4, 5, and 6 RI Report
Former Raritan Arsenal, Edison, NJ

\\BROOKSIDE\GIS_SHARE\ENBG\00_PROJ\U\USACE\RARITANARSENAL20000437\MAPFILES\RARITANARSENAL_03_2013\RI\AREA13\FIGURE_1_2_DREDGE_DEPOSITS.MXD SASELAGE 3/24/2017 4:04:33 PM

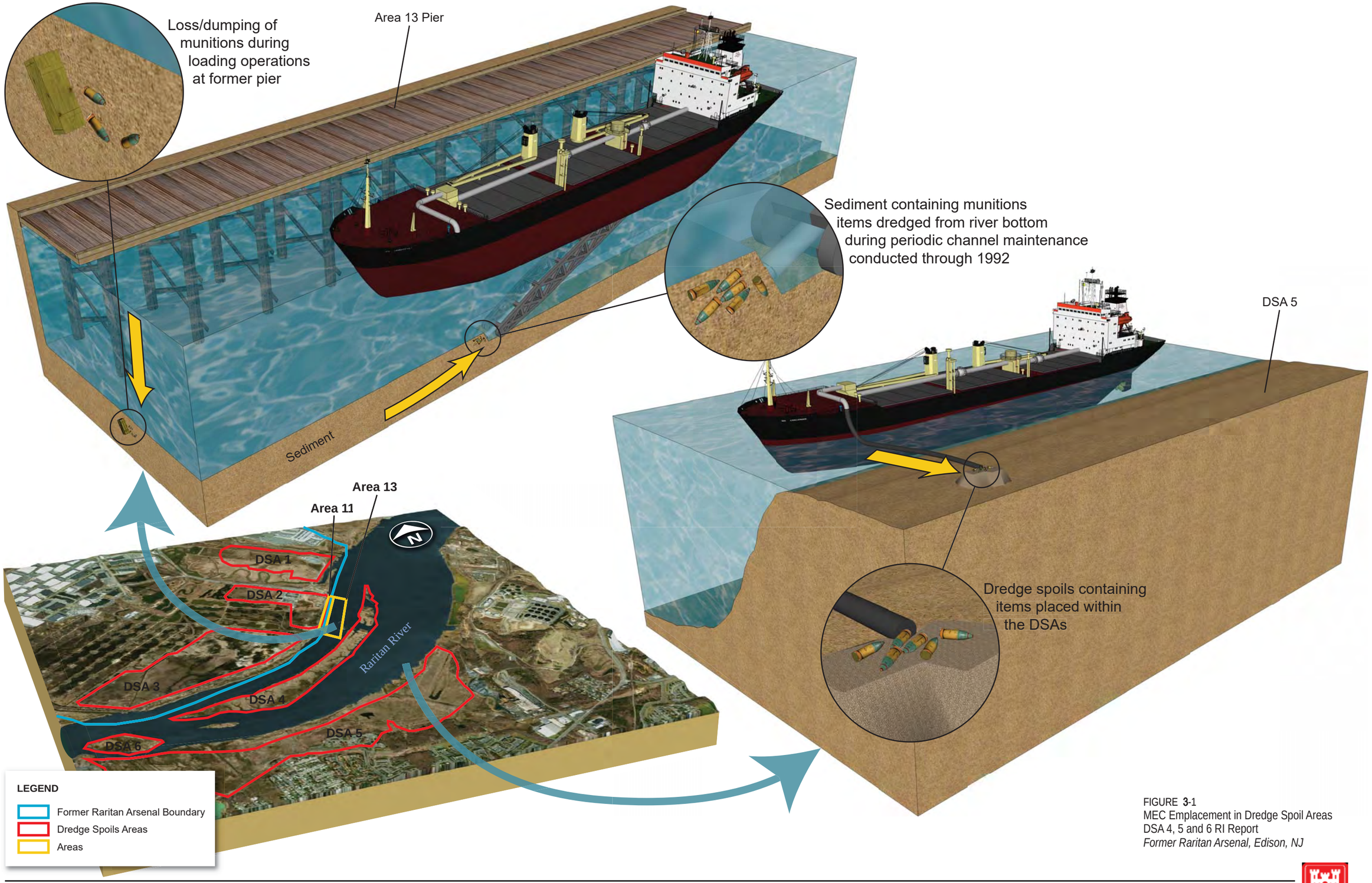


FIGURE **3**-1
MEC Emplacement in Dredge Spoil Areas
DSA 4, 5 and 6 RI Report
Former Raritan Arsenal, Edison, NJ

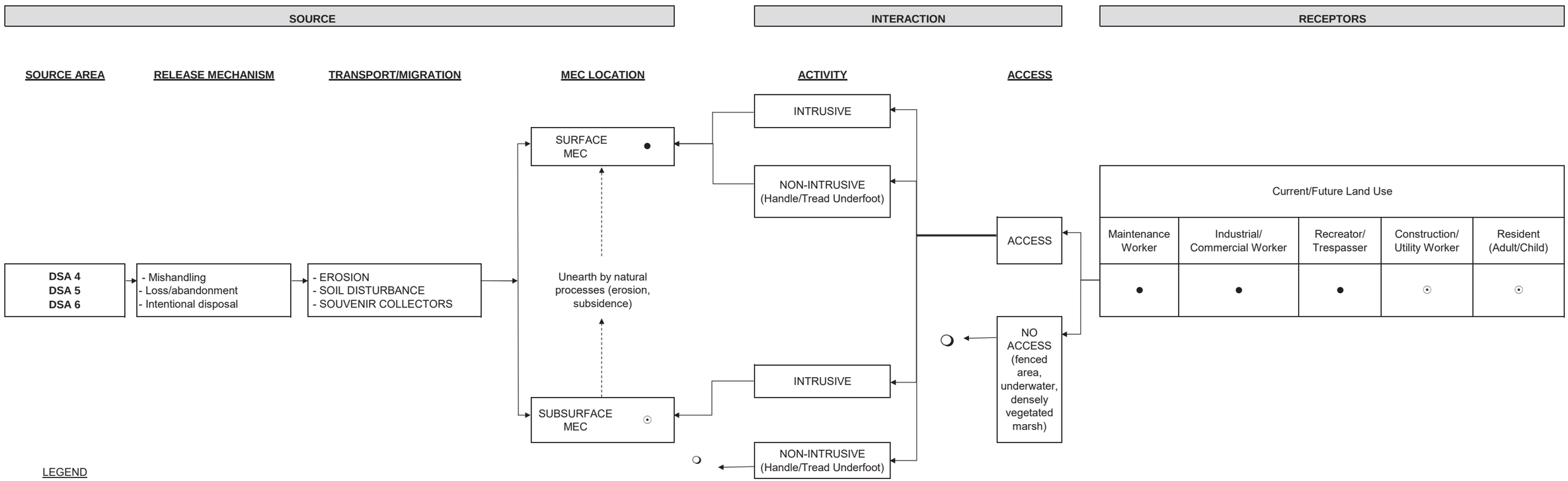
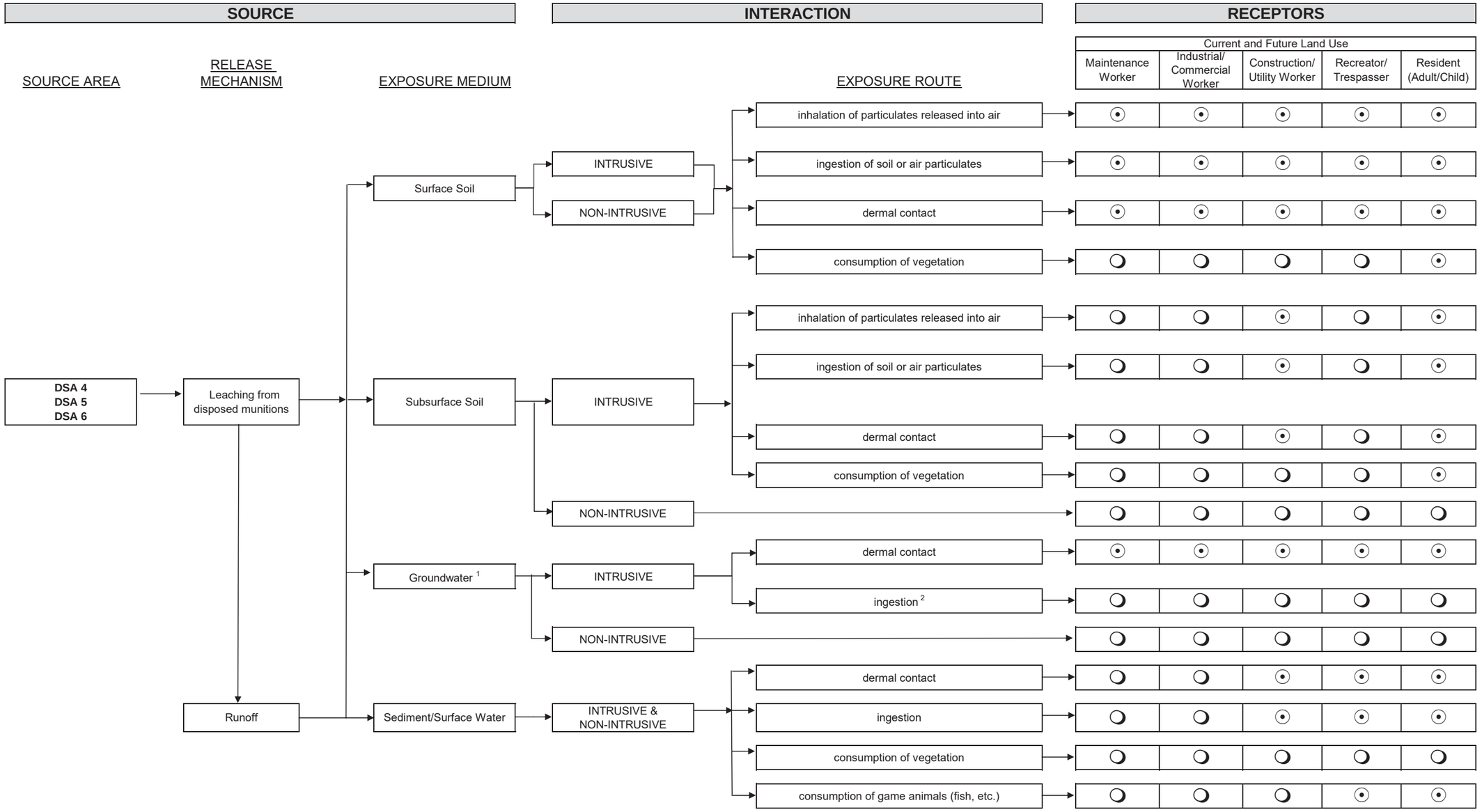


FIGURE 3-2
Conceptual Site Model for MEC Exposure
DSAs 4, 5, and 6 RI Report
Former Raritan Arsenal, Edison, NJ



[1] Groundwater at the former Arsenal has been designated as a separate operable unit and is being addressed under a separate USACE task order contract by others.

[2] Currently, groundwater is not used for potable supply in the vicinity of DSAs 4, 5 and 6. Based on projected use of the area, it is unlikely that this would change. However, if the projected use of this site changes, there is a small chance that groundwater could be considered for use as a potable water supply. Therefore, ingestion of explosives in groundwater has been included as a potentially complete exposure pathway in addition to dermal contact with groundwater.

LEGEND

- ● COMPLETE PATHWAY
- ◑ INCOMPLETE PATHWAY
- ⊙ POTENTIALLY COMPLETE PATHWAY

FIGURE 3-3
Conceptual Site Model for Human Health Exposure to MC
DSAs 4, 5 and 6 RI Report
Former Raritan Arsenal, Edison, NJ

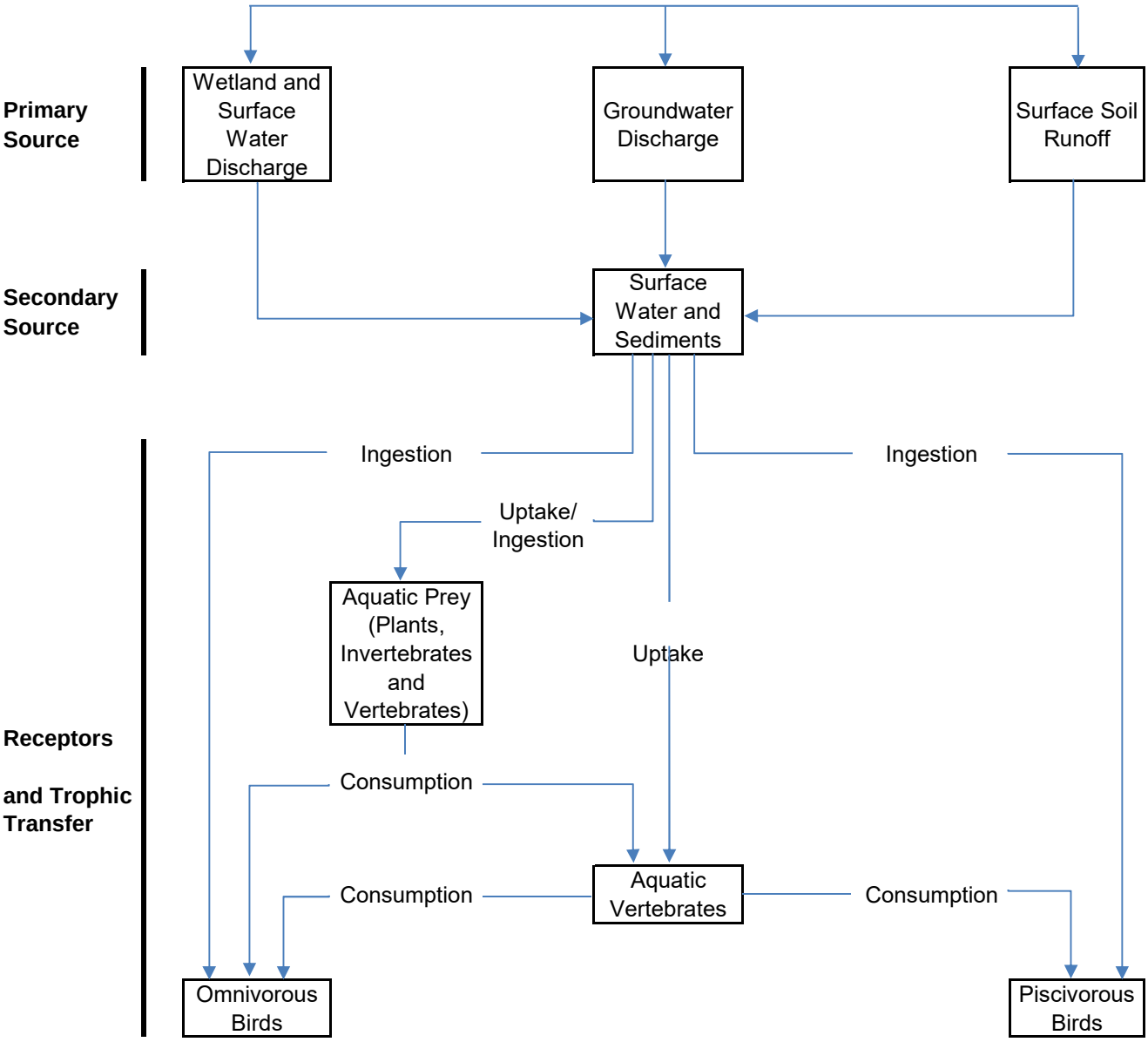
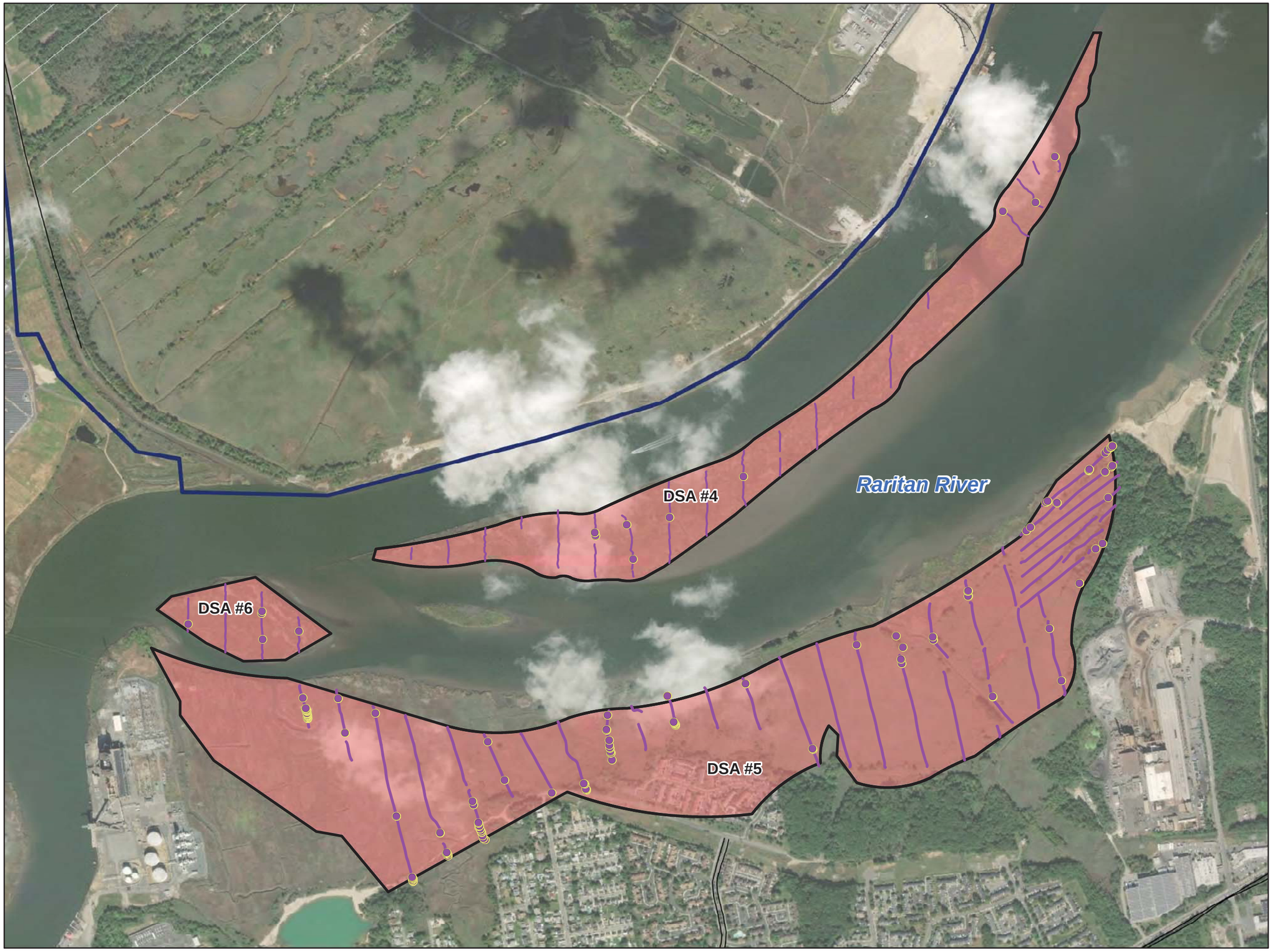


FIGURE 3-4
Conceptual Site Model for Ecological Exposure Pathways to MC
DSAs 4, 5, and 6 RI Report
Former Raritan Arsenal, Edison, NJ



LEGEND

- DGM Anomaly Location
- DGM Anomaly Transect
- Local Road
- Railroads
- Historical Railroads
- Dredge Spoils Area

N

0 700 1,400
Feet

Figure 4-1
DSA 4, 5, and 6 Transects and Anomaly Locations
DSAs 4, 5, and 6 RI Report
Former Raritan Arsenal, Edison, NJ



LEGEND

RI/FS Advanced Classification

- Could Not Analyze
- Looks Like TOI
- Inconclusive
- Does Not Look Like TOI
- Railroads
- Historical Railroads
- Dredge Spoils Area
- Approximate Location of Spoils Area and 1994 UXB Removal Action Area
- Former Raritan Arsenal Boundary

Note:
The location of the QC seed (classified as 'Looks Like TOI') is not shown.

N

0 700 1,400
Feet

Figure 4-3
TEMTADS Results - DSA 5
Dredge Spoil Areas 4, 5, and 6 RI Report
Former Raritan Arsenal, Edison, NJ

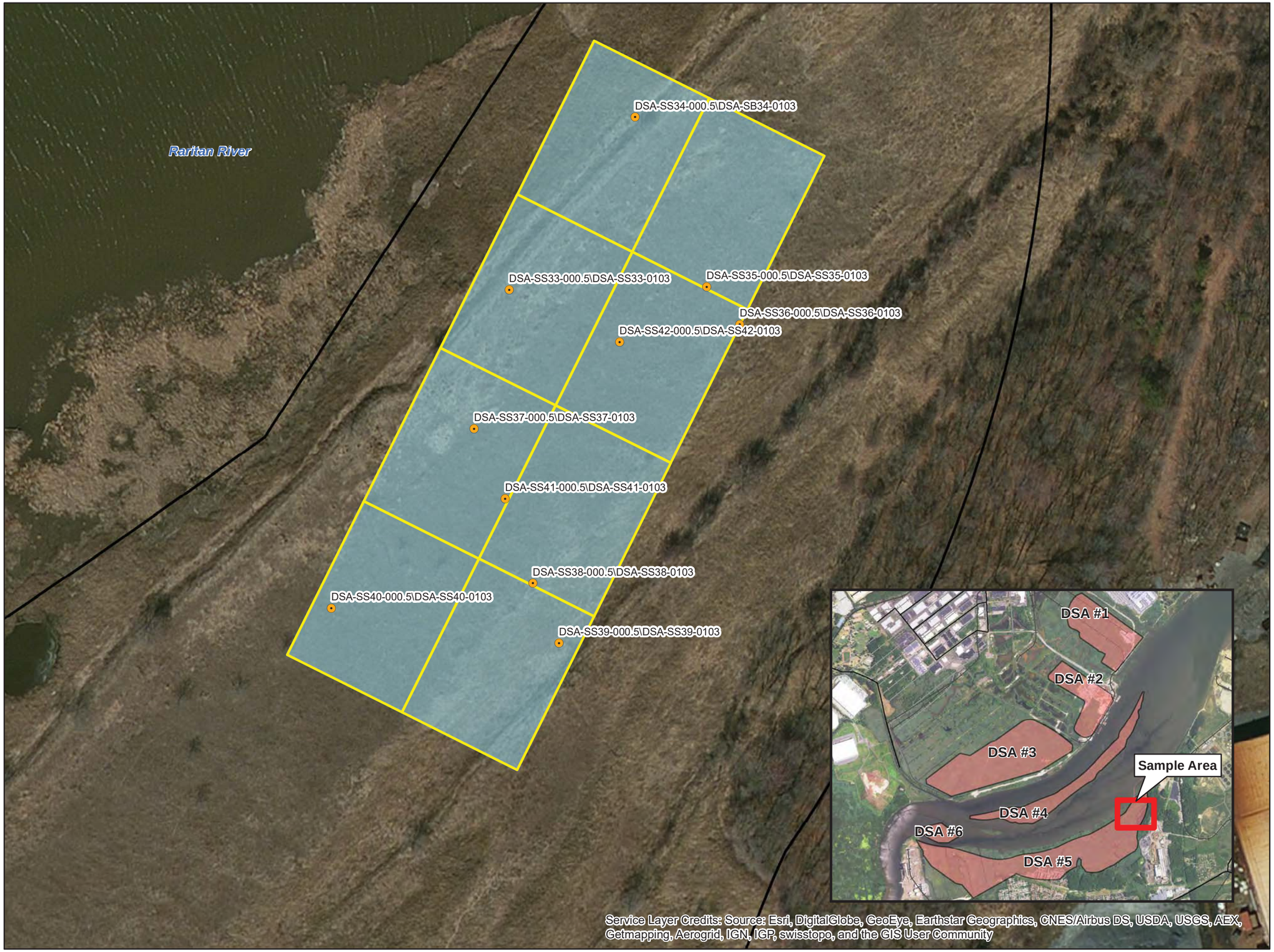
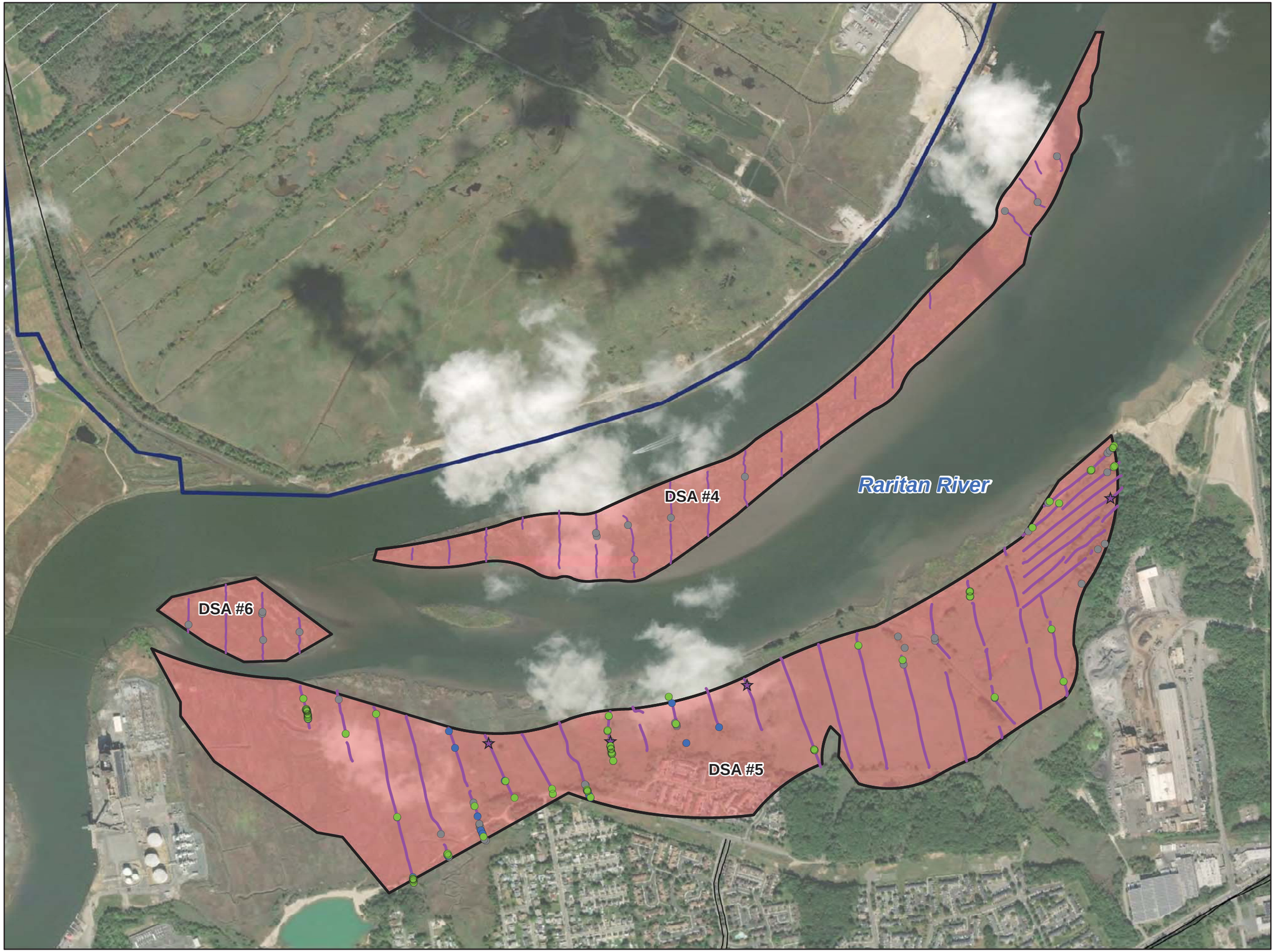


Figure 4-4
DSA 5 Removal Action Area
Sample Locations
DSAs 4, 5, and 6 RI Report
Former Raritan Arsenal, Edison, NJ



LEGEND

RI/FS Advanced Classification*

- Does Not Look Like TOI

Intrusive Investigation Results

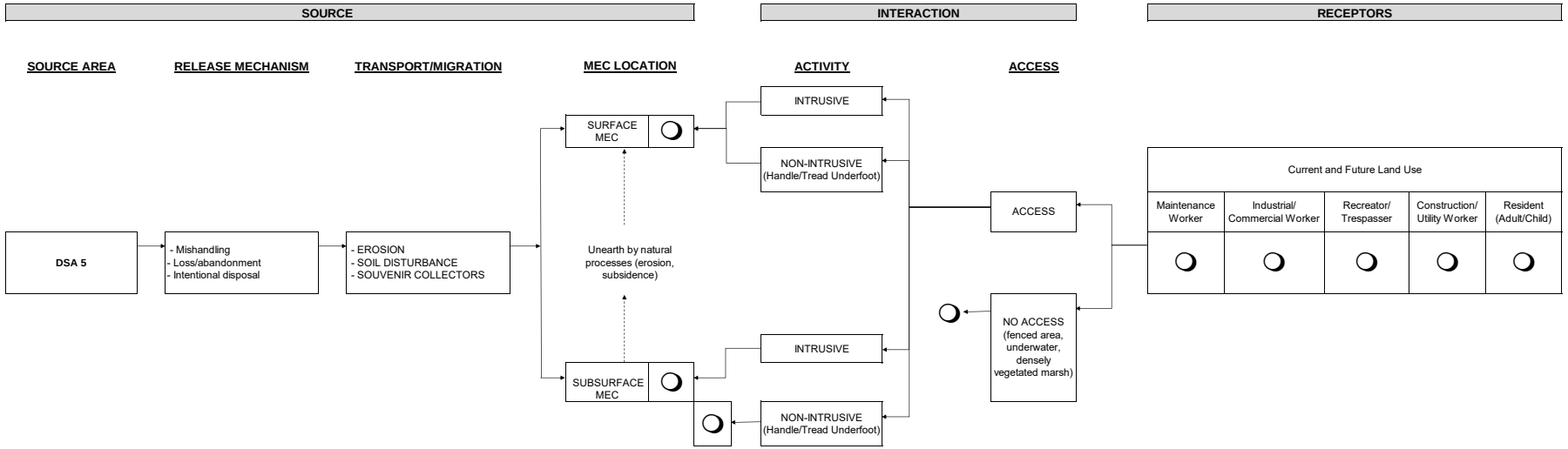
- Non-Munitions Scrap; Other
- QC Seed
- Not Investigated
- DGM Anomaly Transect
- Dredge Spoils Area
- Local Road
- Railroads
- Historical Railroads

Note:
* - The anomalies classified as 'Could Not Analyze', 'Looks Like TOI', and 'Inconclusive' were subsequently intrusively investigated so their intrusive result is displayed in the map window. See Figure 4-3 for the complete TEMTADs results.

N

0 700 1,400
Feet

Figure 5-1
DSAs 4, 5, and 6 Intrusive Investigation Results
DSAs 4, 5, and 6 RI Report
Former Raritan Arsenal, Edison, NJ



LEGEND

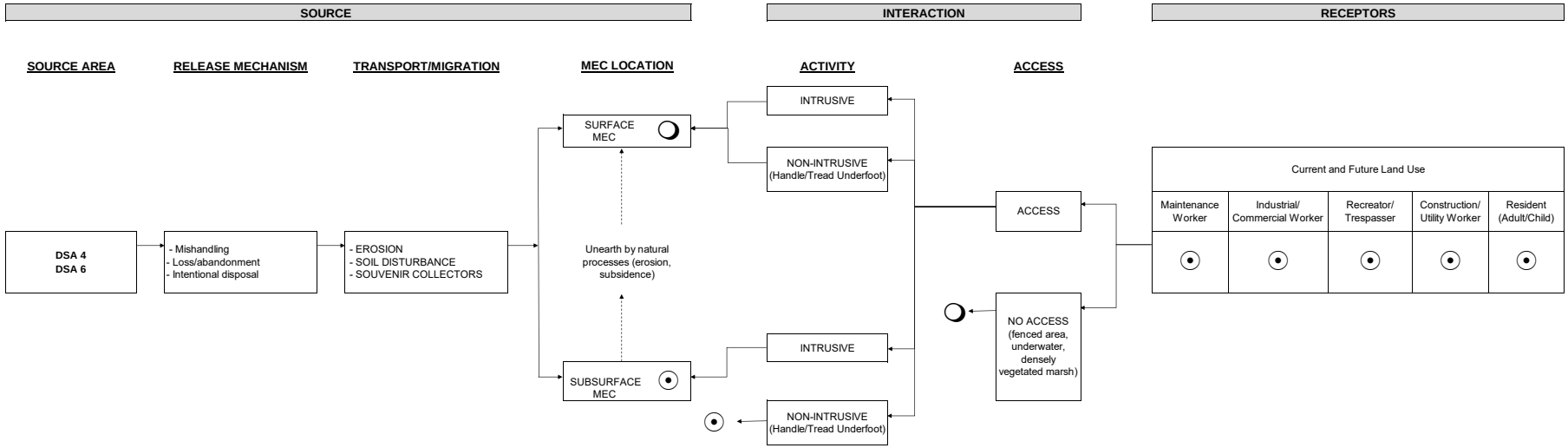
- COMPLETE PATHWAY
- INCOMPLETE PATHWAY
- POTENTIALLY COMPLETE PATHWAY

FIGURE 7-1

Revised Conceptual Site Model for MEC Exposure - DSA 5

DSAs 4, 5, and 6 RI Report

Former Raritan Arsenal, Edison, NJ



LEGEND

- COMPLETE PATHWAY
- INCOMPLETE PATHWAY
- POTENTIALLY COMPLETE PATHWAY

FIGURE 7-2

Revised Conceptual Site Model for MEC Exposure - DSA 4 and 6

DSAs 4, 5, and 6 RI Report

Former Raritan Arsenal, Edison, NJ

Appendix A
Terrestrial Geophysical Mapping Report and Data

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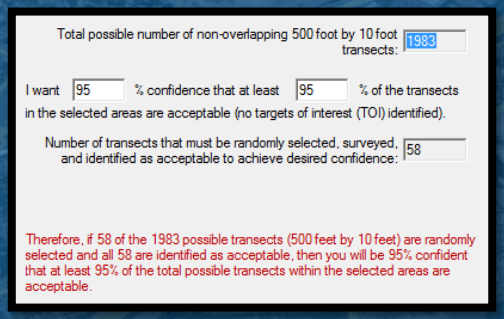
US Army Corps of Engineers ®

Former Raritan Arsenal
Discussion of Statistics-Based Transect Sampling within Dredge Spoils Areas







Presentation to New Jersey Department of Environmental Protection – September 05, 2013

Remedial Investigation/Feasibility Study (RI/FS)

Former Raritan Arsenal

Edison, New Jersey

Contract # W912DY-09-D-0060, Task Order 003

Purpose

- During presentation of the Remedial Investigation approach to NJDEP in August 2013 - a question was raised on the logic behind the transect spacing for the Dredge Spoil Areas.
- The intent of this presentation is to answer that question.



Dredge Spoil Areas

- The conceptual site model for the DSAs assumes:
  - Discarded Military Munitions (DMM) were and/or are present in river sediments adjacent to the former Arsenal as a result of historical activities during the operating history of the Raritan Arsenal.
  - Until approximately 1956 sediments were dredged from the river channel adjacent to the former Arsenal and deposited as fill in the areas adjacent to and on the former Arsenal.
  - As such, DMM contained within these river sediments is now present with an unknown distribution in areas referred to as the Dredge Spoil Areas (DSAs).





Statistical Sampling Survey Design

- Design of Statistical Sampling Approach for DSAs is based on Multi-stage Sampling Technique, with the incorporation of both Systematic Sampling and Simple Random Sampling at the various stages
  - **Multi-stage Sampling**
    - Multistage sampling refers to sampling plans where the sampling is carried out in stages using smaller and smaller sampling units at each stage. Larger groupings are further subdivided into smaller, more targeted groupings for the purposes of surveying
    - One may use any probability sampling unit at any stage, and these methods may differ between stages
  - **Systematic Sampling**
    - Statistical method involving the selection of elements from an ordered set of units
    - Sampling starts by selecting a unit from the list at random and then every n^{th} unit is selected
    - Each unit in the population has a known and equal probability of being selected
  - **Simple Random Sampling**
    - A simple random sample of size n is produced by a scheme which ensures that each subgroup of the population of size n has an equal probability of being chosen as the sample. Each unit in the population has a known and equal probability of being selected

References: http://betterevaluation.org/evaluation-options/multistage, http://www.math.montana.edu/~parker/PattersonStats/Twostage.pdf
http://www.ma.utexas.edu/users/parker/sampling/srs.htm

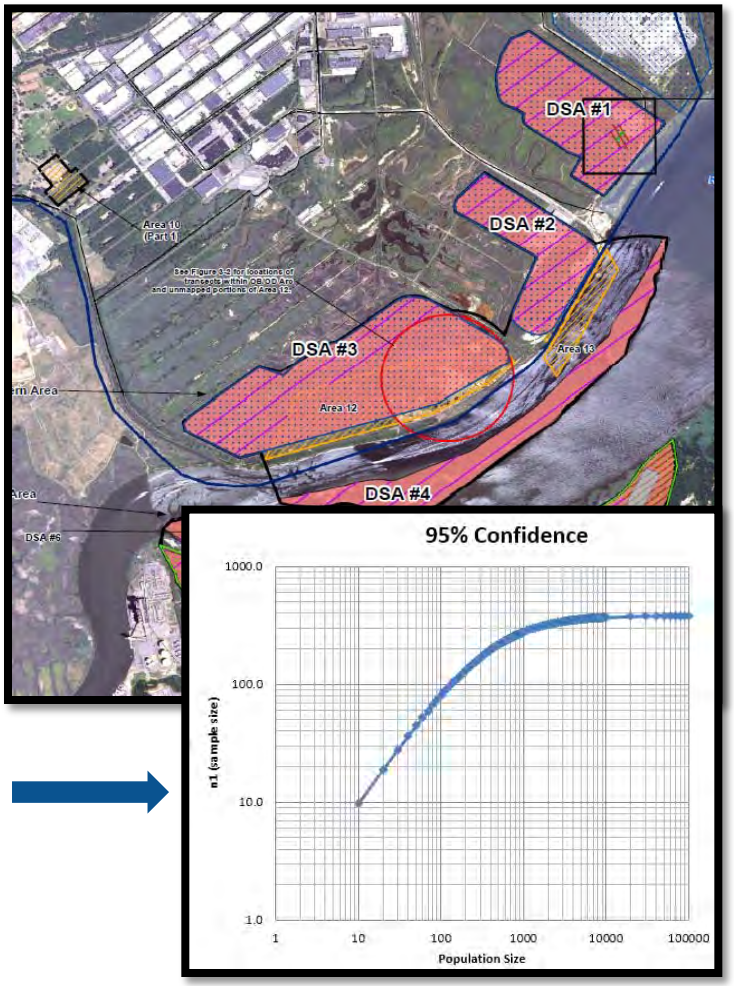
Statistical Sampling Survey Design (cont.)

- Site (Primary Sampling Unit)
  - Each DSA is evaluated as an individual site
- First Stage
  - Site is divided into transects through Systematic Random Sampling method
  - Sampling designed to achieve 95% confidence that at least 95% of the remainder of the site has no DMM in them. (This may not ultimately be the case, but the design is such that if the site has very little DMM it will be demonstrated to a high confidence.)
  - Transects are surveyed (DGM) to establish units (anomalies) for 2nd stage sampling
- Second Stage
  - Simple Random Sampling (using Estimating a Proportion statistical technique) is used to select 2nd stage sampling units for investigation for 95% confidence in nature of anomaly sources within population



Fieldwork Approach

- The proposed approach is to:
  - Sub-divide each individual DSA in similar fashion (i.e. ~same quantity of transects that comprise each area)
  - Determine quantity of transects needed to be surveyed in each area to achieve 95/95 statistical confidence in determining whether DMM is present
  - Use Systematic Random Sampling method to distribute evenly spaced transects to achieve total calculated transect length
    - Oversample by at least 25% to increase confidence in results
    - In addition to achieving statistical confidence in presence/absence of DMM, this approach provides wide area assessment level coverage to identify any unknown areas of DMM clustering
    - Any identified areas will be investigated with follow-on, closer spaced transect surveys similar to those being performed in the previously identified pits in DSA1 and DSA5
  - Perform DGM surveys along transects
  - Use Simple Random Sampling to select geophysical anomalies for investigation to establish the nature of their sources to 95% confidence



Fieldwork Approach (Cont.)

- Table below shows calculations made assuming 10ft (3m) wide towed array.
  - Note: transect lengths (and thus total acreage percentages) may differ for some areas if different width system needs to be used because of access issues; however, statistical significance will remain the same.

DSA	Total Area (Acres)	Transect Length (ft)	Total Transects in Area	Surveyed Transect Length (ft)	Area Required to be Covered for 95/95 with 10 ft wide coil (acres)	Area Needed to be Covered (%) for 95/95	ACTUAL PLANNED FOR SURVEY (ft)	Increase in Sampling from Required	Planned Area to be Covered (acres)	Planned Area to be Covered (%)
1	89	150	2590	8700	2	2.2%	11611	33%	2.67	3.0%
2	64	110	2530	6380	1.46	2.3%	8102	27%	1.92	3.0%
3	168	300	2443	17400	4	2.4%	21746	25%	5.04	3.0%
4	79	135	2544	7830	1.8	2.3%	10135	29%	2.37	3.0%
5	228	400	2479	23200	5.32	2.3%	28995	25%	6.84	3.0%
6	15.5	27	2509	1566	0.36	2.3%	2034	30%	0.47	3.0%

Additional Slides Showing VSP Calculations and Transect Coverage by Dredge Spoils Area

DSA #1 – Transect Design

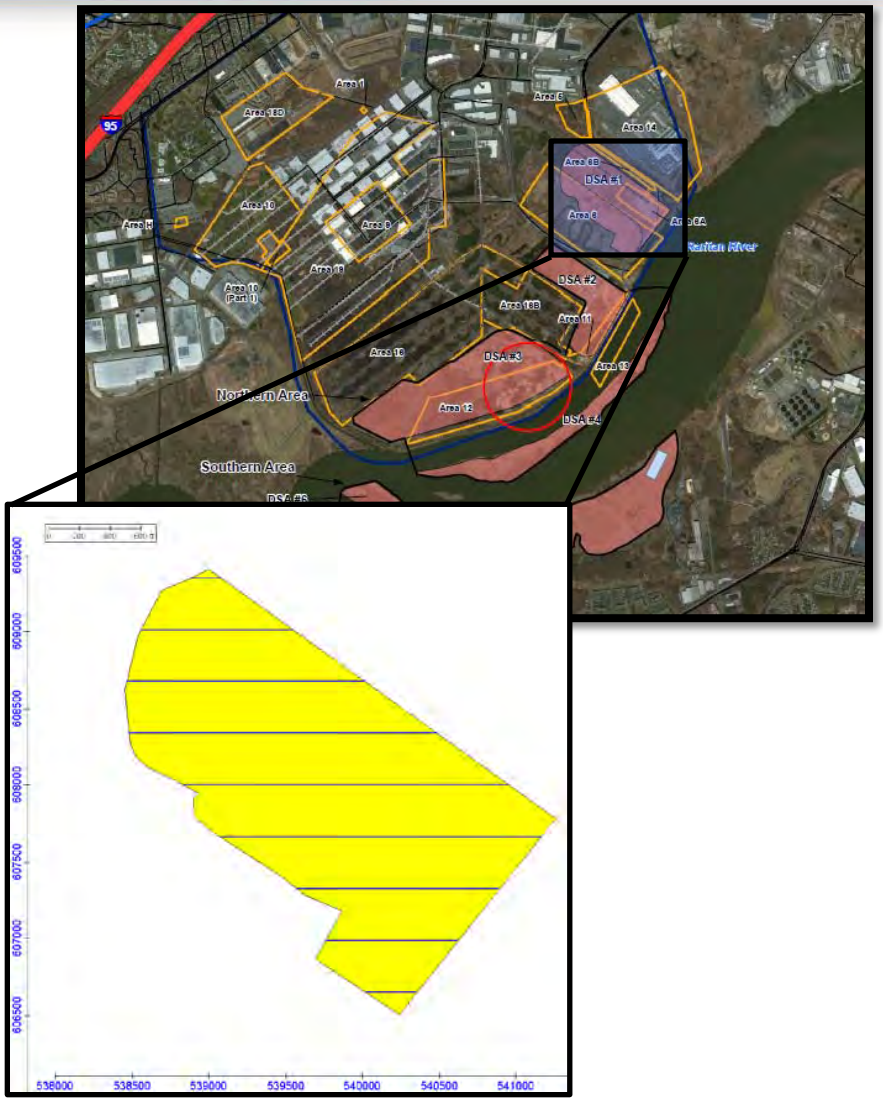
- To achieve 95/95 confidence, a total of 8,700ft (58 transect segments of 150ft combined) are needed at DSA #1
- Sampling will be performed on 11,611 ft (using 328ft [100m] separation) to oversample (resulting in 33% additional transect segments for increased confidence)

Total possible number of non-overlapping 150 foot by 10 foot transects: 2590

I want 95 % confidence that at least 95 % of the transects in the selected areas are acceptable (no targets of interest (TOI) identified).

Number of transects that must be randomly selected, surveyed, and identified as acceptable to achieve desired confidence: 58

Therefore, if 58 of the 2590 possible transects (150 feet by 10 feet) are randomly selected and all 58 are identified as acceptable, then you will be 95% confident that at least 95% of the total possible transects within the selected areas are acceptable.



DSA #2 – Transect Design

- To achieve 95/95 confidence, a total of 6,380ft (58 transect segments of 110ft combined) are needed at DSA #2
- Sampling will be performed on 8,102 ft (using 328ft [100m] separation) to oversample (resulting in 27% additional transect segments for increased confidence)

Total possible number of non-overlapping 110 foot by 10 foot transects: 2530

I want 95 % confidence that at least 95 % of the transects in the selected areas are acceptable (no targets of interest (TOI) identified).

Number of transects that must be randomly selected, surveyed, and identified as acceptable to achieve desired confidence: 58

Therefore, if 58 of the 2530 possible transects (110 feet by 10 feet) are randomly selected and all 58 are identified as acceptable, then you will be 95% confident that at least 95% of the total possible transects within the selected areas are acceptable.



DSA #3 – Transect Design

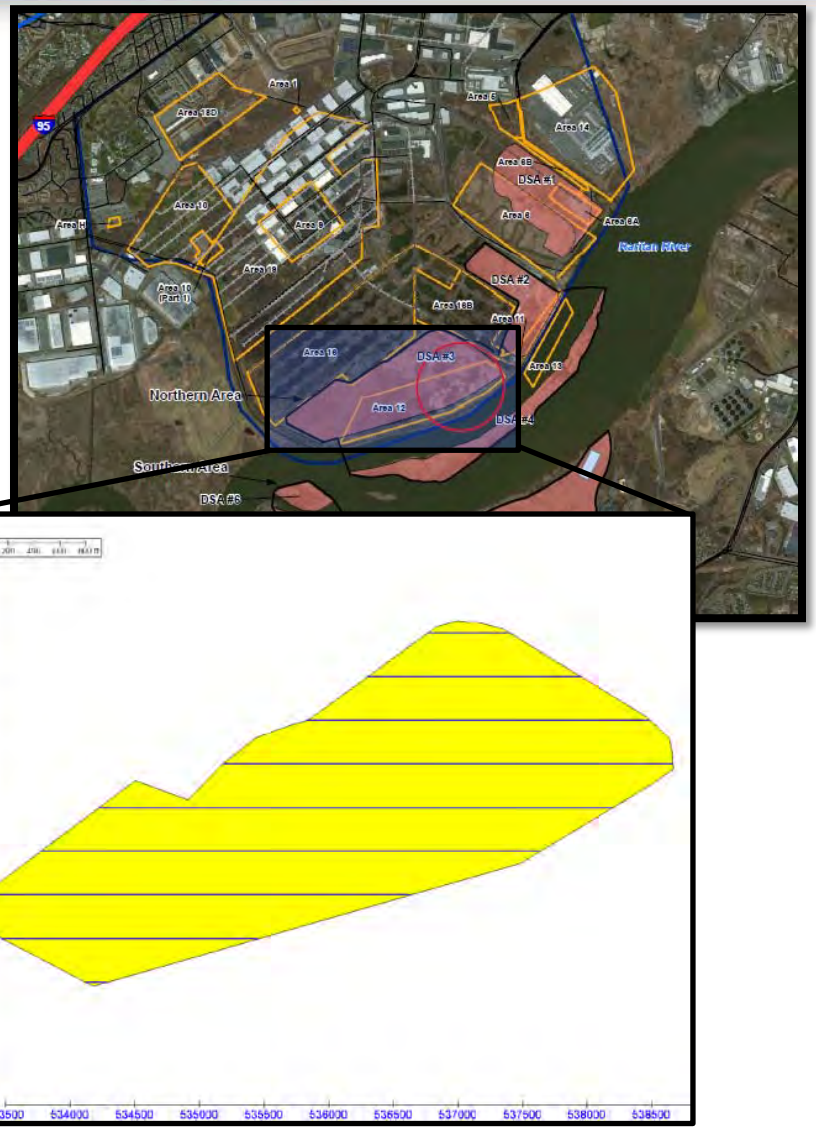
- To achieve 95/95 confidence, a total of 17,400ft (58 transect segments of 300ft combined) are needed at DSA #3
- Sampling will be performed on 21,746ft (using 328ft [100m] separation) to oversample (resulting in 25% additional transect segments for increased confidence)

Total possible number of non-overlapping 300 foot by 10 foot transects: 2443

I want 95 % confidence that at least 95 % of the transects in the selected areas are acceptable (no targets of interest (TOI) identified).

Number of transects that must be randomly selected, surveyed, and identified as acceptable to achieve desired confidence: 58

Therefore, if 58 of the 2443 possible transects (300 feet by 10 feet) are randomly selected and all 58 are identified as acceptable, then you will be 95% confident that at least 95% of the total possible transects within the selected areas are acceptable.



DSA #4 – Transect Design

- To achieve 95/95 confidence, a total of 7,830ft (58 transect segments of 135ft combined) are needed at DSA #4
- Sampling will be performed on 10,135ft (using 328ft [100m] separation) to oversample (resulting in 29% additional transect segments for increased confidence)

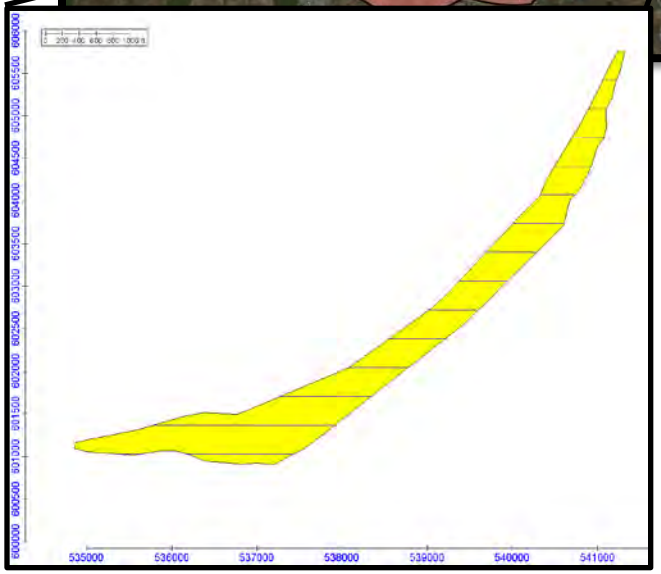
Total possible number of non-overlapping 135 foot by 10 foot transects: 2544

I want 95 % confidence that at least 95 % of the transects in the selected areas are acceptable (no targets of interest (TOI) identified).

Number of transects that must be randomly selected, surveyed, and identified as acceptable to achieve desired confidence: 58

Therefore, if 58 of the 2544 possible transects (135 feet by 10 feet) are randomly selected and all 58 are identified as acceptable, then you will be 95% confident that at least 95% of the total possible transects within the selected areas are acceptable.





DSA #5 – Transect Design

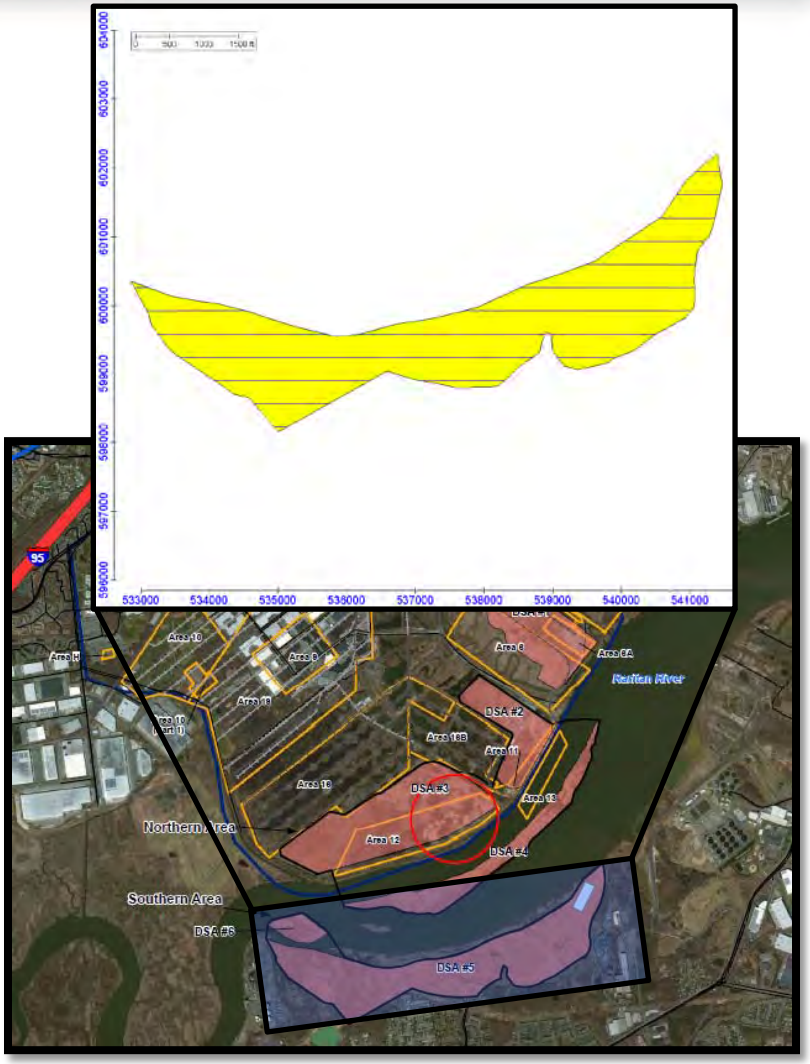
- To achieve 95/95 confidence, a total of 23,200ft (58 transect segments of 400ft combined) are needed at DSA #5
- Sampling will be performed on 28,995ft (using 328ft [100m] separation) to oversample (resulting in 25% additional transect segments for increased confidence)

Total possible number of non-overlapping 400 foot by 10 foot transects: 2479

I want 95 % confidence that at least 95 % of the transects in the selected areas are acceptable (no targets of interest (TOI) identified).

Number of transects that must be randomly selected, surveyed, and identified as acceptable to achieve desired confidence: 58

Therefore, if 58 of the 2479 possible transects (400 feet by 10 feet) are randomly selected and all 58 are identified as acceptable, then you will be 95% confident that at least 95% of the total possible transects within the selected areas are acceptable.



DSA #6 – Transect Design

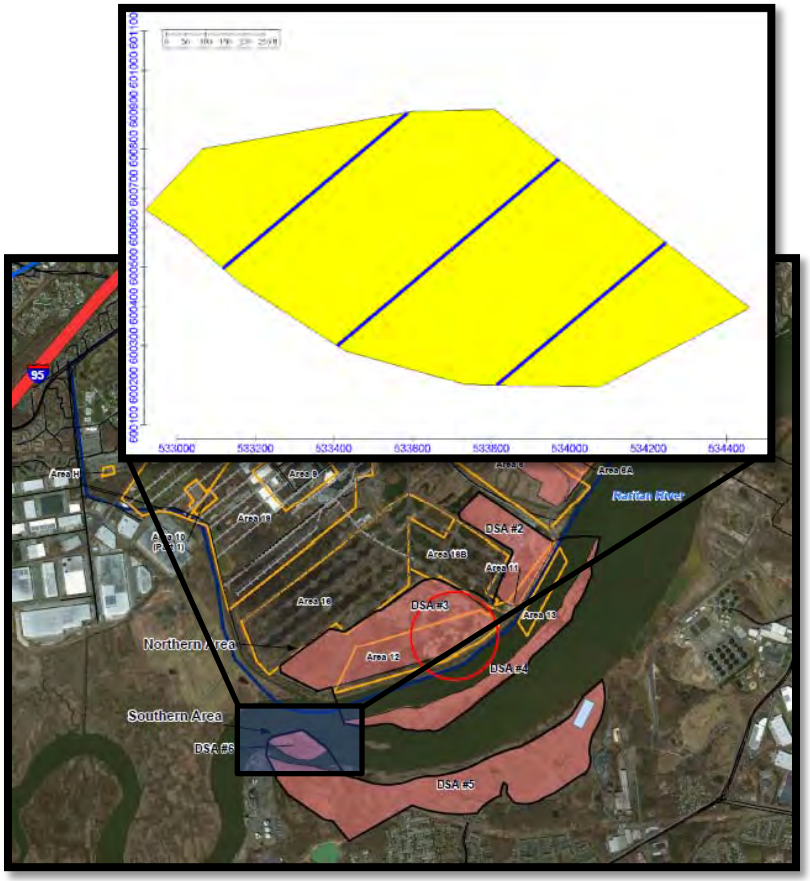
- To achieve 95/95 confidence, a total of 1,566ft (58 transect segments of 27ft combined) are needed at DSA #6
- Sampling will be performed on 2,034ft (using 328ft [100m] separation) to oversample (resulting in 30% additional transect segments for increased confidence)

Total possible number of non-overlapping 27 foot by 10 foot transects: 2509

I want 95 % confidence that at least 95 % of the transects in the selected areas are acceptable (no targets of interest (TOI) identified).

Number of transects that must be randomly selected, surveyed, and identified as acceptable to achieve desired confidence: 58

Therefore, if 58 of the 2509 possible transects (27 feet by 10 feet) are randomly selected and all 58 are identified as acceptable, then you will be 95% confident that at least 95% of the total possible transects within the selected areas are acceptable.



Questions

NAEVA GEOPHYSICS INC.
THE LEADER IN SUBSURFACE DETECTION
Subsurface Geophysical Surveys

GPR
MAGNETICS
ELECTROMAGNETICS
SEISMICS
RESISTIVITY
UTILITY LOCATION
UXO DETECTION
BOREHOLE CAMERA
STAFF SUPPORT

GEOPHYSICAL INVESTIGATION REPORT

Remedial Investigation/ Feasibility Study
Dredge Spoils Areas 1, 2, 3, 4, 5 and 6
Areas 10, 12, 13, and 18

Former Raritan Arsenal
Edison, New Jersey

Task Order: 003
Contract: W912DY-09-D-0060

Under the
Formerly Used Defense Sites
Project Number: C02NJ008403

Dates of Investigation:
December 2 - December 18, 2013
February 18 - March 2, 2014
March 24 - March 28, 2014

PREPARED FOR

CH2MHILL

Chantilly, Virginia

NEW YORK
225 N. Route 303
Suite 102
Congers
New York 10920
(845) 268-1800
(845) 268-1802 Fax

VIRGINIA
P.O. Box 7325
Charlottesville
Virginia 22906
(434) 978-3187
(434) 973-9791 Fax

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Acronyms and Abbreviations

AHA	Activity Hazard Analysis
ASCII	American Standard Code for Information Interchange
CEHNC	US Army Engineering and Support Center, Huntsville
Cm	Centimeter
DGM	Digital Geophysical Mapping
DSA	Dredge Spoils Area
EM	Electromagnetic
FS	Feasibility Study
FTP	File Transfer Protocol
FUDS	Formerly Used Defense Site
GIP	Geophysical Investigation Plan
GPO	Geophysical Prove-Out
GPS	Global Positioning System
GSV	Geophysical System Verification
HAZWOPER	Hazardous Waste Operations and Emergency Response
Hz	Hertz
ISO	Industry Standard Object
IVS	Instrument Verification Strip
M	Meter
MEC	Munitions and Explosives of Concern
MPPEH	Material Potentially Presenting an Explosive Hazard
MQO	Measurement Quality Objective
MRA	Munitions Response Area
MRSIMS	Munitions Response Site Information Management System
mV	Millivolt
NAD83	North American Datum of 1983
NAEVA	NAEVA Geophysics, Inc.
NOAA	National Oceanic and Atmospheric Administration
NRL	Naval Research Laboratory
OB/OD	Open Burn/Open Detonation
OSHA	Occupational Safety and Health Administration
PP	Person Portable
QC	Quality Control
RCA	Root Cause Analysis
RI	Remedial Investigation
Rpm	Revolutions per Minute
RTK	Real-Time Kinematic
SOP	Standard Operating Procedure
SRA	Saturated Response Area
SUXOS	Senior Unexploded Ordnance Supervisor
TA	Towed Array
TO	Task Order
TPP	Technical Project Planning
UHF	Ultra High Frequency
USACE	United States Army Corps of Engineers
USB	Universal Serial Bus
UTM	Universal Transverse Mercator
UXO	Unexploded Ordnance

1.0 INTRODUCTION

NAEVA Geophysics, Inc. (NAEVA) was contracted by CH2M HILL to perform digital geophysical mapping (DGM) as part of a Remedial Investigation (RI) and Feasibility Study (FS) for the Former Raritan Arsenal in Edison, Middlesex County, New Jersey. Field operations were conducted from December 2nd through December 18th, 2013, and continued with two additional mobilizations from February 18th through March 2nd, and March 24th through March 28th, 2014.

1.1 BACKGROUND AND OBJECTIVES

The United States Army Corps of Engineers (USACE), US Army Engineering and Support Center (CEHNC), Huntsville, Alabama, issued Contract W912DY-09-D-0060, Task Order (TO) 003, to CH2M HILL under the Formerly Used Defense Sites (FUDS) Project Number C02NJ008403 to conduct an RI/FS to evaluate the potential presence of Munitions and Explosives of Concern (MEC) and Materials Potentially Presenting an Explosive Hazard (MPPEH) released into terrestrial areas of the Former Raritan Arsenal. Geophysical investigation areas included Dredge Spoils Area (DSA) 1, DSA 2, DSA 3, DSA 4, DSA 5, DSA 6, Area 10, Area 12, Area 13 and Area 18. Deposition of MEC/MPPEH within the investigation areas reportedly occurred through various mechanisms, including as a result of a munitions magazine explosion (Part 1 of Area 10), kick-outs from Open Burn/Open Detonation (OB/OD) operations (Area 12), placement of dredge materials from the Raritan River (DSA 1, 2, 3, 4, 5 and 6), and accidental or intentional discarding through dropping or burial (all areas) (CH2M HILL, 2013).

The Technical Project Planning (TPP) identified DSA 1, DSA 2, DSA 3, DSA 4, DSA 5, DSA 6, Area 10, Area 12, Area 13 and Area 18 as areas of concern, requiring additional investigation. Phase 1 of the RI/FS consists of performing DGM, interpreting the results, and selecting anomalies of interest for intrusive investigation. The goal of the RI/FS in the selected areas is to evaluate the potential presence of MEC by identifying geophysical anomalies through both transect and full-coverage DGM operations. Historical evidence from munitions response operations suggests most items will be found within the top 0.6 meters (m) of soil, or in large quantities in burial trenches or pits (CH2M HILL, 2013).

1.2 SCOPE OF WORK

NAEVA provided qualified personnel and necessary equipment for the execution of the Geophysical Investigation Plan (GIP) included in the Work Plan. Two Field Geophysicists worked on site with support from the Project Geophysicist, Quality Control (QC) Geophysicist, and Geophysical Data Processor at NAEVA's Charlottesville, Virginia office. CH2M HILL's Project Geophysicist and Senior Unexploded Ordnance Supervisor (SUXOS) provided onsite logistics, Unexploded Ordnance (UXO) avoidance assistance, and Health and Safety Plan administration.

Key work performed included:

- Instrument Verification Strip (IVS) installation;
- Daily instrument calibration and verification;
- Data acquisition of transects/grids;
- Quality control of data at all steps of the project;
- Maintenance of project documentation within the Munitions Response Site Information Management System (MRSIMS);
- Data processing and target anomaly selection;
- Reporting and delivery.

1.3 SITE LOCATION AND DESCRIPTION

The worksite contains 905.6 acres located within the former Raritan Arsenal in Middlesex County, New Jersey on the north bank of the Raritan River, 228 acres on the south shore of the Raritan River near the town of Sayreville and 94 acres on two islands located within the Raritan River. The former arsenal is bordered to the north and northwest by Woodbridge Avenue, to the southwest by Mill Road and the Industrial Land Reclamation Landfill, and to the south and east by the Raritan River. The majority of the land in the former Arsenal is either currently zoned as commercial/industrial, or remains as undeveloped wetland. There are private residential areas located to the north of the site, with areas of investigation within Middlesex Community College and Thomas Edison Park. The DSAs are located on both the north and south shore of the Raritan River, as well as within the Raritan River, and are undeveloped for the majority of the DGM areas. The Raritan River experiences tidal fluxes of 1.68- 1.83m (NOAA, 2013), and empties into the western end of Raritan Bay at South Amboy, New Jersey.

Area 10 is located in the western portion of the former Arsenal and consists of 140 acres with open access for commercial, industrial and recreational use. Partial redevelopment of Area 10 includes the Raritan Center and Thomas Edison County Park. Area 12 lies adjacent to the Raritan River along the southwestern boundary of the former Arsenal, and encompasses 84 acres of dense, vegetated wetland. Area 12 is primarily undeveloped and will likely remain as such until risk management scenarios are evaluated for future industrial and recreational use. Area 13 is divided into 2 sections, with 16.9 acres located within the Raritan River, and a 5.6 acre strip of land bordering the river. The terrestrial zone of Area 13 contains two buildings actively used for industrial purposes, and future land use includes possible recreational and commercial development. Area 18D is located in the northwestern portion of the former Arsenal, and consists of 31 acres of developed land and heavily wooded areas. Land within Area 18D is owned by the EPA, Middlesex County College and Beechwood Developments, and is used for industrial and residential purposes.

The total land encompassed by the DSAs is 645 acres, with 323 acres located within the boundary of the former Arsenal, and 322 acres located outside the boundary. DSAs 1, 2 and 3 are located in the southeastern portion of the former Arsenal and contain 89 acres, 65 acres and 169 acres, respectively. DSA 5 is located on the south shoreline of the Raritan River directly across from the former Arsenal and contains 228 acres. DSA 4 and 6 are located within the Raritan River on two small islands, covering 78 acres and 16 acres, respectively. The DSAs are predominately low-lying, densely vegetated, marsh land delineated by tidal canals and mud flats. Aside from the small portion of DSA 5 that contains residential housing with nearby industrial facilities, the majority of the DSAs are undeveloped wetlands owned by various entities.

The areas of investigation are shown in **Figure 1**; additional maps with proposed DGM transects and full coverage areas can be found in the primary work plan under Appendix B –Site Maps. (Map source: CH2M HILL, 2013).



Figure 1. Site Overview by Area and DSA

2.0 EQUIPMENT

2.1 GEONICS EM61-MK2

The geophysical instrument used for this investigation was the Geonics EM61-MK2 metal detector. The EM61-MK2 is a high resolution time-domain electromagnetic instrument designed to detect, with high spatial resolution, shallow ferrous and non-ferrous metallic objects. In comparison with other metal detectors, especially magnetometers, it is much better suited for work in close proximity to man-made structures and in areas of dense subsurface metallic debris (i.e., burial pits).

For treeless areas, transects were cleared of brush to a minimum width of 3 m. Data were collected using a towed array (TA) platform, which consisted of three, 1 m by 0.5 m air-cored coils secured on a fiberglass and stainless steel platform, a Trimble 5700 Real-Time Kinematic (RTK) Global Positioning System (GPS) (**Figure 2**), a Panasonic Toughbook which acts as the data recorder, batteries, processing electronics, and an amphibious Argo ATV which towed the platform during DGM collection. The platform is mounted on 58 centimeter (cm) diameter wheels, which maintain the necessary 40 cm of vertical separation from the ground to the bottom coil. The EM61-MK2's transmitter generates a pulsed primary magnetic field, which then induces eddy currents in nearby metallic objects. The receiver measures the secondary magnetic field generated by the eddy currents at four time intervals in the bottom coil (Geonics, 2005). Earlier time gates provide enhanced detection of smaller metallic objects. Secondary voltages induced in both coils are measured in millivolts (mV).



Figure 2. EM61-MK2 3-coil TA collection with RTK-GPS

Following repeated submersion and exposure to prolonged wet conditions, all vulnerable ports were additionally waterproofed with shrink wrap and silicone to ensure acceptable instrument performance, as stated in the Root Cause Analysis (RCA) (**Appendix A**).

In areas that required increased maneuverability or contained dense tree cover, NAEVA employed an EM61-MK2 system consisting of one, 1 m by 0.5 m air-cored coil, an Allegro data recorder, batteries and processing electronics. In this person-portable (PP) configuration, the instrument is mounted on the manufacturer-supplied 60 cm wheels, maintaining the vertical separation of 40 cm from the ground to the bottom coil. When performing DGM in open areas where an acceptable signal could be achieved to utilize RTK GPS, an EM61 top coil was attached to this system to serve as a mount for the Trimble Zephyr or R8

antenna. Assuming accurate data positioning, target resolution of approximately 0.5 meters can be expected. The data is collected using Geonics' EM61MK2 program and temporarily stored in a Juniper Allegro CX data logger prior to downloading to a laptop computer.

Due to the tidal nature of the islands located within the Raritan River, a modified EM61-MK2 PP system was used in the collection of DSA 4 and DSA 6. This system consisted of an Allegro data recorder, batteries, processing electronics and one, 1 m by 0.5 m air-cored coil mounted to a fiberglass and plastic sled platform. The sled allowed the system to be pulled through marshy conditions and deep water, while maintaining the necessary 40 cm of vertical separation from the ground. An offset GPS antenna mount facilitated use of the R8 during collection, while eliminating additional weight to the system.

2.2 DATA LOGGER

For PP EM61MK2 collection, a Microsoft Windows-based Allegro CX data logger was used to monitor and record data from the EM61. For TA collection, a Microsoft Windows-based Panasonic Toughbook laptop computer was used to monitor and record data from the three EM61MK2 coils. The four time gates, or channels, recorded for this investigation are geometrically spaced in time after the termination of the transmitter pulse. The Allegro stores raw data in the binary .R61 format (Geonics, 2005), while the Toughbook stores raw data in .N61 format.

2.3 TRIMBLE RTK GPS

A Trimble 5700 RTK GPS base station and rovers were used for the acquisition of positional data during the first two mobilizations. The GPS base station was used in conjunction with a roving 5700 unit connected to a Zephyr antenna mounted on a range pole for survey operations, or directly above the EM61-MK2 for geophysical mapping. When mapping with the TA system, the rover was mounted to a tripod secured directly above the middle coil on the platform.

During the final mobilization, a Trimble R8 RTK GPS base station and rover were used for the acquisition of positional data. By eliminating the need for both a Zephyr antenna and a receiver to be carried, the R8 provided a lighter and safer alternative for collection over strenuous terrain. The R8 was mounted on a range pole for survey operations, and secured on a mount either directly over the EM61-MK2 during wheel-mode collection, or offset -0.61 m during sled collection.

Real-time corrections are broadcast to the roving GPS unit via a radio link using a Trimble TDL450 Ultra High Frequency (UHF) radio modem. This system provides positional corrections at a rate of one Hertz (Hz), with an accuracy of 3 cm horizontal and 5 cm vertical when a minimum of 5 satellites are available (Trimble, 2005). Due to the distance between work areas on site, three separate base station locations were used to ensure adequate signal during collection. The base stations were established at survey control points (**Table 1**) with known coordinates, and positional accuracy checked against noted survey control points daily before performing any surveys. Coordinates are provided in Universal Transverse Mercator (UTM) Zone 18 North, North American Datum of 1983 (NAD83), meters.

Survey Control Point	X Location (m)	Y Location (m)
R2 SPK 701	556286.39	4482174.07
B2 IPIN 703	555264.10	4482528.90
B2 PK 705	555896.67	4480891.16

Table 1. Coordinate locations of base station survey control points

2.4 INFORMATION MANAGEMENT

Project documentation, including instrument serial numbers and data file names, were recorded in the MRSIMS forms on a Panasonic ToughPad tablet provided by CH2M HILL. Completed field forms consisting of a daily and survey form, when applicable, were submitted directly to CH2M HILL for QC

review and use during data processing and reporting. Accessory media including relevant site pictures were incorporated with the upload, and a daily log documenting all field team activities was submitted daily.

3.0 METHODOLOGY

3.1 DGM SURVEY ACTIVITIES

Surface clearance, vegetation removal, and land survey activities were completed in advance of the DGM investigation. Significant tidal fluctuations governed accessibility to locations within DSAs 4, 5, 6 and Area 12, and may have influenced anomaly locations, as the tides have the ability to both remove and deposit potential targets in previously cleared and collected survey areas (**Figure 3**). Multiple snowfall events over the course of the first two mobilizations led to snow drifts forming in the open transect areas between the Phragmites, a perennial reed common to the area, with depths ranging from 10 cm to 46 cm. Temperature fluctuations also dictated the extent of DGM collection with portions of the collection areas ranging from flooded to frozen, depending on when it was accessed. Portions of DSA 4 and DSA 6 proved to be inaccessible at any time due to a combination of water features, exposed mud flats, and channel depth. The PP EM61-MK2 was used to collect 100% coverage in Area 13 and Area 18D within the Middlesex Community College boundary, and 1m transects in T3DSA1, Area 10, and forested portions of DSA 5. Data were collected at a rate of 10 readings per second and positioned by GPS when available, and ropes with 0.75 m spacing were used to ensure straight lines and 100% coverage when applicable. In areas where GPS positioning was not feasible, data were collected fiducially in wheel mode with readings taken every 10 cm. Distances were measured between transect stakes for correct positioning. Local coordinates were converted to geodetic coordinates using reference locations (stakes) surveyed in by licensed surveyors on evenly spaced centers.



Figure 3. Some transects in wetland areas are exposed only at low-tide

3.2 DATA PROCESSING AND INTERPRETATION

During PP data collection, EM61-MK2 data were recorded and stored in an Allegro CX data logger using Geomar's NAV61 software, or EM61MK2 software during fiducial collection. Using Geomar's TRACKMAKER61MK2 or DAT61MK2 software, respectively, the EM61-MK2 data were positioned and exported to an American Standard Code for Information Exchange two (ASCII) file. During the 3-coil TA data collection, EM61-MK2 data were recorded and stored in a Panasonic ToughBook equipped with ML61MK2 software. The data were later reviewed on a laptop computer and initially processed using Geomar's Multi61MK2 program. Initial data processing was performed by the field team. This included reviewing data for integrity, repeatability, and completeness. Once the in-field review was completed, the data were transferred to NAEVA's Charlottesville, Virginia office via CH2M HILL's File Transfer Protocol (FTP) site for processing, analysis, target selection and QC using Geosoft's Oasis montaj software and the UX-Detect module. Final processed data were uploaded to the CH2M HILL FTP site.

3.2.1 Pre-Processing

Converted raw data files were imported into Geosoft's Oasis Montaj to perform the following:

- Review and finalize all QC tests (IVS, cable shake, personnel, and static) prior to processing DGM data for that day;
- Evaluation of data density;
- Application of auto leveling and instrument drift corrections for EM61-MK2 data;
- Application of a default lag correction based on the lag determined from the initial collection of the 5-line IVS (Section 5.3.2);
- Generation of preliminary contour map(s) from gridded and transect data;
- Generation of preliminary original versus repeat profiles by grid block;
- Generation of formatted ASCII files containing preprocessed data by grid block.

3.2.2 Final Processing

After completion of preprocessing, the data were further evaluated and processed to generate final processed data files. Final processing steps included:

- Evaluation and refinement of auto leveling and instrument drift corrections for EM61-MK2 data;
- Evaluation and refinement of lag correction;
- Additional digital filtering and enhancement, as necessary;
- Targeting of data, as described in Section 3.2.3;
- Generation of formatted ASCII files containing processed data by grid block;
- Generation of final maps for each grid block showing contoured, gridded data, target locations, areas of interest, and cultural features;
- Generation of final original versus repeat profiles by grid block.

3.2.3 Analysis and Target Selection

The anomaly targeting threshold was set at 4 mV in Channel 2 based on the need to target small munitions items and characterize MEC or MPPEH present. Production and daily static test data were monitored to ensure the threshold level was sufficiently above local background and noise levels, and targets were selected from geophysical data using the UX-Detect module. The UX-Detect module within Oasis Montaj identifies peak amplitude responses associated with, but not limited to, MEC. Single-source anomalies may generate multiple target designations depending on shape and orientation. Initial target selections were auto-selected using the Blakely Test within the UX-Detect module based on the Channel 2 data of the EM61-MK2 bottom coil. Data profiles corresponding to the anomalies selected by Geosoft were then analyzed by trained geophysicists, with the targets evaluated as to their validity and position. Targets found to be invalid or incorrectly located were removed or adjusted. Additionally, anomalies that were not selected by the UX-Detect module, yet deemed to represent potential MEC targets, were manually selected. All selected anomalies that occurred at or above the targeting threshold of 4 mV were identified using a unique ID number. If a target response exhibited adequate decay yet was below the targeting threshold, it was selected as a target and noted as a below threshold pick. The criteria for selecting and locating anomalies for the target list include, but are not limited to, the following items:

- Maximum amplitude of the response with respect to local background conditions;
- Lateral extent (width) of the response;
- Three-dimensional shape of the response;
- Location of the response with respect to the edge of the survey area, inaccessible areas, land features, cultural features, or utilities within or adjacent to the survey area.

3.2.4 Deliverables

Final processed XYZ ASCII data corrected for sensor offsets, lag corrections, drift/leveling corrections and instrument bias were created by dataset for the EM61-MK2 data, with individual target lists created for each grid. The Master Target List provides a Target ID, Grid Cell ID, Easting (X1) and Northing (Y1) UTM coordinate location, anomaly type, and the recorded peak amplitude in mV for each target (**Appendix B**).

Grid maps in Geosoft Oasis Montaj and PDF formats of color-contoured geophysical results were created with anomaly selections shown and labeled at a readable scale. All target lists and both raw and processed data have been submitted to the CH2M HILL Project Geophysicist and can be found on the submitted Universal Serial Bus (USB). Also included are processing reports, a copy of the MRSIMS database, and target lists in MRSIMS format.

4.0 RESULTS

4.1 SUMMARY OF WORK

From December 2nd through December 18th, 2013, February 18th through March 2nd, 2014, and March 24th through March 28 th, 2014, NAEVA Geophysics performed DGM in DSA 1, 2, 3, 4, 5 and 6, and Areas 10, 12, 13 and 18. NAEVA and CH2M HILL installed an IVS to provide initial validation of the EM61-MK2 and to provide on-going QC throughout the production survey for response repeatability and positioning. The limits of production DGM were determined largely by the accessibility to commercial areas during the week, and the tidal schedule for accessing wetland portions of the site. The data were processed and QC checks performed daily as they were received from the field.

The daily field schedule, based on a 10-hour workday, was as follows, unless otherwise noted in daily work logs:

- Morning safety brief and planning;
- Equipment setup;
- Instrument calibration and verification;
- DGM survey;
- End of day instrument verification;
- Equipment storage;
- Data download and review for completeness;
- Upload to the FTP site.

Raw data, processed data, final data, associated reports, and target lists were delivered to CH2M HILL in the specified formats.

4.2 MOBILIZATION AND SITE SETUP

Prior to mobilization, an Activity Hazard Analysis (AHA) and Standard Operating Procedures (SOPs) were provided to CH2M HILL. All personnel had 40-hour Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER) training, with current (annual) 8-hour refresher training, and medical monitoring examinations in accordance with OSHA 29 CFR 1910.120 and 29 CFR 1910.134. Site-specific health and safety briefs were given each morning by the CH2M HILL UXO Safety Officer. NAEVA mobilized one field crew to the former Raritan Arsenal on December 2nd, 2013, and demobilized on December 19th, 2013 after the completion of data collection and review of the QC test data by NAEVA data processors. Based on the results of initial intrusive operations within the surveyed areas, portions of the collected data were deemed unusable, and a field crew returned on a secondary mobilization on February 18th to recollect pertinent areas in accordance with the RCA (**Appendix A**). Once all necessary recollection was completed, the field team demobilized with all equipment on March 3rd. On March 24th, a field crew returned to perform DGM in previously inaccessible regions of the site, including Area 13, DSA 4 and DSA 6. Upon completion of this phase of collection, the field crew demobilized on March 28th, 2014, thereby finishing all geophysical efforts in phase one of the RI.

In preparation for DGM survey, dense vegetation within the site boundary was cut by CH2M HILL to allow passage of the field team and geophysical equipment. A licensed professional land surveyor located and placed labeled wooden stakes and survey nails at transect points and grid corners, where applicable. As part of the Geophysical System Verification (GSV), discussed in Section 5.1.2, blind seeds were placed in advance of DGM by CH2M HILL. The locations were unknown to NAEVA during data collection and processing.

4.3 DGM SURVEY ACTIVITIES

DGM survey coverage of the initial 2013 PP and subsequent recollected 2014 TA with additional PP coverage totaled 22.65 acres, resulting in a total of 3586 selected targets. DGM data was within the data density criteria of 0.213 m spacing as well as the 100 percent coverage criteria for the lane spacing to not exceed 1 m. Transect line spacing was within the allowed 20% variation from intended spacing. Blind seeds were detected by the EM61-MK2 and selected as targets in DGM data. Repeat data for each grid block compared well with original data in anomaly amplitude and location. A sample repeat figure can be found in **Appendix C**. Color-contoured mosaics for each area are included in **Appendix D**.

Intrusive operations identified significant numbers of 'no contacts' in the initial 7133 selected anomaly locations from the 2013 TA data. Subsequent analysis of IVS and transect data determined unacceptable data noise levels. The failure to identify that the noise was intrinsic to the system required that all TA data be recollected following corrective modifications outlined in the RCA (**Appendix A**). PP data collected during the initial DGM phase was unaffected and therefore did not require recollection.

The recollected 2014 TA coverage totaled 19.06 acres, resulting in a total of 3013 targets. **Table 2** displays selected Anomalies by Type from the initial 2013 PP and TA DGM collection with the Recollection Anomalies by Type of the 2014 TA DGM and 2013 PP data. Areas G13, TDSA4, and TDSA6, are not included in the anomaly counts as they were collected in PP during the 2014 TA corrective action.

Selected Anomalies by Type (excluding Area 13, TDSA4 and TDSA6)			
Initial Collection		Recollection	
Anomaly Type	Number of Targets	Anomaly Type	Number of Targets
1	2802	1	1069
2	21	2	49
3	118	3	324
4	1	4	0
5	0	5	0
6	2	6	1
7	4022	7	1423
8	5	8	5
9	162	9	18
10	0	10	0
11	0	11	12
12	n/a	12	12
13	n/a	13	100
Total	**7133**	**Total**	**3013**

Table 2: Compared Anomaly Totals following TA recollection

Selected anomalies were further categorized by type as follows: Type 1 anomalies are point source targets that may represent targets of interest. Type 2 anomalies are known cultural objects such as signs, pipes, fences, etc. Type 3 anomalies are suspected culture such as underground utilities. Type 4 anomalies are anomalies that lie outside the established target area, but are selected based on their proximity and relevance (underwater data only). Type 5 anomalies are hazard deviation targets (underwater data only). Type 6 anomalies are those below the established threshold but were selected based on their decay characteristics. Indicative decay characteristics when comparing profiles of all channels together, would typically have Channel 1 at the highest value followed by Channels 2, 3, and 4. Type 7 represents suspected data spikes resulting from terrain response, poor decay trends or ambient electrical noise. Type 8 is a Saturated

Response Area (SRA), and Type 9 anomalies are targets selected within an SRA as exhibiting unique signatures. Type 11 anomalies are known IVS seeds present in the collection area. Type 12 and Type 13 were added upon recollection of portions of the site, to help better compare the selected anomalies from each phase of DGM. Type 12 anomalies are targets that were picked in both the original and recollection data, and Type 13 anomalies are targets that have been previously investigated through intrusive operations, and are still present. The most significant change documented in the recollected data is the substantial decrease in Type 7 targets, which represent data spikes resulting from ambient electrical noise, among other factors. This decrease aids in validating the TA system and collected data, and demonstrates the effectiveness of the implemented modifications. Other noticeable trends including an increase in Type 3 (suspected culture) anomalies and a decrease in Type 1 (point source) anomalies, can be attributed to increased cultural documentation by the field team, and a percentage of originally selected point source targets having already been removed during intrusive operations. Anomaly types 12 and 13 were not added until the second mobilization, and therefore are not applicable to the original data.

Throughout all mobilizations, DGM coverage was governed largely by man-made and natural site conditions, with seasonal weather events determining accessibility to select areas. Significant snowfall events led to the formation of snowdrifts collecting in the open areas between Phragmites at depths ranging from 10cm to 46 cm. Snow depths remained variable throughout the collection period as wind, temperature changes and subsequent snow events modified existing snow totals. Temperature and tidal fluctuations also proved to be a significant factor, with areas that had been previously collected becoming inaccessible, and vice-versa, due to changes in ice thickness, water depth, and substrate stability in the tidal areas.

Data gaps caused by obstructions were documented in MRSIMS and recorded when available with RTK GPS for inclusion on the individual grid maps. Man-made features include, but are not limited to, a chain-link fence, concrete medians, large trucks, trains, utility poles and general metal debris.

4.4 DATA PROCESSING AND INTERPRETATION

All data were processed as described in-depth in Section 3.2. In addition to the standard processing procedures, the following additional steps were taken during the second mobilization:

- Closely evaluating the IVS data to see if any intrinsic noise appears in the background areas,
- Compare overlapping data from the first DGM collection to the second DGM collection to evaluate following:
    - Point source targets that are present in both DGM surveys (Type 12),
    - Targets that were intrusively investigated from the first DGM data and are still present (Type 13),
- Two power point presentations and an Excel spreadsheet (**Appendix E**) were made denoting the following:
    - Point source targets that were not intrusively investigated from the first DGM survey and are not present in the second DGM survey
    - In areas where the DGM line paths deviate between the two surveys (no overlapping data), targets intrusively investigated and items recovered from the first DGM survey were identified.
- Analyzing channel decays in order to identify possible noise or other false positive responses.

Any anomalies suspected as originating from noise (e.g., channel readings out of phase) and non-metallic and/or cultural objects are noted and designated with a number based on the type of anomaly as described in Section 4.3. Processed data can be found organized by grid block in the submitted USB.

Particular attention was given to all TA data collected from February 24 – March 2, 2014 in DSA 5 as extensive power line coverage and reoccurring ambient noise due to cultural proximity complicated data

analysis and target selection.. Transects were recollected after changes were made (coils and/or cables were switched out) to the TA to ensure that the noise in the data was from ambient sources rather than intrinsic noise within the system. After recollecting portions of TDSA5 and T30DSA5, the noise present in the data was deemed partially intrinsic to the area, and the most usable data was extracted from each date, providing there was acceptable QC tests and IVS data to validate the collected data.

The highest target density within the surveyed area was found in the terrestrial zone of Area 13, which is directly adjacent to an active industrial work area. Elevated target densities were observed in other areas bordering, or included in, developed zones such as Area 12, Area 18D, TDSA 5 and TDSA 1. The lowest number of targets picked per acre were documented on the islands (particularly TDSA 4), and across TDSA 3, which is comprised of almost entirely undeveloped wetlands.

The data processing reports included with the data also list down-line data density statistics and leveling, lag, and gridding parameters used in processing each dataset.

5.0 QUALITY CONTROL

A summary of the Measurement Quality Objectives and Performance Criteria and System Quality Control is presented in Section 5.1 and 5.2, below. The results of the QC tests are summarized in Section 5.4.

5.1 MEASUREMENT QUALITY OBJECTIVES AND PERFORMANCE CRITERIA

5.1.1 DGM System Positioning

The Measurement Quality Objective (MQO) for system positioning accuracy required that positioning of DGM data and detected anomalies was accurate enough to allow for effective reacquisition of selected targets. The measurement performance criterion for system positioning was based on the results of daily reoccupation (Section 5.2.1) of a control point showing that it did not vary more than 10 cm. **Table 3** lists points used for position control.

Control Point ID	Easting (m)	Northing (m)
5A	556662.49	4484459.04
TDSA2-6B	556726.384	4483213.828
R2DH706	556360.30	4480891.16

Table 3. GPS QC Points in NAD83 UTM Zone 18N Meters

5.1.2 Data Positioning

The MQO for data positions accuracy was that positioning of detected anomalies was within the allotted accuracy range. The measurement performance criterion for data positioning was that all locations of anomalies representing QC seeds lie within a 1 m radius of a point on the ground surface directly above the seed item. Any anomaly that was selected outside of 1 m from a point directly above the seed item was not considered to be a detection of that item. This was evaluated in the data by verifying that all anomalies selected were within this standard or could be otherwise explained. This requirement is only applicable to terrestrial EM61-MK2 surveys where the intent is to locate individual MEC items only; Area 18D does not fall within this requirement as the DGM objective was to delineate the extents of a possible trench.

5.1.3 System Munitions detection

The MQO for system munitions detection was that the system responded consistently from the beginning to the end of an operation within industry standard of detection for an industry standard object (ISO). The measurement performance criterion was that the response to an ISO did not vary more than ± 10 percent on Channel 2, after background correction. Daily beginning and end of day static spike tests were evaluated to meet this criterion (Section 5.2.3 Background and Spike Test).

5.1.4 System Data Repeatability

The MQO for DGM systems data repeatability are that the systems respond consistently from the beginning to the end of daily operation. Detection repeatability was quantitatively evaluated twice daily by validating that the IVS survey data fell within the 0.5m offset and 25 percent variation in response from the average of the first two 2-line IVS collected (Section 5.3.2 Instrument Verification Strip

Data repeatability was also evaluated per block of survey data collected. Upon completion of each dataset, approximately 2 percent of the data were recollected in a separate file to demonstrate instrument consistency and data integrity throughout the course of the survey. Repeat data also serves to evaluate and validate the particular collection and positioning methods. In GPS DGM collection, it is essential for the operator to maintain a centered and straight line path to ensure full coverage. If the instrument passes verification while failing repeatability, one may attribute failure to incorrect line paths. Evaluation of repeat data was conducted qualitatively against original data profiles.

5.1.6 Down-line Data Density

The MQO for down-line data density was to have sufficient data collected to detect potential MEC/MPPEH items. The measurement performance criterion for this was that at least 98 percent of possible sensor readings were captured along each transect at a spacing of 0.213 m or less. In addition, any transect containing an unexplained data gap of 0.61 m or greater did not meet this MQO. This was evaluated by verifying that production data point separation met this standard.

5.1.7 Survey Coverage (Lane Spacing)

The MQO for lane spacing was to maintain appropriate line spacing to provide 100 percent coverage of the accessible portions of the survey area. The measurement performance criterion for this is that the lane spacing varied no more than 1 m for EM61-MK2 comprehensive (full-coverage) surveys, and transect lane spacing did not vary more than 20 percent from intended spacing unless vegetation, terrain or other obstacles caused the separation. This was evaluated in production data by verifying that all of the data met this standard.

5.2 SYSTEM QUALITY CONTROL

The following QC procedures were performed and documented during the data collection process and reviewed by a qualified geophysicist on a daily basis. Implemented for the secondary mobilization and DGM, additional IVS and QC data were collected following the completion of each grid block to validate system functionality. When deemed logistically incapable of returning to an established IVS following completion of a dataset, a 1-line test strip was substituted. The test strips were implemented to demonstrate response repeatability of each coil over an ISO at a constant depth and orientation.

5.2.1 Record Sensor Positions Test

The Trimble GPS positioning equipment was checked for system positioning at the beginning of each workday. After starting the GPS base station, the GPS rover and antenna mounted on the EM61-MK2 was used to measure a position at a known control point (**Table 3**). Positions within 10 cm of the known point were acceptable.

5.2.2 Instrument Warm Up

At the beginning of each workday before operation and acquisition of data, the EM61-MK2 was assembled, powered on, and warmed up for a minimum of 15 minutes to minimize instrument drift and ensure proper function. These tests were performed with the instrument immobilized over an area of minimal background response in order to document proper instrument function and test for abnormal performance.

5.2.3 Background and Spike Test

Performed at the beginning and end of each day, as well as midday or upon completion of a dataset, the background/spike test consists of three 1-minute lines of data: background, ISO/spike, and background. Background lines are monitored for data spikes and noise level while the spike line is examined for consistent response. Monitoring background noise enables the Geophysical Data Processor to calibrate data leveling during processing, while the spike test data was monitored for consistent response of a small ISO, a 2.54 cm x 10.16 cm galvanized steel pipe nipple (McMaster-Carr Part Number 44615K466). For the PP spike test, the small ISO was oriented horizontally (long axes of the ISO and the EM61 are parallel) and mounted centrally at a distance of 41 cm from the top of the bottom coil to the ISO's center of mass. For the TA spike test, a small ISO was oriented vertically (long axes of the ISO and the EM61 are perpendicular) and mounted centrally for each coil at a distance of 43 cm from the top of the bottom coil to the ISO's center of mass for all data recorded before December 17, 2013. TA spike test ISO height was adjusted and recorded at a distance of 44 cm beginning February 18, 2014. The background test required that the response varied no more than ± 2 mV from the mean response on Channel 2. Acceptable spike response

values were to be within ± 20 percent of the value for Channel 2 after background corrections. Daily spike response values were plotted against the small ISO response curve at the given depth and evaluated for consistency with Naval Research Lab (NRL) ISO response curves and munitions detection repeatability throughout the duration of investigation.

5.2.4 Cable Shake Test

A 30-second cable shake test was performed each time the sensor was assembled, typically at the beginning of the day, and any time that a cable was replaced. For this test, all cables of the system were shaken to simulate vibrations associated with dynamic DGM survey while monitoring data for shake-induced spikes. This test functioned to detect problems associated with damaged or loose connectors, twisted cables, and other defects. After identification and replacement of the malfunctioning component, the geophysical system would again be verified at the IVS and allowed to resume geophysical operations after demonstrating resolution to the problem.

5.2.5 Personnel Test

At the beginning of each workday a 30-second personnel test was performed and monitored for changes in response associated with personnel in proximity to the instrument coil. Support personnel not actively operating the instrument typically do not approach the coil during production surveys. This test is designed to confirm that the instrument operator, who is closest to the coil during logging, does not interfere with the data. Common sources of operator interference include metal items in pockets and steel-toed boots. This test is applicable only to the PP EM61-MK2 system.

5.2.6 Vehicle Test

Prior to collection, a 30-second vehicle test was performed and monitored for changes in response associated with the vehicle in proximity to the instrument coil. This test is designed to confirm that the vehicle used to tow the array platform during logging does not interfere with the data. The engine of the vehicle is brought to an elevated revolutions per minute (rpm) while monitoring data for data spikes or elevated noise levels. The most common sources of interference result from current generators, such as alternators and portable inverters. This test is applicable only to the TA EM61-MK2 system.

5.2.7 Repeat Data

Daily AM and PM 2-line IVS data were collected to evaluate system positioning and detection repeatability. IVS seed positions within 0.5 m of the recorded locations were acceptable, and response amplitudes were evaluated for consistency within 25% of expected values. In addition, repeat data was collected for each block of data to total at minimum two percent of the block survey area for qualitative amplitude and positional comparison to the initial profiles.

5.3 GEOPHYSICAL SYSTEM VERIFICATION

5.3.1 Overview

The GSV plan, outlined in the GIP, is a physics-based modeling of instrument response to ISOs at different orientations and depths. Six small ISOs (1” x 4” steel pipes) were seeded at detectable depths below ground surface to create an IVS (Section 5.3.2), and a small ISO was also used as static spike test item for daily QC and verification (Section 5.2.3). Detailed specifications of the small ISO may be found in the GSV Work Plan Attachment to the GIP (CH2M HILL, 2013). The GSV is an economical alternative to traditional geophysical prove-outs (GPO) as ISOs are easily obtained and economical, the IVS requires minimal time and area to install, and blind seeding of the survey areas ensures continual system verification throughout production.

5.3.2 Instrument Verification Strip

The purpose of surveying the IVS is to demonstrate the effectiveness of all instrumentation, methods, and personnel prior to the initiation of fieldwork and to document the site-specific capabilities of a DGM system. Prior to seed burial, two suitable areas (one location on each side of the river) with minimal interference and anomalous response were chosen, and thoroughly checked using the EM61-MK2 in analog mode. Background data were submitted to CH2M HILL's Project Geophysicists for review, and any pre-existing anomalies were marked and avoided during IVS construction.

Upon returning on the second mobilization, access to portions of DSA5 were restricted due to the implementation of a "Cease and Desist" Order by a neighboring private development. Two additional IVS locations, IVS 3 and IVS 4, were chosen to facilitate instrument verification while avoiding proximity to private property boundaries.

Once the final IVS locations were approved, tape measures were used to locally establish a 17 meter x 4 meter grid seeded with six small ISOs approximately 3 m apart. Medium ISOs were substituted for two seeds in IVS 1 between the first and second mobilization, and are documented below. The ISOs were buried by CH2M HILL's Project Geophysicist vertically at depths of 23cm and 10cm below ground surface (depths were measured from center of mass). IVS endpoints and seed locations were marked with labeled plastic flags and recorded with RTK GPS. Seed item information is summarized in **Table 4**.

Initial IVS installed in TDSA2				
Seed ID	**Item Type**	**Easting (m)**	**Northing (m)**	**Orientation**
IVS-01	Small ISO	556682.1326	4483164.36	Vertical
IVS-02	Small ISO	556682.7826	4483166.697	Vertical
IVS-02 – Change to Medium ISO in 02/14				
IVS-03	Small ISO	556683.3733	4483169.037	Vertical
IVS-04	Small ISO	556685.1326	4483171.266	Vertical
IVS-05	Small ISO	556687.3485	4483172.4	Vertical
IVS-05 – Change to Medium ISO in 02/14				
IVS-06	Small ISO	556689.6046	4483173.601	Vertical
Secondary IVS installed across the river in TDSA5				
Seed ID	**Item Type**	**Easting (m)**	**Northing (m)**	**Orientation**
IVS-01B	Small ISO	556041.748	4481226.527	Vertical
IVS-02B	Small ISO	556050.494	4481224.713	Vertical
IVS-03B	Small ISO	556053.274	4481223.155	Vertical
IVS-04B	Small ISO	556044.484	4481224.958	Vertical
IVS-05B	Small ISO	556047.155	4481223.466	Vertical
IVS-06B	Small ISO	556055.978	4481221.671	Vertical
Third IVS installed in T30DSA5				
Seed ID	**Item Type**	**Easting (m)**	**Northing (m)**	**Orientation**
IVS-01C	Small ISO	557255.155	4481753.872	Vertical
IVS-02C	Small ISO	557252.175	4481752.744	Vertical

IVS-03C	Small ISO	557249.120	4481751.676	Vertical
IVS-04C	Small ISO	557247.828	4481748.276	Vertical
IVS-05C	Small ISO	557244.937	4481747.252	Vertical
IVS-06C	Small ISO	557241.879	4481746.153	Vertical
Fourth IVS installed in western portion of TDSA5				
Seed ID	**Item Type**	**Easting (m)**	**Northing (m)**	**Orientation**
IVS-01D	Small ISO	555461.266	4480948.722	Vertical
IVS-02D	Small ISO	555461.057	4480945.574	Vertical
IVS-03D	Small ISO	555460.761	4480942.360	Vertical
IVS-04D	Small ISO	555463.465	4480940.002	Vertical
IVS-05D	Small ISO	555463.374	4480936.719	Vertical
IVS-06D	Small ISO	555463.186	4480933.578	Vertical

Table 4. IVS seed item location and orientation

An initial 5-line IVS survey was performed upon construction of each IVS to demonstrate system detection and positioning capabilities. The 5-line survey consisted of a line of data at full spacing from the seeded line (0.75 m), a line centered over the seeds, a line at half spacing (0.375 m), another line at full spacing and finally a background line offset a minimum of 3 m from the seeded line (**Figure 4** and **Figure 5**). Daily AM and PM 2-line IVS tests consisted of one line directly over the seed items, followed by the background line. Midday 2-line IVS tests were conducted beginning on February 25, 2014 during the second site mobilization as directed under the GIP RCA (Form 4-13) and subsequent Corrective Action. The IVS survey data demonstrated the EM61's ability to accurately detect the ISO at the given depths and site conditions. Daily IVS data was evaluated for MQO compliance (Section 5.1.4 System Data Repeatability). Maps from the initial IVS background and 5-line survey can be found in **Appendix F**.

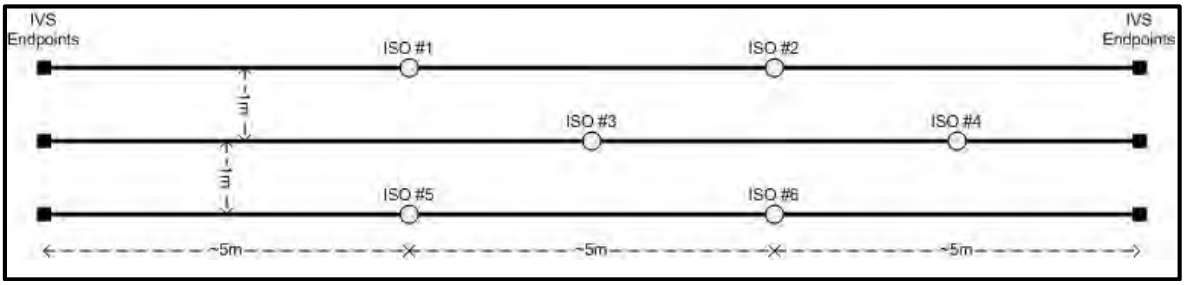

Figure 4. TA IVS Design

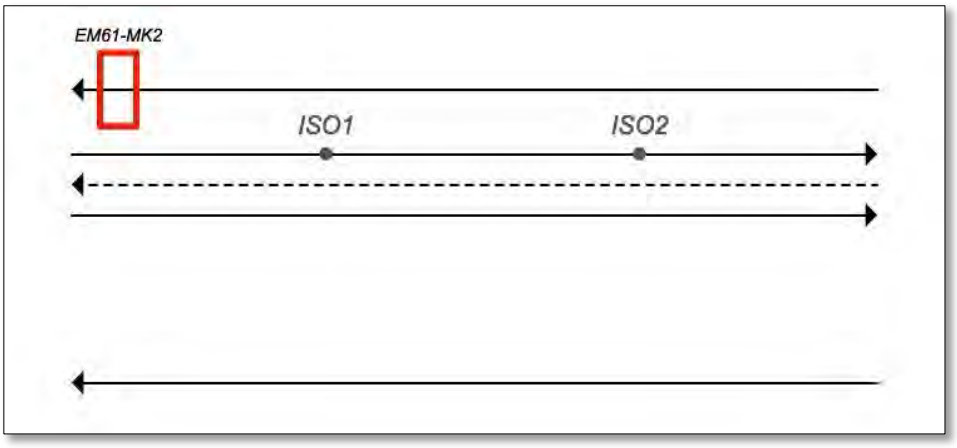

Figure 5. PP 5-line IVS layout diagram, not to scale

5.3.3 Production Blind Seeding

As part of ongoing project QC and system validation, the blind seeding portion of the GSV was conducted and evaluated by CH2M HILL. Seed items were emplaced throughout the survey area; ideally such that at least one seed item would be encountered each day. The locations of these small ISOs seeded in the production area were unknown to NAEVA field DGM teams and data processing teams. Location, orientation and seed identification were recorded for comparison and verification with production data. The CH2M HILL Project Geophysicist evaluated detection of the blind seeds in submitted data and reported that all seeds were detected. This includes both original and recollected data from all three mobilizations, with all blind seeds effectively detected even in data that was deemed unusable.

5.4 RESULTS

All final submitted data met the quality objectives of the project. Intrinsic geophysical noise exhibited in TA IVS tests on December 11, 12, and 17, 2014, and similar noise in significant numbers of transects was identified and addressed with increased protective measures to prevent water infiltrating the TA system. Recorded sensor positions were within the 10 cm offset tolerance (**Figure 6**). For both the PP and TA systems, background static tests were within the acceptable range of ± 20% of the standard item response in Channel 2 (Nelson, et al., 2008) and the detection of the small ISO were consistent and repeatable within 25% of IVS anomaly characteristics throughout the investigation (see **Figure 7** and **Figure 8**). The cable shake, personnel and vehicle data exhibited no significant interference as a result of cable motion, proximity of personnel or proximity of vehicles, respectively.

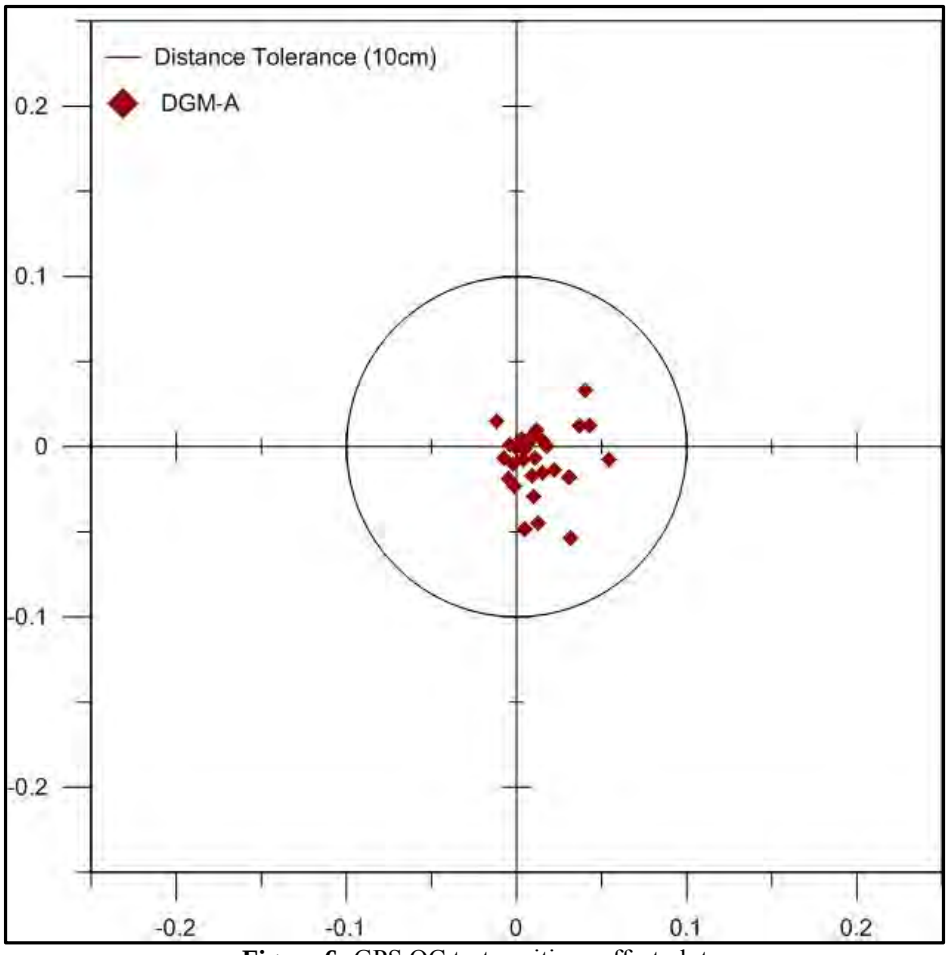

Figure 6: GPS QC test positions offset plot

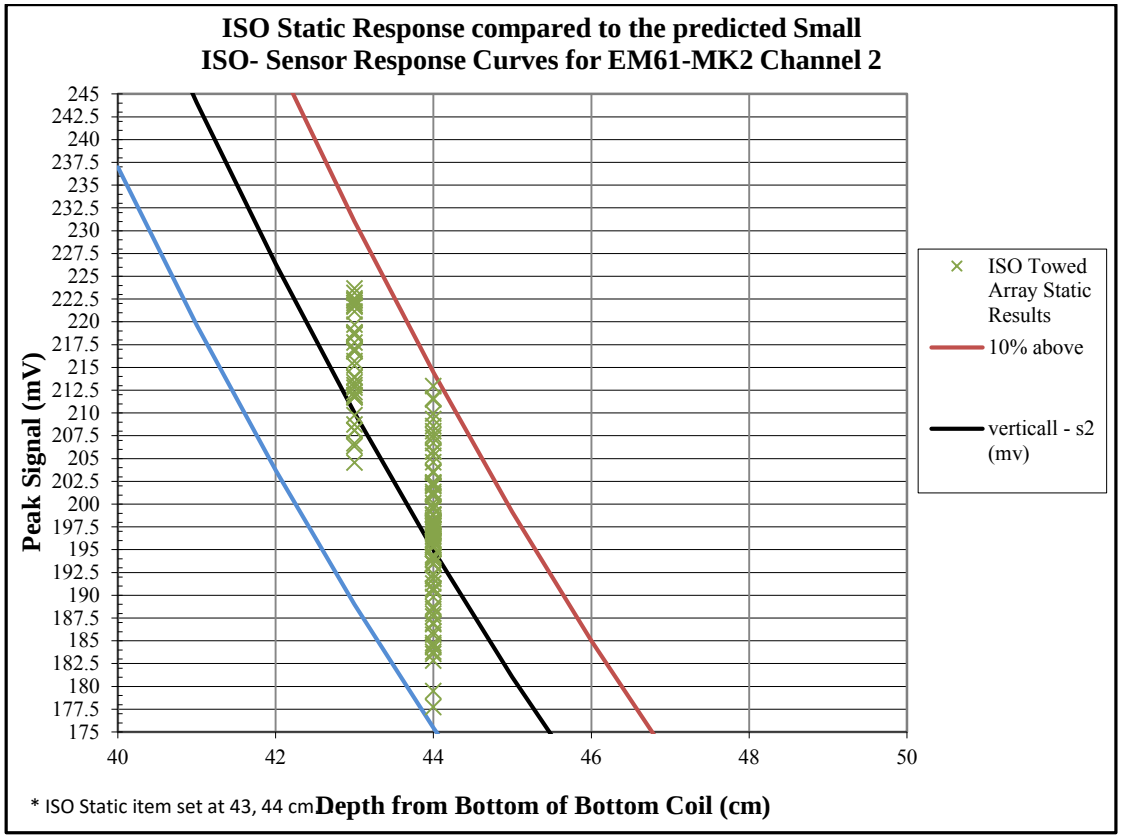

Figure 7: EM61-MK2 TA Ch2 Small ISO static response plotted on predicted response curve

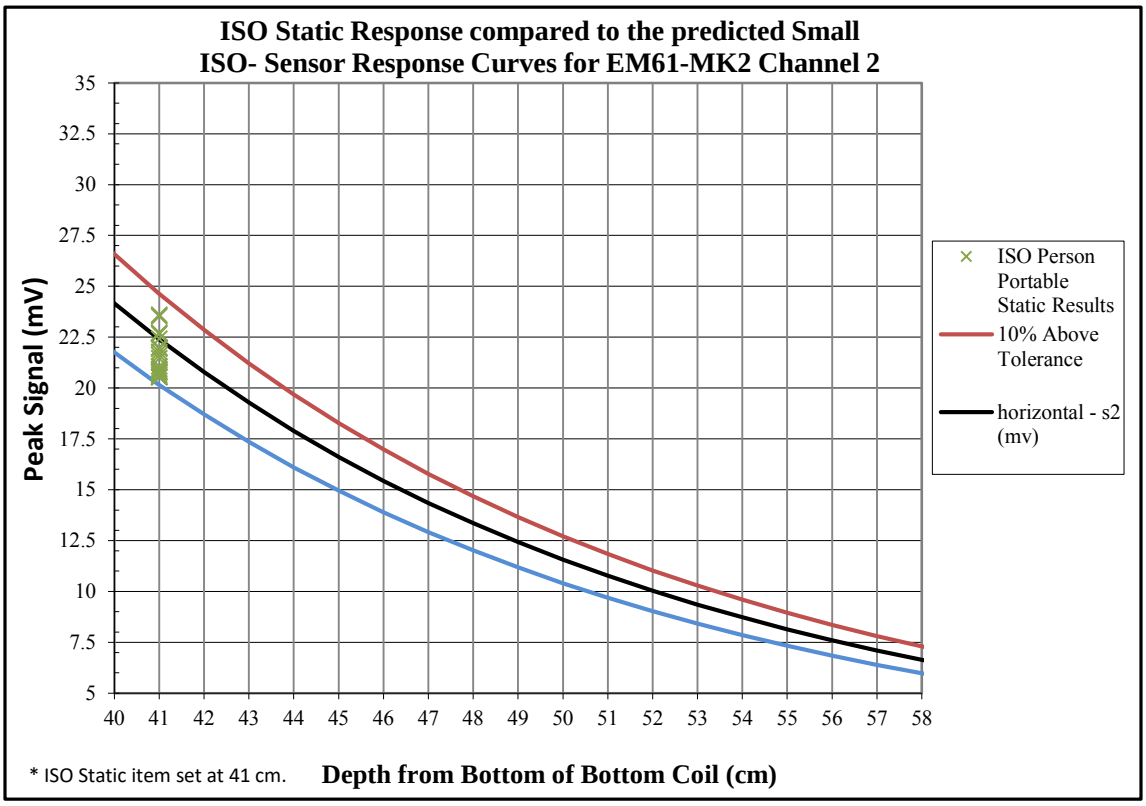

Figure 8: EM61-MK2 PP Ch2 Small ISO static response plotted on predicted response curve

Analysis and contouring of IVS data demonstrated the EM61-MK2 was able to detect the buried seeds items above background levels with consistent amplitude characteristics and placement in relation to recorded locations. The only exceptions to this fell under the IVS Response Memorandum (**Appendix G**), which documents a decreased response of seed items as a result of the TA platform travelling over 25-38 cm of snow; thereby raising the height of the coils. Variable snow height present at the separate IVS locations and throughout the course of the project were addressed and quantitatively documented to aid in ISO comparison. Intrinsic TA geophysical noise were observed in IVS seed detection and background line data in addition to the correlating transect data. TA ISO detection was not compromised by observed noise and resolved in the included RCA (Form 4-13, **Appendix A)**. This satisfied the detection and positioning repeatability criteria. **Table 5** summarizes the MQOs and results for the investigation. Sample static spike, cable shake, personnel and vehicle test figures can be found in **Appendix H**. Full documentation of the QC results are found in the Final Delivery Report for each Grid Block on the USB Drive under each Grid Block folder.

MQO	Measurement Performance Criteria	Test Method	Results
DGM System Positioning. Coordinates obtained from DGM system are of sufficient accuracy for relocation of anomalies.	Measurements made as a daily QC check of positioning systems will not exceed 10 cm compared to known, surveyed location.	Results of Record Sensors Position Test (Section 5.1) will be quantitatively evaluated for compliance.	All positions were within 10 cm. Average position offset was 2.44 cm. (**Figure 6**)
Repeatability. Repeatable and accurate data are being obtained from DGM system.	ISO responses will not vary more than ±20 percent from known response for specific distance from sensors in static tests conducted at the beginning and end of each survey day, as well as following completed datasets. Responses of repeat line data must also be comparable to original line data collected.	Results of the static tests (Section 5.2) will be evaluated quantitatively and compared against published response values for compliance.	All ISO responses were within the ±20 percent from known responses for specific distances. (**Figures 7** and **8**).
Dynamic Detection Repeatability.	Repeat data is comparable to the original data with the number of anomalies on the repeat segment within 20% of the original data for comprehensive surveys, and IVS anomaly characteristics repeatable within 25% for transect surveys	IVS response amplitudes and results of repeat line collection in Section 5.2 will be qualitatively compared to results of original survey data for transect surveys, and a minimum of 2% of the surveyed area will be resurveyed and evaluated for compliance in comprehensive surveys.	All IVS amplitudes were repeatable within 25% for transect data sets, and the number of anomalies was within 20% of the original data for comprehensive surveys.
Downline Data Density. Down line data density is sufficient to detect MEC items.	Over 98% of possible sensor readings are captured along a survey transect with a spacing of no greater than 0.213 m between points. A data gap greater than 0.61 m will not meet the MQO, unless the gap is associated with an obstruction or hazard.	Results of DGM surveys will be quantitatively evaluated for compliance.	Average down line data density was sufficiently achieved for both the PP and TA systems, with no readings greater than 0.61m apart.
Survey Coverage (Lane Spacing). Lane spacing intended to provide 100% coverage of accessible portions of the DGM investigation area.	Lane spacing is no greater than 1 m with an intended lane spacing of 0.75 m for full coverage areas, and transect spacing will not vary greater than 20% from intended spacing unless due to vegetation, terrain or other obstructions cause the separation.	Footprint coverage of DGM surveys will be evaluated for missing or improperly positioned survey lines as well as data gaps that are not otherwise explained.	100% coverage with 1 m footprint with PP collection, and 100% coverage with 3 m footprint with TA collection within surveyed transects
Dynamic Positioning Accuracy. Positioning of detected anomalies is accurate.	Anomaly locations representing QC seeds occur within a 1 m radius of a point on the ground surface directly above the QC seed.	Anomalies selected will be compared with surveyed seed item locations for compliance.	All blind seeds were detected within 1 m radius.
Data Handling. Data must be delivered in a timely manner and in accordance with GIP requirements.	Data packages are completed and delivered within schedule (3 days pre-processed; 5 days processed).	Evaluated based on actual delivery of data.	All data were delivered within the required timeframe.

Table 5. MQO descriptions and results.

6.0 CONCLUSIONS

NAEVA successfully performed DGM, data analysis, and anomaly selection at the Former Raritan Arsenal and associated Dredge Spoils Areas for CH2M HILL in accordance with the project Geophysical Investigation Plan. The EM61-MK2 system and geophysical methods were successfully validated through the IVS, daily QC tests, and production blind seeding. Project MQOs were met. The threshold of 4 mV on Channel 2 was adequate for detection of subsurface geophysical anomalies given noise level and site conditions. **Table 6** illustrates the total number of targeted anomalies by type.

Type	Anomaly Description	Total
Type 1	Point	1080
Type 2	Culture	49
Type 3	Suspected Culture	324
Type 4	Picked outside of target area (Underwater Data only)	0
Type 5	Hazard Deviation (Underwater Data only)	0
Type 6	Anomaly selected below established threshold	4
Type 7	Data Spike (terrain response, ambient noise, poor decay)	1437
Type 8	Saturated Response Area (SRA)	28
Type 9	Anomaly selected within SRA	540
Type 11	IVS Seed	12
Type 12	Selected based on both 2013 and 2014 data	12
Type 13	Previously investigated, anomaly still present	100
Total		3586

Table 6. Selected anomaly totals by type.

The previously submitted USB contains all raw, preprocessed, and processed data, including processing reports, QC test results, color contour maps and target lists for each grid, and mosaic map for the site. A copy of this report may also be found in Adobe PDF and Microsoft Word formats.

7.0 REFERENCES

CH2M HILL. 2013. Geophysical Investigation Plan Remedial Investigation/Feasibility Study (RI/FS) Work Plan (Draft). Former Raritan Arsenal Edison, New Jersey. August 2013.

CH2M HILL. 2013. Geophysical System Verification Plan for Remedial Investigation/Feasibility Study. Former Raritan Arsenal Edison, New Jersey. August 2013.

Geonics Limited. 2005. EM61-MK2 and EM61-MK2HP 4 Channel High Sensitivity Metal Detectors Operating Manual. July 2005.

H.H. Nelson, t. Bell, J. Kingdon, N. Khadr, D.A. Steinhurst. EM61-MK2 Response of Standard Munitions Items. Naval Research Laboratories, Washington D.C., June 2008

National Oceanic and Atmospheric Administration. 2013. *NOAA Tide Predictions*, Sayreville, New Jersey. 2013. [pdf] Available at:

<http://tidesandcurrents.noaa.gov/noaatidepredictions/NOAATidesFacade.jsp?Stationid=8531390> [Accessed 02 December 2013].

Trimble. 2005. *Trimble R7/R8 GPS Receiver User's Guide*. Version 2.23, Revision A, April 2005.

Appendix A

Root Cause Analysis

NAEVA GEOPHYSICS INC.
THE LEADER IN SUBSURFACE DETECTION
Subsurface Geophysical Surveys

GPR
MAGNETICS
ELECTROMAGNETICS
SEISMICS
RESISTIVITY
UTILITY LOCATION
UXO DETECTION
BOREHOLE CAMERA
STAFF SUPPORT

Root Cause Analysis

Digital Geophysical Mapping
Raritan Remedial Investigation/Feasibility Study

Date: February 14, 2014

To: Tamir Klaff, CH2M HILL's Principal Technologist

Cc: Mark Callaghan, CH2M HILL's Project Manager; David Wright, CH2M HILL's Munitions Response Geophysicist; John Breznick, NAEVA's Program Manager; Jon Guillard, NAEVA's QC Geophysicist

From: Karen Lemley, Geophysical Project Manager

RE: Failure to Identify Intrinsic Noise in the Towed Array system

Event Description

On February 7th NAEVA was notified by email that Grid Block TDSA3-13 had a significant number of no contacts during the intrusive operations and these no contacts were targets selected on suspected noise. After further review by CH2M HILL's Principal Technologist, it was determined that all of the data collected by the towed array system was questionable based on noise exhibited in the IVS tests on the 11th, 12th and 17th of December and similar noise was also noticed in a significant number of the transects. Some of the data appears to be valid, however repeated data collection is needed to confirm.

Root Causes

Two root causes and two causal factors led to the failure to identify the intrinsic noise in the towed array.

The first root cause and causal factor led to the towed array system becoming noisy. The root cause was due to site conditions (canals, marshy areas, weather (rain and snow)) contributing to the system being routinely submerged in water. The system being submerge repeatedly in water led to the causal factor of water getting into the coils producing system noise.

The second root cause and causal factor led to the failure to notice that the towed array was producing noise intrinsic to the system. The root cause was that the field crew, processors, and QC made assumptions about the cause of the noise in the data based on site conditions (urban, utilities, industrial) that could justify the noise in the data. Clearly these assumptions should not have been made without further onsite documentation. These assumptions led to the causal factor of not identifying that the noise was intrinsic to the system.

Corrective Actions

All towed array data is to be recollected after modification have been made to the system in an effort to keep water from infiltrating and causing noise.

NEW YORK
225 N Route 303
Suite 102
Congers
New York 10920
(845) 268-1800
(845) 268-1802 Fax

VIRGINIA
P.O. Box 7325
Charlottesville
Virginia 22906
(434) 978-3187
(434) 973-9791 Fax

Below lists the modification that have been made to the system prior to remobilization:

- In addition to the use of the encapsulated EM61-MK2A coils, all vulnerable ports were additionally waterproofed using shrink wrap and Silicone.





- The Silicone was coated over a 'dummy-plug' inserted in the Odometer port, as well as over the cable connections. This makes the coil-cable connection semi-permanent and it will remain as such for the duration of the project to help ensure waterproof results.







To help ensure that the data is being interpreted properly all personnel involved in the data collection, processing, and QC have meet jointly to review the noisy data that was collected previously at Raritan. Further, it has been made clear by management that if anyone has questions regarding the validity of data it should to be brought to the immediate attention of QC.

Additionally, given the extreme site conditions at Raritan, more frequent QC tests will be conducted throughout the day to help ensure an entire day's of data is not collected if a problem arises with the system. These additional tests will include:

- A mid-day or at any time the system is broken down for movement to another area, a static test will be conducted.
- Since the IVS is not convenient to the site locations to be collected midday, an area near each data collection site will be used as a test strip. Either an item will be place on the surface or an area with a known response will be collected before, mid-day and/or after each survey. This will be repeated if the system is broken down and moved to another collection site within the same day.

During the mid-day break, all collected data will be sent to the office for immediate review.

Recommended Corrective Action for Future Work

To help ensure that this issue does not arise again, the following corrective actions are recommended:

- QC will provide a more comprehensive review of all data.
- At any time significant noise is identified in the data, additionally onsite testing will occur to help isolate the source of the noise.
- Management will ensure that all collected data will be more thoroughly scrutinized by all parties (Field, Processing and QC).

APPENDIX A - TERRESTRIAL GEOPHYSICAL MAPPING REPORT AND DATA

Appendix B

Master Target List

2014 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1	1	G13-01B	556739.70	4482522.45	0	0	0	0	0	0	7	4.75	Person_Portable
2	2	G13-01B	556741.20	4482523.65	0	0	0	0	0	0	9	27.26	Person_Portable
3	3	G13-01B	556741.85	4482523.05	0	0	0	0	0	0	9	31.06	Person_Portable
4	4	G13-01B	556741.80	4482521.85	0	0	0	0	0	0	9	7.18	Person_Portable
5	5	G13-01B	556743.00	4482519.70	0	0	0	0	0	0	9	10.10	Person_Portable
6	6	G13-01B	556743.90	4482522.00	0	0	0	0	0	0	9	7.44	Person_Portable
7	7	G13-01B	556745.56	4482522.55	0	0	0	0	0	0	9	5.82	Person_Portable
8	8	G13-01B	556744.20	4482523.35	0	0	0	0	0	0	9	19.29	Person_Portable
9	9	G13-01B	556743.45	4482526.50	0	0	0	0	0	0	9	4.17	Person_Portable
10	10	G13-01B	556744.99	4482527.65	0	0	0	0	0	0	9	12.16	Person_Portable
11	11	G13-01B	556745.65	4482527.10	0	0	0	0	0	0	9	15.50	Person_Portable
12	12	G13-01B	556747.05	4482526.80	0	0	0	0	0	0	9	8.96	Person_Portable
13	13	G13-01B	556748.25	4482527.55	0	0	0	0	0	0	9	41.24	Person_Portable
14	14	G13-01B	556747.65	4482529.50	0	0	0	0	0	0	9	35.96	Person_Portable
15	15	G13-01B	556748.85	4482531.45	0	0	0	0	0	0	9	62.15	Person_Portable
16	16	G13-01B	556747.95	4482532.95	0	0	0	0	0	0	9	115.93	Person_Portable
17	17	G13-01B	556748.55	4482534.15	0	0	0	0	0	0	9	54.82	Person_Portable
18	18	G13-01B	556750.02	4482535.08	0	0	0	0	0	0	9	224.76	Person_Portable
19	19	G13-01B	556749.90	4482533.25	0	0	0	0	0	0	9	26.23	Person_Portable
20	20	G13-01B	556750.80	4482532.05	0	0	0	0	0	0	9	19.98	Person_Portable
21	21	G13-01B	556753.35	4482530.70	0	0	0	0	0	0	9	155.73	Person_Portable
22	22	G13-01B	556755.60	4482530.70	0	0	0	0	0	0	9	43.45	Person_Portable
23	23	G13-01B	556758.45	4482528.75	0	0	0	0	0	0	9	136.21	Person_Portable
24	24	G13-01B	556760.70	4482528.45	0	0	0	0	0	0	9	40.64	Person_Portable
25	25	G13-01B	556761.00	4482530.40	0	0	0	0	0	0	9	19.16	Person_Portable
26	26	G13-01B	556760.10	4482531.75	0	0	0	0	0	0	9	56.28	Person_Portable
27	27	G13-01B	556761.60	4482532.95	0	0	0	0	0	0	9	22.20	Person_Portable
28	28	G13-01B	556762.65	4482531.60	0	0	0	0	0	0	9	11.15	Person_Portable
29	29	G13-01B	556763.52	4482530.05	0	0	0	0	0	0	9	7.88	Person_Portable
30	30	G13-01B	556762.85	4482526.95	0	0	0	0	0	0	9	193.09	Person_Portable
31	31	G13-01B	556765.80	4482526.80	0	0	0	0	0	0	9	44.24	Person_Portable
32	32	G13-01B	556766.40	4482524.55	0	0	0	0	0	0	9	9.20	Person_Portable
33	33	G13-01B	556767.75	4482526.50	0	0	0	0	0	0	9	71.75	Person_Portable
34	34	G13-01B	556767.60	4482528.15	0	0	0	0	0	0	9	49.95	Person_Portable
35	35	G13-01B	556766.45	4482529.50	0	0	0	0	0	0	9	24.93	Person_Portable
36	36	G13-01B	556768.05	4482530.70	0	0	0	0	0	0	9	19.47	Person_Portable

2014 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
37	37	G13-01B	556768.80	4482531.90	0	0	0	0	0	0	9	23.57	Person_Portable
38	38	G13-01B	556769.85	4482533.85	0	0	0	0	0	0	9	13.41	Person_Portable
39	39	G13-01B	556768.68	4482533.48	0	0	0	0	0	0	9	7.37	Person_Portable
40	40	G13-01B	556766.28	4482532.09	0	0	0	0	0	0	9	6.53	Person_Portable
41	41	G13-01B	556764.68	4482532.27	0	0	0	0	0	0	9	4.20	Person_Portable
42	42	G13-01B	556766.07	4482533.34	0	0	0	0	0	0	9	22.10	Person_Portable
43	43	G13-01B	556765.97	4482534.52	0	0	0	0	0	0	9	35.35	Person_Portable
44	44	G13-01B	556764.45	4482536.40	0	0	0	0	0	0	9	39.14	Person_Portable
45	45	G13-01B	556765.77	4482537.01	0	0	0	0	0	0	9	20.91	Person_Portable
46	46	G13-01B	556764.15	4482538.65	0	0	0	0	0	0	9	15.30	Person_Portable
47	47	G13-01B	556761.90	4482539.25	0	0	0	0	0	0	9	66.76	Person_Portable
48	48	G13-01B	556762.35	4482537.15	0	0	0	0	0	0	9	31.89	Person_Portable
49	49	G13-01B	556761.45	4482535.65	0	0	0	0	0	0	9	18.68	Person_Portable
50	50	G13-01B	556760.04	4482536.02	0	0	0	0	0	0	9	5.67	Person_Portable
51	51	G13-01B	556758.15	4482535.80	0	0	0	0	0	0	9	34.93	Person_Portable
52	52	G13-01B	556757.85	4482533.70	0	0	0	0	0	0	9	83.36	Person_Portable
53	53	G13-01B	556752.90	4482535.50	0	0	0	0	0	0	9	49.26	Person_Portable
54	54	G13-01B	556753.05	4482537.30	0	0	0	0	0	0	9	177.72	Person_Portable
55	55	G13-01B	556753.20	4482539.10	0	0	0	0	0	0	9	80.07	Person_Portable
56	56	G13-01B	556752.30	4482540.30	0	0	0	0	0	0	9	42.02	Person_Portable
57	57	G13-01B	556754.40	4482541.20	0	0	0	0	0	0	9	23.98	Person_Portable
58	58	G13-01B	556752.30	4482541.95	0	0	0	0	0	0	9	50.81	Person_Portable
59	59	G13-01B	556750.80	4482543.75	0	0	0	0	0	0	9	5.38	Person_Portable
60	60	G13-01B	556750.11	4482541.04	0	0	0	0	0	0	9	17.85	Person_Portable
61	61	G13-01B	556750.70	4482538.65	0	0	0	0	0	0	9	299.44	Person_Portable
62	62	G13-01B	556750.22	4482536.67	0	0	0	0	0	0	9	164.10	Person_Portable
63	63	G13-01B	556747.47	4482538.13	0	0	0	0	0	0	9	69.70	Person_Portable
64	64	G13-01B	556745.70	4482535.05	0	0	0	0	0	0	9	37.17	Person_Portable
65	65	G13-01B	556745.82	4482532.20	0	0	0	0	0	0	9	11.41	Person_Portable
66	66	G13-01B	556744.65	4482533.25	0	0	0	0	0	0	9	66.17	Person_Portable
67	67	G13-01B	556743.45	4482532.50	0	0	0	0	0	0	9	46.01	Person_Portable
68	68	G13-01B	556742.85	4482531.30	0	0	0	0	0	0	9	76.05	Person_Portable
69	69	G13-01B	556745.46	4482529.82	0	0	0	0	0	0	9	259.98	Person_Portable
70	70	G13-01B	556743.45	4482529.20	0	0	0	0	0	0	9	8.93	Person_Portable
71	71	G13-01B	556741.75	4482528.08	0	0	0	0	0	0	9	797.24	Person_Portable
72	72	G13-01B	556740.15	4482525.30	0	0	0	0	0	0	9	17.11	Person_Portable

2014 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
73	73	G13-01B	556737.60	4482524.85	0	0	0	0	0	0	9	67.55	Person_Portable
74	74	G13-01B	556734.75	4482521.43	556749.654	4482547.47	556774.212	4482533.42	556758.899	4482507.66	8	999.00	Person_Portable
75	1	G13-02B	556754.11	4482548.61	0	0	0	0	0	0	9	7.10	Person_Portable
76	2	G13-02B	556756.35	4482549.15	0	0	0	0	0	0	9	27.08	Person_Portable
77	3	G13-02B	556758.75	4482552.90	0	0	0	0	0	0	9	5.02	Person_Portable
78	4	G13-02B	556760.10	4482553.65	0	0	0	0	0	0	9	4.19	Person_Portable
79	5	G13-02B	556761.54	4482554.60	0	0	0	0	0	0	9	37.03	Person_Portable
80	6	G13-02B	556761.22	4482553.08	0	0	0	0	0	0	9	6.11	Person_Portable
81	7	G13-02B	556760.55	4482551.85	0	0	0	0	0	0	9	5.33	Person_Portable
82	8	G13-02B	556766.70	4482544.80	0	0	0	0	0	0	9	4.89	Person_Portable
83	9	G13-02B	556768.05	4482544.05	0	0	0	0	0	0	9	4.03	Person_Portable
84	10	G13-02B	556768.65	4482545.40	0	0	0	0	0	0	9	5.65	Person_Portable
85	11	G13-02B	556770.02	4482546.30	0	0	0	0	0	0	9	20.08	Person_Portable
86	12	G13-02B	556768.95	4482548.55	0	0	0	0	0	0	9	12.79	Person_Portable
87	13	G13-02B	556767.81	4482549.83	0	0	0	0	0	0	9	11.34	Person_Portable
88	14	G13-02B	556776.50	4482552.90	0	0	0	0	0	0	9	63.11	Person_Portable
89	15	G13-02B	556776.90	4482551.75	0	0	0	0	0	0	9	78.89	Person_Portable
90	16	G13-02B	556777.05	4482547.35	0	0	0	0	0	0	9	6.26	Person_Portable
91	17	G13-02B	556776.90	4482545.55	0	0	0	0	0	0	9	11.77	Person_Portable
92	18	G13-02B	556775.10	4482543.30	0	0	0	0	0	0	9	4.90	Person_Portable
93	19	G13-02B	556772.70	4482542.10	0	0	0	0	0	0	9	9.24	Person_Portable
94	20	G13-02B	556771.80	4482542.70	0	0	0	0	0	0	9	6.01	Person_Portable
95	21	G13-02B	556770.15	4482542.50	0	0	0	0	0	0	9	13.17	Person_Portable
96	22	G13-02B	556771.35	4482540.15	0	0	0	0	0	0	9	7.09	Person_Portable
97	23	G13-02B	556772.40	4482540.45	0	0	0	0	0	0	9	9.30	Person_Portable
98	24	G13-02B	556774.05	4482538.80	0	0	0	0	0	0	9	74.42	Person_Portable
99	25	G13-02B	556769.70	4482536.80	0	0	0	0	0	0	9	13.06	Person_Portable
100	26	G13-02B	556768.20	4482538.65	0	0	0	0	0	0	9	7.72	Person_Portable
101	27	G13-02B	556765.95	4482538.15	0	0	0	0	0	0	9	25.86	Person_Portable
102	28	G13-02B	556765.50	4482539.25	0	0	0	0	0	0	9	125.28	Person_Portable
103	29	G13-02B	556766.59	4482540.35	0	0	0	0	0	0	9	12.40	Person_Portable
104	30	G13-02B	556766.95	4482541.72	0	0	0	0	0	0	9	13.05	Person_Portable
105	31	G13-02B	556766.29	4482542.39	0	0	0	0	0	0	9	13.96	Person_Portable
106	32	G13-02B	556763.25	4482542.20	0	0	0	0	0	0	9	8.40	Person_Portable
107	33	G13-02B	556762.35	4482540.35	0	0	0	0	0	0	9	24.30	Person_Portable
108	34	G13-02B	556749.65	4482547.47	556758.809	4482563.48	556784.364	4482550.6	556774.212	4482533.42	8	999.00	Person_Portable

2014 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
109	35	G13-02B	556764.56	4482573.50	556763.814	4482567.2	556786.393	4482555.75	556788.843	4482559.58	8	999.00	Person_Portable
110	1	G13-03B	556764.57	4482573.50	556788.844	4482559.58	556802.117	4482586.57	556779.429	4482599.56	8	999.00	Person_Portable
111	1	G13-04B	556779.48	4482599.56	556802.105	4482586.55	556816.876	4482612.7	556794.364	4482625.57	8	999.00	Person_Portable
112	1	G13-05B	556794.37	4482625.58	556816.462	4482612.95	556830.867	4482639.26	556809.269	4482651.61	8	999.00	Person_Portable
113	1	G13-06B	556821.50	4482646.90	0	0	0	0	0	0	9	111.71	Person_Portable
114	2	G13-06B	556821.02	4482648.19	0	0	0	0	0	0	9	48.62	Person_Portable
115	3	G13-06B	556822.50	4482647.40	0	0	0	0	0	0	9	62.18	Person_Portable
116	4	G13-06B	556823.85	4482647.25	0	0	0	0	0	0	9	19.35	Person_Portable
117	5	G13-06B	556824.45	4482645.15	0	0	0	0	0	0	9	15.60	Person_Portable
118	6	G13-06B	556823.55	4482644.70	0	0	0	0	0	0	9	18.79	Person_Portable
119	7	G13-06B	556824.15	4482643.65	0	0	0	0	0	0	9	46.04	Person_Portable
120	8	G13-06B	556826.61	4482644.51	0	0	0	0	0	0	9	27.75	Person_Portable
121	9	G13-06B	556827.10	4482645.68	0	0	0	0	0	0	9	15.51	Person_Portable
122	10	G13-06B	556826.10	4482646.65	0	0	0	0	0	0	9	10.68	Person_Portable
123	11	G13-06B	556826.70	4482647.70	0	0	0	0	0	0	9	18.65	Person_Portable
124	12	G13-06B	556827.55	4482654.10	0	0	0	0	0	0	9	132.82	Person_Portable
125	13	G13-06B	556828.86	4482654.53	0	0	0	0	0	0	9	9.01	Person_Portable
126	14	G13-06B	556827.00	4482658.35	0	0	0	0	0	0	9	56.12	Person_Portable
127	15	G13-06B	556830.00	4482659.70	0	0	0	0	0	0	9	20.97	Person_Portable
128	16	G13-06B	556832.00	4482658.50	0	0	0	0	0	0	9	67.44	Person_Portable
129	17	G13-06B	556832.70	4482656.55	0	0	0	0	0	0	9	46.85	Person_Portable
130	18	G13-06B	556834.05	4482657.45	0	0	0	0	0	0	9	43.09	Person_Portable
131	19	G13-06B	556834.80	4482658.95	0	0	0	0	0	0	9	54.02	Person_Portable
132	20	G13-06B	556834.80	4482660.30	0	0	0	0	0	0	9	41.91	Person_Portable
133	21	G13-06B	556837.50	4482663.75	0	0	0	0	0	0	9	166.89	Person_Portable
134	22	G13-06B	556836.54	4482669.24	0	0	0	0	0	0	9	6.55	Person_Portable
135	23	G13-06B	556835.10	4482669.45	0	0	0	0	0	0	9	5.27	Person_Portable
136	24	G13-06B	556833.75	4482669.00	0	0	0	0	0	0	9	30.10	Person_Portable
137	25	G13-06B	556833.00	4482666.90	0	0	0	0	0	0	9	228.74	Person_Portable
138	26	G13-06B	556833.45	4482665.85	0	0	0	0	0	0	9	37.01	Person_Portable
139	27	G13-06B	556832.10	4482666.60	0	0	0	0	0	0	9	223.33	Person_Portable
140	28	G13-06B	556826.95	4482671.52	0	0	0	0	0	0	9	36.00	Person_Portable
141	29	G13-06B	556825.50	4482670.80	0	0	0	0	0	0	9	27.44	Person_Portable
142	30	G13-06B	556824.25	4482670.45	0	0	0	0	0	0	9	116.40	Person_Portable
143	31	G13-06B	556823.85	4482673.80	0	0	0	0	0	0	9	75.91	Person_Portable
144	32	G13-06B	556823.85	4482675.45	0	0	0	0	0	0	9	8.98	Person_Portable

2014 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
145	33	G13-06B	556823.40	4482676.20	0	0	0	0	0	0	9	9.02	Person_Portable
146	34	G13-06B	556822.45	4482674.55	0	0	0	0	0	0	9	34.67	Person_Portable
147	35	G13-06B	556822.80	4482672.15	0	0	0	0	0	0	9	39.04	Person_Portable
148	36	G13-06B	556821.60	4482671.10	0	0	0	0	0	0	9	194.48	Person_Portable
149	37	G13-06B	556822.83	4482670.60	0	0	0	0	0	0	9	15.43	Person_Portable
150	38	G13-06B	556823.25	4482668.10	0	0	0	0	0	0	9	431.43	Person_Portable
151	39	G13-06B	556822.20	4482666.45	0	0	0	0	0	0	9	32.11	Person_Portable
152	40	G13-06B	556819.95	4482667.05	0	0	0	0	0	0	9	186.41	Person_Portable
153	41	G13-06B	556820.40	4482669.15	0	0	0	0	0	0	9	10.22	Person_Portable
154	42	G13-06B	556819.05	4482668.53	0	0	0	0	0	0	9	13.19	Person_Portable
155	43	G13-06B	556818.00	4482666.75	0	0	0	0	0	0	9	52.74	Person_Portable
156	44	G13-06B	556816.95	4482664.95	0	0	0	0	0	0	9	90.92	Person_Portable
157	45	G13-06B	556819.65	4482665.25	0	0	0	0	0	0	9	600.05	Person_Portable
158	46	G13-06B	556821.45	4482663.90	0	0	0	0	0	0	9	9.44	Person_Portable
159	47	G13-06B	556822.35	4482662.40	0	0	0	0	0	0	9	78.68	Person_Portable
160	48	G13-06B	556821.90	4482661.10	0	0	0	0	0	0	9	46.08	Person_Portable
161	49	G13-06B	556820.35	4482661.60	0	0	0	0	0	0	9	12.42	Person_Portable
162	50	G13-06B	556818.81	4482661.97	0	0	0	0	0	0	9	24.96	Person_Portable
163	51	G13-06B	556817.60	4482661.95	0	0	0	0	0	0	9	183.28	Person_Portable
164	52	G13-06B	556817.55	4482658.65	0	0	0	0	0	0	9	34.20	Person_Portable
165	53	G13-06B	556818.75	4482657.60	0	0	0	0	0	0	9	22.89	Person_Portable
166	54	G13-06B	556820.40	4482658.80	0	0	0	0	0	0	9	73.15	Person_Portable
167	55	G13-06B	556820.40	4482657.45	0	0	0	0	0	0	9	43.74	Person_Portable
168	56	G13-06B	556819.45	4482656.55	0	0	0	0	0	0	9	36.51	Person_Portable
169	57	G13-06B	556820.10	4482655.65	0	0	0	0	0	0	9	70.69	Person_Portable
170	58	G13-06B	556817.00	4482651.56	0	0	0	0	0	0	9	35.17	Person_Portable
171	59	G13-06B	556815.71	4482649.23	0	0	0	0	0	0	9	40.31	Person_Portable
172	60	G13-06B	556809.27	4482651.61	556824.172	4482677.65	556842.182	4482667.33	556830.867	4482639.26	8	999.00	Person_Portable
173	1	G13-07B	556838.55	4482676.05	0	0	0	0	0	0	9	5.26	Person_Portable
174	2	G13-07B	556841.25	4482674.85	0	0	0	0	0	0	9	171.00	Person_Portable
175	3	G13-07B	556841.40	4482678.00	0	0	0	0	0	0	9	86.07	Person_Portable
176	4	G13-07B	556842.40	4482679.25	0	0	0	0	0	0	9	67.30	Person_Portable
177	5	G13-07B	556842.00	4482680.10	0	0	0	0	0	0	9	82.80	Person_Portable
178	6	G13-07B	556840.65	4482680.70	0	0	0	0	0	0	9	39.55	Person_Portable
179	7	G13-07B	556833.90	4482683.70	0	0	0	0	0	0	9	23.50	Person_Portable
180	8	G13-07B	556833.00	4482685.35	0	0	0	0	0	0	9	25.79	Person_Portable

2014 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
181	9	G13-07B	556832.95	4482686.45	0	0	0	0	0	0	9	42.83	Person_Portable
182	10	G13-07B	556834.94	4482686.60	0	0	0	0	0	0	9	17.89	Person_Portable
183	11	G13-07B	556836.55	4482687.60	0	0	0	0	0	0	9	40.76	Person_Portable
184	12	G13-07B	556836.75	4482688.80	0	0	0	0	0	0	9	51.86	Person_Portable
185	13	G13-07B	556836.30	4482689.55	0	0	0	0	0	0	9	58.84	Person_Portable
186	14	G13-07B	556834.26	4482689.13	0	0	0	0	0	0	9	26.95	Person_Portable
187	15	G13-07B	556834.95	4482690.15	0	0	0	0	0	0	9	65.50	Person_Portable
188	16	G13-07B	556838.10	4482691.05	0	0	0	0	0	0	9	19.89	Person_Portable
189	17	G13-07B	556838.70	4482692.25	0	0	0	0	0	0	9	10.17	Person_Portable
190	18	G13-07B	556837.70	4482693.00	0	0	0	0	0	0	9	22.10	Person_Portable
191	19	G13-07B	556837.05	4482693.90	0	0	0	0	0	0	9	50.39	Person_Portable
192	20	G13-07B	556837.50	4482694.65	0	0	0	0	0	0	9	31.20	Person_Portable
193	21	G13-07B	556837.50	4482696.00	0	0	0	0	0	0	9	28.38	Person_Portable
194	22	G13-07B	556838.70	4482695.75	0	0	0	0	0	0	9	17.75	Person_Portable
195	23	G13-07B	556838.70	4482698.10	0	0	0	0	0	0	9	99.41	Person_Portable
196	24	G13-07B	556847.85	4482696.45	0	0	0	0	0	0	9	53.47	Person_Portable
197	25	G13-07B	556849.20	4482697.35	0	0	0	0	0	0	9	49.92	Person_Portable
198	26	G13-07B	556848.75	4482695.10	0	0	0	0	0	0	9	36.91	Person_Portable
199	27	G13-07B	556846.67	4482694.11	0	0	0	0	0	0	9	49.80	Person_Portable
200	28	G13-07B	556845.00	4482691.20	0	0	0	0	0	0	9	95.33	Person_Portable
201	29	G13-07B	556848.00	4482690.60	0	0	0	0	0	0	9	14.82	Person_Portable
202	30	G13-07B	556849.05	4482689.40	0	0	0	0	0	0	9	11.80	Person_Portable
203	31	G13-07B	556851.00	4482688.20	0	0	0	0	0	0	9	34.28	Person_Portable
204	32	G13-07B	556852.05	4482687.15	0	0	0	0	0	0	9	33.40	Person_Portable
205	33	G13-07B	556853.10	4482686.25	0	0	0	0	0	0	9	99.11	Person_Portable
206	34	G13-07B	556854.80	4482686.35	0	0	0	0	0	0	9	81.88	Person_Portable
207	35	G13-07B	556855.05	4482689.55	0	0	0	0	0	0	9	9.62	Person_Portable
208	36	G13-07B	556853.50	4482690.80	0	0	0	0	0	0	9	9.58	Person_Portable
209	37	G13-07B	556852.65	4482691.35	0	0	0	0	0	0	9	10.01	Person_Portable
210	38	G13-07B	556851.25	4482692.13	0	0	0	0	0	0	9	4.72	Person_Portable
211	39	G13-07B	556850.64	4482693.99	0	0	0	0	0	0	9	6.41	Person_Portable
212	40	G13-07B	556851.15	4482695.70	0	0	0	0	0	0	9	44.20	Person_Portable
213	41	G13-07B	556852.50	4482695.55	0	0	0	0	0	0	9	51.42	Person_Portable
214	42	G13-07B	556855.20	4482693.90	0	0	0	0	0	0	9	18.92	Person_Portable
215	43	G13-07B	556855.35	4482691.35	0	0	0	0	0	0	9	14.39	Person_Portable
216	44	G13-07B	556857.20	4482691.75	0	0	0	0	0	0	9	272.94	Person_Portable

2014 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
217	45	G13-07B	556858.42	4482690.63	0	0	0	0	0	0	9	10.16	Person_Portable
218	46	G13-07B	556857.30	4482687.45	0	0	0	0	0	0	9	44.58	Person_Portable
219	47	G13-07B	556856.40	4482686.10	0	0	0	0	0	0	9	22.49	Person_Portable
220	48	G13-07B	556855.05	4482684.80	0	0	0	0	0	0	9	74.10	Person_Portable
221	49	G13-07B	556853.70	4482682.80	0	0	0	0	0	0	9	17.41	Person_Portable
222	50	G13-07B	556851.90	4482681.30	0	0	0	0	0	0	9	47.40	Person_Portable
223	51	G13-07B	556850.91	4482680.66	0	0	0	0	0	0	9	7.11	Person_Portable
224	52	G13-07B	556850.70	4482682.20	0	0	0	0	0	0	9	13.62	Person_Portable
225	53	G13-07B	556848.60	4482681.60	0	0	0	0	0	0	9	17.00	Person_Portable
226	54	G13-07B	556847.74	4482682.64	0	0	0	0	0	0	9	11.16	Person_Portable
227	55	G13-07B	556847.25	4482683.55	0	0	0	0	0	0	9	25.47	Person_Portable
228	56	G13-07B	556849.05	4482683.55	0	0	0	0	0	0	9	43.83	Person_Portable
229	57	G13-07B	556850.85	4482683.70	0	0	0	0	0	0	9	8.70	Person_Portable
230	58	G13-07B	556849.50	4482685.95	0	0	0	0	0	0	9	50.27	Person_Portable
231	59	G13-07B	556848.60	4482685.95	0	0	0	0	0	0	9	51.45	Person_Portable
232	60	G13-07B	556847.40	4482685.35	0	0	0	0	0	0	9	83.85	Person_Portable
233	61	G13-07B	556844.40	4482684.45	0	0	0	0	0	0	9	60.17	Person_Portable
234	62	G13-07B	556845.09	4482682.65	0	0	0	0	0	0	9	7.04	Person_Portable
235	63	G13-07B	556845.45	4482680.40	0	0	0	0	0	0	9	18.97	Person_Portable
236	64	G13-07B	556844.40	4482680.10	0	0	0	0	0	0	9	9.18	Person_Portable
237	65	G13-07B	556844.40	4482677.10	0	0	0	0	0	0	9	28.64	Person_Portable
238	66	G13-07B	556848.30	4482678.00	0	0	0	0	0	0	9	394.28	Person_Portable
239	67	G13-07B	556849.80	4482677.70	0	0	0	0	0	0	9	152.47	Person_Portable
240	68	G13-07B	556849.20	4482676.35	0	0	0	0	0	0	9	565.66	Person_Portable
241	69	G13-07B	556847.40	4482674.55	0	0	0	0	0	0	9	85.95	Person_Portable
242	70	G13-07B	556846.05	4482674.28	0	0	0	0	0	0	9	8.65	Person_Portable
243	71	G13-07B	556844.55	4482672.60	0	0	0	0	0	0	9	19.12	Person_Portable
244	72	G13-07B	556845.30	4482671.25	0	0	0	0	0	0	9	33.30	Person_Portable
245	73	G13-07B	556842.75	4482671.10	0	0	0	0	0	0	9	49.30	Person_Portable
246	74	G13-07B	556842.45	4482669.00	0	0	0	0	0	0	9	469.57	Person_Portable
247	75	G13-07B	556824.17	4482677.65	556839.076	4482703.68	556860.814	4482691.27	556843.866	4482666.49	8	999.00	Person_Portable
248	1	G13-08B	556849.98	4482698.72	0	0	0	0	0	0	9	7.40	Person_Portable
249	2	G13-08B	556850.55	4482697.80	0	0	0	0	0	0	9	24.67	Person_Portable
250	3	G13-08B	556851.50	4482697.75	0	0	0	0	0	0	9	27.37	Person_Portable
251	4	G13-08B	556854.15	4482695.10	0	0	0	0	0	0	9	31.02	Person_Portable
252	5	G13-08B	556855.65	4482694.65	0	0	0	0	0	0	9	28.59	Person_Portable

2014 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
253	6	G13-08B	556855.80	4482696.60	0	0	0	0	0	0	9	38.94	Person_Portable
254	7	G13-08B	556857.75	4482697.65	0	0	0	0	0	0	9	30.60	Person_Portable
255	8	G13-08B	556859.10	4482697.80	0	0	0	0	0	0	9	51.94	Person_Portable
256	9	G13-08B	556857.28	4482699.55	0	0	0	0	0	0	9	19.85	Person_Portable
257	10	G13-08B	556855.80	4482701.25	0	0	0	0	0	0	9	170.32	Person_Portable
258	11	G13-08B	556855.80	4482699.90	0	0	0	0	0	0	9	71.72	Person_Portable
259	12	G13-08B	556854.96	4482698.35	0	0	0	0	0	0	9	15.58	Person_Portable
260	13	G13-08B	556854.30	4482699.90	0	0	0	0	0	0	9	28.70	Person_Portable
261	14	G13-08B	556853.14	4482699.43	0	0	0	0	0	0	9	4.31	Person_Portable
262	15	G13-08B	556851.90	4482700.70	0	0	0	0	0	0	9	22.03	Person_Portable
263	16	G13-08B	556846.20	4482704.25	0	0	0	0	0	0	9	32.98	Person_Portable
264	17	G13-08B	556839.08	4482703.68	556853.979	4482729.72	556858.419	4482727.17	556848.226	4482708.83	8	999.00	Person_Portable
265	18	G13-08B	556843.58	4482711.57	556843.584	4482711.57	556864.746	4482698.71	556860.814	4482691.27	8	999.00	Person_Portable
266	1	G13-09B	556853.99	4482729.74	556868.834	4482755.82	556872.861	4482753.52	556858.44	4482727.21	8	999.00	Person_Portable
267	1	G13-10B	556898.35	4482771.45	0	0	0	0	0	0	9	23.33	Person_Portable
268	2	G13-10B	556899.00	4482770.70	0	0	0	0	0	0	9	19.80	Person_Portable
269	3	G13-10B	556900.12	4482769.85	0	0	0	0	0	0	9	12.43	Person_Portable
270	4	G13-10B	556900.19	4482771.79	0	0	0	0	0	0	9	284.55	Person_Portable
271	5	G13-10B	556896.35	4482773.45	0	0	0	0	0	0	9	8.58	Person_Portable
272	6	G13-10B	556895.25	4482773.25	0	0	0	0	0	0	9	23.29	Person_Portable
273	7	G13-10B	556894.05	4482774.30	0	0	0	0	0	0	9	28.66	Person_Portable
274	8	G13-10B	556892.49	4482774.53	0	0	0	0	0	0	9	14.64	Person_Portable
275	9	G13-10B	556893.00	4482775.70	0	0	0	0	0	0	9	22.66	Person_Portable
276	10	G13-10B	556886.25	4482780.30	0	0	0	0	0	0	9	121.13	Person_Portable
277	11	G13-10B	556868.83	4482755.74	556880.434	4482775.96	556884.146	4482773.84	556872.833	4482753.51	8	999.00	Person_Portable
278	12	G13-10B	556880.43	4482775.96	556883.793	4482781.84	556906.729	4482768.67	556903.458	4482763.02	8	999.00	Person_Portable
279	1	G13-11B	556894.65	4482778.50	0	0	0	0	0	0	9	76.80	Person_Portable
280	2	G13-11B	556896.30	4482778.95	0	0	0	0	0	0	9	38.68	Person_Portable
281	3	G13-11B	556897.65	4482779.10	0	0	0	0	0	0	9	39.38	Person_Portable
282	4	G13-11B	556899.30	4482777.60	0	0	0	0	0	0	9	21.29	Person_Portable
283	5	G13-11B	556897.45	4482777.60	0	0	0	0	0	0	9	39.09	Person_Portable
284	6	G13-11B	556897.50	4482775.95	0	0	0	0	0	0	9	29.25	Person_Portable
285	7	G13-11B	556896.40	4482775.65	0	0	0	0	0	0	9	27.01	Person_Portable
286	8	G13-11B	556897.65	4482774.60	0	0	0	0	0	0	9	32.52	Person_Portable
287	9	G13-11B	556900.35	4482774.85	0	0	0	0	0	0	9	50.98	Person_Portable
288	10	G13-11B	556899.82	4482773.39	0	0	0	0	0	0	9	85.05	Person_Portable

2014 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
289	11	G13-11B	556901.56	4482772.16	0	0	0	0	0	0	9	147.77	Person_Portable
290	12	G13-11B	556903.50	4482771.30	0	0	0	0	0	0	9	35.66	Person_Portable
291	13	G13-11B	556903.95	4482770.40	0	0	0	0	0	0	9	34.94	Person_Portable
292	14	G13-11B	556904.05	4482771.90	0	0	0	0	0	0	9	47.56	Person_Portable
293	15	G13-11B	556905.29	4482771.45	0	0	0	0	0	0	9	18.08	Person_Portable
294	16	G13-11B	556906.65	4482770.70	0	0	0	0	0	0	9	109.96	Person_Portable
295	17	G13-11B	556906.00	4482772.87	0	0	0	0	0	0	9	32.79	Person_Portable
296	18	G13-11B	556907.30	4482772.20	0	0	0	0	0	0	9	102.84	Person_Portable
297	19	G13-11B	556908.26	4482773.46	0	0	0	0	0	0	9	43.55	Person_Portable
298	20	G13-11B	556908.15	4482775.20	0	0	0	0	0	0	9	34.71	Person_Portable
299	21	G13-11B	556909.95	4482776.55	0	0	0	0	0	0	9	35.62	Person_Portable
300	22	G13-11B	556906.50	4482776.10	0	0	0	0	0	0	9	49.03	Person_Portable
301	23	G13-11B	556905.90	4482775.50	0	0	0	0	0	0	9	41.18	Person_Portable
302	24	G13-11B	556904.25	4482774.30	0	0	0	0	0	0	9	79.09	Person_Portable
303	25	G13-11B	556903.15	4482774.00	0	0	0	0	0	0	9	52.39	Person_Portable
304	26	G13-11B	556902.00	4482776.25	0	0	0	0	0	0	9	26.48	Person_Portable
305	27	G13-11B	556902.00	4482778.05	0	0	0	0	0	0	9	11.98	Person_Portable
306	28	G13-11B	556903.35	4482778.65	0	0	0	0	0	0	9	19.31	Person_Portable
307	29	G13-11B	556905.20	4482780.00	0	0	0	0	0	0	9	66.24	Person_Portable
308	30	G13-11B	556902.45	4482781.80	0	0	0	0	0	0	9	55.00	Person_Portable
309	31	G13-11B	556897.95	4482782.85	0	0	0	0	0	0	9	65.14	Person_Portable
310	32	G13-11B	556898.70	4482784.20	0	0	0	0	0	0	9	44.50	Person_Portable
311	33	G13-11B	556898.25	4482786.15	0	0	0	0	0	0	9	107.42	Person_Portable
312	34	G13-11B	556899.80	4482787.05	0	0	0	0	0	0	9	46.34	Person_Portable
313	35	G13-11B	556901.00	4482786.00	0	0	0	0	0	0	9	48.29	Person_Portable
314	36	G13-11B	556907.05	4482789.20	0	0	0	0	0	0	9	53.28	Person_Portable
315	37	G13-11B	556905.60	4482794.25	0	0	0	0	0	0	9	38.31	Person_Portable
316	38	G13-11B	556907.25	4482795.75	0	0	0	0	0	0	9	81.17	Person_Portable
317	39	G13-11B	556904.25	4482796.50	0	0	0	0	0	0	9	43.90	Person_Portable
318	40	G13-11B	556903.95	4482797.55	0	0	0	0	0	0	9	37.00	Person_Portable
319	41	G13-11B	556905.00	4482799.35	0	0	0	0	0	0	9	92.76	Person_Portable
320	42	G13-11B	556905.60	4482800.85	0	0	0	0	0	0	9	84.25	Person_Portable
321	43	G13-11B	556902.30	4482799.90	0	0	0	0	0	0	9	145.06	Person_Portable
322	44	G13-11B	556901.90	4482801.49	0	0	0	0	0	0	9	50.37	Person_Portable
323	45	G13-11B	556904.10	4482802.35	0	0	0	0	0	0	9	69.29	Person_Portable
324	46	G13-11B	556903.90	4482803.45	0	0	0	0	0	0	9	41.65	Person_Portable

2014 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
325	47	G13-11B	556904.55	4482804.45	0	0	0	0	0	0	9	26.27	Person_Portable
326	48	G13-11B	556902.15	4482804.90	0	0	0	0	0	0	9	67.12	Person_Portable
327	49	G13-11B	556900.95	4482804.35	0	0	0	0	0	0	9	168.60	Person_Portable
328	50	G13-11B	556898.60	4482807.60	0	0	0	0	0	0	9	63.71	Person_Portable
329	51	G13-11B	556898.10	4482805.35	0	0	0	0	0	0	9	30.61	Person_Portable
330	52	G13-11B	556897.50	4482804.45	0	0	0	0	0	0	9	31.47	Person_Portable
331	53	G13-11B	556896.60	4482802.80	0	0	0	0	0	0	9	50.66	Person_Portable
332	54	G13-11B	556899.30	4482802.80	0	0	0	0	0	0	9	18.81	Person_Portable
333	55	G13-11B	556899.30	4482801.60	0	0	0	0	0	0	9	17.36	Person_Portable
334	56	G13-11B	556898.70	4482800.40	0	0	0	0	0	0	9	16.98	Person_Portable
335	57	G13-11B	556897.65	4482799.80	0	0	0	0	0	0	9	23.13	Person_Portable
336	58	G13-11B	556896.60	4482799.35	0	0	0	0	0	0	9	17.47	Person_Portable
337	59	G13-11B	556895.66	4482801.00	0	0	0	0	0	0	9	33.49	Person_Portable
338	60	G13-11B	556895.40	4482802.05	0	0	0	0	0	0	9	95.64	Person_Portable
339	61	G13-11B	556894.05	4482799.65	0	0	0	0	0	0	9	39.67	Person_Portable
340	62	G13-11B	556895.25	4482798.75	0	0	0	0	0	0	9	32.90	Person_Portable
341	63	G13-11B	556894.20	4482796.95	0	0	0	0	0	0	9	36.80	Person_Portable
342	64	G13-11B	556893.30	4482795.45	0	0	0	0	0	0	9	30.85	Person_Portable
343	65	G13-11B	556891.85	4482795.83	0	0	0	0	0	0	9	9.56	Person_Portable
344	66	G13-11B	556890.50	4482793.50	0	0	0	0	0	0	9	21.52	Person_Portable
345	67	G13-11B	556893.69	4482794.34	0	0	0	0	0	0	9	23.83	Person_Portable
346	68	G13-11B	556895.55	4482793.20	0	0	0	0	0	0	9	203.84	Person_Portable
347	69	G13-11B	556895.85	4482792.30	0	0	0	0	0	0	9	115.80	Person_Portable
348	70	G13-11B	556894.65	4482790.20	0	0	0	0	0	0	9	60.22	Person_Portable
349	71	G13-11B	556886.45	4482786.20	0	0	0	0	0	0	9	12.84	Person_Portable
350	72	G13-11B	556885.95	4482784.20	0	0	0	0	0	0	9	86.53	Person_Portable
351	73	G13-11B	556883.80	4482781.86	556898.647	4482807.84	556922.275	4482794.36	556906.741	4482768.67	8	999.00	Person_Portable
352	1	G13-12A	556931.10	4482802.50	0	0	0	0	0	0	9	99.24	Person_Portable
353	2	G13-12A	556929.15	4482799.05	0	0	0	0	0	0	9	42.82	Person_Portable
354	3	G13-12A	556924.68	4482792.92	556934.012	4482809.13	556935.121	4482807.52	556928.544	4482796.43	8	999.00	Person_Portable
355	1	G13-12B	556900.95	4482808.95	0	0	0	0	0	0	9	92.01	Person_Portable
356	2	G13-12B	556903.05	4482810.90	0	0	0	0	0	0	7	15.49	Person_Portable
357	3	G13-12B	556904.97	4482811.31	0	0	0	0	0	0	9	34.86	Person_Portable
358	4	G13-12B	556904.30	4482814.00	0	0	0	0	0	0	9	288.04	Person_Portable
359	5	G13-12B	556906.35	4482815.40	0	0	0	0	0	0	9	145.60	Person_Portable
360	6	G13-12B	556913.40	4482812.55	0	0	0	0	0	0	9	98.99	Person_Portable

2014 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
361	7	G13-12B	556914.15	4482813.75	0	0	0	0	0	0	9	45.90	Person_Portable
362	8	G13-12B	556917.15	4482814.50	0	0	0	0	0	0	9	320.23	Person_Portable
363	9	G13-12B	556916.14	4482812.69	0	0	0	0	0	0	7	5.84	Person_Portable
364	10	G13-12B	556915.39	4482811.73	0	0	0	0	0	0	9	9.92	Person_Portable
365	11	G13-12B	556915.05	4482810.60	0	0	0	0	0	0	9	22.43	Person_Portable
366	12	G13-12B	556913.20	4482810.44	0	0	0	0	0	0	9	20.92	Person_Portable
367	13	G13-12B	556913.41	4482808.36	0	0	0	0	0	0	9	177.04	Person_Portable
368	14	G13-12B	556915.35	4482808.20	0	0	0	0	0	0	9	96.89	Person_Portable
369	15	G13-12B	556916.60	4482808.65	0	0	0	0	0	0	9	36.36	Person_Portable
370	16	G13-12B	556916.95	4482810.00	0	0	0	0	0	0	9	46.62	Person_Portable
371	17	G13-12B	556918.50	4482810.75	0	0	0	0	0	0	9	36.00	Person_Portable
372	18	G13-12B	556918.95	4482811.65	0	0	0	0	0	0	9	67.14	Person_Portable
373	19	G13-12B	556921.20	4482812.55	0	0	0	0	0	0	9	25.43	Person_Portable
374	20	G13-12B	556921.65	4482816.75	0	0	0	0	0	0	9	63.17	Person_Portable
375	21	G13-12B	556919.85	4482818.10	0	0	0	0	0	0	9	67.26	Person_Portable
376	22	G13-12B	556920.45	4482820.50	0	0	0	0	0	0	9	26.65	Person_Portable
377	23	G13-12B	556921.95	4482820.05	0	0	0	0	0	0	9	27.66	Person_Portable
378	24	G13-12B	556923.30	4482819.75	0	0	0	0	0	0	9	24.41	Person_Portable
379	25	G13-12B	556921.95	4482821.70	0	0	0	0	0	0	9	60.25	Person_Portable
380	26	G13-12B	556922.00	4482823.80	0	0	0	0	0	0	9	41.20	Person_Portable
381	27	G13-12B	556920.30	4482821.85	0	0	0	0	0	0	9	83.28	Person_Portable
382	28	G13-12B	556917.40	4482821.45	0	0	0	0	0	0	9	27.20	Person_Portable
383	29	G13-12B	556913.17	4482822.71	0	0	0	0	0	0	9	170.44	Person_Portable
384	30	G13-12B	556911.90	4482820.50	0	0	0	0	0	0	9	61.65	Person_Portable
385	31	G13-12B	556910.25	4482822.15	0	0	0	0	0	0	9	126.42	Person_Portable
386	32	G13-12B	556908.15	4482823.05	0	0	0	0	0	0	9	128.81	Person_Portable
387	33	G13-12B	556909.36	4482826.25	0	0	0	0	0	0	9	28.07	Person_Portable
388	34	G13-12B	556913.42	4482833.43	0	0	0	0	0	0	9	124.60	Person_Portable
389	35	G13-12B	556921.80	4482828.70	0	0	0	0	0	0	9	41.06	Person_Portable
390	36	G13-12B	556924.05	4482825.41	0	0	0	0	0	0	9	36.79	Person_Portable
391	37	G13-12B	556925.01	4482824.18	0	0	0	0	0	0	9	78.12	Person_Portable
392	38	G13-12B	556927.29	4482823.47	0	0	0	0	0	0	9	342.93	Person_Portable
393	39	G13-12B	556929.45	4482822.90	0	0	0	0	0	0	9	36.07	Person_Portable
394	40	G13-12B	556931.97	4482822.66	0	0	0	0	0	0	9	26.39	Person_Portable
395	41	G13-12B	556926.75	4482807.00	0	0	0	0	0	0	9	42.13	Person_Portable
396	42	G13-12B	556927.65	4482805.50	0	0	0	0	0	0	9	28.25	Person_Portable

2014 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
397	43	G13-12B	556929.60	4482805.80	0	0	0	0	0	0	9	83.36	Person_Portable
398	44	G13-12B	556928.40	4482803.55	0	0	0	0	0	0	9	102.54	Person_Portable
399	45	G13-12B	556927.65	4482800.10	0	0	0	0	0	0	9	99.87	Person_Portable
400	46	G13-12B	556925.70	4482801.90	0	0	0	0	0	0	9	19.83	Person_Portable
401	47	G13-12B	556926.45	4482803.55	0	0	0	0	0	0	9	60.57	Person_Portable
402	48	G13-12B	556925.85	4482805.50	0	0	0	0	0	0	9	39.57	Person_Portable
403	49	G13-12B	556924.48	4482804.54	0	0	0	0	0	0	9	32.04	Person_Portable
404	50	G13-12B	556922.39	4482805.30	0	0	0	0	0	0	9	128.23	Person_Portable
405	51	G13-12B	556923.65	4482807.17	0	0	0	0	0	0	9	253.57	Person_Portable
406	52	G13-12B	556923.50	4482810.78	0	0	0	0	0	0	9	8.85	Person_Portable
407	53	G13-12B	556923.10	4482809.95	0	0	0	0	0	0	9	19.53	Person_Portable
408	54	G13-12B	556921.80	4482809.30	0	0	0	0	0	0	9	94.83	Person_Portable
409	55	G13-12B	556919.90	4482809.85	0	0	0	0	0	0	9	15.23	Person_Portable
410	56	G13-12B	556919.55	4482808.10	0	0	0	0	0	0	9	41.44	Person_Portable
411	57	G13-12B	556918.95	4482807.00	0	0	0	0	0	0	9	64.58	Person_Portable
412	58	G13-12B	556919.10	4482805.80	0	0	0	0	0	0	9	43.08	Person_Portable
413	59	G13-12B	556917.15	4482805.15	0	0	0	0	0	0	9	49.27	Person_Portable
414	60	G13-12B	556915.95	4482804.00	0	0	0	0	0	0	9	36.71	Person_Portable
415	61	G13-12B	556913.55	4482800.85	0	0	0	0	0	0	9	27.60	Person_Portable
416	62	G13-12B	556914.30	4482803.70	0	0	0	0	0	0	9	60.60	Person_Portable
417	63	G13-12B	556913.65	4482805.88	0	0	0	0	0	0	9	2098.34	Person_Portable
418	64	G13-12B	556909.20	4482806.55	0	0	0	0	0	0	9	118.47	Person_Portable
419	65	G13-12B	556904.40	4482808.65	0	0	0	0	0	0	7	31.00	Person_Portable
420	66	G13-12B	556903.35	4482807.00	0	0	0	0	0	0	9	175.01	Person_Portable
421	67	G13-12B	556898.69	4482807.83	556913.593	4482833.86	556939.629	4482818.96	556924.726	4482792.93	8	999.00	Person_Portable
422	1	G13-13B	556921.50	4482829.95	0	0	0	0	0	0	9	40.01	Person_Portable
423	2	G13-13B	556922.70	4482829.20	0	0	0	0	0	0	9	35.43	Person_Portable
424	3	G13-13B	556924.91	4482828.28	0	0	0	0	0	0	9	95.44	Person_Portable
425	4	G13-13B	556925.08	4482830.33	0	0	0	0	0	0	9	47.78	Person_Portable
426	5	G13-13B	556926.75	4482831.45	0	0	0	0	0	0	9	77.51	Person_Portable
427	6	G13-13B	556925.40	4482833.85	0	0	0	0	0	0	9	105.19	Person_Portable
428	7	G13-13B	556926.40	4482836.45	0	0	0	0	0	0	9	1752.06	Person_Portable
429	8	G13-13B	556928.70	4482835.25	0	0	0	0	0	0	9	15.88	Person_Portable
430	9	G13-13B	556929.45	4482833.25	0	0	0	0	0	0	7	5.49	Person_Portable
431	10	G13-13B	556928.70	4482832.20	0	0	0	0	0	0	7	7.89	Person_Portable
432	11	G13-13B	556930.35	4482831.60	0	0	0	0	0	0	9	10.43	Person_Portable

2014 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
433	12	G13-13B	556931.55	4482832.50	0	0	0	0	0	0	9	39.37	Person_Portable
434	13	G13-13B	556934.10	4482832.95	0	0	0	0	0	0	9	72.15	Person_Portable
435	14	G13-13B	556933.97	4482830.60	0	0	0	0	0	0	9	29.72	Person_Portable
436	15	G13-13B	556931.85	4482828.60	0	0	0	0	0	0	9	42.80	Person_Portable
437	16	G13-13B	556932.00	4482825.90	0	0	0	0	0	0	9	43.48	Person_Portable
438	17	G13-13B	556932.22	4482824.63	0	0	0	0	0	0	9	30.91	Person_Portable
439	18	G13-13B	556933.90	4482824.51	0	0	0	0	0	0	9	42.50	Person_Portable
440	19	G13-13B	556939.20	4482826.20	0	0	0	0	0	0	9	58.65	Person_Portable
441	20	G13-13B	556940.10	4482827.70	0	0	0	0	0	0	9	56.61	Person_Portable
442	21	G13-13B	556938.75	4482830.10	0	0	0	0	0	0	9	56.18	Person_Portable
443	22	G13-13B	556942.35	4482830.70	0	0	0	0	0	0	9	12.56	Person_Portable
444	23	G13-13B	556943.99	4482833.48	0	0	0	0	0	0	9	34.38	Person_Portable
445	24	G13-13B	556941.98	4482832.65	0	0	0	0	0	0	9	33.18	Person_Portable
446	25	G13-13B	556940.85	4482833.70	0	0	0	0	0	0	9	59.52	Person_Portable
447	26	G13-13B	556939.80	4482831.90	0	0	0	0	0	0	9	40.35	Person_Portable
448	27	G13-13B	556938.30	4482832.20	0	0	0	0	0	0	9	34.47	Person_Portable
449	28	G13-13B	556938.30	4482833.55	0	0	0	0	0	0	9	32.43	Person_Portable
450	29	G13-13B	556938.45	4482835.35	0	0	0	0	0	0	9	12.91	Person_Portable
451	30	G13-13B	556933.05	4482836.70	0	0	0	0	0	0	9	33.37	Person_Portable
452	31	G13-13B	556931.10	4482834.75	0	0	0	0	0	0	9	7.67	Person_Portable
453	32	G13-13B	556930.65	4482836.45	0	0	0	0	0	0	9	11.98	Person_Portable
454	33	G13-13B	556931.10	4482837.60	0	0	0	0	0	0	9	13.30	Person_Portable
455	34	G13-13B	556928.94	4482838.28	0	0	0	0	0	0	9	17.80	Person_Portable
456	35	G13-13B	556930.35	4482840.90	0	0	0	0	0	0	9	57.07	Person_Portable
457	36	G13-13B	556929.15	4482840.45	0	0	0	0	0	0	9	61.48	Person_Portable
458	37	G13-13B	556926.24	4482839.61	0	0	0	0	0	0	9	779.79	Person_Portable
459	38	G13-13B	556923.15	4482837.30	0	0	0	0	0	0	9	62.09	Person_Portable
460	39	G13-13B	556923.00	4482838.65	0	0	0	0	0	0	9	95.18	Person_Portable
461	40	G13-13B	556922.10	4482839.85	0	0	0	0	0	0	9	50.29	Person_Portable
462	41	G13-13B	556919.85	4482840.45	0	0	0	0	0	0	9	28.80	Person_Portable
463	42	G13-13B	556919.70	4482843.15	0	0	0	0	0	0	9	170.87	Person_Portable
464	43	G13-13B	556918.20	4482840.45	0	0	0	0	0	0	9	36.41	Person_Portable
465	44	G13-13B	556920.45	4482837.35	0	0	0	0	0	0	9	51.66	Person_Portable
466	45	G13-13B	556916.10	4482832.85	0	0	0	0	0	0	9	20.54	Person_Portable
467	46	G13-13B	556913.56	4482833.86	556922.178	4482848.91	556946.084	4482835.89	556939.636	4482819.02	8	999.00	Person_Portable
468	47	G13-13B	556922.12	4482848.95	556928.444	4482859.89	556931.323	4482858.29	556925.28	4482847.28	8	999.00	Person_Portable

2014 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
469	1	G13-14B	556931.85	4482864.75	0	0	0	0	0	0	9	98.94	Person_Portable
470	2	G13-14B	556930.60	4482863.55	0	0	0	0	0	0	9	37.76	Person_Portable
471	3	G13-14B	556928.48	4482859.89	556943.356	4482885.91	556946.758	4482884.04	556931.278	4482858.24	8	999.00	Person_Portable
472	1	G13-15B	556943.34	4482885.92	556958.258	4482911.95	556960.651	4482910.7	556946.695	4482884	8	999.00	Person_Portable
473	1	G13-18B	557007.75	4482969.60	0	0	0	0	0	0	9	175.56	Person_Portable
474	2	G13-18B	557010.00	4482968.40	0	0	0	0	0	0	9	42.60	Person_Portable
475	3	G13-18B	557011.50	4482969.75	0	0	0	0	0	0	9	356.40	Person_Portable
476	4	G13-18B	557014.05	4482968.25	0	0	0	0	0	0	9	153.59	Person_Portable
477	5	G13-18B	557012.15	4482972.15	0	0	0	0	0	0	9	8.76	Person_Portable
478	6	G13-18B	557013.45	4482974.25	0	0	0	0	0	0	9	36.08	Person_Portable
479	7	G13-18B	557011.20	4482974.70	0	0	0	0	0	0	9	11.58	Person_Portable
480	8	G13-18B	557009.85	4482973.80	0	0	0	0	0	0	9	10.31	Person_Portable
481	9	G13-18B	557008.80	4482972.15	0	0	0	0	0	0	9	1303.58	Person_Portable
482	10	G13-18B	557006.55	4482972.90	0	0	0	0	0	0	9	102.51	Person_Portable
483	11	G13-18B	557005.35	4482973.65	0	0	0	0	0	0	9	64.27	Person_Portable
484	12	G13-18B	557004.60	4482975.15	0	0	0	0	0	0	9	122.77	Person_Portable
485	13	G13-18B	557009.55	4482980.70	0	0	0	0	0	0	9	35.73	Person_Portable
486	14	G13-18B	557012.40	4482982.80	0	0	0	0	0	0	9	64.71	Person_Portable
487	15	G13-18B	557009.85	4482982.65	0	0	0	0	0	0	9	16.40	Person_Portable
488	16	G13-18B	557008.80	4482984.05	0	0	0	0	0	0	9	15.58	Person_Portable
489	17	G13-18B	557007.15	4482984.15	0	0	0	0	0	0	9	52.86	Person_Portable
490	18	G13-18B	557006.70	4482987.75	0	0	0	0	0	0	9	46.77	Person_Portable
491	19	G13-18B	557000.55	4482984.45	0	0	0	0	0	0	9	25.82	Person_Portable
492	20	G13-18B	557000.10	4482982.20	0	0	0	0	0	0	9	66.96	Person_Portable
493	21	G13-18B	556995.64	4482977.34	557002.991	4482990.11	557022.856	4482978.76	557012.881	4482964.57	8	999.00	Person_Portable
494	1	G13-19B	557007.45	4482989.10	0	0	0	0	0	0	9	220.59	Person_Portable
495	2	G13-19B	557008.80	4482990.30	0	0	0	0	0	0	9	56.02	Person_Portable
496	3	G13-19B	557010.75	4482991.80	0	0	0	0	0	0	9	28.29	Person_Portable
497	4	G13-19B	557011.50	4482993.00	0	0	0	0	0	0	9	42.90	Person_Portable
498	5	G13-19B	557010.90	4482994.95	0	0	0	0	0	0	9	5.96	Person_Portable
499	6	G13-19B	557009.05	4482994.85	0	0	0	0	0	0	9	16.60	Person_Portable
500	7	G13-19B	557007.85	4482992.80	0	0	0	0	0	0	9	9.15	Person_Portable
501	8	G13-19B	557006.85	4482992.40	0	0	0	0	0	0	7	9.33	Person_Portable
502	9	G13-19B	557004.95	4482992.12	0	0	0	0	0	0	9	18.33	Person_Portable
503	10	G13-19B	557006.70	4482996.05	0	0	0	0	0	0	9	62.78	Person_Portable
504	11	G13-19B	557007.75	4482997.05	0	0	0	0	0	0	9	24.02	Person_Portable

2014 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
505	12	G13-19B	557008.15	4482999.05	0	0	0	0	0	0	9	67.90	Person_Portable
506	13	G13-19B	557009.85	4483000.65	0	0	0	0	0	0	9	12.12	Person_Portable
507	14	G13-19B	557010.60	4483001.85	0	0	0	0	0	0	9	9.18	Person_Portable
508	15	G13-19B	557011.35	4483003.20	0	0	0	0	0	0	9	13.15	Person_Portable
509	16	G13-19B	557013.30	4483003.80	0	0	0	0	0	0	9	39.18	Person_Portable
510	17	G13-19B	557014.95	4483006.50	0	0	0	0	0	0	9	44.03	Person_Portable
511	18	G13-19B	557013.30	4483008.00	0	0	0	0	0	0	9	12.68	Person_Portable
512	19	G13-19B	557014.92	4483010.78	0	0	0	0	0	0	7	8.58	Person_Portable
513	20	G13-19B	557016.60	4483008.00	0	0	0	0	0	0	9	103.22	Person_Portable
514	21	G13-19B	557016.60	4483006.20	0	0	0	0	0	0	9	81.30	Person_Portable
515	22	G13-19B	557021.25	4483006.95	0	0	0	0	0	0	9	34.15	Person_Portable
516	23	G13-19B	557021.45	4483008.45	0	0	0	0	0	0	9	50.06	Person_Portable
517	24	G13-19B	557023.50	4483008.00	0	0	0	0	0	0	9	10.69	Person_Portable
518	25	G13-19B	557024.70	4483008.45	0	0	0	0	0	0	9	13.76	Person_Portable
519	26	G13-19B	557026.20	4483009.65	0	0	0	0	0	0	9	62.30	Person_Portable
520	27	G13-19B	557027.10	4483008.30	0	0	0	0	0	0	9	71.71	Person_Portable
521	28	G13-19B	557026.95	4483006.50	0	0	0	0	0	0	9	54.03	Person_Portable
522	29	G13-19B	557026.64	4483004.48	0	0	0	0	0	0	9	85.12	Person_Portable
523	30	G13-19B	557025.00	4483002.70	0	0	0	0	0	0	9	45.77	Person_Portable
524	31	G13-19B	557023.35	4483004.70	0	0	0	0	0	0	9	72.59	Person_Portable
525	32	G13-19B	557022.42	4483001.71	0	0	0	0	0	0	9	5.12	Person_Portable
526	33	G13-19B	557021.55	4483000.35	0	0	0	0	0	0	9	20.47	Person_Portable
527	34	G13-19B	557024.10	4483001.40	0	0	0	0	0	0	9	88.40	Person_Portable
528	35	G13-19B	557026.18	4483000.66	0	0	0	0	0	0	9	133.96	Person_Portable
529	36	G13-19B	557024.80	4482998.90	0	0	0	0	0	0	9	30.74	Person_Portable
530	37	G13-19B	557022.75	4482996.30	0	0	0	0	0	0	9	40.25	Person_Portable
531	38	G13-19B	557022.75	4482994.65	0	0	0	0	0	0	9	73.54	Person_Portable
532	39	G13-19B	557025.45	4482993.75	0	0	0	0	0	0	9	33.85	Person_Portable
533	40	G13-19B	557024.40	4482993.30	0	0	0	0	0	0	9	7.99	Person_Portable
534	41	G13-19B	557022.90	4482990.75	0	0	0	0	0	0	9	64.28	Person_Portable
535	42	G13-19B	557021.10	4482994.80	0	0	0	0	0	0	9	42.55	Person_Portable
536	43	G13-19B	557015.70	4482996.15	0	0	0	0	0	0	9	105.46	Person_Portable
537	44	G13-19B	557015.40	4482999.90	0	0	0	0	0	0	9	38.93	Person_Portable
538	45	G13-19B	557012.70	4483001.10	0	0	0	0	0	0	9	82.54	Person_Portable
539	46	G13-19B	557011.20	4482998.75	0	0	0	0	0	0	9	18.92	Person_Portable
540	47	G13-19B	557009.85	4482997.80	0	0	0	0	0	0	9	28.81	Person_Portable

2014 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
541	48	G13-19B	557011.05	4482996.75	0	0	0	0	0	0	9	27.35	Person_Portable
542	49	G13-19B	557012.85	4482997.35	0	0	0	0	0	0	9	56.54	Person_Portable
543	50	G13-19B	557013.60	4482995.25	0	0	0	0	0	0	9	40.23	Person_Portable
544	51	G13-19B	557013.90	4482994.05	0	0	0	0	0	0	9	48.22	Person_Portable
545	52	G13-19B	557014.80	4482993.15	0	0	0	0	0	0	9	75.59	Person_Portable
546	53	G13-19B	557013.11	4482991.46	0	0	0	0	0	0	9	33.64	Person_Portable
547	54	G13-19B	557013.90	4482990.00	0	0	0	0	0	0	9	937.22	Person_Portable
548	55	G13-19B	557013.15	4482987.15	0	0	0	0	0	0	9	1330.81	Person_Portable
549	56	G13-19B	557012.85	4482985.05	0	0	0	0	0	0	9	2219.33	Person_Portable
550	57	G13-19B	557009.70	4482987.00	0	0	0	0	0	0	9	74.75	Person_Portable
551	58	G13-19B	557002.99	4482990.17	557017.874	4483016.17	557036.691	4483005.38	557022.821	4482978.73	8	999.00	Person_Portable
552	1	G13-20B	557022.15	4483015.94	0	0	0	0	0	0	9	28.75	Person_Portable
553	2	G13-20B	557017.87	4483016.13	557032.764	4483042.15	557045.111	4483035.1	557036.611	4483005.39	8	999.00	Person_Portable
554	1	TDSA6-1	554896.74	4481457.26	0	0	0	0	0	0	1	44.79	Person_Portable
555	1	TDSA6-2	554998.21	4481414.04	0	0	0	0	0	0	7	6.25	Person_Portable
556	1	TDSA6-3	555098.67	4481417.07	0	0	0	0	0	0	1	23.59	Person_Portable
557	2	TDSA6-3	555095.56	4481486.76	0	0	0	0	0	0	6	3.64	Person_Portable
558	3	TDSA6-3	555096.37	4481492.15	0	0	0	0	0	0	1	11.47	Person_Portable
559	1	TDSA6-4	555196.27	4481439.33	0	0	0	0	0	0	1	72.56	Person_Portable
560	1	TDSA4-1	555499.49	4481652.45	0	0	0	0	0	0	7	5.65	Person_Portable
561	1	TDSA4-3	555698.17	4481706.00	0	0	0	0	0	0	7	4.77	Person_Portable
562	1	TDSA4-6	555996.55	4481701.64	0	0	0	0	0	0	1	10.55	Person_Portable
563	2	TDSA4-6	555994.70	4481710.05	0	0	0	0	0	0	1	31.52	Person_Portable
564	1	TDSA4-7	556098.41	4481638.68	0	0	0	0	0	0	6	3.96	Person_Portable
565	2	TDSA4-7	556081.04	4481732.23	0	0	0	0	0	0	6	3.60	Person_Portable
566	1	TDSA4-8	556196.34	4481752.89	0	0	0	0	0	0	1	46.95	Person_Portable
567	1	TDSA4-10	556395.17	4481864.59	0	0	0	0	0	0	1	208.58	Person_Portable
568	1	TDSA4-17	557091.95	4482585.05	0	0	0	0	0	0	1	90.31	Person_Portable
569	1	TDSA4-18	557180.32	4482609.87	0	0	0	0	0	0	1	157.27	Person_Portable
570	2	TDSA4-18	557180.12	4482613.23	0	0	0	0	0	0	7	4.54	Person_Portable
571	1	TDSA4-19	557244.43	4482704.49	0	0	0	0	0	0	7	5.11	Person_Portable
572	2	TDSA4-19	557232.35	4482733.58	0	0	0	0	0	0	1	36.17	Person_Portable
573	3	TDSA4-19	557225.98	4482740.39	0	0	0	0	0	0	7	4.57	Person_Portable
		TDSA4-2									NO TARGETS		Person_Portable
		TDSA4-4									NO TARGETS		Person_Portable
		TDSA4-5									NO TARGETS		Person_Portable

2014 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
		TDSA4-9									NO TARGETS		Person_Portable
		TDSA4-11									NO TARGETS		Person_Portable
		TDSA4-12									NO TARGETS		Person_Portable
		TDSA4-13									NO TARGETS		Person_Portable
		TDSA4-14									NO TARGETS		Person_Portable
		TDSA4-15									NO TARGETS		Person_Portable

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1	1	T12TR-4	556074.90	4482033.15	0	0	0	0	0	0	1	89.80	3Coil_Towed_Array
2	2	T12TR-4	556105.17	4482038.36	0	0	0	0	0	0	1	10.17	3Coil_Towed_Array
3	3	T12TR-4	556121.55	4482043.80	0	0	0	0	0	0	1	4.13	3Coil_Towed_Array
4	4	T12TR-4	556131.88	4482044.87	0	0	0	0	0	0	1	751.40	3Coil_Towed_Array
5	5	T12TR-4	556156.80	4482054.45	0	0	0	0	0	0	7	4.84	3Coil_Towed_Array
6	6	T12TR-4	556158.15	4482055.50	0	0	0	0	0	0	7	5.50	3Coil_Towed_Array
7	7	T12TR-4	556160.25	4482055.80	0	0	0	0	0	0	1	26.19	3Coil_Towed_Array
8	8	T12TR-4	556161.30	4482055.95	0	0	0	0	0	0	1	21.36	3Coil_Towed_Array
9	9	T12TR-4	556168.35	4482058.65	0	0	0	0	0	0	7	6.22	3Coil_Towed_Array
10	10	T12TR-4	556177.20	4482066.15	0	0	0	0	0	0	1	14.78	3Coil_Towed_Array
11	11	T12TR-4	556180.50	4482067.95	0	0	0	0	0	0	7	5.24	3Coil_Towed_Array
12	12	T12TR-4	556182.30	4482067.80	0	0	0	0	0	0	1	47.04	3Coil_Towed_Array
13	13	T12TR-4	556183.65	4482069.75	0	0	0	0	0	0	1	25.79	3Coil_Towed_Array
14	14	T12TR-4	556187.10	4482069.30	0	0	0	0	0	0	7	4.15	3Coil_Towed_Array
15	15	T12TR-4	556187.40	4482070.95	0	0	0	0	0	0	1	14.84	3Coil_Towed_Array
16	1	T12TR-5	556037.56	4482048.30	0	0	0	0	0	0	1	27.25	3Coil_Towed_Array
17	2	T12TR-5	556095.60	4482060.60	0	0	0	0	0	0	7	8.94	3Coil_Towed_Array
18	3	T12TR-5	556096.50	4482062.40	0	0	0	0	0	0	1	368.58	3Coil_Towed_Array
19	4	T12TR-5	556098.60	4482062.40	0	0	0	0	0	0	1	90.14	3Coil_Towed_Array
20	5	T12TR-5	556100.40	4482061.50	0	0	0	0	0	0	1	21.52	3Coil_Towed_Array
21	6	T12TR-5	556105.08	4482065.57	0	0	0	0	0	0	1	47.44	3Coil_Towed_Array
22	7	T12TR-5	556114.20	4482069.60	0	0	0	0	0	0	7	5.65	3Coil_Towed_Array
23	8	T12TR-5	556114.35	4482070.95	0	0	0	0	0	0	7	7.31	3Coil_Towed_Array
24	9	T12TR-5	556151.55	4482084.75	0	0	0	0	0	0	13	34.77	3Coil_Towed_Array
25	10	T12TR-5	556160.25	4482087.75	0	0	0	0	0	0	1	15.38	3Coil_Towed_Array
26	11	T12TR-5	556162.20	4482088.50	0	0	0	0	0	0	1	17.35	3Coil_Towed_Array
27	12	T12TR-5	556163.85	4482091.20	0	0	0	0	0	0	7	4.05	3Coil_Towed_Array
28	13	T12TR-5	556163.94	4482089.14	0	0	0	0	0	0	13	5.29	3Coil_Towed_Array
29	14	T12TR-5	556171.64	4482091.86	0	0	0	0	0	0	13	4.24	3Coil_Towed_Array
30	15	T12TR-5	556180.05	4482095.10	0	0	0	0	0	0	7	5.30	3Coil_Towed_Array
31	16	T12TR-5	556182.60	4482096.15	0	0	0	0	0	0	1	16.44	3Coil_Towed_Array
32	17	T12TR-5	556183.65	4482096.60	0	0	0	0	0	0	7	8.16	3Coil_Towed_Array
33	18	T12TR-5	556186.05	4482098.55	0	0	0	0	0	0	7	8.04	3Coil_Towed_Array
34	19	T12TR-5	556187.14	4482099.78	0	0	0	0	0	0	1	14.30	3Coil_Towed_Array
35	20	T12TR-5	556192.35	4482099.15	0	0	0	0	0	0	1	114.71	3Coil_Towed_Array
36	21	T12TR-5	556198.95	4482103.80	0	0	0	0	0	0	1	19.26	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
37	22	T12TR-5	556203.17	4482104.67	0	0	0	0	0	0	1	74.80	3Coil_Towed_Array
38	23	T12TR-5	556205.40	4482107.25	0	0	0	0	0	0	7	11.35	3Coil_Towed_Array
39	24	T12TR-5	556206.75	4482105.75	0	0	0	0	0	0	1	59.09	3Coil_Towed_Array
40	25	T12TR-5	556206.70	4482107.22	0	0	0	0	0	0	1	17.54	3Coil_Towed_Array
41	26	T12TR-5	556208.10	4482108.72	0	0	0	0	0	0	1	15.59	3Coil_Towed_Array
42	1	T12TR-6	556247.10	4482153.30	0	0	0	0	0	0	3	37.37	3Coil_Towed_Array
43	2	T12TR-6	556248.39	4482152.16	0	0	0	0	0	0	3	60.02	3Coil_Towed_Array
44	3	T12TR-6	556251.15	4482153.30	0	0	0	0	0	0	3	103.74	3Coil_Towed_Array
45	4	T12TR-6	556253.55	4482153.45	0	0	0	0	0	0	3	6.49	3Coil_Towed_Array
46	5	T12TR-6	556260.60	4482153.90	0	0	0	0	0	0	7	6.68	3Coil_Towed_Array
47	6	T12TR-6	556265.55	4482155.70	0	0	0	0	0	0	1	87.86	3Coil_Towed_Array
48	7	T12TR-6	556273.05	4482159.30	0	0	0	0	0	0	1	4.63	3Coil_Towed_Array
49	8	T12TR-6	556278.45	4482159.15	0	0	0	0	0	0	1	6.07	3Coil_Towed_Array
50	9	T12TR-6	556293.15	4482164.25	0	0	0	0	0	0	1	13.91	3Coil_Towed_Array
51	10	T12TR-6	556294.20	4482166.65	0	0	0	0	0	0	1	7.61	3Coil_Towed_Array
52	11	T12TR-6	556296.00	4482165.00	0	0	0	0	0	0	1	36.13	3Coil_Towed_Array
53	12	T12TR-6	556304.70	4482169.80	0	0	0	0	0	0	1	21.19	3Coil_Towed_Array
54	13	T12TR-6	556312.95	4482171.30	0	0	0	0	0	0	13	49.51	3Coil_Towed_Array
55	14	T12TR-6	556329.90	4482176.40	0	0	0	0	0	0	7	6.72	3Coil_Towed_Array
56	15	T12TR-6	556339.50	4482180.90	0	0	0	0	0	0	7	5.31	3Coil_Towed_Array
57	16	T12TR-6	556345.20	4482185.40	0	0	0	0	0	0	1	849.14	3Coil_Towed_Array
58	17	T12TR-6	556350.78	4482187.22	0	0	0	0	0	0	1	4.98	3Coil_Towed_Array
59	18	T12TR-6	556351.95	4482187.65	0	0	0	0	0	0	1	42.53	3Coil_Towed_Array
60	19	T12TR-6	556365.30	4482191.85	0	0	0	0	0	0	1	90.28	3Coil_Towed_Array
61	20	T12TR-6	556376.70	4482198.60	0	0	0	0	0	0	7	5.02	3Coil_Towed_Array
62	21	T12TR-6	556385.10	4482203.10	0	0	0	0	0	0	7	5.46	3Coil_Towed_Array
63	1	T12TR-7	556331.94	4482211.43	0	0	0	0	0	0	1	6.50	3Coil_Towed_Array
64	2	T12TR-7	556336.95	4482212.85	0	0	0	0	0	0	7	4.50	3Coil_Towed_Array
65	3	T12TR-7	556342.65	4482212.25	0	0	0	0	0	0	1	10.81	3Coil_Towed_Array
66	4	T12TR-7	556344.75	4482213.00	0	0	0	0	0	0	1	8.75	3Coil_Towed_Array
67	5	T12TR-7	556347.30	4482216.30	0	0	0	0	0	0	1	34.32	3Coil_Towed_Array
68	6	T12TR-7	556354.80	4482219.60	0	0	0	0	0	0	1	9.41	3Coil_Towed_Array
69	7	T12TR-7	556356.00	4482217.95	0	0	0	0	0	0	7	4.90	3Coil_Towed_Array
70	8	T12TR-7	556356.15	4482220.20	0	0	0	0	0	0	1	14.23	3Coil_Towed_Array
71	9	T12TR-7	556359.45	4482219.30	0	0	0	0	0	0	3	6.38	3Coil_Towed_Array
72	10	T12TR-7	556360.65	4482220.95	0	0	0	0	0	0	3	11.87	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
73	11	T12TR-7	556362.00	4482220.50	0	0	0	0	0	0	3	25.86	3Coil_Towed_Array
74	12	T12TR-7	556362.90	4482222.00	0	0	0	0	0	0	3	12.00	3Coil_Towed_Array
75	13	T12TR-7	556365.00	4482222.00	0	0	0	0	0	0	3	13.02	3Coil_Towed_Array
76	14	T12TR-7	556366.05	4482222.60	0	0	0	0	0	0	3	7.38	3Coil_Towed_Array
77	15	T12TR-7	556369.05	4482225.15	0	0	0	0	0	0	7	5.46	3Coil_Towed_Array
78	16	T12TR-7	556375.35	4482225.30	0	0	0	0	0	0	3	46.27	3Coil_Towed_Array
79	17	T12TR-7	556377.60	4482226.20	0	0	0	0	0	0	3	26.09	3Coil_Towed_Array
80	18	T12TR-7	556379.79	4482227.02	0	0	0	0	0	0	7	7.94	3Coil_Towed_Array
81	19	T12TR-7	556383.15	4482226.05	0	0	0	0	0	0	13	5.08	3Coil_Towed_Array
82	20	T12TR-7	556394.85	4482226.50	0	0	0	0	0	0	1	5.35	3Coil_Towed_Array
83	21	T12TR-7	556396.20	4482227.10	0	0	0	0	0	0	7	4.18	3Coil_Towed_Array
84	22	T12TR-7	556398.30	4482228.00	0	0	0	0	0	0	7	4.32	3Coil_Towed_Array
85	23	T12TR-7	556402.20	4482230.40	0	0	0	0	0	0	13	4.62	3Coil_Towed_Array
86	24	T12TR-7	556403.40	4482229.65	0	0	0	0	0	0	13	17.18	3Coil_Towed_Array
87	25	T12TR-7	556405.35	4482230.55	0	0	0	0	0	0	13	54.63	3Coil_Towed_Array
88	26	T12TR-7	556421.70	4482238.95	0	0	0	0	0	0	1	27.05	3Coil_Towed_Array
89	27	T12TR-7	556426.35	4482240.30	0	0	0	0	0	0	13	6.33	3Coil_Towed_Array
90	28	T12TR-7	556428.45	4482239.70	0	0	0	0	0	0	1	5.01	3Coil_Towed_Array
91	29	T12TR-7	556430.23	4482240.25	0	0	0	0	0	0	13	9.61	3Coil_Towed_Array
92	30	T12TR-7	556435.51	4482241.68	0	0	0	0	0	0	1	62.35	3Coil_Towed_Array
93	31	T12TR-7	556452.60	4482247.50	0	0	0	0	0	0	1	11.00	3Coil_Towed_Array
94	32	T12TR-7	556455.15	4482248.40	0	0	0	0	0	0	1	45.37	3Coil_Towed_Array
95	33	T12TR-7	556457.55	4482248.40	0	0	0	0	0	0	7	6.02	3Coil_Towed_Array
96	34	T12TR-7	556461.30	4482249.90	0	0	0	0	0	0	1	9.11	3Coil_Towed_Array
97	35	T12TR-7	556468.43	4482253.46	0	0	0	0	0	0	1	32.79	3Coil_Towed_Array
98	1	T12TR-8	556450.05	4482275.25	0	0	0	0	0	0	3	9.82	3Coil_Towed_Array
99	2	T12TR-8	556452.45	4482275.25	0	0	0	0	0	0	3	9.68	3Coil_Towed_Array
100	3	T12TR-8	556452.89	4482276.63	0	0	0	0	0	0	7	6.02	3Coil_Towed_Array
101	4	T12TR-8	556453.43	4482275.31	0	0	0	0	0	0	3	8.97	3Coil_Towed_Array
102	5	T12TR-8	556454.47	4482277.53	0	0	0	0	0	0	3	5.34	3Coil_Towed_Array
103	6	T12TR-8	556454.25	4482276.15	0	0	0	0	0	0	3	5.08	3Coil_Towed_Array
104	7	T12TR-8	556456.83	4482277.56	0	0	0	0	0	0	3	5.88	3Coil_Towed_Array
105	8	T12TR-8	556458.15	4482279.15	0	0	0	0	0	0	3	154.48	3Coil_Towed_Array
106	9	T12TR-8	556461.84	4482282.54	0	0	0	0	0	0	13	6.04	3Coil_Towed_Array
107	10	T12TR-8	556463.85	4482282.15	0	0	0	0	0	0	3	7.94	3Coil_Towed_Array
108	11	T12TR-8	556464.75	4482282.75	0	0	0	0	0	0	7	6.82	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
109	12	T12TR-8	556465.05	4482284.10	0	0	0	0	0	0	3	10.81	3Coil_Towed_Array
110	13	T12TR-8	556466.70	4482286.80	0	0	0	0	0	0	3	9.39	3Coil_Towed_Array
111	14	T12TR-8	556466.85	4482284.40	0	0	0	0	0	0	3	83.35	3Coil_Towed_Array
112	15	T12TR-8	556468.05	4482287.85	0	0	0	0	0	0	3	7.18	3Coil_Towed_Array
113	16	T12TR-8	556468.54	4482285.76	0	0	0	0	0	0	3	10.55	3Coil_Towed_Array
114	17	T12TR-8	556470.00	4482289.05	0	0	0	0	0	0	3	7.23	3Coil_Towed_Array
115	18	T12TR-8	556472.10	4482288.00	0	0	0	0	0	0	3	12.48	3Coil_Towed_Array
116	19	T12TR-8	556472.10	4482290.25	0	0	0	0	0	0	3	15.49	3Coil_Towed_Array
117	20	T12TR-8	556472.55	4482289.35	0	0	0	0	0	0	7	7.59	3Coil_Towed_Array
118	21	T12TR-8	556473.45	4482290.85	0	0	0	0	0	0	3	30.01	3Coil_Towed_Array
119	22	T12TR-8	556474.95	4482291.45	0	0	0	0	0	0	3	28.51	3Coil_Towed_Array
120	23	T12TR-8	556475.82	4482290.16	0	0	0	0	0	0	3	5.52	3Coil_Towed_Array
121	24	T12TR-8	556477.09	4482292.13	0	0	0	0	0	0	7	9.78	3Coil_Towed_Array
122	25	T12TR-8	556479.75	4482292.65	0	0	0	0	0	0	1	32.71	3Coil_Towed_Array
123	26	T12TR-8	556487.40	4482293.10	0	0	0	0	0	0	7	5.70	3Coil_Towed_Array
124	27	T12TR-8	556501.12	4482297.55	0	0	0	0	0	0	1	224.87	3Coil_Towed_Array
125	28	T12TR-8	556504.80	4482300.45	0	0	0	0	0	0	1	10.65	3Coil_Towed_Array
126	29	T12TR-8	556508.55	4482299.10	0	0	0	0	0	0	1	47.39	3Coil_Towed_Array
127	30	T12TR-8	556512.75	4482302.25	0	0	0	0	0	0	1	18.39	3Coil_Towed_Array
128	31	T12TR-8	556519.80	4482302.70	0	0	0	0	0	0	7	4.30	3Coil_Towed_Array
129	1	T12TR-9	556517.55	4482334.65	0	0	0	0	0	0	3	929.54	3Coil_Towed_Array
130	2	T12TR-9	556522.65	4482337.20	0	0	0	0	0	0	3	14.97	3Coil_Towed_Array
131	3	T12TR-9	556526.03	4482337.08	0	0	0	0	0	0	3	18.52	3Coil_Towed_Array
132	4	T12TR-9	556528.05	4482339.15	0	0	0	0	0	0	7	21.64	3Coil_Towed_Array
133	5	T12TR-9	556529.40	4482337.35	0	0	0	0	0	0	13	6.57	3Coil_Towed_Array
134	6	T12TR-9	556530.35	4482338.71	0	0	0	0	0	0	3	54.81	3Coil_Towed_Array
135	7	T12TR-9	556531.05	4482337.50	0	0	0	0	0	0	3	16.44	3Coil_Towed_Array
136	8	T12TR-9	556538.25	4482340.05	0	0	0	0	0	0	13	4.04	3Coil_Towed_Array
137	9	T12TR-9	556553.52	4482346.27	0	0	0	0	0	0	1	10.30	3Coil_Towed_Array
138	10	T12TR-9	556570.80	4482351.60	0	0	0	0	0	0	7	5.40	3Coil_Towed_Array
139	1	T12TR-10	555853.39	4482060.18	0	0	0	0	0	0	1	4.07	3Coil_Towed_Array
140	2	T12TR-10	555866.55	4482065.40	0	0	0	0	0	0	7	10.12	3Coil_Towed_Array
141	3	T12TR-10	555868.23	4482064.71	0	0	0	0	0	0	7	4.99	3Coil_Towed_Array
142	4	T12TR-10	555868.84	4482067.67	0	0	0	0	0	0	3	5456.58	3Coil_Towed_Array
143	5	T12TR-10	555885.45	4482073.93	0	0	0	0	0	0	3	91.56	3Coil_Towed_Array
144	6	T12TR-10	555886.90	4482073.02	0	0	0	0	0	0	3	460.92	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
145	7	T12TR-10	555887.27	4482074.93	0	0	0	0	0	0	3	133.51	3Coil_Towed_Array
146	8	T12TR-10	555891.00	4482074.10	0	0	0	0	0	0	7	7.44	3Coil_Towed_Array
147	9	T12TR-10	555901.65	4482076.05	0	0	0	0	0	0	1	9.68	3Coil_Towed_Array
148	10	T12TR-10	555906.90	4482077.25	0	0	0	0	0	0	1	134.04	3Coil_Towed_Array
149	11	T12TR-10	555908.55	4482078.75	0	0	0	0	0	0	7	4.34	3Coil_Towed_Array
150	12	T12TR-10	555912.00	4482080.10	0	0	0	0	0	0	1	7.57	3Coil_Towed_Array
151	13	T12TR-10	555931.20	4482083.70	0	0	0	0	0	0	1	63.10	3Coil_Towed_Array
152	14	T12TR-10	555935.08	4482084.31	0	0	0	0	0	0	1	25.94	3Coil_Towed_Array
153	15	T12TR-10	555939.45	4482085.50	0	0	0	0	0	0	1	5.58	3Coil_Towed_Array
154	16	T12TR-10	555940.50	4482086.70	0	0	0	0	0	0	1	13.93	3Coil_Towed_Array
155	17	T12TR-10	555944.70	4482087.60	0	0	0	0	0	0	1	5.82	3Coil_Towed_Array
156	18	T12TR-10	555954.30	4482090.60	0	0	0	0	0	0	1	8.28	3Coil_Towed_Array
157	19	T12TR-10	555965.22	4482092.26	0	0	0	0	0	0	1	278.83	3Coil_Towed_Array
158	20	T12TR-10	555978.90	4482095.70	0	0	0	0	0	0	1	10.30	3Coil_Towed_Array
159	21	T12TR-10	555984.90	4482096.30	0	0	0	0	0	0	1	57.09	3Coil_Towed_Array
160	22	T12TR-10	555988.05	4482095.40	0	0	0	0	0	0	7	4.46	3Coil_Towed_Array
161	23	T12TR-10	555989.40	4482096.00	0	0	0	0	0	0	1	7.88	3Coil_Towed_Array
162	24	T12TR-10	556003.20	4482106.50	0	0	0	0	0	0	1	4.85	3Coil_Towed_Array
163	1	T12TR-11	556142.25	4482182.70	0	0	0	0	0	0	1	10.35	3Coil_Towed_Array
164	2	T12TR-11	556157.40	4482189.45	0	0	0	0	0	0	1	6.36	3Coil_Towed_Array
165	3	T12TR-11	556164.75	4482193.50	0	0	0	0	0	0	1	5.35	3Coil_Towed_Array
166	4	T12TR-11	556184.70	4482200.10	0	0	0	0	0	0	3	578.27	3Coil_Towed_Array
167	5	T12TR-11	556186.65	4482199.95	0	0	0	0	0	0	13	526.82	3Coil_Towed_Array
168	6	T12TR-11	556188.30	4482199.50	0	0	0	0	0	0	3	815.69	3Coil_Towed_Array
169	7	T12TR-11	556190.85	4482202.35	0	0	0	0	0	0	3	156.90	3Coil_Towed_Array
170	8	T12TR-11	556191.15	4482201.45	0	0	0	0	0	0	3	247.79	3Coil_Towed_Array
171	9	T12TR-11	556192.50	4482201.90	0	0	0	0	0	0	3	364.09	3Coil_Towed_Array
172	10	T12TR-11	556193.10	4482203.10	0	0	0	0	0	0	3	455.19	3Coil_Towed_Array
173	11	T12TR-11	556194.75	4482201.30	0	0	0	0	0	0	3	263.82	3Coil_Towed_Array
174	12	T12TR-11	556195.80	4482202.50	0	0	0	0	0	0	3	1109.88	3Coil_Towed_Array
175	13	T12TR-11	556198.20	4482201.75	0	0	0	0	0	0	3	184.95	3Coil_Towed_Array
176	14	T12TR-11	556198.20	4482203.70	0	0	0	0	0	0	3	214.18	3Coil_Towed_Array
177	15	T12TR-11	556201.80	4482202.35	0	0	0	0	0	0	3	470.89	3Coil_Towed_Array
178	16	T12TR-11	556202.85	4482201.30	0	0	0	0	0	0	3	668.30	3Coil_Towed_Array
179	17	T12TR-11	556203.60	4482202.60	0	0	0	0	0	0	3	642.85	3Coil_Towed_Array
180	18	T12TR-11	556205.10	4482201.27	0	0	0	0	0	0	3	132.44	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
181	19	T12TR-11	556207.65	4482202.35	0	0	0	0	0	0	3	115.61	3Coil_Towed_Array
182	20	T12TR-11	556209.90	4482203.25	0	0	0	0	0	0	3	54.58	3Coil_Towed_Array
183	21	T12TR-11	556211.40	4482201.30	0	0	0	0	0	0	3	13.29	3Coil_Towed_Array
184	22	T12TR-11	556211.70	4482202.65	0	0	0	0	0	0	3	44.43	3Coil_Towed_Array
185	23	T12TR-11	556214.40	4482203.10	0	0	0	0	0	0	1	11.12	3Coil_Towed_Array
186	24	T12TR-11	556215.94	4482203.05	0	0	0	0	0	0	1	9.26	3Coil_Towed_Array
187	25	T12TR-11	556218.15	4482203.85	0	0	0	0	0	0	1	12.88	3Coil_Towed_Array
188	26	T12TR-11	556221.00	4482203.70	0	0	0	0	0	0	1	6.09	3Coil_Towed_Array
189	27	T12TR-11	556222.42	4482205.76	0	0	0	0	0	0	1	50.56	3Coil_Towed_Array
190	28	T12TR-11	556226.25	4482208.35	0	0	0	0	0	0	1	124.04	3Coil_Towed_Array
191	29	T12TR-11	556226.25	4482206.10	0	0	0	0	0	0	1	19.79	3Coil_Towed_Array
192	30	T12TR-11	556227.60	4482206.70	0	0	0	0	0	0	1	7.53	3Coil_Towed_Array
193	31	T12TR-11	556229.51	4482208.86	0	0	0	0	0	0	1	4.55	3Coil_Towed_Array
194	32	T12TR-11	556234.78	4482210.30	0	0	0	0	0	0	3	2355.83	3Coil_Towed_Array
195	33	T12TR-11	556237.93	4482211.61	0	0	0	0	0	0	3	535.03	3Coil_Towed_Array
196	34	T12TR-11	556239.75	4482212.55	0	0	0	0	0	0	3	34.20	3Coil_Towed_Array
197	35	T12TR-11	556240.65	4482213.15	0	0	0	0	0	0	3	52.19	3Coil_Towed_Array
198	36	T12TR-11	556241.70	4482214.65	0	0	0	0	0	0	3	26.89	3Coil_Towed_Array
199	37	T12TR-11	556243.08	4482214.29	0	0	0	0	0	0	3	9.96	3Coil_Towed_Array
200	38	T12TR-11	556243.35	4482215.55	0	0	0	0	0	0	3	21.86	3Coil_Towed_Array
201	39	T12TR-11	556244.85	4482214.05	0	0	0	0	0	0	3	23.41	3Coil_Towed_Array
202	40	T12TR-11	556245.07	4482215.33	0	0	0	0	0	0	3	59.19	3Coil_Towed_Array
203	41	T12TR-11	556246.65	4482217.05	0	0	0	0	0	0	1	5.22	3Coil_Towed_Array
204	1	T12TR-12	555875.10	4482127.65	0	0	0	0	0	0	1	37.91	3Coil_Towed_Array
205	2	T12TR-12	556163.05	4482220.24	0	0	0	0	0	0	1	19.39	3Coil_Towed_Array
206	3	T12TR-12	556165.65	4482221.70	0	0	0	0	0	0	1	4.44	3Coil_Towed_Array
207	4	T12TR-12	556180.95	4482227.25	0	0	0	0	0	0	1	21.42	3Coil_Towed_Array
208	5	T12TR-12	556184.70	4482228.60	0	0	0	0	0	0	1	6.88	3Coil_Towed_Array
209	6	T12TR-12	556187.70	4482229.20	0	0	0	0	0	0	1	8.81	3Coil_Towed_Array
210	7	T12TR-12	556188.38	4482227.35	0	0	0	0	0	0	12	3.15	3Coil_Towed_Array
211	8	T12TR-12	556194.90	4482231.60	0	0	0	0	0	0	1	611.30	3Coil_Towed_Array
212	9	T12TR-12	556195.58	4482230.45	0	0	0	0	0	0	1	68.22	3Coil_Towed_Array
213	10	T12TR-12	556196.89	4482232.27	0	0	0	0	0	0	1	85.24	3Coil_Towed_Array
214	11	T12TR-12	556198.48	4482231.46	0	0	0	0	0	0	1	16.88	3Coil_Towed_Array
215	12	T12TR-12	556201.80	4482234.00	0	0	0	0	0	0	1	7.53	3Coil_Towed_Array
216	13	T12TR-12	556206.90	4482235.95	0	0	0	0	0	0	1	9.74	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
217	14	T12TR-12	556212.66	4482237.85	0	0	0	0	0	0	1	69.91	3Coil_Towed_Array
218	15	T12TR-12	556213.80	4482236.70	0	0	0	0	0	0	1	72.39	3Coil_Towed_Array
219	16	T12TR-12	556215.15	4482238.05	0	0	0	0	0	0	1	121.27	3Coil_Towed_Array
220	17	T12TR-12	556220.25	4482239.85	0	0	0	0	0	0	1	77.40	3Coil_Towed_Array
221	18	T12TR-12	556222.35	4482239.70	0	0	0	0	0	0	7	5.32	3Coil_Towed_Array
222	19	T12TR-12	556229.85	4482242.40	0	0	0	0	0	0	1	5.04	3Coil_Towed_Array
223	20	T12TR-12	556233.45	4482244.80	0	0	0	0	0	0	7	4.32	3Coil_Towed_Array
224	21	T12TR-12	556234.95	4482245.25	0	0	0	0	0	0	1	11.08	3Coil_Towed_Array
225	22	T12TR-12	556236.45	4482245.85	0	0	0	0	0	0	1	11.65	3Coil_Towed_Array
226	23	T12TR-12	556237.95	4482245.25	0	0	0	0	0	0	1	7.35	3Coil_Towed_Array
227	24	T12TR-12	556241.10	4482248.40	0	0	0	0	0	0	1	24.91	3Coil_Towed_Array
228	25	T12TR-12	556242.56	4482248.55	0	0	0	0	0	0	1	28.00	3Coil_Towed_Array
229	26	T12TR-12	556243.70	4482247.29	0	0	0	0	0	0	1	14.55	3Coil_Towed_Array
230	27	T12TR-12	556245.87	4482249.14	0	0	0	0	0	0	1	10.32	3Coil_Towed_Array
231	28	T12TR-12	556246.50	4482250.35	0	0	0	0	0	0	1	12.45	3Coil_Towed_Array
232	29	T12TR-12	556247.40	4482249.75	0	0	0	0	0	0	7	9.71	3Coil_Towed_Array
233	1	T12TR-13	556149.31	4482249.43	0	0	0	0	0	0	1	9.56	3Coil_Towed_Array
234	2	T12TR-13	556156.65	4482253.95	0	0	0	0	0	0	1	9.24	3Coil_Towed_Array
235	3	T12TR-13	556158.00	4482253.35	0	0	0	0	0	0	1	4.14	3Coil_Towed_Array
236	4	T12TR-13	556162.49	4482254.98	0	0	0	0	0	0	12	2.79	3Coil_Towed_Array
237	5	T12TR-13	556163.70	4482255.41	0	0	0	0	0	0	12	3.04	3Coil_Towed_Array
238	6	T12TR-13	556163.85	4482256.50	0	0	0	0	0	0	1	5.60	3Coil_Towed_Array
239	7	T12TR-13	556168.20	4482255.75	0	0	0	0	0	0	1	15.60	3Coil_Towed_Array
240	8	T12TR-13	556169.40	4482257.10	0	0	0	0	0	0	1	24.23	3Coil_Towed_Array
241	9	T12TR-13	556186.05	4482260.70	0	0	0	0	0	0	1	13.86	3Coil_Towed_Array
242	10	T12TR-13	556189.65	4482261.90	0	0	0	0	0	0	1	10.68	3Coil_Towed_Array
243	11	T12TR-13	556226.70	4482273.15	0	0	0	0	0	0	1	5.52	3Coil_Towed_Array
244	12	T12TR-13	556229.85	4482275.25	0	0	0	0	0	0	1	12.32	3Coil_Towed_Array
245	13	T12TR-13	556231.54	4482275.39	0	0	0	0	0	0	1	20.42	3Coil_Towed_Array
246	14	T12TR-13	556232.63	4482276.45	0	0	0	0	0	0	1	9.43	3Coil_Towed_Array
247	15	T12TR-13	556234.47	4482277.81	0	0	0	0	0	0	1	5.97	3Coil_Towed_Array
248	16	T12TR-13	556235.55	4482276.00	0	0	0	0	0	0	1	12.38	3Coil_Towed_Array
249	17	T12TR-13	556236.04	4482277.90	0	0	0	0	0	0	1	14.02	3Coil_Towed_Array
250	18	T12TR-13	556236.90	4482276.45	0	0	0	0	0	0	1	13.08	3Coil_Towed_Array
251	19	T12TR-13	556240.95	4482278.85	0	0	0	0	0	0	1	18.41	3Coil_Towed_Array
252	20	T12TR-13	556242.45	4482278.25	0	0	0	0	0	0	1	14.43	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
253	21	T12TR-13	556242.53	4482279.94	0	0	0	0	0	0	1	19.15	3Coil_Towed_Array
254	1	T12TR-14	556227.28	4482306.75	0	0	0	0	0	0	1	5.70	3Coil_Towed_Array
255	2	T12TR-14	556235.39	4482309.18	0	0	0	0	0	0	1	13.63	3Coil_Towed_Array
256	3	T12TR-14	556237.35	4482310.05	0	0	0	0	0	0	1	7.85	3Coil_Towed_Array
257	4	T12TR-14	556245.15	4482312.75	0	0	0	0	0	0	7	4.07	3Coil_Towed_Array
258	5	T12TR-14	556250.10	4482314.40	0	0	0	0	0	0	1	5.22	3Coil_Towed_Array
259	6	T12TR-14	556253.70	4482314.55	0	0	0	0	0	0	1	5.64	3Coil_Towed_Array
260	7	T12TR-14	556254.60	4482315.90	0	0	0	0	0	0	1	8.66	3Coil_Towed_Array
261	8	T12TR-14	556256.06	4482316.82	0	0	0	0	0	0	7	5.53	3Coil_Towed_Array
262	9	T12TR-14	556258.05	4482318.00	0	0	0	0	0	0	7	5.99	3Coil_Towed_Array
263	10	T12TR-14	556259.55	4482318.30	0	0	0	0	0	0	7	7.00	3Coil_Towed_Array
264	1	T12TR-15	556286.51	4482356.73	0	0	0	0	0	0	13	8.55	3Coil_Towed_Array
265	2	T12TR-15	556288.20	4482356.25	0	0	0	0	0	0	1	94.20	3Coil_Towed_Array
266	3	T12TR-15	556289.70	4482356.70	0	0	0	0	0	0	13	86.34	3Coil_Towed_Array
267	4	T12TR-15	556304.40	4482361.50	0	0	0	0	0	0	13	6.03	3Coil_Towed_Array
268	1	T12TR-16	556271.55	4482385.65	0	0	0	0	0	0	1	10.38	3Coil_Towed_Array
269	2	T12TR-16	556284.15	4482389.76	0	0	0	0	0	0	12	3.02	3Coil_Towed_Array
270	1	T12TR-17	556390.05	4482457.05	0	0	0	0	0	0	7	4.17	3Coil_Towed_Array
271	2	T12TR-17	556452.75	4482472.35	0	0	0	0	0	0	1	29.84	3Coil_Towed_Array
272	1	T12TR-18	556341.75	4482478.20	0	0	0	0	0	0	7	4.63	3Coil_Towed_Array
273	2	T12TR-18	556356.00	4482475.95	0	0	0	0	0	0	1	4.36	3Coil_Towed_Array
274	3	T12TR-18	556361.68	4482477.14	0	0	0	0	0	0	1	8.49	3Coil_Towed_Array
275	4	T12TR-18	556365.75	4482478.65	0	0	0	0	0	0	1	4.70	3Coil_Towed_Array
276	5	T12TR-18	556482.30	4482507.00	0	0	0	0	0	0	1	11.49	3Coil_Towed_Array
277	1	T12TR-19	555956.10	4482372.00	0	0	0	0	0	0	13	28.77	3Coil_Towed_Array
278	2	T12TR-19	555969.90	4482376.05	0	0	0	0	0	0	13	80.30	3Coil_Towed_Array
279	3	T12TR-19	556020.30	4482392.10	0	0	0	0	0	0	13	59.38	3Coil_Towed_Array
280	4	T12TR-19	556026.90	4482394.05	0	0	0	0	0	0	1	48.36	3Coil_Towed_Array
281	5	T12TR-19	556084.35	4482413.70	0	0	0	0	0	0	13	60.28	3Coil_Towed_Array
282	6	T12TR-19	556097.40	4482416.70	0	0	0	0	0	0	1	4.71	3Coil_Towed_Array
283	7	T12TR-19	556149.60	4482434.55	0	0	0	0	0	0	1	57.04	3Coil_Towed_Array
284	8	T12TR-19	556176.45	4482442.65	0	0	0	0	0	0	1	45.13	3Coil_Towed_Array
285	9	T12TR-19	556263.60	4482471.45	0	0	0	0	0	0	13	33.61	3Coil_Towed_Array
286	10	T12TR-19	556266.45	4482473.55	0	0	0	0	0	0	1	15.76	3Coil_Towed_Array
287	11	T12TR-19	556278.60	4482475.80	0	0	0	0	0	0	13	56.78	3Coil_Towed_Array
288	12	T12TR-19	556279.80	4482478.20	0	0	0	0	0	0	7	5.12	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
289	13	T12TR-19	556281.30	4482478.80	0	0	0	0	0	0	7	14.49	3Coil_Towed_Array
290	14	T12TR-19	556283.50	4482479.12	0	0	0	0	0	0	13	37.65	3Coil_Towed_Array
291	15	T12TR-19	556325.10	4482490.95	0	0	0	0	0	0	7	4.55	3Coil_Towed_Array
292	16	T12TR-19	556330.95	4482490.35	0	0	0	0	0	0	7	4.18	3Coil_Towed_Array
293	17	T12TR-19	556332.35	4482490.93	0	0	0	0	0	0	13	12.62	3Coil_Towed_Array
294	18	T12TR-19	556338.75	4482494.25	0	0	0	0	0	0	7	4.50	3Coil_Towed_Array
295	19	T12TR-19	556339.95	4482495.90	0	0	0	0	0	0	1	6.14	3Coil_Towed_Array
296	20	T12TR-19	556343.40	4482495.15	0	0	0	0	0	0	1	5.07	3Coil_Towed_Array
297	21	T12TR-19	556347.00	4482496.50	0	0	0	0	0	0	7	4.48	3Coil_Towed_Array
298	22	T12TR-19	556349.25	4482499.35	0	0	0	0	0	0	1	6.61	3Coil_Towed_Array
299	23	T12TR-19	556351.93	4482498.56	0	0	0	0	0	0	1	7.23	3Coil_Towed_Array
300	24	T12TR-19	556352.67	4482500.69	0	0	0	0	0	0	1	9.79	3Coil_Towed_Array
301	25	T12TR-19	556353.75	4482498.75	0	0	0	0	0	0	1	8.68	3Coil_Towed_Array
302	26	T12TR-19	556360.20	4482501.90	0	0	0	0	0	0	7	5.52	3Coil_Towed_Array
303	27	T12TR-19	556364.57	4482503.54	0	0	0	0	0	0	1	7.67	3Coil_Towed_Array
304	28	T12TR-19	556366.65	4482502.95	0	0	0	0	0	0	1	5.35	3Coil_Towed_Array
305	29	T12TR-19	556368.30	4482504.60	0	0	0	0	0	0	7	4.96	3Coil_Towed_Array
306	30	T12TR-19	556373.85	4482507.00	0	0	0	0	0	0	1	7.99	3Coil_Towed_Array
307	31	T12TR-19	556378.05	4482509.10	0	0	0	0	0	0	1	119.19	3Coil_Towed_Array
308	32	T12TR-19	556380.30	4482509.25	0	0	0	0	0	0	7	4.52	3Coil_Towed_Array
309	33	T12TR-19	556387.65	4482511.20	0	0	0	0	0	0	1	9.45	3Coil_Towed_Array
310	1	T12TR-20	556182.75	4482476.25	0	0	0	0	0	0	1	4.43	3Coil_Towed_Array
311	1	T12TR-21	555932.42	4482428.97	0	0	0	0	0	0	7	9.46	3Coil_Towed_Array
312	2	T12TR-21	556269.30	4482534.00	0	0	0	0	0	0	1	7.31	3Coil_Towed_Array
313	3	T12TR-21	556344.30	4482559.05	0	0	0	0	0	0	13	6.03	3Coil_Towed_Array
314	4	T12TR-21	556371.43	4482568.36	0	0	0	0	0	0	1	5.28	3Coil_Towed_Array
315	5	T12TR-21	556375.20	4482568.35	0	0	0	0	0	0	7	4.11	3Coil_Towed_Array
316	1	T12TR-22	556012.35	4482483.15	0	0	0	0	0	0	1	5.03	3Coil_Towed_Array
317	2	T12TR-22	556133.11	4482521.48	0	0	0	0	0	0	1	13.30	3Coil_Towed_Array
318	3	T12TR-22	556253.40	4482561.60	0	0	0	0	0	0	1	4.54	3Coil_Towed_Array
319	4	T12TR-22	556334.10	4482587.85	0	0	0	0	0	0	7	4.93	3Coil_Towed_Array
320	1	T12TR-23	556153.35	4482565.05	0	0	0	0	0	0	1	209.47	3Coil_Towed_Array
321	2	T12TR-23	556182.30	4482571.65	0	0	0	0	0	0	7	4.61	3Coil_Towed_Array
322	3	T12TR-23	556185.30	4482574.50	0	0	0	0	0	0	1	10.91	3Coil_Towed_Array
323	4	T12TR-23	556210.05	4482579.75	0	0	0	0	0	0	1	14.68	3Coil_Towed_Array
324	5	T12TR-23	556212.15	4482581.70	0	0	0	0	0	0	1	5.06	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
325	1	T30DSA5R-2	557248.68	4481642.32	0	0	0	0	0	0	7	8.17	3Coil_Towed_Array
326	1	T30DSA5R-4	557187.86	4481664.12	0	0	0	0	0	0	7	4.25	3Coil_Towed_Array
327	2	T30DSA5R-4	557363.72	4481799.92	0	0	0	0	0	0	7	4.30	3Coil_Towed_Array
328	3	T30DSA5R-4	557381.10	4481812.88	0	0	0	0	0	0	1	50.62	3Coil_Towed_Array
329	1	T30DSA5R-5	557241.88	4481746.12	0	0	0	0	0	0	11	28.97	3Coil_Towed_Array
330	2	T30DSA5R-5	557244.96	4481747.29	0	0	0	0	0	0	11	50.18	3Coil_Towed_Array
331	3	T30DSA5R-5	557247.89	4481748.25	0	0	0	0	0	0	11	33.86	3Coil_Towed_Array
332	4	T30DSA5R-5	557249.18	4481751.77	0	0	0	0	0	0	11	75.69	3Coil_Towed_Array
333	5	T30DSA5R-5	557252.21	4481752.79	0	0	0	0	0	0	11	81.43	3Coil_Towed_Array
334	6	T30DSA5R-5	557255.19	4481753.81	0	0	0	0	0	0	11	63.82	3Coil_Towed_Array
335	1	T30DSA5R-6	557160.33	4481721.99	0	0	0	0	0	0	1	122.18	3Coil_Towed_Array
336	2	T30DSA5R-6	557171.36	4481731.78	0	0	0	0	0	0	1	20.76	3Coil_Towed_Array
337	3	T30DSA5R-6	557202.73	4481756.39	0	0	0	0	0	0	7	20.30	3Coil_Towed_Array
338	4	T30DSA5R-6	557243.08	4481797.66	0	0	0	0	0	0	1	89.86	3Coil_Towed_Array
339	5	T30DSA5R-6	557372.34	4481882.18	0	0	0	0	0	0	1	88.20	3Coil_Towed_Array
340	6	T30DSA5R-6	557389.86	4481896.09	0	0	0	0	0	0	1	7.73	3Coil_Towed_Array
341	7	T30DSA5R-6	557392.14	4481899.41	0	0	0	0	0	0	1	6.81	3Coil_Towed_Array
342	1	T30DSA5R-7	557212.69	4481798.80	0	0	0	0	0	0	1	55.12	3Coil_Towed_Array
343	2	T30DSA5R-7	557217.86	4481802.48	0	0	0	0	0	0	1	7.53	3Coil_Towed_Array
344	3	T30DSA5R-7	557327.45	4481885.37	0	0	0	0	0	0	1	58.79	3Coil_Towed_Array
345	4	T30DSA5R-7	557327.84	4481887.05	0	0	0	0	0	0	1	29.54	3Coil_Towed_Array
346	5	T30DSA5R-7	557328.69	4481887.85	0	0	0	0	0	0	1	46.39	3Coil_Towed_Array
347	6	T30DSA5R-7	557329.86	4481888.92	0	0	0	0	0	0	1	61.70	3Coil_Towed_Array
348	7	T30DSA5R-7	557372.51	4481933.90	0	0	0	0	0	0	1	8.40	3Coil_Towed_Array
349	8	T30DSA5R-7	557378.61	4481941.60	0	0	0	0	0	0	1	5.83	3Coil_Towed_Array
350	9	T30DSA5R-7	557386.71	4481947.49	0	0	0	0	0	0	1	124.94	3Coil_Towed_Array
351	10	T30DSA5R-7	557388.01	4481948.91	0	0	0	0	0	0	1	27.33	3Coil_Towed_Array
352	11	T30DSA5R-7	557390.75	4481952.97	0	0	0	0	0	0	1	13.45	3Coil_Towed_Array
353	12	T30DSA5R-7	557391.98	4481952.65	0	0	0	0	0	0	1	5.51	3Coil_Towed_Array
354	1	TDSA1R-2	556545.55	4483837.53	0	0	0	0	0	0	7	5.33	3Coil_Towed_Array
355	2	TDSA1R-2	556601.89	4483797.90	0	0	0	0	0	0	13	5.80	3Coil_Towed_Array
356	3	TDSA1R-2	556959.42	4483545.59	0	0	0	0	0	0	1	7.70	3Coil_Towed_Array
357	4	TDSA1R-2	556960.64	4483544.88	0	0	0	0	0	0	13	5.53	3Coil_Towed_Array
358	5	TDSA1R-2	556990.22	4483524.33	0	0	0	0	0	0	1	13.61	3Coil_Towed_Array
359	6	TDSA1R-2	557009.24	4483509.58	0	0	0	0	0	0	1	10.36	3Coil_Towed_Array
360	7	TDSA1R-2	557010.42	4483509.21	0	0	0	0	0	0	1	10.40	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
361	8	TDSA1R-2	557017.39	4483506.24	0	0	0	0	0	0	1	8.73	3Coil_Towed_Array
362	9	TDSA1R-2	557019.18	4483503.70	0	0	0	0	0	0	1	5.40	3Coil_Towed_Array
363	10	TDSA1R-2	557068.17	4483468.24	0	0	0	0	0	0	1	31.73	3Coil_Towed_Array
364	11	TDSA1R-2	557080.54	4483459.72	0	0	0	0	0	0	1	4.84	3Coil_Towed_Array
365	12	TDSA1R-2	557102.09	4483444.21	0	0	0	0	0	0	3	5901.32	3Coil_Towed_Array
366	13	TDSA1R-2	557106.51	4483441.78	0	0	0	0	0	0	7	8.04	3Coil_Towed_Array
367	14	TDSA1R-2	557104.45	4483440.98	0	0	0	0	0	0	3	8.50	3Coil_Towed_Array
368	15	TDSA1R-2	557108.97	4483437.87	0	0	0	0	0	0	2	12469.29	3Coil_Towed_Array
369	16	TDSA1R-2	557110.53	4483437.65	0	0	0	0	0	0	2	12103.55	3Coil_Towed_Array
370	17	TDSA1R-2	557109.87	4483435.35	0	0	0	0	0	0	2	10684.20	3Coil_Towed_Array
371	18	TDSA1R-2	557113.14	4483431.03	0	0	0	0	0	0	3	844.57	3Coil_Towed_Array
372	19	TDSA1R-2	557128.51	4483427.62	0	0	0	0	0	0	3	689.16	3Coil_Towed_Array
373	20	TDSA1R-2	557113.47	4483427.38	0	0	0	0	0	0	3	70.76	3Coil_Towed_Array
374	21	TDSA1R-2	557115.96	4483427.26	0	0	0	0	0	0	3	620.79	3Coil_Towed_Array
375	22	TDSA1R-2	557131.55	4483426.70	0	0	0	0	0	0	7	20.92	3Coil_Towed_Array
376	23	TDSA1R-2	557125.08	4483426.08	0	0	0	0	0	0	3	763.20	3Coil_Towed_Array
377	24	TDSA1R-2	557116.97	4483425.85	0	0	0	0	0	0	2	9705.27	3Coil_Towed_Array
378	25	TDSA1R-2	557133.51	4483425.72	0	0	0	0	0	0	7	7.53	3Coil_Towed_Array
379	26	TDSA1R-2	557118.04	4483424.76	0	0	0	0	0	0	2	8694.09	3Coil_Towed_Array
380	27	TDSA1R-2	557131.97	4483424.44	0	0	0	0	0	0	1	42.07	3Coil_Towed_Array
381	28	TDSA1R-2	557115.74	4483424.20	0	0	0	0	0	0	2	10024.94	3Coil_Towed_Array
382	29	TDSA1R-2	557116.89	4483423.13	0	0	0	0	0	0	2	11580.66	3Coil_Towed_Array
383	30	TDSA1R-2	557134.88	4483422.69	0	0	0	0	0	0	1	138.97	3Coil_Towed_Array
384	1	TDSA1R-3	556698.17	4483818.17	0	0	0	0	0	0	1	75.81	3Coil_Towed_Array
385	2	TDSA1R-3	556831.43	4483727.14	0	0	0	0	0	0	12	3.80	3Coil_Towed_Array
386	3	TDSA1R-3	556906.91	4483675.90	0	0	0	0	0	0	1	6.74	3Coil_Towed_Array
387	4	TDSA1R-3	556933.71	4483658.74	0	0	0	0	0	0	12	2.15	3Coil_Towed_Array
388	5	TDSA1R-3	556950.86	4483647.25	0	0	0	0	0	0	1	7.63	3Coil_Towed_Array
389	6	TDSA1R-3	556961.19	4483638.14	0	0	0	0	0	0	1	9.20	3Coil_Towed_Array
390	7	TDSA1R-3	556962.55	4483637.12	0	0	0	0	0	0	1	14.11	3Coil_Towed_Array
391	8	TDSA1R-3	556996.35	4483614.00	0	0	0	0	0	0	12	2.99	3Coil_Towed_Array
392	9	TDSA1R-3	557022.33	4483593.61	0	0	0	0	0	0	1	4.75	3Coil_Towed_Array
393	10	TDSA1R-3	557024.89	4483590.04	0	0	0	0	0	0	1	6.21	3Coil_Towed_Array
394	11	TDSA1R-3	557038.76	4483578.64	0	0	0	0	0	0	1	11.08	3Coil_Towed_Array
395	12	TDSA1R-3	557061.92	4483560.74	0	0	0	0	0	0	1	5.74	3Coil_Towed_Array
396	13	TDSA1R-3	557088.69	4483525.75	0	0	0	0	0	0	1	7.61	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
397	14	TDSA1R-3	557089.32	4483523.31	0	0	0	0	0	0	13	8.47	3Coil_Towed_Array
398	15	TDSA1R-3	557091.61	4483521.29	0	0	0	0	0	0	1	32.95	3Coil_Towed_Array
399	16	TDSA1R-3	557095.70	4483505.40	0	0	0	0	0	0	7	4.35	3Coil_Towed_Array
400	17	TDSA1R-3	557098.13	4483497.55	0	0	0	0	0	0	1	15.64	3Coil_Towed_Array
401	18	TDSA1R-3	557100.89	4483489.60	0	0	0	0	0	0	12	2.98	3Coil_Towed_Array
402	19	TDSA1R-3	557101.37	4483479.51	0	0	0	0	0	0	12	2.24	3Coil_Towed_Array
403	1	TDSA1R-4	556642.89	4483986.41	0	0	0	0	0	0	7	4.38	3Coil_Towed_Array
404	2	TDSA1R-4	556657.36	4483977.48	0	0	0	0	0	0	7	7.06	3Coil_Towed_Array
405	3	TDSA1R-4	556800.20	4483870.49	0	0	0	0	0	0	13	11.81	3Coil_Towed_Array
406	4	TDSA1R-4	556800.80	4483869.34	0	0	0	0	0	0	13	6.88	3Coil_Towed_Array
407	5	TDSA1R-4	556964.01	4483749.39	0	0	0	0	0	0	12	3.60	3Coil_Towed_Array
408	6	TDSA1R-4	556973.42	4483745.45	0	0	0	0	0	0	7	5.61	3Coil_Towed_Array
409	7	TDSA1R-4	557074.44	4483670.47	0	0	0	0	0	0	1	21.42	3Coil_Towed_Array
410	8	TDSA1R-4	557078.09	4483667.88	0	0	0	0	0	0	7	5.61	3Coil_Towed_Array
411	9	TDSA1R-4	557089.06	4483658.52	0	0	0	0	0	0	1	169.77	3Coil_Towed_Array
412	10	TDSA1R-4	557090.52	4483657.50	0	0	0	0	0	0	1	181.51	3Coil_Towed_Array
413	11	TDSA1R-4	557108.87	4483646.95	0	0	0	0	0	0	1	41.31	3Coil_Towed_Array
414	12	TDSA1R-4	557111.64	4483643.12	0	0	0	0	0	0	3	289.02	3Coil_Towed_Array
415	13	TDSA1R-4	557113.56	4483642.40	0	0	0	0	0	0	3	273.12	3Coil_Towed_Array
416	14	TDSA1R-4	557112.11	4483641.01	0	0	0	0	0	0	3	457.72	3Coil_Towed_Array
417	15	TDSA1R-4	557116.14	4483639.41	0	0	0	0	0	0	13	160.43	3Coil_Towed_Array
418	16	TDSA1R-4	557114.62	4483638.11	0	0	0	0	0	0	3	814.38	3Coil_Towed_Array
419	17	TDSA1R-4	557117.71	4483636.02	0	0	0	0	0	0	3	1431.75	3Coil_Towed_Array
420	18	TDSA1R-4	557120.67	4483634.55	0	0	0	0	0	0	13	38.40	3Coil_Towed_Array
421	19	TDSA1R-4	557121.86	4483632.28	0	0	0	0	0	0	13	31.00	3Coil_Towed_Array
422	20	TDSA1R-4	557120.72	4483631.78	0	0	0	0	0	0	13	29.67	3Coil_Towed_Array
423	21	TDSA1R-4	557123.52	4483629.23	0	0	0	0	0	0	13	751.25	3Coil_Towed_Array
424	22	TDSA1R-4	557126.85	4483628.63	0	0	0	0	0	0	3	828.31	3Coil_Towed_Array
425	23	TDSA1R-4	557124.94	4483627.73	0	0	0	0	0	0	13	66.94	3Coil_Towed_Array
426	24	TDSA1R-4	557128.59	4483625.65	0	0	0	0	0	0	3	98.26	3Coil_Towed_Array
427	25	TDSA1R-4	557127.30	4483625.46	0	0	0	0	0	0	13	33.37	3Coil_Towed_Array
428	26	TDSA1R-4	557130.57	4483623.81	0	0	0	0	0	0	13	882.17	3Coil_Towed_Array
429	27	TDSA1R-4	557133.66	4483622.33	0	0	0	0	0	0	3	69.34	3Coil_Towed_Array
430	28	TDSA1R-4	557131.74	4483621.36	0	0	0	0	0	0	13	155.55	3Coil_Towed_Array
431	29	TDSA1R-4	557134.99	4483619.80	0	0	0	0	0	0	3	252.73	3Coil_Towed_Array
432	30	TDSA1R-4	557136.46	4483619.67	0	0	0	0	0	0	13	252.20	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
433	31	TDSA1R-4	557134.59	4483618.75	0	0	0	0	0	0	3	77.16	3Coil_Towed_Array
434	32	TDSA1R-4	557136.97	4483617.85	0	0	0	0	0	0	3	477.96	3Coil_Towed_Array
435	33	TDSA1R-4	557139.24	4483617.10	0	0	0	0	0	0	3	377.55	3Coil_Towed_Array
436	34	TDSA1R-4	557136.99	4483616.37	0	0	0	0	0	0	3	111.50	3Coil_Towed_Array
437	35	TDSA1R-4	557138.07	4483615.47	0	0	0	0	0	0	3	101.64	3Coil_Towed_Array
438	36	TDSA1R-4	557141.49	4483615.38	0	0	0	0	0	0	13	298.93	3Coil_Towed_Array
439	37	TDSA1R-4	557144.20	4483613.71	0	0	0	0	0	0	3	733.98	3Coil_Towed_Array
440	38	TDSA1R-4	557141.07	4483613.35	0	0	0	0	0	0	13	252.57	3Coil_Towed_Array
441	39	TDSA1R-4	557145.91	4483612.73	0	0	0	0	0	0	3	662.41	3Coil_Towed_Array
442	40	TDSA1R-4	557143.95	4483612.60	0	0	0	0	0	0	3	93.54	3Coil_Towed_Array
443	41	TDSA1R-4	557142.32	4483612.53	0	0	0	0	0	0	3	21.16	3Coil_Towed_Array
444	42	TDSA1R-4	557147.12	4483611.98	0	0	0	0	0	0	13	340.39	3Coil_Towed_Array
445	43	TDSA1R-4	557144.51	4483611.22	0	0	0	0	0	0	13	19.63	3Coil_Towed_Array
446	44	TDSA1R-4	557148.61	4483610.94	0	0	0	0	0	0	3	385.22	3Coil_Towed_Array
447	45	TDSA1R-4	557147.48	4483609.27	0	0	0	0	0	0	13	10.19	3Coil_Towed_Array
448	46	TDSA1R-4	557148.72	4483608.40	0	0	0	0	0	0	3	49.36	3Coil_Towed_Array
449	47	TDSA1R-4	557151.39	4483608.05	0	0	0	0	0	0	1	4.71	3Coil_Towed_Array
450	48	TDSA1R-4	557152.48	4483605.75	0	0	0	0	0	0	13	5.80	3Coil_Towed_Array
451	49	TDSA1R-4	557164.70	4483597.36	0	0	0	0	0	0	1	5.75	3Coil_Towed_Array
452	50	TDSA1R-4	557180.44	4483585.96	0	0	0	0	0	0	1	10.22	3Coil_Towed_Array
453	51	TDSA1R-4	557202.40	4483570.40	0	0	0	0	0	0	1	195.66	3Coil_Towed_Array
454	52	TDSA1R-4	557200.78	4483570.34	0	0	0	0	0	0	13	54.20	3Coil_Towed_Array
455	53	TDSA1R-4	557210.47	4483569.60	0	0	0	0	0	0	2	18.49	3Coil_Towed_Array
456	54	TDSA1R-4	557207.01	4483569.39	0	0	0	0	0	0	7	6.94	3Coil_Towed_Array
457	55	TDSA1R-4	557207.00	4483568.19	0	0	0	0	0	0	7	8.83	3Coil_Towed_Array
458	56	TDSA1R-4	557209.65	4483568.11	0	0	0	0	0	0	2	46.61	3Coil_Towed_Array
459	57	TDSA1R-4	557202.43	4483568.08	0	0	0	0	0	0	7	4.33	3Coil_Towed_Array
460	58	TDSA1R-4	557205.49	4483568.07	0	0	0	0	0	0	7	6.47	3Coil_Towed_Array
461	59	TDSA1R-4	557207.91	4483567.55	0	0	0	0	0	0	7	6.87	3Coil_Towed_Array
462	1	TDSA1R-5	556578.37	4484126.45	0	0	0	0	0	0	7	4.81	3Coil_Towed_Array
463	2	TDSA1R-5	556580.52	4484125.92	0	0	0	0	0	0	1	21.19	3Coil_Towed_Array
464	3	TDSA1R-5	556581.51	4484125.18	0	0	0	0	0	0	1	4.64	3Coil_Towed_Array
465	4	TDSA1R-5	556582.49	4484124.28	0	0	0	0	0	0	1	4.16	3Coil_Towed_Array
466	5	TDSA1R-5	556585.62	4484121.38	0	0	0	0	0	0	1	45.41	3Coil_Towed_Array
467	6	TDSA1R-5	556586.96	4484120.21	0	0	0	0	0	0	7	11.55	3Coil_Towed_Array
468	7	TDSA1R-5	556592.18	4484114.33	0	0	0	0	0	0	7	4.68	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
469	8	TDSA1R-5	556593.62	4484113.12	0	0	0	0	0	0	1	5.10	3Coil_Towed_Array
470	9	TDSA1R-5	556606.65	4484103.20	0	0	0	0	0	0	1	19.82	3Coil_Towed_Array
471	10	TDSA1R-5	556656.41	4484065.14	0	0	0	0	0	0	1	34.01	3Coil_Towed_Array
472	11	TDSA1R-5	556657.91	4484064.43	0	0	0	0	0	0	1	8.86	3Coil_Towed_Array
473	12	TDSA1R-5	556661.41	4484064.90	0	0	0	0	0	0	1	105.46	3Coil_Towed_Array
474	13	TDSA1R-5	556662.94	4484063.04	0	0	0	0	0	0	13	48.22	3Coil_Towed_Array
475	14	TDSA1R-5	556664.46	4484063.03	0	0	0	0	0	0	13	22.25	3Coil_Towed_Array
476	15	TDSA1R-5	556679.37	4484050.06	0	0	0	0	0	0	1	6.31	3Coil_Towed_Array
477	16	TDSA1R-5	556706.95	4484026.33	0	0	0	0	0	0	1	111.49	3Coil_Towed_Array
478	17	TDSA1R-5	556714.89	4484019.50	0	0	0	0	0	0	12	3.84	3Coil_Towed_Array
479	18	TDSA1R-5	556721.76	4484016.42	0	0	0	0	0	0	1	52.55	3Coil_Towed_Array
480	19	TDSA1R-5	556814.10	4483947.54	0	0	0	0	0	0	1	56.37	3Coil_Towed_Array
481	20	TDSA1R-5	556913.78	4483873.64	0	0	0	0	0	0	1	36.95	3Coil_Towed_Array
482	21	TDSA1R-5	557026.60	4483793.75	0	0	0	0	0	0	1	28.19	3Coil_Towed_Array
483	22	TDSA1R-5	557035.58	4483788.71	0	0	0	0	0	0	7	7.61	3Coil_Towed_Array
484	23	TDSA1R-5	557058.41	4483768.11	0	0	0	0	0	0	3	33.72	3Coil_Towed_Array
485	24	TDSA1R-5	557058.45	4483769.44	0	0	0	0	0	0	3	411.39	3Coil_Towed_Array
486	25	TDSA1R-5	557060.45	4483768.40	0	0	0	0	0	0	3	1591.91	3Coil_Towed_Array
487	26	TDSA1R-5	557060.95	4483765.88	0	0	0	0	0	0	3	211.08	3Coil_Towed_Array
488	27	TDSA1R-5	557062.79	4483765.55	0	0	0	0	0	0	3	1326.06	3Coil_Towed_Array
489	28	TDSA1R-5	557062.94	4483766.74	0	0	0	0	0	0	3	1077.05	3Coil_Towed_Array
490	29	TDSA1R-5	557063.27	4483763.74	0	0	0	0	0	0	3	580.73	3Coil_Towed_Array
491	30	TDSA1R-5	557064.42	4483765.42	0	0	0	0	0	0	3	560.37	3Coil_Towed_Array
492	31	TDSA1R-5	557065.25	4483764.05	0	0	0	0	0	0	13	1017.50	3Coil_Towed_Array
493	32	TDSA1R-5	557065.39	4483761.83	0	0	0	0	0	0	3	427.41	3Coil_Towed_Array
494	33	TDSA1R-5	557067.17	4483761.41	0	0	0	0	0	0	3	1414.32	3Coil_Towed_Array
495	34	TDSA1R-5	557245.02	4483623.62	0	0	0	0	0	0	13	325.21	3Coil_Towed_Array
496	35	TDSA1R-5	557245.11	4483621.91	0	0	0	0	0	0	3	1016.95	3Coil_Towed_Array
497	36	TDSA1R-5	557247.32	4483622.41	0	0	0	0	0	0	3	99.19	3Coil_Towed_Array
498	37	TDSA1R-5	557251.01	4483623.42	0	0	0	0	0	0	1	41.17	3Coil_Towed_Array
499	38	TDSA1R-5	557260.27	4483620.60	0	0	0	0	0	0	7	5.40	3Coil_Towed_Array
500	39	TDSA1R-5	557275.42	4483606.90	0	0	0	0	0	0	1	15.75	3Coil_Towed_Array
501	40	TDSA1R-5	557277.68	4483607.44	0	0	0	0	0	0	1	172.77	3Coil_Towed_Array
502	41	TDSA1R-5	557279.14	4483604.19	0	0	0	0	0	0	1	61.04	3Coil_Towed_Array
503	1	TDSA1R-6	556752.19	4484083.05	0	0	0	0	0	0	13	4.73	3Coil_Towed_Array
504	2	TDSA1R-6	556925.18	4483954.83	0	0	0	0	0	0	7	4.45	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
505	3	TDSA1R-6	557081.16	4483846.63	0	0	0	0	0	0	7	5.90	3Coil_Towed_Array
506	4	TDSA1R-6	557141.18	4483802.38	0	0	0	0	0	0	1	28.59	3Coil_Towed_Array
507	5	TDSA1R-6	557167.80	4483786.35	0	0	0	0	0	0	7	4.54	3Coil_Towed_Array
508	1	TDSA1R-4A	557222.60	4483562.60	0	0	0	0	0	0	3	600.78	3Coil_Towed_Array
509	2	TDSA1R-4A	557224.05	4483559.21	0	0	0	0	0	0	3	63.89	3Coil_Towed_Array
510	3	TDSA1R-4A	557225.91	4483559.46	0	0	0	0	0	0	3	52.40	3Coil_Towed_Array
511	4	TDSA1R-4A	557226.84	4483557.52	0	0	0	0	0	0	3	40.12	3Coil_Towed_Array
512	5	TDSA1R-4A	557227.78	4483558.68	0	0	0	0	0	0	3	48.43	3Coil_Towed_Array
513	6	TDSA1R-4A	557228.91	4483555.21	0	0	0	0	0	0	1	17.40	3Coil_Towed_Array
514	7	TDSA1R-4A	557230.84	4483556.25	0	0	0	0	0	0	1	210.45	3Coil_Towed_Array
515	8	TDSA1R-4A	557230.92	4483553.82	0	0	0	0	0	0	7	13.53	3Coil_Towed_Array
516	9	TDSA1R-4A	557232.98	4483554.18	0	0	0	0	0	0	1	35.96	3Coil_Towed_Array
517	10	TDSA1R-4A	557234.63	4483551.91	0	0	0	0	0	0	1	40.11	3Coil_Towed_Array
518	11	TDSA1R-4A	557234.94	4483553.27	0	0	0	0	0	0	1	40.60	3Coil_Towed_Array
519	12	TDSA1R-4A	557235.77	4483552.48	0	0	0	0	0	0	1	57.91	3Coil_Towed_Array
520	13	TDSA1R-4A	557236.54	4483551.08	0	0	0	0	0	0	1	59.25	3Coil_Towed_Array
521	14	TDSA1R-4A	557237.12	4483553.00	0	0	0	0	0	0	13	49.79	3Coil_Towed_Array
522	1	TDSA1R-6A	557235.42	4483727.03	0	0	0	0	0	0	3	107.80	3Coil_Towed_Array
523	2	TDSA1R-6A	557240.11	4483725.60	0	0	0	0	0	0	1	280.38	3Coil_Towed_Array
524	3	TDSA1R-6A	557243.91	4483723.81	0	0	0	0	0	0	1	584.67	3Coil_Towed_Array
525	4	TDSA1R-6A	557244.39	4483725.25	0	0	0	0	0	0	13	156.63	3Coil_Towed_Array
526	5	TDSA1R-6A	557246.25	4483722.70	0	0	0	0	0	0	1	122.77	3Coil_Towed_Array
527	6	TDSA1R-6A	557248.64	4483721.57	0	0	0	0	0	0	7	13.40	3Coil_Towed_Array
528	7	TDSA1R-6A	557249.46	4483723.39	0	0	0	0	0	0	7	10.74	3Coil_Towed_Array
529	8	TDSA1R-6A	557251.07	4483722.56	0	0	0	0	0	0	7	8.42	3Coil_Towed_Array
530	9	TDSA1R-6A	557254.25	4483720.70	0	0	0	0	0	0	7	7.20	3Coil_Towed_Array
531	10	TDSA1R-6A	557254.75	4483718.40	0	0	0	0	0	0	7	6.22	3Coil_Towed_Array
532	11	TDSA1R-6A	557255.66	4483719.86	0	0	0	0	0	0	7	5.93	3Coil_Towed_Array
533	12	TDSA1R-6A	557260.88	4483714.07	0	0	0	0	0	0	7	5.39	3Coil_Towed_Array
534	13	TDSA1R-6A	557262.00	4483715.73	0	0	0	0	0	0	7	5.57	3Coil_Towed_Array
535	14	TDSA1R-6A	557266.90	4483711.68	0	0	0	0	0	0	7	4.16	3Coil_Towed_Array
536	15	TDSA1R-6A	557283.83	4483700.95	0	0	0	0	0	0	1	12.24	3Coil_Towed_Array
537	16	TDSA1R-6A	557287.93	4483696.94	0	0	0	0	0	0	1	564.92	3Coil_Towed_Array
538	17	TDSA1R-6A	557290.57	4483696.31	0	0	0	0	0	0	1	11.02	3Coil_Towed_Array
539	18	TDSA1R-6A	557297.13	4483690.71	0	0	0	0	0	0	1	729.82	3Coil_Towed_Array
540	1	TDSA1R-51	557116.72	4483790.50	0	0	0	0	0	0	1	13.53	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
541	2	TDSA1R-51	557120.00	4483788.12	0	0	0	0	0	0	1	5.96	3Coil_Towed_Array
542	3	TDSA1R-51	557134.56	4483776.87	0	0	0	0	0	0	1	26.04	3Coil_Towed_Array
543	4	TDSA1R-51	557139.81	4483774.07	0	0	0	0	0	0	7	4.36	3Coil_Towed_Array
544	5	TDSA1R-51	557143.08	4483770.25	0	0	0	0	0	0	7	5.68	3Coil_Towed_Array
545	6	TDSA1R-51	557143.97	4483765.58	0	0	0	0	0	0	13	10.53	3Coil_Towed_Array
546	7	TDSA1R-51	557144.56	4483764.44	0	0	0	0	0	0	13	31.65	3Coil_Towed_Array
547	8	TDSA1R-51	557146.37	4483762.48	0	0	0	0	0	0	7	5.45	3Coil_Towed_Array
548	9	TDSA1R-51	557147.28	4483760.69	0	0	0	0	0	0	13	46.21	3Coil_Towed_Array
549	10	TDSA1R-51	557148.32	4483761.93	0	0	0	0	0	0	1	25.79	3Coil_Towed_Array
550	11	TDSA1R-51	557149.48	4483760.73	0	0	0	0	0	0	1	78.54	3Coil_Towed_Array
551	12	TDSA1R-51	557150.56	4483757.13	0	0	0	0	0	0	1	34.39	3Coil_Towed_Array
552	13	TDSA1R-51	557152.59	4483758.09	0	0	0	0	0	0	1	7.00	3Coil_Towed_Array
553	14	TDSA1R-51	557154.56	4483753.75	0	0	0	0	0	0	13	8.46	3Coil_Towed_Array
554	15	TDSA1R-51	557156.22	4483753.40	0	0	0	0	0	0	1	12.26	3Coil_Towed_Array
555	16	TDSA1R-51	557156.38	4483754.73	0	0	0	0	0	0	1	11.25	3Coil_Towed_Array
556	17	TDSA1R-51	557158.70	4483751.81	0	0	0	0	0	0	1	8.63	3Coil_Towed_Array
557	18	TDSA1R-51	557160.23	4483748.43	0	0	0	0	0	0	1	84.62	3Coil_Towed_Array
558	19	TDSA1R-51	557163.66	4483745.17	0	0	0	0	0	0	1	21.12	3Coil_Towed_Array
559	20	TDSA1R-51	557164.19	4483746.65	0	0	0	0	0	0	1	214.24	3Coil_Towed_Array
560	21	TDSA1R-51	557165.60	4483743.34	0	0	0	0	0	0	1	37.23	3Coil_Towed_Array
561	22	TDSA1R-51	557166.92	4483743.51	0	0	0	0	0	0	1	171.50	3Coil_Towed_Array
562	23	TDSA1R-51	557167.92	4483741.42	0	0	0	0	0	0	1	17.16	3Coil_Towed_Array
563	24	TDSA1R-51	557171.25	4483738.26	0	0	0	0	0	0	7	4.54	3Coil_Towed_Array
564	25	TDSA1R-51	557171.73	4483740.48	0	0	0	0	0	0	1	57.42	3Coil_Towed_Array
565	26	TDSA1R-51	557172.94	4483738.11	0	0	0	0	0	0	13	4.50	3Coil_Towed_Array
566	27	TDSA1R-51	557176.72	4483734.77	0	0	0	0	0	0	13	12.12	3Coil_Towed_Array
567	1	TDSA2R-8	556440.49	4483117.21	0	0	0	0	0	0	7	4.48	3Coil_Towed_Array
568	1	TDSA2R-9	556526.40	4483324.20	0	0	0	0	0	0	1	5.05	3Coil_Towed_Array
569	2	TDSA2R-9	556527.15	4483326.00	0	0	0	0	0	0	1	6.11	3Coil_Towed_Array
570	1	TDSA2R-1	556716.75	4482564.15	0	0	0	0	0	0	1	77.32	3Coil_Towed_Array
571	2	TDSA2R-1	556718.10	4482565.95	0	0	0	0	0	0	1	12.31	3Coil_Towed_Array
572	3	TDSA2R-1	556718.25	4482568.20	0	0	0	0	0	0	7	5.60	3Coil_Towed_Array
573	4	TDSA2R-1	556725.30	4482574.20	0	0	0	0	0	0	7	4.95	3Coil_Towed_Array
574	5	TDSA2R-1	556725.30	4482577.50	0	0	0	0	0	0	7	4.28	3Coil_Towed_Array
575	6	TDSA2R-1	556726.05	4482578.55	0	0	0	0	0	0	7	6.97	3Coil_Towed_Array
576	7	TDSA2R-1	556728.00	4482579.90	0	0	0	0	0	0	1	26.78	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
577	8	TDSA2R-1	556736.85	4482597.15	0	0	0	0	0	0	7	5.44	3Coil_Towed_Array
578	9	TDSA2R-1	556740.00	4482601.50	0	0	0	0	0	0	13	14.85	3Coil_Towed_Array
579	10	TDSA2R-1	556742.55	4482608.40	0	0	0	0	0	0	7	6.45	3Coil_Towed_Array
580	11	TDSA2R-1	556747.65	4482616.50	0	0	0	0	0	0	7	5.80	3Coil_Towed_Array
581	12	TDSA2R-1	556754.70	4482627.75	0	0	0	0	0	0	1	14.68	3Coil_Towed_Array
582	13	TDSA2R-1	556756.66	4482627.66	0	0	0	0	0	0	1	15.93	3Coil_Towed_Array
583	14	TDSA2R-1	556758.30	4482628.80	0	0	0	0	0	0	1	43.17	3Coil_Towed_Array
584	15	TDSA2R-1	556761.60	4482635.25	0	0	0	0	0	0	7	8.35	3Coil_Towed_Array
585	16	TDSA2R-1	556762.80	4482638.40	0	0	0	0	0	0	7	6.52	3Coil_Towed_Array
586	17	TDSA2R-1	556761.45	4482640.35	0	0	0	0	0	0	1	23.40	3Coil_Towed_Array
587	18	TDSA2R-1	556762.95	4482654.15	0	0	0	0	0	0	13	199.97	3Coil_Towed_Array
588	19	TDSA2R-1	556764.75	4482659.25	0	0	0	0	0	0	1	188.35	3Coil_Towed_Array
589	20	TDSA2R-1	556769.85	4482663.90	0	0	0	0	0	0	1	53.72	3Coil_Towed_Array
590	21	TDSA2R-1	556771.38	4482666.34	0	0	0	0	0	0	7	7.80	3Coil_Towed_Array
591	22	TDSA2R-1	556779.75	4482679.20	0	0	0	0	0	0	7	4.69	3Coil_Towed_Array
592	23	TDSA2R-1	556782.05	4482685.91	0	0	0	0	0	0	1	661.43	3Coil_Towed_Array
593	24	TDSA2R-1	556784.40	4482689.10	0	0	0	0	0	0	1	96.55	3Coil_Towed_Array
594	25	TDSA2R-1	556786.95	4482689.85	0	0	0	0	0	0	7	15.75	3Coil_Towed_Array
595	26	TDSA2R-1	556787.25	4482687.90	0	0	0	0	0	0	1	30.85	3Coil_Towed_Array
596	27	TDSA2R-1	556790.55	4482688.50	0	0	0	0	0	0	1	57.49	3Coil_Towed_Array
597	28	TDSA2R-1	556792.25	4482689.37	0	0	0	0	0	0	1	68.10	3Coil_Towed_Array
598	29	TDSA2R-1	556794.12	4482690.71	0	0	0	0	0	0	1	624.54	3Coil_Towed_Array
599	30	TDSA2R-1	556797.43	4482692.25	0	0	0	0	0	0	1	80.54	3Coil_Towed_Array
600	31	TDSA2R-1	556801.67	4482696.52	0	0	0	0	0	0	7	6.26	3Coil_Towed_Array
601	32	TDSA2R-1	556802.55	4482699.00	0	0	0	0	0	0	7	5.54	3Coil_Towed_Array
602	33	TDSA2R-1	556804.05	4482701.40	0	0	0	0	0	0	1	110.95	3Coil_Towed_Array
603	34	TDSA2R-1	556806.24	4482703.30	0	0	0	0	0	0	7	4.71	3Coil_Towed_Array
604	35	TDSA2R-1	556807.20	4482704.85	0	0	0	0	0	0	7	5.18	3Coil_Towed_Array
605	36	TDSA2R-1	556810.05	4482709.80	0	0	0	0	0	0	7	4.79	3Coil_Towed_Array
606	37	TDSA2R-1	556810.65	4482713.25	0	0	0	0	0	0	7	4.48	3Coil_Towed_Array
607	38	TDSA2R-1	556812.60	4482714.60	0	0	0	0	0	0	1	25.68	3Coil_Towed_Array
608	39	TDSA2R-1	556813.20	4482718.20	0	0	0	0	0	0	1	17.52	3Coil_Towed_Array
609	40	TDSA2R-1	556814.17	4482719.98	0	0	0	0	0	0	13	15.79	3Coil_Towed_Array
610	41	TDSA2R-1	556814.25	4482723.30	0	0	0	0	0	0	1	15.08	3Coil_Towed_Array
611	42	TDSA2R-1	556816.51	4482727.44	0	0	0	0	0	0	7	4.27	3Coil_Towed_Array
612	43	TDSA2R-1	556817.92	4482727.19	0	0	0	0	0	0	7	5.48	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
613	44	TDSA2R-1	556819.50	4482732.00	0	0	0	0	0	0	7	4.86	3Coil_Towed_Array
614	45	TDSA2R-1	556821.90	4482732.15	0	0	0	0	0	0	1	42.99	3Coil_Towed_Array
615	46	TDSA2R-1	556820.55	4482734.10	0	0	0	0	0	0	7	4.73	3Coil_Towed_Array
616	47	TDSA2R-1	556824.15	4482738.60	0	0	0	0	0	0	7	14.53	3Coil_Towed_Array
617	48	TDSA2R-1	556825.65	4482739.65	0	0	0	0	0	0	13	158.50	3Coil_Towed_Array
618	49	TDSA2R-1	556826.85	4482742.35	0	0	0	0	0	0	13	71.13	3Coil_Towed_Array
619	50	TDSA2R-1	556828.50	4482745.80	0	0	0	0	0	0	13	13.59	3Coil_Towed_Array
620	51	TDSA2R-1	556826.55	4482746.70	0	0	0	0	0	0	7	9.19	3Coil_Towed_Array
621	52	TDSA2R-1	556828.95	4482748.50	0	0	0	0	0	0	13	301.40	3Coil_Towed_Array
622	53	TDSA2R-1	556829.81	4482750.41	0	0	0	0	0	0	1	120.66	3Coil_Towed_Array
623	54	TDSA2R-1	556830.75	4482751.05	0	0	0	0	0	0	1	227.36	3Coil_Towed_Array
624	55	TDSA2R-1	556832.70	4482751.95	0	0	0	0	0	0	13	89.11	3Coil_Towed_Array
625	56	TDSA2R-1	556835.03	4482754.69	0	0	0	0	0	0	1	19.68	3Coil_Towed_Array
626	57	TDSA2R-1	556835.70	4482755.85	0	0	0	0	0	0	1	20.15	3Coil_Towed_Array
627	58	TDSA2R-1	556835.70	4482757.65	0	0	0	0	0	0	13	64.82	3Coil_Towed_Array
628	59	TDSA2R-1	556837.05	4482759.30	0	0	0	0	0	0	1	15.99	3Coil_Towed_Array
629	60	TDSA2R-1	556837.65	4482760.05	0	0	0	0	0	0	7	9.13	3Coil_Towed_Array
630	61	TDSA2R-1	556838.24	4482760.90	0	0	0	0	0	0	7	4.88	3Coil_Towed_Array
631	62	TDSA2R-1	556838.65	4482762.15	0	0	0	0	0	0	7	6.77	3Coil_Towed_Array
632	63	TDSA2R-1	556840.65	4482762.45	0	0	0	0	0	0	1	27.53	3Coil_Towed_Array
633	64	TDSA2R-1	556840.95	4482766.80	0	0	0	0	0	0	7	9.52	3Coil_Towed_Array
634	65	TDSA2R-1	556842.82	4482768.98	0	0	0	0	0	0	1	37.33	3Coil_Towed_Array
635	66	TDSA2R-1	556845.45	4482772.95	0	0	0	0	0	0	1	24.62	3Coil_Towed_Array
636	67	TDSA2R-1	556846.80	4482773.55	0	0	0	0	0	0	1	41.65	3Coil_Towed_Array
637	68	TDSA2R-1	556846.95	4482775.80	0	0	0	0	0	0	1	36.50	3Coil_Towed_Array
638	69	TDSA2R-1	556847.85	4482777.60	0	0	0	0	0	0	7	6.14	3Coil_Towed_Array
639	70	TDSA2R-1	556850.10	4482779.40	0	0	0	0	0	0	1	13.08	3Coil_Towed_Array
640	71	TDSA2R-1	556849.54	4482781.47	0	0	0	0	0	0	1	7.15	3Coil_Towed_Array
641	72	TDSA2R-1	556850.55	4482784.05	0	0	0	0	0	0	7	11.76	3Coil_Towed_Array
642	73	TDSA2R-1	556852.05	4482786.60	0	0	0	0	0	0	13	280.47	3Coil_Towed_Array
643	74	TDSA2R-1	556853.96	4482787.23	0	0	0	0	0	0	1	104.66	3Coil_Towed_Array
644	75	TDSA2R-1	556853.07	4482788.63	0	0	0	0	0	0	7	11.80	3Coil_Towed_Array
645	76	TDSA2R-1	556854.45	4482789.30	0	0	0	0	0	0	13	34.74	3Coil_Towed_Array
646	77	TDSA2R-1	556855.56	4482793.18	0	0	0	0	0	0	13	24.49	3Coil_Towed_Array
647	78	TDSA2R-1	556858.09	4482796.30	0	0	0	0	0	0	1	360.07	3Coil_Towed_Array
648	79	TDSA2R-1	556857.15	4482797.70	0	0	0	0	0	0	1	678.92	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
649	80	TDSA2R-1	556857.90	4482799.80	0	0	0	0	0	0	1	328.77	3Coil_Towed_Array
650	81	TDSA2R-1	556860.30	4482799.80	0	0	0	0	0	0	1	129.01	3Coil_Towed_Array
651	82	TDSA2R-1	556861.95	4482802.80	0	0	0	0	0	0	13	33.74	3Coil_Towed_Array
652	83	TDSA2R-1	556863.14	4482807.44	0	0	0	0	0	0	13	7.58	3Coil_Towed_Array
653	84	TDSA2R-1	556864.80	4482807.75	0	0	0	0	0	0	7	8.50	3Coil_Towed_Array
654	85	TDSA2R-1	556866.74	4482813.17	0	0	0	0	0	0	7	7.49	3Coil_Towed_Array
655	86	TDSA2R-1	556866.07	4482814.32	0	0	0	0	0	0	7	5.34	3Coil_Towed_Array
656	87	TDSA2R-1	556867.85	4482816.75	0	0	0	0	0	0	3	39.41	3Coil_Towed_Array
657	88	TDSA2R-1	556866.93	4482817.40	0	0	0	0	0	0	7	9.20	3Coil_Towed_Array
658	89	TDSA2R-1	556868.25	4482818.55	0	0	0	0	0	0	3	3643.16	3Coil_Towed_Array
659	90	TDSA2R-1	556866.45	4482819.00	0	0	0	0	0	0	7	9.37	3Coil_Towed_Array
660	1	TDSA2R-2	556628.10	4482582.60	0	0	0	0	0	0	3	1939.25	3Coil_Towed_Array
661	2	TDSA2R-2	556630.20	4482583.35	0	0	0	0	0	0	3	1279.51	3Coil_Towed_Array
662	3	TDSA2R-2	556632.60	4482587.70	0	0	0	0	0	0	1	5.05	3Coil_Towed_Array
663	4	TDSA2R-2	556636.35	4482589.05	0	0	0	0	0	0	1	80.79	3Coil_Towed_Array
664	5	TDSA2R-2	556640.70	4482593.85	0	0	0	0	0	0	1	4.88	3Coil_Towed_Array
665	6	TDSA2R-2	556639.50	4482595.35	0	0	0	0	0	0	1	19.72	3Coil_Towed_Array
666	7	TDSA2R-2	556641.75	4482597.09	0	0	0	0	0	0	13	276.21	3Coil_Towed_Array
667	8	TDSA2R-2	556652.55	4482608.85	0	0	0	0	0	0	1	12.31	3Coil_Towed_Array
668	9	TDSA2R-2	556670.25	4482646.05	0	0	0	0	0	0	1	7.81	3Coil_Towed_Array
669	10	TDSA2R-2	556672.20	4482648.75	0	0	0	0	0	0	13	19.16	3Coil_Towed_Array
670	11	TDSA2R-2	556674.90	4482650.85	0	0	0	0	0	0	1	13.39	3Coil_Towed_Array
671	12	TDSA2R-2	556684.20	4482667.20	0	0	0	0	0	0	1	13.08	3Coil_Towed_Array
672	13	TDSA2R-2	556686.15	4482668.40	0	0	0	0	0	0	1	17.62	3Coil_Towed_Array
673	14	TDSA2R-2	556688.85	4482671.10	0	0	0	0	0	0	1	11.79	3Coil_Towed_Array
674	15	TDSA2R-2	556686.90	4482671.55	0	0	0	0	0	0	1	10.83	3Coil_Towed_Array
675	16	TDSA2R-2	556741.39	4482757.58	0	0	0	0	0	0	12	3.60	3Coil_Towed_Array
676	17	TDSA2R-2	556752.00	4482773.40	0	0	0	0	0	0	1	7.18	3Coil_Towed_Array
677	18	TDSA2R-2	556752.31	4482774.78	0	0	0	0	0	0	1	6.82	3Coil_Towed_Array
678	19	TDSA2R-2	556764.30	4482795.60	0	0	0	0	0	0	1	45.57	3Coil_Towed_Array
679	20	TDSA2R-2	556765.05	4482796.65	0	0	0	0	0	0	1	21.63	3Coil_Towed_Array
680	21	TDSA2R-2	556782.30	4482823.80	0	0	0	0	0	0	1	8.34	3Coil_Towed_Array
681	22	TDSA2R-2	556787.85	4482828.90	0	0	0	0	0	0	1	8.24	3Coil_Towed_Array
682	23	TDSA2R-2	556855.35	4482934.35	0	0	0	0	0	0	1	88.67	3Coil_Towed_Array
683	24	TDSA2R-2	556855.90	4482935.18	0	0	0	0	0	0	13	21.47	3Coil_Towed_Array
684	25	TDSA2R-2	556857.45	4482937.35	0	0	0	0	0	0	1	11.68	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
685	26	TDSA2R-2	556857.30	4482939.30	0	0	0	0	0	0	13	15.10	3Coil_Towed_Array
686	27	TDSA2R-2	556857.75	4482940.20	0	0	0	0	0	0	1	7.10	3Coil_Towed_Array
687	28	TDSA2R-2	556862.25	4482953.40	0	0	0	0	0	0	1	1037.59	3Coil_Towed_Array
688	1	TDSA2R-3	556587.75	4482641.42	0	0	0	0	0	0	1	7.16	3Coil_Towed_Array
689	2	TDSA2R-3	556596.90	4482659.40	0	0	0	0	0	0	1	41.87	3Coil_Towed_Array
690	3	TDSA2R-3	556601.51	4482661.89	0	0	0	0	0	0	1	328.80	3Coil_Towed_Array
691	4	TDSA2R-3	556610.55	4482676.20	0	0	0	0	0	0	1	15.47	3Coil_Towed_Array
692	5	TDSA2R-3	556630.20	4482707.70	0	0	0	0	0	0	1	15.86	3Coil_Towed_Array
693	6	TDSA2R-3	556631.05	4482711.30	0	0	0	0	0	0	1	8.39	3Coil_Towed_Array
694	7	TDSA2R-3	556673.53	4482782.13	0	0	0	0	0	0	1	4.42	3Coil_Towed_Array
695	8	TDSA2R-3	556679.85	4482792.15	0	0	0	0	0	0	7	4.01	3Coil_Towed_Array
696	9	TDSA2R-3	556680.30	4482793.05	0	0	0	0	0	0	7	4.13	3Coil_Towed_Array
697	10	TDSA2R-3	556694.40	4482812.55	0	0	0	0	0	0	1	4.95	3Coil_Towed_Array
698	11	TDSA2R-3	556696.05	4482817.20	0	0	0	0	0	0	1	7.52	3Coil_Towed_Array
699	12	TDSA2R-3	556699.80	4482820.95	0	0	0	0	0	0	1	140.54	3Coil_Towed_Array
700	13	TDSA2R-3	556701.47	4482824.36	0	0	0	0	0	0	1	5.63	3Coil_Towed_Array
701	14	TDSA2R-3	556705.20	4482828.90	0	0	0	0	0	0	1	59.32	3Coil_Towed_Array
702	15	TDSA2R-3	556707.00	4482833.40	0	0	0	0	0	0	1	5.52	3Coil_Towed_Array
703	16	TDSA2R-3	556709.49	4482837.22	0	0	0	0	0	0	1	21.75	3Coil_Towed_Array
704	17	TDSA2R-3	556711.05	4482837.60	0	0	0	0	0	0	13	59.14	3Coil_Towed_Array
705	18	TDSA2R-3	556711.50	4482842.40	0	0	0	0	0	0	1	4.36	3Coil_Towed_Array
706	19	TDSA2R-3	556713.45	4482843.45	0	0	0	0	0	0	1	9.94	3Coil_Towed_Array
707	20	TDSA2R-3	556715.40	4482844.50	0	0	0	0	0	0	1	26.08	3Coil_Towed_Array
708	21	TDSA2R-3	556716.30	4482845.70	0	0	0	0	0	0	13	23.10	3Coil_Towed_Array
709	22	TDSA2R-3	556722.04	4482858.15	0	0	0	0	0	0	7	4.11	3Coil_Towed_Array
710	23	TDSA2R-3	556728.45	4482868.05	0	0	0	0	0	0	1	5.61	3Coil_Towed_Array
711	24	TDSA2R-3	556728.30	4482869.70	0	0	0	0	0	0	1	4.92	3Coil_Towed_Array
712	25	TDSA2R-3	556730.10	4482875.10	0	0	0	0	0	0	7	4.68	3Coil_Towed_Array
713	26	TDSA2R-3	556736.85	4482886.50	0	0	0	0	0	0	1	4.43	3Coil_Towed_Array
714	27	TDSA2R-3	556740.45	4482893.10	0	0	0	0	0	0	1	4.97	3Coil_Towed_Array
715	28	TDSA2R-3	556742.32	4482896.41	0	0	0	0	0	0	1	14.88	3Coil_Towed_Array
716	29	TDSA2R-3	556741.65	4482897.30	0	0	0	0	0	0	1	6.99	3Coil_Towed_Array
717	30	TDSA2R-3	556743.45	4482900.30	0	0	0	0	0	0	1	28.00	3Coil_Towed_Array
718	31	TDSA2R-3	556755.90	4482918.00	0	0	0	0	0	0	1	5.45	3Coil_Towed_Array
719	32	TDSA2R-3	556764.60	4482930.15	0	0	0	0	0	0	1	9.76	3Coil_Towed_Array
720	33	TDSA2R-3	556769.40	4482936.00	0	0	0	0	0	0	1	4.57	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
721	34	TDSA2R-3	556770.45	4482937.80	0	0	0	0	0	0	1	16.30	3Coil_Towed_Array
722	35	TDSA2R-3	556770.75	4482940.20	0	0	0	0	0	0	1	7.50	3Coil_Towed_Array
723	36	TDSA2R-3	556770.60	4482941.85	0	0	0	0	0	0	7	4.77	3Coil_Towed_Array
724	37	TDSA2R-3	556785.30	4482962.55	0	0	0	0	0	0	1	8.73	3Coil_Towed_Array
725	38	TDSA2R-3	556785.90	4482963.60	0	0	0	0	0	0	1	7.00	3Coil_Towed_Array
726	39	TDSA2R-3	556799.10	4482990.15	0	0	0	0	0	0	7	5.50	3Coil_Towed_Array
727	1	TDSA2R-4	556689.60	4482952.05	0	0	0	0	0	0	3	188.97	3Coil_Towed_Array
728	2	TDSA2R-4	556688.18	4482952.60	0	0	0	0	0	0	3	805.12	3Coil_Towed_Array
729	3	TDSA2R-4	556690.80	4482954.00	0	0	0	0	0	0	1	149.78	3Coil_Towed_Array
730	4	TDSA2R-4	556690.65	4482956.85	0	0	0	0	0	0	1	40.86	3Coil_Towed_Array
731	5	TDSA2R-4	556691.85	4482957.15	0	0	0	0	0	0	1	11.22	3Coil_Towed_Array
732	6	TDSA2R-4	556689.90	4482957.90	0	0	0	0	0	0	1	12.03	3Coil_Towed_Array
733	7	TDSA2R-4	556691.70	4482959.85	0	0	0	0	0	0	13	284.23	3Coil_Towed_Array
734	8	TDSA2R-4	556693.20	4482960.90	0	0	0	0	0	0	1	493.12	3Coil_Towed_Array
735	9	TDSA2R-4	556691.70	4482962.55	0	0	0	0	0	0	1	10.21	3Coil_Towed_Array
736	10	TDSA2R-4	556694.89	4482965.97	0	0	0	0	0	0	1	66.90	3Coil_Towed_Array
737	11	TDSA2R-4	556695.00	4482968.25	0	0	0	0	0	0	1	8.11	3Coil_Towed_Array
738	12	TDSA2R-4	556697.13	4482968.46	0	0	0	0	0	0	1	29.86	3Coil_Towed_Array
739	13	TDSA2R-4	556697.40	4482971.70	0	0	0	0	0	0	13	7.56	3Coil_Towed_Array
740	14	TDSA2R-4	556702.66	4482975.86	0	0	0	0	0	0	1	14.81	3Coil_Towed_Array
741	15	TDSA2R-4	556702.80	4482977.85	0	0	0	0	0	0	1	6.00	3Coil_Towed_Array
742	16	TDSA2R-4	556704.75	4482979.05	0	0	0	0	0	0	1	89.58	3Coil_Towed_Array
743	17	TDSA2R-4	556706.04	4482980.82	0	0	0	0	0	0	1	7.90	3Coil_Towed_Array
744	18	TDSA2R-4	556707.65	4482984.58	0	0	0	0	0	0	1	14.08	3Coil_Towed_Array
745	19	TDSA2R-4	556706.85	4482985.95	0	0	0	0	0	0	1	191.62	3Coil_Towed_Array
746	20	TDSA2R-4	556710.00	4482987.15	0	0	0	0	0	0	1	9.89	3Coil_Towed_Array
747	21	TDSA2R-4	556712.83	4482991.68	0	0	0	0	0	0	3	64.95	3Coil_Towed_Array
748	22	TDSA2R-4	556713.90	4482992.70	0	0	0	0	0	0	3	13.10	3Coil_Towed_Array
749	23	TDSA2R-4	556713.45	4482995.40	0	0	0	0	0	0	3	69.31	3Coil_Towed_Array
750	24	TDSA2R-4	556717.05	4482996.75	0	0	0	0	0	0	1	9.89	3Coil_Towed_Array
751	25	TDSA2R-4	556715.26	4482997.06	0	0	0	0	0	0	3	228.59	3Coil_Towed_Array
752	26	TDSA2R-4	556718.10	4482997.95	0	0	0	0	0	0	7	8.87	3Coil_Towed_Array
753	27	TDSA2R-4	556716.06	4482998.48	0	0	0	0	0	0	3	59.61	3Coil_Towed_Array
754	28	TDSA2R-4	556717.95	4482999.15	0	0	0	0	0	0	1	45.80	3Coil_Towed_Array
755	29	TDSA2R-4	556716.74	4482999.32	0	0	0	0	0	0	3	42.69	3Coil_Towed_Array
756	30	TDSA2R-4	556720.80	4483000.65	0	0	0	0	0	0	7	27.35	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
757	31	TDSA2R-4	556718.10	4483000.80	0	0	0	0	0	0	1	13.96	3Coil_Towed_Array
758	32	TDSA2R-4	556722.00	4483001.85	0	0	0	0	0	0	1	90.52	3Coil_Towed_Array
759	33	TDSA2R-4	556720.35	4483002.90	0	0	0	0	0	0	1	107.57	3Coil_Towed_Array
760	34	TDSA2R-4	556722.89	4483003.39	0	0	0	0	0	0	1	40.01	3Coil_Towed_Array
761	35	TDSA2R-4	556721.40	4483003.95	0	0	0	0	0	0	1	100.41	3Coil_Towed_Array
762	36	TDSA2R-4	556725.60	4483004.40	0	0	0	0	0	0	3	669.07	3Coil_Towed_Array
763	37	TDSA2R-4	556723.80	4483005.15	0	0	0	0	0	0	1	15.08	3Coil_Towed_Array
764	38	TDSA2R-4	556727.25	4483006.65	0	0	0	0	0	0	3	1308.51	3Coil_Towed_Array
765	39	TDSA2R-4	556727.85	4483008.75	0	0	0	0	0	0	3	105.61	3Coil_Towed_Array
766	40	TDSA2R-4	556729.11	4483009.08	0	0	0	0	0	0	3	84.51	3Coil_Towed_Array
767	41	TDSA2R-4	556733.55	4483011.60	0	0	0	0	0	0	3	70.98	3Coil_Towed_Array
768	42	TDSA2R-4	556734.75	4483011.67	0	0	0	0	0	0	3	85.44	3Coil_Towed_Array
769	43	TDSA2R-4	556737.42	4483012.71	0	0	0	0	0	0	3	6512.78	3Coil_Towed_Array
770	44	TDSA2R-4	556740.37	4483016.58	0	0	0	0	0	0	2	11204.76	3Coil_Towed_Array
771	45	TDSA2R-4	556742.55	4483017.15	0	0	0	0	0	0	2	9341.59	3Coil_Towed_Array
772	46	TDSA2R-4	556741.84	4483018.82	0	0	0	0	0	0	2	12188.11	3Coil_Towed_Array
773	47	TDSA2R-4	556744.35	4483019.40	0	0	0	0	0	0	2	8259.65	3Coil_Towed_Array
774	48	TDSA2R-4	556742.70	4483020.75	0	0	0	0	0	0	2	8516.60	3Coil_Towed_Array
775	49	TDSA2R-4	556745.40	4483021.50	0	0	0	0	0	0	2	9549.25	3Coil_Towed_Array
776	50	TDSA2R-4	556749.60	4483024.50	0	0	0	0	0	0	3	2137.64	3Coil_Towed_Array
777	51	TDSA2R-4	556748.02	4483025.54	0	0	0	0	0	0	3	9191.38	3Coil_Towed_Array
778	52	TDSA2R-4	556750.46	4483027.71	0	0	0	0	0	0	3	5508.92	3Coil_Towed_Array
779	53	TDSA2R-4	556749.30	4483029.75	0	0	0	0	0	0	3	8457.68	3Coil_Towed_Array
780	54	TDSA2R-4	556751.40	4483030.05	0	0	0	0	0	0	3	8318.25	3Coil_Towed_Array
781	55	TDSA2R-4	556750.87	4483032.04	0	0	0	0	0	0	3	6770.80	3Coil_Towed_Array
782	56	TDSA2R-4	556749.56	4483034.35	0	0	0	0	0	0	3	1464.37	3Coil_Towed_Array
783	57	TDSA2R-4	556746.90	4483038.60	0	0	0	0	0	0	7	8.04	3Coil_Towed_Array
784	58	TDSA2R-4	556748.40	4483039.05	0	0	0	0	0	0	7	7.09	3Coil_Towed_Array
785	59	TDSA2R-4	556746.60	4483040.55	0	0	0	0	0	0	7	6.30	3Coil_Towed_Array
786	60	TDSA2R-4	556747.35	4483042.50	0	0	0	0	0	0	1	8.09	3Coil_Towed_Array
787	61	TDSA2R-4	556749.60	4483048.95	0	0	0	0	0	0	7	5.18	3Coil_Towed_Array
788	62	TDSA2R-4	556761.02	4483058.70	0	0	0	0	0	0	2	370.06	3Coil_Towed_Array
789	1	TDSA2R-5	556669.80	4483006.95	0	0	0	0	0	0	1	930.80	3Coil_Towed_Array
790	2	TDSA2R-5	556672.35	4483007.10	0	0	0	0	0	0	1	21.51	3Coil_Towed_Array
791	3	TDSA2R-5	556677.60	4483010.70	0	0	0	0	0	0	7	7.51	3Coil_Towed_Array
792	4	TDSA2R-5	556678.05	4483012.20	0	0	0	0	0	0	3	108.03	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
793	5	TDSA2R-5	556676.94	4483012.95	0	0	0	0	0	0	1	39.63	3Coil_Towed_Array
794	6	TDSA2R-5	556678.95	4483013.55	0	0	0	0	0	0	3	182.16	3Coil_Towed_Array
795	7	TDSA2R-5	556678.20	4483015.05	0	0	0	0	0	0	2	213.92	3Coil_Towed_Array
796	8	TDSA2R-5	556677.15	4483015.80	0	0	0	0	0	0	2	99.00	3Coil_Towed_Array
797	9	TDSA2R-5	556679.25	4483016.10	0	0	0	0	0	0	2	181.01	3Coil_Towed_Array
798	10	TDSA2R-5	556678.05	4483017.60	0	0	0	0	0	0	2	181.86	3Coil_Towed_Array
799	11	TDSA2R-5	556678.35	4483019.70	0	0	0	0	0	0	3	303.25	3Coil_Towed_Array
800	12	TDSA2R-5	556676.85	4483020.45	0	0	0	0	0	0	3	478.38	3Coil_Towed_Array
801	13	TDSA2R-5	556676.10	4483022.10	0	0	0	0	0	0	3	132.99	3Coil_Towed_Array
802	14	TDSA2R-5	556674.90	4483023.15	0	0	0	0	0	0	3	159.24	3Coil_Towed_Array
803	15	TDSA2R-5	556675.80	4483023.90	0	0	0	0	0	0	3	173.85	3Coil_Towed_Array
804	16	TDSA2R-5	556674.72	4483024.61	0	0	0	0	0	0	3	112.73	3Coil_Towed_Array
805	17	TDSA2R-5	556676.78	4483025.76	0	0	0	0	0	0	3	212.19	3Coil_Towed_Array
806	18	TDSA2R-5	556675.20	4483027.35	0	0	0	0	0	0	3	277.95	3Coil_Towed_Array
807	19	TDSA2R-5	556677.03	4483027.80	0	0	0	0	0	0	3	219.46	3Coil_Towed_Array
808	20	TDSA2R-5	556678.05	4483030.35	0	0	0	0	0	0	3	263.34	3Coil_Towed_Array
809	21	TDSA2R-5	556679.70	4483032.30	0	0	0	0	0	0	3	408.48	3Coil_Towed_Array
810	22	TDSA2R-5	556681.80	4483033.20	0	0	0	0	0	0	3	159.68	3Coil_Towed_Array
811	23	TDSA2R-5	556682.70	4483034.25	0	0	0	0	0	0	3	203.40	3Coil_Towed_Array
812	24	TDSA2R-5	556683.00	4483036.20	0	0	0	0	0	0	3	1277.49	3Coil_Towed_Array
813	25	TDSA2R-5	556685.70	4483037.85	0	0	0	0	0	0	3	972.83	3Coil_Towed_Array
814	26	TDSA2R-5	556685.23	4483039.88	0	0	0	0	0	0	3	299.61	3Coil_Towed_Array
815	27	TDSA2R-5	556687.35	4483041.30	0	0	0	0	0	0	3	594.25	3Coil_Towed_Array
816	28	TDSA2R-5	556686.49	4483041.79	0	0	0	0	0	0	3	312.73	3Coil_Towed_Array
817	29	TDSA2R-5	556688.70	4483042.80	0	0	0	0	0	0	3	676.26	3Coil_Towed_Array
818	30	TDSA2R-5	556688.30	4483043.83	0	0	0	0	0	0	3	658.70	3Coil_Towed_Array
819	31	TDSA2R-5	556691.43	4483044.30	0	0	0	0	0	0	3	515.43	3Coil_Towed_Array
820	32	TDSA2R-5	556690.05	4483044.30	0	0	0	0	0	0	3	806.40	3Coil_Towed_Array
821	33	TDSA2R-5	556689.88	4483045.57	0	0	0	0	0	0	3	467.98	3Coil_Towed_Array
822	34	TDSA2R-5	556692.00	4483046.40	0	0	0	0	0	0	3	1125.58	3Coil_Towed_Array
823	35	TDSA2R-5	556693.82	4483048.71	0	0	0	0	0	0	3	366.32	3Coil_Towed_Array
824	36	TDSA2R-5	556696.50	4483048.80	0	0	0	0	0	0	3	641.85	3Coil_Towed_Array
825	37	TDSA2R-5	556694.91	4483050.29	0	0	0	0	0	0	3	197.12	3Coil_Towed_Array
826	38	TDSA2R-5	556697.55	4483050.60	0	0	0	0	0	0	3	989.69	3Coil_Towed_Array
827	39	TDSA2R-5	556698.60	4483051.95	0	0	0	0	0	0	2	1275.38	3Coil_Towed_Array
828	1	TDSA2R-6	556600.35	4483038.00	0	0	0	0	0	0	13	14.77	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
829	2	TDSA2R-6	556613.25	4483060.65	0	0	0	0	0	0	1	9.25	3Coil_Towed_Array
830	3	TDSA2R-6	556617.60	4483062.45	0	0	0	0	0	0	1	9.20	3Coil_Towed_Array
831	4	TDSA2R-6	556649.85	4483107.08	0	0	0	0	0	0	1	14.79	3Coil_Towed_Array
832	5	TDSA2R-6	556650.75	4483110.60	0	0	0	0	0	0	13	34.96	3Coil_Towed_Array
833	6	TDSA2R-6	556652.10	4483110.75	0	0	0	0	0	0	13	58.52	3Coil_Towed_Array
834	7	TDSA2R-6	556654.20	4483111.95	0	0	0	0	0	0	7	12.99	3Coil_Towed_Array
835	8	TDSA2R-6	556655.35	4483113.62	0	0	0	0	0	0	1	31.07	3Coil_Towed_Array
836	9	TDSA2R-6	556658.55	4483118.55	0	0	0	0	0	0	1	30.46	3Coil_Towed_Array
837	10	TDSA2R-6	556658.25	4483119.90	0	0	0	0	0	0	1	63.15	3Coil_Towed_Array
838	11	TDSA2R-6	556659.90	4483120.65	0	0	0	0	0	0	1	9.29	3Coil_Towed_Array
839	12	TDSA2R-6	556657.95	4483121.25	0	0	0	0	0	0	1	25.42	3Coil_Towed_Array
840	13	TDSA2R-6	556662.90	4483124.55	0	0	0	0	0	0	1	20.56	3Coil_Towed_Array
841	14	TDSA2R-6	556660.50	4483124.85	0	0	0	0	0	0	13	4.84	3Coil_Towed_Array
842	15	TDSA2R-6	556665.15	4483129.50	0	0	0	0	0	0	1	25.30	3Coil_Towed_Array
843	16	TDSA2R-6	556667.08	4483131.50	0	0	0	0	0	0	13	6.57	3Coil_Towed_Array
844	17	TDSA2R-6	556672.28	4483138.55	0	0	0	0	0	0	13	8.01	3Coil_Towed_Array
845	18	TDSA2R-6	556673.25	4483140.30	0	0	0	0	0	0	1	4.72	3Coil_Towed_Array
846	19	TDSA2R-6	556680.30	4483148.10	0	0	0	0	0	0	1	4.95	3Coil_Towed_Array
847	20	TDSA2R-6	556686.75	4483156.65	0	0	0	0	0	0	1	6.32	3Coil_Towed_Array
848	21	TDSA2R-6	556687.95	4483161.75	0	0	0	0	0	0	7	9.80	3Coil_Towed_Array
849	22	TDSA2R-6	556689.90	4483162.80	0	0	0	0	0	0	7	5.11	3Coil_Towed_Array
850	23	TDSA2R-6	556689.90	4483164.45	0	0	0	0	0	0	1	7.66	3Coil_Towed_Array
851	24	TDSA2R-6	556692.60	4483164.90	0	0	0	0	0	0	1	8.17	3Coil_Towed_Array
852	25	TDSA2R-6	556691.92	4483166.42	0	0	0	0	0	0	1	5.74	3Coil_Towed_Array
853	26	TDSA2R-6	556692.90	4483168.50	0	0	0	0	0	0	1	8.46	3Coil_Towed_Array
854	27	TDSA2R-6	556695.96	4483169.45	0	0	0	0	0	0	1	13.16	3Coil_Towed_Array
855	28	TDSA2R-6	556700.82	4483177.73	0	0	0	0	0	0	1	4.41	3Coil_Towed_Array
856	29	TDSA2R-6	556702.05	4483179.90	0	0	0	0	0	0	1	8.23	3Coil_Towed_Array
857	30	TDSA2R-6	556703.40	4483181.25	0	0	0	0	0	0	1	12.61	3Coil_Towed_Array
858	31	TDSA2R-6	556705.59	4483184.60	0	0	0	0	0	0	1	13.54	3Coil_Towed_Array
859	32	TDSA2R-6	556708.95	4483188.30	0	0	0	0	0	0	1	5.28	3Coil_Towed_Array
860	33	TDSA2R-6	556713.60	4483196.25	0	0	0	0	0	0	1	18.72	3Coil_Towed_Array
861	34	TDSA2R-6	556715.70	4483197.45	0	0	0	0	0	0	1	8.61	3Coil_Towed_Array
862	35	TDSA2R-6	556717.35	4483199.55	0	0	0	0	0	0	7	4.34	3Coil_Towed_Array
863	36	TDSA2R-6	556715.55	4483200.60	0	0	0	0	0	0	1	8.80	3Coil_Towed_Array
864	37	TDSA2R-6	556718.44	4483202.52	0	0	0	0	0	0	1	80.21	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
865	38	TDSA2R-6	556718.55	4483204.65	0	0	0	0	0	0	1	4.43	3Coil_Towed_Array
866	39	TDSA2R-6	556721.40	4483206.75	0	0	0	0	0	0	1	93.48	3Coil_Towed_Array
867	40	TDSA2R-6	556725.75	4483214.10	0	0	0	0	0	0	7	4.31	3Coil_Towed_Array
868	1	TDSA2R-7	556523.19	4483071.93	0	0	0	0	0	0	1	10.23	3Coil_Towed_Array
869	2	TDSA2R-7	556523.25	4483074.00	0	0	0	0	0	0	1	71.32	3Coil_Towed_Array
870	3	TDSA2R-7	556530.56	4483084.19	0	0	0	0	0	0	1	23.77	3Coil_Towed_Array
871	4	TDSA2R-7	556555.50	4483116.30	0	0	0	0	0	0	1	4.69	3Coil_Towed_Array
872	5	TDSA2R-7	556562.10	4483126.95	0	0	0	0	0	0	7	4.98	3Coil_Towed_Array
873	6	TDSA2R-7	556581.15	4483149.45	0	0	0	0	0	0	7	4.46	3Coil_Towed_Array
874	7	TDSA2R-7	556646.55	4483228.05	0	0	0	0	0	0	13	52.17	3Coil_Towed_Array
875	1	TDSA3R-2	555094.81	4482054.78	0	0	0	0	0	0	1	4.74	3Coil_Towed_Array
876	2	TDSA3R-2	555093.73	4482088.55	0	0	0	0	0	0	7	5.44	3Coil_Towed_Array
877	1	TDSA3R-3	555202.94	4481896.46	0	0	0	0	0	0	7	4.43	3Coil_Towed_Array
878	2	TDSA3R-3	555192.64	4481914.58	0	0	0	0	0	0	1	17.23	3Coil_Towed_Array
879	3	TDSA3R-3	555194.77	4481929.71	0	0	0	0	0	0	1	4.64	3Coil_Towed_Array
880	4	TDSA3R-3	555195.38	4481932.17	0	0	0	0	0	0	1	4.88	3Coil_Towed_Array
881	5	TDSA3R-3	555194.95	4481945.24	0	0	0	0	0	0	13	85.75	3Coil_Towed_Array
882	6	TDSA3R-3	555194.22	4481973.29	0	0	0	0	0	0	7	5.92	3Coil_Towed_Array
883	7	TDSA3R-3	555193.40	4482007.94	0	0	0	0	0	0	7	4.50	3Coil_Towed_Array
884	8	TDSA3R-3	555194.34	4482066.57	0	0	0	0	0	0	7	5.02	3Coil_Towed_Array
885	9	TDSA3R-3	555194.96	4482122.63	0	0	0	0	0	0	7	4.37	3Coil_Towed_Array
886	10	TDSA3R-3	555192.61	4482177.48	0	0	0	0	0	0	7	4.60	3Coil_Towed_Array
887	11	TDSA3R-3	555193.51	4482181.09	0	0	0	0	0	0	7	4.69	3Coil_Towed_Array
888	12	TDSA3R-3	555193.49	4482200.33	0	0	0	0	0	0	7	4.36	3Coil_Towed_Array
889	13	TDSA3R-3	555192.44	4482219.25	0	0	0	0	0	0	7	4.62	3Coil_Towed_Array
890	14	TDSA3R-3	555193.40	4482224.99	0	0	0	0	0	0	7	4.20	3Coil_Towed_Array
891	1	TDSA3R-4	555293.23	4481964.23	0	0	0	0	0	0	13	20.87	3Coil_Towed_Array
892	2	TDSA3R-4	555294.52	4481970.01	0	0	0	0	0	0	7	5.56	3Coil_Towed_Array
893	3	TDSA3R-4	555294.68	4481971.82	0	0	0	0	0	0	7	4.47	3Coil_Towed_Array
894	4	TDSA3R-4	555293.70	4481972.94	0	0	0	0	0	0	7	4.76	3Coil_Towed_Array
895	5	TDSA3R-4	555292.08	4481977.84	0	0	0	0	0	0	7	6.33	3Coil_Towed_Array
896	6	TDSA3R-4	555292.07	4481980.01	0	0	0	0	0	0	7	4.63	3Coil_Towed_Array
897	7	TDSA3R-4	555292.13	4481981.87	0	0	0	0	0	0	7	4.50	3Coil_Towed_Array
898	8	TDSA3R-4	555294.14	4481984.60	0	0	0	0	0	0	1	4.32	3Coil_Towed_Array
899	9	TDSA3R-4	555292.19	4482272.92	0	0	0	0	0	0	7	4.20	3Coil_Towed_Array
900	10	TDSA3R-4	555292.26	4482273.91	0	0	0	0	0	0	7	6.11	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
901	1	TDSA3R-5	555393.43	4482082.32	0	0	0	0	0	0	1	34.53	3Coil_Towed_Array
902	2	TDSA3R-5	555391.49	4482206.04	0	0	0	0	0	0	13	5.94	3Coil_Towed_Array
903	3	TDSA3R-5	555392.79	4482275.75	0	0	0	0	0	0	7	4.44	3Coil_Towed_Array
904	1	TDSA3R-6	555492.48	4482372.40	0	0	0	0	0	0	13	8.25	3Coil_Towed_Array
905	2	TDSA3R-6	555492.86	4482392.18	0	0	0	0	0	0	1	94.92	3Coil_Towed_Array
906	3	TDSA3R-6	555491.77	4482393.35	0	0	0	0	0	0	13	99.90	3Coil_Towed_Array
907	4	TDSA3R-6	555490.96	4482394.65	0	0	0	0	0	0	7	11.02	3Coil_Towed_Array
908	5	TDSA3R-6	555493.11	4482395.80	0	0	0	0	0	0	1	25.97	3Coil_Towed_Array
909	1	TDSA3R-7	555589.94	4482460.37	0	0	0	0	0	0	7	5.51	3Coil_Towed_Array
910	2	TDSA3R-7	555591.11	4482461.25	0	0	0	0	0	0	7	4.84	3Coil_Towed_Array
911	1	TDSA3R-8	555692.02	4482293.78	0	0	0	0	0	0	1	34.60	3Coil_Towed_Array
912	2	TDSA3R-8	555692.42	4482507.72	0	0	0	0	0	0	7	5.26	3Coil_Towed_Array
913	1	TDSA3R-9	555794.78	4482378.87	0	0	0	0	0	0	2	11.70	3Coil_Towed_Array
914	2	TDSA3R-9	555793.23	4482538.01	0	0	0	0	0	0	13	20.09	3Coil_Towed_Array
915	1	TDSA3R-10	555891.83	4482351.03	0	0	0	0	0	0	13	95.86	3Coil_Towed_Array
916	2	TDSA3R-10	555892.48	4482575.76	0	0	0	0	0	0	1	6.27	3Coil_Towed_Array
917	3	TDSA3R-10	555892.45	4482581.03	0	0	0	0	0	0	1	4.61	3Coil_Towed_Array
918	1	TDSA3R-11	555991.61	4482575.70	0	0	0	0	0	0	1	121.84	3Coil_Towed_Array
919	2	TDSA3R-11	555988.95	4482734.62	0	0	0	0	0	0	7	4.11	3Coil_Towed_Array
920	1	TDSA3R-13	556186.74	4482697.23	0	0	0	0	0	0	13	6.75	3Coil_Towed_Array
921	2	TDSA3R-13	556186.73	4482701.50	0	0	0	0	0	0	3	1677.33	3Coil_Towed_Array
922	3	TDSA3R-13	556185.97	4482702.72	0	0	0	0	0	0	3	2738.17	3Coil_Towed_Array
923	4	TDSA3R-13	556185.28	4482704.37	0	0	0	0	0	0	13	1450.18	3Coil_Towed_Array
924	5	TDSA3R-13	556187.38	4482705.42	0	0	0	0	0	0	13	4011.31	3Coil_Towed_Array
925	6	TDSA3R-13	556188.60	4482708.36	0	0	0	0	0	0	2	276.12	3Coil_Towed_Array
926	1	TDSA5R-4	555224.40	4481179.95	0	0	0	0	0	0	7	7.04	3Coil_Towed_Array
927	2	TDSA5R-4	555223.50	4481181.30	0	0	0	0	0	0	7	13.17	3Coil_Towed_Array
928	3	TDSA5R-4	555225.15	4481181.60	0	0	0	0	0	0	7	12.58	3Coil_Towed_Array
929	4	TDSA5R-4	555222.90	4481182.50	0	0	0	0	0	0	7	8.75	3Coil_Towed_Array
930	5	TDSA5R-4	555224.15	4481183.10	0	0	0	0	0	0	7	11.54	3Coil_Towed_Array
931	6	TDSA5R-4	555222.60	4481184.15	0	0	0	0	0	0	7	6.55	3Coil_Towed_Array
932	7	TDSA5R-4	555224.55	4481184.45	0	0	0	0	0	0	7	4.66	3Coil_Towed_Array
933	8	TDSA5R-4	555222.60	4481185.65	0	0	0	0	0	0	7	19.99	3Coil_Towed_Array
934	9	TDSA5R-4	555224.25	4481185.80	0	0	0	0	0	0	7	19.89	3Coil_Towed_Array
935	10	TDSA5R-4	555222.60	4481186.55	0	0	0	0	0	0	7	12.64	3Coil_Towed_Array
936	11	TDSA5R-4	555221.99	4481187.72	0	0	0	0	0	0	7	4.34	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
937	12	TDSA5R-4	555223.65	4481188.05	0	0	0	0	0	0	7	12.33	3Coil_Towed_Array
938	13	TDSA5R-4	555221.74	4481189.08	0	0	0	0	0	0	7	7.15	3Coil_Towed_Array
939	14	TDSA5R-4	555222.95	4481189.30	0	0	0	0	0	0	7	11.10	3Coil_Towed_Array
940	15	TDSA5R-4	555221.55	4481190.45	0	0	0	0	0	0	7	12.83	3Coil_Towed_Array
941	16	TDSA5R-4	555222.80	4481190.50	0	0	0	0	0	0	7	14.29	3Coil_Towed_Array
942	17	TDSA5R-4	555223.23	4481192.05	0	0	0	0	0	0	7	4.63	3Coil_Towed_Array
943	18	TDSA5R-4	555221.10	4481192.85	0	0	0	0	0	0	7	10.43	3Coil_Towed_Array
944	19	TDSA5R-4	555222.45	4481192.85	0	0	0	0	0	0	7	8.67	3Coil_Towed_Array
945	20	TDSA5R-4	555221.10	4481193.90	0	0	0	0	0	0	7	10.73	3Coil_Towed_Array
946	21	TDSA5R-4	555220.65	4481194.95	0	0	0	0	0	0	7	12.05	3Coil_Towed_Array
947	22	TDSA5R-4	555222.60	4481195.40	0	0	0	0	0	0	7	15.42	3Coil_Towed_Array
948	23	TDSA5R-4	555221.70	4481196.60	0	0	0	0	0	0	7	7.85	3Coil_Towed_Array
949	24	TDSA5R-4	555220.20	4481196.75	0	0	0	0	0	0	7	7.31	3Coil_Towed_Array
950	25	TDSA5R-4	555221.30	4481197.65	0	0	0	0	0	0	7	12.68	3Coil_Towed_Array
951	26	TDSA5R-4	555219.90	4481199.45	0	0	0	0	0	0	7	12.13	3Coil_Towed_Array
952	27	TDSA5R-4	555222.00	4481199.45	0	0	0	0	0	0	7	13.40	3Coil_Towed_Array
953	28	TDSA5R-4	555221.85	4481201.10	0	0	0	0	0	0	7	11.22	3Coil_Towed_Array
954	29	TDSA5R-4	555219.75	4481201.75	0	0	0	0	0	0	7	9.97	3Coil_Towed_Array
955	30	TDSA5R-4	555221.55	4481203.35	0	0	0	0	0	0	3	425.64	3Coil_Towed_Array
956	31	TDSA5R-4	555220.50	4481205.00	0	0	0	0	0	0	3	631.38	3Coil_Towed_Array
957	32	TDSA5R-4	555221.70	4481206.35	0	0	0	0	0	0	3	475.62	3Coil_Towed_Array
958	33	TDSA5R-4	555219.90	4481208.00	0	0	0	0	0	0	3	765.36	3Coil_Towed_Array
959	34	TDSA5R-4	555220.95	4481209.65	0	0	0	0	0	0	3	770.48	3Coil_Towed_Array
960	35	TDSA5R-4	555220.95	4481212.20	0	0	0	0	0	0	3	585.61	3Coil_Towed_Array
961	36	TDSA5R-4	555219.95	4481215.00	0	0	0	0	0	0	3	659.24	3Coil_Towed_Array
962	37	TDSA5R-4	555220.50	4481216.40	0	0	0	0	0	0	3	731.63	3Coil_Towed_Array
963	38	TDSA5R-4	555219.30	4481217.60	0	0	0	0	0	0	3	420.37	3Coil_Towed_Array
964	39	TDSA5R-4	555219.65	4481220.30	0	0	0	0	0	0	2	493.31	3Coil_Towed_Array
965	40	TDSA5R-4	555219.15	4481222.25	0	0	0	0	0	0	3	523.64	3Coil_Towed_Array
966	41	TDSA5R-4	555218.40	4481224.05	0	0	0	0	0	0	3	370.90	3Coil_Towed_Array
967	42	TDSA5R-4	555218.55	4481225.85	0	0	0	0	0	0	3	361.94	3Coil_Towed_Array
968	43	TDSA5R-4	555216.30	4481226.30	0	0	0	0	0	0	3	602.51	3Coil_Towed_Array
969	44	TDSA5R-4	555215.85	4481227.90	0	0	0	0	0	0	3	599.50	3Coil_Towed_Array
970	45	TDSA5R-4	555217.65	4481227.95	0	0	0	0	0	0	3	449.71	3Coil_Towed_Array
971	46	TDSA5R-4	555214.50	4481230.35	0	0	0	0	0	0	3	447.24	3Coil_Towed_Array
972	47	TDSA5R-4	555216.30	4481231.40	0	0	0	0	0	0	3	605.13	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
973	48	TDSA5R-4	555213.45	4481233.80	0	0	0	0	0	0	7	11.17	3Coil_Towed_Array
974	49	TDSA5R-4	555215.25	4481234.10	0	0	0	0	0	0	7	7.33	3Coil_Towed_Array
975	50	TDSA5R-4	555214.60	4481235.75	0	0	0	0	0	0	7	7.52	3Coil_Towed_Array
976	51	TDSA5R-4	555212.85	4481236.05	0	0	0	0	0	0	7	10.63	3Coil_Towed_Array
977	52	TDSA5R-4	555214.35	4481237.25	0	0	0	0	0	0	7	9.93	3Coil_Towed_Array
978	53	TDSA5R-4	555213.87	4481238.97	0	0	0	0	0	0	7	8.50	3Coil_Towed_Array
979	54	TDSA5R-4	555211.65	4481239.55	0	0	0	0	0	0	7	24.29	3Coil_Towed_Array
980	55	TDSA5R-4	555213.45	4481239.95	0	0	0	0	0	0	7	5.02	3Coil_Towed_Array
981	56	TDSA5R-4	555211.20	4481241.15	0	0	0	0	0	0	7	6.56	3Coil_Towed_Array
982	57	TDSA5R-4	555213.15	4481241.45	0	0	0	0	0	0	7	4.71	3Coil_Towed_Array
983	58	TDSA5R-4	555212.85	4481242.95	0	0	0	0	0	0	7	5.50	3Coil_Towed_Array
984	59	TDSA5R-4	555210.60	4481244.30	0	0	0	0	0	0	7	5.34	3Coil_Towed_Array
985	60	TDSA5R-4	555212.25	4481244.90	0	0	0	0	0	0	7	7.70	3Coil_Towed_Array
986	61	TDSA5R-4	555211.50	4481247.45	0	0	0	0	0	0	7	5.78	3Coil_Towed_Array
987	62	TDSA5R-4	555209.40	4481248.20	0	0	0	0	0	0	7	5.54	3Coil_Towed_Array
988	63	TDSA5R-4	555211.05	4481249.10	0	0	0	0	0	0	7	5.15	3Coil_Towed_Array
989	64	TDSA5R-4	555209.00	4481254.80	0	0	0	0	0	0	7	5.49	3Coil_Towed_Array
990	65	TDSA5R-4	555206.70	4481256.90	0	0	0	0	0	0	7	8.31	3Coil_Towed_Array
991	66	TDSA5R-4	555207.75	4481259.30	0	0	0	0	0	0	1	261.34	3Coil_Towed_Array
992	67	TDSA5R-4	555204.60	4481262.75	0	0	0	0	0	0	7	5.34	3Coil_Towed_Array
993	68	TDSA5R-4	555206.55	4481262.90	0	0	0	0	0	0	7	5.58	3Coil_Towed_Array
994	69	TDSA5R-4	555204.30	4481269.60	0	0	0	0	0	0	7	5.89	3Coil_Towed_Array
995	70	TDSA5R-4	555202.20	4481277.15	0	0	0	0	0	0	7	4.23	3Coil_Towed_Array
996	71	TDSA5R-4	555201.45	4481279.85	0	0	0	0	0	0	7	7.11	3Coil_Towed_Array
997	72	TDSA5R-4	555199.03	4481293.26	0	0	0	0	0	0	7	4.65	3Coil_Towed_Array
998	1	TDSA5R-5	555341.86	4481091.73	0	0	0	0	0	0	7	4.89	3Coil_Towed_Array
999	2	TDSA5R-5	555339.90	4481093.10	0	0	0	0	0	0	7	4.17	3Coil_Towed_Array
1000	3	TDSA5R-5	555338.70	4481097.30	0	0	0	0	0	0	7	4.23	3Coil_Towed_Array
1001	4	TDSA5R-5	555336.31	4481100.62	0	0	0	0	0	0	7	5.12	3Coil_Towed_Array
1002	5	TDSA5R-5	555336.75	4481102.70	0	0	0	0	0	0	7	6.21	3Coil_Towed_Array
1003	6	TDSA5R-5	555335.40	4481103.75	0	0	0	0	0	0	7	4.17	3Coil_Towed_Array
1004	7	TDSA5R-5	555334.89	4481105.31	0	0	0	0	0	0	7	4.83	3Coil_Towed_Array
1005	8	TDSA5R-5	555335.71	4481106.23	0	0	0	0	0	0	7	4.49	3Coil_Towed_Array
1006	9	TDSA5R-5	555333.33	4481107.73	0	0	0	0	0	0	7	4.72	3Coil_Towed_Array
1007	10	TDSA5R-5	555335.24	4481108.33	0	0	0	0	0	0	7	5.02	3Coil_Towed_Array
1008	11	TDSA5R-5	555333.60	4481109.30	0	0	0	0	0	0	7	4.57	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1009	12	TDSA5R-5	555334.95	4481109.45	0	0	0	0	0	0	7	4.96	3Coil_Towed_Array
1010	13	TDSA5R-5	555334.35	4481110.95	0	0	0	0	0	0	7	4.91	3Coil_Towed_Array
1011	14	TDSA5R-5	555332.43	4481111.76	0	0	0	0	0	0	7	4.91	3Coil_Towed_Array
1012	15	TDSA5R-5	555334.20	4481111.85	0	0	0	0	0	0	7	5.53	3Coil_Towed_Array
1013	16	TDSA5R-5	555333.15	4481113.05	0	0	0	0	0	0	7	6.48	3Coil_Towed_Array
1014	17	TDSA5R-5	555333.90	4481113.95	0	0	0	0	0	0	7	4.53	3Coil_Towed_Array
1015	18	TDSA5R-5	555332.85	4481114.85	0	0	0	0	0	0	7	4.60	3Coil_Towed_Array
1016	19	TDSA5R-5	555331.55	4481117.20	0	0	0	0	0	0	7	5.94	3Coil_Towed_Array
1017	20	TDSA5R-5	555333.30	4481117.85	0	0	0	0	0	0	7	7.23	3Coil_Towed_Array
1018	21	TDSA5R-5	555331.95	4481119.20	0	0	0	0	0	0	7	6.98	3Coil_Towed_Array
1019	22	TDSA5R-5	555330.75	4481120.10	0	0	0	0	0	0	7	5.96	3Coil_Towed_Array
1020	23	TDSA5R-5	555332.45	4481120.65	0	0	0	0	0	0	7	8.38	3Coil_Towed_Array
1021	24	TDSA5R-5	555331.50	4481121.60	0	0	0	0	0	0	7	4.53	3Coil_Towed_Array
1022	25	TDSA5R-5	555332.40	4481122.35	0	0	0	0	0	0	7	5.32	3Coil_Towed_Array
1023	26	TDSA5R-5	555330.15	4481123.25	0	0	0	0	0	0	7	4.12	3Coil_Towed_Array
1024	27	TDSA5R-5	555331.95	4481123.25	0	0	0	0	0	0	7	6.00	3Coil_Towed_Array
1025	28	TDSA5R-5	555331.05	4481124.15	0	0	0	0	0	0	7	9.50	3Coil_Towed_Array
1026	29	TDSA5R-5	555330.60	4481125.95	0	0	0	0	0	0	7	6.78	3Coil_Towed_Array
1027	30	TDSA5R-5	555329.55	4481126.55	0	0	0	0	0	0	7	7.35	3Coil_Towed_Array
1028	31	TDSA5R-5	555331.20	4481127.30	0	0	0	0	0	0	7	6.08	3Coil_Towed_Array
1029	32	TDSA5R-5	555330.30	4481128.05	0	0	0	0	0	0	7	5.17	3Coil_Towed_Array
1030	33	TDSA5R-5	555330.00	4481129.40	0	0	0	0	0	0	7	13.65	3Coil_Towed_Array
1031	34	TDSA5R-5	555329.70	4481130.60	0	0	0	0	0	0	7	8.59	3Coil_Towed_Array
1032	35	TDSA5R-5	555328.50	4481131.95	0	0	0	0	0	0	7	13.02	3Coil_Towed_Array
1033	36	TDSA5R-5	555330.45	4481132.10	0	0	0	0	0	0	7	11.81	3Coil_Towed_Array
1034	37	TDSA5R-5	555328.18	4481133.36	0	0	0	0	0	0	7	6.75	3Coil_Towed_Array
1035	38	TDSA5R-5	555330.01	4481134.21	0	0	0	0	0	0	7	5.66	3Coil_Towed_Array
1036	39	TDSA5R-5	555327.75	4481134.95	0	0	0	0	0	0	7	9.59	3Coil_Towed_Array
1037	40	TDSA5R-5	555329.30	4481135.25	0	0	0	0	0	0	7	9.89	3Coil_Towed_Array
1038	41	TDSA5R-5	555327.70	4481136.45	0	0	0	0	0	0	7	9.50	3Coil_Towed_Array
1039	42	TDSA5R-5	555329.10	4481137.05	0	0	0	0	0	0	7	14.29	3Coil_Towed_Array
1040	43	TDSA5R-5	555326.75	4481138.10	0	0	0	0	0	0	7	13.23	3Coil_Towed_Array
1041	44	TDSA5R-5	555328.45	4481138.10	0	0	0	0	0	0	7	12.74	3Coil_Towed_Array
1042	45	TDSA5R-5	555328.20	4481139.15	0	0	0	0	0	0	7	10.25	3Coil_Towed_Array
1043	46	TDSA5R-5	555325.95	4481139.45	0	0	0	0	0	0	7	13.24	3Coil_Towed_Array
1044	47	TDSA5R-5	555327.15	4481140.75	0	0	0	0	0	0	7	13.50	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1045	48	TDSA5R-5	555324.90	4481140.80	0	0	0	0	0	0	7	20.12	3Coil_Towed_Array
1046	49	TDSA5R-5	555326.05	4481142.20	0	0	0	0	0	0	2	38.45	3Coil_Towed_Array
1047	50	TDSA5R-5	555322.80	4481160.15	0	0	0	0	0	0	7	8.11	3Coil_Towed_Array
1048	51	TDSA5R-5	555320.85	4481160.90	0	0	0	0	0	0	7	23.23	3Coil_Towed_Array
1049	52	TDSA5R-5	555322.95	4481161.35	0	0	0	0	0	0	7	16.47	3Coil_Towed_Array
1050	53	TDSA5R-5	555321.75	4481161.95	0	0	0	0	0	0	7	11.19	3Coil_Towed_Array
1051	54	TDSA5R-5	555323.25	4481162.40	0	0	0	0	0	0	7	11.80	3Coil_Towed_Array
1052	55	TDSA5R-5	555321.30	4481163.00	0	0	0	0	0	0	7	23.79	3Coil_Towed_Array
1053	56	TDSA5R-5	555323.30	4481163.51	0	0	0	0	0	0	7	9.07	3Coil_Towed_Array
1054	57	TDSA5R-5	555322.40	4481164.85	0	0	0	0	0	0	1	158.64	3Coil_Towed_Array
1055	58	TDSA5R-5	555321.00	4481166.45	0	0	0	0	0	0	7	14.11	3Coil_Towed_Array
1056	59	TDSA5R-5	555322.95	4481167.35	0	0	0	0	0	0	7	4.37	3Coil_Towed_Array
1057	60	TDSA5R-5	555321.75	4481168.10	0	0	0	0	0	0	7	11.19	3Coil_Towed_Array
1058	61	TDSA5R-5	555320.90	4481168.85	0	0	0	0	0	0	7	11.54	3Coil_Towed_Array
1059	62	TDSA5R-5	555322.65	4481168.85	0	0	0	0	0	0	7	5.71	3Coil_Towed_Array
1060	63	TDSA5R-5	555320.65	4481170.25	0	0	0	0	0	0	7	14.06	3Coil_Towed_Array
1061	64	TDSA5R-5	555321.75	4481170.80	0	0	0	0	0	0	7	10.84	3Coil_Towed_Array
1062	65	TDSA5R-5	555321.15	4481172.00	0	0	0	0	0	0	7	9.52	3Coil_Towed_Array
1063	66	TDSA5R-5	555320.10	4481172.90	0	0	0	0	0	0	7	17.74	3Coil_Towed_Array
1064	67	TDSA5R-5	555321.30	4481173.05	0	0	0	0	0	0	7	16.50	3Coil_Towed_Array
1065	68	TDSA5R-5	555320.55	4481173.95	0	0	0	0	0	0	7	10.44	3Coil_Towed_Array
1066	69	TDSA5R-5	555321.75	4481174.70	0	0	0	0	0	0	7	6.38	3Coil_Towed_Array
1067	70	TDSA5R-5	555319.65	4481175.00	0	0	0	0	0	0	7	7.71	3Coil_Towed_Array
1068	71	TDSA5R-5	555320.85	4481175.45	0	0	0	0	0	0	7	8.56	3Coil_Towed_Array
1069	72	TDSA5R-5	555319.65	4481176.65	0	0	0	0	0	0	7	17.05	3Coil_Towed_Array
1070	73	TDSA5R-5	555321.30	4481177.10	0	0	0	0	0	0	7	16.38	3Coil_Towed_Array
1071	74	TDSA5R-5	555319.20	4481177.70	0	0	0	0	0	0	7	16.20	3Coil_Towed_Array
1072	75	TDSA5R-5	555320.70	4481178.15	0	0	0	0	0	0	7	19.09	3Coil_Towed_Array
1073	76	TDSA5R-5	555318.90	4481178.90	0	0	0	0	0	0	7	6.27	3Coil_Towed_Array
1074	77	TDSA5R-5	555320.00	4481179.35	0	0	0	0	0	0	7	5.09	3Coil_Towed_Array
1075	78	TDSA5R-5	555320.55	4481180.55	0	0	0	0	0	0	7	9.55	3Coil_Towed_Array
1076	79	TDSA5R-5	555318.90	4481180.60	0	0	0	0	0	0	7	9.86	3Coil_Towed_Array
1077	80	TDSA5R-5	555319.65	4481181.75	0	0	0	0	0	0	7	9.18	3Coil_Towed_Array
1078	81	TDSA5R-5	555318.30	4481182.20	0	0	0	0	0	0	7	13.88	3Coil_Towed_Array
1079	82	TDSA5R-5	555319.35	4481183.10	0	0	0	0	0	0	7	10.55	3Coil_Towed_Array
1080	83	TDSA5R-5	555317.85	4481183.85	0	0	0	0	0	0	7	12.70	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1081	84	TDSA5R-5	555319.50	4481184.30	0	0	0	0	0	0	7	16.11	3Coil_Towed_Array
1082	85	TDSA5R-5	555319.50	4481185.65	0	0	0	0	0	0	7	8.31	3Coil_Towed_Array
1083	86	TDSA5R-5	555318.00	4481186.25	0	0	0	0	0	0	7	10.40	3Coil_Towed_Array
1084	87	TDSA5R-5	555319.20	4481186.85	0	0	0	0	0	0	7	18.74	3Coil_Towed_Array
1085	88	TDSA5R-5	555318.00	4481187.45	0	0	0	0	0	0	7	5.76	3Coil_Towed_Array
1086	89	TDSA5R-5	555316.80	4481188.05	0	0	0	0	0	0	7	9.85	3Coil_Towed_Array
1087	90	TDSA5R-5	555317.90	4481188.65	0	0	0	0	0	0	7	11.37	3Coil_Towed_Array
1088	91	TDSA5R-5	555317.55	4481189.70	0	0	0	0	0	0	7	6.93	3Coil_Towed_Array
1089	92	TDSA5R-5	555316.20	4481191.00	0	0	0	0	0	0	7	11.19	3Coil_Towed_Array
1090	93	TDSA5R-5	555318.15	4481191.20	0	0	0	0	0	0	7	11.69	3Coil_Towed_Array
1091	94	TDSA5R-5	555315.90	4481192.40	0	0	0	0	0	0	7	14.94	3Coil_Towed_Array
1092	95	TDSA5R-5	555317.10	4481192.70	0	0	0	0	0	0	7	11.55	3Coil_Towed_Array
1093	96	TDSA5R-5	555317.70	4481193.60	0	0	0	0	0	0	7	9.24	3Coil_Towed_Array
1094	97	TDSA5R-5	555316.50	4481194.65	0	0	0	0	0	0	7	5.41	3Coil_Towed_Array
1095	98	TDSA5R-5	555317.25	4481196.15	0	0	0	0	0	0	7	6.42	3Coil_Towed_Array
1096	99	TDSA5R-5	555315.60	4481196.30	0	0	0	0	0	0	7	7.00	3Coil_Towed_Array
1097	100	TDSA5R-5	555314.85	4481197.50	0	0	0	0	0	0	7	7.24	3Coil_Towed_Array
1098	101	TDSA5R-5	555316.60	4481197.95	0	0	0	0	0	0	7	8.48	3Coil_Towed_Array
1099	102	TDSA5R-5	555314.55	4481199.15	0	0	0	0	0	0	7	9.96	3Coil_Towed_Array
1100	103	TDSA5R-5	555316.35	4481200.20	0	0	0	0	0	0	7	7.86	3Coil_Towed_Array
1101	104	TDSA5R-5	555315.15	4481200.95	0	0	0	0	0	0	7	6.41	3Coil_Towed_Array
1102	105	TDSA5R-5	555313.95	4481202.15	0	0	0	0	0	0	7	6.74	3Coil_Towed_Array
1103	106	TDSA5R-5	555315.60	4481202.60	0	0	0	0	0	0	7	5.42	3Coil_Towed_Array
1104	107	TDSA5R-5	555313.95	4481203.63	0	0	0	0	0	0	7	4.94	3Coil_Towed_Array
1105	108	TDSA5R-5	555315.45	4481204.70	0	0	0	0	0	0	7	5.15	3Coil_Towed_Array
1106	109	TDSA5R-5	555313.35	4481205.15	0	0	0	0	0	0	7	5.90	3Coil_Towed_Array
1107	110	TDSA5R-5	555315.15	4481206.05	0	0	0	0	0	0	7	5.11	3Coil_Towed_Array
1108	111	TDSA5R-5	555312.75	4481207.55	0	0	0	0	0	0	7	21.45	3Coil_Towed_Array
1109	112	TDSA5R-5	555314.70	4481208.00	0	0	0	0	0	0	7	19.51	3Coil_Towed_Array
1110	113	TDSA5R-5	555314.16	4481209.69	0	0	0	0	0	0	7	4.58	3Coil_Towed_Array
1111	114	TDSA5R-5	555312.15	4481209.95	0	0	0	0	0	0	7	5.69	3Coil_Towed_Array
1112	115	TDSA5R-5	555312.90	4481211.45	0	0	0	0	0	0	7	4.28	3Coil_Towed_Array
1113	116	TDSA5R-5	555311.68	4481212.31	0	0	0	0	0	0	7	4.49	3Coil_Towed_Array
1114	117	TDSA5R-5	555313.65	4481212.65	0	0	0	0	0	0	7	4.12	3Coil_Towed_Array
1115	118	TDSA5R-5	555313.47	4481213.83	0	0	0	0	0	0	7	4.47	3Coil_Towed_Array
1116	119	TDSA5R-5	555311.13	4481214.63	0	0	0	0	0	0	7	5.00	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1117	120	TDSA5R-5	555310.80	4481215.65	0	0	0	0	0	0	7	6.48	3Coil_Towed_Array
1118	121	TDSA5R-5	555312.75	4481216.25	0	0	0	0	0	0	7	5.54	3Coil_Towed_Array
1119	122	TDSA5R-5	555311.25	4481217.45	0	0	0	0	0	0	7	7.90	3Coil_Towed_Array
1120	123	TDSA5R-5	555311.71	4481218.67	0	0	0	0	0	0	7	4.91	3Coil_Towed_Array
1121	124	TDSA5R-5	555310.35	4481219.10	0	0	0	0	0	0	7	5.44	3Coil_Towed_Array
1122	125	TDSA5R-5	555308.75	4481220.15	0	0	0	0	0	0	7	7.98	3Coil_Towed_Array
1123	126	TDSA5R-5	555308.85	4481222.25	0	0	0	0	0	0	7	5.99	3Coil_Towed_Array
1124	127	TDSA5R-5	555307.20	4481223.45	0	0	0	0	0	0	7	4.36	3Coil_Towed_Array
1125	128	TDSA5R-5	555308.80	4481224.20	0	0	0	0	0	0	7	6.16	3Coil_Towed_Array
1126	129	TDSA5R-5	555307.80	4481225.25	0	0	0	0	0	0	7	4.92	3Coil_Towed_Array
1127	130	TDSA5R-5	555307.35	4481228.10	0	0	0	0	0	0	7	6.54	3Coil_Towed_Array
1128	131	TDSA5R-5	555307.20	4481230.35	0	0	0	0	0	0	7	6.89	3Coil_Towed_Array
1129	132	TDSA5R-5	555306.45	4481234.25	0	0	0	0	0	0	7	10.78	3Coil_Towed_Array
1130	133	TDSA5R-5	555306.60	4481235.60	0	0	0	0	0	0	7	9.60	3Coil_Towed_Array
1131	134	TDSA5R-5	555305.40	4481236.80	0	0	0	0	0	0	7	5.21	3Coil_Towed_Array
1132	135	TDSA5R-5	555306.00	4481238.90	0	0	0	0	0	0	7	4.84	3Coil_Towed_Array
1133	136	TDSA5R-5	555305.05	4481240.35	0	0	0	0	0	0	7	4.68	3Coil_Towed_Array
1134	137	TDSA5R-5	555303.77	4481244.88	0	0	0	0	0	0	7	4.44	3Coil_Towed_Array
1135	138	TDSA5R-5	555305.76	4481245.11	0	0	0	0	0	0	7	4.50	3Coil_Towed_Array
1136	139	TDSA5R-5	555303.75	4481249.70	0	0	0	0	0	0	7	9.79	3Coil_Towed_Array
1137	140	TDSA5R-5	555302.10	4481252.40	0	0	0	0	0	0	7	8.61	3Coil_Towed_Array
1138	141	TDSA5R-5	555304.20	4481252.55	0	0	0	0	0	0	7	6.85	3Coil_Towed_Array
1139	142	TDSA5R-5	555302.85	4481253.60	0	0	0	0	0	0	7	6.27	3Coil_Towed_Array
1140	143	TDSA5R-5	555302.70	4481255.10	0	0	0	0	0	0	7	5.51	3Coil_Towed_Array
1141	144	TDSA5R-5	555303.45	4481256.00	0	0	0	0	0	0	7	4.37	3Coil_Towed_Array
1142	145	TDSA5R-5	555303.30	4481257.50	0	0	0	0	0	0	1	45.42	3Coil_Towed_Array
1143	146	TDSA5R-5	555301.35	4481262.30	0	0	0	0	0	0	7	5.80	3Coil_Towed_Array
1144	147	TDSA5R-5	555299.40	4481266.50	0	0	0	0	0	0	7	7.24	3Coil_Towed_Array
1145	148	TDSA5R-5	555301.35	4481266.95	0	0	0	0	0	0	7	7.04	3Coil_Towed_Array
1146	149	TDSA5R-5	555299.15	4481270.85	0	0	0	0	0	0	7	4.35	3Coil_Towed_Array
1147	150	TDSA5R-5	555300.45	4481271.45	0	0	0	0	0	0	7	4.22	3Coil_Towed_Array
1148	151	TDSA5R-5	555298.95	4481273.40	0	0	0	0	0	0	7	4.79	3Coil_Towed_Array
1149	152	TDSA5R-5	555297.75	4481274.60	0	0	0	0	0	0	7	4.94	3Coil_Towed_Array
1150	153	TDSA5R-5	555298.95	4481274.95	0	0	0	0	0	0	7	8.04	3Coil_Towed_Array
1151	154	TDSA5R-5	555298.35	4481277.15	0	0	0	0	0	0	7	6.05	3Coil_Towed_Array
1152	155	TDSA5R-5	555298.35	4481278.95	0	0	0	0	0	0	7	4.60	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1153	156	TDSA5R-5	555297.45	4481280.15	0	0	0	0	0	0	7	4.75	3Coil_Towed_Array
1154	1	TDSA5R-6	555508.05	4480764.30	0	0	0	0	0	0	3	53.18	3Coil_Towed_Array
1155	2	TDSA5R-6	555508.50	4480765.95	0	0	0	0	0	0	3	44.99	3Coil_Towed_Array
1156	3	TDSA5R-6	555506.40	4480768.35	0	0	0	0	0	0	3	184.64	3Coil_Towed_Array
1157	4	TDSA5R-6	555508.80	4480771.35	0	0	0	0	0	0	3	74.32	3Coil_Towed_Array
1158	5	TDSA5R-6	555506.70	4480771.80	0	0	0	0	0	0	3	141.54	3Coil_Towed_Array
1159	6	TDSA5R-6	555506.70	4480773.30	0	0	0	0	0	0	3	89.87	3Coil_Towed_Array
1160	7	TDSA5R-6	555506.25	4480775.55	0	0	0	0	0	0	3	91.75	3Coil_Towed_Array
1161	8	TDSA5R-6	555506.10	4480779.30	0	0	0	0	0	0	2	289.30	3Coil_Towed_Array
1162	9	TDSA5R-6	555503.43	4480783.68	0	0	0	0	0	0	7	20.61	3Coil_Towed_Array
1163	10	TDSA5R-6	555505.35	4480784.10	0	0	0	0	0	0	7	12.66	3Coil_Towed_Array
1164	11	TDSA5R-6	555503.25	4480785.45	0	0	0	0	0	0	7	16.25	3Coil_Towed_Array
1165	12	TDSA5R-6	555504.75	4480786.05	0	0	0	0	0	0	7	10.21	3Coil_Towed_Array
1166	13	TDSA5R-6	555503.60	4480787.05	0	0	0	0	0	0	7	13.26	3Coil_Towed_Array
1167	14	TDSA5R-6	555502.20	4480788.75	0	0	0	0	0	0	7	16.55	3Coil_Towed_Array
1168	15	TDSA5R-6	555503.85	4480789.20	0	0	0	0	0	0	7	18.50	3Coil_Towed_Array
1169	16	TDSA5R-6	555501.45	4480789.95	0	0	0	0	0	0	7	4.57	3Coil_Towed_Array
1170	17	TDSA5R-6	555503.40	4480790.40	0	0	0	0	0	0	7	8.02	3Coil_Towed_Array
1171	18	TDSA5R-6	555501.00	4480791.60	0	0	0	0	0	0	7	14.50	3Coil_Towed_Array
1172	19	TDSA5R-6	555502.95	4480792.20	0	0	0	0	0	0	7	13.40	3Coil_Towed_Array
1173	20	TDSA5R-6	555500.40	4480793.25	0	0	0	0	0	0	7	13.52	3Coil_Towed_Array
1174	21	TDSA5R-6	555502.35	4480793.85	0	0	0	0	0	0	7	8.69	3Coil_Towed_Array
1175	22	TDSA5R-6	555499.95	4480794.60	0	0	0	0	0	0	7	17.88	3Coil_Towed_Array
1176	23	TDSA5R-6	555501.90	4480795.05	0	0	0	0	0	0	7	18.91	3Coil_Towed_Array
1177	24	TDSA5R-6	555499.50	4480796.10	0	0	0	0	0	0	7	8.34	3Coil_Towed_Array
1178	25	TDSA5R-6	555500.90	4480796.25	0	0	0	0	0	0	7	13.52	3Coil_Towed_Array
1179	26	TDSA5R-6	555500.30	4480797.70	0	0	0	0	0	0	7	7.98	3Coil_Towed_Array
1180	27	TDSA5R-6	555499.05	4480798.35	0	0	0	0	0	0	7	19.44	3Coil_Towed_Array
1181	28	TDSA5R-6	555500.45	4480798.90	0	0	0	0	0	0	7	18.74	3Coil_Towed_Array
1182	29	TDSA5R-6	555499.50	4480800.00	0	0	0	0	0	0	7	5.65	3Coil_Towed_Array
1183	30	TDSA5R-6	555498.30	4480801.05	0	0	0	0	0	0	7	17.07	3Coil_Towed_Array
1184	31	TDSA5R-6	555500.10	4480801.80	0	0	0	0	0	0	7	18.01	3Coil_Towed_Array
1185	32	TDSA5R-6	555497.70	4480802.70	0	0	0	0	0	0	7	24.56	3Coil_Towed_Array
1186	33	TDSA5R-6	555499.65	4480803.30	0	0	0	0	0	0	7	27.03	3Coil_Towed_Array
1187	34	TDSA5R-6	555497.60	4480804.50	0	0	0	0	0	0	7	11.85	3Coil_Towed_Array
1188	35	TDSA5R-6	555498.80	4480804.95	0	0	0	0	0	0	7	13.13	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1189	36	TDSA5R-6	555497.70	4480806.60	0	0	0	0	0	0	7	17.69	3Coil_Towed_Array
1190	37	TDSA5R-6	555496.35	4480807.65	0	0	0	0	0	0	7	10.75	3Coil_Towed_Array
1191	38	TDSA5R-6	555498.30	4480808.10	0	0	0	0	0	0	7	14.80	3Coil_Towed_Array
1192	39	TDSA5R-6	555496.95	4480809.30	0	0	0	0	0	0	7	8.24	3Coil_Towed_Array
1193	40	TDSA5R-6	555497.40	4480810.65	0	0	0	0	0	0	7	5.21	3Coil_Towed_Array
1194	41	TDSA5R-6	555495.30	4480811.55	0	0	0	0	0	0	7	6.10	3Coil_Towed_Array
1195	42	TDSA5R-6	555497.40	4480811.85	0	0	0	0	0	0	7	8.83	3Coil_Towed_Array
1196	43	TDSA5R-6	555494.85	4480812.90	0	0	0	0	0	0	7	5.13	3Coil_Towed_Array
1197	44	TDSA5R-6	555496.95	4480813.50	0	0	0	0	0	0	7	7.21	3Coil_Towed_Array
1198	45	TDSA5R-6	555494.70	4480815.00	0	0	0	0	0	0	7	11.89	3Coil_Towed_Array
1199	46	TDSA5R-6	555496.35	4480815.45	0	0	0	0	0	0	7	13.68	3Coil_Towed_Array
1200	47	TDSA5R-6	555494.40	4480817.70	0	0	0	0	0	0	7	9.45	3Coil_Towed_Array
1201	48	TDSA5R-6	555495.60	4480818.00	0	0	0	0	0	0	7	11.89	3Coil_Towed_Array
1202	49	TDSA5R-6	555493.50	4480818.45	0	0	0	0	0	0	7	7.02	3Coil_Towed_Array
1203	50	TDSA5R-6	555495.15	4480819.95	0	0	0	0	0	0	7	4.38	3Coil_Towed_Array
1204	51	TDSA5R-6	555493.50	4480821.60	0	0	0	0	0	0	7	4.19	3Coil_Towed_Array
1205	52	TDSA5R-6	555492.90	4480823.25	0	0	0	0	0	0	7	5.75	3Coil_Towed_Array
1206	53	TDSA5R-6	555492.60	4480824.30	0	0	0	0	0	0	7	4.53	3Coil_Towed_Array
1207	54	TDSA5R-6	555491.85	4480825.80	0	0	0	0	0	0	7	4.69	3Coil_Towed_Array
1208	55	TDSA5R-6	555490.65	4480829.25	0	0	0	0	0	0	7	6.72	3Coil_Towed_Array
1209	56	TDSA5R-6	555490.20	4480831.05	0	0	0	0	0	0	7	8.21	3Coil_Towed_Array
1210	57	TDSA5R-6	555488.30	4480839.05	0	0	0	0	0	0	7	6.39	3Coil_Towed_Array
1211	58	TDSA5R-6	555488.60	4480840.40	0	0	0	0	0	0	7	9.40	3Coil_Towed_Array
1212	59	TDSA5R-6	555487.80	4480842.30	0	0	0	0	0	0	7	5.30	3Coil_Towed_Array
1213	60	TDSA5R-6	555486.45	4480848.60	0	0	0	0	0	0	7	4.93	3Coil_Towed_Array
1214	61	TDSA5R-6	555486.00	4480850.55	0	0	0	0	0	0	7	5.02	3Coil_Towed_Array
1215	62	TDSA5R-6	555483.44	4480859.34	0	0	0	0	0	0	7	8.11	3Coil_Towed_Array
1216	63	TDSA5R-6	555479.09	4480875.14	0	0	0	0	0	0	7	4.11	3Coil_Towed_Array
1217	64	TDSA5R-6	555477.57	4480880.25	0	0	0	0	0	0	7	5.90	3Coil_Towed_Array
1218	65	TDSA5R-6	555476.85	4480882.65	0	0	0	0	0	0	7	7.87	3Coil_Towed_Array
1219	66	TDSA5R-6	555473.97	4480889.22	0	0	0	0	0	0	7	4.13	3Coil_Towed_Array
1220	67	TDSA5R-6	555474.13	4480891.09	0	0	0	0	0	0	7	4.87	3Coil_Towed_Array
1221	68	TDSA5R-6	555469.65	4480909.80	0	0	0	0	0	0	7	9.73	3Coil_Towed_Array
1222	69	TDSA5R-6	555468.30	4480911.60	0	0	0	0	0	0	7	4.75	3Coil_Towed_Array
1223	70	TDSA5R-6	555465.90	4480926.30	0	0	0	0	0	0	7	5.35	3Coil_Towed_Array
1224	71	TDSA5R-6	555463.20	4480933.50	0	0	0	0	0	0	11	30.97	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1225	72	TDSA5R-6	555463.39	4480936.73	0	0	0	0	0	0	11	42.86	3Coil_Towed_Array
1226	73	TDSA5R-6	555463.65	4480939.95	0	0	0	0	0	0	11	31.96	3Coil_Towed_Array
1227	74	TDSA5R-6	555462.41	4480940.56	0	0	0	0	0	0	1	33.71	3Coil_Towed_Array
1228	75	TDSA5R-6	555460.95	4480942.35	0	0	0	0	0	0	11	57.13	3Coil_Towed_Array
1229	76	TDSA5R-6	555461.12	4480945.71	0	0	0	0	0	0	11	77.93	3Coil_Towed_Array
1230	77	TDSA5R-6	555461.40	4480948.80	0	0	0	0	0	0	11	63.38	3Coil_Towed_Array
1231	78	TDSA5R-6	555457.65	4480959.60	0	0	0	0	0	0	7	6.64	3Coil_Towed_Array
1232	79	TDSA5R-6	555457.05	4480962.75	0	0	0	0	0	0	7	6.47	3Coil_Towed_Array
1233	80	TDSA5R-6	555454.23	4480970.44	0	0	0	0	0	0	7	7.42	3Coil_Towed_Array
1234	81	TDSA5R-6	555450.26	4480982.11	0	0	0	0	0	0	7	4.84	3Coil_Towed_Array
1235	82	TDSA5R-6	555448.65	4480990.95	0	0	0	0	0	0	7	8.93	3Coil_Towed_Array
1236	83	TDSA5R-6	555443.38	4481007.93	0	0	0	0	0	0	7	7.98	3Coil_Towed_Array
1237	84	TDSA5R-6	555440.16	4481021.19	0	0	0	0	0	0	7	6.59	3Coil_Towed_Array
1238	85	TDSA5R-6	555440.25	4481025.30	0	0	0	0	0	0	7	4.80	3Coil_Towed_Array
1239	86	TDSA5R-6	555438.35	4481028.83	0	0	0	0	0	0	7	4.42	3Coil_Towed_Array
1240	87	TDSA5R-6	555434.30	4481052.20	0	0	0	0	0	0	7	4.52	3Coil_Towed_Array
1241	88	TDSA5R-6	555433.74	4481055.51	0	0	0	0	0	0	7	4.76	3Coil_Towed_Array
1242	89	TDSA5R-6	555433.65	4481056.65	0	0	0	0	0	0	7	4.06	3Coil_Towed_Array
1243	90	TDSA5R-6	555433.80	4481063.40	0	0	0	0	0	0	7	4.41	3Coil_Towed_Array
1244	91	TDSA5R-6	555432.75	4481064.15	0	0	0	0	0	0	7	4.14	3Coil_Towed_Array
1245	92	TDSA5R-6	555432.60	4481065.20	0	0	0	0	0	0	7	4.20	3Coil_Towed_Array
1246	93	TDSA5R-6	555432.40	4481066.33	0	0	0	0	0	0	7	4.08	3Coil_Towed_Array
1247	94	TDSA5R-6	555432.86	4481069.83	0	0	0	0	0	0	7	5.09	3Coil_Towed_Array
1248	95	TDSA5R-6	555432.75	4481070.90	0	0	0	0	0	0	7	4.38	3Coil_Towed_Array
1249	96	TDSA5R-6	555430.28	4481073.09	0	0	0	0	0	0	7	4.62	3Coil_Towed_Array
1250	97	TDSA5R-6	555432.00	4481073.45	0	0	0	0	0	0	7	6.99	3Coil_Towed_Array
1251	98	TDSA5R-6	555430.05	4481074.50	0	0	0	0	0	0	7	8.73	3Coil_Towed_Array
1252	99	TDSA5R-6	555432.00	4481075.10	0	0	0	0	0	0	7	6.61	3Coil_Towed_Array
1253	100	TDSA5R-6	555431.55	4481077.05	0	0	0	0	0	0	7	4.24	3Coil_Towed_Array
1254	101	TDSA5R-6	555429.00	4481079.15	0	0	0	0	0	0	7	4.20	3Coil_Towed_Array
1255	102	TDSA5R-6	555431.04	4481079.64	0	0	0	0	0	0	7	4.73	3Coil_Towed_Array
1256	103	TDSA5R-6	555428.85	4481080.05	0	0	0	0	0	0	7	4.52	3Coil_Towed_Array
1257	104	TDSA5R-6	555430.79	4481080.72	0	0	0	0	0	0	7	5.19	3Coil_Towed_Array
1258	105	TDSA5R-6	555428.55	4481081.40	0	0	0	0	0	0	7	5.96	3Coil_Towed_Array
1259	106	TDSA5R-6	555430.50	4481082.00	0	0	0	0	0	0	7	4.44	3Coil_Towed_Array
1260	107	TDSA5R-6	555428.40	4481082.60	0	0	0	0	0	0	7	4.54	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1261	108	TDSA5R-6	555430.20	4481083.50	0	0	0	0	0	0	7	4.47	3Coil_Towed_Array
1262	109	TDSA5R-6	555429.00	4481084.10	0	0	0	0	0	0	7	9.31	3Coil_Towed_Array
1263	110	TDSA5R-6	555427.65	4481085.60	0	0	0	0	0	0	7	4.07	3Coil_Towed_Array
1264	111	TDSA5R-6	555428.85	4481086.05	0	0	0	0	0	0	7	5.86	3Coil_Towed_Array
1265	112	TDSA5R-6	555429.00	4481088.90	0	0	0	0	0	0	7	5.02	3Coil_Towed_Array
1266	113	TDSA5R-6	555426.75	4481089.50	0	0	0	0	0	0	7	8.08	3Coil_Towed_Array
1267	114	TDSA5R-6	555428.70	4481089.95	0	0	0	0	0	0	7	6.29	3Coil_Towed_Array
1268	115	TDSA5R-6	555426.60	4481090.85	0	0	0	0	0	0	7	8.87	3Coil_Towed_Array
1269	116	TDSA5R-6	555428.20	4481092.05	0	0	0	0	0	0	7	7.47	3Coil_Towed_Array
1270	117	TDSA5R-6	555426.70	4481093.25	0	0	0	0	0	0	7	8.90	3Coil_Towed_Array
1271	118	TDSA5R-6	555427.95	4481093.70	0	0	0	0	0	0	7	7.42	3Coil_Towed_Array
1272	119	TDSA5R-6	555426.90	4481094.60	0	0	0	0	0	0	7	8.89	3Coil_Towed_Array
1273	120	TDSA5R-6	555426.60	4481095.65	0	0	0	0	0	0	7	11.40	3Coil_Towed_Array
1274	121	TDSA5R-6	555427.35	4481096.70	0	0	0	0	0	0	7	6.36	3Coil_Towed_Array
1275	122	TDSA5R-6	555426.00	4481097.30	0	0	0	0	0	0	7	9.83	3Coil_Towed_Array
1276	123	TDSA5R-6	555424.95	4481098.80	0	0	0	0	0	0	7	8.03	3Coil_Towed_Array
1277	124	TDSA5R-6	555426.75	4481100.30	0	0	0	0	0	0	7	6.82	3Coil_Towed_Array
1278	125	TDSA5R-6	555424.95	4481100.45	0	0	0	0	0	0	7	5.50	3Coil_Towed_Array
1279	126	TDSA5R-6	555425.40	4481102.40	0	0	0	0	0	0	7	10.53	3Coil_Towed_Array
1280	127	TDSA5R-6	555424.20	4481103.30	0	0	0	0	0	0	7	8.94	3Coil_Towed_Array
1281	128	TDSA5R-6	555426.15	4481103.75	0	0	0	0	0	0	7	9.98	3Coil_Towed_Array
1282	129	TDSA5R-6	555424.05	4481104.50	0	0	0	0	0	0	7	9.46	3Coil_Towed_Array
1283	130	TDSA5R-6	555425.25	4481104.65	0	0	0	0	0	0	7	12.36	3Coil_Towed_Array
1284	131	TDSA5R-6	555423.75	4481105.70	0	0	0	0	0	0	7	5.91	3Coil_Towed_Array
1285	132	TDSA5R-6	555425.10	4481106.00	0	0	0	0	0	0	7	11.39	3Coil_Towed_Array
1286	133	TDSA5R-6	555423.60	4481107.05	0	0	0	0	0	0	7	12.39	3Coil_Towed_Array
1287	134	TDSA5R-6	555425.15	4481107.50	0	0	0	0	0	0	7	7.90	3Coil_Towed_Array
1288	135	TDSA5R-6	555423.45	4481108.25	0	0	0	0	0	0	7	10.80	3Coil_Towed_Array
1289	136	TDSA5R-6	555425.40	4481108.70	0	0	0	0	0	0	7	7.91	3Coil_Towed_Array
1290	137	TDSA5R-6	555423.15	4481109.90	0	0	0	0	0	0	7	14.34	3Coil_Towed_Array
1291	138	TDSA5R-6	555425.25	4481109.90	0	0	0	0	0	0	7	7.69	3Coil_Towed_Array
1292	139	TDSA5R-6	555423.30	4481111.25	0	0	0	0	0	0	7	7.40	3Coil_Towed_Array
1293	140	TDSA5R-6	555424.95	4481111.25	0	0	0	0	0	0	7	9.64	3Coil_Towed_Array
1294	141	TDSA5R-6	555422.85	4481112.30	0	0	0	0	0	0	7	6.76	3Coil_Towed_Array
1295	142	TDSA5R-6	555424.35	4481112.90	0	0	0	0	0	0	7	7.70	3Coil_Towed_Array
1296	143	TDSA5R-6	555423.60	4481113.80	0	0	0	0	0	0	7	21.93	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1297	144	TDSA5R-6	555422.55	4481115.45	0	0	0	0	0	0	7	6.39	3Coil_Towed_Array
1298	145	TDSA5R-6	555424.00	4481116.05	0	0	0	0	0	0	7	7.85	3Coil_Towed_Array
1299	146	TDSA5R-6	555422.10	4481116.80	0	0	0	0	0	0	7	6.11	3Coil_Towed_Array
1300	147	TDSA5R-6	555423.80	4481116.95	0	0	0	0	0	0	7	8.72	3Coil_Towed_Array
1301	148	TDSA5R-6	555421.95	4481118.00	0	0	0	0	0	0	7	12.34	3Coil_Towed_Array
1302	149	TDSA5R-6	555423.90	4481118.30	0	0	0	0	0	0	7	14.92	3Coil_Towed_Array
1303	150	TDSA5R-6	555421.65	4481119.35	0	0	0	0	0	0	7	15.89	3Coil_Towed_Array
1304	151	TDSA5R-6	555423.60	4481119.65	0	0	0	0	0	0	7	15.59	3Coil_Towed_Array
1305	152	TDSA5R-6	555423.10	4481120.70	0	0	0	0	0	0	7	6.77	3Coil_Towed_Array
1306	153	TDSA5R-6	555421.35	4481121.00	0	0	0	0	0	0	7	8.86	3Coil_Towed_Array
1307	154	TDSA5R-6	555423.30	4481122.05	0	0	0	0	0	0	7	5.66	3Coil_Towed_Array
1308	155	TDSA5R-6	555422.10	4481122.35	0	0	0	0	0	0	7	12.29	3Coil_Towed_Array
1309	156	TDSA5R-6	555420.90	4481123.70	0	0	0	0	0	0	7	7.26	3Coil_Towed_Array
1310	157	TDSA5R-6	555422.85	4481123.85	0	0	0	0	0	0	7	8.10	3Coil_Towed_Array
1311	158	TDSA5R-6	555420.75	4481124.60	0	0	0	0	0	0	7	10.47	3Coil_Towed_Array
1312	159	TDSA5R-6	555422.70	4481124.90	0	0	0	0	0	0	7	10.14	3Coil_Towed_Array
1313	160	TDSA5R-6	555420.45	4481126.40	0	0	0	0	0	0	7	4.84	3Coil_Towed_Array
1314	161	TDSA5R-6	555422.40	4481126.55	0	0	0	0	0	0	7	5.49	3Coil_Towed_Array
1315	162	TDSA5R-6	555421.20	4481127.75	0	0	0	0	0	0	7	5.03	3Coil_Towed_Array
1316	163	TDSA5R-6	555420.15	4481128.50	0	0	0	0	0	0	7	5.89	3Coil_Towed_Array
1317	164	TDSA5R-6	555421.20	4481129.25	0	0	0	0	0	0	7	5.40	3Coil_Towed_Array
1318	165	TDSA5R-6	555419.70	4481130.90	0	0	0	0	0	0	7	4.58	3Coil_Towed_Array
1319	166	TDSA5R-6	555421.50	4481131.35	0	0	0	0	0	0	7	7.99	3Coil_Towed_Array
1320	167	TDSA5R-6	555419.40	4481132.25	0	0	0	0	0	0	7	6.86	3Coil_Towed_Array
1321	168	TDSA5R-6	555420.60	4481133.15	0	0	0	0	0	0	7	9.53	3Coil_Towed_Array
1322	169	TDSA5R-6	555418.95	4481134.65	0	0	0	0	0	0	7	7.42	3Coil_Towed_Array
1323	170	TDSA5R-6	555420.45	4481135.25	0	0	0	0	0	0	7	7.62	3Coil_Towed_Array
1324	171	TDSA5R-6	555419.55	4481136.75	0	0	0	0	0	0	7	6.50	3Coil_Towed_Array
1325	172	TDSA5R-6	555418.35	4481137.05	0	0	0	0	0	0	7	5.51	3Coil_Towed_Array
1326	173	TDSA5R-6	555419.45	4481137.95	0	0	0	0	0	0	7	19.45	3Coil_Towed_Array
1327	174	TDSA5R-6	555419.10	4481140.05	0	0	0	0	0	0	7	7.13	3Coil_Towed_Array
1328	175	TDSA5R-6	555418.65	4481141.10	0	0	0	0	0	0	7	5.63	3Coil_Towed_Array
1329	176	TDSA5R-6	555419.40	4481142.00	0	0	0	0	0	0	7	15.18	3Coil_Towed_Array
1330	177	TDSA5R-6	555417.45	4481142.15	0	0	0	0	0	0	7	6.34	3Coil_Towed_Array
1331	178	TDSA5R-6	555418.20	4481142.90	0	0	0	0	0	0	7	9.74	3Coil_Towed_Array
1332	179	TDSA5R-6	555418.05	4481144.25	0	0	0	0	0	0	7	17.76	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1333	180	TDSA5R-6	555418.45	4481146.05	0	0	0	0	0	0	7	14.40	3Coil_Towed_Array
1334	181	TDSA5R-6	555417.14	4481146.55	0	0	0	0	0	0	7	10.20	3Coil_Towed_Array
1335	182	TDSA5R-6	555418.35	4481147.40	0	0	0	0	0	0	7	4.33	3Coil_Towed_Array
1336	183	TDSA5R-6	555416.25	4481147.85	0	0	0	0	0	0	7	7.14	3Coil_Towed_Array
1337	184	TDSA5R-6	555416.10	4481148.75	0	0	0	0	0	0	7	6.72	3Coil_Towed_Array
1338	185	TDSA5R-6	555417.90	4481149.35	0	0	0	0	0	0	7	16.83	3Coil_Towed_Array
1339	186	TDSA5R-6	555415.65	4481150.70	0	0	0	0	0	0	7	10.41	3Coil_Towed_Array
1340	187	TDSA5R-6	555417.40	4481150.85	0	0	0	0	0	0	7	8.96	3Coil_Towed_Array
1341	188	TDSA5R-6	555415.95	4481152.20	0	0	0	0	0	0	7	7.70	3Coil_Towed_Array
1342	189	TDSA5R-6	555417.45	4481152.20	0	0	0	0	0	0	7	6.08	3Coil_Towed_Array
1343	190	TDSA5R-6	555415.20	4481152.95	0	0	0	0	0	0	7	10.88	3Coil_Towed_Array
1344	191	TDSA5R-6	555417.15	4481153.85	0	0	0	0	0	0	7	11.12	3Coil_Towed_Array
1345	192	TDSA5R-6	555415.05	4481154.00	0	0	0	0	0	0	7	4.94	3Coil_Towed_Array
1346	193	TDSA5R-6	555414.75	4481155.35	0	0	0	0	0	0	7	14.13	3Coil_Towed_Array
1347	194	TDSA5R-6	555416.70	4481155.65	0	0	0	0	0	0	7	13.62	3Coil_Towed_Array
1348	195	TDSA5R-6	555414.60	4481156.40	0	0	0	0	0	0	7	12.24	3Coil_Towed_Array
1349	196	TDSA5R-6	555416.55	4481157.00	0	0	0	0	0	0	7	12.80	3Coil_Towed_Array
1350	197	TDSA5R-6	555414.60	4481157.45	0	0	0	0	0	0	7	13.45	3Coil_Towed_Array
1351	198	TDSA5R-6	555416.25	4481158.05	0	0	0	0	0	0	7	6.36	3Coil_Towed_Array
1352	199	TDSA5R-6	555415.05	4481158.95	0	0	0	0	0	0	7	6.10	3Coil_Towed_Array
1353	200	TDSA5R-6	555413.85	4481159.70	0	0	0	0	0	0	7	8.27	3Coil_Towed_Array
1354	201	TDSA5R-6	555415.80	4481160.00	0	0	0	0	0	0	7	5.10	3Coil_Towed_Array
1355	202	TDSA5R-6	555414.60	4481160.75	0	0	0	0	0	0	7	4.83	3Coil_Towed_Array
1356	203	TDSA5R-6	555413.55	4481161.05	0	0	0	0	0	0	7	7.91	3Coil_Towed_Array
1357	204	TDSA5R-6	555415.50	4481161.65	0	0	0	0	0	0	7	5.84	3Coil_Towed_Array
1358	205	TDSA5R-6	555413.40	4481162.10	0	0	0	0	0	0	7	5.59	3Coil_Towed_Array
1359	206	TDSA5R-6	555415.20	4481163.00	0	0	0	0	0	0	7	7.88	3Coil_Towed_Array
1360	207	TDSA5R-6	555412.99	4481164.09	0	0	0	0	0	0	7	14.86	3Coil_Towed_Array
1361	208	TDSA5R-6	555415.05	4481164.35	0	0	0	0	0	0	7	11.51	3Coil_Towed_Array
1362	209	TDSA5R-6	555413.85	4481165.10	0	0	0	0	0	0	7	4.56	3Coil_Towed_Array
1363	210	TDSA5R-6	555412.62	4481165.86	0	0	0	0	0	0	7	7.90	3Coil_Towed_Array
1364	211	TDSA5R-6	555414.60	4481166.15	0	0	0	0	0	0	7	9.54	3Coil_Towed_Array
1365	212	TDSA5R-6	555413.10	4481166.90	0	0	0	0	0	0	7	5.43	3Coil_Towed_Array
1366	213	TDSA5R-6	555413.85	4481167.95	0	0	0	0	0	0	7	5.29	3Coil_Towed_Array
1367	214	TDSA5R-6	555412.05	4481168.70	0	0	0	0	0	0	7	5.70	3Coil_Towed_Array
1368	215	TDSA5R-6	555413.98	4481169.30	0	0	0	0	0	0	7	5.49	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1369	216	TDSA5R-6	555412.35	4481170.80	0	0	0	0	0	0	7	7.68	3Coil_Towed_Array
1370	217	TDSA5R-6	555413.55	4481171.55	0	0	0	0	0	0	7	9.85	3Coil_Towed_Array
1371	218	TDSA5R-6	555411.30	4481172.75	0	0	0	0	0	0	7	8.02	3Coil_Towed_Array
1372	219	TDSA5R-6	555413.25	4481172.90	0	0	0	0	0	0	7	8.62	3Coil_Towed_Array
1373	220	TDSA5R-6	555411.00	4481174.10	0	0	0	0	0	0	7	11.57	3Coil_Towed_Array
1374	221	TDSA5R-6	555411.90	4481175.45	0	0	0	0	0	0	7	6.18	3Coil_Towed_Array
1375	222	TDSA5R-6	555410.70	4481175.90	0	0	0	0	0	0	7	4.93	3Coil_Towed_Array
1376	223	TDSA5R-6	555412.65	4481176.35	0	0	0	0	0	0	7	4.95	3Coil_Towed_Array
1377	224	TDSA5R-6	555410.55	4481177.25	0	0	0	0	0	0	7	4.20	3Coil_Towed_Array
1378	225	TDSA5R-6	555412.50	4481177.40	0	0	0	0	0	0	7	4.64	3Coil_Towed_Array
1379	226	TDSA5R-6	555410.10	4481179.80	0	0	0	0	0	0	7	4.70	3Coil_Towed_Array
1380	227	TDSA5R-6	555411.64	4481180.61	0	0	0	0	0	0	7	4.57	3Coil_Towed_Array
1381	228	TDSA5R-6	555409.65	4481181.90	0	0	0	0	0	0	7	4.95	3Coil_Towed_Array
1382	229	TDSA5R-6	555411.00	4481182.35	0	0	0	0	0	0	7	5.47	3Coil_Towed_Array
1383	230	TDSA5R-6	555410.10	4481183.40	0	0	0	0	0	0	7	5.33	3Coil_Towed_Array
1384	231	TDSA5R-6	555411.30	4481183.85	0	0	0	0	0	0	7	4.96	3Coil_Towed_Array
1385	232	TDSA5R-6	555409.20	4481184.90	0	0	0	0	0	0	7	4.37	3Coil_Towed_Array
1386	233	TDSA5R-6	555411.00	4481185.65	0	0	0	0	0	0	7	6.28	3Coil_Towed_Array
1387	234	TDSA5R-6	555410.86	4481186.72	0	0	0	0	0	0	7	4.30	3Coil_Towed_Array
1388	235	TDSA5R-6	555408.45	4481188.35	0	0	0	0	0	0	7	4.01	3Coil_Towed_Array
1389	236	TDSA5R-6	555408.21	4481190.03	0	0	0	0	0	0	7	4.15	3Coil_Towed_Array
1390	237	TDSA5R-6	555410.10	4481190.60	0	0	0	0	0	0	7	4.37	3Coil_Towed_Array
1391	238	TDSA5R-6	555407.92	4481191.46	0	0	0	0	0	0	7	4.67	3Coil_Towed_Array
1392	239	TDSA5R-6	555409.95	4481191.65	0	0	0	0	0	0	7	6.24	3Coil_Towed_Array
1393	240	TDSA5R-6	555408.95	4481192.70	0	0	0	0	0	0	7	5.05	3Coil_Towed_Array
1394	241	TDSA5R-6	555409.20	4481194.95	0	0	0	0	0	0	7	6.24	3Coil_Towed_Array
1395	242	TDSA5R-6	555408.90	4481196.15	0	0	0	0	0	0	7	5.04	3Coil_Towed_Array
1396	243	TDSA5R-6	555407.70	4481197.50	0	0	0	0	0	0	7	4.72	3Coil_Towed_Array
1397	244	TDSA5R-6	555407.17	4481199.99	0	0	0	0	0	0	7	4.03	3Coil_Towed_Array
1398	245	TDSA5R-6	555405.75	4481201.55	0	0	0	0	0	0	7	4.26	3Coil_Towed_Array
1399	246	TDSA5R-6	555407.55	4481203.20	0	0	0	0	0	0	7	6.28	3Coil_Towed_Array
1400	247	TDSA5R-6	555405.15	4481204.55	0	0	0	0	0	0	7	8.22	3Coil_Towed_Array
1401	248	TDSA5R-6	555407.10	4481205.00	0	0	0	0	0	0	7	6.86	3Coil_Towed_Array
1402	249	TDSA5R-6	555406.76	4481206.99	0	0	0	0	0	0	7	4.42	3Coil_Towed_Array
1403	250	TDSA5R-6	555405.45	4481208.30	0	0	0	0	0	0	7	4.02	3Coil_Towed_Array
1404	251	TDSA5R-6	555404.25	4481219.10	0	0	0	0	0	0	1	32.96	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1405	1	TDSA5R-7	555602.40	4480834.20	0	0	0	0	0	0	3	630.22	3Coil_Towed_Array
1406	2	TDSA5R-7	555601.65	4480838.55	0	0	0	0	0	0	3	12154.64	3Coil_Towed_Array
1407	3	TDSA5R-7	555598.50	4480839.90	0	0	0	0	0	0	3	1392.82	3Coil_Towed_Array
1408	4	TDSA5R-7	555597.89	4480841.34	0	0	0	0	0	0	3	1040.31	3Coil_Towed_Array
1409	5	TDSA5R-7	555599.20	4480843.05	0	0	0	0	0	0	3	3476.37	3Coil_Towed_Array
1410	6	TDSA5R-7	555596.85	4480847.55	0	0	0	0	0	0	7	67.58	3Coil_Towed_Array
1411	7	TDSA5R-7	555595.35	4480849.50	0	0	0	0	0	0	7	9.02	3Coil_Towed_Array
1412	8	TDSA5R-7	555597.33	4480849.58	0	0	0	0	0	0	7	33.88	3Coil_Towed_Array
1413	9	TDSA5R-7	555595.05	4480850.55	0	0	0	0	0	0	7	28.87	3Coil_Towed_Array
1414	10	TDSA5R-7	555596.85	4480851.30	0	0	0	0	0	0	7	26.57	3Coil_Towed_Array
1415	11	TDSA5R-7	555595.80	4480851.90	0	0	0	0	0	0	7	12.13	3Coil_Towed_Array
1416	12	TDSA5R-7	555594.45	4480853.10	0	0	0	0	0	0	7	15.47	3Coil_Towed_Array
1417	13	TDSA5R-7	555596.25	4480853.55	0	0	0	0	0	0	7	17.16	3Coil_Towed_Array
1418	14	TDSA5R-7	555594.60	4480855.20	0	0	0	0	0	0	7	13.11	3Coil_Towed_Array
1419	15	TDSA5R-7	555594.05	4480856.25	0	0	0	0	0	0	7	15.59	3Coil_Towed_Array
1420	16	TDSA5R-7	555595.80	4480856.70	0	0	0	0	0	0	7	13.19	3Coil_Towed_Array
1421	17	TDSA5R-7	555594.46	4480857.78	0	0	0	0	0	0	7	4.87	3Coil_Towed_Array
1422	18	TDSA5R-7	555595.25	4480858.86	0	0	0	0	0	0	7	4.38	3Coil_Towed_Array
1423	19	TDSA5R-7	555593.35	4480859.55	0	0	0	0	0	0	7	10.00	3Coil_Towed_Array
1424	20	TDSA5R-7	555594.90	4480860.15	0	0	0	0	0	0	7	10.03	3Coil_Towed_Array
1425	21	TDSA5R-7	555592.66	4480860.94	0	0	0	0	0	0	7	4.53	3Coil_Towed_Array
1426	22	TDSA5R-7	555592.05	4480862.55	0	0	0	0	0	0	7	6.27	3Coil_Towed_Array
1427	23	TDSA5R-7	555593.10	4480863.50	0	0	0	0	0	0	7	11.84	3Coil_Towed_Array
1428	24	TDSA5R-7	555590.70	4480864.80	0	0	0	0	0	0	7	19.37	3Coil_Towed_Array
1429	25	TDSA5R-7	555591.90	4480866.45	0	0	0	0	0	0	7	29.22	3Coil_Towed_Array
1430	26	TDSA5R-7	555590.25	4480866.60	0	0	0	0	0	0	7	10.26	3Coil_Towed_Array
1431	27	TDSA5R-7	555580.80	4480896.15	0	0	0	0	0	0	1	7.97	3Coil_Towed_Array
1432	28	TDSA5R-7	555582.00	4480900.35	0	0	0	0	0	0	7	6.90	3Coil_Towed_Array
1433	29	TDSA5R-7	555579.75	4480910.10	0	0	0	0	0	0	7	4.35	3Coil_Towed_Array
1434	30	TDSA5R-7	555577.35	4480912.35	0	0	0	0	0	0	7	4.33	3Coil_Towed_Array
1435	31	TDSA5R-7	555574.45	4480915.20	0	0	0	0	0	0	7	4.25	3Coil_Towed_Array
1436	32	TDSA5R-7	555570.30	4480922.40	0	0	0	0	0	0	7	5.24	3Coil_Towed_Array
1437	33	TDSA5R-7	555569.85	4480924.50	0	0	0	0	0	0	7	6.07	3Coil_Towed_Array
1438	34	TDSA5R-7	555568.95	4480925.85	0	0	0	0	0	0	7	6.43	3Coil_Towed_Array
1439	35	TDSA5R-7	555566.70	4480927.95	0	0	0	0	0	0	7	5.63	3Coil_Towed_Array
1440	36	TDSA5R-7	555563.70	4480929.30	0	0	0	0	0	0	7	6.72	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1441	37	TDSA5R-7	555560.25	4480932.90	0	0	0	0	0	0	7	6.76	3Coil_Towed_Array
1442	38	TDSA5R-7	555561.75	4480934.10	0	0	0	0	0	0	7	7.61	3Coil_Towed_Array
1443	39	TDSA5R-7	555557.95	4480935.75	0	0	0	0	0	0	7	4.84	3Coil_Towed_Array
1444	40	TDSA5R-7	555554.40	4480942.95	0	0	0	0	0	0	7	4.42	3Coil_Towed_Array
1445	41	TDSA5R-7	555551.91	4480950.62	0	0	0	0	0	0	7	4.00	3Coil_Towed_Array
1446	42	TDSA5R-7	555547.35	4480966.80	0	0	0	0	0	0	7	5.05	3Coil_Towed_Array
1447	43	TDSA5R-7	555546.00	4480968.00	0	0	0	0	0	0	7	4.33	3Coil_Towed_Array
1448	44	TDSA5R-7	555547.30	4480968.45	0	0	0	0	0	0	7	5.37	3Coil_Towed_Array
1449	45	TDSA5R-7	555545.85	4480972.65	0	0	0	0	0	0	7	4.42	3Coil_Towed_Array
1450	46	TDSA5R-7	555544.05	4480978.50	0	0	0	0	0	0	7	5.14	3Coil_Towed_Array
1451	47	TDSA5R-7	555540.15	4480987.95	0	0	0	0	0	0	7	4.53	3Coil_Towed_Array
1452	48	TDSA5R-7	555541.80	4480988.30	0	0	0	0	0	0	7	5.68	3Coil_Towed_Array
1453	49	TDSA5R-7	555540.90	4480989.30	0	0	0	0	0	0	7	4.94	3Coil_Towed_Array
1454	50	TDSA5R-7	555540.45	4480990.80	0	0	0	0	0	0	7	4.78	3Coil_Towed_Array
1455	51	TDSA5R-7	555536.70	4481011.20	0	0	0	0	0	0	7	5.00	3Coil_Towed_Array
1456	52	TDSA5R-7	555535.50	4481012.25	0	0	0	0	0	0	7	4.33	3Coil_Towed_Array
1457	53	TDSA5R-7	555537.45	4481012.55	0	0	0	0	0	0	7	4.73	3Coil_Towed_Array
1458	54	TDSA5R-7	555536.70	4481016.45	0	0	0	0	0	0	7	5.15	3Coil_Towed_Array
1459	55	TDSA5R-7	555535.20	4481018.40	0	0	0	0	0	0	7	4.06	3Coil_Towed_Array
1460	56	TDSA5R-7	555533.11	4481022.95	0	0	0	0	0	0	7	4.06	3Coil_Towed_Array
1461	57	TDSA5R-7	555532.65	4481024.55	0	0	0	0	0	0	7	5.53	3Coil_Towed_Array
1462	58	TDSA5R-7	555533.07	4481027.63	0	0	0	0	0	0	7	5.04	3Coil_Towed_Array
1463	59	TDSA5R-7	555532.65	4481029.35	0	0	0	0	0	0	7	4.84	3Coil_Towed_Array
1464	60	TDSA5R-7	555533.25	4481031.00	0	0	0	0	0	0	7	4.08	3Coil_Towed_Array
1465	61	TDSA5R-7	555531.90	4481032.20	0	0	0	0	0	0	7	6.80	3Coil_Towed_Array
1466	62	TDSA5R-7	555530.55	4481033.55	0	0	0	0	0	0	7	5.06	3Coil_Towed_Array
1467	63	TDSA5R-7	555532.50	4481034.00	0	0	0	0	0	0	7	5.84	3Coil_Towed_Array
1468	64	TDSA5R-7	555531.57	4481036.83	0	0	0	0	0	0	7	4.11	3Coil_Towed_Array
1469	65	TDSA5R-7	555529.42	4481037.29	0	0	0	0	0	0	7	4.83	3Coil_Towed_Array
1470	66	TDSA5R-7	555529.05	4481038.80	0	0	0	0	0	0	7	5.34	3Coil_Towed_Array
1471	67	TDSA5R-7	555531.00	4481039.25	0	0	0	0	0	0	7	5.27	3Coil_Towed_Array
1472	68	TDSA5R-7	555529.80	4481040.15	0	0	0	0	0	0	7	6.42	3Coil_Towed_Array
1473	69	TDSA5R-7	555528.50	4481041.50	0	0	0	0	0	0	7	6.54	3Coil_Towed_Array
1474	70	TDSA5R-7	555530.25	4481042.10	0	0	0	0	0	0	7	7.33	3Coil_Towed_Array
1475	71	TDSA5R-7	555528.20	4481042.85	0	0	0	0	0	0	7	5.96	3Coil_Towed_Array
1476	72	TDSA5R-7	555528.75	4481044.20	0	0	0	0	0	0	7	6.75	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1477	73	TDSA5R-7	555527.40	4481045.25	0	0	0	0	0	0	7	4.69	3Coil_Towed_Array
1478	74	TDSA5R-7	555529.35	4481045.55	0	0	0	0	0	0	7	5.41	3Coil_Towed_Array
1479	75	TDSA5R-7	555527.85	4481047.65	0	0	0	0	0	0	7	7.49	3Coil_Towed_Array
1480	76	TDSA5R-7	555526.50	4481049.60	0	0	0	0	0	0	7	6.24	3Coil_Towed_Array
1481	77	TDSA5R-7	555528.00	4481050.45	0	0	0	0	0	0	7	7.80	3Coil_Towed_Array
1482	78	TDSA5R-7	555525.90	4481051.40	0	0	0	0	0	0	7	7.52	3Coil_Towed_Array
1483	79	TDSA5R-7	555527.85	4481051.85	0	0	0	0	0	0	7	10.89	3Coil_Towed_Array
1484	80	TDSA5R-7	555525.60	4481052.60	0	0	0	0	0	0	7	4.91	3Coil_Towed_Array
1485	81	TDSA5R-7	555527.55	4481053.20	0	0	0	0	0	0	7	6.46	3Coil_Towed_Array
1486	82	TDSA5R-7	555525.30	4481053.65	0	0	0	0	0	0	7	5.55	3Coil_Towed_Array
1487	83	TDSA5R-7	555527.10	4481054.25	0	0	0	0	0	0	7	6.63	3Coil_Towed_Array
1488	84	TDSA5R-7	555524.70	4481055.30	0	0	0	0	0	0	7	5.25	3Coil_Towed_Array
1489	85	TDSA5R-7	555526.10	4481055.80	0	0	0	0	0	0	7	8.32	3Coil_Towed_Array
1490	86	TDSA5R-7	555524.55	4481056.50	0	0	0	0	0	0	7	7.02	3Coil_Towed_Array
1491	87	TDSA5R-7	555524.10	4481058.45	0	0	0	0	0	0	7	5.87	3Coil_Towed_Array
1492	88	TDSA5R-7	555525.35	4481058.45	0	0	0	0	0	0	7	8.39	3Coil_Towed_Array
1493	89	TDSA5R-7	555524.40	4481059.50	0	0	0	0	0	0	7	7.82	3Coil_Towed_Array
1494	90	TDSA5R-7	555526.05	4481059.80	0	0	0	0	0	0	7	9.68	3Coil_Towed_Array
1495	91	TDSA5R-7	555523.80	4481060.70	0	0	0	0	0	0	7	12.30	3Coil_Towed_Array
1496	92	TDSA5R-7	555525.75	4481061.15	0	0	0	0	0	0	7	13.25	3Coil_Towed_Array
1497	93	TDSA5R-7	555525.30	4481063.10	0	0	0	0	0	0	7	5.32	3Coil_Towed_Array
1498	94	TDSA5R-7	555523.05	4481063.70	0	0	0	0	0	0	7	10.45	3Coil_Towed_Array
1499	95	TDSA5R-7	555525.00	4481064.15	0	0	0	0	0	0	7	11.43	3Coil_Towed_Array
1500	96	TDSA5R-7	555522.90	4481065.50	0	0	0	0	0	0	7	24.07	3Coil_Towed_Array
1501	97	TDSA5R-7	555524.85	4481065.80	0	0	0	0	0	0	7	20.58	3Coil_Towed_Array
1502	98	TDSA5R-7	555522.95	4481067.08	0	0	0	0	0	0	7	12.37	3Coil_Towed_Array
1503	99	TDSA5R-7	555524.70	4481067.30	0	0	0	0	0	0	7	10.28	3Coil_Towed_Array
1504	100	TDSA5R-7	555523.35	4481068.50	0	0	0	0	0	0	7	13.10	3Coil_Towed_Array
1505	101	TDSA5R-7	555522.30	4481069.55	0	0	0	0	0	0	7	15.74	3Coil_Towed_Array
1506	102	TDSA5R-7	555524.00	4481069.70	0	0	0	0	0	0	7	19.51	3Coil_Towed_Array
1507	103	TDSA5R-7	555522.15	4481070.75	0	0	0	0	0	0	7	21.76	3Coil_Towed_Array
1508	104	TDSA5R-7	555524.10	4481071.20	0	0	0	0	0	0	7	18.66	3Coil_Towed_Array
1509	105	TDSA5R-7	555522.00	4481072.25	0	0	0	0	0	0	7	21.18	3Coil_Towed_Array
1510	106	TDSA5R-7	555523.95	4481072.70	0	0	0	0	0	0	7	20.41	3Coil_Towed_Array
1511	107	TDSA5R-7	555521.70	4481073.60	0	0	0	0	0	0	7	14.17	3Coil_Towed_Array
1512	108	TDSA5R-7	555523.80	4481073.75	0	0	0	0	0	0	7	12.47	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1513	109	TDSA5R-7	555522.45	4481075.40	0	0	0	0	0	0	7	15.65	3Coil_Towed_Array
1514	110	TDSA5R-7	555521.25	4481076.45	0	0	0	0	0	0	7	29.70	3Coil_Towed_Array
1515	111	TDSA5R-7	555523.35	4481076.75	0	0	0	0	0	0	7	26.13	3Coil_Towed_Array
1516	112	TDSA5R-7	555521.10	4481077.65	0	0	0	0	0	0	7	28.72	3Coil_Towed_Array
1517	113	TDSA5R-7	555523.20	4481077.80	0	0	0	0	0	0	7	24.91	3Coil_Towed_Array
1518	114	TDSA5R-7	555521.94	4481079.04	0	0	0	0	0	0	7	19.32	3Coil_Towed_Array
1519	115	TDSA5R-7	555520.80	4481079.75	0	0	0	0	0	0	7	34.46	3Coil_Towed_Array
1520	116	TDSA5R-7	555522.90	4481080.05	0	0	0	0	0	0	7	29.92	3Coil_Towed_Array
1521	117	TDSA5R-7	555520.65	4481081.10	0	0	0	0	0	0	7	11.92	3Coil_Towed_Array
1522	118	TDSA5R-7	555522.60	4481081.25	0	0	0	0	0	0	7	13.47	3Coil_Towed_Array
1523	119	TDSA5R-7	555521.40	4481082.15	0	0	0	0	0	0	7	4.38	3Coil_Towed_Array
1524	120	TDSA5R-7	555520.20	4481083.20	0	0	0	0	0	0	7	19.73	3Coil_Towed_Array
1525	121	TDSA5R-7	555522.00	4481083.80	0	0	0	0	0	0	7	15.00	3Coil_Towed_Array
1526	122	TDSA5R-7	555520.80	4481084.55	0	0	0	0	0	0	7	9.87	3Coil_Towed_Array
1527	123	TDSA5R-7	555520.60	4481085.90	0	0	0	0	0	0	7	15.11	3Coil_Towed_Array
1528	124	TDSA5R-7	555519.50	4481086.80	0	0	0	0	0	0	7	20.55	3Coil_Towed_Array
1529	125	TDSA5R-7	555521.10	4481087.40	0	0	0	0	0	0	7	17.37	3Coil_Towed_Array
1530	126	TDSA5R-7	555518.85	4481087.85	0	0	0	0	0	0	7	18.10	3Coil_Towed_Array
1531	127	TDSA5R-7	555520.05	4481088.30	0	0	0	0	0	0	7	17.53	3Coil_Towed_Array
1532	128	TDSA5R-7	555518.40	4481089.50	0	0	0	0	0	0	7	11.93	3Coil_Towed_Array
1533	129	TDSA5R-7	555519.45	4481090.10	0	0	0	0	0	0	7	16.48	3Coil_Towed_Array
1534	130	TDSA5R-7	555518.10	4481091.00	0	0	0	0	0	0	7	23.69	3Coil_Towed_Array
1535	131	TDSA5R-7	555519.60	4481091.90	0	0	0	0	0	0	7	17.71	3Coil_Towed_Array
1536	132	TDSA5R-7	555517.35	4481092.50	0	0	0	0	0	0	7	19.22	3Coil_Towed_Array
1537	133	TDSA5R-7	555519.30	4481092.95	0	0	0	0	0	0	7	22.75	3Coil_Towed_Array
1538	134	TDSA5R-7	555516.65	4481094.60	0	0	0	0	0	0	7	6.34	3Coil_Towed_Array
1539	135	TDSA5R-7	555518.81	4481094.64	0	0	0	0	0	0	7	4.35	3Coil_Towed_Array
1540	136	TDSA5R-7	555517.50	4481095.65	0	0	0	0	0	0	7	17.54	3Coil_Towed_Array
1541	137	TDSA5R-7	555516.00	4481097.00	0	0	0	0	0	0	7	11.39	3Coil_Towed_Array
1542	138	TDSA5R-7	555517.80	4481097.00	0	0	0	0	0	0	7	7.26	3Coil_Towed_Array
1543	139	TDSA5R-7	555516.60	4481098.20	0	0	0	0	0	0	7	24.01	3Coil_Towed_Array
1544	140	TDSA5R-7	555515.55	4481099.40	0	0	0	0	0	0	7	17.32	3Coil_Towed_Array
1545	141	TDSA5R-7	555517.05	4481100.00	0	0	0	0	0	0	7	13.76	3Coil_Towed_Array
1546	142	TDSA5R-7	555514.80	4481100.75	0	0	0	0	0	0	7	17.16	3Coil_Towed_Array
1547	143	TDSA5R-7	555516.35	4481101.35	0	0	0	0	0	0	7	16.68	3Coil_Towed_Array
1548	144	TDSA5R-7	555514.05	4481103.00	0	0	0	0	0	0	7	6.96	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1549	145	TDSA5R-7	555516.00	4481103.30	0	0	0	0	0	0	7	11.29	3Coil_Towed_Array
1550	146	TDSA5R-7	555513.60	4481104.50	0	0	0	0	0	0	7	16.39	3Coil_Towed_Array
1551	147	TDSA5R-7	555515.20	4481104.80	0	0	0	0	0	0	7	14.92	3Coil_Towed_Array
1552	148	TDSA5R-7	555513.30	4481106.15	0	0	0	0	0	0	7	21.41	3Coil_Towed_Array
1553	149	TDSA5R-7	555515.10	4481106.60	0	0	0	0	0	0	7	14.93	3Coil_Towed_Array
1554	150	TDSA5R-7	555513.05	4481107.65	0	0	0	0	0	0	7	18.60	3Coil_Towed_Array
1555	151	TDSA5R-7	555514.80	4481108.25	0	0	0	0	0	0	7	16.00	3Coil_Towed_Array
1556	152	TDSA5R-7	555513.00	4481109.00	0	0	0	0	0	0	7	11.76	3Coil_Towed_Array
1557	153	TDSA5R-7	555514.35	4481110.05	0	0	0	0	0	0	7	16.16	3Coil_Towed_Array
1558	154	TDSA5R-7	555513.00	4481110.50	0	0	0	0	0	0	7	15.87	3Coil_Towed_Array
1559	155	TDSA5R-7	555512.10	4481111.55	0	0	0	0	0	0	7	12.28	3Coil_Towed_Array
1560	156	TDSA5R-7	555514.05	4481111.85	0	0	0	0	0	0	7	19.40	3Coil_Towed_Array
1561	157	TDSA5R-7	555511.80	4481112.75	0	0	0	0	0	0	7	18.79	3Coil_Towed_Array
1562	158	TDSA5R-7	555513.75	4481113.05	0	0	0	0	0	0	7	17.53	3Coil_Towed_Array
1563	159	TDSA5R-7	555511.80	4481113.65	0	0	0	0	0	0	7	16.43	3Coil_Towed_Array
1564	160	TDSA5R-7	555513.60	4481114.10	0	0	0	0	0	0	7	13.14	3Coil_Towed_Array
1565	161	TDSA5R-7	555511.65	4481114.85	0	0	0	0	0	0	7	15.16	3Coil_Towed_Array
1566	162	TDSA5R-7	555513.30	4481115.30	0	0	0	0	0	0	7	17.01	3Coil_Towed_Array
1567	163	TDSA5R-7	555512.02	4481116.61	0	0	0	0	0	0	7	6.80	3Coil_Towed_Array
1568	164	TDSA5R-7	555510.90	4481117.25	0	0	0	0	0	0	7	12.73	3Coil_Towed_Array
1569	165	TDSA5R-7	555512.85	4481117.85	0	0	0	0	0	0	7	19.61	3Coil_Towed_Array
1570	166	TDSA5R-7	555510.60	4481118.90	0	0	0	0	0	0	7	4.33	3Coil_Towed_Array
1571	167	TDSA5R-7	555510.30	4481120.10	0	0	0	0	0	0	7	20.49	3Coil_Towed_Array
1572	168	TDSA5R-7	555512.00	4481120.10	0	0	0	0	0	0	7	20.43	3Coil_Towed_Array
1573	169	TDSA5R-7	555511.20	4481121.30	0	0	0	0	0	0	7	29.29	3Coil_Towed_Array
1574	170	TDSA5R-7	555510.00	4481122.50	0	0	0	0	0	0	7	19.26	3Coil_Towed_Array
1575	171	TDSA5R-7	555511.20	4481122.95	0	0	0	0	0	0	7	20.53	3Coil_Towed_Array
1576	172	TDSA5R-7	555509.70	4481124.00	0	0	0	0	0	0	7	33.92	3Coil_Towed_Array
1577	173	TDSA5R-7	555511.65	4481124.30	0	0	0	0	0	0	7	30.45	3Coil_Towed_Array
1578	174	TDSA5R-7	555509.85	4481125.85	0	0	0	0	0	0	7	15.40	3Coil_Towed_Array
1579	175	TDSA5R-7	555511.35	4481126.10	0	0	0	0	0	0	7	10.88	3Coil_Towed_Array
1580	176	TDSA5R-7	555509.10	4481127.45	0	0	0	0	0	0	7	23.55	3Coil_Towed_Array
1581	177	TDSA5R-7	555511.05	4481128.05	0	0	0	0	0	0	7	28.56	3Coil_Towed_Array
1582	178	TDSA5R-7	555509.30	4481129.20	0	0	0	0	0	0	7	20.86	3Coil_Towed_Array
1583	179	TDSA5R-7	555510.90	4481129.70	0	0	0	0	0	0	7	25.73	3Coil_Towed_Array
1584	180	TDSA5R-7	555508.50	4481130.75	0	0	0	0	0	0	7	15.27	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1585	181	TDSA5R-7	555510.45	4481131.05	0	0	0	0	0	0	7	14.49	3Coil_Towed_Array
1586	182	TDSA5R-7	555509.22	4481132.01	0	0	0	0	0	0	7	4.71	3Coil_Towed_Array
1587	183	TDSA5R-7	555507.90	4481133.60	0	0	0	0	0	0	7	27.08	3Coil_Towed_Array
1588	184	TDSA5R-7	555509.85	4481133.90	0	0	0	0	0	0	7	19.86	3Coil_Towed_Array
1589	185	TDSA5R-7	555507.45	4481135.25	0	0	0	0	0	0	7	7.01	3Coil_Towed_Array
1590	186	TDSA5R-7	555508.55	4481135.70	0	0	0	0	0	0	7	10.34	3Coil_Towed_Array
1591	187	TDSA5R-7	555507.30	4481136.45	0	0	0	0	0	0	7	11.10	3Coil_Towed_Array
1592	188	TDSA5R-7	555509.10	4481136.75	0	0	0	0	0	0	7	13.84	3Coil_Towed_Array
1593	189	TDSA5R-7	555506.85	4481138.10	0	0	0	0	0	0	7	11.37	3Coil_Towed_Array
1594	190	TDSA5R-7	555508.50	4481138.55	0	0	0	0	0	0	7	10.27	3Coil_Towed_Array
1595	191	TDSA5R-7	555506.40	4481140.05	0	0	0	0	0	0	7	8.54	3Coil_Towed_Array
1596	192	TDSA5R-7	555507.90	4481140.50	0	0	0	0	0	0	7	11.07	3Coil_Towed_Array
1597	193	TDSA5R-7	555505.65	4481141.10	0	0	0	0	0	0	7	9.87	3Coil_Towed_Array
1598	194	TDSA5R-7	555506.95	4481141.40	0	0	0	0	0	0	7	12.63	3Coil_Towed_Array
1599	195	TDSA5R-7	555507.11	4481142.81	0	0	0	0	0	0	7	5.74	3Coil_Towed_Array
1600	196	TDSA5R-7	555504.90	4481143.35	0	0	0	0	0	0	7	7.98	3Coil_Towed_Array
1601	197	TDSA5R-7	555505.95	4481144.25	0	0	0	0	0	0	7	7.47	3Coil_Towed_Array
1602	198	TDSA5R-7	555505.20	4481145.30	0	0	0	0	0	0	7	6.10	3Coil_Towed_Array
1603	199	TDSA5R-7	555503.85	4481146.35	0	0	0	0	0	0	7	9.59	3Coil_Towed_Array
1604	200	TDSA5R-7	555505.10	4481146.65	0	0	0	0	0	0	7	8.51	3Coil_Towed_Array
1605	201	TDSA5R-7	555503.55	4481147.40	0	0	0	0	0	0	7	8.57	3Coil_Towed_Array
1606	202	TDSA5R-7	555505.50	4481148.15	0	0	0	0	0	0	7	7.87	3Coil_Towed_Array
1607	203	TDSA5R-7	555503.85	4481149.65	0	0	0	0	0	0	7	10.82	3Coil_Towed_Array
1608	204	TDSA5R-7	555504.52	4481150.79	0	0	0	0	0	0	7	5.24	3Coil_Towed_Array
1609	205	TDSA5R-7	555502.20	4481151.30	0	0	0	0	0	0	7	9.12	3Coil_Towed_Array
1610	206	TDSA5R-7	555504.30	4481152.20	0	0	0	0	0	0	7	7.48	3Coil_Towed_Array
1611	207	TDSA5R-7	555501.45	4481153.85	0	0	0	0	0	0	7	7.29	3Coil_Towed_Array
1612	208	TDSA5R-7	555503.40	4481154.60	0	0	0	0	0	0	7	9.26	3Coil_Towed_Array
1613	209	TDSA5R-7	555501.15	4481154.90	0	0	0	0	0	0	7	5.07	3Coil_Towed_Array
1614	210	TDSA5R-7	555502.65	4481155.65	0	0	0	0	0	0	7	6.04	3Coil_Towed_Array
1615	211	TDSA5R-7	555501.60	4481156.85	0	0	0	0	0	0	7	9.64	3Coil_Towed_Array
1616	212	TDSA5R-7	555500.10	4481158.65	0	0	0	0	0	0	7	6.62	3Coil_Towed_Array
1617	213	TDSA5R-7	555502.20	4481158.65	0	0	0	0	0	0	7	4.59	3Coil_Towed_Array
1618	214	TDSA5R-7	555500.95	4481160.15	0	0	0	0	0	0	7	5.54	3Coil_Towed_Array
1619	215	TDSA5R-7	555499.20	4481161.80	0	0	0	0	0	0	7	4.59	3Coil_Towed_Array
1620	216	TDSA5R-7	555501.30	4481162.25	0	0	0	0	0	0	7	5.35	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1621	217	TDSA5R-7	555499.95	4481163.45	0	0	0	0	0	0	7	6.18	3Coil_Towed_Array
1622	218	TDSA5R-7	555498.15	4481166.00	0	0	0	0	0	0	7	6.22	3Coil_Towed_Array
1623	219	TDSA5R-7	555497.70	4481168.55	0	0	0	0	0	0	7	6.85	3Coil_Towed_Array
1624	220	TDSA5R-7	555497.55	4481169.90	0	0	0	0	0	0	7	4.64	3Coil_Towed_Array
1625	221	TDSA5R-7	555497.70	4481170.80	0	0	0	0	0	0	7	5.49	3Coil_Towed_Array
1626	222	TDSA5R-7	555496.20	4481172.00	0	0	0	0	0	0	7	4.11	3Coil_Towed_Array
1627	223	TDSA5R-7	555498.15	4481172.60	0	0	0	0	0	0	7	4.86	3Coil_Towed_Array
1628	224	TDSA5R-7	555495.30	4481174.85	0	0	0	0	0	0	7	5.25	3Coil_Towed_Array
1629	225	TDSA5R-7	555497.00	4481175.45	0	0	0	0	0	0	7	4.68	3Coil_Towed_Array
1630	226	TDSA5R-7	555496.15	4481178.00	0	0	0	0	0	0	7	4.61	3Coil_Towed_Array
1631	227	TDSA5R-7	555494.97	4481179.48	0	0	0	0	0	0	7	4.75	3Coil_Towed_Array
1632	228	TDSA5R-7	555493.70	4481180.85	0	0	0	0	0	0	7	4.86	3Coil_Towed_Array
1633	229	TDSA5R-7	555493.05	4481182.35	0	0	0	0	0	0	7	7.18	3Coil_Towed_Array
1634	230	TDSA5R-7	555494.20	4481182.95	0	0	0	0	0	0	7	9.11	3Coil_Towed_Array
1635	231	TDSA5R-7	555493.35	4481184.60	0	0	0	0	0	0	7	6.03	3Coil_Towed_Array
1636	232	TDSA5R-7	555491.85	4481186.10	0	0	0	0	0	0	7	4.13	3Coil_Towed_Array
1637	233	TDSA5R-7	555490.87	4481189.67	0	0	0	0	0	0	7	4.60	3Coil_Towed_Array
1638	234	TDSA5R-7	555491.25	4481191.65	0	0	0	0	0	0	7	4.08	3Coil_Towed_Array
1639	235	TDSA5R-7	555489.90	4481193.00	0	0	0	0	0	0	7	5.02	3Coil_Towed_Array
1640	236	TDSA5R-7	555486.30	4481203.95	0	0	0	0	0	0	7	4.90	3Coil_Towed_Array
1641	237	TDSA5R-7	555484.99	4481210.57	0	0	0	0	0	0	7	4.23	3Coil_Towed_Array
1642	238	TDSA5R-7	555485.27	4481212.83	0	0	0	0	0	0	7	4.31	3Coil_Towed_Array
1643	1	TSDA5R-8	555702.60	4480878.90	0	0	0	0	0	0	1	11.29	3Coil_Towed_Array
1644	2	TSDA5R-8	555697.80	4480882.50	0	0	0	0	0	0	1	9.22	3Coil_Towed_Array
1645	3	TSDA5R-8	555699.15	4480884.15	0	0	0	0	0	0	7	4.75	3Coil_Towed_Array
1646	4	TSDA5R-8	555695.70	4480889.70	0	0	0	0	0	0	1	78.28	3Coil_Towed_Array
1647	5	TSDA5R-8	555693.00	4480898.25	0	0	0	0	0	0	3	1982.87	3Coil_Towed_Array
1648	6	TSDA5R-8	555691.35	4480902.30	0	0	0	0	0	0	3	1837.43	3Coil_Towed_Array
1649	7	TSDA5R-8	555688.95	4480907.55	0	0	0	0	0	0	3	629.70	3Coil_Towed_Array
1650	8	TSDA5R-8	555687.90	4480912.65	0	0	0	0	0	0	2	119.35	3Coil_Towed_Array
1651	9	TSDA5R-8	555685.35	4480914.30	0	0	0	0	0	0	3	66.67	3Coil_Towed_Array
1652	10	TSDA5R-8	555687.00	4480916.10	0	0	0	0	0	0	3	69.09	3Coil_Towed_Array
1653	11	TSDA5R-8	555684.75	4480917.30	0	0	0	0	0	0	7	4.01	3Coil_Towed_Array
1654	12	TSDA5R-8	555685.85	4480920.32	0	0	0	0	0	0	7	4.48	3Coil_Towed_Array
1655	13	TSDA5R-8	555683.62	4480921.63	0	0	0	0	0	0	7	8.75	3Coil_Towed_Array
1656	14	TSDA5R-8	555684.45	4480923.15	0	0	0	0	0	0	1	183.67	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1657	15	TSDA5R-8	555684.45	4480924.20	0	0	0	0	0	0	1	91.16	3Coil_Towed_Array
1658	16	TSDA5R-8	555683.48	4480925.52	0	0	0	0	0	0	7	7.47	3Coil_Towed_Array
1659	17	TSDA5R-8	555685.15	4480926.60	0	0	0	0	0	0	7	9.03	3Coil_Towed_Array
1660	18	TSDA5R-8	555683.10	4480929.00	0	0	0	0	0	0	7	7.38	3Coil_Towed_Array
1661	19	TSDA5R-8	555684.80	4480929.00	0	0	0	0	0	0	7	15.13	3Coil_Towed_Array
1662	20	TSDA5R-8	555682.95	4480931.40	0	0	0	0	0	0	7	9.77	3Coil_Towed_Array
1663	21	TSDA5R-8	555685.05	4480931.70	0	0	0	0	0	0	7	16.43	3Coil_Towed_Array
1664	22	TSDA5R-8	555683.85	4480932.45	0	0	0	0	0	0	7	6.45	3Coil_Towed_Array
1665	23	TSDA5R-8	555682.50	4480933.95	0	0	0	0	0	0	7	7.23	3Coil_Towed_Array
1666	24	TSDA5R-8	555684.45	4480934.40	0	0	0	0	0	0	7	5.60	3Coil_Towed_Array
1667	25	TSDA5R-8	555683.25	4480936.05	0	0	0	0	0	0	7	12.87	3Coil_Towed_Array
1668	26	TSDA5R-8	555682.80	4480937.55	0	0	0	0	0	0	7	13.19	3Coil_Towed_Array
1669	27	TSDA5R-8	555683.55	4480939.05	0	0	0	0	0	0	7	11.60	3Coil_Towed_Array
1670	28	TSDA5R-8	555681.00	4480940.40	0	0	0	0	0	0	7	4.49	3Coil_Towed_Array
1671	29	TSDA5R-8	555683.10	4480940.70	0	0	0	0	0	0	7	16.33	3Coil_Towed_Array
1672	30	TSDA5R-8	555680.20	4480944.15	0	0	0	0	0	0	7	5.58	3Coil_Towed_Array
1673	31	TSDA5R-8	555681.75	4480945.20	0	0	0	0	0	0	7	10.24	3Coil_Towed_Array
1674	32	TSDA5R-8	555679.50	4480945.80	0	0	0	0	0	0	7	15.09	3Coil_Towed_Array
1675	33	TSDA5R-8	555681.30	4480946.70	0	0	0	0	0	0	7	11.22	3Coil_Towed_Array
1676	34	TSDA5R-8	555680.85	4480948.20	0	0	0	0	0	0	7	6.77	3Coil_Towed_Array
1677	35	TSDA5R-8	555678.60	4480948.50	0	0	0	0	0	0	7	4.72	3Coil_Towed_Array
1678	36	TSDA5R-8	555680.40	4480949.40	0	0	0	0	0	0	7	7.80	3Coil_Towed_Array
1679	37	TSDA5R-8	555678.00	4480950.30	0	0	0	0	0	0	7	7.86	3Coil_Towed_Array
1680	38	TSDA5R-8	555677.70	4480951.65	0	0	0	0	0	0	7	11.14	3Coil_Towed_Array
1681	39	TSDA5R-8	555679.65	4480951.80	0	0	0	0	0	0	7	10.13	3Coil_Towed_Array
1682	40	TSDA5R-8	555676.80	4480954.20	0	0	0	0	0	0	7	9.36	3Coil_Towed_Array
1683	41	TSDA5R-8	555678.75	4480954.95	0	0	0	0	0	0	7	7.26	3Coil_Towed_Array
1684	42	TSDA5R-8	555677.00	4480955.70	0	0	0	0	0	0	7	9.21	3Coil_Towed_Array
1685	43	TSDA5R-8	555678.30	4480956.15	0	0	0	0	0	0	7	9.22	3Coil_Towed_Array
1686	44	TSDA5R-8	555676.10	4480957.35	0	0	0	0	0	0	7	10.02	3Coil_Towed_Array
1687	45	TSDA5R-8	555677.55	4480958.25	0	0	0	0	0	0	7	10.70	3Coil_Towed_Array
1688	46	TSDA5R-8	555675.18	4480958.81	0	0	0	0	0	0	7	4.56	3Coil_Towed_Array
1689	47	TSDA5R-8	555676.95	4480959.90	0	0	0	0	0	0	7	6.49	3Coil_Towed_Array
1690	48	TSDA5R-8	555674.40	4480961.25	0	0	0	0	0	0	7	5.72	3Coil_Towed_Array
1691	49	TSDA5R-8	555676.20	4480961.55	0	0	0	0	0	0	7	6.22	3Coil_Towed_Array
1692	50	TSDA5R-8	555673.50	4480963.20	0	0	0	0	0	0	7	9.33	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1693	51	TSDA5R-8	555675.60	4480963.50	0	0	0	0	0	0	7	6.62	3Coil_Towed_Array
1694	52	TSDA5R-8	555674.70	4480965.00	0	0	0	0	0	0	7	7.19	3Coil_Towed_Array
1695	53	TSDA5R-8	555673.35	4480965.70	0	0	0	0	0	0	7	8.26	3Coil_Towed_Array
1696	54	TSDA5R-8	555672.30	4480966.50	0	0	0	0	0	0	7	10.71	3Coil_Towed_Array
1697	55	TSDA5R-8	555674.25	4480966.95	0	0	0	0	0	0	7	5.52	3Coil_Towed_Array
1698	56	TSDA5R-8	555673.75	4480968.15	0	0	0	0	0	0	7	7.52	3Coil_Towed_Array
1699	57	TSDA5R-8	555671.70	4480968.30	0	0	0	0	0	0	7	10.54	3Coil_Towed_Array
1700	58	TSDA5R-8	555671.20	4480970.10	0	0	0	0	0	0	7	13.22	3Coil_Towed_Array
1701	59	TSDA5R-8	555672.90	4480970.55	0	0	0	0	0	0	7	7.49	3Coil_Towed_Array
1702	60	TSDA5R-8	555670.95	4480972.50	0	0	0	0	0	0	1	75.73	3Coil_Towed_Array
1703	61	TSDA5R-8	555669.55	4480975.65	0	0	0	0	0	0	7	9.08	3Coil_Towed_Array
1704	62	TSDA5R-8	555670.50	4480976.70	0	0	0	0	0	0	7	12.46	3Coil_Towed_Array
1705	63	TSDA5R-8	555668.55	4480976.85	0	0	0	0	0	0	7	6.77	3Coil_Towed_Array
1706	64	TSDA5R-8	555667.50	4480978.65	0	0	0	0	0	0	7	9.64	3Coil_Towed_Array
1707	65	TSDA5R-8	555669.30	4480979.70	0	0	0	0	0	0	7	8.41	3Coil_Towed_Array
1708	66	TSDA5R-8	555667.05	4480980.15	0	0	0	0	0	0	7	6.66	3Coil_Towed_Array
1709	67	TSDA5R-8	555666.60	4480981.35	0	0	0	0	0	0	7	16.40	3Coil_Towed_Array
1710	68	TSDA5R-8	555668.40	4480982.10	0	0	0	0	0	0	1	73.45	3Coil_Towed_Array
1711	69	TSDA5R-8	555666.00	4480982.55	0	0	0	0	0	0	7	11.87	3Coil_Towed_Array
1712	70	TSDA5R-8	555665.60	4480984.20	0	0	0	0	0	0	7	16.22	3Coil_Towed_Array
1713	71	TSDA5R-8	555667.35	4480984.95	0	0	0	0	0	0	7	10.52	3Coil_Towed_Array
1714	72	TSDA5R-8	555664.65	4480986.00	0	0	0	0	0	0	7	7.54	3Coil_Towed_Array
1715	73	TSDA5R-8	555665.90	4480986.30	0	0	0	0	0	0	7	9.52	3Coil_Towed_Array
1716	74	TSDA5R-8	555664.05	4480987.35	0	0	0	0	0	0	7	10.71	3Coil_Towed_Array
1717	75	TSDA5R-8	555666.10	4480987.65	0	0	0	0	0	0	7	10.72	3Coil_Towed_Array
1718	76	TSDA5R-8	555663.30	4480989.15	0	0	0	0	0	0	7	10.54	3Coil_Towed_Array
1719	77	TSDA5R-8	555665.25	4480989.75	0	0	0	0	0	0	7	12.11	3Coil_Towed_Array
1720	78	TSDA5R-8	555663.20	4480990.70	0	0	0	0	0	0	7	8.72	3Coil_Towed_Array
1721	79	TSDA5R-8	555664.50	4480991.35	0	0	0	0	0	0	7	9.68	3Coil_Towed_Array
1722	80	TSDA5R-8	555662.10	4480992.00	0	0	0	0	0	0	7	12.25	3Coil_Towed_Array
1723	81	TSDA5R-8	555664.05	4480992.75	0	0	0	0	0	0	7	18.63	3Coil_Towed_Array
1724	82	TSDA5R-8	555661.65	4480993.35	0	0	0	0	0	0	7	19.51	3Coil_Towed_Array
1725	83	TSDA5R-8	555662.85	4480993.70	0	0	0	0	0	0	7	20.82	3Coil_Towed_Array
1726	84	TSDA5R-8	555661.40	4480995.30	0	0	0	0	0	0	7	17.72	3Coil_Towed_Array
1727	85	TSDA5R-8	555662.70	4480995.60	0	0	0	0	0	0	7	13.25	3Coil_Towed_Array
1728	86	TSDA5R-8	555661.20	4480996.50	0	0	0	0	0	0	7	14.47	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1729	87	TSDA5R-8	555659.70	4480997.40	0	0	0	0	0	0	7	7.54	3Coil_Towed_Array
1730	88	TSDA5R-8	555661.65	4480998.15	0	0	0	0	0	0	7	5.87	3Coil_Towed_Array
1731	89	TSDA5R-8	555660.30	4480998.75	0	0	0	0	0	0	7	10.21	3Coil_Towed_Array
1732	90	TSDA5R-8	555659.00	4481000.25	0	0	0	0	0	0	7	8.36	3Coil_Towed_Array
1733	91	TSDA5R-8	555660.75	4481000.25	0	0	0	0	0	0	7	8.75	3Coil_Towed_Array
1734	92	TSDA5R-8	555658.20	4481001.15	0	0	0	0	0	0	7	12.18	3Coil_Towed_Array
1735	93	TSDA5R-8	555660.00	4481002.05	0	0	0	0	0	0	7	10.36	3Coil_Towed_Array
1736	94	TSDA5R-8	555657.60	4481003.10	0	0	0	0	0	0	7	14.79	3Coil_Towed_Array
1737	95	TSDA5R-8	555659.40	4481003.55	0	0	0	0	0	0	7	12.76	3Coil_Towed_Array
1738	96	TSDA5R-8	555656.85	4481004.15	0	0	0	0	0	0	7	14.50	3Coil_Towed_Array
1739	97	TSDA5R-8	555658.45	4481004.60	0	0	0	0	0	0	7	18.60	3Coil_Towed_Array
1740	98	TSDA5R-8	555656.70	4481005.50	0	0	0	0	0	0	7	9.00	3Coil_Towed_Array
1741	99	TSDA5R-8	555658.35	4481006.10	0	0	0	0	0	0	7	9.73	3Coil_Towed_Array
1742	100	TSDA5R-8	555656.10	4481007.00	0	0	0	0	0	0	7	15.71	3Coil_Towed_Array
1743	101	TSDA5R-8	555658.05	4481007.30	0	0	0	0	0	0	7	15.76	3Coil_Towed_Array
1744	102	TSDA5R-8	555657.45	4481008.65	0	0	0	0	0	0	7	16.08	3Coil_Towed_Array
1745	103	TSDA5R-8	555656.10	4481008.70	0	0	0	0	0	0	7	13.98	3Coil_Towed_Array
1746	104	TSDA5R-8	555658.20	4481010.90	0	0	0	0	0	0	7	29.03	3Coil_Towed_Array
1747	105	TSDA5R-8	555659.25	4481011.80	0	0	0	0	0	0	7	37.19	3Coil_Towed_Array
1748	106	TSDA5R-8	555650.10	4481026.80	0	0	0	0	0	0	7	8.59	3Coil_Towed_Array
1749	107	TSDA5R-8	555651.75	4481026.95	0	0	0	0	0	0	7	7.52	3Coil_Towed_Array
1750	108	TSDA5R-8	555649.80	4481027.70	0	0	0	0	0	0	7	7.64	3Coil_Towed_Array
1751	109	TSDA5R-8	555651.75	4481028.15	0	0	0	0	0	0	7	9.41	3Coil_Towed_Array
1752	110	TSDA5R-8	555650.40	4481029.05	0	0	0	0	0	0	7	16.39	3Coil_Towed_Array
1753	111	TSDA5R-8	555649.95	4481030.10	0	0	0	0	0	0	7	10.48	3Coil_Towed_Array
1754	112	TSDA5R-8	555649.20	4481031.45	0	0	0	0	0	0	7	10.32	3Coil_Towed_Array
1755	113	TSDA5R-8	555647.55	4481032.20	0	0	0	0	0	0	7	16.97	3Coil_Towed_Array
1756	114	TSDA5R-8	555649.00	4481033.10	0	0	0	0	0	0	7	17.75	3Coil_Towed_Array
1757	115	TSDA5R-8	555646.65	4481033.40	0	0	0	0	0	0	7	10.68	3Coil_Towed_Array
1758	116	TSDA5R-8	555648.46	4481034.41	0	0	0	0	0	0	7	11.35	3Coil_Towed_Array
1759	117	TSDA5R-8	555647.10	4481034.60	0	0	0	0	0	0	7	12.56	3Coil_Towed_Array
1760	118	TSDA5R-8	555645.45	4481035.50	0	0	0	0	0	0	7	4.98	3Coil_Towed_Array
1761	119	TSDA5R-8	555647.55	4481035.80	0	0	0	0	0	0	7	4.99	3Coil_Towed_Array
1762	120	TSDA5R-8	555644.85	4481036.40	0	0	0	0	0	0	7	10.41	3Coil_Towed_Array
1763	121	TSDA5R-8	555646.65	4481037.10	0	0	0	0	0	0	7	10.01	3Coil_Towed_Array
1764	122	TSDA5R-8	555644.25	4481037.45	0	0	0	0	0	0	7	12.76	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1765	123	TSDA5R-8	555645.60	4481037.75	0	0	0	0	0	0	7	14.20	3Coil_Towed_Array
1766	124	TSDA5R-8	555643.70	4481039.25	0	0	0	0	0	0	7	23.30	3Coil_Towed_Array
1767	125	TSDA5R-8	555645.30	4481039.85	0	0	0	0	0	0	7	18.13	3Coil_Towed_Array
1768	126	TSDA5R-8	555643.15	4481040.34	0	0	0	0	0	0	7	11.09	3Coil_Towed_Array
1769	127	TSDA5R-8	555645.00	4481040.90	0	0	0	0	0	0	7	6.20	3Coil_Towed_Array
1770	128	TSDA5R-8	555643.35	4481042.25	0	0	0	0	0	0	7	11.92	3Coil_Towed_Array
1771	129	TSDA5R-8	555644.70	4481042.25	0	0	0	0	0	0	7	10.17	3Coil_Towed_Array
1772	130	TSDA5R-8	555642.65	4481043.30	0	0	0	0	0	0	7	12.05	3Coil_Towed_Array
1773	131	TSDA5R-8	555644.40	4481043.45	0	0	0	0	0	0	7	14.82	3Coil_Towed_Array
1774	132	TSDA5R-8	555642.15	4481044.20	0	0	0	0	0	0	7	4.29	3Coil_Towed_Array
1775	133	TSDA5R-8	555643.80	4481044.65	0	0	0	0	0	0	7	6.96	3Coil_Towed_Array
1776	134	TSDA5R-8	555642.00	4481045.25	0	0	0	0	0	0	7	12.85	3Coil_Towed_Array
1777	135	TSDA5R-8	555643.35	4481045.85	0	0	0	0	0	0	7	10.01	3Coil_Towed_Array
1778	136	TSDA5R-8	555641.70	4481046.30	0	0	0	0	0	0	7	4.74	3Coil_Towed_Array
1779	137	TSDA5R-8	555641.44	4481047.38	0	0	0	0	0	0	7	5.69	3Coil_Towed_Array
1780	138	TSDA5R-8	555643.35	4481047.80	0	0	0	0	0	0	7	6.99	3Coil_Towed_Array
1781	139	TSDA5R-8	555641.25	4481048.55	0	0	0	0	0	0	7	30.32	3Coil_Towed_Array
1782	140	TSDA5R-8	555643.20	4481048.85	0	0	0	0	0	0	7	26.04	3Coil_Towed_Array
1783	141	TSDA5R-8	555641.10	4481049.60	0	0	0	0	0	0	7	23.47	3Coil_Towed_Array
1784	142	TSDA5R-8	555643.05	4481049.90	0	0	0	0	0	0	7	22.42	3Coil_Towed_Array
1785	143	TSDA5R-8	555640.90	4481050.65	0	0	0	0	0	0	7	15.09	3Coil_Towed_Array
1786	144	TSDA5R-8	555642.75	4481051.25	0	0	0	0	0	0	7	14.96	3Coil_Towed_Array
1787	145	TSDA5R-8	555640.80	4481052.45	0	0	0	0	0	0	7	11.43	3Coil_Towed_Array
1788	146	TSDA5R-8	555642.45	4481053.05	0	0	0	0	0	0	7	11.71	3Coil_Towed_Array
1789	147	TSDA5R-8	555640.20	4481053.50	0	0	0	0	0	0	7	11.53	3Coil_Towed_Array
1790	148	TSDA5R-8	555641.35	4481053.80	0	0	0	0	0	0	7	6.57	3Coil_Towed_Array
1791	149	TSDA5R-8	555640.05	4481054.70	0	0	0	0	0	0	7	16.26	3Coil_Towed_Array
1792	150	TSDA5R-8	555642.00	4481055.15	0	0	0	0	0	0	7	12.39	3Coil_Towed_Array
1793	151	TSDA5R-8	555639.75	4481056.05	0	0	0	0	0	0	7	26.73	3Coil_Towed_Array
1794	152	TSDA5R-8	555641.70	4481056.35	0	0	0	0	0	0	7	24.43	3Coil_Towed_Array
1795	153	TSDA5R-8	555639.60	4481057.25	0	0	0	0	0	0	7	27.36	3Coil_Towed_Array
1796	154	TSDA5R-8	555641.55	4481057.70	0	0	0	0	0	0	7	20.07	3Coil_Towed_Array
1797	155	TSDA5R-8	555639.15	4481058.75	0	0	0	0	0	0	7	20.58	3Coil_Towed_Array
1798	156	TSDA5R-8	555641.10	4481059.20	0	0	0	0	0	0	7	18.04	3Coil_Towed_Array
1799	157	TSDA5R-8	555638.85	4481060.40	0	0	0	0	0	0	7	21.72	3Coil_Towed_Array
1800	158	TSDA5R-8	555640.80	4481060.70	0	0	0	0	0	0	7	14.50	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1801	159	TSDA5R-8	555638.40	4481061.90	0	0	0	0	0	0	7	28.90	3Coil_Towed_Array
1802	160	TSDA5R-8	555640.35	4481062.35	0	0	0	0	0	0	7	21.53	3Coil_Towed_Array
1803	161	TSDA5R-8	555637.95	4481063.40	0	0	0	0	0	0	7	25.83	3Coil_Towed_Array
1804	162	TSDA5R-8	555639.90	4481063.85	0	0	0	0	0	0	7	26.71	3Coil_Towed_Array
1805	163	TSDA5R-8	555637.50	4481065.05	0	0	0	0	0	0	7	22.89	3Coil_Towed_Array
1806	164	TSDA5R-8	555639.30	4481065.65	0	0	0	0	0	0	7	18.43	3Coil_Towed_Array
1807	165	TSDA5R-8	555636.90	4481066.85	0	0	0	0	0	0	7	22.67	3Coil_Towed_Array
1808	166	TSDA5R-8	555638.70	4481067.60	0	0	0	0	0	0	7	23.94	3Coil_Towed_Array
1809	167	TSDA5R-8	555636.30	4481068.80	0	0	0	0	0	0	7	23.34	3Coil_Towed_Array
1810	168	TSDA5R-8	555638.25	4481069.40	0	0	0	0	0	0	7	21.36	3Coil_Towed_Array
1811	169	TSDA5R-8	555635.85	4481070.30	0	0	0	0	0	0	7	38.04	3Coil_Towed_Array
1812	170	TSDA5R-8	555637.80	4481070.75	0	0	0	0	0	0	7	26.33	3Coil_Towed_Array
1813	171	TSDA5R-8	555635.25	4481071.95	0	0	0	0	0	0	7	35.24	3Coil_Towed_Array
1814	172	TSDA5R-8	555637.20	4481072.55	0	0	0	0	0	0	7	27.80	3Coil_Towed_Array
1815	173	TSDA5R-8	555635.70	4481074.35	0	0	0	0	0	0	7	14.08	3Coil_Towed_Array
1816	174	TSDA5R-8	555634.35	4481074.95	0	0	0	0	0	0	7	27.75	3Coil_Towed_Array
1817	175	TSDA5R-8	555636.30	4481075.70	0	0	0	0	0	0	7	15.04	3Coil_Towed_Array
1818	176	TSDA5R-8	555634.45	4481076.00	0	0	0	0	0	0	7	12.25	3Coil_Towed_Array
1819	177	TSDA5R-8	555633.95	4481076.90	0	0	0	0	0	0	7	8.89	3Coil_Towed_Array
1820	178	TSDA5R-8	555635.85	4481077.20	0	0	0	0	0	0	7	9.94	3Coil_Towed_Array
1821	179	TSDA5R-8	555633.45	4481077.95	0	0	0	0	0	0	7	5.90	3Coil_Towed_Array
1822	180	TSDA5R-8	555633.70	4481079.60	0	0	0	0	0	0	7	23.74	3Coil_Towed_Array
1823	181	TSDA5R-8	555634.95	4481080.05	0	0	0	0	0	0	7	28.29	3Coil_Towed_Array
1824	182	TSDA5R-8	555632.10	4481082.30	0	0	0	0	0	0	7	24.87	3Coil_Towed_Array
1825	183	TSDA5R-8	555634.05	4481082.90	0	0	0	0	0	0	7	29.31	3Coil_Towed_Array
1826	184	TSDA5R-8	555632.85	4481083.50	0	0	0	0	0	0	7	12.87	3Coil_Towed_Array
1827	185	TSDA5R-8	555631.50	4481084.40	0	0	0	0	0	0	7	27.91	3Coil_Towed_Array
1828	186	TSDA5R-8	555633.45	4481084.70	0	0	0	0	0	0	7	29.60	3Coil_Towed_Array
1829	187	TSDA5R-8	555630.90	4481086.20	0	0	0	0	0	0	7	29.66	3Coil_Towed_Array
1830	188	TSDA5R-8	555632.85	4481086.80	0	0	0	0	0	0	7	28.77	3Coil_Towed_Array
1831	189	TSDA5R-8	555631.50	4481087.55	0	0	0	0	0	0	7	10.44	3Coil_Towed_Array
1832	190	TSDA5R-8	555630.30	4481088.15	0	0	0	0	0	0	7	16.23	3Coil_Towed_Array
1833	191	TSDA5R-8	555632.25	4481088.60	0	0	0	0	0	0	7	20.37	3Coil_Towed_Array
1834	192	TSDA5R-8	555630.60	4481089.35	0	0	0	0	0	0	7	6.65	3Coil_Towed_Array
1835	193	TSDA5R-8	555631.80	4481089.95	0	0	0	0	0	0	7	8.76	3Coil_Towed_Array
1836	194	TSDA5R-8	555630.15	4481090.85	0	0	0	0	0	0	7	11.05	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1837	195	TSDA5R-8	555631.35	4481091.30	0	0	0	0	0	0	7	15.69	3Coil_Towed_Array
1838	196	TSDA5R-8	555629.10	4481091.75	0	0	0	0	0	0	7	31.84	3Coil_Towed_Array
1839	197	TSDA5R-8	555630.90	4481092.35	0	0	0	0	0	0	7	28.62	3Coil_Towed_Array
1840	198	TSDA5R-8	555628.65	4481092.65	0	0	0	0	0	0	7	24.15	3Coil_Towed_Array
1841	199	TSDA5R-8	555630.60	4481093.40	0	0	0	0	0	0	7	20.09	3Coil_Towed_Array
1842	200	TSDA5R-8	555629.25	4481094.00	0	0	0	0	0	0	7	5.91	3Coil_Towed_Array
1843	201	TSDA5R-8	555628.05	4481094.60	0	0	0	0	0	0	7	25.87	3Coil_Towed_Array
1844	202	TSDA5R-8	555630.00	4481095.20	0	0	0	0	0	0	7	23.16	3Coil_Towed_Array
1845	203	TSDA5R-8	555628.00	4481095.70	0	0	0	0	0	0	7	13.35	3Coil_Towed_Array
1846	204	TSDA5R-8	555629.70	4481096.10	0	0	0	0	0	0	7	11.10	3Coil_Towed_Array
1847	205	TSDA5R-8	555627.30	4481097.45	0	0	0	0	0	0	7	18.24	3Coil_Towed_Array
1848	206	TSDA5R-8	555629.25	4481097.45	0	0	0	0	0	0	7	11.06	3Coil_Towed_Array
1849	207	TSDA5R-8	555628.20	4481098.65	0	0	0	0	0	0	7	7.50	3Coil_Towed_Array
1850	208	TSDA5R-8	555626.55	4481098.80	0	0	0	0	0	0	7	10.50	3Coil_Towed_Array
1851	209	TSDA5R-8	555626.40	4481099.70	0	0	0	0	0	0	7	8.78	3Coil_Towed_Array
1852	210	TSDA5R-8	555628.05	4481100.30	0	0	0	0	0	0	7	8.53	3Coil_Towed_Array
1853	211	TSDA5R-8	555627.00	4481100.75	0	0	0	0	0	0	7	12.65	3Coil_Towed_Array
1854	212	TSDA5R-8	555625.80	4481101.05	0	0	0	0	0	0	7	14.99	3Coil_Towed_Array
1855	213	TSDA5R-8	555627.60	4481101.80	0	0	0	0	0	0	7	15.09	3Coil_Towed_Array
1856	214	TSDA5R-8	555624.90	4481103.75	0	0	0	0	0	0	7	16.87	3Coil_Towed_Array
1857	215	TSDA5R-8	555627.00	4481104.05	0	0	0	0	0	0	7	19.10	3Coil_Towed_Array
1858	216	TSDA5R-8	555626.50	4481104.95	0	0	0	0	0	0	7	13.56	3Coil_Towed_Array
1859	217	TSDA5R-8	555624.00	4481106.45	0	0	0	0	0	0	7	19.44	3Coil_Towed_Array
1860	218	TSDA5R-8	555625.95	4481107.05	0	0	0	0	0	0	7	19.81	3Coil_Towed_Array
1861	219	TSDA5R-8	555623.85	4481107.95	0	0	0	0	0	0	7	6.67	3Coil_Towed_Array
1862	220	TSDA5R-8	555623.45	4481108.90	0	0	0	0	0	0	7	10.61	3Coil_Towed_Array
1863	221	TSDA5R-8	555625.05	4481109.30	0	0	0	0	0	0	7	8.37	3Coil_Towed_Array
1864	222	TSDA5R-8	555622.35	4481111.10	0	0	0	0	0	0	7	14.31	3Coil_Towed_Array
1865	223	TSDA5R-8	555624.30	4481111.85	0	0	0	0	0	0	7	12.22	3Coil_Towed_Array
1866	224	TSDA5R-8	555621.60	4481113.05	0	0	0	0	0	0	7	12.77	3Coil_Towed_Array
1867	225	TSDA5R-8	555623.55	4481113.65	0	0	0	0	0	0	7	9.30	3Coil_Towed_Array
1868	226	TSDA5R-8	555621.30	4481113.95	0	0	0	0	0	0	7	9.33	3Coil_Towed_Array
1869	227	TSDA5R-8	555622.45	4481114.25	0	0	0	0	0	0	7	10.00	3Coil_Towed_Array
1870	228	TSDA5R-8	555620.55	4481116.05	0	0	0	0	0	0	7	19.03	3Coil_Towed_Array
1871	229	TSDA5R-8	555622.50	4481116.50	0	0	0	0	0	0	7	17.39	3Coil_Towed_Array
1872	230	TSDA5R-8	555620.25	4481116.95	0	0	0	0	0	0	7	16.14	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1873	231	TSDA5R-8	555621.45	4481117.40	0	0	0	0	0	0	7	11.48	3Coil_Towed_Array
1874	232	TSDA5R-8	555621.45	4481118.60	0	0	0	0	0	0	7	6.10	3Coil_Towed_Array
1875	233	TSDA5R-8	555619.80	4481118.90	0	0	0	0	0	0	7	9.49	3Coil_Towed_Array
1876	234	TSDA5R-8	555621.30	4481119.80	0	0	0	0	0	0	7	11.10	3Coil_Towed_Array
1877	235	TSDA5R-8	555618.90	4481120.40	0	0	0	0	0	0	7	7.24	3Coil_Towed_Array
1878	236	TSDA5R-8	555620.55	4481121.30	0	0	0	0	0	0	7	9.11	3Coil_Towed_Array
1879	237	TSDA5R-8	555618.60	4481121.45	0	0	0	0	0	0	7	5.28	3Coil_Towed_Array
1880	238	TSDA5R-8	555618.15	4481122.95	0	0	0	0	0	0	7	10.49	3Coil_Towed_Array
1881	239	TSDA5R-8	555619.80	4481123.55	0	0	0	0	0	0	7	8.37	3Coil_Towed_Array
1882	240	TSDA5R-8	555617.70	4481124.60	0	0	0	0	0	0	7	4.98	3Coil_Towed_Array
1883	241	TSDA5R-8	555617.25	4481126.10	0	0	0	0	0	0	7	10.01	3Coil_Towed_Array
1884	242	TSDA5R-8	555619.35	4481126.55	0	0	0	0	0	0	7	9.62	3Coil_Towed_Array
1885	243	TSDA5R-8	555616.74	4481128.28	0	0	0	0	0	0	7	5.23	3Coil_Towed_Array
1886	244	TSDA5R-8	555618.75	4481128.65	0	0	0	0	0	0	7	5.17	3Coil_Towed_Array
1887	245	TSDA5R-8	555616.35	4481129.55	0	0	0	0	0	0	7	5.70	3Coil_Towed_Array
1888	246	TSDA5R-8	555618.00	4481130.00	0	0	0	0	0	0	7	4.73	3Coil_Towed_Array
1889	247	TSDA5R-8	555615.90	4481130.75	0	0	0	0	0	0	7	5.71	3Coil_Towed_Array
1890	248	TSDA5R-8	555615.75	4481131.65	0	0	0	0	0	0	7	8.04	3Coil_Towed_Array
1891	249	TSDA5R-8	555617.70	4481132.10	0	0	0	0	0	0	7	7.51	3Coil_Towed_Array
1892	250	TSDA5R-8	555615.45	4481133.45	0	0	0	0	0	0	7	8.70	3Coil_Towed_Array
1893	251	TSDA5R-8	555616.75	4481133.75	0	0	0	0	0	0	7	11.11	3Coil_Towed_Array
1894	252	TSDA5R-8	555614.85	4481134.80	0	0	0	0	0	0	7	15.62	3Coil_Towed_Array
1895	253	TSDA5R-8	555616.80	4481135.55	0	0	0	0	0	0	7	16.94	3Coil_Towed_Array
1896	254	TSDA5R-8	555614.55	4481136.00	0	0	0	0	0	0	7	10.65	3Coil_Towed_Array
1897	255	TSDA5R-8	555616.50	4481136.60	0	0	0	0	0	0	7	11.25	3Coil_Towed_Array
1898	256	TSDA5R-8	555614.25	4481139.90	0	0	0	0	0	0	7	8.00	3Coil_Towed_Array
1899	257	TSDA5R-8	555615.00	4481140.95	0	0	0	0	0	0	7	5.86	3Coil_Towed_Array
1900	258	TSDA5R-8	555613.80	4481141.85	0	0	0	0	0	0	7	9.21	3Coil_Towed_Array
1901	259	TSDA5R-8	555612.60	4481145.30	0	0	0	0	0	0	7	4.51	3Coil_Towed_Array
1902	260	TSDA5R-8	555612.85	4481147.10	0	0	0	0	0	0	7	4.83	3Coil_Towed_Array
1903	261	TSDA5R-8	555610.35	4481148.90	0	0	0	0	0	0	7	4.62	3Coil_Towed_Array
1904	262	TSDA5R-8	555612.15	4481149.35	0	0	0	0	0	0	7	4.50	3Coil_Towed_Array
1905	263	TSDA5R-8	555611.24	4481152.35	0	0	0	0	0	0	7	3.76	3Coil_Towed_Array
1906	264	TSDA5R-8	555609.00	4481152.65	0	0	0	0	0	0	7	4.75	3Coil_Towed_Array
1907	265	TSDA5R-8	555610.80	4481153.40	0	0	0	0	0	0	7	6.45	3Coil_Towed_Array
1908	266	TSDA5R-8	555607.35	4481157.15	0	0	0	0	0	0	7	6.82	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1909	267	TSDA5R-8	555609.30	4481157.75	0	0	0	0	0	0	7	6.65	3Coil_Towed_Array
1910	268	TSDA5R-8	555606.75	4481159.10	0	0	0	0	0	0	7	7.62	3Coil_Towed_Array
1911	269	TSDA5R-8	555608.70	4481159.55	0	0	0	0	0	0	7	7.24	3Coil_Towed_Array
1912	270	TSDA5R-8	555605.70	4481161.50	0	0	0	0	0	0	7	9.37	3Coil_Towed_Array
1913	271	TSDA5R-8	555607.50	4481162.25	0	0	0	0	0	0	7	9.48	3Coil_Towed_Array
1914	272	TSDA5R-8	555605.25	4481163.00	0	0	0	0	0	0	7	6.78	3Coil_Towed_Array
1915	273	TSDA5R-8	555607.05	4481163.60	0	0	0	0	0	0	7	6.12	3Coil_Towed_Array
1916	274	TSDA5R-8	555606.15	4481165.85	0	0	0	0	0	0	7	4.26	3Coil_Towed_Array
1917	275	TSDA5R-8	555603.49	4481166.91	0	0	0	0	0	0	7	4.46	3Coil_Towed_Array
1918	276	TSDA5R-8	555602.70	4481170.35	0	0	0	0	0	0	7	4.24	3Coil_Towed_Array
1919	277	TSDA5R-8	555603.90	4481171.25	0	0	0	0	0	0	7	4.98	3Coil_Towed_Array
1920	278	TSDA5R-8	555600.60	4481173.35	0	0	0	0	0	0	7	4.67	3Coil_Towed_Array
1921	279	TSDA5R-8	555602.40	4481174.25	0	0	0	0	0	0	7	7.28	3Coil_Towed_Array
1922	280	TSDA5R-8	555600.75	4481175.60	0	0	0	0	0	0	7	7.08	3Coil_Towed_Array
1923	281	TSDA5R-8	555600.00	4481177.40	0	0	0	0	0	0	7	4.25	3Coil_Towed_Array
1924	282	TSDA5R-8	555598.80	4481178.30	0	0	0	0	0	0	7	4.97	3Coil_Towed_Array
1925	283	TSDA5R-8	555600.75	4481178.90	0	0	0	0	0	0	7	5.43	3Coil_Towed_Array
1926	284	TSDA5R-8	555600.45	4481180.25	0	0	0	0	0	0	7	4.67	3Coil_Towed_Array
1927	1	TDSA5R-9	555775.95	4480995.15	0	0	0	0	0	0	7	18.99	3Coil_Towed_Array
1928	2	TDSA5R-9	555777.60	4480996.05	0	0	0	0	0	0	7	13.26	3Coil_Towed_Array
1929	3	TDSA5R-9	555776.25	4480996.65	0	0	0	0	0	0	7	22.04	3Coil_Towed_Array
1930	4	TDSA5R-9	555775.05	4480996.95	0	0	0	0	0	0	7	20.61	3Coil_Towed_Array
1931	5	TDSA5R-9	555776.25	4480997.80	0	0	0	0	0	0	7	20.69	3Coil_Towed_Array
1932	6	TDSA5R-9	555775.10	4480998.50	0	0	0	0	0	0	7	8.00	3Coil_Towed_Array
1933	7	TDSA5R-9	555773.25	4480999.35	0	0	0	0	0	0	7	20.52	3Coil_Towed_Array
1934	8	TDSA5R-9	555774.45	4481000.25	0	0	0	0	0	0	7	24.85	3Coil_Towed_Array
1935	9	TDSA5R-9	555773.00	4481000.55	0	0	0	0	0	0	7	11.22	3Coil_Towed_Array
1936	10	TDSA5R-9	555773.85	4481001.60	0	0	0	0	0	0	7	13.64	3Coil_Towed_Array
1937	11	TDSA5R-9	555771.70	4481002.30	0	0	0	0	0	0	7	19.82	3Coil_Towed_Array
1938	12	TDSA5R-9	555772.95	4481002.80	0	0	0	0	0	0	7	19.84	3Coil_Towed_Array
1939	13	TDSA5R-9	555770.85	4481003.10	0	0	0	0	0	0	7	11.42	3Coil_Towed_Array
1940	14	TDSA5R-9	555772.20	4481004.00	0	0	0	0	0	0	7	14.12	3Coil_Towed_Array
1941	15	TDSA5R-9	555769.65	4481004.60	0	0	0	0	0	0	7	19.63	3Coil_Towed_Array
1942	16	TDSA5R-9	555771.60	4481005.35	0	0	0	0	0	0	7	19.09	3Coil_Towed_Array
1943	17	TDSA5R-9	555770.25	4481005.65	0	0	0	0	0	0	7	18.68	3Coil_Towed_Array
1944	18	TDSA5R-9	555769.20	4481006.70	0	0	0	0	0	0	7	16.22	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1945	19	TDSA5R-9	555770.85	4481007.00	0	0	0	0	0	0	7	18.40	3Coil_Towed_Array
1946	20	TDSA5R-9	555768.15	4481008.20	0	0	0	0	0	0	7	30.75	3Coil_Towed_Array
1947	21	TDSA5R-9	555769.95	4481009.10	0	0	0	0	0	0	7	38.42	3Coil_Towed_Array
1948	22	TDSA5R-9	555767.70	4481009.85	0	0	0	0	0	0	7	31.23	3Coil_Towed_Array
1949	23	TDSA5R-9	555769.00	4481010.00	0	0	0	0	0	0	7	27.95	3Coil_Towed_Array
1950	24	TDSA5R-9	555766.35	4481011.65	0	0	0	0	0	0	7	27.92	3Coil_Towed_Array
1951	25	TDSA5R-9	555768.20	4481011.80	0	0	0	0	0	0	7	33.21	3Coil_Towed_Array
1952	26	TDSA5R-9	555765.90	4481013.00	0	0	0	0	0	0	7	33.72	3Coil_Towed_Array
1953	27	TDSA5R-9	555767.70	4481013.75	0	0	0	0	0	0	7	38.90	3Coil_Towed_Array
1954	28	TDSA5R-9	555766.05	4481014.95	0	0	0	0	0	0	7	19.36	3Coil_Towed_Array
1955	29	TDSA5R-9	555764.70	4481015.55	0	0	0	0	0	0	7	32.21	3Coil_Towed_Array
1956	30	TDSA5R-9	555765.80	4481016.20	0	0	0	0	0	0	7	47.36	3Coil_Towed_Array
1957	31	TDSA5R-9	555764.25	4481016.75	0	0	0	0	0	0	7	32.89	3Coil_Towed_Array
1958	32	TDSA5R-9	555765.45	4481017.20	0	0	0	0	0	0	7	37.98	3Coil_Towed_Array
1959	33	TDSA5R-9	555763.50	4481020.65	0	0	0	0	0	0	7	19.14	3Coil_Towed_Array
1960	34	TDSA5R-9	555762.15	4481021.10	0	0	0	0	0	0	7	28.59	3Coil_Towed_Array
1961	35	TDSA5R-9	555763.95	4481022.00	0	0	0	0	0	0	7	27.62	3Coil_Towed_Array
1962	36	TDSA5R-9	555762.00	4481022.15	0	0	0	0	0	0	7	42.93	3Coil_Towed_Array
1963	37	TDSA5R-9	555763.35	4481023.20	0	0	0	0	0	0	7	38.43	3Coil_Towed_Array
1964	38	TDSA5R-9	555761.70	4481023.95	0	0	0	0	0	0	7	10.02	3Coil_Towed_Array
1965	39	TDSA5R-9	555760.80	4481024.85	0	0	0	0	0	0	7	19.49	3Coil_Towed_Array
1966	40	TDSA5R-9	555762.30	4481025.60	0	0	0	0	0	0	7	18.44	3Coil_Towed_Array
1967	41	TDSA5R-9	555759.60	4481026.50	0	0	0	0	0	0	7	34.32	3Coil_Towed_Array
1968	42	TDSA5R-9	555761.10	4481026.95	0	0	0	0	0	0	7	24.48	3Coil_Towed_Array
1969	43	TDSA5R-9	555758.40	4481029.35	0	0	0	0	0	0	7	40.92	3Coil_Towed_Array
1970	44	TDSA5R-9	555759.70	4481030.25	0	0	0	0	0	0	7	40.42	3Coil_Towed_Array
1971	45	TDSA5R-9	555757.20	4481031.00	0	0	0	0	0	0	7	17.18	3Coil_Towed_Array
1972	46	TDSA5R-9	555759.15	4481031.75	0	0	0	0	0	0	7	27.42	3Coil_Towed_Array
1973	47	TDSA5R-9	555756.90	4481032.05	0	0	0	0	0	0	7	17.88	3Coil_Towed_Array
1974	48	TDSA5R-9	555758.55	4481033.25	0	0	0	0	0	0	7	9.24	3Coil_Towed_Array
1975	49	TDSA5R-9	555756.45	4481033.70	0	0	0	0	0	0	7	26.60	3Coil_Towed_Array
1976	50	TDSA5R-9	555758.10	4481034.45	0	0	0	0	0	0	7	22.16	3Coil_Towed_Array
1977	51	TDSA5R-9	555755.85	4481034.60	0	0	0	0	0	0	7	17.84	3Coil_Towed_Array
1978	52	TDSA5R-9	555757.65	4481035.50	0	0	0	0	0	0	7	18.51	3Coil_Towed_Array
1979	53	TDSA5R-9	555756.00	4481036.40	0	0	0	0	0	0	7	22.98	3Coil_Towed_Array
1980	54	TDSA5R-9	555756.15	4481038.05	0	0	0	0	0	0	7	44.27	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1981	55	TDSA5R-9	555754.35	4481039.55	0	0	0	0	0	0	3	955.38	3Coil_Towed_Array
1982	56	TDSA5R-9	555752.10	4481041.50	0	0	0	0	0	0	2	805.02	3Coil_Towed_Array
1983	57	TDSA5R-9	555750.45	4481044.95	0	0	0	0	0	0	7	113.08	3Coil_Towed_Array
1984	58	TDSA5R-9	555749.85	4481046.45	0	0	0	0	0	0	7	40.67	3Coil_Towed_Array
1985	59	TDSA5R-9	555751.50	4481047.50	0	0	0	0	0	0	7	18.66	3Coil_Towed_Array
1986	60	TDSA5R-9	555750.00	4481048.70	0	0	0	0	0	0	7	24.20	3Coil_Towed_Array
1987	61	TDSA5R-9	555748.65	4481049.30	0	0	0	0	0	0	7	21.00	3Coil_Towed_Array
1988	62	TDSA5R-9	555750.60	4481050.05	0	0	0	0	0	0	7	22.73	3Coil_Towed_Array
1989	63	TDSA5R-9	555748.20	4481050.50	0	0	0	0	0	0	7	35.68	3Coil_Towed_Array
1990	64	TDSA5R-9	555749.40	4481051.10	0	0	0	0	0	0	7	32.12	3Coil_Towed_Array
1991	65	TDSA5R-9	555749.68	4481052.37	0	0	0	0	0	0	7	7.56	3Coil_Towed_Array
1992	66	TDSA5R-9	555747.80	4481052.45	0	0	0	0	0	0	7	16.34	3Coil_Towed_Array
1993	67	TDSA5R-9	555746.85	4481053.80	0	0	0	0	0	0	7	41.42	3Coil_Towed_Array
1994	68	TDSA5R-9	555748.95	4481053.95	0	0	0	0	0	0	7	36.69	3Coil_Towed_Array
1995	69	TDSA5R-9	555747.45	4481054.70	0	0	0	0	0	0	7	11.31	3Coil_Towed_Array
1996	70	TDSA5R-9	555746.25	4481055.15	0	0	0	0	0	0	7	11.01	3Coil_Towed_Array
1997	71	TDSA5R-9	555748.05	4481055.75	0	0	0	0	0	0	7	11.45	3Coil_Towed_Array
1998	72	TDSA5R-9	555745.65	4481056.65	0	0	0	0	0	0	7	30.51	3Coil_Towed_Array
1999	73	TDSA5R-9	555747.45	4481057.40	0	0	0	0	0	0	7	42.01	3Coil_Towed_Array
2000	74	TDSA5R-9	555745.20	4481057.70	0	0	0	0	0	0	7	7.12	3Coil_Towed_Array
2001	75	TDSA5R-9	555747.00	4481058.45	0	0	0	0	0	0	7	9.23	3Coil_Towed_Array
2002	76	TDSA5R-9	555745.80	4481058.75	0	0	0	0	0	0	7	9.21	3Coil_Towed_Array
2003	77	TDSA5R-9	555744.45	4481059.35	0	0	0	0	0	0	7	24.70	3Coil_Towed_Array
2004	78	TDSA5R-9	555746.25	4481059.95	0	0	0	0	0	0	7	18.15	3Coil_Towed_Array
2005	79	TDSA5R-9	555743.85	4481060.70	0	0	0	0	0	0	7	19.81	3Coil_Towed_Array
2006	80	TDSA5R-9	555745.35	4481061.40	0	0	0	0	0	0	7	14.22	3Coil_Towed_Array
2007	81	TDSA5R-9	555744.15	4481062.50	0	0	0	0	0	0	7	12.02	3Coil_Towed_Array
2008	82	TDSA5R-9	555742.65	4481063.40	0	0	0	0	0	0	7	20.06	3Coil_Towed_Array
2009	83	TDSA5R-9	555744.30	4481063.85	0	0	0	0	0	0	7	13.88	3Coil_Towed_Array
2010	84	TDSA5R-9	555741.75	4481065.50	0	0	0	0	0	0	7	13.09	3Coil_Towed_Array
2011	85	TDSA5R-9	555743.70	4481065.95	0	0	0	0	0	0	7	16.39	3Coil_Towed_Array
2012	86	TDSA5R-9	555742.20	4481066.70	0	0	0	0	0	0	7	5.44	3Coil_Towed_Array
2013	87	TDSA5R-9	555741.00	4481067.00	0	0	0	0	0	0	7	19.76	3Coil_Towed_Array
2014	88	TDSA5R-9	555742.00	4481067.90	0	0	0	0	0	0	7	15.20	3Coil_Towed_Array
2015	89	TDSA5R-9	555740.25	4481068.65	0	0	0	0	0	0	7	10.47	3Coil_Towed_Array
2016	90	TDSA5R-9	555742.05	4481069.85	0	0	0	0	0	0	7	5.14	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
2017	91	TDSA5R-9	555739.65	4481070.15	0	0	0	0	0	0	7	8.53	3Coil_Towed_Array
2018	92	TDSA5R-9	555741.00	4481071.50	0	0	0	0	0	0	7	8.33	3Coil_Towed_Array
2019	93	TDSA5R-9	555738.90	4481071.80	0	0	0	0	0	0	7	7.36	3Coil_Towed_Array
2020	94	TDSA5R-9	555740.70	4481072.70	0	0	0	0	0	0	7	10.48	3Coil_Towed_Array
2021	95	TDSA5R-9	555738.60	4481073.00	0	0	0	0	0	0	7	9.63	3Coil_Towed_Array
2022	96	TDSA5R-9	555737.85	4481074.05	0	0	0	0	0	0	7	4.86	3Coil_Towed_Array
2023	97	TDSA5R-9	555739.35	4481074.20	0	0	0	0	0	0	7	4.92	3Coil_Towed_Array
2024	98	TDSA5R-9	555737.55	4481075.25	0	0	0	0	0	0	7	12.70	3Coil_Towed_Array
2025	99	TDSA5R-9	555739.20	4481076.00	0	0	0	0	0	0	7	13.54	3Coil_Towed_Array
2026	100	TDSA5R-9	555736.95	4481077.35	0	0	0	0	0	0	7	6.81	3Coil_Towed_Array
2027	101	TDSA5R-9	555738.30	4481077.35	0	0	0	0	0	0	7	14.29	3Coil_Towed_Array
2028	102	TDSA5R-9	555738.00	4481078.55	0	0	0	0	0	0	7	5.88	3Coil_Towed_Array
2029	103	TDSA5R-9	555736.35	4481079.45	0	0	0	0	0	0	7	8.83	3Coil_Towed_Array
2030	104	TDSA5R-9	555737.55	4481079.60	0	0	0	0	0	0	7	14.46	3Coil_Towed_Array
2031	105	TDSA5R-9	555736.65	4481080.65	0	0	0	0	0	0	7	7.06	3Coil_Towed_Array
2032	106	TDSA5R-9	555735.45	4481080.95	0	0	0	0	0	0	7	5.75	3Coil_Towed_Array
2033	107	TDSA5R-9	555735.60	4481082.00	0	0	0	0	0	0	7	8.18	3Coil_Towed_Array
2034	108	TDSA5R-9	555733.80	4481083.05	0	0	0	0	0	0	7	6.09	3Coil_Towed_Array
2035	109	TDSA5R-9	555735.90	4481083.50	0	0	0	0	0	0	7	6.39	3Coil_Towed_Array
2036	110	TDSA5R-9	555733.05	4481084.70	0	0	0	0	0	0	7	5.97	3Coil_Towed_Array
2037	111	TDSA5R-9	555735.00	4481084.70	0	0	0	0	0	0	7	5.73	3Coil_Towed_Array
2038	112	TDSA5R-9	555732.60	4481085.90	0	0	0	0	0	0	7	6.05	3Coil_Towed_Array
2039	113	TDSA5R-9	555733.65	4481087.65	0	0	0	0	0	0	7	7.91	3Coil_Towed_Array
2040	114	TDSA5R-9	555731.55	4481088.00	0	0	0	0	0	0	7	4.89	3Coil_Towed_Array
2041	115	TDSA5R-9	555731.10	4481089.05	0	0	0	0	0	0	7	5.97	3Coil_Towed_Array
2042	116	TDSA5R-9	555733.05	4481089.80	0	0	0	0	0	0	7	5.61	3Coil_Towed_Array
2043	117	TDSA5R-9	555730.65	4481090.40	0	0	0	0	0	0	7	4.90	3Coil_Towed_Array
2044	118	TDSA5R-9	555732.15	4481091.75	0	0	0	0	0	0	7	9.08	3Coil_Towed_Array
2045	119	TDSA5R-9	555729.90	4481091.90	0	0	0	0	0	0	7	9.28	3Coil_Towed_Array
2046	120	TDSA5R-9	555731.70	4481092.65	0	0	0	0	0	0	7	8.62	3Coil_Towed_Array
2047	121	TDSA5R-9	555730.20	4481093.40	0	0	0	0	0	0	7	4.09	3Coil_Towed_Array
2048	122	TDSA5R-9	555728.85	4481094.00	0	0	0	0	0	0	7	5.58	3Coil_Towed_Array
2049	123	TDSA5R-9	555730.35	4481094.75	0	0	0	0	0	0	7	5.95	3Coil_Towed_Array
2050	124	TDSA5R-9	555729.50	4481096.85	0	0	0	0	0	0	7	5.48	3Coil_Towed_Array
2051	125	TDSA5R-9	555729.10	4481098.05	0	0	0	0	0	0	7	4.36	3Coil_Towed_Array
2052	126	TDSA5R-9	555726.30	4481100.15	0	0	0	0	0	0	7	4.30	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
2053	127	TDSA5R-9	555724.50	4481103.75	0	0	0	0	0	0	7	7.40	3Coil_Towed_Array
2054	128	TDSA5R-9	555726.75	4481104.05	0	0	0	0	0	0	7	5.03	3Coil_Towed_Array
2055	129	TDSA5R-9	555726.15	4481104.95	0	0	0	0	0	0	7	5.04	3Coil_Towed_Array
2056	130	TDSA5R-9	555723.95	4481105.55	0	0	0	0	0	0	7	4.68	3Coil_Towed_Array
2057	131	TDSA5R-9	555723.87	4481107.57	0	0	0	0	0	0	7	5.10	3Coil_Towed_Array
2058	132	TDSA5R-9	555723.45	4481110.50	0	0	0	0	0	0	7	4.39	3Coil_Towed_Array
2059	133	TDSA5R-9	555721.25	4481110.79	0	0	0	0	0	0	7	4.63	3Coil_Towed_Array
2060	134	TDSA5R-9	555723.10	4481111.54	0	0	0	0	0	0	7	4.40	3Coil_Towed_Array
2061	135	TDSA5R-9	555721.80	4481112.00	0	0	0	0	0	0	7	5.68	3Coil_Towed_Array
2062	136	TDSA5R-9	555721.65	4481114.40	0	0	0	0	0	0	7	4.37	3Coil_Towed_Array
2063	137	TDSA5R-9	555718.61	4481116.29	0	0	0	0	0	0	7	4.53	3Coil_Towed_Array
2064	138	TDSA5R-9	555720.30	4481117.25	0	0	0	0	0	0	7	4.15	3Coil_Towed_Array
2065	139	TDSA5R-9	555715.80	4481122.65	0	0	0	0	0	0	7	4.33	3Coil_Towed_Array
2066	140	TDSA5R-9	555717.60	4481123.40	0	0	0	0	0	0	7	4.08	3Coil_Towed_Array
2067	141	TDSA5R-9	555714.20	4481126.27	0	0	0	0	0	0	7	4.58	3Coil_Towed_Array
2068	142	TDSA5R-9	555716.10	4481126.85	0	0	0	0	0	0	7	4.09	3Coil_Towed_Array
2069	143	TDSA5R-9	555712.20	4481130.75	0	0	0	0	0	0	7	4.48	3Coil_Towed_Array
2070	144	TDSA5R-9	555711.36	4481132.79	0	0	0	0	0	0	7	4.47	3Coil_Towed_Array
2071	145	TDSA5R-9	555713.10	4481133.60	0	0	0	0	0	0	7	5.44	3Coil_Towed_Array
2072	146	TDSA5R-9	555712.50	4481135.10	0	0	0	0	0	0	7	4.06	3Coil_Towed_Array
2073	147	TDSA5R-9	555708.30	4481143.35	0	0	0	0	0	0	1	34.99	3Coil_Towed_Array
2074	148	TDSA5R-9	555706.80	4481144.40	0	0	0	0	0	0	7	4.43	3Coil_Towed_Array
2075	149	TDSA5R-9	555708.65	4481145.09	0	0	0	0	0	0	7	5.01	3Coil_Towed_Array
2076	1	TDSA5R-10	555882.30	4481006.10	0	0	0	0	0	0	3	215.07	3Coil_Towed_Array
2077	2	TDSA5R-10	555884.10	4481008.95	0	0	0	0	0	0	7	29.97	3Coil_Towed_Array
2078	3	TDSA5R-10	555882.06	4481009.16	0	0	0	0	0	0	7	50.85	3Coil_Towed_Array
2079	4	TDSA5R-10	555882.30	4481010.45	0	0	0	0	0	0	7	48.82	3Coil_Towed_Array
2080	5	TDSA5R-10	555883.65	4481011.05	0	0	0	0	0	0	7	20.96	3Coil_Towed_Array
2081	6	TDSA5R-10	555883.05	4481012.10	0	0	0	0	0	0	7	35.98	3Coil_Towed_Array
2082	7	TDSA5R-10	555881.70	4481013.30	0	0	0	0	0	0	7	23.55	3Coil_Towed_Array
2083	8	TDSA5R-10	555883.65	4481014.05	0	0	0	0	0	0	7	17.17	3Coil_Towed_Array
2084	9	TDSA5R-10	555881.25	4481015.25	0	0	0	0	0	0	7	14.25	3Coil_Towed_Array
2085	10	TDSA5R-10	555883.00	4481015.65	0	0	0	0	0	0	7	26.29	3Coil_Towed_Array
2086	11	TDSA5R-10	555880.58	4481016.65	0	0	0	0	0	0	7	15.25	3Coil_Towed_Array
2087	12	TDSA5R-10	555882.00	4481017.50	0	0	0	0	0	0	7	12.91	3Coil_Towed_Array
2088	13	TDSA5R-10	555879.90	4481017.80	0	0	0	0	0	0	7	51.44	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
2089	14	TDSA5R-10	555881.70	4481018.85	0	0	0	0	0	0	7	38.06	3Coil_Towed_Array
2090	15	TDSA5R-10	555880.35	4481019.00	0	0	0	0	0	0	7	82.88	3Coil_Towed_Array
2091	16	TDSA5R-10	555878.70	4481020.05	0	0	0	0	0	0	7	61.84	3Coil_Towed_Array
2092	17	TDSA5R-10	555880.35	4481020.95	0	0	0	0	0	0	7	40.03	3Coil_Towed_Array
2093	18	TDSA5R-10	555877.95	4481021.70	0	0	0	0	0	0	7	41.53	3Coil_Towed_Array
2094	19	TDSA5R-10	555879.45	4481022.75	0	0	0	0	0	0	7	44.12	3Coil_Towed_Array
2095	20	TDSA5R-10	555876.75	4481023.35	0	0	0	0	0	0	7	42.91	3Coil_Towed_Array
2096	21	TDSA5R-10	555878.55	4481024.25	0	0	0	0	0	0	7	18.50	3Coil_Towed_Array
2097	22	TDSA5R-10	555876.15	4481024.55	0	0	0	0	0	0	7	36.77	3Coil_Towed_Array
2098	23	TDSA5R-10	555877.95	4481025.45	0	0	0	0	0	0	7	38.93	3Coil_Towed_Array
2099	24	TDSA5R-10	555876.80	4481026.80	0	0	0	0	0	0	7	11.54	3Coil_Towed_Array
2100	25	TDSA5R-10	555874.80	4481027.10	0	0	0	0	0	0	7	46.84	3Coil_Towed_Array
2101	26	TDSA5R-10	555876.30	4481028.30	0	0	0	0	0	0	7	25.42	3Coil_Towed_Array
2102	27	TDSA5R-10	555873.94	4481028.44	0	0	0	0	0	0	7	22.43	3Coil_Towed_Array
2103	28	TDSA5R-10	555875.00	4481029.30	0	0	0	0	0	0	7	28.67	3Coil_Towed_Array
2104	29	TDSA5R-10	555873.00	4481030.70	0	0	0	0	0	0	7	34.98	3Coil_Towed_Array
2105	30	TDSA5R-10	555874.80	4481030.85	0	0	0	0	0	0	7	27.52	3Coil_Towed_Array
2106	31	TDSA5R-10	555872.25	4481032.65	0	0	0	0	0	0	7	16.69	3Coil_Towed_Array
2107	32	TDSA5R-10	555873.75	4481032.95	0	0	0	0	0	0	7	25.33	3Coil_Towed_Array
2108	33	TDSA5R-10	555871.05	4481033.55	0	0	0	0	0	0	7	31.41	3Coil_Towed_Array
2109	34	TDSA5R-10	555872.70	4481034.60	0	0	0	0	0	0	7	25.86	3Coil_Towed_Array
2110	35	TDSA5R-10	555870.15	4481035.05	0	0	0	0	0	0	7	4.44	3Coil_Towed_Array
2111	36	TDSA5R-10	555871.95	4481035.95	0	0	0	0	0	0	7	7.31	3Coil_Towed_Array
2112	37	TDSA5R-10	555869.75	4481036.40	0	0	0	0	0	0	7	29.14	3Coil_Towed_Array
2113	38	TDSA5R-10	555871.05	4481037.30	0	0	0	0	0	0	7	21.73	3Coil_Towed_Array
2114	39	TDSA5R-10	555868.80	4481037.85	0	0	0	0	0	0	7	21.17	3Coil_Towed_Array
2115	40	TDSA5R-10	555870.60	4481038.35	0	0	0	0	0	0	7	17.92	3Coil_Towed_Array
2116	41	TDSA5R-10	555867.90	4481039.10	0	0	0	0	0	0	7	21.47	3Coil_Towed_Array
2117	42	TDSA5R-10	555867.30	4481040.15	0	0	0	0	0	0	7	26.76	3Coil_Towed_Array
2118	43	TDSA5R-10	555869.70	4481040.15	0	0	0	0	0	0	7	25.38	3Coil_Towed_Array
2119	44	TDSA5R-10	555869.10	4481041.20	0	0	0	0	0	0	7	29.00	3Coil_Towed_Array
2120	45	TDSA5R-10	555867.00	4481041.65	0	0	0	0	0	0	7	5.92	3Coil_Towed_Array
2121	46	TDSA5R-10	555868.20	4481042.55	0	0	0	0	0	0	7	7.96	3Coil_Towed_Array
2122	47	TDSA5R-10	555865.65	4481043.15	0	0	0	0	0	0	7	10.01	3Coil_Towed_Array
2123	48	TDSA5R-10	555867.30	4481044.20	0	0	0	0	0	0	7	9.52	3Coil_Towed_Array
2124	49	TDSA5R-10	555864.90	4481044.50	0	0	0	0	0	0	7	20.10	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
2125	50	TDSA5R-10	555866.55	4481045.70	0	0	0	0	0	0	7	17.53	3Coil_Towed_Array
2126	51	TDSA5R-10	555864.20	4481047.05	0	0	0	0	0	0	7	11.53	3Coil_Towed_Array
2127	52	TDSA5R-10	555862.95	4481048.25	0	0	0	0	0	0	7	6.23	3Coil_Towed_Array
2128	53	TDSA5R-10	555865.20	4481048.25	0	0	0	0	0	0	7	11.04	3Coil_Towed_Array
2129	54	TDSA5R-10	555863.70	4481049.30	0	0	0	0	0	0	7	8.04	3Coil_Towed_Array
2130	55	TDSA5R-10	555862.05	4481050.00	0	0	0	0	0	0	7	13.13	3Coil_Towed_Array
2131	56	TDSA5R-10	555863.70	4481050.80	0	0	0	0	0	0	7	9.33	3Coil_Towed_Array
2132	57	TDSA5R-10	555862.20	4481051.70	0	0	0	0	0	0	7	6.69	3Coil_Towed_Array
2133	58	TDSA5R-10	555860.70	4481052.15	0	0	0	0	0	0	7	14.29	3Coil_Towed_Array
2134	59	TDSA5R-10	555861.60	4481053.05	0	0	0	0	0	0	7	10.69	3Coil_Towed_Array
2135	60	TDSA5R-10	555859.50	4481054.40	0	0	0	0	0	0	7	10.01	3Coil_Towed_Array
2136	61	TDSA5R-10	555861.00	4481055.00	0	0	0	0	0	0	7	8.08	3Coil_Towed_Array
2137	62	TDSA5R-10	555859.05	4481055.30	0	0	0	0	0	0	7	11.69	3Coil_Towed_Array
2138	63	TDSA5R-10	555860.40	4481056.05	0	0	0	0	0	0	7	7.19	3Coil_Towed_Array
2139	64	TDSA5R-10	555858.15	4481056.65	0	0	0	0	0	0	7	10.86	3Coil_Towed_Array
2140	65	TDSA5R-10	555859.95	4481057.70	0	0	0	0	0	0	7	12.69	3Coil_Towed_Array
2141	66	TDSA5R-10	555856.80	4481059.20	0	0	0	0	0	0	7	7.33	3Coil_Towed_Array
2142	67	TDSA5R-10	555858.60	4481060.25	0	0	0	0	0	0	7	10.61	3Coil_Towed_Array
2143	68	TDSA5R-10	555855.90	4481060.85	0	0	0	0	0	0	7	4.48	3Coil_Towed_Array
2144	69	TDSA5R-10	555857.85	4481061.45	0	0	0	0	0	0	7	7.10	3Coil_Towed_Array
2145	70	TDSA5R-10	555855.30	4481061.90	0	0	0	0	0	0	7	7.60	3Coil_Towed_Array
2146	71	TDSA5R-10	555857.10	4481062.65	0	0	0	0	0	0	7	5.57	3Coil_Towed_Array
2147	72	TDSA5R-10	555854.40	4481063.70	0	0	0	0	0	0	7	4.06	3Coil_Towed_Array
2148	73	TDSA5R-10	555856.20	4481064.45	0	0	0	0	0	0	7	4.80	3Coil_Towed_Array
2149	74	TDSA5R-10	555853.50	4481065.50	0	0	0	0	0	0	7	4.84	3Coil_Towed_Array
2150	75	TDSA5R-10	555855.46	4481065.90	0	0	0	0	0	0	7	4.57	3Coil_Towed_Array
2151	76	TDSA5R-10	555852.75	4481066.55	0	0	0	0	0	0	7	5.55	3Coil_Towed_Array
2152	77	TDSA5R-10	555854.66	4481067.37	0	0	0	0	0	0	7	4.40	3Coil_Towed_Array
2153	78	TDSA5R-10	555851.10	4481069.55	0	0	0	0	0	0	7	6.13	3Coil_Towed_Array
2154	79	TDSA5R-10	555852.75	4481070.60	0	0	0	0	0	0	7	5.05	3Coil_Towed_Array
2155	80	TDSA5R-10	555850.20	4481070.90	0	0	0	0	0	0	7	5.61	3Coil_Towed_Array
2156	81	TDSA5R-10	555852.00	4481071.95	0	0	0	0	0	0	7	5.35	3Coil_Towed_Array
2157	82	TDSA5R-10	555851.09	4481073.34	0	0	0	0	0	0	7	4.41	3Coil_Towed_Array
2158	83	TDSA5R-10	555847.65	4481077.05	0	0	0	0	0	0	7	4.15	3Coil_Towed_Array
2159	84	TDSA5R-10	555845.10	4481080.05	0	0	0	0	0	0	7	4.01	3Coil_Towed_Array
2160	85	TDSA5R-10	555841.97	4481087.56	0	0	0	0	0	0	7	4.03	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
2161	86	TDSA5R-10	555838.20	4481092.50	0	0	0	0	0	0	7	4.40	3Coil_Towed_Array
2162	87	TDSA5R-10	555838.59	4481094.12	0	0	0	0	0	0	7	4.08	3Coil_Towed_Array
2163	88	TDSA5R-10	555836.70	4481095.95	0	0	0	0	0	0	7	5.56	3Coil_Towed_Array
2164	89	TDSA5R-10	555838.35	4481096.85	0	0	0	0	0	0	7	5.60	3Coil_Towed_Array
2165	90	TDSA5R-10	555834.30	4481099.85	0	0	0	0	0	0	7	4.97	3Coil_Towed_Array
2166	91	TDSA5R-10	555835.95	4481101.05	0	0	0	0	0	0	7	4.61	3Coil_Towed_Array
2167	92	TDSA5R-10	555833.00	4481102.48	0	0	0	0	0	0	7	4.84	3Coil_Towed_Array
2168	93	TDSA5R-10	555834.71	4481103.54	0	0	0	0	0	0	7	4.04	3Coil_Towed_Array
2169	94	TDSA5R-10	555831.15	4481105.40	0	0	0	0	0	0	7	4.83	3Coil_Towed_Array
2170	95	TDSA5R-10	555830.22	4481107.14	0	0	0	0	0	0	7	4.05	3Coil_Towed_Array
2171	96	TDSA5R-10	555828.60	4481111.70	0	0	0	0	0	0	7	4.69	3Coil_Towed_Array
2172	97	TDSA5R-10	555826.80	4481113.20	0	0	0	0	0	0	7	5.50	3Coil_Towed_Array
2173	98	TDSA5R-10	555817.70	4481129.10	0	0	0	0	0	0	7	5.52	3Coil_Towed_Array
2174	99	TDSA5R-10	555817.20	4481131.50	0	0	0	0	0	0	7	4.10	3Coil_Towed_Array
2175	100	TDSA5R-10	555816.60	4481132.70	0	0	0	0	0	0	7	5.44	3Coil_Towed_Array
2176	101	TDSA5R-10	555808.73	4481147.14	0	0	0	0	0	0	7	4.02	3Coil_Towed_Array
2177	102	TDSA5R-10	555807.60	4481151.45	0	0	0	0	0	0	7	5.92	3Coil_Towed_Array
2178	103	TDSA5R-10	555805.65	4481151.60	0	0	0	0	0	0	7	4.00	3Coil_Towed_Array
2179	1	TDSA5R-11	555975.95	4481013.90	0	0	0	0	0	0	1	70.76	3Coil_Towed_Array
2180	2	TDSA5R-11	555976.05	4481015.70	0	0	0	0	0	0	1	471.65	3Coil_Towed_Array
2181	3	TDSA5R-11	555974.25	4481017.35	0	0	0	0	0	0	1	24.31	3Coil_Towed_Array
2182	4	TDSA5R-11	555975.90	4481018.55	0	0	0	0	0	0	7	11.79	3Coil_Towed_Array
2183	5	TDSA5R-11	555973.20	4481020.05	0	0	0	0	0	0	7	4.82	3Coil_Towed_Array
2184	6	TDSA5R-11	555975.00	4481020.65	0	0	0	0	0	0	7	4.79	3Coil_Towed_Array
2185	7	TDSA5R-11	555974.10	4481021.40	0	0	0	0	0	0	7	5.36	3Coil_Towed_Array
2186	8	TDSA5R-11	555969.67	4481028.77	0	0	0	0	0	0	7	5.41	3Coil_Towed_Array
2187	9	TDSA5R-11	555969.10	4481029.80	0	0	0	0	0	0	7	5.41	3Coil_Towed_Array
2188	10	TDSA5R-11	555971.10	4481030.40	0	0	0	0	0	0	1	9.96	3Coil_Towed_Array
2189	11	TDSA5R-11	555968.40	4481032.20	0	0	0	0	0	0	1	41.38	3Coil_Towed_Array
2190	12	TDSA5R-11	555970.35	4481032.65	0	0	0	0	0	0	7	7.49	3Coil_Towed_Array
2191	13	TDSA5R-11	555967.55	4481033.88	0	0	0	0	0	0	7	4.72	3Coil_Towed_Array
2192	14	TDSA5R-11	555969.15	4481034.82	0	0	0	0	0	0	7	4.73	3Coil_Towed_Array
2193	15	TDSA5R-11	555968.70	4481036.25	0	0	0	0	0	0	7	4.27	3Coil_Towed_Array
2194	16	TDSA5R-11	555967.35	4481036.70	0	0	0	0	0	0	7	5.14	3Coil_Towed_Array
2195	17	TDSA5R-11	555966.75	4481037.60	0	0	0	0	0	0	7	4.57	3Coil_Towed_Array
2196	18	TDSA5R-11	555964.49	4481040.32	0	0	0	0	0	0	7	4.54	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
2197	19	TDSA5R-11	555966.45	4481040.60	0	0	0	0	0	0	7	4.72	3Coil_Towed_Array
2198	20	TDSA5R-11	555963.99	4481041.69	0	0	0	0	0	0	7	5.22	3Coil_Towed_Array
2199	21	TDSA5R-11	555965.85	4481042.25	0	0	0	0	0	0	7	5.03	3Coil_Towed_Array
2200	22	TDSA5R-11	555962.54	4481051.31	0	0	0	0	0	0	7	4.14	3Coil_Towed_Array
2201	23	TDSA5R-11	555961.60	4481054.91	0	0	0	0	0	0	7	4.67	3Coil_Towed_Array
2202	24	TDSA5R-11	555960.90	4481058.15	0	0	0	0	0	0	7	4.94	3Coil_Towed_Array
2203	25	TDSA5R-11	555958.43	4481059.61	0	0	0	0	0	0	7	4.06	3Coil_Towed_Array
2204	26	TDSA5R-11	555957.15	4481064.00	0	0	0	0	0	0	7	5.15	3Coil_Towed_Array
2205	27	TDSA5R-11	555959.10	4481064.45	0	0	0	0	0	0	7	4.25	3Coil_Towed_Array
2206	28	TDSA5R-11	555952.05	4481086.05	0	0	0	0	0	0	7	5.32	3Coil_Towed_Array
2207	29	TDSA5R-11	555925.50	4481113.20	0	0	0	0	0	0	7	6.04	3Coil_Towed_Array
2208	30	TDSA5R-11	555921.30	4481134.95	0	0	0	0	0	0	7	6.65	3Coil_Towed_Array
2209	1	TDSA5R-12	556044.30	4481095.80	0	0	0	0	0	0	1	7.91	3Coil_Towed_Array
2210	2	TDSA5R-12	556040.55	4481112.75	0	0	0	0	0	0	7	6.70	3Coil_Towed_Array
2211	3	TDSA5R-12	556040.31	4481114.11	0	0	0	0	0	0	1	16.85	3Coil_Towed_Array
2212	4	TDSA5R-12	556041.60	4481115.10	0	0	0	0	0	0	1	277.65	3Coil_Towed_Array
2213	5	TDSA5R-12	556040.04	4481117.83	0	0	0	0	0	0	1	35.42	3Coil_Towed_Array
2214	6	TDSA5R-12	556038.76	4481127.25	0	0	0	0	0	0	1	39.83	3Coil_Towed_Array
2215	7	TDSA5R-12	556038.00	4481129.55	0	0	0	0	0	0	1	37.12	3Coil_Towed_Array
2216	8	TDSA5R-12	556037.10	4481136.00	0	0	0	0	0	0	1	60.16	3Coil_Towed_Array
2217	9	TDSA5R-12	556036.50	4481149.50	0	0	0	0	0	0	1	55.58	3Coil_Towed_Array
2218	10	TDSA5R-12	556030.05	4481170.95	0	0	0	0	0	0	7	4.59	3Coil_Towed_Array
2219	11	TDSA5R-12	556029.29	4481176.16	0	0	0	0	0	0	1	29.27	3Coil_Towed_Array
2220	12	TDSA5R-12	556029.09	4481178.08	0	0	0	0	0	0	1	12.66	3Coil_Towed_Array
2221	13	TDSA5R-12	556028.85	4481184.00	0	0	0	0	0	0	7	13.60	3Coil_Towed_Array
2222	14	TDSA5R-12	556029.30	4481190.75	0	0	0	0	0	0	7	7.19	3Coil_Towed_Array
2223	15	TDSA5R-12	556031.95	4481217.01	0	0	0	0	0	0	1	79.25	3Coil_Towed_Array
2224	1	TDSA5R-13	556100.85	4481231.40	0	0	0	0	0	0	7	4.75	3Coil_Towed_Array
2225	2	TDSA5R-13	556098.00	4481237.10	0	0	0	0	0	0	7	5.29	3Coil_Towed_Array
2226	1	TDSA5R-14	556193.10	4481270.10	0	0	0	0	0	0	1	32.46	3Coil_Towed_Array
2227	1	TDSA5R-16	556404.31	4481303.77	0	0	0	0	0	0	1	14.93	3Coil_Towed_Array
2228	1	TDSA5R-17	556587.30	4481127.30	0	0	0	0	0	0	1	8.78	3Coil_Towed_Array
2229	2	TDSA5R-17	556585.96	4481129.63	0	0	0	0	0	0	1	4.80	3Coil_Towed_Array
2230	3	TDSA5R-17	556539.00	4481255.40	0	0	0	0	0	0	7	4.96	3Coil_Towed_Array
2231	1	TDSA5R-18	556616.10	4481336.70	0	0	0	0	0	0	7	4.52	3Coil_Towed_Array
2232	1	TDSA5R-19	556703.70	4481410.95	0	0	0	0	0	0	1	69.50	3Coil_Towed_Array

2014 Master Towed Array Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
2233	1	TDSA5R-20	556826.10	4481361.00	0	0	0	0	0	0	1	11.02	3Coil_Towed_Array
2234	2	TDSA5R-20	556823.40	4481372.25	0	0	0	0	0	0	1	5.24	3Coil_Towed_Array
2235	1	TDSA5R-21A	556910.85	4481425.65	0	0	0	0	0	0	1	5.52	3Coil_Towed_Array
2236	2	TDSA5R-21A	556909.53	4481433.45	0	0	0	0	0	0	1	10.18	3Coil_Towed_Array
2237	1	TDSA5R-22A	557125.95	4481204.55	0	0	0	0	0	0	7	6.22	3Coil_Towed_Array
2238	2	TDSA5R-22A	557072.51	4481271.91	0	0	0	0	0	0	1	4.42	3Coil_Towed_Array
2239	3	TDSA5R-22A	557072.40	4481273.25	0	0	0	0	0	0	1	4.27	3Coil_Towed_Array
2240	4	TDSA5R-22A	557069.85	4481275.80	0	0	0	0	0	0	7	4.49	3Coil_Towed_Array
2241	5	TDSA5R-22A	557067.75	4481286.45	0	0	0	0	0	0	7	5.25	3Coil_Towed_Array
2242	6	TDSA5R-22A	557064.90	4481290.50	0	0	0	0	0	0	7	6.50	3Coil_Towed_Array
2243	7	TDSA5R-22A	557005.35	4481544.75	0	0	0	0	0	0	1	82.27	3Coil_Towed_Array
2244	8	TDSA5R-22A	557004.10	4481544.98	0	0	0	0	0	0	1	17.65	3Coil_Towed_Array
2245	9	TDSA5R-22A	557004.06	4481557.74	0	0	0	0	0	0	1	18.14	3Coil_Towed_Array
2246	10	TDSA5R-22A	557002.95	4481557.80	0	0	0	0	0	0	1	5.40	3Coil_Towed_Array
2247	11	TDSA5R-22A	557004.75	4481558.55	0	0	0	0	0	0	1	82.59	3Coil_Towed_Array
2248	1	TDSA5R-23	557165.14	4481391.41	0	0	0	0	0	0	7	4.03	3Coil_Towed_Array
2249	1	TDSA5R-24	557257.80	4481317.20	0	0	0	0	0	0	1	6.71	3Coil_Towed_Array
2250	2	TDSA5R-24	557245.80	4481358.30	0	0	0	0	0	0	7	4.67	3Coil_Towed_Array
2251	3	TDSA5R-24	557231.85	4481430.45	0	0	0	0	0	0	7	4.67	3Coil_Towed_Array
2252	4	TDSA5R-24	557229.22	4481445.04	0	0	0	0	0	0	7	3.98	3Coil_Towed_Array
2253	5	TDSA5R-24	557228.80	4481447.65	0	0	0	0	0	0	7	4.80	3Coil_Towed_Array
2254	6	TDSA5R-24	557224.41	4481457.97	0	0	0	0	0	0	1	10.97	3Coil_Towed_Array
		T12TR-24									NO TARGETS		3Coil_Towed_Array
		T12TR-25									NO TARGETS		3Coil_Towed_Array
		T30DSA5R-1									NO TARGETS		3Coil_Towed_Array
		T30DSA5R-3									NO TARGETS		3Coil_Towed_Array
		TDSA1R-1									NO TARGETS		3Coil_Towed_Array
		TDSA3R-1									NO TARGETS		3Coil_Towed_Array
		TDSA3R-12									NO TARGETS		3Coil_Towed_Array
		TDSA5R-15									NO TARGETS		3Coil_Towed_Array
		TDSA5R-21									NO TARGETS		3Coil_Towed_Array
		TDSA5R-22									NO TARGETS		3Coil_Towed_Array
		TDSA2R-10									NO TARGETS		3Coil_Towed_Array

2013 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
1	1	T10-1	554256.46	4483232.47	0	0	0	0	0	0	1	76.50	Person_Portable
2	2	T10-1	554257.34	4483233.19	0	0	0	0	0	0	1	7.87	Person_Portable
3	3	T10-1	554258.66	4483234.29	0	0	0	0	0	0	1	4.25	Person_Portable
4	4	T10-1	554259.76	4483235.20	0	0	0	0	0	0	1	5.66	Person_Portable
5	5	T10-1	554262.04	4483237.08	0	0	0	0	0	0	1	5.55	Person_Portable
6	6	T10-1	554277.79	4483250.51	0	0	0	0	0	0	1	5.38	Person_Portable
7	7	T10-1	554278.79	4483251.38	0	0	0	0	0	0	1	13.24	Person_Portable
8	8	T10-1	554296.86	4483267.41	0	0	0	0	0	0	1	5.22	Person_Portable
9	9	T10-1	554301.43	4483271.74	0	0	0	0	0	0	1	4.11	Person_Portable
10	10	T10-1	554304.31	4483274.06	0	0	0	0	0	0	1	4.80	Person_Portable
11	11	T10-1	554311.69	4483278.74	0	0	0	0	0	0	1	5.40	Person_Portable
12	12	T10-1	554321.60	4483285.54	0	0	0	0	0	0	7	7.06	Person_Portable
13	13	T10-1	554329.49	4483291.27	0	0	0	0	0	0	1	8.06	Person_Portable
14	14	T10-1	554334.26	4483294.89	0	0	0	0	0	0	1	6.75	Person_Portable
15	15	T10-1	554344.40	4483301.84	0	0	0	0	0	0	1	14.57	Person_Portable
16	16	T10-1	554346.07	4483302.93	0	0	0	0	0	0	1	22.25	Person_Portable
17	17	T10-1	554347.50	4483303.87	0	0	0	0	0	0	1	4.36	Person_Portable
18	18	T10-1	554348.62	4483304.60	0	0	0	0	0	0	1	10.79	Person_Portable
19	19	T10-1	554351.00	4483306.79	0	0	0	0	0	0	1	11.08	Person_Portable
20	20	T10-1	554352.33	4483308.17	0	0	0	0	0	0	1	22.84	Person_Portable
21	21	T10-1	554354.47	4483310.38	0	0	0	0	0	0	1	5.23	Person_Portable
22	22	T10-1	554355.47	4483311.42	0	0	0	0	0	0	1	43.58	Person_Portable
23	23	T10-1	554356.74	4483312.73	0	0	0	0	0	0	1	103.47	Person_Portable
24	24	T10-1	554357.80	4483313.83	0	0	0	0	0	0	1	50.14	Person_Portable
25	25	T10-1	554359.07	4483315.14	0	0	0	0	0	0	1	53.76	Person_Portable
26	26	T10-1	554361.42	4483317.57	0	0	0	0	0	0	1	26.42	Person_Portable
27	27	T10-1	554363.66	4483319.86	0	0	0	0	0	0	1	109.92	Person_Portable
28	28	T10-1	554365.36	4483321.59	0	0	0	0	0	0	1	59.62	Person_Portable
29	29	T10-1	554366.72	4483322.98	0	0	0	0	0	0	1	31.13	Person_Portable
30	30	T10-1	554368.15	4483324.44	0	0	0	0	0	0	1	62.82	Person_Portable
31	31	T10-1	554368.89	4483325.20	0	0	0	0	0	0	1	50.80	Person_Portable
32	32	T10-1	554369.91	4483326.25	0	0	0	0	0	0	1	18.12	Person_Portable
33	33	T10-1	554371.20	4483327.56	0	0	0	0	0	0	1	23.48	Person_Portable
34	34	T10-1	554372.78	4483330.30	0	0	0	0	0	0	1	12.33	Person_Portable
35	35	T10-1	554373.93	4483332.51	0	0	0	0	0	0	1	5.65	Person_Portable
36	36	T10-1	554378.10	4483336.16	0	0	0	0	0	0	1	12.35	Person_Portable
37	37	T10-1	554379.85	4483337.34	0	0	0	0	0	0	1	6.45	Person_Portable

2013 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
38	38	T10-1	554382.48	4483339.12	0	0	0	0	0	0	1	37.22	Person_Portable
39	39	T10-1	554383.28	4483339.66	0	0	0	0	0	0	1	42.72	Person_Portable
40	40	T10-1	554385.98	4483341.49	0	0	0	0	0	0	1	8.18	Person_Portable
41	41	T10-1	554387.81	4483342.73	0	0	0	0	0	0	1	5.57	Person_Portable
42	42	T10-1	554392.17	4483345.88	0	0	0	0	0	0	1	11.07	Person_Portable
43	43	T10-1	554393.71	4483347.18	0	0	0	0	0	0	1	139.05	Person_Portable
44	44	T10-1	554395.47	4483348.67	0	0	0	0	0	0	1	49.71	Person_Portable
45	45	T10-1	554396.43	4483349.47	0	0	0	0	0	0	1	19.17	Person_Portable
46	46	T10-1	554397.53	4483350.40	0	0	0	0	0	0	1	7.62	Person_Portable
47	47	T10-1	554399.29	4483351.89	0	0	0	0	0	0	1	5.25	Person_Portable
48	48	T10-1	554400.10	4483352.57	0	0	0	0	0	0	1	10.92	Person_Portable
49	49	T10-1	554400.91	4483353.25	0	0	0	0	0	0	1	17.95	Person_Portable
50	50	T10-1	554402.89	4483354.93	0	0	0	0	0	0	1	7.45	Person_Portable
51	51	T10-1	554405.83	4483357.41	0	0	0	0	0	0	1	10.62	Person_Portable
52	52	T10-1	554406.78	4483358.21	0	0	0	0	0	0	1	7.62	Person_Portable
53	53	T10-1	554409.79	4483360.75	0	0	0	0	0	0	1	141.09	Person_Portable
54	1	T10-2	554250.44	4483239.37	0	0	0	0	0	0	1	15.65	Person_Portable
55	2	T10-2	554251.61	4483240.24	0	0	0	0	0	0	1	4.39	Person_Portable
56	3	T10-2	554263.08	4483248.73	0	0	0	0	0	0	7	6.39	Person_Portable
57	4	T10-2	554274.80	4483258.68	0	0	0	0	0	0	1	4.75	Person_Portable
58	5	T10-2	554275.46	4483259.39	0	0	0	0	0	0	1	4.02	Person_Portable
59	6	T10-2	554324.86	4483302.68	0	0	0	0	0	0	1	7.76	Person_Portable
60	7	T10-2	554327.16	4483304.58	0	0	0	0	0	0	1	8.24	Person_Portable
61	8	T10-2	554330.47	4483306.38	0	0	0	0	0	0	1	4.36	Person_Portable
62	9	T10-2	554348.13	4483325.18	0	0	0	0	0	0	1	5.31	Person_Portable
63	10	T10-2	554354.54	4483329.06	0	0	0	0	0	0	1	19.50	Person_Portable
64	11	T10-2	554359.14	4483331.84	0	0	0	0	0	0	1	11.48	Person_Portable
65	12	T10-2	554363.32	4483334.38	0	0	0	0	0	0	1	13.31	Person_Portable
66	13	T10-2	554364.95	4483335.40	0	0	0	0	0	0	1	13.61	Person_Portable
67	14	T10-2	554366.11	4483336.41	0	0	0	0	0	0	1	4.31	Person_Portable
68	15	T10-2	554372.72	4483342.18	0	0	0	0	0	0	1	15.26	Person_Portable
69	16	T10-2	554373.89	4483343.19	0	0	0	0	0	0	1	6.87	Person_Portable
70	17	T10-2	554374.98	4483344.14	0	0	0	0	0	0	1	23.77	Person_Portable
71	18	T10-2	554376.14	4483345.15	0	0	0	0	0	0	1	9.10	Person_Portable
72	19	T10-2	554377.38	4483346.23	0	0	0	0	0	0	1	6.76	Person_Portable
73	20	T10-2	554387.67	4483355.18	0	0	0	0	0	0	1	11.06	Person_Portable
74	21	T10-2	554391.20	4483358.24	0	0	0	0	0	0	1	17.92	Person_Portable

2013 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
75	22	T10-2	554394.52	4483361.12	0	0	0	0	0	0	1	8.34	Person_Portable
76	23	T10-2	554396.26	4483362.62	0	0	0	0	0	0	1	18.38	Person_Portable
77	24	T10-2	554398.64	4483364.68	0	0	0	0	0	0	1	8.87	Person_Portable
78	25	T10-2	554400.88	4483366.62	0	0	0	0	0	0	1	10.84	Person_Portable
79	26	T10-2	554402.54	4483368.06	0	0	0	0	0	0	1	17.44	Person_Portable
80	1	T10-3	554245.47	4483248.31	0	0	0	0	0	0	1	10.88	Person_Portable
81	2	T10-3	554287.78	4483284.12	0	0	0	0	0	0	1	15.17	Person_Portable
82	3	T10-3	554303.83	4483295.33	0	0	0	0	0	0	1	6.19	Person_Portable
83	4	T10-3	554306.16	4483297.32	0	0	0	0	0	0	1	4.92	Person_Portable
84	5	T10-3	554330.93	4483320.28	0	0	0	0	0	0	1	5.56	Person_Portable
85	6	T10-3	554334.85	4483324.86	0	0	0	0	0	0	1	4.70	Person_Portable
86	7	T10-3	554335.42	4483325.53	0	0	0	0	0	0	1	6.30	Person_Portable
87	8	T10-3	554338.07	4483328.63	0	0	0	0	0	0	1	4.75	Person_Portable
88	9	T10-3	554339.97	4483330.85	0	0	0	0	0	0	1	4.36	Person_Portable
89	10	T10-3	554342.08	4483331.69	0	0	0	0	0	0	1	7.67	Person_Portable
90	11	T10-3	554347.93	4483333.41	0	0	0	0	0	0	1	222.27	Person_Portable
91	12	T10-3	554355.63	4483339.62	0	0	0	0	0	0	1	10.36	Person_Portable
92	13	T10-3	554358.30	4483341.77	0	0	0	0	0	0	1	10.05	Person_Portable
93	14	T10-3	554360.15	4483343.27	0	0	0	0	0	0	1	32.07	Person_Portable
94	15	T10-3	554361.26	4483344.16	0	0	0	0	0	0	1	4.69	Person_Portable
95	16	T10-3	554364.24	4483346.58	0	0	0	0	0	0	1	10.29	Person_Portable
96	17	T10-3	554368.05	4483349.68	0	0	0	0	0	0	1	25.33	Person_Portable
97	18	T10-3	554369.39	4483350.77	0	0	0	0	0	0	1	34.27	Person_Portable
98	19	T10-3	554372.01	4483352.90	0	0	0	0	0	0	1	45.33	Person_Portable
99	20	T10-3	554372.83	4483353.57	0	0	0	0	0	0	1	44.13	Person_Portable
100	21	T10-3	554374.02	4483354.54	0	0	0	0	0	0	1	19.57	Person_Portable
101	22	T10-3	554378.28	4483358.00	0	0	0	0	0	0	1	18.22	Person_Portable
102	23	T10-3	554379.40	4483358.91	0	0	0	0	0	0	1	13.85	Person_Portable
103	24	T10-3	554381.98	4483361.07	0	0	0	0	0	0	1	88.77	Person_Portable
104	25	T10-3	554383.85	4483363.36	0	0	0	0	0	0	1	32.38	Person_Portable
105	26	T10-3	554384.82	4483364.54	0	0	0	0	0	0	1	102.67	Person_Portable
106	27	T10-3	554386.21	4483366.24	0	0	0	0	0	0	1	150.36	Person_Portable
107	28	T10-3	554387.11	4483367.35	0	0	0	0	0	0	1	125.46	Person_Portable
108	29	T10-3	554388.23	4483368.54	0	0	0	0	0	0	1	52.54	Person_Portable
109	30	T10-3	554389.39	4483369.71	0	0	0	0	0	0	1	159.59	Person_Portable
110	31	T10-3	554392.67	4483373.01	0	0	0	0	0	0	1	25.59	Person_Portable
111	32	T10-3	554395.14	4483375.49	0	0	0	0	0	0	1	63.15	Person_Portable

2013 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
112	33	T10-3	554396.37	4483376.73	0	0	0	0	0	0	1	14.80	Person_Portable
113	1	T10-4	554238.96	4483254.95	0	0	0	0	0	0	1	205.53	Person_Portable
114	2	T10-4	554246.89	4483261.06	0	0	0	0	0	0	7	4.09	Person_Portable
115	3	T10-4	554262.53	4483274.72	0	0	0	0	0	0	1	19.23	Person_Portable
116	4	T10-4	554295.51	4483302.35	0	0	0	0	0	0	1	5.32	Person_Portable
117	5	T10-4	554324.56	4483323.53	0	0	0	0	0	0	1	54.04	Person_Portable
118	6	T10-4	554326.62	4483325.65	0	0	0	0	0	0	1	8.59	Person_Portable
119	7	T10-4	554332.29	4483331.34	0	0	0	0	0	0	1	5.07	Person_Portable
120	8	T10-4	554338.22	4483336.87	0	0	0	0	0	0	1	15.47	Person_Portable
121	9	T10-4	554341.61	4483340.03	0	0	0	0	0	0	1	5.25	Person_Portable
122	10	T10-4	554350.93	4483348.15	0	0	0	0	0	0	1	4.68	Person_Portable
123	11	T10-4	554364.29	4483359.27	0	0	0	0	0	0	1	16.18	Person_Portable
124	12	T10-4	554366.72	4483361.33	0	0	0	0	0	0	1	8.58	Person_Portable
125	13	T10-4	554368.93	4483363.20	0	0	0	0	0	0	1	5.98	Person_Portable
126	14	T10-4	554375.92	4483369.13	0	0	0	0	0	0	1	14.03	Person_Portable
127	15	T10-4	554379.46	4483372.12	0	0	0	0	0	0	1	8.09	Person_Portable
128	16	T10-4	554385.23	4483378.58	0	0	0	0	0	0	1	4.50	Person_Portable
129	17	T10-4	554390.13	4483384.27	0	0	0	0	0	0	1	17.24	Person_Portable
130	1	T10-5	554245.15	4483276.43	0	0	0	0	0	0	1	47.03	Person_Portable
131	2	T10-5	554256.03	4483284.30	0	0	0	0	0	0	1	21.68	Person_Portable
132	3	T10-5	554261.31	4483288.11	0	0	0	0	0	0	7	9.25	Person_Portable
133	4	T10-5	554300.06	4483319.46	0	0	0	0	0	0	1	5.27	Person_Portable
134	5	T10-5	554319.89	4483335.37	0	0	0	0	0	0	1	5.73	Person_Portable
135	6	T10-5	554324.11	4483338.53	0	0	0	0	0	0	1	4.12	Person_Portable
136	7	T10-5	554331.25	4483346.03	0	0	0	0	0	0	1	5.06	Person_Portable
137	8	T10-5	554332.50	4483347.87	0	0	0	0	0	0	1	4.53	Person_Portable
138	9	T10-5	554340.31	4483354.27	0	0	0	0	0	0	1	5.28	Person_Portable
139	10	T10-5	554359.97	4483370.36	0	0	0	0	0	0	1	8.49	Person_Portable
140	11	T10-5	554361.51	4483372.22	0	0	0	0	0	0	1	4.83	Person_Portable
141	12	T10-5	554362.62	4483373.56	0	0	0	0	0	0	1	7.72	Person_Portable
142	13	T10-5	554363.72	4483374.90	0	0	0	0	0	0	1	4.32	Person_Portable
143	14	T10-5	554368.97	4483380.04	0	0	0	0	0	0	1	5.06	Person_Portable
144	15	T10-5	554373.37	4483382.96	0	0	0	0	0	0	1	4.49	Person_Portable
145	16	T10-5	554377.78	4483385.87	0	0	0	0	0	0	1	6.13	Person_Portable
146	17	T10-5	554381.94	4483388.63	0	0	0	0	0	0	1	4.85	Person_Portable
147	18	T10-5	554385.38	4483390.91	0	0	0	0	0	0	1	37.43	Person_Portable
148	1	T10-6	554256.37	4483295.24	0	0	0	0	0	0	1	4.82	Person_Portable

2013 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
149	2	T10-6	554259.17	4483297.70	0	0	0	0	0	0	1	5.38	Person_Portable
150	3	T10-6	554266.27	4483303.93	0	0	0	0	0	0	1	4.56	Person_Portable
151	4	T10-6	554298.03	4483333.69	0	0	0	0	0	0	1	4.40	Person_Portable
152	5	T10-6	554331.64	4483360.84	0	0	0	0	0	0	1	4.14	Person_Portable
153	6	T10-6	554332.50	4483361.75	0	0	0	0	0	0	1	4.99	Person_Portable
154	7	T10-6	554355.59	4483378.70	0	0	0	0	0	0	1	8.27	Person_Portable
155	8	T10-6	554358.20	4483382.14	0	0	0	0	0	0	1	8.36	Person_Portable
156	9	T10-6	554377.27	4483399.28	0	0	0	0	0	0	1	10.03	Person_Portable
157	10	T10-6	554378.08	4483399.98	0	0	0	0	0	0	1	33.00	Person_Portable
158	1	T10-7	554264.39	4483314.93	0	0	0	0	0	0	1	59.64	Person_Portable
159	2	T10-7	554270.16	4483319.27	0	0	0	0	0	0	1	4.72	Person_Portable
160	3	T10-7	554272.08	4483320.71	0	0	0	0	0	0	1	15.00	Person_Portable
161	4	T10-7	554275.01	4483322.91	0	0	0	0	0	0	1	14.77	Person_Portable
162	5	T10-7	554277.85	4483325.05	0	0	0	0	0	0	1	10.98	Person_Portable
163	6	T10-7	554291.33	4483335.56	0	0	0	0	0	0	1	6.66	Person_Portable
164	7	T10-7	554306.53	4483349.18	0	0	0	0	0	0	1	4.83	Person_Portable
165	8	T10-7	554314.91	4483357.50	0	0	0	0	0	0	1	4.04	Person_Portable
166	9	T10-7	554322.22	4483364.25	0	0	0	0	0	0	1	6.89	Person_Portable
167	10	T10-7	554329.40	4483370.72	0	0	0	0	0	0	1	5.06	Person_Portable
168	11	T10-7	554372.95	4483407.14	0	0	0	0	0	0	1	94.77	Person_Portable
169	1	T10-8	554273.62	4483337.00	0	0	0	0	0	0	1	208.46	Person_Portable
170	2	T10-8	554274.76	4483338.01	0	0	0	0	0	0	1	80.88	Person_Portable
171	3	T10-8	554286.34	4483348.29	0	0	0	0	0	0	1	7.84	Person_Portable
172	4	T10-8	554289.62	4483351.21	0	0	0	0	0	0	1	6.20	Person_Portable
173	5	T10-8	554303.54	4483363.88	0	0	0	0	0	0	1	13.88	Person_Portable
174	6	T10-8	554305.33	4483365.52	0	0	0	0	0	0	1	4.57	Person_Portable
175	7	T10-8	554310.22	4483369.97	0	0	0	0	0	0	1	5.07	Person_Portable
176	8	T10-8	554318.61	4483376.97	0	0	0	0	0	0	1	33.54	Person_Portable
177	9	T10-8	554319.88	4483378.03	0	0	0	0	0	0	1	4.38	Person_Portable
178	10	T10-8	554324.90	4483382.22	0	0	0	0	0	0	1	581.61	Person_Portable
179	11	T10-8	554331.04	4483387.00	0	0	0	0	0	0	1	4.67	Person_Portable
180	12	T10-8	554335.33	4483389.82	0	0	0	0	0	0	1	6.03	Person_Portable
181	13	T10-8	554346.33	4483397.06	0	0	0	0	0	0	1	10.26	Person_Portable
182	14	T10-8	554352.57	4483402.54	0	0	0	0	0	0	1	7.70	Person_Portable
183	15	T10-8	554363.32	4483412.26	0	0	0	0	0	0	1	4.76	Person_Portable
184	16	T10-8	554366.97	4483413.96	0	0	0	0	0	0	1	18.51	Person_Portable
185	1	T10-9	554282.92	4483357.64	0	0	0	0	0	0	1	27.95	Person_Portable

2013 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
186	2	T10-9	554293.17	4483366.68	0	0	0	0	0	0	1	16.43	Person_Portable
187	3	T10-9	554296.82	4483369.90	0	0	0	0	0	0	1	4.67	Person_Portable
188	4	T10-9	554298.49	4483371.37	0	0	0	0	0	0	1	5.46	Person_Portable
189	5	T10-9	554301.44	4483373.99	0	0	0	0	0	0	1	4.84	Person_Portable
190	6	T10-9	554302.76	4483375.30	0	0	0	0	0	0	1	5.85	Person_Portable
191	7	T10-9	554305.40	4483377.91	0	0	0	0	0	0	1	7.00	Person_Portable
192	8	T10-9	554309.23	4483381.70	0	0	0	0	0	0	1	8.84	Person_Portable
193	9	T10-9	554310.68	4483383.15	0	0	0	0	0	0	1	7.82	Person_Portable
194	10	T10-9	554312.28	4483384.74	0	0	0	0	0	0	1	5.02	Person_Portable
195	11	T10-9	554313.12	4483385.56	0	0	0	0	0	0	1	6.15	Person_Portable
196	12	T10-9	554315.62	4483388.05	0	0	0	0	0	0	1	6.59	Person_Portable
197	13	T10-9	554318.33	4483390.73	0	0	0	0	0	0	1	4.31	Person_Portable
198	14	T10-9	554319.59	4483391.14	0	0	0	0	0	0	1	4.42	Person_Portable
199	15	T10-9	554327.40	4483396.83	0	0	0	0	0	0	1	5.27	Person_Portable
200	16	T10-9	554329.15	4483398.06	0	0	0	0	0	0	1	4.24	Person_Portable
201	17	T10-9	554331.21	4483399.50	0	0	0	0	0	0	1	6.54	Person_Portable
202	18	T10-9	554335.81	4483402.73	0	0	0	0	0	0	1	4.28	Person_Portable
203	19	T10-9	554340.64	4483406.13	0	0	0	0	0	0	1	7.47	Person_Portable
204	20	T10-9	554346.60	4483411.18	0	0	0	0	0	0	1	10.26	Person_Portable
205	21	T10-9	554349.25	4483413.49	0	0	0	0	0	0	1	11.08	Person_Portable
206	22	T10-9	554354.62	4483418.16	0	0	0	0	0	0	1	4.62	Person_Portable
207	23	T10-9	554358.35	4483421.41	0	0	0	0	0	0	1	7.58	Person_Portable
208	24	T10-9	554359.21	4483422.15	0	0	0	0	0	0	1	17.43	Person_Portable
209	25	T10-9	554360.36	4483423.15	0	0	0	0	0	0	1	71.34	Person_Portable
210	1	T3DSA1-1	557088.02	4483595.60	0	0	0	0	0	0	3	874.54	Person_Portable
211	2	T3DSA1-1	557086.83	4483597.31	0	0	0	0	0	0	3	1019.51	Person_Portable
212	1	T3DSA1-2	557100.10	4483578.50	0	0	0	0	0	0	1	4.47	Person_Portable
213	2	T3DSA1-2	557090.84	4483593.98	0	0	0	0	0	0	1	6.07	Person_Portable
214	3	T3DSA1-2	557088.93	4483597.96	0	0	0	0	0	0	3	1025.24	Person_Portable
215	4	T3DSA1-2	557087.98	4483599.83	0	0	0	0	0	0	3	1460.07	Person_Portable
216	1	T3DSA1-3	557102.85	4483583.84	0	0	0	0	0	0	1	5.39	Person_Portable
217	2	T3DSA1-3	557092.61	4483603.88	0	0	0	0	0	0	3	1294.62	Person_Portable
218	3	T3DSA1-3	557090.78	4483607.27	0	0	0	0	0	0	3	3360.75	Person_Portable
219	1	T3DSA1-4	557103.12	4483589.29	0	0	0	0	0	0	1	5.27	Person_Portable
220	2	T3DSA1-4	557096.17	4483602.55	0	0	0	0	0	0	1	15.29	Person_Portable
221	3	T3DSA1-4	557094.18	4483606.26	0	0	0	0	0	0	3	1775.05	Person_Portable
222	4	T3DSA1-4	557092.60	4483609.00	0	0	0	0	0	0	3	2016.47	Person_Portable

2013 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
223	1	T3DSA1-5	557096.31	4483611.17	0	0	0	0	0	0	3	1840.48	Person_Portable
224	2	T3DSA1-5	557094.94	4483614.03	0	0	0	0	0	0	3	3486.17	Person_Portable
225	1	T3DSA1-6	557098.12	4483614.86	0	0	0	0	0	0	3	1767.48	Person_Portable
226	2	T3DSA1-6	557097.54	4483615.91	0	0	0	0	0	0	3	2459.00	Person_Portable
227	3	T3DSA1-6	557096.81	4483616.77	0	0	0	0	0	0	3	2509.69	Person_Portable
228	1	T3DSA1-7	557115.43	4483593.17	0	0	0	0	0	0	1	6.91	Person_Portable
229	2	T3DSA1-7	557111.88	4483599.91	0	0	0	0	0	0	1	4.46	Person_Portable
230	3	T3DSA1-7	557101.44	4483618.69	0	0	0	0	0	0	3	2852.22	Person_Portable
231	4	T3DSA1-7	557099.32	4483621.50	0	0	0	0	0	0	3	3771.92	Person_Portable
232	1	T3DSA1-8	557103.32	4483622.28	0	0	0	0	0	0	3	3431.98	Person_Portable
233	2	T3DSA1-8	557102.09	4483624.28	0	0	0	0	0	0	3	4809.98	Person_Portable
234	1	T3DSA1-9	557105.73	4483627.19	0	0	0	0	0	0	3	5204.41	Person_Portable
235	2	T3DSA1-9	557105.08	4483628.77	0	0	0	0	0	0	3	5741.72	Person_Portable
236	1	T3DSA1-10	557127.00	4483596.78	0	0	0	0	0	0	1	13.27	Person_Portable
237	2	T3DSA1-10	557125.08	4483600.26	0	0	0	0	0	0	1	78.31	Person_Portable
238	3	T3DSA1-10	557111.21	4483622.74	0	0	0	0	0	0	1	6.62	Person_Portable
239	4	T3DSA1-10	557108.36	4483628.83	0	0	0	0	0	0	3	2572.27	Person_Portable
240	5	T3DSA1-10	557107.42	4483630.21	0	0	0	0	0	0	3	3658.07	Person_Portable
241	6	T3DSA1-10	557106.96	4483631.46	0	0	0	0	0	0	3	4476.67	Person_Portable
242	1	T3DSA1-11	557132.40	4483594.93	0	0	0	0	0	0	1	8.62	Person_Portable
243	2	T3DSA1-11	557112.83	4483622.81	0	0	0	0	0	0	3	9.52	Person_Portable
244	3	T3DSA1-11	557113.96	4483625.60	0	0	0	0	0	0	3	4.75	Person_Portable
245	4	T3DSA1-11	557112.19	4483631.73	0	0	0	0	0	0	3	4.29	Person_Portable
246	5	T3DSA1-11	557111.77	4483632.73	0	0	0	0	0	0	3	11.18	Person_Portable
247	6	T3DSA1-11	557110.60	4483636.21	0	0	0	0	0	0	3	377.76	Person_Portable
248	1	T3DSA1-12	557134.42	4483598.56	0	0	0	0	0	0	1	5.80	Person_Portable
249	2	T3DSA1-12	557134.08	4483600.22	0	0	0	0	0	0	1	20.29	Person_Portable
250	3	T3DSA1-12	557131.08	4483605.27	0	0	0	0	0	0	1	11.45	Person_Portable
251	4	T3DSA1-12	557128.10	4483618.80	0	0	0	0	0	0	3	61.72	Person_Portable
252	5	T3DSA1-12	557127.49	4483622.98	0	0	0	0	0	0	3	32.43	Person_Portable
253	6	T3DSA1-12	557126.39	4483625.18	0	0	0	0	0	0	3	11.15	Person_Portable
254	7	T3DSA1-12	557125.14	4483627.51	0	0	0	0	0	0	3	54.21	Person_Portable
255	8	T3DSA1-12	557123.65	4483629.29	0	0	0	0	0	0	3	920.66	Person_Portable
256	9	T3DSA1-12	557119.14	4483631.07	0	0	0	0	0	0	3	22.60	Person_Portable
257	10	T3DSA1-12	557118.08	4483631.28	0	0	0	0	0	0	3	26.65	Person_Portable
258	11	T3DSA1-12	557117.09	4483632.28	0	0	0	0	0	0	3	96.12	Person_Portable
259	12	T3DSA1-12	557113.42	4483635.87	0	0	0	0	0	0	3	490.29	Person_Portable

2013 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
260	13	T3DSA1-12	557111.42	4483638.71	0	0	0	0	0	0	3	166.84	Person_Portable
261	1	T3DSA1-13	557128.54	4483620.35	0	0	0	0	0	0	3	45.37	Person_Portable
262	2	T3DSA1-13	557121.59	4483632.12	0	0	0	0	0	0	1	6.75	Person_Portable
263	3	T3DSA1-13	557119.92	4483634.53	0	0	0	0	0	0	1	7.16	Person_Portable
264	4	T3DSA1-13	557116.54	4483639.91	0	0	0	0	0	0	1	13.72	Person_Portable
265	1	T3DSA1-14	557135.62	4483614.99	0	0	0	0	0	0	1	24.71	Person_Portable
266	2	T3DSA1-14	557135.11	4483616.50	0	0	0	0	0	0	1	19.51	Person_Portable
267	3	T3DSA1-14	557133.46	4483618.58	0	0	0	0	0	0	1	91.57	Person_Portable
268	4	T3DSA1-14	557132.84	4483619.76	0	0	0	0	0	0	1	71.00	Person_Portable
269	5	T3DSA1-14	557131.74	4483621.74	0	0	0	0	0	0	1	156.66	Person_Portable
270	6	T3DSA1-14	557130.63	4483623.85	0	0	0	0	0	0	1	576.09	Person_Portable
271	7	T3DSA1-14	557128.66	4483627.47	0	0	0	0	0	0	1	35.74	Person_Portable
272	8	T3DSA1-14	557121.48	4483638.27	0	0	0	0	0	0	1	15.12	Person_Portable
273	9	T3DSA1-14	557119.78	4483642.18	0	0	0	0	0	0	1	4.33	Person_Portable
274	1	T3DSA1-15	557140.61	4483611.71	0	0	0	0	0	0	1	7.61	Person_Portable
275	2	T3DSA1-15	557139.58	4483613.94	0	0	0	0	0	0	1	5.75	Person_Portable
276	3	T3DSA1-15	557131.68	4483629.24	0	0	0	0	0	0	1	5.57	Person_Portable
277	4	T3DSA1-15	557130.59	4483631.24	0	0	0	0	0	0	1	147.60	Person_Portable
278	5	T3DSA1-15	557128.04	4483635.30	0	0	0	0	0	0	1	343.74	Person_Portable
279	6	T3DSA1-15	557126.80	4483637.24	0	0	0	0	0	0	1	9.71	Person_Portable
280	7	T3DSA1-15	557125.76	4483639.93	0	0	0	0	0	0	1	57.81	Person_Portable
281	8	T3DSA1-15	557125.26	4483640.79	0	0	0	0	0	0	1	47.88	Person_Portable
282	1	T12T-16A	556096.00	4482327.00	0	0	0	0	0	0	1	37.31	Person_Portable
283	2	T12T-16A	556103.84	4482329.48	0	0	0	0	0	0	1	6.82	Person_Portable
284	3	T12T-16A	556112.37	4482332.61	0	0	0	0	0	0	1	4.89	Person_Portable
285	4	T12T-16A	556116.00	4482332.60	0	0	0	0	0	0	7	4.30	Person_Portable
286	5	T12T-16A	556122.00	4482334.20	0	0	0	0	0	0	1	10.18	Person_Portable
287	6	T12T-16A	556125.20	4482335.20	0	0	0	0	0	0	1	8.16	Person_Portable
288	7	T12T-16A	556129.17	4482337.29	0	0	0	0	0	0	6	3.96	Person_Portable
289	1	T12T-17A	556097.20	4482358.60	0	0	0	0	0	0	1	8.01	Person_Portable
290	1	TDSA5-14A	556215.57	4481191.04	0	0	0	0	0	0	1	8.37	Person_Portable
291	2	TDSA5-14A	556214.88	4481193.96	0	0	0	0	0	0	1	38.71	Person_Portable
292	3	TDSA5-14A	556212.73	4481196.54	0	0	0	0	0	0	1	226.57	Person_Portable
293	4	TDSA5-14A	556212.04	4481197.34	0	0	0	0	0	0	1	263.75	Person_Portable
294	5	TDSA5-14A	556210.87	4481199.44	0	0	0	0	0	0	1	22.89	Person_Portable
295	1	TDSA5-20A	556828.83	4481404.96	0	0	0	0	0	0	1	70.47	Person_Portable
296	2	TDSA5-20A	556810.44	4481435.67	0	0	0	0	0	0	1	119.82	Person_Portable

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Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
297	1	TDSA5-25A	557305.25	4481580.65	0	0	0	0	0	0	1	8.94	Person_Portable
298	179	T30DSA5-1	557348.60	4481674.60	0	0	0	0	0	0	1	26.35	Person_Portable
299	180	T30DSA5-1	557367.00	4481688.80	0	0	0	0	0	0	1	8.25	Person_Portable
300	1	G-18D-1A	554065.43	4484375.59	0	0	0	0	0	0	3	30.81	Person_Portable
301	2	G-18D-1A	554064.47	4484376.63	0	0	0	0	0	0	3	84.36	Person_Portable
302	3	G-18D-1A	554065.19	4484378.09	0	0	0	0	0	0	3	32.56	Person_Portable
303	4	G-18D-1A	554065.65	4484380.05	0	0	0	0	0	0	1	4.59	Person_Portable
304	5	G-18D-1A	554064.45	4484385.00	0	0	0	0	0	0	1	10.34	Person_Portable
305	6	G-18D-1A	554067.15	4484386.00	0	0	0	0	0	0	1	11.15	Person_Portable
306	7	G-18D-1A	554068.95	4484388.00	0	0	0	0	0	0	1	57.70	Person_Portable
307	8	G-18D-1A	554069.61	4484386.71	0	0	0	0	0	0	1	22.80	Person_Portable
308	9	G-18D-1A	554070.27	4484384.48	0	0	0	0	0	0	1	6.47	Person_Portable
309	10	G-18D-1A	554070.34	4484383.47	0	0	0	0	0	0	1	37.54	Person_Portable
310	11	G-18D-1A	554070.75	4484381.85	0	0	0	0	0	0	1	169.64	Person_Portable
311	12	G-18D-1A	554069.10	4484380.80	0	0	0	0	0	0	1	59.02	Person_Portable
312	13	G-18D-1A	554069.25	4484379.00	0	0	0	0	0	0	1	117.10	Person_Portable
313	14	G-18D-1A	554067.45	4484379.60	0	0	0	0	0	0	1	14.43	Person_Portable
314	15	G-18D-1A	554066.30	4484377.50	0	0	0	0	0	0	3	96.86	Person_Portable
315	16	G-18D-1A	554067.49	4484376.98	0	0	0	0	0	0	3	35.75	Person_Portable
316	17	G-18D-1A	554069.55	4484376.45	0	0	0	0	0	0	1	5.36	Person_Portable
317	18	G-18D-1A	554070.46	4484375.19	0	0	0	0	0	0	1	7.48	Person_Portable
318	19	G-18D-1A	554072.10	4484376.30	0	0	0	0	0	0	1	4.19	Person_Portable
319	20	G-18D-1A	554072.85	4484377.65	0	0	0	0	0	0	1	74.09	Person_Portable
320	21	G-18D-1A	554072.32	4484379.17	0	0	0	0	0	0	3	18.00	Person_Portable
321	22	G-18D-1A	554071.20	4484379.45	0	0	0	0	0	0	3	35.36	Person_Portable
322	23	G-18D-1A	554072.55	4484380.35	0	0	0	0	0	0	3	30.18	Person_Portable
323	24	G-18D-1A	554073.15	4484383.50	0	0	0	0	0	0	1	10.45	Person_Portable
324	25	G-18D-1A	554073.75	4484384.85	0	0	0	0	0	0	1	6.95	Person_Portable
325	26	G-18D-1A	554074.80	4484385.45	0	0	0	0	0	0	1	12.63	Person_Portable
326	27	G-18D-1A	554072.85	4484386.95	0	0	0	0	0	0	1	12.26	Person_Portable
327	28	G-18D-1A	554074.20	4484387.85	0	0	0	0	0	0	1	140.78	Person_Portable
328	29	G-18D-1A	554073.30	4484389.20	0	0	0	0	0	0	1	134.97	Person_Portable
329	30	G-18D-1A	554074.35	4484391.60	0	0	0	0	0	0	1	141.04	Person_Portable
330	31	G-18D-1A	554076.30	4484392.05	0	0	0	0	0	0	1	4.18	Person_Portable
331	32	G-18D-1A	554077.35	4484390.10	0	0	0	0	0	0	1	65.67	Person_Portable
332	33	G-18D-1A	554075.90	4484388.40	0	0	0	0	0	0	1	178.78	Person_Portable
333	34	G-18D-1A	554077.17	4484388.01	0	0	0	0	0	0	1	104.14	Person_Portable

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Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
334	35	G-18D-1A	554080.70	4484387.71	0	0	0	0	0	0	3	31.40	Person_Portable
335	36	G-18D-1A	554080.80	4484388.75	0	0	0	0	0	0	3	40.14	Person_Portable
336	37	G-18D-1A	554083.20	4484387.70	0	0	0	0	0	0	1	11.59	Person_Portable
337	38	G-18D-1A	554083.35	4484388.60	0	0	0	0	0	0	1	8.86	Person_Portable
338	39	G-18D-1A	554084.25	4484389.20	0	0	0	0	0	0	1	6.78	Person_Portable
339	40	G-18D-1A	554084.70	4484390.25	0	0	0	0	0	0	1	6.66	Person_Portable
340	41	G-18D-1A	554083.50	4484391.45	0	0	0	0	0	0	1	15.29	Person_Portable
341	42	G-18D-1A	554082.60	4484390.65	0	0	0	0	0	0	1	19.87	Person_Portable
342	43	G-18D-1A	554080.35	4484390.00	0	0	0	0	0	0	3	49.90	Person_Portable
343	44	G-18D-1A	554080.33	4484391.19	0	0	0	0	0	0	3	47.65	Person_Portable
344	45	G-18D-1A	554080.35	4484394.00	0	0	0	0	0	0	2	12011.86	Person_Portable
345	46	G-18D-1A	554083.65	4484394.30	0	0	0	0	0	0	3	113.48	Person_Portable
346	47	G-18D-1A	554085.90	4484394.90	0	0	0	0	0	0	3	112.53	Person_Portable
347	48	G-18D-1A	554086.52	4484397.82	0	0	0	0	0	0	1	7.08	Person_Portable
348	49	G-18D-1A	554087.85	4484395.20	0	0	0	0	0	0	3	109.30	Person_Portable
349	50	G-18D-1A	554086.77	4484390.03	0	0	0	0	0	0	1	9.17	Person_Portable
350	51	G-18D-1A	554087.56	4484390.45	0	0	0	0	0	0	1	10.68	Person_Portable
351	52	G-18D-1A	554088.91	4484389.53	0	0	0	0	0	0	1	9.12	Person_Portable
352	53	G-18D-1A	554089.86	4484390.15	0	0	0	0	0	0	1	7.53	Person_Portable
353	54	G-18D-1A	554091.00	4484389.95	0	0	0	0	0	0	1	9.64	Person_Portable
354	55	G-18D-1A	554093.10	4484388.00	0	0	0	0	0	0	1	50.67	Person_Portable
355	56	G-18D-1A	554092.35	4484385.90	0	0	0	0	0	0	1	7.72	Person_Portable
356	57	G-18D-1A	554091.75	4484385.15	0	0	0	0	0	0	1	5.49	Person_Portable
357	58	G-18D-1A	554091.54	4484386.72	0	0	0	0	0	0	1	18.80	Person_Portable
358	59	G-18D-1A	554089.20	4484387.85	0	0	0	0	0	0	1	157.52	Person_Portable
359	60	G-18D-1A	554089.64	4484385.45	0	0	0	0	0	0	1	27.33	Person_Portable
360	61	G-18D-1A	554088.97	4484385.00	0	0	0	0	0	0	1	26.13	Person_Portable
361	62	G-18D-1A	554090.55	4484382.60	0	0	0	0	0	0	1	17.38	Person_Portable
362	63	G-18D-1A	554089.48	4484381.82	0	0	0	0	0	0	1	6.04	Person_Portable
363	64	G-18D-1A	554089.80	4484380.50	0	0	0	0	0	0	1	48.38	Person_Portable
364	65	G-18D-1A	554091.60	4484380.05	0	0	0	0	0	0	1	442.66	Person_Portable
365	66	G-18D-1A	554093.40	4484379.60	0	0	0	0	0	0	1	50.11	Person_Portable
366	67	G-18D-1A	554094.36	4484379.28	0	0	0	0	0	0	1	51.08	Person_Portable
367	68	G-18D-1A	554095.71	4484381.16	0	0	0	0	0	0	1	7.31	Person_Portable
368	69	G-18D-1A	554096.33	4484380.61	0	0	0	0	0	0	1	11.74	Person_Portable
369	70	G-18D-1A	554097.30	4484380.65	0	0	0	0	0	0	1	25.99	Person_Portable
370	71	G-18D-1A	554097.75	4484379.15	0	0	0	0	0	0	3	532.68	Person_Portable

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Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
371	72	G-18D-1A	554097.15	4484377.80	0	0	0	0	0	0	3	350.64	Person_Portable
372	73	G-18D-1A	554095.80	4484377.20	0	0	0	0	0	0	3	232.50	Person_Portable
373	74	G-18D-1A	554095.35	4484374.95	0	0	0	0	0	0	2	4059.46	Person_Portable
374	75	G-18D-1A	554093.21	4484376.16	0	0	0	0	0	0	1	15.16	Person_Portable
375	76	G-18D-1A	554092.95	4484373.75	0	0	0	0	0	0	1	86.57	Person_Portable
376	77	G-18D-1A	554091.30	4484372.25	0	0	0	0	0	0	1	73.36	Person_Portable
377	78	G-18D-1A	554091.00	4484371.20	0	0	0	0	0	0	1	59.16	Person_Portable
378	79	G-18D-1A	554088.75	4484369.85	0	0	0	0	0	0	1	84.37	Person_Portable
379	80	G-18D-1A	554089.05	4484371.05	0	0	0	0	0	0	1	81.81	Person_Portable
380	81	G-18D-1A	554089.65	4484372.85	0	0	0	0	0	0	1	67.85	Person_Portable
381	82	G-18D-1A	554087.25	4484374.20	0	0	0	0	0	0	1	6.61	Person_Portable
382	83	G-18D-1A	554086.50	4484374.65	0	0	0	0	0	0	1	13.15	Person_Portable
383	84	G-18D-1A	554084.25	4484374.20	0	0	0	0	0	0	1	68.48	Person_Portable
384	85	G-18D-1A	554084.10	4484373.00	0	0	0	0	0	0	1	44.21	Person_Portable
385	86	G-18D-1A	554082.60	4484374.80	0	0	0	0	0	0	1	889.94	Person_Portable
386	87	G-18D-1A	554085.15	4484377.05	0	0	0	0	0	0	1	4.65	Person_Portable
387	88	G-18D-1A	554085.75	4484376.00	0	0	0	0	0	0	1	23.02	Person_Portable
388	89	G-18D-1A	554087.85	4484375.70	0	0	0	0	0	0	1	4.21	Person_Portable
389	90	G-18D-1A	554088.60	4484375.10	0	0	0	0	0	0	1	19.07	Person_Portable
390	91	G-18D-1A	554089.80	4484375.40	0	0	0	0	0	0	1	43.45	Person_Portable
391	92	G-18D-1A	554091.11	4484374.77	0	0	0	0	0	0	1	7.87	Person_Portable
392	93	G-18D-1A	554091.76	4484375.22	0	0	0	0	0	0	1	11.27	Person_Portable
393	94	G-18D-1A	554091.30	4484376.15	0	0	0	0	0	0	1	113.47	Person_Portable
394	95	G-18D-1A	554091.30	4484377.95	0	0	0	0	0	0	1	19.94	Person_Portable
395	96	G-18D-1A	554089.50	4484377.05	0	0	0	0	0	0	1	51.81	Person_Portable
396	97	G-18D-1A	554088.15	4484378.40	0	0	0	0	0	0	2	4544.33	Person_Portable
397	98	G-18D-1A	554086.80	4484379.90	0	0	0	0	0	0	2	153.42	Person_Portable
398	99	G-18D-1A	554084.85	4484380.50	0	0	0	0	0	0	1	15.04	Person_Portable
399	100	G-18D-1A	554083.95	4484380.05	0	0	0	0	0	0	1	10.01	Person_Portable
400	101	G-18D-1A	554083.15	4484382.05	0	0	0	0	0	0	1	7.50	Person_Portable
401	102	G-18D-1A	554081.25	4484384.40	0	0	0	0	0	0	2	11467.44	Person_Portable
402	103	G-18D-1A	554078.41	4484385.25	0	0	0	0	0	0	3	111.46	Person_Portable
403	104	G-18D-1A	554076.75	4484383.20	0	0	0	0	0	0	1	192.04	Person_Portable
404	105	G-18D-1A	554075.34	4484383.20	0	0	0	0	0	0	3	92.55	Person_Portable
405	106	G-18D-1A	554076.30	4484382.15	0	0	0	0	0	0	1	152.70	Person_Portable
406	107	G-18D-1A	554078.55	4484378.85	0	0	0	0	0	0	1	42.83	Person_Portable
407	108	G-18D-1A	554078.90	4484377.42	0	0	0	0	0	0	1	9.21	Person_Portable

2013 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
408	109	G-18D-1A	554081.70	4484379.30	0	0	0	0	0	0	1	7.60	Person_Portable
409	110	G-18D-1A	554081.63	4484376.70	0	0	0	0	0	0	1	9.47	Person_Portable
410	111	G-18D-1A	554080.65	4484375.85	0	0	0	0	0	0	1	133.23	Person_Portable
411	112	G-18D-1A	554079.90	4484375.10	0	0	0	0	0	0	1	73.69	Person_Portable
412	113	G-18D-1A	554076.15	4484374.05	0	0	0	0	0	0	1	9.49	Person_Portable
413	114	G-18D-1A	554075.41	4484375.06	0	0	0	0	0	0	1	4.21	Person_Portable
414	115	G-18D-1A	554074.05	4484373.30	0	0	0	0	0	0	1	5.43	Person_Portable
415	116	G-18D-1A	554073.00	4484374.05	0	0	0	0	0	0	1	8.83	Person_Portable
416	117	G-18D-1A	554070.75	4484373.45	0	0	0	0	0	0	9	54.20	Person_Portable
417	118	G-18D-1A	554070.00	4484373.00	0	0	0	0	0	0	9	54.99	Person_Portable
418	119	G-18D-1A	554077.46	4484357.08	0	0	0	0	0	0	8	999.00	Person_Portable
419	120	G-18D-1A	554070.48	4484367.52	0	0	0	0	0	0	8	999.00	Person_Portable
420	1	G-18D-2A	554095.20	4484388.04	0	0	0	0	0	0	7	7.33	Person_Portable
421	2	G-18D-2A	554096.31	4484388.29	0	0	0	0	0	0	1	5.98	Person_Portable
422	3	G-18D-2A	554094.75	4484389.80	0	0	0	0	0	0	1	5.57	Person_Portable
423	4	G-18D-2A	554094.35	4484391.40	0	0	0	0	0	0	1	18.76	Person_Portable
424	5	G-18D-2A	554092.05	4484392.50	0	0	0	0	0	0	1	8.34	Person_Portable
425	6	G-18D-2A	554092.20	4484396.10	0	0	0	0	0	0	3	100.23	Person_Portable
426	7	G-18D-2A	554090.25	4484395.80	0	0	0	0	0	0	3	97.57	Person_Portable
427	8	G-18D-2A	554088.60	4484395.65	0	0	0	0	0	0	3	107.68	Person_Portable
428	9	G-18D-2A	554086.86	4484399.20	0	0	0	0	0	0	1	4.39	Person_Portable
429	10	G-18D-2A	554085.85	4484399.45	0	0	0	0	0	0	1	5.86	Person_Portable
430	11	G-18D-2A	554088.30	4484401.10	0	0	0	0	0	0	1	12.74	Person_Portable
431	12	G-18D-2A	554091.29	4484402.72	0	0	0	0	0	0	1	10.21	Person_Portable
432	13	G-18D-2A	554090.85	4484400.75	0	0	0	0	0	0	1	189.33	Person_Portable
433	14	G-18D-2A	554091.48	4484399.28	0	0	0	0	0	0	1	7.14	Person_Portable
434	15	G-18D-2A	554092.94	4484399.40	0	0	0	0	0	0	1	5.21	Person_Portable
435	16	G-18D-2A	554094.30	4484396.55	0	0	0	0	0	0	3	88.57	Person_Portable
436	17	G-18D-2A	554096.10	4484397.00	0	0	0	0	0	0	3	81.61	Person_Portable
437	18	G-18D-2A	554098.50	4484397.60	0	0	0	0	0	0	3	72.95	Person_Portable
438	19	G-18D-2A	554100.71	4484396.92	0	0	0	0	0	0	3	19.80	Person_Portable
439	20	G-18D-2A	554101.39	4484397.63	0	0	0	0	0	0	3	33.27	Person_Portable
440	21	G-18D-2A	554102.55	4484396.40	0	0	0	0	0	0	1	347.53	Person_Portable
441	22	G-18D-2A	554103.75	4484398.80	0	0	0	0	0	0	3	222.66	Person_Portable
442	23	G-18D-2A	554101.35	4484401.50	0	0	0	0	0	0	3	7868.93	Person_Portable
443	24	G-18D-2A	554099.86	4484401.78	0	0	0	0	0	0	1	260.92	Person_Portable
444	25	G-18D-2A	554099.19	4484401.26	0	0	0	0	0	0	1	318.33	Person_Portable

2013 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
445	26	G-18D-2A	554097.75	4484402.40	0	0	0	0	0	0	1	44.70	Person_Portable
446	27	G-18D-2A	554097.75	4484404.65	0	0	0	0	0	0	1	45.95	Person_Portable
447	28	G-18D-2A	554095.95	4484404.05	0	0	0	0	0	0	1	4.45	Person_Portable
448	29	G-18D-2A	554095.65	4484405.65	0	0	0	0	0	0	1	20.89	Person_Portable
449	30	G-18D-2A	554097.15	4484406.75	0	0	0	0	0	0	1	101.87	Person_Portable
450	31	G-18D-2A	554098.03	4484407.43	0	0	0	0	0	0	1	19.61	Person_Portable
451	32	G-18D-2A	554101.05	4484406.15	0	0	0	0	0	0	1	8.90	Person_Portable
452	33	G-18D-2A	554100.82	4484403.29	0	0	0	0	0	0	1	17.59	Person_Portable
453	34	G-18D-2A	554101.94	4484404.15	0	0	0	0	0	0	1	7.11	Person_Portable
454	35	G-18D-2A	554102.25	4484405.10	0	0	0	0	0	0	1	6.86	Person_Portable
455	36	G-18D-2A	554104.90	4484407.20	0	0	0	0	0	0	1	12.53	Person_Portable
456	37	G-18D-2A	554104.95	4484408.10	0	0	0	0	0	0	1	12.10	Person_Portable
457	38	G-18D-2A	554104.80	4484410.80	0	0	0	0	0	0	1	34.47	Person_Portable
458	39	G-18D-2A	554106.00	4484411.70	0	0	0	0	0	0	1	13.53	Person_Portable
459	40	G-18D-2A	554106.90	4484410.65	0	0	0	0	0	0	1	7.98	Person_Portable
460	41	G-18D-2A	554108.10	4484413.20	0	0	0	0	0	0	1	8.32	Person_Portable
461	42	G-18D-2A	554109.30	4484413.20	0	0	0	0	0	0	1	7.70	Person_Portable
462	43	G-18D-2A	554110.80	4484409.00	0	0	0	0	0	0	1	60.87	Person_Portable
463	44	G-18D-2A	554111.55	4484407.65	0	0	0	0	0	0	1	44.52	Person_Portable
464	45	G-18D-2A	554112.21	4484409.71	0	0	0	0	0	0	1	8.96	Person_Portable
465	46	G-18D-2A	554114.05	4484411.05	0	0	0	0	0	0	1	388.14	Person_Portable
466	47	G-18D-2A	554113.88	4484408.56	0	0	0	0	0	0	1	17.55	Person_Portable
467	48	G-18D-2A	554114.92	4484407.87	0	0	0	0	0	0	1	11.51	Person_Portable
468	49	G-18D-2A	554114.25	4484406.65	0	0	0	0	0	0	1	30.34	Person_Portable
469	50	G-18D-2A	554114.53	4484405.85	0	0	0	0	0	0	1	27.77	Person_Portable
470	51	G-18D-2A	554115.84	4484404.93	0	0	0	0	0	0	3	46.53	Person_Portable
471	52	G-18D-2A	554115.75	4484403.90	0	0	0	0	0	0	3	52.00	Person_Portable
472	53	G-18D-2A	554116.50	4484404.35	0	0	0	0	0	0	3	55.02	Person_Portable
473	54	G-18D-2A	554117.70	4484404.20	0	0	0	0	0	0	3	72.27	Person_Portable
474	55	G-18D-2A	554119.20	4484402.12	0	0	0	0	0	0	1	10.31	Person_Portable
475	56	G-18D-2A	554117.55	4484401.50	0	0	0	0	0	0	1	30.86	Person_Portable
476	57	G-18D-2A	554116.51	4484402.33	0	0	0	0	0	0	1	12.47	Person_Portable
477	58	G-18D-2A	554114.10	4484399.85	0	0	0	0	0	0	1	9.62	Person_Portable
478	59	G-18D-2A	554112.53	4484400.56	0	0	0	0	0	0	1	10.36	Person_Portable
479	60	G-18D-2A	554112.45	4484398.80	0	0	0	0	0	0	1	4.72	Person_Portable
480	61	G-18D-2A	554110.95	4484398.50	0	0	0	0	0	0	1	4.30	Person_Portable
481	62	G-18D-2A	554109.75	4484399.10	0	0	0	0	0	0	1	6.61	Person_Portable

2013 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
482	63	G-18D-2A	554109.60	4484401.35	0	0	0	0	0	0	3	45.20	Person_Portable
483	64	G-18D-2A	554110.50	4484400.90	0	0	0	0	0	0	3	51.72	Person_Portable
484	65	G-18D-2A	554111.55	4484401.80	0	0	0	0	0	0	3	44.73	Person_Portable
485	66	G-18D-2A	554112.90	4484402.85	0	0	0	0	0	0	3	49.94	Person_Portable
486	67	G-18D-2A	554113.95	4484403.60	0	0	0	0	0	0	3	43.86	Person_Portable
487	68	G-18D-2A	554111.96	4484404.08	0	0	0	0	0	0	1	15.61	Person_Portable
488	69	G-18D-2A	554110.33	4484403.68	0	0	0	0	0	0	1	10.39	Person_Portable
489	70	G-18D-2A	554109.90	4484406.00	0	0	0	0	0	0	1	4.15	Person_Portable
490	71	G-18D-2A	554108.70	4484407.05	0	0	0	0	0	0	1	4.10	Person_Portable
491	72	G-18D-2A	554106.15	4484406.85	0	0	0	0	0	0	1	8.74	Person_Portable
492	73	G-18D-2A	554106.45	4484405.25	0	0	0	0	0	0	1	9.29	Person_Portable
493	74	G-18D-2A	554106.15	4484404.20	0	0	0	0	0	0	1	4.09	Person_Portable
494	75	G-18D-2A	554107.80	4484403.45	0	0	0	0	0	0	1	8.35	Person_Portable
495	76	G-18D-2A	554107.21	4484402.19	0	0	0	0	0	0	1	10.40	Person_Portable
496	77	G-18D-2A	554105.70	4484402.10	0	0	0	0	0	0	1	16.64	Person_Portable
497	78	G-18D-2A	554106.60	4484401.20	0	0	0	0	0	0	3	54.71	Person_Portable
498	79	G-18D-2A	554107.50	4484400.75	0	0	0	0	0	0	3	54.68	Person_Portable
499	80	G-18D-2A	554106.15	4484400.45	0	0	0	0	0	0	3	57.29	Person_Portable
500	81	G-18D-2A	554106.45	4484399.50	0	0	0	0	0	0	3	54.10	Person_Portable
501	82	G-18D-2A	554107.06	4484398.25	0	0	0	0	0	0	1	24.45	Person_Portable
502	83	G-18D-2A	554107.66	4484396.20	0	0	0	0	0	0	1	27.59	Person_Portable
503	84	G-18D-2A	554108.93	4484395.80	0	0	0	0	0	0	1	213.77	Person_Portable
504	85	G-18D-2A	554108.40	4484394.90	0	0	0	0	0	0	1	339.30	Person_Portable
505	86	G-18D-2A	554109.11	4484394.19	0	0	0	0	0	0	1	75.67	Person_Portable
506	87	G-18D-2A	554111.40	4484394.75	0	0	0	0	0	0	1	5.26	Person_Portable
507	88	G-18D-2A	554113.80	4484395.50	0	0	0	0	0	0	1	27.66	Person_Portable
508	89	G-18D-2A	554117.30	4484396.38	0	0	0	0	0	0	1	28.05	Person_Portable
509	90	G-18D-2A	554119.20	4484395.80	0	0	0	0	0	0	1	2262.41	Person_Portable
510	91	G-18D-2A	554121.90	4484398.80	0	0	0	0	0	0	1	73.36	Person_Portable
511	92	G-18D-2A	554121.60	4484397.45	0	0	0	0	0	0	1	56.17	Person_Portable
512	93	G-18D-2A	554122.50	4484395.65	0	0	0	0	0	0	3	23.66	Person_Portable
513	94	G-18D-2A	554123.26	4484394.39	0	0	0	0	0	0	1	6.90	Person_Portable
514	95	G-18D-2A	554122.03	4484393.53	0	0	0	0	0	0	1	7.15	Person_Portable
515	96	G-18D-2A	554120.88	4484394.59	0	0	0	0	0	0	3	18.19	Person_Portable
516	97	G-18D-2A	554119.56	4484393.72	0	0	0	0	0	0	3	20.97	Person_Portable
517	98	G-18D-2A	554118.49	4484393.23	0	0	0	0	0	0	3	21.27	Person_Portable
518	99	G-18D-2A	554120.21	4484392.14	0	0	0	0	0	0	1	5.63	Person_Portable

2013 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
519	100	G-18D-2A	554121.00	4484390.55	0	0	0	0	0	0	9	88.50	Person_Portable
520	101	G-18D-2A	554119.05	4484390.10	0	0	0	0	0	0	9	5.92	Person_Portable
521	102	G-18D-2A	554116.00	4484391.79	0	0	0	0	0	0	3	34.20	Person_Portable
522	103	G-18D-2A	554115.45	4484393.25	0	0	0	0	0	0	1	1336.76	Person_Portable
523	104	G-18D-2A	554114.10	4484391.30	0	0	0	0	0	0	3	22.80	Person_Portable
524	105	G-18D-2A	554114.48	4484389.83	0	0	0	0	0	0	1	11.22	Person_Portable
525	106	G-18D-2A	554113.33	4484388.93	0	0	0	0	0	0	1	8.54	Person_Portable
526	107	G-18D-2A	554112.39	4484389.37	0	0	0	0	0	0	3	17.81	Person_Portable
527	108	G-18D-2A	554112.58	4484388.42	0	0	0	0	0	0	1	9.97	Person_Portable
528	109	G-18D-2A	554113.45	4484388.15	0	0	0	0	0	0	1	14.07	Person_Portable
529	110	G-18D-2A	554112.75	4484387.60	0	0	0	0	0	0	1	11.98	Person_Portable
530	111	G-18D-2A	554111.85	4484385.30	0	0	0	0	0	0	1	10.37	Person_Portable
531	112	G-18D-2A	554109.00	4484383.50	0	0	0	0	0	0	1	9.59	Person_Portable
532	113	G-18D-2A	554109.15	4484384.40	0	0	0	0	0	0	1	7.52	Person_Portable
533	114	G-18D-2A	554109.12	4484386.33	0	0	0	0	0	0	1	5.42	Person_Portable
534	115	G-18D-2A	554109.17	4484387.28	0	0	0	0	0	0	1	43.29	Person_Portable
535	116	G-18D-2A	554108.85	4484388.30	0	0	0	0	0	0	1	433.58	Person_Portable
536	117	G-18D-2A	554110.20	4484388.75	0	0	0	0	0	0	1	447.69	Person_Portable
537	118	G-18D-2A	554110.33	4484390.23	0	0	0	0	0	0	1	229.33	Person_Portable
538	119	G-18D-2A	554109.54	4484391.26	0	0	0	0	0	0	1	113.92	Person_Portable
539	120	G-18D-2A	554106.90	4484389.05	0	0	0	0	0	0	3	35.95	Person_Portable
540	121	G-18D-2A	554105.10	4484388.85	0	0	0	0	0	0	3	37.99	Person_Portable
541	122	G-18D-2A	554104.10	4484387.93	0	0	0	0	0	0	3	31.87	Person_Portable
542	123	G-18D-2A	554103.67	4484388.64	0	0	0	0	0	0	3	40.22	Person_Portable
543	124	G-18D-2A	554103.70	4484392.23	0	0	0	0	0	0	1	4.39	Person_Portable
544	125	G-18D-2A	554103.75	4484394.15	0	0	0	0	0	0	1	19.36	Person_Portable
545	126	G-18D-2A	554101.50	4484394.25	0	0	0	0	0	0	1	5.61	Person_Portable
546	127	G-18D-2A	554098.50	4484393.10	0	0	0	0	0	0	1	9.50	Person_Portable
547	128	G-18D-2A	554097.48	4484391.69	0	0	0	0	0	0	1	10.62	Person_Portable
548	129	G-18D-2A	554097.74	4484390.67	0	0	0	0	0	0	1	13.34	Person_Portable
549	130	G-18D-2A	554099.85	4484389.35	0	0	0	0	0	0	2	11339.71	Person_Portable
550	131	G-18D-2A	554101.20	4484387.44	0	0	0	0	0	0	3	62.05	Person_Portable
551	132	G-18D-2A	554098.95	4484385.75	0	0	0	0	0	0	2	475.00	Person_Portable
552	133	G-18D-2A	554100.60	4484385.15	0	0	0	0	0	0	2	773.67	Person_Portable
553	134	G-18D-2A	554101.35	4484383.95	0	0	0	0	0	0	2	2782.09	Person_Portable
554	135	G-18D-2A	554103.09	4484383.28	0	0	0	0	0	0	1	13.05	Person_Portable
555	136	G-18D-2A	554104.95	4484381.85	0	0	0	0	0	0	1	5.23	Person_Portable

2013 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
556	137	G-18D-2A	554104.80	4484380.80	0	0	0	0	0	0	1	4.67	Person_Portable
557	138	G-18D-2A	554102.40	4484378.25	0	0	0	0	0	0	1	8.66	Person_Portable
558	139	G-18D-2A	554101.35	4484378.25	0	0	0	0	0	0	1	7.58	Person_Portable
559	140	G-18D-2A	554100.60	4484380.75	0	0	0	0	0	0	3	116.90	Person_Portable
560	141	G-18D-2A	554100.75	4484382.05	0	0	0	0	0	0	3	167.92	Person_Portable
561	142	G-18D-2A	554097.45	4484382.60	0	0	0	0	0	0	2	73.37	Person_Portable
562	143	G-18D-2A	554102.56	4484373.79	0	0	0	0	0	0	8	999.00	Person_Portable
563	1	G-18D-3A	554122.05	4484399.70	0	0	0	0	0	0	1	175.39	Person_Portable
564	2	G-18D-3A	554122.50	4484401.20	0	0	0	0	0	0	1	39.34	Person_Portable
565	3	G-18D-3A	554124.15	4484400.15	0	0	0	0	0	0	2	1057.28	Person_Portable
566	4	G-18D-3A	554125.35	4484398.35	0	0	0	0	0	0	2	346.73	Person_Portable
567	5	G-18D-3A	554125.95	4484396.70	0	0	0	0	0	0	1	293.39	Person_Portable
568	6	G-18D-3A	554128.20	4484397.60	0	0	0	0	0	0	9	4.39	Person_Portable
569	7	G-18D-3A	554127.45	4484400.30	0	0	0	0	0	0	1	301.75	Person_Portable
570	8	G-18D-3A	554127.00	4484402.10	0	0	0	0	0	0	1	334.38	Person_Portable
571	9	G-18D-3A	554126.00	4484402.65	0	0	0	0	0	0	1	250.42	Person_Portable
572	10	G-18D-3A	554124.85	4484403.83	0	0	0	0	0	0	1	40.66	Person_Portable
573	11	G-18D-3A	554126.16	4484406.25	0	0	0	0	0	0	1	14.49	Person_Portable
574	12	G-18D-3A	554127.00	4484404.95	0	0	0	0	0	0	1	87.27	Person_Portable
575	13	G-18D-3A	554128.80	4484405.40	0	0	0	0	0	0	1	137.79	Person_Portable
576	14	G-18D-3A	554130.45	4484402.70	0	0	0	0	0	0	1	7.43	Person_Portable
577	15	G-18D-3A	554130.90	4484403.90	0	0	0	0	0	0	1	11.57	Person_Portable
578	16	G-18D-3A	554131.17	4484405.11	0	0	0	0	0	0	1	11.74	Person_Portable
579	17	G-18D-3A	554132.40	4484404.95	0	0	0	0	0	0	1	23.06	Person_Portable
580	18	G-18D-3A	554133.00	4484407.35	0	0	0	0	0	0	1	92.65	Person_Portable
581	19	G-18D-3A	554132.32	4484408.63	0	0	0	0	0	0	1	21.12	Person_Portable
582	20	G-18D-3A	554135.10	4484409.30	0	0	0	0	0	0	1	70.80	Person_Portable
583	21	G-18D-3A	554134.63	4484407.30	0	0	0	0	0	0	1	23.11	Person_Portable
584	22	G-18D-3A	554135.85	4484406.45	0	0	0	0	0	0	1	122.28	Person_Portable
585	23	G-18D-3A	554137.05	4484406.15	0	0	0	0	0	0	1	65.43	Person_Portable
586	24	G-18D-3A	554137.65	4484405.25	0	0	0	0	0	0	1	37.70	Person_Portable
587	25	G-18D-3A	554140.20	4484406.15	0	0	0	0	0	0	1	6.72	Person_Portable
588	26	G-18D-3A	554138.55	4484409.00	0	0	0	0	0	0	7	4.07	Person_Portable
589	27	G-18D-3A	554139.45	4484411.10	0	0	0	0	0	0	1	344.04	Person_Portable
590	28	G-18D-3A	554137.50	4484412.90	0	0	0	0	0	0	1	24.82	Person_Portable
591	29	G-18D-3A	554139.11	4484412.50	0	0	0	0	0	0	1	39.95	Person_Portable
592	30	G-18D-3A	554141.40	4484412.30	0	0	0	0	0	0	1	12.73	Person_Portable

2013 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
593	31	G-18D-3A	554142.15	4484410.05	0	0	0	0	0	0	1	12.01	Person_Portable
594	32	G-18D-3A	554145.90	4484413.50	0	0	0	0	0	0	1	9.65	Person_Portable
595	33	G-18D-3A	554145.30	4484415.00	0	0	0	0	0	0	1	15.76	Person_Portable
596	34	G-18D-3A	554145.00	4484416.35	0	0	0	0	0	0	1	10.45	Person_Portable
597	35	G-18D-3A	554144.10	4484415.75	0	0	0	0	0	0	1	11.51	Person_Portable
598	36	G-18D-3A	554143.80	4484414.70	0	0	0	0	0	0	1	10.85	Person_Portable
599	37	G-18D-3A	554142.57	4484416.71	0	0	0	0	0	0	1	9.33	Person_Portable
600	38	G-18D-3A	554143.05	4484417.85	0	0	0	0	0	0	1	51.27	Person_Portable
601	39	G-18D-3A	554144.10	4484420.18	0	0	0	0	0	0	1	23.32	Person_Portable
602	40	G-18D-3A	554139.67	4484420.84	0	0	0	0	0	0	1	9.05	Person_Portable
603	41	G-18D-3A	554140.05	4484419.20	0	0	0	0	0	0	3	24.61	Person_Portable
604	42	G-18D-3A	554138.40	4484419.05	0	0	0	0	0	0	3	26.79	Person_Portable
605	43	G-18D-3A	554138.40	4484418.00	0	0	0	0	0	0	3	25.37	Person_Portable
606	44	G-18D-3A	554137.20	4484417.25	0	0	0	0	0	0	3	29.66	Person_Portable
607	45	G-18D-3A	554136.30	4484416.65	0	0	0	0	0	0	3	29.39	Person_Portable
608	46	G-18D-3A	554135.91	4484418.54	0	0	0	0	0	0	1	4.07	Person_Portable
609	47	G-18D-3A	554134.05	4484417.25	0	0	0	0	0	0	1	9.24	Person_Portable
610	48	G-18D-3A	554135.10	4484415.90	0	0	0	0	0	0	3	29.93	Person_Portable
611	49	G-18D-3A	554134.05	4484415.15	0	0	0	0	0	0	3	30.46	Person_Portable
612	50	G-18D-3A	554132.22	4484413.38	0	0	0	0	0	0	3	36.54	Person_Portable
613	51	G-18D-3A	554130.54	4484412.15	0	0	0	0	0	0	3	36.30	Person_Portable
614	52	G-18D-3A	554131.20	4484410.95	0	0	0	0	0	0	1	64.99	Person_Portable
615	53	G-18D-3A	554130.24	4484410.11	0	0	0	0	0	0	1	15.51	Person_Portable
616	54	G-18D-3A	554130.02	4484408.90	0	0	0	0	0	0	1	10.37	Person_Portable
617	55	G-18D-3A	554128.82	4484409.07	0	0	0	0	0	0	1	17.73	Person_Portable
618	56	G-18D-3A	554127.75	4484410.20	0	0	0	0	0	0	3	37.35	Person_Portable
619	57	G-18D-3A	554128.65	4484410.80	0	0	0	0	0	0	3	36.39	Person_Portable
620	58	G-18D-3A	554129.55	4484411.40	0	0	0	0	0	0	3	39.34	Person_Portable
621	59	G-18D-3A	554129.55	4484412.29	0	0	0	0	0	0	3	33.76	Person_Portable
622	60	G-18D-3A	554128.29	4484412.41	0	0	0	0	0	0	1	18.31	Person_Portable
623	61	G-18D-3A	554127.60	4484413.65	0	0	0	0	0	0	1	4.45	Person_Portable
624	62	G-18D-3A	554124.90	4484415.75	0	0	0	0	0	0	1	7.93	Person_Portable
625	63	G-18D-3A	554125.05	4484416.65	0	0	0	0	0	0	1	4.96	Person_Portable
626	64	G-18D-3A	554124.42	4484417.81	0	0	0	0	0	0	1	4.41	Person_Portable
627	65	G-18D-3A	554123.25	4484418.15	0	0	0	0	0	0	1	4.48	Person_Portable
628	66	G-18D-3A	554123.40	4484419.20	0	0	0	0	0	0	1	9.16	Person_Portable
629	67	G-18D-3A	554125.43	4484420.04	0	0	0	0	0	0	1	74.91	Person_Portable

2013 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
630	68	G-18D-3A	554126.43	4484417.99	0	0	0	0	0	0	1	52.38	Person_Portable
631	69	G-18D-3A	554127.54	4484417.34	0	0	0	0	0	0	1	12.91	Person_Portable
632	70	G-18D-3A	554128.21	4484419.16	0	0	0	0	0	0	1	166.11	Person_Portable
633	71	G-18D-3A	554129.83	4484420.21	0	0	0	0	0	0	2	632.72	Person_Portable
634	72	G-18D-3A	554132.30	4484420.56	0	0	0	0	0	0	1	7.84	Person_Portable
635	73	G-18D-3A	554132.10	4484421.60	0	0	0	0	0	0	1	12.34	Person_Portable
636	74	G-18D-3A	554133.10	4484422.62	0	0	0	0	0	0	1	19.18	Person_Portable
637	75	G-18D-3A	554134.35	4484423.85	0	0	0	0	0	0	1	19.75	Person_Portable
638	76	G-18D-3A	554135.35	4484431.80	0	0	0	0	0	0	1	12.13	Person_Portable
639	77	G-18D-3A	554131.92	4484424.66	0	0	0	0	0	0	1	48.21	Person_Portable
640	78	G-18D-3A	554129.40	4484425.05	0	0	0	0	0	0	1	4.10	Person_Portable
641	79	G-18D-3A	554129.70	4484422.95	0	0	0	0	0	0	2	283.21	Person_Portable
642	80	G-18D-3A	554127.86	4484421.80	0	0	0	0	0	0	2	852.15	Person_Portable
643	81	G-18D-3A	554124.90	4484423.85	0	0	0	0	0	0	1	18.35	Person_Portable
644	82	G-18D-3A	554124.90	4484424.85	0	0	0	0	0	0	1	19.45	Person_Portable
645	83	G-18D-3A	554120.33	4484422.44	0	0	0	0	0	0	1	9.02	Person_Portable
646	84	G-18D-3A	554120.25	4484421.60	0	0	0	0	0	0	1	24.71	Person_Portable
647	85	G-18D-3A	554121.23	4484421.32	0	0	0	0	0	0	1	12.89	Person_Portable
648	86	G-18D-3A	554121.05	4484420.44	0	0	0	0	0	0	1	9.82	Person_Portable
649	87	G-18D-3A	554120.25	4484419.80	0	0	0	0	0	0	1	12.08	Person_Portable
650	88	G-18D-3A	554120.85	4484418.45	0	0	0	0	0	0	1	11.63	Person_Portable
651	89	G-18D-3A	554119.85	4484417.70	0	0	0	0	0	0	1	10.37	Person_Portable
652	90	G-18D-3A	554119.20	4484419.05	0	0	0	0	0	0	1	9.03	Person_Portable
653	91	G-18D-3A	554118.08	4484420.00	0	0	0	0	0	0	1	6.65	Person_Portable
654	92	G-18D-3A	554116.93	4484420.13	0	0	0	0	0	0	1	11.99	Person_Portable
655	93	G-18D-3A	554117.76	4484418.95	0	0	0	0	0	0	1	5.07	Person_Portable
656	94	G-18D-3A	554116.80	4484417.40	0	0	0	0	0	0	1	12.35	Person_Portable
657	95	G-18D-3A	554115.60	4484419.23	0	0	0	0	0	0	1	44.53	Person_Portable
658	96	G-18D-3A	554112.90	4484417.40	0	0	0	0	0	0	1	202.43	Person_Portable
659	97	G-18D-3A	554114.55	4484415.90	0	0	0	0	0	0	1	23.03	Person_Portable
660	98	G-18D-3A	554115.45	4484415.60	0	0	0	0	0	0	1	16.96	Person_Portable
661	99	G-18D-3A	554115.25	4484414.47	0	0	0	0	0	0	1	4.61	Person_Portable
662	100	G-18D-3A	554116.30	4484413.23	0	0	0	0	0	0	1	64.44	Person_Portable
663	101	G-18D-3A	554114.25	4484411.40	0	0	0	0	0	0	1	353.79	Person_Portable
664	102	G-18D-3A	554116.95	4484410.95	0	0	0	0	0	0	1	18.33	Person_Portable
665	103	G-18D-3A	554116.46	4484409.93	0	0	0	0	0	0	1	15.56	Person_Portable
666	104	G-18D-3A	554117.56	4484407.85	0	0	0	0	0	0	1	4.62	Person_Portable

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Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
667	105	G-18D-3A	554118.30	4484409.30	0	0	0	0	0	0	1	6.33	Person_Portable
668	106	G-18D-3A	554119.05	4484409.75	0	0	0	0	0	0	1	6.59	Person_Portable
669	107	G-18D-3A	554118.05	4484412.41	0	0	0	0	0	0	1	15.91	Person_Portable
670	108	G-18D-3A	554119.01	4484413.16	0	0	0	0	0	0	1	18.59	Person_Portable
671	109	G-18D-3A	554117.85	4484414.05	0	0	0	0	0	0	1	406.27	Person_Portable
672	110	G-18D-3A	554116.99	4484414.99	0	0	0	0	0	0	1	9.20	Person_Portable
673	111	G-18D-3A	554118.15	4484415.63	0	0	0	0	0	0	1	7.02	Person_Portable
674	112	G-18D-3A	554119.80	4484416.65	0	0	0	0	0	0	1	16.30	Person_Portable
675	113	G-18D-3A	554120.40	4484415.24	0	0	0	0	0	0	1	24.17	Person_Portable
676	114	G-18D-3A	554121.30	4484415.00	0	0	0	0	0	0	1	24.61	Person_Portable
677	115	G-18D-3A	554123.10	4484414.40	0	0	0	0	0	0	1	10.35	Person_Portable
678	116	G-18D-3A	554122.20	4484413.60	0	0	0	0	0	0	1	10.52	Person_Portable
679	117	G-18D-3A	554123.25	4484410.65	0	0	0	0	0	0	1	18.25	Person_Portable
680	118	G-18D-3A	554125.20	4484409.30	0	0	0	0	0	0	3	45.79	Person_Portable
681	119	G-18D-3A	554126.47	4484408.36	0	0	0	0	0	0	3	24.58	Person_Portable
682	120	G-18D-3A	554124.99	4484407.36	0	0	0	0	0	0	3	25.64	Person_Portable
683	121	G-18D-3A	554124.30	4484408.70	0	0	0	0	0	0	3	50.72	Person_Portable
684	122	G-18D-3A	554123.40	4484408.10	0	0	0	0	0	0	3	46.41	Person_Portable
685	123	G-18D-3A	554122.20	4484407.35	0	0	0	0	0	0	3	42.92	Person_Portable
686	124	G-18D-3A	554123.44	4484405.64	0	0	0	0	0	0	1	6.30	Person_Portable
687	125	G-18D-3A	554122.40	4484405.17	0	0	0	0	0	0	1	17.77	Person_Portable
688	126	G-18D-3A	554121.42	4484405.92	0	0	0	0	0	0	3	34.84	Person_Portable
689	127	G-18D-3A	554120.55	4484407.05	0	0	0	0	0	0	3	61.55	Person_Portable
690	128	G-18D-3A	554119.05	4484405.25	0	0	0	0	0	0	3	53.31	Person_Portable
691	129	G-18D-3A	554120.22	4484405.16	0	0	0	0	0	0	3	33.67	Person_Portable
692	130	G-18D-3A	554121.45	4484404.50	0	0	0	0	0	0	1	70.76	Person_Portable
693	131	G-18D-3A	554121.97	4484403.07	0	0	0	0	0	0	1	60.80	Person_Portable
694	132	G-18D-3A	554120.40	4484401.90	0	0	0	0	0	0	1	30.52	Person_Portable
695	133	G-18D-3A	554121.04	4484401.08	0	0	0	0	0	0	1	32.21	Person_Portable
696	134	G-18D-3A	554128.00	4484390.59	0	0	0	0	0	0	8	999.00	Person_Portable
697	1	G-18D-4A	554145.60	4484419.65	0	0	0	0	0	0	9	13.13	Person_Portable
698	2	G-18D-4A	554145.98	4484424.54	0	0	0	0	0	0	9	45.67	Person_Portable
699	3	G-18D-4A	554143.80	4484425.30	0	0	0	0	0	0	9	41.53	Person_Portable
700	4	G-18D-4A	554143.28	4484426.31	0	0	0	0	0	0	9	34.29	Person_Portable
701	5	G-18D-4A	554142.56	4484427.78	0	0	0	0	0	0	1	39.77	Person_Portable
702	6	G-18D-4A	554144.10	4484429.40	0	0	0	0	0	0	1	6.35	Person_Portable
703	7	G-18D-4A	554142.10	4484428.73	0	0	0	0	0	0	1	60.92	Person_Portable

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Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
704	8	G-18D-4A	554139.00	4484430.90	0	0	0	0	0	0	1	8.25	Person_Portable
705	9	G-18D-4A	554141.55	4484432.85	0	0	0	0	0	0	1	42.78	Person_Portable
706	10	G-18D-4A	554142.45	4484433.90	0	0	0	0	0	0	1	96.66	Person_Portable
707	11	G-18D-4A	554142.45	4484435.70	0	0	0	0	0	0	1	25.21	Person_Portable
708	12	G-18D-4A	554140.87	4484435.59	0	0	0	0	0	0	1	6.49	Person_Portable
709	13	G-18D-4A	554141.25	4484436.65	0	0	0	0	0	0	1	25.59	Person_Portable
710	14	G-18D-4A	554142.60	4484436.77	0	0	0	0	0	0	1	8.32	Person_Portable
711	15	G-18D-4A	554144.28	4484436.31	0	0	0	0	0	0	1	11.77	Person_Portable
712	16	G-18D-4A	554144.90	4484437.34	0	0	0	0	0	0	1	19.70	Person_Portable
713	17	G-18D-4A	554148.60	4484441.50	0	0	0	0	0	0	1	91.34	Person_Portable
714	18	G-18D-4A	554149.65	4484439.75	0	0	0	0	0	0	1	35.02	Person_Portable
715	19	G-18D-4A	554150.56	4484438.75	0	0	0	0	0	0	1	12.54	Person_Portable
716	20	G-18D-4A	554152.05	4484437.20	0	0	0	0	0	0	1	113.42	Person_Portable
717	21	G-18D-4A	554153.10	4484436.75	0	0	0	0	0	0	1	88.35	Person_Portable
718	22	G-18D-4A	554154.30	4484436.40	0	0	0	0	0	0	1	149.08	Person_Portable
719	23	G-18D-4A	554155.20	4484438.55	0	0	0	0	0	0	1	42.58	Person_Portable
720	24	G-18D-4A	554152.85	4484438.25	0	0	0	0	0	0	1	9.98	Person_Portable
721	25	G-18D-4A	554153.26	4484439.21	0	0	0	0	0	0	1	11.51	Person_Portable
722	26	G-18D-4A	554154.15	4484440.20	0	0	0	0	0	0	1	51.05	Person_Portable
723	27	G-18D-4A	554154.60	4484444.25	0	0	0	0	0	0	2	1181.73	Person_Portable
724	28	G-18D-4A	554156.40	4484443.35	0	0	0	0	0	0	2	1839.61	Person_Portable
725	29	G-18D-4A	554159.40	4484442.30	0	0	0	0	0	0	2	394.84	Person_Portable
726	30	G-18D-4A	554161.50	4484441.70	0	0	0	0	0	0	2	10175.89	Person_Portable
727	31	G-18D-4A	554163.90	4484440.50	0	0	0	0	0	0	2	678.19	Person_Portable
728	32	G-18D-4A	554166.75	4484439.60	0	0	0	0	0	0	2	1210.11	Person_Portable
729	33	G-18D-4A	554163.45	4484438.55	0	0	0	0	0	0	1	15.57	Person_Portable
730	34	G-18D-4A	554161.95	4484436.15	0	0	0	0	0	0	1	20.89	Person_Portable
731	35	G-18D-4A	554161.05	4484439.90	0	0	0	0	0	0	1	11.19	Person_Portable
732	36	G-18D-4A	554159.25	4484439.15	0	0	0	0	0	0	1	28.94	Person_Portable
733	37	G-18D-4A	554158.20	4484437.80	0	0	0	0	0	0	1	94.29	Person_Portable
734	38	G-18D-4A	554157.90	4484435.85	0	0	0	0	0	0	1	108.82	Person_Portable
735	39	G-18D-4A	554157.30	4484434.80	0	0	0	0	0	0	1	149.05	Person_Portable
736	40	G-18D-4A	554157.15	4484433.55	0	0	0	0	0	0	1	9.27	Person_Portable
737	41	G-18D-4A	554155.65	4484434.05	0	0	0	0	0	0	1	9.02	Person_Portable
738	42	G-18D-4A	554155.93	4484432.85	0	0	0	0	0	0	1	6.32	Person_Portable
739	43	G-18D-4A	554157.45	4484431.50	0	0	0	0	0	0	9	56.87	Person_Portable
740	44	G-18D-4A	554154.00	4484431.40	0	0	0	0	0	0	9	7.95	Person_Portable

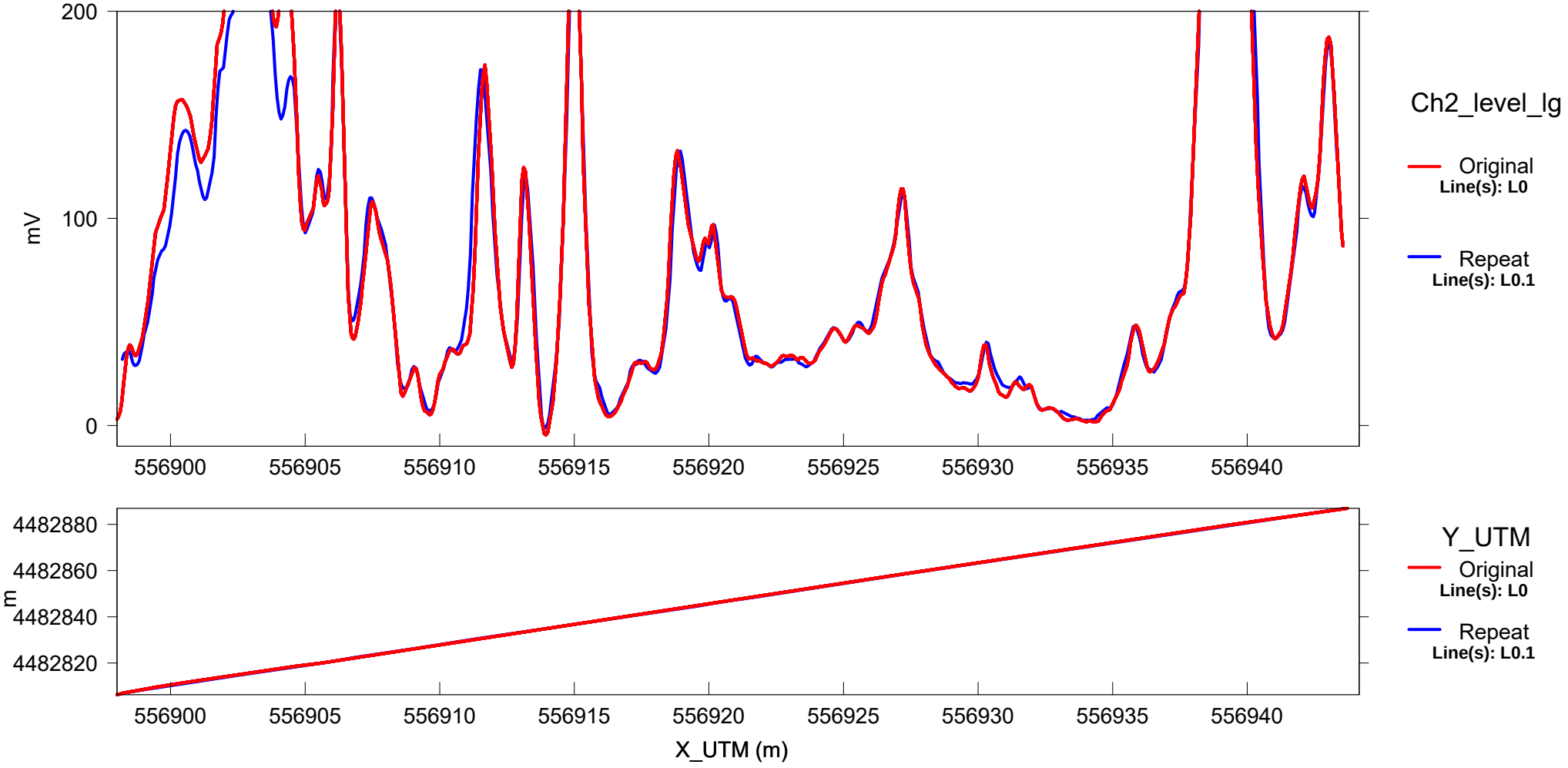
2013 Master Person Portable Target List

Count_ID	Target_ID	GRIDCELLID	X_UTM	Y_UTM	X_UTM2	Y_UTM2	X_UTM3	Y_UTM3	X_UTM4	Y_UTM4	TYPE	AMPLITUDE	DGM_Method
741	45	G-18D-4A	554153.66	4484432.34	0	0	0	0	0	0	1	6.91	Person_Portable
742	46	G-18D-4A	554152.50	4484434.35	0	0	0	0	0	0	1	12.40	Person_Portable
743	47	G-18D-4A	554151.30	4484435.70	0	0	0	0	0	0	1	8.12	Person_Portable
744	48	G-18D-4A	554149.65	4484434.80	0	0	0	0	0	0	1	9.05	Person_Portable
745	49	G-18D-4A	554150.70	4484433.30	0	0	0	0	0	0	1	13.11	Person_Portable
746	50	G-18D-4A	554149.50	4484433.55	0	0	0	0	0	0	1	13.61	Person_Portable
747	51	G-18D-4A	554147.95	4484433.46	0	0	0	0	0	0	1	5.43	Person_Portable
748	52	G-18D-4A	554148.90	4484432.10	0	0	0	0	0	0	1	20.22	Person_Portable
749	53	G-18D-4A	554150.10	4484430.90	0	0	0	0	0	0	1	16.66	Person_Portable
750	54	G-18D-4A	554148.75	4484430.90	0	0	0	0	0	0	1	18.31	Person_Portable
751	55	G-18D-4A	554146.95	4484428.80	0	0	0	0	0	0	1	14.95	Person_Portable
752	56	G-18D-4A	554153.10	4484425.05	0	0	0	0	0	0	9	261.50	Person_Portable
753	57	G-18D-4A	554152.65	4484422.35	0	0	0	0	0	0	9	167.10	Person_Portable
754	58	G-18D-4A	554154.00	4484419.80	0	0	0	0	0	0	9	102.01	Person_Portable
755	59	G-18D-4A	554151.90	4484419.35	0	0	0	0	0	0	9	25.22	Person_Portable
756	60	G-18D-4A	554147.75	4484416.55	0	0	0	0	0	0	9	9.86	Person_Portable
757	61	G-18D-4A	554149.35	4484415.75	0	0	0	0	0	0	9	4.30	Person_Portable
758	62	G-18D-4A	554149.05	4484413.65	0	0	0	0	0	0	9	4.93	Person_Portable
759	63	G-18D-4A	554152.88	4484407.43	0	0	0	0	0	0	8	999.00	Person_Portable
		T18D3-1									NOT TARGETED_EPA Area		Person_Portable
		T18D3-2									NOT TARGETED_EPA Area		Person_Portable
		T18D3-3									NOT TARGETED_EPA Area		Person_Portable
		T18D3-4									NOT TARGETED_EPA Area		Person_Portable
		T18D3-5									NOT TARGETED_EPA Area		Person_Portable
		T18D3-6									NOT TARGETED_EPA Area		Person_Portable
		T18D3-7									NOT TARGETED_EPA Area		Person_Portable
		T18D3-8									NOT TARGETED_EPA Area		Person_Portable
		T18D3-9									NOT TARGETED_EPA Area		Person_Portable
		T18D3-10									NOT TARGETED_EPA Area		Person_Portable
		T18D3-11									NOT TARGETED_EPA Area		Person_Portable
		T18D3-12									NOT TARGETED_EPA Area		Person_Portable
		T18D3-13									NOT TARGETED_EPA Area		Person_Portable
		T18D3-14									NOT TARGETED_EPA Area		Person_Portable
		T18D3-15									NOT TARGETED_EPA Area		Person_Portable
		T18D3-16									NOT TARGETED_EPA Area		Person_Portable
		T18D3-17									NOT TARGETED_EPA Area		Person_Portable
		TDSA5-16A									NO TARGETS		Person_Portable

Appendix C

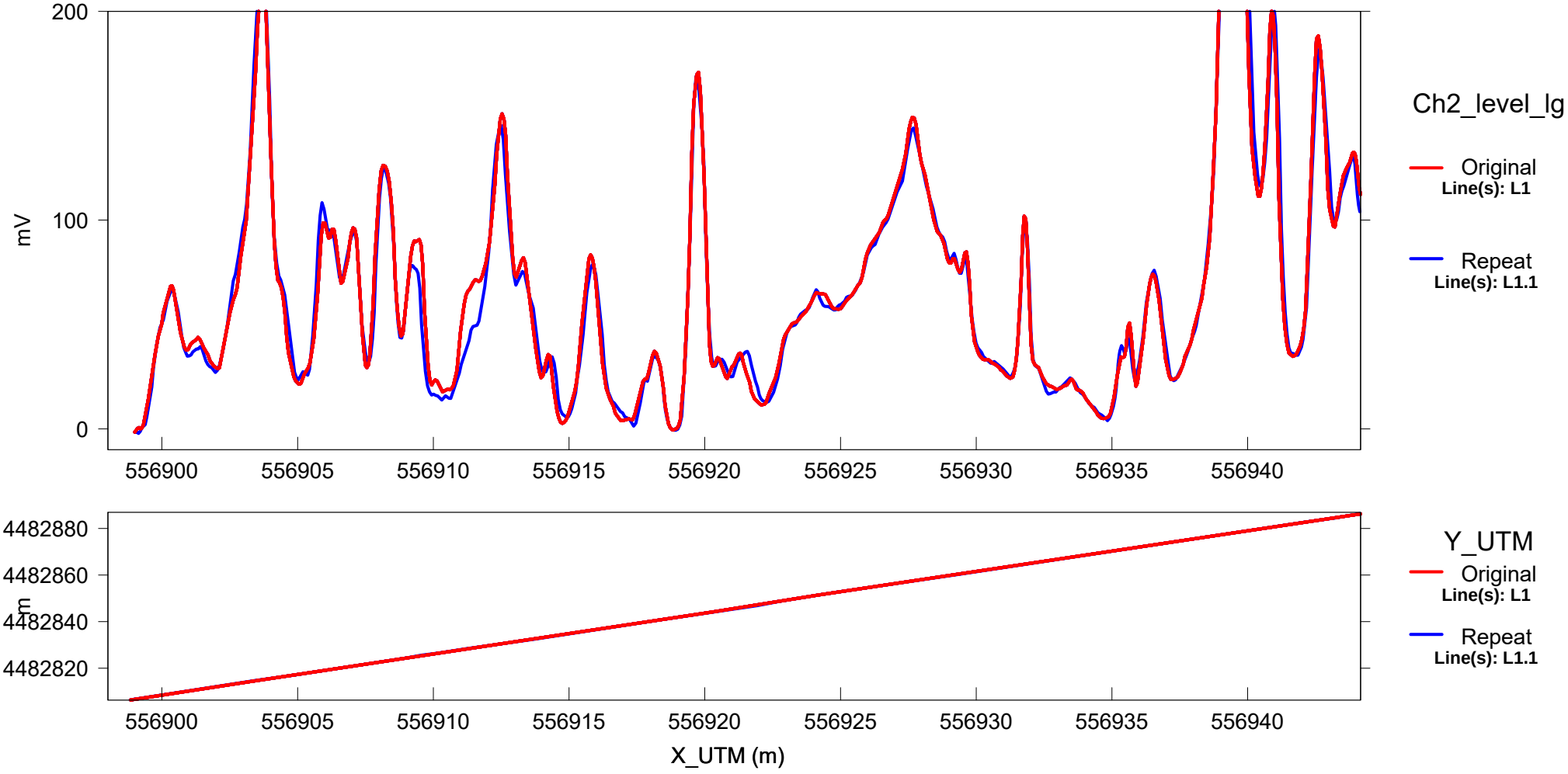
Sample Repeat Mosaic

Block G13-12B Repeat L0 - EM61 MK2 Person Portable
Former Raritan Arsenal, Middlesex County, New Jersey



Database: G13-12B_Repeat.gdb

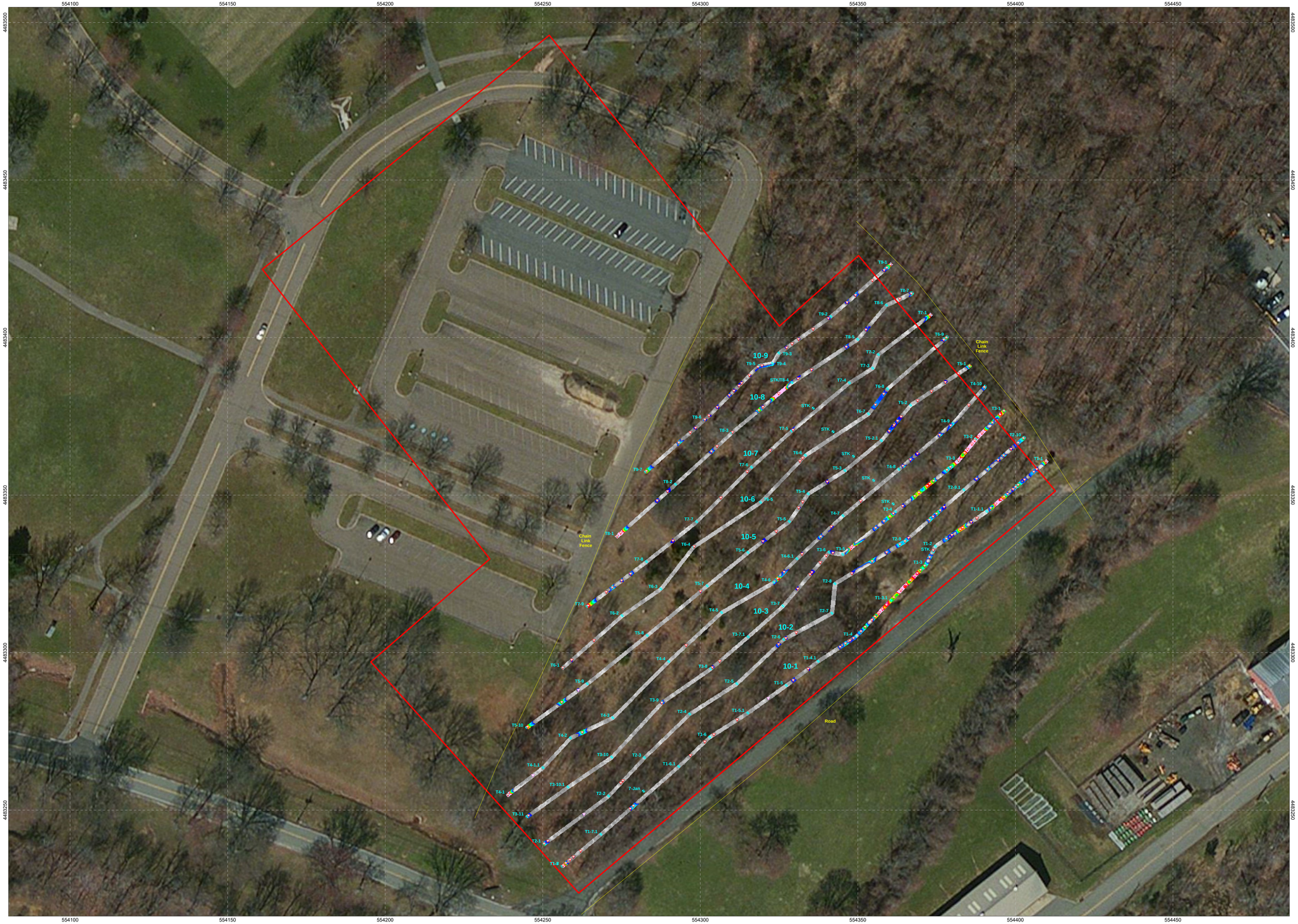
Block G13-12B Repeat L1 - EM61 MK2 Person Portable
Former Raritan Arsenal, Middlesex County, New Jersey



Database: G13-12B_Repeat.gdb

Appendix D

Mosaics



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Subsurface Geophysical Surveys



Aerial Photograph from Bing Maps

mV
Channel 2

Legend

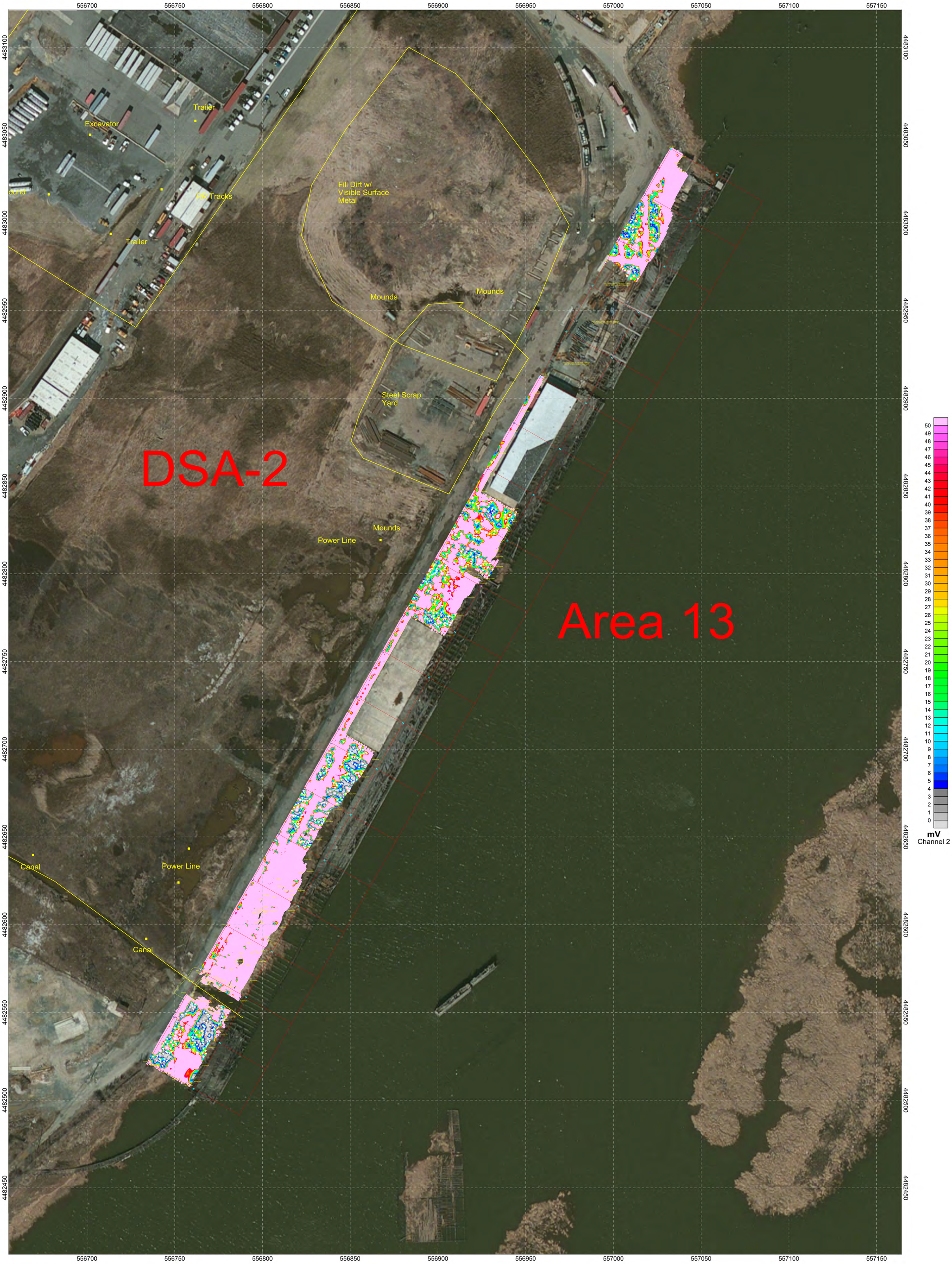
- Area Boundary
- Culture (if noted)
- Stake
- Saturated Response Area (SRA) (if noted)

Selected Targets

- 1 - Point
- 2 - Culture
- 3 - Suspected Culture
- 4 - Picked Outside of Target Area
- 5 - Hazard Deviation
- 6 - Anomaly Selected Below Established Threshold
- 7 - Data Spike (Terrain Response, Ambient Noise, Poor Decays)
- 8 - Saturated Response Area (SRA)
- 9 - Selected within SRA
- 10 - Side Scan Sonar Target (SSS)
- 11 - IVS Seed
- 12 - Selected Based on Both 2013 and 2014 Data
- 13 - Previously Investigated, Anomaly Still Present

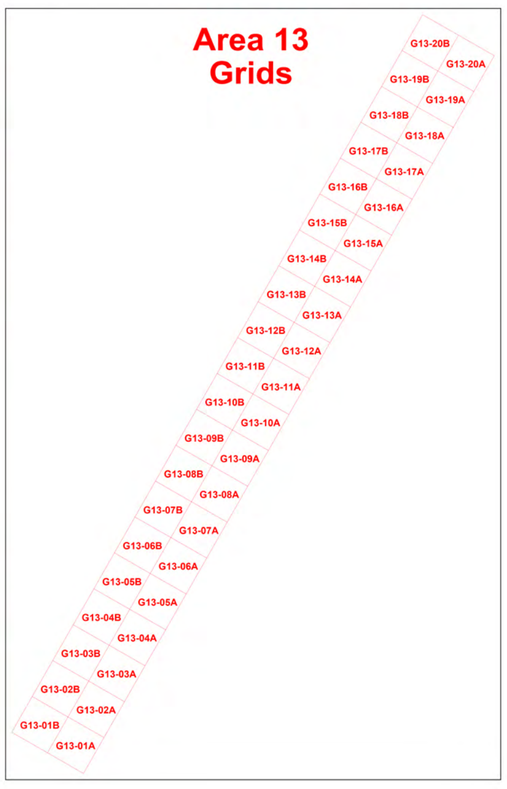
10 0 10 20 30 40
(meters)
NAD83 / UTM zone 18N

Client: CH2M HILL
EM61 MK2 Bottom Coil - Person Portable Mosaic Area 10 Munitions Response Area Former Raritan Arsenal Edison, Middlesex County, New Jersey
Date of Survey: 12/05/2013 Date of Map Creation: 03/20/2014
Map Approver: J. Guillard





Aerial Photograph from Bing Maps



Legend

- Area Boundary
- brush — Culture (if noted)
- Stake
- Saturated Response Area (SRA) (if noted)

Selected Targets

- 1 - Point
- 2 - Culture
- 3 - Suspected Culture
- 4 - Picked Outside of Target Area
- 5 - Hazard Deviation
- 6 - Anomaly Selected Below Established Threshold
- 7 - Data Spike (Terrain Response, Ambient Noise, Poor Decays)
- 8 - Saturated Response Area (SRA)
- 9 - Selected within SRA
- 10 - Side Scan Sonar Target (SSS)
- 11 - IVS Seed
- 12 - Selected Based on Both 2013 and 2014 Data
- 13 - Previously Investigated, Anomaly Still Present

20 0 20 40 60
(meters)
NAD83 / UTM zone 18N

NAEVA GEOPHYSICS INC.
THE LEADER IN SUBSURFACE DETECTION
Subsurface Geophysical Surveys

Client: CH2M HILL

EM61 MK2 Bottom Coil - Person Portable
Mosaic
Area 13 Munitions Response Area
Former Raritan Arsenal
Edison, Middlesex County, New Jersey

Dates of Survey: 03/24/2014 & 03/25/2014
Date of Map Creation: 04/04/2014

Map Approver: J. Guillard

NAEVA GEOPHYSICS INC.
Subsurface Geophysical Surveys

554050 554100 554150 554200 554250 554300

4484500 4484450 4484400 4484350

NO SELECTED TARGETS IN EPA AREA

G-18D-1A G-18D-2A G-18D-3A G-18D-4A G-18D-4B

Housing Development Fence Paved Road Trees & Snowbanks Building Ravine Industrial Area Island Pole Light Culture Ground Light Transformer Pad Fence Offset Set Stk 1A Set Stk 2A Set Stk 3A No Eley Set Stk 4A Set Stk 5A Set Stk 6A Set Stk 7A Set Stk 8A Set Stk 9A Set Stk 10A Set Stk 11A Set Stk 12A Set Stk 13A Set Stk 14A Set Stk 15A Set Stk 16A Set Stk 1B Set Stk 2B Set Stk 3B Set Stk 4B Set Stk 5B Mag Pol 1 Mag Pol 2 Mag Pol 3 Mag Pol 4 Mag Pol 5 Mag Pol 6 Mag Pol 7 Mag 5B Mag 7B Stk 5B Stk 6B Stk 16B Stk 15B Stk 14B Stk 13B Stk 12B Stk 11B Stk 10B Stk 9B Stk 8B Stk 7B Stk 6B Stk 5B Stk 4B Stk 3B Stk 2B Stk 1B



Aerial Photograph from Bing Maps

50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

mV
Channel 2

Legend

- Area Boundary
- Culture (if noted)
- Stake
- Saturated Response Area (SRA) (if noted)
- EPA Area Interpreted Subsurface Features

Selected Targets

- 1 - Point
- 2 - Culture
- 3 - Suspected Culture
- 4 - Picked Outside of Target Area
- 5 - Hazard Deviation
- 6 - Anomaly Selected Below Established Threshold
- 7 - Data Spike (Terrain Response, Ambient Noise, Poor Decays)
- 8 - Saturated Response Area (SRA)
- 9 - Selected within SRA
- 10 - Side Scan Sonar Target (SSS)
- 11 - IVS Seed
- 12 - Selected Based on Both 2013 and 2014 Data
- 13 - Previously Investigated, Anomaly Still Present

N

5 0 5 10 15 20 25 30
(meters)
NAD83 / UTM zone 18N

Client: CH2M HILL

EM61 MK2 Bottom Coil - Person Portable
Mosaic
Area 18D Munitions Response Area
Former Raritan Arsenal
Edison, Middlesex County, New Jersey

Date of Survey: 02/06/2013 & 02/18/2013
Date of Map Creation: 03/20/2014

Map Approver: J. Guillard

556300 556400 556500 556600 556700 556800 556900 557000 557100 557200 557300 557400 557500

4484100 4484000 4483900 4483800 4483700 4483600 4483500 4483400 4483300

TDSA 1-6B$_0$
TDSA 1-5B$_0$
Trees
Trees
TDSA 1-4B$_0$
Trees
TDSA 1-3B$_0$
Trees
Trees
TDSA 1-2B$_0$
Trees
Road
Canal
Small Canal
DSA1-6
DSA1-5
DSA1-4
DSA1-3
DSA1-2
DSA1-1
Train
TDSA 1-3D$_0$
Trees
DSA1-5I
Berm
TDSA 1-5C
Road/Power Line
Industrial Shipping Center
DSA1-6
TDSA 1-6A
Concrete
Concrete
Concrete
Concrete
Power Line
DSA1-5
TDSA 1-5A
Train
TDSA 1-4A
Train
Road
TDSA 1-4A$_0$
TDSA 1-1B$_0$
RR Tracks
Power Lines
TDSA 1-2A
RR Tracks
RR TRACKS TO BE REMOVED
TSDA 2-10B$_0$
DSA-2
TDSA 2-9B$_0$
TDSA 2-9B$_0$
Train
TDSA 1-1A
Road



Aerial Photograph from Bing Maps

mV
Channel 2
50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

Legend

- Area Boundary
- Culture (if noted)
- Stake
- Saturated Response Area (SRA) (if noted)

Selected Targets

- 1 - Point
- 2 - Culture
- 3 - Suspected Culture
- 4 - Picked Outside of Target Area
- 5 - Hazard Deviation
- 6 - Anomaly Selected Below Established Threshold
- 7 - Data Spike (Terrain Response, Ambient Noise, Poor Decays)
- 8 - Saturated Response Area (SRA)
- 9 - Selected within SRA
- 10 - Side Scan Sonar Target (SSS)
- 11 - IVS Seed
- 12 - Selected Based on Both 2013 and 2014 Data
- 13 - Previously Investigated, Anomaly Still Present

25 0 25 50 75 100 125 150
(meters)
NAD83 / UTM zone 18N

Client: CH2M HILL

EM61 MK2 Bottom Coil - Person Portable & Towed Array
Mosaic
DSA-1 Munitions Response Area
Former Raritan Arsenal
Edison, Middlesex County, New Jersey

Date of Survey: Person Portable Data Collected: 12/12/2013
Towed Array Data Collected: 02/20/2014 - 02/22/2014
Date of Map Creation: 03/20/2014

Map Approver: J. Guillard

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THE LEADER IN SUBSURFACE DETECTION
Subsurface Geophysical Surveys



Aerial Photograph from Bing Maps

Legend

- Area Boundary
- Culture (if noted)
- Stake
- Saturated Response Area (SRA) (if noted)

Selected Targets

- 1 - Point
- 2 - Culture
- 3 - Suspected Culture
- 4 - Picked Outside of Target Area
- 5 - Hazard Deviation
- 6 - Anomaly Selected Below Established Threshold
- 7 - Data Spike (Terrain Response, Ambient Noise, Poor Decays)
- 8 - Saturated Response Area (SRA)
- 9 - Selected within SRA
- 10 - Side Scan Sonar Target (SSS)
- 11 - IVS Seed
- 12 - Selected Based on Both 2013 and 2014 Data
- 13 - Previously Investigated, Anomaly Still Present

mV
Channel 2

25 0 25 50 75 100 125 150
(meters)
NAD83 / UTM zone 18N

Client: CH2M HILL
EM61 MK2 Bottom Coil - Towed Array Mosaic DSA-2 Munitions Response Area Former Raritan Arsenal Edison, Middlesex County, New Jersey
Date of Survey: 02/25/2014 & 02/28/2014 Date of Map Creation: 03/21/2014
Map Approver: J. Guillard

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THE LEADER IN TERRESTRIAL DETECTION
Subsurface Geophysical Surveys





Aerial Photograph from Bing Maps



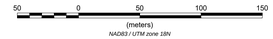
Legend

- Area Boundary
- Culture (if noted)
- Stake
- Saturated Response Area (SRA) (if noted)

Selected Targets

- 1 - Point
- 2 - Culture
- 3 - Suspected Culture
- 4 - Picked Outside of Target Area
- 5 - Hazard Deviation
- 6 - Anomaly Selected Below Established Threshold
- 7 - Data Spike (Terrain Response, Ambient Noise, Poor Decays)
- 8 - Saturated Response Area (SRA)
- 9 - Selected within SRA
- 10 - Side Scan Sonar Target (SSS)
- 11 - IVS Seed
- 12 - Selected Based on Both 2013 and 2014 Data
- 13 - Previously Investigated, Anomaly Still Present





Client: CH2M HILL
EM61 MK2 Bottom Coil Person Portable & Towed Array Mosaic DSA-3 & Area 12 Munitions Response Areas Former Raritan Arsenal Edison, Middlesex County, New Jersey
Date of Survey: Person Portable Data Collected: 12/13/2013 Towed Array Data Collected: 02/19/14, 02/22/14, 02/23/14, & 02/25/14 Date of Map Creation: 03/20/2014
Map Approver: J. Guillard



NAEVA GEOPHYSICS INC.
THE LEADER IN SUBSURFACE DETECTION
Subsurface Geophysical Surveys



Aerial Photograph from Bing Maps



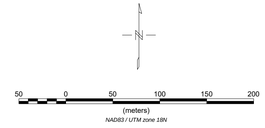
mV
Channel 2

Legend

- Area Boundary
- Culture (if noted)
- Stake
- Saturated Response Area (SRA) (if noted)

Selected Targets

- 1 - Point
- 2 - Culture
- 3 - Suspected Culture
- 4 - Picked Outside of Target Area
- 5 - Hazard Deviation
- 6 - Anomaly Selected Below Established Threshold
- 7 - Data Spike (Terrain Response, Ambient Noise, Poor Decays)
- 8 - Saturated Response Area (SRA)
- 9 - Selected within SRA
- 10 - Side Scan Sonar Target (SSS)
- 11 - IVS Seed
- 12 - Selected Based on Both 2013 and 2014 Data
- 13 - Previously Investigated, Anomaly Still Present



Client: CH2M HILL
EM61 MK2 Bottom Coil - Person Portable Mosaic DSA-4 Munitions Response Area Former Raritan Arsenal Edison, Middlesex County, New Jersey
Date of Survey: 03/27/2014 & 03/28/2014 Date of Map Creation: 04/04/2014
Map Approver: J. Guillard

NAEVA GEOPHYSICS INC.
THE LEADER IN SUBSURFACE DETECTION
Subsurface Geophysical Surveys



Aerial Photograph from Bing Maps

Legend

- Area Boundary
- Culture (if noted)
- Stake
- Saturated Response Area (SRA) (if noted)

Selected Targets

- 1 - Point
- 2 - Culture
- 3 - Suspected Culture
- 4 - Picked Outside of Target Area
- 5 - Hazard Deviation
- 6 - Anomaly Selected Below Established Threshold
- 7 - Data Spike (Terrain Response, Ambient Noise, Poor Decays)
- 8 - Saturated Response Area (SRA)
- 9 - Selected within SRA
- 10 - Side Scan Sonar Target (SSS)
- 11 - IVS Seed
- 12 - Selected Based on Both 2013 and 2014 Data
- 13 - Previously Investigated, Anomaly Still Present

mV
Channel 2

50 0 50 100 150 200 250 300
(meters)
NAD83 / UTM zone 18N

Client: CH2M HILL

EM61 MK2 Bottom Coil Person Portable & Towed Array
Mosaic
DSA-5 Munitions Response Area
Former Raritan Arsenal
Edison, Middlesex County, New Jersey

Date of Survey: Person Portable Data Collected: 12/13/2013, 12/17/2013, & 12/18/2013.
Towed Array Data Collected: 02/24/2014, 02/26/2014, 02/27/2014, 03/01/2014 & 03/02/2014
Date of Map Creation: 03/20/2014

Map Approver: J. Guillard

NAEVA GEOPHYSICS INC.
Subsurface Geophysical Surveys



Aerial Photograph from Bing Maps

554800 554850 554900 554950 555000 555050 555100 555150 555200 555250 555300

4481600 4481550 4481500 4481450 4481400 4481350

TDSA6-1B
TDSA6-2B
TDSA6-3B
MUDFLAT
TDSA6-4B
TDSA6-1
TDSA6-2
TDSA6-3
TDSA6-4
TDSA6-1A
TDSA6-2A
TDSA6-3A
TDSA6-4A
MUDFLAT
MUDFLAT
DSA-5

50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

mV
Channel 2

Legend

- Area Boundary
- Culture (if noted)
- Stake
- Saturated Response Area (SRA) (if noted)

Selected Targets

- 1 - Point
- 2 - Culture
- 3 - Suspected Culture
- 4 - Picked Outside of Target Area
- 5 - Hazard Deviation
- 6 - Anomaly Selected Below Established Threshold
- 7 - Data Spike (Terrain Response, Ambient Noise, Poor Decays)
- 8 - Saturated Response Area (SRA)
- 9 - Selected within SRA
- 10 - Side Scan Sonar Target (SSS)
- 11 - IVS Seed
- 12 - Selected Based on Both 2013 and 2014 Data
- 13 - Previously Investigated, Anomaly Still Present

10 0 10 20 30 40 50
(meters)
NAD83 / UTM zone 18N

Client: CH2M HILL
EM61 MK2 Bottom Coil - Person Portable Mosaic DSA-6 Munitions Response Area Former Raritan Arsenal Edison, Middlesex County, New Jersey
Date of Survey: 03/25/2014 Date of Map Creation: 04/04/2014
Map Approver: J. Guillard

Appendix E

Data Interpretation Documents

Previously Investigated Targets with a Found Item from December 2013 but February 2014 Line Path Does NOT Follow

ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
6	TDSA1-3	556696.65	4483823.25	16.102	mV
8	TDSA1-3	556709.55	4483814.55	23.727	mV
19	TDSA1-3	556921.709	4483669.668	45.755	mV
20	TDSA1-3	556921.8	4483668.45	23.332	mV
38	TDSA1-3	557033.1	4483587.6	6.078	mV
40	TDSA1-3	557038.65	4483581.75	21.539	mV
41	TDSA1-3	557047.35	4483576.35	9.686	mV
44	TDSA1-3	557063.55	4483563.9	17.765	mV
45	TDSA1-3	557065.2	4483562.7	19.481	mV
52	TDSA1-3	557092.083	4483524.15	47.66	mV
54	TDSA1-3	557093.25	4483521.3	4503.479	mV
65	TDSA1-4	557119.8	4483638.15	82.264	mV
69	TDSA1-4	557123.456	4483635.239	5.37	mV
71	TDSA1-4	557126.25	4483632.75	51.702	mV
74	TDSA1-4	557129.25	4483628.55	551.112	mV
78	TDSA1-4	557134.2	4483623.45	87.302	mV
86	TDSA1-4	557141.744	4483616.75	164.98	mV
104	TDSA1-4	557177.404	4483591.128	5.061	mV
115	TDSA1-4	557212.406	4483569.727	137.751	mV
116	TDSA1-4	557221.657	4483559.647	470.552	mV
132	TDSA1-4	557239.8	4483553.55	54.746	mV
133	TDSA1-4	557240.228	4483551.846	72.527	mV
134	TDSA1-4	557242.35	4483553.7	48.326	mV
56	TDSA1-5	557231.1	4483626	316.138	mV
57	TDSA1-6	557185.65	4483726.05	10.827	mV
58	TDSA1-6	557186.55	4483726.8	33.574	mV
59	TDSA1-6	557187	4483724.85	8.464	mV
60	TDSA1-6	557187.964	4483724.046	4.572	mV
61	TDSA1-6	557188.8	4483726.05	24.524	mV
63	TDSA1-6	557190.45	4483724.55	8.389	mV
64	TDSA1-6	557192.4	4483721.55	4.244	mV
68	TDSA1-6	557196.048	4483719.872	6.333	mV
69	TDSA1-6	557197.161	4483718.65	13.791	mV
75	TDSA1-6	557206.2	4483710.75	33.075	mV
76	TDSA1-6	557207.041	4483709.758	26.745	mV
78	TDSA1-6	557210.1	4483706.7	29.522	mV
79	TDSA1-6	557211.297	4483707.478	29.735	mV
82	TDSA1-6	557214.9	4483705.8	7.974	mV
83	TDSA1-6	557216.009	4483701.93	18.8	mV
84	TDSA1-6	557235.617	4483730.582	107.408	mV
85	TDSA1-6	557238.15	4483730.1	16.92	mV
86	TDSA1-6	557239.346	4483729.118	5.482	mV
87	TDSA1-6	557239.873	4483728.378	4.898	mV
46	TDSA3-9	555789.69	4482577.453	6.864	mV
71	TDSA3-12	556090.702	4482737.965	9.503	mV

2	T12T-8	556454.382	4482278.85	15.05	mV
20	T12T-9	556564.513	4482352.035	43.339	mV
22	T12T-9	556577.076	4482354.471	20.209	mV
14	T12T-15	556312.305	4482359.074	11.94	mV
25	T12T-15	556355.02	4482372.97	89.813	mV
12	T12T-16	556333.792	4482403.381	4.981	mV
13	T12T-16	556353.157	4482409.536	4.04	mV
46	TDSA3-9	555789.7	4482577	6.864	mV
71	TDSA3-12	556090.7	4482738	9.503	mV

Good Response in 2013 Data Not Investigated that has NO Response in 2014 Data

ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
59	T12T-6	556280.4	4482161	11.067	mV
54	T12T-10	556008.7	4482108	8.899	mV
44	T12T-10	555973.7	4482095	18.138	mV
60	T12T-12	556217.8	4482238	55.206	mV
50	T12T-12	556203.2	4482232	45.798	mV
23	T12T-12	555890.9	4482133	17.598	mV
32	T12T-13	556177.1	4482258	29.882	mV
6	T12T-24	556065.2	4482563	8.284	mV
75	T12T-12	556239.2	4482246	37.315	mV
15	TDSA3-4	555291.6	4482105	19.614	mV
82	TDSA5-12	556040.1	4481132	8.202	mV
138	TDSA5-22A	556997.7	4481581	7.079	mV
28	TDSA5-24	557259	4481314	10.291	mV

Good Anomalies in 2013 data – No Anomalies in 2014 data

Former Raritan Arsenal

Overview and Legend

- Included are screenshots of December 2013 Data and the corresponding 2014 data.
- These show anomalies in 2013 data that were not investigated, but the 2014 data does not show an anomaly at the location of the 2013 target.
- This assumes that December 2013 data and February 2014 follow the same path.

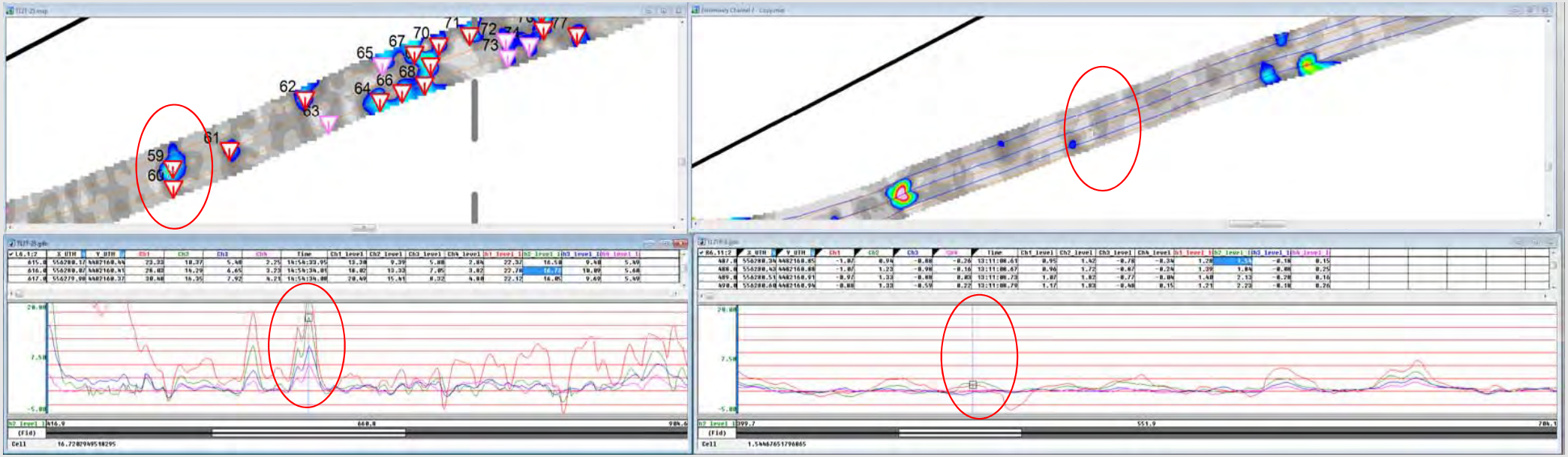
Line Path: ORANGE = December 2013 Data BLUE = February 2014 Data

Block T12TR-9 Transect T12TR-6

2013

2014

ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
59	T12T-6	556280.359	4482160.693	11.067	mV

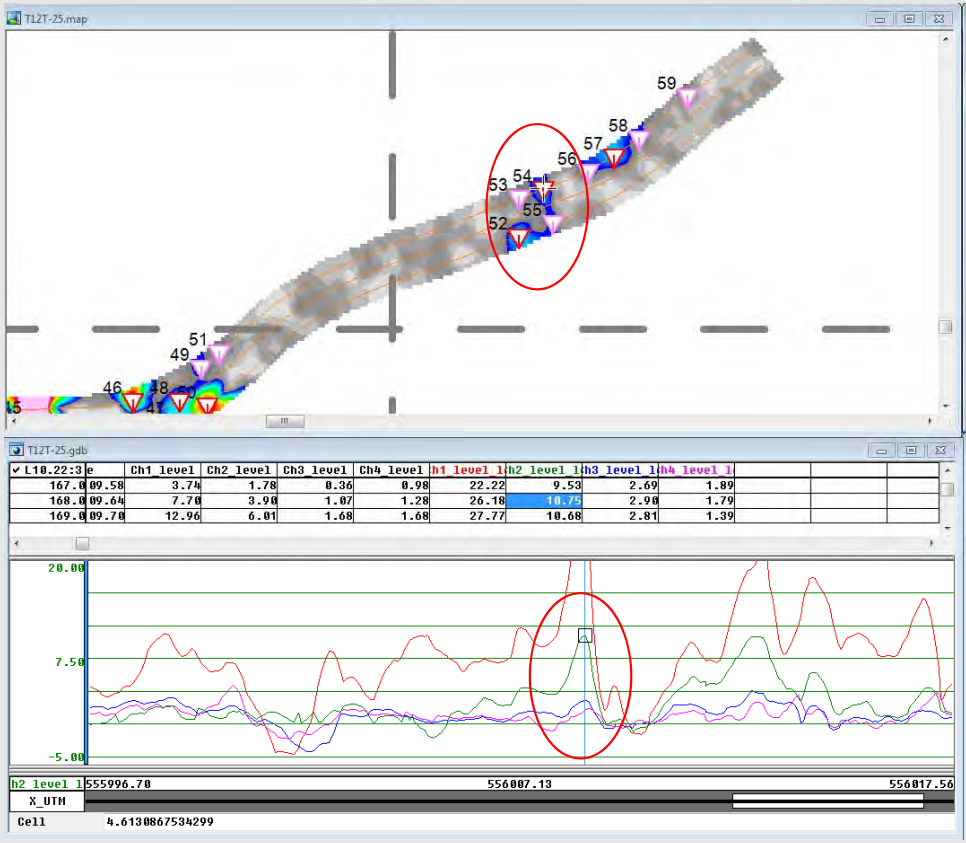


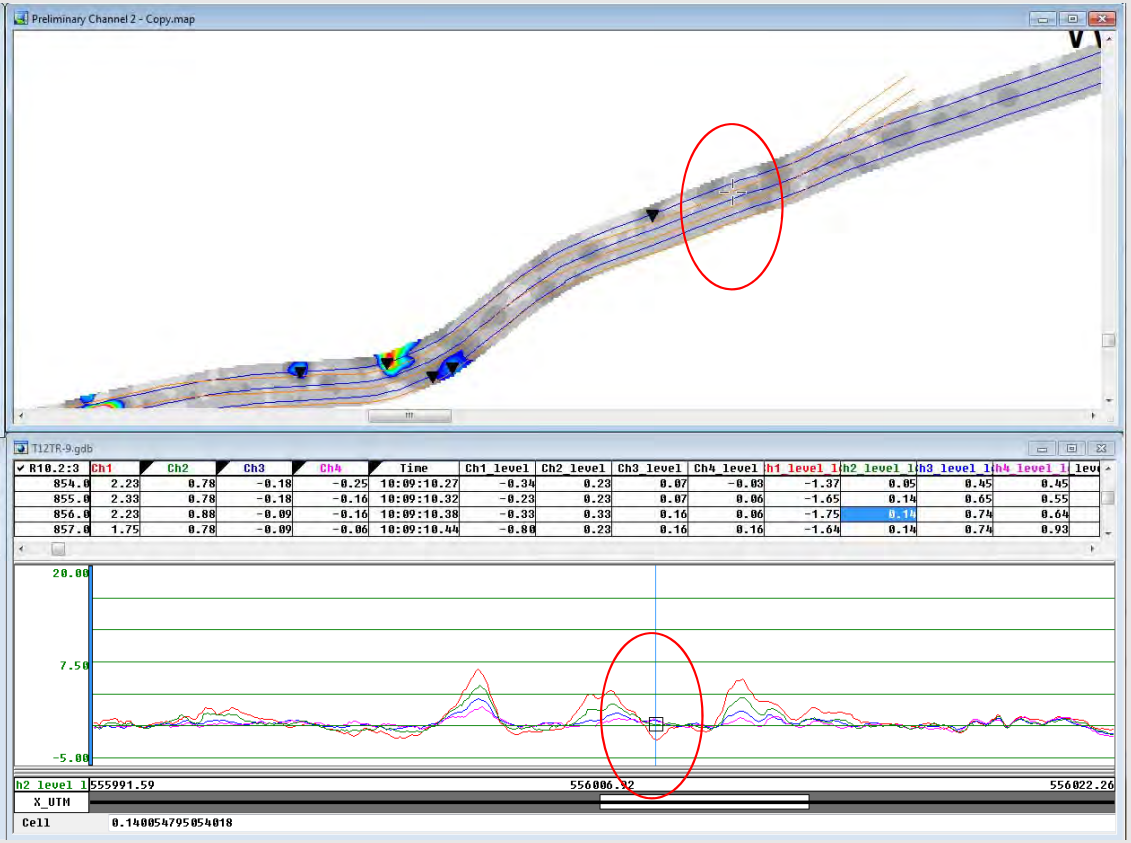
Block T12TR-9 Transect T12TR-10

2013

2014

ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
54	T12T-10	556008.681	4482108.099	8.899	mV



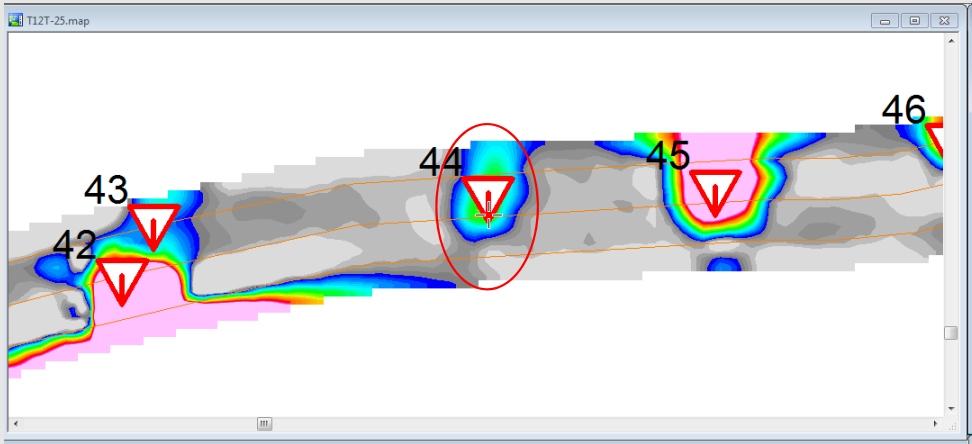


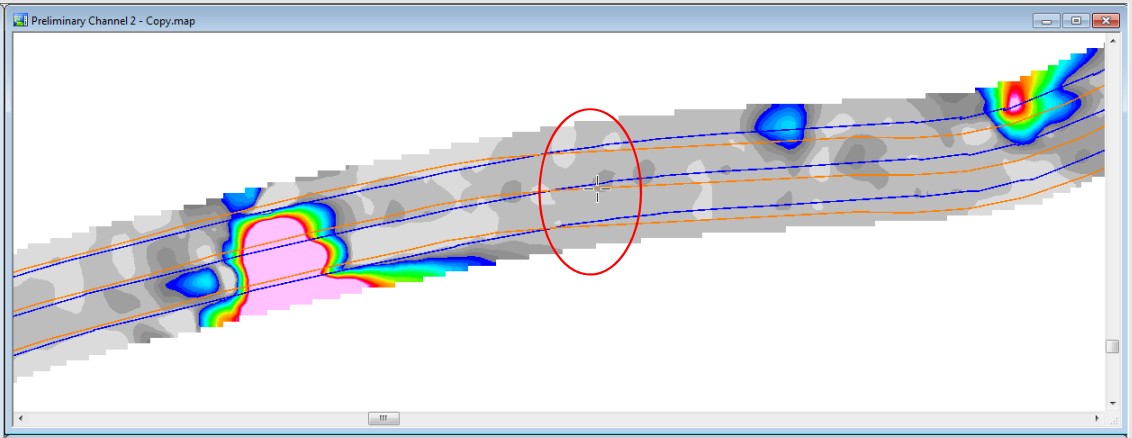
Block T12TR-9 Transect T12TR-10

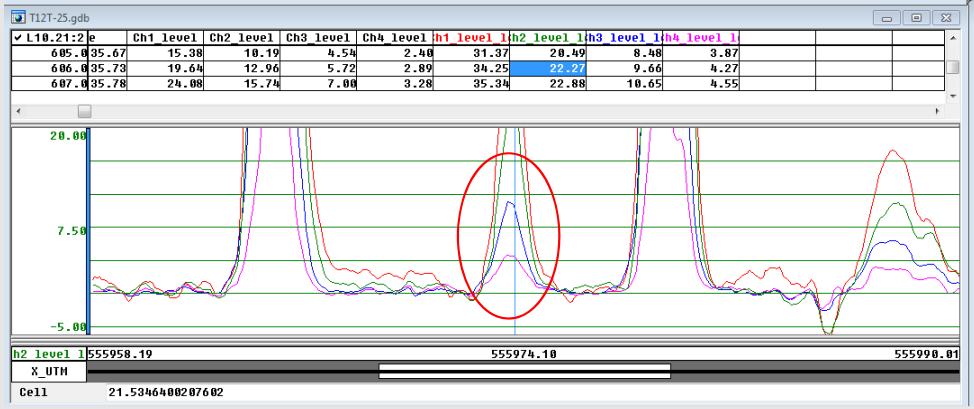
2013

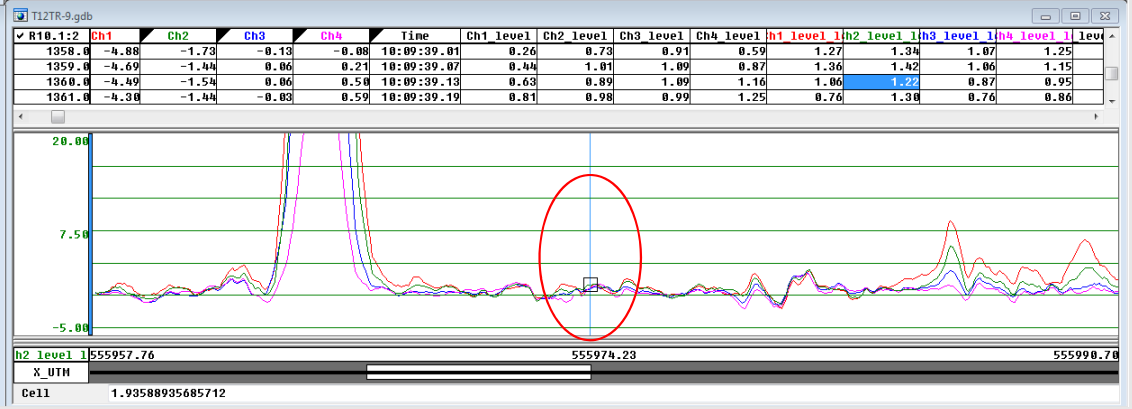
2014

ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
44	T12T-10	555973.74	4482094.629	18.138	mV







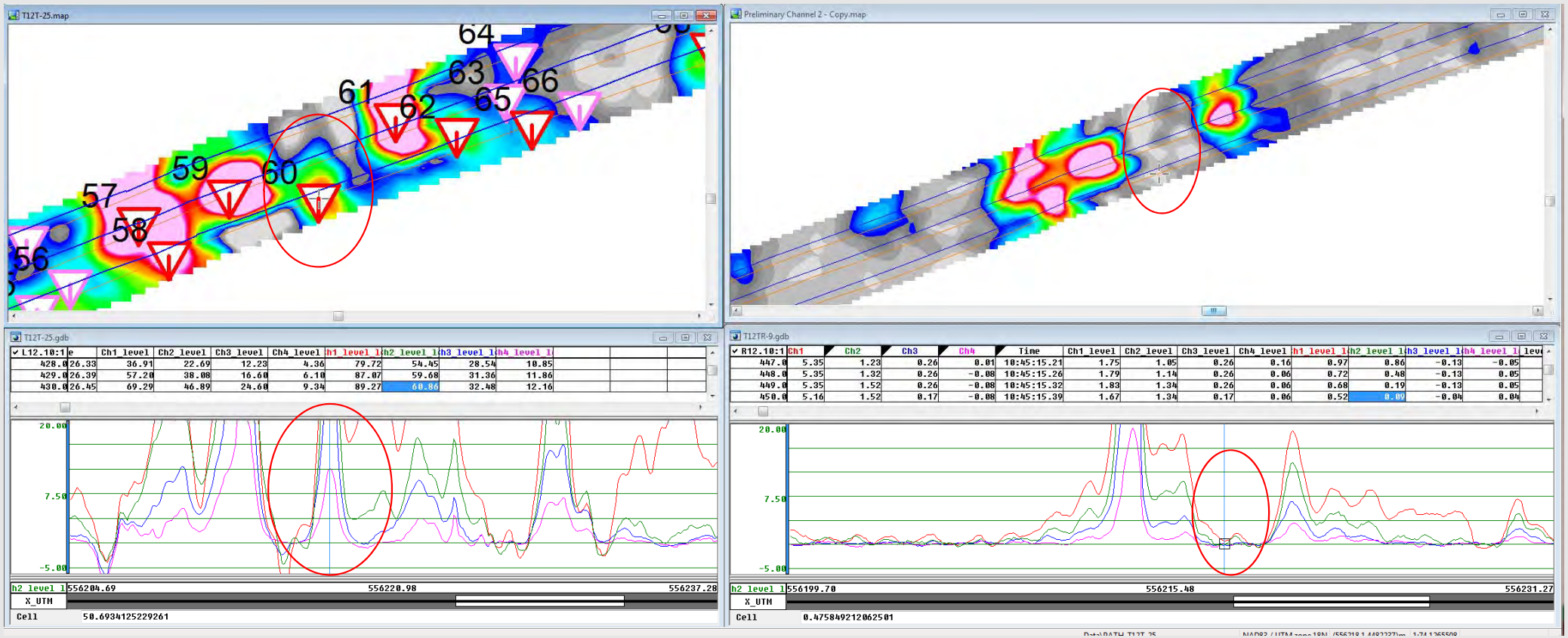


Block T12TR-9 Transect T12TR-12

2013

2014

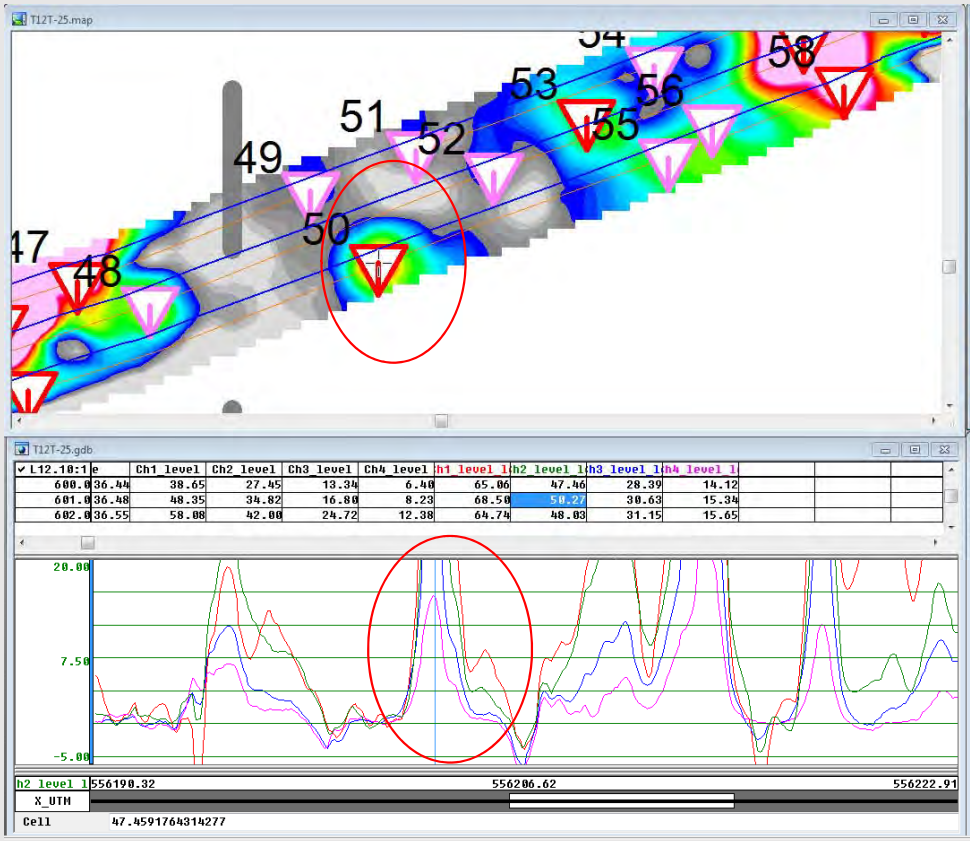
ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
60	T12T-12	556217.786	4482237.729	55.206	mV



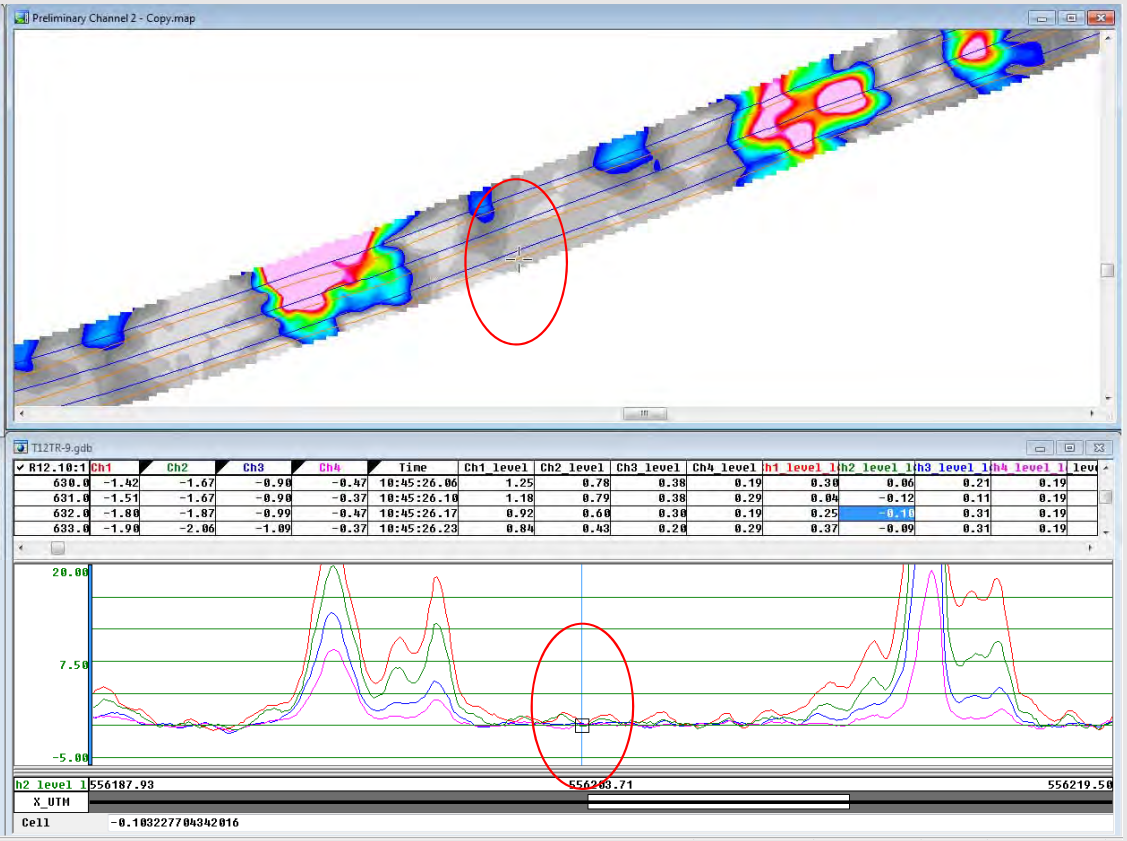
Block T12TR-9 Transect T12TR-12

2013

ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
50	T12T-12	556203.213	4482232.162	45.798	mV



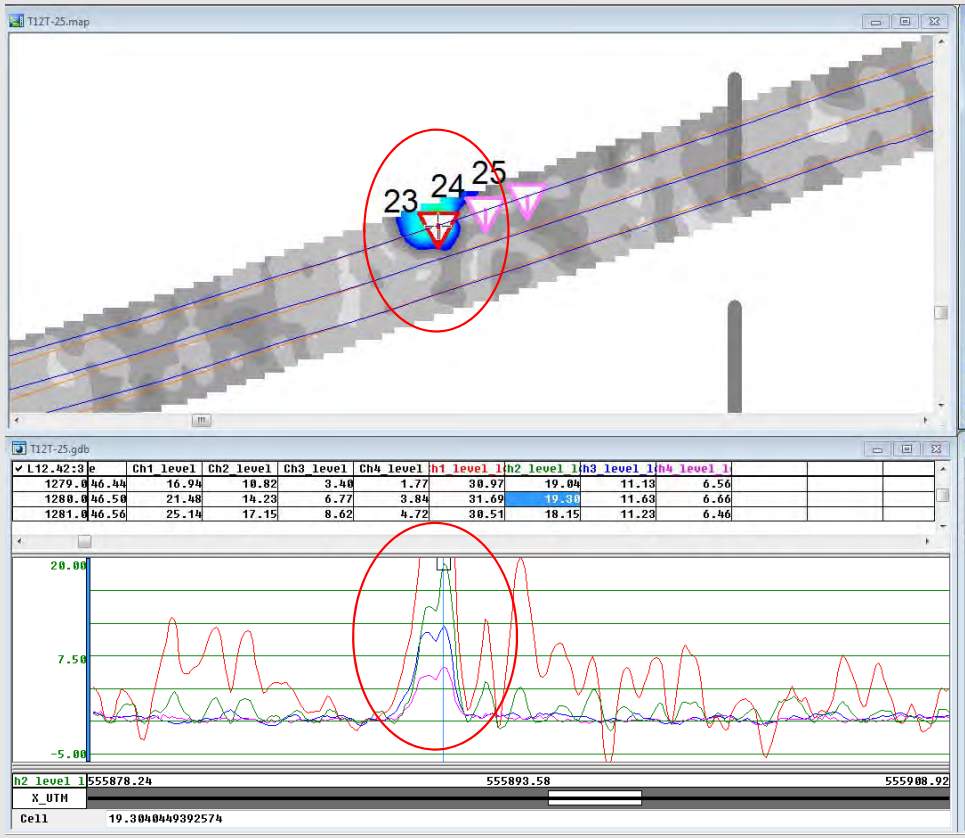
2014



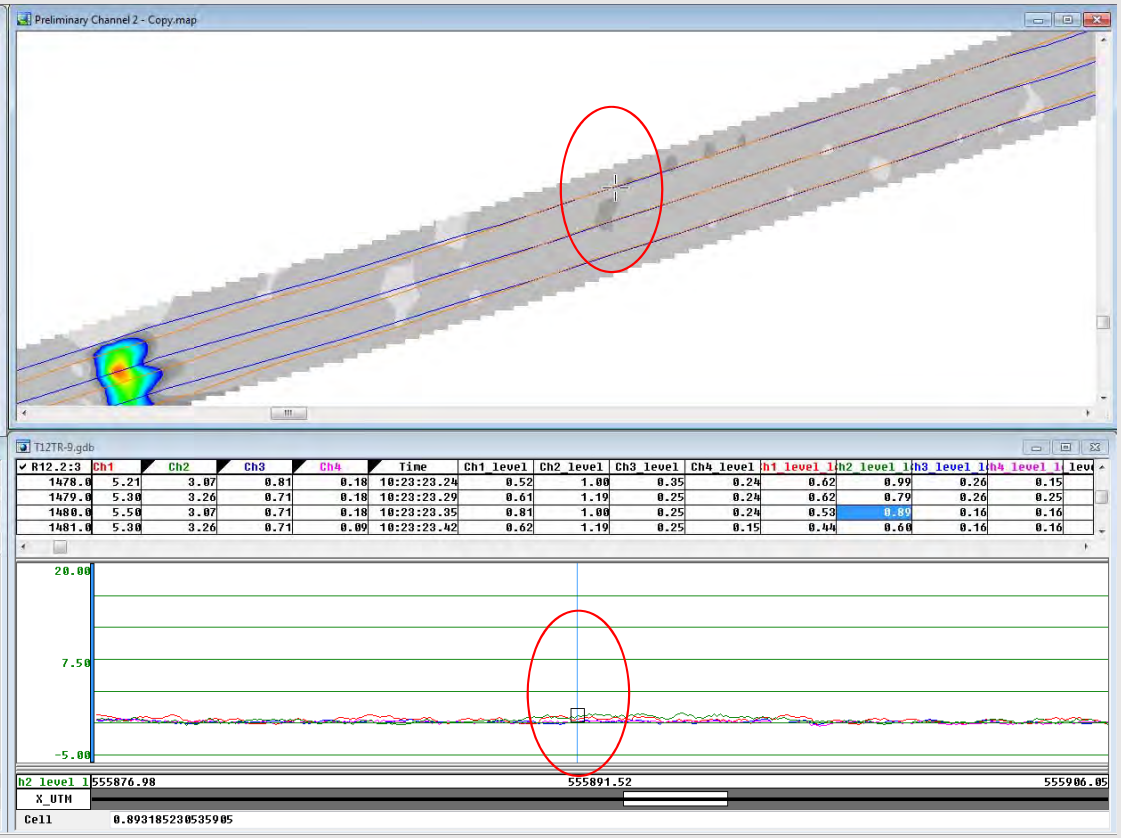
Block T12TR-9 Transect T12TR-12

2013

ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
23	T12T-12	555890.863	4482133.462	17.598	mV



2014

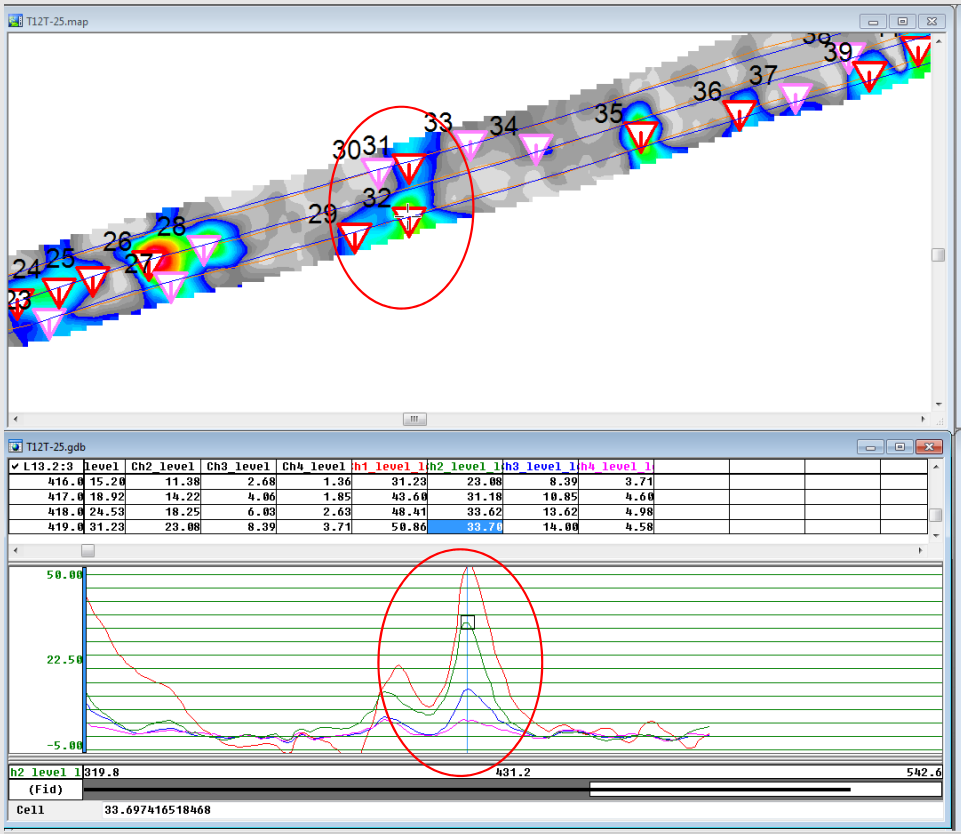


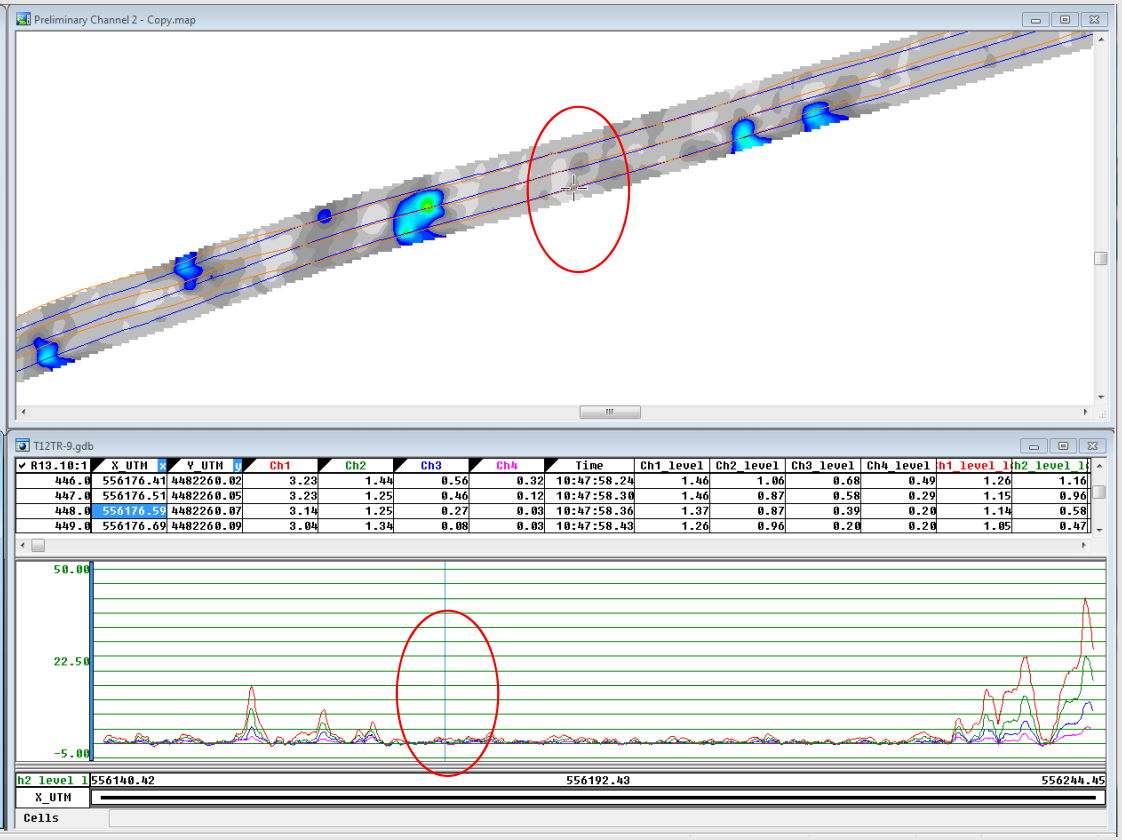
Block T12TR-9 Transect T12TR-13

2013

2014

ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
32	T12T-13	556177.125	4482258.115	29.882	mV



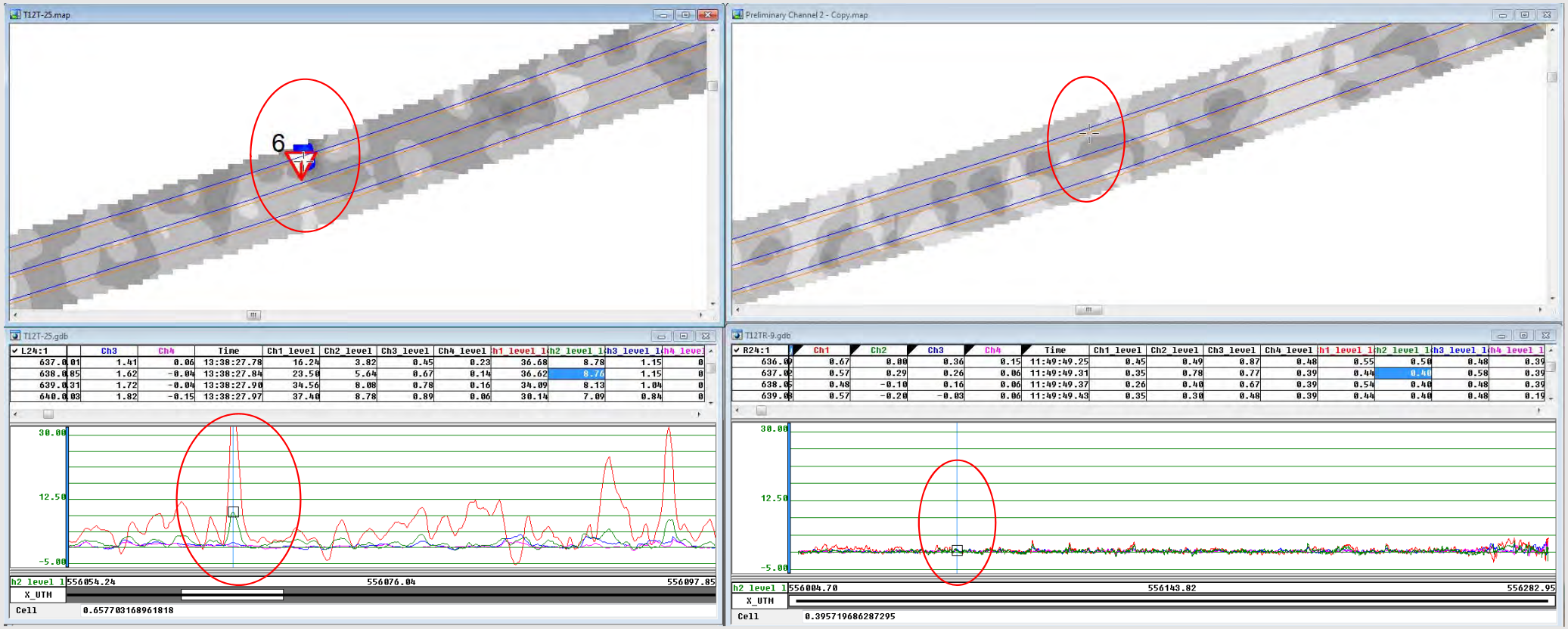


Block T12TR-9 Transect T12TR-24

2013

2014

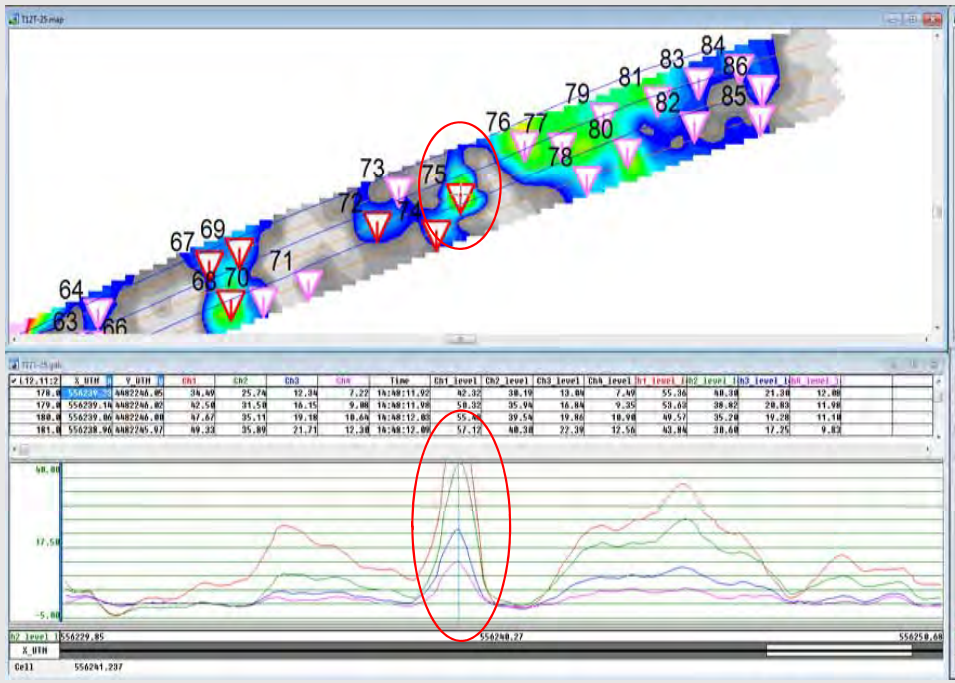
ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
6	T12T-24	556065.226	4482562.809	8.284	mV



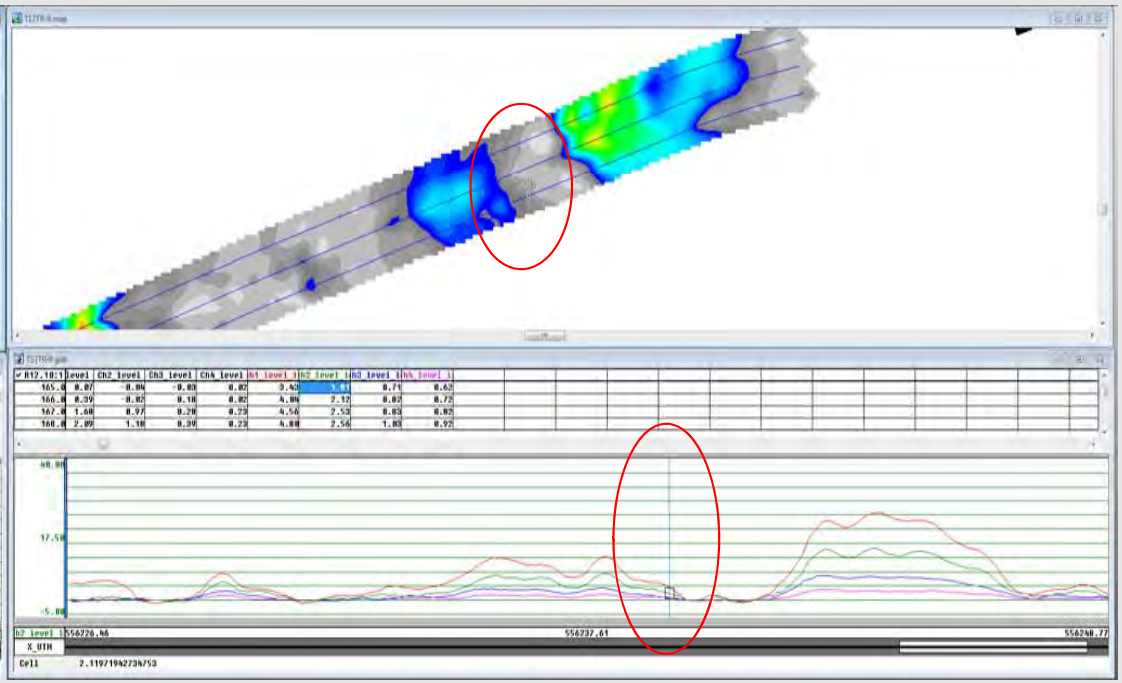
Block T12TR-9 Transect T12TR-12

2013

ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
75	T12T-12	556239.234	4482246.054	37.315	mV



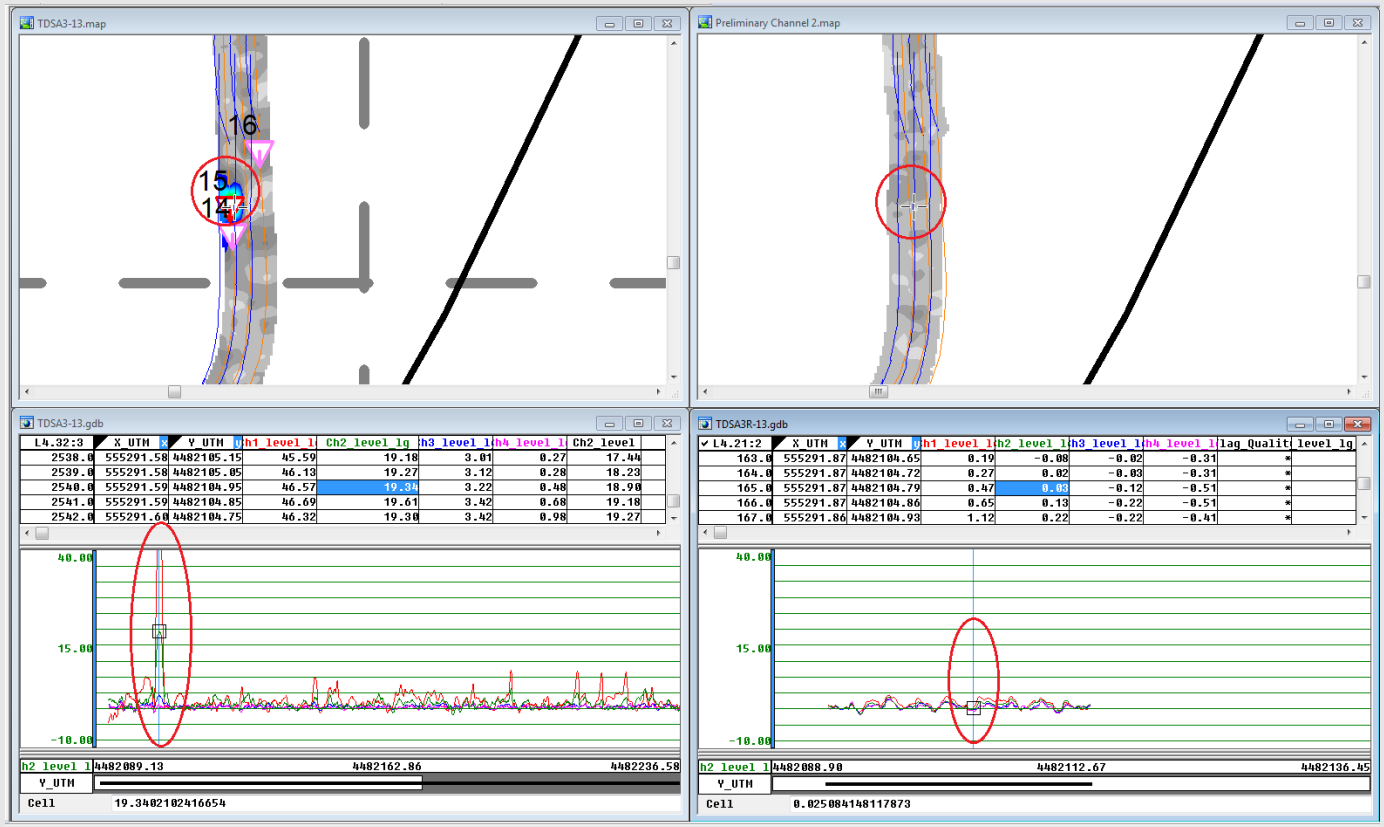
2014



Block TDSA3R-13 Transect TDSA3R-4

2013 2014

ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
15	TDSA3-4	555291.6	4482105	19.614	mV



Block TDSA5R-12 Transect TDSA5R-12

2013

2014

ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
82	TDSA5-12	556040.1	4481132.25	8.202	mV



Block TDSA5R-23 Transect TDSA5R-22A

2013

2014

ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
138	TDSA5-22A	556997.7	4481580.9	7.079	mV



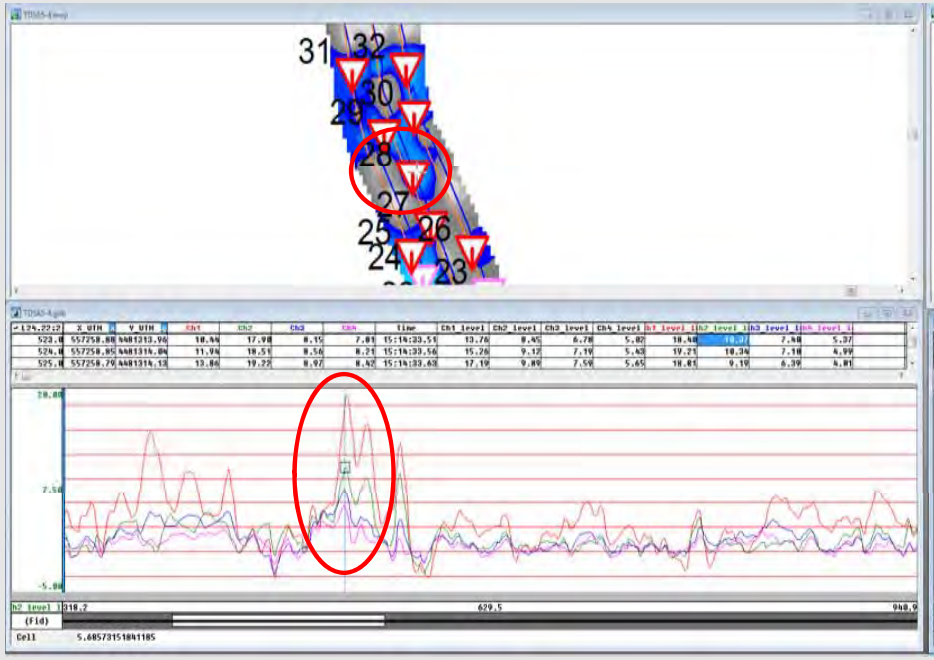


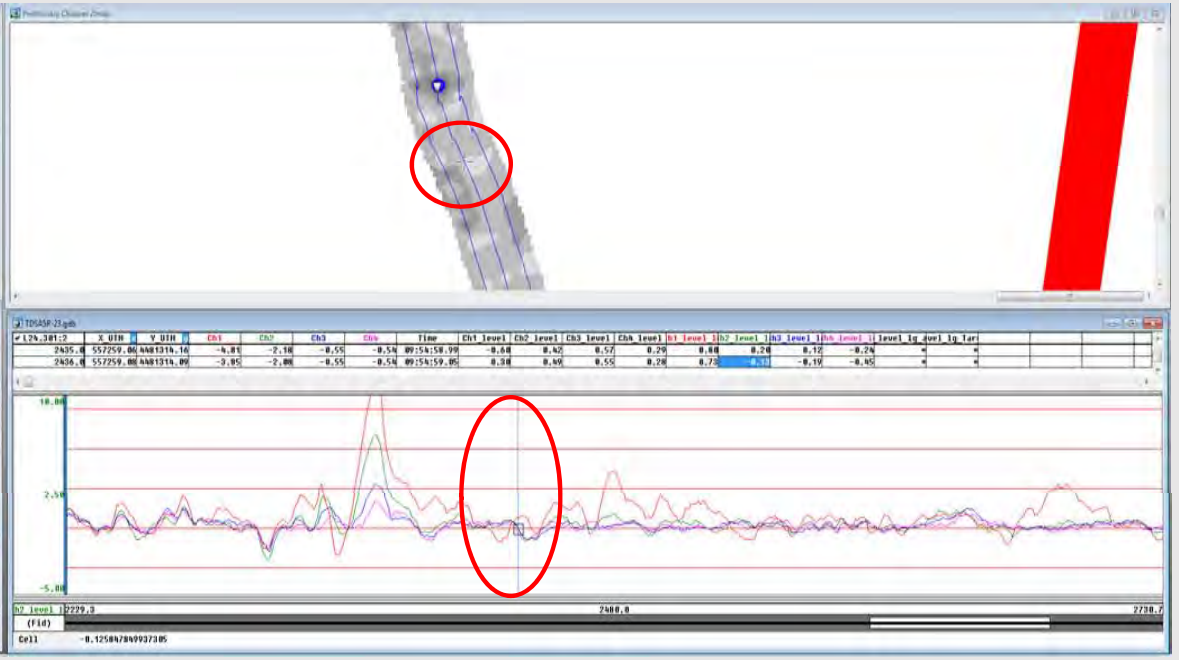
Block TDSA5R-23 Transect TDSA5R-24

2013

2014

ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
28	TDSA5-24	557258.95	4481314.05	10.291	mV





Line Deviations from 2013 to 2014 data – Good Targets Investigated 2013 and Items Recovered

Former Raritan Arsenal

Overview and Legend

- Included are screenshots of December 2013 Data with Intrusive results plotted.

  Line Path: BLUE = February 2014 Data ORANGE = December 2013 Data

  Intrusive Symbol

  Frag = Yellow
  MDAS = Green
  No Contact = Red
  Non-Munitions Scrap = Orange
  Other = Cyan
  QC Seed = Black
  Underwater = Dark blue (this means the target was underwater so they could not dig it)

- Investigated anomalies from December 2013 data where item was found, but data collected February 2014 does not follow the same path.

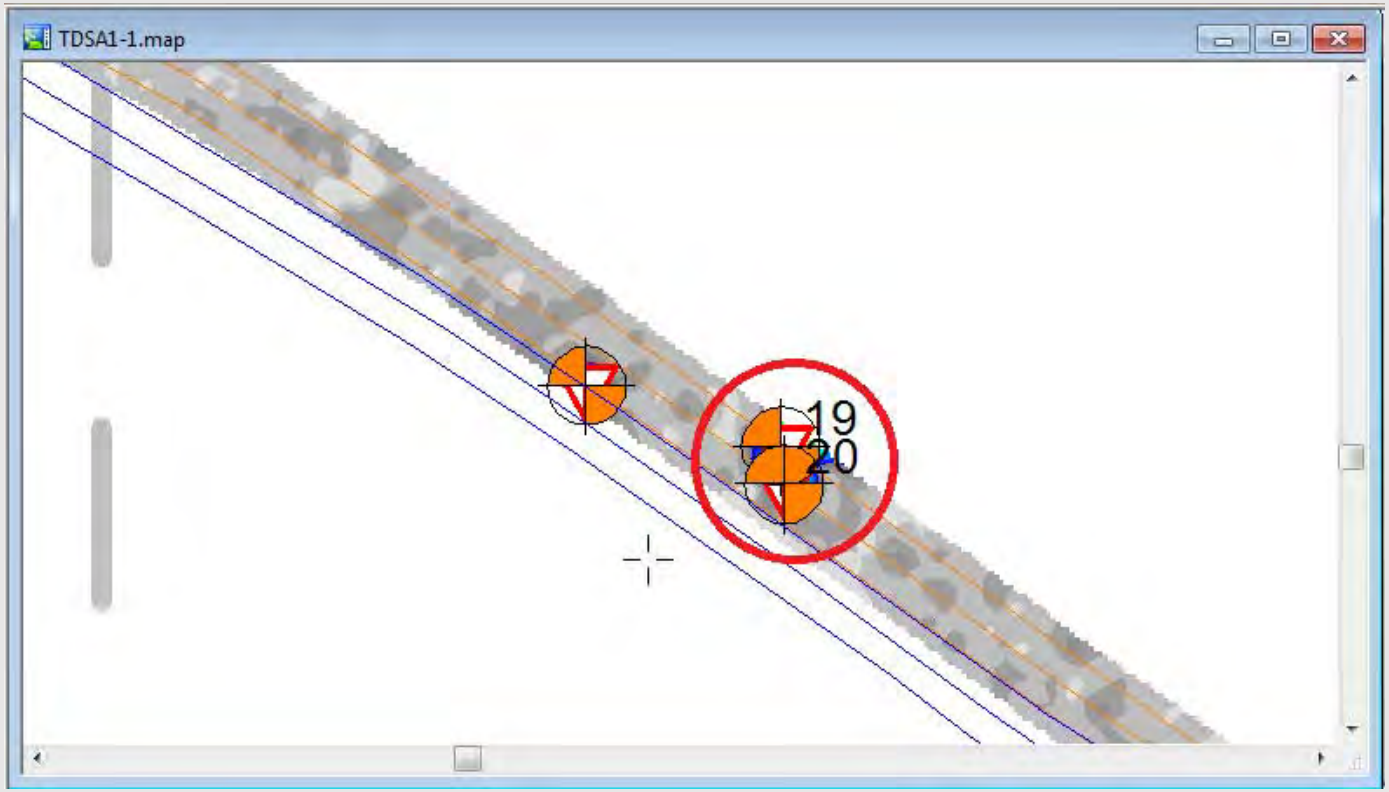
Block TDSA1-1 Transect TDSA1-3

ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
6	TDSA1-3	556696.7	4483823	16.102	mV
8	TDSA1-3	556709.6	4483815	23.727	mV



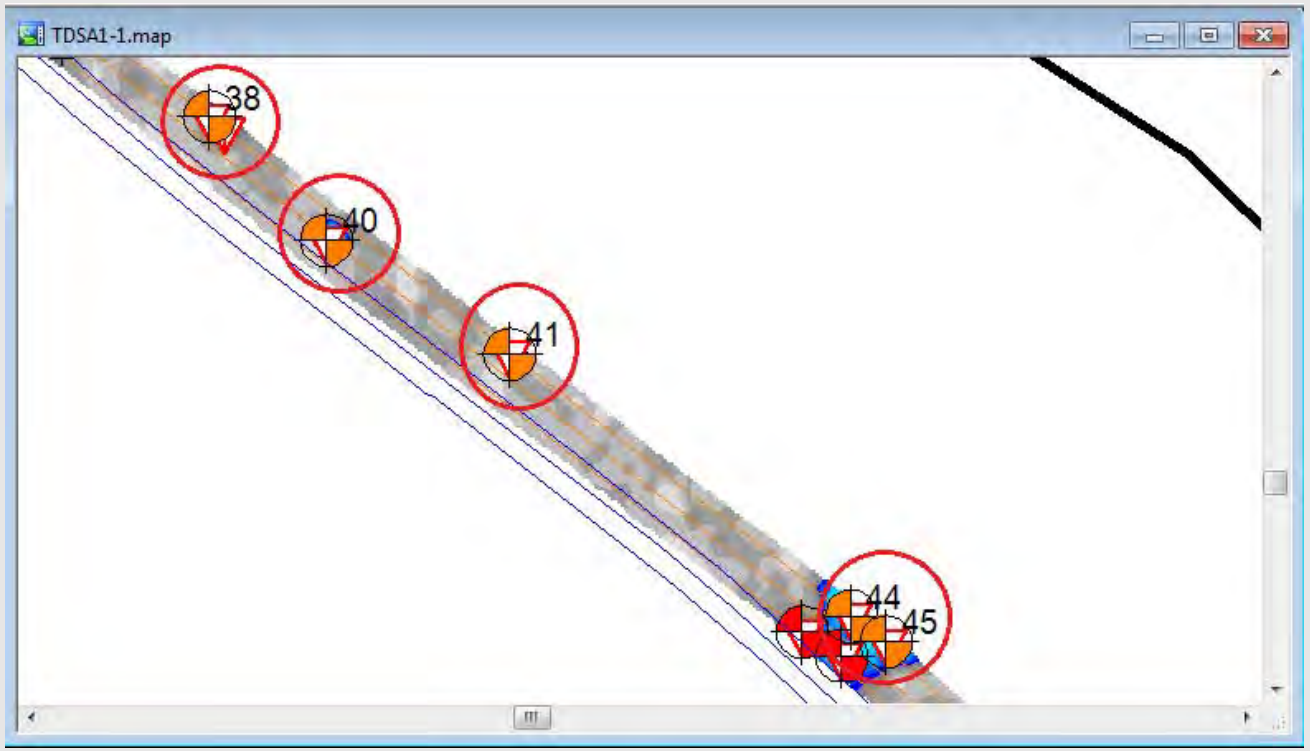
Block TDSA1-1 Transect TDSA1-3

ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
19	TDSA1-3	556921.7	4483670	45.755	mV
20	TDSA1-3	556921.8	4483668	23.332	mV



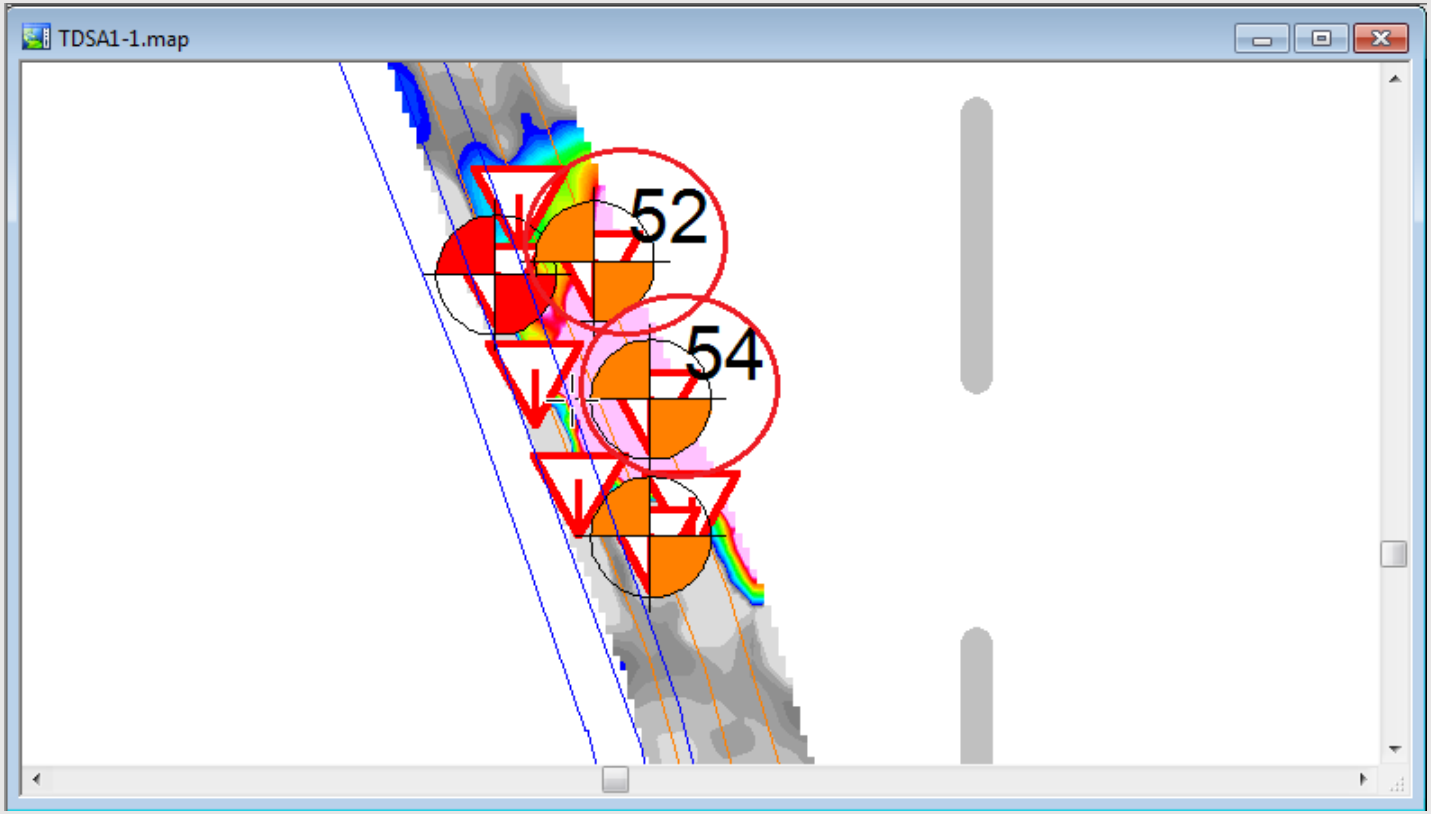
Block TDSA1-1 Transect TDSA1-3

ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
38	TDSA1-3	557033.1	4483588	6.078	mV
40	TDSA1-3	557038.7	4483582	21.539	mV
41	TDSA1-3	557047.4	4483576	9.686	mV
44	TDSA1-3	557063.6	4483564	17.765	mV
45	TDSA1-3	557065.2	4483563	19.481	mV



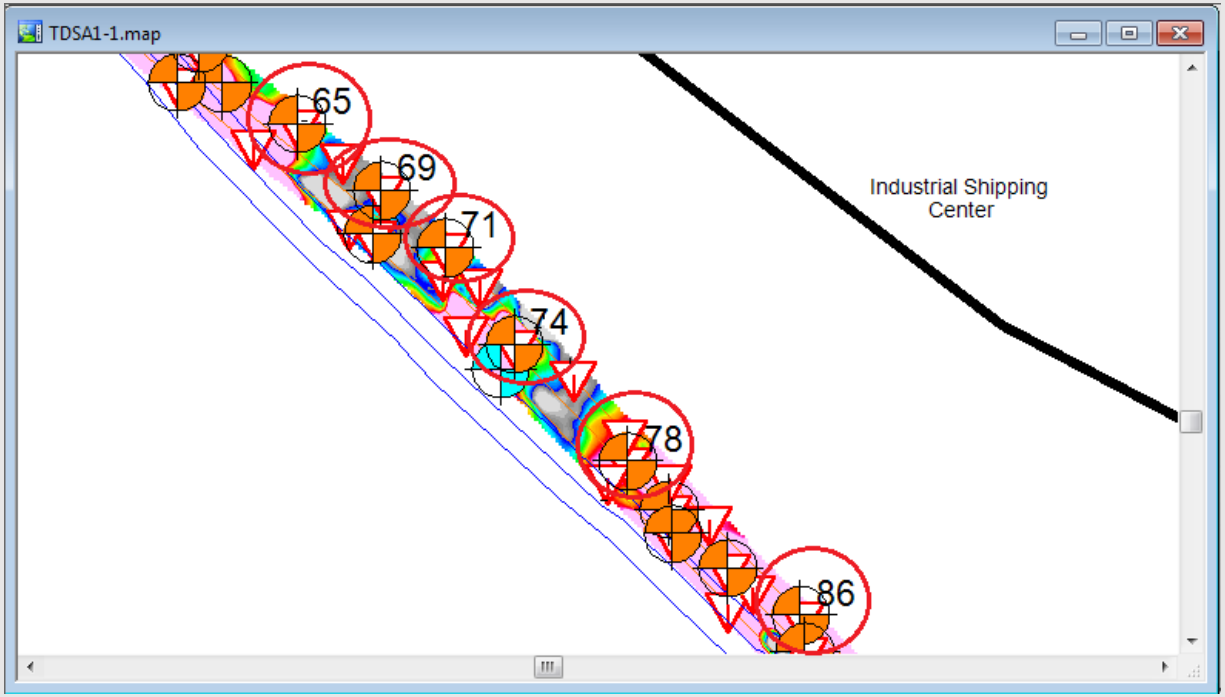
Block TDSA1-1 Transect TDSA1-3

ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
52	TDSA1-3	557092.1	4483524	47.66	mV
54	TDSA1-3	557093.3	4483521	4503.479	mV



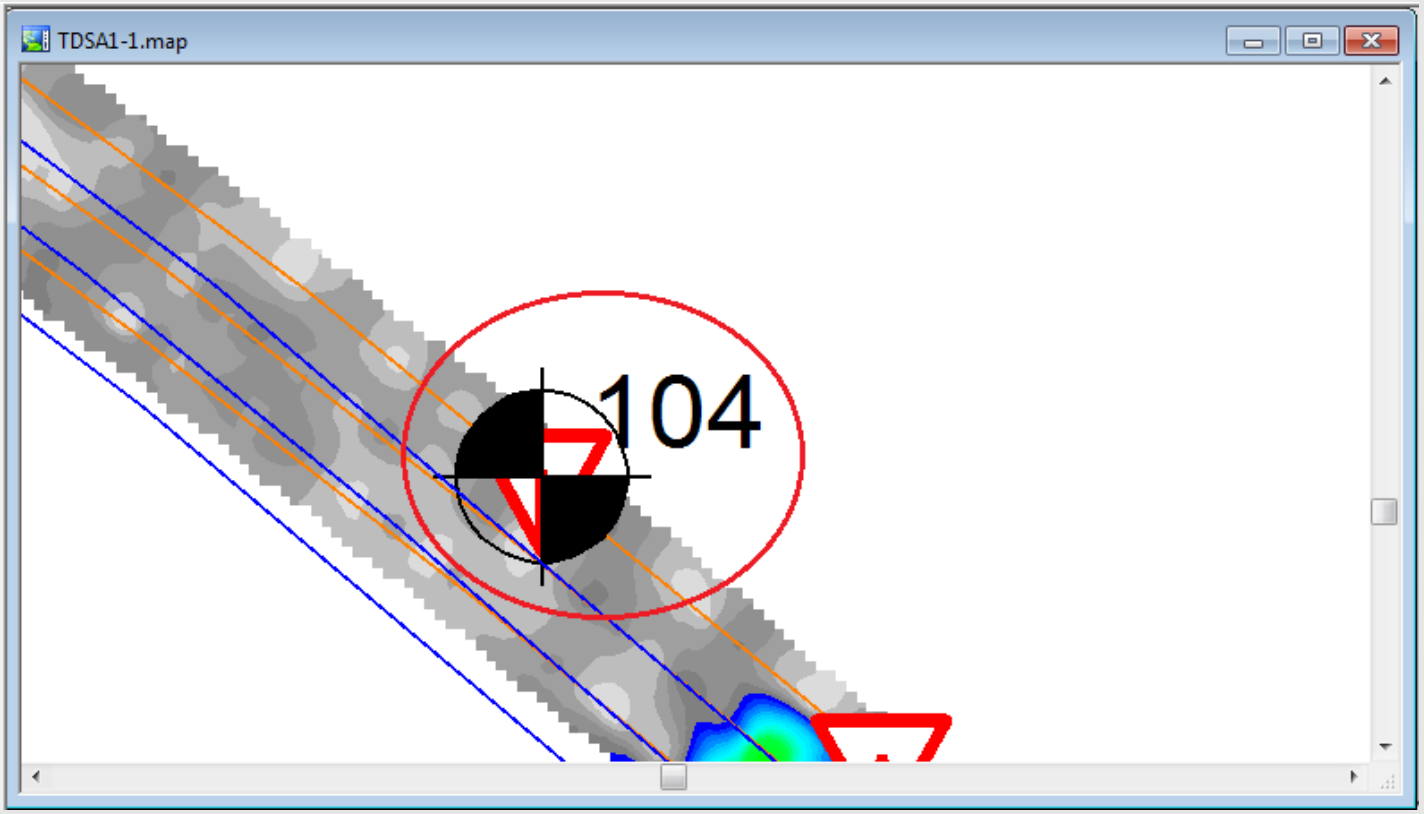
Block TDSA1-1 Transect TDSA1-4

ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
65	TDSA1-4	557119.8	4483638	82.264	mV
69	TDSA1-4	557123.5	4483635	5.37	mV
71	TDSA1-4	557126.3	4483633	51.702	mV
74	TDSA1-4	557129.3	4483629	551.112	mV
78	TDSA1-4	557134.2	4483623	87.302	mV
86	TDSA1-4	557141.7	4483617	164.98	mV



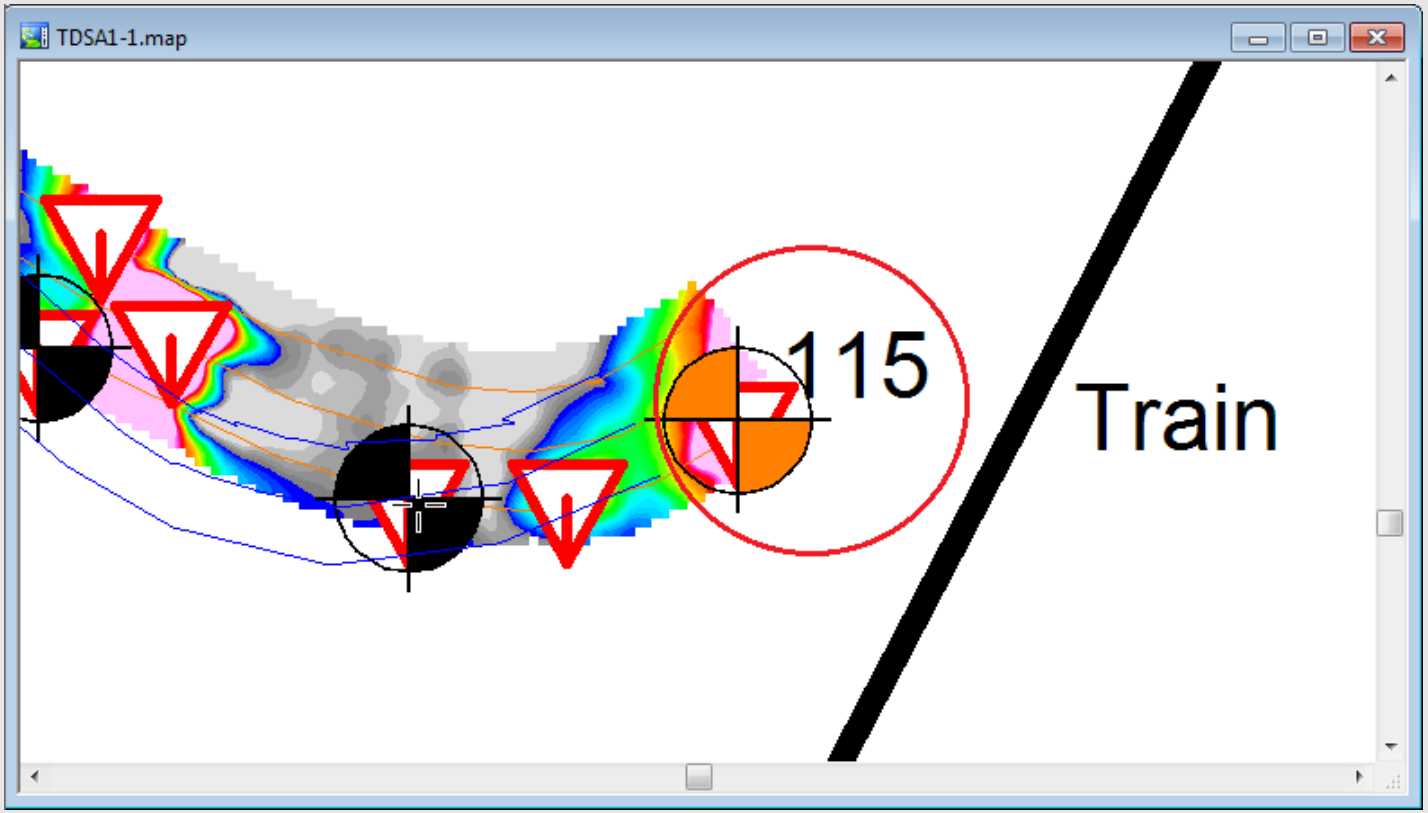
Block TDSA1-1 Transect TDSA1-4

ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
104	TDSA1-4	557177.4	4483591	5.061	mV



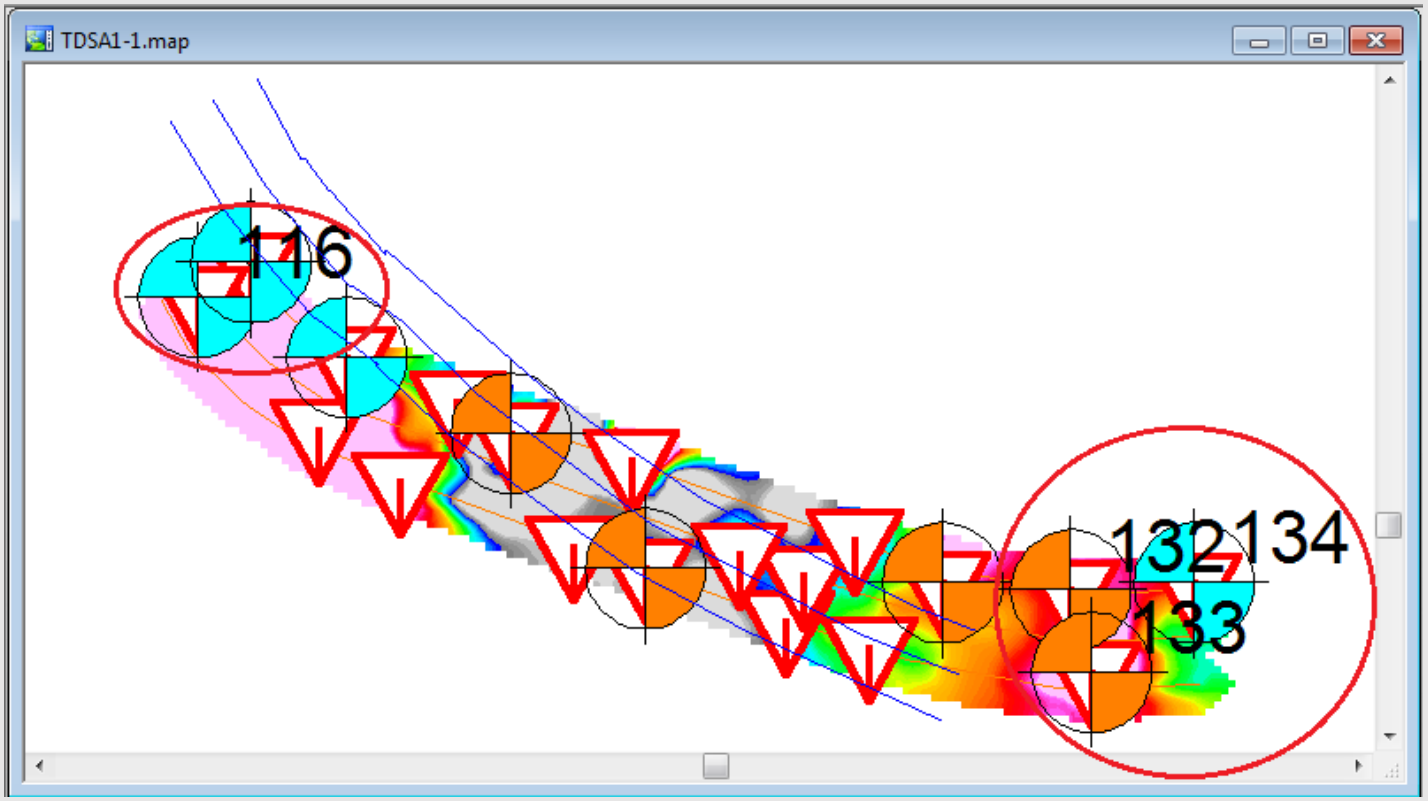
Block TDSA1-1 Transect TDSA1-4

ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
115	TDSA1-4	557212.4	4483570	137.751	mV



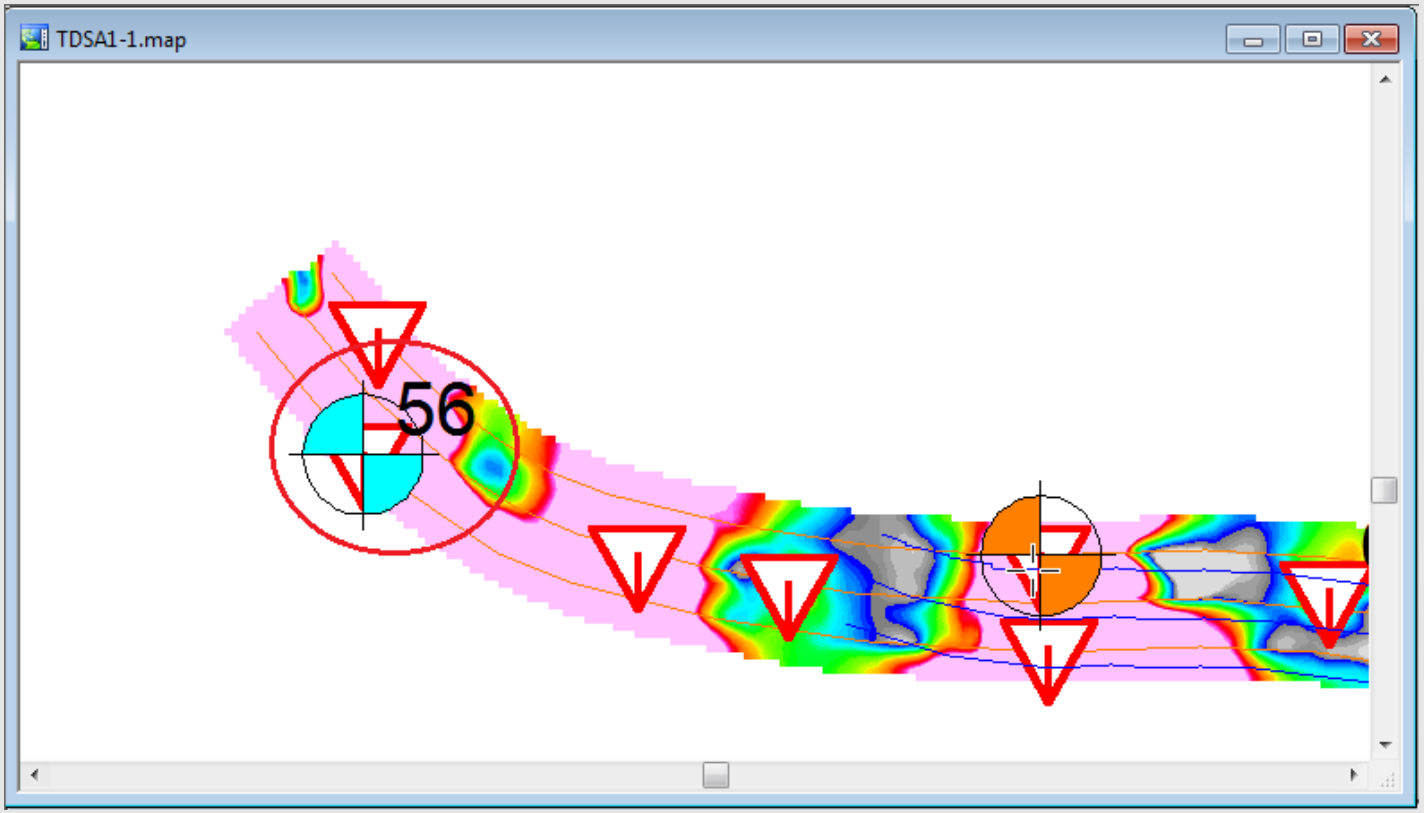
Block TDSA1-1 Transect TDSA1-4

ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
116	TDSA1-4	557221.7	4483560	470.552	mV
132	TDSA1-4	557239.8	4483554	54.746	mV
133	TDSA1-4	557240.2	4483552	72.527	mV
134	TDSA1-4	557242.4	4483554	48.326	mV



Block TDSA1-1 Transect TDSA1-5

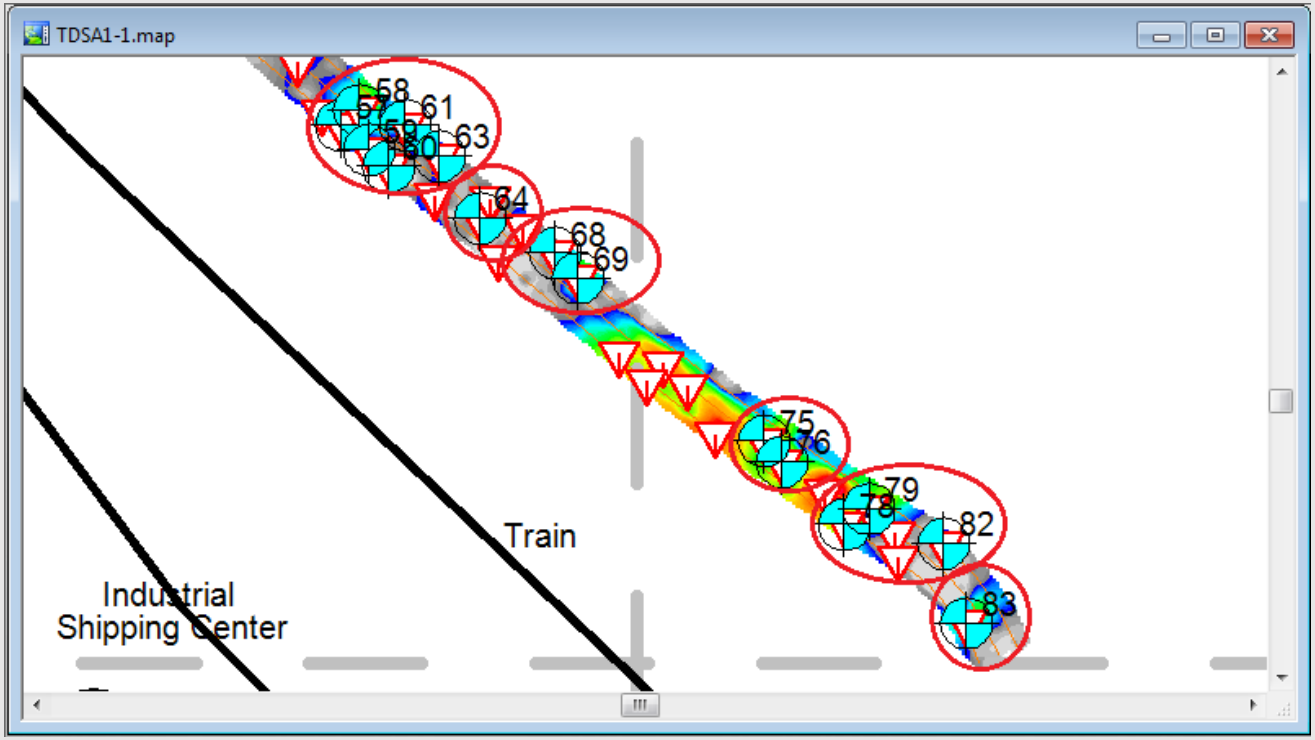
ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
56	TDSA1-5	557231.1	4483626	316.138	mV



Block TDSA1-1 Transect TDSA1-6

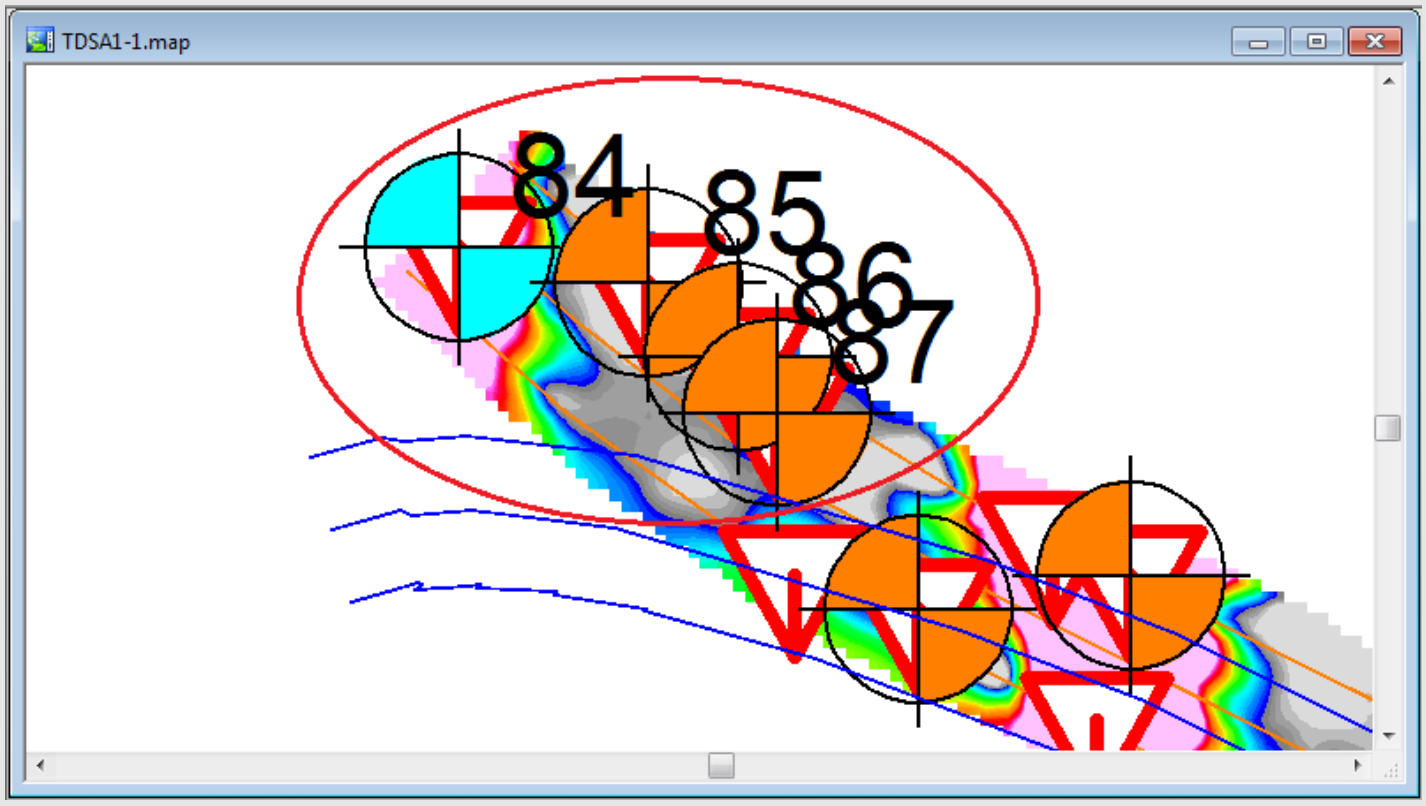
ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
57	TDSA1-6	557185.7	4483726	10.827	mV
58	TDSA1-6	557186.6	4483727	33.574	mV
59	TDSA1-6	557187	4483725	8.464	mV
60	TDSA1-6	557188	4483724	4.572	mV
61	TDSA1-6	557188.8	4483726	24.524	mV
63	TDSA1-6	557190.5	4483725	8.389	mV

ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
69	TDSA1-6	557197.2	4483719	13.791	mV
75	TDSA1-6	557206.2	4483711	33.075	mV
76	TDSA1-6	557207	4483710	26.745	mV
78	TDSA1-6	557210.1	4483707	29.522	mV
79	TDSA1-6	557211.3	4483707	29.735	mV



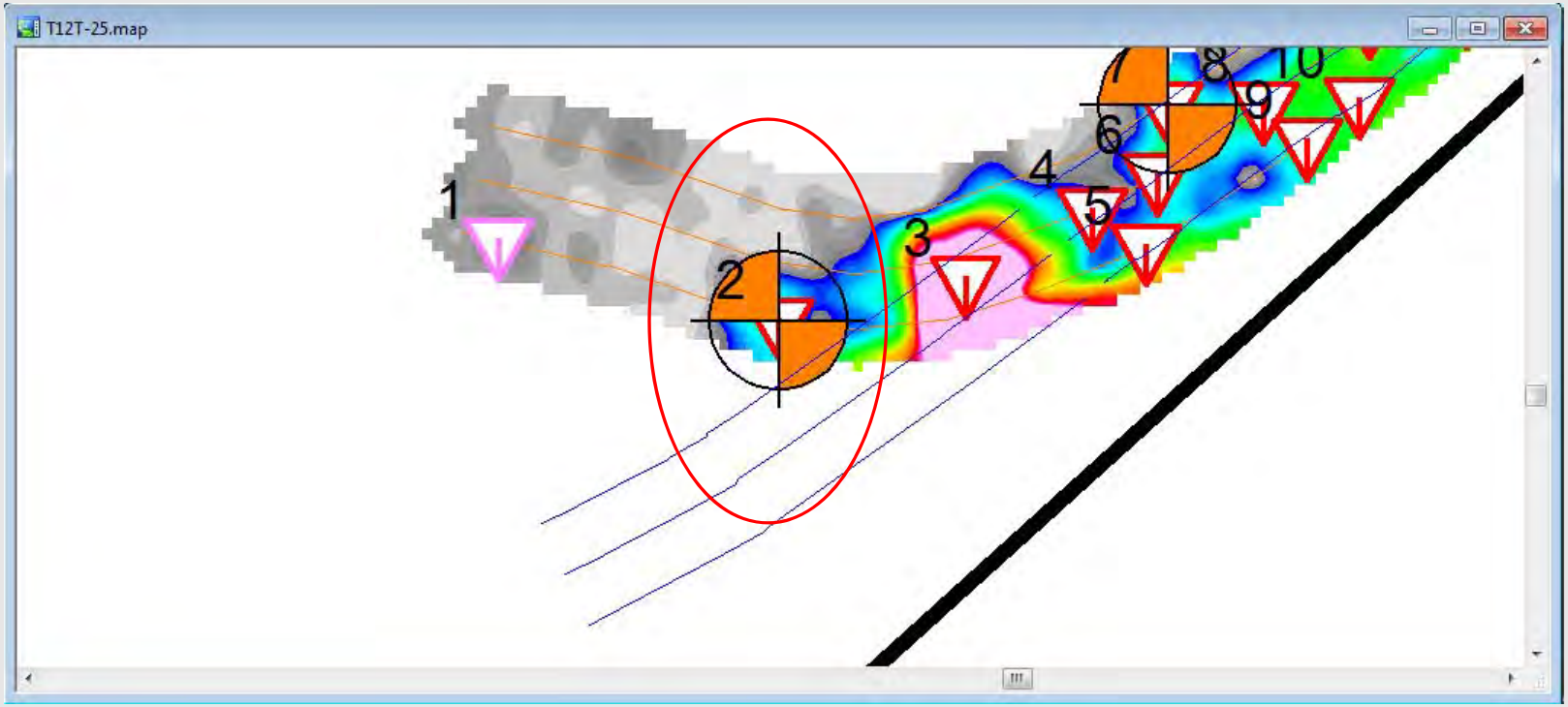
Block TDSA1-1 Transect TDSA1-6

ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
84	TDSA1-6	557235.6	4483731	107.408	mV
85	TDSA1-6	557238.2	4483730	16.92	mV
86	TDSA1-6	557239.3	4483729	5.482	mV
87	TDSA1-6	557239.9	4483728	4.898	mV



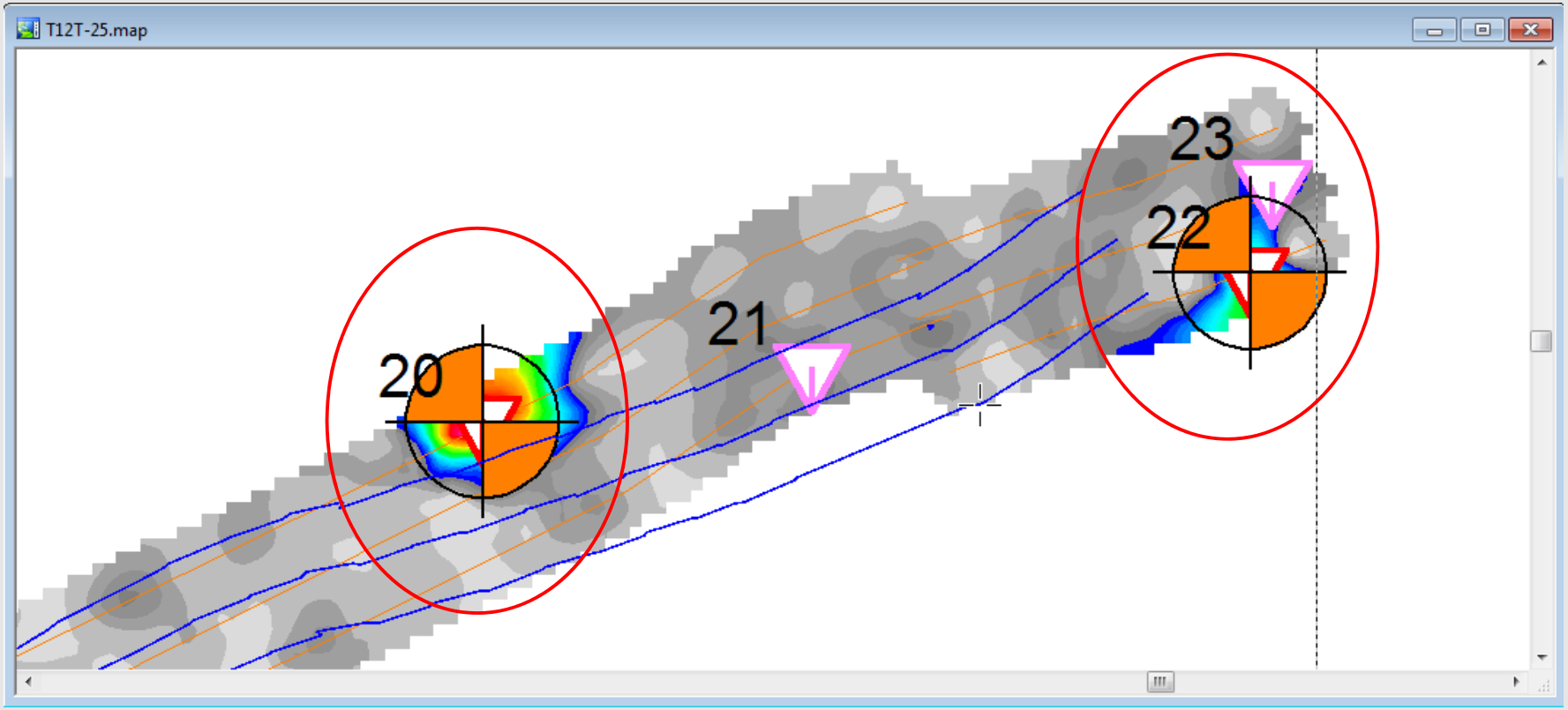
Block T12T-25 Transect T12T-8

ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
2	T12T-8	556454.382	4482278.85	15.05	mV



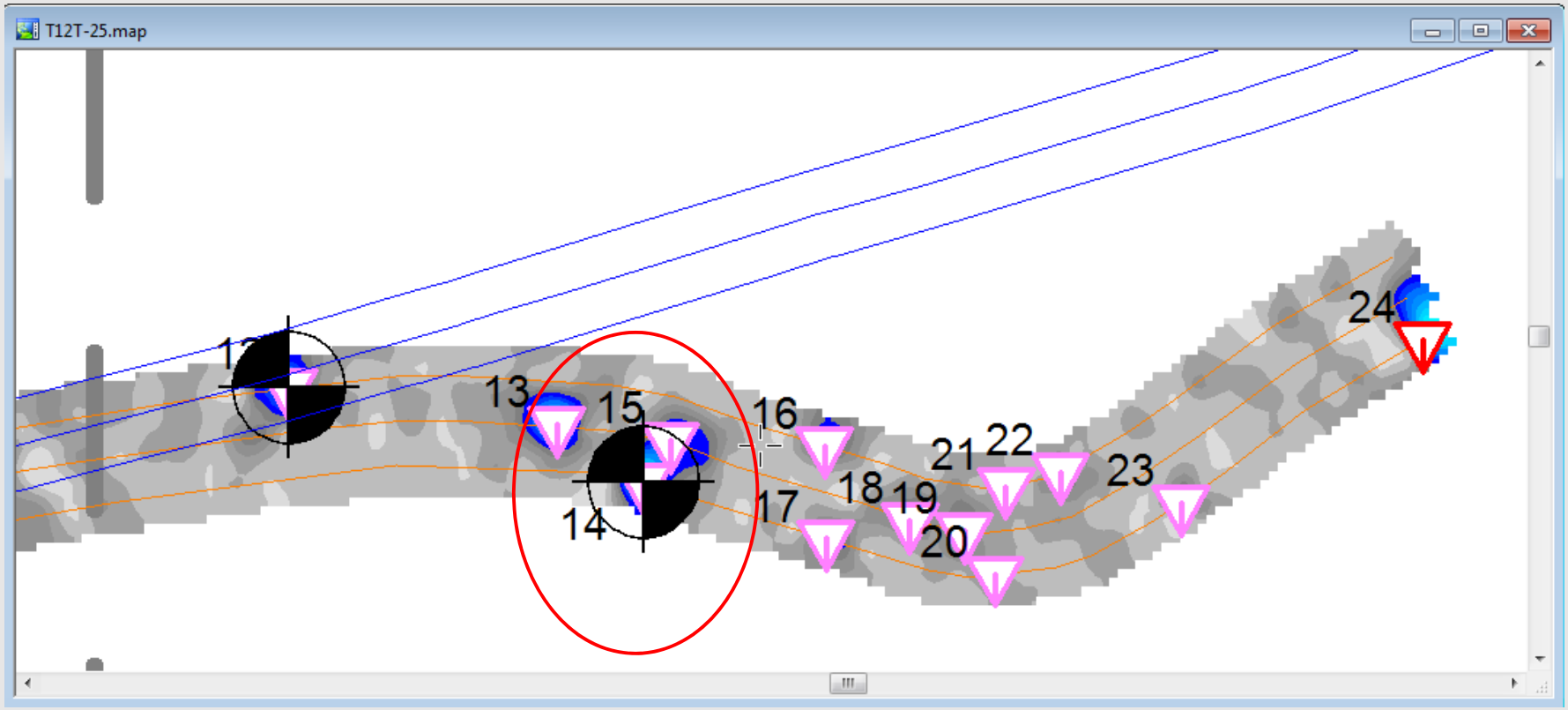
Block T12T-25 Transect T12T-9

ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
20	T12T-9	556564.513	4482352.035	43.339	mV
22	T12T-9	556577.076	4482354.471	20.209	mV



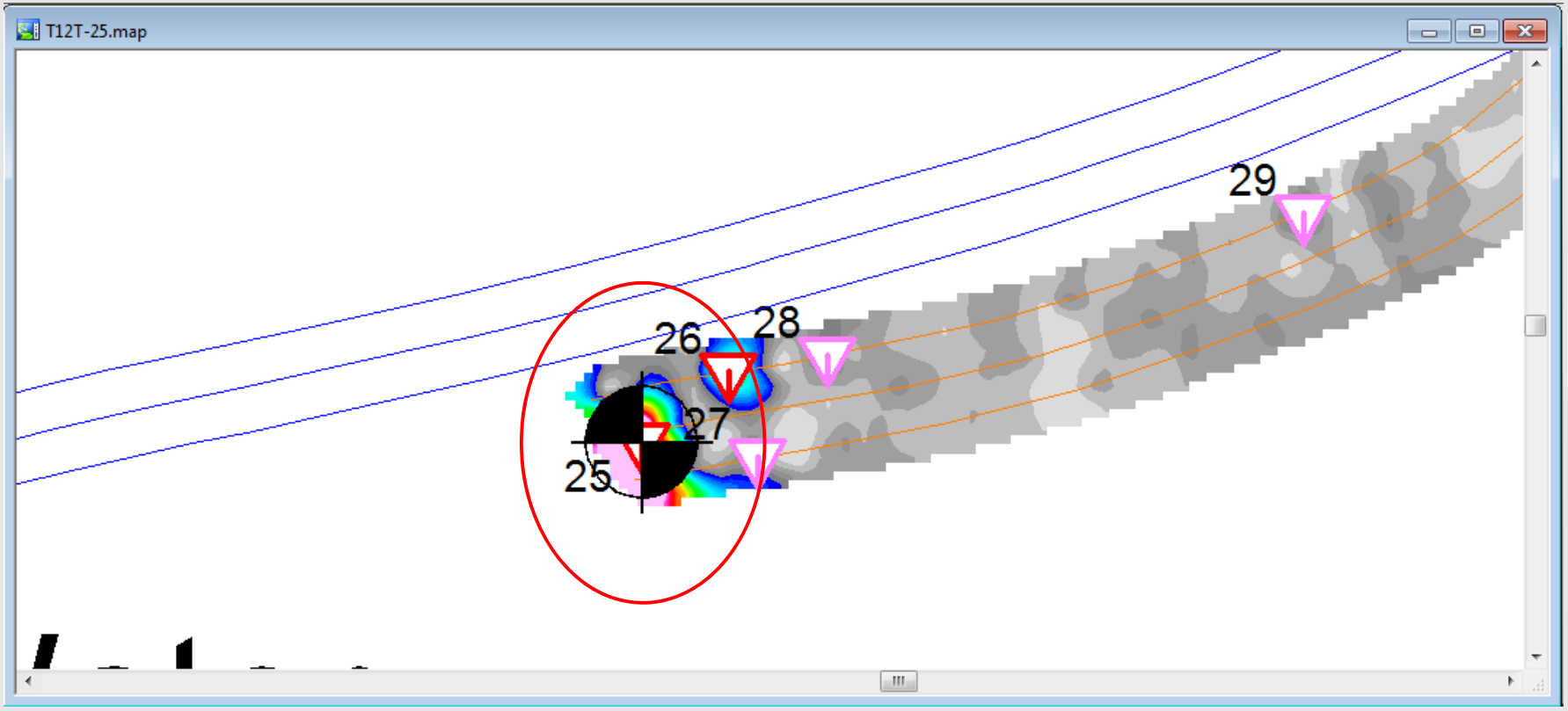
Block T12T-25 Transect T12T-9

ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
14	T12T-15	556312.305	4482359.074	11.94	mV



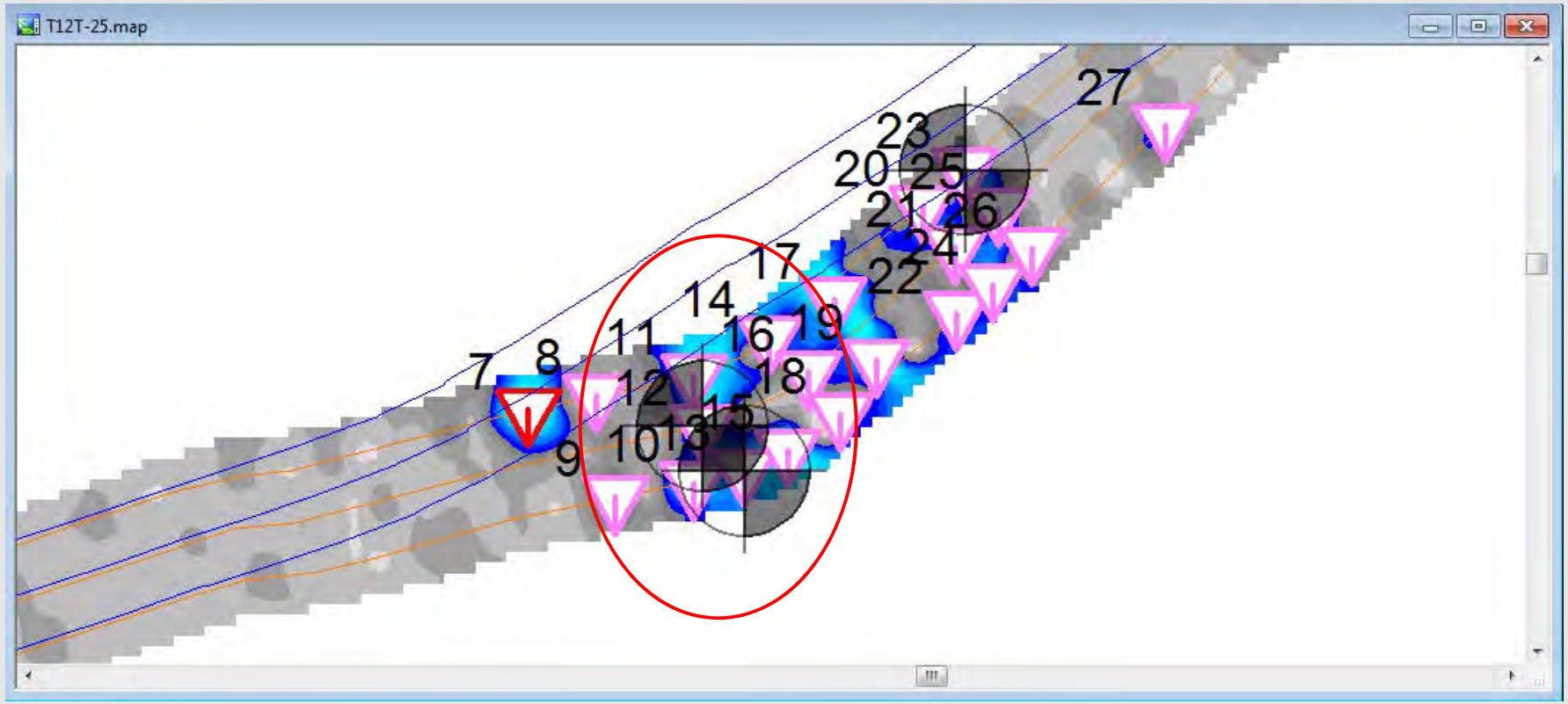
Block T12T-25 Transect T12T-9

ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
25	T12T-15	556355.02	4482372.97	89.813	mV



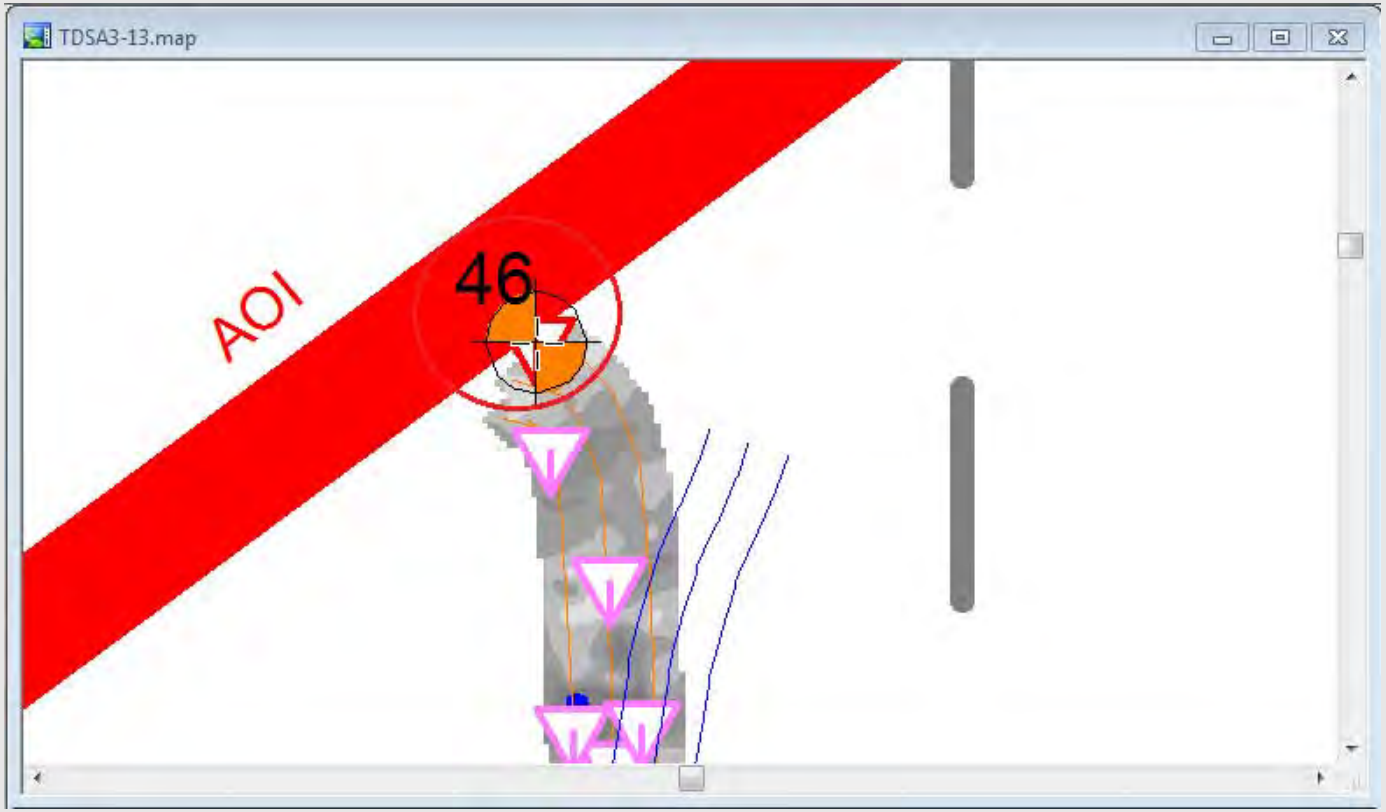
Block T12T-25 Transect T12T-16

ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
12	T12T-16	556333.792	4482403.381	4.981	mV
13	T12T-16	556353.157	4482409.536	4.04	mV



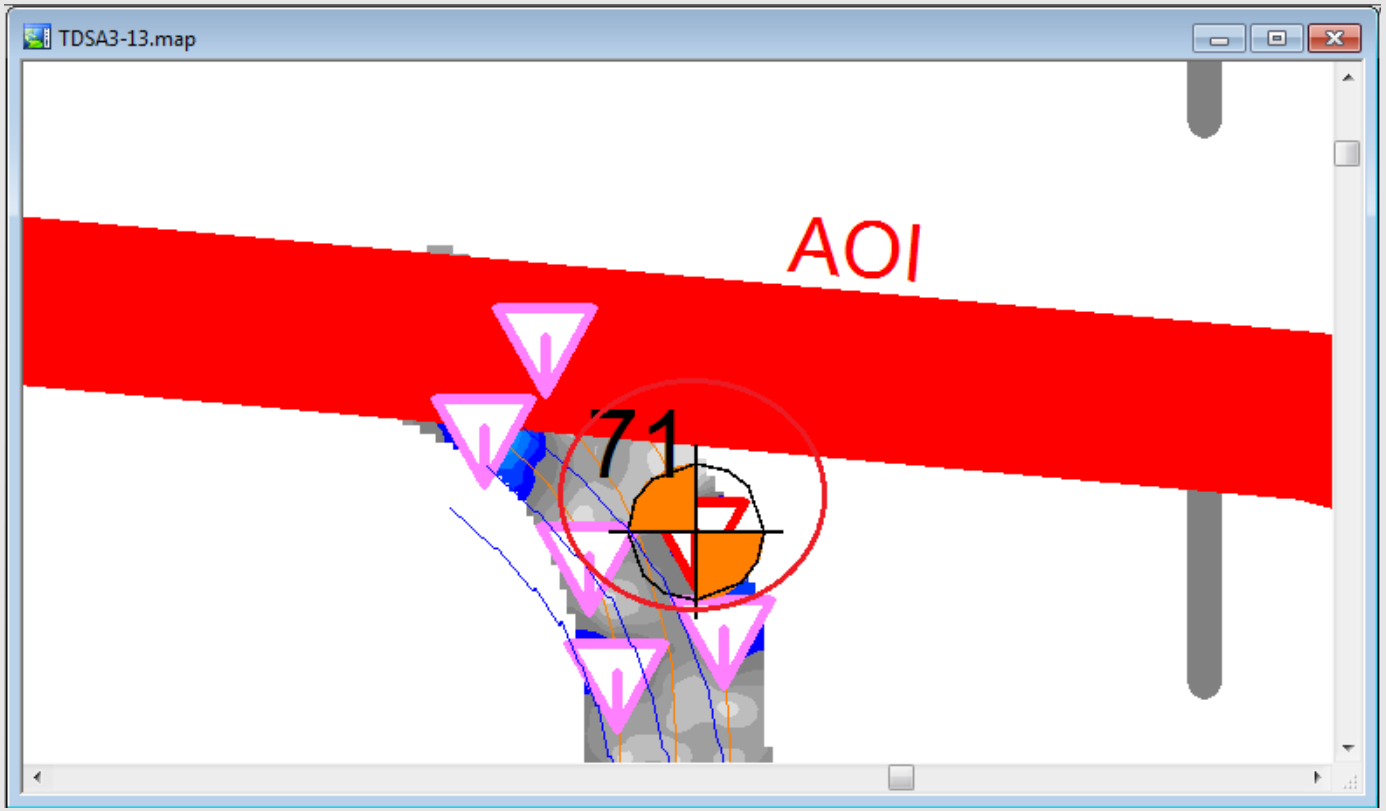
Block TDSA3-13 Transect TDSA3-9

ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
46	TDSA3-9	555789.7	4482577	6.864	mV



Block TDSA3-13 Transect TDSA3-12

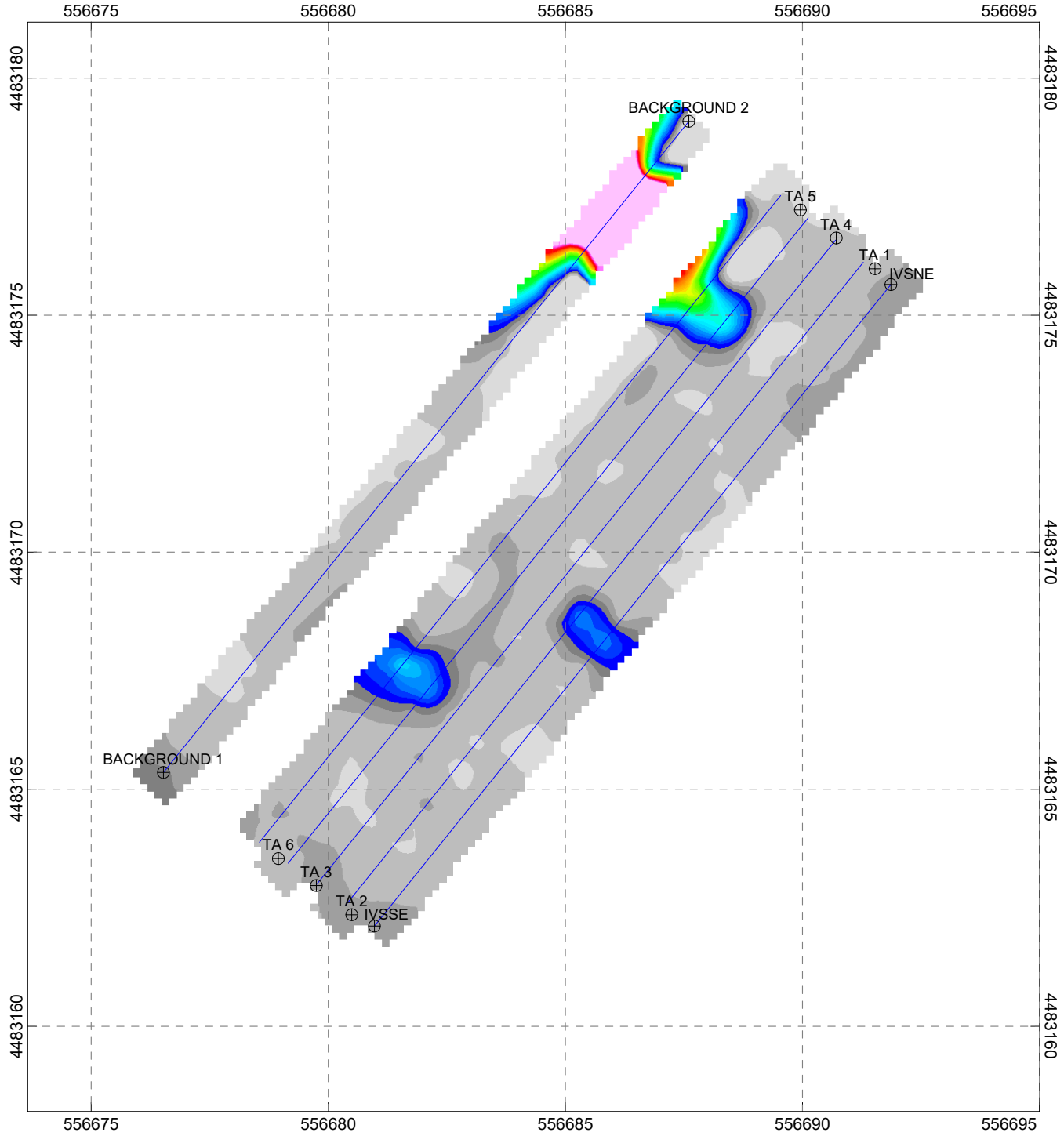
ID	GRIDCELLID	X1	Y1	AMPLITUDE	UNITS
71	TDSA3-12	556090.7	4482738	9.503	mV

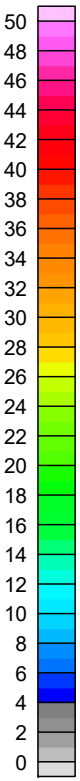


Appendix F

Initial IVS Background and 5 Line Sample Maps

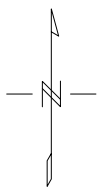
NAEVA GEOPHYSICS INC.
THE LEADER IN SUBSURFACE DETECTION
Subsurface Geophysical Surveys





Legend

- Target Location
- Survey Point
- Seed Location
- Line Path



2.5 0 2.5
(meters)
NAD83 / UTM zone 18N

Client: CH2M HILL

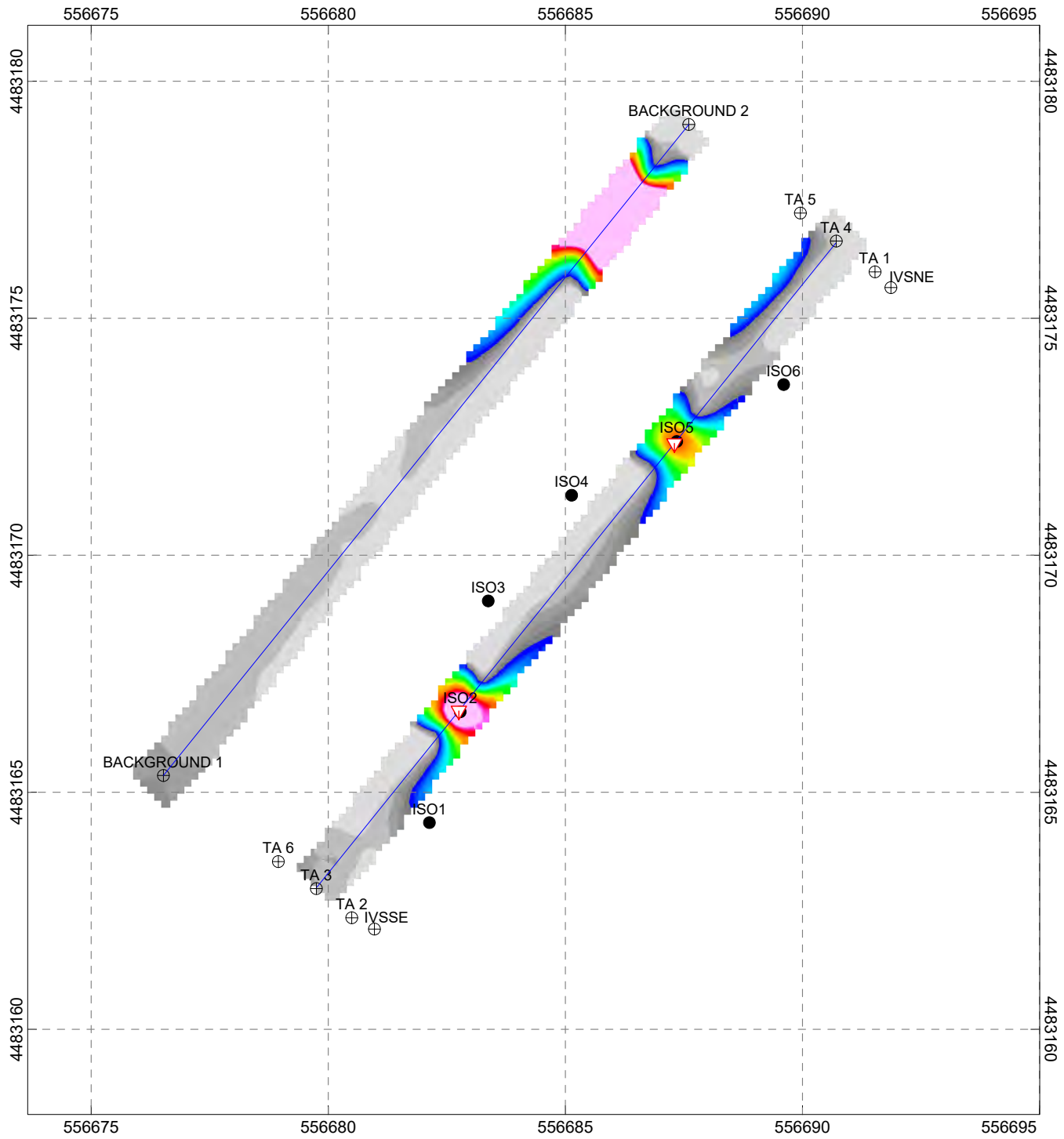
EM61 MK2 Bottom Coil - Person Portable
1203Background (IVS Test - 5 Line) Background
Geo A
Former Raritan Arsenal
Edison, Middlesex County, New Jersey

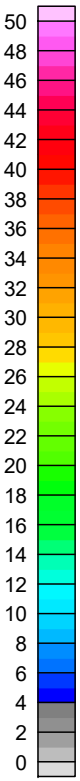
Date of Survey: 12/03/2013
Date of Map Creation: 12/05/2013

Map Approver: J. Guillard

CONTRACT: W912DY-09-D-0060 / TO: 003
NOVEMBER 2020

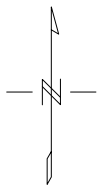
NAEVA GEOPHYSICS INC.
THE LEADER IN SUBSURFACE DETECTION
Subsurface Geophysical Surveys





Legend

- Target Location
- Survey Point
- Seed Location
- Line Path



2.5 0 2.5
(meters)
NAD83 / UTM zone 18N

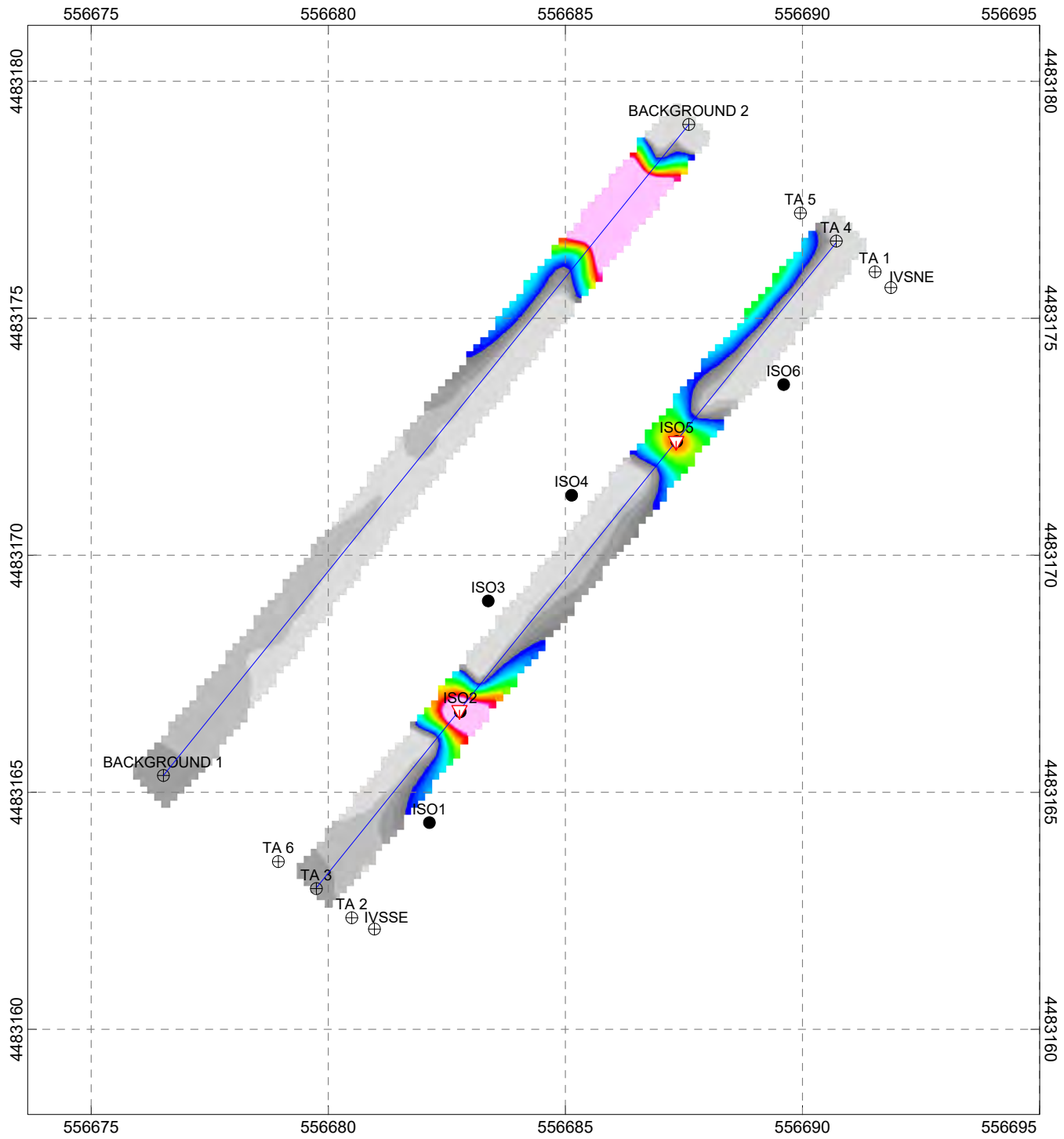
Client: CH2M HILL

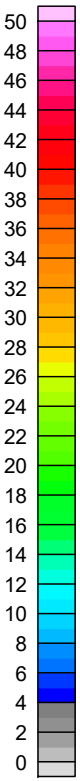
EM61 MK2 Bottom Coil - Person Portable
1205IVS1 (IVS Test - 2 Line) Seeded
DSA-2 Munitions Response Area - Geo A
Former Raritan Arsenal
Edison, Middlesex County, New Jersey

Date of Survey: 12/05/2013
Date of Map Creation: 12/06/2013

Map Approver: J. Guillard

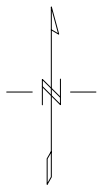
NAEVA GEOPHYSICS INC.
THE LEADER IN SUBSURFACE DETECTION
Subsurface Geophysical Surveys





Legend

- Target Location
- Survey Point
- Seed Location
- Line Path



2.5 0 2.5
(meters)
NAD83 / UTM zone 18N

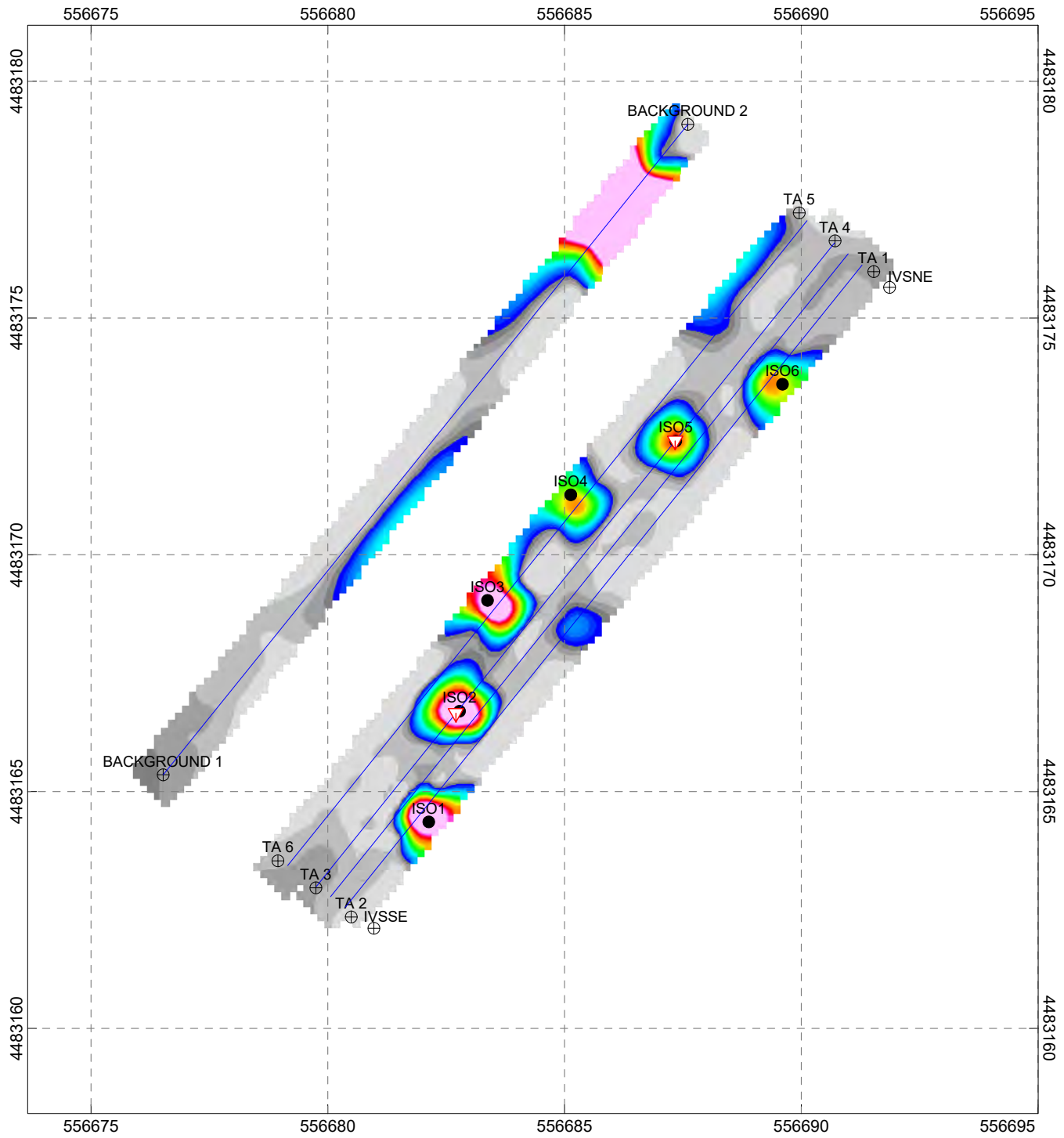
Client: CH2M HILL

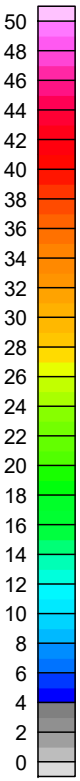
EM61 MK2 Bottom Coil - Person Portable
1205IVS2 (IVS Test - 2 Line) Seeded
DSA-2 Munitions Response Area - Geo A
Former Raritan Arsenal
Edison, Middlesex County, New Jersey

Date of Survey: 12/05/2013
Date of Map Creation: 12/06/2013

Map Approver: J. Guillard

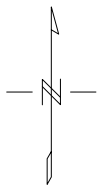
NAEVA GEOPHYSICS INC.
THE LEADER IN SUBSURFACE DETECTION
Subsurface Geophysical Surveys

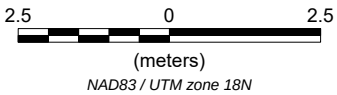




Legend

- Target Location
- Survey Point
- Seed Location
- Line Path





NAD83 / UTM zone 18N

Client: CH2M HILL

EM61 MK2 Bottom Coil - Person Portable
12035Line (IVS Test - 5 Line) Seeded
Geo A
Former Raritan Arsenal
Edison, Middlesex County, New Jersey

Date of Survey: 12/03/2013
Date of Map Creation: 12/05/2013

Map Approver: J. Guillard

CONTRACT: W912DY-09-D-0060 / TO: 003
NOVEMBER 2020

Appendix G

IVS Response Memorandum

NAEVA GEOPHYSICS INC.
THE LEADER IN SUBSURFACE DETECTION
Subsurface Geophysical Surveys

GPR
MAGNETICS
ELECTROMAGNETICS
SEISMICS
RESISTIVITY
UTILITY LOCATION
UXO DETECTION
BOREHOLE CAMERA
STAFF SUPPORT

IVS Response Memo

Digital Geophysical Mapping
Raritan Remedial Investigation/Feasibility Study

Date: February 26, 2014

To: Tamir Klaff, CH2M HILL's Project Geophysicist

Cc: Jon Guillard, NAEVA's QC Geophysicist

From: Karen Lemley, Geophysical Project Manager

RE: Varying Response over the ISO seeds in the IVS

This memorandum is intended to document the reason why the IVS seed responses have not been comparable from day to day since remobilization of the towed array system for data recollection for the Raritan Remedial Investigation project. When NAEVA's field crew mobilized back to Raritan to re-collect the towed array data on February 18th, there was approximately 10-15 inches of snow on the ground at the instrument verification strip (IVS). The IVS was collected and the data were turned over to CH2M HILL. There was a noticeable decrease in responses from the items as a result of the wheels riding on top of the snow, thus raising the height of the coil. See below table (IVS-04 was changed to a schedule 80 ISO as part of the TEMTADS system testing after the collection of the December 2013 data so it is no longer comparable).

	IVS-01		IVS-02		IVS-03		IVS-04		IVS-05		IVS-06	
	Dec-13	18-Feb	Dec-13	18-Feb	Dec-13	18-Feb	Dec-13	18-Feb	Dec-13	18-Feb	Dec-13	18-Feb
1st Pass	97.64	28.46	95.52	34.37	79.31	21.01	38.56	26.35	48.26	23.20	45.94	12.87
2nd Pass	99.00	32.26	99.75	39.12	90.71	25.29	43.42	27.36	48.85	26.77	44.58	15.10
Average	98.32	30.36	97.63	36.74	85.01	23.15	40.99	26.86	48.55	24.99	45.26	13.99
% Difference	-69.12%		-62.37%		-72.77%		-34.49%		-48.54%		-69.09%	

CH2M HILL had a call with USACE and it was decided to proceed with data collection. Since that time the snow has been melting and as of February 24th there was minimal snow left on the ground. The melting of the snow is lowering the height of the coils above the ground, thus the response of the ISOs are increasing. Below is the comparison between February 18th collection of the IVS and February 25th collection.

	IVS-01		IVS-02		IVS-03		IVS-04		IVS-05		IVS-06	
	18-Feb	25-Feb	18-Feb	25-Feb	18-Feb	25-Feb	18-Feb	25-Feb	18-Feb	25-Feb	18-Feb	25-Feb
1st Pass	28.46	78.71	34.37	95.41	21.01	70.285	26.35	111.39	23.20	58.093	12.87	33.29
2nd Pass	32.26	81.564	39.12	95.35	25.29	73.373	27.36	116.68	26.77	61.732	15.10	34.83
Average	30.36	80.14	36.74	95.38	23.15	71.83	26.86	114.03	24.99	59.91	13.99	34.06
% Difference	163.93%		159.60%		210.29%		324.61%		139.79%		143.50%	

Below is the comparison between December 2013 collection of the IVS and February 25th collection. As expected the response are much closer to the original values.

NEW YORK
225 N Route 303
Suite 102
Congers
New York 10920
(845) 268-1800
(845) 268-1802 Fax

VIRGINIA
P.O. Box 7325
Charlottesville
Virginia 22906
(434) 978-3187
(434) 973-9791 Fax

	IVS-01		IVS-02		IVS-03		IVS-04		IVS-05		IVS-06	
	Dec-13	25-Feb	Dec-13	25-Feb	Dec-13	25-Feb	Dec-13	25-Feb	Dec-13	25-Feb	Dec-13	25-Feb
1st Pass	97.64	78.71	95.52	95.41	79.31	70.285	38.56	111.39	48.26	58.093	45.94	33.29
2nd Pass	99.00	81.564	99.75	95.35	90.71	73.373	43.42	116.68	48.85	61.732	44.58	34.83
Average	98.32	80.14	97.63	95.38	85.01	71.83	40.99	114.03	48.55	59.91	45.26	34.06
% Difference	-18.49%		-2.31%		-15.50%		178.17%		23.39%		-24.74%	

Appendix H

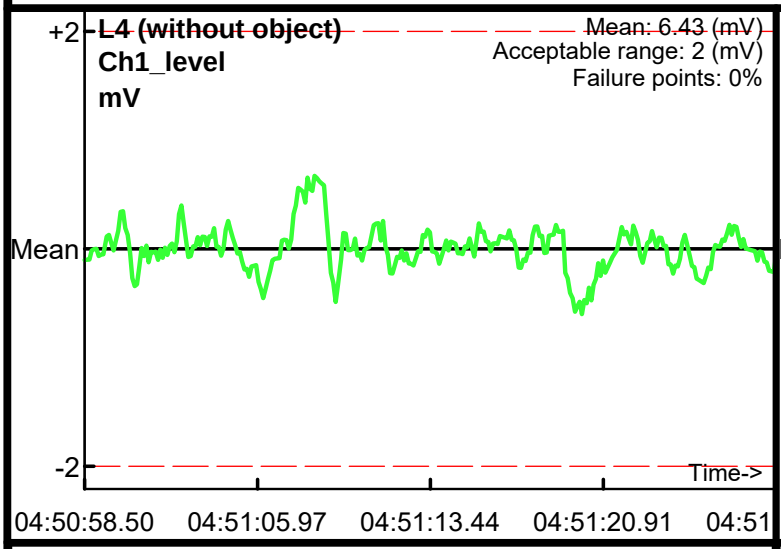
Sample Static Spike, Cable Shake, Personnel and Vehicle Test Figures

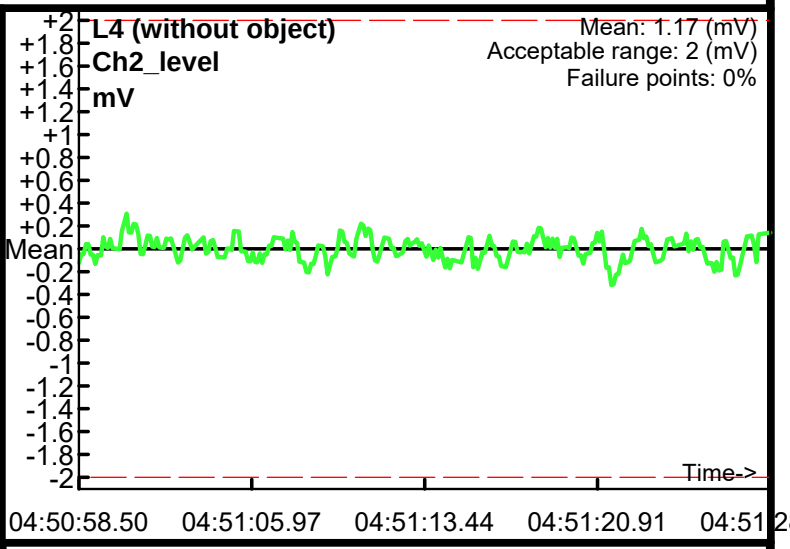
Static Calibration Test - Cable & Personnel Tests

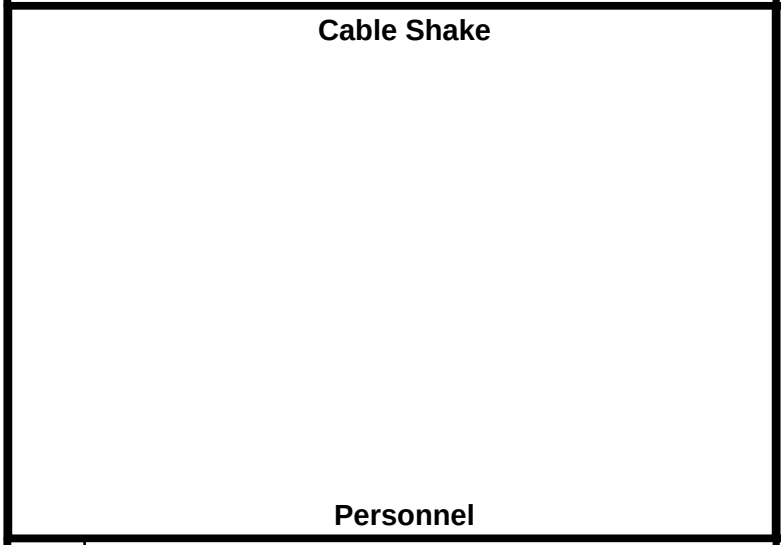
Project: Raritan Arsenal, New Jersey
Equipment: EM-61 Mark II
Grid/Location: QC Area

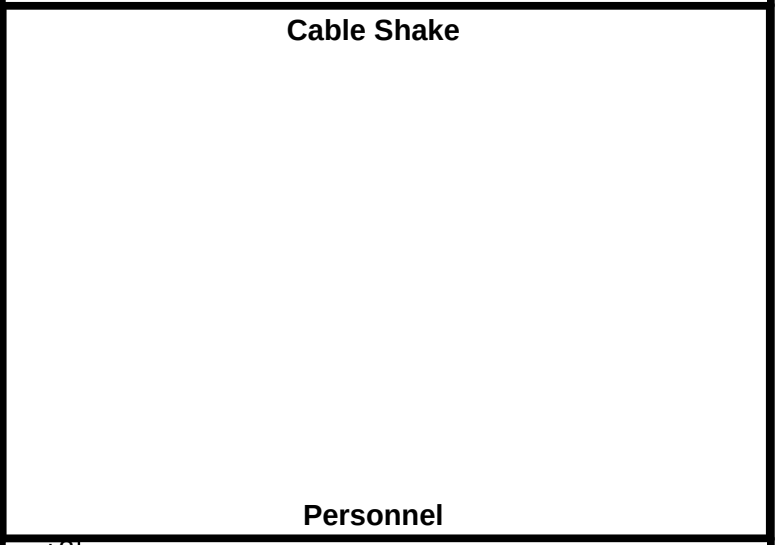
Outside range
Acceptable limits

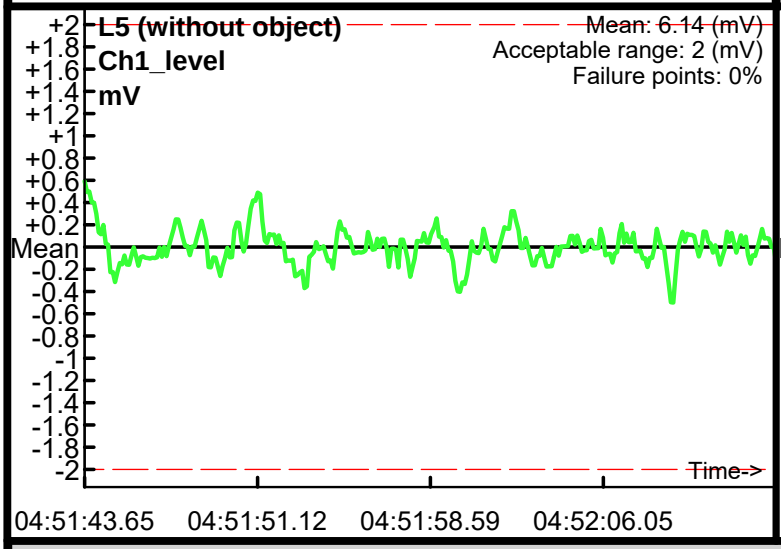
AM test
Operator: GeoA
Date: 03/25/2014

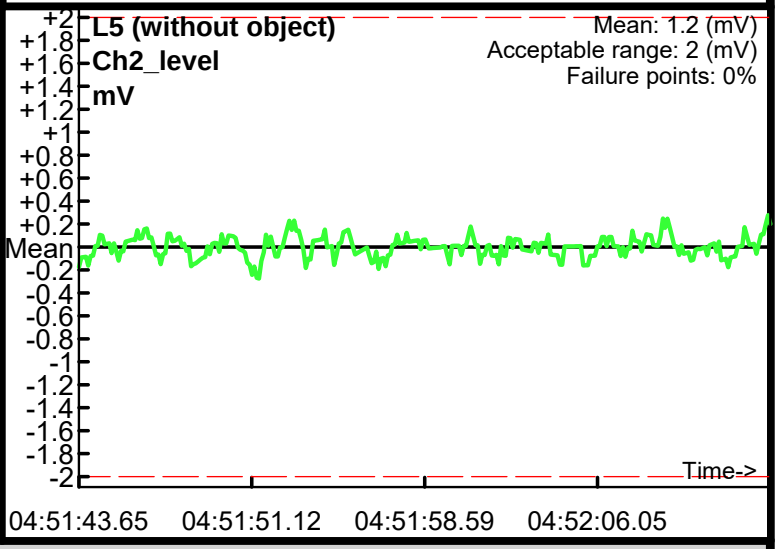












Database: c:\Projects\Raritan\Data\Geosoft\QC\032514_pp_qc1\0325QC1.gdb
Line Name: L4 L5 L5

Page: 1

Static Calibration Test

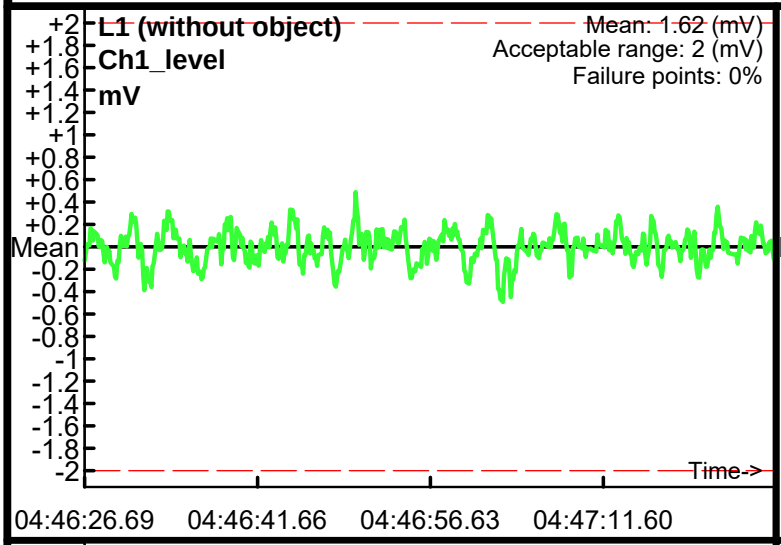
Mean Response Values
Ch1_level Without Object: 3.83
Ch1_level Signal Strength With Object: 39.30

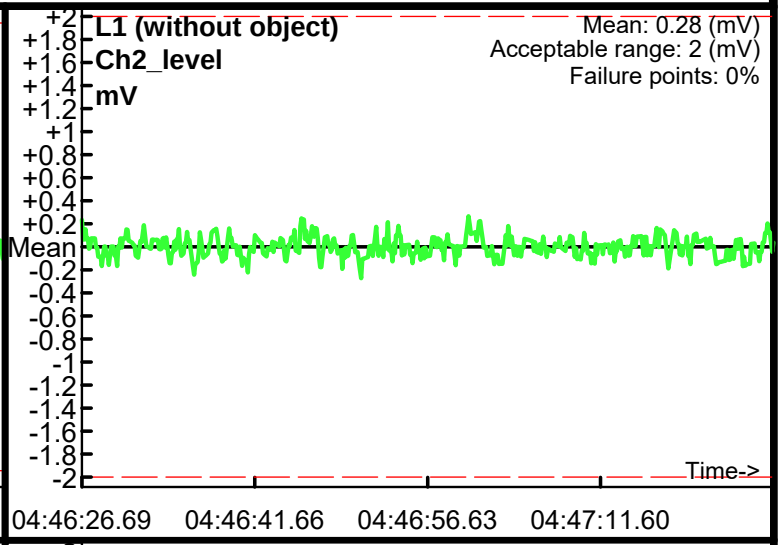
Mean Response Values
Ch2_level Without Object: 0.79
Ch2_level Signal Strength With Object: 21.80

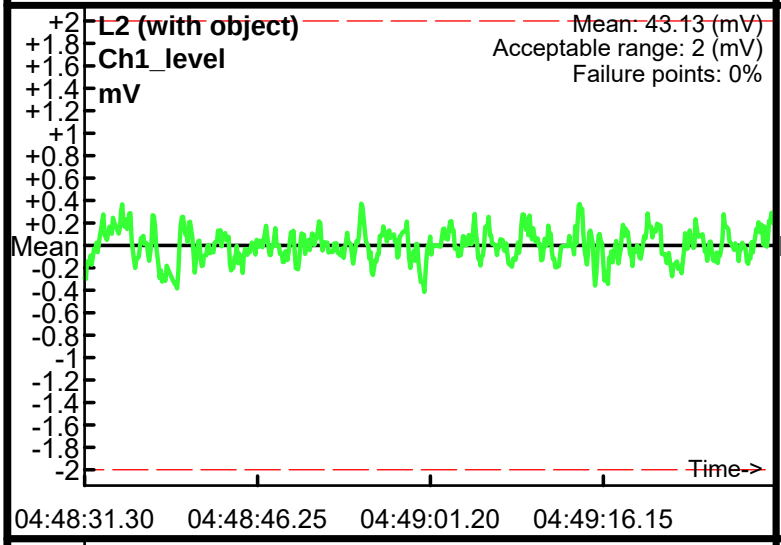
Project: Raritan Arsenal, New Jersey
Equipment: EM-61 Mark II
Grid/Location: QC Area

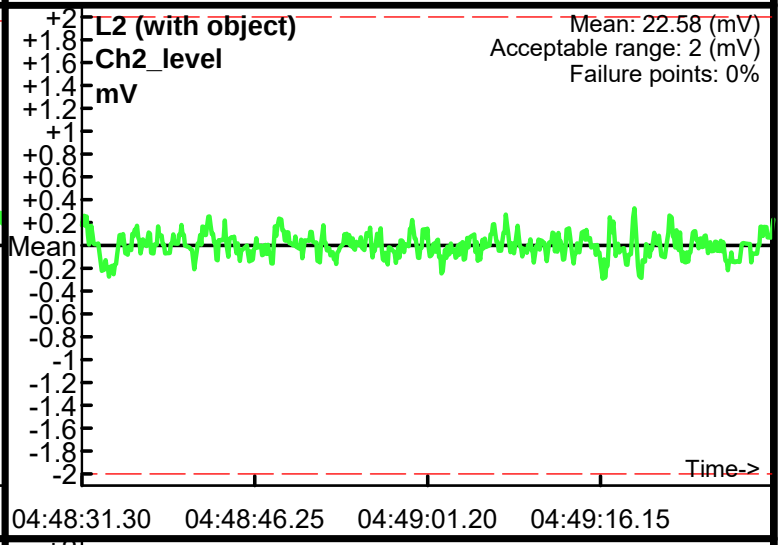
Outside range
Acceptable limits

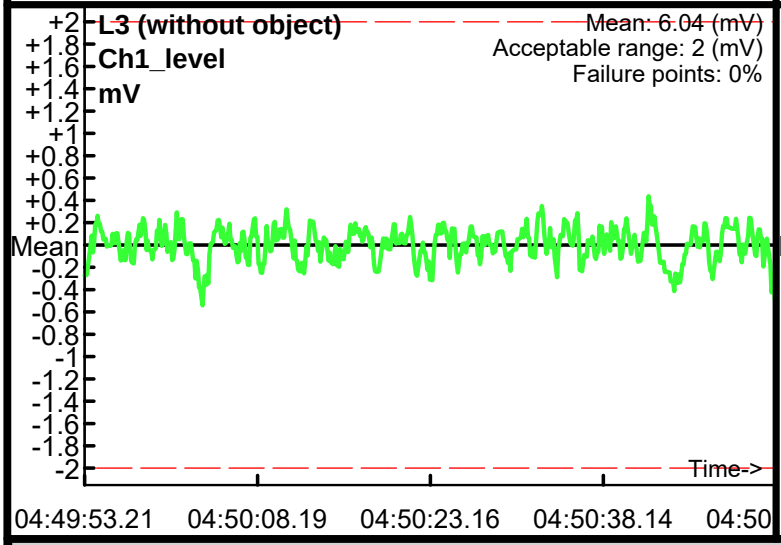
AM test
Operator: GeoA
Date: 03/25/2014

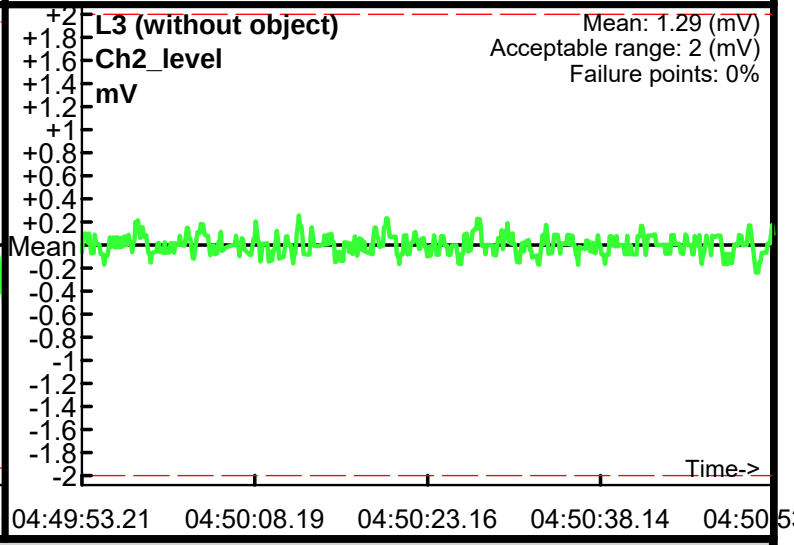












Database: c:\Projects\Raritan\Data\Geosoft\QC\032514_pp_qc1\0325QC1.gdb
Line Name: L1 L2 L3

Page: 1

Appendix B
Instrument Verification Strip Report

Draft

EM61-MK2 Instrument Verification Strip Report for the Remedial Investigation/Feasibility Study

Former Raritan Arsenal
Edison, New Jersey

FUDS Property Number: TBD
FUDS Project Number: C02NJ008403

January 2014

Geographical District: US Army Corps of Engineers - New York District

Contract: W912DY-09-D-0060
Task Order: 003

Prepared for:

US Army Engineering and Support Center, Huntsville

Prepared by:

1000 Abernathy Road
Suite 1600
Atlanta, Georgia 30328

Contents

1 Introduction……1-1

2 Instrument Verification Strip Location and Setup……2-1

3 Instrument Verification Strip Surveys and Results……3-1
3.1 Instrument Verification Strip Surveys 3-1
3.2 Results 3-2
3.2.1 Single-Coil Person Portable EM61-MK2 with Fiducial Positioning 3-2
3.2.2 Triple-Coil Towed Array EM61-MK2 with RTK-GPS Positioning 3-5
3.2.3 Single-Coil Person Portable EM61-MK2 with RTK-GPS Positioning 3-7

4 Quality Control and Measurement Quality objectives……4-1

5 Conclusions……5-1

Figures (included within each section)

2-1 IVS Location
2-2 IVS Background Survey
2-3 Small Industry Standard Object
2-4 IVS As-Built Layout
2-5 IVS As-Built Photograph

3-1 Triple-Coil Towed-Array EM61-MK2 IVS Survey
3-2 Single-Coil Person-Portable EM61-MK2 (Fiducial Positioning) IVS Survey Results
3-3 Person-Portable (Fiducial Positioning) Static Test Result Compared to Predicted Small Horizontal ISO Response
3-4 Triple-Coil Towed Array EM61-MK2 (RTK-GPS Positioning) IVS Survey Results
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3-2 Towed Array (RTK-GPS Positioning) IVS Seed Item Response Characteristics
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5-1 Measurement Quality Objectives and IVS Results

SECTION 1

Introduction

1.0.1 CH2M HILL is performing a Remedial Investigation and Feasibility Study (RI/FS) focused on Areas 1, 6, 6A, 6B, 9, 10, 11, 12, 13, 16, 18D, 19, and the Dredge Spoils Area (DSA) at the Former Raritan Arsenal in Edison, New Jersey. This document was prepared for the U.S. Army Engineering and Support Center, Huntsville, Alabama (CEHNC) as part of Contract Number W912DY-09-D-0060, Task Order 0003, and the U.S. Army Corps of Engineers (USACE) New York and New England Districts to document the initial phase of the investigation to locate and characterize munitions and explosives of concern (MEC) and material potentially presenting an explosive hazard (MPPEH) in the subsurface at the Former Raritan Arsenal.

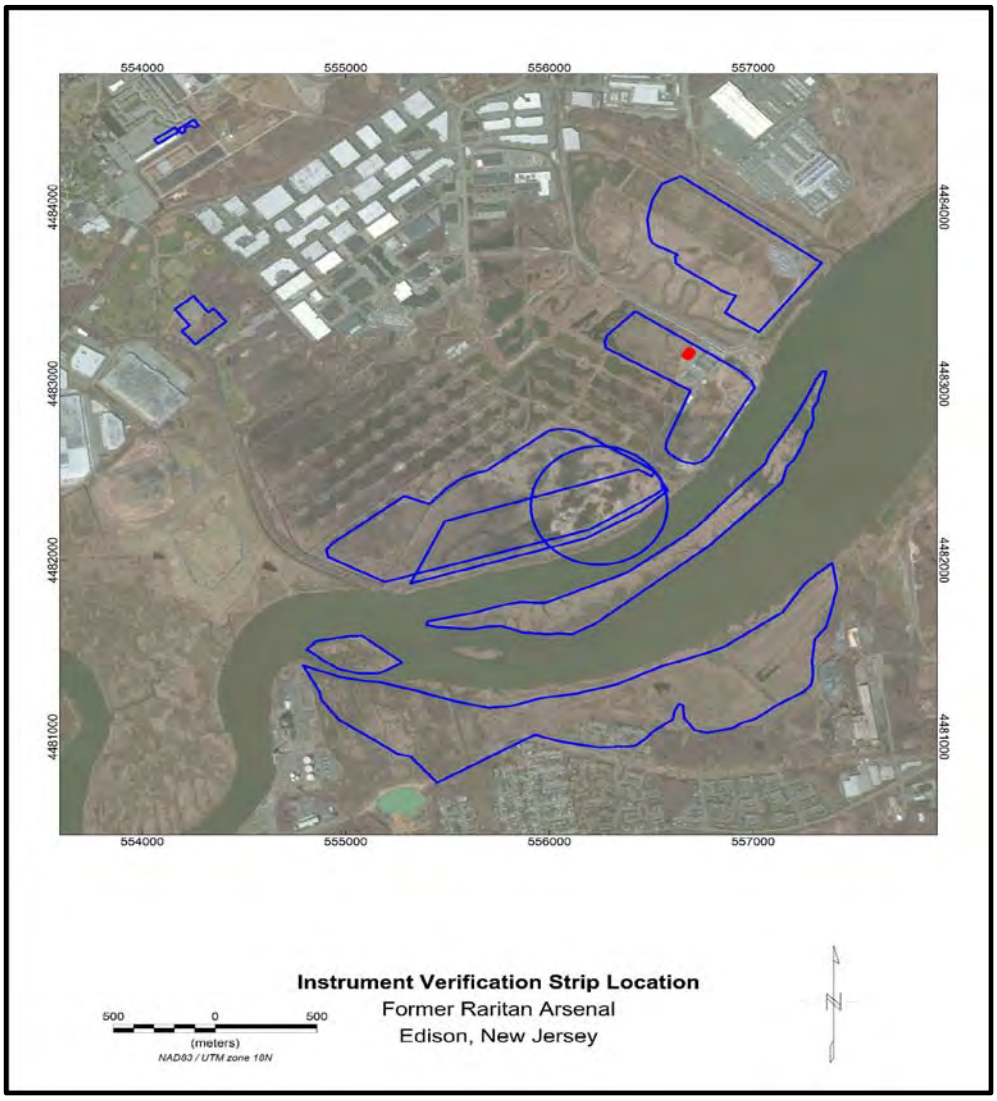
1.0.2 CH2M HILL employed a two-stage physics-based verification process in which signal strength and sensor performance were demonstrated initially by static and dynamic tests on a test strip and throughout the survey with a blind seeding program. The initial phase involved verification of both the single-coil person-portable Geonics Ltd. EM61-MK2 digital geophysical mapping (DGM) system and the three-coil vehicular towed array EM61-MK2 DGM system using an instrument verification strip (IVS). The second phase involved the burial of small industry standard objects (ISOs) within the investigation areas to demonstrate the continued effectiveness of the system and of the survey methodology. The results of the blind seeding program will be discussed in the final RI Report. The IVS process followed the Geophysical System Verification (GSV) Plan presented in Appendix F of the Remedial Investigation Work Plan.

SECTION 2

Instrument Verification Strip Location and Setup

2.0.1 On December 3, 2013, the CH2M HILL Quality Control (QC) Geophysicist and Unexploded Ordnance Quality Control Manager (UXOQCM) established an IVS at the location in Dredge Spoils Area (DSA) #2 marked in red on Figure 2-1. A Trimble R8 Global Navigation Satellite System (GNSS) receiver was utilized for data positioning[1], with a Trimble R8 base station on the "A-701" control point, which was established by Vargo Associates, the project licensed New Jersey professional land surveyor (PLS). The real-time kinematic (RTK) global positioning system (GPS) was tested at a previously-installed survey stake ("TDSA2-6B") prior to recording the IVS coordinates and found to be accurate within 1 centimeter (cm).

FIGURE 2-1
IVS Location



[1] All coordinates reported in this document and in the IVS data are accurate to the North American Datum of 1983 (NAD83) Universal Transverse Mercator (UTM) Zone 18 North (meters) coordinate system.

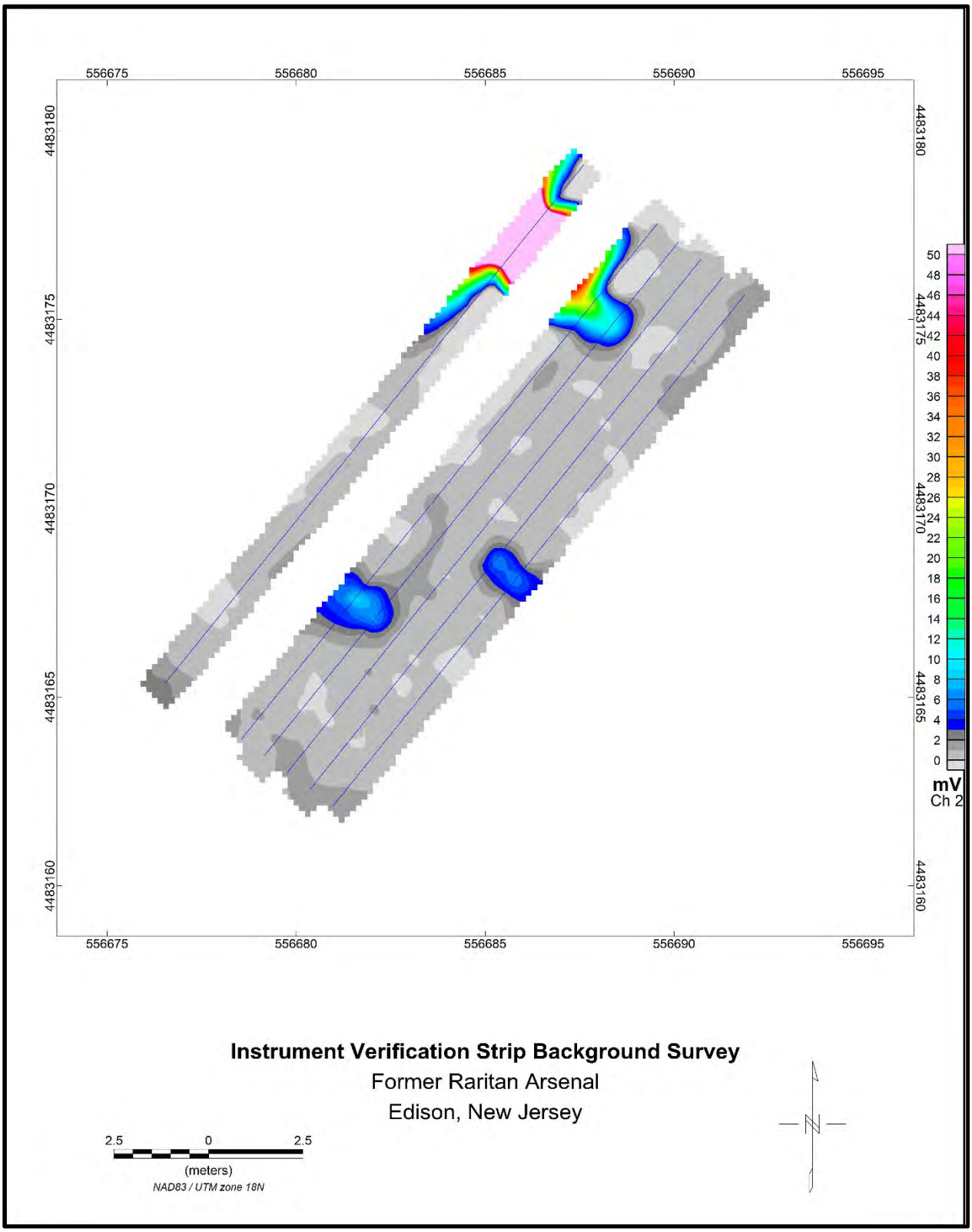
2.0.2 Prior to each IVS geophysical survey, daily QC tests were performed with the EM61-MK2 systems, as described in the Remedial Investigation Work Plan. The following daily functional tests were conducted:

- **Equipment Warm-up**. The EM61-MK2 systems were allowed to warm up for more than 10 minutes prior to beginning QC tests and data collection.
- **Record Sensor Positions**. The R8 GPS rover antenna was positioned over a known point ("TDSA2-6B"), and its location was recorded to demonstrate the system positioning accuracy.
- **Personnel Test.** To verify that all personnel operating or working within close proximity to the survey platforms were free of magnetic and/or conductive material that could potentially affect the survey data, the EM61-MK2 systems were checked for any response to the personnel operating the systems. Data was recorded continuously for the duration of the test as each system operator approached the instrument receiving coils to identify objects on the operator's person that could affect the survey data. The response was observed in the field for immediate corrective action, and transmitted back to the data processor, where it was analyzed and checked for spikes in the data that could result in false anomalies.
- **Cable Shake Test.** To ensure that movement of cables on the survey equipment did not introduce significant noise, and that there were no loose connections or shorts in cables that could introduce noise spikes, data were continuously recorded in a static location as each system cable and connection was shaken. The response was observed in the field for immediate corrective action and transmitted back to the data processor, where it was analyzed and checked for spikes in the data that could result in false anomalies.
- **Static Background and Static Spike**. The static test was performed by positioning the EM61-MK2 systems in an area free of metallic contacts and collecting data for a 3-minute period. During this time, the instruments were held in a fixed position for 1 minute to measure the background response, then for 1 minute with a small ISO spike at a precisely measured orientation and distance (43 cm) from each sensor coil, and finally for 1 minute without the ISO to again measure the system response to background conditions. The purpose of the static test was to determine whether unusual levels of instrument or ambient noise existed.

2.0.3 As part of the IVS survey, the repeat data functional test was also conducted. This test was performed to verify repeatability of the data after the initial survey over the IVS by resurveying the line over the seeded IVS items. The initial repeat data test was conducted at the IVS, where line paths are well constrained, because repeatability of the survey data is generally high. Due to the intrinsic difficulty of following the exact path for collecting repeat data, however, especially under field survey conditions, this test is a qualitative comparison as opposed to a quantitative comparison.

2.0.4 After the instrument QC tests were performed, the single-coil person portable EM61-MK2 system was used to conduct a background survey of the general area identified by CH2M HILL as a potential location for the IVS. The location was not entirely free from geophysical anomalies, however, there was sufficient space between existing anomalies for the placement of the IVS seed items. The background survey over the selected plot is shown on Figure 2-2.

FIGURE 2-2
IVS Background Survey



2.0.5 The CH2M HILL Quality Control Geophysicist buried six IVS seed items as specified in the GSV Plan. All seed items were small schedule 40 ISOs, as shown on Figure 2-3. The seed item locations were confirmed to be clear of geophysical anomalies by the CH2M HILL UXOQCM prior to emplacement. After placement of the items, the locations were recorded using the Trimble R8 RTK GPS**.** The locations, depths and orientations of the IVS seed items are shown in Table 2-1. An as-built map of the IVS is shown on Figure 2-4, and a photograph of the IVS in presented on Figure 2-5.

FIGURE 2-3
Small Industry Standard Object

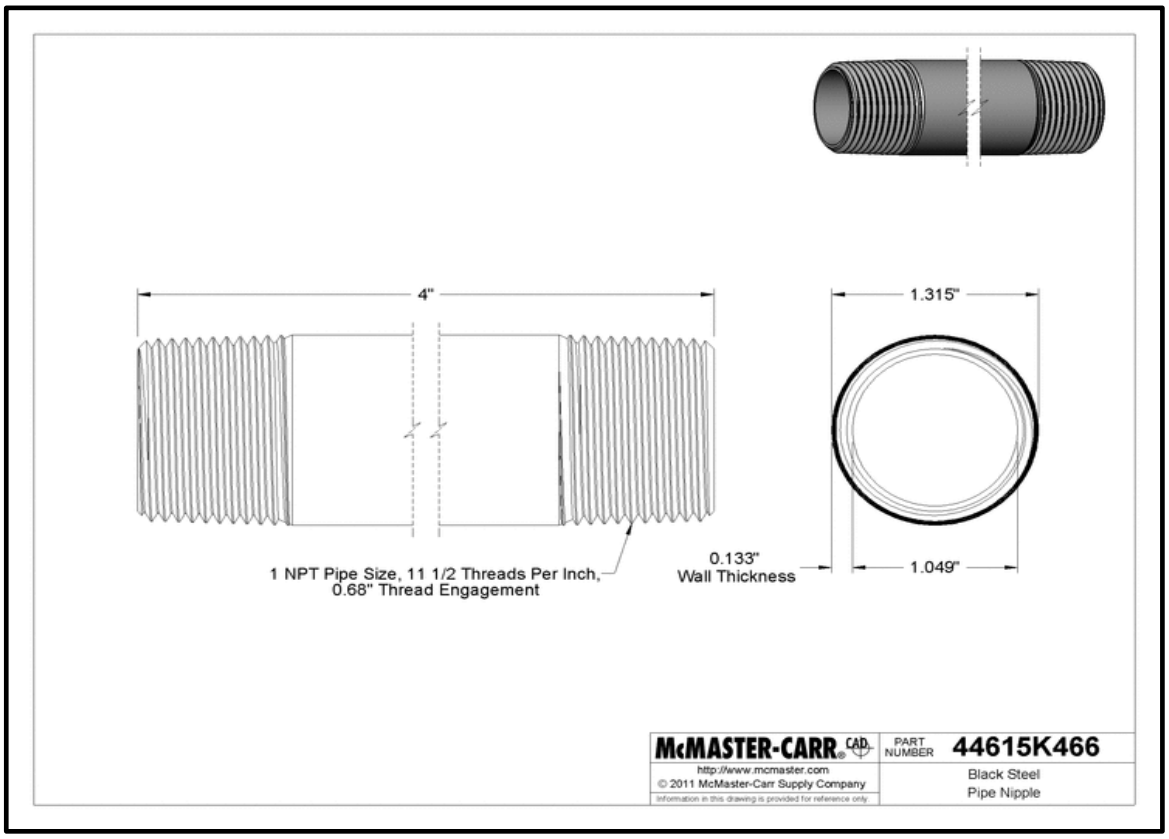


TABLE 2-1
IVS Coordinates

Point ID	Easting (m)[1]	Northing (m)[1]	Item Depth[2] (cm)	Item Orientation	Description
ISO 1	556682.1326	4483164.360	10	Vertical	Small ISO
ISO 2	556682.7826	4483166.697	10	Vertical	Small ISO
ISO 3	556683.3733	4483169.037	10	Vertical	Small ISO
ISO 4	556685.1326	4483171.266	23	Vertical	Small ISO
ISO 5	556687.3485	4483172.400	23	Vertical	Small ISO
ISO 6	556689.6046	4483173.601	23	Vertical	Small ISO

Notes:

[1] All coordinates in North American Datum of 1983 (NAD83), Universal Transverse Mercator (UTM), Zone 18N, meters.
[2] Measured from ground surface to center of mass of item.

FIGURE 2-4
IVS As-Built Layout

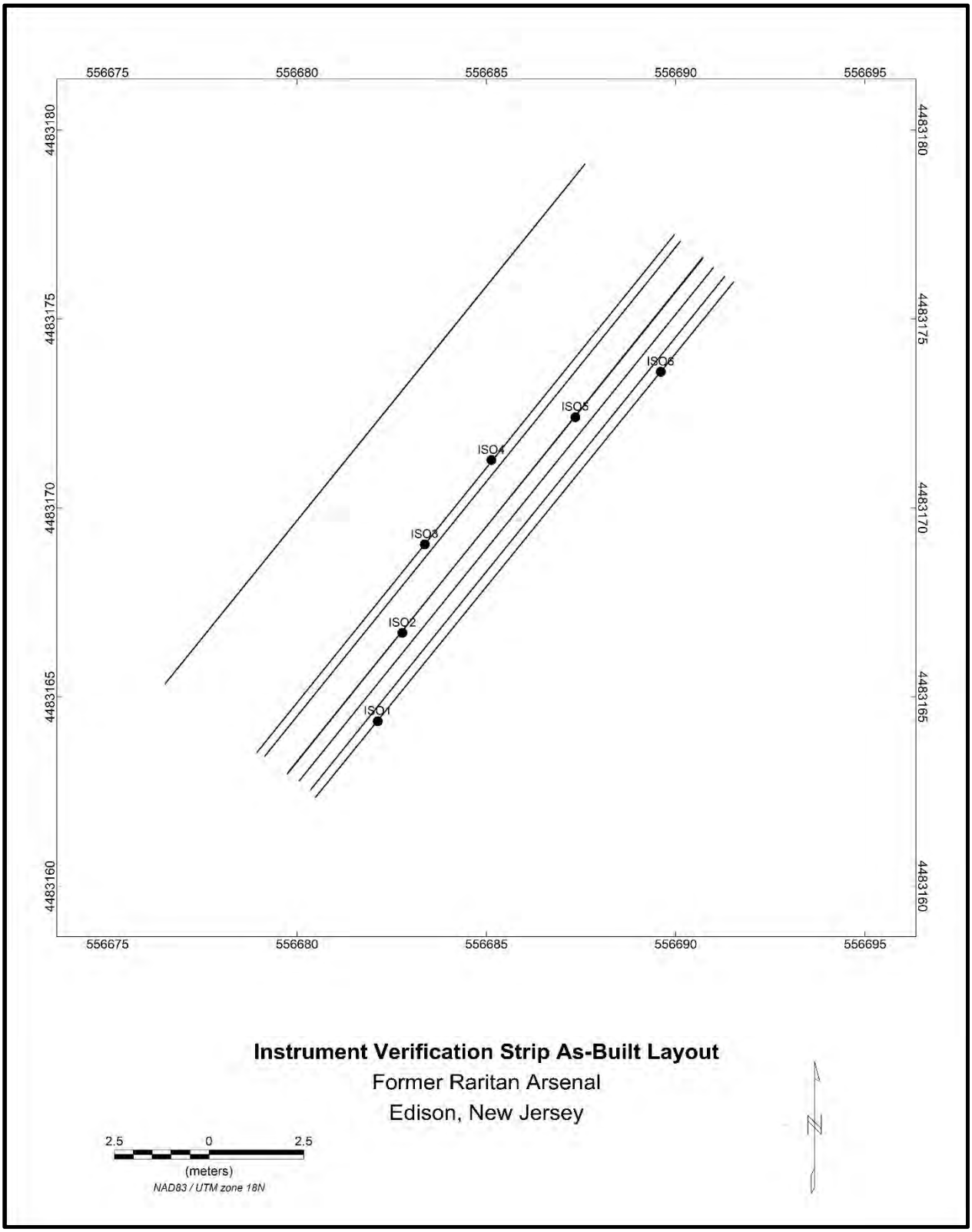


FIGURE 2-5
IVS As-Built Photograph



SECTION 3

Instrument Verification Strip Surveys and Results

3.1 Instrument Verification Strip Surveys

3.1.1 Initial IVS surveys were conducted with three separate EM61-MK2 systems for use in the Former Raritan Arsenal DGM surveys. The single-coil person-portable systems were validated with a standard 5-line IVS survey as described in the GSV Plan. The primary line in the person-portable IVS surveys passed directly over 2 buried seed items (ISO 2 and ISO 5). The triple-coil towed array system was validated with a survey over the IVS in which each coil in the array passed directly over 2 buried seed items. Abbreviated IVS surveys were conducted with each EM61-MK2 system on a twice-daily basis when that system was in use as a continuing verification of the dynamic performance of the system.

3.1.2 The following EM61-MK2 systems were validated at the IVS:

- a single-coil person-portable system utilizing fiducial positioning methods
- an RTK-GPS-positioned triple-coil towed array system towed behind an Argo utility task vehicle
- a single-coil person-portable system with RTK-GPS positioning

3.1.3 The single-coil person-portable system utilizing fiducial positioning methods and the triple-coil towed array system were both validated on December 3, 2013. The IVS survey with the single-coil person-portable system was conducted on December 13, 2013. The triple-coil system towed behind the Argo utility task vehicle is shown on Figure 3-1 conducting the IVS survey.

FIGURE 3-1
Triple-Coil Towed-Array EM61-MK2 IVS Survey



3.1.4 Responses from the IVS seeds may vary from the predicted values because of variables that intrinsically inject error into the measurement, including the following:

- **Depth Measurement**: if terrain is not completely flat around excavated holes, an average of the ground level must be determined in the field, potentially resulting in differences of up to several centimeters
- **Instrument Path**: while the instrument operator attempts to maintain a central path over the seeded items, slight variation to either side can impact the measured response
- **Measurement Location**: because the instrument records are at set measurement intervals, the actual measured response may not be directly over the seed item
- **Instrument Bounce**: unless terrain is absolutely flat around the excavation, the motion of the DGM system may cause the transmit/receive coil to vary in height above the ground surface by several centimeters from the height used to predict the response curve

3.1.5 Because there is limited ability to control these error variables, the primary quality measure of the instrument response is the static test with the ISO at a strictly controlled distance from the transmit/receive coil. The dynamic survey over the IVS seeds is a secondary measure and can be used to demonstrate kinematic (in motion) detection of the ISOs, demonstrate appropriate falloff of response from deeper items, measure representative background response, and demonstrate positioning system accuracy under kinematic conditions.

3.1.6 All IVS data has been provided to the USACE Geophysicist for review, and will also be delivered on DVD with the final Digital Geophysical Mapping Report.

3.2 Results

3.2.1 Single-Coil Person Portable EM61-MK2 with Fiducial Positioning

3.2.1.1 The IVS was surveyed on December 3, 2013, using the single-coil person-portable EM61-MK2 system with fiducial positioning. The survey results are shown on Figure 3-2 and described in the following section. The quantitative daily static test results are shown on Figure 3-3.

FIGURE 3-2

Single-Coil Person Portable EM61-MK2 (Fiducial Positioning) IVS Survey Results

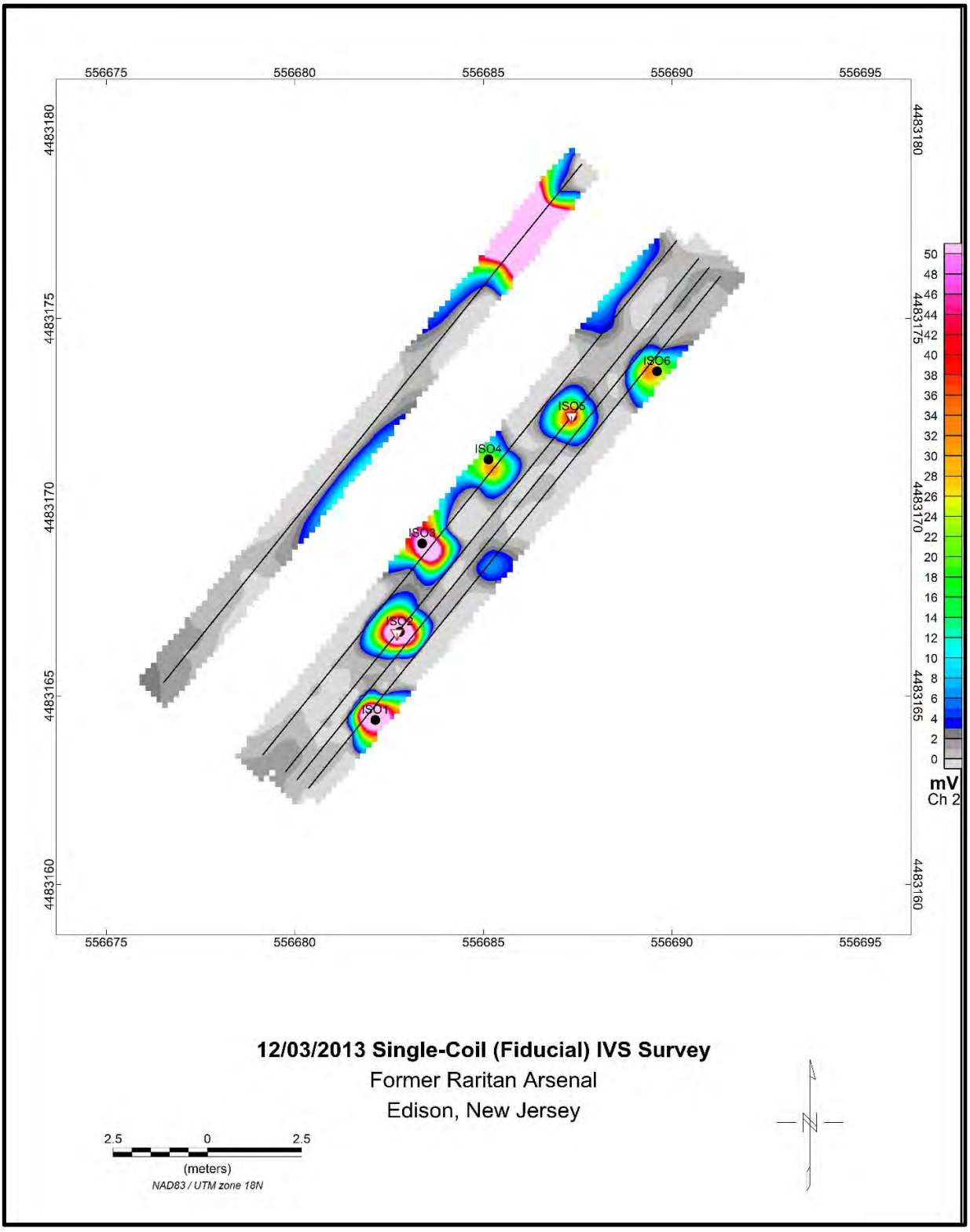
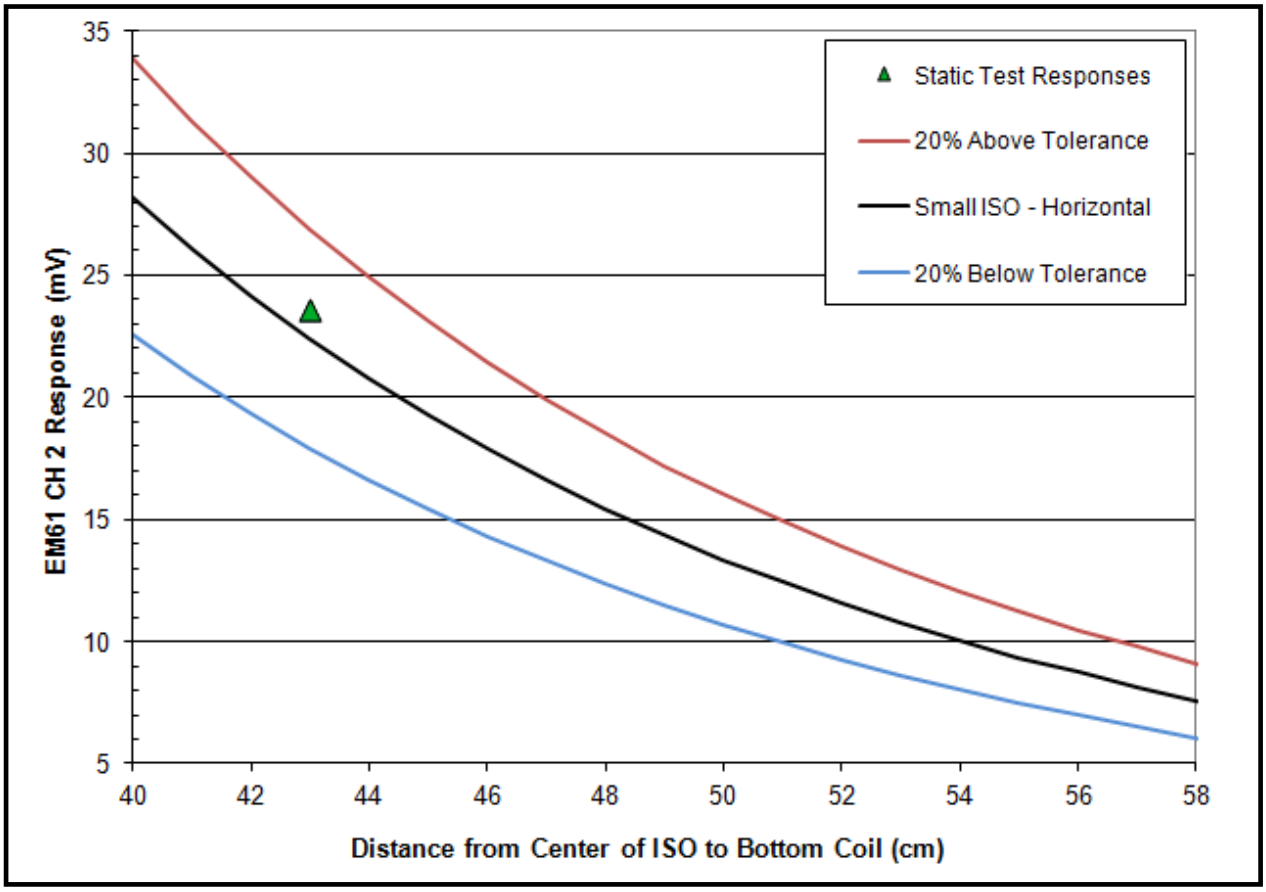


FIGURE 3-3
Person Portable (Fiducial Positioning) Static Test Results Compared to Predicted Small Horizontal ISO Response[2]



Notes: A small industry standard object mounted horizontally 43cm from the sensor coil is used as the test spike item.

3.2.1.2. The objective of repeatable (within 25%) daily IVS anomaly characteristics is difficult to quantify at the initial IVS survey without a standard set by previous DGM surveys over the IVS items. After several days of hindsight, however, the response values from the initial person-portable (with fiducial positioning) IVS survey can be compared to the average response of each IVS items, as shown in Table 3-1.

TABLE 3-1
Person-Portable (Fiducial Positioning) IVS Seed Item Response Characteristics

IVS Item	Average Response (mV)[1]	Initial IVS Response (mV)	Difference from Average
ISO 2	86.8	91.2	5.1%
ISO 5	41.5	43.3	4.3%

Notes:[1] Average response of each IVS seed item over the course of the first week of person-portable IVS surveys

[2] Naval Research Laboratory, NRL/MR/6110--09-9183, *EM61-MK2 Response of Three Munitions Surrogates*, March 12, 2009.

3.2.2 Triple-Coil Towed Array EM61-MK2 with RTK-GPS Positioning

3.2.2.1 The IVS was surveyed on December 3, 2013, using the triple-coil towed array EM61-MK2 system with RTK-GPS positioning. The survey results are shown on Figure 3-4 and described in the following section. The quantitative daily static test results are shown on Figure 3-5.

FIGURE 3-4
Triple-Coil Towed Array EM61-MK2 (RTK-GPS Positioning) IVS Survey Results

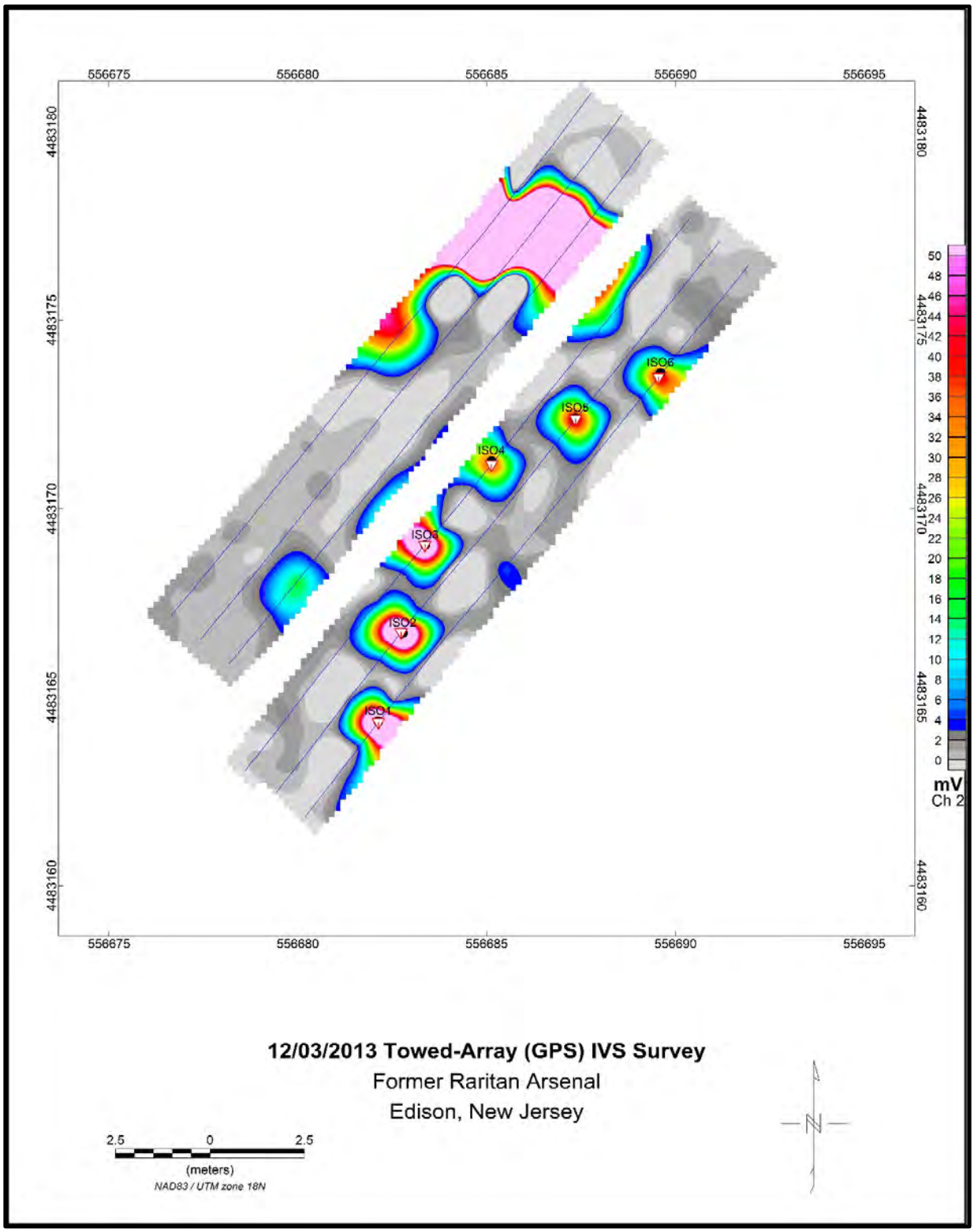
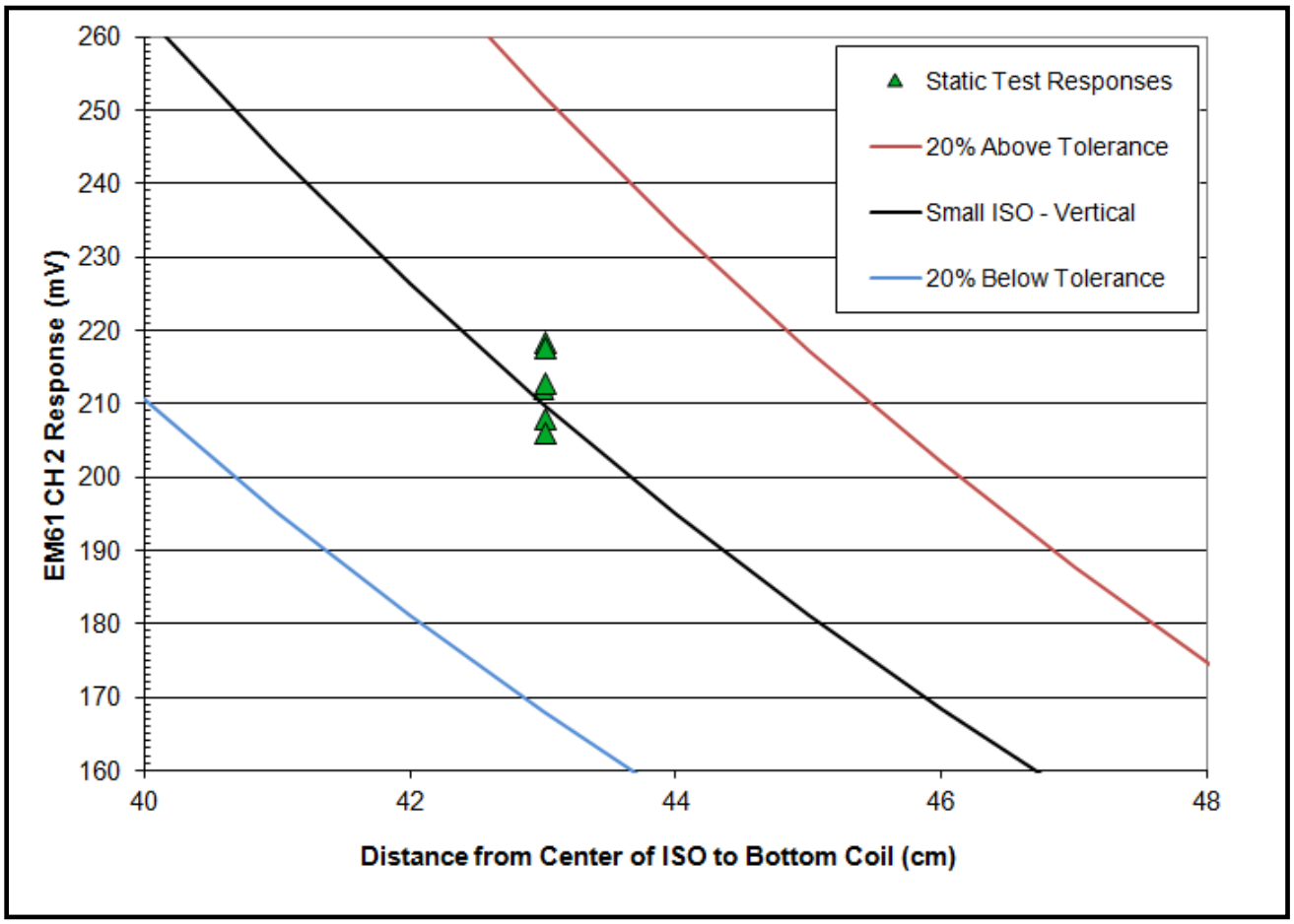


FIGURE 3-5
Towed Array (RTK-GPS Positioning) Static Test Results Compared to Predicted Small Horizontal ISO Response



Notes: A small industry standard object mounted horizontally 43cm from the sensor coil is used as the test spike item.

3.2.2.2 The objective of repeatable (within 25%) daily IVS anomaly characteristics is difficult to quantify at the initial IVS survey without a standard set by previous DGM surveys over the IVS items. After several days of hindsight, however, the response values from the initial towed-array IVS survey can be compared to the average response of each IVS items, as shown in Table 3-2.

TABLE 3-2
Towed Array (RTK-GPS Positioning) IVS Seed Item Response Characteristics

IVS Item	Average Response (mV)[1]	Initial IVS Response (mV)	Difference from Average
ISO 1	100.4	97.6	2.8%
ISO 2	97.1	95.5	1.6%
ISO 3	83.4	79.3	4.9%
ISO 4	37.6	38.6	2.7%
ISO 5	48.9	48.3	1.2%
ISO 6	44.9	45.9	2.2%

Notes:[1] Average response of each IVS seed item over the course of the first week of person-portable IVS surveys

3.2.3 Single-Coil Person Portable EM61-MK2 with RTK-GPS Positioning

3.2.3.1 The IVS was surveyed on December 13, 2013, using the single-coil person-portable EM61-MK2 system with RTK-GPS positioning. The survey results are shown on Figure 3-6 and described in the following section. The quantitative daily static test results are shown on Figure 3-7.

FIGURE 3-6
Single-Coil Person Portable EM61-MK2 (RTK-GPS Positioning) IVS Survey Results

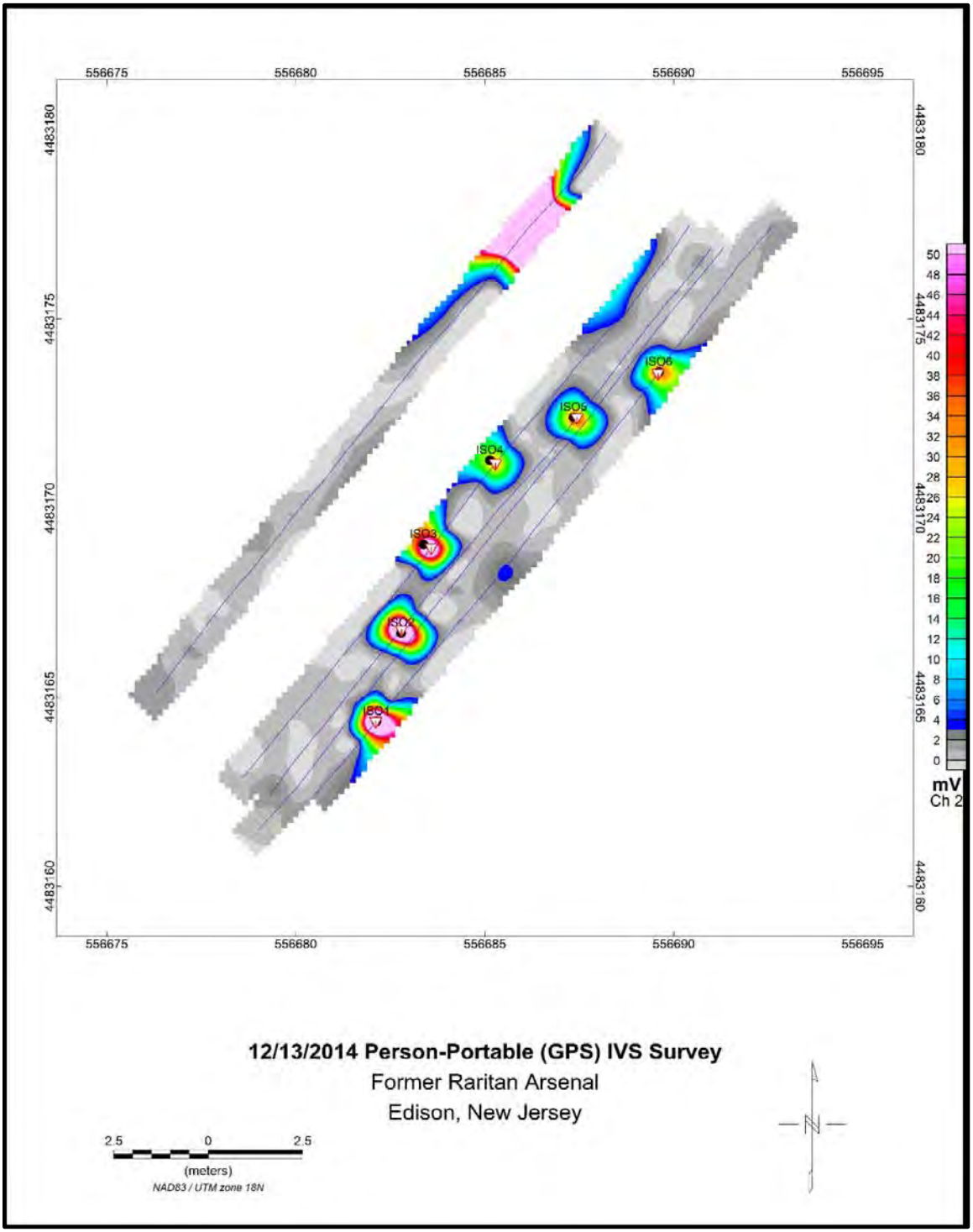
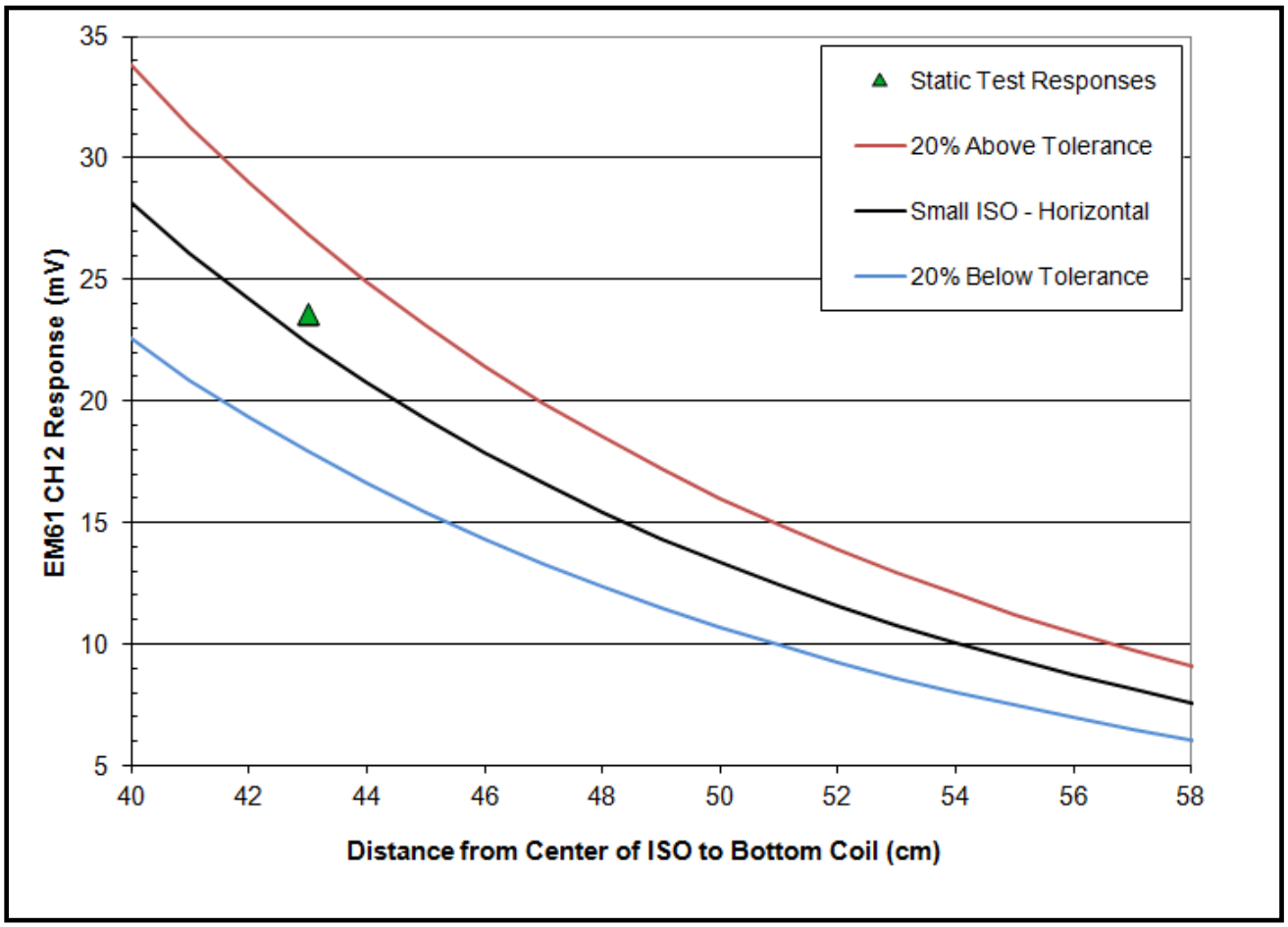


FIGURE 3-7
Person Portable (RTK-GPS Positioning) Static Test Results Compared to Predicted Small Horizontal ISO Response



Notes: A small industry standard object mounted horizontally 43cm from the sensor coil is used as the test spike item.

3.2.3.2 The response values from the initial person-portable (with RTK-GPS positioning) IVS survey are compared to the average response of each IVS item previously surveyed with the person-portable system, as shown in Table 3-3.

TABLE 3-3
Person Portable (RTK-GPS Positioning) IVS Seed Item Response Characteristics

IVS Item	Average Response (mV)[1]	Initial IVS Response (mV)	Difference from Average
ISO 2	85.9	84.6	1.5%
ISO 5	39.9	39.2	1.8%

Notes:[1] Average response of each IVS seed item over the course of the first week of person-portable IVS surveys

SECTION 4

Quality Control and Measurement Quality objectives

4.0.1 All QC tests were performed as specified in the project work plan. No discrepancies were noted, and all data have been provided to the USACE Geophysicist. The measurement quality objects (MQOs), measurement performance criteria (MPC), and test methods established for the IVS are summarized in Table 4-1 along with the MQO results.

TABLE 4-1
Measurement Quality Objectives and IVS Results

MQO	Measurement Performance Criteria	Test Method
General System Function		
DGM Systems Positioning. Accurate positioning information is provided to DGM system.	The positional error of the system at known locations will not exceed 10 cm (4 inches) when individual MEC items need to be located. When the objective of the survey is to delineate the extent of a trench (e.g. Area 18D) the positional error of the system at known locations will not exceed 1.5m (4.9 ft).	Results of QC Test #2 were evaluated for compliance. All positioning system test met the MPC.
Repeatability. Repeatable and accurate data are being obtained from DGM system.	Response to ISO will not vary more than ±20 percent from known response for specific distance from sensors in static tests conducted at the beginning and end of each survey day. Response of repeat line is comparable to original line data (qualitative determination).	Results of QC Test #5 were evaluated quantitatively and compared to published response values for compliance. All static test results met the MPC.
DGM Surveys		
Downline Data Density. Downline data density is sufficient to detect MEC items.	Over 98 percent of possible sensor readings are captured along a survey transect with a spacing of no greater than 0.2 m (0.7 ft.) between points. A data gap greater than 0.6 m (2 ft.) will not meet the MQO.	Results of DGM surveys were quantitatively evaluated for compliance. All data was in compliance with the downline data density MQO.
Survey Coverage. Maintain appropriate line spacing to provide 100% coverage of accessible portions of the survey area.	Greater than 90% survey coverage at the project design line spacing of 0.75 m for EM61-MK2 comprehensive (full coverage) surveys. Lane spacing for transect surveys will not vary greater than 20% from intended spacing unless vegetation, terrain or other obstructions cause the separation.	Results of DGM surveys were quantitatively evaluated for compliance. All data was in compliance with the survey coverage MQO.
Dynamic Detection Repeatability.	Comprehensive terrestrial surveys: Repeat data is comparable to original data. The number of anomalies on the repeat segment will be within 20% of the original data. Transect surveys: IVS anomaly characteristics (peak response and size) are repeatable within 25%.	Comprehensive surveys: At least 2% of the survey area was repeated and evaluated for compliance. The IVS repeat data was comparable to the original data. Transect surveys: Daily IVS surveys will be evaluated for compliance.

SECTION 5

Conclusions

5.0.1 CH2M HILL constructed an IVS and performed IVS surveys to verify the functionality of three DGM systems to be used for surveys at the Former Raritan Arsenal. The systems were verified as functioning within industry standards and meeting project MQOs.

5.0.2 Based on the variations in EM61-MK2 response seen in the background IVS survey, on the known instrument responses to various munitions items, and to include anomalies potentially related to munitions components, as well as those representing fully intact munitions items expected at the site, a threshold of 4 millivolts in the second EM61-MK2 time gate was selected for anomaly identification. The following approach is planned:

- Utilize a baseline anomaly selection threshold of 4 mV on channel 2 of the EM61-MK2 provided each anomaly has good decay and profile shape[3], removing noted surface metal items
- Re-evaluate and adjust selection criteria if background noise on any particular transect or area is higher than that observed in the IVS

[3] While there are no absolute measures for good decay and profile shape, and the experience of the data processor is important in determining this, the general measures are that the amplitude of each subsequent channel (Channels 1 through 4) is less than the previous channel and the response falls off in a parabolic shape to either side of the anomaly.

Appendix C
Advanced Munitions Classification Report

Final

Advanced Classification in Support of a Remedial Investigation and Feasibility Study (RI/FS) at the former Raritan Arsenal

Edison, New Jersey

FUDS Property Number: TBD
FUDS Project Number: C02NJ008403

May 2014 (revised April 2019)

Geographical District: US Army Corps of Engineers - New York District

Contract: W912DY-09-D-0060
Task Order: 003



Prepared for:

US Army Engineering and Support Center,
Huntsville

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Acronyms and Abbreviations

µs	microsecond
APP	Accident Prevention Plan
CH2M	CH2M HILL, Inc.
cm	centimeter
DGM	digital geophysical mapping
DMM	discarded military munitions
DSA	dredge spoils area
EMI	electromagnetic induction
FS	feasibility study
FTP	file transfer protocol
FUDS	Formerly Used Defense Sites
GPO	geophysical prove-out
GPS	global positioning system
HASP	Health and Safety Plan
IMU	inertial measurement unit
INS	inertial navigation system
ISO	industry standard object
IVS	instrument verification strip
kHz	kilohertz
m	meter
MEC	munitions and explosives of concern
mm	millimeter
MPPEH	material potentially presenting an explosive hazard
MQO	measurement quality objective
MRS	munitions response site
ms	millisecond
mV	millivolt
QC	quality control
RI	remedial investigation
RTK	real-time kinematic
SNR	signal to noise ratio
TEMTADS	Time-domain Electromagnetic Towed Array Detection System
TOI	target of interest

UTM	Universal Transverse Mercator
UXA	UX Analyze
UXO	unexploded ordnance

SECTION 1

Introduction

1.1 Purpose

1.1.1 This report summarizes the results to-date of the application of advanced classification technology to the remedial investigation and feasibility study (RI/FS) at the Former Raritan Arsenal (former Arsenal) in Edison, New Jersey. This effort involved using the man-portable adjunct to the Time-domain Electromagnetic Towed Array Detection System (TEMTADS 2x2) as part of the digital geophysical mapping (DGM) investigation at the munitions response site (MRS) focused on Area 18D, Dredge Spoils Area (DSA) 5, and the parking lot area in DSA 2. These three areas are in close proximity to either active business operations or residential areas and the explosive safety arcs for intrusive investigations will cause business closures and/or home evacuations. The parking lot is also in active use and investigation of the anomalies in that area will require destroying parts of the lot. By eliminating locations requiring intrusive investigation (through the use of TEMTADS), the number of closures and evacuations will be minimized. The RI/FS is being performed under the Defense Environmental Restoration Program—Formerly Used Defense Sites (FUDS). The TEMTADS 2x2 is one of the "next generation" advanced electromagnetic induction (EMI) sensors that supports use of advanced analyses for classification of buried metal at MRSs.

1.2 Objective

1.2.1 The objective of the TEMTADS 2x2 data collection and analysis is to classify pre-identified geophysical anomalies with the intent of determining which anomalies may represent targets of interest (TOIs) (either unexploded ordnance [UXO], discarded military munitions [DMM], or practice munitions items) and should be intrusively investigated for confirmation. Those anomalies identified as "high probability non-TOI" will not require intrusive investigation.

1.2.2 The key components of this effort to-date are as follows:

- Collection of TEMTADS data over anomalies selected from "production" EM61-MK2 data
- Analysis of the data using physics-based models to extract target parameters or "features" such as size, shape, and materials properties
- Use of extracted parameters directly, and/or by comparison with a "library" of known munitions features, to construct a preliminary ranked (i.e., prioritized) anomaly list

1.3 Technology Description

1.3.1 TEMTADS 2x2

1.3.1.1 Time-domain electromagnetic (TEM) sensors illuminate a buried target by rapidly turning off a transmitting loop, which causes a step-change in the magnetic field below the ground, inducing eddy currents in any metallic objects. The eddy currents induced in the target decay with time, generating a decaying secondary field that is measured at the surface. These measurements are used to derive estimates of features relating to the sources of these currents. The TEMTADS 2x2 is comprised of a 2x2 EMI sensor element array (schematic shown in the lower corner of Figure 1-1). Each element consists of a single-axis vertically coupled transmit coil co-located with a 3-axis receive coil. Each transmit coil is fired sequentially and all of the receiver coils are used to measure the resulting decays, resulting in a total of 48 transmit/receive coil pairs. This arrangement uses the spatial offsets of the transmit coils to energize potential targets along multiple axes.



Figure 1-1. TEMTADS System as Deployed on a Project

1.3.1.2 Decay data are collected with a 500-kilohertz (kHz) sample rate until 25 milliseconds (ms) after turn off of the excitation pulse. This results in a raw decay of 12,500 points; too many to be used practically. These raw decay measurements are grouped into 122 logarithmically spaced "gates" with center times ranging from 25 microseconds (μs) to 24.35 ms with 5 percent widths and are saved to disk.

1.3.1.3 A Trimble Real-time Kinematic Global Positioning System (RTK GPS) is used to position the EMI sensor data. The precise position of each EMI sensor measurement is calculated by translating the GPS antenna location to the sensor location based on the platform geometry and attitude. In systems configured without an inertial measurement unit (IMU), the pitch, roll and azimuth of the platform are derived from operator's estimates and are not well constrained. Because of the short distance between the GPS antenna and the object fit locations, this lack of precision has a minimal effect on the final target location estimate (provided the reported information is correct). For systems supplied with an IMU, the attitude information is derived directly from the IMU, thereby reducing errors associated with imprecise and erroneous field notes.

All data are stored by a custom, purpose-built data acquisition system on a hard disk and downloaded to the field processing computer via portable digital media ("thumb drives").

1.3.2 Data Acquisition

1.3.2.1 The TEMTADS 2x2 is deployable in both dynamic and static "cued" modes. During cued investigations, the system is positioned over each target, the transmitter for each array sensor is fired in sequence, and decay data are collected from all 12 receive coils for each excitation. The transmit pulse and decay measurement time is 25 ms. The data acquisition system records the signal from each of the 48 transmit/receive airs over 121 logarithmically spaced time gates. The measured responses over the first 14 gates include distortions due to transmitter ringing and related artifacts and are discarded. Time delays due to effects of the receive coil and electronics (Bell et al., 2001) are further accounted for by subtracting 0.028 ms from the nominal gate times, leaving 107 gates spaced logarithmically between 0.089 ms and 25.35 ms. The recorded signals are normalized by the peak transmitter current to account

for any variation in the transmitter output. On average, the peak transmitter current is approximately 7.5 Amps.

1.3.2.2 After each measurement, prior to moving to the next target, the operator evaluates a display of the four monostatic, 3-axis signal amplitude decays and compares the values at the first usable time gate (0.089 ms) to a "low signal to noise ratio (SNR)" threshold (nominally 5 millivolts [mV]/Amp). If no amplitude was above the threshold, the operator may elect to collect additional data for the target prior to leaving the target location. The operator also has the facility to conduct a "real-time" inversion of the data to confirm the inverted location of the target and review the polarizabilities as additional quality control (QC) checks. If the inversion fit position indicates that the target is greater than 0.4 meters (m) from the center of the array, a second measurement with the TEMTADS 2x2 centered over the fit location is performed to ensure that the target has been fully energized along each principal axis.

1.3.3 Data Analysis

1.3.3.1 Preprocessing

1.3.3.1.1 The raw data files comprised of raw sensor data, RTK GPS data, and inertial navigation system (INS) attitude measurement data are loaded into Geosoft's UX Analyze (UXA) advanced analysis software environment. The RTK GPS and INS data are merged with the sensor data to provide georeferenced positions for each TEMTADS 2x2 transmit/receive combination measurement.

1.3.3.1.2 For static surveys, the background response is subtracted from each target measurement using data collected at preset time intervals over a nearby, target-free background location. The background measurements are reviewed for variability and to identify outliers, which may correspond to measurements over targets. To minimize errors in the background removal process, spatial and temporal distance between the background and target measurements are minimized.

1.3.3.2 Target Feature Estimation

1.3.3.2.1 Intrinsic and extrinsic features relating to each target are estimated using the dipole modeling routine in the UXA module in Oasis Montaj. All target data are inverted using both a single-source and a multi-source dipole response model to find the set of parameters that describes a model whose response best fits the observed data. These parameters are used as estimates of extrinsic and intrinsic target features (Figure 1-2). The extrinsic features are estimates of the target(s) refined position and orientation. While these feature estimates are useful for the teams who intrusively investigate the targets, they are extrinsic to the target and as such are not used for classification. The intrinsic features used for classification are the three principal axis polarizabilities (β1, β2, and β3) estimated for each target. These βs are related to the size, shape, and composition of the target(s) and are the basis for classification of each target. In addition, a measure of the correlation between the modeled anomaly response and the observed response is derived. This correlation, known as the "fit quality" metric, is used to verify that the model is representative of the observed data and the derived features can be used to support classification of the target. If the modeled response is not highly correlated with the observed response, the target is classified as "unable to analyze" and marked for intrusive investigation.

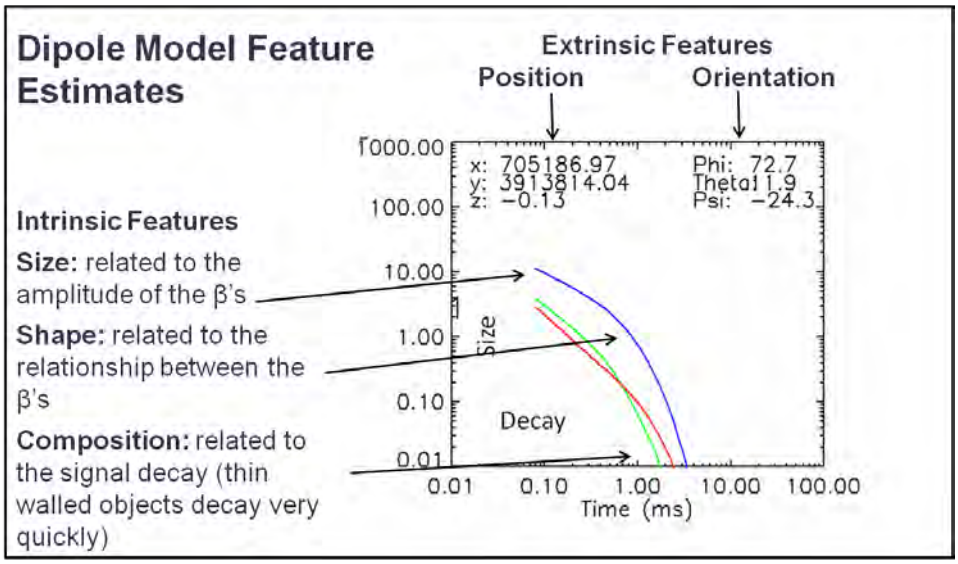

Figure 1-2. Intrinsic and Extrinsic Target Feature Estimates Derived from Dipole Fit Model Parameters

1.3.3.3 Training Data

1.3.3.3.1 Training data are primarily derived from previous testing of the TEMTADS 2x2 using various inert munitions items. These data are used to create a library of polarizabilities for various standard munitions types. Signatures for any munitions that are specific to a site are added as applicable. Estimated polarizabilities derived from the inversion routines are compared to this library for classification purposes as described below.

1.3.3.4 Site-specific Munitions Library

1.3.3.4.1 Typically, a site-specific library of βs for candidate munitions items is used. Entries in existing libraries that are confirmed as representative (i.e., the same caliber, model, and configuration) of the munitions items expected to be present at the sites are used in the site-specific library. Intrinsic parameters for items expected to be at the site, but not confirmed to be in the existing library, are derived from test measurements prior to the start of the classification process.

1.3.3.5 Classification

Library Matching

1.3.3.5.1 The classifier is based primarily on the confidence metric generated by UXA during a comparison of the β values estimated for each surveyed target and the β values in the munitions library developed for the project. The confidence metric indicates the fit correlation between a target and the best fit item in the library, with higher metrics indicating a better fit between the target and the corresponding item in the library. The library fit analysis matches the following four combinations of βs to those of the candidate library TOIs:

1. β1, β1/β2, β1/β3
2. β1, β1/β2
3. β1/β2, β1/β3
4. β1

1.3.3.5.2 The confidence metrics for each fit combination are combined (nominally averaged, but the final method may be modified based upon site conditions) to derive a “decision metric.”

1.3.3.5.3 This library matching process is performed for each single-solver model and every target in each of the candidate realization models. For each flag position, the best library fit from the single-solver and multi-solver targets is used to derive a decision metric. This decision metric is used to rank and classify the target list as follows:

- Category 1: Values > 0.925 are considered "high likelihood TOI" (dig)
- Category 2: Values between 0.925 and 0.825 are considered "inconclusive" (dig)
- Category 3: Values less than 0.825 are considered "high likelihood non-TOI" (no dig)

1.3.3.5.4 The point indicating the start of Category 3 is known as the "analyst threshold" and indicates the point on the list after which intrusive investigation is not required. These thresholds may be adjusted for specific target sizes and types. A set of anomalies is typically selected as training data to be used to calibrate the thresholds used.

Cluster Analysis/Feature Space Analysis

1.3.3.5.5 Cluster analyses and feature space analyses are used to augment the library matching classification approach. Cluster analysis is employed to identify ubiquitous signatures that may represent a TOI that is not represented in the library. A cluster analysis is performed whereby the clusters of anomalies with similar β signatures are identified. Representative samples of these clusters are intrusively investigated as part of the training data. If the intrusive investigation identifies a hazardous item, these signatures are placed in the library and the matching process is repeated to ensure that all similar items are classified as TOI.

1.3.3.5.6 Feature space analysis is used to identify individual items that do not match any library items but have βs that indicate a large, axially symmetric, thick-walled object. These objects are identified and investigated as part of the training data and added to the library if they are identified as TOIs.

1.4 Previous Investigations

1.4.1 Advantages and Limitations of the Technology

1.4.1.1 The TEMTADS 2x2 array is 80 centimeters (cm) on a side and mounted on a man-portable cart. There are obvious limitations to the use of this technology. Terrain where the vegetation or topography interferes with passage of a cart of that size will not be amenable to the use of the system.

1.4.1.2 The other serious limitation is anomaly density. For all systems, there is a limiting anomaly density above which the response of individual targets cannot be separated individually. Recent developments, including solvers designed for classification in multiple-object scenarios such as SAIC-ASAD's multi-target solver (Miller et al., 2010), have been shown to be effective at mitigating the effect of high anomaly densities on classification, but not overcoming this limitation entirely.

1.5 Health and Safety

1.5.1 The TEMTADS investigation at the Former Raritan Arsenal was conducted in accordance with the existing project Accident Prevention Plan (APP) and Health and Safety Plan (HASP). Because the survey areas had undergone previous EM61-MK2 data collection, no separate visual inspection for potential surface munitions and explosives of concern (MEC) or material potentially presenting an explosive hazard (MPPEH) was performed in advance of the TEMTADS survey.

Field Operations

2.1 Seeding of Inert Munitions Items

2.1.1 In preparation for advanced classification investigation, CH2M HILL, Inc. (CH2M) QC personnel placed munitions "seeds" in the survey areas. Locations for placement of the seeds were selected from EM61-MK2 data collected at the site. The selected locations were reacquired with an RTK GPS and marked in the field with pin flags. The locations were then verified as being anomaly-free by a UXO Technician with a Schonstedt GA-52Cx magnetometer prior to excavation of holes in which the seed items were to be placed. Once the items were placed, the GPS was used to record points on the item(s) in the hole and a point on the ground surface, which would then be used to calculate the depth of the item(s). A total of five locations were "seeded" with small, schedule 80 industry standard objects (ISOs) shown on Figure 2-1.

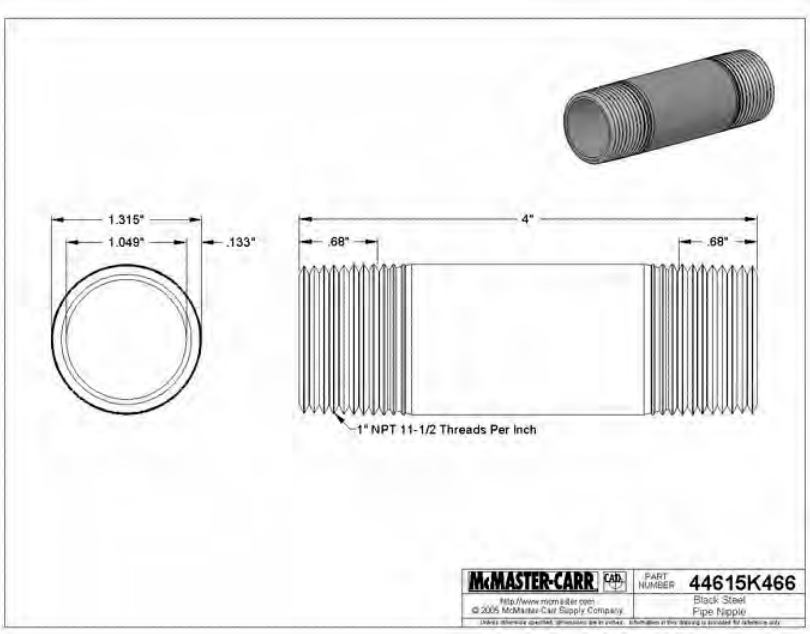

Figure 2-1. Small Schedule 80 ISO Used as QC Seed Items

2.2 Instrument Verification Strip

2.2.1 An instrument verification strip (IVS) was established at the site by burying two small schedule 80 ISOs at an area devoid of metal targets near the staging area. Table 2-1 provides the IVS target locations.

Table 2-1. Instrument Verification Strip Locations

IVS ID	Easting (m)	Northing (m)	Item
IVS-1	556682.92	4483165.79	Small schedule 80 ISOs
IVS-2	556687.48	4483171.49	Small schedule 80 ISOs

Note: Coordinates in North American Datum 1983, Universal Transverse Mercator 18N, meters.

2.3 Background Readings

2.3.1 Regular background readings were taken throughout the initial testing as well as the production survey. Background readings were generally recorded every 1 to 2 hours, as well as at the start and end of each survey day. Background locations were selected from the original EM61-MK2 survey data and revised as appropriate if the initial location was not devoid of metal, as determined through a real-time graphical (i.e., qualitative) display of receiver amplitude. During post-processing, the background measurements were confirmed to be devoid of metal. After visual inspection and acceptance, the raw background data were used to correct the target measurements.

2.4 Data Collection

2.4.1 The EM61-MK2 DGM survey, data analysis, anomaly identification, and statistical target selection processes described in Section 3 of the RI/FS Work Plan (CH2M, 2013) was followed to identify subsurface geophysical anomalies within the survey areas identified for TEMTADS investigation. The TEMTADS data were collected at these locations during the time period from January 20 to 31, 2014. These dates include the system setup, initial testing, and production survey. There was an additional survey day on February 11, 2014 to perform some recollects as well as to collect training data over two VB rifle grenades buried at a prior geophysical prove-out (GPO) site.

2.4.2 Static measurements were collected at each target location. Relevant field notes were recorded by the TEMTADS team, including those locations that were not accessible and whether the system was offset from the location in the target file due to an obstruction such as a tree. The number of targets investigated in each area is presented in Table 2-2, along with the initial number of detected EM61-MK2 anomalies (detected targets) and the subset of targets identified for investigation (targets identified). The five emplaced seed items are included in the “targets investigated” totals but not in the “targets identified” totals.

Table 2-2. Number of Targets Selected and Investigated for Each Survey Area

Area	Initially Detected	Targets Identified	Targets Investigated
G-18D	431	205	207
TDSA2	751	45	47
TDSA5	543	30	31

2.4.3 Raw data files and copies of field notes were uploaded daily by the field team to the project file transfer protocol site (FTP) and backed up on a CH2M server. Data were qualitatively reviewed to ensure that the system was functioning properly and that all relevant information needed for analysis was captured in the data files as well as in field notes. Raw data and relevant pre- and final processed data files are also located on the CD included with this report.

2.5 Production Survey Quality Control

2.5.1 Sensor Response Function Tests

2.5.1.1 Prior to any data collection activity, and periodically during each survey day, a function test was performed where the background corrected response to an ISO placed in the center of the array (Figure 2-2) was used to verify that all EMI sensor components of the TEMTADS were functional. When the results indicated a component failure, data collection was suspended until the source of the failure was identified and the system was rendered operational. This occurred at the outset of the data collection effort during the initial testing. After 3 days of testing, the problem was eventually traced to a bad chip

on the data acquisition computer, resulting in the loss of use of one out of the 12 receive coils. The effect of loss of data from this receive coil was assessed by collecting four sets of data with the sensor array positioned so that the IVS target was situated under each receive coil. The results from each of these tests show that the system was still able to meet all of the QC criteria with respect to feature extraction and target location. Based on these results and time constraints associated with the use of the sensor and access to some portions of the survey area, it was decided to proceed with data acquisition while the replacement parts were on order. All of the daily measurement quality objectives (MQOs) for the days in question were met or exceeded as discussed in Section 3.1.

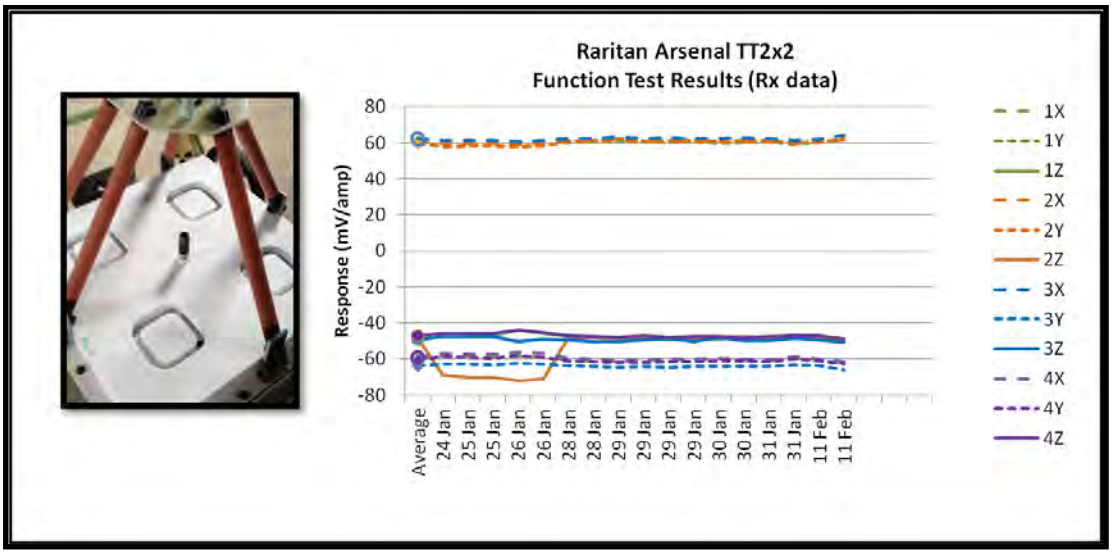

Figure 2-2. Function Test Results – Offsets in RX Coil 2Z (amber trace) Indicate Fault Condition for Days January 24-26, 2014

TEMTADS Data Analysis

3.0.1 The TEMTADS data were analyzed by a CH2M analyst. As the data were collected, the QC data were processed and compiled to ensure that the system was fully operational.

3.1 Quality Control

3.1.1 QC was monitored through the use of daily function tests (described in Section 2.5.1), inspection of twice-daily IVS survey results, and performance against blind seeds. Table 3-1 presents a list of quantitative performance objectives used to ensure that the quality of the data supports the goals of the survey.

3.1.2 All of the performance criteria were exceeded in this data set, with one exception. Part of the Dipole Fit Quality MQO stipulated that 95% of the dipole fit positions should be within 40 cm of the center of the array. In the data set, only 94% of the positions were within the specified tolerance. Appendix A contains a root cause analysis (RCA) of this failure. This failure is not an indication that the sensor or data collection methodology was flawed – it is an artifact of the fact that there were a very large number of "no-finds" in the target list. In the case of a "no-find," the fit routine will still try to fit a target model to the observed signal and often this results in fitting to real or "noise-related" targets that are well outside of the 40-cm acceptance radius. Fit positions outside of a 1-m radius are considered "no-finds," but those that are within 1 m are conservatively treated as potential targets. Because they are potential targets, but not within the 40-cm radius required for reliable classification, these targets are categorized as "can't analyze" (category zero) and marked for intrusive investigation.

Table 3-1. Performance Objectives for the TEMTADS Pilot Study

Measurement Quality Objective	Test Method	Performance Criteria	Results
Dipole Fit Quality	Fit coherence/reasonableness of fit depth/positions	95% of all measurements will pass fit coherence (> 0.8), fit depth (<2 m), and fit position (<40 cm from center of sensor).	99% fit coh >0.8, 100% <2 m, 94% within 40 cm of center of sensor array.
Sensor Measurement Accuracy	Comparison of initial IVS survey polarizations with library polarizations	IVS results will match library polarizations with a correlation of 0.9 or better.	All IVS items matched library entries with a correlation >0.9 (average fit correlation = 0.98).
Sensor Measurement Precision	Comparison of twice daily static IVS measurements	Amplitude of derived polarizabilities will be within ± 10%.	All derived polarizability amplitudes were within 10% of the mean amplitude (average error = 4%).
Sensor Positioning Accuracy	Comparison of IVS results to independent ground truth positions	Emplaced target positions will be determined within 20 cm of ground truth positions.	All derived IVS fit positions were within 20 cm of ground truth positions (average error = 4 cm).
Sensor Positioning Precision	Comparison of twice daily static IVS measurements	Derived fit positions of IVS items will be repeatable to ± 20 cm.	All derived fit positions were within 20 cm of the mean position (average error = 3 cm).
Classification Performance	Blind seed item identification	100% of all blind seed items will be correctly identified as TOI.	100% of blind seed items were correctly identified as TOI.

Table 3-1. Performance Objectives for the TEMTADS Pilot Study

Measurement Quality Objective	Test Method	Performance Criteria	Results
Decision Metric Threshold Verification	Classification of known items (QC seed items, IVS items, test pit items, and ground-truthed items)	Decision metric threshold will correctly classify known items (QC seed items, IVS items, test pit items, and ground-truthed items) as TOI.	The decision metric used identified all known TOI items as TOI (decision metric for QC seeds >0.98).

3.1.3 The sensor measurement accuracy was evaluated by monitoring the precision of the dipole fit derived βamplitude of the small ISO used as an IVS target. The small ISO presents the most challenging of the IVS items with respect to achieving precision for this metric because of its lower SNR response. All IVS items matched the library entry with a correlation of better than 0.9. The sensor measurement precision was assessed by comparing the polarization amplitudes (I.e. target size) of each measurement with the average of all of the measurements. All of the size estimates were consistent to within 10%. IVS response performance is presented graphically on Figure 3-1.

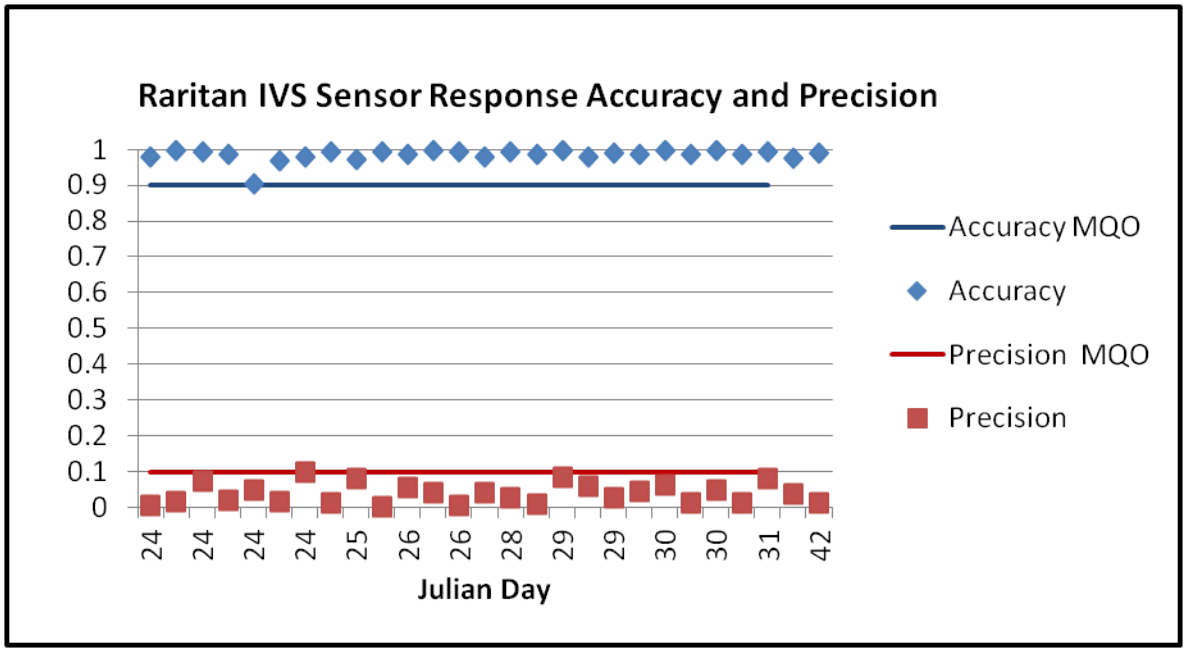

Figure 3-1. IVS Response Results.
Note: Accuracy is assessed using library fit correlation and precision is assessed as the percentage deviation of each derived amplitude from the mean of the derived amplitudes.

3.1.4 The accuracy of the TEMTADS target positions was evaluated by comparing the IVS target locations derived from the dipole fit analysis with independently measured ground truth. The repeatability, or precision, of the target positions was evaluated by comparing each derived target position with the average of the target positions for that location. The accuracy and precision of the target locations was within the specified criteria (Figure 3-2).

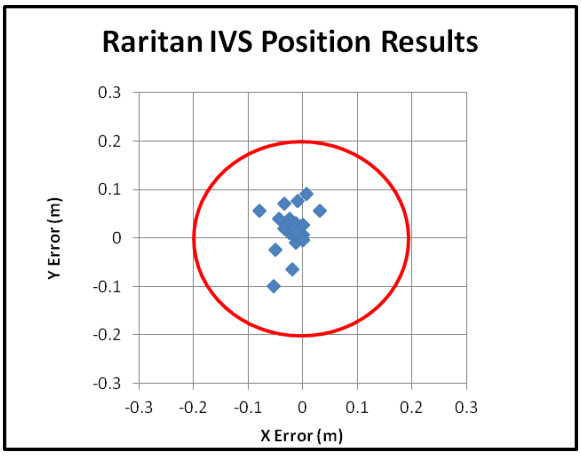

Figure 3-1. QC Plots of TEMTADS Location Errors

3.2 Data Processing/Background Removal

3.2.1 Background removal was performed pursuant to the methods described in Section 1.3.3.1. Background data were collected nominally at hourly intervals. Each set of background measurements was evaluated on a daily basis and any outliers were rejected. The UXA software was used to identify the most appropriate background measurement (with respect to temporal and spatial offsets) and remove the background values from the target measurements.

3.2.2 After background removal, the data were inverted with the single-source solver and the results were inspected for QC purposes. Upon initial inspection it became apparent that many of the data collection locations were devoid of a target source—in other words, based on the background-corrected TEMTADS data, there was no identifiable metal within the footprint of the sensor array. In conventional TEMTADS investigations, these "no-finds" are very rare. Upon inspection of the target selections and the EM61 data they were selected from, it was apparent these selections were due to grid artifacts and/or noisy EMI data. These no-finds were identified by the low peak signal amplitude and/or a fit location > 1.0 m from the center of the original flag. All no-finds were assigned to Category 3 (non-TOI, no dig).

3.3 Classification Methodology

3.3.1 With the exception of the "no-finds," classification was based on library matching and augmented with cluster analysis and feature space analysis. Because many of the TOIs listed do not have a representative library entry, the feature space analysis was expanded to include a qualitative assessment of the derived features with respect to the likelihood of the derived features being a potential TOI.

3.3.1 TEMTADS Library

3.3.1.1 The TOIs for the site are presented in Table 3-2. Many of the TOIs listed do not have direct entries in the TEMTADS library and were not available to obtain measurements upon to add to the library. For these items the closest item in the library is listed. The field crew was able to locate a buried VB rifle grenade at the former GPO at the former Arsenal and measurements were collected so this item could be added to the library. A complete list of the library items used is presented in Appendix B.

Table 3-1. Targets of Interest

TOI	Library Entry?	Closest Library Item
Bomb, Practice, MK I, 50-pound	No	155-mm projectile

Table 3-1. Targets of Interest

TOI	Library Entry?	Closest Library Item
Bomb, MK III, FRAG (Cooper), 25-pound	No	155-mm projectile
Case, Cartridge, 105-mm	No	105-mm projectile
Case, Cartridge, 90-mm	No	90-mm AP (VNTR)
Case, Cartridge, 40-mm	No	40-mm grenade
Case, Cartridge, 37-mm	No	37-mm (Blossom Point, Camp Beale, LSBP)
Case, Cartridge, 20-mm	Yes	20-mm w/cartridge (NBAFS)
Fuze, Projectile, PTT	No	6 cm and 5 cm diameter fuze components (Camp Beale)
Grenade, Hand, MKll	Yes	MK2 hand grenade (Ft Rucker)
Grenade, French Rifle	Yes	VB rifle grenade (Raritan Arsenal)
Projectile, 40-mm	Yes	40-mm projectile
Projectile, 37-mm	Yes	37-mm (Blossom Point, Beale)
Projectile, 23-mm	No	20-mm (NBAFS, Blossom Pt)
Propellant Charge Container	No	155-mm projectile

mm = millimeters

3.3.1.2 A cluster analysis was performed by matching the derived polarizabilities of each target to the rest of the targets, A total of eight clusters were identified (Figure 3-3). In a conventional classification project, representative targets from each cluster that is not already represented in the library would be selected for intrusive investigation to provide “training” data for additional analysis. Clusters 1, 4, 5, 6, and 8 are matched with a high correlation to existing library items (105-mm HEAT, 2.36-inch rocket, 105-mm projectile, 60-mm illumination, and M29 rifle grenade, respectively). Cluster 3 is comprised of small ISOs used as seed items. The remaining clusters are not represented in the library.

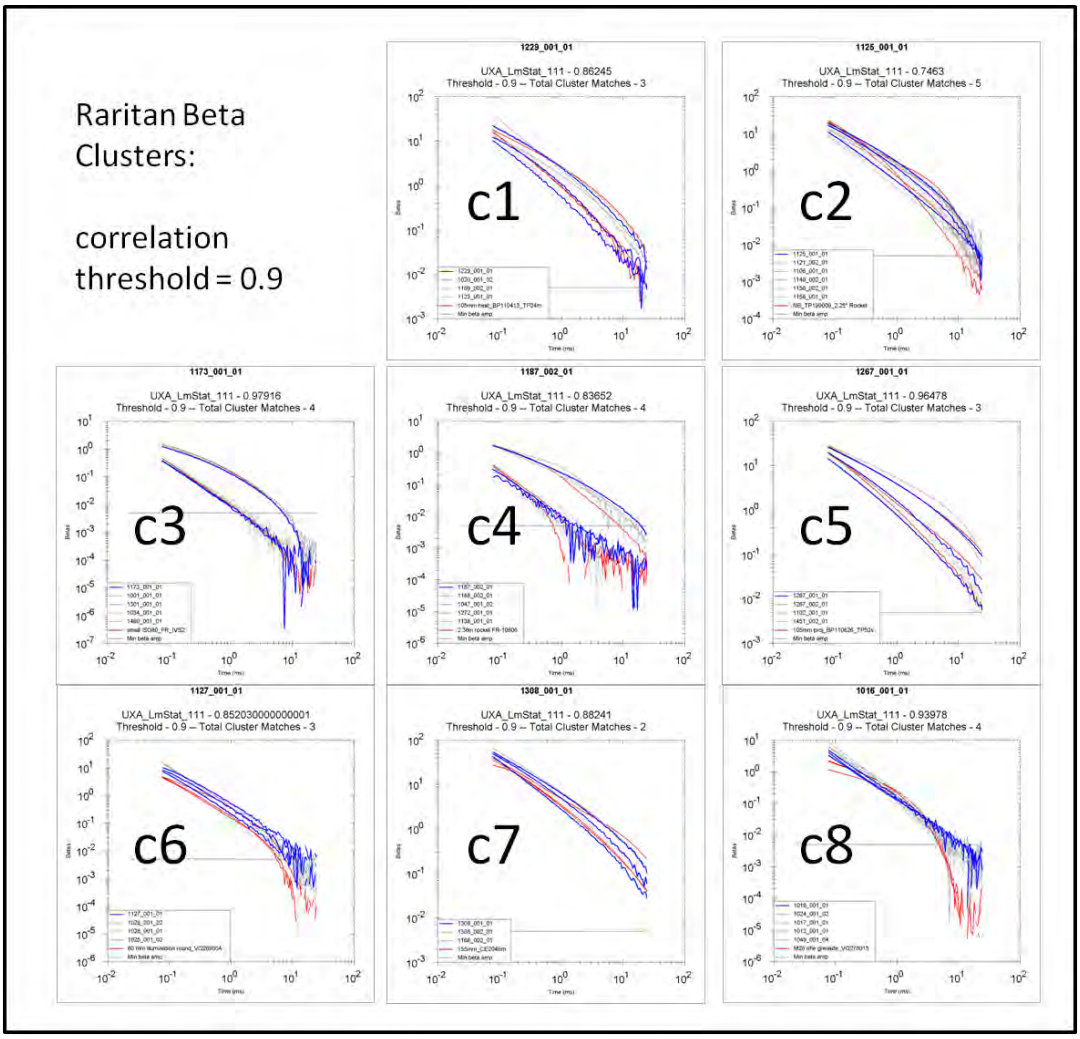

Figure 3-2. Cluster Analysis Results

3.3.1.3 In addition to the cluster analysis, a feature space analysis was also performed. Typically this analysis would be limited to identifying any targets that are large, axially symmetric and thick walled—an example of such a target is provided on the left panel of Figure 3-4. However, because the TOIs for this site are not all represented in the library, this analysis was expanded to include a qualitative review of all of the targets that were classified as Category 3. Any targets that appeared to be axially symmetric (indicated by the two smallest βs being close to equal) with an aspect ratio of 2 or higher (indicated by the primary β being at least twice as large as the two smallest βs) were denoted as "qualitative TOIs" and were elevated to Category 2. An example of this type of qualitative TOI selection is provided on the right panel of Figure 3-4.

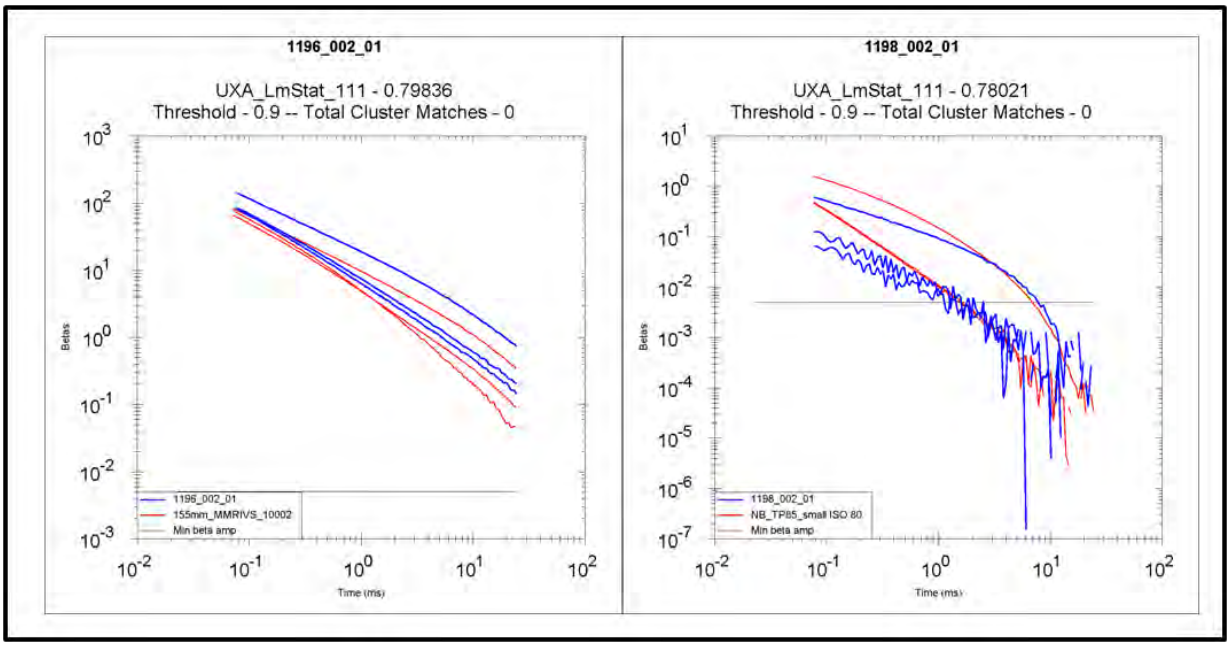

Figure 3-3. Feature Space Analysis Examples

3.4 Classification Results

3.4.1 Prioritized Target List

3.4.1.1 An interim prioritized list is provided as a Microsoft Excel spreadsheet and includes the following columns:

- **UXA_Target_ ID:**
  - ID including measurement version number and target source number. Example: 1001_02_03 where 1001 is the Flag ID, 02 is the second measurement taken at this flag location and 03 identifies the third of n objects identified by the multi-solver solution.
- **UXA_Fit_X / UXA_Fit_Y / UXA_Fit_Z:**
  - The refined fit location of the identified target.
- **UXA_Fit COH14**:
  - The fit coherence metric indicating how well the model response matched the observed response.
- **UXA_diff_array_fit**:
  - The distance between the fit location and the center of the sensor array.
- **UXA_diff_flag_fit**:
  - The distance between the flag location and the target fit location.
- **UXA_decision statistic**:
  - The library match metric indicating how well the target βs matched the closest match library βs.
- **UXA_LmID 111_best**:
  - The best match library item (based upon the 3 criteria match).
- **Category**:

- Category -1 = Training data (dig)
- Category 0 = Cannot Extract Reliable Parameters (dig)
- Category 1 = Can Extract Reliable Parameters: Likely Target of Interest (dig)
- Category 2 = Can Extract Reliable Parameters: Cannot Decide (dig)
- Category 3 = Can Extract Reliable Parameters: Likely Clutter (no-dig)

- **Sub-Category:**
  - Sub-categories indicate attributes like signal amplitude, decay range, size range, and fit location.
- **UXA_Size14:**
  - The vector sum of the 3 βs at the earliest useable time gate.
- **UXA_decay71:**
  - The derived decay used to indicate wall thickness.
- **UXA_Comments_2:**
  - Qualitative assessment comments.
- **Area_Name:**
  - Name of the operating unit.

3.4.1.2 Conventionally, a set of intrusive investigations designed to inform the analysis is performed prior to delivery of the final prioritized list. These training data are used to refine the library as follows:

a) Determine the nature of identified β clusters and perform additions to the library as appropriate. Identified clusters of targets with similar signatures might indicate a specific TOI or clutter item that is ubiquitous to the site. If a new TOI item is discovered, its signature is added to the library or a ubiquitous, identifiable clutter item would be added to the clutter library.

b) Determine the presence or absence of specific library TOI that have a high number of matches in the data set and performed deletions to the library as appropriate. When a comprehensive library is used (i.e., a library that includes munitions that are not specifically suspected to be TOIs at the site) some items might get a high number of matches. The training investigations are used to confirm that these items are actually present at the site; otherwise, that particular library entry can be excluded from the result.

3.4.1.3 In addition to helping to refine the library, the training data are also used to calibrate the decision thresholds used. Although the conditions found at this site may preclude the use of training data to refine the classification results, a list of suggested training data requests and alternates is provided with this document.

3.4.2 Classification Summary

3.4.2.1 There were a total of 285 target locations analyzed and ranked in the prioritized list of these targets; five were emplaced QC seeds and are excluded in the summaries presented below. Using cutoff thresholds of 0.925 for category 1 (TOI) and 0.825, for category 2 (Inconclusive) the classification results are provided in Table 3-3 and graphically presented in Figure 3-5. Category 2 anomalies refer to measurements having enough TOI characteristics, but they could not be classified as high confidence non-TOI. Due to the large number of no-finds, these have been broken out and identified separately as a subset Category 3.

Table 3-2. Classification Distribution

Category	All	G-18D	TDSA2	TDSA5
0 – Can't analyze	22	17	4	1
1 – TOI	38	18	18	2
2 – Inconclusive	102	74	15	13
3 – Non-TOI	51	41	2	8
3 – "No_Find"	67	55	6	6
Total	**280**			

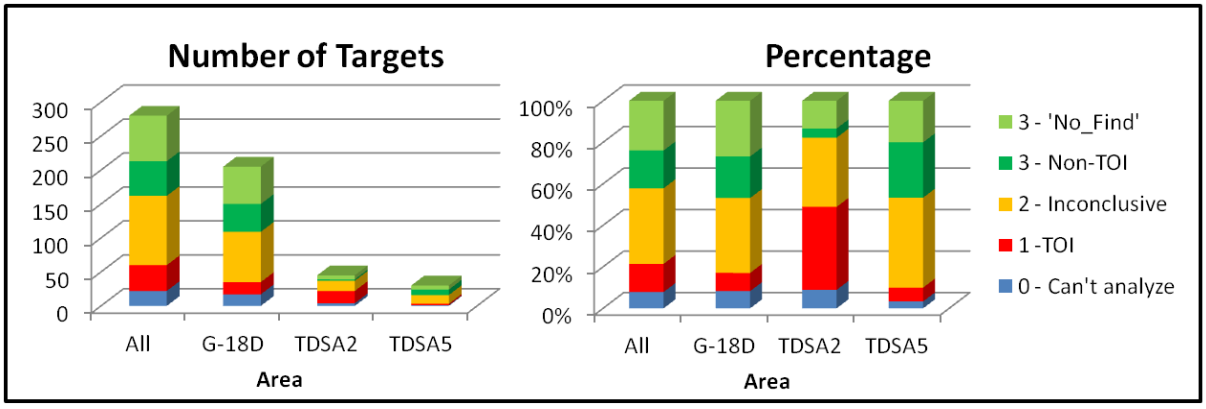

Figure 3-4. Classification Distribution

3.4.2.2 The cutoff thresholds used were arbitrarily assigned based on previous analyses performed with the TEMTADS at other sites. Although they are a reasonable starting point, they have yet to be validated. Accordingly, the distinction between "TOI" and "Inconclusive" is not well defined, nor is the distinction between "Inconclusive" and "non-TOI."

3.4.2.3 The distribution of munitions types for Categories 1 and 2 is presented on Figure 3-6. The library used did not have specific entries for all of the munitions listed as TOIs in Table 3-2. In addition, the library contains many entries that are in all likelihood not present at this site. The lack of library entries for all of the known TOIs at this site played a very important part in the TEMTADS classifications of Category 2 (Inconclusive) targets. Accordingly, these distributions are more indicative of the distribution of sizes/shapes of the identified objects as opposed to actually representing the number of occurrences of a specific object. Furthermore, the "Inconclusive" categories will include items that are only close to the matched library item with respect to a subset of the features (i.e., only a subset of the combinations of criteria used actually matched the indicated items).

3.4.2.4 Where three are library entries for the items listed in Table 3-2, only two targets matched to these items (indicated with an "*" in Figure 3-6). There was a high confidence match to a hand grenade in area TDSA5, and an inconclusive match to a 20-mm with cartridge in area G-18D. In the delivered prioritized list there is also an "Inconclusive" item that is listed as a match to a VB rifle grenade. Even though this item was elevated to Category 2 during the qualitative assessment, the "VB rifle grenade" designation should be ignored. Upon review of the derived βs, this item does not match a VB rifle grenade qualitatively or quantitatively and accordingly is not identified as a VB rifle grenade on Figure 3-6 (but it is still categorized as "Inconclusive").

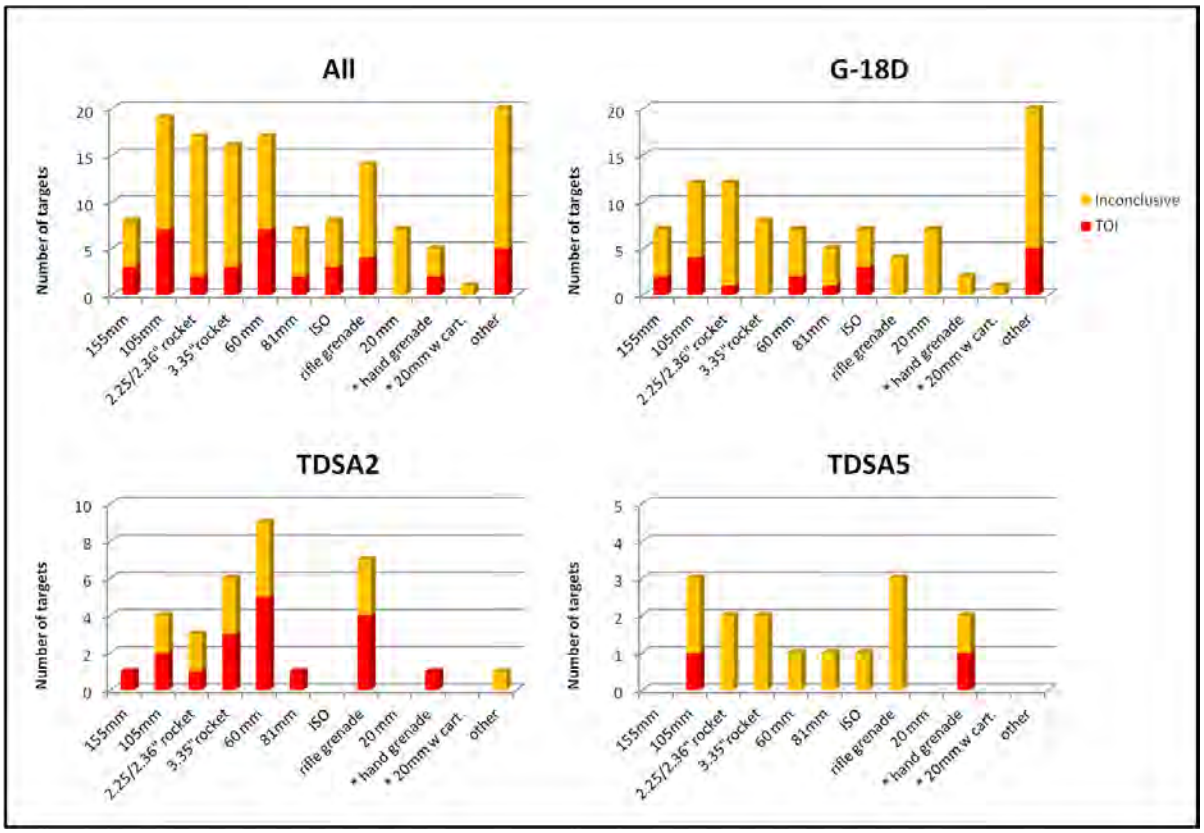

Figure 3-5. TOI Distribution by Munitions Type

3.5 Classification Discussion and Conclusions

3.5.1 Classification of targets as a TOI or non-TOI is based on how the estimated physical parameters (i.e., size, aspect ratio, rotational symmetry, and wall thickness) of targets match with items in the munitions library developed for the project. This is accomplished by comparing the β values estimated for each source and the β values in the munitions library developed for the project. If the modeled response is not highly correlated with the observed response, the target is classified as "can't analyze" and marked for intrusive investigation. Additionally, if the observed response shows TOI characteristics but does not match one of the library entries with high confidence, the target is classified as category 2 (Inconclusive) and marked for intrusive investigation. Furthermore, if no metallic source is associated with a candidate target, the fit routine will still try to fit a target model to the observed signal and often this results in "no-finds" in the target list. The discovery of multiple no-finds during the reacquisition process prompted the QC evaluation of EM61 data and recollection of towed array data, including in DSA 2 and DSA 5 (also see Section 5 of the applicable RI reports and the February 14, 2014 Root Cause Analysis included in the Geophysical Investigation Report appendix of the applicable RI reports).

3.5.2 The application of advanced analysis as described in this report differs significantly from previous demonstrations of this technology. In previous demonstrations, the existence of library entries for all of the known TOIs, supplemented by intrusive "training" investigations to update and confirm the appropriateness of the library, played a very important part in the successful classification of targets at these sites. Accordingly, these results do not support the same conclusions (with respect to potential dig/no dig decisions) with the same confidence levels as are indicated in the previous demonstrations. However, these results can be used to infer size, shape, and likelihood of an anomaly source being due to a TOI.

3.5.3 All of the TOIs listed in Table 3-2 (with the exception of the “Fuze, Projectile, PTT”) are expected to have recognizable features due primarily to their cylindrical shape. The lack of library entries and/or training data is mitigated by the qualitative analysis performed by the analyst, whereby targets exhibiting these recognizable features were removed from the non-TOI category.

3.5.4 With respect to the fuze entry listed in the Table 3-2, although some fuzes were included in the library without confirmation that these were representative of the fuze listed, the classification results do not strongly support any conclusions regarding the presence or absence of this item.

3.5.5 Although the results to date lack the quantitative validation metrics required to be used in support of a removal action, the quantitative and qualitative analyses performed provide reasonable assurance that the targets identified as non-TOI can be assumed to be non-TOI for the purposes of the ongoing RI. As training data (and/or library entries for the TOI listed in Table 3-2) become available, more definitive and quantifiable pronouncements with respect to the source of each anomaly will become possible. Although it is likely that many of the items identified as TOI or Inconclusive are due to non-TOI sources, without further information it is not possible to determine how many, or which of these items are not TOI. No further data are required.

SECTION 4

References

Bell, T., Barrow, B., Miller, J., Keiswetter, D. 2001. “Time and Frequency Domain Electromagnetic Induction Signatures of Unexploded Ordnance.” In *Subsurface Sensing Technologies and Applications* Vol. 2, No. 3. July.

CH2M HILL, Inc. 2013. *Remedial Investigation/Feasibility Study Work Plan*. Former Raritan Arsenal, Edison, New Jersey. Prepared for the U.S. Army Corps of Engineers, New York District. November.

Miller, J.T., Keiswetter, D.A., Kingdon, J.B., Furuya, T., Barrow, B.J., Bell, T.H. 2010. “Source Separation using Sparse-Solution Linear Solvers,” Detection and Sensing of Mines, Explosive Objects, and Obscured Targets XV, Proc. of SPIE Vol. 7664, 766409.

Appendix A - Root Cause Analysis

TEMTADS Dipole Fit Quality Failure

Date: February 8, 2019

Non-conformance: In the TEMTADS data set collected during the time period January 20 to 31, 2014, only 94% of the fit dipole positions were within the specified tolerance (within 40 cm of the center of the array).

Applicable reference: QAPP Worksheet #22: *Field Equipment Calibration, Maintenance, Testing, and Inspection during Surface Clearance, Detection Surveys, Cued Surveys, and Intrusive Investigation*. Criterion for Dipole Fit Quality states: "95% of all measurements will pass fit coherence (> 0.8), fit depth (<2 m), and fit position (<40 cm from center of sensor)."

Description of Nonconformance: Part of the Dipole Fit Quality MQO stipulated that 95% of the dipole fit positions should be within 40 cm of the center of the array. As indicated above, only 94% of the positions were within the specified tolerance. However, this failure is not an indication that the sensor or data collection methodology was flawed. The sensor functionality with respect to target location errors and measurement accuracy and precision were verified during the data collection days using the IVS results (Figures A-1 and A-2).

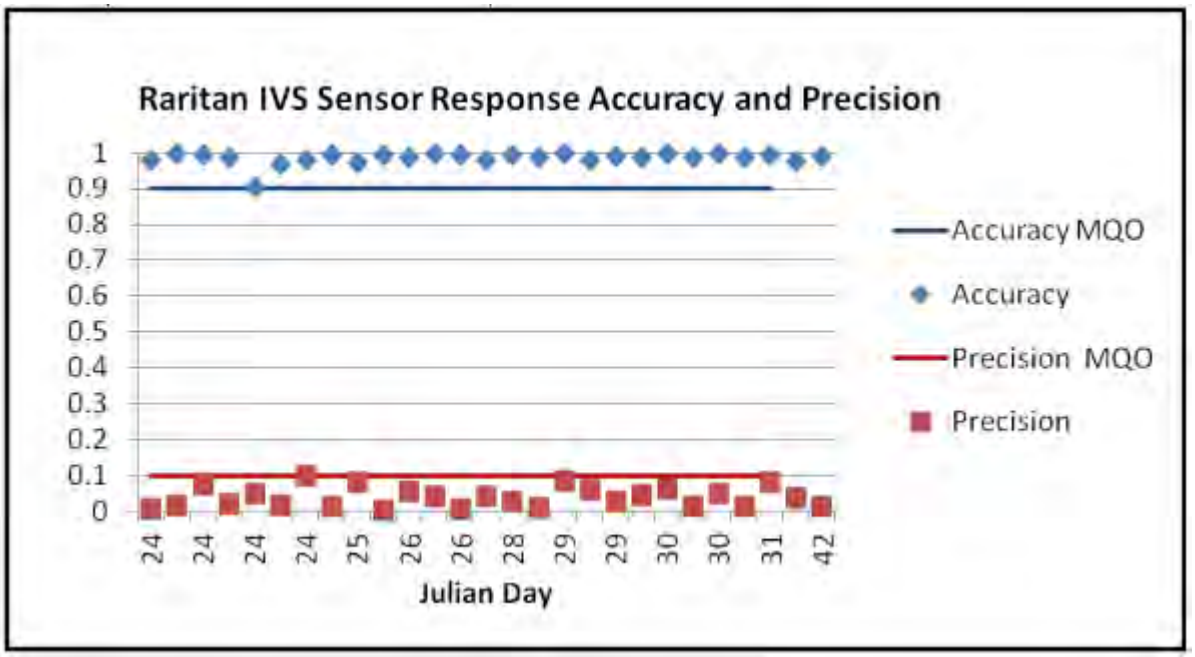

Figure A-1. IVS Response Results

Note: Accuracy (passed MQO, better than 0.9) is verified using library fit correlation and precision (passed MQO, within 10%) is assessed as the percentage deviation of each derived amplitude from the mean of the derived amplitudes.

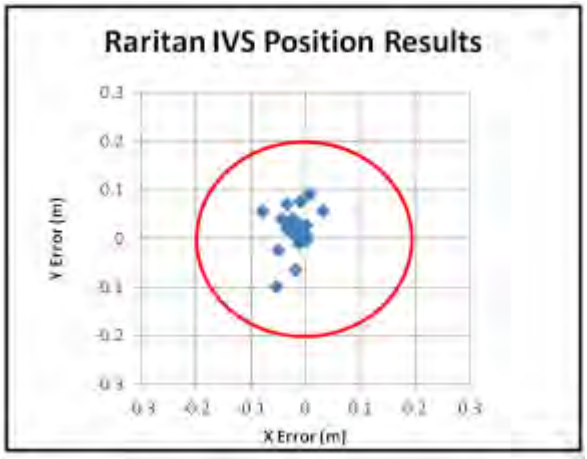

Figure A-2. QC Plots of TEMTADS Location Errors
Note: Passed MQO, average error is 3 cm.

Contributing Factors: Upon inspection of the target selections and the EM61 data they were selected from, it was apparent some selections were due to grid artifacts and/or noisy EMI data. The discovery of multiple no-contacts during the reacquisition process prompted the QC evaluation and resurvey due to intrinsic noise in the EM61 towed array system as indicated in Section 5.1 and documented in Appendix F of the RI report for Area 18D.

Root Cause Analysis: The root cause of the dipole fit positions failure is an artifact of the fact that there was a very large number of "no-finds" in the target list. In the case of a "no-find," the fit routine will still try to fit a target model to the observed signal and often this results in fitting to real or "noise-related" targets that are well outside of the 40-cm acceptance radius. Fit positions outside of a 1-m radius are considered "no-finds," but those that are within 1 m are conservatively treated as potential targets. Because they are potential targets, but not within the 40-cm radius required for reliable classification, these targets are categorized as "can't analyze" (category zero) or inconclusive (category 2) and marked for intrusive investigation.

Data Usability Assessment: As outlined above, this issue has not arisen during the QC tests, and it is highly unlikely that this failure was indicative on a problem with the system. Therefore, there is no impact on the quality of the data collected during the entire time period from January 20 to 31, 2014.

Appendix B - TEMTADS Library

Type	Source
105-mm HEAT	Blossom Point Research Facility, MD
105-mm projectile	Blossom Point Research Facility, MD
155-mm projectile	Massachusetts Military Reservation, MA
2.25-inch rocket	New Boston Air Force Station, NH
2.36-inch rocket	Fort Rucker, AL
2.75-inch rocket warhead	Former VNTR, PR (test stand)
20-mm ATC	New Boston Air Force Station, NH
20-mm expended	New Boston Air Force Station, NH
20-mm projectile	New Boston Air Force Station, NH
Mk2 hand grenade	Fort Rucker, AL
3 lb bomb	Former VNTR, PR (test stand)
3.5-inch rocket without ogive	Former VNTR, PR (test stand)
3.5-inch rocket with ogive	Former VNTR, PR (test stand)
3.5-inch Rocket Full Assembly	New Boston Air Force Station, NH
3.5-inch rocket fuze & motor	New Boston Air Force Station, NH
3.5-inch Rocket warhead	New Boston Air Force Station, NH
30-mm projectile	Former VNTR, PR (test stand)
37-mm (various)	Blossom Point Research Facility, MD
3-inch projectile	Blossom Point Research Facility, MD
4.2-inch mortar	Former VNTR, PR (test stand)
40-mm	Former VNTR, PR (test stand)
40-mm grenade	Former VNTR, PR (test stand)
5-inch projectile	Blossom Point Research Facility, MD
60-mm illumination round	Former VNTR, PR (test stand)
60-mm mortar (various)	Blossom Point Research Facility, MD
75-mm	Former Spencer Artillery Range, TN
81-mm mortar (various)	Blossom Point Research Facility, MD
90-mm AP with drive band	Former VNTR, PR (test stand)
M102A1 bomb tail fuze	New Boston Air Force Station, NH
M29 rifle grenade	Former VNTR, PR (test stand)
Medium ISO	Massachusetts Military Reservation, MA
Rifle grenade	Fort Rucker, AL
small ISO sched40	Former Camp Beale, CA
small ISO sched80	Fort Rucker, AL
VB Rifle Grenade	Raritan Arsenal

Appendix C - Tabulated Munitions Classification Results by Area

Appendix C-1

Advanced Classification Results for Dredge Spoil Area (DSA) #2
Former Raritan Arsenal, Edison, NJ

# of Anomalies	Anomaly ID	X*	Y*	Anomaly Classification Category	Classification Description
1	1040_001_01	556718.7	4483004	0	Could Not Analyze
2	1048_001_02	556731.1	4483017.5	0	Could Not Analyze
3	1054_001_04	556742.9	4483034.4	0	Could Not Analyze
4	1059_001_01	556681.6	4483038.8	0	Could Not Analyze
5	1034_001_01	556700.1	4482975.3	1	Looks Like TOI
6	1001_001_01	556649.9	4482998.8	1	Looks Like TOI
7	1022_001_01	556685.8	4483050	1	Looks Like TOI
8	1014_001_01	556678.9	4483032.7	1	Looks Like TOI
9	1063_001_02	556738.5	4483027.4	1	Looks Like TOI
10	1027_001_01	556693.4	4483060.5	1	Looks Like TOI
11	1051_001_04	556736.7	4483025	1	Looks Like TOI
12	1023_001_02	556687.2	4483051.3	1	Looks Like TOI
13	1012_001_01	556674.6	4483019.6	1	Looks Like TOI
14	1090_001_04	556736.7	4483028	1	Looks Like TOI
15	1016_001_01	556679.1	4483037.7	1	Looks Like TOI
16	1017_001_01	556681.9	4483042.5	1	Looks Like TOI
17	1043_002_01	556722.1	4483004.1	1	Looks Like TOI
18	1013_001_01	556675.3	4483021.1	1	Looks Like TOI
19	1021_001_01	556684.8	4483049.3	1	Looks Like TOI
20	1044_002_01	556721.6	4483008.7	1	Looks Like TOI
21	1025_001_03	556692.3	4483058.3	1	Looks Like TOI
22	1049_001_04	556733.5	4483022.8	1	Looks Like TOI
23	1046_001_01	556728.7	4483015.9	1	Looks Like TOI
24	1058_001_01	556679.4	4483036.1	1	Looks Like TOI
25	1041_002_01	556721.3	4483004	2	Inconclusive
26	1015_001_02	556679.3	4483035	2	Inconclusive
27	1045_001_03	556730.6	4483015.1	2	Inconclusive
28	1053_001_01	556738.1	4483029.3	2	Inconclusive
29	1024_001_04	556688.7	4483054.2	2	Inconclusive
30	1018_001_02	556683.3	4483045.9	2	Inconclusive
31	1020_001_02	556684.2	4483048.2	2	Inconclusive
32	1047_001_02	556731.9	4483016.2	2	Inconclusive
33	1011_001_01	556673.4	4483019.4	2	Inconclusive
34	1026_001_03	556692.3	4483060.5	2	Inconclusive
35	1038_002_01	556715.1	4482999.7	2	Inconclusive
36	1052_002_01	556737	4483027.9	2	Inconclusive
37	1028_001_02	556695.2	4483064.1	2	Inconclusive
38	1019_001_03	556685.3	4483046.9	2	Inconclusive
39	1050_001_02	556736.1	4483023.2	2	Inconclusive
	1042_001_01	556719.6	4483003.8	3	Does Not Look Like TOI
	1032_001_01	556707.1	4483082.6	3	Does Not Look Like TOI
	1033_001_01	556709.1	4483086.5	3	Does Not Look Like TOI
	1039_001_01	556718	4482999.8	3	Does Not Look Like TOI
	1061_001_01	556706.9	4483083.7	3	Does Not Look Like TOI
	1091_001_01	556745.6	4483037.6	3	Does Not Look Like TOI
	1037_003_04	556712.2	4482993.8	3	Does Not Look Like TOI
	1060_001_03	556703.8	4483077.4	3	Does Not Look Like TOI

* All coordinates reported in NAD83, UTM Zone 18N, meters

Appendix C-2

Advanced Classification Results for Dredge Spoil Area (DSA) #5

Former Raritan Arsenal, Edison, NJ

# of Anomalies	Anomaly ID	X*	Y*	Anomaly Classification Category	Classification Description
1	1463_001_03	556038.3	4481127.1	0	Could Not Analyze
2	1460_001_01	556036.5	4481149.5	1	Looks Like TOI
3	1471_002_01	556585.9	4481129.6	1	Looks Like TOI
4	1451_002_01	555754.8	4481039.7	1	Looks Like TOI
5	1453_002_01	555880.4	4481019.1	2	Inconclusive
6	1456_002_01	555976	4481015.7	2	Inconclusive
7	1447_002_01	555695.3	4480889.6	2	Inconclusive
8	1438_002_01	555506.8	4480773.1	2	Inconclusive
9	1443_002_01	555671	4480972	2	Inconclusive
10	1455_002_01	555975.4	4481013.8	2	Inconclusive
11	1466_001_03	556212.7	4481196.3	2	Inconclusive
12	1462_002_01	556037.6	4481129.2	2	Inconclusive
13	1461_001_01	556037	4481135.9	2	Inconclusive
14	1464_001_01	556040.1	4481117.6	2	Inconclusive
15	1458_002_01	555983.1	4480996.9	2	Inconclusive
16	1441_001_05	555601.7	4480838.9	2	Inconclusive
17	1452_001_01	555778.8	4480994.3	2	Inconclusive
	1459_001_01	555984.1	4480996.6	3	Does Not Look Like TOI
	1454_001_01	555973.4	4481017.2	3	Does Not Look Like TOI
	1437_001_01	555506.2	4480779.3	3	Does Not Look Like TOI
	1445_001_01	555688.4	4480907.1	3	Does Not Look Like TOI
	1457_001_01	555980	4481004.1	3	Does Not Look Like TOI
	1440_003_01	555600.4	4480837.9	3	Does Not Look Like TOI
	1450_001_01	555752.3	4481041.6	3	Does Not Look Like TOI
	1446_001_01	555693.2	4480897.9	3	Does Not Look Like TOI
	1467_001_01	556241.6	4481146	3	Does Not Look Like TOI
	1439_001_01	555601	4481174.4	3	Does Not Look Like TOI
	1442_001_01	555617.6	4481129.1	3	Does Not Look Like TOI
	1444_001_02	555679.5	4480945.2	3	Does Not Look Like TOI
	1465_001_01	556202.1	4481253.4	3	Does Not Look Like TOI
	1468_001_01	556329.5	4481188.5	3	Does Not Look Like TOI

* All coordinates reported in NAD83, UTM Zone 18N, meters

Appendix C-3

Advanced Classification Results for Area 18D (MCC Property)

Former Raritan Arsenal, Edison, NJ

# of Anomalies	Anomaly ID	X*	Y*	Anomaly Classification Category	Classification Description
1	1105_001_01	554069	4484387.3	0	Could Not Analyze
2	1108_001_01	554069.5	4484387.3	0	Could Not Analyze
3	1134_001_02	554083.3	4484387.9	0	Could Not Analyze
4	1139_001_01	554085.3	4484377	0	Could Not Analyze
5	1164_002_02	554094.3	4484378.4	0	Could Not Analyze
6	1171_001_01	554099.2	4484397.9	0	Could Not Analyze
7	1184_001_01	554103.7	4484399.5	0	Could Not Analyze
8	1190_002_01	554106.1	4484411.7	0	Could Not Analyze
9	1203_001_01	554111.3	4484408.1	0	Could Not Analyze
10	1213_001_01	554114.5	4484403.6	0	Could Not Analyze
11	1220_001_04	554115.7	4484404.2	0	Could Not Analyze
12	1236_002_01	554121	4484415.2	0	Could Not Analyze
13	1240_001_01	554122.1	4484399.5	0	Could Not Analyze
14	1268_002_02	554133	4484423.7	0	Could Not Analyze
15	1271_002_03	554135.6	4484415.6	0	Could Not Analyze
16	1275_001_03	554137.2	4484417.3	0	Could Not Analyze
17	1288_002_01	554142.9	4484426.6	0	Could Not Analyze
18	1173_001_01	554099.1	4484404.1	1	Looks Like TOI
19	1301_001_01	554156.5	4484437.1	1	Looks Like TOI
20	1168_002_01	554097.1	4484378.6	1	Looks Like TOI
21	1267_001_01	554132.8	4484407.2	1	Looks Like TOI
22	1137_002_01	554084.4	4484373.6	1	Looks Like TOI
23	1302_001_01	554157.6	4484435.2	1	Looks Like TOI
24	1159_002_01	554091.1	4484375.4	1	Looks Like TOI
25	1300_001_01	554153.2	4484424.9	1	Looks Like TOI
26	1308_002_01	554096.1	4484377.9	1	Looks Like TOI
27	1107_002_01	554069.3	4484375.7	1	Looks Like TOI
28	1102_001_01	554066.2	4484377.5	1	Looks Like TOI
29	1110_002_01	554070.2	4484373.4	1	Looks Like TOI
30	1229_001_01	554118.1	4484414	1	Looks Like TOI
31	1200_001_01	554110.6	4484389.9	1	Looks Like TOI
32	1274_001_02	554137.3	4484405.6	1	Looks Like TOI
33	1276_001_01	554137.6	4484405.6	1	Looks Like TOI
34	1130_002_01	554080.5	4484390.5	1	Looks Like TOI
35	1311_001_01	554154.5	4484436.1	1	Looks Like TOI
36	1181_001_01	554102.6	4484396.4	1	Looks Like TOI
37	1182_002_01	554103.5	4484383.5	1	Looks Like TOI
38	1265_003_02	554131.3	4484411.4	2	Inconclusive
39	1138_001_01	554084.4	4484380.3	2	Inconclusive
40	1298_001_01	554152	4484419.5	2	Inconclusive
41	1126_001_01	554076.9	4484383.2	2	Inconclusive
42	1162_001_01	554093.1	4484379.6	2	Inconclusive
43	1307_001_01	554163.4	4484438.5	2	Inconclusive
44	1170_001_01	554098	4484404.5	2	Inconclusive
45	1127_001_01	554077.3	4484390.2	2	Inconclusive
46	1250_001_01	554126.2	4484396.5	2	Inconclusive
47	1150_002_01	554088.7	4484371.2	2	Inconclusive
48	1187_002_01	554105.1	4484407.7	2	Inconclusive
49	1312_002_03	554111.9	4484398.3	2	Inconclusive
50	1188_002_01	554105	4484407.6	2	Inconclusive
51	1217_001_01	554114.2	4484411.5	2	Inconclusive

Appendix C-3

Advanced Classification Results for Area 18D (MCC Property)

Former Raritan Arsenal, Edison, NJ

# of Anomalies	Anomaly ID	X*	Y*	Anomaly Classification Category	Classification Description
52	1255_001_03	554128.1	4484418.8	2	Inconclusive
53	1123_001_01	554075.8	4484388.6	2	Inconclusive
54	1149_002_02	554089.1	4484369.6	2	Inconclusive
55	1156_002_01	554091.1	4484372.4	2	Inconclusive
56	1169_002_01	554097.4	4484407.3	2	Inconclusive
57	1282_002_01	554141.8	4484412.6	2	Inconclusive
58	1210_004_01	554113	4484417.2	2	Inconclusive
59	1194_001_01	554108.8	4484394.9	2	Inconclusive
60	1109_001_01	554070.9	4484381.7	2	Inconclusive
61	1119_001_01	554073.4	4484389.2	2	Inconclusive
62	1299_001_01	554152.8	4484422.1	2	Inconclusive
63	1103_001_01	554067.3	4484386.2	2	Inconclusive
64	1237_001_01	554121.1	4484421	2	Inconclusive
65	1157_001_01	554091.5	4484378	2	Inconclusive
66	1186_001_01	554104.8	4484381	2	Inconclusive
67	1272_001_01	554135.7	4484431.7	2	Inconclusive
68	1106_001_01	554069.4	4484380.8	2	Inconclusive
69	1211_003_01	554113	4484388.7	2	Inconclusive
70	1214_001_01	554114.1	4484411.2	2	Inconclusive
71	1306_001_01	554162.3	4484435.9	2	Inconclusive
72	1198_002_01	554109.1	4484384	2	Inconclusive
73	1143_001_01	554086.5	4484397.8	2	Inconclusive
74	1222_003_01	554116.8	4484391.4	2	Inconclusive
75	1257_002_01	554128	4484409.8	2	Inconclusive
76	1266_001_01	554132.5	4484404.8	2	Inconclusive
77	1223_001_01	554116.4	4484413.3	2	Inconclusive
78	1196_002_01	554108.7	4484395	2	Inconclusive
79	1270_001_01	554134.4	4484407.1	2	Inconclusive
80	1154_001_01	554090.9	4484390.2	2	Inconclusive
81	1191_001_01	554106.1	4484405.3	2	Inconclusive
82	1249_002_01	554125.6	4484408.9	2	Inconclusive
83	1238_001_02	554121.2	4484415	2	Inconclusive
84	1310_002_01	554142.4	4484416.4	2	Inconclusive
85	1313_001_01	554091.2	4484371.2	2	Inconclusive
86	1293_001_01	554145.6	4484414.9	2	Inconclusive
87	1192_003_01	554106.8	4484398.6	2	Inconclusive
88	1116_002_01	554073.1	4484386.1	2	Inconclusive
89	1176_003_01	554101.3	4484405.8	2	Inconclusive
90	1259_003_01	554129.9	4484412.5	2	Inconclusive
91	1117_001_01	554073.1	4484373.8	2	Inconclusive
92	1225_001_01	554117	4484410.7	2	Inconclusive
93	1135_001_01	554083.1	4484391.2	2	Inconclusive
94	1112_001_01	554071.8	4484376.5	2	Inconclusive
95	1260_003_01	554129.5	4484411	2	Inconclusive
96	1140_001_01	554085.8	4484375.7	2	Inconclusive
97	1209_001_01	554113.1	4484402.7	2	Inconclusive
98	1125_001_01	554076.3	4484382.1	2	Inconclusive
99	1121_002_01	554075.6	4484382.7	2	Inconclusive
100	1239_002_01	554121.5	4484397.6	2	Inconclusive
101	1264_001_01	554131.4	4484405.1	2	Inconclusive
102	1226_001_01	554117.7	4484396.3	2	Inconclusive

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Advanced Classification Results for Area 18D (MCC Property)

Former Raritan Arsenal, Edison, NJ

# of Anomalies	Anomaly ID	X*	Y*	Anomaly Classification Category	Classification Description
103	1291_001_02	554145.1	4484437.5	2	Inconclusive
104	1252_001_01	554127.3	4484400.4	2	Inconclusive
105	1104_001_01	554067.4	4484376.7	2	Inconclusive
106	1283_001_01	554141.6	4484432.5	2	Inconclusive
107	1152_002_02	554089.6	4484376.6	2	Inconclusive
108	1253_001_02	554127.4	4484417.6	2	Inconclusive
109	1166_001_01	554095.7	4484405.5	2	Inconclusive
110	1215_002_03	554113.7	4484400	2	Inconclusive
111	1221_001_04	554115.8	4484404.7	2	Inconclusive
	1202_001_02	554111.1	4484394.6	3	Does Not Look Like TOI
	1120_001_01	554074	4484373.3	3	Does Not Look Like TOI
	1115_001_01	554073.1	4484377.5	3	Does Not Look Like TOI
	1160_001_02	554091.9	4484392.7	3	Does Not Look Like TOI
	1305_001_01	554160.9	4484439.9	3	Does Not Look Like TOI
	1128_001_01	554079.3	4484378.2	3	Does Not Look Like TOI
	1242_001_01	554122	4484414	3	Does Not Look Like TOI
	1136_001_01	554084.3	4484389.4	3	Does Not Look Like TOI
	1144_001_01	554086.7	4484390.1	3	Does Not Look Like TOI
	1219_001_01	554115.3	4484415.8	3	Does Not Look Like TOI
	1145_001_01	554087.4	4484390.2	3	Does Not Look Like TOI
	1233_001_01	554120	4484417.4	3	Does Not Look Like TOI
	1230_001_02	554117.8	4484415.7	3	Does Not Look Like TOI
	1165_001_02	554094.7	4484389.4	3	Does Not Look Like TOI
	1248_001_01	554124.9	4484424.9	3	Does Not Look Like TOI
	1212_002_01	554114.6	4484407.9	3	Does Not Look Like TOI
	1111_001_01	554071.4	4484379.3	3	Does Not Look Like TOI
	1245_001_01	554123.3	4484410.3	3	Does Not Look Like TOI
	1232_001_01	554118.9	4484419.3	3	Does Not Look Like TOI
	1261_001_01	554130.3	4484408.6	3	Does Not Look Like TOI
	1290_002_01	554146.3	4484421.5	3	Does Not Look Like TOI
	1124_001_01	554076.2	4484392.7	3	Does Not Look Like TOI
	1247_001_02	554124.3	4484409.1	3	Does Not Look Like TOI
	1292_001_02	554145.4	4484416.1	3	Does Not Look Like TOI
	1177_001_02	554102	4484387.4	3	Does Not Look Like TOI
	1243_001_02	554122	4484407.7	3	Does Not Look Like TOI
	1180_001_01	554102.6	4484378.1	3	Does Not Look Like TOI
	1101_001_01	554065.8	4484380.3	3	Does Not Look Like TOI
	1218_003_01	554114.4	4484406.3	3	Does Not Look Like TOI
	1161_001_01	554092.4	4484385.6	3	Does Not Look Like TOI
	1147_001_01	554088	4484376	3	Does Not Look Like TOI
	1178_001_01	554101.2	4484401.5	3	Does Not Look Like TOI
	1148_001_01	554088.8	4484375.3	3	Does Not Look Like TOI
	1284_001_01	554142.1	4484410.1	3	Does Not Look Like TOI
	1258_001_01	554129.4	4484424.6	3	Does Not Look Like TOI
	1269_001_01	554134.3	4484415.3	3	Does Not Look Like TOI
	1277_001_01	554139.3	4484431.4	3	Does Not Look Like TOI
	1172_001_01	554098.7	4484393.1	3	Does Not Look Like TOI
	1279_002_01	554140.7	4484406.2	3	Does Not Look Like TOI
	1256_001_01	554128.3	4484412.5	3	Does Not Look Like TOI
	1235_003_01	554120.3	4484405	3	Does Not Look Like TOI
	1280_001_01	554140.8	4484435.4	3	Does Not Look Like TOI

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Advanced Classification Results for Area 18D (MCC Property)

Former Raritan Arsenal, Edison, NJ

# of Anomalies	Anomaly ID	X*	Y*	Anomaly Classification Category	Classification Description
	1224_001_01	554117	4484420.4	3	Does Not Look Like TOI
	1122_001_01	554075.7	4484375.3	3	Does Not Look Like TOI
	1304_001_01	554158.3	4484437.8	3	Does Not Look Like TOI
	1208_001_02	554112.9	4484387.7	3	Does Not Look Like TOI
	1201_001_01	554110.7	4484400.6	3	Does Not Look Like TOI
	1132_001_01	554081.7	4484379.4	3	Does Not Look Like TOI
	1118_001_01	554073.5	4484383.4	3	Does Not Look Like TOI
	1174_001_01	554100.4	4484397.1	3	Does Not Look Like TOI
	1254_001_01	554127.8	4484397.6	3	Does Not Look Like TOI
	1216_001_01	554114.6	4484391.3	3	Does Not Look Like TOI
	1289_001_01	554144	4484415.8	3	Does Not Look Like TOI
	1207_001_01	554112.9	4484388.5	3	Does Not Look Like TOI
	1296_001_01	554148.3	4484415.3	3	Does Not Look Like TOI
	1246_001_01	554123.5	4484408.2	3	Does Not Look Like TOI
	1131_002_01	554080.8	4484387.7	3	Does Not Look Like TOI
	1263_001_01	554130.8	4484402.7	3	Does Not Look Like TOI
	1155_001_01	554090.4	4484402.1	3	Does Not Look Like TOI
	1185_002_01	554104.8	4484411	3	Does Not Look Like TOI
	1183_002_01	554103.6	4484388	3	Does Not Look Like TOI
	1146_001_01	554088.2	4484395.1	3	Does Not Look Like TOI
	1142_001_01	554085.9	4484394.8	3	Does Not Look Like TOI
	1113_001_01	554072.1	4484379.3	3	Does Not Look Like TOI
	1163_001_01	554094.6	4484396.6	3	Does Not Look Like TOI
	1114_001_01	554072.3	4484380.5	3	Does Not Look Like TOI
	1273_001_01	554136.6	4484416.6	3	Does Not Look Like TOI
	1197_001_03	554109.4	4484386.3	3	Does Not Look Like TOI
	1133_001_05	554082.7	4484390.9	3	Does Not Look Like TOI
	1141_001_03	554085.6	4484399.5	3	Does Not Look Like TOI
	1151_001_01	554090	4484381.2	3	Does Not Look Like TOI
	1153_001_01	554089.7	4484385.6	3	Does Not Look Like TOI
	1158_001_01	554090.5	4484399.1	3	Does Not Look Like TOI
	1167_001_01	554095.9	4484388.4	3	Does Not Look Like TOI
	1175_002_02	554100.5	4484402.8	3	Does Not Look Like TOI
	1179_001_01	554101.9	4484404.4	3	Does Not Look Like TOI
	1189_001_01	554104.9	4484381.9	3	Does Not Look Like TOI
	1193_001_01	554107.7	4484403.7	3	Does Not Look Like TOI
	1195_001_01	554108	4484407.7	3	Does Not Look Like TOI
	1199_001_01	554110.1	4484404	3	Does Not Look Like TOI
	1204_001_01	554112.1	4484404	3	Does Not Look Like TOI
	1205_001_01	554112.3	4484409.5	3	Does Not Look Like TOI
	1206_001_01	554112.3	4484389.4	3	Does Not Look Like TOI
	1227_001_01	554117.2	4484408.3	3	Does Not Look Like TOI
	1228_001_01	554117.1	4484419.5	3	Does Not Look Like TOI
	1231_001_01	554119.1	4484410.1	3	Does Not Look Like TOI
	1234_001_02	554120.2	4484392.2	3	Does Not Look Like TOI
	1241_001_01	554121.6	4484394.1	3	Does Not Look Like TOI
	1244_001_03	554122.6	4484405.3	3	Does Not Look Like TOI
	1251_001_03	554126.1	4484406.2	3	Does Not Look Like TOI
	1262_001_05	554130.5	4484410.1	3	Does Not Look Like TOI
	1278_001_02	554139.5	4484420.7	3	Does Not Look Like TOI
	1286_001_03	554142.9	4484428.1	3	Does Not Look Like TOI

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Advanced Classification Results for Area 18D (MCC Property)
Former Raritan Arsenal, Edison, NJ

# of Anomalies	Anomaly ID	X*	Y*	Anomaly Classification Category	Classification Description
	1294_001_03	554149.2	4484432	3	Does Not Look Like TOI
	1295_001_03	554149.3	4484413.9	3	Does Not Look Like TOI
	1297_001_01	554149.5	4484434.8	3	Does Not Look Like TOI

* All coordinates reported in NAD83, UTM Zone 18N, meters

Appendix D
Background Threshold Value Report

APPENDIX D

Background Study for Dredge Spoil Areas

A background study was conducted for the dredge spoil areas (DSAs) that are being investigated as part of the Remedial Investigation/Feasibility Study (RI/FS) that is being completed for several Areas of Investigation[1] at the former Raritan Arsenal in Middlesex County, New Jersey (Figure D-1). The purpose of the background study was to collect samples representative of background conditions in the areas with dredge spoils and establish a background dataset using statistical and graphical data analyses.[2] Dredge spoils from the Raritan River were historically deposited at DSAs 1, 2, 3, 4, 5, and 6. Therefore, the background dataset for the dredge spoils will be used to determine if site concentrations within the DSAs are attributable to dredge spoils rather than a site-specific release.

The background study was conducted in general accordance with the following guidance documents:

- *Environmental Statistics: Environmental Quality – Engineering and Design* (U.S. Army Corps of Engineers [USACE], 2013)
- *Determination of Background Concentrations of Inorganics in Soils and Sediments at Hazardous Waste Sites* (U.S. Environmental Protection Agency [EPA], 1995)
- *Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites* (EPA, 2002)
- *ProUCL Version 5.1 Technical Guide. Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations* (EPA, 2015)

The background study included the following steps: 1) Establishing a background dataset; 2) Estimating background threshold values (BTVs) using upper tolerance limits (UTLs); and 3) Providing the methodology for site-to-background comparisons. Each of these steps is discussed in the following sections.

Background Dataset

Background samples were collected from the DSAs and were evaluated to establish a representative background dataset for metals. The background dataset will be used in the site-to-background comparisons for the DSAs to determine if the metals are attributable to background levels. The approach used to collect the background data and the results of the background data evaluation are discussed below.

Background Data Collection

Overview of Dredge Spoil Areas

Historical records indicate that dredging of the lower Raritan River was performed from approximately the World War II era up to as recently as 1992. According to Weston (2002), “A 300-foot wide, 25-foot-deep channel was historically maintained by USACE from Raritan Bay upriver to immediately downstream of the former Arsenal.” Historical dredging activities maintained a turning basin, which vessels used for turning around in the channel after picking up supplies from the former Arsenal,

[1] The background study was conducted during RI/FS work performed as part of Contract Number W912DY-09-D-0060, Task Order 003.

[2] For the purpose of the study, “background” refers to concentrations or locations that are not influenced by a site-related release and are described as naturally occurring or anthropogenic.

whereas more recent dredging activities were focused on maintaining a channel downstream of the turning basin toward Raritan Bay.

The dredge spoils from the Raritan River were disposed within several areas identified as DSAs (Figure D-1) (Dames & Moore, 1993). The total land area of the DSAs is 645 acres with 323 acres located within the boundary of the former Arsenal and 322 acres located outside the boundary. The DSAs are located in the southeastern portion of the former Arsenal (DSA 1 through DSA 3), on the south shoreline of the Raritan River directly across from the former Arsenal (DSA 5), and on two small islands (Crab Island) located within the Raritan River (DSAs 4 and 6). DSA 1 overlaps with Areas 6, 6A, and 6B; DSA 2 overlaps with Area 11; and DSA 3 overlaps with Area 12.

Background Sampling Approach

The overall investigation approach used for the RI/FS for the former Raritan Arsenal consisted of three phases. Phases I and II were completed in Fall 2013 and Spring 2014, respectively, and consisted of digital geophysical mapping (DGM), selecting anomalies of interest, and conducting intrusive investigations of the selected anomalies. A statistically representative subset of the identified anomalies was investigated to determine which anomalies may represent targets of interest (either unexploded ordnance [UXO], discarded military munitions [DMM], or practice munitions items). The results of the Phase I and II investigations were used to determine the approach for the background sampling, as described in the *Final Revision 1 Uniform Federal Policy for Quality Assurance Project Plan (UFP-QAPP) for the RI/FS* (CH2M, 2016). The background sampling was completed during Phase III of the RI/FS in August 2016.

Sample locations for the background sampling were identified in areas where dredge spoils from the Raritan River were previously delineated; specifically at DSAs 1, 2, 3, and 5. The background sample locations were placed in separate DSAs to capture potential variability in constituent concentrations since the dredge spoils were sourced from different areas of the Raritan River and were dredged and deposited at different times. Within each DSA, the background samples were collected outside areas where metallic anomalies were identified to avoid areas potentially impacted by munitions and explosives of concern (MEC) and munitions constituents (MC).

The background samples were collected from random sample points located within two 0.5-acre sampling grids placed at each DSA. The sampling grids were subdivided into four cells and one sample location was randomly placed in each grid cell using the Environmental Systems Research Institute (ESRI) geographic information system (GIS) software. A total of 32 soil samples (0 to 10 feet below ground surface [bgs]) were collected and analyzed for Target Analyte List (TAL) metals. The samples were composited across the 0 to 10 feet depth interval. The soil sampling locations are shown on Figures D-2 through D-5.

Background Data Validation

The background analytical data collected from the DSAs during the Phase III sampling were validated, and the data validation results are provided in Attachment D-1. The validation process showed the precision, accuracy, representativeness, comparability and completeness of the laboratory results as qualified to meet the project objectives. A summary of the background data is provided in Table D-1. A copy of the background dataset is provided in Attachment D-2.

Background Data Evaluation

Identification of Outliers

An outlier can be defined as a measurement that is unusual relative to other measurements in the same sample population, and which therefore is suspected of misrepresenting the population to which it is

assigned (EPA, 2002). Because of their extreme value relative to most of the sample data, outliers can distort statistical calculations (EPA, 2002, 2015).

Typical reasons for outliers in background data (EPA, 2002) include:

- Improper sampling, analytical error, or laboratory contamination
- Errors in data transcription
- Non-normal population (population is highly skewed toward high or low values)
- Natural heterogeneity with "true" background values that are unusually low or high
- Sample is affected by site-related contamination

Background data collected from the DSAs were evaluated for potential outliers using the Rosner outlier test with a 0.05 significance level. The Rosner test was run up to five times and the potential outliers identified in each run were removed prior to running the subsequent test. The Rosner outlier test was also supplemented with graphical displays of the data (box-and-whisker plots and Q-Q plots) to facilitate the identification of potential outliers. The box-and-whisker plots and Q-Q plots are provided in Attachments D-3 and D-4, respectively. The potential outliers identified based on the Rosner test are summarized in Table D-2.

As stated in EPA's *Data Quality Evaluation Statistical Toolbox (DataQUEST) User's Guide* (EPA, 1997):

> "If a data point is found to be an outlier, the analyst may either: 1) correct the data point; 2) discard the data point from analysis; or 3) use the data point in all analyses. This decision should be based on scientific reasoning in addition to the results of the statistical test. One should never discard an outlier based solely on a statistical test. Discarding an outlier from a data set should be done with extreme caution, particularly for environmental data sets, which often contain legitimate extreme values."

The potential outliers identified based on the statistical tests and graphical displays are likely associated with the heterogeneity of the dredge spoils. The dredge spoils have inherent variability because they were collected from various areas of the Raritan River and were applied to the former Arsenal during different time periods. Additionally, the concentrations of metals in the dredge spoils reflect contributions from both naturally occurring and anthropogenic sources of uncertain origin. The background samples were not collected near metallic anomalies and therefore, are unlikely to represent a Department of Defense (DoD)-related release. The majority of the outliers were from four sample locations (DSA05-SB29, DSA05-SB30, DSA05-SB31, and DSA05-SB32) within the same sample grid located in the eastern portion of DSA 5. As shown in Figure D-5, these four locations were not located within close proximity to any metallic anomalies identified from the DGM. Based on these factors, the potential outliers identified based on the results of the statistical tests and graphical displays were included in the estimation of the UTLs for the DSAs.

Final Background Dataset

For the purpose of the background study, all of the background soil samples collected from DSAs 1,2, 3, and 5 were grouped together to create one background data set. The dredge spoils were applied to the different DSAs at various times, in different quantities, and from multiple locations within the Raritan River. Therefore, combining the background data collected from the different DSAs provides a background dataset that is representative of the heterogeneity associated with the dredge spoils. The final background dataset consisted of all 32 soil samples (0 to 10 feet bgs) collected from DSAs 1, 2, 3, and 5.

Background Threshold Value Estimation

The 95 percent UTL of the 95th percentile, also called the 95/95 UTL or UTL, is typically used as a BTV for screening against site concentrations (EPA, 2015). If the background and site concentrations are not

different from one another, it can be concluded with 95 percent confidence that at least 95 percent of all site measurements will fall below the calculated 95/95 UTL (USACE, 2013). Therefore, it would be expected that a small percentage of site measurements will exceed the UTL, even when overall site contamination is not elevated relative to background. Based on this rationale, a target of 5 percent will be used to determine whether site concentrations are attributable to background levels.

The ProUCL software (EPA, 2016) was used to estimate the BTVs. The software estimates a value for non-detect results and tests the data distribution to determine if the data fit a normal, lognormal, or gamma distribution, or if the data do not fit any of these distributions (nonparametric). The UTL calculated based on ProUCL's recommended data distribution type was then selected as the BTV (Table D-3). The methods used by ProUCL software to estimate BTVs with non-detect results and to determine the distribution of the background dataset are briefly described below.

Handling of Non-detect Results

The occurrence of non-detect results (a left-censored data) is quite common in environmental datasets, especially when the data are from a background or reference area (EPA, 2015). The approach recommended by ProUCL (EPA, 2015) was used to calculate the UTLs for metals with non-detect results in the background data set. Goodness-of-fit tests for normal, lognormal and gamma distributions cannot be reliably used on left censored data. Therefore, emphasis is given on the use of distribution-free nonparametric methods including the Kaplan-Meier (KM), Chebyshev inequality, and other computer intensive bootstrap methods to calculate upper limits for datasets with non-detect results (EPA, 2015). The KM method has long been used in epidemiological statistics, such as survival analysis, to manage right-censored data. The KM method has been modified in ProUCL's algorithms to manage left-censored data.

Distributional Assumptions

The distribution of a dataset is important to determine so that appropriate statistical methods are used for analysis. The distributions of the background datasets for this study were determined using the ProUCL software (EPA, 2016). ProUCL uses two statistical tests to determine normal or log-normal distributions: the Shapiro-Wilk test and/or the Lilliefors test. ProUCL uses the Shapiro-Wilk test when the sample size is less than or equal to 50, and the Lilliefors test when the sample size is greater than 50. Tests for gamma distribution include the Kolmogorov Smirnov and Anderson-Darling tests. If ProUCL could not match the data to one of these three distributions, or if the percentage of non-detects in the dataset was greater than 40 percent (extreme left-censored data), nonparametric methods were used for further statistical analysis. Additional information regarding distributional tests is provided in the ProUCL guidance (EPA, 2015).

Recommended Methodology for Site-to-Background Comparisons

A site-to-background screening will be conducted for surface soil (0 to 2 feet bgs) and subsurface soil (2 to 10 feet bgs) at Areas 6, 6A, 6B (DSA 1); Area 11 (DSA 2); Area 12 (DSA 3); and DSAs 4, 5, and 6. The detected site concentrations of each metal will be compared to their respective BTVs to determine if more than 5 percent of the site concentrations exceed the BTVs. If more than 5 percent of the site concentrations for a particular metal exceed the BTV, this indicates the metal could be associated with site-specific contamination rather than background levels.

If a metal is identified as a risk driver based on the results of the risk assessment and 5 percent of its detected concentrations are greater than its respective BTV, additional statistical analyses may be performed to further compare site and background concentrations. Two-sample tests are often used to compare concentrations of two populations, such as site versus background (EPA, 2002; USACE, 2013).

EPA's ProUCL software will be used to run the two-sample tests. The two-sample hypotheses testing approaches in ProUCL are as follows (EPA, 2015) and will be selected for the comparison, as appropriate:

- Student t-test (with equal and unequal variances) – A parametric test that assumes normality
- Wilcoxon-Mann-Whitney test – A Nonparametric test that handles data with non-detects with one detection limit and assumes two populations have comparable shapes and variability
- Gehan test – A nonparametric test that handles data sets with non-detects and multiple detection limits and assumes comparable shapes and variability
- Tarone-Ware test – A nonparametric test that handles data sets with non-detects and multiple detection limits and assumes comparable shapes and variability.

The results of the statistical tests will be used as one line of evidence in determining if the site concentrations of detected metals are attributable to background levels. A qualitative component will also be included in the site-to-background comparisons and will involve identifying whether a particular metal is associated with munitions items and/or historical DoD activities. The results and conclusions of the site-to-background comparisons will be included in the RI Reports for Areas 6, 6A, 6B (DSA 1); Area 11 (DSA 2); Area 12 (DSA 3); and DSAs 4, 5, and 6.

References

CH2M HILL, Inc. (CH2M). 2016. *Final, Revision 1 Uniform Federal Policy-Quality Assurance Project Plan for the Remedial Investigation Feasibility Study*. August.

Dames & Moore. 1993. *Archival Search Report Former Raritan Arsenal*. July.

U.S. Army Corps of Engineers (USACE). 2013. *Environmental Statistics: Environmental Quality – Engineering and Design*. EM 200-1-16. May.

U.S. Environmental Protection Agency (EPA). 1995. *Determination of Background Concentrations of Inorganics in Soils and Sediments at Hazardous Waste Sites.* Office of Research and Development. EPA/540/S-96/500. December.

U.S. Environmental Protection Agency (EPA). 1997. *Data Quality Evaluation Statistical Toolbox (DataQUEST) User's Guide*. EPA/600/R-96/085. December.

U.S. Environmental Protection Agency (EPA). 2002. *Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites*. Office of Emergency and Remedial Response. EPA/540/R-01/003. September.

U.S. Environmental Protection Agency (EPA). 2015. *ProUCL Version 5.1 Technical Guide. Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations.* EPA/600/R-07/041. October.

U.S. Environmental Protection Agency (EPA). 2016. ProUCL, Version 5.1. Prepared by Lockheed Martin Environmental Services. June.

Weston Solutions, Inc. 2002. Non-DoD Historical Dredging Activities Packet. July.

Tables

Table D-1. Background Data Summary

Former Raritan Arsenal, Edison, NJ

CAS #	Analyte	Minimum Detected Concentration/ Qualifier	Maximum Detected Concentration/ Qualifier	Minimum Nondetect Concentration	Maximum Nondetect Concentration	Location of Maximum Detected Concentration	Frequency of Detection	Arithmetic Mean	Standard Deviation
7429-90-5	Aluminum	5430	25600	--	--	DSA02-SB09-0010	32 / 32	16704	7051
7440-36-0	Antimony	1.42 J	8.79	0.937	6.65	DSA05-SB32-0010	5 / 32	4.494	3.343
7440-38-2	Arsenic	2.24 J	179	--	--	DSA05-SB29-0010	32 / 32	29.51	46.21
7440-39-3	Barium	7.98	187	--	--	DSA05-SB31-0010	32 / 32	43.9	46.68
7440-41-7	Beryllium	0.298 J	1.47 J	1.66	1.66	DSA02-SB11-0010	31 / 32	0.885	0.349
7440-43-9	Cadmium	0.853 J	6.79	0.234	1.66	DSA05-SB29-0010	4 / 32	3.266	2.558
7440-70-2	Calcium	138 J	5890	--	--	DSA05-SB27-0010	32 / 32	1637	1467
7440-47-3	Chromium	11	215	--	--	DSA05-SB31-0010	32 / 32	51.67	53.75
7440-48-4	Cobalt	1.89 J	18.3	--	--	DSA05-SB29-0010	32 / 32	9.6	4.339
7440-50-8	Copper	4.66	634	--	--	DSA05-SB31-0010	32 / 32	73.14	162.1
7439-89-6	Iron	7570	57500	--	--	DSA02-SB10-0010	32 / 32	36133	14118
7439-92-1	Lead	4.18	294	--	--	DSA05-SB32-0010	32 / 32	49.05	90.57
7439-95-4	Magnesium	1600	11000	--	--	DSA05-SB27-0010	32 / 32	5463	2586
7439-96-5	Manganese	53.1	841	--	--	DSA02-SB11-0010	32 / 32	228.1	168.6
7439-97-6	Mercury	0.0212 J	5.72	0.0289	0.15	DSA05-SB31-0010	8 / 32	2.146	2.198
7439-98-7	Molybdenum	0.625 J	12.4	1.17	4.66	DSA03-SB17-0010	25 / 32	3.951	3.176
7440-02-0	Nickel	5.3	55.3	--	--	DSA05-SB29-0010	32 / 32	23.65	12.9
7440-09-7	Potassium	1090	5690	--	--	DSA02-SB13-0010	32 / 32	3159	1519
7782-49-2	Selenium	0.366 J	17.6	0.586	4.15	DSA05-SB31-0010	9 / 32	5.251	5.594
7440-22-4	Silver	1.4 J	10.1	0.234	1.66	DSA05-SB31-0010	5 / 32	6.326	3.165
7440-23-5	Sodium	313 J	35500	--	--	DSA05-SB27-0010	32 / 32	5355	7469
7440-28-0	Thallium	0.411 J	1.25 J	0.469	3.32	DSA05-SB32-0010	9 / 32	0.704	0.286
7440-62-2	Vanadium	14.9	118	--	--	DSA05-SB29-0010	32 / 32	49.45	26.49
7440-66-6	Zinc	18.1	709	--	--	DSA05-SB29-0010	32 / 32	109.2	144.3

Notes:

Units are milligrams per kilogram (mg/kg).

-- chemical was detected in all samples

J = result is estimated

Table D-2. Summary of Outliers Identified from Rosner Test

Former Raritan Arsenal, Edison, NJ

Analyte	Outlier Test 1		Outlier Test 2		Outlier Test 3		Outlier Test 4		Outlier Test 5	
	Concentration	Sample ID	Concentration	Sample ID	Concentration	Sample ID	Concentration	Sample ID	Concentration	Sample ID
Antimony	8.79	DSA05-SB32-0010	7.11	DSA05-SB29-0010	NA	NA	NA	NA	NA	NA
Arsenic	179	DSA05-SB29-0010	169	DSA05-SB31-0010	136	DSA05-SB32-0010	72.1	DSA03-SB21-0010	67.6	DSA05-SB30-0010
Barium	187	DSA05-SB31-0010	155	DSA05-SB32-0010	149	DSA05-SB29-0010	132	DSA05-SB30-0010	NA	NA
Cadmium	6.79	DSA05-SB29-0010	3.33	DSA05-SB32-0010	2.09	DSA05-SB31-0010	NA	NA	NA	NA
Calcium	5890	DSA05-SB27-0010	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	215	DSA05-SB31-0010	192	DSA05-SB29-0010	187	DSA05-SB32-0010	145	DSA05-SB30-0010	NA	NA
Copper	634	DSA05-SB31-0010	500	DSA05-SB29-0010	411	DSA05-SB30-0010	396	DSA05-SB32-0010	51.5	DSA03-SB21-0010
Manganese	841	DSA02-SB11-0010	645	DSA02-SB12-0010	NA	NA	NA	NA	NA	NA
Mercury	5.72	DSA05-SB31-0010	4.15	DSA05-SB32-0010	3.33	DSA05-SB30-0010	2.99	DSA05-SB29-0010	0.832	DSA03-SB21-0010
Molybdenum	12.4	DSA03-SB17-0010	10.7	DSA02-SB13-0010	NA	NA	NA	NA	NA	NA
Selenium	17.6	DSA05-SB31-0010	9.78	DSA05-SB29-0010	6.32	DSA05-SB32-0010	5.28	DSA03-SB21-0010	4.51	DSA05-SB30-0010
Silver	10.1	DSA05-SB31-0010	7.56	DSA05-SB29-0010	6.41	DSA05-SB32-0010	6.16	DSA05-SB30-0010	1.4	DSA03-SB21-0010
Sodium	35500	DSA05-SB27-0010	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	709	DSA05-SB29-0010	435	DSA05-SB31-0010	415	DSA05-SB32-0010	186	DSA05-SB30-0010	NA	NA

Notes:

NA = Not applicable

Table D-3. Background Threshold Values

Former Raritan Arsenal, Edison, NJ

Analyte	No. Samples	No. Detects	% Detect	Max Detect (mg/kg)	BTV 95/95 UTL [(1)] (mg/kg)	Basis
Aluminum	32	32	100%	25600	25325	Nonparametric
Antimony	32	5	16%	8.79	5.401	KM (Normal)
Arsenic	32	32	100%	179	179	Nonparametric
Barium	32	32	100%	187	216.7	Lognormal
Beryllium	32	31	97%	1.47	1.637	KM (Normal)
Cadmium	32	4	13%	6.79	3.402	KM (Normal)
Calcium	32	32	100%	5890	5890	Nonparametric
Chromium	32	32	100%	215	201.3	Lognormal
Cobalt	32	32	100%	18.3	19.09	Normal
Copper	32	32	100%	634	634	Nonparametric
Iron	32	32	100%	57500	66999	Normal
Lead	32	32	100%	294	294	Nonparametric
Magnesium	32	32	100%	11000	11115	Normal
Manganese	32	32	100%	841	596.7	Normal
Mercury	32	8	25%	5.72	3.569	KM (Normal)
Molybdenum	32	25	78%	12.4	11.94	KM (Gamma)
Nickel	32	32	100%	55.3	51.85	Normal
Potassium	32	32	100%	5690	5690	Nonparametric
Selenium	32	9	28%	17.6	9.536	KM (Normal)
Silver	32	5	16%	10.1	6.607	KM (Normal)
Sodium	32	32	100%	35500	25710	Gamma
Thallium	32	9	28%	1.25	1.036	KM (Normal)
Vanadium	32	32	100%	118	119.2	Gamma
Zinc	32	32	100%	709	709	Nonparametric

Notes:

[(1)] Calculated using EPA's Statistical Software ProUCL 5.1.002 for Environmental Applications for Data Sets with and without Nondetect Observations (June 2016).

BTV = background threshold value

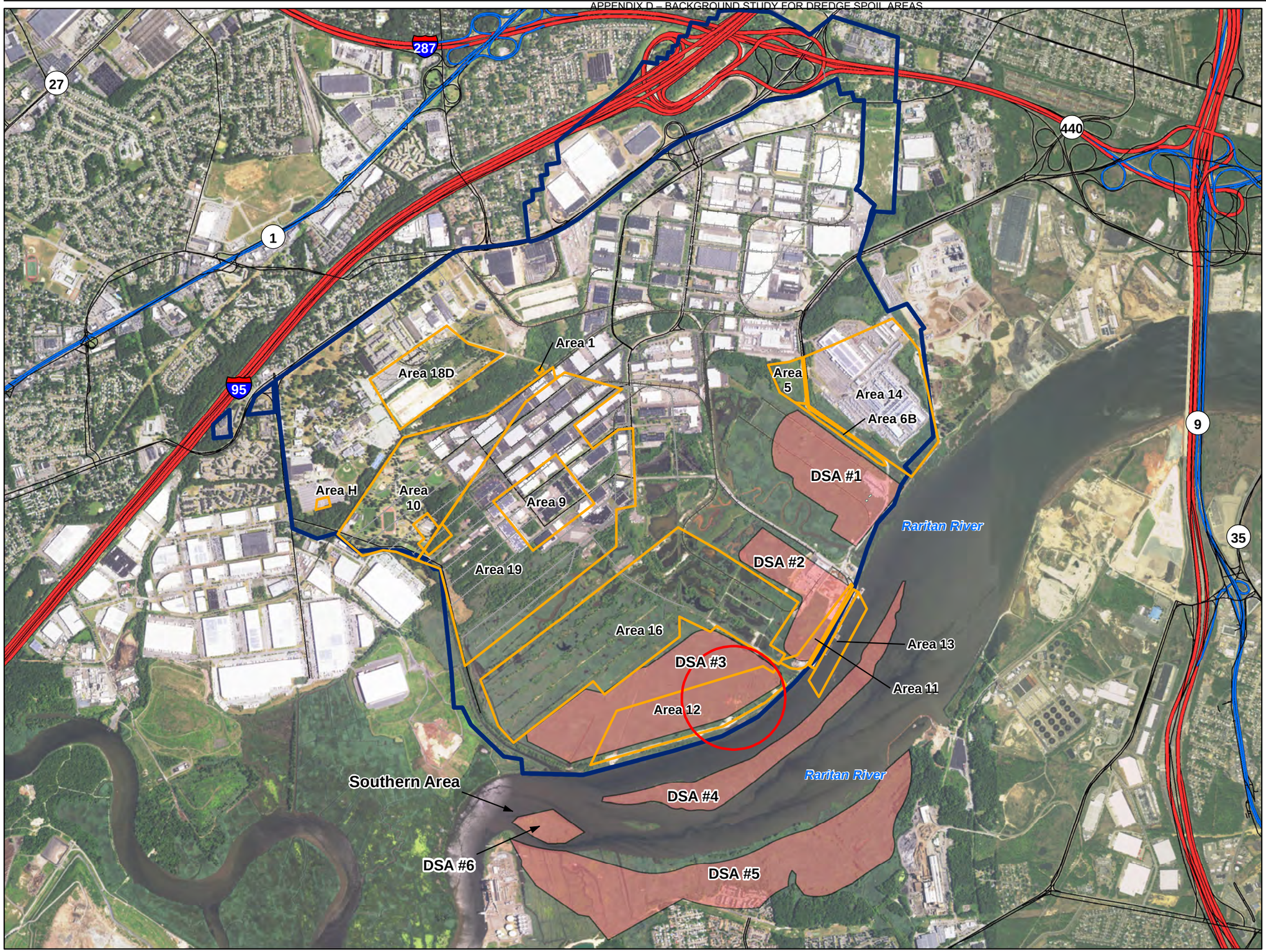
KM = Kaplan-Meier

mg/kg = milligrams per kilogram

NA = not available

UTL = upper tolerance limit

Figures



LEGEND

- OB/OD Boundary
- Areas of Investigation
- Former Raritan Arsenal Boundary
- Dredge Spoils Area
- Railroads
- Historical Railroads
- Local Road
- Interstate
- State Highway

Imagery source: ESRI world imagery online map service (NAIP 2015).

N

0 1,900 3,800
Feet

Figure D-1
Dredge Spoil Areas
Background Study for Dredge Spoil Areas
Former Raritan Arsenal, Edison, NJ

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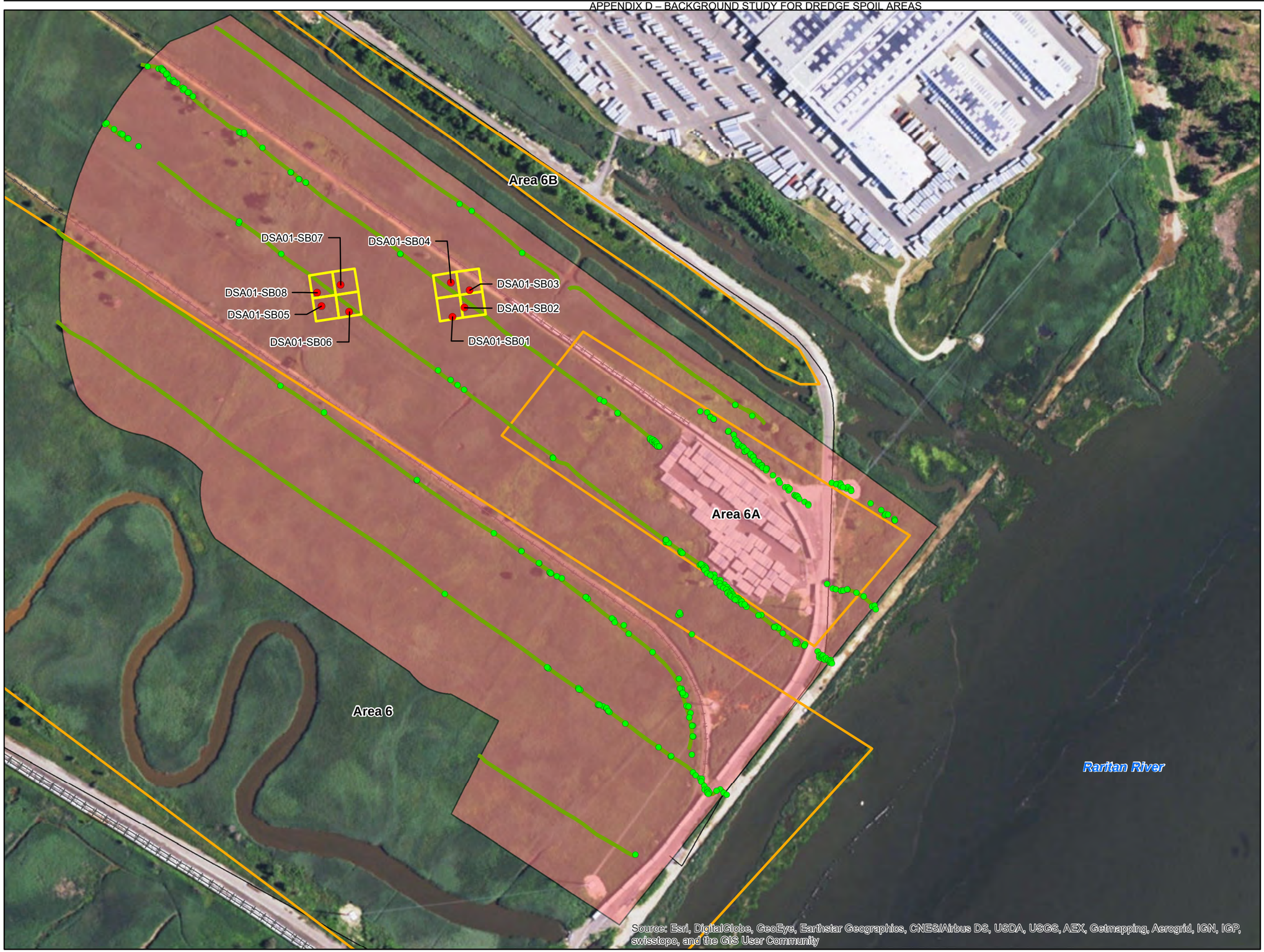
CONTRACT: W912DY-09-D-0060 / TO: 003
NOVEMBER 2020

APPENDIX D – BACKGROUND STUDY FOR DREDGE SPOIL AREAS



LEGEND

- Subsurface Sample
- DGM Anomalies
- DGM Transects Paths
- Local Road
- Railroads
- Historical Railroads
- Background Sampling Grid
- Areas of Investigation
- Dredge Spoils Area

N

0 300 600
Feet

Figure D-2
DSA 1 Background Sampling Locations
Background Study for Dredge Spoil Areas
Former Raritan Arsenal, Edison, NJ

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CONTRACT: W912DY-09-D-0060 / TO: 003
NOVEMBER 2020

APPENDIX D – BACKGROUND STUDY FOR DREDGE SPOIL AREAS



LEGEND

- Subsurface Sample
- DGM Anomalies
- DGM Transect Paths
- Local Road
- Railroads
- Historical Railroads
- Background Sampling Grid
- Areas of Investigation
- Dredge Spoils Area

N

0 300 600
Feet

Figure D-3
DSA 2 Background Sampling Locations
Background Study for Dredge Spoil Areas
Former Raritan Arsenal, Edison, NJ

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CONTRACT: W912DY-09-D-0060 / TO: 003
NOVEMBER 2020

APPENDIX D – BACKGROUND STUDY FOR DREDGE SPOIL AREAS



LEGEND

- Subsurface Sample
- DGM Anomalies
- DGM Transect Paths
- Local Road
- Railroads
- Historical Railroads
- Areas of Investigation
- Background Sampling Grid
- Dredge Spoils Area

N

0 450 900
Feet

Figure D-4
DSA 3 Background Sampling Locations
Background Study for Dredge Spoil Areas
Former Raritan Arsenal, Edison, NJ

APPENDIX D – BACKGROUND STUDY FOR DREDGE SPOIL AREAS



Figure D-5
DSA 5 Background Sampling Locations
Background Evaluation for Dredge Spoil Areas
Former Raritan Arsenal, Edison, NJ

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CONTRACT: W912DY-09-D-0060 / TO: 003
NOVEMBER 2020

Attachment D-1

MEMORANDUM CH2MHILL

Data Validation Summary

Raritan

TO: Mike Zamboni/WDC

Anita Dodson/VBO

FROM: Tiffany McGlynn/GNV

CC: Herb Kelly/GNV

DATE: October 21, 2016

Introduction

The following data validation report discusses the data validation process and findings for Empirical Laboratories, for Sample Delivery Group (SDG) 1608229.

Samples were analyzed using the following analytical methods:

- SW6010C Metals
- SW7471B Mercury

The samples included in this SDG are listed in the table below.

Sample Name	Matrix
DSA03-SB17-0010	Soil
DSA03-SB18-0010	Soil
DSA03-SB19-0010	Soil
DSA03-SB20-0010	Soil
DSA03-SB21-0010	Soil
DSA03-SB22-0010	Soil
DSA03-SB23-0010	Soil
DSA03-SB24-0010	Soil
DSA05-SB25-0010	Soil
DSA05-SB26-0010	Soil
DSA05-SB27-0010	Soil
DSA05-SB28-0010	Soil

Data Evaluation

Data was evaluated in accordance with the analytical methods and with the criteria found in the following guidance documents: Uniform Federal Policy- Quality Assurance Project Plan Addendum for the Remedial Investigation/Feasibility Study Military Munitions Response Program Former Raritan Arsenal Edison, New Jersey CTO 003 (August 2016) and National Functional Guidelines for Superfund Organic Methods Data Review (August 2014), as applicable. The samples were evaluated based on the following criteria:

- Data Completeness
- Technical Holding Times
- Instrument Tuning
- Initial/Continuing Calibrations
- Blanks
- Internal Standards
- Laboratory Control Samples
- Matrix Spike Recoveries
- Serial Dilution
- Interference Check Sample
- Identification/Quantitation
- Reporting Limits

Overall Evaluation of Data/Potential Usability Issues

Specific details regarding qualification of the data are addressed in the sections below. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte, the validator has chosen the qualifier that best indicates possible bias in the results and qualified these data accordingly.

Data Completeness

The SDG was received complete and intact.

Technical Holding Times

According to the chain of custody records, sampling was performed on 8/22/16 and 8/23/16. Samples were received at the laboratory on 8/24/16. All sample preparation analysis was performed within holding time requirements.

Calibration

Vanadium exhibited high responses in the continuing calibration. Affected data are summarized in the table below.

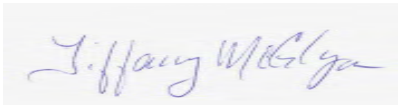
Sample ID	Compound	Q Flag	Qual Code
DSA03-SB17-0010	Vanadium	J+	CCH
DSA03-SB18-0010	Vanadium	J+	CCH
DSA03-SB19-0010	Vanadium	J+	CCH
DSA03-SB20-0010	Vanadium	J+	CCH
DSA03-SB21-0010	Vanadium	J+	CCH
DSA03-SB22-0010	Vanadium	J+	CCH
DSA03-SB23-0010	Vanadium	J+	CCH
DSA03-SB24-0010	Vanadium	J+	CCH
DSA05-SB25-0010	Vanadium	J+	CCH
DSA05-SB26-0010	Vanadium	J+	CCH
DSA05-SB27-0010	Vanadium	J+	CCH
DSA05-SB27-0010	Vanadium	J+	CCH
DSA05-SB28-0010	Vanadium	J+	CCH

Conclusion

These data can be used in the project decision-making process as qualified by the data quality evaluation process.

Please do not hesitate to contact us about this validation report.

Sincerely,



Tiffany McGlynn

Qualification Flags

Exclude	More appropriate data exist for this analyte.
R	Data were rejected for use.
UL	Analyte not detected, quantitation limit is potentially biased low.
UJ	Analyte not detected, estimated quantitation limit.
U	Analyte not detected.
B	Not detected substantially above the level reported in laboratory or field blanks.
L	Analyte present, estimated value potentially biased low.
K	Analyte present, estimated value potentially biased high.
N	Analyte identification presumptive; no second column analysis performed or GC/MS tentative identification.
J	Analyte present, estimated value.
NJ	Analysis indicates the presence of an analyte that was "tentatively identified" and the associated value represents its approximate concentration.
None	Placeholder for calculating quality control issues that do not require flagging.
=	Analyte was detected at a concentration greater than the quantitation limit.

Qualifier Code Reference

Value	Description
%SOL	High Moisture content
2C	Second Column – Poor Dual Column Reproducibility
2S	Second Source – Bad reproducibility between tandem detectors
BD	Blank Spike/Blank Spike Duplicate(LCS/LCSD) Precision
BRL	Below Reporting Limit
BSH	Blank Spike/LCS – High Recovery
BSL	Blank Spike/LCS – Low Recovery
CC	Continuing Calibration
CCBL	Continuing Calibration Blank Contamination
CCH	Continuing Calibration Verification – High Recovery
CCL	Continuing Calibration Verification – Low Recovery
DL	Redundant Result – due to Dilution
EBL	Equipment Blank Contamination
EMPC	Estimated Possible Maximum Concentration
ESH	Extraction Standard - High Recovery
ESL	Extraction Standard - Low Recovery
FBL	Field Blank Contamination
FD	Field Duplicate
HT	Holding Time
ICB	Initial Calibration – Bad Linearity or Curve Function
ICH	Initial Calibration – High Relative Response Factors
ICL	Initial Calibration – Low Relative Response Factors
IR15	Ion ratio exceeds +/- 15% difference
ISH	Internal Standard – High Recovery
ISL	Internal Standard – Low Recovery
LD	Lab Duplicate Reproducibility
LR	Concentration Exceeds Linear Range
MBL	Method Blank Contamination
MDP	Matrix Spike/Matrix Spike Duplicate Precision
MI	Matrix interference obscuring the raw data

MSH	Matrix Spike and/or Matrix Spike Duplicate – High Recovery
MSL	Matrix Spike and/or Matrix Spike Duplicate – Low Recovery
OT	Other
PD	Pesticide Degradation
RE	Redundant Result - due to Reanalysis or Re-extraction
SD	Serial Dilution Reproducibility
SSH	Spiked Surrogate – High Recovery
SSL	Spiked Surrogate – Low Recovery
TBL	Trip Blank Contamination
TN	Tune

MEMORANDUM CH2MHILL

Data Validation Summary

Raritan

TO: Mike Zamboni/WDC

Anita Dodson/VBO

FROM: Tiffany McGlynn/GNV

CC: Herb Kelly/GNV

DATE: October 21, 2016

Introduction

The following data validation report discusses the data validation process and findings for Empirical Laboratories, for Sample Delivery Group (SDG) 1608251.

Samples were analyzed using the following analytical methods:

- SW6010C Metals
- SW7471B Mercury

The samples included in this SDG are listed in the table below.

Sample Name	Matrix
DSA01-SB01-0010	Soil
DSA01-SB02-0010	Soil
DSA01-SB03-0010	Soil
DSA01-SB04-0010	Soil
DSA01-SB05-0010	Soil
DSA01-SB06-0010	Soil
DSA01-SB07-0010	Soil
DSA01-SB08-0010	Soil
DSA02-SB09-0010	Soil
DSA02-SB10-0010	Soil
DSA02-SB11-0010	Soil
DSA02-SB12-0010	Soil
DSA02-SB13-0010	Soil
DSA02-SB14-0010	Soil
DSA02-SB15-0010	Soil

Sample Name	Matrix
DSA02-SB16-0010	Soil
DSA05-SB29-0010	Soil
DSA05-SB30-0010	Soil
DSA05-SB31-0010	Soil
DSA05-SB32-0010	Soil

Data Evaluation

Data was evaluated in accordance with the analytical methods and with the criteria found in the following guidance documents: Uniform Federal Policy- Quality Assurance Project Plan Addendum for the Remedial Investigation/Feasibility Study Military Munitions Response Program Former Raritan Arsenal Edison, New Jersey CTO 003 (August 2016) and National Functional Guidelines for Superfund Organic Methods Data Review (August 2014), as applicable. The samples were evaluated based on the following criteria:

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- Blanks
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- Laboratory Control Samples
- Matrix Spike Recoveries
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- Interference Check Sample
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Specific details regarding qualification of the data are addressed in the sections below. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte, the validator has chosen the qualifier that best indicates possible bias in the results and qualified these data accordingly.

Data Completeness

The SDG was received complete and intact.

Technical Holding Times

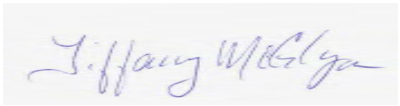
According to the chain of custody records, sampling was performed on 8/24/16 and 8/25/16. Samples were received at the laboratory on 8/26/16. All sample preparation analysis was performed within holding time requirements.

Conclusion

These data can be used in the project decision-making process as qualified by the data quality evaluation process.

Please do not hesitate to contact us about this validation report.

Sincerely,



Tiffany McGlynn

Qualification Flags

Exclude	More appropriate data exist for this analyte.
R	Data were rejected for use.
UL	Analyte not detected, quantitation limit is potentially biased low.
UJ	Analyte not detected, estimated quantitation limit.
U	Analyte not detected.
B	Not detected substantially above the level reported in laboratory or field blanks.
L	Analyte present, estimated value potentially biased low.
K	Analyte present, estimated value potentially biased high.
N	Analyte identification presumptive; no second column analysis performed or GC/MS tentative identification.
J	Analyte present, estimated value.
NJ	Analysis indicates the presence of an analyte that was "tentatively identified" and the associated value represents its approximate concentration.
None	Placeholder for calculating quality control issues that do not require flagging.
=	Analyte was detected at a concentration greater than the quantitation limit.

Qualifier Code Reference

Value	Description
%SOL	High Moisture content
2C	Second Column – Poor Dual Column Reproducibility
2S	Second Source – Bad reproducibility between tandem detectors
BD	Blank Spike/Blank Spike Duplicate(LCS/LCSD) Precision
BRL	Below Reporting Limit
BSH	Blank Spike/LCS – High Recovery
BSL	Blank Spike/LCS – Low Recovery
CC	Continuing Calibration
CCBL	Continuing Calibration Blank Contamination
CCH	Continuing Calibration Verification – High Recovery
CCL	Continuing Calibration Verification – Low Recovery
DL	Redundant Result – due to Dilution
EBL	Equipment Blank Contamination
EMPC	Estimated Possible Maximum Concentration
ESH	Extraction Standard - High Recovery
ESL	Extraction Standard - Low Recovery
FBL	Field Blank Contamination
FD	Field Duplicate
HT	Holding Time
ICB	Initial Calibration – Bad Linearity or Curve Function
ICH	Initial Calibration – High Relative Response Factors
ICL	Initial Calibration – Low Relative Response Factors
IR15	Ion ratio exceeds +/- 15% difference
ISH	Internal Standard – High Recovery
ISL	Internal Standard – Low Recovery
LD	Lab Duplicate Reproducibility
LR	Concentration Exceeds Linear Range
MBL	Method Blank Contamination
MDP	Matrix Spike/Matrix Spike Duplicate Precision
MI	Matrix interference obscuring the raw data

MSH	Matrix Spike and/or Matrix Spike Duplicate – High Recovery
MSL	Matrix Spike and/or Matrix Spike Duplicate – Low Recovery
OT	Other
PD	Pesticide Degradation
RE	Redundant Result - due to Reanalysis or Re-extraction
SD	Serial Dilution Reproducibility
SSH	Spiked Surrogate – High Recovery
SSL	Spiked Surrogate – Low Recovery
TBL	Trip Blank Contamination
TN	Tune

Attachment D-2

Attachment D-2
Background Analytical Data
Former Raritan Arsenal, Edison, NJ

Matrix	Sample Name	Sample Type	Depth Interval (feet bgs)	Analysis Group	Analytical Method	Chem_Name	CAS	Result	Qualifier	Units	DL	LOD
SO	DSA01-SB01-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	13900		mg/kg	5.94	11.9
SO	DSA01-SB01-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	0.951	U	mg/kg	0.594	0.951
SO	DSA01-SB01-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	5.61		mg/kg	0.356	0.713
SO	DSA01-SB01-0010	N	0-10	METAL	6010C	Barium	7440-39-3	15.2		mg/kg	0.594	1.19
SO	DSA01-SB01-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	0.69		mg/kg	0.119	0.238
SO	DSA01-SB01-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	0.238	U	mg/kg	0.119	0.238
SO	DSA01-SB01-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	424	J	mg/kg	119	238
SO	DSA01-SB01-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	22.9		mg/kg	0.238	0.475
SO	DSA01-SB01-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	8.38		mg/kg	0.594	1.19
SO	DSA01-SB01-0010	N	0-10	METAL	6010C	Copper	7440-50-8	14.7		mg/kg	0.475	0.951
SO	DSA01-SB01-0010	N	0-10	METAL	6010C	Iron	7439-89-6	21900		mg/kg	3.56	7.13
SO	DSA01-SB01-0010	N	0-10	METAL	6010C	Lead	7439-92-1	9.92		mg/kg	0.178	0.356
SO	DSA01-SB01-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	3550		mg/kg	119	356
SO	DSA01-SB01-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	117		mg/kg	0.356	0.713
SO	DSA01-SB01-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	0.625	J	mg/kg	0.594	1.19
SO	DSA01-SB01-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	15.7		mg/kg	0.356	0.713
SO	DSA01-SB01-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	1860		mg/kg	119	356
SO	DSA01-SB01-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	0.594	U	mg/kg	0.356	0.594
SO	DSA01-SB01-0010	N	0-10	METAL	6010C	Silver	7440-22-4	0.238	U	mg/kg	0.119	0.238
SO	DSA01-SB01-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	1080		mg/kg	119	356
SO	DSA01-SB01-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	0.475	U	mg/kg	0.356	0.475
SO	DSA01-SB01-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	34.6		mg/kg	0.594	1.19
SO	DSA01-SB01-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	42		mg/kg	0.594	1.19
SO	DSA01-SB01-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	0.0307	U	mg/kg	0.0148	0.0307
SO	DSA01-SB02-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	8880		mg/kg	5.90	11.8
SO	DSA01-SB02-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	0.944	U	mg/kg	0.590	0.944
SO	DSA01-SB02-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	6.22		mg/kg	0.354	0.708
SO	DSA01-SB02-0010	N	0-10	METAL	6010C	Barium	7440-39-3	10.7		mg/kg	0.590	1.18
SO	DSA01-SB02-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	0.516	J	mg/kg	0.118	0.236
SO	DSA01-SB02-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	0.236	U	mg/kg	0.118	0.236
SO	DSA01-SB02-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	304	J	mg/kg	118	236
SO	DSA01-SB02-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	18		mg/kg	0.236	0.472
SO	DSA01-SB02-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	6.6		mg/kg	0.590	1.18
SO	DSA01-SB02-0010	N	0-10	METAL	6010C	Copper	7440-50-8	9.57		mg/kg	0.472	0.944
SO	DSA01-SB02-0010	N	0-10	METAL	6010C	Iron	7439-89-6	20200		mg/kg	3.54	7.08
SO	DSA01-SB02-0010	N	0-10	METAL	6010C	Lead	7439-92-1	8.39		mg/kg	0.177	0.354
SO	DSA01-SB02-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	3030		mg/kg	118	354

Attachment D-2
Background Analytical Data
Former Raritan Arsenal, Edison, NJ

Matrix	Sample Name	Sample Type	Depth Interval (feet bgs)	Analysis Group	Analytical Method	Chem_Name	CAS	Result	Qualifier	Units	DL	LOD
SO	DSA01-SB02-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	71.4		mg/kg	0.354	0.708
SO	DSA01-SB02-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	1.18	U	mg/kg	0.590	1.18
SO	DSA01-SB02-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	12.8		mg/kg	0.354	0.708
SO	DSA01-SB02-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	1740		mg/kg	118	354
SO	DSA01-SB02-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	0.59	U	mg/kg	0.354	0.590
SO	DSA01-SB02-0010	N	0-10	METAL	6010C	Silver	7440-22-4	0.236	U	mg/kg	0.118	0.236
SO	DSA01-SB02-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	975		mg/kg	118	354
SO	DSA01-SB02-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	0.472	U	mg/kg	0.354	0.472
SO	DSA01-SB02-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	27.2		mg/kg	0.590	1.18
SO	DSA01-SB02-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	39		mg/kg	0.590	1.18
SO	DSA01-SB02-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	0.0325	U	mg/kg	0.0156	0.0325
SO	DSA01-SB03-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	11700		mg/kg	5.88	11.8
SO	DSA01-SB03-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	0.941	U	mg/kg	0.588	0.941
SO	DSA01-SB03-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	4.55		mg/kg	0.353	0.706
SO	DSA01-SB03-0010	N	0-10	METAL	6010C	Barium	7440-39-3	11.1		mg/kg	0.588	1.18
SO	DSA01-SB03-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	0.576	J	mg/kg	0.118	0.235
SO	DSA01-SB03-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	0.235	U	mg/kg	0.118	0.235
SO	DSA01-SB03-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	319	J	mg/kg	118	235
SO	DSA01-SB03-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	19.2		mg/kg	0.235	0.470
SO	DSA01-SB03-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	8.46		mg/kg	0.588	1.18
SO	DSA01-SB03-0010	N	0-10	METAL	6010C	Copper	7440-50-8	13.6		mg/kg	0.470	0.941
SO	DSA01-SB03-0010	N	0-10	METAL	6010C	Iron	7439-89-6	24200		mg/kg	3.53	7.06
SO	DSA01-SB03-0010	N	0-10	METAL	6010C	Lead	7439-92-1	8.89		mg/kg	0.176	0.353
SO	DSA01-SB03-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	3890		mg/kg	118	353
SO	DSA01-SB03-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	94.1		mg/kg	0.353	0.706
SO	DSA01-SB03-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	0.686	J	mg/kg	0.588	1.18
SO	DSA01-SB03-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	15.4		mg/kg	0.353	0.706
SO	DSA01-SB03-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	1660		mg/kg	118	353
SO	DSA01-SB03-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	0.401	J	mg/kg	0.353	0.588
SO	DSA01-SB03-0010	N	0-10	METAL	6010C	Silver	7440-22-4	0.235	U	mg/kg	0.118	0.235
SO	DSA01-SB03-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	767		mg/kg	118	353
SO	DSA01-SB03-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	0.47	U	mg/kg	0.353	0.470
SO	DSA01-SB03-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	29.8		mg/kg	0.588	1.18
SO	DSA01-SB03-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	48.2		mg/kg	0.588	1.18
SO	DSA01-SB03-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	0.0304	U	mg/kg	0.0146	0.0304
SO	DSA01-SB04-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	8670		mg/kg	5.86	11.7
SO	DSA01-SB04-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	0.937	U	mg/kg	0.586	0.937

Attachment D-2
Background Analytical Data
Former Raritan Arsenal, Edison, NJ

Matrix	Sample Name	Sample Type	Depth Interval (feet bgs)	Analysis Group	Analytical Method	Chem_Name	CAS	Result	Qualifier	Units	DL	LOD
SO	DSA01-SB04-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	6.11		mg/kg	0.351	0.703
SO	DSA01-SB04-0010	N	0-10	METAL	6010C	Barium	7440-39-3	7.98		mg/kg	0.586	1.17
SO	DSA01-SB04-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	0.473	J	mg/kg	0.117	0.234
SO	DSA01-SB04-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	0.234	U	mg/kg	0.117	0.234
SO	DSA01-SB04-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	266	J	mg/kg	117	234
SO	DSA01-SB04-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	13.8		mg/kg	0.234	0.469
SO	DSA01-SB04-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	7.69		mg/kg	0.586	1.17
SO	DSA01-SB04-0010	N	0-10	METAL	6010C	Copper	7440-50-8	8.64		mg/kg	0.469	0.937
SO	DSA01-SB04-0010	N	0-10	METAL	6010C	Iron	7439-89-6	16900		mg/kg	3.51	7.03
SO	DSA01-SB04-0010	N	0-10	METAL	6010C	Lead	7439-92-1	6.4		mg/kg	0.176	0.351
SO	DSA01-SB04-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	2070		mg/kg	117	351
SO	DSA01-SB04-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	83.2		mg/kg	0.351	0.703
SO	DSA01-SB04-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	1.17	U	mg/kg	0.586	1.17
SO	DSA01-SB04-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	10.5		mg/kg	0.351	0.703
SO	DSA01-SB04-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	1490		mg/kg	117	351
SO	DSA01-SB04-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	0.366	J	mg/kg	0.351	0.586
SO	DSA01-SB04-0010	N	0-10	METAL	6010C	Silver	7440-22-4	0.234	U	mg/kg	0.117	0.234
SO	DSA01-SB04-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	536	J	mg/kg	117	351
SO	DSA01-SB04-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	0.469	U	mg/kg	0.351	0.469
SO	DSA01-SB04-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	19.4		mg/kg	0.586	1.17
SO	DSA01-SB04-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	32.6		mg/kg	0.586	1.17
SO	DSA01-SB04-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	0.0304	U	mg/kg	0.0146	0.0304
SO	DSA01-SB05-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	10000		mg/kg	5.89	11.8
SO	DSA01-SB05-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	0.943	U	mg/kg	0.589	0.943
SO	DSA01-SB05-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	4.31		mg/kg	0.354	0.707
SO	DSA01-SB05-0010	N	0-10	METAL	6010C	Barium	7440-39-3	12.2		mg/kg	0.589	1.18
SO	DSA01-SB05-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	0.511	J	mg/kg	0.118	0.236
SO	DSA01-SB05-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	0.236	U	mg/kg	0.118	0.236
SO	DSA01-SB05-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	268	J	mg/kg	118	236
SO	DSA01-SB05-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	17.5		mg/kg	0.236	0.471
SO	DSA01-SB05-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	6.72		mg/kg	0.589	1.18
SO	DSA01-SB05-0010	N	0-10	METAL	6010C	Copper	7440-50-8	12.3		mg/kg	0.471	0.943
SO	DSA01-SB05-0010	N	0-10	METAL	6010C	Iron	7439-89-6	18500		mg/kg	3.54	7.07
SO	DSA01-SB05-0010	N	0-10	METAL	6010C	Lead	7439-92-1	8.17		mg/kg	0.177	0.354
SO	DSA01-SB05-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	3190		mg/kg	118	354
SO	DSA01-SB05-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	78.1		mg/kg	0.354	0.707
SO	DSA01-SB05-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	1.18	U	mg/kg	0.589	1.18

Attachment D-2
Background Analytical Data
Former Raritan Arsenal, Edison, NJ

Matrix	Sample Name	Sample Type	Depth Interval (feet bgs)	Analysis Group	Analytical Method	Chem_Name	CAS	Result	Qualifier	Units	DL	LOD
SO	DSA01-SB05-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	13.6		mg/kg	0.354	0.707
SO	DSA01-SB05-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	1730		mg/kg	118	354
SO	DSA01-SB05-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	0.589	U	mg/kg	0.354	0.589
SO	DSA01-SB05-0010	N	0-10	METAL	6010C	Silver	7440-22-4	0.236	U	mg/kg	0.118	0.236
SO	DSA01-SB05-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	860		mg/kg	118	354
SO	DSA01-SB05-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	0.471	U	mg/kg	0.354	0.471
SO	DSA01-SB05-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	26		mg/kg	0.589	1.18
SO	DSA01-SB05-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	40		mg/kg	0.589	1.18
SO	DSA01-SB05-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	0.0298	U	mg/kg	0.0144	0.0298
SO	DSA01-SB06-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	5620		mg/kg	6.03	12.1
SO	DSA01-SB06-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	0.965	U	mg/kg	0.603	0.965
SO	DSA01-SB06-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	4.88		mg/kg	0.362	0.723
SO	DSA01-SB06-0010	N	0-10	METAL	6010C	Barium	7440-39-3	8.02		mg/kg	0.603	1.21
SO	DSA01-SB06-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	0.327	J	mg/kg	0.121	0.241
SO	DSA01-SB06-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	0.241	U	mg/kg	0.121	0.241
SO	DSA01-SB06-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	184	J	mg/kg	121	241
SO	DSA01-SB06-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	11		mg/kg	0.241	0.482
SO	DSA01-SB06-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	6.89		mg/kg	0.603	1.21
SO	DSA01-SB06-0010	N	0-10	METAL	6010C	Copper	7440-50-8	5.95		mg/kg	0.482	0.965
SO	DSA01-SB06-0010	N	0-10	METAL	6010C	Iron	7439-89-6	15700		mg/kg	3.62	7.23
SO	DSA01-SB06-0010	N	0-10	METAL	6010C	Lead	7439-92-1	4.76		mg/kg	0.181	0.362
SO	DSA01-SB06-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	1600		mg/kg	121	362
SO	DSA01-SB06-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	60.8		mg/kg	0.362	0.723
SO	DSA01-SB06-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	1.21	U	mg/kg	0.603	1.21
SO	DSA01-SB06-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	7.63		mg/kg	0.362	0.723
SO	DSA01-SB06-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	1090		mg/kg	121	362
SO	DSA01-SB06-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	0.603	U	mg/kg	0.362	0.603
SO	DSA01-SB06-0010	N	0-10	METAL	6010C	Silver	7440-22-4	0.241	U	mg/kg	0.121	0.241
SO	DSA01-SB06-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	313	J	mg/kg	121	362
SO	DSA01-SB06-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	0.482	U	mg/kg	0.362	0.482
SO	DSA01-SB06-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	14.9		mg/kg	0.603	1.21
SO	DSA01-SB06-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	22.9		mg/kg	0.603	1.21
SO	DSA01-SB06-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	0.0332	U	mg/kg	0.0160	0.0332
SO	DSA01-SB07-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	9190		mg/kg	5.86	11.7
SO	DSA01-SB07-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	0.938	U	mg/kg	0.586	0.938
SO	DSA01-SB07-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	2.73		mg/kg	0.352	0.703
SO	DSA01-SB07-0010	N	0-10	METAL	6010C	Barium	7440-39-3	9.67		mg/kg	0.586	1.17

Attachment D-2
Background Analytical Data
Former Raritan Arsenal, Edison, NJ

Matrix	Sample Name	Sample Type	Depth Interval (feet bgs)	Analysis Group	Analytical Method	Chem_Name	CAS	Result	Qualifier	Units	DL	LOD
SO	DSA01-SB07-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	0.528	J	mg/kg	0.117	0.234
SO	DSA01-SB07-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	0.234	U	mg/kg	0.117	0.234
SO	DSA01-SB07-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	351	J	mg/kg	117	234
SO	DSA01-SB07-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	19		mg/kg	0.234	0.469
SO	DSA01-SB07-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	4.81		mg/kg	0.586	1.17
SO	DSA01-SB07-0010	N	0-10	METAL	6010C	Copper	7440-50-8	10.2		mg/kg	0.469	0.938
SO	DSA01-SB07-0010	N	0-10	METAL	6010C	Iron	7439-89-6	16700		mg/kg	3.52	7.03
SO	DSA01-SB07-0010	N	0-10	METAL	6010C	Lead	7439-92-1	7.09		mg/kg	0.176	0.352
SO	DSA01-SB07-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	2740		mg/kg	117	352
SO	DSA01-SB07-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	111		mg/kg	0.352	0.703
SO	DSA01-SB07-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	1.17	U	mg/kg	0.586	1.17
SO	DSA01-SB07-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	12.2		mg/kg	0.352	0.703
SO	DSA01-SB07-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	1660		mg/kg	117	352
SO	DSA01-SB07-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	0.586	U	mg/kg	0.352	0.586
SO	DSA01-SB07-0010	N	0-10	METAL	6010C	Silver	7440-22-4	0.234	U	mg/kg	0.117	0.234
SO	DSA01-SB07-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	471	J	mg/kg	117	352
SO	DSA01-SB07-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	0.469	U	mg/kg	0.352	0.469
SO	DSA01-SB07-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	30.1		mg/kg	0.586	1.17
SO	DSA01-SB07-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	34.8		mg/kg	0.586	1.17
SO	DSA01-SB07-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	0.0323	U	mg/kg	0.0155	0.0323
SO	DSA01-SB08-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	13700		mg/kg	14.4	28.8
SO	DSA01-SB08-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	2.31	U	mg/kg	1.44	2.31
SO	DSA01-SB08-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	6.63		mg/kg	0.865	1.73
SO	DSA01-SB08-0010	N	0-10	METAL	6010C	Barium	7440-39-3	18		mg/kg	1.44	2.88
SO	DSA01-SB08-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	0.926	J	mg/kg	0.288	0.577
SO	DSA01-SB08-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	0.577	U	mg/kg	0.288	0.577
SO	DSA01-SB08-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	476	J	mg/kg	288	577
SO	DSA01-SB08-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	23.2		mg/kg	0.577	1.15
SO	DSA01-SB08-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	9.53		mg/kg	1.44	2.88
SO	DSA01-SB08-0010	N	0-10	METAL	6010C	Copper	7440-50-8	11.8		mg/kg	1.15	2.31
SO	DSA01-SB08-0010	N	0-10	METAL	6010C	Iron	7439-89-6	25800		mg/kg	8.65	17.3
SO	DSA01-SB08-0010	N	0-10	METAL	6010C	Lead	7439-92-1	11.1		mg/kg	0.433	0.865
SO	DSA01-SB08-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	4690		mg/kg	288	865
SO	DSA01-SB08-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	142		mg/kg	0.865	1.73
SO	DSA01-SB08-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	2.88	U	mg/kg	1.44	2.88
SO	DSA01-SB08-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	17.7		mg/kg	0.865	1.73
SO	DSA01-SB08-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	2730		mg/kg	288	865

Attachment D-2
Background Analytical Data
Former Raritan Arsenal, Edison, NJ

Matrix	Sample Name	Sample Type	Depth Interval (feet bgs)	Analysis Group	Analytical Method	Chem_Name	CAS	Result	Qualifier	Units	DL	LOD
SO	DSA01-SB08-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	1.44	U	mg/kg	0.865	1.44
SO	DSA01-SB08-0010	N	0-10	METAL	6010C	Silver	7440-22-4	0.577	U	mg/kg	0.288	0.577
SO	DSA01-SB08-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	1260	J	mg/kg	288	865
SO	DSA01-SB08-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	1.15	U	mg/kg	0.865	1.15
SO	DSA01-SB08-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	30.5		mg/kg	1.44	2.88
SO	DSA01-SB08-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	50.7		mg/kg	1.44	2.88
SO	DSA01-SB08-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	0.029	U	mg/kg	0.0140	0.0290
SO	DSA02-SB09-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	25600		mg/kg	23.3	46.6
SO	DSA02-SB09-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	3.73	U	mg/kg	2.33	3.73
SO	DSA02-SB09-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	13.2		mg/kg	1.40	2.80
SO	DSA02-SB09-0010	N	0-10	METAL	6010C	Barium	7440-39-3	45.1		mg/kg	2.33	4.66
SO	DSA02-SB09-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	1.37	J	mg/kg	0.466	0.932
SO	DSA02-SB09-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	0.932	U	mg/kg	0.466	0.932
SO	DSA02-SB09-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	2140	J	mg/kg	466	932
SO	DSA02-SB09-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	47.5		mg/kg	0.932	1.86
SO	DSA02-SB09-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	15.7		mg/kg	2.33	4.66
SO	DSA02-SB09-0010	N	0-10	METAL	6010C	Copper	7440-50-8	17.8		mg/kg	1.86	3.73
SO	DSA02-SB09-0010	N	0-10	METAL	6010C	Iron	7439-89-6	42700		mg/kg	14.0	28.0
SO	DSA02-SB09-0010	N	0-10	METAL	6010C	Lead	7439-92-1	18		mg/kg	0.699	1.40
SO	DSA02-SB09-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	8790		mg/kg	466	1400
SO	DSA02-SB09-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	291		mg/kg	1.40	2.80
SO	DSA02-SB09-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	4.66	U	mg/kg	2.33	4.66
SO	DSA02-SB09-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	35.9		mg/kg	1.40	2.80
SO	DSA02-SB09-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	5280		mg/kg	466	1400
SO	DSA02-SB09-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	2.33	U	mg/kg	1.40	2.33
SO	DSA02-SB09-0010	N	0-10	METAL	6010C	Silver	7440-22-4	0.932	U	mg/kg	0.466	0.932
SO	DSA02-SB09-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	3260		mg/kg	466	1400
SO	DSA02-SB09-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	1.86	U	mg/kg	1.40	1.86
SO	DSA02-SB09-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	58		mg/kg	2.33	4.66
SO	DSA02-SB09-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	111		mg/kg	2.33	4.66
SO	DSA02-SB09-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	0.0315	J	mg/kg	0.0236	0.0490
SO	DSA02-SB10-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	25100		mg/kg	23.2	46.5
SO	DSA02-SB10-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	3.72	U	mg/kg	2.32	3.72
SO	DSA02-SB10-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	26.5		mg/kg	1.39	2.79
SO	DSA02-SB10-0010	N	0-10	METAL	6010C	Barium	7440-39-3	41.8		mg/kg	2.32	4.65
SO	DSA02-SB10-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	1.2	J	mg/kg	0.465	0.930
SO	DSA02-SB10-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	0.93	U	mg/kg	0.465	0.930

Attachment D-2
Background Analytical Data
Former Raritan Arsenal, Edison, NJ

Matrix	Sample Name	Sample Type	Depth Interval (feet bgs)	Analysis Group	Analytical Method	Chem_Name	CAS	Result	Qualifier	Units	DL	LOD
SO	DSA02-SB10-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	1780	J	mg/kg	465	930
SO	DSA02-SB10-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	43.5		mg/kg	0.930	1.86
SO	DSA02-SB10-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	14.7		mg/kg	2.32	4.65
SO	DSA02-SB10-0010	N	0-10	METAL	6010C	Copper	7440-50-8	13.3		mg/kg	1.86	3.72
SO	DSA02-SB10-0010	N	0-10	METAL	6010C	Iron	7439-89-6	57500		mg/kg	13.9	27.9
SO	DSA02-SB10-0010	N	0-10	METAL	6010C	Lead	7439-92-1	16		mg/kg	0.697	1.39
SO	DSA02-SB10-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	7160		mg/kg	465	1390
SO	DSA02-SB10-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	314		mg/kg	1.39	2.79
SO	DSA02-SB10-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	6.91	J	mg/kg	2.32	4.65
SO	DSA02-SB10-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	32.7		mg/kg	1.39	2.79
SO	DSA02-SB10-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	5020		mg/kg	465	1390
SO	DSA02-SB10-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	2.32	U	mg/kg	1.39	2.32
SO	DSA02-SB10-0010	N	0-10	METAL	6010C	Silver	7440-22-4	0.93	U	mg/kg	0.465	0.930
SO	DSA02-SB10-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	2840		mg/kg	465	1390
SO	DSA02-SB10-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	1.86	U	mg/kg	1.39	1.86
SO	DSA02-SB10-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	52.1		mg/kg	2.32	4.65
SO	DSA02-SB10-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	96		mg/kg	2.32	4.65
SO	DSA02-SB10-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	0.0468	U	mg/kg	0.0225	0.0468
SO	DSA02-SB11-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	24500		mg/kg	26.1	52.2
SO	DSA02-SB11-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	4.17	U	mg/kg	2.61	4.17
SO	DSA02-SB11-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	19.2		mg/kg	1.57	3.13
SO	DSA02-SB11-0010	N	0-10	METAL	6010C	Barium	7440-39-3	41.5		mg/kg	2.61	5.22
SO	DSA02-SB11-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	1.47	J	mg/kg	0.522	1.04
SO	DSA02-SB11-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	1.04	U	mg/kg	0.522	1.04
SO	DSA02-SB11-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	2270	J	mg/kg	522	1040
SO	DSA02-SB11-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	45.4		mg/kg	1.04	2.09
SO	DSA02-SB11-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	17.8		mg/kg	2.61	5.22
SO	DSA02-SB11-0010	N	0-10	METAL	6010C	Copper	7440-50-8	16.8		mg/kg	2.09	4.17
SO	DSA02-SB11-0010	N	0-10	METAL	6010C	Iron	7439-89-6	55800		mg/kg	15.7	31.3
SO	DSA02-SB11-0010	N	0-10	METAL	6010C	Lead	7439-92-1	17		mg/kg	0.783	1.57
SO	DSA02-SB11-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	8170		mg/kg	522	1570
SO	DSA02-SB11-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	841		mg/kg	1.57	3.13
SO	DSA02-SB11-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	6.65	J	mg/kg	2.61	5.22
SO	DSA02-SB11-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	33.8		mg/kg	1.57	3.13
SO	DSA02-SB11-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	5010		mg/kg	522	1570
SO	DSA02-SB11-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	2.61	U	mg/kg	1.57	2.61
SO	DSA02-SB11-0010	N	0-10	METAL	6010C	Silver	7440-22-4	1.04	U	mg/kg	0.522	1.04

Attachment D-2
Background Analytical Data
Former Raritan Arsenal, Edison, NJ

Matrix	Sample Name	Sample Type	Depth Interval (feet bgs)	Analysis Group	Analytical Method	Chem_Name	CAS	Result	Qualifier	Units	DL	LOD
SO	DSA02-SB11-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	3070		mg/kg	522	1570
SO	DSA02-SB11-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	2.09	U	mg/kg	1.57	2.09
SO	DSA02-SB11-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	56.2		mg/kg	2.61	5.22
SO	DSA02-SB11-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	102		mg/kg	2.61	5.22
SO	DSA02-SB11-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	0.051	U	mg/kg	0.0245	0.0510
SO	DSA02-SB12-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	23100		mg/kg	22.3	44.5
SO	DSA02-SB12-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	3.56	U	mg/kg	2.23	3.56
SO	DSA02-SB12-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	16.5		mg/kg	1.34	2.67
SO	DSA02-SB12-0010	N	0-10	METAL	6010C	Barium	7440-39-3	39		mg/kg	2.23	4.45
SO	DSA02-SB12-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	1.23	J	mg/kg	0.445	0.891
SO	DSA02-SB12-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	0.891	U	mg/kg	0.445	0.891
SO	DSA02-SB12-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	2040	J	mg/kg	445	891
SO	DSA02-SB12-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	43.9		mg/kg	0.891	1.78
SO	DSA02-SB12-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	13.2		mg/kg	2.23	4.45
SO	DSA02-SB12-0010	N	0-10	METAL	6010C	Copper	7440-50-8	16.4		mg/kg	1.78	3.56
SO	DSA02-SB12-0010	N	0-10	METAL	6010C	Iron	7439-89-6	48600		mg/kg	13.4	26.7
SO	DSA02-SB12-0010	N	0-10	METAL	6010C	Lead	7439-92-1	16.6		mg/kg	0.668	1.34
SO	DSA02-SB12-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	7390		mg/kg	445	1340
SO	DSA02-SB12-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	645		mg/kg	1.34	2.67
SO	DSA02-SB12-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	3.02	J	mg/kg	2.23	4.45
SO	DSA02-SB12-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	31		mg/kg	1.34	2.67
SO	DSA02-SB12-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	4620		mg/kg	445	1340
SO	DSA02-SB12-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	2.23	U	mg/kg	1.34	2.23
SO	DSA02-SB12-0010	N	0-10	METAL	6010C	Silver	7440-22-4	0.891	U	mg/kg	0.445	0.891
SO	DSA02-SB12-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	2840		mg/kg	445	1340
SO	DSA02-SB12-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	1.78	U	mg/kg	1.34	1.78
SO	DSA02-SB12-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	53.4		mg/kg	2.23	4.45
SO	DSA02-SB12-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	95		mg/kg	2.23	4.45
SO	DSA02-SB12-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	0.0212	J	mg/kg	0.0202	0.0419
SO	DSA02-SB13-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	24600		mg/kg	32.7	65.5
SO	DSA02-SB13-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	5.24	U	mg/kg	3.27	5.24
SO	DSA02-SB13-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	18.1		mg/kg	1.96	3.93
SO	DSA02-SB13-0010	N	0-10	METAL	6010C	Barium	7440-39-3	45.4		mg/kg	3.27	6.55
SO	DSA02-SB13-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	1.25	J	mg/kg	0.655	1.31
SO	DSA02-SB13-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	1.31	U	mg/kg	0.655	1.31
SO	DSA02-SB13-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	3880		mg/kg	655	1310
SO	DSA02-SB13-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	45.1		mg/kg	1.31	2.62

Attachment D-2
Background Analytical Data
Former Raritan Arsenal, Edison, NJ

Matrix	Sample Name	Sample Type	Depth Interval (feet bgs)	Analysis Group	Analytical Method	Chem_Name	CAS	Result	Qualifier	Units	DL	LOD
SO	DSA02-SB13-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	8.87		mg/kg	3.27	6.55
SO	DSA02-SB13-0010	N	0-10	METAL	6010C	Copper	7440-50-8	9.34		mg/kg	2.62	5.24
SO	DSA02-SB13-0010	N	0-10	METAL	6010C	Iron	7439-89-6	34800		mg/kg	19.6	39.3
SO	DSA02-SB13-0010	N	0-10	METAL	6010C	Lead	7439-92-1	11.7		mg/kg	0.982	1.96
SO	DSA02-SB13-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	7930		mg/kg	655	1960
SO	DSA02-SB13-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	359		mg/kg	1.96	3.93
SO	DSA02-SB13-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	10.7	J	mg/kg	3.27	6.55
SO	DSA02-SB13-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	29.3		mg/kg	1.96	3.93
SO	DSA02-SB13-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	5690		mg/kg	655	1960
SO	DSA02-SB13-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	3.27	U	mg/kg	1.96	3.27
SO	DSA02-SB13-0010	N	0-10	METAL	6010C	Silver	7440-22-4	1.31	U	mg/kg	0.655	1.31
SO	DSA02-SB13-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	12300		mg/kg	655	1960
SO	DSA02-SB13-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	2.62	U	mg/kg	1.96	2.62
SO	DSA02-SB13-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	58.9		mg/kg	3.27	6.55
SO	DSA02-SB13-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	82.2		mg/kg	3.27	6.55
SO	DSA02-SB13-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	0.0718	U	mg/kg	0.0346	0.0718
SO	DSA02-SB14-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	22400		mg/kg	37.1	74.2
SO	DSA02-SB14-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	5.94	U	mg/kg	3.71	5.94
SO	DSA02-SB14-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	13.8		mg/kg	2.23	4.45
SO	DSA02-SB14-0010	N	0-10	METAL	6010C	Barium	7440-39-3	42		mg/kg	3.71	7.42
SO	DSA02-SB14-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	1.13	J	mg/kg	0.742	1.48
SO	DSA02-SB14-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	1.48	U	mg/kg	0.742	1.48
SO	DSA02-SB14-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	3470	J	mg/kg	742	1480
SO	DSA02-SB14-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	40.7		mg/kg	1.48	2.97
SO	DSA02-SB14-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	8.98	J	mg/kg	3.71	7.42
SO	DSA02-SB14-0010	N	0-10	METAL	6010C	Copper	7440-50-8	11.8		mg/kg	2.97	5.94
SO	DSA02-SB14-0010	N	0-10	METAL	6010C	Iron	7439-89-6	43200		mg/kg	22.3	44.5
SO	DSA02-SB14-0010	N	0-10	METAL	6010C	Lead	7439-92-1	14.9		mg/kg	1.11	2.23
SO	DSA02-SB14-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	7270		mg/kg	742	2230
SO	DSA02-SB14-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	240		mg/kg	2.23	4.45
SO	DSA02-SB14-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	6.27	J	mg/kg	3.71	7.42
SO	DSA02-SB14-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	27.3		mg/kg	2.23	4.45
SO	DSA02-SB14-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	5040		mg/kg	742	2230
SO	DSA02-SB14-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	3.71	U	mg/kg	2.23	3.71
SO	DSA02-SB14-0010	N	0-10	METAL	6010C	Silver	7440-22-4	1.48	U	mg/kg	0.742	1.48
SO	DSA02-SB14-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	12600		mg/kg	742	2230
SO	DSA02-SB14-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	2.97	U	mg/kg	2.23	2.97

Attachment D-2
Background Analytical Data
Former Raritan Arsenal, Edison, NJ

Matrix	Sample Name	Sample Type	Depth Interval (feet bgs)	Analysis Group	Analytical Method	Chem_Name	CAS	Result	Qualifier	Units	DL	LOD
SO	DSA02-SB14-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	58.6		mg/kg	3.71	7.42
SO	DSA02-SB14-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	83.5		mg/kg	3.71	7.42
SO	DSA02-SB14-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	0.0707	U	mg/kg	0.0340	0.0707
SO	DSA02-SB15-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	23600		mg/kg	41.5	83.1
SO	DSA02-SB15-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	6.65	U	mg/kg	4.15	6.65
SO	DSA02-SB15-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	7.2	J	mg/kg	2.49	4.99
SO	DSA02-SB15-0010	N	0-10	METAL	6010C	Barium	7440-39-3	46.3		mg/kg	4.15	8.31
SO	DSA02-SB15-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	1.66	U	mg/kg	0.831	1.66
SO	DSA02-SB15-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	1.66	U	mg/kg	0.831	1.66
SO	DSA02-SB15-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	4130	J	mg/kg	831	1660
SO	DSA02-SB15-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	44.1		mg/kg	1.66	3.32
SO	DSA02-SB15-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	6.97	J	mg/kg	4.15	8.31
SO	DSA02-SB15-0010	N	0-10	METAL	6010C	Copper	7440-50-8	12.3		mg/kg	3.32	6.65
SO	DSA02-SB15-0010	N	0-10	METAL	6010C	Iron	7439-89-6	30100		mg/kg	24.9	49.9
SO	DSA02-SB15-0010	N	0-10	METAL	6010C	Lead	7439-92-1	14.1		mg/kg	1.25	2.49
SO	DSA02-SB15-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	7780		mg/kg	831	2490
SO	DSA02-SB15-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	373		mg/kg	2.49	4.99
SO	DSA02-SB15-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	6.73	J	mg/kg	4.15	8.31
SO	DSA02-SB15-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	22.8		mg/kg	2.49	4.99
SO	DSA02-SB15-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	5360		mg/kg	831	2490
SO	DSA02-SB15-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	4.15	U	mg/kg	2.49	4.15
SO	DSA02-SB15-0010	N	0-10	METAL	6010C	Silver	7440-22-4	1.66	U	mg/kg	0.831	1.66
SO	DSA02-SB15-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	15300		mg/kg	831	2490
SO	DSA02-SB15-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	3.32	U	mg/kg	2.49	3.32
SO	DSA02-SB15-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	54.5		mg/kg	4.15	8.31
SO	DSA02-SB15-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	60.5		mg/kg	4.15	8.31
SO	DSA02-SB15-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	0.0777	U	mg/kg	0.0374	0.0777
SO	DSA02-SB16-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	24200		mg/kg	28.8	57.6
SO	DSA02-SB16-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	4.6	U	mg/kg	2.88	4.60
SO	DSA02-SB16-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	12.9		mg/kg	1.73	3.45
SO	DSA02-SB16-0010	N	0-10	METAL	6010C	Barium	7440-39-3	37		mg/kg	2.88	5.76
SO	DSA02-SB16-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	1.15	J	mg/kg	0.576	1.15
SO	DSA02-SB16-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	1.15	U	mg/kg	0.576	1.15
SO	DSA02-SB16-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	2610	J	mg/kg	576	1150
SO	DSA02-SB16-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	36.8		mg/kg	1.15	2.30
SO	DSA02-SB16-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	12		mg/kg	2.88	5.76
SO	DSA02-SB16-0010	N	0-10	METAL	6010C	Copper	7440-50-8	12.8		mg/kg	2.30	4.60

Attachment D-2
Background Analytical Data
Former Raritan Arsenal, Edison, NJ

Matrix	Sample Name	Sample Type	Depth Interval (feet bgs)	Analysis Group	Analytical Method	Chem_Name	CAS	Result	Qualifier	Units	DL	LOD
SO	DSA02-SB16-0010	N	0-10	METAL	6010C	Iron	7439-89-6	42600		mg/kg	17.3	34.5
SO	DSA02-SB16-0010	N	0-10	METAL	6010C	Lead	7439-92-1	16.9		mg/kg	0.863	1.73
SO	DSA02-SB16-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	7470		mg/kg	576	1730
SO	DSA02-SB16-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	333		mg/kg	1.73	3.45
SO	DSA02-SB16-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	5.34	J	mg/kg	2.88	5.76
SO	DSA02-SB16-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	36.4		mg/kg	1.73	3.45
SO	DSA02-SB16-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	4930		mg/kg	576	1730
SO	DSA02-SB16-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	1.78	J	mg/kg	1.73	2.88
SO	DSA02-SB16-0010	N	0-10	METAL	6010C	Silver	7440-22-4	1.15	U	mg/kg	0.576	1.15
SO	DSA02-SB16-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	12700		mg/kg	576	1730
SO	DSA02-SB16-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	2.3	U	mg/kg	1.73	2.30
SO	DSA02-SB16-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	44		mg/kg	2.88	5.76
SO	DSA02-SB16-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	97		mg/kg	2.88	5.76
SO	DSA02-SB16-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	0.0605	U	mg/kg	0.0291	0.0605
SO	DSA03-SB17-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	15700		mg/kg	13.2	26.5
SO	DSA03-SB17-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	2.12	U	mg/kg	1.32	2.12
SO	DSA03-SB17-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	16.9		mg/kg	0.794	1.59
SO	DSA03-SB17-0010	N	0-10	METAL	6010C	Barium	7440-39-3	24.7		mg/kg	1.32	2.65
SO	DSA03-SB17-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	0.989	J	mg/kg	0.265	0.529
SO	DSA03-SB17-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	0.529	U	mg/kg	0.265	0.529
SO	DSA03-SB17-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	601	J	mg/kg	265	529
SO	DSA03-SB17-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	28.7		mg/kg	0.529	1.06
SO	DSA03-SB17-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	15.6		mg/kg	1.32	2.65
SO	DSA03-SB17-0010	N	0-10	METAL	6010C	Copper	7440-50-8	8.21		mg/kg	1.06	2.12
SO	DSA03-SB17-0010	N	0-10	METAL	6010C	Iron	7439-89-6	46200		mg/kg	7.94	15.9
SO	DSA03-SB17-0010	N	0-10	METAL	6010C	Lead	7439-92-1	8.83		mg/kg	0.397	0.794
SO	DSA03-SB17-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	3470		mg/kg	265	794
SO	DSA03-SB17-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	173		mg/kg	0.794	1.59
SO	DSA03-SB17-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	12.4		mg/kg	1.32	2.65
SO	DSA03-SB17-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	26.1		mg/kg	0.794	1.59
SO	DSA03-SB17-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	2480		mg/kg	265	794
SO	DSA03-SB17-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	1.32	U	mg/kg	0.794	1.32
SO	DSA03-SB17-0010	N	0-10	METAL	6010C	Silver	7440-22-4	0.529	U	mg/kg	0.529	0.529
SO	DSA03-SB17-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	2410		mg/kg	265	794
SO	DSA03-SB17-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	1.06	U	mg/kg	0.794	1.06
SO	DSA03-SB17-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	46	J+	mg/kg	1.32	2.65
SO	DSA03-SB17-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	64.6		mg/kg	1.32	2.65

Attachment D-2
Background Analytical Data
Former Raritan Arsenal, Edison, NJ

Matrix	Sample Name	Sample Type	Depth Interval (feet bgs)	Analysis Group	Analytical Method	Chem_Name	CAS	Result	Qualifier	Units	DL	LOD
SO	DSA03-SB17-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	0.0733	U	mg/kg	0.0353	0.0733
SO	DSA03-SB18-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	7670		mg/kg	6.45	12.9
SO	DSA03-SB18-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	1.03	U	mg/kg	0.645	1.03
SO	DSA03-SB18-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	8.95		mg/kg	0.387	0.774
SO	DSA03-SB18-0010	N	0-10	METAL	6010C	Barium	7440-39-3	8.04		mg/kg	0.645	1.29
SO	DSA03-SB18-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	0.467	J	mg/kg	0.129	0.258
SO	DSA03-SB18-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	0.258	U	mg/kg	0.129	0.258
SO	DSA03-SB18-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	151	J	mg/kg	129	258
SO	DSA03-SB18-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	21		mg/kg	0.258	0.516
SO	DSA03-SB18-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	4.95		mg/kg	0.645	1.29
SO	DSA03-SB18-0010	N	0-10	METAL	6010C	Copper	7440-50-8	8		mg/kg	0.516	1.03
SO	DSA03-SB18-0010	N	0-10	METAL	6010C	Iron	7439-89-6	20500		mg/kg	3.87	7.74
SO	DSA03-SB18-0010	N	0-10	METAL	6010C	Lead	7439-92-1	4.7		mg/kg	0.193	0.387
SO	DSA03-SB18-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	2720		mg/kg	129	387
SO	DSA03-SB18-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	67.9		mg/kg	0.387	0.774
SO	DSA03-SB18-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	0.792	J	mg/kg	0.645	1.29
SO	DSA03-SB18-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	11.3		mg/kg	0.387	0.774
SO	DSA03-SB18-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	1570		mg/kg	129	387
SO	DSA03-SB18-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	0.645	U	mg/kg	0.387	0.645
SO	DSA03-SB18-0010	N	0-10	METAL	6010C	Silver	7440-22-4	0.258	U	mg/kg	0.129	0.258
SO	DSA03-SB18-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	325	J	mg/kg	129	387
SO	DSA03-SB18-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	0.496	J	mg/kg	0.387	0.516
SO	DSA03-SB18-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	30.9	J+	mg/kg	0.645	1.29
SO	DSA03-SB18-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	40.4		mg/kg	0.645	1.29
SO	DSA03-SB18-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	0.0303	U	mg/kg	0.0146	0.0303
SO	DSA03-SB19-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	7980		mg/kg	6.24	12.5
SO	DSA03-SB19-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	0.999	U	mg/kg	0.624	0.999
SO	DSA03-SB19-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	7.09		mg/kg	0.375	0.749
SO	DSA03-SB19-0010	N	0-10	METAL	6010C	Barium	7440-39-3	11.3		mg/kg	0.624	1.25
SO	DSA03-SB19-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	0.591	J	mg/kg	0.125	0.250
SO	DSA03-SB19-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	0.25	U	mg/kg	0.250	0.250
SO	DSA03-SB19-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	138	J	mg/kg	125	250
SO	DSA03-SB19-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	17.2		mg/kg	0.250	0.499
SO	DSA03-SB19-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	3.75		mg/kg	0.624	1.25
SO	DSA03-SB19-0010	N	0-10	METAL	6010C	Copper	7440-50-8	5.93		mg/kg	0.499	0.999
SO	DSA03-SB19-0010	N	0-10	METAL	6010C	Iron	7439-89-6	28500		mg/kg	3.75	7.49
SO	DSA03-SB19-0010	N	0-10	METAL	6010C	Lead	7439-92-1	5.93		mg/kg	0.187	0.375

Attachment D-2
Background Analytical Data
Former Raritan Arsenal, Edison, NJ

Matrix	Sample Name	Sample Type	Depth Interval (feet bgs)	Analysis Group	Analytical Method	Chem_Name	CAS	Result	Qualifier	Units	DL	LOD
SO	DSA03-SB19-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	1680		mg/kg	125	375
SO	DSA03-SB19-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	241		mg/kg	0.375	0.749
SO	DSA03-SB19-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	0.807	J	mg/kg	0.624	1.25
SO	DSA03-SB19-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	8.18		mg/kg	0.375	0.749
SO	DSA03-SB19-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	1130		mg/kg	125	375
SO	DSA03-SB19-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	0.624	U	mg/kg	0.375	0.624
SO	DSA03-SB19-0010	N	0-10	METAL	6010C	Silver	7440-22-4	0.25	U	mg/kg	0.125	0.250
SO	DSA03-SB19-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	402	J	mg/kg	125	375
SO	DSA03-SB19-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	0.445	J	mg/kg	0.375	0.499
SO	DSA03-SB19-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	24.5	J+	mg/kg	0.624	1.25
SO	DSA03-SB19-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	35.1		mg/kg	0.624	1.25
SO	DSA03-SB19-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	0.0289	U	mg/kg	0.0139	0.0289
SO	DSA03-SB20-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	11400		mg/kg	7.43	14.9
SO	DSA03-SB20-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	1.19	U	mg/kg	0.743	1.19
SO	DSA03-SB20-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	10.8		mg/kg	0.446	0.892
SO	DSA03-SB20-0010	N	0-10	METAL	6010C	Barium	7440-39-3	12		mg/kg	0.743	1.49
SO	DSA03-SB20-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	1.06		mg/kg	0.149	0.297
SO	DSA03-SB20-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	0.297	U	mg/kg	0.297	0.297
SO	DSA03-SB20-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	237	J	mg/kg	149	297
SO	DSA03-SB20-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	56.6		mg/kg	0.297	0.594
SO	DSA03-SB20-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	7.43		mg/kg	0.743	1.49
SO	DSA03-SB20-0010	N	0-10	METAL	6010C	Copper	7440-50-8	11.4		mg/kg	0.594	1.19
SO	DSA03-SB20-0010	N	0-10	METAL	6010C	Iron	7439-89-6	49600		mg/kg	4.46	8.92
SO	DSA03-SB20-0010	N	0-10	METAL	6010C	Lead	7439-92-1	8.28		mg/kg	0.223	0.446
SO	DSA03-SB20-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	3630		mg/kg	149	446
SO	DSA03-SB20-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	190		mg/kg	0.446	0.892
SO	DSA03-SB20-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	1.36	J	mg/kg	0.743	1.49
SO	DSA03-SB20-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	17		mg/kg	0.446	0.892
SO	DSA03-SB20-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	1700		mg/kg	149	446
SO	DSA03-SB20-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	0.743	U	mg/kg	0.446	0.743
SO	DSA03-SB20-0010	N	0-10	METAL	6010C	Silver	7440-22-4	0.297	U	mg/kg	0.149	0.297
SO	DSA03-SB20-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	1090		mg/kg	149	446
SO	DSA03-SB20-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	0.645	J	mg/kg	0.446	0.594
SO	DSA03-SB20-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	48.1	J+	mg/kg	0.743	1.49
SO	DSA03-SB20-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	70.8		mg/kg	0.743	1.49
SO	DSA03-SB20-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	0.0359	U	mg/kg	0.0173	0.0359
SO	DSA03-SB21-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	12500		mg/kg	8.55	17.1

Attachment D-2
Background Analytical Data
Former Raritan Arsenal, Edison, NJ

Matrix	Sample Name	Sample Type	Depth Interval (feet bgs)	Analysis Group	Analytical Method	Chem_Name	CAS	Result	Qualifier	Units	DL	LOD
SO	DSA03-SB21-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	1.42	J	mg/kg	0.855	1.37
SO	DSA03-SB21-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	72.1		mg/kg	0.513	1.03
SO	DSA03-SB21-0010	N	0-10	METAL	6010C	Barium	7440-39-3	64.8		mg/kg	0.855	1.71
SO	DSA03-SB21-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	0.298	J	mg/kg	0.171	0.342
SO	DSA03-SB21-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	0.342	U	mg/kg	0.342	0.342
SO	DSA03-SB21-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	494	J	mg/kg	171	342
SO	DSA03-SB21-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	54.6		mg/kg	0.342	0.684
SO	DSA03-SB21-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	5.08		mg/kg	0.855	1.71
SO	DSA03-SB21-0010	N	0-10	METAL	6010C	Copper	7440-50-8	51.5		mg/kg	0.684	1.37
SO	DSA03-SB21-0010	N	0-10	METAL	6010C	Iron	7439-89-6	52700		mg/kg	5.13	10.3
SO	DSA03-SB21-0010	N	0-10	METAL	6010C	Lead	7439-92-1	97.7		mg/kg	0.257	0.513
SO	DSA03-SB21-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	4010		mg/kg	171	513
SO	DSA03-SB21-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	105		mg/kg	0.513	1.03
SO	DSA03-SB21-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	2.82	J	mg/kg	0.855	1.71
SO	DSA03-SB21-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	15.3		mg/kg	0.513	1.03
SO	DSA03-SB21-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	3580		mg/kg	171	513
SO	DSA03-SB21-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	5.28		mg/kg	0.513	0.855
SO	DSA03-SB21-0010	N	0-10	METAL	6010C	Silver	7440-22-4	1.4	J	mg/kg	0.171	0.342
SO	DSA03-SB21-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	2610		mg/kg	171	513
SO	DSA03-SB21-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	0.659	J	mg/kg	0.513	0.684
SO	DSA03-SB21-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	60.3	J+	mg/kg	0.855	1.71
SO	DSA03-SB21-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	54.5		mg/kg	0.855	1.71
SO	DSA03-SB21-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	0.832		mg/kg	0.0226	0.0469
SO	DSA03-SB22-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	21500		mg/kg	9.81	19.6
SO	DSA03-SB22-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	1.57	U	mg/kg	0.981	1.57
SO	DSA03-SB22-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	31.2		mg/kg	0.589	1.18
SO	DSA03-SB22-0010	N	0-10	METAL	6010C	Barium	7440-39-3	67		mg/kg	0.981	1.96
SO	DSA03-SB22-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	0.674	J	mg/kg	0.196	0.393
SO	DSA03-SB22-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	0.393	U	mg/kg	0.196	0.393
SO	DSA03-SB22-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	732	J	mg/kg	196	393
SO	DSA03-SB22-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	59.9		mg/kg	0.393	0.785
SO	DSA03-SB22-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	6.32		mg/kg	0.981	1.96
SO	DSA03-SB22-0010	N	0-10	METAL	6010C	Copper	7440-50-8	35		mg/kg	0.785	1.57
SO	DSA03-SB22-0010	N	0-10	METAL	6010C	Iron	7439-89-6	37800		mg/kg	5.89	11.8
SO	DSA03-SB22-0010	N	0-10	METAL	6010C	Lead	7439-92-1	62.4		mg/kg	0.294	0.589
SO	DSA03-SB22-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	5610		mg/kg	196	589
SO	DSA03-SB22-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	126		mg/kg	0.589	1.18

Attachment D-2
Background Analytical Data
Former Raritan Arsenal, Edison, NJ

Matrix	Sample Name	Sample Type	Depth Interval (feet bgs)	Analysis Group	Analytical Method	Chem_Name	CAS	Result	Qualifier	Units	DL	LOD
SO	DSA03-SB22-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	2.85	J	mg/kg	0.981	1.96
SO	DSA03-SB22-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	20		mg/kg	0.589	1.18
SO	DSA03-SB22-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	4560		mg/kg	196	589
SO	DSA03-SB22-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	1.22	J	mg/kg	0.589	0.981
SO	DSA03-SB22-0010	N	0-10	METAL	6010C	Silver	7440-22-4	0.393	U	mg/kg	0.196	0.393
SO	DSA03-SB22-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	1120		mg/kg	196	589
SO	DSA03-SB22-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	0.785	U	mg/kg	0.589	0.785
SO	DSA03-SB22-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	57.3	J+	mg/kg	0.981	1.96
SO	DSA03-SB22-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	65.8		mg/kg	0.981	1.96
SO	DSA03-SB22-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	0.0951		mg/kg	0.0252	0.0523
SO	DSA03-SB23-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	9190		mg/kg	6.24	12.5
SO	DSA03-SB23-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	0.998	U	mg/kg	0.624	0.998
SO	DSA03-SB23-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	9		mg/kg	0.374	0.748
SO	DSA03-SB23-0010	N	0-10	METAL	6010C	Barium	7440-39-3	13.3		mg/kg	0.624	1.25
SO	DSA03-SB23-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	0.916		mg/kg	0.125	0.249
SO	DSA03-SB23-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	0.249	U	mg/kg	0.249	0.249
SO	DSA03-SB23-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	491	J	mg/kg	125	249
SO	DSA03-SB23-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	19.4		mg/kg	0.249	0.499
SO	DSA03-SB23-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	4.21		mg/kg	0.624	1.25
SO	DSA03-SB23-0010	N	0-10	METAL	6010C	Copper	7440-50-8	6.78		mg/kg	0.499	0.998
SO	DSA03-SB23-0010	N	0-10	METAL	6010C	Iron	7439-89-6	30000		mg/kg	3.74	7.48
SO	DSA03-SB23-0010	N	0-10	METAL	6010C	Lead	7439-92-1	6.1		mg/kg	0.187	0.374
SO	DSA03-SB23-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	2100		mg/kg	125	374
SO	DSA03-SB23-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	220		mg/kg	0.374	0.748
SO	DSA03-SB23-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	1.13	J	mg/kg	0.624	1.25
SO	DSA03-SB23-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	9.44		mg/kg	0.374	0.748
SO	DSA03-SB23-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	1510		mg/kg	125	374
SO	DSA03-SB23-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	0.624	U	mg/kg	0.374	0.624
SO	DSA03-SB23-0010	N	0-10	METAL	6010C	Silver	7440-22-4	0.249	U	mg/kg	0.125	0.249
SO	DSA03-SB23-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	320	J	mg/kg	125	374
SO	DSA03-SB23-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	0.411	J	mg/kg	0.374	0.499
SO	DSA03-SB23-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	29.1	J+	mg/kg	0.624	1.25
SO	DSA03-SB23-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	39.9		mg/kg	0.624	1.25
SO	DSA03-SB23-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	0.0293	U	mg/kg	0.0141	0.0293
SO	DSA03-SB24-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	10700		mg/kg	8.29	16.6
SO	DSA03-SB24-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	1.33	U	mg/kg	0.829	1.33
SO	DSA03-SB24-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	19.7		mg/kg	0.497	0.995

Attachment D-2
Background Analytical Data
Former Raritan Arsenal, Edison, NJ

Matrix	Sample Name	Sample Type	Depth Interval (feet bgs)	Analysis Group	Analytical Method	Chem_Name	CAS	Result	Qualifier	Units	DL	LOD
SO	DSA03-SB24-0010	N	0-10	METAL	6010C	Barium	7440-39-3	18.3		mg/kg	0.829	1.66
SO	DSA03-SB24-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	0.845		mg/kg	0.166	0.332
SO	DSA03-SB24-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	0.332	U	mg/kg	0.166	0.332
SO	DSA03-SB24-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	1330		mg/kg	166	332
SO	DSA03-SB24-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	24.2		mg/kg	0.332	0.663
SO	DSA03-SB24-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	12.7		mg/kg	0.829	1.66
SO	DSA03-SB24-0010	N	0-10	METAL	6010C	Copper	7440-50-8	9.26		mg/kg	0.663	1.33
SO	DSA03-SB24-0010	N	0-10	METAL	6010C	Iron	7439-89-6	49700		mg/kg	4.97	9.95
SO	DSA03-SB24-0010	N	0-10	METAL	6010C	Lead	7439-92-1	9.33		mg/kg	0.249	0.497
SO	DSA03-SB24-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	3710		mg/kg	166	497
SO	DSA03-SB24-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	227		mg/kg	0.497	0.995
SO	DSA03-SB24-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	6.81		mg/kg	0.829	1.66
SO	DSA03-SB24-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	18		mg/kg	0.497	0.995
SO	DSA03-SB24-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	2090		mg/kg	166	497
SO	DSA03-SB24-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	0.829	U	mg/kg	0.497	0.829
SO	DSA03-SB24-0010	N	0-10	METAL	6010C	Silver	7440-22-4	0.332	U	mg/kg	0.332	0.332
SO	DSA03-SB24-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	650	J	mg/kg	166	497
SO	DSA03-SB24-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	0.663	U	mg/kg	0.497	0.663
SO	DSA03-SB24-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	37.2	J+	mg/kg	0.829	1.66
SO	DSA03-SB24-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	58		mg/kg	0.829	1.66
SO	DSA03-SB24-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	0.0459	U	mg/kg	0.0221	0.0459
SO	DSA05-SB25-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	5430		mg/kg	14.5	28.9
SO	DSA05-SB25-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	2.32	U	mg/kg	1.45	2.32
SO	DSA05-SB25-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	2.24	J	mg/kg	0.868	1.74
SO	DSA05-SB25-0010	N	0-10	METAL	6010C	Barium	7440-39-3	11.8		mg/kg	1.45	2.89
SO	DSA05-SB25-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	0.302	J	mg/kg	0.289	0.579
SO	DSA05-SB25-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	0.579	U	mg/kg	0.289	0.579
SO	DSA05-SB25-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	2550		mg/kg	289	579
SO	DSA05-SB25-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	12.2		mg/kg	0.579	1.16
SO	DSA05-SB25-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	1.89	J	mg/kg	1.45	2.89
SO	DSA05-SB25-0010	N	0-10	METAL	6010C	Copper	7440-50-8	4.66		mg/kg	1.16	2.32
SO	DSA05-SB25-0010	N	0-10	METAL	6010C	Iron	7439-89-6	7570		mg/kg	8.68	17.4
SO	DSA05-SB25-0010	N	0-10	METAL	6010C	Lead	7439-92-1	4.18		mg/kg	0.434	0.868
SO	DSA05-SB25-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	4520		mg/kg	289	868
SO	DSA05-SB25-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	53.1		mg/kg	0.868	1.74
SO	DSA05-SB25-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	2.23	J	mg/kg	1.45	2.89
SO	DSA05-SB25-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	5.3		mg/kg	0.868	1.74

Attachment D-2
Background Analytical Data
Former Raritan Arsenal, Edison, NJ

Matrix	Sample Name	Sample Type	Depth Interval (feet bgs)	Analysis Group	Analytical Method	Chem_Name	CAS	Result	Qualifier	Units	DL	LOD
SO	DSA05-SB25-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	1640		mg/kg	289	868
SO	DSA05-SB25-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	1.45	U	mg/kg	0.868	1.45
SO	DSA05-SB25-0010	N	0-10	METAL	6010C	Silver	7440-22-4	0.579	U	mg/kg	0.579	0.579
SO	DSA05-SB25-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	17000		mg/kg	289	868
SO	DSA05-SB25-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	1.16	U	mg/kg	0.868	1.16
SO	DSA05-SB25-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	16.4	J+	mg/kg	1.45	2.89
SO	DSA05-SB25-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	18.1		mg/kg	1.45	2.89
SO	DSA05-SB25-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	0.0789	U	mg/kg	0.0380	0.0789
SO	DSA05-SB26-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	22000		mg/kg	11.5	23.0
SO	DSA05-SB26-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	1.84	U	mg/kg	1.15	1.84
SO	DSA05-SB26-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	13.9		mg/kg	0.690	1.38
SO	DSA05-SB26-0010	N	0-10	METAL	6010C	Barium	7440-39-3	40.9		mg/kg	1.15	2.30
SO	DSA05-SB26-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	1.17		mg/kg	0.230	0.460
SO	DSA05-SB26-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	0.46	U	mg/kg	0.230	0.460
SO	DSA05-SB26-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	2350		mg/kg	230	460
SO	DSA05-SB26-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	49		mg/kg	0.460	0.920
SO	DSA05-SB26-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	12.6		mg/kg	1.15	2.30
SO	DSA05-SB26-0010	N	0-10	METAL	6010C	Copper	7440-50-8	19		mg/kg	0.920	1.84
SO	DSA05-SB26-0010	N	0-10	METAL	6010C	Iron	7439-89-6	46500		mg/kg	6.90	13.8
SO	DSA05-SB26-0010	N	0-10	METAL	6010C	Lead	7439-92-1	17.7		mg/kg	0.345	0.690
SO	DSA05-SB26-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	9280		mg/kg	230	690
SO	DSA05-SB26-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	284		mg/kg	0.690	1.38
SO	DSA05-SB26-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	1.73	J	mg/kg	1.15	2.30
SO	DSA05-SB26-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	30.2		mg/kg	0.690	1.38
SO	DSA05-SB26-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	4400		mg/kg	230	690
SO	DSA05-SB26-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	1.15	U	mg/kg	0.690	1.15
SO	DSA05-SB26-0010	N	0-10	METAL	6010C	Silver	7440-22-4	0.46	U	mg/kg	0.460	0.460
SO	DSA05-SB26-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	10300		mg/kg	230	690
SO	DSA05-SB26-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	0.92	U	mg/kg	0.690	0.920
SO	DSA05-SB26-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	52.4	J+	mg/kg	1.15	2.30
SO	DSA05-SB26-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	103		mg/kg	1.15	2.30
SO	DSA05-SB26-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	0.0601	U	mg/kg	0.0289	0.0601
SO	DSA05-SB27-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	20600		mg/kg	30.3	60.7
SO	DSA05-SB27-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	4.85	U	mg/kg	3.03	4.85
SO	DSA05-SB27-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	19.1		mg/kg	1.82	3.64
SO	DSA05-SB27-0010	N	0-10	METAL	6010C	Barium	7440-39-3	41.6		mg/kg	3.03	6.07
SO	DSA05-SB27-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	1.15	J	mg/kg	0.607	1.21

Attachment D-2
Background Analytical Data
Former Raritan Arsenal, Edison, NJ

Matrix	Sample Name	Sample Type	Depth Interval (feet bgs)	Analysis Group	Analytical Method	Chem_Name	CAS	Result	Qualifier	Units	DL	LOD
SO	DSA05-SB27-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	1.21	U	mg/kg	0.607	1.21
SO	DSA05-SB27-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	5890		mg/kg	607	1210
SO	DSA05-SB27-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	40.1	J+	mg/kg	1.21	2.43
SO	DSA05-SB27-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	7.14	J	mg/kg	3.03	6.07
SO	DSA05-SB27-0010	N	0-10	METAL	6010C	Copper	7440-50-8	28.6		mg/kg	2.43	4.85
SO	DSA05-SB27-0010	N	0-10	METAL	6010C	Iron	7439-89-6	36400		mg/kg	18.2	36.4
SO	DSA05-SB27-0010	N	0-10	METAL	6010C	Lead	7439-92-1	22.8		mg/kg	0.910	1.82
SO	DSA05-SB27-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	11000		mg/kg	607	1820
SO	DSA05-SB27-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	113		mg/kg	1.82	3.64
SO	DSA05-SB27-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	6.35	J	mg/kg	3.03	6.07
SO	DSA05-SB27-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	27.1		mg/kg	1.82	3.64
SO	DSA05-SB27-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	4560		mg/kg	607	1820
SO	DSA05-SB27-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	3.03	U	mg/kg	1.82	3.03
SO	DSA05-SB27-0010	N	0-10	METAL	6010C	Silver	7440-22-4	1.21	U	mg/kg	1.21	1.21
SO	DSA05-SB27-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	35500		mg/kg	607	1820
SO	DSA05-SB27-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	2.43	U	mg/kg	1.82	2.43
SO	DSA05-SB27-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	51.5	J+	mg/kg	3.03	6.07
SO	DSA05-SB27-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	81.3		mg/kg	3.03	6.07
SO	DSA05-SB27-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	0.15	U	mg/kg	0.0724	0.150
SO	DSA05-SB28-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	20400		mg/kg	12.8	25.6
SO	DSA05-SB28-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	2.05	U	mg/kg	1.28	2.05
SO	DSA05-SB28-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	13.3		mg/kg	0.767	1.53
SO	DSA05-SB28-0010	N	0-10	METAL	6010C	Barium	7440-39-3	37		mg/kg	1.28	2.56
SO	DSA05-SB28-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	1.17	J	mg/kg	0.256	0.511
SO	DSA05-SB28-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	0.511	U	mg/kg	0.256	0.511
SO	DSA05-SB28-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	2650		mg/kg	256	511
SO	DSA05-SB28-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	40	J+	mg/kg	0.511	1.02
SO	DSA05-SB28-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	9.24		mg/kg	1.28	2.56
SO	DSA05-SB28-0010	N	0-10	METAL	6010C	Copper	7440-50-8	13.8		mg/kg	1.02	2.05
SO	DSA05-SB28-0010	N	0-10	METAL	6010C	Iron	7439-89-6	35700		mg/kg	7.67	15.3
SO	DSA05-SB28-0010	N	0-10	METAL	6010C	Lead	7439-92-1	13.8		mg/kg	0.383	0.767
SO	DSA05-SB28-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	8750		mg/kg	256	767
SO	DSA05-SB28-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	217		mg/kg	0.767	1.53
SO	DSA05-SB28-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	2.18	J	mg/kg	1.28	2.56
SO	DSA05-SB28-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	25.5		mg/kg	0.767	1.53
SO	DSA05-SB28-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	4170		mg/kg	256	767
SO	DSA05-SB28-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	1.28	U	mg/kg	0.767	1.28

Attachment D-2
Background Analytical Data
Former Raritan Arsenal, Edison, NJ

Matrix	Sample Name	Sample Type	Depth Interval (feet bgs)	Analysis Group	Analytical Method	Chem_Name	CAS	Result	Qualifier	Units	DL	LOD
SO	DSA05-SB28-0010	N	0-10	METAL	6010C	Silver	7440-22-4	0.511	U	mg/kg	0.511	0.511
SO	DSA05-SB28-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	12600		mg/kg	256	767
SO	DSA05-SB28-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	1.02	U	mg/kg	0.767	1.02
SO	DSA05-SB28-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	47	J+	mg/kg	1.28	2.56
SO	DSA05-SB28-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	79.4		mg/kg	1.28	2.56
SO	DSA05-SB28-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	0.0634	U	mg/kg	0.0305	0.0634
SO	DSA05-SB29-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	24200		mg/kg	10.3	20.5
SO	DSA05-SB29-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	7.11		mg/kg	1.03	1.64
SO	DSA05-SB29-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	179		mg/kg	0.615	1.23
SO	DSA05-SB29-0010	N	0-10	METAL	6010C	Barium	7440-39-3	149		mg/kg	1.03	2.05
SO	DSA05-SB29-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	1.31		mg/kg	0.205	0.410
SO	DSA05-SB29-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	6.79		mg/kg	0.205	0.410
SO	DSA05-SB29-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	3120		mg/kg	205	410
SO	DSA05-SB29-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	192		mg/kg	0.410	0.821
SO	DSA05-SB29-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	18.3		mg/kg	1.03	2.05
SO	DSA05-SB29-0010	N	0-10	METAL	6010C	Copper	7440-50-8	500		mg/kg	0.821	1.64
SO	DSA05-SB29-0010	N	0-10	METAL	6010C	Iron	7439-89-6	53900		mg/kg	6.15	12.3
SO	DSA05-SB29-0010	N	0-10	METAL	6010C	Lead	7439-92-1	290		mg/kg	0.308	0.615
SO	DSA05-SB29-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	7550		mg/kg	205	615
SO	DSA05-SB29-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	334		mg/kg	0.615	1.23
SO	DSA05-SB29-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	3.77	J	mg/kg	1.03	2.05
SO	DSA05-SB29-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	55.3		mg/kg	0.615	1.23
SO	DSA05-SB29-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	3380		mg/kg	205	615
SO	DSA05-SB29-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	9.78		mg/kg	0.615	1.03
SO	DSA05-SB29-0010	N	0-10	METAL	6010C	Silver	7440-22-4	7.56		mg/kg	0.205	0.410
SO	DSA05-SB29-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	5190		mg/kg	205	615
SO	DSA05-SB29-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	1.09	J	mg/kg	0.615	0.821
SO	DSA05-SB29-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	118		mg/kg	1.03	2.05
SO	DSA05-SB29-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	709		mg/kg	1.03	2.05
SO	DSA05-SB29-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	2.99		mg/kg	0.0267	0.0554
SO	DSA05-SB30-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	23800		mg/kg	9.86	19.7
SO	DSA05-SB30-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	1.44	J	mg/kg	0.986	1.58
SO	DSA05-SB30-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	67.6		mg/kg	0.592	1.18
SO	DSA05-SB30-0010	N	0-10	METAL	6010C	Barium	7440-39-3	132		mg/kg	0.986	1.97
SO	DSA05-SB30-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	1.01		mg/kg	0.197	0.395
SO	DSA05-SB30-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	0.853	J	mg/kg	0.197	0.395
SO	DSA05-SB30-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	1210		mg/kg	197	395

Attachment D-2
Background Analytical Data
Former Raritan Arsenal, Edison, NJ

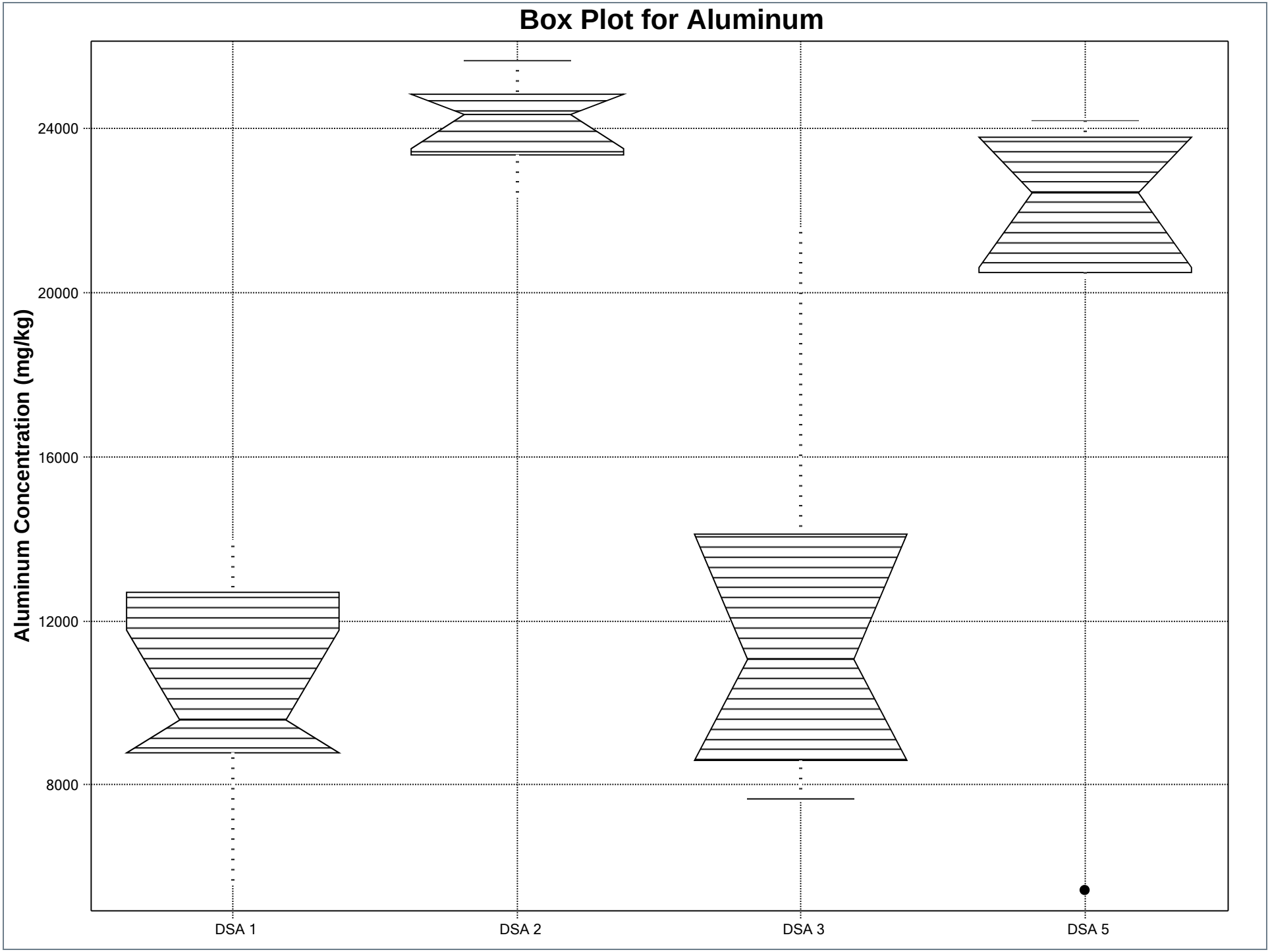
Matrix	Sample Name	Sample Type	Depth Interval (feet bgs)	Analysis Group	Analytical Method	Chem_Name	CAS	Result	Qualifier	Units	DL	LOD
SO	DSA05-SB30-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	145		mg/kg	0.395	0.789
SO	DSA05-SB30-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	11.2		mg/kg	0.986	1.97
SO	DSA05-SB30-0010	N	0-10	METAL	6010C	Copper	7440-50-8	411		mg/kg	0.789	1.58
SO	DSA05-SB30-0010	N	0-10	METAL	6010C	Iron	7439-89-6	52500		mg/kg	5.92	11.8
SO	DSA05-SB30-0010	N	0-10	METAL	6010C	Lead	7439-92-1	247		mg/kg	0.296	0.592
SO	DSA05-SB30-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	6150		mg/kg	197	592
SO	DSA05-SB30-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	227		mg/kg	0.592	1.18
SO	DSA05-SB30-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	2.32	J	mg/kg	0.986	1.97
SO	DSA05-SB30-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	34.7		mg/kg	0.592	1.18
SO	DSA05-SB30-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	2620		mg/kg	197	592
SO	DSA05-SB30-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	4.51		mg/kg	0.592	0.986
SO	DSA05-SB30-0010	N	0-10	METAL	6010C	Silver	7440-22-4	6.16		mg/kg	0.197	0.395
SO	DSA05-SB30-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	1910		mg/kg	197	592
SO	DSA05-SB30-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	0.709	J	mg/kg	0.592	0.789
SO	DSA05-SB30-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	99.4		mg/kg	0.986	1.97
SO	DSA05-SB30-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	186		mg/kg	0.986	1.97
SO	DSA05-SB30-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	3.33		mg/kg	0.0496	0.103
SO	DSA05-SB31-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	23800		mg/kg	9.35	18.7
SO	DSA05-SB31-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	3.71		mg/kg	0.935	1.50
SO	DSA05-SB31-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	169		mg/kg	0.561	1.12
SO	DSA05-SB31-0010	N	0-10	METAL	6010C	Barium	7440-39-3	187		mg/kg	0.935	1.87
SO	DSA05-SB31-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	1.23		mg/kg	0.187	0.374
SO	DSA05-SB31-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	2.09		mg/kg	0.187	0.374
SO	DSA05-SB31-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	2970		mg/kg	187	374
SO	DSA05-SB31-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	215		mg/kg	0.374	0.748
SO	DSA05-SB31-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	14.4		mg/kg	0.935	1.87
SO	DSA05-SB31-0010	N	0-10	METAL	6010C	Copper	7440-50-8	634		mg/kg	0.748	1.50
SO	DSA05-SB31-0010	N	0-10	METAL	6010C	Iron	7439-89-6	48800		mg/kg	5.61	11.2
SO	DSA05-SB31-0010	N	0-10	METAL	6010C	Lead	7439-92-1	287		mg/kg	0.281	0.561
SO	DSA05-SB31-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	6950		mg/kg	187	561
SO	DSA05-SB31-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	322		mg/kg	0.561	1.12
SO	DSA05-SB31-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	1.75	J	mg/kg	0.935	1.87
SO	DSA05-SB31-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	52.5		mg/kg	0.561	1.12
SO	DSA05-SB31-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	3560		mg/kg	187	561
SO	DSA05-SB31-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	17.6		mg/kg	0.561	0.935
SO	DSA05-SB31-0010	N	0-10	METAL	6010C	Silver	7440-22-4	10.1		mg/kg	0.187	0.374
SO	DSA05-SB31-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	3750		mg/kg	187	561

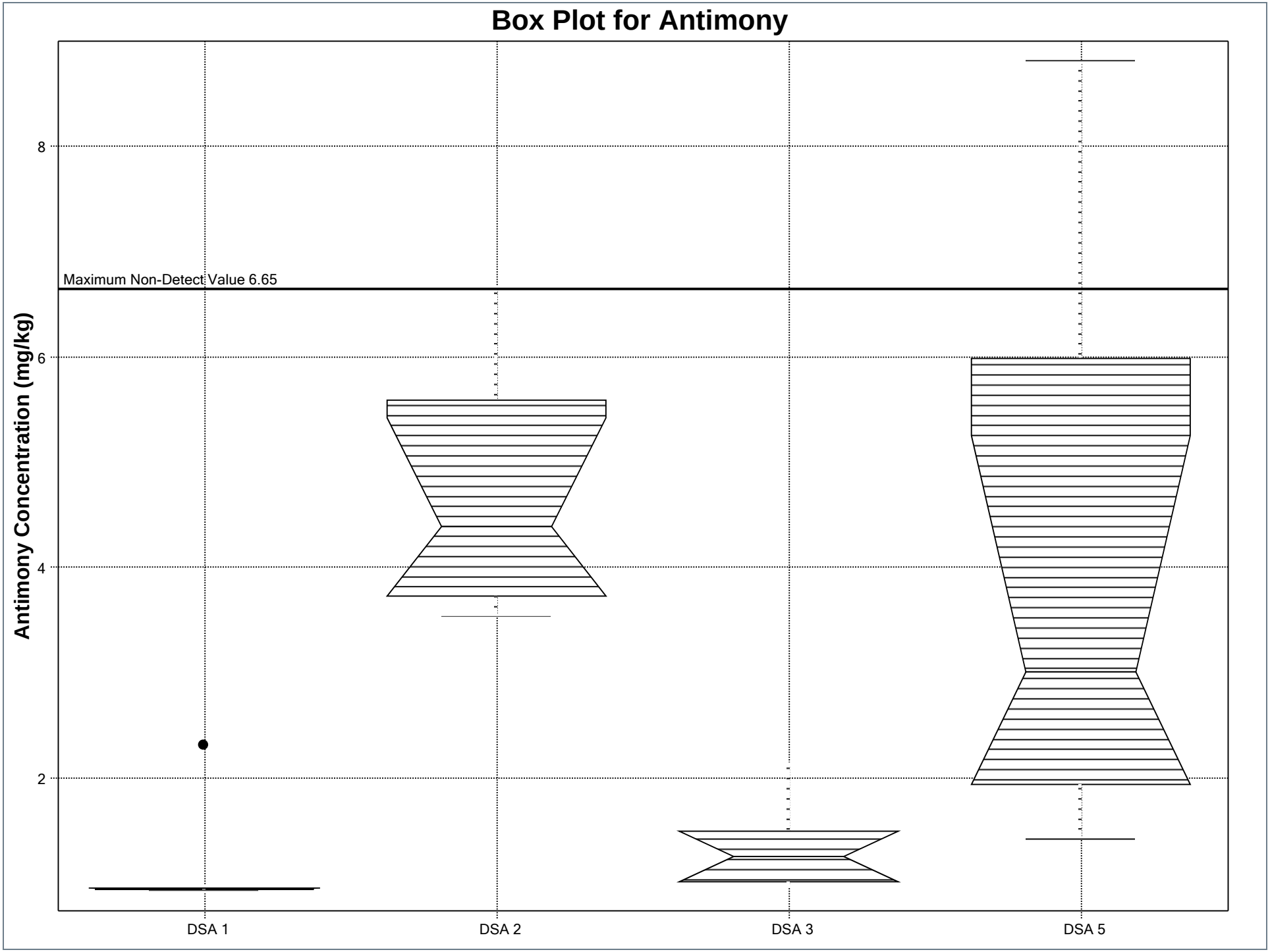
Attachment D-2
Background Analytical Data
Former Raritan Arsenal, Edison, NJ

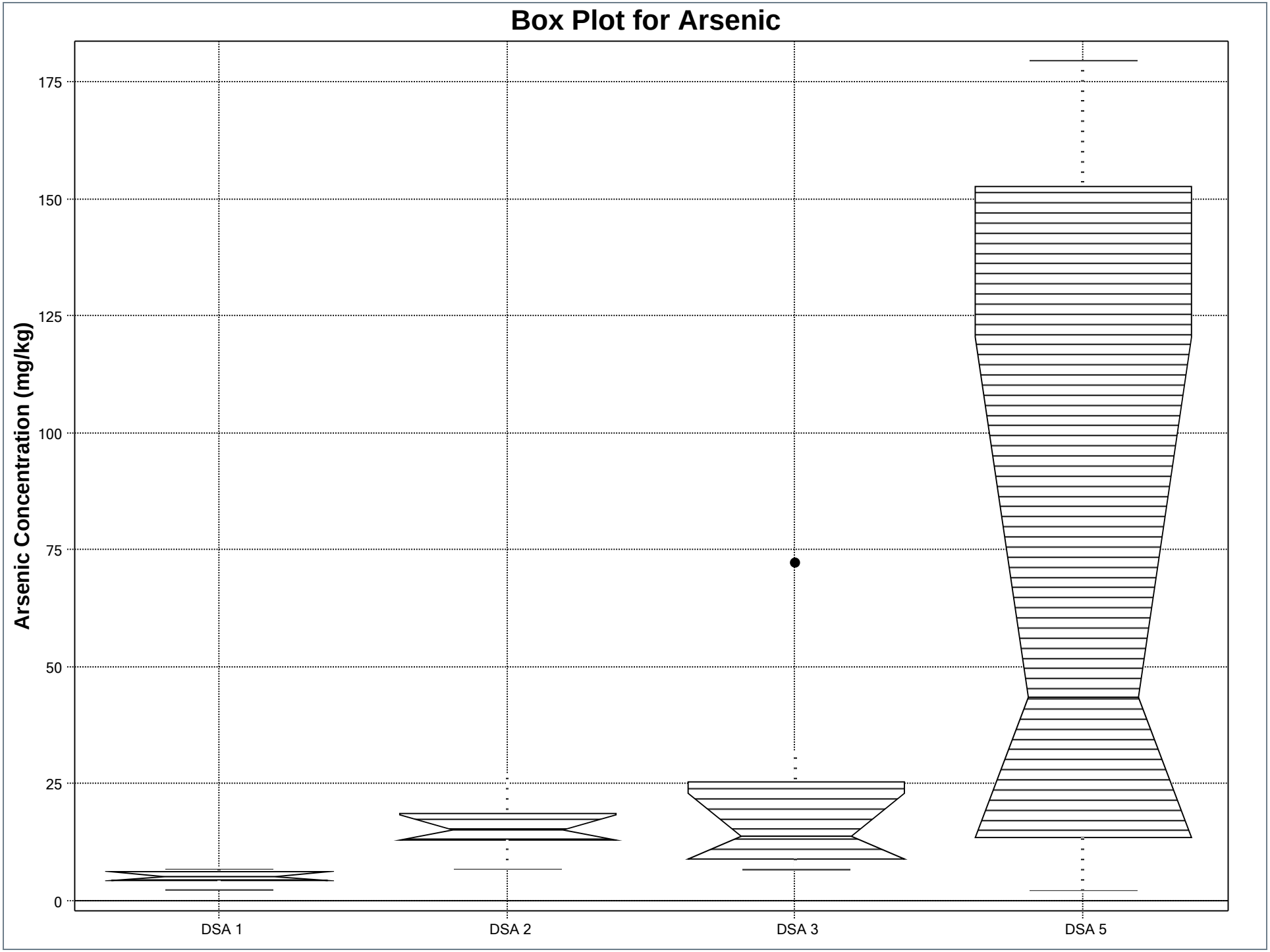
Matrix	Sample Name	Sample Type	Depth Interval (feet bgs)	Analysis Group	Analytical Method	Chem_Name	CAS	Result	Qualifier	Units	DL	LOD
SO	DSA05-SB31-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	0.631	J	mg/kg	0.561	0.748
SO	DSA05-SB31-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	105		mg/kg	0.935	1.87
SO	DSA05-SB31-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	435		mg/kg	0.935	1.87
SO	DSA05-SB31-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	5.72		mg/kg	0.115	0.239
SO	DSA05-SB32-0010	N	0-10	METAL	6010C	Aluminum	7429-90-5	22900		mg/kg	9.55	19.1
SO	DSA05-SB32-0010	N	0-10	METAL	6010C	Antimony	7440-36-0	8.79		mg/kg	0.955	1.53
SO	DSA05-SB32-0010	N	0-10	METAL	6010C	Arsenic	7440-38-2	136		mg/kg	0.573	1.15
SO	DSA05-SB32-0010	N	0-10	METAL	6010C	Barium	7440-39-3	155		mg/kg	0.955	1.91
SO	DSA05-SB32-0010	N	0-10	METAL	6010C	Beryllium	7440-41-7	0.918	J	mg/kg	0.191	0.382
SO	DSA05-SB32-0010	N	0-10	METAL	6010C	Cadmium	7440-43-9	3.33		mg/kg	0.191	0.382
SO	DSA05-SB32-0010	N	0-10	METAL	6010C	Calcium	7440-70-2	2550		mg/kg	191	382
SO	DSA05-SB32-0010	N	0-10	METAL	6010C	Chromium	7440-47-3	187		mg/kg	0.382	0.764
SO	DSA05-SB32-0010	N	0-10	METAL	6010C	Cobalt	7440-48-4	15.1		mg/kg	0.955	1.91
SO	DSA05-SB32-0010	N	0-10	METAL	6010C	Copper	7440-50-8	396		mg/kg	0.764	1.53
SO	DSA05-SB32-0010	N	0-10	METAL	6010C	Iron	7439-89-6	44700		mg/kg	5.73	11.5
SO	DSA05-SB32-0010	N	0-10	METAL	6010C	Lead	7439-92-1	294		mg/kg	0.287	0.573
SO	DSA05-SB32-0010	N	0-10	METAL	6010C	Magnesium	7439-95-4	6950		mg/kg	191	573
SO	DSA05-SB32-0010	N	0-10	METAL	6010C	Manganese	7439-96-5	246		mg/kg	0.573	1.15
SO	DSA05-SB32-0010	N	0-10	METAL	6010C	Molybdenum	7439-98-7	2.54	J	mg/kg	0.955	1.91
SO	DSA05-SB32-0010	N	0-10	METAL	6010C	Nickel	7440-02-0	46.1		mg/kg	0.573	1.15
SO	DSA05-SB32-0010	N	0-10	METAL	6010C	Potassium	7440-09-7	3230		mg/kg	191	573
SO	DSA05-SB32-0010	N	0-10	METAL	6010C	Selenium	7782-49-2	6.32		mg/kg	0.573	0.955
SO	DSA05-SB32-0010	N	0-10	METAL	6010C	Silver	7440-22-4	6.41		mg/kg	0.191	0.382
SO	DSA05-SB32-0010	N	0-10	METAL	6010C	Sodium	7440-23-5	5010		mg/kg	191	573
SO	DSA05-SB32-0010	N	0-10	METAL	6010C	Thallium	7440-28-0	1.25	J	mg/kg	0.573	0.764
SO	DSA05-SB32-0010	N	0-10	METAL	6010C	Vanadium	7440-62-2	111		mg/kg	0.955	1.91
SO	DSA05-SB32-0010	N	0-10	METAL	6010C	Zinc	7440-66-6	415		mg/kg	0.955	1.91
SO	DSA05-SB32-0010	N	0-10	METAL	7471B	Mercury	7439-97-6	4.15		mg/kg	0.111	0.231

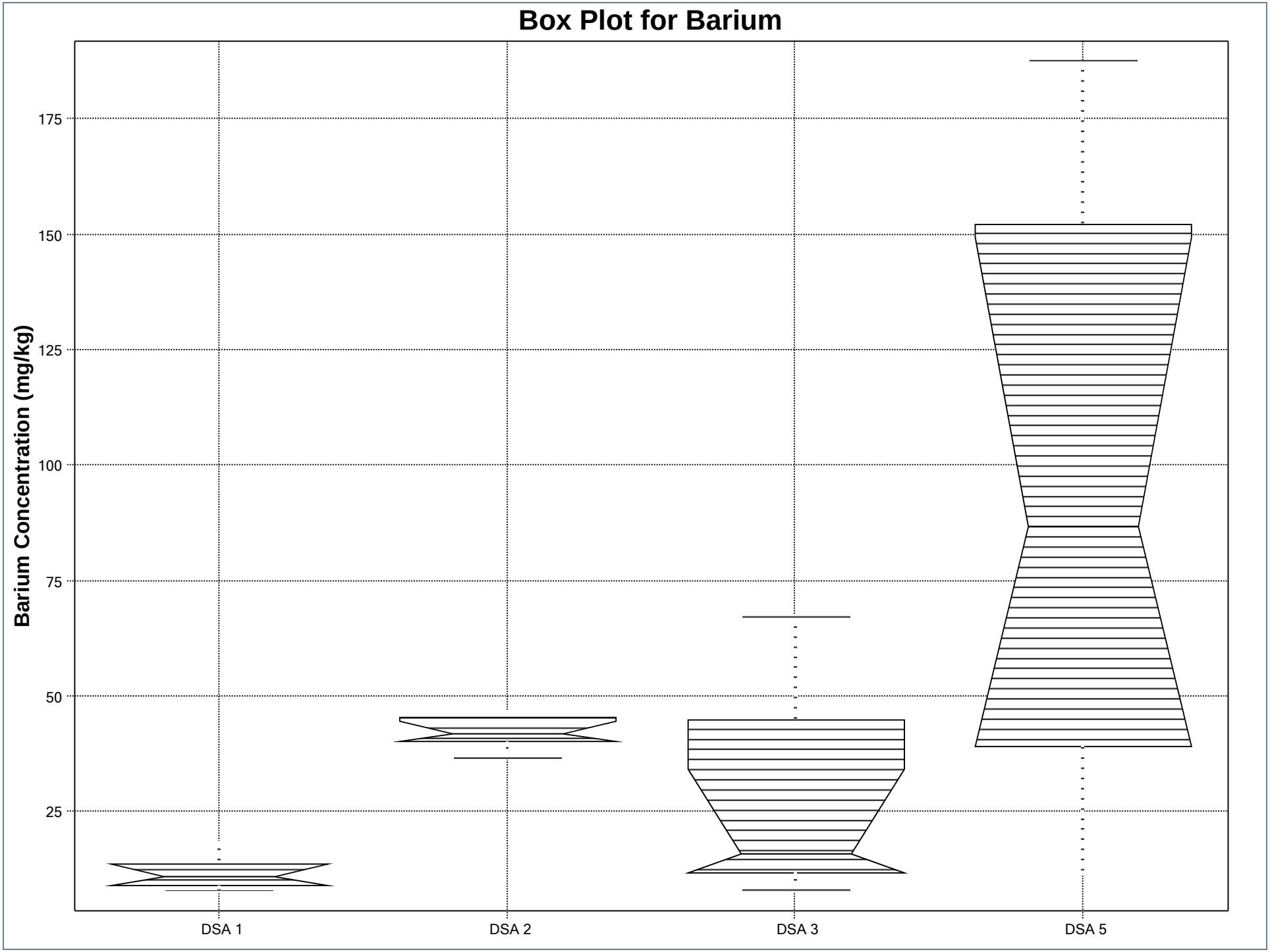
Note:
bgs = below ground surface
DL = detection limit
J = estimated value
J+ = estimated value, biased high
LOD = limit of detection
mg/kg = milligram per kilogram
N = normal sample
SO = soil
U = not detected

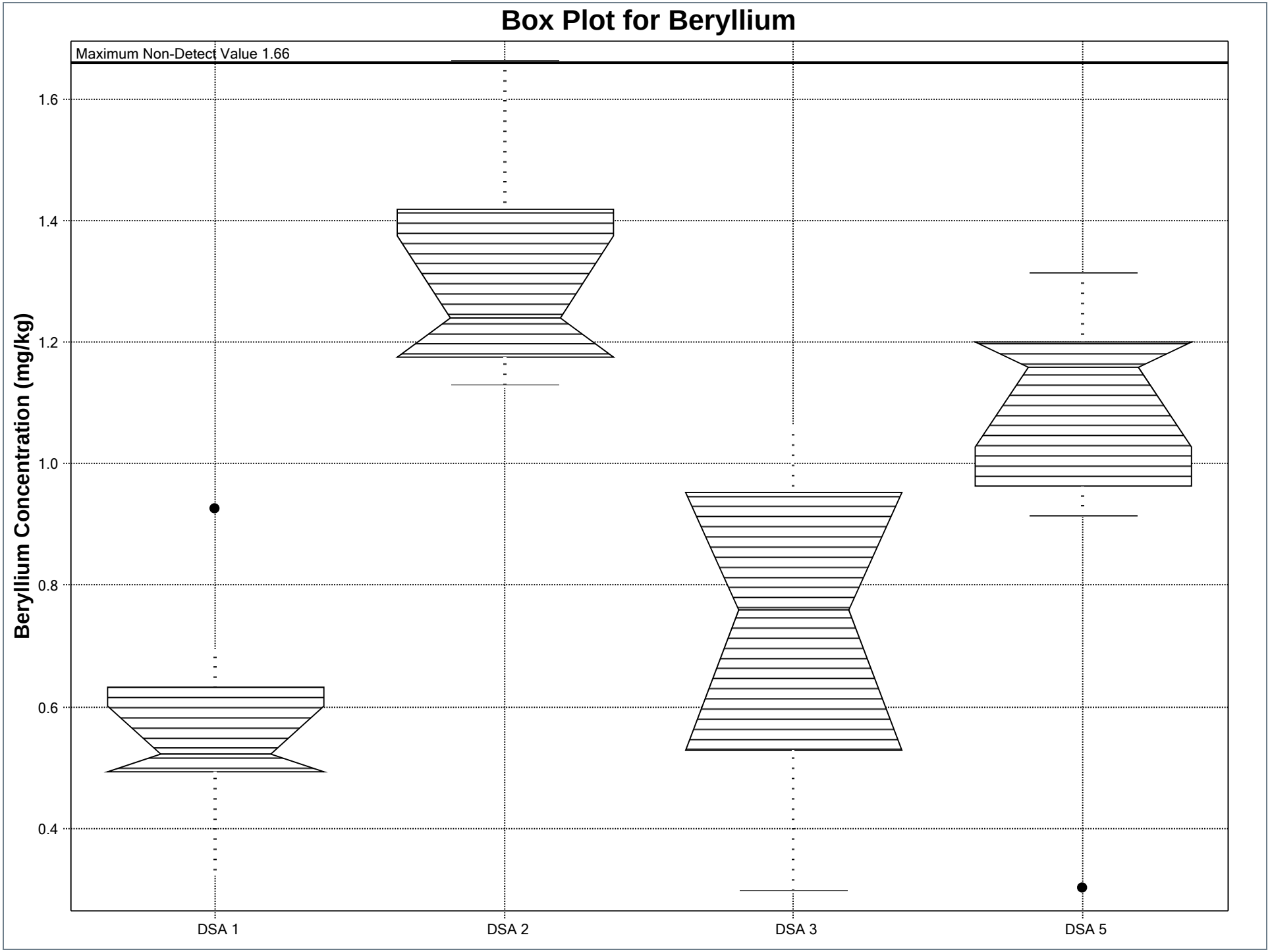
Attachment D-3

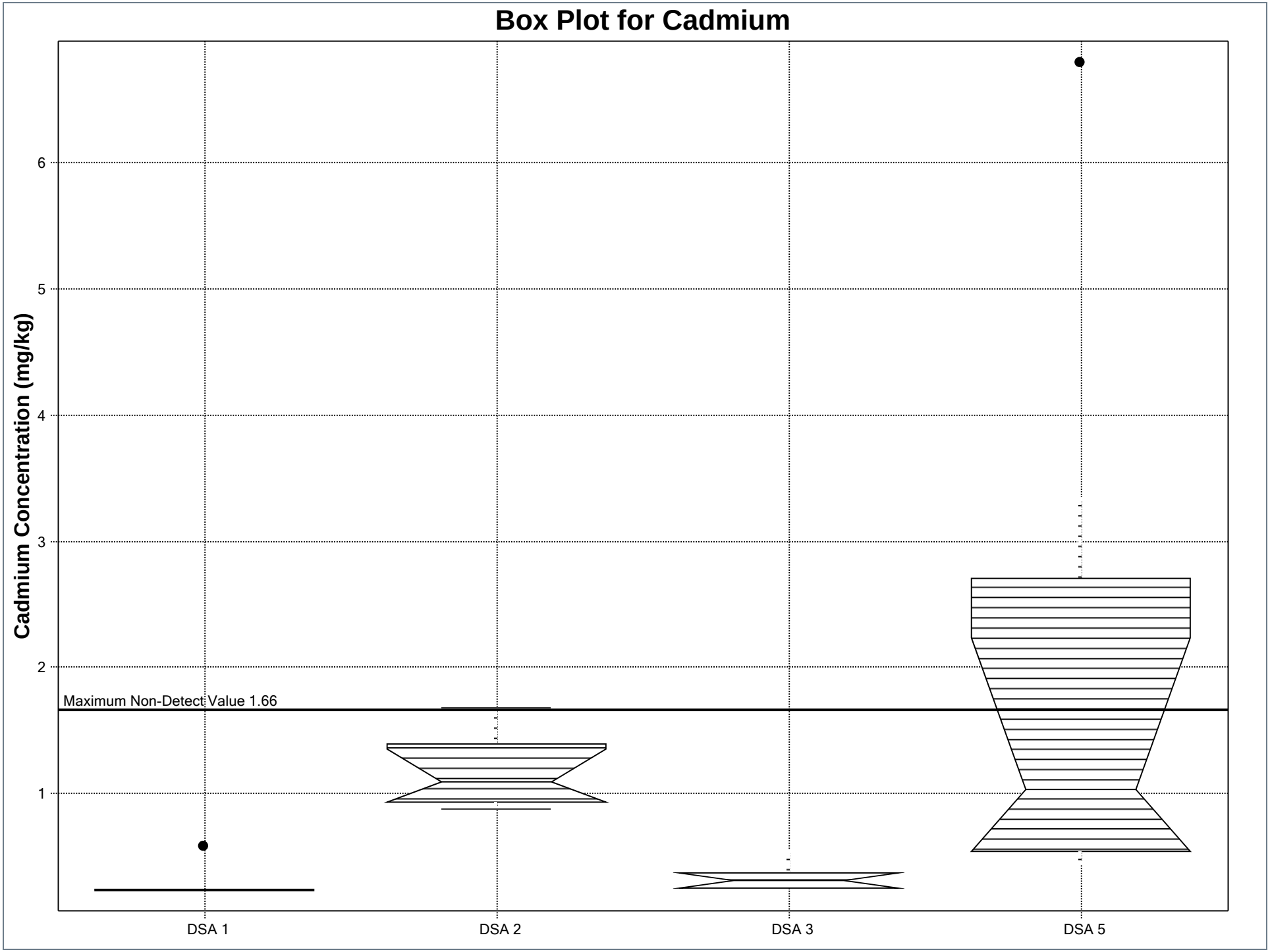

Box Plot for Aluminum
Aluminum Concentration (mg/kg)
24000
20000
16000
12000
8000
DSA 1
DSA 2
DSA 3
DSA 5

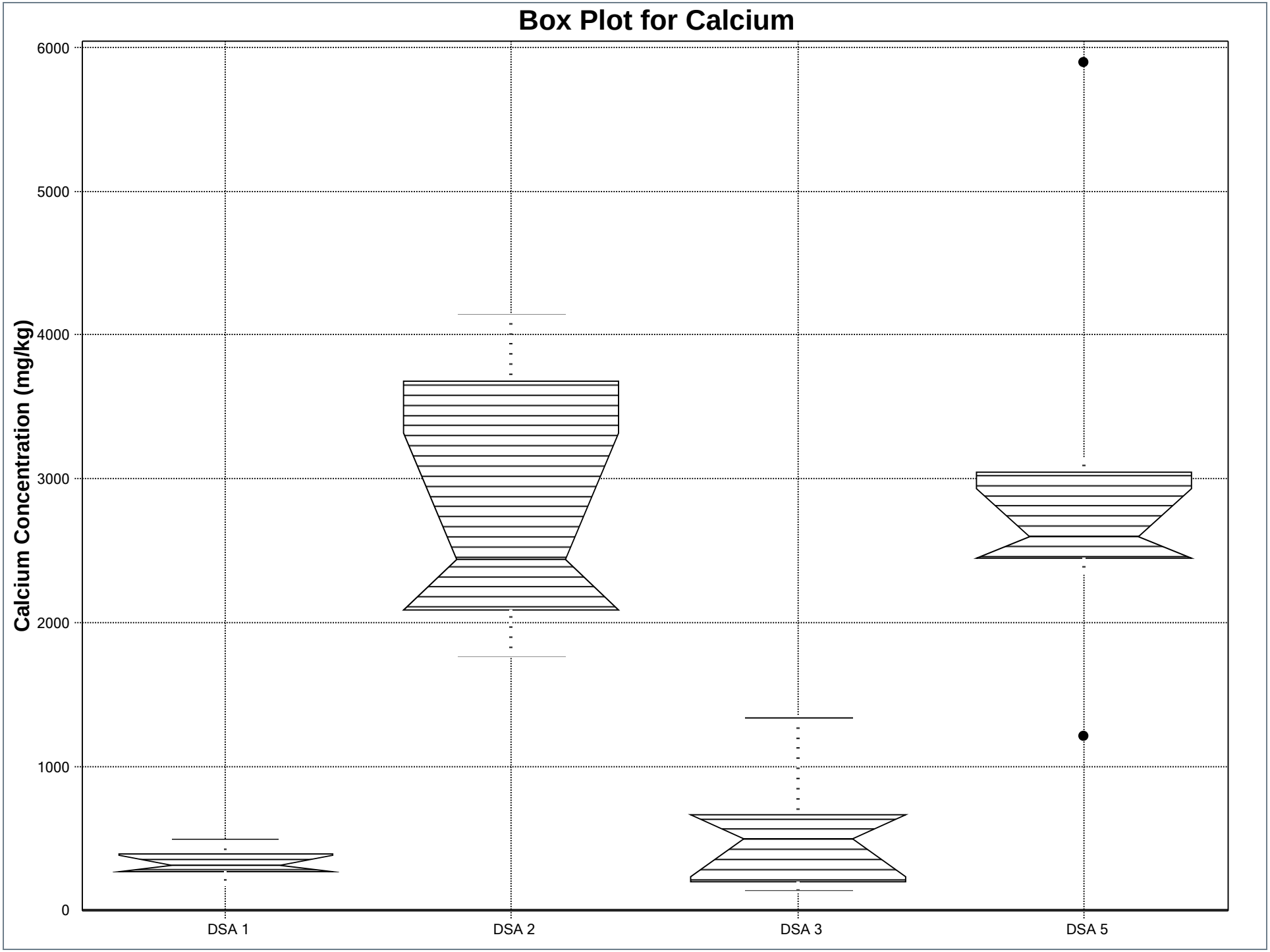

Box Plot for Antimony
Antimony Concentration (mg/kg)
8
6
4
2
Maximum Non-Detect Value 6.65
DSA 1
DSA 2
DSA 3
DSA 5

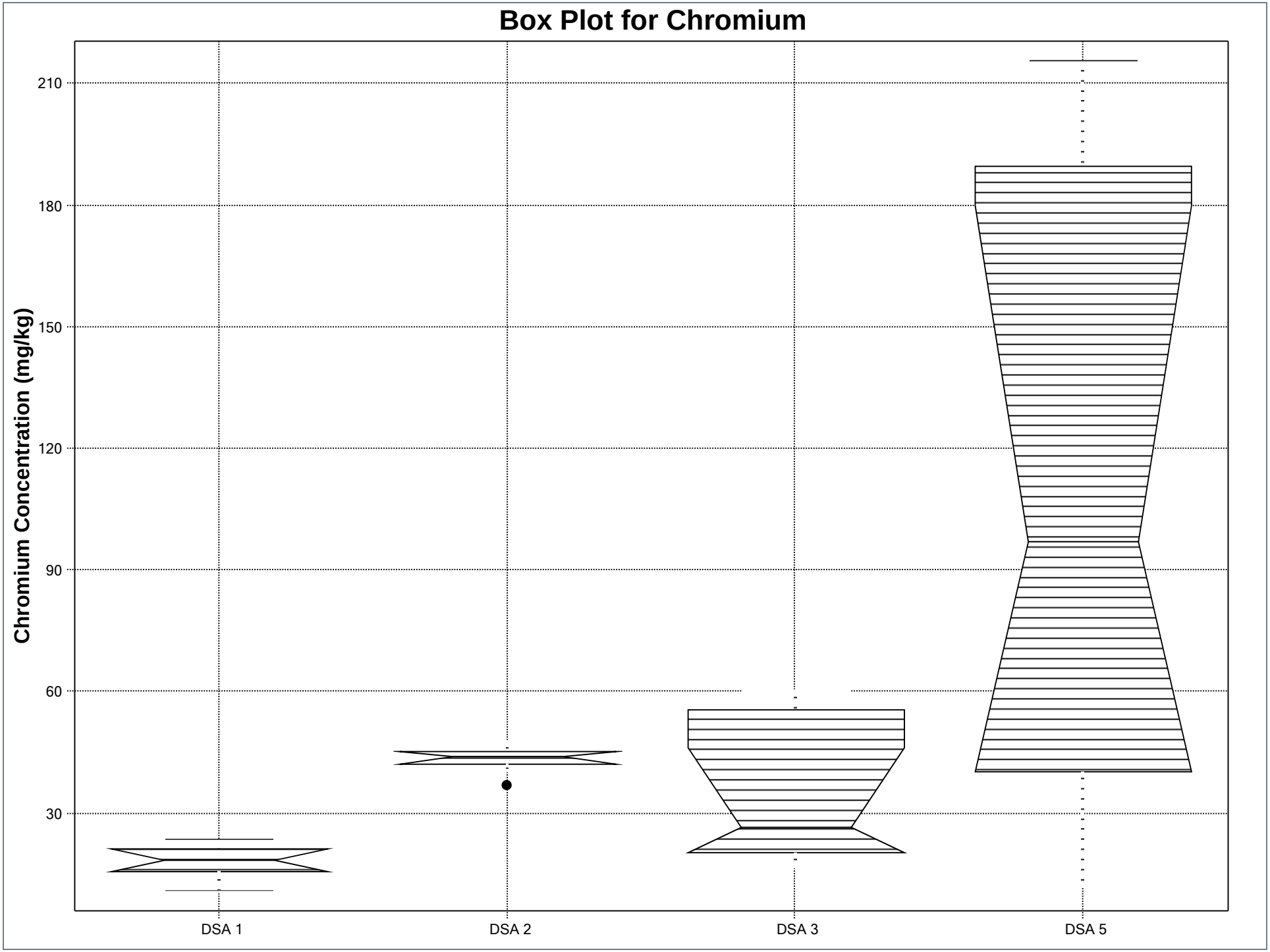

Box Plot for Arsenic
Arsenic Concentration (mg/kg)
0
25
50
75
100
125
150
175
DSA 1
DSA 2
DSA 3
DSA 5

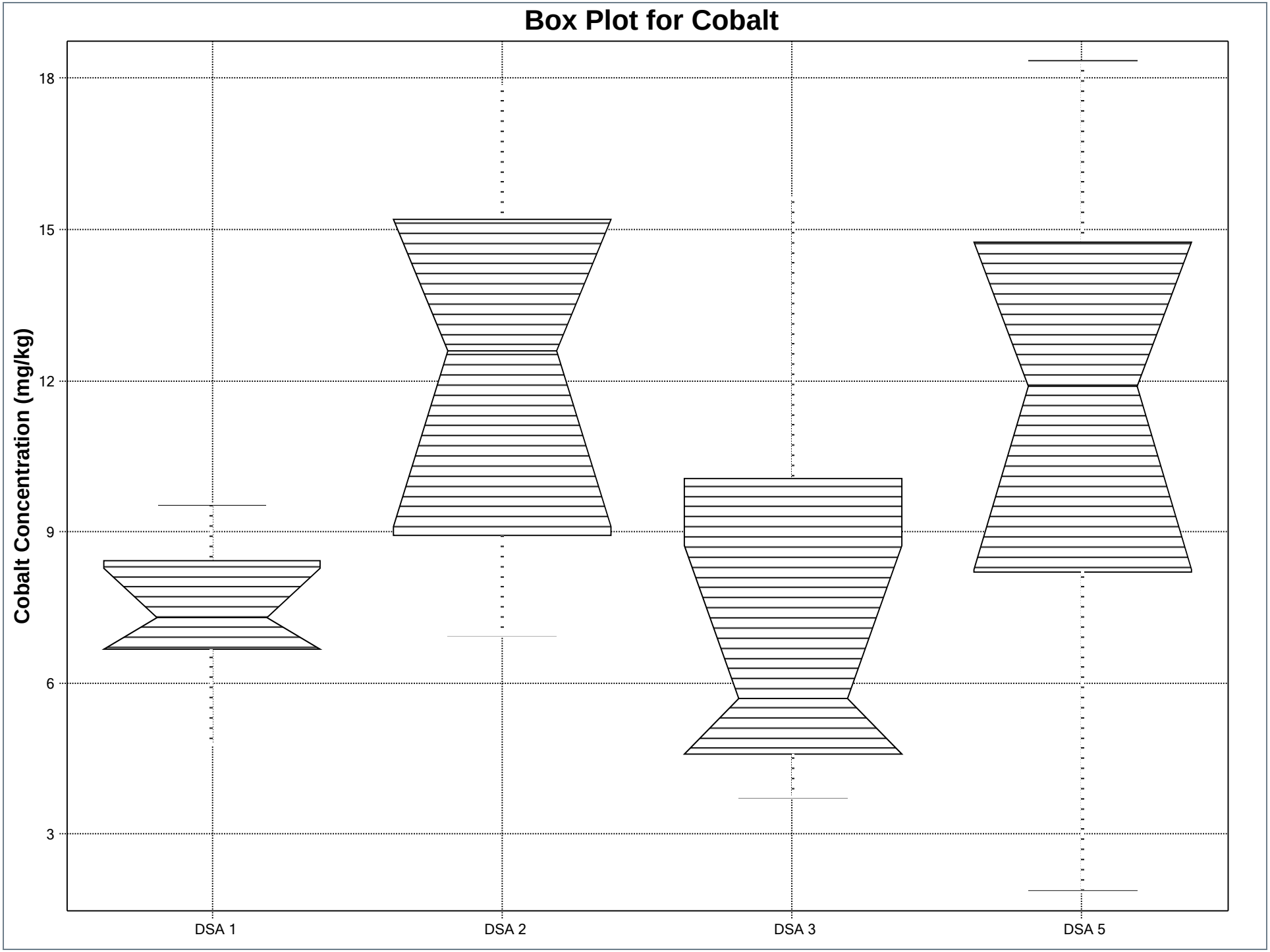

Box Plot for Barium
Barium Concentration (mg/kg)
175
150
125
100
75
50
25
DSA 1
DSA 2
DSA 3
DSA 5

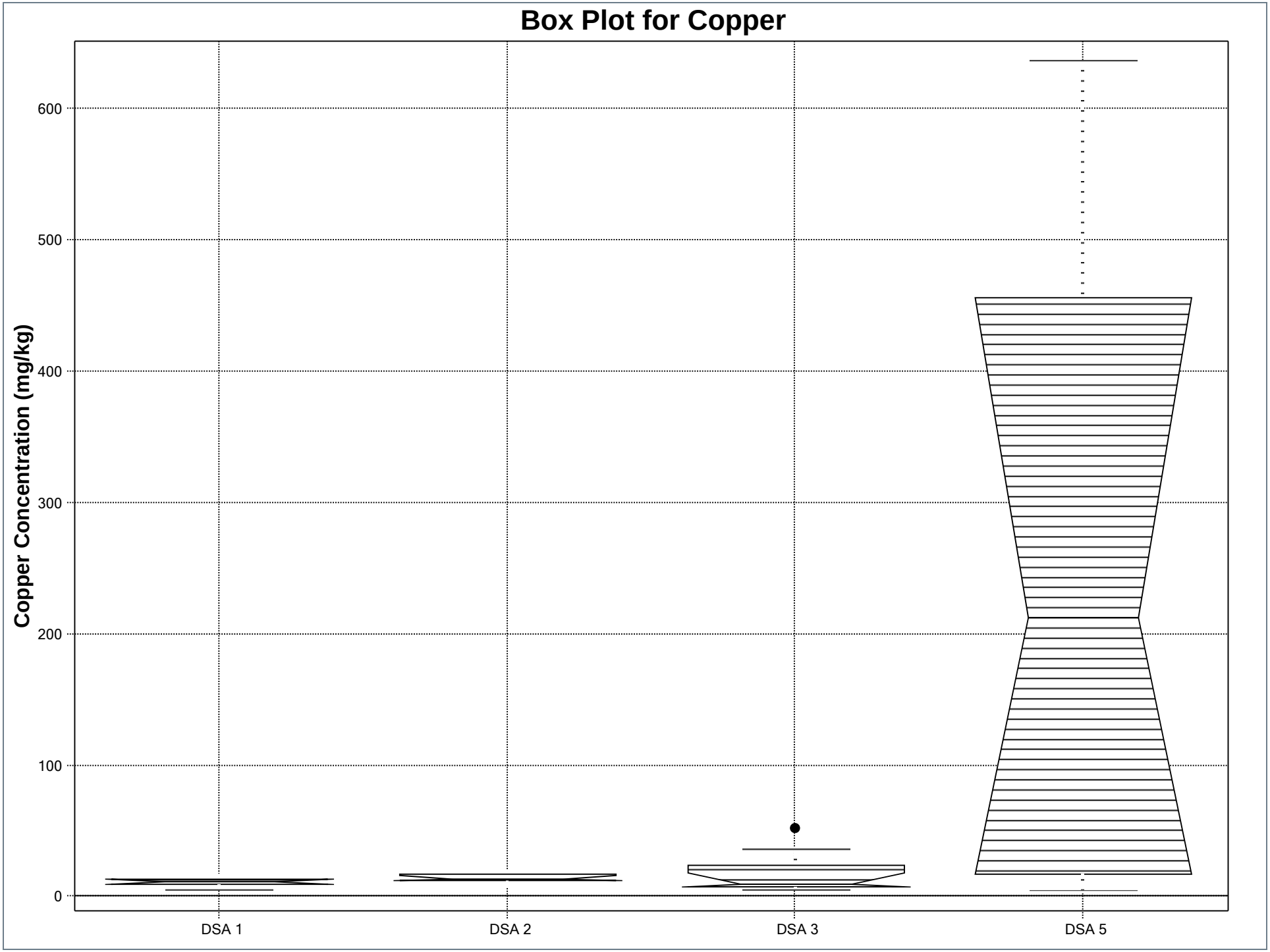

Box Plot for Beryllium
Maximum Non-Detect Value 1.66
Beryllium Concentration (mg/kg)
1.6
1.4
1.2
1.0
0.8
0.6
0.4
DSA 1
DSA 2
DSA 3
DSA 5

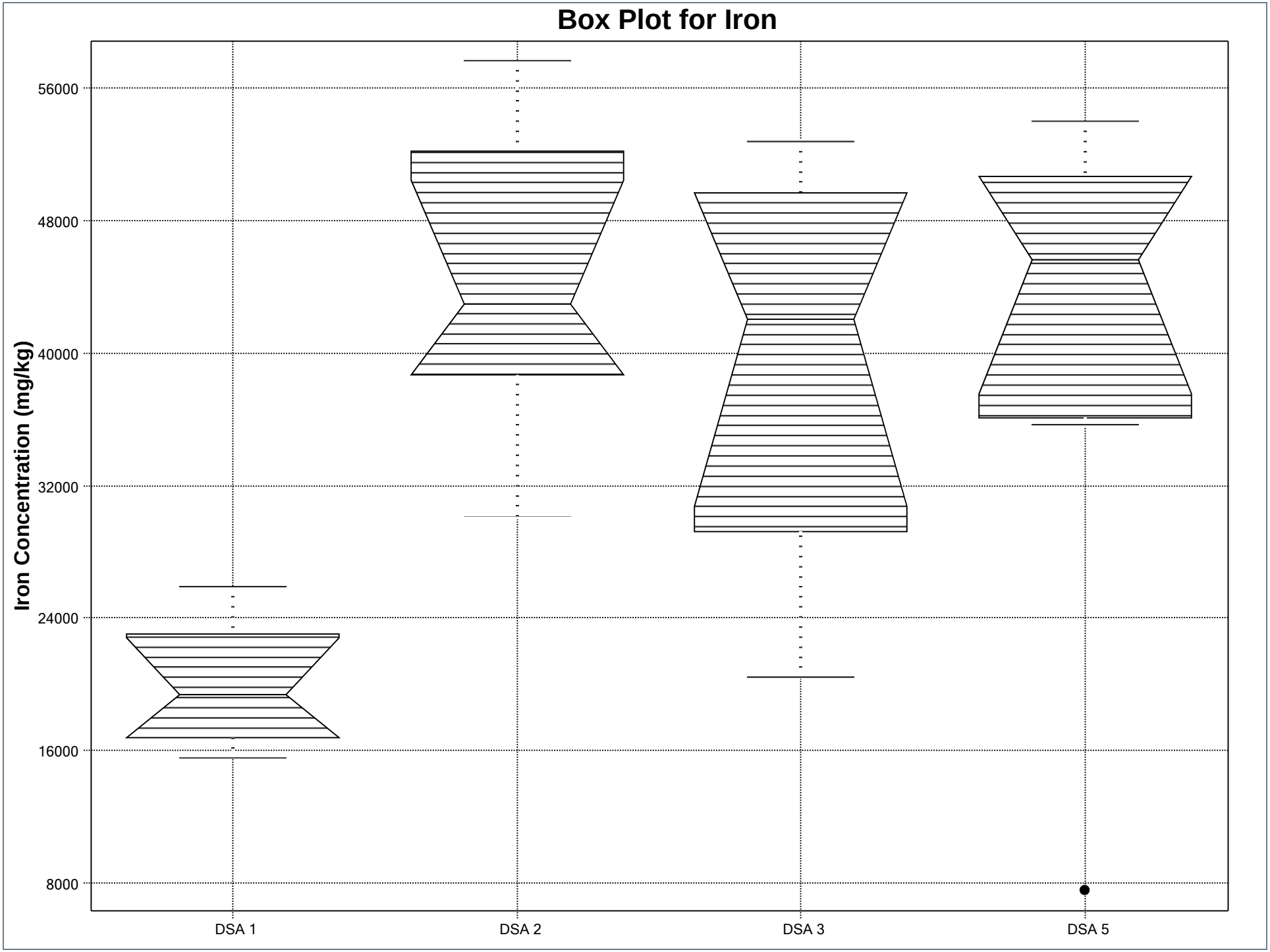

Box Plot for Cadmium
Cadmium Concentration (mg/kg)
6
5
4
3
2
1
Maximum Non-Detect Value 1.66
DSA 1
DSA 2
DSA 3
DSA 5

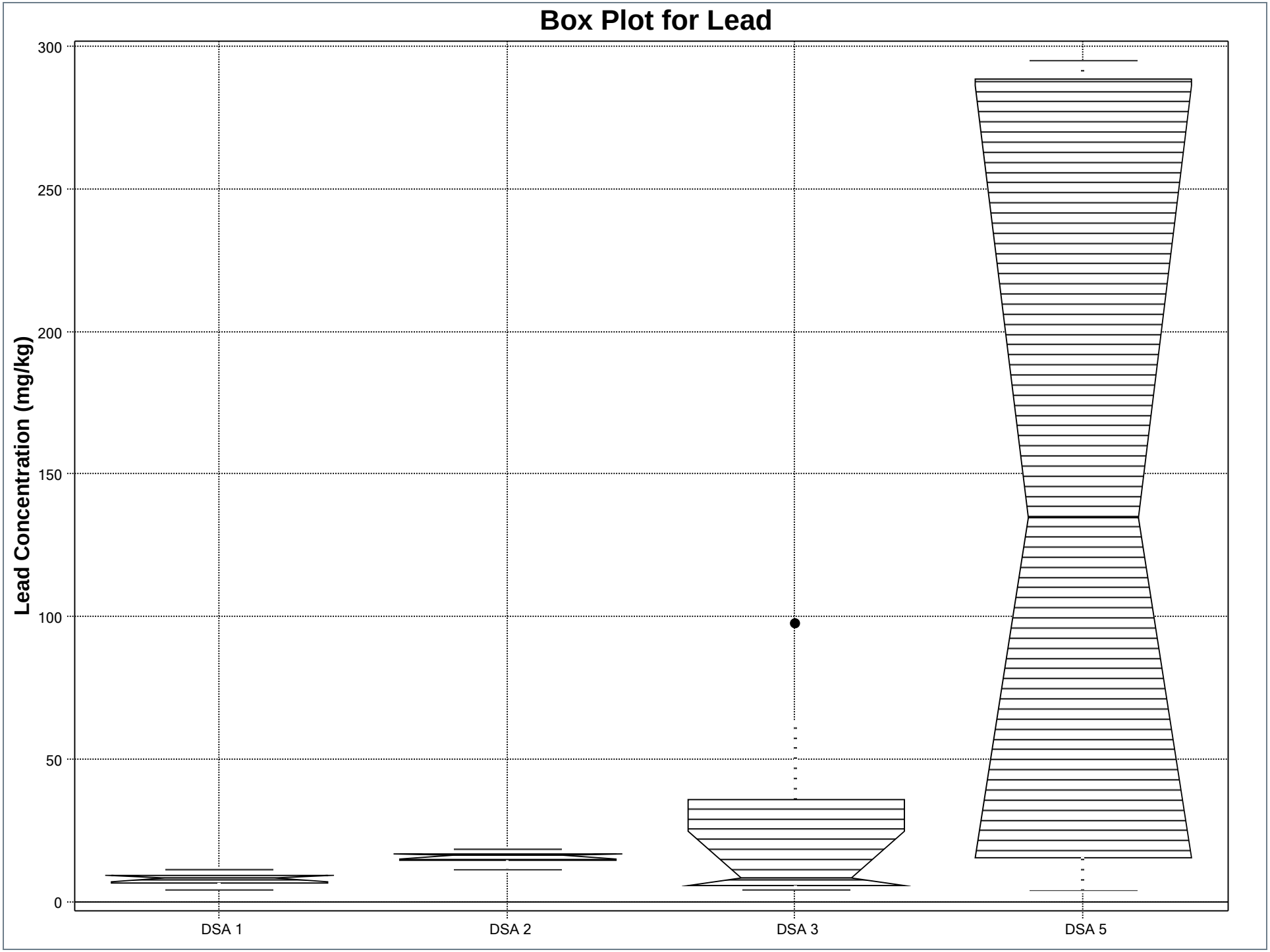

Box Plot for Calcium
Calcium Concentration (mg/kg)
6000
5000
4000
3000
2000
1000
0
DSA 1
DSA 2
DSA 3
DSA 5

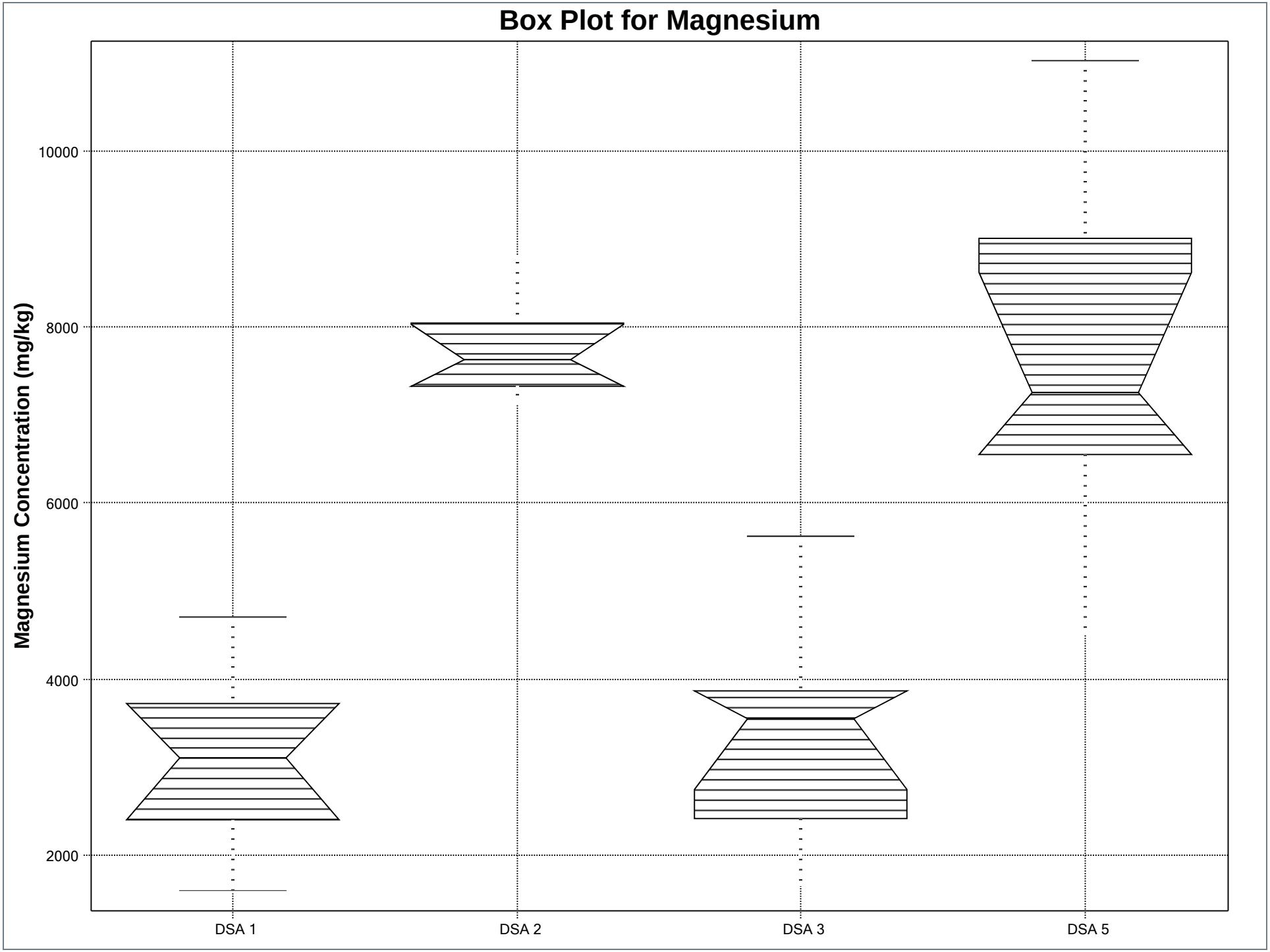

Box Plot for Chromium
Chromium Concentration (mg/kg)
210
180
150
120
90
60
30
DSA 1
DSA 2
DSA 3
DSA 5


Box Plot for Cobalt
Cobalt Concentration (mg/kg)
18
15
12
9
6
3
DSA 1
DSA 2
DSA 3
DSA 5

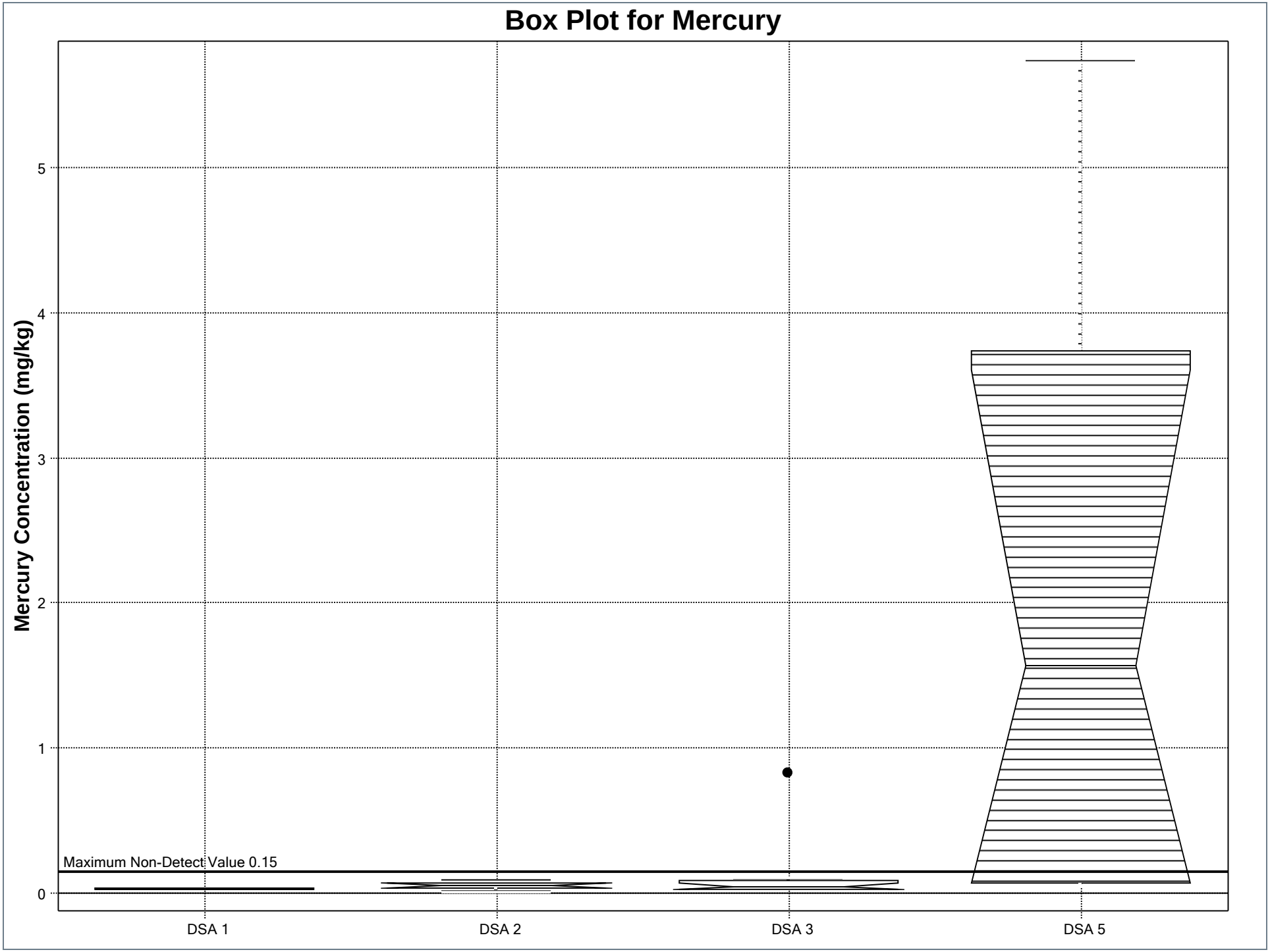

Box Plot for Copper
Copper Concentration (mg/kg)
600
500
400
300
200
100
0
DSA 1
DSA 2
DSA 3
DSA 5

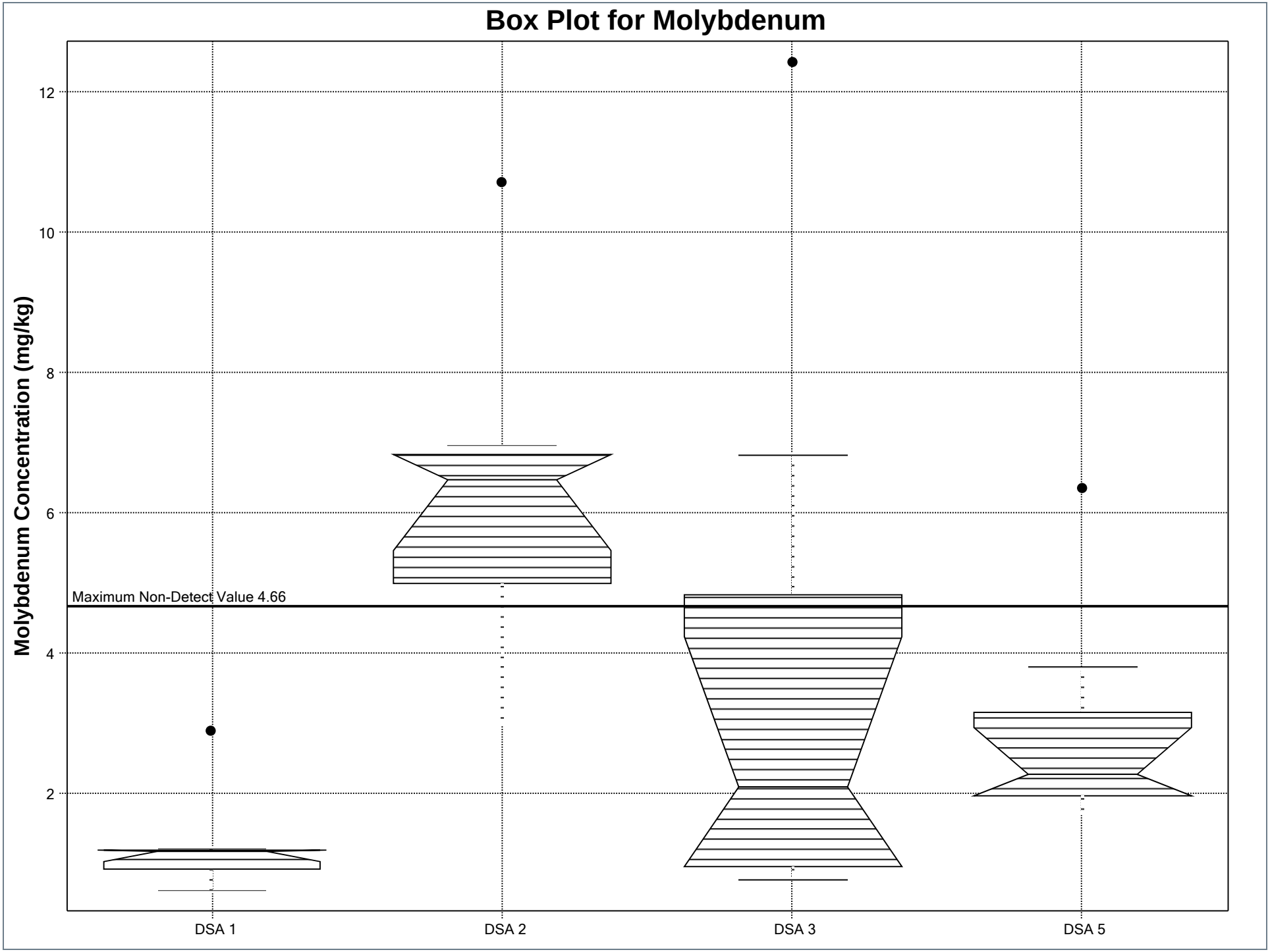

Box Plot for Iron
Iron Concentration (mg/kg)
56000
48000
40000
32000
24000
16000
8000
DSA 1
DSA 2
DSA 3
DSA 5

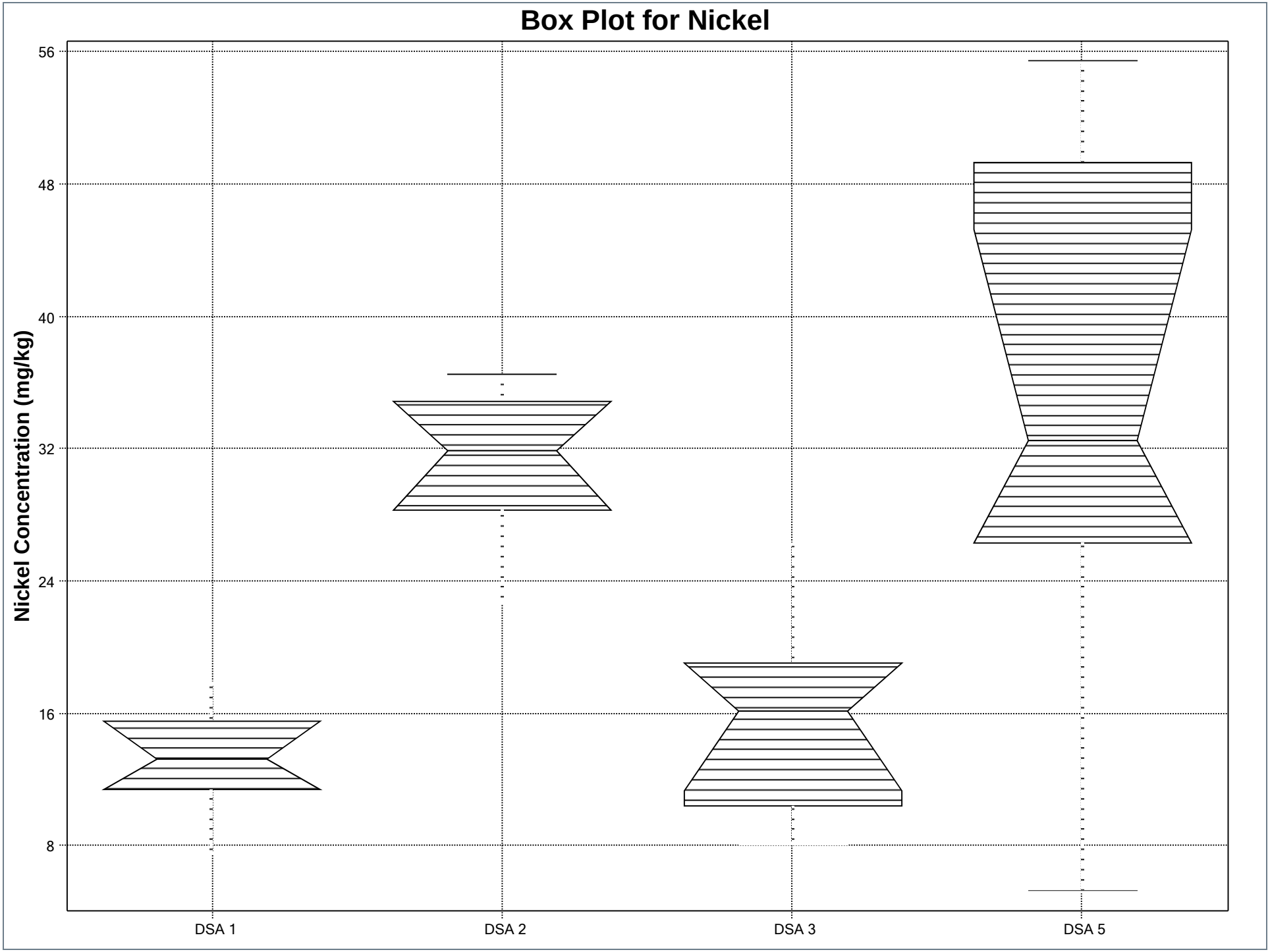

Box Plot for Lead
Lead Concentration (mg/kg)
300
250
200
150
100
50
0
DSA 1
DSA 2
DSA 3
DSA 5

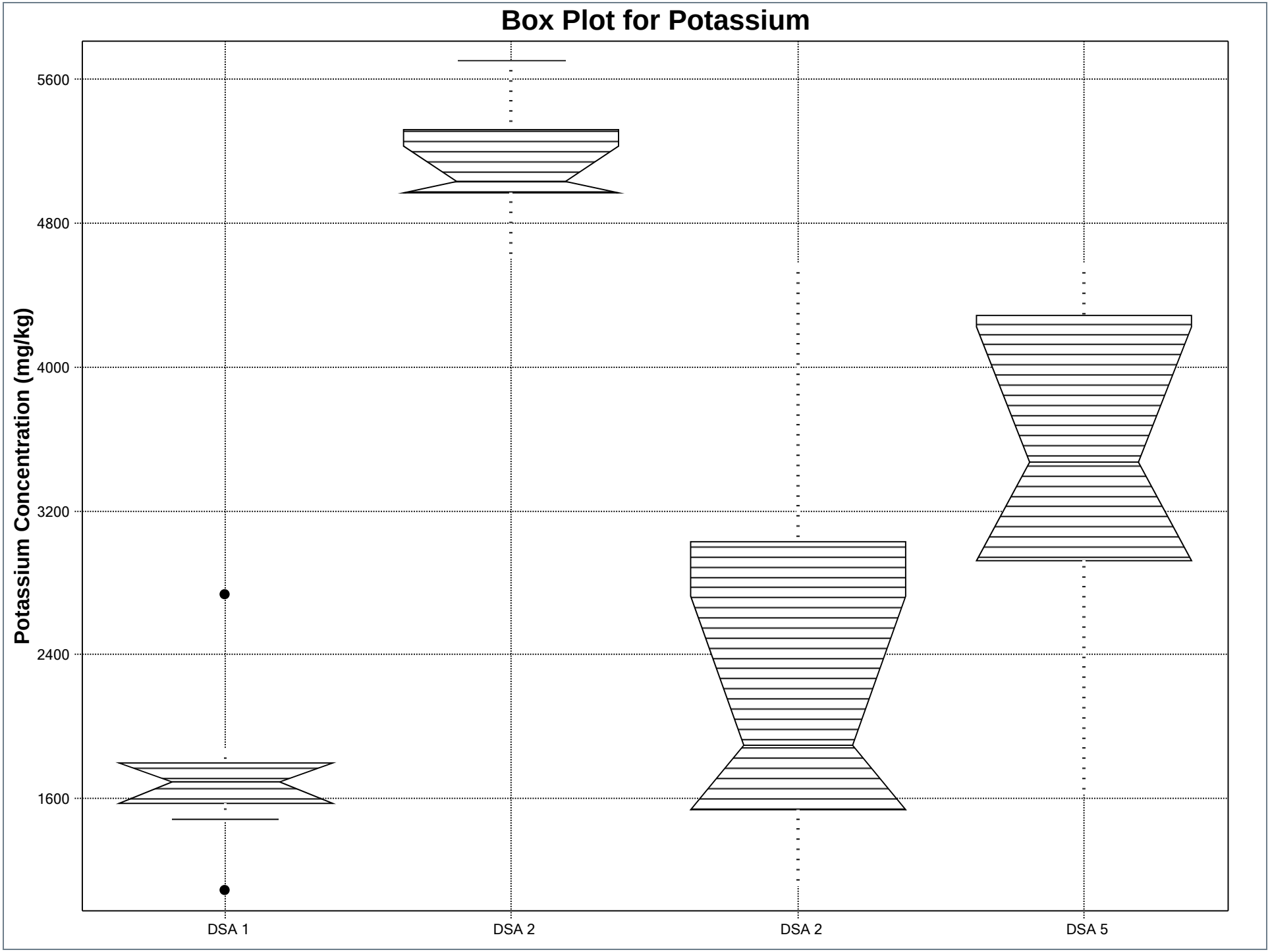

Box Plot for Magnesium
Magnesium Concentration (mg/kg)
10000
8000
6000
4000
2000
DSA 1
DSA 2
DSA 3
DSA 5

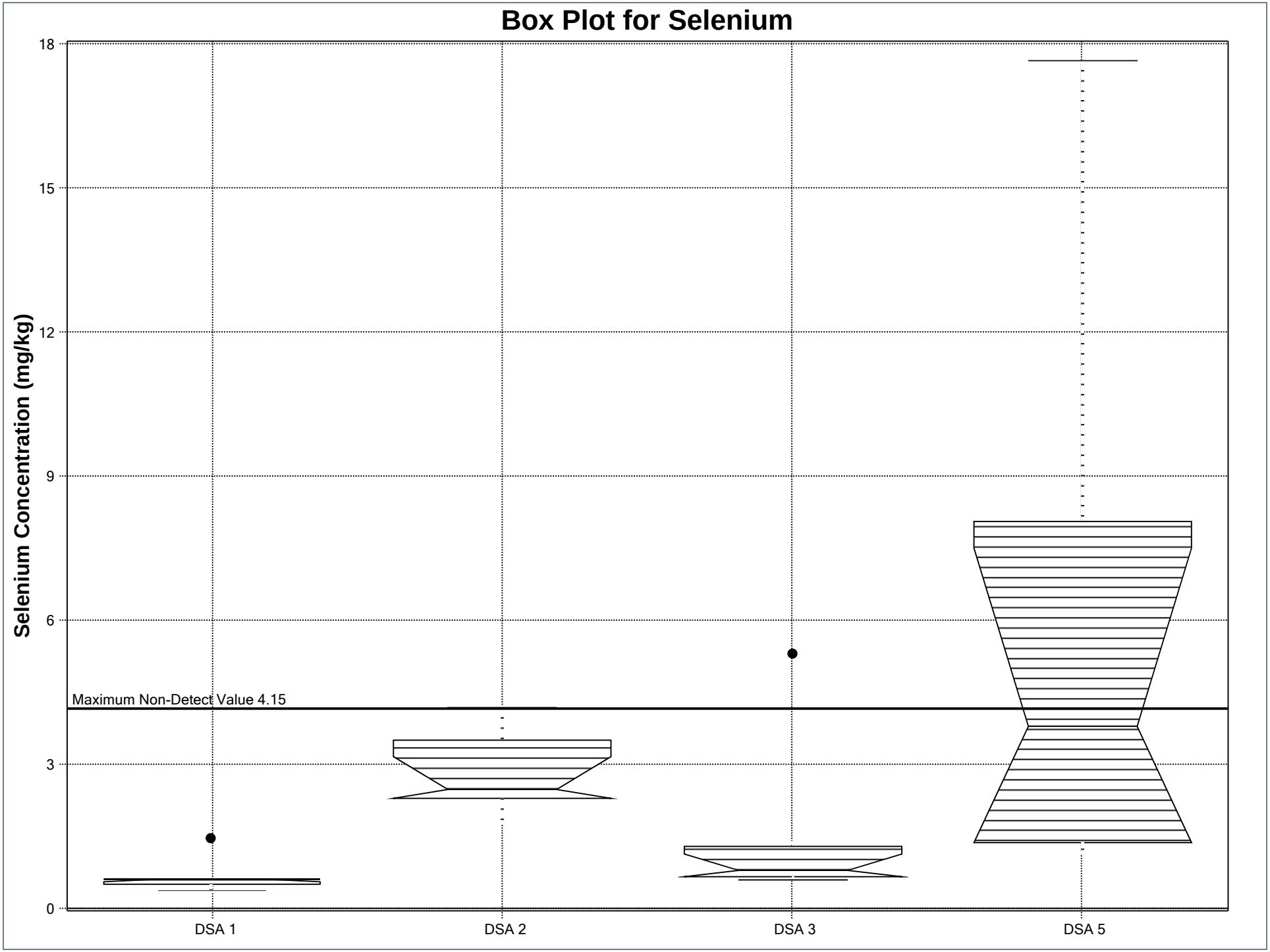

Box Plot for Manganese
Manganese Concentration (mg/kg)
800
600
400
200
DSA 1
DSA 2
DSA 3
DSA 5

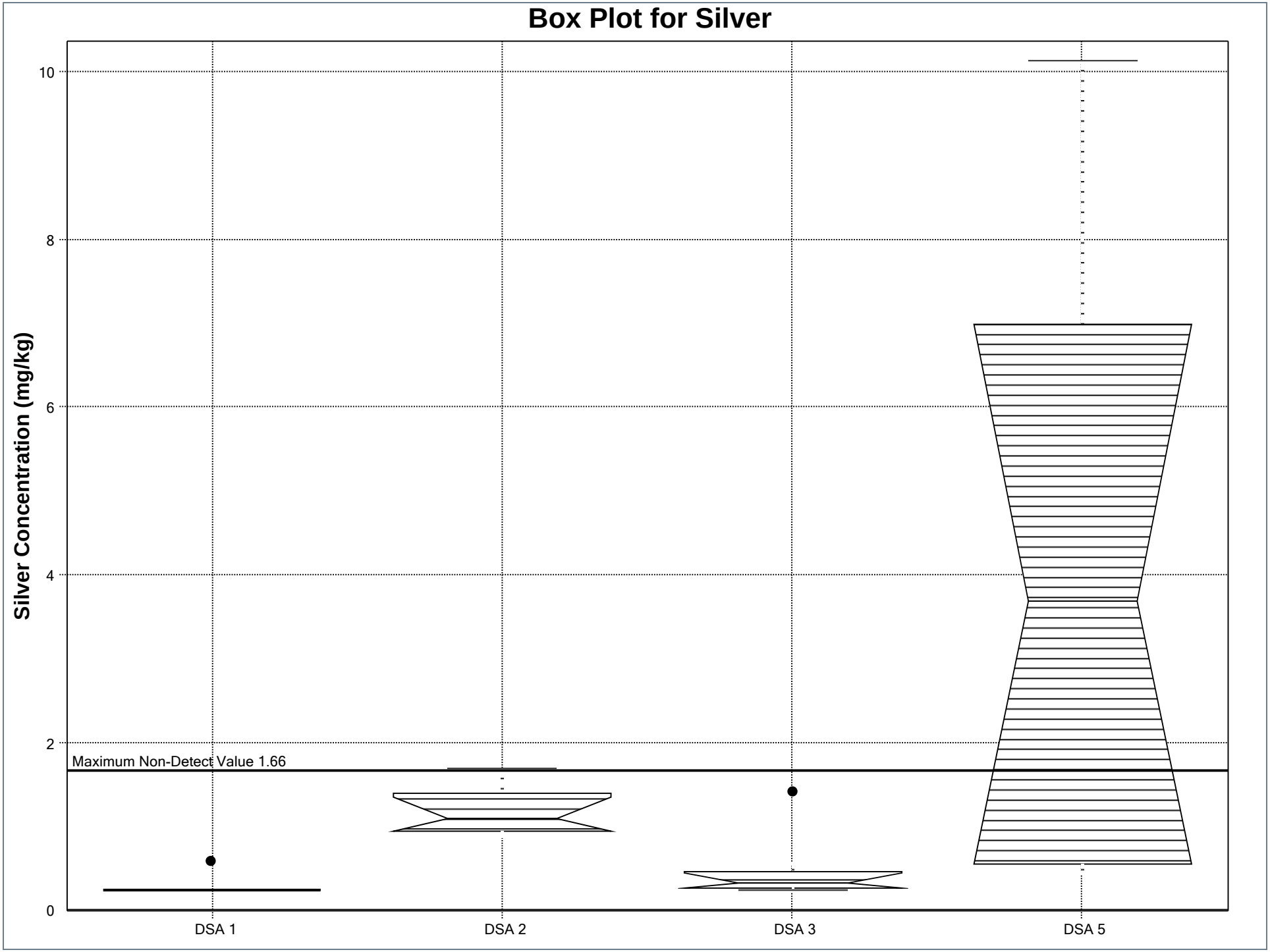

Box Plot for Mercury
Mercury Concentration (mg/kg)
0
1
2
3
4
5
Maximum Non-Detect Value 0.15
DSA 1
DSA 2
DSA 3
DSA 5

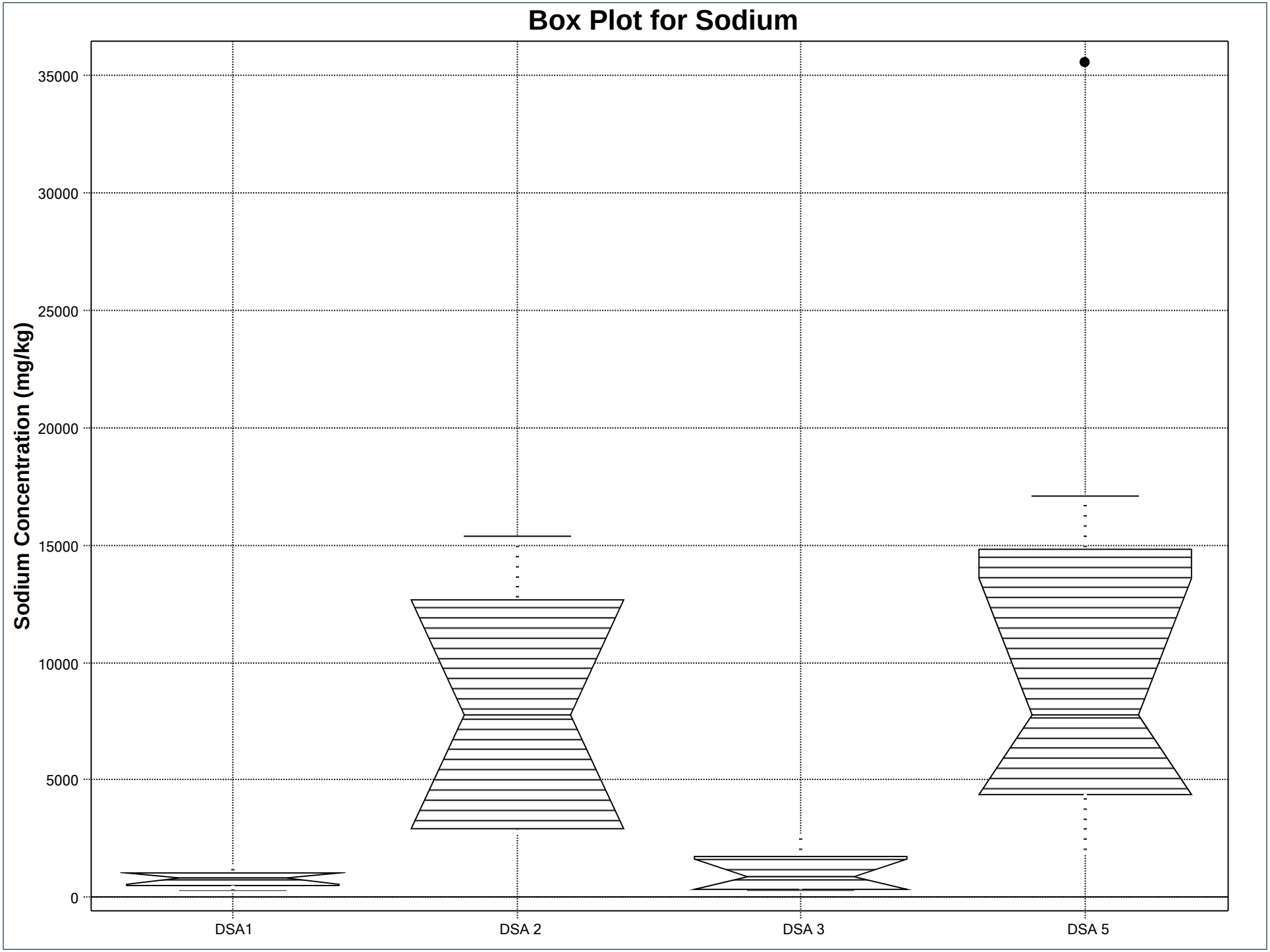

Box Plot for Molybdenum
Molybdenum Concentration (mg/kg)
12
10
8
6
4
2
Maximum Non-Detect Value 4.66
DSA 1
DSA 2
DSA 3
DSA 5

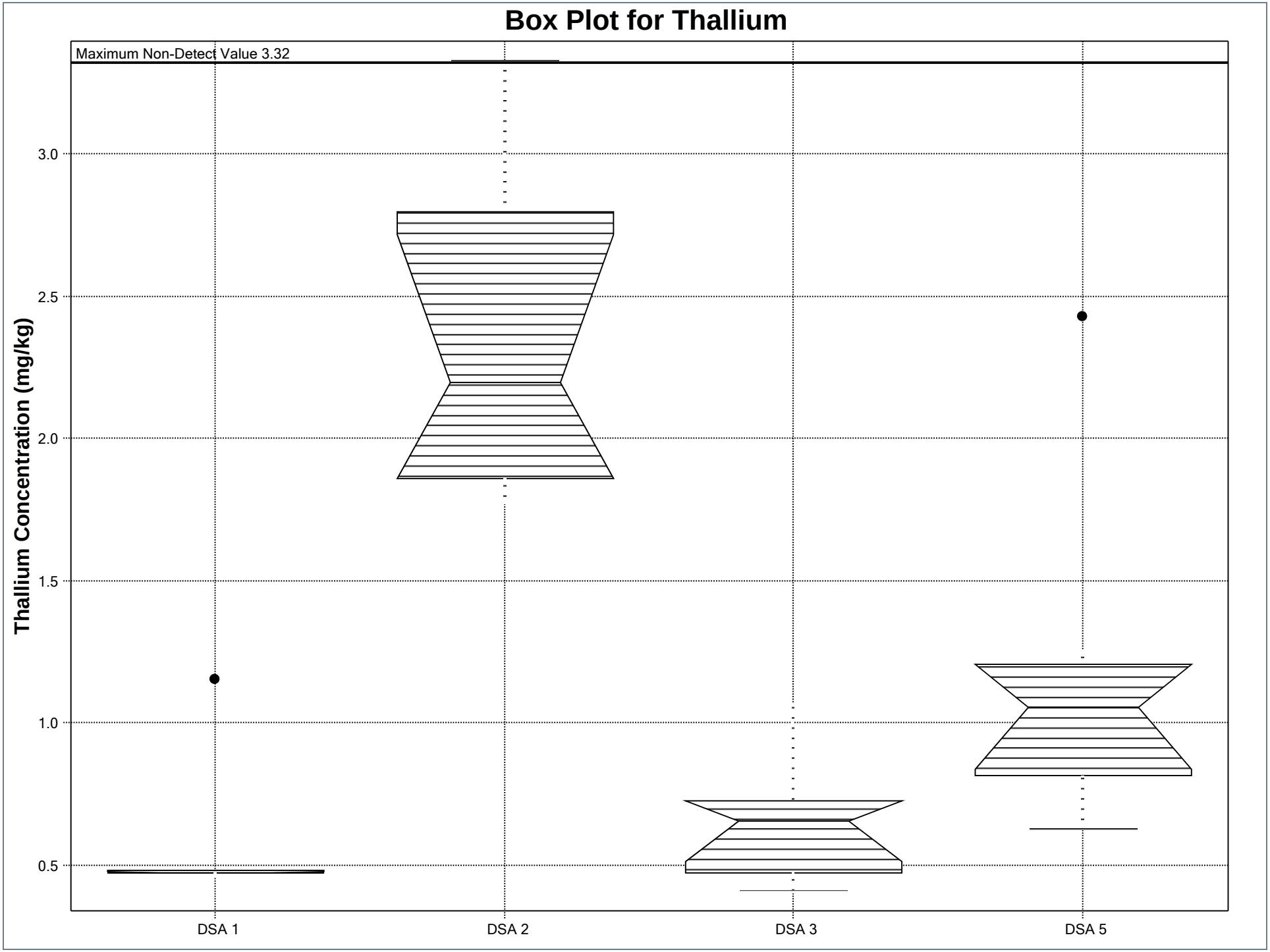

Box Plot for Nickel
Nickel Concentration (mg/kg)
56
48
40
32
24
16
8
DSA 1
DSA 2
DSA 3
DSA 5

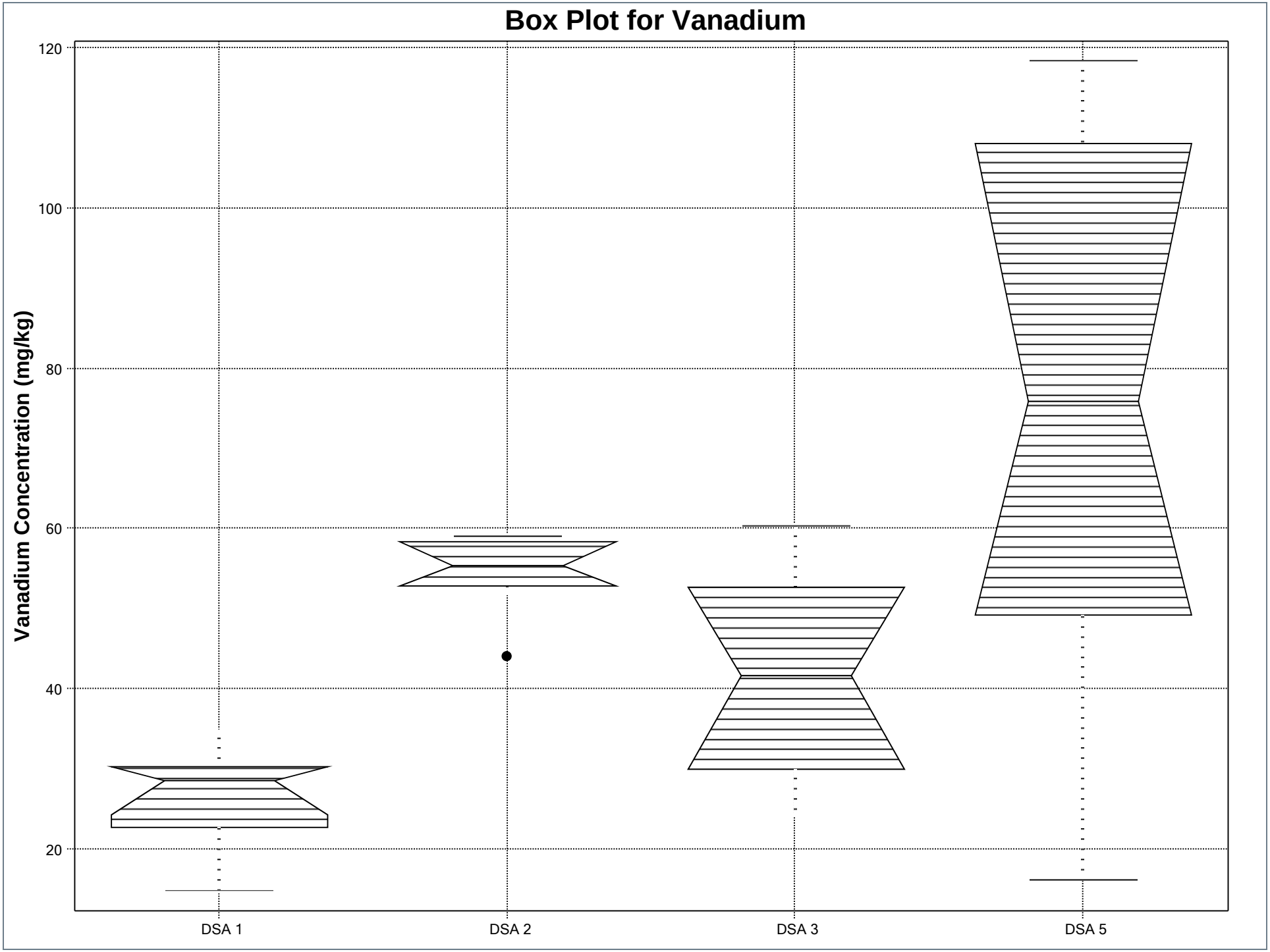

Box Plot for Potassium
Potassium Concentration (mg/kg)
5600
4800
4000
3200
2400
1600
DSA 1
DSA 2
DSA 2
DSA 5

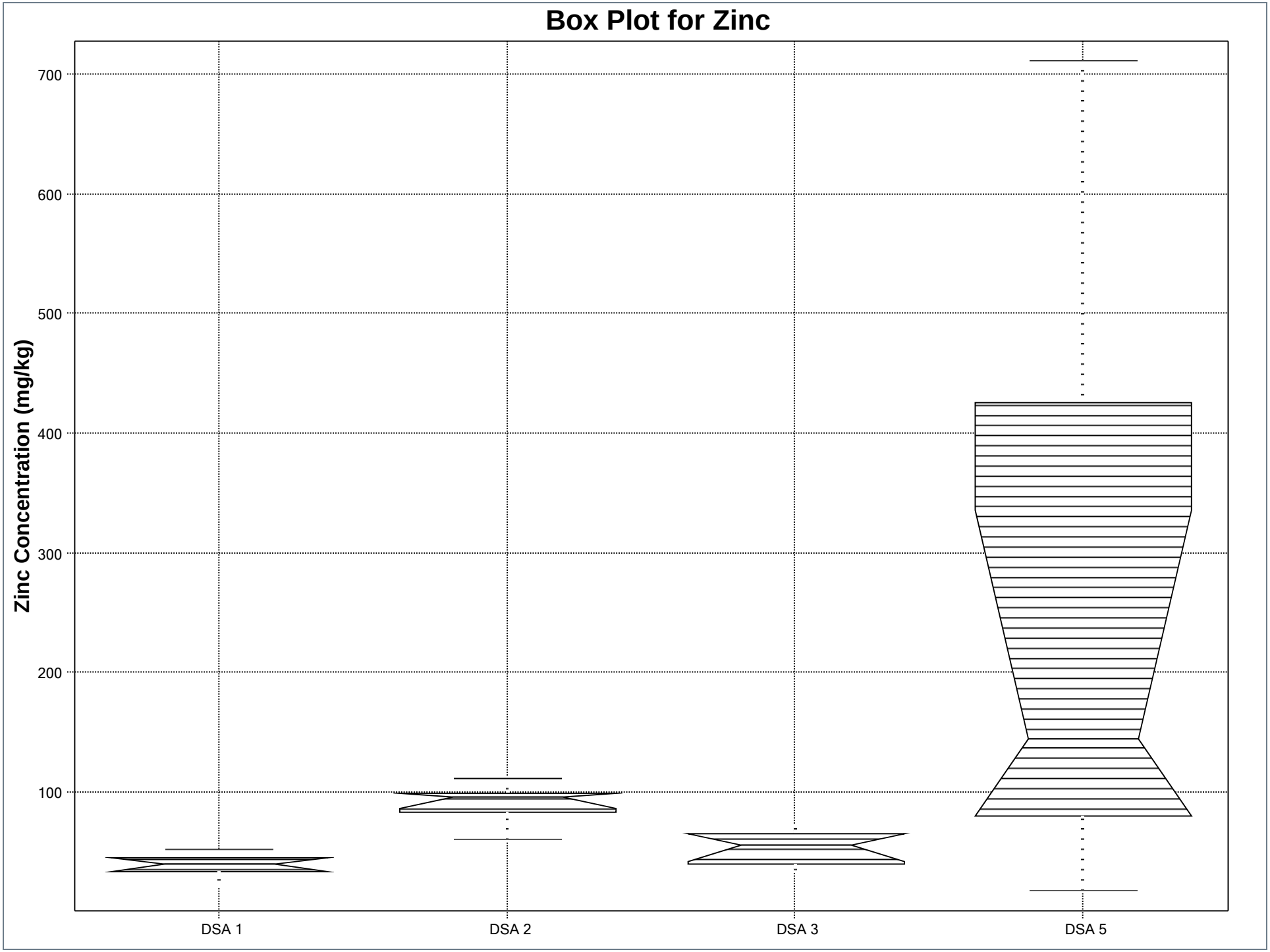

Box Plot for Selenium
Selenium Concentration (mg/kg)
18
15
12
9
6
3
0
Maximum Non-Detect Value 4.15
DSA 1
DSA 2
DSA 3
DSA 5


Box Plot for Silver
Silver Concentration (mg/kg)
10
8
6
4
2
0
Maximum Non-Detect Value 1.66
DSA 1
DSA 2
DSA 3
DSA 5

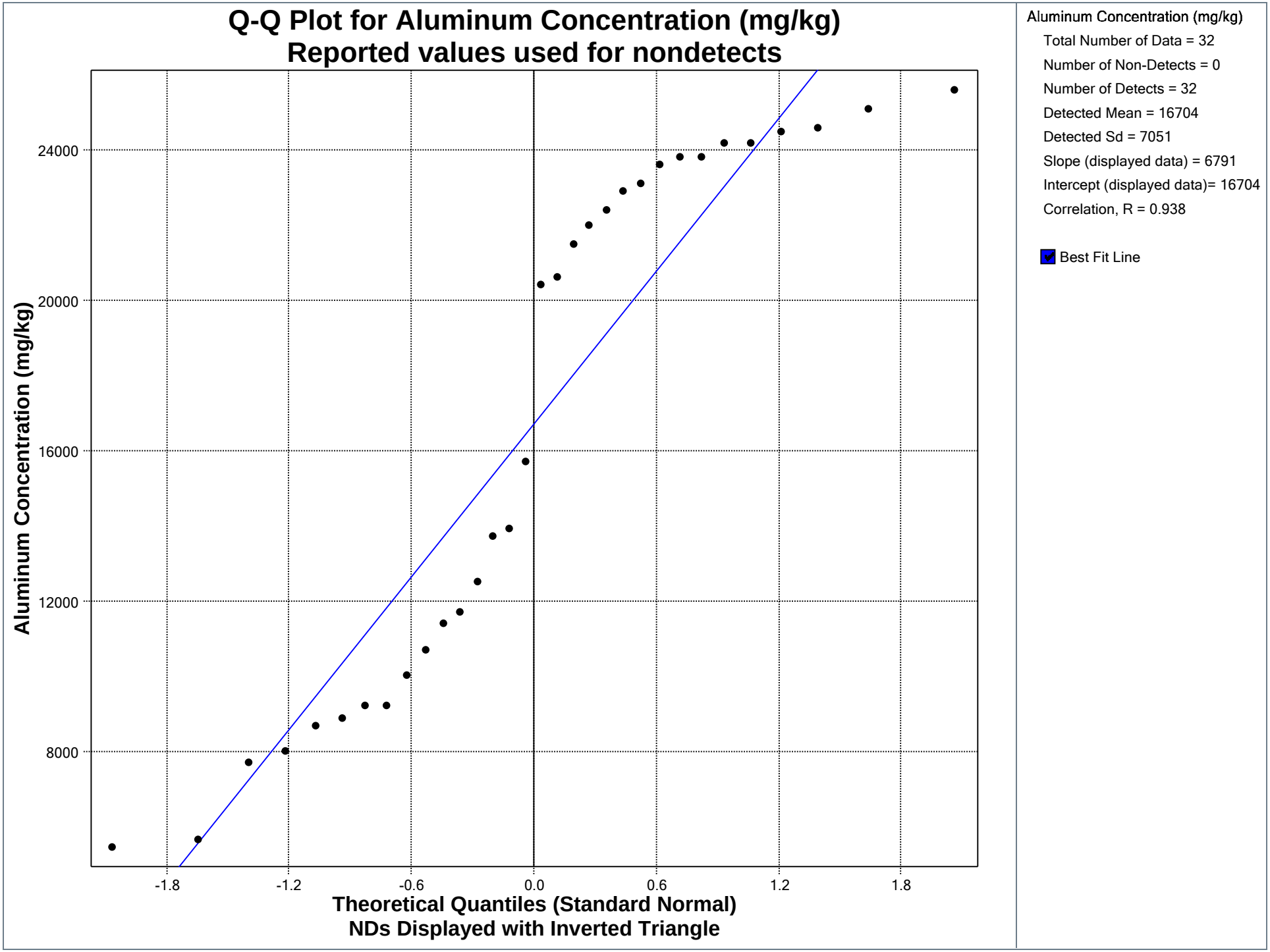

Box Plot for Sodium
Sodium Concentration (mg/kg)
35000
30000
25000
20000
15000
10000
5000
0
DSA1
DSA 2
DSA 3
DSA 5

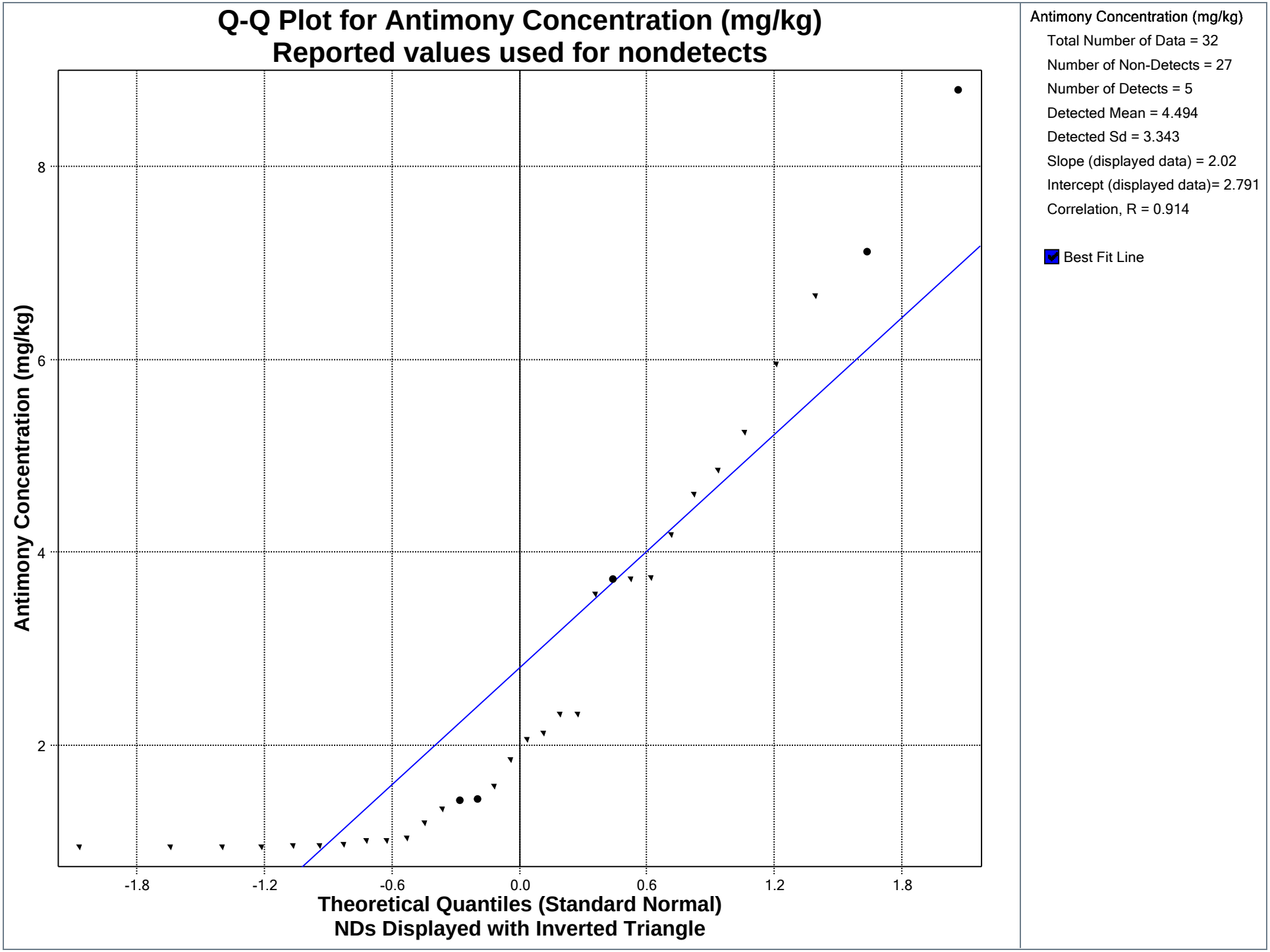

Box Plot for Thallium
Maximum Non-Detect Value 3.32
Thallium Concentration (mg/kg)
3.0
2.5
2.0
1.5
1.0
0.5
DSA 1
DSA 2
DSA 3
DSA 5

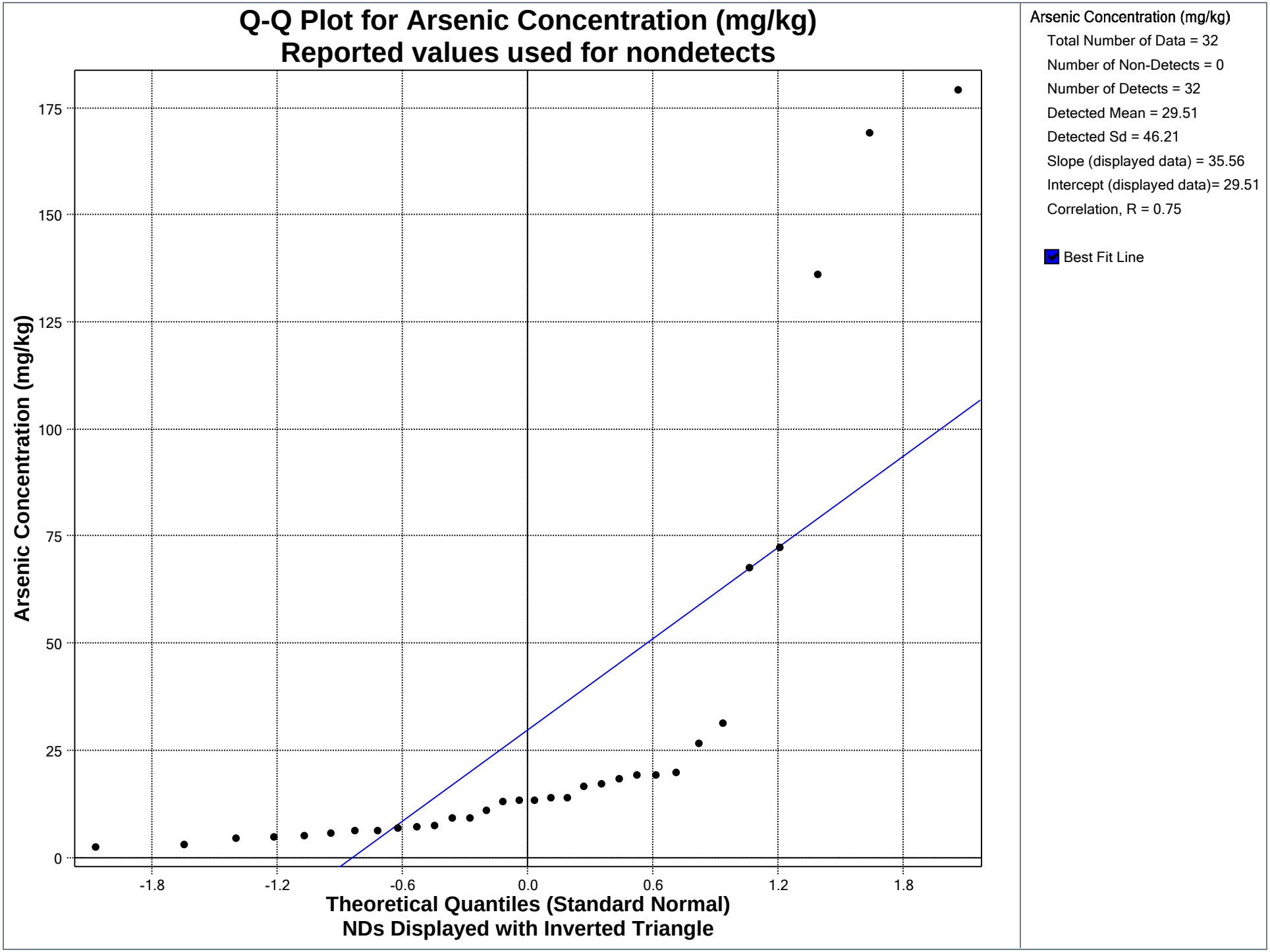

Box Plot for Vanadium
Vanadium Concentration (mg/kg)
120
100
80
60
40
20
DSA 1
DSA 2
DSA 3
DSA 5

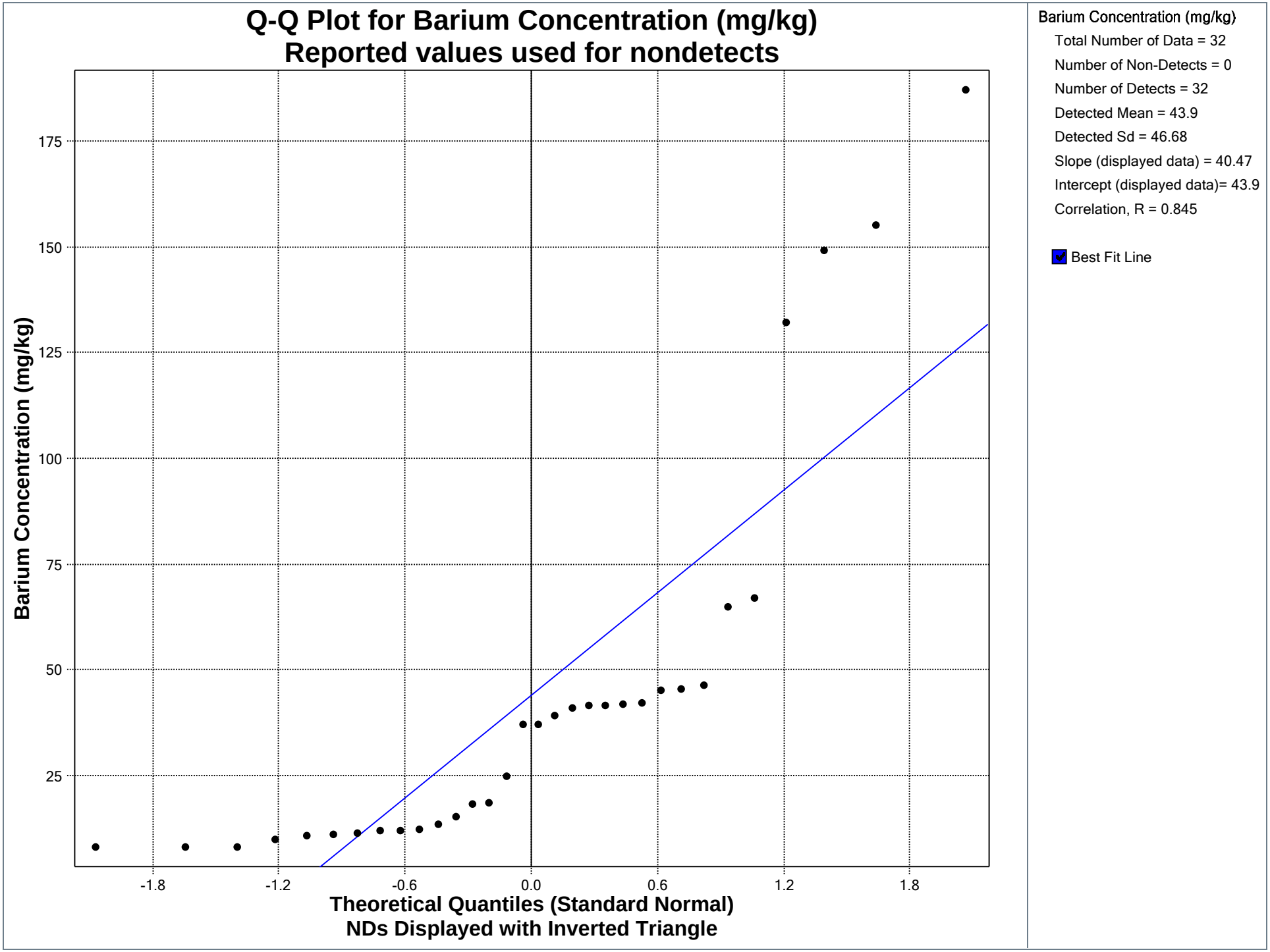

Box Plot for Zinc
Zinc Concentration (mg/kg)
700
600
500
400
300
200
100
DSA 1
DSA 2
DSA 3
DSA 5

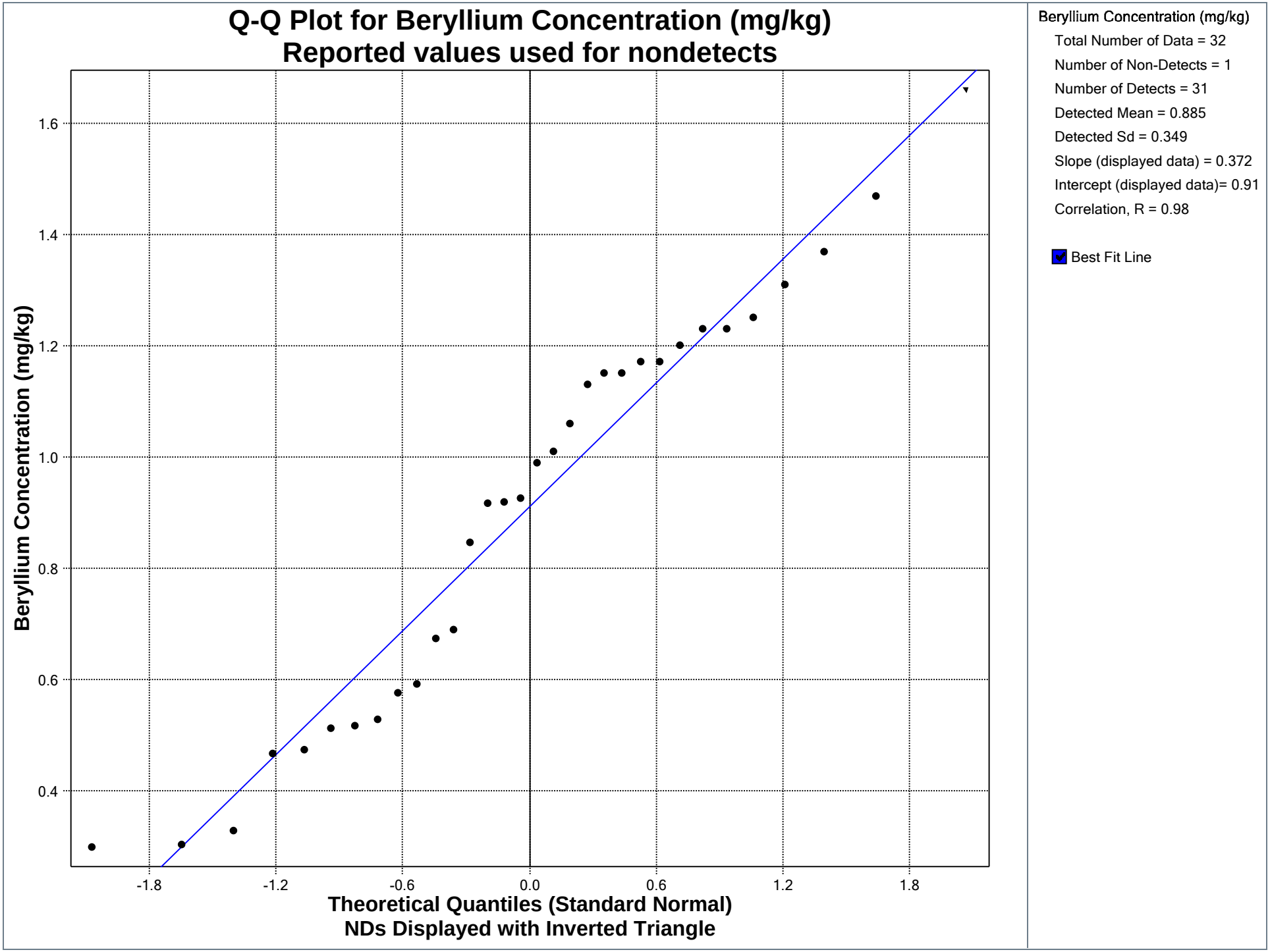
Attachment D-4

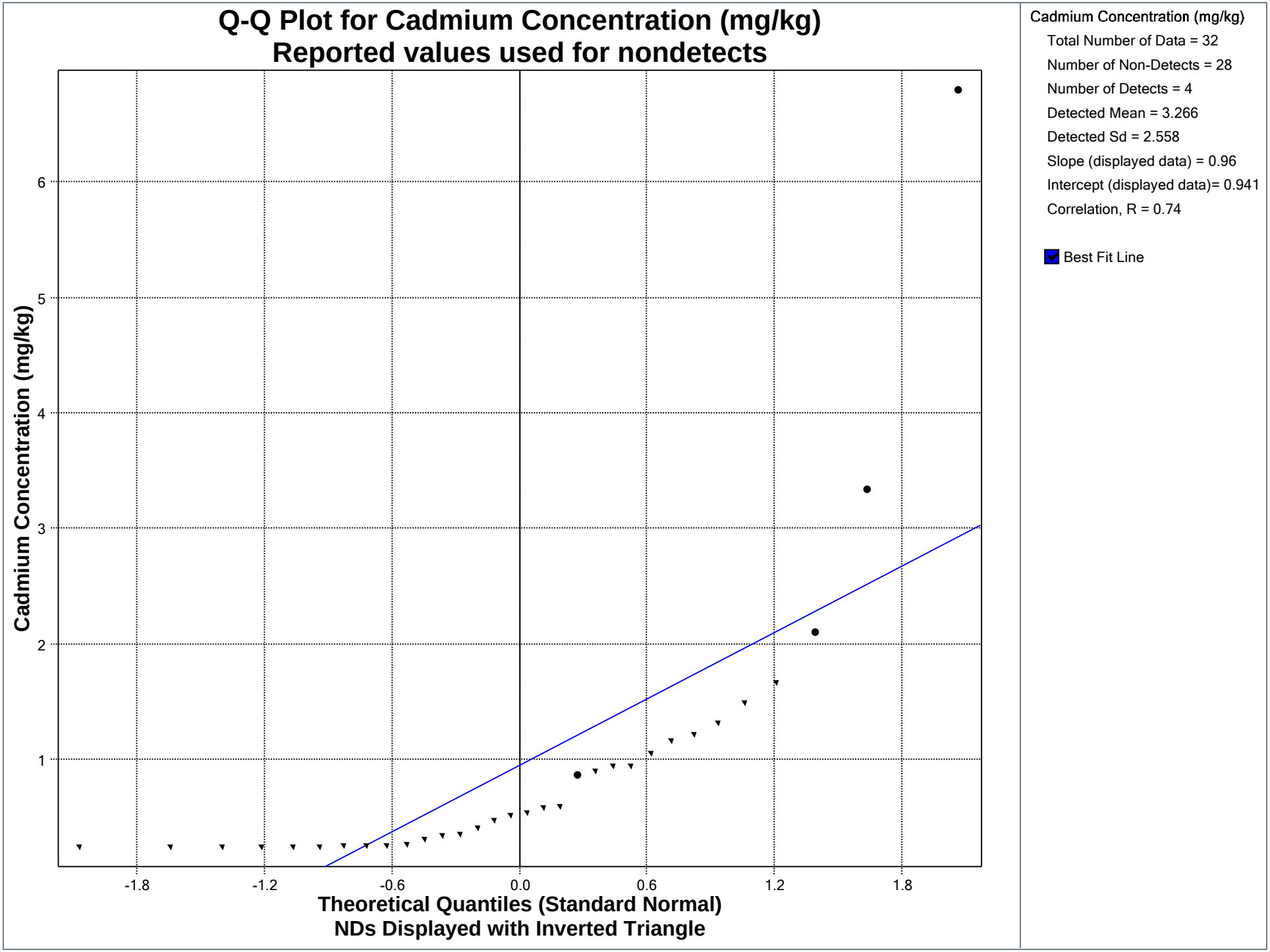

Q-Q Plot for Aluminum Concentration (mg/kg)
Reported values used for nondetects
Aluminum Concentration (mg/kg)
24000
20000
16000
12000
8000
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle
Aluminum Concentration (mg/kg)
Total Number of Data = 32
Number of Non-Detects = 0
Number of Detects = 32
Detected Mean = 16704
Detected Sd = 7051
Slope (displayed data) = 6791
Intercept (displayed data)= 16704
Correlation, R = 0.938
Best Fit Line

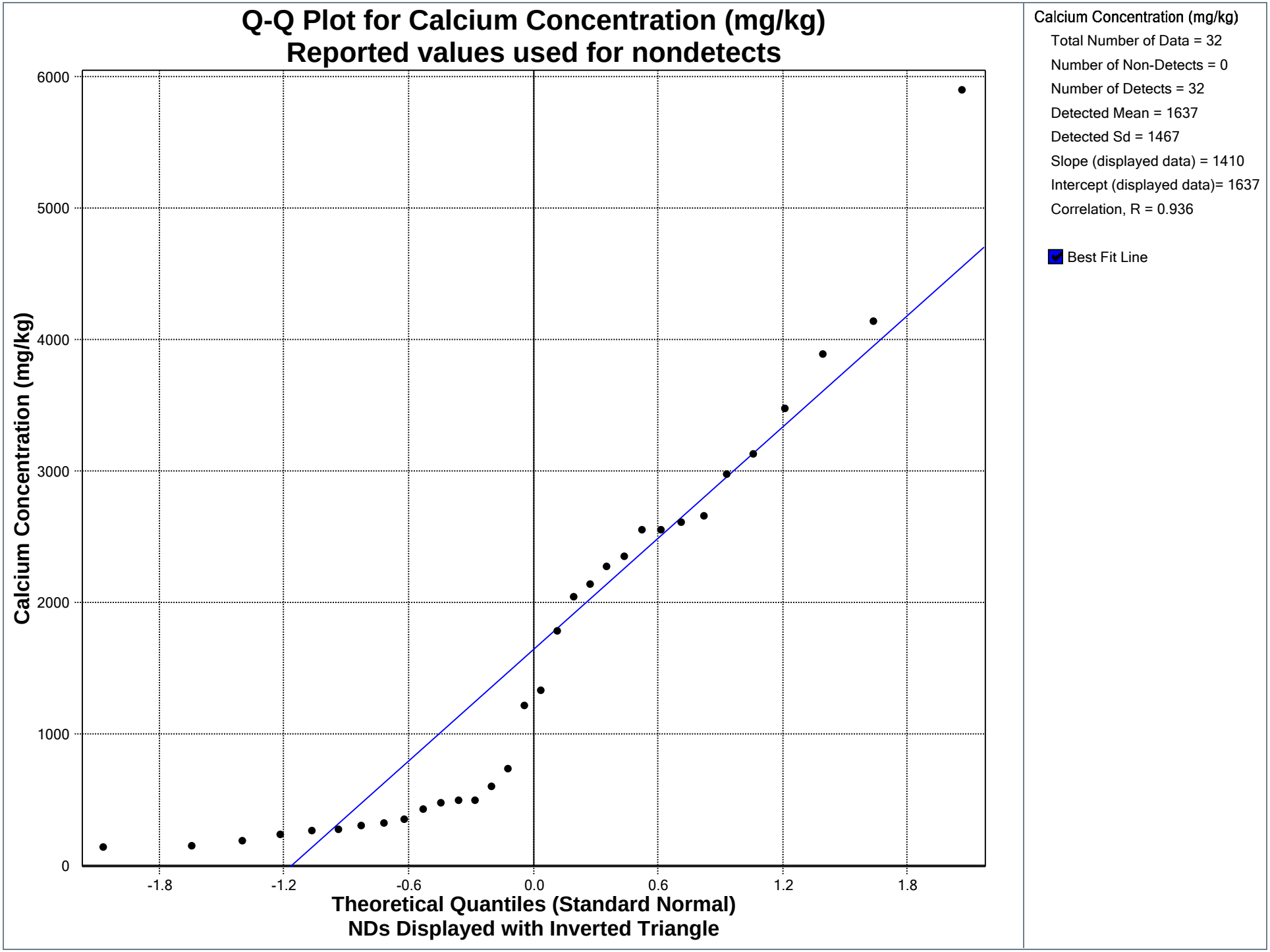

Q-Q Plot for Antimony Concentration (mg/kg)
Reported values used for nondetects
Antimony Concentration (mg/kg)
8
6
4
2
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle
Antimony Concentration (mg/kg)
Total Number of Data = 32
Number of Non-Detects = 27
Number of Detects = 5
Detected Mean = 4.494
Detected Sd = 3.343
Slope (displayed data) = 2.02
Intercept (displayed data)= 2.791
Correlation, R = 0.914
Best Fit Line

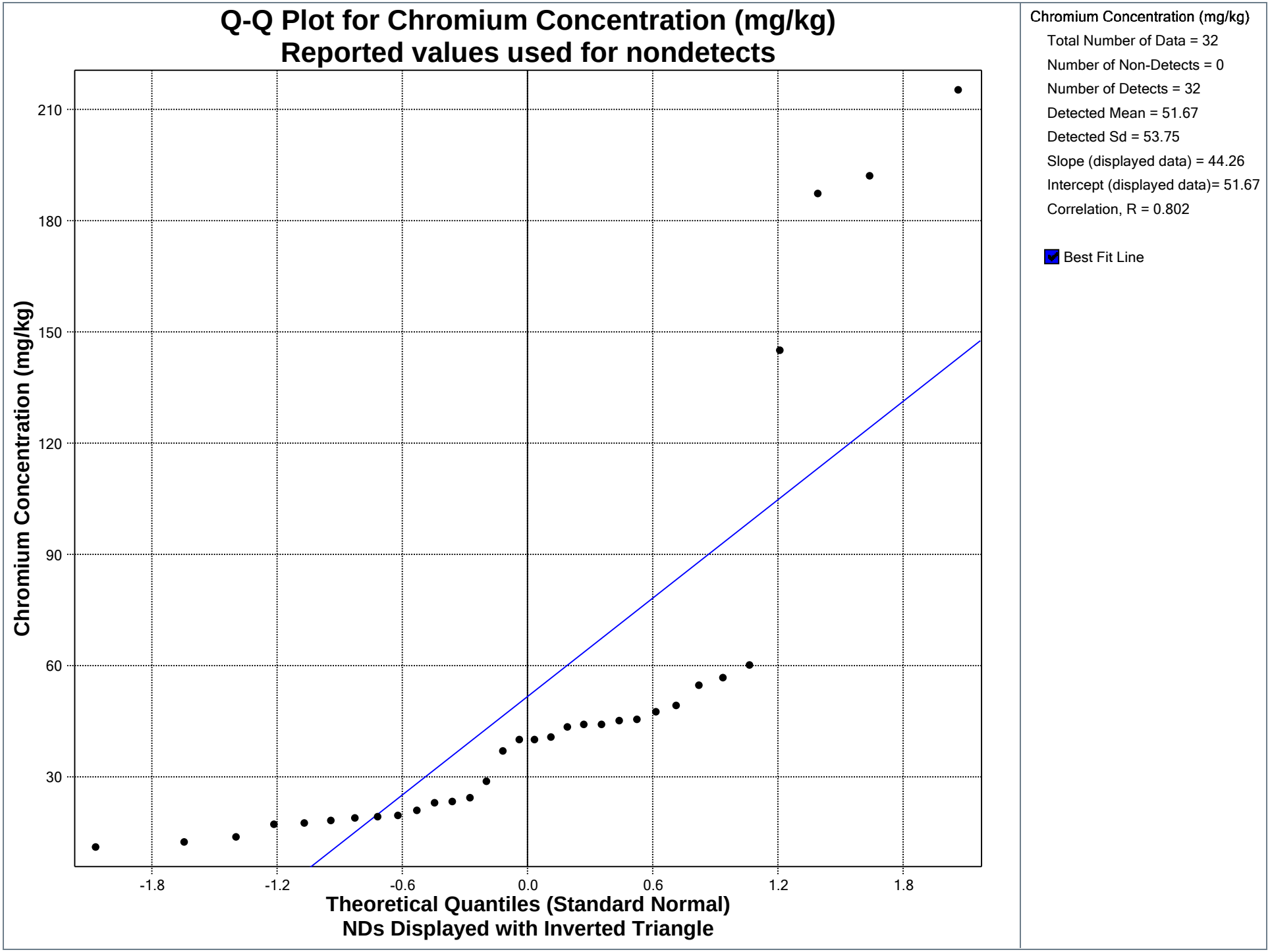

Q-Q Plot for Arsenic Concentration (mg/kg)
Reported values used for nondetects
Arsenic Concentration (mg/kg)
Total Number of Data = 32
Number of Non-Detects = 0
Number of Detects = 32
Detected Mean = 29.51
Detected Sd = 46.21
Slope (displayed data) = 35.56
Intercept (displayed data)= 29.51
Correlation, R = 0.75
Best Fit Line
Arsenic Concentration (mg/kg)
0
25
50
75
100
125
150
175
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle

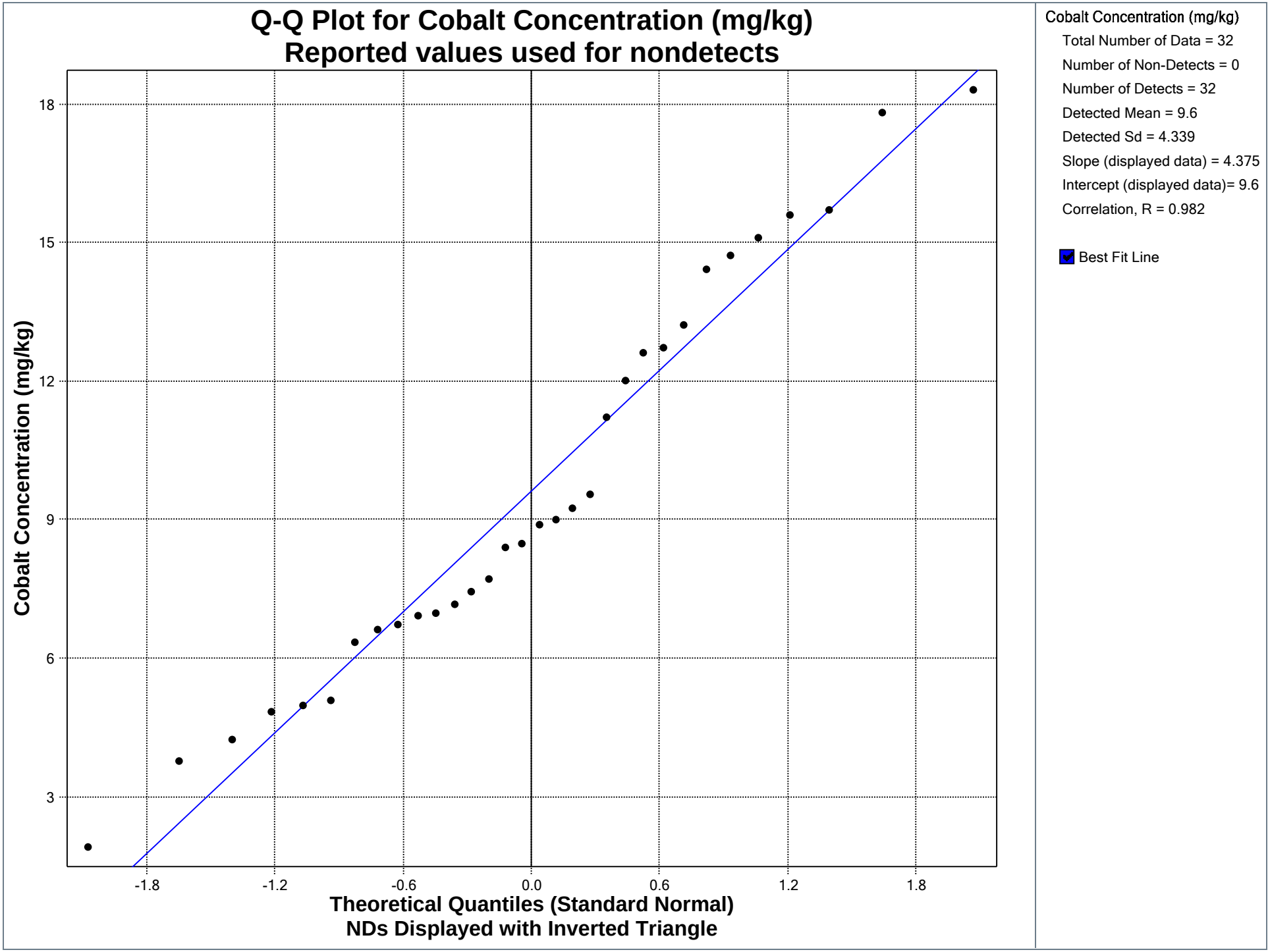

Q-Q Plot for Barium Concentration (mg/kg)
Reported values used for nondetects
Barium Concentration (mg/kg)
175
150
125
100
75
50
25
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle
Barium Concentration (mg/kg)
Total Number of Data = 32
Number of Non-Detects = 0
Number of Detects = 32
Detected Mean = 43.9
Detected Sd = 46.68
Slope (displayed data) = 40.47
Intercept (displayed data)= 43.9
Correlation, R = 0.845
Best Fit Line

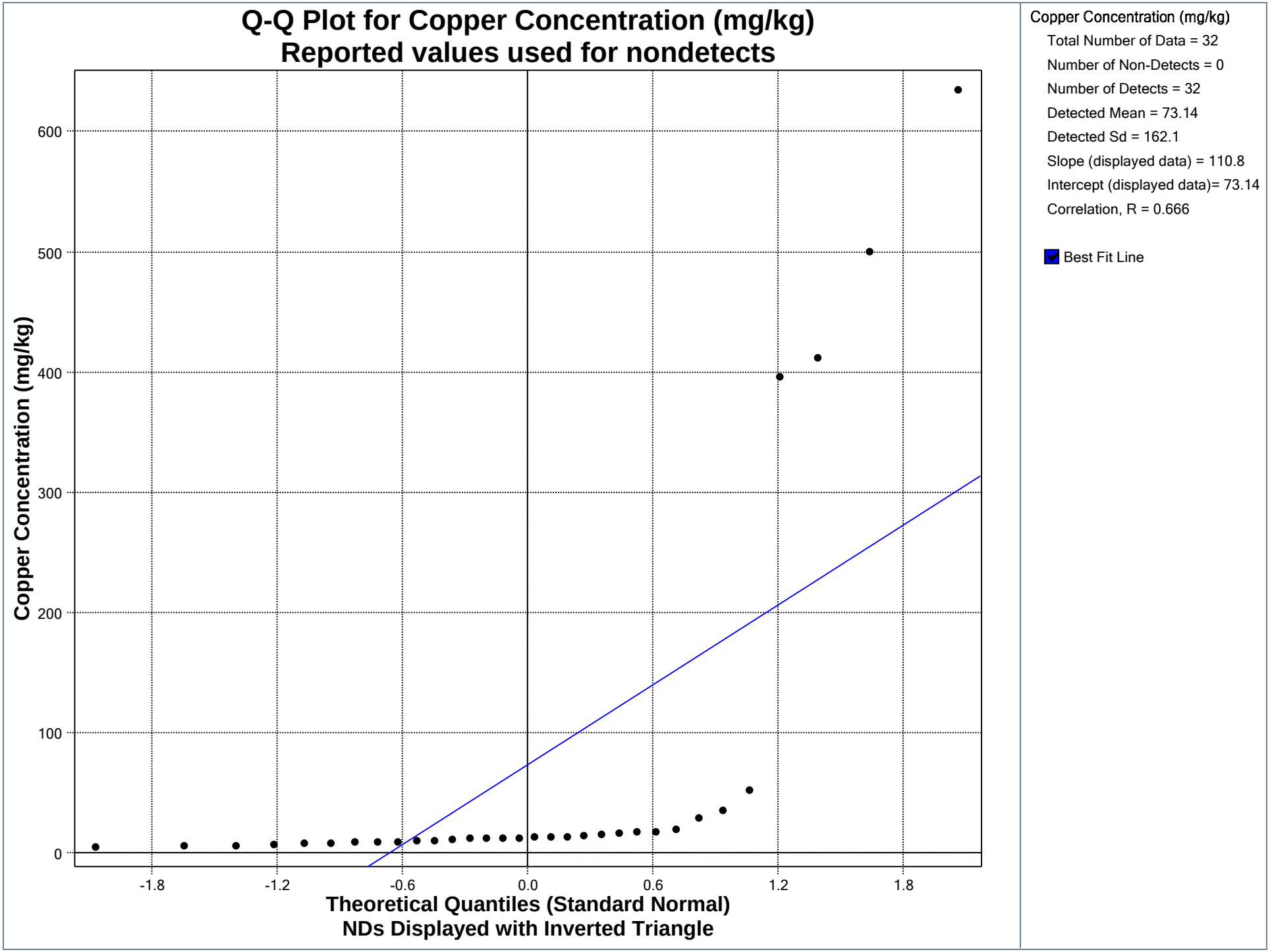

Q-Q Plot for Beryllium Concentration (mg/kg)
Reported values used for nondetects
Beryllium Concentration (mg/kg)
1.6
1.4
1.2
1.0
0.8
0.6
0.4
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle
Beryllium Concentration (mg/kg)
Total Number of Data = 32
Number of Non-Detects = 1
Number of Detects = 31
Detected Mean = 0.885
Detected Sd = 0.349
Slope (displayed data) = 0.372
Intercept (displayed data)= 0.91
Correlation, R = 0.98
Best Fit Line

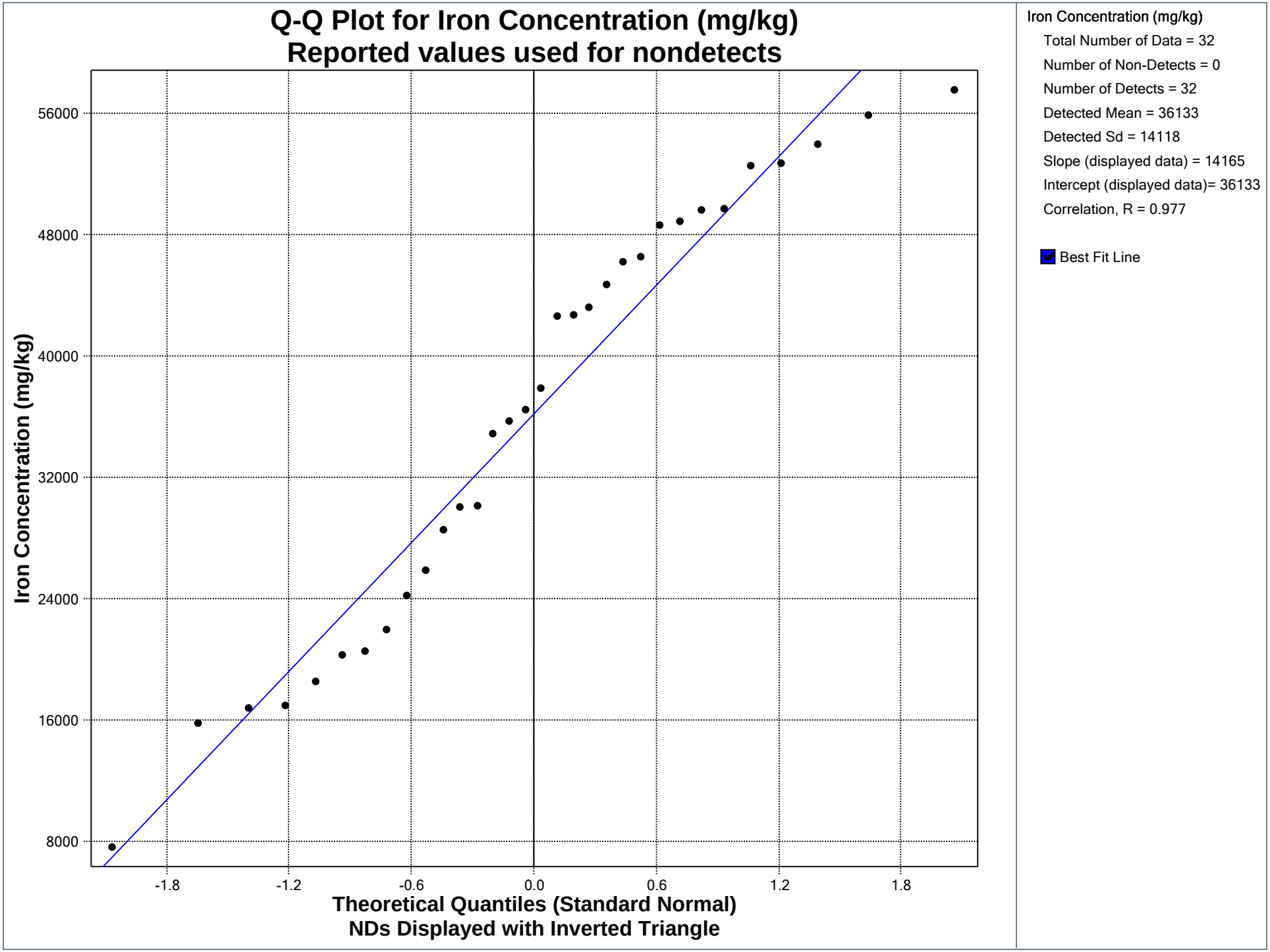

Q-Q Plot for Cadmium Concentration (mg/kg)
Reported values used for nondetects
Cadmium Concentration (mg/kg)
Total Number of Data = 32
Number of Non-Detects = 28
Number of Detects = 4
Detected Mean = 3.266
Detected Sd = 2.558
Slope (displayed data) = 0.96
Intercept (displayed data)= 0.941
Correlation, R = 0.74
Best Fit Line
Cadmium Concentration (mg/kg)
1
2
3
4
5
6
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle

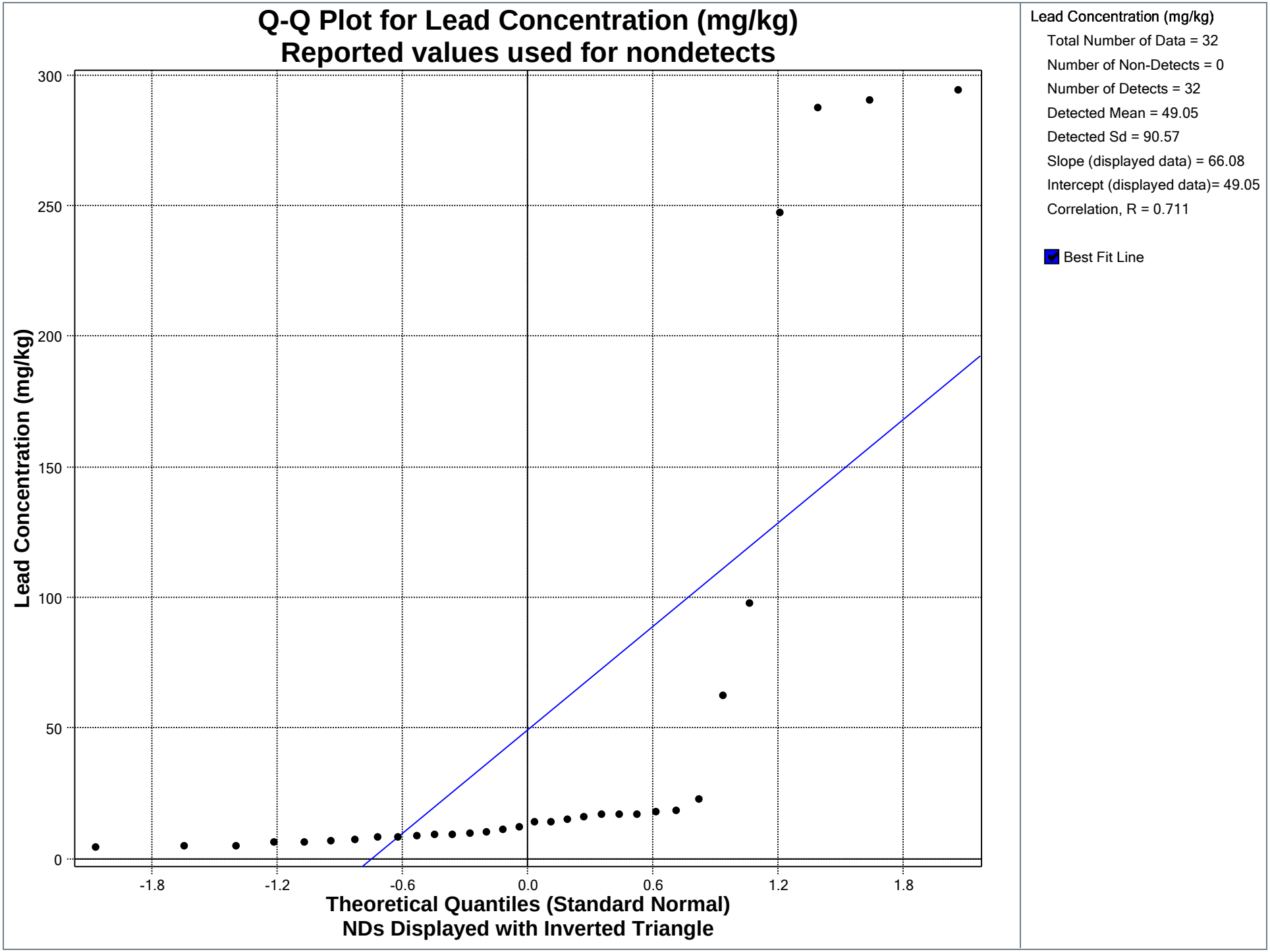

Q-Q Plot for Calcium Concentration (mg/kg)
Reported values used for nondetects
Calcium Concentration (mg/kg)
6000
5000
4000
3000
2000
1000
0
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle
Calcium Concentration (mg/kg)
Total Number of Data = 32
Number of Non-Detects = 0
Number of Detects = 32
Detected Mean = 1637
Detected Sd = 1467
Slope (displayed data) = 1410
Intercept (displayed data)= 1637
Correlation, R = 0.936
Best Fit Line

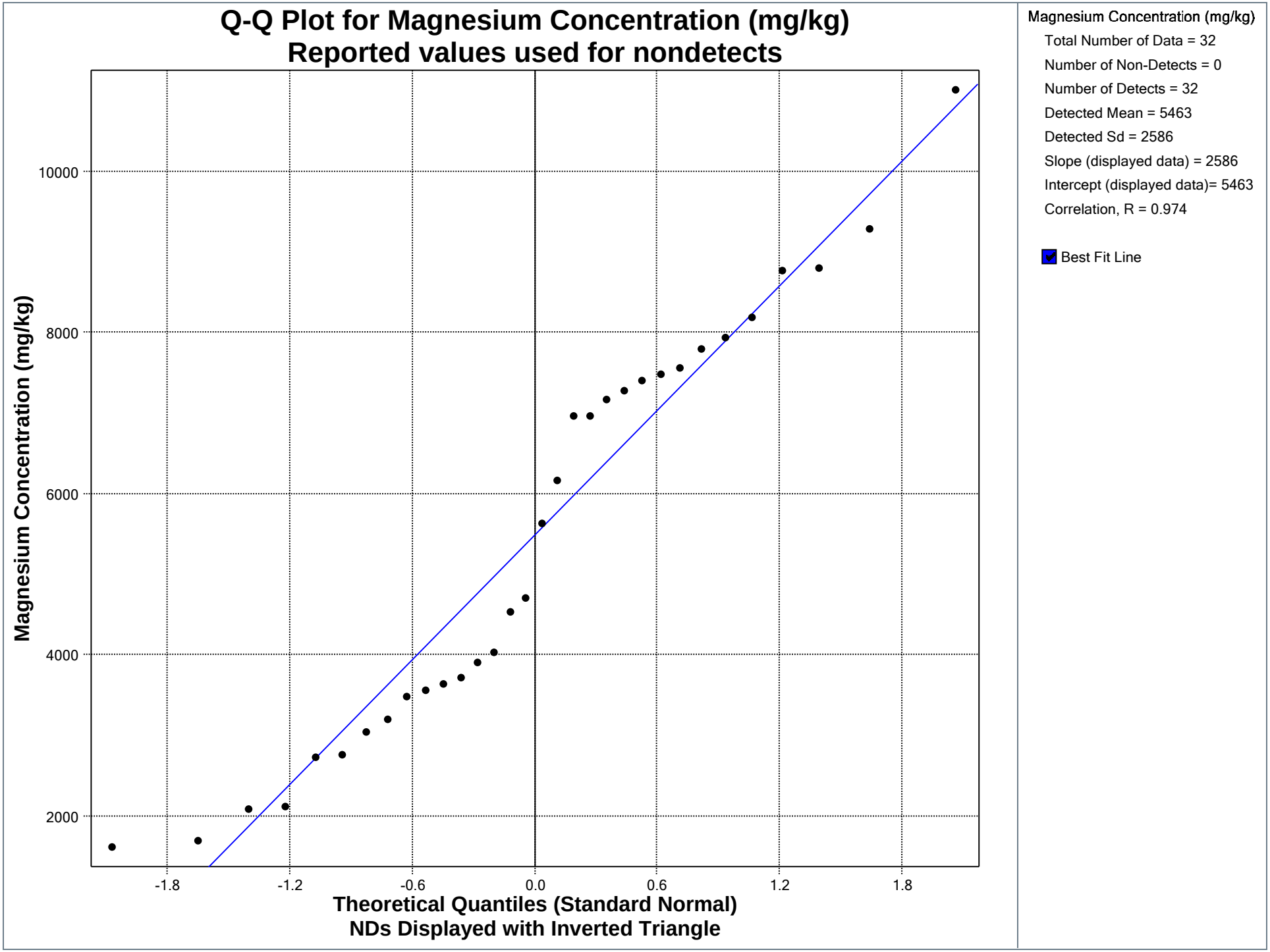

Q-Q Plot for Chromium Concentration (mg/kg)
Reported values used for nondetects
Chromium Concentration (mg/kg)
210
180
150
120
90
60
30
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle
Chromium Concentration (mg/kg)
Total Number of Data = 32
Number of Non-Detects = 0
Number of Detects = 32
Detected Mean = 51.67
Detected Sd = 53.75
Slope (displayed data) = 44.26
Intercept (displayed data)= 51.67
Correlation, R = 0.802
Best Fit Line


Q-Q Plot for Cobalt Concentration (mg/kg)
Reported values used for nondetects
Cobalt Concentration (mg/kg)
18
15
12
9
6
3
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle
Cobalt Concentration (mg/kg)
Total Number of Data = 32
Number of Non-Detects = 0
Number of Detects = 32
Detected Mean = 9.6
Detected Sd = 4.339
Slope (displayed data) = 4.375
Intercept (displayed data)= 9.6
Correlation, R = 0.982
Best Fit Line

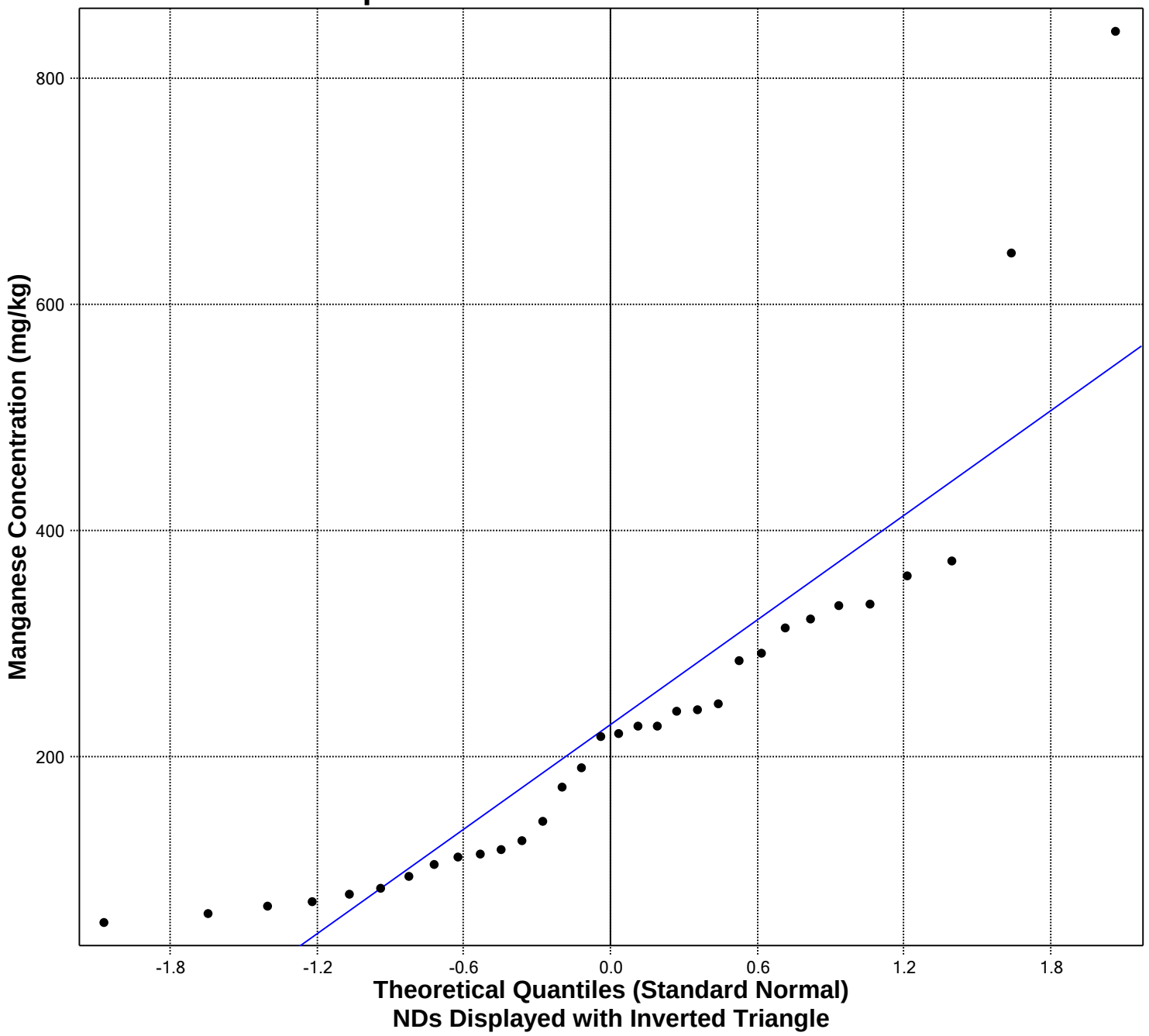

Q-Q Plot for Copper Concentration (mg/kg)
Reported values used for nondetects
Copper Concentration (mg/kg)
600
500
400
300
200
100
0
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle
Copper Concentration (mg/kg)
Total Number of Data = 32
Number of Non-Detects = 0
Number of Detects = 32
Detected Mean = 73.14
Detected Sd = 162.1
Slope (displayed data) = 110.8
Intercept (displayed data)= 73.14
Correlation, R = 0.666
Best Fit Line


Q-Q Plot for Iron Concentration (mg/kg)
Reported values used for nondetects
Iron Concentration (mg/kg)
56000
48000
40000
32000
24000
16000
8000
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle
Iron Concentration (mg/kg)
Total Number of Data = 32
Number of Non-Detects = 0
Number of Detects = 32
Detected Mean = 36133
Detected Sd = 14118
Slope (displayed data) = 14165
Intercept (displayed data)= 36133
Correlation, R = 0.977
Best Fit Line


Q-Q Plot for Lead Concentration (mg/kg)
Reported values used for nondetects
Lead Concentration (mg/kg)
Total Number of Data = 32
Number of Non-Detects = 0
Number of Detects = 32
Detected Mean = 49.05
Detected Sd = 90.57
Slope (displayed data) = 66.08
Intercept (displayed data)= 49.05
Correlation, R = 0.711
Best Fit Line
Lead Concentration (mg/kg)
300
250
200
150
100
50
0
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle


Q-Q Plot for Magnesium Concentration (mg/kg)
Reported values used for nondetects
Magnesium Concentration (mg/kg)
10000
8000
6000
4000
2000
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle
Magnesium Concentration (mg/kg)
Total Number of Data = 32
Number of Non-Detects = 0
Number of Detects = 32
Detected Mean = 5463
Detected Sd = 2586
Slope (displayed data) = 2586
Intercept (displayed data)= 5463
Correlation, R = 0.974
Best Fit Line

Q-Q Plot for Manganese Concentration (mg/kg)
Reported values used for nondetects



Manganese Concentration (mg/kg)

Total Number of Data = 32

Number of Non-Detects = 0

Number of Detects = 32

Detected Mean = 228.1

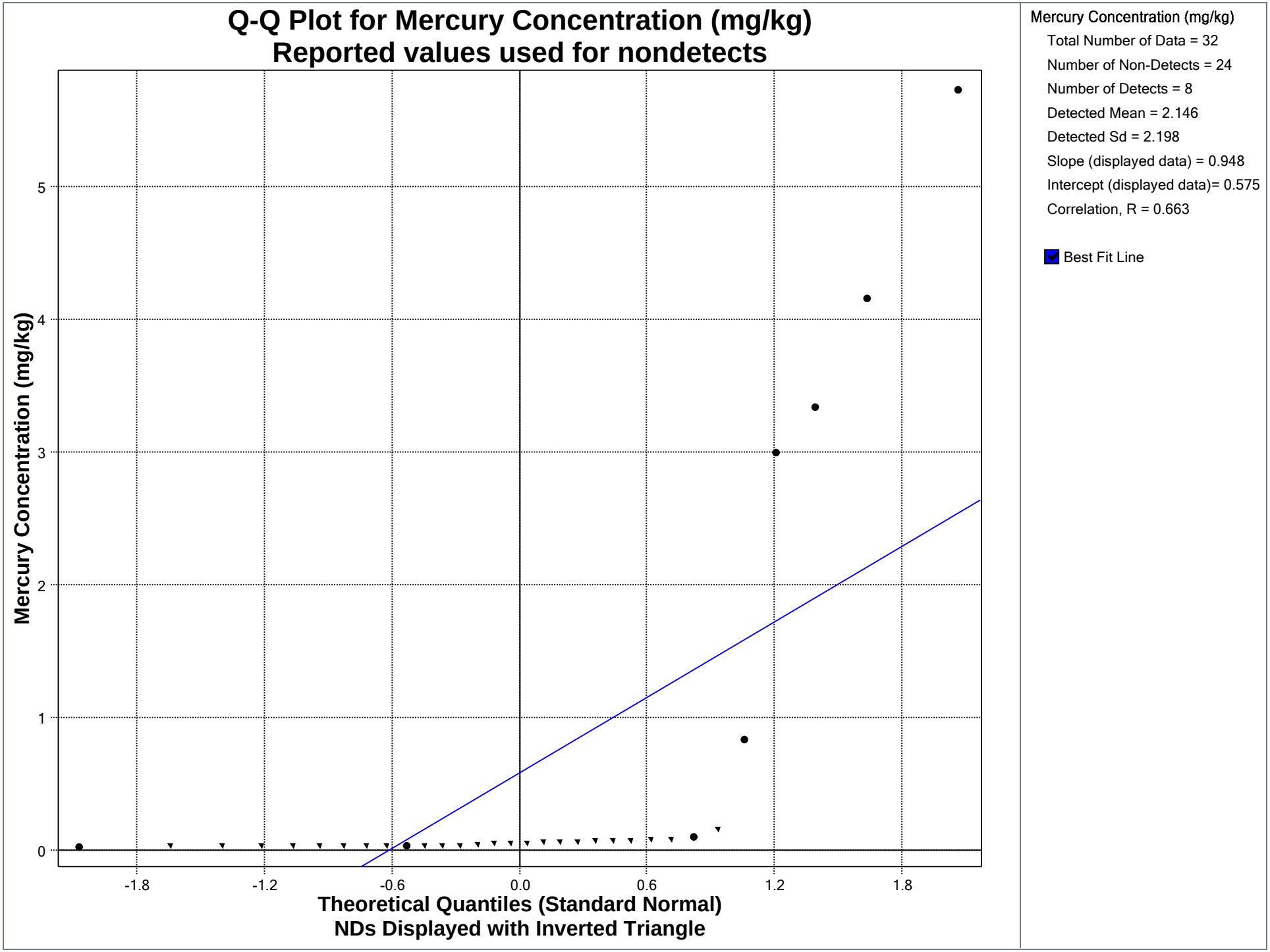
Detected Sd = 168.6

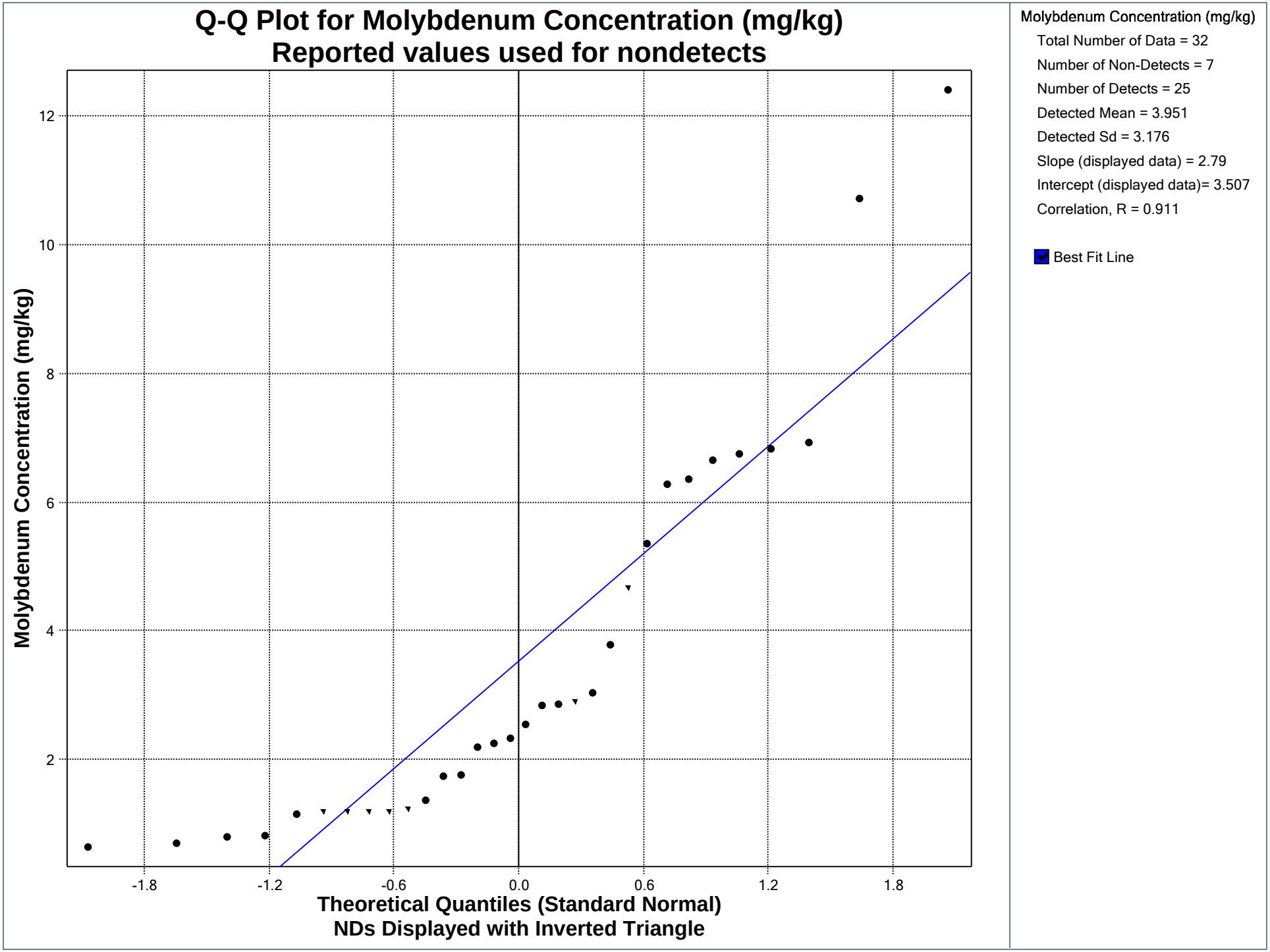
Slope (displayed data) = 154.6

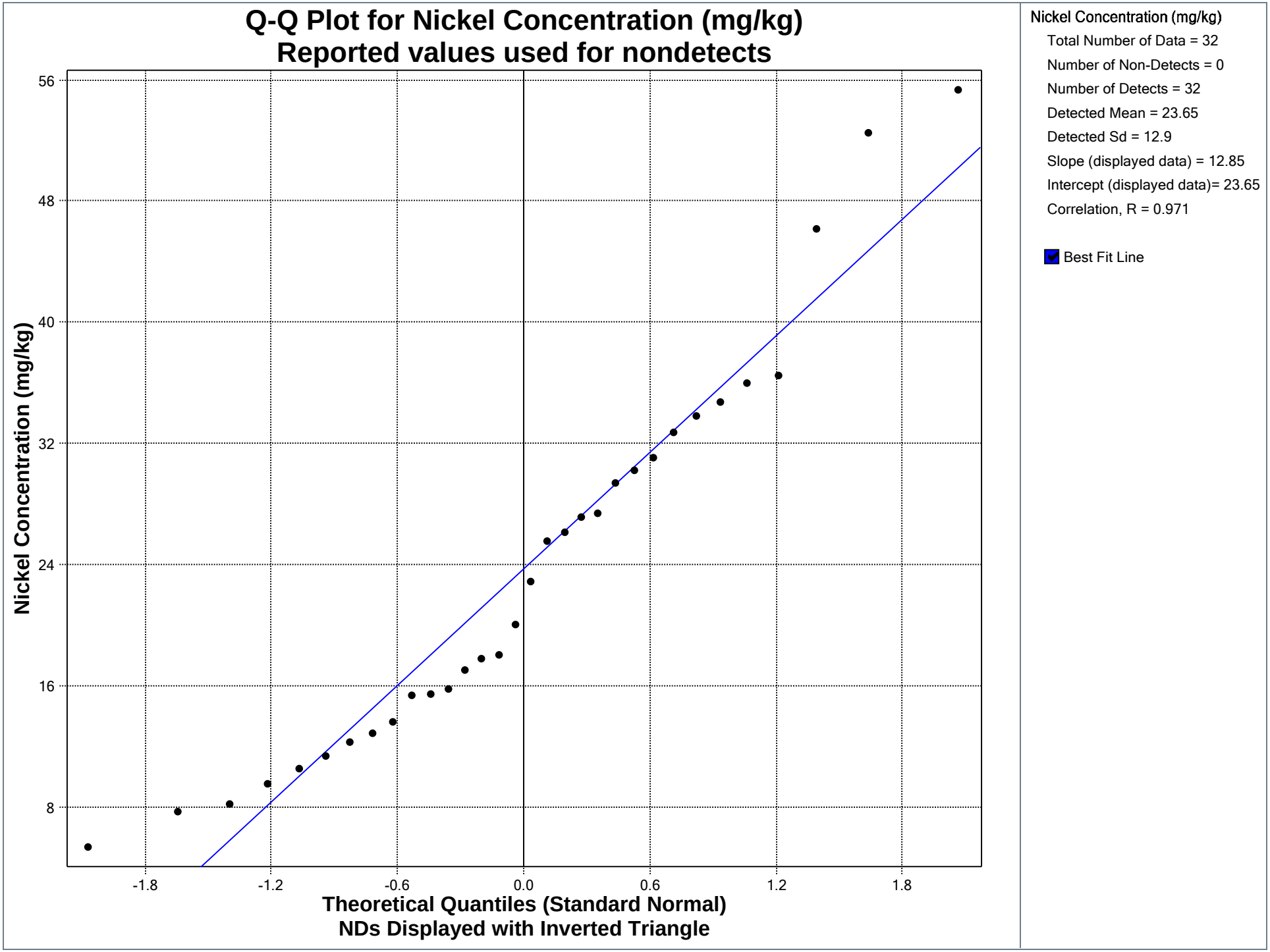
Intercept (displayed data)= 228.1

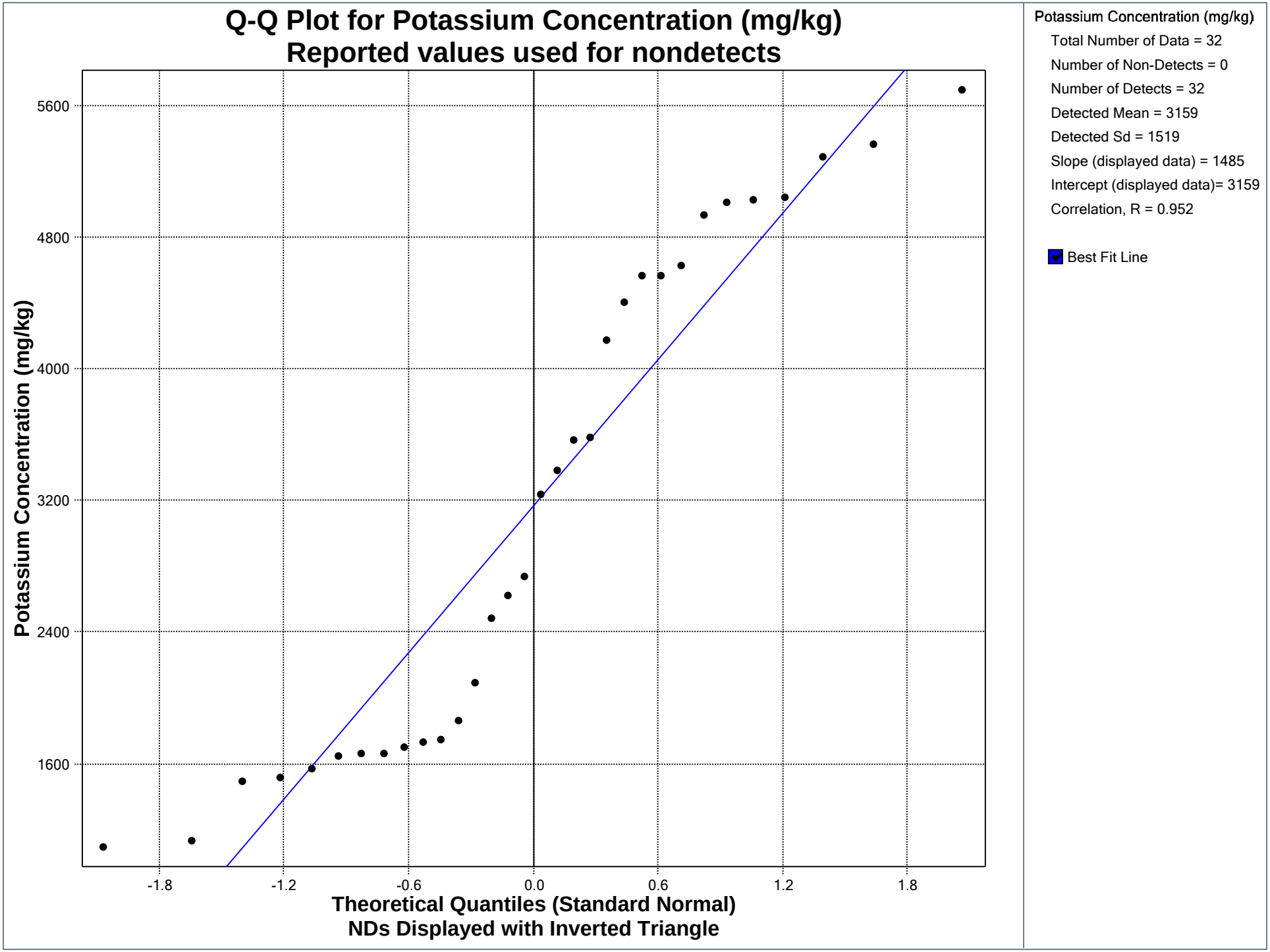
Correlation, R = 0.894

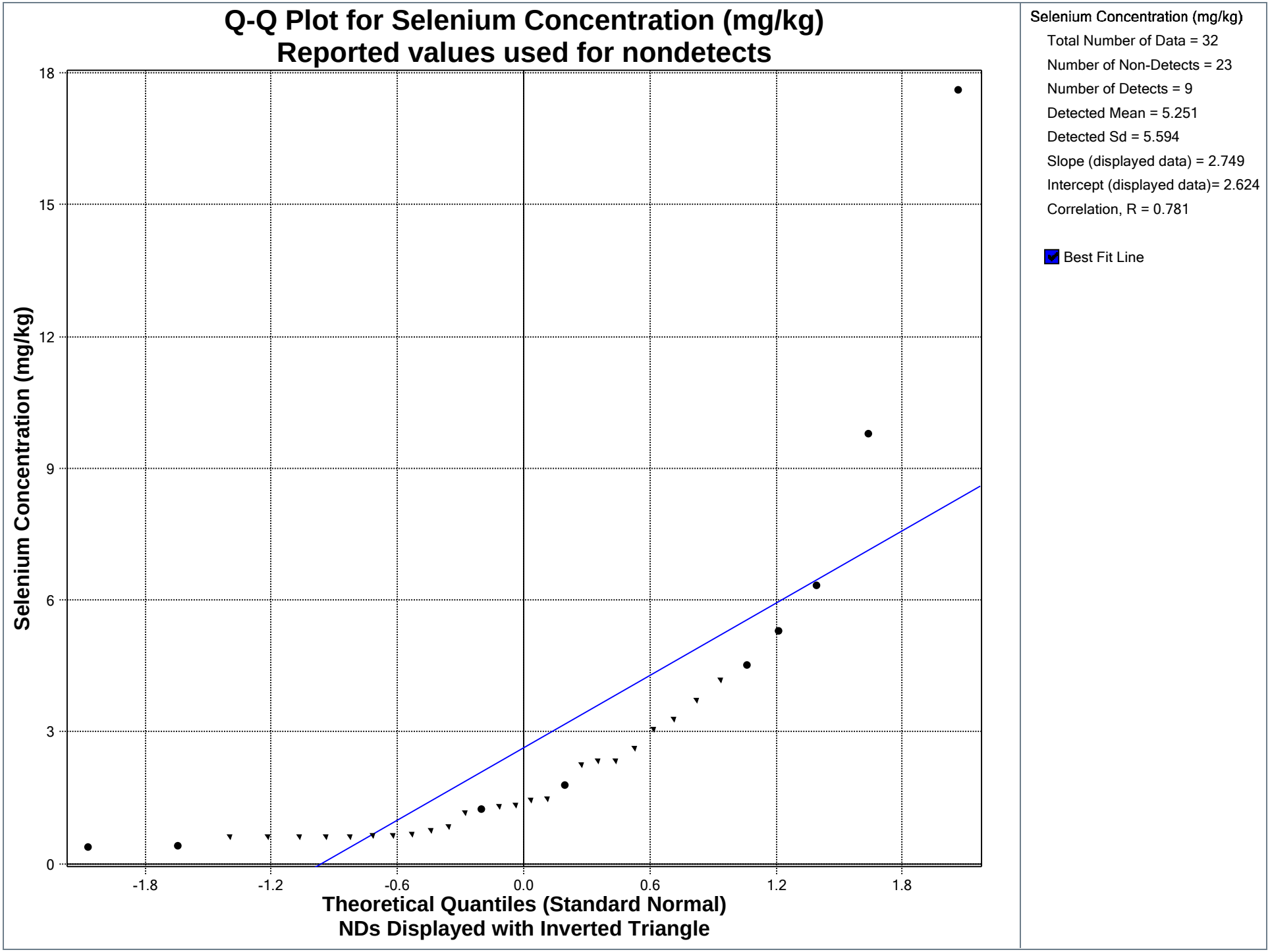
Best Fit Line

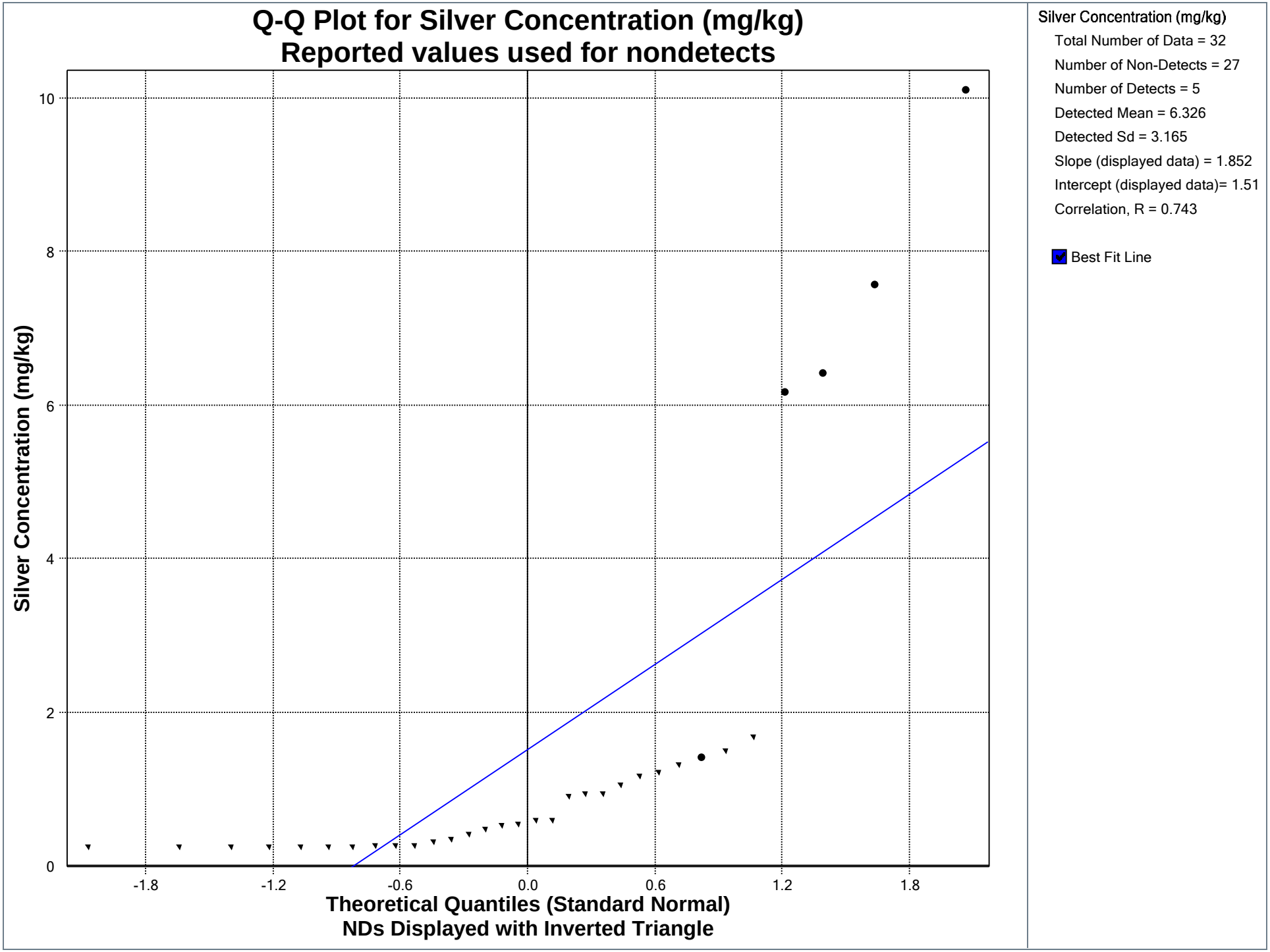

Q-Q Plot for Mercury Concentration (mg/kg)
Reported values used for nondetects
Mercury Concentration (mg/kg)
0
1
2
3
4
5
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle
Mercury Concentration (mg/kg)
Total Number of Data = 32
Number of Non-Detects = 24
Number of Detects = 8
Detected Mean = 2.146
Detected Sd = 2.198
Slope (displayed data) = 0.948
Intercept (displayed data)= 0.575
Correlation, R = 0.663
Best Fit Line

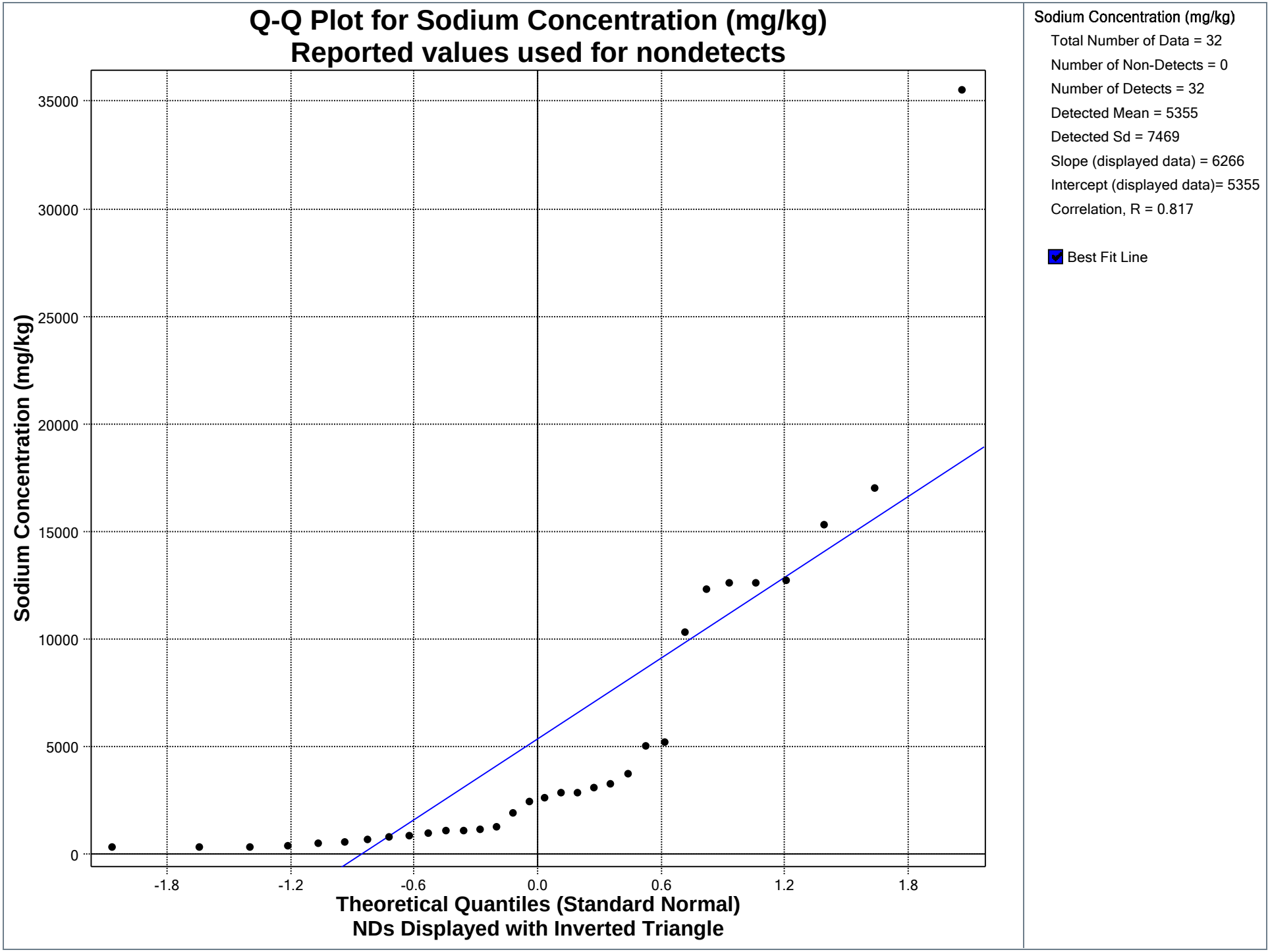

Q-Q Plot for Molybdenum Concentration (mg/kg)
Reported values used for nondetects
Molybdenum Concentration (mg/kg)
Total Number of Data = 32
Number of Non-Detects = 7
Number of Detects = 25
Detected Mean = 3.951
Detected Sd = 3.176
Slope (displayed data) = 2.79
Intercept (displayed data)= 3.507
Correlation, R = 0.911
Best Fit Line
Molybdenum Concentration (mg/kg)
12
10
8
6
4
2
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle

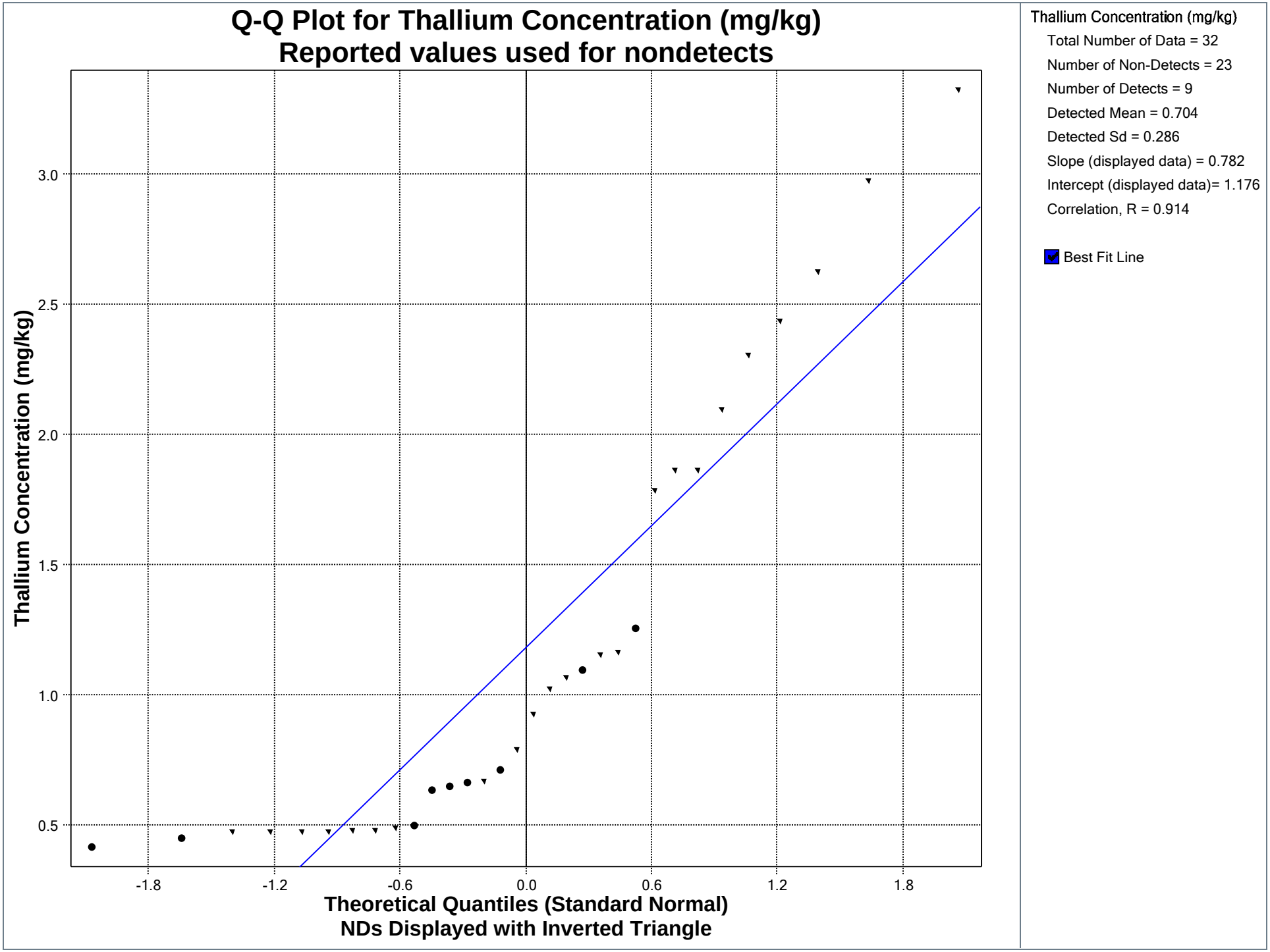

Q-Q Plot for Nickel Concentration (mg/kg)
Reported values used for nondetects
Nickel Concentration (mg/kg)
56
48
40
32
24
16
8
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle
Nickel Concentration (mg/kg)
Total Number of Data = 32
Number of Non-Detects = 0
Number of Detects = 32
Detected Mean = 23.65
Detected Sd = 12.9
Slope (displayed data) = 12.85
Intercept (displayed data)= 23.65
Correlation, R = 0.971
Best Fit Line

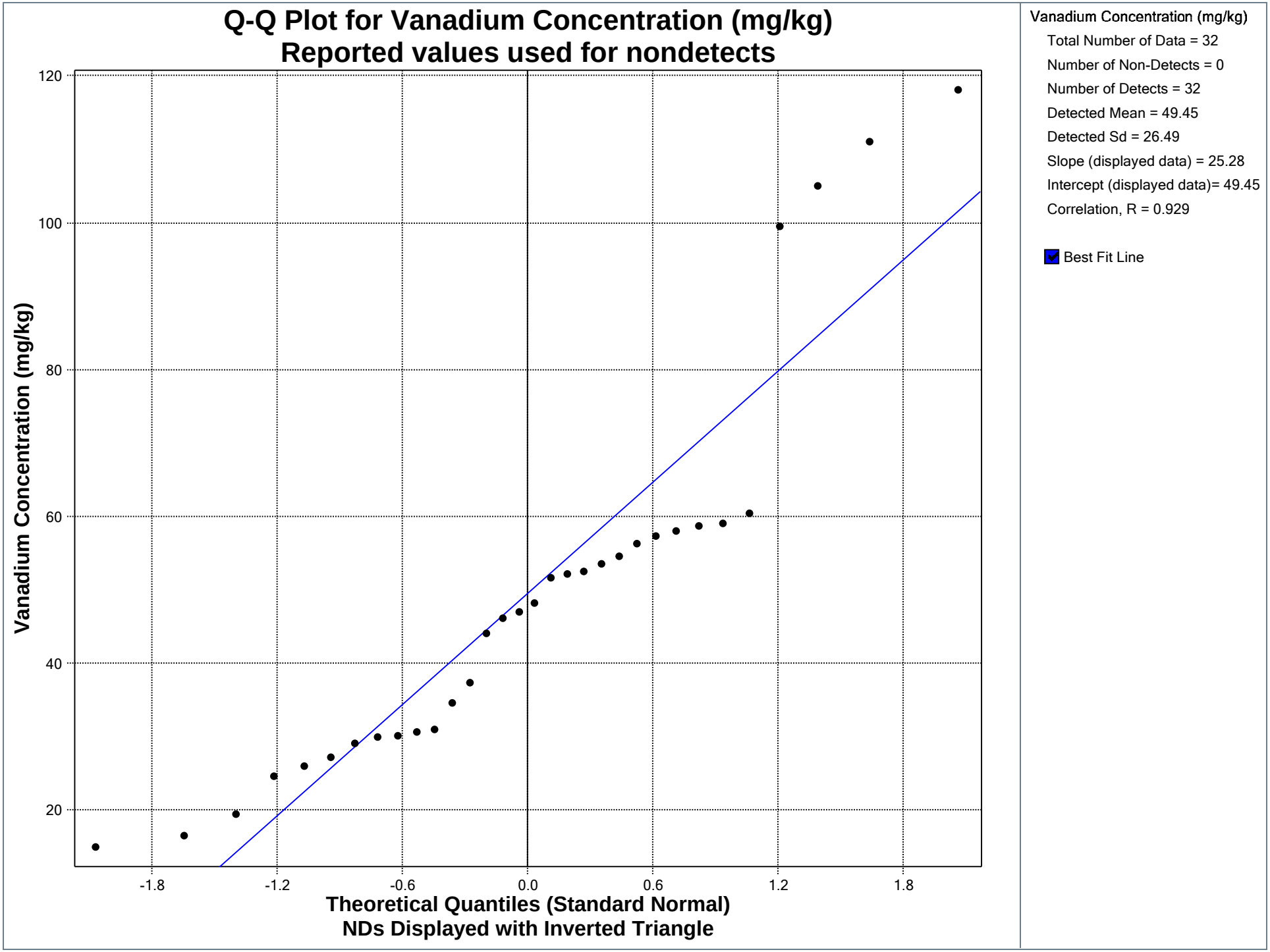

Q-Q Plot for Potassium Concentration (mg/kg)
Reported values used for nondetects
Potassium Concentration (mg/kg)
5600
4800
4000
3200
2400
1600
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle
Potassium Concentration (mg/kg)
Total Number of Data = 32
Number of Non-Detects = 0
Number of Detects = 32
Detected Mean = 3159
Detected Sd = 1519
Slope (displayed data) = 1485
Intercept (displayed data)= 3159
Correlation, R = 0.952
Best Fit Line

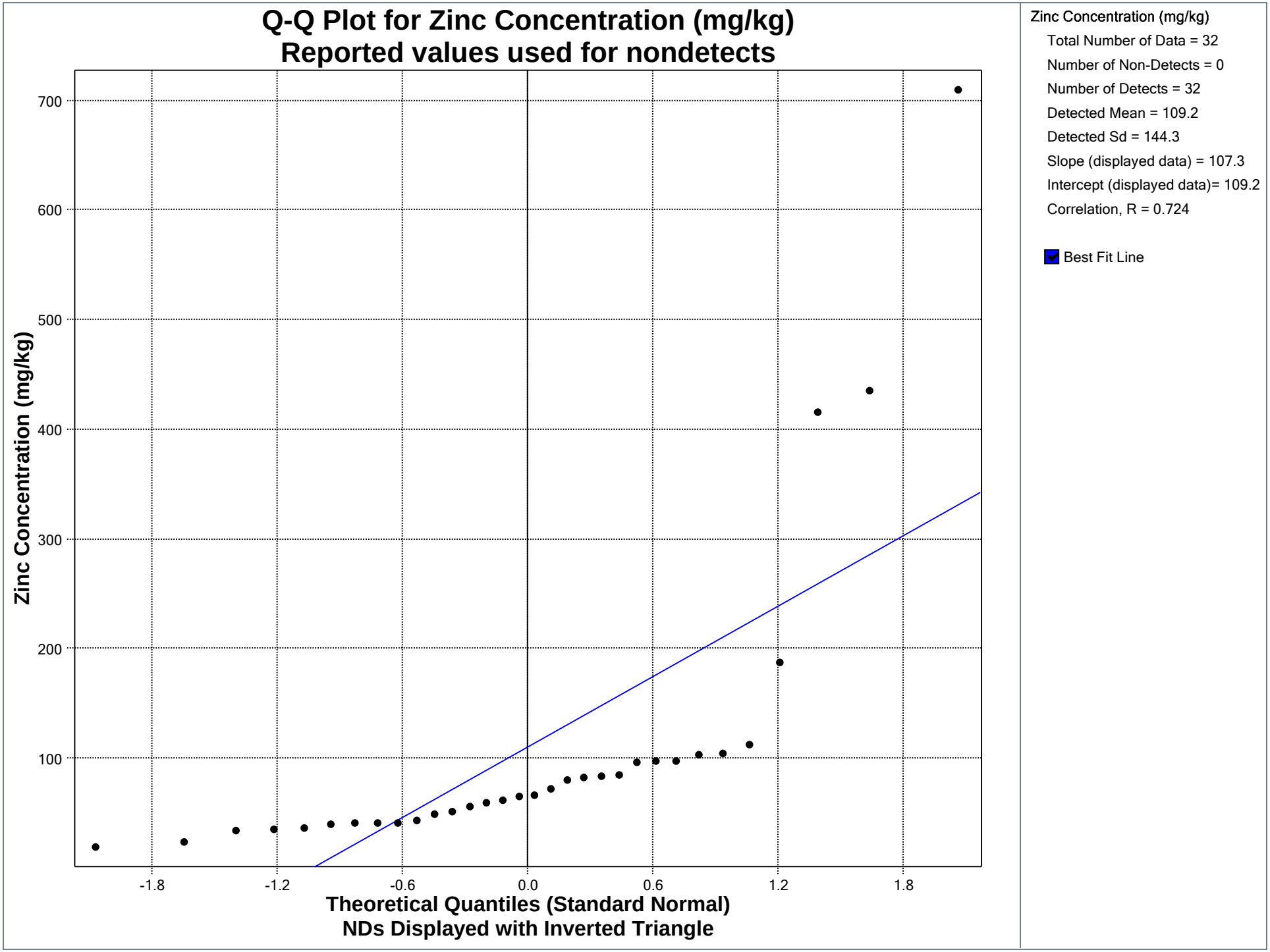

Q-Q Plot for Selenium Concentration (mg/kg)
Reported values used for nondetects
Selenium Concentration (mg/kg)
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle
0
3
6
9
12
15
18
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Selenium Concentration (mg/kg)
Total Number of Data = 32
Number of Non-Detects = 23
Number of Detects = 9
Detected Mean = 5.251
Detected Sd = 5.594
Slope (displayed data) = 2.749
Intercept (displayed data)= 2.624
Correlation, R = 0.781
Best Fit Line


Q-Q Plot for Silver Concentration (mg/kg)
Reported values used for nondetects
Silver Concentration (mg/kg)
Total Number of Data = 32
Number of Non-Detects = 27
Number of Detects = 5
Detected Mean = 6.326
Detected Sd = 3.165
Slope (displayed data) = 1.852
Intercept (displayed data)= 1.51
Correlation, R = 0.743
Best Fit Line
Silver Concentration (mg/kg)
0
2
4
6
8
10
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle


Q-Q Plot for Sodium Concentration (mg/kg)
Reported values used for nondetects
Sodium Concentration (mg/kg)
35000
30000
25000
20000
15000
10000
5000
0
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle
Sodium Concentration (mg/kg)
Total Number of Data = 32
Number of Non-Detects = 0
Number of Detects = 32
Detected Mean = 5355
Detected Sd = 7469
Slope (displayed data) = 6266
Intercept (displayed data)= 5355
Correlation, R = 0.817
Best Fit Line


Q-Q Plot for Thallium Concentration (mg/kg)
Reported values used for nondetects
Thallium Concentration (mg/kg)
3.0
2.5
2.0
1.5
1.0
0.5
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle
Thallium Concentration (mg/kg)
Total Number of Data = 32
Number of Non-Detects = 23
Number of Detects = 9
Detected Mean = 0.704
Detected Sd = 0.286
Slope (displayed data) = 0.782
Intercept (displayed data)= 1.176
Correlation, R = 0.914
Best Fit Line


Q-Q Plot for Vanadium Concentration (mg/kg)
Reported values used for nondetects
Vanadium Concentration (mg/kg)
120
100
80
60
40
20
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle
Vanadium Concentration (mg/kg)
Total Number of Data = 32
Number of Non-Detects = 0
Number of Detects = 32
Detected Mean = 49.45
Detected Sd = 26.49
Slope (displayed data) = 25.28
Intercept (displayed data)= 49.45
Correlation, R = 0.929
Best Fit Line


Q-Q Plot for Zinc Concentration (mg/kg)
Reported values used for nondetects
Zinc Concentration (mg/kg)
700
600
500
400
300
200
100
-1.8
-1.2
-0.6
0.0
0.6
1.2
1.8
Theoretical Quantiles (Standard Normal)
NDs Displayed with Inverted Triangle
Zinc Concentration (mg/kg)
Total Number of Data = 32
Number of Non-Detects = 0
Number of Detects = 32
Detected Mean = 109.2
Detected Sd = 144.3
Slope (displayed data) = 107.3
Intercept (displayed data)= 109.2
Correlation, R = 0.724
Best Fit Line

Appendix E
Laboratory and Data Validation Reports

ANALYTICAL DATA PACKAGE
SDG # 1608229

PROJECT NAME: Raritan Arsenal Phase III

SUBMITTAL TO:
Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

SUBMITTAL BY:
Empirical Laboratories, LLC (EL)
621 Mainstream Drive, Suite 270
Nashville, TN 37228
Tel (615)345-1115
Fax (866)417-0548

LABORATORY CONTACT PERSON:
Project Manager: Sonya Gordon
Tel (615)345-1115
Fax (866)417-0548
Email: sgordon@empirlabs.com

Original Report Date: September 22, 2016
Report Revision #: N/A
Revision Date: N/A

THIS DOCUMENT MEETS DoD QSM 5.0 STANDARDS

The results relate to only the samples associated with the referenced SDG and the submitted data has been produced in accordance with laboratory procedures. The Laboratory's Data Review Manager, Ms. Amy Barnett, is responsible for the final data produced and reported. Her signature is listed at the end of the Case Narrative within the Analytical Data Package. If applicable to this report package, details on report revisions and the information on subcontracted analysis are listed in the package Case Narrative. This report shall not be reproduced, except in full, without the written approval of Empirical Laboratories, LLC.

L-A-B Accredited - Certificate Number L2226 - Testing

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5	Data for Mercury Required Data / QAQC / Calibration Forms Supporting Raw Data / Logs

Sample Delivery Group Case Narrative

Receipt Information:

The samples were received within the preservation guidelines for the associated methods. The information associated with sample receipt and the Sample Delivery Group (SDG) are included within section 4 of this package, which also provides information on the link between the client sample ID listed on the COC and laboratory's assigned unique sample ID or WorkOrder #. The sample is tracked through the laboratory for all analysis via the assigned WorkOrder #.

All samples that were received were analyzed and none of the samples were placed on hold without analyses. There were no subcontracted analyses for this SDG.

Changes to the Revision:

This is an original submittal of the final report package.

Analytical Information:

All samples were prepped (where applicable) and analyzed within the standard allowed holding times, unless noted within the exceptions listed below. The laboratory analyzed all samples within the program and method guidelines. Sample preparation and dilution information is provided within the final results report and at the beginning of each form set. The following information is provided specific to individual methods:

Metals:

The following compounds are qualified with an "M" to indicate that the LOD and/or DL were raised due to sample interference:
Cadmium in 1608229-03, -04, -05, -07
Silver in 1608229-01, -08, -09, -10, -11, -12

The following continuing calibration verifications exceeded criteria:
6I25301-CCV6 with a positive bias for Vanadium
6I25301-CCV8 with a positive bias for Chromium and Vanadium
Note – The associated samples are qualified with an "X".

No additional anomalies or deviations are noted and the proper data qualifiers have been applied.

Mercury:

No anomalies or deviations are noted.

Data Qualifiers:

As applicable and where required, the following general qualifiers are associated with the sample results. Additional qualifiers will be specified within the reporting sections of the data package or within the body of the Case Narrative.

Analytical Report Terms and Qualifiers

DL: The detection limit (DL) is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero. The DL is supported by the method detection limit (MDL) which is determined from analysis of a sample containing the analyte in a given matrix.

LOD: The Limit of Detection is an estimate of the minimum amount of a substance that an analytical process can reliably detect. An LOD is analyte- and matrix-specific and may be laboratory-dependent. This definition is further clarified in the DoD QSM 5.0 revisions as the smallest amount or concentration of a substance that must be present in a sample in order to be detected at a high level of confidence (99%). At the LOD, the false negative rate (Type II error) is 1%.

LOQ: The Limit of Quantitation is the minimum level, concentration, or quantity of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. This term is further clarified within the DoD QSM 5.0 as the lowest concentration that produces a quantitative result within specified limits of precision and bias.

*: Exceeding quality control criteria are associated with the reported result.

B: The presence of a "B" to the right of an analytical value indicates that this compound was also detected in the method blank and the data should be interpreted with caution. One should consider the possibility that the correct sample result might be less than the reported result and, perhaps, zero.

D: When a sample (or sample extract) is rerun diluted because one of the compound concentrations exceeded the highest concentration range for the standard curve, all of the values obtained in the dilution run will be flagged with a "D".

E: The concentration for any compound found which exceeds the highest concentration level on the standard curve for that compound will be flagged with an "E". Usually the sample will be rerun at a dilution to quantitate the flagged compound. For Metals, the qualifier indicates that the serial dilution was outside of the control limits and the compound should be considered estimated due to the presence of interference.

H: The result was analyzed, extracted, or received outside of the EPA recommended holding time.

J: The presence of a "J" to the right of an analytical result indicates that the reported result is estimated. The mass spectral data pass the identification criteria showing that the compound is present, but the calculated result is less than the LOQ. One should feel confident that the result is greater than zero and less than the LOQ.

M: Indicates that the sample matrix interfered with the quantitation of the analyte. In dual column analysis the result is reported from the column with the lower concentration. In inorganics, it

indicates that the parameters DL/LOD/LOQ have been raised.

N: The MS/MSD accuracy and/or precision are outside criteria. The predigested spike recovery is not within control limits for the associated parameter.

P: The associated numerical value is an estimated quantity. There is greater than a 40% difference between the two GC columns for the detected concentrations. The higher of the two values is reported unless matrix interference is obvious or for HPLC analysis where the primary column is reported.

Q: The relative percent difference (RPD) and/or percent recovery exceeded limits in the associated Blank Spike and/or Blank Spike Duplicate.

S: The associated internal standard exceeded criteria.

U: The presence of a "U" indicates that the analyte was analyzed for but was not detected or the concentration of the analyte quantitated below the DL.

X: The parameter shows a potential positive bias on a reported concentration due to an ICV or CCV exceeding the upper control limit on the high side.

Y: The parameter shows a potential negative bias on a reported concentration due to an ICV or CCV exceeding the lower control limit on the low side.

Z: The parameter shows lack of confirmation/detection, which may be due to a negative bias in the ICV or CCV which exceeds the lower control limit.

Chromatographic Flags for Manual Integration:

The following letters are used to denote manual integrations on the laboratory's raw data in association with chromatographic integrations:

A: The peak was manually integrated as it was not integrated in the original chromatogram.

B: The peak was manually integrated due to resolution or co-elution issues in the original chromatogram.

C: The peak was manually integrated to correct the baseline from the original chromatogram.

D: The peak was manually integrated to identify the correct peak as the wrong peak was identified in the original chromatogram.

E: The peak was manually integrated to include the entire peak as the original chromatogram only integrated part of the peak.

LIMS Definitions / Naming Conventions:

The following are general naming conventions that are used throughout the laboratory; however, on a method by method basis, there are additional QAQC items that are named in a consistent format.

BLK: LIMS assigns a unique identifier to the Method Blank by naming it as the letters BLK appended to the Batch ID. A Method Blank is an analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The Method Blank is used to

assess for possible contamination during preparation and/or analysis steps. Method Blanks within a Batch or Analytical sequence will be appended with a numerical value beginning with 1 that will increase incrementally.

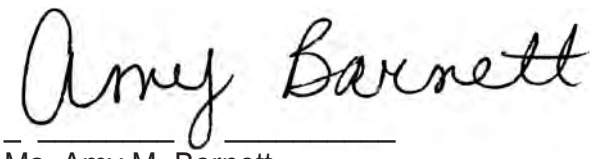
BS: LIMS assigns a unique identifier to the Blank Spike by naming it as the letters BS appended to the Batch ID. The Blank Spike or Lab Control Sample is a controlled analyte-free matrix, which is spiked with known and verified concentrations of target analytes. Spiking concentrations can be referenced in the method SOP. The BS is used to evaluate the viability of analytes taken through the entire prep (when applicable) and analytical process. Blank Spikes within a Batch or Analytical sequence will be appended with a numerical value beginning with 1 that will increase incrementally. A duplicate Blank Spike will be designated as a BSD.

MS: The LIMS assigns each Client sample with a unique identifier. The Matrix Spike is designated with a MS at the end of the sample's unique identifier. The Matrix Spike sample is used to assess the effect of the sample matrix on the precision and accuracy of the results generated using the selected method. A duplicate Matrix Spike will be designated as a MSD.

IDs: The LIMS assigns each Client sample with a unique identifier. The letter "RE" may potentially be appended to the end of the LIMS Sample ID. And "RE" implies that the sample was either re-prepped, re-analyzed straight, or re-analyzed at a dilution. Subsequent re-analysis for the sample will be appended with a numerical value beginning with 1 that will increase incrementally. Eg: RE1, RE2, RE3, etc.

Statement of Data Authenticity:

I certify that, based upon my inquiry of those individuals immediately responsible for obtaining the information and to the best of my knowledge, the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, with the exception of the conditions detailed in this Case Narrative, as verified by my signature below. During absences, the Data Quality Manager, Technical Directors or Project Managers are authorized to sign this Statement of Data Authenticity.



Ms. Amy M. Barnett
Data Review Manager

Empirical Laboratories, LLC
Certifications/Approvals
(Revised 06/30/2016)

DoD ELAP QSM5.0, Certificate Number L2226
- Aqueous
- Non-aqueous
- Expires: 11/30/2018

State of Florida, Department of Health – NELAP Primary, Lab ID: E87646
- Clean Water Act
- RCRA/CERCLA
- Expires: 06/30/2017

State of Georgia, Environmental Protection Agency – NELAP, Self Certification
- Expires: 06/30/2017

Commonwealth of Kentucky, Energy and Environment Cabinet – WWLCP, Laboratory Number: 98017
- Wastewater
- Expires: 12/31/2016

Commonwealth of Kentucky, Department of Environmental Protection – UST, Certificate Number: 77
- Aqueous
- Non-aqueous
- Expires: 06/30/2017

State of New Jersey, Department of Environmental Protection – NELAP, Lab ID: TN473
- Water Pollution
- Solid and Hazardous Waste
- Expires: 06/30/2017

State of North Carolina, Department of Environment and Natural Resources - Certificate Number: 643
- Aqueous
- Non-aqueous
- Expires: 12/31/2016

State of Texas, Commission on Environmental Quality – NELAP, Certificate Number: T104704307-16-12
- Aqueous
- Non-aqueous
- Expires: 12/31/2016

State of Utah, Department of Health – NELAP, Certificate Number: TN0042015-7
- Aqueous
- Non-aqueous
- Expires: 07/31/2016

Commonwealth of Virginia, Department of General Services – NELAP, Certificate Number: 8176, Lab ID: 460243
- Aqueous
- Non-aqueous
- Expires: 12/14/2016

State of Washington, Department of Ecology – NELAP, Lab ID: C934-16
- Groundwater
- Solid and Hazardous Waste
- Expires: 03/18/2017

ORGANIC CALCULATIONS

GC/MS Volatiles

$$\text{Final Concentration} = \frac{\text{On-column(ug/L or ug/Kg) * Expected Vol/Weight (mL or g) * Dilution}}{\text{Initial Vol/Weight (mL or g) * (Percent Solids/100) (if applicable)}}$$

Note - Expected Vol/Weight value is found in "Final Vol" column of Preparation Batch Summary.

GC/MS Extractables

$$\text{Final Concentration} = \frac{\text{On-column(ng/uL) * Final Vol (ml) * Dilution *(1000uL/mL)}}{\text{Initial Vol/Weight (mL or g) * (Percent Solids/100) (if applicable)}}$$

= ng/mL or ng/g

= ug/L or ug/kg

GC or LC Extractables

$$\text{Final Concentration} = \frac{\text{On-column(ng/mL) * Final Vol (mL) * Dilution}}{\text{Initial Vol/Weight (mL or g) * (Percent Solids/100) (if applicable)}}$$

= ng/mL or ng/g

= ug/L or ug/kg

Sample Receipt Information

1608229-01 A

MPIRICAL LABORATORIES, LLC - CHAIN OF CUSTODY RECORD

D: 621 Mainstream Drive, Suite 270 ♦ Nashville, TN 37228 ♦ 877-345-1113 ♦ (fax) 866-417-0548

32355

Send Results to:

Name Mike Zamboni
Company CH2M Hill
Address 2411 Dulles Corner Park, Suite 500
City Herndon
State, Zip VA, 20171
Phone 703-376-5301
Fax
E-mail Michael.Zamboni@ch2m.com

Project No./Name: PO: 100077100862

Send Invoice to:

Name CH2M Hill AP
Company CH2M Hill
Address
City
State, Zip
Phone
Fax
E-mail

Sampler's (Signature): Dan Holmes / [signature]

Analysis Requirements: TAL Metals, SW-846 6010B *

Lab Use Only:

VOA Headspace	Y	N	NA
Field Filtered	Y	N	NA
Correct Containers	Y	N	NA
Discrepancies	Y	N	NA
Cust. Seals Intact	Y	N	NA
Containers Intact	Y	N	NA

Airbill #:

CAR #:

Lab Use Only Lab #	Date/Time Sampled	Sample Description	Sample Matrix	TAL Metals, SW-846 6010B *	Comments	No. of Bottles	Lab Use Only Containers/Pres.
01	8/22/16 1035	DSA03-SB17-0010	Soil	X		1	
02	8/22/16 1055	DSA03-SB18-0010		X		1	
03	8/22/16 1110	DSA03-SB19-0010		X		1	
04	8/22/16 1140	DSA03-SB20-0010		X		1	
05	8/22/16 1418	DSA03-SB21-0010		X		1	
06	8/22/16 1448	DSA03-SB22-0010		X		1	
07	8/22/16 1522	DSA03-SB23-0010		X		1	
08	8/22/16 1545	DSA03-SB24-0010		X		1	
09	8/23/16 1030	DSA05-SB25-0010		X		1	
10	8/23/16 1101	DSA05-SB26-0010		X		1	
11	8/23/16 1255	DSA05-SB27-0010		X		1	
12	8/23/16 1316	DSA05-SB28-0010		X		1	

Sample Kit Prep'd by: (Signature)	Date/Time	Received By: (Signature)
[signature]	8/23/16 1600	
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Received for Laboratory by: (Signature)	Date/Time	Temperature
[signature]	8/24/16 833	

REMARKS:
* Metal (TAL from ILM05 (incl. Hg) + Mo)

Details:
Page 1 of 1
Cooler No. 1 of 1
Date Shipped 8/23/16
Shipped By DH
Turnaround Standard

Distribution: Original and yellow copies accompany sample shipment to laboratory; Pink retained by samplers.

V:\Standard Operating Procedures\Current SOP File Directory\Forms\QS10-P24-...



II. EMPIRICAL LABORATORIES
COOLER RECEIPT FORM

Cooler Received/Opened On:8/24/16@0835 Workorder# 1608229

1. Tracking # 8731 (last 4 digits, FedEx)

   Courier: ___FedEx

2. Temperature of rep. sample or temp blank when opened: 1.8 °C + correction factor (+0.1_) = 1.9 °C

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES (NO)...NA

4. Were custody seals on outside of cooler? (YES)...NO...NA

   If yes, how many and where: 1 front

5. Were the seals intact, signed, and dated correctly? (YES)...NO...NA

6. Were custody papers inside cooler? (YES)...NO...NA

I certify that I opened the cooler and answered questions 1-6 (initial/date) TH 8/24/16

7. Were custody seals on containers: YES (NO) and Intact YES...NO...(NA)

   Were these signed and dated correctly? YES...NO...(NA)

8. Packing material used? Bubblewrap (Plastic bag) Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process: (Ice) Ice-pack Ice (direct contact) Dry ice Other None

10. Did all containers arrive in good condition (unbroken)? (YES)...NO...NA

11. Were all container labels complete (#, date, signed, pres., etc)? (YES)...NO...NA

12. Did all container labels and tags agree with custody papers? (YES)...NO...NA

13. a. Were VOA vials received? YES...(NO)...NA

    b. Was there observable headspace present in any VOA vial (>5mm-6mm)? YES...NO...(NA)

14. Was there a Trip Blank in this cooler (custody seals present/intact)? YES...NO...NA...Comments_____
    If multiple coolers, sequence #_____

I certify that I unloaded the cooler and answered questions 7-14 (initial/date) TH 8/24/16

15. a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES...NO...(NA)

    b. Did the bottle labels indicate that the correct preservatives were used? YES...NO...(NA)

16. Was residual chlorine present for Cyanide "Effluent" samples? If so, treated/documented? YES...NO...(NA)

17. For 608 Pest/PCB samples, was pH <5 or >9? Was residual chlorine present? If either, adjusted/documented? YES...NO...(NA)

I certify that I checked for chlorine and pH as per SOP and answered questions 15-17 (initial/date) TH 8/24/16

18. Were custody papers properly filled out (ink, signed, etc)? (YES)...NO...NA

19. Did you sign the custody papers in the appropriate place? (YES)...NO...NA

20. Were correct containers used for the analysis requested? (YES)...NO...NA If not, PM notified? YES...NO...(NA)

21. Was sufficient amount of sample sent in each container? (YES)...NO...NA If not, PM notified? YES...NO...(NA)

22. Were there Non-Conformance issues at login? YES...(NO)...NCR#_____

I certify that I entered this project into LIMS and answered questions 18-22 (initial/date) TH 8/24/16

I certify that I attached a unique LIMS number label with matching sample name to each container (initial/date) TH 8/24/16

I certify that I notified the laboratory of any short holding time or RUSH parameters (initial/date) TH 8/24/16

Printed: 8/29/2016 1:19:26PM

Empirical Laboratories, LLC

WORK ORDER

1608229

Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Project Manager: Sonya Gordon
Project Number: Former Raritan Arsenal - RI/FS

Report To:
CH2M Hill, Inc.
Accounts Payable
P.O.Box 241329
Denver, CO 80224-____
Phone: (303) 771-0952
Fax: (303) 771-0952

Invoice To:
CH2M Hill, Inc.
Accounts Payable
P.O.Box 241329
Denver, CO 80224-____
Phone :(303) 771-0952
Fax: (303) 771-0952

Date Due: 09/22/2016 16:00 (20 day TAT)
Logged In By: Tiana L. Hutchings
Date Received: 08/24/2016 08:35
Received By: Tiana L. Hutchings

Samples Received at: **1.9°C**

Custody Seals	Yes	Received On Ice	Yes
Containers Intact	Yes		
COC/Labels Agree	Yes		
Preservation Confirme	No		

Analysis	TAT	Expires	Version	Comments
1608229-01 DSA03-SB17-0010 [Solid] Sampled 08/22/2016 10:35 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/19/2016 09:35		
MET_ICP_LOW6010C_FULL_Q5	20	02/18/2017 09:35	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/29/2016 09:35		
1608229-02 DSA03-SB18-0010 [Solid] Sampled 08/22/2016 10:55 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/19/2016 09:55		
MET_ICP_LOW6010C_FULL_Q5	20	02/18/2017 09:55	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/29/2016 09:55		
1608229-03 DSA03-SB19-0010 [Solid] Sampled 08/22/2016 11:10 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/19/2016 10:10		
MET_ICP_LOW6010C_FULL_Q5	20	02/18/2017 10:10	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/29/2016 10:10		
1608229-04 DSA03-SB20-0010 [Solid] Sampled 08/22/2016 11:40 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/19/2016 10:40		
MET_ICP_LOW6010C_FULL_Q5	20	02/18/2017 10:40	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/29/2016 10:40		

Printed: 8/29/2016 1:19:26PM

Empirical Laboratories, LLC

WORK ORDER

1608229

Client:	**CH2M Hill, Inc.**	**Project Manager:**	**Sonya Gordon**
Project:	**Raritan Arsenal - Phase III**	**Project Number:**	**Former Raritan Arsenal - RI/FS**

Analysis	TAT	Expires	Version	Comments
1608229-05 DSA03-SB21-0010 [Solid] Sampled 08/22/2016 14:18 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/19/2016 13:18		
MET_ICP_LOW6010C_FULL_Q5	20	02/18/2017 13:18	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/29/2016 13:18		
1608229-06 DSA03-SB22-0010 [Solid] Sampled 08/22/2016 14:48 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/19/2016 13:48		
MET_ICP_LOW6010C_FULL_Q5	20	02/18/2017 13:48	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/29/2016 13:48		
1608229-07 DSA03-SB23-0010 [Solid] Sampled 08/22/2016 15:22 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/19/2016 14:22		
MET_ICP_LOW6010C_FULL_Q5	20	02/18/2017 14:22	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/29/2016 14:22		
1608229-08 DSA03-SB24-0010 [Solid] Sampled 08/22/2016 15:45 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/19/2016 14:45		
MET_ICP_LOW6010C_FULL_Q5	20	02/18/2017 14:45	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/29/2016 14:45		
1608229-09 DSA05-SB25-0010 [Solid] Sampled 08/23/2016 10:30 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/20/2016 09:30		
MET_ICP_LOW6010C_FULL_Q5	20	02/19/2017 09:30	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/30/2016 09:30		
1608229-10 DSA05-SB26-0010 [Solid] Sampled 08/23/2016 11:01 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/20/2016 10:01		
MET_ICP_LOW6010C_FULL_Q5	20	02/19/2017 10:01	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/30/2016 10:01		

Printed: 8/29/2016 1:19:26PM

Empirical Laboratories, LLC

WORK ORDER

1608229

Client:	**CH2M Hill, Inc.**	**Project Manager:**	**Sonya Gordon**
Project:	**Raritan Arsenal - Phase III**	**Project Number:**	**Former Raritan Arsenal - RI/FS**

Analysis	TAT	Expires	Version	Comments
1608229-11 DSA05-SB27-0010 [Solid] Sampled 08/23/2016 12:55 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/20/2016 11:55		
MET_ICP_LOW6010C_FULL_Q5	20	02/19/2017 11:55	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/30/2016 11:55		
1608229-12 DSA05-SB28-0010 [Solid] Sampled 08/23/2016 13:16 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/20/2016 12:16		
MET_ICP_LOW6010C_FULL_Q5	20	02/19/2017 12:16	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/30/2016 12:16		

MET_ICP_LOW6010C_FULL_Q5 **Extraction: MET_3050B**

TAL + Mo

Aluminum
Antimony
Arsenic
Barium
Beryllium
Cadmium
Calcium
Chromium
Cobalt
Copper
Iron
Lead
Magnesium
Manganese
Molybdenum
Nickel
Potassium
Selenium
Silver
Sodium
Thallium
Vanadium
Zinc

Sample Delivery Group Assignment Form

CLIENT: CH2M Hill, Inc.
PROJECT NAME: Raritan Arsenal - Phase III
SDG #: 1608229

QC LEVEL: Level IV
Report Due: 9/22/2016
Client Sample Count: 12

Sample Type	Sampled	Received	Lab ID	Client ID	Lab Matrix	SM2540B	SW6010C	SW7471B
Client Sample	8/22/2016	8/24/2016	1608229-01	DSA03-SB17-0010	Solid	X	X	X
Client Sample	8/22/2016	8/24/2016	1608229-02	DSA03-SB18-0010	Solid	X	X	X
Client Sample	8/22/2016	8/24/2016	1608229-03	DSA03-SB19-0010	Solid	X	X	X
Client Sample	8/22/2016	8/24/2016	1608229-04	DSA03-SB20-0010	Solid	X	X	X
Client Sample	8/22/2016	8/24/2016	1608229-05	DSA03-SB21-0010	Solid	X	X	X
Client Sample	8/22/2016	8/24/2016	1608229-06	DSA03-SB22-0010	Solid	X	X	X
Client Sample	8/22/2016	8/24/2016	1608229-07	DSA03-SB23-0010	Solid	X	X	X
Client Sample	8/22/2016	8/24/2016	1608229-08	DSA03-SB24-0010	Solid	X	X	X
Client Sample	8/23/2016	8/24/2016	1608229-09	DSA05-SB25-0010	Solid	X	X	X
Client Sample	8/23/2016	8/24/2016	1608229-10	DSA05-SB26-0010	Solid	X	X	X
Client Sample	8/23/2016	8/24/2016	1608229-11	DSA05-SB27-0010	Solid	X	X	X
Client Sample	8/23/2016	8/24/2016	1608229-12	DSA05-SB28-0010	Solid	X	X	X

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB17-0010
Lab Sample ID: 1608229-01

Sample Collection D/T : 08/22/2016 10:35
Sample Matrix: Solid

Metals (Total) by ICP

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	15,654.0900	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Antimony	0.7987	mg/Kg dry	2		09/09/16 17:05		SW6010C
Arsenic	16.8733	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Barium	24.6568	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Beryllium	0.9889	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Cadmium	-0.1325	mg/Kg dry	2		09/09/16 17:05		SW6010C
Calcium	600.6511	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Chromium	28.6733	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Cobalt	15.5538	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Copper	8.2126	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Iron	46,244.6500	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Lead	8.8302	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Magnesium	3,466.0990	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Manganese	173.2785	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Molybdenum	12.3550	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Nickel	26.0794	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Potassium	2,480.3490	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Selenium	-0.2250	mg/Kg dry	2		09/09/16 17:05		SW6010C
Silver	-0.3547	mg/Kg dry	2	M	09/09/16 17:05		SW6010C
Sodium	2,414.7540	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Thallium	0.5397	mg/Kg dry	2		09/09/16 17:05		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Vanadium	45.9641	mg/Kg dry	2	X, D	09/09/16 17:05		SW6010C
Zinc	64.5916	mg/Kg dry	2	D	09/09/16 17:05		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB18-0010
Lab Sample ID: 1608229-02

Sample Collection D/T : 08/22/2016 10:55
Sample Matrix: Solid

Metals (Total) by ICP

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	7,666.7060	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Antimony	0.4080	mg/Kg dry	2		09/09/16 17:09		SW6010C
Arsenic	8.9453	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Barium	8.0373	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Beryllium	0.4667	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Cadmium	-0.0571	mg/Kg dry	2		09/09/16 17:09		SW6010C
Calcium	151.1238	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Chromium	20.9709	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Cobalt	4.9455	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Copper	8.0011	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Iron	20,487.2800	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Lead	4.6979	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Magnesium	2,715.9470	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Manganese	67.9096	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Molybdenum	0.7921	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Nickel	11.3136	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Potassium	1,569.9130	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Selenium	0.2341	mg/Kg dry	2		09/09/16 17:09		SW6010C
Silver	-0.1058	mg/Kg dry	2		09/09/16 17:09		SW6010C
Sodium	325.0858	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Thallium	0.4959	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Vanadium	30.8889	mg/Kg dry	2	X, D	09/09/16 17:09		SW6010C
Zinc	40.4162	mg/Kg dry	2	D	09/09/16 17:09		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB19-0010
Lab Sample ID: 1608229-03

Sample Collection D/T : 08/22/2016 11:10
Sample Matrix: Solid

Metals (Total) by ICP

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	7,981.7520	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Antimony	0.3735	mg/Kg dry	2		09/09/16 17:13		SW6010C
Arsenic	7.0937	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Barium	11.3281	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Beryllium	0.5912	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Cadmium	-0.1634	mg/Kg dry	2	M	09/09/16 17:13		SW6010C
Calcium	137.7236	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Chromium	17.2045	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Cobalt	3.7475	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Copper	5.9324	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Iron	28,532.3000	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Lead	5.9284	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Magnesium	1,676.8790	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Manganese	240.9632	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Molybdenum	0.8068	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Nickel	8.1834	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Potassium	1,134.1500	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Selenium	-0.0804	mg/Kg dry	2		09/09/16 17:13		SW6010C
Silver	-0.0961	mg/Kg dry	2		09/09/16 17:13		SW6010C
Sodium	402.1090	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Thallium	0.4453	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Vanadium	24.4809	mg/Kg dry	2	X, D	09/09/16 17:13		SW6010C
Zinc	35.1369	mg/Kg dry	2	D	09/09/16 17:13		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB20-0010
Lab Sample ID: 1608229-04

Sample Collection D/T : 08/22/2016 11:40
Sample Matrix: Solid

Metals (Total) by ICP

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	11,407.7700	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Antimony	0.6110	mg/Kg dry	2		09/09/16 17:18		SW6010C
Arsenic	10.7762	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Barium	11.9921	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Beryllium	1.0644	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Cadmium	-0.2564	mg/Kg dry	2	M	09/09/16 17:18		SW6010C
Calcium	237.0923	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Chromium	56.6495	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Cobalt	7.4312	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Copper	11.3638	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Iron	49,579.1000	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Lead	8.2815	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Magnesium	3,632.8390	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Manganese	190.4168	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Molybdenum	1.3602	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Nickel	17.0356	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Potassium	1,697.1670	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Selenium	0.1727	mg/Kg dry	2		09/09/16 17:18		SW6010C
Silver	-0.1239	mg/Kg dry	2		09/09/16 17:18		SW6010C
Sodium	1,087.4590	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Thallium	0.6452	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Vanadium	48.1139	mg/Kg dry	2	X, D	09/09/16 17:18		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	70.7502	mg/Kg dry	2	D	09/09/16 17:18		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB21-0010
Lab Sample ID: 1608229-05

Sample Collection D/T : 08/22/2016 14:18
Sample Matrix: Solid

Metals (Total) by ICP

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	12,490.0800	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Antimony	1.4204	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Arsenic	72.0689	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Barium	64.8123	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Beryllium	0.2985	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Cadmium	-0.2581	mg/Kg dry	2	M	09/09/16 17:22		SW6010C
Calcium	493.5146	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Chromium	54.6156	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Cobalt	5.0778	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Copper	51.4790	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Iron	52,698.4500	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Lead	97.6733	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Magnesium	4,014.1670	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Manganese	105.2909	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Molybdenum	2.8197	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Nickel	15.3406	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Potassium	3,579.9300	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Selenium	5.2763	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Silver	1.4029	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Sodium	2,607.9860	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Thallium	0.6592	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Vanadium	60.2630	mg/Kg dry	2	X, D	09/09/16 17:22		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	54.5490	mg/Kg dry	2	D	09/09/16 17:22		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB22-0010
Lab Sample ID: 1608229-06

Sample Collection D/T : 08/22/2016 14:48
Sample Matrix: Solid

Metals (Total) by ICP

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	21,496.2900	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Antimony	0.5270	mg/Kg dry	2		09/09/16 17:27		SW6010C
Arsenic	31.2238	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Barium	67.0228	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Beryllium	0.6736	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Cadmium	-0.1901	mg/Kg dry	2		09/09/16 17:27		SW6010C
Calcium	732.0161	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Chromium	59.9215	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Cobalt	6.3205	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Copper	35.0139	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Iron	37,804.9700	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Lead	62.3789	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Magnesium	5,607.2490	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Manganese	126.3770	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Molybdenum	2.8458	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Nickel	19.9536	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Potassium	4,557.7550	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Selenium	1.2242	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Silver	0.1726	mg/Kg dry	2		09/09/16 17:27		SW6010C
Sodium	1,122.0190	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Thallium	0.5585	mg/Kg dry	2		09/09/16 17:27		SW6010C
Vanadium	57.3149	mg/Kg dry	2	X, D	09/09/16 17:27		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	65.7627	mg/Kg dry	2	D	09/09/16 17:27		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB23-0010
Lab Sample ID: 1608229-07

Sample Collection D/T : 08/22/2016 15:22
Sample Matrix: Solid

Metals (Total) by ICP

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	9,185.2350	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Antimony	0.1882	mg/Kg dry	2		09/09/16 17:31		SW6010C
Arsenic	9.0003	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Barium	13.3047	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Beryllium	0.9159	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Cadmium	-0.1274	mg/Kg dry	2	M	09/09/16 17:31		SW6010C
Calcium	490.8711	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Chromium	19.3647	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Cobalt	4.2079	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Copper	6.7849	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Iron	29,953.1300	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Lead	6.1022	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Magnesium	2,101.3460	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Manganese	219.5881	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Molybdenum	1.1299	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Nickel	9.4428	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Potassium	1,512.3110	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Selenium	0.1737	mg/Kg dry	2		09/09/16 17:31		SW6010C
Silver	-0.0310	mg/Kg dry	2		09/09/16 17:31		SW6010C
Sodium	320.4213	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Thallium	0.4107	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Vanadium	29.1113	mg/Kg dry	2	X, D	09/09/16 17:31		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	39.9242	mg/Kg dry	2	D	09/09/16 17:31		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB24-0010
Lab Sample ID: 1608229-08

Sample Collection D/T : 08/22/2016 15:45
Sample Matrix: Solid

Metals (Total) by ICP

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	10,659.8800	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Antimony	0.5833	mg/Kg dry	2		09/09/16 17:35		SW6010C
Arsenic	19.7053	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Barium	18.3078	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Beryllium	0.8454	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Cadmium	-0.0403	mg/Kg dry	2		09/09/16 17:35		SW6010C
Calcium	1,333.4830	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Chromium	24.1832	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Cobalt	12.7259	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Copper	9.2606	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Iron	49,727.5200	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Lead	9.3273	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Magnesium	3,709.9600	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Manganese	227.2097	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Molybdenum	6.8085	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Nickel	17.9762	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Potassium	2,089.7330	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Selenium	-0.1424	mg/Kg dry	2		09/09/16 17:35		SW6010C
Silver	-0.2194	mg/Kg dry	2	M	09/09/16 17:35		SW6010C
Sodium	649.7983	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Thallium	0.4698	mg/Kg dry	2		09/09/16 17:35		SW6010C
Vanadium	37.2057	mg/Kg dry	2	X, D	09/09/16 17:35		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	58.0351	mg/Kg dry	2	D	09/09/16 17:35		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA05-SB25-0010
Lab Sample ID: 1608229-09

Sample Collection D/T : 08/23/2016 10:30
Sample Matrix: Solid

Metals (Total) by ICP

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	5,433.1590	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Antimony	0.6313	mg/Kg dry	2		09/09/16 17:40		SW6010C
Arsenic	2.2448	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Barium	11.8195	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Beryllium	0.3018	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Cadmium	-0.0241	mg/Kg dry	2		09/09/16 17:40		SW6010C
Calcium	2,554.8150	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Chromium	12.1847	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Cobalt	1.8859	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Copper	4.6625	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Iron	7,571.6970	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Lead	4.1827	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Magnesium	4,522.1830	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Manganese	53.0959	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Molybdenum	2.2324	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Nickel	5.2974	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Potassium	1,636.8060	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Selenium	0.0406	mg/Kg dry	2		09/09/16 17:40		SW6010C
Silver	-0.4068	mg/Kg dry	2	M	09/09/16 17:40		SW6010C
Sodium	17,011.0700	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Thallium	0.4699	mg/Kg dry	2		09/09/16 17:40		SW6010C
Vanadium	16.3767	mg/Kg dry	2	X, D	09/09/16 17:40		SW6010C
Zinc	18.1498	mg/Kg dry	2	D	09/09/16 17:40		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA05-SB26-0010
Lab Sample ID: 1608229-10

Sample Collection D/T : 08/23/2016 11:01
Sample Matrix: Solid

Metals (Total) by ICP

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	21,988.6700	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Antimony	0.3825	mg/Kg dry	2		09/09/16 17:44		SW6010C
Arsenic	13.8510	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Barium	40.9069	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Beryllium	1.1669	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Cadmium	-0.1909	mg/Kg dry	2		09/09/16 17:44		SW6010C
Calcium	2,348.5720	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Chromium	49.0244	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Cobalt	12.6436	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Copper	19.0033	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Iron	46,497.8600	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Lead	17.6879	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Magnesium	9,283.0210	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Manganese	283.6862	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Molybdenum	1.7331	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Nickel	30.1802	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Potassium	4,398.7450	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Selenium	0.4817	mg/Kg dry	2		09/09/16 17:44		SW6010C
Silver	-0.2463	mg/Kg dry	2	M	09/09/16 17:44		SW6010C
Sodium	10,302.1300	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Thallium	0.4128	mg/Kg dry	2		09/09/16 17:44		SW6010C
Vanadium	52.4222	mg/Kg dry	2	X, D	09/09/16 17:44		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	103.2926	mg/Kg dry	2	D	09/09/16 17:44		SW6010C

Empirical Laboratories, LLC
621 Mainstream Drive, Suite 270 I Nashville, TN 37228 I Main: 615.345.1115 I Fax: 877.345.1113 I www.empirlabs.com

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA05-SB27-0010
Lab Sample ID: 1608229-11

Sample Collection D/T : 08/23/2016 12:55
Sample Matrix: Solid

Metals (Total) by ICP

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	20,611.6700	mg/Kg dry	2	D	09/09/16 17:57		SW6010C
Antimony	2.4641	mg/Kg dry	2		09/09/16 17:57		SW6010C
Arsenic	19.0921	mg/Kg dry	2	D	09/09/16 17:57		SW6010C
Barium	41.5819	mg/Kg dry	2	D	09/09/16 17:57		SW6010C
Beryllium	1.1540	mg/Kg dry	2	D	09/09/16 17:57		SW6010C
Cadmium	0.2246	mg/Kg dry	2		09/09/16 17:57		SW6010C
Calcium	5,887.9570	mg/Kg dry	2	D	09/09/16 17:57		SW6010C
Chromium	40.1126	mg/Kg dry	2	X, D	09/09/16 17:57		SW6010C
Cobalt	7.1399	mg/Kg dry	2	D	09/09/16 17:57		SW6010C
Copper	28.5572	mg/Kg dry	2	D	09/09/16 17:57		SW6010C
Iron	36,431.6600	mg/Kg dry	2	D	09/09/16 17:57		SW6010C
Lead	22.7943	mg/Kg dry	2	D	09/09/16 17:57		SW6010C
Magnesium	10,980.3900	mg/Kg dry	2	D	09/09/16 17:57		SW6010C
Manganese	113.3405	mg/Kg dry	2	D	09/09/16 17:57		SW6010C
Molybdenum	6.3464	mg/Kg dry	2	D	09/09/16 17:57		SW6010C
Nickel	27.0576	mg/Kg dry	2	D	09/09/16 17:57		SW6010C
Potassium	4,561.7680	mg/Kg dry	2	D	09/09/16 17:57		SW6010C
Selenium	0.0807	mg/Kg dry	2		09/09/16 17:57		SW6010C
Silver	-0.7891	mg/Kg dry	2	M	09/09/16 17:57		SW6010C
Sodium	35,516.8800	mg/Kg dry	2	D	09/09/16 17:57		SW6010C
Thallium	0.4932	mg/Kg dry	2		09/09/16 17:57		SW6010C
Vanadium	51.5207	mg/Kg dry	2	X, D	09/09/16 17:57		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	81.2565	mg/Kg dry	2	D	09/09/16 17:57		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA05-SB28-0010
Lab Sample ID: 1608229-12

Sample Collection D/T : 08/23/2016 13:16
Sample Matrix: Solid

Metals (Total) by ICP

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	20,415.0700	mg/Kg dry	2	D	09/09/16 18:02		SW6010C
Antimony	0.7272	mg/Kg dry	2		09/09/16 18:02		SW6010C
Arsenic	13.2692	mg/Kg dry	2	D	09/09/16 18:02		SW6010C
Barium	36.9921	mg/Kg dry	2	D	09/09/16 18:02		SW6010C
Beryllium	1.1740	mg/Kg dry	2	D	09/09/16 18:02		SW6010C
Cadmium	-0.0754	mg/Kg dry	2		09/09/16 18:02		SW6010C
Calcium	2,647.0420	mg/Kg dry	2	D	09/09/16 18:02		SW6010C
Chromium	39.9958	mg/Kg dry	2	X, D	09/09/16 18:02		SW6010C
Cobalt	9.2436	mg/Kg dry	2	D	09/09/16 18:02		SW6010C
Copper	13.8234	mg/Kg dry	2	D	09/09/16 18:02		SW6010C
Iron	35,713.9800	mg/Kg dry	2	D	09/09/16 18:02		SW6010C
Lead	13.8116	mg/Kg dry	2	D	09/09/16 18:02		SW6010C
Magnesium	8,745.0800	mg/Kg dry	2	D	09/09/16 18:02		SW6010C
Manganese	216.7558	mg/Kg dry	2	D	09/09/16 18:02		SW6010C
Molybdenum	2.1810	mg/Kg dry	2	D	09/09/16 18:02		SW6010C
Nickel	25.4850	mg/Kg dry	2	D	09/09/16 18:02		SW6010C
Potassium	4,171.8710	mg/Kg dry	2	D	09/09/16 18:02		SW6010C
Selenium	0.0205	mg/Kg dry	2		09/09/16 18:02		SW6010C
Silver	-0.4017	mg/Kg dry	2	M	09/09/16 18:02		SW6010C
Sodium	12,579.7800	mg/Kg dry	2	D	09/09/16 18:02		SW6010C
Thallium	0.3348	mg/Kg dry	2		09/09/16 18:02		SW6010C
Vanadium	46.9591	mg/Kg dry	2	X, D	09/09/16 18:02		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	79.4010	mg/Kg dry	2	D	09/09/16 18:02		SW6010C

Empirical Laboratories, LLC
621 Mainstream Drive, Suite 270 l Nashville, TN 37228 l Main: 615.345.1115 l Fax: 877.345.1113 l www.empirlabs.com

Data and Forms For

Metals

Sample Extraction Data

Prep Method: MET_3050B-SW6010C

Lab Number [Field ID]	Batch	Nominal Initial/Final	Initial [g]	Final [mL]	Dilution	% Solids	Notes	Date
1608229-01 [DSA03-SB17-0010]	6H29010	2.00/100.00	2.05	100	2.00	36.86		09/08/16
1608229-02 [DSA03-SB18-0010]	6H29010	2.00/100.00	2.03	100	2.00	76.40		09/08/16
1608229-03 [DSA03-SB19-0010]	6H29010	2.00/100.00	2.00	100	2.00	80.10		09/08/16
1608229-04 [DSA03-SB20-0010]	6H29010	2.00/100.00	2.03	100	2.00	66.30		09/08/16
1608229-05 [DSA03-SB21-0010]	6H29010	2.00/100.00	2.03	100	2.00	57.61		09/08/16
1608229-06 [DSA03-SB22-0010]	6H29010	2.00/100.00	2.04	100	2.00	49.95		09/08/16
1608229-07 [DSA03-SB23-0010]	6H29010	2.00/100.00	2.03	100	2.00	79.00		09/08/16
1608229-08 [DSA03-SB24-0010]	6H29010	2.00/100.00	2.05	100	2.00	58.85		09/08/16
1608229-09 [DSA05-SB25-0010]	6H29010	2.00/100.00	2.02	100	2.00	34.21		09/08/16
1608229-10 [DSA05-SB26-0010]	6H29010	2.00/100.00	2.00	100	2.00	43.50		09/08/16
1608229-11 [DSA05-SB27-0010]	6H29010	2.00/100.00	2.02	100	2.00	16.32		09/08/16
1608229-12 [DSA05-SB28-0010]	6H29010	2.00/100.00	2.02	100	2.00	38.73		09/08/16

ANALYSIS DATA SHEET

DSA03-SB17-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 10:35
% Solids: 36.86

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-01
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	15700	**13.2**	26.5	52.9	2	D	SW6010C	6H29010	09/09/16 17:05
7440-36-0	Antimony		1.32	2.12	2.65	2	U	SW6010C	6H29010	09/09/16 17:05
7440-38-2	Arsenic	16.9	**0.794**	1.59	2.65	2	D	SW6010C	6H29010	09/09/16 17:05
7440-39-3	Barium	24.7	**1.32**	2.65	10.6	2	D	SW6010C	6H29010	09/09/16 17:05
7440-41-7	Beryllium	0.989	**0.265**	0.529	1.32	2	J D	SW6010C	6H29010	09/09/16 17:05
7440-43-9	Cadmium		0.265	0.529	1.32	2	U	SW6010C	6H29010	09/09/16 17:05
7440-70-2	Calcium	601	**265**	529	1320	2	J D	SW6010C	6H29010	09/09/16 17:05
7440-47-3	Chromium	28.7	**0.529**	1.06	2.65	2	D	SW6010C	6H29010	09/09/16 17:05
7440-48-4	Cobalt	15.6	**1.32**	2.65	3.31	2	D	SW6010C	6H29010	09/09/16 17:05
7440-50-8	Copper	8.21	**1.06**	2.12	2.65	2	D	SW6010C	6H29010	09/09/16 17:05
7439-89-6	Iron	46200	**7.94**	15.9	26.5	2	D	SW6010C	6H29010	09/09/16 17:05
7439-92-1	Lead	8.83	**0.397**	0.794	1.32	2	D	SW6010C	6H29010	09/09/16 17:05
7439-95-4	Magnesium	3470	**265**	794	1320	2	D	SW6010C	6H29010	09/09/16 17:05
7439-96-5	Manganese	173	**0.794**	1.59	3.97	2	D	SW6010C	6H29010	09/09/16 17:05
7439-98-7	Molybdenum	12.4	**1.32**	2.65	5.29	2	D	SW6010C	6H29010	09/09/16 17:05
7440-02-0	Nickel	26.1	**0.794**	1.59	2.65	2	D	SW6010C	6H29010	09/09/16 17:05
7440-09-7	Potassium	2480	**265**	794	1320	2	D	SW6010C	6H29010	09/09/16 17:05
7782-49-2	Selenium		0.794	1.32	2.65	2	U	SW6010C	6H29010	09/09/16 17:05
7440-22-4	Silver		0.529	0.529	2.65	2	M U	SW6010C	6H29010	09/09/16 17:05
7440-23-5	Sodium	2410	**265**	794	1320	2	D	SW6010C	6H29010	09/09/16 17:05
7440-28-0	Thallium		0.794	1.06	2.12	2	U	SW6010C	6H29010	09/09/16 17:05
7440-62-2	Vanadium	46.0	**1.32**	2.65	3.31	2	X D	SW6010C	6H29010	09/09/16 17:05
7440-66-6	Zinc	64.6	**1.32**	2.65	5.29	2	D	SW6010C	6H29010	09/09/16 17:05

ANALYSIS DATA SHEET

DSA03-SB18-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 10:55
% Solids: 76.40

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-02
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	7670	**6.45**	12.9	25.8	2	D	SW6010C	6H29010	09/09/16 17:09
7440-36-0	Antimony		0.645	1.03	1.29	2	U	SW6010C	6H29010	09/09/16 17:09
7440-38-2	Arsenic	8.95	**0.387**	0.774	1.29	2	D	SW6010C	6H29010	09/09/16 17:09
7440-39-3	Barium	8.04	**0.645**	1.29	5.16	2	D	SW6010C	6H29010	09/09/16 17:09
7440-41-7	Beryllium	0.467	**0.129**	0.258	0.645	2	J D	SW6010C	6H29010	09/09/16 17:09
7440-43-9	Cadmium		0.129	0.258	0.645	2	U	SW6010C	6H29010	09/09/16 17:09
7440-70-2	Calcium	151	**129**	258	645	2	J D	SW6010C	6H29010	09/09/16 17:09
7440-47-3	Chromium	21.0	**0.258**	0.516	1.29	2	D	SW6010C	6H29010	09/09/16 17:09
7440-48-4	Cobalt	4.95	**0.645**	1.29	1.61	2	D	SW6010C	6H29010	09/09/16 17:09
7440-50-8	Copper	8.00	**0.516**	1.03	1.29	2	D	SW6010C	6H29010	09/09/16 17:09
7439-89-6	Iron	20500	**3.87**	7.74	12.9	2	D	SW6010C	6H29010	09/09/16 17:09
7439-92-1	Lead	4.70	**0.193**	0.387	0.645	2	D	SW6010C	6H29010	09/09/16 17:09
7439-95-4	Magnesium	2720	**129**	387	645	2	D	SW6010C	6H29010	09/09/16 17:09
7439-96-5	Manganese	67.9	**0.387**	0.774	1.93	2	D	SW6010C	6H29010	09/09/16 17:09
7439-98-7	Molybdenum	0.792	**0.645**	1.29	2.58	2	J D	SW6010C	6H29010	09/09/16 17:09
7440-02-0	Nickel	11.3	**0.387**	0.774	1.29	2	D	SW6010C	6H29010	09/09/16 17:09
7440-09-7	Potassium	1570	**129**	387	645	2	D	SW6010C	6H29010	09/09/16 17:09
7782-49-2	Selenium		0.387	0.645	1.29	2	U	SW6010C	6H29010	09/09/16 17:09
7440-22-4	Silver		0.129	0.258	1.29	2	U	SW6010C	6H29010	09/09/16 17:09
7440-23-5	Sodium	325	**129**	387	645	2	J D	SW6010C	6H29010	09/09/16 17:09
7440-28-0	Thallium	0.496	**0.387**	0.516	1.03	2	J D	SW6010C	6H29010	09/09/16 17:09
7440-62-2	Vanadium	30.9	**0.645**	1.29	1.61	2	X D	SW6010C	6H29010	09/09/16 17:09
7440-66-6	Zinc	40.4	**0.645**	1.29	2.58	2	D	SW6010C	6H29010	09/09/16 17:09

ANALYSIS DATA SHEET

DSA03-SB19-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 11:10
% Solids: 80.10

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-03
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	7980	**6.24**	12.5	25.0	2	D	SW6010C	6H29010	09/09/16 17:13
7440-36-0	Antimony		0.624	0.999	1.25	2	U	SW6010C	6H29010	09/09/16 17:13
7440-38-2	Arsenic	7.09	**0.375**	0.749	1.25	2	D	SW6010C	6H29010	09/09/16 17:13
7440-39-3	Barium	11.3	**0.624**	1.25	4.99	2	D	SW6010C	6H29010	09/09/16 17:13
7440-41-7	Beryllium	0.591	**0.125**	0.250	0.624	2	J D	SW6010C	6H29010	09/09/16 17:13
7440-43-9	Cadmium		0.250	0.250	0.624	2	M U	SW6010C	6H29010	09/09/16 17:13
7440-70-2	Calcium	138	**125**	250	624	2	J D	SW6010C	6H29010	09/09/16 17:13
7440-47-3	Chromium	17.2	**0.250**	0.499	1.25	2	D	SW6010C	6H29010	09/09/16 17:13
7440-48-4	Cobalt	3.75	**0.624**	1.25	1.56	2	D	SW6010C	6H29010	09/09/16 17:13
7440-50-8	Copper	5.93	**0.499**	0.999	1.25	2	D	SW6010C	6H29010	09/09/16 17:13
7439-89-6	Iron	28500	**3.75**	7.49	12.5	2	D	SW6010C	6H29010	09/09/16 17:13
7439-92-1	Lead	5.93	**0.187**	0.375	0.624	2	D	SW6010C	6H29010	09/09/16 17:13
7439-95-4	Magnesium	1680	**125**	375	624	2	D	SW6010C	6H29010	09/09/16 17:13
7439-96-5	Manganese	241	**0.375**	0.749	1.87	2	D	SW6010C	6H29010	09/09/16 17:13
7439-98-7	Molybdenum	0.807	**0.624**	1.25	2.50	2	J D	SW6010C	6H29010	09/09/16 17:13
7440-02-0	Nickel	8.18	**0.375**	0.749	1.25	2	D	SW6010C	6H29010	09/09/16 17:13
7440-09-7	Potassium	1130	**125**	375	624	2	D	SW6010C	6H29010	09/09/16 17:13
7782-49-2	Selenium		0.375	0.624	1.25	2	U	SW6010C	6H29010	09/09/16 17:13
7440-22-4	Silver		0.125	0.250	1.25	2	U	SW6010C	6H29010	09/09/16 17:13
7440-23-5	Sodium	402	**125**	375	624	2	J D	SW6010C	6H29010	09/09/16 17:13
7440-28-0	Thallium	0.445	**0.375**	0.499	0.999	2	J D	SW6010C	6H29010	09/09/16 17:13
7440-62-2	Vanadium	24.5	**0.624**	1.25	1.56	2	X D	SW6010C	6H29010	09/09/16 17:13
7440-66-6	Zinc	35.1	**0.624**	1.25	2.50	2	D	SW6010C	6H29010	09/09/16 17:13

ANALYSIS DATA SHEET

DSA03-SB20-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 11:40
% Solids: 66.30

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-04
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	11400	**7.43**	14.9	29.7	2	D	SW6010C	6H29010	09/09/16 17:18
7440-36-0	Antimony		0.743	1.19	1.49	2	U	SW6010C	6H29010	09/09/16 17:18
7440-38-2	Arsenic	10.8	**0.446**	0.892	1.49	2	D	SW6010C	6H29010	09/09/16 17:18
7440-39-3	Barium	12.0	**0.743**	1.49	5.94	2	D	SW6010C	6H29010	09/09/16 17:18
7440-41-7	Beryllium	1.06	**0.149**	0.297	0.743	2	D	SW6010C	6H29010	09/09/16 17:18
7440-43-9	Cadmium		0.297	0.297	0.743	2	M U	SW6010C	6H29010	09/09/16 17:18
7440-70-2	Calcium	237	**149**	297	743	2	J D	SW6010C	6H29010	09/09/16 17:18
7440-47-3	Chromium	56.6	**0.297**	0.594	1.49	2	D	SW6010C	6H29010	09/09/16 17:18
7440-48-4	Cobalt	7.43	**0.743**	1.49	1.86	2	D	SW6010C	6H29010	09/09/16 17:18
7440-50-8	Copper	11.4	**0.594**	1.19	1.49	2	D	SW6010C	6H29010	09/09/16 17:18
7439-89-6	Iron	49600	**4.46**	8.92	14.9	2	D	SW6010C	6H29010	09/09/16 17:18
7439-92-1	Lead	8.28	**0.223**	0.446	0.743	2	D	SW6010C	6H29010	09/09/16 17:18
7439-95-4	Magnesium	3630	**149**	446	743	2	D	SW6010C	6H29010	09/09/16 17:18
7439-96-5	Manganese	190	**0.446**	0.892	2.23	2	D	SW6010C	6H29010	09/09/16 17:18
7439-98-7	Molybdenum	1.36	**0.743**	1.49	2.97	2	J D	SW6010C	6H29010	09/09/16 17:18
7440-02-0	Nickel	17.0	**0.446**	0.892	1.49	2	D	SW6010C	6H29010	09/09/16 17:18
7440-09-7	Potassium	1700	**149**	446	743	2	D	SW6010C	6H29010	09/09/16 17:18
7782-49-2	Selenium		0.446	0.743	1.49	2	U	SW6010C	6H29010	09/09/16 17:18
7440-22-4	Silver		0.149	0.297	1.49	2	U	SW6010C	6H29010	09/09/16 17:18
7440-23-5	Sodium	1090	**149**	446	743	2	D	SW6010C	6H29010	09/09/16 17:18
7440-28-0	Thallium	0.645	**0.446**	0.594	1.19	2	J D	SW6010C	6H29010	09/09/16 17:18
7440-62-2	Vanadium	48.1	**0.743**	1.49	1.86	2	X D	SW6010C	6H29010	09/09/16 17:18
7440-66-6	Zinc	70.8	**0.743**	1.49	2.97	2	D	SW6010C	6H29010	09/09/16 17:18

ANALYSIS DATA SHEET

DSA03-SB21-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 14:18
% Solids: 57.61

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-05
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	12500	**8.55**	17.1	34.2	2	D	SW6010C	6H29010	09/09/16 17:22
7440-36-0	Antimony	1.42	**0.855**	1.37	1.71	2	J D	SW6010C	6H29010	09/09/16 17:22
7440-38-2	Arsenic	72.1	**0.513**	1.03	1.71	2	D	SW6010C	6H29010	09/09/16 17:22
7440-39-3	Barium	64.8	**0.855**	1.71	6.84	2	D	SW6010C	6H29010	09/09/16 17:22
7440-41-7	Beryllium	0.298	**0.171**	0.342	0.855	2	J D	SW6010C	6H29010	09/09/16 17:22
7440-43-9	Cadmium		0.342	0.342	0.855	2	M U	SW6010C	6H29010	09/09/16 17:22
7440-70-2	Calcium	494	**171**	342	855	2	J D	SW6010C	6H29010	09/09/16 17:22
7440-47-3	Chromium	54.6	**0.342**	0.684	1.71	2	D	SW6010C	6H29010	09/09/16 17:22
7440-48-4	Cobalt	5.08	**0.855**	1.71	2.14	2	D	SW6010C	6H29010	09/09/16 17:22
7440-50-8	Copper	51.5	**0.684**	1.37	1.71	2	D	SW6010C	6H29010	09/09/16 17:22
7439-89-6	Iron	52700	**5.13**	10.3	17.1	2	D	SW6010C	6H29010	09/09/16 17:22
7439-92-1	Lead	97.7	**0.257**	0.513	0.855	2	D	SW6010C	6H29010	09/09/16 17:22
7439-95-4	Magnesium	4010	**171**	513	855	2	D	SW6010C	6H29010	09/09/16 17:22
7439-96-5	Manganese	105	**0.513**	1.03	2.57	2	D	SW6010C	6H29010	09/09/16 17:22
7439-98-7	Molybdenum	2.82	**0.855**	1.71	3.42	2	J D	SW6010C	6H29010	09/09/16 17:22
7440-02-0	Nickel	15.3	**0.513**	1.03	1.71	2	D	SW6010C	6H29010	09/09/16 17:22
7440-09-7	Potassium	3580	**171**	513	855	2	D	SW6010C	6H29010	09/09/16 17:22
7782-49-2	Selenium	5.28	**0.513**	0.855	1.71	2	D	SW6010C	6H29010	09/09/16 17:22
7440-22-4	Silver	1.40	**0.171**	0.342	1.71	2	J D	SW6010C	6H29010	09/09/16 17:22
7440-23-5	Sodium	2610	**171**	513	855	2	D	SW6010C	6H29010	09/09/16 17:22
7440-28-0	Thallium	0.659	**0.513**	0.684	1.37	2	J D	SW6010C	6H29010	09/09/16 17:22
7440-62-2	Vanadium	60.3	**0.855**	1.71	2.14	2	X D	SW6010C	6H29010	09/09/16 17:22
7440-66-6	Zinc	54.5	**0.855**	1.71	3.42	2	D	SW6010C	6H29010	09/09/16 17:22

ANALYSIS DATA SHEET

DSA03-SB22-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 14:48
% Solids: 49.95

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-06
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	21500	**9.81**	19.6	39.3	2	D	SW6010C	6H29010	09/09/16 17:27
7440-36-0	Antimony		0.981	1.57	1.96	2	U	SW6010C	6H29010	09/09/16 17:27
7440-38-2	Arsenic	31.2	**0.589**	1.18	1.96	2	D	SW6010C	6H29010	09/09/16 17:27
7440-39-3	Barium	67.0	**0.981**	1.96	7.85	2	D	SW6010C	6H29010	09/09/16 17:27
7440-41-7	Beryllium	0.674	**0.196**	0.393	0.981	2	J D	SW6010C	6H29010	09/09/16 17:27
7440-43-9	Cadmium		0.196	0.393	0.981	2	U	SW6010C	6H29010	09/09/16 17:27
7440-70-2	Calcium	732	**196**	393	981	2	J D	SW6010C	6H29010	09/09/16 17:27
7440-47-3	Chromium	59.9	**0.393**	0.785	1.96	2	D	SW6010C	6H29010	09/09/16 17:27
7440-48-4	Cobalt	6.32	**0.981**	1.96	2.45	2	D	SW6010C	6H29010	09/09/16 17:27
7440-50-8	Copper	35.0	**0.785**	1.57	1.96	2	D	SW6010C	6H29010	09/09/16 17:27
7439-89-6	Iron	37800	**5.89**	11.8	19.6	2	D	SW6010C	6H29010	09/09/16 17:27
7439-92-1	Lead	62.4	**0.294**	0.589	0.981	2	D	SW6010C	6H29010	09/09/16 17:27
7439-95-4	Magnesium	5610	**196**	589	981	2	D	SW6010C	6H29010	09/09/16 17:27
7439-96-5	Manganese	126	**0.589**	1.18	2.94	2	D	SW6010C	6H29010	09/09/16 17:27
7439-98-7	Molybdenum	2.85	**0.981**	1.96	3.93	2	J D	SW6010C	6H29010	09/09/16 17:27
7440-02-0	Nickel	20.0	**0.589**	1.18	1.96	2	D	SW6010C	6H29010	09/09/16 17:27
7440-09-7	Potassium	4560	**196**	589	981	2	D	SW6010C	6H29010	09/09/16 17:27
7782-49-2	Selenium	1.22	**0.589**	0.981	1.96	2	J D	SW6010C	6H29010	09/09/16 17:27
7440-22-4	Silver		0.196	0.393	1.96	2	U	SW6010C	6H29010	09/09/16 17:27
7440-23-5	Sodium	1120	**196**	589	981	2	D	SW6010C	6H29010	09/09/16 17:27
7440-28-0	Thallium		0.589	0.785	1.57	2	U	SW6010C	6H29010	09/09/16 17:27
7440-62-2	Vanadium	57.3	**0.981**	1.96	2.45	2	X D	SW6010C	6H29010	09/09/16 17:27
7440-66-6	Zinc	65.8	**0.981**	1.96	3.93	2	D	SW6010C	6H29010	09/09/16 17:27

ANALYSIS DATA SHEET

DSA03-SB23-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 15:22
% Solids: 79.00

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-07
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	9190	**6.24**	12.5	24.9	2	D	SW6010C	6H29010	09/09/16 17:31
7440-36-0	Antimony		0.624	0.998	1.25	2	U	SW6010C	6H29010	09/09/16 17:31
7440-38-2	Arsenic	9.00	**0.374**	0.748	1.25	2	D	SW6010C	6H29010	09/09/16 17:31
7440-39-3	Barium	13.3	**0.624**	1.25	4.99	2	D	SW6010C	6H29010	09/09/16 17:31
7440-41-7	Beryllium	0.916	**0.125**	0.249	0.624	2	D	SW6010C	6H29010	09/09/16 17:31
7440-43-9	Cadmium		0.249	0.249	0.624	2	M U	SW6010C	6H29010	09/09/16 17:31
7440-70-2	Calcium	491	**125**	249	624	2	J D	SW6010C	6H29010	09/09/16 17:31
7440-47-3	Chromium	19.4	**0.249**	0.499	1.25	2	D	SW6010C	6H29010	09/09/16 17:31
7440-48-4	Cobalt	4.21	**0.624**	1.25	1.56	2	D	SW6010C	6H29010	09/09/16 17:31
7440-50-8	Copper	6.78	**0.499**	0.998	1.25	2	D	SW6010C	6H29010	09/09/16 17:31
7439-89-6	Iron	30000	**3.74**	7.48	12.5	2	D	SW6010C	6H29010	09/09/16 17:31
7439-92-1	Lead	6.10	**0.187**	0.374	0.624	2	D	SW6010C	6H29010	09/09/16 17:31
7439-95-4	Magnesium	2100	**125**	374	624	2	D	SW6010C	6H29010	09/09/16 17:31
7439-96-5	Manganese	220	**0.374**	0.748	1.87	2	D	SW6010C	6H29010	09/09/16 17:31
7439-98-7	Molybdenum	1.13	**0.624**	1.25	2.49	2	J D	SW6010C	6H29010	09/09/16 17:31
7440-02-0	Nickel	9.44	**0.374**	0.748	1.25	2	D	SW6010C	6H29010	09/09/16 17:31
7440-09-7	Potassium	1510	**125**	374	624	2	D	SW6010C	6H29010	09/09/16 17:31
7782-49-2	Selenium		0.374	0.624	1.25	2	U	SW6010C	6H29010	09/09/16 17:31
7440-22-4	Silver		0.125	0.249	1.25	2	U	SW6010C	6H29010	09/09/16 17:31
7440-23-5	Sodium	320	**125**	374	624	2	J D	SW6010C	6H29010	09/09/16 17:31
7440-28-0	Thallium	0.411	**0.374**	0.499	0.998	2	J D	SW6010C	6H29010	09/09/16 17:31
7440-62-2	Vanadium	29.1	**0.624**	1.25	1.56	2	X D	SW6010C	6H29010	09/09/16 17:31
7440-66-6	Zinc	39.9	**0.624**	1.25	2.49	2	D	SW6010C	6H29010	09/09/16 17:31

ANALYSIS DATA SHEET

DSA03-SB24-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 15:45
% Solids: 58.85

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-08
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	10700	**8.29**	16.6	33.2	2	D	SW6010C	6H29010	09/09/16 17:35
7440-36-0	Antimony		0.829	1.33	1.66	2	U	SW6010C	6H29010	09/09/16 17:35
7440-38-2	Arsenic	19.7	**0.497**	0.995	1.66	2	D	SW6010C	6H29010	09/09/16 17:35
7440-39-3	Barium	18.3	**0.829**	1.66	6.63	2	D	SW6010C	6H29010	09/09/16 17:35
7440-41-7	Beryllium	0.845	**0.166**	0.332	0.829	2	D	SW6010C	6H29010	09/09/16 17:35
7440-43-9	Cadmium		0.166	0.332	0.829	2	U	SW6010C	6H29010	09/09/16 17:35
7440-70-2	Calcium	1330	**166**	332	829	2	D	SW6010C	6H29010	09/09/16 17:35
7440-47-3	Chromium	24.2	**0.332**	0.663	1.66	2	D	SW6010C	6H29010	09/09/16 17:35
7440-48-4	Cobalt	12.7	**0.829**	1.66	2.07	2	D	SW6010C	6H29010	09/09/16 17:35
7440-50-8	Copper	9.26	**0.663**	1.33	1.66	2	D	SW6010C	6H29010	09/09/16 17:35
7439-89-6	Iron	49700	**4.97**	9.95	16.6	2	D	SW6010C	6H29010	09/09/16 17:35
7439-92-1	Lead	9.33	**0.249**	0.497	0.829	2	D	SW6010C	6H29010	09/09/16 17:35
7439-95-4	Magnesium	3710	**166**	497	829	2	D	SW6010C	6H29010	09/09/16 17:35
7439-96-5	Manganese	227	**0.497**	0.995	2.49	2	D	SW6010C	6H29010	09/09/16 17:35
7439-98-7	Molybdenum	6.81	**0.829**	1.66	3.32	2	D	SW6010C	6H29010	09/09/16 17:35
7440-02-0	Nickel	18.0	**0.497**	0.995	1.66	2	D	SW6010C	6H29010	09/09/16 17:35
7440-09-7	Potassium	2090	**166**	497	829	2	D	SW6010C	6H29010	09/09/16 17:35
7782-49-2	Selenium		0.497	0.829	1.66	2	U	SW6010C	6H29010	09/09/16 17:35
7440-22-4	Silver		0.332	0.332	1.66	2	M U	SW6010C	6H29010	09/09/16 17:35
7440-23-5	Sodium	650	**166**	497	829	2	J D	SW6010C	6H29010	09/09/16 17:35
7440-28-0	Thallium		0.497	0.663	1.33	2	U	SW6010C	6H29010	09/09/16 17:35
7440-62-2	Vanadium	37.2	**0.829**	1.66	2.07	2	X D	SW6010C	6H29010	09/09/16 17:35
7440-66-6	Zinc	58.0	**0.829**	1.66	3.32	2	D	SW6010C	6H29010	09/09/16 17:35

ANALYSIS DATA SHEET

DSA05-SB25-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/23/16 10:30
% Solids: 34.21

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-09
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	5430	**14.5**	28.9	57.9	2	D	SW6010C	6H29010	09/09/16 17:40
7440-36-0	Antimony		1.45	2.32	2.89	2	U	SW6010C	6H29010	09/09/16 17:40
7440-38-2	Arsenic	2.24	**0.868**	1.74	2.89	2	J D	SW6010C	6H29010	09/09/16 17:40
7440-39-3	Barium	11.8	**1.45**	2.89	11.6	2	D	SW6010C	6H29010	09/09/16 17:40
7440-41-7	Beryllium	0.302	**0.289**	0.579	1.45	2	J D	SW6010C	6H29010	09/09/16 17:40
7440-43-9	Cadmium		0.289	0.579	1.45	2	U	SW6010C	6H29010	09/09/16 17:40
7440-70-2	Calcium	2550	**289**	579	1450	2	D	SW6010C	6H29010	09/09/16 17:40
7440-47-3	Chromium	12.2	**0.579**	1.16	2.89	2	D	SW6010C	6H29010	09/09/16 17:40
7440-48-4	Cobalt	1.89	**1.45**	2.89	3.62	2	J D	SW6010C	6H29010	09/09/16 17:40
7440-50-8	Copper	4.66	**1.16**	2.32	2.89	2	D	SW6010C	6H29010	09/09/16 17:40
7439-89-6	Iron	7570	**8.68**	17.4	28.9	2	D	SW6010C	6H29010	09/09/16 17:40
7439-92-1	Lead	4.18	**0.434**	0.868	1.45	2	D	SW6010C	6H29010	09/09/16 17:40
7439-95-4	Magnesium	4520	**289**	868	1450	2	D	SW6010C	6H29010	09/09/16 17:40
7439-96-5	Manganese	53.1	**0.868**	1.74	4.34	2	D	SW6010C	6H29010	09/09/16 17:40
7439-98-7	Molybdenum	2.23	**1.45**	2.89	5.79	2	J D	SW6010C	6H29010	09/09/16 17:40
7440-02-0	Nickel	5.30	**0.868**	1.74	2.89	2	D	SW6010C	6H29010	09/09/16 17:40
7440-09-7	Potassium	1640	**289**	868	1450	2	D	SW6010C	6H29010	09/09/16 17:40
7782-49-2	Selenium		0.868	1.45	2.89	2	U	SW6010C	6H29010	09/09/16 17:40
7440-22-4	Silver		0.579	0.579	2.89	2	M U	SW6010C	6H29010	09/09/16 17:40
7440-23-5	Sodium	17000	**289**	868	1450	2	D	SW6010C	6H29010	09/09/16 17:40
7440-28-0	Thallium		0.868	1.16	2.32	2	U	SW6010C	6H29010	09/09/16 17:40
7440-62-2	Vanadium	16.4	**1.45**	2.89	3.62	2	X D	SW6010C	6H29010	09/09/16 17:40
7440-66-6	Zinc	18.1	**1.45**	2.89	5.79	2	D	SW6010C	6H29010	09/09/16 17:40

ANALYSIS DATA SHEET

DSA05-SB26-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/23/16 11:01
% Solids: 43.50

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-10
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	22000	**11.5**	23.0	46.0	2	D	SW6010C	6H29010	09/09/16 17:44
7440-36-0	Antimony		1.15	1.84	2.30	2	U	SW6010C	6H29010	09/09/16 17:44
7440-38-2	Arsenic	13.9	**0.690**	1.38	2.30	2	D	SW6010C	6H29010	09/09/16 17:44
7440-39-3	Barium	40.9	**1.15**	2.30	9.20	2	D	SW6010C	6H29010	09/09/16 17:44
7440-41-7	Beryllium	1.17	**0.230**	0.460	1.15	2	D	SW6010C	6H29010	09/09/16 17:44
7440-43-9	Cadmium		0.230	0.460	1.15	2	U	SW6010C	6H29010	09/09/16 17:44
7440-70-2	Calcium	2350	**230**	460	1150	2	D	SW6010C	6H29010	09/09/16 17:44
7440-47-3	Chromium	49.0	**0.460**	0.920	2.30	2	D	SW6010C	6H29010	09/09/16 17:44
7440-48-4	Cobalt	12.6	**1.15**	2.30	2.87	2	D	SW6010C	6H29010	09/09/16 17:44
7440-50-8	Copper	19.0	**0.920**	1.84	2.30	2	D	SW6010C	6H29010	09/09/16 17:44
7439-89-6	Iron	46500	**6.90**	13.8	23.0	2	D	SW6010C	6H29010	09/09/16 17:44
7439-92-1	Lead	17.7	**0.345**	0.690	1.15	2	D	SW6010C	6H29010	09/09/16 17:44
7439-95-4	Magnesium	9280	**230**	690	1150	2	D	SW6010C	6H29010	09/09/16 17:44
7439-96-5	Manganese	284	**0.690**	1.38	3.45	2	D	SW6010C	6H29010	09/09/16 17:44
7439-98-7	Molybdenum	1.73	**1.15**	2.30	4.60	2	J D	SW6010C	6H29010	09/09/16 17:44
7440-02-0	Nickel	30.2	**0.690**	1.38	2.30	2	D	SW6010C	6H29010	09/09/16 17:44
7440-09-7	Potassium	4400	**230**	690	1150	2	D	SW6010C	6H29010	09/09/16 17:44
7782-49-2	Selenium		0.690	1.15	2.30	2	U	SW6010C	6H29010	09/09/16 17:44
7440-22-4	Silver		0.460	0.460	2.30	2	M U	SW6010C	6H29010	09/09/16 17:44
7440-23-5	Sodium	10300	**230**	690	1150	2	D	SW6010C	6H29010	09/09/16 17:44
7440-28-0	Thallium		0.690	0.920	1.84	2	U	SW6010C	6H29010	09/09/16 17:44
7440-62-2	Vanadium	52.4	**1.15**	2.30	2.87	2	X D	SW6010C	6H29010	09/09/16 17:44
7440-66-6	Zinc	103	**1.15**	2.30	4.60	2	D	SW6010C	6H29010	09/09/16 17:44

ANALYSIS DATA SHEET

DSA05-SB27-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/23/16 12:55
% Solids: 16.32

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-11
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	20600	**30.3**	60.7	121	2	D	SW6010C	6H29010	09/09/16 17:57
7440-36-0	Antimony		3.03	4.85	6.07	2	U	SW6010C	6H29010	09/09/16 17:57
7440-38-2	Arsenic	19.1	**1.82**	3.64	6.07	2	D	SW6010C	6H29010	09/09/16 17:57
7440-39-3	Barium	41.6	**3.03**	6.07	24.3	2	D	SW6010C	6H29010	09/09/16 17:57
7440-41-7	Beryllium	1.15	**0.607**	1.21	3.03	2	J D	SW6010C	6H29010	09/09/16 17:57
7440-43-9	Cadmium		0.607	1.21	3.03	2	U	SW6010C	6H29010	09/09/16 17:57
7440-70-2	Calcium	5890	**607**	1210	3030	2	D	SW6010C	6H29010	09/09/16 17:57
7440-47-3	Chromium	40.1	**1.21**	2.43	6.07	2	X D	SW6010C	6H29010	09/09/16 17:57
7440-48-4	Cobalt	7.14	**3.03**	6.07	7.58	2	J D	SW6010C	6H29010	09/09/16 17:57
7440-50-8	Copper	28.6	**2.43**	4.85	6.07	2	D	SW6010C	6H29010	09/09/16 17:57
7439-89-6	Iron	36400	**18.2**	36.4	60.7	2	D	SW6010C	6H29010	09/09/16 17:57
7439-92-1	Lead	22.8	**0.910**	1.82	3.03	2	D	SW6010C	6H29010	09/09/16 17:57
7439-95-4	Magnesium	11000	**607**	1820	3030	2	D	SW6010C	6H29010	09/09/16 17:57
7439-96-5	Manganese	113	**1.82**	3.64	9.10	2	D	SW6010C	6H29010	09/09/16 17:57
7439-98-7	Molybdenum	6.35	**3.03**	6.07	12.1	2	J D	SW6010C	6H29010	09/09/16 17:57
7440-02-0	Nickel	27.1	**1.82**	3.64	6.07	2	D	SW6010C	6H29010	09/09/16 17:57
7440-09-7	Potassium	4560	**607**	1820	3030	2	D	SW6010C	6H29010	09/09/16 17:57
7782-49-2	Selenium		1.82	3.03	6.07	2	U	SW6010C	6H29010	09/09/16 17:57
7440-22-4	Silver		1.21	1.21	6.07	2	M U	SW6010C	6H29010	09/09/16 17:57
7440-23-5	Sodium	35500	**607**	1820	3030	2	D	SW6010C	6H29010	09/09/16 17:57
7440-28-0	Thallium		1.82	2.43	4.85	2	U	SW6010C	6H29010	09/09/16 17:57
7440-62-2	Vanadium	51.5	**3.03**	6.07	7.58	2	X D	SW6010C	6H29010	09/09/16 17:57
7440-66-6	Zinc	81.3	**3.03**	6.07	12.1	2	D	SW6010C	6H29010	09/09/16 17:57

ANALYSIS DATA SHEET

DSA05-SB28-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/23/16 13:16
% Solids: 38.73

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-12
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	20400	**12.8**	25.6	51.1	2	D	SW6010C	6H29010	09/09/16 18:02
7440-36-0	Antimony		1.28	2.05	2.56	2	U	SW6010C	6H29010	09/09/16 18:02
7440-38-2	Arsenic	13.3	**0.767**	1.53	2.56	2	D	SW6010C	6H29010	09/09/16 18:02
7440-39-3	Barium	37.0	**1.28**	2.56	10.2	2	D	SW6010C	6H29010	09/09/16 18:02
7440-41-7	Beryllium	1.17	**0.256**	0.511	1.28	2	J D	SW6010C	6H29010	09/09/16 18:02
7440-43-9	Cadmium		0.256	0.511	1.28	2	U	SW6010C	6H29010	09/09/16 18:02
7440-70-2	Calcium	2650	**256**	511	1280	2	D	SW6010C	6H29010	09/09/16 18:02
7440-47-3	Chromium	40.0	**0.511**	1.02	2.56	2	X D	SW6010C	6H29010	09/09/16 18:02
7440-48-4	Cobalt	9.24	**1.28**	2.56	3.20	2	D	SW6010C	6H29010	09/09/16 18:02
7440-50-8	Copper	13.8	**1.02**	2.05	2.56	2	D	SW6010C	6H29010	09/09/16 18:02
7439-89-6	Iron	35700	**7.67**	15.3	25.6	2	D	SW6010C	6H29010	09/09/16 18:02
7439-92-1	Lead	13.8	**0.383**	0.767	1.28	2	D	SW6010C	6H29010	09/09/16 18:02
7439-95-4	Magnesium	8750	**256**	767	1280	2	D	SW6010C	6H29010	09/09/16 18:02
7439-96-5	Manganese	217	**0.767**	1.53	3.83	2	D	SW6010C	6H29010	09/09/16 18:02
7439-98-7	Molybdenum	2.18	**1.28**	2.56	5.11	2	J D	SW6010C	6H29010	09/09/16 18:02
7440-02-0	Nickel	25.5	**0.767**	1.53	2.56	2	D	SW6010C	6H29010	09/09/16 18:02
7440-09-7	Potassium	4170	**256**	767	1280	2	D	SW6010C	6H29010	09/09/16 18:02
7782-49-2	Selenium		0.767	1.28	2.56	2	U	SW6010C	6H29010	09/09/16 18:02
7440-22-4	Silver		0.511	0.511	2.56	2	M U	SW6010C	6H29010	09/09/16 18:02
7440-23-5	Sodium	12600	**256**	767	1280	2	D	SW6010C	6H29010	09/09/16 18:02
7440-28-0	Thallium		0.767	1.02	2.05	2	U	SW6010C	6H29010	09/09/16 18:02
7440-62-2	Vanadium	47.0	**1.28**	2.56	3.20	2	X D	SW6010C	6H29010	09/09/16 18:02
7440-66-6	Zinc	79.4	**1.28**	2.56	5.11	2	D	SW6010C	6H29010	09/09/16 18:02

ANALYSIS DATA SHEET

Blank

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
% Solids:

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 6H29010-BLK1

CAS NO.	Analyte	Conc. (mg/Kg wet)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	ND	2.50	5.00	10.0	1	U	SW6010C	6H29010	09/09/16 16:56
7440-36-0	Antimony	ND	0.250	0.400	0.500	1	U	SW6010C	6H29010	09/09/16 16:56
7440-38-2	Arsenic	ND	0.150	0.300	0.500	1	U	SW6010C	6H29010	09/09/16 16:56
7440-39-3	Barium	ND	0.250	0.500	2.00	1	U	SW6010C	6H29010	09/09/16 16:56
7440-41-7	Beryllium	ND	0.0500	0.100	0.250	1	U	SW6010C	6H29010	09/09/16 16:56
7440-43-9	Cadmium	ND	0.0500	0.100	0.250	1	U	SW6010C	6H29010	09/09/16 16:56
7440-70-2	Calcium	ND	50.0	100	250	1	U	SW6010C	6H29010	09/09/16 16:56
7440-47-3	Chromium	ND	0.100	0.200	0.500	1	U	SW6010C	6H29010	09/09/16 16:56
7440-48-4	Cobalt	ND	0.250	0.500	0.625	1	U	SW6010C	6H29010	09/09/16 16:56
7440-50-8	Copper	ND	0.200	0.400	0.500	1	U	SW6010C	6H29010	09/09/16 16:56
7439-89-6	Iron	ND	1.50	3.00	5.00	1	U	SW6010C	6H29010	09/09/16 16:56
7439-92-1	Lead	ND	0.0750	0.150	0.250	1	U	SW6010C	6H29010	09/09/16 16:56
7439-95-4	Magnesium	ND	50.0	150	250	1	U	SW6010C	6H29010	09/09/16 16:56
7439-96-5	Manganese	ND	0.150	0.300	0.750	1	U	SW6010C	6H29010	09/09/16 16:56
7439-98-7	Molybdenum	ND	0.250	0.500	1.00	1	U	SW6010C	6H29010	09/09/16 16:56
7440-02-0	Nickel	ND	0.150	0.300	0.500	1	U	SW6010C	6H29010	09/09/16 16:56
7440-09-7	Potassium	ND	50.0	150	250	1	U	SW6010C	6H29010	09/09/16 16:56
7782-49-2	Selenium	ND	0.150	0.250	0.500	1	U	SW6010C	6H29010	09/09/16 16:56
7440-22-4	Silver	ND	0.0500	0.100	0.500	1	U	SW6010C	6H29010	09/09/16 16:56
7440-23-5	Sodium	ND	50.0	150	250	1	U	SW6010C	6H29010	09/09/16 16:56
7440-28-0	Thallium	ND	0.150	0.200	0.400	1	U	SW6010C	6H29010	09/09/16 16:56
7440-62-2	Vanadium	ND	0.250	0.500	0.625	1	X U	SW6010C	6H29010	09/09/16 16:56
7440-66-6	Zinc	0.351	**0.250**	0.500	1.00	1	J	SW6010C	6H29010	09/09/16 16:56

ANALYSIS DATA SHEET

LCS

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Matrix: Solid
Laboratory ID: 6H29010-BS1
% Solids:

CAS NO.	Analyte	Conc. (mg/Kg wet)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	99.94	**2.50**	5.00	10.0	1		SW6010C	6H29010	09/09/16 17:00
7440-36-0	Antimony	12.00	**0.250**	0.400	0.500	1		SW6010C	6H29010	09/09/16 17:00
7440-38-2	Arsenic	12.25	**0.150**	0.300	0.500	1		SW6010C	6H29010	09/09/16 17:00
7440-39-3	Barium	95.68	**0.250**	0.500	2.00	1		SW6010C	6H29010	09/09/16 17:00
7440-41-7	Beryllium	2.557	**0.0500**	0.100	0.250	1		SW6010C	6H29010	09/09/16 17:00
7440-43-9	Cadmium	6.625	**0.0500**	0.100	0.250	1		SW6010C	6H29010	09/09/16 17:00
7440-70-2	Calcium	272.6	**50.0**	100	250	1		SW6010C	6H29010	09/09/16 17:00
7440-47-3	Chromium	11.30	**0.100**	0.200	0.500	1		SW6010C	6H29010	09/09/16 17:00
7440-48-4	Cobalt	25.06	**0.250**	0.500	0.625	1		SW6010C	6H29010	09/09/16 17:00
7440-50-8	Copper	12.67	**0.200**	0.400	0.500	1		SW6010C	6H29010	09/09/16 17:00
7439-89-6	Iron	55.34	**1.50**	3.00	5.00	1		SW6010C	6H29010	09/09/16 17:00
7439-92-1	Lead	11.90	**0.0750**	0.150	0.250	1		SW6010C	6H29010	09/09/16 17:00
7439-95-4	Magnesium	263.7	**50.0**	150	250	1		SW6010C	6H29010	09/09/16 17:00
7439-96-5	Manganese	24.90	**0.150**	0.300	0.750	1		SW6010C	6H29010	09/09/16 17:00
7439-98-7	Molybdenum	52.32	**0.250**	0.500	1.00	1		SW6010C	6H29010	09/09/16 17:00
7440-02-0	Nickel	24.56	**0.150**	0.300	0.500	1		SW6010C	6H29010	09/09/16 17:00
7440-09-7	Potassium	240.5	**50.0**	150	250	1	J	SW6010C	6H29010	09/09/16 17:00
7782-49-2	Selenium	12.16	**0.150**	0.250	0.500	1		SW6010C	6H29010	09/09/16 17:00
7440-22-4	Silver	11.90	**0.0500**	0.100	0.500	1		SW6010C	6H29010	09/09/16 17:00
7440-23-5	Sodium	251.9	**50.0**	150	250	1		SW6010C	6H29010	09/09/16 17:00
7440-28-0	Thallium	12.50	**0.150**	0.200	0.400	1		SW6010C	6H29010	09/09/16 17:00
7440-62-2	Vanadium	28.02	**0.250**	0.500	0.625	1	X	SW6010C	6H29010	09/09/16 17:00
7440-66-6	Zinc	27.24	**0.250**	0.500	1.00	1		SW6010C	6H29010	09/09/16 17:00

INITIAL AND CONTINUING CALIBRATION CHECK

SW6010C

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP
SDG: 1608229
Project: Raritan Arsenal - Phase III
Calibration: 6253002
Sequence: 6I25301

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
6I25301-ICV1	Aluminum	10000	9760	97.6	ug/L	+/- 10.00%
	Antimony	1000	1016	102	ug/L	+/- 10.00%
	Arsenic	1000	1052	105	ug/L	+/- 10.00%
	Barium	1000	981.3	98.1	ug/L	+/- 10.00%
	Beryllium	1000	1042	104	ug/L	+/- 10.00%
	Cadmium	1000	1018	102	ug/L	+/- 10.00%
	Calcium	50000	52860	106	ug/L	+/- 10.00%
	Chromium	1000	997.2	99.7	ug/L	+/- 10.00%
	Cobalt	1000	953.7	95.4	ug/L	+/- 10.00%
	Copper	1000	1066	107	ug/L	+/- 10.00%
	Iron	10000	10210	102	ug/L	+/- 10.00%
	Lead	1000	966.7	96.7	ug/L	+/- 10.00%
	Magnesium	50000	48650	97.3	ug/L	+/- 10.00%
	Manganese	1000	1005	100	ug/L	+/- 10.00%
	Molybdenum	1000	1017	102	ug/L	+/- 10.00%
	Nickel	1000	991.0	99.1	ug/L	+/- 10.00%
	Potassium	10000	9689	96.9	ug/L	+/- 10.00%
	Selenium	1000	1043	104	ug/L	+/- 10.00%
	Silver	500.0	488.4	97.7	ug/L	+/- 10.00%
	Sodium	50000	48140	96.3	ug/L	+/- 10.00%
	Thallium	1000	1020	102	ug/L	+/- 10.00%
	Vanadium	1000	1044	104	ug/L	+/- 10.00%
	Zinc	1000	1013	101	ug/L	+/- 10.00%
6I25301-CCV1	Aluminum	10000	9883	98.8	ug/L	+/- 10.00%
	Antimony	1000	996.2	99.6	ug/L	+/- 10.00%
	Arsenic	1000	1031	103	ug/L	+/- 10.00%
	Barium	1000	970.9	97.1	ug/L	+/- 10.00%
	Beryllium	1000	1030	103	ug/L	+/- 10.00%
	Cadmium	1000	1020	102	ug/L	+/- 10.00%
	Calcium	50000	50850	102	ug/L	+/- 10.00%
	Chromium	1000	981.6	98.2	ug/L	+/- 10.00%
	Cobalt	1000	957.7	95.8	ug/L	+/- 10.00%
	Copper	1000	1025	102	ug/L	+/- 10.00%
	Iron	10000	9943	99.4	ug/L	+/- 10.00%
	Lead	1000	963.0	96.3	ug/L	+/- 10.00%
	Magnesium	50000	48140	96.3	ug/L	+/- 10.00%
	Manganese	1000	988.5	98.9	ug/L	+/- 10.00%
	Molybdenum	1000	1006	101	ug/L	+/- 10.00%
	Nickel	1000	985.9	98.6	ug/L	+/- 10.00%

INITIAL AND CONTINUING CALIBRATION CHECK

SW6010C

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP

SDG: 1608229
Project: Raritan Arsenal - Phase III
Calibration: 6253002
Sequence: 6I25301

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
6I25301-CCV1	Potassium	10000	9563	95.6	ug/L	+/- 10.00%
	Selenium	1000	1026	103	ug/L	+/- 10.00%
	Silver	500.0	476.0	95.2	ug/L	+/- 10.00%
	Sodium	50000	47880	95.8	ug/L	+/- 10.00%
	Thallium	1000	1001	100	ug/L	+/- 10.00%
	Vanadium	1000	1005	101	ug/L	+/- 10.00%
	Zinc	1000	995.2	99.5	ug/L	+/- 10.00%
6I25301-CCV6	Aluminum	10000	9729	97.3	ug/L	+/- 10.00%
	Antimony	1000	979.7	98.0	ug/L	+/- 10.00%
	Arsenic	1000	1005	100	ug/L	+/- 10.00%
	Barium	1000	922.8	92.3	ug/L	+/- 10.00%
	Beryllium	1000	1051	105	ug/L	+/- 10.00%
	Cadmium	1000	1046	105	ug/L	+/- 10.00%
	Calcium	50000	51880	104	ug/L	+/- 10.00%
	Chromium	1000	1101	110	ug/L	+/- 10.00%
	Cobalt	1000	943.8	94.4	ug/L	+/- 10.00%
	Copper	1000	1022	102	ug/L	+/- 10.00%
	Iron	10000	10540	105	ug/L	+/- 10.00%
	Lead	1000	925.8	92.6	ug/L	+/- 10.00%
	Magnesium	50000	49440	98.9	ug/L	+/- 10.00%
	Manganese	1000	955.4	95.5	ug/L	+/- 10.00%
	Molybdenum	1000	1038	104	ug/L	+/- 10.00%
	Nickel	1000	935.6	93.6	ug/L	+/- 10.00%
	Potassium	10000	9708	97.1	ug/L	+/- 10.00%
	Selenium	1000	1037	104	ug/L	+/- 10.00%
	Silver	500.0	484.5	96.9	ug/L	+/- 10.00%
	Sodium	50000	48140	96.3	ug/L	+/- 10.00%
	Thallium	1000	975.1	97.5	ug/L	+/- 10.00%
	Vanadium	**1000**	**1110**	**111**	**ug/L**	+/- 10.00%
	Zinc	1000	1047	105	ug/L	+/- 10.00%
6I25301-CCV7	Aluminum	10000	9546	95.5	ug/L	+/- 10.00%
	Antimony	1000	973.6	97.4	ug/L	+/- 10.00%
	Arsenic	1000	1001	100	ug/L	+/- 10.00%
	Barium	1000	918.7	91.9	ug/L	+/- 10.00%
	Beryllium	1000	1043	104	ug/L	+/- 10.00%
	Cadmium	1000	1059	106	ug/L	+/- 10.00%
	Calcium	50000	51690	103	ug/L	+/- 10.00%
	Chromium	1000	1099	110	ug/L	+/- 10.00%
	Cobalt	1000	945.5	94.6	ug/L	+/- 10.00%

INITIAL AND CONTINUING CALIBRATION CHECK

SW6010C

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP
SDG: 1608229
Project: Raritan Arsenal - Phase III
Calibration: 6253002
Sequence: 6I25301

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
6I25301-CCV7	Copper	1000	1009	101	ug/L	+/- 10.00%
	Iron	10000	10360	104	ug/L	+/- 10.00%
	Lead	1000	924.1	92.4	ug/L	+/- 10.00%
	Magnesium	50000	49100	98.2	ug/L	+/- 10.00%
	Manganese	1000	957.1	95.7	ug/L	+/- 10.00%
	Molybdenum	1000	1033	103	ug/L	+/- 10.00%
	Nickel	1000	929.9	93.0	ug/L	+/- 10.00%
	Potassium	10000	9520	95.2	ug/L	+/- 10.00%
	Selenium	1000	1049	105	ug/L	+/- 10.00%
	Silver	500.0	471.4	94.3	ug/L	+/- 10.00%
	Sodium	50000	47230	94.5	ug/L	+/- 10.00%
	Thallium	1000	973.4	97.3	ug/L	+/- 10.00%
	Vanadium	1000	1097	110	ug/L	+/- 10.00%
	Zinc	1000	1054	105	ug/L	+/- 10.00%
6I25301-CCV8	Aluminum	10000	9736	97.4	ug/L	+/- 10.00%
	Antimony	1000	975.6	97.6	ug/L	+/- 10.00%
	Arsenic	1000	1001	100	ug/L	+/- 10.00%
	Barium	1000	922.1	92.2	ug/L	+/- 10.00%
	Beryllium	1000	1057	106	ug/L	+/- 10.00%
	Cadmium	1000	1046	105	ug/L	+/- 10.00%
	Calcium	50000	52310	105	ug/L	+/- 10.00%
	Chromium	**1000**	**1125**	**112**	**ug/L**	+/- 10.00%
	Cobalt	1000	945.9	94.6	ug/L	+/- 10.00%
	Copper	1000	1022	102	ug/L	+/- 10.00%
	Iron	10000	10730	107	ug/L	+/- 10.00%
	Lead	1000	926.7	92.7	ug/L	+/- 10.00%
	Magnesium	50000	49980	100	ug/L	+/- 10.00%
	Manganese	1000	955.1	95.5	ug/L	+/- 10.00%
	Molybdenum	1000	1038	104	ug/L	+/- 10.00%
	Nickel	1000	930.4	93.0	ug/L	+/- 10.00%
	Potassium	10000	9736	97.4	ug/L	+/- 10.00%
	Selenium	1000	1035	103	ug/L	+/- 10.00%
	Silver	500.0	490.8	98.2	ug/L	+/- 10.00%
	Sodium	50000	49510	99.0	ug/L	+/- 10.00%
	Thallium	1000	975.6	97.6	ug/L	+/- 10.00%
	Vanadium	**1000**	**1127**	**113**	**ug/L**	+/- 10.00%
	Zinc	1000	1049	105	ug/L	+/- 10.00%

CRDL STANDARD

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Instrument ID: ME-ICP
Calibration: 6253002
Sequence: 6I25301

Lab Sample ID	Analyte	True	Found	%R	Units	QC Limts
6I25301-CRL1	Aluminum	200.0	201.4	101	ug/L	80 - 120
	Antimony	10.00	11.72	117	ug/L	80 - 120
	Arsenic	5.000	5.737	115	ug/L	80 - 120
	Barium	10.00	10.19	102	ug/L	80 - 120
	Beryllium	2.000	2.091	105	ug/L	80 - 120
	Cadmium	2.000	2.082	104	ug/L	80 - 120
	Calcium	2000	2146	107	ug/L	80 - 120
	Chromium	4.000	3.713	92.8	ug/L	80 - 120
	Cobalt	10.00	10.71	107	ug/L	80 - 120
	Copper	10.00	10.97	110	ug/L	80 - 120
	Iron	100.0	116.8	117	ug/L	80 - 120
	Lead	3.000	3.106	104	ug/L	80 - 120
	Magnesium	3000	3179	106	ug/L	80 - 120
	Manganese	6.000	6.482	108	ug/L	80 - 120
	Molybdenum	10.00	10.60	106	ug/L	80 - 120
	Nickel	6.000	6.087	101	ug/L	80 - 120
	Potassium	3000	2941	98.0	ug/L	80 - 120
	Selenium	5.000	4.275	85.5	ug/L	80 - 120
	Silver	3.000	2.589	86.3	ug/L	80 - 120
	Sodium	3000	3085	103	ug/L	80 - 120
	Vanadium	10.00	9.678	96.8	ug/L	80 - 120
	Zinc	10.00	10.67	107	ug/L	80 - 120
6I25301-CRL2	Thallium	8.000	9.229	115	ug/L	80 - 120

BLANKS
SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP
Project: Raritan Arsenal - Phase III
Sequence: 6I25301
Calibration: 6253002

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
6I25301-ICB1	Aluminum	-7.233	50.0	200	ug/L	U	SW6010C
	Antimony	3.640	5.00	10.0	ug/L	U	SW6010C
	Arsenic	1.135	3.00	10.0	ug/L	U	SW6010C
	Barium	0.09826	5.00	40.0	ug/L	U	SW6010C
	Beryllium	0.1624	1.00	5.00	ug/L	U	SW6010C
	Cadmium	-0.002610	1.00	5.00	ug/L	U	SW6010C
	Calcium	1.760	1000	5000	ug/L	U	SW6010C
	Chromium	0.06311	2.00	10.0	ug/L	U	SW6010C
	Cobalt	0.2625	5.00	12.5	ug/L	U	SW6010C
	Copper	0.9346	4.00	10.0	ug/L	U	SW6010C
	Iron	12.99	30.0	100	ug/L	U	SW6010C
	Lead	0.1876	1.50	5.00	ug/L	U	SW6010C
	Magnesium	-1.860	1000	5000	ug/L	U	SW6010C
	Manganese	0.02616	3.00	15.0	ug/L	U	SW6010C
	Molybdenum	0.3571	5.00	20.0	ug/L	U	SW6010C
	Nickel	-0.1356	3.00	10.0	ug/L	U	SW6010C
	Potassium	-8.980	1000	5000	ug/L	U	SW6010C
	Selenium	1.069	3.00	10.0	ug/L	U	SW6010C
	Silver	-0.01680	1.00	10.0	ug/L	U	SW6010C
	Sodium	-36.31	1000	5000	ug/L	U	SW6010C
	Thallium	1.327	3.00	8.00	ug/L	U	SW6010C
	Vanadium	-0.2492	5.00	12.5	ug/L	U	SW6010C
	Zinc	0.08810	5.00	20.0	ug/L	U	SW6010C
6I25301-CCB1	Aluminum	-8.58	50.0	200	ug/L	U	SW6010C
	Antimony	0.924	5.00	10.0	ug/L	U	SW6010C
	Arsenic	0.0938	3.00	10.0	ug/L	U	SW6010C
	Barium	0.0482	5.00	40.0	ug/L	U	SW6010C
	Beryllium	0.236	1.00	5.00	ug/L	U	SW6010C
	Cadmium	-0.0331	1.00	5.00	ug/L	U	SW6010C
	Calcium	-0.420	1000	5000	ug/L	U	SW6010C
	Chromium	0.0236	2.00	10.0	ug/L	U	SW6010C
	Cobalt	0.162	5.00	12.5	ug/L	U	SW6010C
	Copper	1.17	4.00	10.0	ug/L	U	SW6010C
	Iron	7.16	30.0	100	ug/L	U	SW6010C

BLANKS
SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP
Project: Raritan Arsenal - Phase III
Sequence: 6I25301
Calibration: 6253002

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
6I25301-CCB1	Lead	0.664	1.50	5.00	ug/L	U	SW6010C
	Magnesium	8.65	1000	5000	ug/L	U	SW6010C
	Manganese	0.0589	3.00	15.0	ug/L	U	SW6010C
	Molybdenum	0.616	5.00	20.0	ug/L	U	SW6010C
	Nickel	-0.213	3.00	10.0	ug/L	U	SW6010C
	Potassium	-21.6	1000	5000	ug/L	U	SW6010C
	Selenium	0.129	3.00	10.0	ug/L	U	SW6010C
	Silver	0.582	1.00	10.0	ug/L	U	SW6010C
	Sodium	-140	1000	5000	ug/L	U	SW6010C
	Thallium	1.87	3.00	8.00	ug/L	U	SW6010C
	Vanadium	-0.0421	5.00	12.5	ug/L	U	SW6010C
	Zinc	0.220	5.00	20.0	ug/L	U	SW6010C
6I25301-CCB6	Aluminum	-23.1	50.0	200	ug/L	U	SW6010C
	Antimony	3.83	5.00	10.0	ug/L	U	SW6010C
	Arsenic	0.972	3.00	10.0	ug/L	U	SW6010C
	Barium	0.0960	5.00	40.0	ug/L	U	SW6010C
	Beryllium	0.135	1.00	5.00	ug/L	U	SW6010C
	Cadmium	-0.0508	1.00	5.00	ug/L	U	SW6010C
	Calcium	3.95	1000	5000	ug/L	U	SW6010C
	Chromium	-0.537	2.00	10.0	ug/L	U	SW6010C
	Cobalt	-0.0654	5.00	12.5	ug/L	U	SW6010C
	Copper	-0.713	4.00	10.0	ug/L	U	SW6010C
	Iron	2.25	30.0	100	ug/L	U	SW6010C
	Lead	0.263	1.50	5.00	ug/L	U	SW6010C
	Magnesium	-10.9	1000	5000	ug/L	U	SW6010C
	Manganese	0.658	3.00	15.0	ug/L	U	SW6010C
	Molybdenum	1.09	5.00	20.0	ug/L	U	SW6010C
	Nickel	0.220	3.00	10.0	ug/L	U	SW6010C
	Potassium	3.07	1000	5000	ug/L	U	SW6010C
	Selenium	-2.17	3.00	10.0	ug/L	U	SW6010C
	Silver	-0.748	1.00	10.0	ug/L	U	SW6010C
	Sodium	163	1000	5000	ug/L	U	SW6010C
	Thallium	1.49	3.00	8.00	ug/L	U	SW6010C
	Vanadium	0.486	5.00	12.5	ug/L	U	SW6010C

BLANKS
SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP
Project: Raritan Arsenal - Phase III
Sequence: 6I25301
Calibration: 6253002

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
6I25301-CCB6	Zinc	0.316	5.00	20.0	ug/L	U	SW6010C
6H29010-BLK1	Aluminum	-0.377	2.50	10.0	mg/Kg wet	U	SW6010C
	Antimony	0.176	0.250	0.500	mg/Kg wet	U	SW6010C
	Arsenic	0.0747	0.150	0.500	mg/Kg wet	U	SW6010C
	Barium	0.0151	0.250	2.00	mg/Kg wet	U	SW6010C
	Beryllium	0.00534	0.0500	0.250	mg/Kg wet	U	SW6010C
	Cadmium	0.00176	0.0500	0.250	mg/Kg wet	U	SW6010C
	Calcium	1.94	50.0	250	mg/Kg wet	U	SW6010C
	Chromium	0.0541	0.100	0.500	mg/Kg wet	U	SW6010C
	Cobalt	-0.0170	0.250	0.625	mg/Kg wet	U	SW6010C
	Copper	-0.0720	0.200	0.500	mg/Kg wet	U	SW6010C
	Iron	0.286	1.50	5.00	mg/Kg wet	U	SW6010C
	Lead	0.0200	0.0750	0.250	mg/Kg wet	U	SW6010C
	Magnesium	0.497	50.0	250	mg/Kg wet	U	SW6010C
	Manganese	0.0260	0.150	0.750	mg/Kg wet	U	SW6010C
	Molybdenum	0.0425	0.250	1.00	mg/Kg wet	U	SW6010C
	Nickel	0.00878	0.150	0.500	mg/Kg wet	U	SW6010C
	Potassium	1.17	50.0	250	mg/Kg wet	U	SW6010C
	Selenium	-0.107	0.150	0.500	mg/Kg wet	U	SW6010C
	Silver	-0.0606	0.0500	0.500	mg/Kg wet	J	SW6010C
	Sodium	-4.30	50.0	250	mg/Kg wet	U	SW6010C
	Thallium	0.0261	0.150	0.400	mg/Kg wet	U	SW6010C
	Vanadium	0.0136	0.250	0.625	mg/Kg wet	U	SW6010C
	Zinc	0.351	0.250	1.00	mg/Kg wet	J	SW6010C
6I25301-CCB7	Aluminum	-9.12	50.0	200	ug/L	U	SW6010C
	Antimony	2.93	5.00	10.0	ug/L	U	SW6010C
	Arsenic	0.647	3.00	10.0	ug/L	U	SW6010C
	Barium	0.00639	5.00	40.0	ug/L	U	SW6010C
	Beryllium	0.198	1.00	5.00	ug/L	U	SW6010C
	Cadmium	-0.0695	1.00	5.00	ug/L	U	SW6010C
	Calcium	2.87	1000	5000	ug/L	U	SW6010C
	Chromium	-0.318	2.00	10.0	ug/L	U	SW6010C
	Cobalt	-0.122	5.00	12.5	ug/L	U	SW6010C
	Copper	-1.34	4.00	10.0	ug/L	U	SW6010C

BLANKS
SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP
Project: Raritan Arsenal - Phase III
Sequence: 6I25301
Calibration: 6253002

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
6I25301-CCB7	Iron	9.05	30.0	100	ug/L	U	SW6010C
	Lead	1.04	1.50	5.00	ug/L	U	SW6010C
	Magnesium	-10.6	1000	5000	ug/L	U	SW6010C
	Manganese	0.307	3.00	15.0	ug/L	U	SW6010C
	Molybdenum	0.974	5.00	20.0	ug/L	U	SW6010C
	Nickel	-0.00141	3.00	10.0	ug/L	U	SW6010C
	Potassium	-2.01	1000	5000	ug/L	U	SW6010C
	Selenium	-2.35	3.00	10.0	ug/L	U	SW6010C
	Silver	-0.472	1.00	10.0	ug/L	U	SW6010C
	Sodium	-220	1000	5000	ug/L	U	SW6010C
	Thallium	1.13	3.00	8.00	ug/L	U	SW6010C
	Vanadium	-0.620	5.00	12.5	ug/L	U	SW6010C
	Zinc	0.503	5.00	20.0	ug/L	U	SW6010C
6I25301-CCB8	Aluminum	-18.2	50.0	200	ug/L	U	SW6010C
	Antimony	3.01	5.00	10.0	ug/L	U	SW6010C
	Arsenic	1.46	3.00	10.0	ug/L	U	SW6010C
	Barium	-0.136	5.00	40.0	ug/L	U	SW6010C
	Beryllium	0.0771	1.00	5.00	ug/L	U	SW6010C
	Cadmium	-0.101	1.00	5.00	ug/L	U	SW6010C
	Calcium	-0.190	1000	5000	ug/L	U	SW6010C
	Chromium	-0.540	2.00	10.0	ug/L	U	SW6010C
	Cobalt	-0.123	5.00	12.5	ug/L	U	SW6010C
	Copper	-1.51	4.00	10.0	ug/L	U	SW6010C
	Iron	5.74	30.0	100	ug/L	U	SW6010C
	Lead	0.173	1.50	5.00	ug/L	U	SW6010C
	Magnesium	-8.75	1000	5000	ug/L	U	SW6010C
	Manganese	0.116	3.00	15.0	ug/L	U	SW6010C
	Molybdenum	0.961	5.00	20.0	ug/L	U	SW6010C
	Nickel	0.0756	3.00	10.0	ug/L	U	SW6010C
	Potassium	30.0	1000	5000	ug/L	U	SW6010C
	Selenium	-2.33	3.00	10.0	ug/L	U	SW6010C
	Silver	-0.949	1.00	10.0	ug/L	U	SW6010C
	Sodium	-329	1000	5000	ug/L	U	SW6010C
	Thallium	1.62	3.00	8.00	ug/L	U	SW6010C

BLANKS
SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP
Project: Raritan Arsenal - Phase III
Sequence: 6I25301
Calibration: 6253002

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
6I25301-CCB8	Vanadium	0.714	5.00	12.5	ug/L	U	SW6010C
	Zinc	0.459	5.00	20.0	ug/L	U	SW6010C

ICP INTERFERENCE CHECK SAMPLE

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Instrument ID: ME-ICP
Calibration: 6253002
Sequence: 6I25301

Lab Sample ID	Analyte	True	Found	%R	Units
6I25301-IFA1	Aluminum	500000	496,990.00	99.4	ug/L
	Antimony		1.98		ug/L
	Arsenic		-1.95		ug/L
	Barium		0.31		ug/L
	Beryllium		0.12		ug/L
	Boron		2.01		ug/L
	Cadmium		-0.50		ug/L
	Calcium	500000	497,160.00	99.4	ug/L
	Chromium		-0.67		ug/L
	Cobalt		-1.94		ug/L
	Copper		-0.43		ug/L
	Iron	200000	194,490.00	97.2	ug/L
	Lead		1.04		ug/L
	Magnesium	500000	457,360.00	91.5	ug/L
	Manganese		-1.84		ug/L
	Molybdenum		0.35		ug/L
	Nickel		-1.43		ug/L
	Potassium		50.97		ug/L
	Selenium		0.53		ug/L
	Silver		-1.40		ug/L
	Sodium		345.16		ug/L
	Thallium		3.12		ug/L
	Tin		-3.60		ug/L
	Titanium		-16.72		ug/L
	Vanadium		2.70		ug/L
	Zinc		0.00		ug/L
	Strontium		-1.91		ug/L
6I25301-IFB1	Aluminum	500000	505,558.00	101	ug/L
	Antimony	600.0	661.94	110	ug/L
	Arsenic	100.0	108.11	108	ug/L

ICP INTERFERENCE CHECK SAMPLE

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Instrument ID: ME-ICP
Calibration: 6253002
Sequence: 6I25301

Lab Sample ID	Analyte	True	Found	%R	Units
6I25301-IFB1	Barium	500.0	533.05	107	ug/L
	Beryllium	500.0	519.87	104	ug/L
	Boron		40.00		ug/L
	Cadmium	1000	1,010.70	101	ug/L
	Calcium	500000	501,549.00	100	ug/L
	Chromium	500.0	471.87	94.4	ug/L
	Cobalt	500.0	482.36	96.5	ug/L
	Copper	500.0	556.04	111	ug/L
	Iron	200000	200,070.00	100	ug/L
	Lead	50.00	49.84	99.7	ug/L
	Magnesium	500000	464,080.00	92.8	ug/L
	Manganese	500.0	477.01	95.4	ug/L
	Molybdenum		0.67		ug/L
	Nickel	1000	962.90	96.3	ug/L
	Potassium		20.21		ug/L
	Selenium	50.00	54.34	109	ug/L
	Silver	200.0	201.84	101	ug/L
	Sodium		414.61		ug/L
	Thallium	100.0	107.87	108	ug/L
	Tin		-4.68		ug/L
	Titanium		-17.95		ug/L
	Vanadium	500.0	500.72	100	ug/L
	Zinc	1000	985.49	98.5	ug/L
	Strontium	1000	1,053.00	105	ug/L

LCS / LCS DUPLICATE RECOVERY

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Matrix: Solid
Batch: 6H29010
Laboratory ID: 6H29010-BS1
Preparation: MET_3050B
Initial/Final: 2 g / 100 mL

ANALYTE	SPIKE ADDED (mg/Kg wet)	LCS CONCENTRATION (mg/Kg wet)	LCS % REC.	QC LIMITS REC.
Aluminum	100.0	99.94	99.9	74 - 119
Antimony	12.50	12.00	96.0	79 - 114
Arsenic	12.50	12.25	98.0	82 - 111
Barium	100.0	95.68	95.7	83 - 113
Beryllium	2.500	2.557	102	83 - 113
Cadmium	6.250	6.625	106	82 - 113
Calcium	250.0	272.6	109	81 - 116
Chromium	10.00	11.30	113	85 - 113
Cobalt	25.00	25.06	100	85 - 112
Copper	12.50	12.67	101	81 - 117
Iron	50.00	55.34	111	81 - 118
Lead	12.50	11.90	95.2	81 - 112
Magnesium	250.0	263.7	105	78 - 115
Manganese	25.00	24.90	99.6	84 - 114
Molybdenum	50.00	52.32	105	82 - 116
Nickel	25.00	24.56	98.2	83 - 113
Potassium	250.0	240.5	96.2	81 - 116
Selenium	12.50	12.16	97.3	78 - 111
Silver	12.50	11.90	95.2	82 - 112
Sodium	250.0	251.9	101	83 - 118
Thallium	12.50	12.50	100	83 - 111
Vanadium	25.00	28.02	112	82 - 114
Zinc	25.00	27.24	109	82 - 113

PREPARATION BATCH SUMMARY

SW6010C

Laboratory: Empirical Laboratories, LLC SDG: 1608229

Client: CH2M Hill, Inc. Project: Raritan Arsenal - Phase III

Batch: 6H29010 Batch Matrix: Solid Preparation: MET_3050B

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT	FINAL VOL.
DSA03-SB17-0010	1608229-01	09/08/16 09:49	2.05	100.00
DSA03-SB18-0010	1608229-02	09/08/16 09:49	2.03	100.00
DSA03-SB19-0010	1608229-03	09/08/16 09:49	2.00	100.00
DSA03-SB20-0010	1608229-04	09/08/16 09:49	2.03	100.00
DSA03-SB21-0010	1608229-05	09/08/16 09:49	2.03	100.00
DSA03-SB22-0010	1608229-06	09/08/16 09:49	2.04	100.00
DSA03-SB23-0010	1608229-07	09/08/16 09:49	2.03	100.00
DSA03-SB24-0010	1608229-08	09/08/16 09:49	2.05	100.00
DSA05-SB25-0010	1608229-09	09/08/16 09:49	2.02	100.00
DSA05-SB26-0010	1608229-10	09/08/16 09:49	2.00	100.00
DSA05-SB27-0010	1608229-11	09/08/16 09:49	2.02	100.00
DSA05-SB28-0010	1608229-12	09/08/16 09:49	2.02	100.00
Blank	6H29010-BLK1	09/08/16 09:49	2.00	100.00
LCS	6H29010-BS1	09/08/16 09:49	2.00	100.00

ANALYSIS SEQUENCE SUMMARY

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Sequence: 6I25301
Instrument: ME-ICP
Calibration: 6253002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Cal Standard	6I25301-CAL1	09-09-16A-001	09/09/16 09:27
Cal Standard	6I25301-CAL2	09-09-16A-002	09/09/16 09:32
Cal Standard	6I25301-CAL3	09-09-16A-003	09/09/16 09:35
Cal Standard	6I25301-CAL4	09-09-16A-004	09/09/16 09:39
Cal Standard	6I25301-CAL5	09-09-16A-005	09/09/16 09:43
Cal Standard	6I25301-CAL6	09-09-16A-006	09/09/16 09:47
Cal Standard	6I25301-CAL7	09-09-16A-007	09/09/16 09:52
Cal Standard	6I25301-CAL8	09-09-16A-008	09/09/16 09:56
Cal Standard	6I25301-CAL9	09-09-16A-009	09/09/16 10:06
Initial Cal Check	6I25301-ICV1	09-09-16B-001	09/09/16 10:37
Initial Cal Blank	6I25301-ICB1	09-09-16B-002	09/09/16 10:42
Instrument RL Check	6I25301-CRL1	09-09-16B-003	09/09/16 10:47
Instrument RL Check	6I25301-CRL2	09-09-16B-004	09/09/16 10:55
Interference Check A	6I25301-IFA1	09-09-16B-005	09/09/16 10:59
Interference Check B	6I25301-IFB1	09-09-16B-006	09/09/16 11:04
Calibration Check	6I25301-CCV1	09-09-16B-008	09/09/16 11:13
Calibration Blank	6I25301-CCB1	09-09-16B-009	09/09/16 11:18
Calibration Check	6I25301-CCV6	09-09-16C-057	09/09/16 16:46
Calibration Blank	6I25301-CCB6	09-09-16C-058	09/09/16 16:50
Blank	6H29010-BLK1	09-09-16D-001	09/09/16 16:56
LCS	6H29010-BS1	09-09-16D-002	09/09/16 17:00
DSA03-SB17-0010	1608229-01	09-09-16D-003	09/09/16 17:05
DSA03-SB18-0010	1608229-02	09-09-16D-004	09/09/16 17:09
DSA03-SB19-0010	1608229-03	09-09-16D-005	09/09/16 17:13
DSA03-SB20-0010	1608229-04	09-09-16D-006	09/09/16 17:18
DSA03-SB21-0010	1608229-05	09-09-16D-007	09/09/16 17:22
DSA03-SB22-0010	1608229-06	09-09-16D-008	09/09/16 17:27
DSA03-SB23-0010	1608229-07	09-09-16D-009	09/09/16 17:31
DSA03-SB24-0010	1608229-08	09-09-16D-010	09/09/16 17:35
DSA05-SB25-0010	1608229-09	09-09-16D-011	09/09/16 17:40
DSA05-SB26-0010	1608229-10	09-09-16D-012	09/09/16 17:44
Calibration Check	6I25301-CCV7	09-09-16D-013	09/09/16 17:49
Calibration Blank	6I25301-CCB7	09-09-16D-014	09/09/16 17:53

ANALYSIS SEQUENCE SUMMARY

SW6010C

Laboratory:	Empirical Laboratories, LLC	SDG:	1608229
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Sequence:	6I25301	Instrument:	ME-ICP
Calibration:	6253002		

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
DSA05-SB27-0010	1608229-11	09-09-16D-015	09/09/16 17:57
DSA05-SB28-0010	1608229-12	09-09-16D-016	09/09/16 18:02
Calibration Check	6I25301-CCV8	09-09-16D-029	09/09/16 18:58
Calibration Blank	6I25301-CCB8	09-09-16D-030	09/09/16 19:03

INITIAL CALIBRATION DATA

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Calibration: 6253002
Instrument: ME-ICP
Matrix: Water
Calibration Dates: 9/9/16 9:27 9/9/16 10:06

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Aluminum	0	0	5000	4.3178E-05	10000	4.2603E-05			500000	4.1368E-05		
Antimony	0	0	100	0.0008575	1000	9.0869E-04					10000	9.0377E-04
Arsenic	0	0	100	0.0004141	1000	4.5634E-04					10000	4.4991E-04
Barium	0	0	50	0.0177138	1000	0.016047	5000	0.0170484				
Beryllium	0	0	100	0.0026623	1000	0.0026804					10000	0.0025737
Boron	0	0	50	0.0000186	1000	1.782E-05					5000	1.7084E-05
Cadmium	0	0	100	0.029842	1000	0.028423					10000	0.02793
Calcium	0	0	1100	9.030909E-05	50000	8.4856E-05					10000	
Chromium	0	0	100	0.0000449	1000	4.242E-05					10000	4.109E-05
Cobalt	0	0	100	8.690001E-03	1000	7.986899E-03					10000	0.0084704
Copper	0	0	100	9.650001E-05	1000	9.203E-05					10000	8.7923E-05
Iron	0	0	5100	1.995882E-05	10000	2.0201E-05			500000	1.91384E-05	10000	
Lead	0	0	100	0.002017	1000	0.0019339					10000	0.0020686
Magnesium	0	0	5100		50000	2.792E-06			500000	2.8254E-06	10000	
Manganese	0	0	100	0.0003629	1000	3.4074E-04	10000	3.4823E-04			10000	
Molybdenum	0	0	100	0.0039601	1000	0.0039992					10000	0.0039597
Nickel	0	0	100	0.0052359	1000	0.0047241					10000	0.0048779
Potassium	0	0	1000	1.514E-05	10000	1.8908E-05						
Selenium	0	0	100	0.0005575	1000	4.6173E-04					10000	4.4714E-04
Silver	0	0	20	0.0000725	500	5.206E-05	2000	5.2945E-05				
Sodium	0	0	1000		50000	4.0238E-05						
Thallium	0	0	100	0.0007513	1000	7.4056E-04					10000	7.5438E-04
Tin	0	0	50	0.0014766	1000	0.0014677					5000	1.49666E-03
Titanium	0	0	100	0.0002455	1000	2.4354E-04					10000	0.0002372
Vanadium	0	0	100	0.0000455	1000	4.768E-05					10000	4.5175E-05
Zinc	0	0	100	0.011205	1000	0.010777					10000	0.01073
Strontium	0	0	100	0.001919	1000	0.002029					10000	0.001994
Lithium (outside certification)	0	0	100	0.0000083	1000	8.05E-06					10000	7.588E-06

INITIAL CALIBRATION DATA (Continued)

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Calibration: 6253002
Instrument: ME-ICP
Matrix: Water
Calibration Dates: 9/9/16 9:27 9/9/16 10:06

Compound	Level 07		Level 08		Level 09		Level 10		Level 11		Level 12	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Aluminum												
Antimony												
Arsenic												
Barium												
Beryllium												
Boron												
Cadmium												
Calcium	100000		500000	8.2872E-05								
Chromium												
Cobalt												
Copper												
Iron												
Lead												
Magnesium			100000	0.0000031								
Manganese												
Molybdenum												
Nickel												
Potassium	100000	1.9774E-05										
Selenium												
Silver												
Sodium	100000	3.8894E-05	500000		500000	4.0246E-05						
Thallium												
Tin												
Titanium												
Vanadium												
Zinc												
Strontium												
Lithium (outside certification)												

INITIAL CALIBRATION DATA (Continued)

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Calibration: 6253002
Instrument: ME-ICP
Matrix: Water
Calibration Dates: 9/9/16 9:27 9/9/16 10:06

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
Aluminum	3.178725E-05	66.70898	13.64156	195.3851	0.9999998		0.998	
Antimony	6.6749E-04	66.75611	2.149573	176.3051	0.9999985		0.998	
Arsenic	3.300875E-04	66.90395	2.123825	147.3685	0.9999944		0.998	
Barium	0.0127023	66.88446	2.963057	177.5921	0.9998427		0.998	
Beryllium	0.0019791	66.70827	6.48765	187.9251	0.999984		0.998	
Boron	1.3376E-05	66.82708	4.000945	150.7616	0.9999328		0.998	
Cadmium	2.154875E-02	66.77269	1.163415	141.7823	0.9999978		0.998	
Calcium	6.450927E-05	66.84462	3.218652	173.1608	0.9999947		0.998	
Chromium	3.21025E-05	66.84784	1.82423	110.2175	0.9999931		0.998	
Cobalt	6.286825E-03	66.83015	2.58261	187.2826	0.9999649		0.998	
Copper	6.911325E-05	66.85902	1.223615	77.11854	0.9999853		0.998	
Iron	1.482456E-05	66.73717	25.37462	195.6822	0.9999991		0.998	
Lead	1.504875E-03	66.76856	3.10703	142.2417	0.9999608		0.998	
Magnesium	2.17935E-06	66.96669	14.85385	197.8452	0.999537		0.998	
Manganese	2.629675E-04	66.75848	14.40438	192.1777	0.9999944		0.998	
Molybdenum	2.97975E-03	66.66957	35.2272	199.0372	0.999999		0.998	
Nickel	3.709475E-03	66.91677	1.00997	158.9034	0.9999861		0.998	
Potassium	1.34555E-05	68.32251	3.953647	150.1945	0.9999959		0.998	
Selenium	3.665925E-04	67.99068	2.264467	150.4798	0.9999984		0.998	
Silver	4.437625E-05	69.97413	1.54097	83.60192	0.9999413		0.998	
Sodium	2.98445E-05	66.70066	0.88527	42.78231	0.9999392		0.998	
Thallium	5.6156E-04	66.67501	12.40072	190.9118	0.9999971		0.998	
Tin	1.11024E-03	66.67559	7.871637	187.5804	0.9999851		0.998	
Titanium	1.8156E-04	66.69521	15.41751	195.7735	0.9999943		0.998	
Vanadium	3.458875E-05	66.74417	8.557477	176.2718	0.9999687		0.998	
Zinc	0.008178	66.71786	132.8807	199.5321	0.9999998		0.998	
Strontium	0.0014855	66.73819	0.8088	38.08873	0.9999949		0.998	
Lithium (outside certification)	5.9845E-06	66.84858	3.41954	115.0406	0.9999623		0.998	

HOLDING TIME SUMMARY

SW6010C

Laboratory: Empirical Laboratories, LLC SDG: 1608229

Client: CH2M Hill, Inc. Project: Raritan Arsenal - Phase III

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
DSA03-SB17-0010	08/22/16 10:35	08/24/16 08:35	09/08/16 09:49	N/A	180.00	09/09/16 17:05	18.31	180.00	
DSA03-SB18-0010	08/22/16 10:55	08/24/16 08:35	09/08/16 09:49	N/A	180.00	09/09/16 17:09	18.30	180.00	
DSA03-SB19-0010	08/22/16 11:10	08/24/16 08:35	09/08/16 09:49	N/A	180.00	09/09/16 17:13	18.29	180.00	
DSA03-SB20-0010	08/22/16 11:40	08/24/16 08:35	09/08/16 09:49	N/A	180.00	09/09/16 17:18	18.28	180.00	
DSA03-SB21-0010	08/22/16 14:18	08/24/16 08:35	09/08/16 09:49	N/A	180.00	09/09/16 17:22	18.17	180.00	
DSA03-SB22-0010	08/22/16 14:48	08/24/16 08:35	09/08/16 09:49	N/A	180.00	09/09/16 17:27	18.15	180.00	
DSA03-SB23-0010	08/22/16 15:22	08/24/16 08:35	09/08/16 09:49	N/A	180.00	09/09/16 17:31	18.13	180.00	
DSA03-SB24-0010	08/22/16 15:45	08/24/16 08:35	09/08/16 09:49	N/A	180.00	09/09/16 17:35	18.12	180.00	
DSA05-SB25-0010	08/23/16 10:30	08/24/16 08:35	09/08/16 09:49	N/A	180.00	09/09/16 17:40	17.34	180.00	
DSA05-SB26-0010	08/23/16 11:01	08/24/16 08:35	09/08/16 09:49	N/A	180.00	09/09/16 17:44	17.32	180.00	
DSA05-SB27-0010	08/23/16 12:55	08/24/16 08:35	09/08/16 09:49	N/A	180.00	09/09/16 17:57	17.25	180.00	
DSA05-SB28-0010	08/23/16 13:16	08/24/16 08:35	09/08/16 09:49	N/A	180.00	09/09/16 18:02	17.24	180.00	

Flexible Report By Sample

Author:

Published: 9 2/20 9:38:57AM

Instrument Name: iCAP 6500 Duo Serial Number: 20062310

Sample Name	Acquisition Date	Sample type	Correction Factor
SEQ-CAL1	9/9/2016 9:27:53AM	Standard	1.00

Valid	Analyst Name	Method Name
Yes	rburr	6500DUOBB (1134)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.000462587	0.000677916	-0.0054888	8.5957e-005	0.0273915
Std Dev:	1.51429e-005	0.000363499	0.000370021	1.11758e-005	0.00297345
%RSD:	3.27353	53.6201	6.74137	13.0017	10.8554
Repeat: 1	0.000480064	0.000507927	-0.0053562	9.84784e-005	0.0252439
Repeat: 2	0.000454323	0.00109526	-0.00590685	8.24001e-005	0.0261453
Repeat: 3	0.000453373	0.000430556	-0.00520335	7.69925e-005	0.0307853
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	0.000569404	0.000537099	0.033501	0.0172756	0.000204477
Std Dev:	0.000141061	6.21139e-005	0.00121645	0.00169936	9.78772e-006
%RSD:	24.7735	11.5647	3.63108	9.83677	4.7867
Repeat: 1	0.000605924	0.000474111	0.0324742	0.0180343	0.000198584
Repeat: 2	0.000413674	0.000598301	0.0348445	0.0184634	0.000199073
Repeat: 3	0.000688614	0.000538885	0.0331843	0.015329	0.000215776
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.000789024	-0.000152048	-0.0060363	-5.02305e-005	-2.64542e-005
Std Dev:	2.05307e-005	0.000151826	0.000769853	4.64092e-006	1.55908e-005
%RSD:	2.60204	99.8539	12.7537	9.23925	58.9353
Repeat: 1	0.000810788	-0.000304342	-0.00648297	-5.55719e-005	-3.45749e-005
Repeat: 2	0.000770003	-6.94084e-007	-0.00647858	-4.71858e-005	-3.63083e-005
Repeat: 3	0.00078628	-0.000151109	-0.00514736	-4.79338e-005	-8.47926e-006
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	1.92075e-005	-0.0010173	0.0228283	0.0248153	-0.00629131
Std Dev:	1.07419e-005	0.00142832	0.000312948	0.000847589	0.000603085
%RSD:	55.9255	140.403	1.37088	3.41559	9.586
Repeat: 1	1.19784e-005	9.5182e-005	0.0231214	0.0242753	-0.00666499
Repeat: 2	1.40932e-005	-0.000519087	0.0228647	0.0257922	-0.00661336
Repeat: 3	3.1551e-005	-0.002628	0.0224987	0.0243784	-0.00559556
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	-0.00832172	0.00918689	6.89756	-0.00216026	-0.0136369
Std Dev:	0.000651574	0.00067492	1.11772	0.000648375	0.000139939
%RSD:	7.8298	7.34655	16.2046	30.0137	1.02618
Repeat: 1	-0.0089211	0.00877921	8.17673	-0.00180314	-0.0137982
Repeat: 2	-0.00762819	0.00881553	6.40659	-0.00290868	-0.0135645
Repeat: 3	-0.00841588	0.00996594	6.10936	-0.00176896	-0.013548
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.000748088	-0.00231528	-5.63452e-005	0.000150216	2247.6
Std Dev:	0.000454027	0.00110919	1.75698e-005	0.000797031	11.4652
%RSD:	60.6916	47.9074	31.1825	530.59	0.510111
Repeat: 1	0.000779834	-0.00354124	-4.14156e-005	0.00101252	2255.03
Repeat: 2	0.000279022	-0.00138125	-5.19134e-005	-2.38661e-006	2234.39
Repeat: 3	0.00118541	-0.00202336	-7.57066e-005	-0.000559481	2253.38
Element/Wavelength	Sc3613	Sc3613-2			

Avg. of Repeats:	637826	18063.2
Std Dev:	3143.81	63.8499
%RSD:	0.492895	0.353481
Repeat: 1	637946	18096.6
Repeat: 2	640908	17989.6
Repeat: 3	634623	18103.4

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.307662	10.2639	0.285536	-0.145958	0.0541738
Std Dev:	0.292528	8.80779	0.815387	0.663153	0.171735
%RSD:	95.0809	85.8132	285.564	454.345	317.007
Repeat: 1	0.0299165	6.13423	0.576527	0.596975	-0.0696397
Repeat: 2	-0.466296	20.3777	-0.635427	-0.356773	-0.0180667
Repeat: 3	-0.486607	4.27975	0.915507	-0.678076	0.250228
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	-0.0710235	0.0012056	-0.123043	-0.0719082	-1.89313
Std Dev:	0.0585415	0.000783273	0.0456456	0.207315	0.135736
%RSD:	82.4255	64.9696	37.0974	288.305	7.16993
Repeat: 1	-0.0563637	0.000411306	-0.161558	0.0194051	-1.97492
Repeat: 2	-0.135502	0.00197737	-0.072625	0.0740752	-1.96803
Repeat: 3	-0.0212051	0.00122813	-0.134945	-0.309205	-1.73645
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	-1.32244	0.924964	0.0152561	-0.706848	0.000323732
Std Dev:	0.22901	8.267	0.0390559	0.598798	0.00568323
%RSD:	17.3172	893.765	256.002	84.7138	1755.54
Repeat: 1	-1.08024	-7.36784	-0.00740406	-1.39604	-0.0026396
Repeat: 2	-1.53547	9.16593	-0.00718138	-0.31413	-0.00326541
Repeat: 3	-1.35162	0.976805	0.0603537	-0.41037	0.00687621
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	0.00609377	0.196601	0.138872	-0.095594	0.793436
Std Dev:	0.030584	0.375931	0.00834449	0.168046	0.287233
%RSD:	501.889	191.215	6.00875	175.791	36.2011
Repeat: 1	-0.0143186	0.489341	0.146689	-0.202069	0.613916
Repeat: 2	-0.00865764	0.327812	0.139843	0.098131	0.641675
Repeat: 3	0.0412575	-0.22735	0.130085	-0.182844	1.12472
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-2.15494	-0.906627	-25.2324	5.63446	0.99466
Std Dev:	0.736296	1.58192	14.778	0.465652	0.0707857
%RSD:	34.1679	174.484	58.5678	8.26435	7.11657
Repeat: 1	-2.82898	-1.86151	-8.31973	5.89084	0.913065
Repeat: 2	-1.36916	-1.77775	-31.7234	5.09696	1.03129
Repeat: 3	-2.26667	0.919379	-35.654	5.91558	1.03962
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	0.86492	-0.732798	0.232949	-0.0962251	2247.6
Std Dev:	1.93952	1.46199	0.403925	0.0797332	11.4652
%RSD:	224.242	199.508	173.397	82.8611	0.510111
Repeat: 1	1.00063	-2.34986	0.575507	-0.00998387	2255.03

Repeat: 2	-1.13889	0.495554	0.335797	-0.111431	2234.39
Repeat: 3	2.73302	-0.34409	-0.212458	-0.16726	2253.38
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	637826	18063.2			
Std Dev:	3143.81	63.8499			
%RSD:	0.492895	0.353481			
Repeat: 1	637946	18096.6			
Repeat: 2	640908	17989.6			
Repeat: 3	634623	18103.4			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2247.6	637826	18063.2
Std Dev:	11.4652	3143.81	63.8499
%RSD:	0.510111	0.492895	0.353481
Repeat: 1	2255.03	637946	18096.6
Repeat: 2	2234.39	640908	17989.6
Repeat: 3	2253.38	634623	18103.4

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
SEQ-CAL2	9/9/2016 9:32:08AM	Standard	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1134)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.00144911	0.215893	0.0414092	0.00093118	0.885691
Std Dev:	3.15735e-006	0.00147618	0.00057296	1.73596e-005	0.00238072
%RSD:	0.217882	0.683755	1.38365	1.86425	0.268798
Repeat: 1	0.00144554	0.214319	0.0419699	0.00094734	0.887178
Repeat: 2	0.00145027	0.216116	0.0414331	0.000912829	0.882945
Repeat: 3	0.00145152	0.217246	0.0408247	0.000933372	0.88695
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.266229	0.0993377	2.98417	0.869001	0.00448928
Std Dev:	0.000943322	0.000326264	0.0100556	0.00210271	1.36977e-005
%RSD:	0.354328	0.32844	0.336966	0.241969	0.305119
Repeat: 1	0.265172	0.0989715	2.98385	0.870885	0.00448138
Repeat: 2	0.266527	0.099444	2.97428	0.866732	0.00448136
Repeat: 3	0.266987	0.0995975	2.99438	0.869385	0.0045051
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mn2576**
Avg. of Repeats:	0.00964699	0.101794	0.0151392	0.000827149	0.0362881
Std Dev:	9.6812e-005	0.000720615	0.000350515	1.93904e-005	0.000237537
%RSD:	1.00355	0.707913	2.31528	2.34424	0.654585
Repeat: 1	0.0096593	0.10181	0.0151275	0.000816075	0.0362196
Repeat: 2	0.00954461	0.101066	0.0154954	0.000849539	0.0360924
Repeat: 3	0.00973706	0.102507	0.0147947	0.000815834	0.0365524
Element/Wavelength	**Mo2020**	**Ni2316**	**Pb2203**	**Sb2068**	**Se1960**
Avg. of Repeats:	0.396015	0.523586	0.201701	0.085751	0.0557459
Std Dev:	0.00105576	0.000868453	0.0045678	0.000401955	0.000603755
%RSD:	0.266595	0.165866	2.26464	0.468747	1.08305
Repeat: 1	0.39553	0.523756	0.200116	0.085802	0.0555368
Repeat: 2	0.395288	0.522645	0.198137	0.085326	0.0552744
Repeat: 3	0.397226	0.524357	0.20685	0.0861251	0.0564264

Element/Wavelength	Si2516	Sn1899	Sr4215	Ti3349	Tl1908
Avg. of Repeats:	7.7526	0.073833	0.191909	0.0245536	0.0751304
Std Dev:	2.5336	0.000698083	0.000946924	3.03137e-005	0.000854352
%RSD:	32.6806	0.945488	0.493422	0.123459	1.13716
Repeat: 1	10.2499	0.0743924	0.192337	0.0245784	0.0744072
Repeat: 2	5.18417	0.0740559	0.190824	0.0245198	0.0760731
Repeat: 3	7.82377	0.0730507	0.192567	0.0245626	0.0749109
Element/Wavelength	V_2924	Zn2062	Sc1880	Sc3613	Sc3613-2
Avg. of Repeats:	0.00454849	1.12054	2264.8	651333	18295.8
Std Dev:	4.51388e-005	0.00299634	6.65621	2103.44	75.7733
%RSD:	0.992393	0.267402	0.293899	0.322944	0.414156
Repeat: 1	0.00450116	1.12059	2257.87	653533	18282.1
Repeat: 2	0.00459106	1.11752	2271.14	651125	18377.5
Repeat: 3	0.00455324	1.12351	2265.39	649342	18227.9

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	z *****	z *****	z *****	z *****	z *****
Std Dev:	----	----	----	----	----
%RSD:	----	----	----	----	----
Repeat: 1	z ----	z ----	z ----	z ----	z ----
Repeat: 2	z ----	z ----	z ----	z ----	z ----
Repeat: 3	z ----	z ----	z ----	z ----	z ----
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	z *****	z *****	z *****	z *****	z *****
Std Dev:	----	----	----	----	----
%RSD:	----	----	----	----	----
Repeat: 1	z ----	z ----	z ----	z ----	z ----
Repeat: 2	z ----	z ----	z ----	z ----	z ----
Repeat: 3	z ----	z ----	z ----	z ----	z ----
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mn2576
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	z *****	z *****	z *****	z *****	z *****
Std Dev:	----	----	----	----	----
%RSD:	----	----	----	----	----
Repeat: 1	z ----	z ----	z ----	z ----	z ----
Repeat: 2	z ----	z ----	z ----	z ----	z ----
Repeat: 3	z ----	z ----	z ----	z ----	z ----
Element/Wavelength	Mo2020	Ni2316	Pb2203	Sb2068	Se1960
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	z *****	z *****	z *****	z *****	z *****
Std Dev:	----	----	----	----	----
%RSD:	----	----	----	----	----
Repeat: 1	z ----	z ----	z ----	z ----	z ----
Repeat: 2	z ----	z ----	z ----	z ----	z ----
Repeat: 3	z ----	z ----	z ----	z ----	z ----
Element/Wavelength	Si2516	Sn1899	Sr4215	Ti3349	Tl1908
Units:	ppm	ppb	ppb	ppb	ppb
Avg. of Repeats:	z *****	z *****	z *****	z *****	z *****
Std Dev:	----	----	----	----	----
%RSD:	----	----	----	----	----
Repeat: 1	z ----	z ----	z ----	z ----	z ----

Repeat: 2	z ----	z ----	z ----	z ----	z ----
Repeat: 3	z ----	z ----	z ----	z ----	z ----
Element/Wavelength	**V_2924**	**Zn2062**	**Sc1880**	**Sc3613**	**Sc3613-2**
Units:	ppb	ppb	----	----	----
Avg. of Repeats:	0	0	2264.8	651333	18295.8
Std Dev:	0	0	6.65621	2103.44	75.7733
%RSD:	0	0	0.293899	0.322944	0.414156
Repeat: 1	0	0	2257.87	653533	18282.1
Repeat: 2	0	0	2271.14	651125	18377.5
Repeat: 3	0	0	2265.39	649342	18227.9

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2264.8	651333	18295.8
Std Dev:	6.65621	2103.44	75.7733
%RSD:	0.293899	0.322944	0.414156
Repeat: 1	2257.87	653533	18282.1
Repeat: 2	2271.14	651125	18377.5
Repeat: 3	2265.39	649342	18227.9

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
SEQ-CAL3	9/9/2016 9:35:46AM	Standard	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1134)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.0260267	0.426029	0.456337	0.0178187	16.0469
Std Dev:	0.000278208	0.00064294	0.00093488	9.09969e-005	0.0419594
%RSD:	1.06893	0.150914	0.204866	0.510681	0.261479
Repeat: 1	0.026041	0.42529	0.457265	0.017796	16.0046
Repeat: 2	0.0262974	0.426341	0.455395	0.0179189	16.0477
Repeat: 3	0.0257416	0.426457	0.45635	0.0177412	16.0885
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	2.68036	4.24278	28.4227	7.98693	0.0424241
Std Dev:	0.00442601	0.00465023	0.0555648	0.015673	0.000453589
%RSD:	0.165127	0.109603	0.195494	0.196233	1.06918
Repeat: 1	2.6761	4.23818	28.3656	7.97072	0.0425124
Repeat: 2	2.68004	4.24269	28.426	7.98808	0.042827
Repeat: 3	2.68493	4.24748	28.4766	8.002	0.0419328
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0920349	0.202011	0.189083	0.00805041	0.139604
Std Dev:	0.000741756	0.00153463	0.000587179	0.000105992	0.000315866
%RSD:	0.805951	0.759675	0.31054	1.31661	0.226259
Repeat: 1	0.0919842	0.200278	0.189432	0.00796109	0.139277
Repeat: 2	0.0928007	0.202561	0.188405	0.00816753	0.139627
Repeat: 3	0.0913198	0.203195	0.189412	0.00802262	0.139907
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.340738	3.99919	2.01191	4.72415	1.93392
Std Dev:	0.000863874	0.005604	0.00952844	0.0138412	0.00769104
%RSD:	0.253531	0.140128	0.473602	0.292989	0.397692
Repeat: 1	0.340633	3.99273	2.00107	4.70885	1.92596
Repeat: 2	0.341649	4.00211	2.01571	4.72778	1.93447
Repeat: 3	0.339931	4.00274	2.01895	4.73581	1.94132

Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	0.908692	0.46173	289.838	1.46766	2.02864
Std Dev:	0.00144173	0.00166634	3.91218	0.00620754	0.0121677
%RSD:	0.15866	0.36089	1.34978	0.422955	0.599797
Repeat: 1	0.909814	0.46107	287.186	1.46176	2.01459
Repeat: 2	0.907066	0.460494	294.331	1.46708	2.03585
Repeat: 3	0.909195	0.463625	287.997	1.47414	2.03547
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.243539	0.740564	0.0476761	10.7767	2208.39
Std Dev:	0.0012352	0.0027868	0.000609619	0.00186131	9.04523
%RSD:	0.50719	0.376308	1.27867	0.0172716	0.409586
Repeat: 1	0.242155	0.739413	0.0477127	10.7752	2214.96
Repeat: 2	0.243932	0.738537	0.0482667	10.7761	2212.13
Repeat: 3	0.244529	0.743742	0.0470491	10.7788	2198.07
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	630714	17525.9			
Std Dev:	5192.56	60.8392			
%RSD:	0.823283	0.347139			
Repeat: 1	631010	17471.8			
Repeat: 2	625379	17591.7			
Repeat: 3	635752	17514.2			

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	k 507.447	k 9809.43	k 985.233	k 1043.84	k 927.284
Std Dev:	5.52243	14.8712	1.99442	5.35655	2.4288
%RSD:	1.08828	0.151601	0.202431	0.513157	0.261926
Repeat: 1	507.731	9792.33	987.213	1042.5	924.834
Repeat: 2	512.821	9816.69	983.224	1049.74	927.328
Repeat: 3	501.788	9819.28	985.26	1039.28	929.691
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	k 1008.17	42.9374	k 964.071	k 937.129	k 986.513
Std Dev:	1.66512	0.0470669	1.88707	1.84294	10.5987
%RSD:	0.165163	0.109617	0.19574	0.196658	1.07436
Repeat: 1	1006.57	42.8908	962.131	935.223	988.577
Repeat: 2	1008.05	42.9365	964.18	937.264	995.928
Repeat: 3	1009.89	42.985	965.901	938.901	975.035
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	k 1028.12	k 9913.4	9.21439	k 923.115	z *****
Std Dev:	8.35778	75.253	0.0277291	12.0789	----
%RSD:	0.81292	0.759104	0.300933	1.3085	----
Repeat: 1	1027.55	9828.38	9.23085	912.937	z ----
Repeat: 2	1036.75	9940.35	9.18238	936.463	z ----
Repeat: 3	1020.06	9971.46	9.22995	919.946	z ----
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	k 940.455	k 1006.54	z *****	k 941.503	k 921.579
Std Dev:	2.38448	1.41009	----	2.77307	3.65317
%RSD:	0.253545	0.140092	----	0.294536	0.396403
Repeat: 1	940.168	1004.92	z ----	938.438	917.801
Repeat: 2	942.971	1007.28	z ----	942.23	921.843

Repeat: 3	938.228	1007.44	z ----	943.84	925.093
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	k 995.331	k 974.98	k 19731	k 967.558	993.143
Std Dev:	1.56486	3.58792	272.818	4.08632	5.91994
%RSD:	0.15722	0.368	1.38269	0.422333	0.596081
Repeat: 1	996.549	973.56	19546	963.676	986.308
Repeat: 2	993.566	972.32	20044.3	967.176	996.654
Repeat: 3	995.878	979.061	19602.6	971.821	996.466
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	k 1019.43	k 956.148	k 1025.63	966.759	2208.39
Std Dev:	5.1905	3.58685	13.0989	0.166945	9.04523
%RSD:	0.509156	0.375135	1.27716	0.0172686	0.409586
Repeat: 1	1013.62	954.667	1026.41	966.625	2214.96
Repeat: 2	1021.09	953.54	1038.32	966.706	2212.13
Repeat: 3	1023.6	960.239	1012.15	966.946	2198.07

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	630714	17525.9
Std Dev:	5192.56	60.8392
%RSD:	0.823283	0.347139
Repeat: 1	631010	17471.8
Repeat: 2	625379	17591.7
Repeat: 3	635752	17514.2

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2208.39	630714	17525.9
Std Dev:	9.04523	5192.56	60.8392
%RSD:	0.409586	0.823283	0.347139
Repeat: 1	2214.96	631010	17471.8
Repeat: 2	2212.13	625379	17591.7
Repeat: 3	2198.07	635752	17514.2

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
SEQ-CAL4	9/9/2016 9:39:29AM	Standard	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1134)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Ba2335**	**Mn2576**	**Sc1880**	**Sc3613**
Avg. of Repeats:	0.105895	85.2422	3.48225	2245.28	646552
Std Dev:	0.00169816	0.398042	0.02728	3.82159	7306.39
%RSD:	1.60363	0.466955	0.783403	0.170206	1.13006
Repeat: 1	0.107769	85.0994	3.51363	2249.19	639965
Repeat: 2	0.104458	84.9352	3.46889	2245.1	654411
Repeat: 3	0.105458	85.6919	3.46422	2241.56	645279

Concentration

Element/Wavelength	**Ag3280**	**Ba2335**	**Mn2576**	**Sc1880**	**Sc3613**
Units:	ppb	ppb	ppb	----	----
Avg. of Repeats:	k 2046.37	z *****	10163.8	2245.28	646552
Std Dev:	32.9602	----	79.6239	3.82159	7306.39
%RSD:	1.61066	----	0.783407	0.170206	1.13006

Repeat: 1	2082.75	z ----	10255.4	2249.19	639965
Repeat: 2	2018.48	z ----	10124.8	2245.1	654411
Repeat: 3	2037.89	z ----	10111.2	2241.56	645279

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**
Avg. of Repeats:	2245.28	646552
Std Dev:	3.82159	7306.39
%RSD:	0.170206	1.13006
Repeat: 1	2249.19	639965
Repeat: 2	2245.1	654411
Repeat: 3	2241.56	645279

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
SEQ-CAL5	9/9/2016 9:43:23AM	Standard	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1134)

Corrected CTS/S

Element/Wavelength	**Al3961**	**Fe2611**	**Mg2790**	**Sc3613-2**
Avg. of Repeats:	20.6843	9.56918	1.41267	16951.6
Std Dev:	0.0230786	0.0169289	0.000154261	58.5642
%RSD:	0.111575	0.176911	0.0109198	0.345478
Repeat: 1	20.6577	9.58559	1.41253	16969.3
Repeat: 2	20.6991	9.57017	1.41266	16999.3
Repeat: 3	20.6961	9.55177	1.41283	16886.3

Concentration

Element/Wavelength	**Al3961**	**Fe2611**	**Mg2790**	**Sc3613-2**
Units:	ppb	ppb	ppm	----
Avg. of Repeats:	k 488741	471689	505.688	16951.6
Std Dev:	545.382	834.455	0.0552189	58.5642
%RSD:	0.111589	0.176908	0.0109196	0.345478
Repeat: 1	488112	472498	505.635	16969.3
Repeat: 2	489090	471738	505.683	16999.3
Repeat: 3	489020	470832	505.745	16886.3

Internal Standards

Element/Wavelength	**Sc3613-2**
Avg. of Repeats:	16951.6
Std Dev:	58.5642
%RSD:	0.345478
Repeat: 1	16969.3
Repeat: 2	16999.3
Repeat: 3	16886.3

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
SEQ-CAL6	9/9/2016 9:47:09AM	Standard	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1134)

Corrected CTS/S

Element/Wavelength	**As1890**	**B_2496**	**Be3130**	**Cd2144**	**Co2286**
Avg. of Repeats:	4.49914	0.0854178	25.7372	279.303	84.7038
Std Dev:	0.00743836	0.000535395	0.169388	1.36886	0.0469602
%RSD:	0.165328	0.626795	0.658145	0.490098	0.0554405

Repeat: 1	4.49183	0.0848179	25.6171	277.984	84.6496
Repeat: 2	4.5067	0.085847	25.9309	279.207	84.731
Repeat: 3	4.4989	0.0855885	25.6635	280.717	84.731
Element/Wavelength	**Cr2677**	**Cu3247**	**Li6707**	**Mo2020**	**Ni2316**
Avg. of Repeats:	0.410897	0.879233	0.0758823	39.5974	48.7785
Std Dev:	0.00466718	0.00424681	0.00059041	0.0404221	0.0806876
%RSD:	1.13585	0.483014	0.77806	0.102083	0.165416
Repeat: 1	0.409185	0.874329	0.0754632	39.6291	48.6882
Repeat: 2	0.416178	0.881641	0.0765575	39.6112	48.8038
Repeat: 3	0.407327	0.881727	0.0756263	39.5518	48.8435
Element/Wavelength	**Pb2203**	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**
Avg. of Repeats:	20.6862	9.03772	4.47136	444.44	7.48335
Std Dev:	0.0371999	0.0127505	0.0119602	4.04832	0.00779081
%RSD:	0.17983	0.141081	0.267484	0.91088	0.104109
Repeat: 1	20.6444	9.02308	4.45974	447.873	7.47862
Repeat: 2	20.6985	9.04374	4.47071	445.471	7.47909
Repeat: 3	20.7156	9.04635	4.48364	439.976	7.49234
Element/Wavelength	**Sr4215**	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**
Avg. of Repeats:	19.9446	2.37198	7.54376	0.451751	107.299
Std Dev:	0.22262	0.00824006	0.0137579	0.00350928	0.695272
%RSD:	1.11619	0.347391	0.182374	0.776817	0.647979
Repeat: 1	19.7413	2.37309	7.53048	0.455769	106.612
Repeat: 2	20.1825	2.37961	7.54286	0.450201	107.281
Repeat: 3	19.9101	2.36325	7.55795	0.449284	108.002
Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**		
Avg. of Repeats:	2275.59	663933	18177.3		
Std Dev:	0.831787	2747.7	64.6863		
%RSD:	0.0365526	0.413851	0.355863		
Repeat: 1	2274.75	666642	18105.3		
Repeat: 2	2276.41	661148	18196.3		
Repeat: 3	2275.6	664009	18230.4		

Concentration

Element/Wavelength	**As1890**	**B_2496**	**Be3130**	**Cd2144**	**Co2286**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	k 9760.26	k 4827.79	k 9606.2	k 9807.48	k 10566.4
Std Dev:	16.1168	30.2909	63.2241	48.072	5.85927
%RSD:	0.165127	0.627427	0.658159	0.490157	0.0554518
Repeat: 1	9744.41	4793.85	9561.37	9761.17	10559.6
Repeat: 2	9776.63	4852.08	9678.51	9804.13	10569.8
Repeat: 3	9759.73	4837.45	9578.71	9857.14	10569.8
Element/Wavelength	**Cr2677**	**Cu3247**	**Li6707**	**Mo2020**	**Ni2316**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	k 9724.97	k 9647.25	z *****	k 9900.09	k 10306.7
Std Dev:	110.516	46.6394	----	10.106	17.0576
%RSD:	1.13642	0.483447	----	0.10208	0.165501
Repeat: 1	9684.43	9593.39	z ----	9908.02	10287.6
Repeat: 2	9850.03	9673.7	z ----	9903.55	10312
Repeat: 3	9640.45	9674.64	z ----	9888.71	10320.4
Element/Wavelength	**Pb2203**	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**
Units:	ppb	ppb	ppb	ppm	ppb
Avg. of Repeats:	k 10558.2	k 10046	9844.15	9340.82	5085.91
Std Dev:	18.9744	14.1599	26.3857	86.4246	5.29335
%RSD:	0.179712	0.140951	0.268035	0.925235	0.104079

Repeat: 1	10536.9	10029.7	9818.51	9414.11	5082.7
Repeat: 2	10564.5	10052.7	9842.71	9362.84	5083.02
Repeat: 3	10573.2	10055.6	9871.23	9245.52	5092.02
Element/Wavelength	**Sr4215**	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	9772.89	9816.98	10083.5	9403.72	9971.38
Std Dev:	109.009	34.1141	18.384	73.0405	64.6125
%RSD:	1.11543	0.347501	0.182318	0.77672	0.64798
Repeat: 1	9673.31	9821.55	10065.7	9487.34	9907.59
Repeat: 2	9889.36	9848.57	10082.3	9371.45	9969.76
Repeat: 3	9755.99	9780.81	10102.4	9352.37	10036.8

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Units:	----	----	----
Avg. of Repeats:	2275.59	663933	18177.3
Std Dev:	0.831787	2747.7	64.6863
%RSD:	0.0365526	0.413851	0.355863
Repeat: 1	2274.75	666642	18105.3
Repeat: 2	2276.41	661148	18196.3
Repeat: 3	2275.6	664009	18230.4

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2275.59	663933	18177.3
Std Dev:	0.831787	2747.7	64.6863
%RSD:	0.0365526	0.413851	0.355863
Repeat: 1	2274.75	666642	18105.3
Repeat: 2	2276.41	661148	18196.3
Repeat: 3	2275.6	664009	18230.4

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
SEQ-CAL7	9/9/2016 9:52:27AM	Standard	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1134)

Corrected CTS/S

Element/Wavelength	**K_7664**	**Na5895**	**Sc3613-2**
Avg. of Repeats:	1.97742	3.88945	18000.4
Std Dev:	0.00859689	0.0288879	90.4509
%RSD:	0.434754	0.742725	0.502494
Repeat: 1	1.96807	3.85764	18075.7
Repeat: 2	1.98498	3.91405	17900
Repeat: 3	1.97919	3.89666	18025.4

Concentration

Element/Wavelength	**K_7664**	**Na5895**	**Sc3613-2**
Units:	ppm	ppm	----
Avg. of Repeats:	100.873	97.1962	18000.4
Std Dev:	0.437213	0.726162	90.4509
%RSD:	0.433431	0.74711	0.502494
Repeat: 1	100.397	96.3966	18075.7
Repeat: 2	101.258	97.8146	17900
Repeat: 3	100.963	97.3773	18025.4

Internal Standards

Element/Wavelength	**Sc3613-2**
Avg. of Repeats:	18000.4

Std Dev:	90.4509
%RSD:	0.502494
Repeat: 1	18075.7
Repeat: 2	17900
Repeat: 3	18025.4

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
SEQ-CAL8	9/9/2016 9:56:37AM	Standard	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1134)

Corrected CTS/S

Element/Wavelength	**Ca3179**	**Mg2790**	**Sc3613-2**
Avg. of Repeats:	41.4358	0.310004	16790.7
Std Dev:	0.361142	0.000753937	80.2696
%RSD:	0.871569	0.243202	0.47806
Repeat: 1	41.0219	0.309346	16881.1
Repeat: 2	41.6863	0.310827	16727.7
Repeat: 3	41.5993	0.30984	16763.3

Concentration

Element/Wavelength	**Ca3179**	**Mg2790**	**Sc3613-2**
Units:	ppm	ppm	----
Avg. of Repeats:	486.798	109.79	16790.7
Std Dev:	4.24284	0.266987	80.2696
%RSD:	0.871581	0.24318	0.47806
Repeat: 1	481.935	109.557	16881.1
Repeat: 2	489.741	110.081	16727.7
Repeat: 3	488.719	109.732	16763.3

Internal Standards

Element/Wavelength	**Sc3613-2**
Avg. of Repeats:	16790.7
Std Dev:	80.2696
%RSD:	0.47806
Repeat: 1	16881.1
Repeat: 2	16727.7
Repeat: 3	16763.3

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
SEQ-CAL9	9/9/2016 10:06:01AM	Standard	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1134)

Corrected CTS/S

Element/Wavelength	**Na5895**	**Sc3613-2**
Avg. of Repeats:	20.1225	17024.1
Std Dev:	0.191938	94.4253
%RSD:	0.953845	0.554656
Repeat: 1	20.2639	17057.8
Repeat: 2	20.1997	16917.5
Repeat: 3	19.904	17097.1

Concentration

Element/Wavelength	**Na5895**	**Sc3613-2**
Units:	ppm	----

Avg. of Repeats:	449.752	17024.1
Std Dev:	4.29471	94.4253
%RSD:	0.954907	0.554656
Repeat: 1	452.915	17057.8
Repeat: 2	451.479	16917.5
Repeat: 3	444.863	17097.1

Internal Standards

Element/Wavelength	**Sc3613-2**
Avg. of Repeats:	17024.1
Std Dev:	94.4253
%RSD:	0.554656
Repeat: 1	17057.8
Repeat: 2	16917.5
Repeat: 3	17097.1

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25301-ICV1	9/9/2016 10:37:35AM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.0258437	0.410317	0.469276	0.0186716	16.5372
Std Dev:	0.000453925	0.00117561	0.000615516	0.000358731	0.0356194
%RSD:	1.75642	0.286512	0.131163	1.92126	0.215389
Repeat: 1	0.0254811	0.410909	0.468885	0.0184054	16.5359
Repeat: 2	0.0256972	0.411079	0.469985	0.0185299	16.5735
Repeat: 3	0.0263528	0.408963	0.468957	0.0190795	16.5023
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	2.69397	4.3923	28.5375	8.05269	0.0413138
Std Dev:	0.0050279	0.00597682	0.0765434	0.0190465	0.000668426
%RSD:	0.186636	0.136075	0.26822	0.236523	1.61792
Repeat: 1	2.69977	4.39618	28.6105	8.0663	0.0408989
Repeat: 2	2.69083	4.39531	28.5442	8.06085	0.0409576
Repeat: 3	2.69131	4.38542	28.4579	8.03093	0.0420849
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0947268	0.195449	0.185977	0.00804093	0.139385
Std Dev:	0.00166556	0.000295353	0.000638416	0.000156283	0.000335788
%RSD:	1.75828	0.151115	0.343277	1.9436	0.240907
Repeat: 1	0.0935138	0.195617	0.18669	0.00793189	0.139731
Repeat: 2	0.0940408	0.195621	0.18578	0.00797092	0.139362
Repeat: 3	0.0966258	0.195108	0.18546	0.00821998	0.139061
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.349445	4.0305	1.94512	4.84175	1.97896
Std Dev:	0.00654574	0.00424698	0.0108545	0.0135569	0.00338528
%RSD:	1.87318	0.105371	0.558037	0.280001	0.171063
Repeat: 1	0.344674	4.03123	1.95586	4.83864	1.97973
Repeat: 2	0.346754	4.03433	1.94536	4.85659	1.9819
Repeat: 3	0.356908	4.02593	1.93415	4.83002	1.97526
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.91152	0.475959	1330.59	1.47277	1.96289
Std Dev:	0.000617481	0.00134283	4.56149	0.00324751	0.00874873

%RSD:	0.0677419	0.282132	0.342817	0.220504	0.445707
Repeat: 1	0.912206	0.477351	1326.65	1.47564	1.97286
Repeat: 2	0.911348	0.475856	1335.58	1.47341	1.95932
Repeat: 3	0.911008	0.474672	1329.54	1.46924	1.95649
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.238302	0.767339	0.0473835	10.8912	2198.31
Std Dev:	0.000195827	0.00152256	0.00083572	0.0299391	6.07132
%RSD:	0.082176	0.198421	1.76373	0.274892	0.276181
Repeat: 1	0.238515	0.765734	0.0468698	10.9255	2201.95
Repeat: 2	0.238259	0.768764	0.0469329	10.878	2191.3
Repeat: 3	0.238131	0.767518	0.0483478	10.8702	2201.67
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	629966	17837.5			
Std Dev:	12033.2	95.1331			
%RSD:	1.91013	0.533332			
Repeat: 1	638099	17736.4			
Repeat: 2	635656	17850.7			
Repeat: 3	616143	17925.3			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	488.35	9759.45	1051.62	1085.11	981.276
Std Dev:	8.72924	28.2283	1.36661	20.9814	2.0575
%RSD:	1.7875	0.289241	0.129952	1.93357	0.209676
Repeat: 1	481.39	9773.66	1050.76	1069.54	981.158
Repeat: 2	485.516	9777.75	1053.19	1076.83	983.39
Repeat: 3	498.144	9726.94	1050.91	1108.97	979.28
QC Status Pass/Fail:	Pass	Pass	Fail	Fail	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	1042.3	52.8626	1018.05	953.656	997.229
Std Dev:	1.94924	0.0719418	2.73309	2.2608	16.2232
%RSD:	0.187013	0.136092	0.268462	0.237067	1.62683
Repeat: 1	1044.55	52.9092	1020.66	955.27	987.16
Repeat: 2	1041.09	52.8988	1018.29	954.626	988.583
Repeat: 3	1041.26	52.7797	1015.21	951.072	1015.94
QC Status Pass/Fail:	Pass	Fail	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	1065.82	10210.8	9.689	1056.48	48.6528
Std Dev:	18.8893	15.2621	0.0322147	20.4388	0.117161
%RSD:	1.77229	0.14947	0.332488	1.93461	0.24081
Repeat: 1	1052.06	10219.5	9.72501	1042.22	48.7737
Repeat: 2	1058.04	10219.7	9.67906	1047.33	48.6448
Repeat: 3	1087.36	10193.2	9.66293	1079.9	48.5398
QC Status Pass/Fail:	Fail	Pass	Pass	Fail	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1004.83	1017.24	48.1411	990.948	966.664
Std Dev:	18.828	1.06879	0.271827	2.78254	1.65634
%RSD:	1.87374	0.105068	0.564647	0.280795	0.171346
Repeat: 1	991.109	1017.43	48.4099	990.305	967.045
Repeat: 2	997.093	1018.21	48.147	993.996	968.098

Repeat: 3	1026.3	1016.09	47.8664	988.543	964.851
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1015.51	1043.24	20293.2	988.232	987.345
Std Dev:	1.01236	3.00677	69.9287	2.18087	4.37278
%RSD:	0.0996896	0.288214	0.344591	0.220684	0.442883
Repeat: 1	1016.52	1046.36	20232.8	990.162	992.328
Repeat: 2	1015.52	1043.01	20369.8	988.669	985.557
Repeat: 3	1014.49	1040.36	20277.1	985.866	984.149
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	996.549	1020.5	1044.53	1013.33	2198.31
Std Dev:	0.822408	2.01341	18.394	2.82513	6.07132
%RSD:	0.0825256	0.197296	1.76098	0.278797	0.276181
Repeat: 1	997.446	1018.37	1033.22	1016.56	2201.95
Repeat: 2	996.372	1022.37	1034.61	1012.1	2191.3
Repeat: 3	995.83	1020.77	1065.75	1011.32	2201.67
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	629966	17837.5
Std Dev:	12033.2	95.1331
%RSD:	1.91013	0.533332
Repeat: 1	638099	17736.4
Repeat: 2	635656	17850.7
Repeat: 3	616143	17925.3
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2198.31	629966	17837.5
Std Dev:	6.07132	12033.2	95.1331
%RSD:	0.276181	1.91013	0.533332
Repeat: 1	2201.95	638099	17736.4
Repeat: 2	2191.3	635656	17850.7
Repeat: 3	2201.67	616143	17925.3

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25301-ICB1	9/9/2016 10:42:39AM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000461712	0.000390024	-0.00497416	9.95976e-005	0.029053
Std Dev:	1.74145e-005	0.000868992	0.000453242	6.94673e-006	0.000901742
%RSD:	3.77173	222.805	9.11192	6.9748	3.10379
Repeat: 1	0.000476855	0.00130078	-0.00544727	9.21256e-005	0.0295791
Repeat: 2	0.000442683	-0.000430101	-0.00454382	0.000100807	0.0295681
Repeat: 3	0.000465598	0.000299392	-0.00493139	0.00010586	0.0280118
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00100747	0.000700939	0.0336141	0.019434	0.000207326

Std Dev:	0.000174713	0.00026107	0.000880939	0.00187199	7.81509e-006
%RSD:	17.3418	37.2457	2.62074	9.63254	3.76947
Repeat: 1	0.000810345	0.00068985	0.0346018	0.0215723	0.000200182
Repeat: 2	0.0011432	0.000967376	0.0329094	0.0180905	0.000215673
Repeat: 3	0.00106886	0.000445591	0.0333313	0.0186394	0.000206123
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.000871801	0.000108267	-0.00621314	-6.62882e-005	-2.57431e-005
Std Dev:	5.203e-005	3.70292e-005	0.000218632	1.6386e-005	2.87425e-005
%RSD:	5.96811	34.2016	3.51886	24.7194	111.651
Repeat: 1	0.000813681	0.000114153	-0.00608182	-8.47082e-005	-2.51324e-005
Repeat: 2	0.000887683	6.8648e-005	-0.00646552	-5.33326e-005	-5.47861e-005
Repeat: 3	0.000914039	0.000142001	-0.00609207	-6.08238e-005	2.68924e-006
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	2.9219e-005	0.0004025	0.0213211	0.024155	-0.00590691
Std Dev:	7.41705e-006	0.00140472	0.000616022	0.000564832	0.00161561
%RSD:	25.3844	348.999	2.88926	2.33836	27.3512
Repeat: 1	2.4831e-005	-0.000938894	0.0206099	0.0247185	-0.00450151
Repeat: 2	2.50434e-005	0.00186297	0.0216842	0.0241577	-0.00767208
Repeat: 3	3.77826e-005	0.000283427	0.0216694	0.0235889	-0.00554714
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00508575	0.00966721	9.05901	-0.00075458	-0.0132603
Std Dev:	0.00157731	0.00102177	1.60003	0.000455277	0.000406265
%RSD:	31.0144	10.5695	17.6623	60.3351	3.06378
Repeat: 1	-0.00573936	0.0105573	9.78822	-0.00109608	-0.0130444
Repeat: 2	-0.00328669	0.00855146	7.22428	-0.000929968	-0.0137289
Repeat: 3	-0.00623119	0.00989288	10.1645	-0.000237694	-0.0130075
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.000493231	-0.00130751	-6.75675e-005	0.0011759	2209.87
Std Dev:	0.000120461	0.0005118	8.32385e-006	0.000833725	8.16054
%RSD:	24.4229	39.1432	12.3193	70.9008	0.369277
Repeat: 1	0.000627137	-0.000942507	-7.00876e-005	0.00175955	2213.66
Repeat: 2	0.000393675	-0.00108749	-7.434e-005	0.00154712	2200.5
Repeat: 3	0.000458882	-0.00189252	-5.82748e-005	0.000221045	2215.44
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	628878	17795.9			
Std Dev:	3915.31	78.1512			
%RSD:	0.622587	0.439152			
Repeat: 1	629863	17705.7			
Repeat: 2	632207	17842.9			
Repeat: 3	624564	17839.2			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.0168021	-7.2334	1.13534	0.796858	0.0982606
Std Dev:	0.332362	21.0076	1.00462	0.406687	0.052811
%RSD:	1978.1	290.424	88.486	51.0364	53.7458
Repeat: 1	0.271696	14.7803	0.0866136	0.359341	0.129219
Repeat: 2	-0.380234	-27.0644	2.0891	0.867869	0.128281
Repeat: 3	0.0581321	-9.41603	1.2303	1.16336	0.0372821
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.162425	0.00176432	-0.00260727	0.26246	0.0631104

Std Dev:	0.067102	0.00314244	0.0311149	0.220794	0.189892
%RSD:	41.3127	178.11	1193.39	84.1248	300.888
Repeat: 1	0.0867281	0.00163085	0.0323126	0.514725	-0.11044
Repeat: 2	0.214598	0.00497138	-0.0273876	0.104368	0.265942
Repeat: 3	0.185947	-0.00130926	-0.0127468	0.168286	0.0338294
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	0.934608	12.9925	-0.00897698	-2.11741	-0.00185922
Std Dev:	0.589716	1.93096	0.0110323	2.14145	0.0100257
%RSD:	63.0976	14.8621	122.895	101.135	539.245
Repeat: 1	0.275969	13.2989	-0.0023505	-4.52464	-0.00165042
Repeat: 2	1.11423	10.9267	-0.0217124	-0.424184	-0.0119877
Repeat: 3	1.41363	14.752	-0.00286803	-1.40341	0.00806049
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	0.0261624	0.357124	-0.0363077	-0.135593	0.187549
Std Dev:	0.0213007	0.354227	0.0154269	0.115917	0.789058
%RSD:	81.4172	99.189	42.4893	85.4889	420.721
Repeat: 1	0.0135344	0.0188512	-0.0541199	-0.0199008	0.875111
Repeat: 2	0.0141974	0.725398	-0.0272169	-0.135144	-0.673974
Repeat: 3	0.0507553	0.327122	-0.0275864	-0.251733	0.36151
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	3.64007	1.06924	33.1791	0.941858	0.18373
Std Dev:	1.774	2.28446	24.5289	0.305085	0.203127
%RSD:	48.7354	213.652	73.9289	32.3918	110.557
Repeat: 1	2.90677	3.05911	44.358	0.713	0.291624
Repeat: 2	5.66316	-1.42539	5.05206	0.82435	-0.0505772
Repeat: 3	2.35029	1.57402	50.1271	1.28822	0.310144
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	-1.07487	1.32684	-0.249204	0.0880955	2209.87
Std Dev:	0.50713	0.676198	0.180934	0.0783186	8.16054
%RSD:	47.1807	50.9629	72.6047	88.902	0.369277
Repeat: 1	-0.511022	1.81017	-0.306279	0.144124	2213.66
Repeat: 2	-1.49368	1.61625	-0.394717	0.121558	2200.5
Repeat: 3	-1.21989	0.554107	-0.0466149	-0.00139577	2215.44
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	628878	17795.9			
Std Dev:	3915.31	78.1512			
%RSD:	0.622587	0.439152			
Repeat: 1	629863	17705.7			
Repeat: 2	632207	17842.9			
Repeat: 3	624564	17839.2			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**

Avg. of Repeats:	2209.87	628878	17795.9
Std Dev:	8.16054	3915.31	78.1512
%RSD:	0.369277	0.622587	0.439152
Repeat: 1	2213.66	629863	17705.7
Repeat: 2	2200.5	632207	17842.9
Repeat: 3	2215.44	624564	17839.2

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25301-CRL	9/9/2016 10:47:36AM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000596158	0.00921307	-0.0028927	0.000840883	0.198935
Std Dev:	1.71471e-005	0.000474452	0.000168985	1.37819e-005	0.0010742
%RSD:	2.87627	5.14977	5.84177	1.63898	0.539974
Repeat: 1	0.000583869	0.00960534	-0.00276583	0.000847276	0.197988
Repeat: 2	0.000588857	0.00868572	-0.00282775	0.000825066	0.198714
Repeat: 3	0.000615747	0.00934814	-0.00308453	0.000850308	0.200102
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00598011	0.178841	0.0922968	0.107483	0.000358581
Std Dev:	0.000342555	0.000112063	0.00134502	0.000708253	1.3328e-005
%RSD:	5.72825	0.0626607	1.45728	0.658947	3.71687
Repeat: 1	0.00578459	0.178823	0.0935012	0.108202	0.000362669
Repeat: 2	0.00637565	0.17874	0.0925438	0.10746	0.000343688
Repeat: 3	0.00578008	0.178962	0.0908454	0.106786	0.000369386
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00175666	0.00209751	0.052244	-2.00284e-006	0.00909137
Std Dev:	1.82644e-005	9.69339e-005	0.000402389	1.25602e-005	5.12613e-005
%RSD:	1.03972	4.62138	0.770211	627.118	0.563846
Repeat: 1	0.00173559	0.00220689	0.0525995	-7.14376e-006	0.00903854
Repeat: 2	0.00176639	0.00206336	0.0518072	1.23122e-005	0.0091409
Repeat: 3	0.00176801	0.00202227	0.0523255	-1.1177e-005	0.00909468
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.00227462	0.0410121	0.14596	0.0544137	-1.33885e-005
Std Dev:	1.80163e-005	0.000511909	0.000564808	0.00180814	0.00112438
%RSD:	0.792057	1.24819	0.386962	3.32295	8398.13
Repeat: 1	0.00226189	0.0409755	0.146513	0.0544757	0.000962815
Repeat: 2	0.00226675	0.0415413	0.145981	0.05619	0.000239796
Repeat: 3	0.00229524	0.0405195	0.145384	0.0525754	-0.00124278
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.00214252	0.0111077	46.6671	0.0267317	-0.00112377
Std Dev:	0.00139713	0.000993193	2.31814	0.000799789	0.000453741
%RSD:	65.2096	8.94152	4.96739	2.99191	40.3766
Repeat: 1	0.00311492	0.0106844	44.6822	0.0259308	-0.00149649
Repeat: 2	0.00277113	0.0103962	46.1043	0.026734	-0.000618522
Repeat: 3	0.000541512	0.0122424	49.2148	0.0275304	-0.0012563
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.00290972	0.00577481	0.000385933	0.114687	2233.07
Std Dev:	6.22493e-005	0.000580543	2.61241e-005	0.00119096	4.60267
%RSD:	2.13936	10.053	6.76909	1.03845	0.206114
Repeat: 1	0.00294021	0.00644167	0.000359781	0.115267	2234.11

Repeat: 2	0.00295084	0.00550055	0.000385987	0.113317	2237.06
Repeat: 3	0.0028381	0.00538221	0.00041203	0.115477	2228.03
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	641902	17994			
Std Dev:	3899.26	16.1541			
%RSD:	0.607454	0.0897752			
Repeat: 1	639893	17991.4			
Repeat: 2	646396	17979.2			
Repeat: 3	639417	18011.2			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	2.58908	201.414	5.73658	44.1185	10.1925
Std Dev:	0.329175	11.4634	0.375083	0.805768	0.0655638
%RSD:	12.714	5.69146	6.53843	1.82637	0.643254
Repeat: 1	2.35236	210.891	6.01861	44.4922	10.1345
Repeat: 2	2.4499	188.673	5.88024	43.1937	10.1794
Repeat: 3	2.96499	204.679	5.31091	44.6695	10.2636
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	2.09134	2.14601	2.08219	10.7126	3.71266
Std Dev:	0.132645	0.00134888	0.047947	0.0836566	0.323735
%RSD:	6.3426	0.0628556	2.30272	0.780917	8.71977
Repeat: 1	2.01607	2.14578	2.125	10.7976	3.81198
Repeat: 2	2.24449	2.14478	2.09118	10.7099	3.3509
Repeat: 3	2.01344	2.14745	2.03038	10.6304	3.97509
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	10.9719	116.797	2.9408	6.18697	3.17901
Std Dev:	0.206874	5.05596	0.0203047	1.64153	0.0178823
%RSD:	1.88548	4.32883	0.69045	26.5321	0.562511
Repeat: 1	10.7333	122.503	2.95873	5.51477	3.16058
Repeat: 2	11.0822	115.015	2.91875	8.05791	3.19629
Repeat: 3	11.1003	112.874	2.94491	4.98822	3.18016
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	6.48237	10.6039	3.08499	6.08736	3.10654
Std Dev:	0.0519058	0.129037	0.0141444	0.371509	0.546077
%RSD:	0.800723	1.21689	0.45849	6.10295	17.5783
Repeat: 1	6.44561	10.5946	3.09886	6.09976	3.58278
Repeat: 2	6.45976	10.7373	3.08552	6.45251	3.22633
Repeat: 3	6.54175	10.4797	3.07058	5.7098	2.51052
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	11.7237	4.27537	609.726	19.3606	6.22211
Std Dev:	1.57866	2.22118	35.5371	0.535875	0.226833
%RSD:	13.4655	51.953	5.82838	2.76785	3.6456
Repeat: 1	12.8167	3.32821	579.298	18.824	6.03579
Repeat: 2	12.4406	2.68478	601.098	19.3622	6.47469

Repeat: 3	9.9138	6.81312	648.783	19.8958	6.15584
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	8.90855	10.7221	9.6781	10.6738	2233.07
Std Dev:	0.262234	0.765968	0.570752	0.112003	4.60267
%RSD:	2.94362	7.14381	5.89736	1.04932	0.206114
Repeat: 1	9.03786	11.602	9.10858	10.7279	2234.11
Repeat: 2	9.08102	10.3603	9.67563	10.545	2237.06
Repeat: 3	8.60678	10.2041	10.2501	10.7485	2228.03
QC Status Pass/Fail:	Pass	Fail	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	641902	17994
Std Dev:	3899.26	16.1541
%RSD:	0.607454	0.0897752
Repeat: 1	639893	17991.4
Repeat: 2	646396	17979.2
Repeat: 3	639417	18011.2
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2233.07	641902	17994
Std Dev:	4.60267	3899.26	16.1541
%RSD:	0.206114	0.607454	0.0897752
Repeat: 1	2234.11	639893	17991.4
Repeat: 2	2237.06	646396	17979.2
Repeat: 3	2228.03	639417	18011.2

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25301-CRL	9/9/2016 10:55:31AM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000603201	0.0092297	-0.00313101	0.000606731	0.197431
Std Dev:	2.49833e-005	0.000949067	0.00104003	1.63445e-005	0.000593722
%RSD:	4.14178	10.2827	33.217	2.69386	0.300725
Repeat: 1	0.000607079	0.00959613	-0.00194071	0.000588043	0.197544
Repeat: 2	0.000576506	0.00815205	-0.00386417	0.000613795	0.196788
Repeat: 3	0.000626019	0.00994093	-0.00358815	0.000618356	0.19796
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00580321	0.178348	0.0900841	0.107208	0.000372385
Std Dev:	0.000190391	0.000410889	0.000463479	0.00117604	9.32426e-006
%RSD:	3.28078	0.230386	0.514496	1.09697	2.50393
Repeat: 1	0.00589727	0.178822	0.0898771	0.107403	0.000368867
Repeat: 2	0.00592826	0.1781	0.090615	0.108275	0.000365332
Repeat: 3	0.00558409	0.178122	0.0897601	0.105947	0.000382957
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00168569	0.00187262	0.052697	-1.41943e-005	0.00905951
Std Dev:	3.65644e-005	6.69767e-005	0.000872555	3.60433e-005	8.7787e-005
%RSD:	2.16911	3.57663	1.6558	253.928	0.969004

Repeat: 1	0.0017249	0.00194416	0.053453	2.48205e-005	0.00910791
Repeat: 2	0.00167963	0.00181141	0.0517422	-4.62517e-005	0.00895818
Repeat: 3	0.00165253	0.00186228	0.0528957	-2.11517e-005	0.00911246
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.00227755	0.0402054	0.143934	0.0548288	-0.00195231
Std Dev:	1.50477e-005	0.000829345	0.000856931	0.000621152	0.000973478
%RSD:	0.660697	2.06277	0.595364	1.13289	49.8628
Repeat: 1	0.00226494	0.0402098	0.14487	0.0542206	-0.00238774
Repeat: 2	0.00229421	0.0393738	0.143744	0.0548038	-0.00263208
Repeat: 3	0.00227351	0.0410325	0.143188	0.0554621	-0.000837126
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.00141306	0.0105599	8.15033	0.0269828	-0.00180393
Std Dev:	0.000783192	0.000101263	2.61002	0.00105449	0.000483153
%RSD:	55.4254	0.958936	32.0234	3.90803	26.7834
Repeat: 1	0.000542214	0.0104532	11.0597	0.0278781	-0.00160632
Repeat: 2	0.00163726	0.0105718	7.37671	0.0272497	-0.00235456
Repeat: 3	0.0020597	0.0106546	6.01457	0.0258204	-0.0014509
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.00314016	0.00464463	0.000351654	0.113548	2240.91
Std Dev:	0.00015795	0.000715201	2.73808e-005	0.00097283	12.1869
%RSD:	5.03001	15.3984	7.78629	0.856757	0.543837
Repeat: 1	0.00306915	0.0054014	0.000377421	0.114663	2249.73
Repeat: 2	0.00332115	0.0045526	0.000322903	0.113113	2227
Repeat: 3	0.00303018	0.00397991	0.000354637	0.112869	2245.98
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	641001	18018.5			
Std Dev:	4315.23	98.2248			
%RSD:	0.673202	0.545133			
Repeat: 1	642276	17908.9			
Repeat: 2	636192	18048			
Repeat: 3	644535	18098.6			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	2.72026	201.835	5.20806	30.4294	10.1009
Std Dev:	0.478056	22.9178	2.30875	0.955233	0.0366328
%RSD:	17.5739	11.3547	44.3304	3.13918	0.362668
Repeat: 1	2.79658	210.676	7.85044	29.3373	10.1095
Repeat: 2	2.20864	175.814	3.58078	30.8416	10.0608
Repeat: 3	3.15557	219.016	4.19295	31.1093	10.1325
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	2.02414	2.14006	2.00353	10.6782	4.04793
Std Dev:	0.0741037	0.00494579	0.0166725	0.138259	0.226389
%RSD:	3.661	0.231105	0.832158	1.29478	5.59272
Repeat: 1	2.06	2.14577	1.99622	10.7018	3.96242
Repeat: 2	2.07349	2.13708	2.02261	10.8031	3.87674
Repeat: 3	1.93893	2.13734	1.99177	10.5297	4.30461
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	10.1672	105.069	2.96365	4.5945	3.16789

Std Dev:	0.414821	3.49327	0.0440295	4.71116	0.03063
%RSD:	4.07998	3.32475	1.48565	102.539	0.966891
Repeat: 1	10.6119	108.8	3.0018	9.69387	3.18477
Repeat: 2	10.099	101.876	2.91547	0.403974	3.13253
Repeat: 3	9.79076	104.531	2.97368	3.68565	3.18636
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	6.49106	10.4002	3.03426	6.17312	2.16542
Std Dev:	0.0433537	0.209217	0.0214599	0.127829	0.477153
%RSD:	0.667899	2.01167	0.707255	2.07073	22.0351
Repeat: 1	6.45469	10.4014	3.05769	6.04789	1.95611
Repeat: 2	6.53904	10.1903	3.02951	6.16805	1.82869
Repeat: 3	6.47945	10.6087	3.01557	6.3034	2.71146
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Fail
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	10.8936	3.05045	19.2556	19.5291	5.88218
Std Dev:	0.879489	0.226414	40.0123	0.706691	0.2415
%RSD:	8.07347	7.4223	207.795	3.61866	4.10562
Repeat: 1	9.91455	2.81145	63.8571	20.129	5.98089
Repeat: 2	11.1493	3.07818	7.39573	19.7082	5.60696
Repeat: 3	11.6168	3.26172	-13.486	18.7501	6.05869
QC Status Pass/Fail:	Pass	Fail	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	9.87959	9.22938	8.93255	10.5689	2240.91
Std Dev:	0.666554	0.945711	0.598424	0.0908015	12.1869
%RSD:	6.74679	10.2467	6.69936	0.859141	0.543837
Repeat: 1	9.57961	10.2299	9.49414	10.6729	2249.73
Repeat: 2	10.6434	9.10805	8.30308	10.528	2227
Repeat: 3	9.41573	8.35019	9.00044	10.5057	2245.98
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	641001	18018.5			
Std Dev:	4315.23	98.2248			
%RSD:	0.673202	0.545133			
Repeat: 1	642276	17908.9			
Repeat: 2	636192	18048			
Repeat: 3	644535	18098.6			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2240.91	641001	18018.5
Std Dev:	12.1869	4315.23	98.2248
%RSD:	0.543837	0.673202	0.545133
Repeat: 1	2249.73	642276	17908.9
Repeat: 2	2227	636192	18048
Repeat: 3	2245.98	644535	18098.6

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25301-IFA	9/9/2016 10:59:49AM	Unknown	1.00

Valid	Analyst Name	Method Name
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.000406779	20.6133	-0.012849	-0.000142286	0.0486451
Std Dev:	2.02287e-005	0.0512789	0.00144782	1.94063e-005	0.000733281
%RSD:	4.97289	0.248766	11.268	13.639	1.50741
Repeat: 1	0.000425483	20.5964	-0.013776	-0.000139262	0.0485236
Repeat: 2	0.00038531	20.671	-0.0111806	-0.000124568	0.0494316
Repeat: 3	0.000409544	20.5727	-0.0135903	-0.000163026	0.0479802
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	0.000932072	41.3038	0.378613	0.0425589	0.000362997
Std Dev:	4.15302e-005	0.55826	0.00286833	0.00154174	1.06971e-005
%RSD:	4.45568	1.35159	0.757588	3.6226	2.9469
Repeat: 1	0.000977077	41.0998	0.377368	0.0442282	0.000368258
Repeat: 2	0.000923911	41.9354	0.381893	0.04226	0.000350688
Repeat: 3	0.000895229	40.8763	0.376577	0.0411885	0.000370044
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.000198264	3.72868	-0.00502511	8.60053e-005	1.31067
Std Dev:	2.80335e-005	0.018471	0.000681879	1.39024e-005	0.00331828
%RSD:	14.1395	0.495377	13.5694	16.1646	0.253173
Repeat: 1	0.000215638	3.7441	-0.00549663	9.61868e-005	1.31191
Repeat: 2	0.000165924	3.73374	-0.00533543	9.16629e-005	1.3132
Repeat: 3	0.00021323	3.70821	-0.00424326	7.0166e-005	1.30692
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.000869071	-0.00814819	0.0365536	0.0319447	-0.252647
Std Dev:	1.24249e-005	0.00196227	0.000842061	0.00139947	0.00164646
%RSD:	1.42967	24.0822	2.30363	4.38092	0.651682
Repeat: 1	0.000878663	-0.00760378	0.0363223	0.0314903	-0.250794
Repeat: 2	0.000873515	-0.0103252	0.0358514	0.0335149	-0.253209
Repeat: 3	0.000855035	-0.00651562	0.0374872	0.0308289	-0.25394
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	-0.00505854	0.0202683	10.2471	-0.00752681	-0.00419051
Std Dev:	0.000340029	0.00141457	2.18387	0.00144636	0.000649288
%RSD:	6.72187	6.97924	21.3121	19.216	15.4942
Repeat: 1	-0.00491043	0.0216932	11.4772	-0.00785188	-0.00344721
Repeat: 2	-0.00544751	0.0188643	11.5385	-0.00594558	-0.0044773
Repeat: 3	-0.00481769	0.0202474	7.72564	-0.00878297	-0.00464702
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.00429424	0.00173047	-0.000144185	0.0154146	1926.27
Std Dev:	0.000366775	0.00103837	1.31545e-005	0.00239333	13.1973
%RSD:	8.54108	60.0051	9.12331	15.5264	0.685122
Repeat: 1	0.00389002	0.00232979	-0.000130914	0.0139968	1937.76
Repeat: 2	0.00460579	0.00233017	-0.000157219	0.0181779	1911.86
Repeat: 3	0.00438692	0.000531465	-0.000144423	0.0140691	1929.2
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	593443	16412.4			
Std Dev:	4528.01	96.5573			
%RSD:	0.763006	0.588319			
Repeat: 1	590580	16387.8			
Repeat: 2	598664	16330.5			
Repeat: 3	591086	16518.9			

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-1.40063	496993	-1.95474	2.00579	0.307794
Std Dev:	0.386576	1225.78	3.24284	1.19451	0.0402188
%RSD:	27.6003	0.246639	165.896	59.553	13.0668
Repeat: 1	-1.04423	496588	-4.0033	2.24567	0.297686
Repeat: 2	-1.81158	498370	1.78405	3.06215	0.352103
Repeat: 3	-1.34607	496021	-3.64497	0.709543	0.273594
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.117244	497.159	-0.501406	-1.94286	-0.669339
Std Dev:	0.0148036	6.71967	0.0649325	0.163131	0.267968
%RSD:	12.6264	1.35161	12.9501	8.39644	40.0348
Repeat: 1	0.132953	494.703	-0.562399	-1.76189	-0.551849
Repeat: 2	0.115224	504.762	-0.433146	-1.98806	-0.975983
Repeat: 3	0.103553	492.013	-0.508674	-2.07862	-0.480184
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	-0.430687	194493	0.0509713	7.55553	457.364
Std Dev:	0.313547	963.437	0.0344079	1.75558	1.15809
%RSD:	72.8015	0.495358	67.5044	23.2357	0.25321
Repeat: 1	-0.205431	195297	0.0271781	8.93016	457.794
Repeat: 2	-0.788787	194757	0.0353123	8.1585	458.245
Repeat: 3	-0.297844	193425	0.0904236	5.57792	456.052
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-1.83672	0.353958	0.345156	-1.43127	1.03823
Std Dev:	0.0146905	0.489618	0.0210876	0.280927	0.820635
%RSD:	0.799822	138.327	6.10957	19.6277	79.0418
Repeat: 1	-1.82682	0.500168	0.339363	-1.5344	1.82417
Repeat: 2	-1.82974	-0.192109	0.327571	-1.11336	1.1037
Repeat: 3	-1.8536	0.753816	0.368535	-1.64607	0.186821
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1.98222	0.525426	65.9131	-3.59685	-1.91026
Std Dev:	0.38058	3.20959	33.5479	0.968759	0.352726
%RSD:	19.1997	610.856	50.8972	26.9335	18.4649
Repeat: 1	2.12982	3.72036	84.8304	-3.81439	-1.50594
Repeat: 2	1.54995	-2.69863	85.73	-2.53782	-2.15497
Repeat: 3	2.26689	0.554549	27.1787	-4.43834	-2.06986
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	-16.7189	3.11937	2.6967	-0.000209636	1926.27
Std Dev:	1.46357	1.36373	0.297448	0.216647	13.1973
%RSD:	8.75399	43.7182	11.0301	103344	0.685122
Repeat: 1	-18.3816	3.90432	3.0076	-0.130401	1937.76
Repeat: 2	-15.6254	3.90911	2.41484	0.249882	1911.86
Repeat: 3	-16.1499	1.54467	2.66766	-0.12011	1929.2
Element/Wavelength	Sc3613	Sc3613-2			
Units:	----	----			
Avg. of Repeats:	593443	16412.4			
Std Dev:	4528.01	96.5573			

%RSD:	0.763006	0.588319
Repeat: 1	590580	16387.8
Repeat: 2	598664	16330.5
Repeat: 3	591086	16518.9

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	1926.27	593443	16412.4
Std Dev:	13.1973	4528.01	96.5573
%RSD:	0.685122	0.763006	0.588319
Repeat: 1	1937.76	590580	16387.8
Repeat: 2	1911.86	598664	16330.5
Repeat: 3	1929.2	591086	16518.9

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25301-IFB	9/9/2016 11:04:50AM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.0109584	20.9683	0.0366537	0.000525579	9.01604
Std Dev:	0.000106147	0.0431759	0.00151136	1.47525e-005	0.0171717
%RSD:	0.968635	0.205911	4.12335	2.8069	0.190457
Repeat: 1	0.0110807	21.0115	0.035344	0.000540099	8.99696
Repeat: 2	0.0108904	20.9251	0.0383074	0.000526035	9.03025
Repeat: 3	0.0109041	20.9681	0.0363098	0.000510604	9.02093
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	1.34524	41.6686	28.6871	4.12274	0.0198376
Std Dev:	0.00543569	0.126339	0.0497741	0.00901976	0.00025123
%RSD:	0.404069	0.3032	0.173507	0.218781	1.26644
Repeat: 1	1.34887	41.6009	28.6764	4.11283	0.0201234
Repeat: 2	1.33899	41.5905	28.6435	4.13047	0.0197377
Repeat: 3	1.34786	41.8143	28.7413	4.12491	0.0196516
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0492469	3.83552	-0.00563475	9.78271e-005	1.32992
Std Dev:	0.000473699	0.028997	0.000460467	2.71008e-005	0.00534019
%RSD:	0.961885	0.756012	8.17192	27.7028	0.401543
Repeat: 1	0.0497922	3.86721	-0.00548793	6.76392e-005	1.33281
Repeat: 2	0.0490111	3.81031	-0.00615073	0.000105781	1.32376
Repeat: 3	0.0489374	3.82904	-0.0052656	0.000120061	1.33319
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.167389	-0.00849222	0.0393271	4.72245	-0.155308
Std Dev:	0.00184173	0.0017741	0.000548579	0.00444602	0.0092001
%RSD:	1.10027	20.8908	1.39491	0.0941465	5.92377
Repeat: 1	0.169516	-0.00731625	0.038694	4.71845	-0.150281
Repeat: 2	0.166302	-0.00762753	0.0396248	4.72166	-0.149716
Repeat: 3	0.16635	-0.0105329	0.0396624	4.72724	-0.165926
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.590633	0.0445729	119.247	-0.00895036	2.10539
Std Dev:	0.000685361	0.000558135	2.09536	0.00022565	0.0173672
%RSD:	0.116038	1.25218	1.75716	2.52112	0.824892
Repeat: 1	0.589854	0.0439599	121.403	-0.00871295	2.12539
Repeat: 2	0.590902	0.0450516	117.218	-0.00916205	2.09411

Repeat: 3	0.591143	0.0447071	119.121	-0.00897609	2.09667
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.00413286	0.0805637	0.0224626	10.5846	1923.04
Std Dev:	0.000437503	0.00179706	0.000259704	0.0161694	0.588375
%RSD:	10.586	2.23061	1.15616	0.152764	0.0305961
Repeat: 1	0.00462725	0.0789746	0.0227579	10.5858	1922.8
Repeat: 2	0.0037957	0.0825139	0.0223602	10.5678	1923.71
Repeat: 3	0.00397562	0.0802025	0.0222698	10.6001	1922.6
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	592071	16264.2			
Std Dev:	6246.78	29.2916			
%RSD:	1.05507	0.180098			
Repeat: 1	585228	16233.7			
Repeat: 2	597468	16266.8			
Repeat: 3	593517	16292.1			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	201.838	505558	108.105	40.0026	533.055
Std Dev:	2.0446	1042.88	3.30346	0.94727	1.00667
%RSD:	1.01299	0.206283	3.05578	2.36802	0.188849
Repeat: 1	204.194	506604	105.254	40.9871	531.939
Repeat: 2	200.534	504519	111.725	39.9233	533.895
Repeat: 3	200.785	505552	107.336	39.0975	533.331
QC Status Pass/Fail:	Pass	Pass	Pass	None	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	519.871	501.549	1010.68	482.361	471.865
Std Dev:	2.10261	1.52072	1.76312	1.1126	6.0815
%RSD:	0.404449	0.303204	0.174449	0.230657	1.28882
Repeat: 1	521.275	500.735	1010.23	481.139	478.78
Repeat: 2	517.454	500.61	1009.18	483.316	469.468
Repeat: 3	520.884	503.304	1012.62	482.628	467.348
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	556.039	200070	0.0202086	9.27565	464.08
Std Dev:	5.42288	1512.51	0.0232354	3.52619	1.86361
%RSD:	0.975269	0.755988	114.978	38.0155	0.40157
Repeat: 1	562.284	201723	0.0276171	5.34114	465.088
Repeat: 2	553.319	198755	-0.0058277	10.3353	461.929
Repeat: 3	552.515	199732	0.0388363	12.1505	465.222
QC Status Pass/Fail:	Pass	Pass	None	None	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	477.005	0.671275	0.414611	962.896	49.838
Std Dev:	5.26577	0.452704	0.013738	0.9201	4.46205
%RSD:	1.10392	67.4394	3.31345	0.0955554	8.95312
Repeat: 1	483.085	0.98718	0.398757	962.058	52.5104
Repeat: 2	473.906	0.874009	0.422068	962.751	52.3166
Repeat: 3	474.024	0.152637	0.423009	963.881	44.6868
QC Status Pass/Fail:	Pass	None	None	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**

Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	661.943	54.3412	1737.32	-4.67665	1052.6
Std Dev:	0.935888	1.31628	32.234	0.150038	8.68983
%RSD:	0.141385	2.42226	1.85539	3.20822	0.825561
Repeat: 1	660.876	52.9004	1770.49	-4.51918	1062.61
Repeat: 2	662.324	55.4807	1706.11	-4.81795	1046.97
Repeat: 3	662.628	54.6424	1735.36	-4.69282	1048.21
QC Status Pass/Fail:	Pass	Pass	Fail	None	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	-17.9463	107.87	500.72	985.489	1923.04
Std Dev:	1.80095	2.37457	5.75626	1.50574	0.588375
%RSD:	10.0352	2.20133	1.1496	0.152791	0.0305961
Repeat: 1	-15.8912	105.775	507.269	985.592	1922.8
Repeat: 2	-19.2495	110.449	498.43	983.935	1923.71
Repeat: 3	-18.6981	107.385	496.461	986.941	1922.6
QC Status Pass/Fail:	None	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	592071	16264.2			
Std Dev:	6246.78	29.2916			
%RSD:	1.05507	0.180098			
Repeat: 1	585228	16233.7			
Repeat: 2	597468	16266.8			
Repeat: 3	593517	16292.1			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	1923.04	592071	16264.2
Std Dev:	0.588375	6246.78	29.2916
%RSD:	0.0305961	1.05507	0.180098
Repeat: 1	1922.8	585228	16233.7
Repeat: 2	1923.71	597468	16266.8
Repeat: 3	1922.6	593517	16292.1

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25301-CCV1	9/9/2016 11:13:40AM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.0252058	0.415247	0.460091	0.0178531	16.3635
Std Dev:	0.000398586	0.00110008	0.00075081	0.000236835	0.0130485
%RSD:	1.58133	0.264922	0.163187	1.32658	0.0797413
Repeat: 1	0.0248734	0.414635	0.460164	0.0177023	16.3748
Repeat: 2	0.0256477	0.416517	0.459306	0.0181261	16.3492
Repeat: 3	0.0250963	0.41459	0.460802	0.017731	16.3666
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	2.6634	4.22478	28.5941	8.08723	0.0406699
Std Dev:	0.0104511	0.0102086	0.045577	0.00245608	0.000564423
%RSD:	0.392398	0.241637	0.159393	0.0303699	1.38781
Repeat: 1	2.65164	4.21351	28.5417	8.08633	0.0401416

Repeat: 2	2.67162	4.23343	28.6238	8.09001	0.0412645
Repeat: 3	2.66695	4.22738	28.617	8.08534	0.0406035
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0911263	0.190323	0.183472	0.00767715	0.137905
Std Dev:	0.00128455	0.000847276	0.000830378	0.000134891	0.000783203
%RSD:	1.40964	0.445178	0.452592	1.75704	0.567929
Repeat: 1	0.0903103	0.189364	0.182744	0.0075434	0.137004
Repeat: 2	0.092607	0.190972	0.184376	0.00781315	0.138289
Repeat: 3	0.0904616	0.190632	0.183295	0.00767488	0.138422
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.343778	3.98569	1.93459	4.81726	1.97127
Std Dev:	0.00528344	0.00278714	0.00845371	0.00168264	0.00297279
%RSD:	1.53687	0.0699287	0.436977	0.0349294	0.150806
Repeat: 1	0.341356	3.98254	1.92508	4.81614	1.97176
Repeat: 2	0.349839	3.98665	1.94124	4.81645	1.97396
Repeat: 3	0.34014	3.98786	1.93746	4.8192	1.96808
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.894104	0.468435	288.532	1.49932	1.92154
Std Dev:	0.000893015	0.000623458	2.26453	0.0024274	0.0101289
%RSD:	0.0998782	0.133094	0.784846	0.161901	0.527124
Repeat: 1	0.893322	0.467728	291.126	1.49752	1.90992
Repeat: 2	0.893913	0.468906	287.515	1.50208	1.92849
Repeat: 3	0.895077	0.46867	286.953	1.49835	1.92621
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.239229	0.75246	0.0455945	10.6965	2209.82
Std Dev:	0.000866531	0.000989203	0.000589784	0.0253605	2.7795
%RSD:	0.362219	0.131463	1.29354	0.237092	0.125779
Repeat: 1	0.238376	0.752964	0.0450947	10.6754	2207.36
Repeat: 2	0.240109	0.75132	0.0462451	10.7246	2212.84
Repeat: 3	0.239202	0.753095	0.0454438	10.6894	2209.25
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	644482	17920.4			
Std Dev:	8024.67	39.0942			
%RSD:	1.24513	0.218154			
Repeat: 1	649222	17875.3			
Repeat: 2	635217	17942.2			
Repeat: 3	649008	17943.8			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	476.022	9882.86	1031.26	1037.22	970.856
Std Dev:	7.65348	26.3973	1.66771	13.8502	0.728438
%RSD:	1.6078	0.267102	0.161715	1.33532	0.0750304
Repeat: 1	469.638	9868.36	1031.43	1028.39	971.485
Repeat: 2	484.506	9913.33	1029.52	1053.18	970.058
Repeat: 3	473.922	9866.9	1032.84	1030.08	971.026
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	1030.5	50.8461	1020.09	957.737	981.605
Std Dev:	4.04094	0.122879	1.62704	0.286391	13.6976
%RSD:	0.392135	0.241669	0.1595	0.0299029	1.39543
Repeat: 1	1025.95	50.7106	1018.22	957.637	968.781

Repeat: 2	1033.67	50.9502	1021.15	958.06	996.035
Repeat: 3	1031.87	50.8775	1020.91	957.514	979.998
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	1024.98	9943.32	9.56259	1008.96	48.1363
Std Dev:	14.5715	44.2797	0.0419012	17.6298	0.273267
%RSD:	1.42164	0.445321	0.438178	1.74732	0.567695
Repeat: 1	1015.72	9893.25	9.52587	991.481	47.8219
Repeat: 2	1041.78	9977.31	9.60824	1026.74	48.2703
Repeat: 3	1017.44	9959.41	9.55367	1008.66	48.3166
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	988.539	1005.93	47.8773	985.915	962.962
Std Dev:	15.1963	0.704828	0.211705	0.343719	1.44409
%RSD:	1.53725	0.0700674	0.442181	0.0348629	0.149964
Repeat: 1	981.574	1005.13	47.6391	985.682	963.2
Repeat: 2	1005.97	1006.17	48.0438	985.754	964.273
Repeat: 3	978.074	1006.48	47.9491	986.31	961.414
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	996.229	1026.42	4318.29	1006.03	966.699
Std Dev:	0.982981	1.39138	34.7125	1.62361	5.06176
%RSD:	0.0986701	0.135557	0.803849	0.161387	0.523613
Repeat: 1	995.647	1024.84	4358.06	1004.83	960.891
Repeat: 2	995.677	1027.47	4302.72	1007.88	970.173
Repeat: 3	997.364	1026.95	4294.09	1005.39	969.032
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1000.53	1000.77	1005.34	995.209	2209.82
Std Dev:	3.63215	1.28203	13.0005	2.33456	2.7795
%RSD:	0.363022	0.128104	1.29315	0.23458	0.125779
Repeat: 1	996.963	1001.41	994.307	993.268	2207.36
Repeat: 2	1004.22	999.294	1019.67	997.799	2212.84
Repeat: 3	1000.41	1001.61	1002.03	994.559	2209.25
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	644482	17920.4
Std Dev:	8024.67	39.0942
%RSD:	1.24513	0.218154
Repeat: 1	649222	17875.3
Repeat: 2	635217	17942.2
Repeat: 3	649008	17943.8
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2209.82	644482	17920.4
Std Dev:	2.7795	8024.67	39.0942
%RSD:	0.125779	1.24513	0.218154

Repeat: 1	2207.36	649222	17875.3
Repeat: 2	2212.84	635217	17942.2
Repeat: 3	2209.25	649008	17943.8

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25301-CCB1	9/9/2016 11:18:03AM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.00049308	0.000334657	-0.00544304	0.000110609	0.0281961
Std Dev:	2.66394e-005	0.000963047	0.000772661	6.57419e-006	0.00152355
%RSD:	5.40265	287.771	14.1954	5.94364	5.40342
Repeat: 1	0.000507987	-0.000480757	-0.00483087	0.000110638	0.0296531
Repeat: 2	0.000462324	0.00139718	-0.00631121	0.000117168	0.0266137
Repeat: 3	0.000508929	8.75469e-005	-0.00518704	0.00010402	0.0283214
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00119613	0.000519712	0.032757	0.0185962	0.000205705
Std Dev:	0.000178012	2.55287e-005	0.00208286	0.00128558	2.0418e-005
%RSD:	14.8824	4.91209	6.35852	6.91314	9.92586
Repeat: 1	0.00136214	0.000490427	0.0338999	0.0196919	0.000192416
Repeat: 2	0.00121809	0.000537272	0.0340182	0.0189157	0.000229215
Repeat: 3	0.00100816	0.000531437	0.0303529	0.017181	0.000195483
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.000892561	-3.6493e-006	-0.00646273	-5.08084e-005	4.36639e-006
Std Dev:	4.72787e-005	9.23008e-005	0.000219294	9.66361e-006	4.51233e-005
%RSD:	5.29696	2529.27	3.39321	19.0197	1033.42
Repeat: 1	0.000943061	-7.25279e-005	-0.00657449	-5.0362e-005	2.65859e-005
Repeat: 2	0.000885274	-3.9646e-005	-0.00621007	-4.13757e-005	3.40713e-005
Repeat: 3	0.00084935	0.000101226	-0.00660363	-6.06875e-005	-4.7558e-005
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	4.05415e-005	0.00142953	0.0171742	0.0237764	-0.00492649
Std Dev:	1.92683e-005	0.000120689	0.000182389	0.000302721	0.00122163
%RSD:	47.5273	8.44255	1.06199	1.2732	24.7972
Repeat: 1	2.42999e-005	0.00149149	0.0173649	0.0236887	-0.00536478
Repeat: 2	6.18314e-005	0.00150666	0.0171565	0.0235272	-0.00586852
Repeat: 3	3.54932e-005	0.00129045	0.0170014	0.0241133	-0.00354618
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00749797	0.00924652	9.64444	-0.00127488	-0.0138014
Std Dev:	0.000777066	0.000575555	2.75663	0.000618469	0.000258903
%RSD:	10.3637	6.22456	28.5826	48.512	1.87592
Repeat: 1	-0.00661886	0.00863447	7.02756	-0.00198566	-0.0135365
Repeat: 2	-0.00778193	0.00977684	9.38351	-0.000979481	-0.0140538
Repeat: 3	-0.00809311	0.00932826	12.5223	-0.000859498	-0.0138139
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.000627735	-0.000900606	-5.80356e-005	0.00257783	2223.03
Std Dev:	0.000302344	6.23874e-005	1.93705e-005	0.00143782	4.31369
%RSD:	48.1643	6.92727	33.3769	55.7762	0.194045
Repeat: 1	0.00028873	-0.000829603	-6.15117e-005	0.00423467	2225.67
Repeat: 2	0.000869478	-0.000925564	-3.71624e-005	0.00184154	2225.37
Repeat: 3	0.000724997	-0.00094665	-7.54327e-005	0.00165729	2218.05
Element/Wavelength	**Sc3613**	**Sc3613-2**			

Avg. of Repeats:	636189	18193.7
Std Dev:	8933.97	114.289
%RSD:	1.4043	0.62818
Repeat: 1	634369	18062.2
Repeat: 2	628304	18250.3
Repeat: 3	645892	18268.6

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	0.582201	-8.57501	0.0938074	1.44047	0.0482495
Std Dev:	0.50614	23.2648	1.71462	0.383881	0.0892373
%RSD:	86.9356	271.309	1827.81	26.6497	184.95
Repeat: 1	0.866004	-28.2737	1.45196	1.44153	0.134288
Repeat: 2	-0.00215932	17.0927	-1.83286	1.82382	-0.0438751
Repeat: 3	0.882759	-14.5441	0.662327	1.05606	0.0543355
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.235852	-0.000417073	-0.0331148	0.162492	0.0236513
Std Dev:	0.0680023	0.000307284	0.0744879	0.154153	0.495661
%RSD:	28.8326	73.6762	224.938	94.868	2095.7
Repeat: 1	0.298748	-0.000769569	0.00815147	0.295363	-0.298862
Repeat: 2	0.245116	-0.000205707	0.011607	0.198633	0.594382
Repeat: 3	0.163693	-0.000275943	-0.119103	-0.0065207	-0.224566
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	1.17007	7.15497	-0.0215716	-0.0915916	0.00864535
Std Dev:	0.53538	4.81389	0.0110657	1.26251	0.0157401
%RSD:	45.7564	67.2803	51.2974	1378.41	182.064
Repeat: 1	1.74176	3.56088	-0.0272108	-0.0328475	0.0163954
Repeat: 2	1.08796	5.27977	-0.00882229	1.14052	0.0190077
Repeat: 3	0.680486	12.6243	-0.0286816	-1.38244	-0.00946706
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	0.0588581	0.616132	-0.140158	-0.213292	0.663591
Std Dev:	0.055427	0.0304562	0.00456753	0.0620124	0.590653
%RSD:	94.1707	4.94314	3.25885	29.074	89.0086
Repeat: 1	0.0122212	0.631745	-0.135384	-0.23132	0.445785
Repeat: 2	0.120136	0.635615	-0.140603	-0.264292	0.21277
Repeat: 3	0.0442172	0.581035	-0.144486	-0.144263	1.33222
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	0.924294	0.128686	42.1534	0.593102	-0.0867552
Std Dev:	0.880265	1.28658	42.2601	0.414491	0.129428
%RSD:	95.2365	999.783	100.253	69.8852	149.188
Repeat: 1	1.92253	-1.23957	2.03574	0.116759	0.04569
Repeat: 2	0.591039	1.31402	38.153	0.790962	-0.212939
Repeat: 3	0.259313	0.311605	86.2714	0.871586	-0.0930166
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**

Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	-0.508968	1.86635	-0.0421277	0.219882	2223.03
Std Dev:	1.2731	0.0797674	0.426526	0.133272	4.31369
%RSD:	250.133	4.27397	1012.46	60.6107	0.194045
Repeat: 1	-1.93665	1.9567	-0.120205	0.373485	2225.67
Repeat: 2	0.508297	1.83672	0.418043	0.151213	2225.37
Repeat: 3	-0.0985512	1.80564	-0.424221	0.134949	2218.05
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	636189	18193.7
Std Dev:	8933.97	114.289
%RSD:	1.4043	0.62818
Repeat: 1	634369	18062.2
Repeat: 2	628304	18250.3
Repeat: 3	645892	18268.6
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2223.03	636189	18193.7
Std Dev:	4.31369	8933.97	114.289
%RSD:	0.194045	1.4043	0.62818
Repeat: 1	2225.67	634369	18062.2
Repeat: 2	2225.37	628304	18250.3
Repeat: 3	2218.05	645892	18268.6

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I08004-BLK1	9/9/2016 11:22:28AM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000419687	0.000510708	-0.00511627	0.000135569	0.0334992
Std Dev:	1.44086e-005	0.000398631	0.000538758	1.7934e-005	0.000647551
%RSD:	3.43317	78.0545	10.5303	13.2286	1.93303
Repeat: 1	0.000419939	0.000629242	-0.00572471	0.000117302	0.0339865
Repeat: 2	0.000433969	6.62543e-005	-0.00469973	0.00015315	0.0327644
Repeat: 3	0.000405155	0.000836628	-0.00492439	0.000136255	0.0337468
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00055331	0.00379279	0.0354695	0.0172358	0.000218592
Std Dev:	0.000222387	0.000113582	0.0018396	0.000788374	1.08682e-005
%RSD:	40.1921	2.99468	5.18643	4.57404	4.97189
Repeat: 1	0.000805753	0.00383137	0.0339951	0.0163406	0.000221917
Repeat: 2	0.000467837	0.00366495	0.037531	0.0175404	0.00020645
Repeat: 3	0.000386341	0.00388206	0.0348823	0.0178265	0.000227409
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.000879385	-4.75916e-006	-0.00600057	-4.056e-005	-3.09799e-005
Std Dev:	8.38168e-005	5.2659e-005	0.000608707	1.40989e-005	3.85694e-005
%RSD:	9.53129	1106.48	10.1442	34.7607	124.498
Repeat: 1	0.000908435	4.85069e-005	-0.00625604	-2.66725e-005	-1.6139e-005
Repeat: 2	0.000944813	-5.67894e-005	-0.00530575	-5.48612e-005	-7.47652e-005
Repeat: 3	0.000784908	-5.99495e-006	-0.0064399	-4.01463e-005	-2.03532e-006

Element/Wavelength	Sc3613	Sc3613-2
Units:	----	----
Avg. of Repeats:	633802	17781.8
Std Dev:	4362.55	14.7946
%RSD:	0.688315	0.0832007
Repeat: 1	636965	17770.2
Repeat: 2	635615	17798.4
Repeat: 3	628825	17776.7
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	Sc1880	Sc3613	Sc3613-2
Avg. of Repeats:	2184.34	633802	17781.8
Std Dev:	6.56671	4362.55	14.7946
%RSD:	0.300627	0.688315	0.0832007
Repeat: 1	2184.85	636965	17770.2
Repeat: 2	2190.63	635615	17798.4
Repeat: 3	2177.53	628825	17776.7

Sample Name	Acquisition Date	Sample type	Correction Factor
6I25301-CCV6	9/9/2016 4:46:19PM	QC	1.00

Valid	Analyst Name	Method Name
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.0256282	0.409016	0.448193	0.0179297	15.546
Std Dev:	0.000231195	0.00114147	0.00151523	0.000181433	0.0347283
%RSD:	0.902113	0.279076	0.338076	1.01191	0.22339
Repeat: 1	0.0253775	0.408088	0.446457	0.0177318	15.5264
Repeat: 2	0.0258331	0.410291	0.449248	0.0180881	15.5255
Repeat: 3	0.0256739	0.40867	0.448873	0.0179693	15.5861
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	2.71739	4.31092	29.3176	7.97003	0.045602
Std Dev:	0.0106128	0.00966094	0.0755321	0.0174454	0.000519528
%RSD:	0.390552	0.224104	0.257634	0.218888	1.13927
Repeat: 1	2.70562	4.30177	29.2366	7.95201	0.045058
Repeat: 2	2.72623	4.32102	29.3861	7.97124	0.0460929
Repeat: 3	2.72032	4.30997	29.3302	7.98684	0.045655
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.0908376	0.201802	0.186342	0.00802385	0.141629
Std Dev:	0.0010446	0.0013081	0.000743587	9.79568e-005	0.000410009
%RSD:	1.14997	0.648208	0.399044	1.22082	0.289495
Repeat: 1	0.0896923	0.200292	0.186288	0.00791079	0.141477
Repeat: 2	0.091738	0.202557	0.187111	0.00807755	0.142093
Repeat: 3	0.0910824	0.202558	0.185627	0.00808322	0.141317
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.332245	4.11167	1.9451	4.57242	1.89465
Std Dev:	0.00322335	0.00848663	0.00677314	0.00869436	0.00265008
%RSD:	0.970173	0.206403	0.348216	0.190148	0.139871
Repeat: 1	0.32861	4.10196	1.93759	4.56365	1.89213
Repeat: 2	0.333371	4.11764	1.95076	4.57258	1.89442
Repeat: 3	0.334754	4.11543	1.94694	4.58103	1.89741
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215

Avg. of Repeats:	0.881866	0.472988	291.392	1.48469	2.0177
Std Dev:	0.000957238	0.000759705	3.12307	0.00417343	0.0107889
%RSD:	0.108547	0.160618	1.07177	0.281097	0.534712
Repeat: 1	0.881141	0.472337	291.666	1.48004	2.00642
Repeat: 2	0.882951	0.473823	288.142	1.48594	2.02791
Repeat: 3	0.881506	0.472804	294.37	1.4881	2.01877
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.242494	0.732775	0.0503543	11.2528	2387.98
Std Dev:	0.000526102	0.00121999	0.000620529	0.0274384	4.42944
%RSD:	0.216955	0.166489	1.23233	0.243836	0.185489
Repeat: 1	0.24195	0.732155	0.0497097	11.2218	2386.54
Repeat: 2	0.243	0.73199	0.0509476	11.2739	2392.95
Repeat: 3	0.242531	0.734181	0.0504057	11.2627	2384.45
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	671458	18771.9			
Std Dev:	5889.28	93.9405			
%RSD:	0.877088	0.500432			
Repeat: 1	678166	18707.9			
Repeat: 2	667138	18728			
Repeat: 3	669069	18879.7			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	484.529	9729.24	1004.75	1041.81	922.798
Std Dev:	4.46521	27.2963	3.35699	10.6112	2.05978
%RSD:	0.921557	0.280559	0.334111	1.01854	0.223211
Repeat: 1	479.691	9707.12	1000.91	1030.23	921.59
Repeat: 2	488.491	9759.75	1007.09	1051.07	921.628
Repeat: 3	485.405	9720.86	1006.26	1044.12	925.177
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	1051.35	51.883	1045.92	943.839	1101.38
Std Dev:	4.1014	0.116287	2.6971	2.07049	12.611
%RSD:	0.390108	0.224133	0.257868	0.219369	1.14502
Repeat: 1	1046.8	51.7728	1043.03	941.702	1088.18
Repeat: 2	1054.77	52.0046	1048.37	943.981	1113.3
Repeat: 3	1052.48	51.8716	1046.37	945.835	1102.66
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Fail
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	1021.72	10542.3	9.70745	1054.25	49.4362
Std Dev:	11.8499	68.3145	0.0375217	12.8022	0.143063
%RSD:	1.15979	0.648001	0.386525	1.21434	0.28939
Repeat: 1	1008.73	10463.5	9.70472	1039.47	49.3831
Repeat: 2	1031.94	10581.8	9.74626	1061.27	49.5982
Repeat: 3	1024.5	10581.8	9.67137	1062.01	49.3272
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	955.352	1037.74	48.1404	935.613	925.784
Std Dev:	9.26991	2.14366	0.169618	1.79122	1.28558
%RSD:	0.970313	0.20657	0.352341	0.191448	0.138864

Repeat: 1	944.898	1035.28	47.9525	933.804	924.555
Repeat: 2	958.589	1039.24	48.2823	935.65	925.678
Repeat: 3	962.569	1038.68	48.1864	937.386	927.12
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	979.726	1036.63	4362.19	996.208	1014.76
Std Dev:	0.821464	1.69744	47.8768	2.79444	5.39177
%RSD:	0.0838462	0.163745	1.09754	0.280507	0.531336
Repeat: 1	979.213	1035.18	4366.38	993.091	1009.12
Repeat: 2	980.674	1038.5	4312.36	997.041	1019.86
Repeat: 3	979.293	1036.22	4407.84	998.491	1015.29
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1014.16	975.057	1110.33	1047.24	2387.98
Std Dev:	2.20393	1.60766	13.6616	2.53469	4.42944
%RSD:	0.217315	0.164879	1.2304	0.242035	0.185489
Repeat: 1	1011.88	974.208	1096.14	1044.38	2386.54
Repeat: 2	1016.28	974.053	1123.39	1049.19	2392.95
Repeat: 3	1014.32	976.912	1111.47	1048.15	2384.45
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	671458	18771.9			
Std Dev:	5889.28	93.9405			
%RSD:	0.877088	0.500432			
Repeat: 1	678166	18707.9			
Repeat: 2	667138	18728			
Repeat: 3	669069	18879.7			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2387.98	671458	18771.9
Std Dev:	4.42944	5889.28	93.9405
%RSD:	0.185489	0.877088	0.500432
Repeat: 1	2386.54	678166	18707.9
Repeat: 2	2392.95	667138	18728
Repeat: 3	2384.45	669069	18879.7

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25301-CCB6	9/9/2016 4:50:45PM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000423183	-0.00026668	-0.00504682	0.000114799	0.0289718
Std Dev:	1.87865e-005	0.000369408	0.000762184	9.53286e-006	0.00214947
%RSD:	4.43933	138.521	15.1023	8.30393	7.41917
Repeat: 1	0.000402389	-0.000253679	-0.00586198	0.000104838	0.0304316
Repeat: 2	0.000438932	9.60552e-005	-0.00492656	0.000123837	0.0299804
Repeat: 3	0.000428228	-0.000642417	-0.00435191	0.000115723	0.0265036

Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	0.000938552	0.000882179	0.0322512	0.0166598	0.000182616
Std Dev:	0.000155664	0.000197515	0.00147853	0.000924975	4.85591e-006
%RSD:	16.5855	22.3894	4.58442	5.55213	2.65908
Repeat: 1	0.00110791	0.000737741	0.0316415	0.0159847	0.000177643
Repeat: 2	0.000906034	0.000801542	0.0311751	0.0162806	0.000187345
Repeat: 3	0.000801715	0.00110726	0.0339371	0.0177141	0.00018286
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.000726614	-9.76943e-005	-0.00597437	-1.64839e-005	-5.17818e-005
Std Dev:	1.67607e-005	4.07923e-005	0.000748109	2.78432e-005	4.67897e-005
%RSD:	2.30669	41.755	12.522	168.912	90.3592
Repeat: 1	0.00071307	-0.000119721	-0.00513571	-4.15162e-005	-1.64661e-006
Repeat: 2	0.000721415	-5.06237e-005	-0.00621438	1.35046e-005	-9.42884e-005
Repeat: 3	0.000745359	-0.000122738	-0.00657302	-2.14401e-005	-5.94105e-005
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.000248926	0.00329506	0.0292791	0.0258845	-0.00574545
Std Dev:	2.10784e-005	0.00017758	0.000344412	0.000741987	0.00198073
%RSD:	8.46774	5.38927	1.1763	2.86653	34.4748
Repeat: 1	0.000227376	0.00311592	0.0292137	0.0263161	-0.00401236
Repeat: 2	0.000249903	0.00329823	0.0289721	0.0263096	-0.00531947
Repeat: 3	0.000269499	0.00347103	0.0296515	0.0250277	-0.00790451
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	-0.00493581	0.00821826	8.40303	-0.00120799	-0.0115063
Std Dev:	0.000739517	0.00040819	0.578942	0.000613324	0.000338292
%RSD:	14.9827	4.96687	6.88968	50.7722	2.94006
Repeat: 1	-0.00421114	0.00863725	9.04645	-0.00161501	-0.0112318
Repeat: 2	-0.00568933	0.00782181	7.92421	-0.0015064	-0.0118842
Repeat: 3	-0.00490694	0.00819572	8.23844	-0.000502568	-0.0114029
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.000485582	-0.00118527	-3.3615e-005	0.00358395	2423.59
Std Dev:	0.000357762	0.000559104	9.17282e-006	0.000926286	12.8365
%RSD:	73.677	47.1709	27.2879	25.8454	0.529647
Repeat: 1	0.000847755	-0.000992154	-3.18846e-005	0.00368181	2418.66
Repeat: 2	0.0001324	-0.00181534	-4.35298e-005	0.00445742	2438.16
Repeat: 3	0.00047659	-0.000748329	-2.54307e-005	0.00261262	2413.95
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	689890	19225.9			
Std Dev:	5564.35	74.5244			
%RSD:	0.806556	0.387626			
Repeat: 1	696279	19279.1			
Repeat: 2	687278	19257.8			
Repeat: 3	686111	19140.7			

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.748269	-23.126	0.97167	1.68582	0.0960249
Std Dev:	0.35772	8.92858	1.69149	0.557326	0.126811
%RSD:	47.8063	38.6084	174.081	33.0597	132.06
Repeat: 1	-1.14447	-22.807	-0.837383	1.10361	0.182601
Repeat: 2	-0.449019	-14.3612	1.23852	2.21438	0.155009
Repeat: 3	-0.651316	-32.2098	2.51387	1.73946	-0.0495345
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677

Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.13545	0.00394587	-0.0508178	-0.0654525	-0.537122
Std Dev:	0.0611774	0.00237744	0.0530764	0.110471	0.11816
%RSD:	45.166	60.2514	104.445	168.781	21.9987
Repeat: 1	0.202379	0.0022073	-0.0728024	-0.148508	-0.658136
Repeat: 2	0.121557	0.00297525	-0.0893696	-0.107771	-0.422039
Repeat: 3	0.0824143	0.00665507	0.00971856	0.0599215	-0.531192
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	-0.712768	2.2506	0.00307117	4.38779	-0.0109395
Std Dev:	0.189799	2.12812	0.0377499	3.63976	0.0163223
%RSD:	26.6285	94.558	1229.17	82.952	149.205
Repeat: 1	-0.865455	1.10102	0.0453902	1.11539	0.00654994
Repeat: 2	-0.772582	4.70628	-0.00903977	8.30793	-0.0257674
Repeat: 3	-0.500267	0.94449	-0.0271369	3.74005	-0.013601
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	0.658347	1.08665	0.162982	0.219946	0.263393
Std Dev:	0.0606281	0.0447803	0.00862503	0.15246	0.963108
%RSD:	9.20915	4.12096	5.29201	69.3167	365.655
Repeat: 1	0.596388	1.04146	0.161344	0.308449	1.1049
Repeat: 2	0.661101	1.08746	0.155294	0.307488	0.472302
Repeat: 3	0.71755	1.13101	0.172309	0.043902	-0.787024
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	3.8252	-2.17058	23.1219	0.637797	1.0605
Std Dev:	0.835391	0.913352	8.87519	0.411013	0.169107
%RSD:	21.8391	42.0788	38.3843	64.4426	15.946
Repeat: 1	4.64387	-1.23323	32.9856	0.365008	1.19775
Repeat: 2	2.97404	-3.05788	15.7817	0.437857	0.871588
Repeat: 3	3.8577	-2.22062	20.5986	1.11053	1.11215
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	-1.10681	1.49002	0.485704	0.315507	2423.59
Std Dev:	1.50568	0.741769	0.198758	0.0869766	12.8365
%RSD:	136.038	49.7825	40.9217	27.5672	0.529647
Repeat: 1	0.417439	1.74897	0.521195	0.324547	2418.66
Repeat: 2	-2.59321	0.653488	0.271591	0.397611	2438.16
Repeat: 3	-1.14465	2.0676	0.664326	0.224364	2413.95
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	689890	19225.9			
Std Dev:	5564.35	74.5244			
%RSD:	0.806556	0.387626			
Repeat: 1	696279	19279.1			
Repeat: 2	687278	19257.8			
Repeat: 3	686111	19140.7			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	Sc1880	Sc3613	Sc3613-2
Avg. of Repeats:	2423.59	689890	19225.9
Std Dev:	12.8365	5564.35	74.5244
%RSD:	0.529647	0.806556	0.387626
Repeat: 1	2418.66	696279	19279.1
Repeat: 2	2438.16	687278	19257.8
Repeat: 3	2413.95	686111	19140.7

Sample Name	Acquisition Date	Sample type	Correction Factor
6H29010-BLK1	9/9/2016 4:56:29PM	QC	1.00

Valid	Analyst Name	Method Name
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.000398947	0.000381291	-0.00481206	9.94072e-005	0.0324472
Std Dev:	1.35129e-005	0.000301291	0.000214672	1.26346e-005	0.000880102
%RSD:	3.38713	79.0187	4.46113	12.7099	2.71241
Repeat: 1	0.000411018	0.00063634	-0.00457536	0.000111324	0.0321318
Repeat: 2	0.000401475	4.88545e-005	-0.00486663	8.61599e-005	0.0317682
Repeat: 3	0.000384349	0.000458678	-0.00499417	0.000100738	0.0334415
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	0.000861522	0.00378297	0.0346647	0.014377	0.000249288
Std Dev:	0.000123869	0.000165138	0.00243693	0.00100249	7.22568e-006
%RSD:	14.3779	4.3653	7.03	6.97288	2.89852
Repeat: 1	0.00099209	0.00361198	0.0329015	0.013229	0.000241042
Repeat: 2	0.000846812	0.00394156	0.0374455	0.0148219	0.000254511
Repeat: 3	0.000745665	0.00379537	0.0336471	0.0150799	0.000252312
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.000662431	-3.11117e-005	-0.0055714	-2.23471e-005	8.08333e-006
Std Dev:	1.30418e-005	7.28385e-005	0.000686604	4.5195e-006	1.4617e-005
%RSD:	1.96878	234.12	12.3237	20.2241	180.829
Repeat: 1	0.000668576	3.63265e-005	-0.00495105	-2.50894e-005	2.3306e-005
Repeat: 2	0.000647452	-0.000108357	-0.00630913	-2.48213e-005	6.78535e-006
Repeat: 3	0.000671266	-2.13047e-005	-0.00545401	-1.71308e-005	-5.84139e-006
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.000200831	0.00235223	0.0193332	0.0256707	-0.00547362
Std Dev:	4.343e-006	0.000604046	0.000106001	0.000320994	0.00224812
%RSD:	2.16251	25.6797	0.548284	1.25043	41.0719
Repeat: 1	0.000196151	0.00177776	0.0194486	0.0254248	-0.007713
Repeat: 2	0.00020161	0.00298205	0.0193108	0.0260339	-0.00549103
Repeat: 3	0.000204732	0.00229689	0.0192401	0.0255535	-0.00321685
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	-0.00517537	0.00823154	8.86565	0.0452467	-0.0107005
Std Dev:	0.00165507	0.00121581	1.22699	0.000299605	0.000315881
%RSD:	31.9798	14.7701	13.8398	0.662157	2.95201
Repeat: 1	-0.00465287	0.00698331	9.23246	0.0452405	-0.0105322
Repeat: 2	-0.00384461	0.00829922	7.4971	0.0455494	-0.0110649
Repeat: 3	-0.00702864	0.0094121	9.86741	0.0449503	-0.0105045
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.000767583	-0.00191964	-4.4091e-005	0.0753406	2483.18
Std Dev:	0.00024154	0.000968363	2.71275e-005	0.00102577	16.7704

%RSD:	31.4676	50.4449	61.5261	1.36151	0.675359
Repeat: 1	0.000972047	-0.00262709	-2.5147e-005	0.0754595	2494.19
Repeat: 2	0.000501072	-0.00081601	-3.19588e-005	0.0763018	2491.47
Repeat: 3	0.000829631	-0.00231583	-7.51672e-005	0.0742606	2463.88
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	707613	19924.7			
Std Dev:	3495.88	4.37283			
%RSD:	0.494039	0.0219468			
Repeat: 1	704082	19920			
Repeat: 2	711072	19925.3			
Repeat: 3	707684	19928.7			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-1.21119	-7.53227	1.49381	0.786911	0.301092
Std Dev:	0.260094	7.28716	0.47699	0.739099	0.050205
%RSD:	21.4743	96.746	31.9311	93.9241	16.6743
Repeat: 1	-0.979256	-1.36212	2.01998	1.48421	0.283804
Repeat: 2	-1.16191	-15.5721	1.37173	0.0121194	0.261815
Repeat: 3	-1.49239	-5.66258	1.08973	0.864402	0.357656
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.10686	0.0388621	0.0352218	-0.339149	1.08173
Std Dev:	0.0480796	0.00198773	0.0872513	0.120517	0.175617
%RSD:	44.9931	5.11483	247.72	35.5351	16.2348
Repeat: 1	0.158	0.036804	-0.0279228	-0.477391	0.881325
Repeat: 2	0.100002	0.040771	0.134782	-0.283856	1.20875
Repeat: 3	0.0625776	0.0390114	-0.00119385	-0.2562	1.15513
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	-1.43973	5.72887	0.0234055	3.62572	0.00994438
Std Dev:	0.14869	3.79856	0.0346463	0.590543	0.00509937
%RSD:	10.3277	66.3056	148.026	16.2876	51.2789
Repeat: 1	-1.36929	9.24556	0.0547083	3.2672	0.0152551
Repeat: 2	-1.61055	1.70034	-0.0138206	3.30265	0.0094915
Repeat: 3	-1.33934	6.2407	0.0293289	4.30731	0.00508656
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	0.519933	0.850689	-0.0860924	0.175577	0.399158
Std Dev:	0.0125366	0.152299	0.00265455	0.0656845	1.09099
%RSD:	2.4112	17.903	3.08337	37.4106	273.323
Repeat: 1	0.506395	0.705921	-0.0832022	0.125132	-0.686714
Repeat: 2	0.522261	1.00954	-0.0866533	0.24985	0.388993
Repeat: 3	0.531142	0.836605	-0.0884217	0.15175	1.4952
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	3.51666	-2.1415	30.2143	31.7718	1.46283
Std Dev:	1.86522	2.71914	18.8102	0.200678	0.157928
%RSD:	53.0396	126.973	62.256	0.631624	10.7961

Repeat: 1	4.10923	-4.93329	35.8377	31.7675	1.54702
Repeat: 2	5.01361	-1.98985	9.23372	31.9745	1.28065
Repeat: 3	1.42714	0.498634	45.5714	31.5732	1.56084
QC Status Pass/Fail:	Pass	Pass	Fail	Fail	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	0.0787027	0.521863	0.272042	7.02772	2483.18
Std Dev:	1.01702	1.27735	0.591069	0.0954174	16.7704
%RSD:	1292.23	244.767	217.271	1.35773	0.675359
Repeat: 1	0.939374	-0.409681	0.682859	7.0386	2494.19
Repeat: 2	-1.04355	1.97798	0.538633	7.11723	2491.47
Repeat: 3	0.340289	-0.00271045	-0.405367	6.92732	2463.88
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	707613	19924.7			
Std Dev:	3495.88	4.37283			
%RSD:	0.494039	0.0219468			
Repeat: 1	704082	19920			
Repeat: 2	711072	19925.3			
Repeat: 3	707684	19928.7			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2483.18	707613	19924.7
Std Dev:	16.7704	3495.88	4.37283
%RSD:	0.675359	0.494039	0.0219468
Repeat: 1	2494.19	704082	19920
Repeat: 2	2491.47	711072	19925.3
Repeat: 3	2463.88	707684	19928.7

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6H29010-BS1	9/9/2016 5:00:54PM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.0128221	0.0852935	0.105972	0.016712	32.308
Std Dev:	0.000149062	0.00044524	0.000865921	8.85507e-005	0.104772
%RSD:	1.16254	0.52201	0.817126	0.529862	0.324292
Repeat: 1	0.0127931	0.084902	0.106245	0.0167605	32.2204
Repeat: 2	0.0126896	0.0857778	0.105002	0.0166098	32.2795
Repeat: 3	0.0129835	0.0852006	0.106667	0.0167657	32.424
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.130836	0.453575	3.74034	4.2404	0.00953083
Std Dev:	0.000368988	0.00209182	0.00788475	0.0126259	7.7974e-005
%RSD:	0.282024	0.461186	0.210803	0.297752	0.818124
Repeat: 1	0.130949	0.451399	3.73216	4.22947	0.00950116
Repeat: 2	0.131135	0.455572	3.74098	4.23751	0.00947204
Repeat: 3	0.130424	0.453754	3.74789	4.25422	0.00961928
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0231205	0.0210103	0.0893021	0.00819455	0.0150556

Std Dev:	0.000174516	0.000118405	0.000850442	5.32311e-005	6.65354e-005
%RSD:	0.75481	0.563556	0.952319	0.649592	0.441932
Repeat: 1	0.0231399	0.0211241	0.0897305	0.00821802	0.0149788
Repeat: 2	0.022937	0.0208878	0.0898533	0.00813362	0.0150959
Repeat: 3	0.0232845	0.0210189	0.0883227	0.00823201	0.0150921
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.173172	4.14681	0.223979	2.41035	0.480665
Std Dev:	0.00108227	0.00924863	0.00056526	0.0106974	0.00204531
%RSD:	0.62497	0.22303	0.252372	0.443811	0.425517
Repeat: 1	0.173527	4.13976	0.224363	2.40328	0.478544
Repeat: 2	0.171957	4.14339	0.224245	2.40511	0.480827
Repeat: 3	0.174032	4.15728	0.22333	2.42265	0.482625
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.206865	0.117905	17.2832	1.53701	2.09027
Std Dev:	0.000791622	0.00119329	2.20991	0.00268184	0.000462309
%RSD:	0.382676	1.01208	12.7865	0.174484	0.0221172
Repeat: 1	0.206403	0.116965	18.258	1.53629	2.0908
Repeat: 2	0.206413	0.117502	18.838	1.53477	2.09005
Repeat: 3	0.207779	0.119247	14.7534	1.53998	2.08995
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.241831	0.184542	0.0255535	5.83745	2431.6
Std Dev:	0.0010041	0.00147923	0.000219129	0.0187856	10.2843
%RSD:	0.415207	0.801565	0.857529	0.321812	0.422942
Repeat: 1	0.24131	0.18345	0.0255406	5.82747	2438.14
Repeat: 2	0.242989	0.186226	0.0253412	5.82576	2436.91
Repeat: 3	0.241195	0.183952	0.0257789	5.85912	2419.74
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	682035	19232.9			
Std Dev:	3031.68	83.1469			
%RSD:	0.444505	0.432315			
Repeat: 1	683330	19326.9			
Repeat: 2	684204	19169.1			
Repeat: 3	678571	19202.8			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	238.09	1998.87	244.913	971.181	1913.64
Std Dev:	2.86192	10.7084	1.9173	5.17739	6.2168
%RSD:	1.20203	0.535725	0.782849	0.533102	0.324867
Repeat: 1	237.536	1989.52	245.525	974.019	1908.45
Repeat: 2	235.546	2010.55	242.765	965.205	1911.94
Repeat: 3	241.189	1996.53	246.45	974.319	1920.53
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	51.1312	5.45292	132.502	501.235	226.043
Std Dev:	0.147623	0.0251789	0.282049	1.505	1.89253
%RSD:	0.288715	0.46175	0.212864	0.300258	0.837245
Repeat: 1	51.1729	5.42673	132.209	499.938	225.323
Repeat: 2	51.2534	5.47695	132.524	500.882	224.617
Repeat: 3	50.9672	5.45507	132.772	502.886	228.19
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**

Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	253.416	1106.69	4.81076	1078.01	5.27372
Std Dev:	1.97609	6.18853	0.0429136	6.96023	0.0232288
%RSD:	0.779782	0.559194	0.892034	0.645658	0.440462
Repeat: 1	253.635	1112.63	4.83238	1081.07	5.24691
Repeat: 2	251.339	1100.28	4.83857	1070.04	5.28777
Repeat: 3	255.273	1107.16	4.76134	1082.91	5.28649
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	498.016	1046.27	5.03882	491.15	237.922
Std Dev:	3.11286	2.33342	0.0141557	2.20134	0.995964
%RSD:	0.625052	0.223022	0.280933	0.448201	0.41861
Repeat: 1	499.037	1044.5	5.04843	489.696	236.888
Repeat: 2	494.521	1045.41	5.04547	490.071	238.003
Repeat: 3	500.491	1048.92	5.02257	493.683	238.874
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	239.908	243.212	159.338	1031.41	1051.65
Std Dev:	0.855649	2.66896	33.8783	1.79619	0.231392
%RSD:	0.356658	1.09738	21.2618	0.174148	0.0220027
Repeat: 1	239.399	241.109	174.284	1030.92	1051.92
Repeat: 2	239.428	242.311	183.174	1029.91	1051.54
Repeat: 3	240.895	246.214	120.557	1033.4	1051.5
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1014.6	250.077	560.463	544.79	2431.6
Std Dev:	4.22785	1.95737	4.80164	1.75279	10.2843
%RSD:	0.4167	0.782708	0.856727	0.321736	0.422942
Repeat: 1	1012.41	248.627	560.175	543.856	2438.14
Repeat: 2	1019.48	252.303	555.812	543.702	2436.91
Repeat: 3	1011.92	249.3	565.402	546.812	2419.74
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	682035	19232.9			
Std Dev:	3031.68	83.1469			
%RSD:	0.444505	0.432315			
Repeat: 1	683330	19326.9			
Repeat: 2	684204	19169.1			
Repeat: 3	678571	19202.8			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2431.6	682035	19232.9
Std Dev:	10.2843	3031.68	83.1469
%RSD:	0.422942	0.444505	0.432315
Repeat: 1	2438.14	683330	19326.9
Repeat: 2	2436.91	684204	19169.1
Repeat: 3	2419.74	678571	19202.8

Sample Name	Acquisition Date	Sample type	Correction Factor
1608229-01@2X	9/9/2016 5:05:13PM	Unknown	1.00

Valid	Analyst Name	Method Name
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.000369631	2.44915	0.0208702	0.00126465	1.60475
Std Dev:	3.02491e-005	0.00505215	0.000923513	9.60157e-006	0.00699167
%RSD:	8.1836	0.206282	4.42503	0.75923	0.435685
Repeat: 1	0.000379384	2.45102	0.0212271	0.00126034	1.60741
Repeat: 2	0.000335708	2.453	0.0198215	0.00125795	1.59682
Repeat: 3	0.0003938	2.44343	0.0215621	0.00127565	1.61003
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	0.00746492	0.189068	0.207961	0.568168	0.00476139
Std Dev:	0.000152872	0.000463865	0.000668955	0.00493952	3.63891e-005
%RSD:	2.04787	0.245343	0.321674	0.869376	0.764253
Repeat: 1	0.00763971	0.189131	0.208647	0.56768	0.00478297
Repeat: 2	0.0073562	0.189497	0.207311	0.56349	0.00471938
Repeat: 3	0.00739884	0.188575	0.207924	0.573333	0.00478183
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.00290003	3.34921	0.179657	0.00140941	0.0372479
Std Dev:	3.51581e-005	0.00546672	0.00101957	2.09169e-005	5.61709e-005
%RSD:	1.21234	0.163224	0.567511	1.48409	0.150803
Repeat: 1	0.00292633	3.35455	0.180833	0.00142336	0.0372848
Repeat: 2	0.00286009	3.34947	0.179026	0.00138536	0.0372756
Repeat: 3	0.00291366	3.34362	0.179112	0.00141951	0.0371833
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.22894	0.176029	0.387041	0.51246	0.0380513
Std Dev:	0.00248529	0.000675588	0.00293505	0.00306382	0.00113741
%RSD:	1.08556	0.383794	0.75833	0.597866	2.98916
Repeat: 1	0.230159	0.176808	0.390338	0.512705	0.0381126
Repeat: 2	0.226081	0.175665	0.386074	0.509282	0.0391568
Repeat: 3	0.230581	0.175613	0.384712	0.515394	0.0368844
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	-0.00044354	0.0113645	1376.42	0.0180783	0.0715998
Std Dev:	0.000437941	0.000602878	8.49936	0.000256585	0.000512433
%RSD:	98.7376	5.30493	0.617497	1.4193	0.71569
Repeat: 1	4.59695e-005	0.0115708	1384.31	0.0183526	0.0721592
Repeat: 2	-0.000578397	0.0106855	1367.42	0.0178442	0.0711531
Repeat: 3	-0.000798193	0.0118371	1377.53	0.0180381	0.0714873
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.288852	-0.00207361	0.00769493	2.6166	2464.11
Std Dev:	0.00069082	0.000850948	4.01269e-005	0.00876608	11.8797
%RSD:	0.239161	41.037	0.521472	0.335017	0.482111
Repeat: 1	0.289361	-0.00111408	0.00772634	2.61323	2463.11
Repeat: 2	0.289129	-0.00237008	0.00764972	2.61003	2476.46
Repeat: 3	0.288065	-0.00273666	0.00770872	2.62656	2452.77
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	699929	19496.3			
Std Dev:	6676.96	112.208			
%RSD:	0.953949	0.575535			
Repeat: 1	696366	19395.8			

Repeat: 2	707632	19475.7
Repeat: 3	695790	19617.4

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-1.33979	59137.2	63.7433	82.606	93.1471
Std Dev:	0.57936	122.029	2.046	0.541696	0.417165
%RSD:	43.2427	0.206349	3.20974	0.655758	0.447856
Repeat: 1	-1.15161	59182.3	64.5424	82.3766	93.3056
Repeat: 2	-1.98984	59230.2	61.4184	82.2168	92.6739
Repeat: 3	-0.877904	58999	65.2692	83.2247	93.4618
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	3.73584	2.2691	-0.500613	58.7583	108.324
Std Dev:	0.0603437	0.00558345	0.0215801	0.595401	0.880038
%RSD:	1.61526	0.246065	4.31073	1.01331	0.81241
Repeat: 1	3.80519	2.26986	-0.486273	58.6896	108.843
Repeat: 2	3.69531	2.27426	-0.525432	58.2003	107.308
Repeat: 3	3.70703	2.26317	-0.490135	59.3851	108.822
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	31.0255	174704	9.3701	190.199	13.0943
Std Dev:	0.400063	285.136	0.051448	2.73471	0.0197359
%RSD:	1.28947	0.163211	0.549066	1.43781	0.150721
Repeat: 1	31.3351	174982	9.42946	192.021	13.1073
Repeat: 2	30.5738	174717	9.33825	187.055	13.104
Repeat: 3	31.1675	174412	9.3426	191.523	13.0716
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	654.604	46.6741	9.12234	98.5205	33.3576
Std Dev:	7.14927	0.173117	0.0735018	0.632494	0.5798
%RSD:	1.09215	0.370906	0.805734	0.641993	1.73813
Repeat: 1	658.103	46.8738	9.20489	98.5681	33.3938
Repeat: 2	646.379	46.5823	9.09811	97.8656	33.9184
Repeat: 3	659.329	46.5663	9.064	99.1279	32.7605
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	3.01718	-0.850171	21008.1	13.52	42.5746
Std Dev:	0.482849	1.35029	130.305	0.171761	0.256178
%RSD:	16.0033	158.826	0.620257	1.27042	0.601716
Repeat: 1	3.55132	-0.397026	21129.2	13.7037	42.8542
Repeat: 2	2.88853	-2.36875	20870.2	13.3634	42.3511
Repeat: 3	2.61168	0.215266	21025.1	13.493	42.5184
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1212.41	2.03903	173.643	244.011	2464.11
Std Dev:	2.90784	1.12819	0.887073	0.815967	11.8797
%RSD:	0.239839	55.3298	0.510859	0.334398	0.482111

Repeat: 1	1214.55	3.30955	174.34	243.692	2463.11
Repeat: 2	1213.58	1.65308	172.645	243.403	2476.46
Repeat: 3	1209.1	1.15446	173.946	244.938	2452.77
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	699929	19496.3
Std Dev:	6676.96	112.208
%RSD:	0.953949	0.575535
Repeat: 1	696366	19395.8
Repeat: 2	707632	19475.7
Repeat: 3	695790	19617.4
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2464.11	699929	19496.3
Std Dev:	11.8797	6676.96	112.208
%RSD:	0.482111	0.953949	0.575535
Repeat: 1	2463.11	696366	19395.8
Repeat: 2	2476.46	707632	19475.7
Repeat: 3	2452.77	695790	19617.4

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608229-02@2X	9/9/2016 5:09:32PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000378902	2.462	0.0234905	0.00132579	1.0792
Std Dev:	2.20953e-005	0.00498385	0.000298684	2.88995e-005	0.00191083
%RSD:	5.8314	0.202431	1.27151	2.1798	0.17706
Repeat: 1	0.000356638	2.4565	0.023182	0.00135389	1.08132
Repeat: 2	0.000400824	2.46328	0.0237783	0.00129615	1.07762
Repeat: 3	0.000379243	2.46622	0.0235113	0.00132732	1.07866
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00642709	0.0979181	0.193665	0.398616	0.00699139
Std Dev:	0.000291423	0.00016384	0.000847423	0.000851304	0.000114117
%RSD:	4.5343	0.167323	0.437571	0.213565	1.63225
Repeat: 1	0.00642435	0.0977999	0.194147	0.399291	0.00712198
Repeat: 2	0.00613704	0.0981051	0.194161	0.397659	0.00694129
Repeat: 3	0.00671987	0.0978493	0.192687	0.398898	0.00691088
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00566661	3.04567	0.235231	0.00147935	0.0601081
Std Dev:	6.47964e-005	0.00400336	0.00090397	1.31897e-005	0.000112371
%RSD:	1.14348	0.131444	0.384291	0.891591	0.186949
Repeat: 1	0.00574021	3.04133	0.235283	0.00149457	0.060133
Repeat: 2	0.00561815	3.04647	0.234302	0.00147199	0.0599854
Repeat: 3	0.00564147	3.04922	0.236108	0.00147148	0.0602059
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.184321	0.0158886	0.123436	0.459352	0.0437434
Std Dev:	0.0028201	0.000374764	0.000462331	0.000676117	0.00270518
%RSD:	1.52999	2.3587	0.374552	0.147189	6.18421

Repeat: 1	0.187535	0.0161703	0.123275	0.458572	0.0466982
Repeat: 2	0.182261	0.0154633	0.123075	0.45971	0.0413887
Repeat: 3	0.183167	0.0160322	0.123957	0.459774	0.0431433
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.000716092	0.0123718	1202.65	0.0200197	0.0557381
Std Dev:	0.000339846	0.000365635	3.46854	0.000352037	0.000451058
%RSD:	47.4585	2.95539	0.288408	1.75845	0.809245
Repeat: 1	0.000328479	0.0127407	1203.8	0.0203792	0.0555873
Repeat: 2	0.000962934	0.0123652	1198.75	0.0200043	0.0562453
Repeat: 3	0.000856862	0.0120095	1205.4	0.0196756	0.0553818
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.367573	-0.00155193	0.0107202	3.35785	2479.27
Std Dev:	0.000898016	0.000875356	0.000159904	0.00969607	3.48524
%RSD:	0.244309	56.4044	1.49161	0.288758	0.140575
Repeat: 1	0.366554	-0.000592339	0.0109048	3.34817	2475.4
Repeat: 2	0.368248	-0.00230675	0.0106229	3.36756	2482.15
Repeat: 3	0.367917	-0.0017567	0.010633	3.35782	2480.27
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	692508	19403.2			
Std Dev:	9224.81	53.0746			
%RSD:	1.33209	0.273535			
Repeat: 1	681926	19364			
Repeat: 2	698849	19382.1			
Repeat: 3	696750	19463.6			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.820432	59451.8	69.3671	84.9886	62.3264
Std Dev:	0.408835	120.392	0.669735	1.68012	0.125728
%RSD:	49.8317	0.202504	0.965494	1.97687	0.201725
Repeat: 1	-1.22849	59318.9	68.6724	86.6145	62.4672
Repeat: 2	-0.410819	59482.6	70.0087	83.2591	62.2253
Repeat: 3	-0.82199	59553.7	69.4202	85.0923	62.2868
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	3.61892	1.17195	-0.442575	38.3501	162.623
Std Dev:	0.112167	0.00197211	0.0371874	0.109483	2.76952
%RSD:	3.09945	0.168276	8.40251	0.285484	1.70303
Repeat: 1	3.61211	1.17053	-0.416079	38.4442	165.792
Repeat: 2	3.51031	1.1742	-0.426559	38.2299	161.409
Repeat: 3	3.73434	1.17112	-0.485087	38.3761	160.667
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	62.045	158871	12.1744	199.47	21.0607
Std Dev:	0.72593	208.771	0.0456147	1.72477	0.0392215
%RSD:	1.17001	0.131409	0.374678	0.864674	0.186231
Repeat: 1	62.8687	158645	12.177	201.461	21.0693
Repeat: 2	61.4988	158912	12.1275	198.509	21.0179
Repeat: 3	61.7675	159056	12.2186	198.44	21.0949
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**

Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	526.613	6.14245	2.52093	87.7324	36.4302
Std Dev:	8.1155	0.0938555	0.0115781	0.13554	1.29107
%RSD:	1.54107	1.52798	0.459278	0.154493	3.54396
Repeat: 1	535.862	6.21138	2.51691	87.576	37.8345
Repeat: 2	520.686	6.03556	2.51189	87.8047	35.2946
Repeat: 3	523.291	6.18041	2.53398	87.8164	36.1616
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	3.16387	1.81521	18343	14.8046	34.66
Std Dev:	0.440847	0.823506	53.1744	0.235169	0.225457
%RSD:	13.9338	45.3669	0.289889	1.58849	0.650481
Repeat: 1	2.65838	2.64563	18360.6	15.0445	34.5846
Repeat: 2	3.4686	1.80121	18283.3	14.7948	34.9135
Repeat: 3	3.36464	0.998798	18385.2	14.5745	34.4819
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1543.53	3.84553	239.528	313.412	2479.27
Std Dev:	3.78274	1.15146	3.51503	0.913062	3.48524
%RSD:	0.24507	29.9429	1.46748	0.29133	0.140575
Repeat: 1	1539.24	5.1082	243.585	312.499	2475.4
Repeat: 2	1546.38	2.85349	237.391	314.325	2482.15
Repeat: 3	1544.98	3.57489	237.609	313.411	2480.27
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	692508	19403.2			
Std Dev:	9224.81	53.0746			
%RSD:	1.33209	0.273535			
Repeat: 1	681926	19364			
Repeat: 2	698849	19382.1			
Repeat: 3	696750	19463.6			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2479.27	692508	19403.2
Std Dev:	3.48524	9224.81	53.0746
%RSD:	0.140575	1.33209	0.273535
Repeat: 1	2475.4	681926	19364
Repeat: 2	2482.15	698849	19382.1
Repeat: 3	2480.27	696750	19463.6

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608229-03@2X	9/9/2016 5:13:52PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.00040665	2.6475	0.0170999	0.001269	1.56718
Std Dev:	1.49176e-005	0.010574	0.000416587	1.44363e-005	0.00376856

%RSD:	3.66841	0.399396	2.4362	1.13761	0.240468
Repeat: 1	0.000422469	2.63831	0.016625	0.00127677	1.56798
Repeat: 2	0.000404645	2.65906	0.0174036	0.00127788	1.57048
Repeat: 3	0.000392837	2.64512	0.017271	0.00125234	1.56307
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00966954	0.0922019	0.240403	0.340853	0.00602712
Std Dev:	0.000217042	0.00032959	0.000918631	0.000780548	3.21207e-005
%RSD:	2.2446	0.357466	0.382121	0.228999	0.532935
Repeat: 1	0.00977084	0.0919566	0.240329	0.341353	0.00605483
Repeat: 2	0.00981742	0.0925765	0.241357	0.339953	0.00603463
Repeat: 3	0.00942037	0.0920725	0.239524	0.341252	0.00599191
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00416945	4.38115	0.173988	0.00212357	0.0381328
Std Dev:	2.94485e-005	0.0141214	0.000680166	2.33615e-005	0.000168005
%RSD:	0.706291	0.322323	0.390927	1.1001	0.440579
Repeat: 1	0.00419274	4.37426	0.174437	0.00215054	0.0379466
Repeat: 2	0.00417927	4.39739	0.174322	0.00211003	0.0381786
Repeat: 3	0.00413635	4.37179	0.173205	0.00211013	0.0382731
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.672758	0.0141593	0.15138	0.354209	0.0668996
Std Dev:	0.00351472	0.000907612	0.00124909	0.00118905	0.000152068
%RSD:	0.522434	6.41002	0.82513	0.335691	0.227308
Repeat: 1	0.669464	0.013962	0.152066	0.354093	0.0667268
Repeat: 2	0.676458	0.0151493	0.152137	0.353083	0.0670129
Repeat: 3	0.672352	0.0133665	0.149939	0.355452	0.0669592
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.00119791	0.0122531	1446.26	0.0363376	0.048748
Std Dev:	0.00117479	0.000818697	2.97769	0.000275763	0.000403611
%RSD:	98.0697	6.68155	0.205888	0.758891	0.827954
Repeat: 1	0.00156975	0.0128618	1444.63	0.0366	0.0491931
Repeat: 2	0.00214178	0.0113224	1444.46	0.0360502	0.0486449
Repeat: 3	-0.0001178	0.0125751	1449.7	0.0363626	0.0484059
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.328258	-0.000397713	0.00864125	3.02787	2494.8
Std Dev:	0.00135457	9.88265e-005	7.96821e-005	0.0110107	6.66728
%RSD:	0.412652	24.8487	0.922114	0.363644	0.267247
Repeat: 1	0.327247	-0.000511701	0.00862287	3.0167	2499.13
Repeat: 2	0.329797	-0.00033607	0.00872851	3.02821	2498.15
Repeat: 3	0.32773	-0.000345367	0.00857236	3.03872	2487.12
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	700551	19605.5			
Std Dev:	3947.54	182.133			
%RSD:	0.563491	0.928993			
Repeat: 1	697887	19614.3			
Repeat: 2	698679	19419.1			
Repeat: 3	705086	19783			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.769939	63930.1	56.8175	87.1731	90.7326
Std Dev:	0.286536	255.407	0.939321	0.880882	0.225801
%RSD:	37.2154	0.399509	1.65323	1.0105	0.248864
Repeat: 1	-0.468613	63708.3	55.7499	87.599	90.7808

Repeat: 2	-0.802262	64209.3	57.517	87.7601	90.9304
Repeat: 3	-1.03894	63872.7	57.1856	86.1603	90.4866
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	4.73505	1.10314	-1.30876	30.016	137.801
Std Dev:	0.0858254	0.00396721	0.0127607	0.121519	0.779519
%RSD:	1.81256	0.359628	0.975024	0.404847	0.565685
Repeat: 1	4.77037	1.10019	-1.29682	30.0924	138.483
Repeat: 2	4.79757	1.10765	-1.30724	29.8759	137.968
Repeat: 3	4.63719	1.10159	-1.32221	30.0797	136.951
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	47.5161	228535	9.08404	283.665	13.4308
Std Dev:	0.345571	736.606	0.0343215	3.05415	0.0586711
%RSD:	0.727272	0.322317	0.377822	1.07667	0.436838
Repeat: 1	47.7647	228176	9.10669	287.192	13.3657
Repeat: 2	47.6622	229382	9.10088	281.893	13.4473
Repeat: 3	47.1215	228046	9.04455	281.91	13.4795
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1929.98	6.46213	3.22074	65.5449	47.4841
Std Dev:	10.0953	0.236996	0.0312806	0.25018	0.122722
%RSD:	0.523078	3.66746	0.971224	0.381693	0.258448
Repeat: 1	1920.51	6.40806	3.2379	65.5237	47.3517
Repeat: 2	1940.6	6.72148	3.23968	65.3059	47.5941
Repeat: 3	1928.82	6.25684	3.18463	65.8049	47.5066
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	2.99175	-0.643688	22082.9	25.7517	31.1666
Std Dev:	1.29762	1.85768	45.6157	0.185133	0.201783
%RSD:	43.3733	288.599	0.206566	0.718915	0.647434
Repeat: 1	3.40174	0.736702	22057.8	25.9277	31.3891
Repeat: 2	4.03485	-2.75581	22055.3	25.5586	31.115
Repeat: 3	1.53866	0.0880402	22135.5	25.7689	30.9956
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1378.34	3.56701	196.079	281.429	2494.8
Std Dev:	5.70205	0.133269	1.75763	1.02705	6.66728
%RSD:	0.41369	3.73616	0.896391	0.364942	0.267247
Repeat: 1	1374.09	3.41383	195.676	280.391	2499.13
Repeat: 2	1384.82	3.65634	198.002	281.45	2498.15
Repeat: 3	1376.11	3.63086	194.557	282.445	2487.12
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	700551	19605.5			
Std Dev:	3947.54	182.133			
%RSD:	0.563491	0.928993			

Repeat: 1	697887	19614.3
Repeat: 2	698679	19419.1
Repeat: 3	705086	19783
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2494.8	700551	19605.5
Std Dev:	6.66728	3947.54	182.133
%RSD:	0.267247	0.563491	0.928993
Repeat: 1	2499.13	697887	19614.3
Repeat: 2	2498.15	698679	19419.1
Repeat: 3	2487.12	705086	19783

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608229-04@2X	9/9/2016 5:18:19PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000378475	3.17913	0.0229488	0.00129053	1.39915
Std Dev:	1.42709e-005	0.0123107	0.000676457	9.24768e-006	0.00375196
%RSD:	3.77064	0.387236	2.94768	0.716581	0.26816
Repeat: 1	0.000382994	3.16492	0.0236765	0.00128823	1.40335
Repeat: 2	0.000362492	3.18649	0.0223392	0.00130071	1.39614
Repeat: 3	0.00038994	3.18598	0.0228306	0.00128265	1.39796
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.0143677	0.133108	0.336577	0.542836	0.0160856
Std Dev:	0.000333235	0.000397243	0.00217559	0.0015488	0.000129838
%RSD:	2.31933	0.298438	0.646387	0.285315	0.807165
Repeat: 1	0.0139836	0.132669	0.338008	0.543578	0.0159358
Repeat: 2	0.0145784	0.13321	0.337651	0.541056	0.0161556
Repeat: 3	0.0145413	0.133444	0.334074	0.543875	0.0161655
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00634575	6.39625	0.220296	0.00182283	0.0695522
Std Dev:	7.34962e-005	0.0346392	0.000136726	2.58312e-005	0.000333178
%RSD:	1.1582	0.541555	0.0620648	1.4171	0.479033
Repeat: 1	0.00628054	6.35653	0.22014	0.00179422	0.0692315
Repeat: 2	0.00642539	6.42018	0.220353	0.00184444	0.0698966
Repeat: 3	0.00633132	6.41203	0.220396	0.00182982	0.0695285
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.448081	0.0199311	0.314989	0.598827	0.0807123
Std Dev:	0.00135328	0.000566217	0.00146169	0.00202565	0.000574497
%RSD:	0.302017	2.84088	0.464045	0.33827	0.711783
Repeat: 1	0.449634	0.0205419	0.313301	0.601102	0.0806297
Repeat: 2	0.447154	0.0194238	0.315804	0.597218	0.0801835
Repeat: 3	0.447455	0.0198275	0.315862	0.59816	0.0813236
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.00914671	0.0140038	1267.92	0.0204729	0.071499
Std Dev:	0.000408076	0.000523211	7.63704	0.000326352	0.000821821
%RSD:	4.46145	3.73621	0.60233	1.59407	1.14942
Repeat: 1	0.00875991	0.0143701	1267.69	0.0208418	0.0707057
Repeat: 2	0.00910705	0.0134046	1275.66	0.0203549	0.0723466

Repeat: 3	0.00957317	0.0142367	1260.39	0.0202219	0.0714449
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.495227	-0.00111919	0.0143026	5.10469	2491.57
Std Dev:	0.00191114	0.00057875	0.000122793	0.00605878	17.3025
%RSD:	0.385912	51.7117	0.85854	0.11869	0.694444
Repeat: 1	0.493093	-0.00146178	0.0141608	5.10676	2475.77
Repeat: 2	0.495808	-0.000450975	0.0143771	5.09786	2510.06
Repeat: 3	0.49678	-0.0014448	0.0143698	5.10944	2488.87
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	702511	19615.3			
Std Dev:	5499.51	31.325			
%RSD:	0.782836	0.159697			
Repeat: 1	708733	19601.7			
Repeat: 2	698301	19593.1			
Repeat: 3	700500	19651.2			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.833696	76767.9	72.5179	96.7234	80.6997
Std Dev:	0.269754	297.324	1.45563	0.603524	0.221869
%RSD:	32.3564	0.387302	2.00726	0.62397	0.274932
Repeat: 1	-0.758415	76424.6	74.0785	96.4242	80.948
Repeat: 2	-1.13309	76945.7	71.1969	97.418	80.5209
Repeat: 3	-0.609579	76933.3	72.2784	96.3278	80.6302
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	7.16311	1.59552	-1.72555	50.0085	381.22
Std Dev:	0.134995	0.00478154	0.124363	0.217433	3.13579
%RSD:	1.88459	0.299686	7.20717	0.434792	0.822568
Repeat: 1	7.00735	1.59024	-1.59741	50.1664	377.601
Repeat: 2	7.24619	1.59675	-1.73347	49.7605	382.908
Repeat: 3	7.2358	1.59957	-1.84576	50.0986	383.15
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	76.4724	333639	11.4208	244.091	24.4475
Std Dev:	0.892664	1806.75	0.00689927	3.37259	0.117084
%RSD:	1.1673	0.54153	0.0604098	1.38169	0.478919
Repeat: 1	75.6516	331567	11.4129	240.356	24.3345
Repeat: 2	77.4228	334887	11.4236	246.913	24.5683
Repeat: 3	76.343	334462	11.4258	245.004	24.4396
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1281.42	9.15332	7.31795	114.643	55.7303
Std Dev:	3.93221	0.123197	0.0366048	0.43585	0.290047
%RSD:	0.306862	1.34593	0.500206	0.38018	0.520448
Repeat: 1	1285.94	9.28399	7.27569	115.133	55.6382
Repeat: 2	1278.73	9.03929	7.33836	114.298	55.4975
Repeat: 3	1279.61	9.13667	7.33981	114.497	56.0553
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**

Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	4.11157	1.16231	19356.6	15.0872	42.5331
Std Dev:	0.376034	1.20001	117.097	0.219391	0.410783
%RSD:	9.14575	103.244	0.604944	1.45416	0.965794
Repeat: 1	3.80176	2.03095	19353	15.3352	42.1366
Repeat: 2	4.003	-0.206959	19475.5	15.0077	42.9568
Repeat: 3	4.52994	1.66294	19241.4	14.9186	42.506
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	2080.83	4.34207	323.781	476.106	2491.57
Std Dev:	8.04261	0.768601	2.74549	0.566618	17.3025
%RSD:	0.38651	17.7013	0.847948	0.119011	0.694444
Repeat: 1	2071.85	3.87037	320.612	476.299	2475.77
Repeat: 2	2083.27	5.22897	325.449	475.469	2510.06
Repeat: 3	2087.37	3.92687	325.281	476.552	2488.87
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	702511	19615.3			
Std Dev:	5499.51	31.325			
%RSD:	0.782836	0.159697			
Repeat: 1	708733	19601.7			
Repeat: 2	698301	19593.1			
Repeat: 3	700500	19651.2			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2491.57	702511	19615.3
Std Dev:	17.3025	5499.51	31.325
%RSD:	0.694444	0.782836	0.159697
Repeat: 1	2475.77	708733	19601.7
Repeat: 2	2510.06	698301	19593.1
Repeat: 3	2488.87	700500	19651.2

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608229-05@2X	9/9/2016 5:22:46PM	Unknown	1.00
	Valid	**Analyst Name**	**Method Name**
	Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000838655	3.02446	0.180382	0.00161045	6.43169
Std Dev:	3.08326e-005	0.0058594	0.000419304	1.33897e-005	0.0252929
%RSD:	3.67643	0.193734	0.232453	0.831421	0.393254
Repeat: 1	0.000804598	3.02139	0.180734	0.00162174	6.43048
Repeat: 2	0.000846701	3.02078	0.179918	0.00159566	6.40703
Repeat: 3	0.000864668	3.03122	0.180493	0.00161396	6.45757
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	-0.000396201	0.240285	0.315273	0.371175	0.0135135
Std Dev:	0.000262769	0.000279392	0.000606757	0.00232977	8.90685e-005
%RSD:	66.3221	0.116275	0.192455	0.627674	0.659107
Repeat: 1	-0.000426095	0.239962	0.314788	0.369588	0.0134918

Repeat: 2	-0.000119763	0.240437	0.315077	0.370088	0.0136114
Repeat: 3	-0.000642743	0.240455	0.315953	0.37385	0.0134373
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0262071	5.90722	0.40878	0.00112707	0.0667926
Std Dev:	4.90104e-005	0.0443979	0.00150063	2.11872e-005	0.000383614
%RSD:	0.187012	0.751587	0.367099	1.87984	0.574336
Repeat: 1	0.0261548	5.90939	0.408974	0.00114704	0.0666156
Repeat: 2	0.0262519	5.86178	0.407192	0.00110484	0.0665295
Repeat: 3	0.0262146	5.9505	0.410174	0.00112933	0.0672328
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.216414	0.0502816	0.631694	0.476426	1.14321
Std Dev:	0.000550971	0.000682566	0.00452798	0.00219772	0.00487619
%RSD:	0.254591	1.35749	0.716799	0.461294	0.426534
Repeat: 1	0.216309	0.0500988	0.631791	0.474486	1.14374
Repeat: 2	0.217011	0.051037	0.627118	0.475979	1.13809
Repeat: 3	0.215924	0.049709	0.636173	0.478812	1.1478
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.0112177	0.0268374	1549.45	0.108554	0.604417
Std Dev:	0.000645233	0.000961558	5.63049	0.00085445	0.00403783
%RSD:	5.75191	3.5829	0.363386	0.787117	0.668054
Repeat: 1	0.0108041	0.0275786	1543.71	0.109341	0.604573
Repeat: 2	0.0119612	0.0271828	1549.68	0.107645	0.600303
Repeat: 3	0.0108879	0.0257509	1554.96	0.108677	0.608374
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.571661	-0.00257593	0.0156862	3.42216	2478.78
Std Dev:	0.00170461	0.000509023	8.84322e-005	0.00989796	5.61935
%RSD:	0.298185	19.7608	0.563759	0.289231	0.226698
Repeat: 1	0.571442	-0.00228682	0.0156076	3.41809	2484.06
Repeat: 2	0.570077	-0.00316367	0.0157819	3.41495	2479.42
Repeat: 3	0.573465	-0.00227729	0.015669	3.43345	2472.88
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	700244	19607.3			
Std Dev:	1073.21	28.8308			
%RSD:	0.153262	0.147042			
Repeat: 1	699656	19575			
Repeat: 2	699593	19616.2			
Repeat: 3	701482	19630.6			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	8.20289	73029.7	421.392	113.467	378.962
Std Dev:	0.591671	141.467	0.971643	0.921436	1.48261
%RSD:	7.21296	0.193711	0.23058	0.812077	0.391229
Repeat: 1	7.546	72955.5	422.175	114.135	378.884
Repeat: 2	8.36873	72940.7	420.304	112.415	377.52
Repeat: 3	8.69395	73192.8	421.696	113.849	380.482
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	1.7451	2.88559	-1.50909	29.6904	319.345
Std Dev:	0.094451	0.00336298	0.0707103	0.222812	2.18644
%RSD:	5.41234	0.116544	4.68563	0.75045	0.684664
Repeat: 1	1.73339	2.88171	-1.52976	29.5008	318.816

Repeat: 2	1.84487	2.88742	-1.43035	29.6348	321.747
Repeat: 3	1.65706	2.88764	-1.56716	29.9358	317.471
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	300.998	308129	20.9317	153.043	23.4714
Std Dev:	0.525253	2315.75	0.0757223	2.7668	0.134926
%RSD:	0.174504	0.751554	0.361758	1.80785	0.574854
Repeat: 1	300.408	308242	20.9415	155.653	23.4097
Repeat: 2	301.416	305758	20.8516	150.143	23.3784
Repeat: 3	301.171	310386	21.0021	153.335	23.6262
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	615.64	16.4871	15.2491	89.6965	571.097
Std Dev:	1.63533	0.147091	0.113393	0.436698	2.35911
%RSD:	0.265631	0.892157	0.743604	0.486862	0.413083
Repeat: 1	615.334	16.4419	15.2516	89.2961	571.333
Repeat: 2	617.407	16.6515	15.1345	89.6312	568.629
Repeat: 3	614.18	16.3679	15.3613	90.1622	573.329
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	8.30516	30.8512	23670.7	74.1121	308.918
Std Dev:	0.719504	2.18687	86.3911	0.573131	2.01849
%RSD:	8.66334	7.08845	0.364971	0.77333	0.653404
Repeat: 1	7.84917	32.509	23582.6	74.6399	308.996
Repeat: 2	9.1346	31.6718	23674.1	73.5024	306.862
Repeat: 3	7.9317	28.3727	23755.3	74.1941	310.896
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	2402.68	3.85456	352.362	318.955	2478.78
Std Dev:	7.17219	0.671527	1.91218	0.926573	5.61935
%RSD:	0.298509	17.4216	0.542676	0.290503	0.226698
Repeat: 1	2401.76	4.22997	350.645	318.575	2484.06
Repeat: 2	2396.01	3.07927	354.423	318.278	2479.42
Repeat: 3	2410.26	4.25443	352.017	320.011	2472.88
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	700244	19607.3			
Std Dev:	1073.21	28.8308			
%RSD:	0.153262	0.147042			
Repeat: 1	699656	19575			
Repeat: 2	699593	19616.2			
Repeat: 3	701482	19630.6			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2478.78	700244	19607.3
Std Dev:	5.61935	1073.21	28.8308
%RSD:	0.226698	0.153262	0.147042

Repeat: 1	2484.06	699656	19575
Repeat: 2	2479.42	699593	19616.2
Repeat: 3	2472.88	701482	19630.6

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608229-06@2X	9/9/2016 5:27:02PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000457978	4.53482	0.0630705	0.00196947	5.79264
Std Dev:	1.83511e-005	0.0213129	0.000108834	2.53469e-005	0.00361925
%RSD:	4.00697	0.469982	0.17256	1.28699	0.0624801
Repeat: 1	0.000459097	4.52011	0.0631592	0.00199629	5.7964
Repeat: 2	0.000439093	4.55927	0.0631033	0.00196621	5.78917
Repeat: 3	0.000475744	4.52509	0.0629491	0.00194592	5.79236
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00435081	0.310392	0.223589	0.364555	0.012888
Std Dev:	0.000130056	0.000844174	0.00295761	0.00305158	0.000133164
%RSD:	2.98924	0.27197	1.32279	0.837071	1.03324
Repeat: 1	0.00439501	0.309493	0.225641	0.366407	0.0130379
Repeat: 2	0.00420441	0.311167	0.224928	0.361033	0.0127833
Repeat: 3	0.004453	0.310517	0.220199	0.366224	0.0128428
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0157824	3.69249	0.454141	0.00168955	0.0815763
Std Dev:	0.000189967	0.0138173	0.0022992	4.15417e-005	6.90437e-005
%RSD:	1.20366	0.3742	0.506276	2.45875	0.084637
Repeat: 1	0.0160018	3.69318	0.454724	0.00173699	0.0815992
Repeat: 2	0.0156743	3.70594	0.456092	0.00165969	0.0816311
Repeat: 3	0.0156712	3.67833	0.451606	0.00167196	0.0814988
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.225345	0.0474886	0.251041	0.528643	0.598809
Std Dev:	0.00265375	0.00115683	0.00113795	0.00109629	0.00211284
%RSD:	1.17764	2.43601	0.453292	0.207377	0.352841
Repeat: 1	0.22836	0.0462692	0.251017	0.529046	0.596666
Repeat: 2	0.22431	0.047626	0.252191	0.527402	0.600891
Repeat: 3	0.223364	0.0485706	0.249915	0.52948	0.59887
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.00376819	0.0154648	1838.87	0.0348204	0.194958
Std Dev:	0.00195931	0.000676625	18.1864	0.000529162	0.00102691
%RSD:	51.9961	4.37526	0.989	1.51969	0.526734
Repeat: 1	0.00222566	0.0162308	1836.39	0.0351062	0.19562
Repeat: 2	0.00310616	0.0149485	1858.16	0.0351452	0.195479
Repeat: 3	0.00597276	0.0152151	1822.04	0.0342098	0.193775
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.527936	-0.00331126	0.0130454	3.59327	2495.12
Std Dev:	0.00386057	0.000579471	0.000134685	0.0075538	1.86568
%RSD:	0.731257	17.5	1.03243	0.210221	0.0747731
Repeat: 1	0.526821	-0.00264731	0.0131985	3.60119	2497.13
Repeat: 2	0.532231	-0.0037151	0.0129453	3.58614	2494.79
Repeat: 3	0.524755	-0.00357137	0.0129925	3.59249	2493.45
Element/Wavelength	**Sc3613**	**Sc3613-2**			

Avg. of Repeats:	704986	19789.3
Std Dev:	6810.3	29.9742
%RSD:	0.966019	0.151467
Repeat: 1	697122	19816.4
Repeat: 2	708981	19757.1
Repeat: 3	708854	19794.3

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	0.879544	109521	159.084	125.318	341.466
Std Dev:	0.353329	514.838	0.258262	1.50818	0.236584
%RSD:	40.1719	0.470082	0.162343	1.20348	0.0692848
Repeat: 1	0.913978	109166	159.274	126.89	341.714
Repeat: 2	0.510259	110111	159.189	125.183	341.243
Repeat: 3	1.2144	109286	158.79	123.882	341.442
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	3.43207	3.72945	-0.968588	32.2018	305.291
Std Dev:	0.0343918	0.0101612	0.0853717	0.407001	3.23223
%RSD:	1.00207	0.272457	8.81404	1.26391	1.05874
Repeat: 1	3.44331	3.71863	-0.893506	32.4292	308.927
Repeat: 2	3.39347	3.73878	-0.950808	31.7319	302.741
Repeat: 3	3.45944	3.73096	-1.06145	32.4443	304.206
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	178.387	192609	23.2207	226.709	28.5682
Std Dev:	2.15402	720.707	0.116019	5.43187	0.0244529
%RSD:	1.2075	0.374181	0.499636	2.39597	0.0855949
Repeat: 1	180.873	192646	23.2501	232.912	28.5762
Repeat: 2	177.197	193311	23.3191	222.802	28.5876
Repeat: 3	177.089	191871	23.0928	224.413	28.5407
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	643.868	14.499	5.71651	101.664	317.807
Std Dev:	7.62954	0.287738	0.0284974	0.232492	1.13937
%RSD:	1.18496	1.98454	0.49851	0.228686	0.35851
Repeat: 1	652.54	14.1926	5.71592	101.748	316.675
Repeat: 2	640.876	14.5409	5.74531	101.402	318.954
Repeat: 3	638.187	14.7635	5.68832	101.843	317.791
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	2.68501	6.23701	28098.8	24.7109	104.221
Std Dev:	2.25871	1.52646	278.854	0.354415	0.513372
%RSD:	84.123	24.4742	0.992403	1.43425	0.49258
Repeat: 1	0.860618	7.95892	28060.9	24.9016	104.552
Repeat: 2	1.98305	5.04996	28394.7	24.9291	104.481
Repeat: 3	5.21135	5.70215	27840.9	24.3019	103.63
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**

Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	2218.34	2.84551	292.008	335.05	2495.12
Std Dev:	16.2546	0.755075	2.97378	0.70021	1.86568
%RSD:	0.732736	26.5357	1.01839	0.208987	0.0747731
Repeat: 1	2213.64	3.7142	295.39	335.782	2497.13
Repeat: 2	2236.42	2.34662	289.802	334.386	2494.79
Repeat: 3	2204.95	2.47571	290.832	334.983	2493.45
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	704986	19789.3
Std Dev:	6810.3	29.9742
%RSD:	0.966019	0.151467
Repeat: 1	697122	19816.4
Repeat: 2	708981	19757.1
Repeat: 3	708854	19794.3
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2495.12	704986	19789.3
Std Dev:	1.86568	6810.3	29.9742
%RSD:	0.0747731	0.966019	0.151467
Repeat: 1	2497.13	697122	19816.4
Repeat: 2	2494.79	708981	19757.1
Repeat: 3	2493.45	708854	19794.3

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608229-07@2X	9/9/2016 5:31:20PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000426182	3.05005	0.0238278	0.00178391	1.83526
Std Dev:	9.81236e-006	0.00958565	0.000719836	5.2118e-006	0.00341311
%RSD:	2.30239	0.314279	3.021	0.292156	0.185975
Repeat: 1	0.00043745	3.04213	0.024426	0.00178313	1.83665
Repeat: 2	0.000419519	3.0473	0.0240284	0.00177913	1.83137
Repeat: 3	0.000421578	3.06071	0.0230289	0.00178946	1.83775
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.0168215	0.32754	0.26252	0.372335	0.00674765
Std Dev:	0.000130453	0.00114412	0.00298195	0.00145827	6.37866e-005
%RSD:	0.775509	0.349308	1.1359	0.391656	0.945316
Repeat: 1	0.0167203	0.326669	0.264169	0.37179	0.00670635
Repeat: 2	0.0167755	0.327114	0.259078	0.371227	0.00671548
Repeat: 3	0.0169688	0.328836	0.264313	0.373987	0.00682111
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00474856	4.60425	0.234263	0.00248196	0.0479144
Std Dev:	3.63806e-005	0.0228903	0.000117191	1.22947e-005	0.000219268
%RSD:	0.76614	0.497157	0.0500253	0.495363	0.457625
Repeat: 1	0.00475622	4.61397	0.234398	0.00248639	0.0480026
Repeat: 2	0.00470896	4.5781	0.234185	0.00246806	0.0476647
Repeat: 3	0.0047805	4.62067	0.234206	0.00249142	0.0480757

Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.613982	0.0238854	0.125365	0.404422	0.0652462
Std Dev:	0.00652519	0.000344114	0.000235102	0.00145926	0.000762136
%RSD:	1.06277	1.44069	0.187534	0.360827	1.16809
Repeat: 1	0.61185	0.0235268	0.125625	0.402972	0.0643662
Repeat: 2	0.60879	0.0239163	0.125168	0.404404	0.0656796
Repeat: 3	0.621307	0.024213	0.125301	0.40589	0.0656928

Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	0.000369485	0.0134043	1473.87	0.0200859	0.15711
Std Dev:	0.000607167	0.000737136	9.93405	0.00049705	0.000567301
%RSD:	164.328	5.49926	0.67401	2.47462	0.361086
Repeat: 1	-0.000267448	0.0142148	1466.56	0.0202645	0.157186
Repeat: 2	0.000434199	0.012774	1485.18	0.020469	0.156508
Repeat: 3	0.000941702	0.013224	1469.87	0.0195243	0.157635

Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.292712	-0.000420977	0.0103301	3.44044	2489.05
Std Dev:	0.000519212	0.00142092	7.57215e-005	0.00911899	2.64421
%RSD:	0.17738	337.53	0.733016	0.265053	0.106234
Repeat: 1	0.292366	-0.000944091	0.0102986	3.44263	2490.37
Repeat: 2	0.292462	0.00118735	0.0102752	3.43043	2486.01
Repeat: 3	0.293309	-0.00150619	0.0104165	3.44827	2490.78

Element/Wavelength	Sc3613	Sc3613-2
Avg. of Repeats:	705761	19736.7
Std Dev:	3193.27	101.578
%RSD:	0.452458	0.514662
Repeat: 1	704648	19698.8
Repeat: 2	709361	19851.8
Repeat: 3	703272	19659.6

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.248937	73648.9	72.1661	118.193	106.679
Std Dev:	0.18462	231.523	1.58335	0.389882	0.200621
%RSD:	74.1633	0.314361	2.19403	0.329868	0.188059
Repeat: 1	-0.0373433	73457.8	73.5019	118.188	106.757
Repeat: 2	-0.377218	73582.7	72.5794	117.806	106.451
Repeat: 3	-0.33225	73906.4	70.4171	118.586	106.829
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass

Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	7.34413	3.93586	-1.0214	33.7398	155.274
Std Dev:	0.0518532	0.0137716	0.063909	0.147342	1.53203
%RSD:	0.70605	0.349901	6.25697	0.436701	0.986661
Repeat: 1	7.30388	3.92538	-0.979028	33.6647	154.27
Repeat: 2	7.32586	3.93073	-1.09491	33.6451	154.516
Repeat: 3	7.40264	3.95146	-0.990271	33.9095	157.038
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass

Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	54.4028	240171	12.1255	330.444	16.8495
Std Dev:	0.456365	1194.02	0.00591349	1.6057	0.0771246
%RSD:	0.838863	0.497153	0.0487689	0.485923	0.457726
Repeat: 1	54.5075	240678	12.1323	331.023	16.8806

Repeat: 2	53.9032	238807	12.1216	328.629	16.7617
Repeat: 3	54.7977	241027	12.1227	331.679	16.9062
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1760.67	9.05994	2.56924	75.7145	48.9292
Std Dev:	18.7478	0.0889742	0.00588761	0.300323	0.418611
%RSD:	1.06482	0.982062	0.229158	0.396652	0.855543
Repeat: 1	1754.52	8.97508	2.57576	75.41	48.4466
Repeat: 2	1745.76	9.05221	2.56431	75.723	49.1474
Repeat: 3	1781.72	9.15253	2.56765	76.0104	49.1937
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1.50936	1.39261	22507	14.8505	85.2981
Std Dev:	0.653991	1.638	152.206	0.333546	0.283467
%RSD:	43.329	117.622	0.676261	2.24602	0.332325
Repeat: 1	0.804717	3.20523	22395	14.9704	85.3365
Repeat: 2	1.6265	0.0184806	22680.3	15.1076	84.9974
Repeat: 3	2.09687	0.954106	22445.7	14.4736	85.5605
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1228.45	3.29336	233.425	320.119	2489.05
Std Dev:	2.18347	1.8881	1.69087	0.838811	2.64421
%RSD:	0.177743	57.3306	0.724376	0.262031	0.106234
Repeat: 1	1226.99	2.59886	232.74	320.33	2490.37
Repeat: 2	1227.4	5.43035	232.184	319.196	2486.01
Repeat: 3	1230.96	1.85086	235.351	320.833	2490.78
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	705761	19736.7			
Std Dev:	3193.27	101.578			
%RSD:	0.452458	0.514662			
Repeat: 1	704648	19698.8			
Repeat: 2	709361	19851.8			
Repeat: 3	703272	19659.6			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2489.05	705761	19736.7
Std Dev:	2.64421	3193.27	101.578
%RSD:	0.106234	0.452458	0.514662
Repeat: 1	2490.37	704648	19698.8
Repeat: 2	2486.01	709361	19851.8
Repeat: 3	2490.78	703272	19659.6

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608229-08@2X	9/9/2016 5:35:47PM	Unknown	1.00
	Valid	**Analyst Name**	**Method Name**
	Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.000374182	2.6635	0.0443508	0.00147764	1.90407
Std Dev:	3.0392e-005	0.00703296	0.000986472	1.60894e-005	0.018767
%RSD:	8.12226	0.26405	2.22425	1.08886	0.985626
Repeat: 1	0.000370193	2.65549	0.0433594	0.00149125	1.89027
Repeat: 2	0.000406372	2.66631	0.0443607	0.00148178	1.8965
Repeat: 3	0.000345982	2.66868	0.0453322	0.00145988	1.92544
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	0.0103286	0.668791	0.34242	0.751471	0.00637883
Std Dev:	0.00013135	0.000981565	0.00479251	0.00672021	8.39412e-005
%RSD:	1.27172	0.146767	1.3996	0.894274	1.31593
Repeat: 1	0.0102031	0.668248	0.337054	0.747482	0.00647109
Repeat: 2	0.0104651	0.6682	0.343934	0.747701	0.00635845
Repeat: 3	0.0103174	0.669924	0.346273	0.75923	0.00630696
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.00466961	5.75041	0.243763	0.0011965	0.0636691
Std Dev:	5.77573e-005	0.0133464	0.000492769	1.37384e-005	0.000118615
%RSD:	1.23688	0.232095	0.202151	1.14821	0.186299
Repeat: 1	0.00473617	5.74988	0.24422	0.00118141	0.0635631
Repeat: 2	0.00463997	5.76402	0.243827	0.00120829	0.063647
Repeat: 3	0.00463269	5.73734	0.243241	0.0011998	0.0637972
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.478803	0.148158	0.179283	0.566822	0.0870186
Std Dev:	0.00239388	0.00184749	0.000574535	0.00571833	0.0014415
%RSD:	0.499971	1.24697	0.320463	1.00884	1.65654
Repeat: 1	0.481347	0.148018	0.179284	0.562362	0.0869716
Repeat: 2	0.478469	0.146385	0.179856	0.564836	0.0856011
Repeat: 3	0.476594	0.150072	0.178707	0.573269	0.088483
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	0.00300465	0.0126688	1518	0.0204895	0.210181
Std Dev:	0.00145499	0.000553472	8.63471	0.000795399	0.000661531
%RSD:	48.4247	4.36876	0.568822	3.88199	0.314743
Repeat: 1	0.00298199	0.0122197	1508.08	0.0195917	0.210735
Repeat: 2	0.00156111	0.0124996	1523.87	0.0207703	0.21036
Repeat: 3	0.00447083	0.0132872	1522.04	0.0211064	0.209449
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.358672	-0.00119075	0.00986974	3.75723	2474.62
Std Dev:	0.000877635	0.000681068	0.000111029	0.0356883	26.9163
%RSD:	0.24469	57.1965	1.12494	0.949857	1.0877
Repeat: 1	0.357676	-0.00131968	0.00998362	3.73542	2489.34
Repeat: 2	0.35901	-0.000454434	0.00986381	3.73785	2490.96
Repeat: 3	0.35933	-0.00179814	0.00976179	3.79841	2443.55
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	711105	19936.5			
Std Dev:	5759.19	112.586			
%RSD:	0.809893	0.564725			
Repeat: 1	705358	19822.9			
Repeat: 2	711080	19938.4			
Repeat: 3	716876	20048.1			

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Units:	ppb	ppb	ppb	ppb	ppb

Avg. of Repeats:	-1.32342	64298.9	118.864	104.908	110.429
Std Dev:	0.581782	169.89	2.18649	0.979932	1.10627
%RSD:	43.9606	0.26422	1.83948	0.934087	1.0018
Repeat: 1	-1.38979	64105.6	116.657	105.704	109.62
Repeat: 2	-0.711292	64367	118.905	105.207	109.976
Repeat: 3	-1.86916	64424.2	121.03	103.813	111.689
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	5.09953	8.04343	-0.242995	76.7608	145.867
Std Dev:	0.0538698	0.0118149	0.176983	0.809068	2.03351
%RSD:	1.05637	0.146889	72.834	1.05401	1.39409
Repeat: 1	5.046	8.03689	-0.432326	76.2958	148.104
Repeat: 2	5.15374	8.03632	-0.214954	76.2917	145.365
Repeat: 3	5.09884	8.05707	-0.0817072	77.6951	144.131
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	55.859	299952	12.6049	162.279	22.3777
Std Dev:	0.654132	696.154	0.0248653	1.79514	0.0411642
%RSD:	1.17104	0.232088	0.197267	1.10621	0.183952
Repeat: 1	56.6104	299924	12.628	160.307	22.3407
Repeat: 2	55.5499	300662	12.6081	163.819	22.3704
Repeat: 3	55.4167	299270	12.5786	162.71	22.4221
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1370.53	41.0684	3.91949	108.434	56.2609
Std Dev:	6.88007	0.458841	0.014388	1.18009	0.721332
%RSD:	0.501999	1.11726	0.367088	1.08831	1.28212
Repeat: 1	1377.85	41.0324	3.91953	107.518	56.1896
Repeat: 2	1369.56	40.6286	3.93385	108.017	55.5778
Repeat: 3	1364.19	41.5442	3.90508	109.765	57.0152
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	3.51831	-0.858903	23187.9	15.1232	111.774
Std Dev:	1.66951	1.24489	132.379	0.533669	0.330845
%RSD:	47.4521	144.939	0.570897	3.52881	0.295996
Repeat: 1	3.44126	-1.85889	23035.9	14.5209	112.051
Repeat: 2	1.88865	-1.25321	23277.9	15.3115	111.863
Repeat: 3	5.225	0.535388	23249.9	15.5373	111.407
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1505.84	2.83374	224.417	350.059	2474.62
Std Dev:	3.69429	0.896898	2.45293	3.34146	26.9163
%RSD:	0.245331	31.6507	1.09303	0.954544	1.0877
Repeat: 1	1501.64	2.65532	226.927	348.014	2489.34
Repeat: 2	1507.26	3.80644	224.298	348.248	2490.96
Repeat: 3	1508.61	2.03946	222.025	353.915	2443.55
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			

Units:	----	----
Avg. of Repeats:	711105	19936.5
Std Dev:	5759.19	112.586
%RSD:	0.809893	0.564725
Repeat: 1	705358	19822.9
Repeat: 2	711080	19938.4
Repeat: 3	716876	20048.1
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2474.62	711105	19936.5
Std Dev:	26.9163	5759.19	112.586
%RSD:	1.0877	0.809893	0.564725
Repeat: 1	2489.34	705358	19822.9
Repeat: 2	2490.96	711080	19938.4
Repeat: 3	2443.55	716876	20048.1

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608229-09@2X	9/9/2016 5:40:14PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000378092	0.778619	-0.0024591	0.00184314	0.715968
Std Dev:	9.49469e-006	0.00238864	4.48375e-005	2.68625e-005	0.0024597
%RSD:	2.51121	0.306779	1.82333	1.45743	0.343549
Repeat: 1	0.000374047	0.777399	-0.00244239	0.00186151	0.717609
Repeat: 2	0.000388939	0.781372	-0.00242502	0.00181231	0.71314
Repeat: 3	0.00037129	0.777088	-0.00250989	0.00185559	0.717154
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.0021628	0.734017	0.0626289	0.0852328	0.00195957
Std Dev:	0.00040436	0.00227921	0.00147428	0.000427473	3.97867e-005
%RSD:	18.6961	0.310512	2.35399	0.501536	2.03038
Repeat: 1	0.001973	0.731962	0.0636015	0.0847429	0.0019939
Repeat: 2	0.00262714	0.736469	0.0609326	0.08553	0.00191597
Repeat: 3	0.00188826	0.73362	0.0633525	0.0854256	0.00196884
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00210142	0.501481	0.106056	0.000434775	0.0447324
Std Dev:	5.21909e-005	0.00288138	0.0017661	2.16844e-005	0.000206593
%RSD:	2.4836	0.574574	1.66525	4.98749	0.461843
Repeat: 1	0.0021612	0.501823	0.104773	0.000414361	0.0447924
Repeat: 2	0.00207815	0.504176	0.10807	0.000457538	0.0449024
Repeat: 3	0.0020649	0.498444	0.105325	0.000432426	0.0445025
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.0640087	0.0283272	2.37013	0.11513	0.0147489
Std Dev:	0.000711568	0.00080298	0.0125986	0.00025137	0.00144029
%RSD:	1.11168	2.83466	0.531558	0.218335	9.76544
Repeat: 1	0.0647103	0.0284815	2.37972	0.114986	0.0131475
Repeat: 2	0.0632876	0.0274583	2.37481	0.115421	0.0159383
Repeat: 3	0.0640281	0.0290418	2.35586	0.114984	0.0151609
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00503802	0.00981042	961.24	0.0194035	0.283458

Std Dev:	0.00191754	0.000170164	9.52199	0.000540118	0.00187542
%RSD:	38.0614	1.73452	0.990594	2.78361	0.661622
Repeat: 1	-0.00725202	0.00975346	966.187	0.0200249	0.284024
Repeat: 2	-0.00395534	0.00967604	967.271	0.0191384	0.284985
Repeat: 3	-0.00390668	0.0100018	950.263	0.0190471	0.281365
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.115566	-0.00181516	0.00250366	0.673069	2482.23
Std Dev:	0.000110446	0.000741016	2.2324e-005	0.000894223	14.3622
%RSD:	0.0955693	40.8238	0.891656	0.132858	0.578602
Repeat: 1	0.115601	-0.00187608	0.00250341	0.673395	2483.57
Repeat: 2	0.115655	-0.00252384	0.00248146	0.672057	2495.87
Repeat: 3	0.115443	-0.00104556	0.0025261	0.673754	2467.24
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	693917	19248.6			
Std Dev:	7646.5	46.7512			
%RSD:	1.10193	0.242881			
Repeat: 1	687367	19195.9			
Repeat: 2	702320	19285			
Repeat: 3	692064	19265			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-1.40582	18774.9	7.75728	104.787	40.8443
Std Dev:	0.179036	57.6581	0.10434	1.56183	0.147611
%RSD:	12.7354	0.307101	1.34506	1.49047	0.361398
Repeat: 1	-1.48318	18745.5	7.79395	105.863	40.9415
Repeat: 2	-1.20111	18841.4	7.83833	102.996	40.6745
Repeat: 3	-1.53317	18738	7.63956	105.503	40.9171
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	1.04294	8.82854	-0.083322	6.51692	42.106
Std Dev:	0.156919	0.0274344	0.0575025	0.0509445	0.966178
%RSD:	15.0458	0.310746	69.0124	0.781726	2.29463
Repeat: 1	0.969667	8.80381	-0.0488013	6.45811	42.9383
Repeat: 2	1.2231	8.85805	-0.149702	6.54752	41.0465
Repeat: 3	0.936065	8.82376	-0.0514623	6.54513	42.3333
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	16.1116	26165.3	5.65618	61.9213	15.6267
Std Dev:	0.5933	150.285	0.0891181	2.83417	0.0721499
%RSD:	3.68245	0.574368	1.57559	4.57705	0.461708
Repeat: 1	16.7903	26183.2	5.59144	59.2487	15.6477
Repeat: 2	15.8531	26305.8	5.75782	64.8933	15.6861
Repeat: 3	15.6913	26006.9	5.61927	61.6219	15.5464
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	183.476	7.71453	58.7844	18.3063	14.4535
Std Dev:	2.04812	0.200996	0.315504	0.0500245	0.708753
%RSD:	1.11629	2.60542	0.536715	0.273263	4.90367
Repeat: 1	185.494	7.75365	59.0245	18.277	13.668

Repeat: 2	181.399	7.49685	58.9016	18.3641	15.0452
Repeat: 3	183.535	7.89309	58.427	18.2779	14.6473
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	2.18142	0.140325	14632.3	14.4375	148.394
Std Dev:	2.17715	0.384886	145.984	0.361996	0.937365
%RSD:	99.8042	274.283	0.997689	2.50733	0.631675
Repeat: 1	-0.332469	0.0128971	14708.1	14.854	148.677
Repeat: 2	3.42257	-0.164688	14724.7	14.26	149.157
Repeat: 3	3.45415	0.572765	14464	14.1985	147.347
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	482.545	1.62379	56.5923	62.7185	2482.23
Std Dev:	0.461796	0.979398	0.490298	0.0828641	14.3622
%RSD:	0.0957	60.3155	0.866369	0.132121	0.578602
Repeat: 1	482.691	1.54217	56.5958	62.7475	2483.57
Repeat: 2	482.916	0.68776	56.1002	62.6251	2495.87
Repeat: 3	482.028	2.64145	57.0808	62.783	2467.24
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	693917	19248.6			
Std Dev:	7646.5	46.7512			
%RSD:	1.10193	0.242881			
Repeat: 1	687367	19195.9			
Repeat: 2	702320	19285			
Repeat: 3	692064	19265			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2482.23	693917	19248.6
Std Dev:	14.3622	7646.5	46.7512
%RSD:	0.578602	1.10193	0.242881
Repeat: 1	2483.57	687367	19195.9
Repeat: 2	2495.87	702320	19285
Repeat: 3	2467.24	692064	19265

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608229-10@2X	9/9/2016 5:44:34PM	Unknown	1.00
	Valid	**Analyst Name**	**Method Name**
	Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000375532	3.96112	0.0185883	0.00256764	3.0356
Std Dev:	1.4298e-005	0.00865313	0.000987759	2.40602e-005	0.00131283
%RSD:	3.80741	0.218452	5.31387	0.937056	0.0432477
Repeat: 1	0.000366419	3.95125	0.0191714	0.00256179	3.03449
Repeat: 2	0.000392011	3.96471	0.0191457	0.00259409	3.03526
Repeat: 3	0.000368165	3.9674	0.0174479	0.00254705	3.03705
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**

Avg. of Repeats:	0.009401	0.849311	0.235284	0.553169	0.00911602
Std Dev:	6.93304e-005	0.00313133	0.00321325	0.00220911	0.000123466
%RSD:	0.737478	0.368691	1.36569	0.399355	1.35438
Repeat: 1	0.00932405	0.847137	0.234511	0.55143	0.00911326
Repeat: 2	0.00942037	0.847895	0.232527	0.552422	0.00924084
Repeat: 3	0.00945859	0.8529	0.238812	0.555655	0.00899396
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00733069	3.87739	0.373154	0.00171483	0.11542
Std Dev:	9.03131e-005	0.0302194	0.000415395	3.74698e-005	0.000615789
%RSD:	1.23199	0.779374	0.11132	2.18505	0.533519
Repeat: 1	0.00733899	3.84408	0.372982	0.00169395	0.11471
Repeat: 2	0.00741656	3.90305	0.372852	0.00175808	0.115803
Repeat: 3	0.00723651	3.88503	0.373627	0.00169244	0.115747
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.430596	0.0193833	1.81224	0.673151	0.110276
Std Dev:	0.00482249	0.000744698	0.0110752	0.000159515	0.00202712
%RSD:	1.11996	3.84196	0.611131	0.0236967	1.83822
Repeat: 1	0.43311	0.0189196	1.80153	0.673145	0.111707
Repeat: 2	0.433642	0.0202423	1.82365	0.673314	0.111166
Repeat: 3	0.425036	0.0189881	1.81154	0.672995	0.107957
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.00111345	0.0136219	1740.56	0.0243598	0.313521
Std Dev:	0.00141792	0.000922468	7.00233	0.000993515	0.00236714
%RSD:	127.345	6.77193	0.402304	4.07851	0.755017
Repeat: 1	0.00251603	0.0127464	1746.36	0.0232821	0.311175
Repeat: 2	-0.000319322	0.0145851	1732.78	0.0245578	0.315909
Repeat: 3	0.00114363	0.0135343	1742.53	0.0252393	0.31348
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.443621	-0.00304762	0.0101247	4.81833	2437.61
Std Dev:	0.00204495	0.000921045	0.000186677	0.0113803	7.06706
%RSD:	0.460968	30.2217	1.84378	0.236188	0.289917
Repeat: 1	0.441495	-0.00409162	0.0101243	4.80644	2443.37
Repeat: 2	0.443796	-0.00234988	0.0103116	4.81941	2439.75
Repeat: 3	0.445574	-0.00270137	0.00993827	4.82913	2429.73
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	687602	19028.7			
Std Dev:	5882.06	59.8784			
%RSD:	0.855446	0.314675			
Repeat: 1	686299	19025.8			
Repeat: 2	682480	18970.3			
Repeat: 3	694026	19089.9			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-1.07151	95648.3	60.2496	160.969	177.935
Std Dev:	0.284634	208.928	2.1795	1.47338	0.0644789
%RSD:	26.5637	0.218434	3.61745	0.91532	0.0362373
Repeat: 1	-1.2437	95410	61.4984	160.49	177.878
Repeat: 2	-0.742972	95735	61.5174	162.622	177.923
Repeat: 3	-1.22786	95800	57.7329	159.794	178.005
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb

Avg. of Repeats:	5.07574	10.2163	-0.830302	54.9976	213.247
Std Dev:	0.0354205	0.0376912	0.132282	0.233552	2.98702
%RSD:	0.697838	0.368932	15.9318	0.424659	1.40073
Repeat: 1	5.03754	10.1901	-0.793451	54.852	213.196
Repeat: 2	5.0822	10.1993	-0.977102	54.8737	216.259
Repeat: 3	5.10749	10.2595	-0.720353	55.267	210.286
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	82.662	202256	19.134	229.121	40.3803
Std Dev:	1.03603	1576.22	0.020961	4.8923	0.215634
%RSD:	1.25333	0.779317	0.109548	2.13524	0.534009
Repeat: 1	82.6874	200519	19.1253	226.401	40.1315
Repeat: 2	83.6851	203595	19.1188	234.769	40.5146
Repeat: 3	81.6135	202655	19.1579	226.193	40.4946
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1234.02	7.5388	44.8133	131.281	76.9401
Std Dev:	13.8768	0.202051	0.277353	0.0338317	0.953757
%RSD:	1.12451	2.68015	0.618907	0.0257703	1.23961
Repeat: 1	1241.29	7.40231	44.5451	131.3	77.6026
Repeat: 2	1242.75	7.77091	45.099	131.302	77.3707
Repeat: 3	1218.02	7.44317	44.7959	131.242	75.847
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1.66382	2.09545	26592.5	17.7162	163.404
Std Dev:	1.66471	2.02842	107.242	0.666199	1.18327
%RSD:	100.053	96.8012	0.40328	3.7604	0.724137
Repeat: 1	3.27973	0.175628	26681.3	16.994	162.231
Repeat: 2	-0.0457425	4.21734	26473.3	17.8479	164.597
Repeat: 3	1.75749	1.89338	26622.7	18.3067	163.382
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1862.68	1.79555	228.03	449.313	2437.61
Std Dev:	8.60189	1.2284	4.11866	1.07323	7.06706
%RSD:	0.461801	68.4139	1.80619	0.238861	0.289917
Repeat: 1	1853.74	0.400573	227.987	448.196	2443.37
Repeat: 2	1863.41	2.71555	232.17	449.407	2439.75
Repeat: 3	1870.9	2.27052	223.933	450.336	2429.73
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	687602	19028.7			
Std Dev:	5882.06	59.8784			
%RSD:	0.855446	0.314675			
Repeat: 1	686299	19025.8			
Repeat: 2	682480	18970.3			
Repeat: 3	694026	19089.9			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	Sc1880	Sc3613	Sc3613-2
Avg. of Repeats:	2437.61	687602	19028.7
Std Dev:	7.06706	5882.06	59.8784
%RSD:	0.289917	0.855446	0.314675
Repeat: 1	2443.37	686299	19025.8
Repeat: 2	2439.75	682480	18970.3
Repeat: 3	2429.73	694026	19089.9

Sample Name	Acquisition Date	Sample type	Correction Factor
6I25301-CCV7	9/9/2016 5:49:02PM	QC	1.00

Valid	Analyst Name	Method Name
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.0249421	0.401403	0.446555	0.0181759	15.4769
Std Dev:	0.000142232	0.00108125	0.000771684	0.000158256	0.029108
%RSD:	0.570251	0.269367	0.172808	0.870692	0.188074
Repeat: 1	0.0247997	0.400272	0.445664	0.0180132	15.5025
Repeat: 2	0.0250842	0.402427	0.447012	0.0183293	15.4452
Repeat: 3	0.0249424	0.40151	0.446988	0.018185	15.4829
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	2.69482	4.29452	29.6778	7.98406	0.0455176
Std Dev:	0.00556876	0.00699064	0.0195991	0.0110431	0.000322121
%RSD:	0.206647	0.162781	0.0660394	0.138314	0.707684
Repeat: 1	2.69107	4.28852	29.6898	7.98818	0.045169
Repeat: 2	2.70122	4.30219	29.6552	7.97155	0.0458041
Repeat: 3	2.69217	4.29283	29.6885	7.99245	0.0455797
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.0897148	0.198314	0.182638	0.00767699	0.140655
Std Dev:	0.000671333	0.000689778	0.000924574	4.96246e-005	0.000434894
%RSD:	0.748297	0.347822	0.506232	0.646407	0.309192
Repeat: 1	0.0891065	0.198629	0.183508	0.00764705	0.140561
Repeat: 2	0.0904351	0.19879	0.181667	0.00773427	0.141129
Repeat: 3	0.089603	0.197523	0.182739	0.00764966	0.140275
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.332853	4.09374	1.90886	4.5447	1.89135
Std Dev:	0.00549219	0.00517295	0.00241827	0.00638944	0.00539375
%RSD:	1.65004	0.126362	0.126687	0.140591	0.285179
Repeat: 1	0.327255	4.09371	1.91159	4.55038	1.89704
Repeat: 2	0.338232	4.08858	1.90796	4.53778	1.88631
Repeat: 3	0.333072	4.09893	1.90701	4.54595	1.89072
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	0.876379	0.478443	292.674	1.49585	1.96435
Std Dev:	0.00136887	0.000721503	1.16359	0.00130415	0.00378713
%RSD:	0.156197	0.150802	0.397573	0.0871845	0.192793
Repeat: 1	0.875404	0.479262	293.224	1.49665	1.96752
Repeat: 2	0.875789	0.47817	293.46	1.49435	1.96538
Repeat: 3	0.877944	0.477899	291.337	1.49656	1.96016
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.238779	0.731535	0.049762	11.3223	2425.02
Std Dev:	0.000628361	0.00338342	0.00036696	0.00909238	6.38278
%RSD:	0.263156	0.462511	0.737431	0.0803048	0.263205

Repeat: 1	0.238282	0.733268	0.0493948	11.3153	2418.35
Repeat: 2	0.239485	0.727636	0.0501287	11.3191	2425.63
Repeat: 3	0.23857	0.7337	0.0497624	11.3326	2431.07
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	678328	19025			
Std Dev:	2293.37	75.7157			
%RSD:	0.338091	0.39798			
Repeat: 1	680562	19020.2			
Repeat: 2	678441	19103			
Repeat: 3	675980	18951.8			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	471.392	9545.86	1001.12	1056.17	918.66
Std Dev:	2.74463	25.9828	1.71155	9.25638	1.69668
%RSD:	0.58224	0.272189	0.170964	0.876412	0.184691
Repeat: 1	468.645	9518.68	999.142	1046.66	920.15
Repeat: 2	474.134	9570.45	1002.14	1065.15	916.813
Repeat: 3	471.398	9548.45	1002.08	1056.7	919.016
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	1042.61	51.6856	1058.8	945.531	1099.34
Std Dev:	2.15331	0.0841449	0.701128	1.31821	7.81333
%RSD:	0.20653	0.162802	0.0662191	0.139415	0.710732
Repeat: 1	1041.16	51.6134	1059.23	946.023	1090.88
Repeat: 2	1045.09	51.778	1057.99	944.037	1106.28
Repeat: 3	1041.58	51.6653	1059.18	946.532	1100.85
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	1008.97	10360.4	9.52054	1008.93	49.0963
Std Dev:	7.61613	35.9827	0.0466544	6.48609	0.15172
%RSD:	0.754838	0.347311	0.490039	0.642871	0.309026
Repeat: 1	1002.07	10376.7	9.56443	1005.01	49.0636
Repeat: 2	1017.15	10385.3	9.47154	1016.41	49.2617
Repeat: 3	1007.7	10319.1	9.52564	1005.35	48.9636
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	957.105	1033.21	47.2329	929.917	924.139
Std Dev:	15.7972	1.30374	0.0605603	1.30945	2.61588
%RSD:	1.65052	0.126183	0.128217	0.140814	0.283061
Repeat: 1	941.002	1033.2	47.3014	931.079	926.894
Repeat: 2	972.578	1031.91	47.2105	928.498	921.689
Repeat: 3	957.735	1034.52	47.1867	930.174	923.834
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	973.587	1048.84	4381.82	1003.69	988.091
Std Dev:	1.50092	1.61836	17.8408	0.87583	1.89325
%RSD:	0.154164	0.154301	0.407154	0.0872611	0.191607
Repeat: 1	972.686	1050.67	4390.27	1004.23	989.675

Repeat: 2	972.755	1048.22	4393.87	1002.68	988.604
Repeat: 3	975.32	1047.62	4361.33	1004.16	985.994
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	998.547	973.349	1097.4	1053.77	2425.02
Std Dev:	2.63589	4.45654	8.08272	0.846948	6.38278
%RSD:	0.263973	0.457856	0.736536	0.0803735	0.263205
Repeat: 1	996.459	975.625	1089.3	1053.13	2418.35
Repeat: 2	1001.51	968.214	1105.47	1053.43	2425.63
Repeat: 3	997.672	976.207	1097.42	1054.73	2431.07
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	678328	19025
Std Dev:	2293.37	75.7157
%RSD:	0.338091	0.39798
Repeat: 1	680562	19020.2
Repeat: 2	678441	19103
Repeat: 3	675980	18951.8
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2425.02	678328	19025
Std Dev:	6.38278	2293.37	75.7157
%RSD:	0.263205	0.338091	0.39798
Repeat: 1	2418.35	680562	19020.2
Repeat: 2	2425.63	678441	19103
Repeat: 3	2431.07	675980	18951.8

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25301-CCB7	9/9/2016 5:53:29PM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000437941	0.000312797	-0.00519353	9.73001e-005	0.0275228
Std Dev:	2.54099e-005	0.000288757	0.00045542	7.2321e-006	0.000626423
%RSD:	5.80213	92.3146	8.76899	7.43278	2.27602
Repeat: 1	0.000431423	0.000292563	-0.00571936	0.000105527	0.0269599
Repeat: 2	0.000416425	0.000611139	-0.00492485	9.44267e-005	0.0281977
Repeat: 3	0.000465975	3.46891e-005	-0.00493638	9.19463e-005	0.0274108
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00109633	0.000793046	0.0317378	0.0161974	0.000191653
Std Dev:	0.000213788	0.000225084	0.00163258	0.000514434	2.10957e-005
%RSD:	19.5002	28.3822	5.14396	3.17602	11.0072
Repeat: 1	0.00134295	0.000918932	0.0304137	0.0160585	0.000193665
Repeat: 2	0.000982464	0.000927023	0.0335619	0.0157667	0.000211671
Repeat: 3	0.000963585	0.000533184	0.0312378	0.016767	0.000169624
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.000671347	3.26197e-005	-0.00607509	-1.59927e-005	-5.07126e-005
Std Dev:	2.9593e-005	0.000114056	0.000210306	2.34229e-005	1.87649e-005

%RSD:	4.408	349.655	3.46178	146.46	37.0025
Repeat: 1	0.000700825	-8.764e-005	-0.00613996	-2.05103e-006	-7.0828e-005
Repeat: 2	0.000671576	0.000139247	-0.00583999	-2.89235e-006	-3.368e-005
Repeat: 3	0.000641641	4.62521e-005	-0.00624532	-4.30348e-005	-4.76297e-005
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.000126858	0.0028495	0.0139786	0.0248083	-0.00415653
Std Dev:	1.09858e-005	0.000496066	0.000829612	0.000350408	0.00154689
%RSD:	8.65989	17.4089	5.93489	1.41247	37.2159
Repeat: 1	0.000114891	0.00313914	0.0142522	0.0249082	-0.0023951
Repeat: 2	0.000129197	0.00227671	0.0146368	0.0244188	-0.00529395
Repeat: 3	0.000136486	0.00313266	0.0130467	0.0250979	-0.00478055
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00572759	0.00814024	8.8888	-0.000388106	-0.0115473
Std Dev:	0.000380802	0.000952962	0.960978	0.000486736	0.000410461
%RSD:	6.64856	11.7068	10.8111	125.413	3.55462
Repeat: 1	-0.00605726	0.0079988	7.97715	8.309e-006	-0.0115453
Repeat: 2	-0.00581475	0.00915602	9.89249	-0.000931355	-0.0111378
Repeat: 3	-0.00531077	0.0072659	8.79678	-0.000241272	-0.0119587
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.000711498	-0.00145839	-8.43697e-005	0.00557842	2407.41
Std Dev:	0.000106365	0.000831841	1.10429e-005	0.000753634	4.21173
%RSD:	14.9494	57.0381	13.0886	13.5098	0.174948
Repeat: 1	0.000659878	-0.00189445	-9.66664e-005	0.00640808	2406.71
Repeat: 2	0.000640794	-0.00198155	-7.52994e-005	0.00539099	2411.94
Repeat: 3	0.000833822	-0.000499184	-8.11434e-005	0.00493619	2403.6
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	681042	19402.4			
Std Dev:	6215.88	25.3483			
%RSD:	0.912701	0.130645			
Repeat: 1	677360	19391.7			
Repeat: 2	677547	19384.2			
Repeat: 3	688219	19431.4			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.471534	-9.12134	0.646974	0.663247	0.00638826
Std Dev:	0.484427	6.97499	1.01126	0.422426	0.0378374
%RSD:	102.734	76.4689	156.307	63.6906	592.295
Repeat: 1	-0.596951	-9.61523	-0.520634	1.14372	-0.0278313
Repeat: 2	-0.880918	-1.91253	1.24386	0.495846	0.0470232
Repeat: 3	0.0632685	-15.8363	1.2177	0.350177	-2.71159e-005
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.197836	0.002873	-0.0695123	-0.122471	-0.317677
Std Dev:	0.0825931	0.00270929	0.0581872	0.060423	0.51232
%RSD:	41.7481	94.3018	83.7078	49.3365	161.271
Repeat: 1	0.293134	0.00438825	-0.116724	-0.138278	-0.268686
Repeat: 2	0.153423	0.00448565	-0.00450543	-0.173419	0.168388
Repeat: 3	0.146953	-0.000254915	-0.0873074	-0.0557156	-0.852732
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm

Avg. of Repeats:	-1.33868	9.04675	-0.00201102	4.46007	-0.0105644
Std Dev:	0.335267	5.9498	0.0106121	3.06058	0.00654836
%RSD:	25.0447	65.7672	527.698	68.6217	61.9854
Repeat: 1	-1.00475	2.77412	-0.00528437	6.2819	-0.0175844
Repeat: 2	-1.33601	14.6101	0.00985214	6.17172	-0.00462116
Repeat: 3	-1.67527	9.75599	-0.0106008	0.926595	-0.00948752
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	0.30709	0.974237	-0.220186	-0.00140877	1.03829
Std Dev:	0.0315037	0.125025	0.0207758	0.0718636	0.750716
%RSD:	10.2588	12.8331	9.43554	5101.17	72.303
Repeat: 1	0.272808	1.04719	-0.213333	0.0193758	1.89341
Repeat: 2	0.313695	0.829873	-0.203703	-0.0813739	0.487639
Repeat: 3	0.334768	1.04565	-0.243523	0.0577718	0.733824
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	2.92755	-2.34568	30.5694	1.18756	1.04003
Std Dev:	0.437568	2.13093	14.7324	0.326263	0.205156
%RSD:	14.9466	90.8449	48.1933	27.4734	19.7259
Repeat: 1	2.55543	-2.66194	16.5932	1.45331	1.04101
Repeat: 2	2.81761	-0.0742929	45.9565	0.823426	1.24469
Repeat: 3	3.4096	-4.3008	29.1587	1.28595	0.834387
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	-0.155369	1.1288	-0.620023	0.503288	2407.41
Std Dev:	0.447955	1.10026	0.241963	0.0699885	4.21173
%RSD:	288.317	97.4722	39.0248	13.9062	0.174948
Repeat: 1	-0.372404	0.551548	-0.887814	0.580351	2406.71
Repeat: 2	-0.453466	0.437285	-0.417119	0.485839	2411.94
Repeat: 3	0.359763	2.39756	-0.555137	0.443676	2403.6
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	681042	19402.4			
Std Dev:	6215.88	25.3483			
%RSD:	0.912701	0.130645			
Repeat: 1	677360	19391.7			
Repeat: 2	677547	19384.2			
Repeat: 3	688219	19431.4			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2407.41	681042	19402.4
Std Dev:	4.21173	6215.88	25.3483
%RSD:	0.174948	0.912701	0.130645
Repeat: 1	2406.71	677360	19391.7
Repeat: 2	2411.94	677547	19384.2
Repeat: 3	2403.6	688219	19431.4

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**

1608229-11@2X 9/9/2016 5:57:53PM Unknown 1.00

Valid	Analyst Name	Method Name
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.000379642	1.40805	0.00772448	0.00193503	1.18492
Std Dev:	9.99439e-006	0.00567154	0.000229143	1.76321e-005	0.00830222
%RSD:	2.63258	0.402793	2.96645	0.911202	0.700655
Repeat: 1	0.000390662	1.40306	0.00748983	0.00192587	1.18044
Repeat: 2	0.0003771	1.40688	0.00794768	0.00192387	1.17983
Repeat: 3	0.000371164	1.41422	0.00773593	0.00195536	1.1945
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	0.00380461	0.806933	0.112695	0.140672	0.00296455
Std Dev:	0.000165266	0.0027813	0.00252517	0.00115411	1.62365e-005
%RSD:	4.34385	0.344676	2.24071	0.820424	0.547688
Repeat: 1	0.00361432	0.804503	0.112924	0.139397	0.00297254
Repeat: 2	0.00391219	0.806329	0.110062	0.141646	0.00294587
Repeat: 3	0.00388732	0.809966	0.115097	0.140973	0.00297525
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.00470956	1.15124	0.142992	0.000650349	0.0517731
Std Dev:	5.98612e-005	0.00365761	0.000581739	1.76914e-005	9.90089e-005
%RSD:	1.27106	0.31771	0.406834	2.72029	0.191236
Repeat: 1	0.00470684	1.15036	0.143066	0.000633931	0.0517034
Repeat: 2	0.0046511	1.14811	0.142377	0.000648031	0.0517296
Repeat: 3	0.00477073	1.15526	0.143533	0.000669085	0.0518865
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.0654379	0.0376393	2.36073	0.244797	0.0557413
Std Dev:	0.000567212	0.00047091	0.00913976	0.00266864	0.000746674
%RSD:	0.866794	1.25111	0.387159	1.09015	1.33953
Repeat: 1	0.0655339	0.0372124	2.36312	0.243641	0.0556086
Repeat: 2	0.0648288	0.0375611	2.35063	0.242901	0.0565454
Repeat: 3	0.065951	0.0381444	2.36843	0.247848	0.0550699
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	-0.00229309	0.0103412	1285.48	0.020111	0.315871
Std Dev:	0.00130503	0.00106118	11.1494	0.00104969	0.00104821
%RSD:	56.9114	10.2617	0.867333	5.21948	0.331849
Repeat: 1	-0.000832808	0.0115613	1291.83	0.0189015	0.316392
Repeat: 2	-0.00334539	0.00982895	1292	0.0207839	0.314664
Repeat: 3	-0.00270108	0.00963331	1272.61	0.0206475	0.316557
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.17491	-0.00275347	0.00376287	1.43559	2433.81
Std Dev:	0.000426244	0.000547374	4.41525e-005	0.00575559	19.8505
%RSD:	0.243693	19.8794	1.17337	0.40092	0.815616
Repeat: 1	0.174421	-0.00274881	0.00378149	1.43003	2446.77
Repeat: 2	0.175111	-0.00220845	0.00371246	1.43523	2443.69
Repeat: 3	0.175199	-0.00330317	0.00379466	1.44153	2410.95
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	690590	19478.4			
Std Dev:	4683.68	158.958			
%RSD:	0.678215	0.816072			
Repeat: 1	688852	19435.1			
Repeat: 2	695894	19654.5			

Repeat: 3	687023	19345.6

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-1.30086	33977.7	31.4733	112.83	68.5465
Std Dev:	0.190964	136.939	0.508897	1.04543	0.492946
%RSD:	14.6798	0.403026	1.61692	0.926558	0.719141
Repeat: 1	-1.08909	33857.1	30.9487	112.291	68.2825
Repeat: 2	-1.35353	33949.5	31.9649	112.163	68.2418
Repeat: 3	-1.45996	34126.5	31.5062	114.034	69.1152
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	1.9023	9.70621	0.370191	11.7704	66.1252
Std Dev:	0.0657695	0.033478	0.0829781	0.134613	0.391915
%RSD:	3.45736	0.344913	22.4149	1.14365	0.592686
Repeat: 1	1.82658	9.67696	0.381045	11.6239	66.3199
Repeat: 2	1.94518	9.69895	0.28232	11.8886	65.6741
Repeat: 3	1.93515	9.74273	0.447208	11.7987	66.3817
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	47.076	60056.7	7.51997	90.0095	18.1009
Std Dev:	0.685821	190.787	0.0293548	2.30926	0.0346333
%RSD:	1.45684	0.317679	0.390358	2.56557	0.191335
Repeat: 1	47.0424	60010.8	7.52371	87.8634	18.0765
Repeat: 2	46.4076	59893	7.48892	89.7122	18.0856
Repeat: 3	47.778	60266.2	7.54727	92.4531	18.1406
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	186.841	10.4616	58.5489	44.6039	37.576
Std Dev:	1.62755	0.120579	0.228885	0.546938	0.34919
%RSD:	0.871086	1.15258	0.39093	1.22621	0.92929
Repeat: 1	187.118	10.3534	58.6089	44.3667	37.4822
Repeat: 2	185.093	10.4399	58.296	44.2156	37.9625
Repeat: 3	188.313	10.5916	58.7418	45.2294	37.2833
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	4.06199	0.133082	19605.5	14.9046	164.585
Std Dev:	1.46405	2.37852	170.909	0.703604	0.523878
%RSD:	36.0426	1787.26	0.871742	4.72073	0.318302
Repeat: 1	5.70307	2.86711	19702.9	14.0938	164.846
Repeat: 2	2.88991	-1.00761	19705.5	15.3559	163.982
Repeat: 3	3.59299	-1.46025	19408.2	15.264	164.927
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	732.281	0.812957	84.9305	133.95	2433.81
Std Dev:	1.79311	0.722819	0.971546	0.537147	19.8505
%RSD:	0.244867	88.9123	1.14393	0.401005	0.815616
Repeat: 1	730.221	0.815635	85.339	133.43	2446.77

Repeat: 2	733.128	1.53443	83.8214	133.919	2443.69
Repeat: 3	733.494	0.0888026	85.6311	134.502	2410.95
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	690590	19478.4			
Std Dev:	4683.68	158.958			
%RSD:	0.678215	0.816072			
Repeat: 1	688852	19435.1			
Repeat: 2	695894	19654.5			
Repeat: 3	687023	19345.6			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2433.81	690590	19478.4
Std Dev:	19.8505	4683.68	158.958
%RSD:	0.815616	0.678215	0.816072
Repeat: 1	2446.77	688852	19435.1
Repeat: 2	2443.69	695894	19654.5
Repeat: 3	2410.95	687023	19345.6

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608229-12@2X	9/9/2016 6:02:13PM	Unknown	1.00
	Valid	**Analyst Name**	**Method Name**
	Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000352384	3.30756	0.0156439	0.00255179	2.4719
Std Dev:	2.98253e-005	0.0157103	0.00048353	3.26697e-005	0.0120299
%RSD:	8.46386	0.474982	3.09085	1.28027	0.486669
Repeat: 1	0.000335212	3.29034	0.01512	0.0025894	2.46308
Repeat: 2	0.000335116	3.31121	0.0160731	0.00253049	2.46701
Repeat: 3	0.000386823	3.32112	0.0157386	0.00253547	2.4856
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00909736	0.860797	0.18411	0.374644	0.00673959
Std Dev:	9.72547e-005	0.00369226	0.0013014	0.00261944	9.00643e-006
%RSD:	1.06904	0.428935	0.706861	0.699181	0.133635
Repeat: 1	0.00916966	0.856775	0.18308	0.372009	0.00673998
Repeat: 2	0.00898679	0.861584	0.183677	0.374675	0.00673039
Repeat: 3	0.00913564	0.864033	0.185573	0.377247	0.00674839
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0050334	2.67822	0.317382	0.00151402	0.0978293
Std Dev:	3.83409e-005	0.0165334	0.00131756	1.5022e-005	0.000590909
%RSD:	0.76173	0.617328	0.415135	0.992193	0.60402
Repeat: 1	0.00504966	2.66282	0.316803	0.00150101	0.0971473
Repeat: 2	0.00498961	2.67614	0.316453	0.00153047	0.0981881
Repeat: 3	0.00506093	2.69569	0.31889	0.00151059	0.0981526
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.295887	0.0262424	1.98783	0.516505	0.0689516
Std Dev:	0.00109235	0.000586148	0.00929854	0.00101113	0.00134535
%RSD:	0.369178	2.2336	0.467773	0.195764	1.95115
Repeat: 1	0.297137	0.0267769	1.98276	0.516743	0.0690447

Repeat: 2	0.295118	0.0263346	1.98217	0.515397	0.0675622
Repeat: 3	0.295406	0.0256156	1.99856	0.517377	0.070248
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.0001293	0.0118628	1610.37	0.0213946	0.314086
Std Dev:	0.000825783	0.000482925	3.07138	0.000345803	0.000771053
%RSD:	638.658	4.07093	0.190725	1.61631	0.245491
Repeat: 1	-0.000839384	0.0124018	1611.09	0.0210763	0.31333
Repeat: 2	0.00077688	0.011717	1607.01	0.0213448	0.314058
Repeat: 3	-0.000325395	0.0114695	1613.02	0.0217625	0.314871
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.347049	-0.00309964	0.00817808	3.33114	2396.76
Std Dev:	0.00208982	0.000539938	1.52539e-005	0.0127958	2.62601
%RSD:	0.602168	17.4194	0.186521	0.384125	0.109565
Repeat: 1	0.344658	-0.0036466	0.00819548	3.31878	2396.35
Repeat: 2	0.347959	-0.00308532	0.00816704	3.33031	2399.57
Repeat: 3	0.348529	-0.00256701	0.0081717	3.34433	2394.37
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	685740	19258.7			
Std Dev:	1259.8	58.2344			
%RSD:	0.183714	0.302379			
Repeat: 1	684852	19232.4			
Repeat: 2	687182	19325.5			
Repeat: 3	685186	19218.3			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-1.57153	79861.8	51.9083	155.138	144.709
Std Dev:	0.567252	379.416	1.09215	1.85933	0.707791
%RSD:	36.0954	0.475091	2.104	1.1985	0.489115
Repeat: 1	-1.89694	79446.1	50.7165	157.274	144.192
Repeat: 2	-1.90113	79950.1	52.8612	153.885	144.419
Repeat: 3	-0.916533	80189.3	52.1473	154.255	145.515
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	4.59269	10.3546	-0.295047	36.16	156.46
Std Dev:	0.0338343	0.044443	0.0150847	0.273666	0.213692
%RSD:	0.736699	0.429212	5.11265	0.75682	0.136579
Repeat: 1	4.61099	10.3062	-0.29968	35.8866	156.478
Repeat: 2	4.55364	10.364	-0.307271	36.1595	156.238
Repeat: 3	4.61342	10.3935	-0.278189	36.434	156.664
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	54.076	139706	16.3198	202.881	34.2104
Std Dev:	0.443077	862.361	0.0664848	1.9632	0.206507
%RSD:	0.81936	0.617268	0.407388	0.967663	0.603637
Repeat: 1	54.2251	138903	16.2905	201.185	33.9721
Repeat: 2	53.5776	139598	16.2729	205.032	34.3355
Repeat: 3	54.4253	140618	16.3959	202.425	34.3237
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb

Avg. of Repeats:	847.934	8.53198	49.2106	99.6949	54.0295
Std Dev:	3.15566	0.137989	0.232861	0.204387	0.674247
%RSD:	0.372159	1.61731	0.473194	0.205012	1.24792
Repeat: 1	851.548	8.65765	49.0837	99.7531	53.9839
Repeat: 2	845.724	8.55398	49.0687	99.4678	53.3793
Repeat: 3	846.531	8.38431	49.4793	99.8639	54.7254
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	2.84495	0.0801772	24592	15.74	163.684
Std Dev:	0.929911	1.10765	47.1117	0.231811	0.384866
%RSD:	32.6864	1381.5	0.191573	1.47275	0.235127
Repeat: 1	2.06138	1.31416	24602.9	15.5267	163.307
Repeat: 2	3.87254	-0.245525	24540.4	15.7067	163.67
Repeat: 3	2.60092	-0.828101	24632.8	15.9867	164.076
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1456.34	1.30993	183.701	310.608	2396.76
Std Dev:	8.7895	0.72814	0.325723	1.19744	2.62601
%RSD:	0.603535	55.5863	0.177311	0.385514	0.109565
Repeat: 1	1446.28	0.567606	184.07	309.45	2396.35
Repeat: 2	1460.16	1.33917	183.453	310.532	2399.57
Repeat: 3	1462.56	2.02301	183.581	311.841	2394.37
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	685740	19258.7			
Std Dev:	1259.8	58.2344			
%RSD:	0.183714	0.302379			
Repeat: 1	684852	19232.4			
Repeat: 2	687182	19325.5			
Repeat: 3	685186	19218.3			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2396.76	685740	19258.7
Std Dev:	2.62601	1259.8	58.2344
%RSD:	0.109565	0.183714	0.302379
Repeat: 1	2396.35	684852	19232.4
Repeat: 2	2399.57	687182	19325.5
Repeat: 3	2394.37	685186	19218.3

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608232-04@2X	9/9/2016 6:06:33PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000326522	4.85478	0.00523215	0.000218682	7.03596
Std Dev:	1.25138e-005	0.0198079	0.000316613	4.43109e-006	0.0374837
%RSD:	3.83247	0.408008	6.05129	2.02627	0.532745

Repeat: 1	0.000312077	4.83972	0.00494065	0.000222735	7.03623
Repeat: 2	0.000334063	4.8474	0.00556899	0.000213951	6.99834
Repeat: 3	0.000333426	4.87722	0.00518681	0.000219361	7.07331
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00103454	0.387689	0.126709	0.324565	0.00718224
Std Dev:	0.00021371	0.00154853	0.00227668	0.00202221	9.28006e-005
%RSD:	20.6574	0.399426	1.79677	0.623053	1.29209
Repeat: 1	0.00108218	0.386655	0.124814	0.32389	0.00722681
Repeat: 2	0.00122041	0.386942	0.12608	0.322966	0.00707556
Repeat: 3	0.000801034	0.389469	0.129235	0.326838	0.00724434
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00486807	1.36118	0.0814871	0.000538275	0.0385029
Std Dev:	3.35085e-005	0.00293852	0.0013767	1.47616e-005	0.000240838
%RSD:	0.688332	0.21588	1.68947	2.74238	0.625506
Repeat: 1	0.00489183	1.36142	0.0808605	0.000522343	0.0384059
Repeat: 2	0.00482974	1.35814	0.0805352	0.000540995	0.0383257
Repeat: 3	0.00488263	1.364	0.0830656	0.000551488	0.0387772
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.519333	0.00962623	0.0334978	0.372436	0.0478634
Std Dev:	0.00451356	0.000318194	0.00136929	0.00188178	0.000751095
%RSD:	0.869107	3.30549	4.08769	0.505263	1.56925
Repeat: 1	0.524335	0.00925886	0.0345835	0.371593	0.0486918
Repeat: 2	0.515564	0.00981534	0.0339503	0.371123	0.0476716
Repeat: 3	0.5181	0.00980448	0.0319595	0.374592	0.0472268
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.000837482	0.0121364	2561.05	0.0179223	0.11386
Std Dev:	0.00120869	0.000297284	10.2388	0.000362416	0.000322594
%RSD:	144.324	2.44952	0.399789	2.02215	0.283324
Repeat: 1	-0.00207754	0.0122983	2569.74	0.0180026	0.114139
Repeat: 2	0.000337185	0.0117933	2563.66	0.0182379	0.113507
Repeat: 3	-0.000772093	0.0123176	2549.76	0.0175265	0.113936
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.725451	-0.00575679	0.00705032	2.00119	2432.75
Std Dev:	0.00242151	0.000471289	4.92862e-005	0.0101009	15.9397
%RSD:	0.333794	8.18667	0.699063	0.504743	0.655213
Repeat: 1	0.723372	-0.00541966	0.00707411	2.00203	2433.31
Repeat: 2	0.724872	-0.00555539	0.00699365	1.99069	2448.41
Repeat: 3	0.72811	-0.00629532	0.00708319	2.01084	2416.54
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	694351	19419.4			
Std Dev:	7217.2	75.5382			
%RSD:	1.03942	0.388984			
Repeat: 1	687101	19380.1			
Repeat: 2	701535	19506.5			
Repeat: 3	694415	19371.5			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-2.03186	117254	28.3435	13.3404	415.249
Std Dev:	0.238415	478.482	0.702062	0.267356	2.22253
%RSD:	11.7339	0.408072	2.47698	2.00411	0.535229
Repeat: 1	-2.30714	116890	27.6875	13.5786	415.267
Repeat: 2	-1.89213	117076	29.084	13.0512	413.018

Repeat: 3	-1.89629	117796	28.2589	13.3913	417.463
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	2.99245	4.65986	-0.160429	28.9954	167.465
Std Dev:	0.075572	0.0186394	0.0741642	0.220445	2.24681
%RSD:	2.52542	0.399998	46.2286	0.760276	1.34166
Repeat: 1	3.00237	4.64742	-0.225665	28.9312	168.541
Repeat: 2	3.06257	4.65088	-0.175859	28.8141	164.883
Repeat: 3	2.91241	4.68129	-0.0797638	29.2408	168.972
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	50.6919	71013.3	4.41641	76.3746	13.477
Std Dev:	0.385168	153.3	0.0694688	1.92791	0.084095
%RSD:	0.759823	0.215875	1.57297	2.52429	0.623987
Repeat: 1	50.9566	71025.6	4.38479	74.2937	13.4432
Repeat: 2	50.25	70854.3	4.36838	76.7301	13.4151
Repeat: 3	50.869	71160.1	4.49607	78.1	13.5728
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1492.15	3.54341	0.268629	71.0229	54.1926
Std Dev:	12.9813	0.0800302	0.0342907	0.385874	0.268812
%RSD:	0.869972	2.25856	12.7651	0.543309	0.49603
Repeat: 1	1506.53	3.45101	0.295819	70.8509	54.502
Repeat: 2	1481.31	3.58889	0.279962	70.7529	54.0591
Repeat: 3	1488.6	3.59035	0.230107	71.4648	54.0167
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	2.86962	0.567674	39161	13.4197	63.6685
Std Dev:	1.40453	0.652328	156.956	0.243114	0.161235
%RSD:	48.945	114.912	0.400796	1.81161	0.253242
Repeat: 1	1.44778	0.935479	39294.2	13.4734	63.8078
Repeat: 2	4.25618	-0.185501	39200.9	13.6315	63.4919
Repeat: 3	2.90489	0.953044	38988	13.1543	63.7059
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	3050.67	1.38679	156.661	185.648	2432.75
Std Dev:	10.1921	0.596594	1.10064	0.940393	15.9397
%RSD:	0.334095	43.0198	0.702561	0.506546	0.655213
Repeat: 1	3041.91	1.80404	157.201	185.717	2433.31
Repeat: 2	3048.23	1.65287	155.395	184.675	2448.41
Repeat: 3	3061.86	0.703453	157.388	186.552	2416.54
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	694351	19419.4			
Std Dev:	7217.2	75.5382			
%RSD:	1.03942	0.388984			
Repeat: 1	687101	19380.1			

Repeat: 2	701535	19506.5
Repeat: 3	694415	19371.5
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2432.75	694351	19419.4
Std Dev:	15.9397	7217.2	75.5382
%RSD:	0.655213	1.03942	0.388984
Repeat: 1	2433.31	687101	19380.1
Repeat: 2	2448.41	701535	19506.5
Repeat: 3	2416.54	694415	19371.5

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608232-05@2X	9/9/2016 6:11:01PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000318966	6.19156	0.00780256	0.000197567	8.72274
Std Dev:	3.0731e-005	0.0129215	0.000368079	6.93988e-006	0.0304586
%RSD:	9.63457	0.208695	4.71742	3.51267	0.349186
Repeat: 1	0.000320251	6.18287	0.00738112	0.000195674	8.73325
Repeat: 2	0.000349034	6.20641	0.00796556	0.000205257	8.68842
Repeat: 3	0.000287612	6.18539	0.00806099	0.000191771	8.74655
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	-0.00037311	0.424176	0.145119	0.336267	0.0083385
Std Dev:	5.06812e-005	0.000346604	0.00169531	0.000847738	6.14126e-005
%RSD:	13.5834	0.0817123	1.16823	0.252103	0.736495
Repeat: 1	-0.000401334	0.424118	0.143161	0.336325	0.00826759
Repeat: 2	-0.000403396	0.423862	0.146108	0.335392	0.00837357
Repeat: 3	-0.000314601	0.424548	0.146086	0.337084	0.00837434
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00620345	1.70494	0.0945621	0.000617591	0.049799
Std Dev:	3.38256e-005	0.00608746	0.00161991	4.95454e-006	0.000112222
%RSD:	0.54527	0.357047	1.71306	0.802236	0.225351
Repeat: 1	0.00616653	1.71191	0.0944402	0.000619748	0.0499054
Repeat: 2	0.00623294	1.70225	0.0962395	0.000621101	0.0498098
Repeat: 3	0.00621089	1.70067	0.0930066	0.000611923	0.0496817
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.343357	0.00470963	0.0431491	0.448802	0.0483068
Std Dev:	0.00378018	0.000304871	0.000947443	0.00205922	0.00217851
%RSD:	1.10095	6.47336	2.19574	0.458825	4.50973
Repeat: 1	0.339219	0.00486199	0.0441302	0.450989	0.0501998
Repeat: 2	0.346628	0.00435861	0.0430779	0.4469	0.0459256
Repeat: 3	0.344225	0.0049083	0.0422393	0.448518	0.0487951
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.00106334	0.0127651	3223.96	0.0182539	0.188586
Std Dev:	0.00168573	0.00045077	27.1383	0.000377584	0.00100882
%RSD:	158.532	3.53128	0.841768	2.06851	0.534937
Repeat: 1	0.000253769	0.0132751	3229.11	0.0179384	0.189751
Repeat: 2	-6.48925e-005	0.0126	3248.16	0.018151	0.187993
Repeat: 3	0.00300114	0.0124201	3194.62	0.0186723	0.188013

Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.92772	-0.00758222	0.00948364	5.69511	2452.34
Std Dev:	0.000704539	0.000175897	8.27201e-005	0.0140621	11.7128
%RSD:	0.0759431	2.31986	0.87224	0.246915	0.477615
Repeat: 1	0.92767	-0.00755303	0.00938882	5.71134	2440.89
Repeat: 2	0.928448	-0.00777088	0.00952106	5.6873	2464.3
Repeat: 3	0.927041	-0.00742274	0.00954103	5.68668	2451.84

Element/Wavelength	Sc3613	Sc3613-2
Avg. of Repeats:	694982	19284.7
Std Dev:	4235.88	74.62
%RSD:	0.609495	0.386939
Repeat: 1	699808	19209.9
Repeat: 2	693257	19359.1
Repeat: 3	691880	19285.1

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-1.87208	149547	35.2791	13.5365	515.237
Std Dev:	0.584482	312.175	0.812448	0.404039	1.80244
%RSD:	31.2211	0.208747	2.30291	2.98482	0.349827
Repeat: 1	-1.85578	149337	34.348	13.4539	515.851
Repeat: 2	-1.29591	149906	35.6456	13.9754	513.208
Repeat: 3	-2.46454	149398	35.8437	13.1801	516.653
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	3.23075	5.09905	-0.402861	28.3377	195.516
Std Dev:	0.0168159	0.004172	0.0706532	0.107177	1.48907
%RSD:	0.520496	0.0818192	17.5378	0.378213	0.76161
Repeat: 1	3.22051	5.09835	-0.484365	28.3357	193.797
Repeat: 2	3.22159	5.09527	-0.365226	28.2315	196.364
Repeat: 3	3.25016	5.10352	-0.358993	28.4458	196.388
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	67.0063	88941.4	5.07618	86.5711	17.4273
Std Dev:	0.373864	317.468	0.0817412	0.646576	0.0392994
%RSD:	0.557953	0.356941	1.61029	0.746873	0.225505
Repeat: 1	66.6008	89304.9	5.07003	86.8527	17.4646
Repeat: 2	67.3374	88801.1	5.16083	87.0292	17.431
Repeat: 3	67.0808	88718.3	4.99769	85.8315	17.3863
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	985.59	2.60322	0.510326	86.4788	62.2236
Std Dev:	10.8793	0.0781105	0.0237266	0.418355	0.979699
%RSD:	1.10383	3.00054	4.6493	0.483765	1.57448
Repeat: 1	973.678	2.64575	0.534894	86.9222	63.0856
Repeat: 2	995.001	2.51307	0.508542	86.091	61.1581
Repeat: 3	988.091	2.65083	0.487542	86.4233	62.427
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Units:	ppb	ppb	ppm	ppb	ppb

Avg. of Repeats:	3.9241	0.768979	49324.9	13.6286	101.017
Std Dev:	1.88789	1.01084	416.042	0.252692	0.504308
%RSD:	48.1103	131.452	0.843473	1.85412	0.499229
Repeat: 1	3.04446	1.91549	49403.9	13.4177	101.6
Repeat: 2	2.63655	0.385289	49695.8	13.5594	100.721
Repeat: 3	6.09129	0.00615839	48875.1	13.9087	100.731
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	3902.14	1.27364	209.725	531.445	2452.34
Std Dev:	2.96574	0.229075	1.81418	1.32423	11.7128
%RSD:	0.0760028	17.9858	0.865025	0.249174	0.477615
Repeat: 1	3901.93	1.31302	207.646	532.974	2440.89
Repeat: 2	3905.2	1.02743	210.547	530.707	2464.3
Repeat: 3	3899.28	1.48047	210.983	530.655	2451.84
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	694982	19284.7			
Std Dev:	4235.88	74.62			
%RSD:	0.609495	0.386939			
Repeat: 1	699808	19209.9			
Repeat: 2	693257	19359.1			
Repeat: 3	691880	19285.1			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2452.34	694982	19284.7
Std Dev:	11.7128	4235.88	74.62
%RSD:	0.477615	0.609495	0.386939
Repeat: 1	2440.89	699808	19209.9
Repeat: 2	2464.3	693257	19359.1
Repeat: 3	2451.84	691880	19285.1

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608232-06@2X	9/9/2016 6:15:28PM	Unknown	1.00
	Valid	**Analyst Name**	**Method Name**
	Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000338581	9.07859	0.00279962	0.000228269	13.3899
Std Dev:	1.85628e-005	0.0350399	0.000408731	1.43926e-005	0.013821
%RSD:	5.48253	0.385962	14.5995	6.30511	0.103219
Repeat: 1	0.000334981	9.0402	0.00250385	0.000235956	13.3743
Repeat: 2	0.000322083	9.08672	0.00262898	0.000211665	13.3949
Repeat: 3	0.000358681	9.10885	0.00326602	0.000237186	13.4005
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00122864	0.582375	0.188328	0.429836	0.0120661
Std Dev:	0.000275058	0.00138261	0.00166223	0.00120034	0.000115528
%RSD:	22.3873	0.237409	0.882626	0.279254	0.957463
Repeat: 1	0.00135291	0.580808	0.188178	0.428454	0.0119327
Repeat: 2	0.00141962	0.583421	0.19006	0.430437	0.0121291

Repeat: 3	0.000913371	0.582897	0.186745	0.430617	0.0121363
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00813447	2.20086	0.126321	0.000861544	0.0584614
Std Dev:	5.9384e-005	0.013591	0.00140653	1.86435e-005	0.000199189
%RSD:	0.730029	0.617533	1.11346	2.16396	0.340719
Repeat: 1	0.00806677	2.18572	0.125235	0.000843913	0.0583352
Repeat: 2	0.00815888	2.20486	0.125818	0.000859661	0.0586911
Repeat: 3	0.00817775	2.212	0.12791	0.000881057	0.058358
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.438201	0.00805232	0.0458553	0.590274	0.0485677
Std Dev:	0.0061461	0.000289133	0.000341158	0.00249489	0.00539943
%RSD:	1.40258	3.59068	0.743989	0.422667	11.1173
Repeat: 1	0.431126	0.0083664	0.0461588	0.59187	0.0485473
Repeat: 2	0.442224	0.00799331	0.0454861	0.587399	0.0539773
Repeat: 3	0.441252	0.00779724	0.0459209	0.591552	0.0431785
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.00110608	0.0135287	1429.44	0.0214836	0.268207
Std Dev:	0.000655289	0.00026241	18.4269	0.000803262	0.00218398
%RSD:	59.2444	1.93966	1.2891	3.73896	0.81429
Repeat: 1	0.000948597	0.0135092	1413	0.0221238	0.265945
Repeat: 2	0.00182576	0.0132765	1425.95	0.0217446	0.268372
Repeat: 3	0.000543879	0.0138002	1449.36	0.0205822	0.270304
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.960712	-0.00700352	0.0116225	2.95821	2424.09
Std Dev:	0.00530651	0.000511036	0.000152286	0.00907599	6.89655
%RSD:	0.552352	7.29684	1.31027	0.306807	0.2845
Repeat: 1	0.95463	-0.00670912	0.0114467	2.95998	2416.64
Repeat: 2	0.963104	-0.00759362	0.0117101	2.94837	2430.25
Repeat: 3	0.964401	-0.00670784	0.0117108	2.96626	2425.4
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	685416	19322.8			
Std Dev:	6968.75	138.321			
%RSD:	1.01672	0.71584			
Repeat: 1	693449	19196.7			
Repeat: 2	681808	19301.1			
Repeat: 3	680992	19470.7			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-1.36101	219288	26.1633	17.3653	791.675
Std Dev:	0.356263	846.447	0.937804	0.830928	0.826278
%RSD:	26.1763	0.385998	3.58443	4.78498	0.104371
Repeat: 1	-1.44407	218360	25.4656	17.7515	790.74
Repeat: 2	-1.66841	219484	25.7948	16.4116	791.978
Repeat: 3	-0.970559	220019	27.2293	17.9329	792.307
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	3.96136	7.00326	-0.343958	38.5303	285.595
Std Dev:	0.097849	0.0166422	0.0727628	0.0832953	2.78609
%RSD:	2.47008	0.237635	21.1546	0.216181	0.975539
Repeat: 1	3.98685	6.9844	-0.313774	38.4341	282.379
Repeat: 2	4.04395	7.01585	-0.291145	38.5776	287.116

Repeat: 3	3.85329	7.00954	-0.426955	38.5791	287.29
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	89.8851	114810	6.67874	118.273	20.463
Std Dev:	0.712868	708.985	0.070974	2.43345	0.0696073
%RSD:	0.793088	0.617531	1.06268	2.05748	0.340162
Repeat: 1	89.0728	114020	6.62395	115.973	20.4186
Repeat: 2	90.1759	115019	6.65336	118.026	20.5432
Repeat: 3	90.4067	115391	6.75892	120.821	20.4272
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1257.82	3.67104	0.578095	115.364	79.2615
Std Dev:	17.6634	0.0645693	0.00854355	0.512988	2.56535
%RSD:	1.40429	1.75888	1.47788	0.444671	3.23656
Repeat: 1	1237.49	3.74096	0.585698	115.696	79.0355
Repeat: 2	1269.39	3.65852	0.568849	114.773	81.9324
Repeat: 3	1266.59	3.61365	0.579739	115.622	76.8167
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1.62878	-0.751147	21816.4	15.7811	140.794
Std Dev:	0.730961	0.573127	282.536	0.538929	1.09158
%RSD:	44.8778	76.3003	1.29506	3.41503	0.775304
Repeat: 1	1.54458	-0.739395	21564.5	16.2111	139.664
Repeat: 2	2.3982	-1.33006	21762.9	15.9555	140.876
Repeat: 3	0.943569	-0.183986	22121.9	15.1765	141.842
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	4040.86	1.98768	257.851	275.083	2424.09
Std Dev:	22.3407	0.659847	3.35509	0.852567	6.89655
%RSD:	0.552871	33.1969	1.30117	0.30993	0.2845
Repeat: 1	4015.25	2.32678	253.977	275.268	2416.64
Repeat: 2	4050.93	1.22723	259.777	274.154	2430.25
Repeat: 3	4056.39	2.40902	259.8	275.829	2425.4
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	685416	19322.8			
Std Dev:	6968.75	138.321			
%RSD:	1.01672	0.71584			
Repeat: 1	693449	19196.7			
Repeat: 2	681808	19301.1			
Repeat: 3	680992	19470.7			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2424.09	685416	19322.8
Std Dev:	6.89655	6968.75	138.321
%RSD:	0.2845	1.01672	0.71584
Repeat: 1	2416.64	693449	19196.7

Repeat: 2	2430.25	681808	19301.1
Repeat: 3	2425.4	680992	19470.7

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608232-07	9/9/2016 6:19:56PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000327529	0.34879	0.000329425	0.0001816	0.613823
Std Dev:	2.07635e-005	0.00135692	0.000433631	1.26619e-005	0.00129463
%RSD:	6.33943	0.389036	131.633	6.97241	0.210913
Repeat: 1	0.00032425	0.347237	-4.86806e-005	0.00019027	0.613662
Repeat: 2	0.000349737	0.349392	0.000802753	0.000187461	0.61519
Repeat: 3	0.0003086	0.349743	0.000234201	0.00016707	0.612616
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	-0.00144179	0.163474	0.0484961	0.0740091	0.0021541
Std Dev:	5.61774e-005	0.000549037	0.00114034	0.0008609	2.92938e-005
%RSD:	3.89638	0.335856	2.3514	1.16324	1.35991
Repeat: 1	-0.00138994	0.16311	0.0492485	0.0739242	0.00218792
Repeat: 2	-0.00150147	0.164106	0.0471841	0.0731938	0.0021376
Repeat: 3	-0.00143394	0.163206	0.0490557	0.0749093	0.00213677
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.000879274	0.230005	0.0166226	2.44854e-005	0.00512979
Std Dev:	1.49621e-005	0.0014939	0.000921848	5.24203e-007	4.68024e-005
%RSD:	1.70164	0.649505	5.54575	2.14088	0.912365
Repeat: 1	0.00087275	0.231699	0.0174378	2.44678e-005	0.00509947
Repeat: 2	0.000868681	0.228874	0.0156222	2.39702e-005	0.0051062
Repeat: 3	0.00089639	0.229443	0.0168078	2.50182e-005	0.00518369
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.0276305	0.0137347	0.0157365	0.0659956	0.0328345
Std Dev:	0.000416485	0.00035053	0.000599538	0.00179257	0.00110191
%RSD:	1.50734	2.55215	3.80985	2.71619	3.35596
Repeat: 1	0.0280386	0.0137945	0.0163334	0.0679998	0.0335604
Repeat: 2	0.0272061	0.0133581	0.0157418	0.0654415	0.0315666
Repeat: 3	0.0276467	0.0140515	0.0151344	0.0645455	0.0333765
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.0051362	0.00847349	786.203	0.0418059	0.0245022
Std Dev:	0.00111918	0.0011717	5.66666	0.000643564	0.00015832
%RSD:	21.7901	13.8279	0.720763	1.53941	0.646147
Repeat: 1	-0.00642313	0.00895182	780.748	0.0423873	0.0245544
Repeat: 2	-0.00459488	0.00713829	792.06	0.0419162	0.0246279
Repeat: 3	-0.0043906	0.00933035	785.801	0.0411144	0.0243244
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.264131	-0.00466865	0.00232999	0.407373	2469.03
Std Dev:	0.000103562	9.17244e-005	4.13905e-005	0.000753567	6.23492
%RSD:	0.0392085	1.96469	1.77643	0.184982	0.252525
Repeat: 1	0.264047	-0.00457598	0.00237778	0.40769	2464.72
Repeat: 2	0.264246	-0.00467057	0.00230623	0.406513	2466.18
Repeat: 3	0.264099	-0.00475939	0.00230595	0.407917	2476.18
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	700015	19487.3			

Std Dev:	9077.09	45.8051
%RSD:	1.2967	0.235051
Repeat: 1	691185	19440.3
Repeat: 2	709321	19531.8
Repeat: 3	699539	19489.8

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-2.31375	8405.08	13.5593	6.54337	34.8495
Std Dev:	0.395516	32.7782	0.96191	0.743208	0.0765061
%RSD:	17.0942	0.38998	7.09412	11.3582	0.219533
Repeat: 1	-2.37207	8367.55	12.7208	7.05749	34.8432
Repeat: 2	-1.89231	8419.6	14.6094	6.88139	34.929
Repeat: 3	-2.67686	8428.1	13.3476	5.69123	34.7764
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.242605	1.96103	0.0291743	4.37408	47.0296
Std Dev:	0.0210201	0.00660865	0.0388336	0.102694	0.710166
%RSD:	8.66435	0.336998	133.109	2.34778	1.51004
Repeat: 1	0.261885	1.95665	0.053145	4.36242	47.8496
Repeat: 2	0.220195	1.96863	-0.0156302	4.27771	46.6302
Repeat: 3	0.245735	1.95781	0.0500082	4.4821	46.6091
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	2.15367	12004.8	1.14332	9.61914	1.8031
Std Dev:	0.168979	77.9287	0.0465168	0.0683895	0.0163127
%RSD:	7.84611	0.649144	4.06856	0.710973	0.904699
Repeat: 1	2.08273	12093.2	1.18446	9.61654	1.79257
Repeat: 2	2.03172	11945.8	1.09284	9.55209	1.79484
Repeat: 3	2.34655	11975.5	1.15267	9.6888	1.8219
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	79.1523	3.87039	-0.176162	8.39534	20.9073
Std Dev:	1.19634	0.0887307	0.0150141	0.367871	0.530302
%RSD:	1.51144	2.29255	8.5229	4.38184	2.53644
Repeat: 1	80.3243	3.88661	-0.161214	8.80661	21.2488
Repeat: 2	77.933	3.77467	-0.176031	8.28178	20.2964
Repeat: 3	79.1997	3.94989	-0.191241	8.09764	21.1768
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	2.01977	-2.02561	11947.8	29.4527	19.0348
Std Dev:	1.27882	2.61963	86.8656	0.431136	0.0790886
%RSD:	63.3149	129.325	0.72704	1.46382	0.415494
Repeat: 1	0.549145	-0.956464	11864.2	29.8421	19.061
Repeat: 2	2.63971	-5.01072	12037.6	29.5267	19.0976
Repeat: 3	2.87047	-0.109654	11941.7	28.9894	18.946
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----

Avg. of Repeats:	1108.85	-0.505925	52.0614	38.0027	2469.03
Std Dev:	0.436222	0.122161	0.910445	0.0696795	6.23492
%RSD:	0.0393401	24.1461	1.74879	0.183354	0.252525
Repeat: 1	1108.5	-0.38303	53.1127	38.0323	2464.72
Repeat: 2	1109.34	-0.507406	51.5382	37.9231	2466.18
Repeat: 3	1108.71	-0.62734	51.5333	38.0527	2476.18
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	700015	19487.3
Std Dev:	9077.09	45.8051
%RSD:	1.2967	0.235051
Repeat: 1	691185	19440.3
Repeat: 2	709321	19531.8
Repeat: 3	699539	19489.8
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2469.03	700015	19487.3
Std Dev:	6.23492	9077.09	45.8051
%RSD:	0.252525	1.2967	0.235051
Repeat: 1	2464.72	691185	19440.3
Repeat: 2	2466.18	709321	19531.8
Repeat: 3	2476.18	699539	19489.8

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6H29010-MS1	9/9/2016 6:24:17PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.01286	0.548608	0.103052	0.0168348	33.638
Std Dev:	0.000157526	0.000739027	0.000672077	0.000251483	0.161258
%RSD:	1.22493	0.134709	0.652176	1.49383	0.479394
Repeat: 1	0.0127765	0.548023	0.102685	0.0166653	33.5533
Repeat: 2	0.0127619	0.548364	0.102642	0.0167154	33.5367
Repeat: 3	0.0130417	0.549439	0.103827	0.0171238	33.8239
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.129897	0.665292	3.70937	4.32403	0.0114305
Std Dev:	0.000147143	0.000708574	0.0135517	0.0137171	0.000138727
%RSD:	0.113277	0.106506	0.365337	0.31723	1.21366
Repeat: 1	0.129842	0.664486	3.70153	4.32117	0.0113384
Repeat: 2	0.129785	0.665817	3.70157	4.31198	0.0113631
Repeat: 3	0.130064	0.665574	3.72502	4.33896	0.01159
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0237249	0.249135	0.113182	0.00805672	0.0206364
Std Dev:	0.000341845	0.000947719	0.0012256	9.13373e-005	6.9865e-005
%RSD:	1.44087	0.380404	1.08285	1.13368	0.338552
Repeat: 1	0.0235372	0.249228	0.112925	0.00799826	0.0206967
Repeat: 2	0.0235179	0.248144	0.112106	0.00800992	0.0205598
Repeat: 3	0.0241194	0.250033	0.114516	0.00816197	0.0206527
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**

Avg. of Repeats:	0.201052	3.96078	0.221271	2.46906	0.518986
Std Dev:	0.00297734	0.00878674	0.00220558	0.00945935	0.00308737
%RSD:	1.48088	0.221844	0.996778	0.383115	0.594884
Repeat: 1	0.199523	3.95694	0.222686	2.464	0.516933
Repeat: 2	0.199151	3.95456	0.21873	2.46321	0.517489
Repeat: 3	0.204484	3.97083	0.222398	2.47998	0.522537
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.167385	0.113745	1080.48	1.49396	2.12213
Std Dev:	0.000880975	0.00107397	5.53864	0.00633226	0.0124647
%RSD:	0.526316	0.944189	0.512609	0.423856	0.587365
Repeat: 1	0.166595	0.112611	1074.58	1.49133	2.12947
Repeat: 2	0.167226	0.114746	1085.56	1.48938	2.10774
Repeat: 3	0.168335	0.113879	1081.3	1.50119	2.12918
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.446605	0.183029	0.0274528	6.0772	2446.97
Std Dev:	0.000334424	0.00158097	0.000306694	0.0119355	8.99116
%RSD:	0.0748814	0.86378	1.11717	0.196398	0.367441
Repeat: 1	0.446983	0.183655	0.0273295	6.07637	2453.53
Repeat: 2	0.446484	0.181231	0.0272269	6.06571	2450.65
Repeat: 3	0.446348	0.184202	0.0278019	6.08954	2436.72
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	684841	19122			
Std Dev:	8050.47	88.6235			
%RSD:	1.17552	0.463464			
Repeat: 1	688814	19041.2			
Repeat: 2	690133	19216.8			
Repeat: 3	675577	19107.9			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	239.013	13187.8	239.215	979.279	1992.49
Std Dev:	3.0309	17.775	1.48609	14.7028	9.57275
%RSD:	1.26809	0.134784	0.621236	1.50139	0.480441
Repeat: 1	237.408	13173.7	238.405	969.37	1987.47
Repeat: 2	237.121	13182	238.309	972.296	1986.48
Repeat: 3	242.509	13207.8	240.93	996.172	2003.53
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	51.5645	8.00132	130.867	509.179	271.896
Std Dev:	0.0534969	0.00852896	0.4831	1.6321	3.36407
%RSD:	0.103748	0.106594	0.369154	0.320537	1.23727
Repeat: 1	51.5459	7.99162	130.586	508.834	269.66
Repeat: 2	51.5228	8.00763	130.59	507.746	270.262
Repeat: 3	51.6248	8.00471	131.425	510.956	275.765
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	261.267	13006.1	6.01577	1059.87	7.22636
Std Dev:	3.87681	49.4765	0.0618443	11.9422	0.0244023
%RSD:	1.48385	0.380411	1.02804	1.12676	0.337685
Repeat: 1	259.141	13010.9	6.00276	1052.22	7.24738
Repeat: 2	258.919	12954.4	5.96146	1053.75	7.1996

Repeat: 3	265.742	13053	6.08308	1073.63	7.2321
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	577.947	999.502	4.971	503.124	259.063
Std Dev:	8.56284	2.21771	0.0552339	1.94741	1.50296
%RSD:	1.4816	0.221882	1.11112	0.387065	0.580152
Repeat: 1	573.547	998.534	5.00643	502.081	258.062
Repeat: 2	572.479	997.933	4.90736	501.92	258.335
Repeat: 3	587.815	1002.04	4.99921	505.371	260.791
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	193.825	233.335	16459.2	1002.55	1067.55
Std Dev:	0.922551	2.40173	84.9067	4.24218	6.23108
%RSD:	0.475971	1.02931	0.515861	0.423139	0.583682
Repeat: 1	192.983	230.8	16368.8	1000.78	1071.22
Repeat: 2	193.68	235.576	16537.2	999.477	1060.35
Repeat: 3	194.811	233.63	16471.8	1007.39	1071.07
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1876.66	250.066	602.051	567.147	2446.97
Std Dev:	1.40866	2.09696	6.7264	1.10486	8.99116
%RSD:	0.0750621	0.838562	1.11725	0.19481	0.367441
Repeat: 1	1878.25	250.893	599.339	567.075	2453.53
Repeat: 2	1876.15	247.682	597.105	566.079	2450.65
Repeat: 3	1875.57	251.623	609.711	568.285	2436.72
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	684841	19122			
Std Dev:	8050.47	88.6235			
%RSD:	1.17552	0.463464			
Repeat: 1	688814	19041.2			
Repeat: 2	690133	19216.8			
Repeat: 3	675577	19107.9			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2446.97	684841	19122
Std Dev:	8.99116	8050.47	88.6235
%RSD:	0.367441	1.17552	0.463464
Repeat: 1	2453.53	688814	19041.2
Repeat: 2	2450.65	690133	19216.8
Repeat: 3	2436.72	675577	19107.9

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6H29010-MSD1	9/9/2016 6:28:34PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.0128113	0.558896	0.104467	0.0168101	33.4277
Std Dev:	3.42475e-005	0.000497061	0.000588909	1.94702e-005	0.0805904
%RSD:	0.267322	0.0889363	0.56373	0.115824	0.241089
Repeat: 1	0.0128453	0.559166	0.105102	0.0167909	33.4659
Repeat: 2	0.0128118	0.558323	0.104358	0.0168298	33.3351
Repeat: 3	0.0127768	0.5592	0.10394	0.0168097	33.4821
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	0.13056	0.660309	3.76511	4.31589	0.0114967
Std Dev:	0.000565535	0.00141822	0.00795843	0.00296985	1.99027e-005
%RSD:	0.433159	0.214781	0.211373	0.0688118	0.173117
Repeat: 1	0.129921	0.658765	3.75747	4.31828	0.0114748
Repeat: 2	0.130995	0.661553	3.7645	4.31257	0.0115136
Repeat: 3	0.130765	0.66061	3.77336	4.31683	0.0115017
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.0233345	0.266305	0.115056	0.00814135	0.0210173
Std Dev:	4.95908e-005	0.000207393	0.000194614	6.91147e-005	0.000106541
%RSD:	0.212521	0.0778781	0.169148	0.848934	0.50692
Repeat: 1	0.0233077	0.266524	0.114975	0.0080633	0.0211019
Repeat: 2	0.0233917	0.266111	0.115278	0.00819477	0.0210524
Repeat: 3	0.0233041	0.266279	0.114915	0.008166	0.0208976
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.199524	4.00959	0.226315	2.45196	0.526659
Std Dev:	0.000376823	0.00311394	0.00016298	0.0042918	0.00305307
%RSD:	0.188861	0.0776622	0.0720146	0.175035	0.579706
Repeat: 1	0.199098	4.00836	0.226162	2.45645	0.529657
Repeat: 2	0.199813	4.01313	0.226486	2.4479	0.523553
Repeat: 3	0.19966	4.00728	0.226297	2.45153	0.526766
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	0.168943	0.114298	1042.8	1.50847	2.20374
Std Dev:	0.00246223	0.000908256	3.6888	0.00377798	0.00498342
%RSD:	1.45743	0.794639	0.353739	0.250451	0.226135
Repeat: 1	0.171424	0.115221	1041.82	1.5077	2.20741
Repeat: 2	0.1665	0.114267	1046.88	1.50514	2.19807
Repeat: 3	0.168904	0.113406	1039.71	1.51257	2.20575
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.465526	0.185096	0.0275084	6.137	2453.98
Std Dev:	0.00100282	0.000142007	2.70617e-005	0.00413942	2.41109
%RSD:	0.215416	0.0767205	0.0983761	0.0674503	0.0982522
Repeat: 1	0.464462	0.185046	0.0275186	6.14158	2452.66
Repeat: 2	0.466453	0.185257	0.0275288	6.13588	2452.52
Repeat: 3	0.465664	0.184987	0.0274777	6.13353	2456.77
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	693831	19057.9			
Std Dev:	2647.06	67.2287			
%RSD:	0.381513	0.352761			
Repeat: 1	696852	18985.6			
Repeat: 2	691916	19118.6			
Repeat: 3	692727	19069.4			

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	238.093	13436	242.365	977.913	1980.04

Std Dev:	0.654809	12.0577	1.30684	1.13835	4.77123
%RSD:	0.275023	0.0897418	0.539202	0.116406	0.240966
Repeat: 1	238.742	13442.6	243.777	976.788	1982.3
Repeat: 2	238.104	13422.1	242.122	979.065	1974.56
Repeat: 3	237.433	13443.4	241.198	977.885	1983.26
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	51.8961	7.94134	132.826	508.061	273.486
Std Dev:	0.222697	0.0170708	0.284365	0.358421	0.482405
%RSD:	0.429121	0.214961	0.214088	0.0705467	0.176391
Repeat: 1	51.6445	7.92275	132.553	508.352	272.954
Repeat: 2	52.0679	7.95631	132.805	507.661	273.896
Repeat: 3	51.976	7.94495	133.12	508.171	273.608
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	256.917	13901.6	6.11031	1070.92	7.35987
Std Dev:	0.563811	10.8115	0.00982033	9.03227	0.0371753
%RSD:	0.219453	0.0777716	0.160717	0.843412	0.505109
Repeat: 1	256.61	13913	6.10624	1060.72	7.38938
Repeat: 2	257.567	13891.5	6.12152	1077.9	7.37211
Repeat: 3	256.573	13900.3	6.10319	1074.14	7.31812
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	573.53	1011.82	5.09731	499.605	262.854
Std Dev:	1.08409	0.785276	0.00408147	0.881362	1.48386
%RSD:	0.189021	0.07761	0.080071	0.176412	0.564518
Repeat: 1	572.304	1011.51	5.09347	500.528	264.31
Repeat: 2	574.363	1012.72	5.10159	498.772	261.344
Repeat: 3	573.923	1011.24	5.09686	499.517	262.907
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	195.542	234.56	15881.7	1012.27	1108.34
Std Dev:	2.78389	2.03136	56.5496	2.53214	2.49138
%RSD:	1.42368	0.86603	0.356067	0.250145	0.224784
Repeat: 1	198.35	236.624	15866.7	1011.75	1110.18
Repeat: 2	192.783	234.492	15944.3	1010.04	1105.51
Repeat: 3	195.493	232.563	15834.2	1015.02	1109.35
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1956.32	252.986	603.247	572.744	2453.98
Std Dev:	4.22253	0.195231	0.590037	0.387876	2.41109
%RSD:	0.21584	0.0771707	0.0978102	0.0677223	0.0982522
Repeat: 1	1951.84	252.91	603.467	573.174	2452.66
Repeat: 2	1960.22	253.208	603.694	572.639	2452.52
Repeat: 3	1956.91	252.84	602.578	572.42	2456.77
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			

Avg. of Repeats:	693831	19057.9
Std Dev:	2647.06	67.2287
%RSD:	0.381513	0.352761
Repeat: 1	696852	18985.6
Repeat: 2	691916	19118.6
Repeat: 3	692727	19069.4
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2453.98	693831	19057.9
Std Dev:	2.41109	2647.06	67.2287
%RSD:	0.0982522	0.381513	0.352761
Repeat: 1	2452.66	696852	18985.6
Repeat: 2	2452.52	691916	19118.6
Repeat: 3	2456.77	692727	19069.4

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6H29010-PS1	9/9/2016 6:32:53PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.0126701	0.420593	0.111097	0.0172183	32.9697
Std Dev:	0.000113196	0.00129712	0.000867974	0.000239164	0.06358
%RSD:	0.893416	0.308403	0.781279	1.38901	0.192844
Repeat: 1	0.0125482	0.421267	0.111055	0.0169424	32.9669
Repeat: 2	0.0126901	0.421414	0.11025	0.0173676	32.9076
Repeat: 3	0.0127719	0.419097	0.111985	0.0173448	33.0346
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.129268	0.613189	3.77359	4.29953	0.0114425
Std Dev:	0.000572294	0.000720644	0.00828347	0.012838	4.44273e-005
%RSD:	0.442718	0.117524	0.219511	0.298592	0.388265
Repeat: 1	0.128919	0.613383	3.77356	4.30138	0.0114002
Repeat: 2	0.129929	0.613793	3.76532	4.28587	0.0114386
Repeat: 3	0.128957	0.612392	3.78189	4.31134	0.0114888
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0233911	0.247082	0.10933	0.00802667	0.0199966
Std Dev:	0.000315331	0.000678815	0.00093106	6.63061e-005	7.3773e-005
%RSD:	1.34808	0.274733	0.851608	0.826072	0.368927
Repeat: 1	0.023028	0.246974	0.110335	0.00797655	0.0200816
Repeat: 2	0.0235952	0.247808	0.109157	0.00810186	0.0199594
Repeat: 3	0.0235503	0.246463	0.108497	0.00800161	0.0199488
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.19906	4.12619	0.219404	2.44572	0.519996
Std Dev:	0.00260977	0.0140256	0.00204515	0.00579692	0.00172951
%RSD:	1.31105	0.339915	0.932142	0.237023	0.3326
Repeat: 1	0.196046	4.12636	0.21983	2.44519	0.519717
Repeat: 2	0.200584	4.11208	0.221202	2.44021	0.518424
Repeat: 3	0.200548	4.14013	0.217179	2.45177	0.521848
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.206206	0.119653	774.36	1.54382	2.14087
Std Dev:	0.00198651	0.00072169	5.27619	0.00331275	0.00822582

%RSD:	0.963361	0.603151	0.681362	0.214582	0.384228
Repeat: 1	0.206112	0.119011	778.958	1.54014	2.14425
Repeat: 2	0.204268	0.119514	775.521	1.54475	2.14686
Repeat: 3	0.208238	0.120434	768.6	1.54657	2.13149
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.504468	0.184373	0.0277096	6.16483	2505.76
Std Dev:	0.00178168	0.000989728	0.000180043	0.0273202	8.2655
%RSD:	0.353179	0.536806	0.649751	0.443162	0.32986
Repeat: 1	0.505038	0.184629	0.0275132	6.16793	2505.21
Repeat: 2	0.505896	0.18521	0.0277486	6.13609	2514.29
Repeat: 3	0.502472	0.183281	0.0278669	6.19047	2497.78
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	700016	19410.6			
Std Dev:	6607.82	10.549			
%RSD:	0.943952	0.0543466			
Repeat: 1	707620	19400.1			
Repeat: 2	695670	19410.4			
Repeat: 3	696758	19421.2			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	235.432	10095.1	256.952	1001.71	1952.93
Std Dev:	2.17402	31.4219	1.91452	13.9831	3.77048
%RSD:	0.923418	0.311261	0.745088	1.39592	0.193067
Repeat: 1	233.091	10111.3	256.86	985.58	1952.75
Repeat: 2	235.816	10115	255.085	1010.44	1949.26
Repeat: 3	237.387	10058.8	258.91	1009.1	1956.79
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	51.5503	7.37416	133.199	505.886	272.163
Std Dev:	0.225776	0.00867425	0.298096	1.54387	1.07656
%RSD:	0.437972	0.11763	0.223799	0.305181	0.395559
Repeat: 1	51.4194	7.3765	133.198	506.102	271.139
Repeat: 2	51.811	7.38143	132.901	504.246	272.064
Repeat: 3	51.4205	7.36456	133.497	507.311	273.286
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	257.615	12898.9	5.82136	1055.94	7.00364
Std Dev:	3.57576	35.4089	0.0469817	8.66525	0.0257331
%RSD:	1.38803	0.27451	0.807057	0.820621	0.367424
Repeat: 1	253.497	12893.3	5.87209	1049.38	7.03328
Repeat: 2	259.936	12936.8	5.81265	1065.76	6.99064
Repeat: 3	259.411	12866.7	5.77934	1052.67	6.987
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	572.217	1041.22	4.92423	498.349	258.842
Std Dev:	7.50643	3.53756	0.0512164	1.1945	0.836486
%RSD:	1.31181	0.339751	1.04009	0.239691	0.323165
Repeat: 1	563.55	1041.26	4.93491	498.239	258.712
Repeat: 2	576.602	1037.66	4.96926	497.214	258.077

Repeat: 3	576.5	1044.74	4.86852	499.595	259.735
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	237.601	246.713	11766.4	1035.96	1076.92
Std Dev:	2.23553	1.61313	80.8865	2.21922	4.11192
%RSD:	0.940878	0.653849	0.687439	0.214218	0.381822
Repeat: 1	237.518	245.279	11836.9	1033.5	1078.61
Repeat: 2	235.407	246.399	11784.2	1036.59	1079.92
Repeat: 3	239.876	248.46	11678	1037.8	1072.23
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	2120.32	252.443	607.49	575.333	2505.76
Std Dev:	7.50183	1.3217	3.94267	2.55553	8.2655
%RSD:	0.353806	0.523565	0.649009	0.444182	0.32986
Repeat: 1	2122.72	252.782	603.193	575.636	2505.21
Repeat: 2	2126.33	253.563	608.337	572.64	2514.29
Repeat: 3	2111.91	250.985	610.94	577.724	2497.78
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	700016	19410.6
Std Dev:	6607.82	10.549
%RSD:	0.943952	0.0543466
Repeat: 1	707620	19400.1
Repeat: 2	695670	19410.4
Repeat: 3	696758	19421.2
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2505.76	700016	19410.6
Std Dev:	8.2655	6607.82	10.549
%RSD:	0.32986	0.943952	0.0543466
Repeat: 1	2505.21	707620	19400.1
Repeat: 2	2514.29	695670	19410.4
Repeat: 3	2497.78	696758	19421.2

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6H29010-SRL1@5X	9/9/2016 6:37:10PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000404308	0.0712253	-0.00408643	0.000129518	0.147116
Std Dev:	1.35687e-005	0.000918836	0.000429021	1.44491e-005	0.000726238
%RSD:	3.35604	1.29004	10.4987	11.1561	0.493649
Repeat: 1	0.000419972	0.0715495	-0.00448596	0.000146164	0.147166
Repeat: 2	0.000396199	0.0701883	-0.00363301	0.000120222	0.146366
Repeat: 3	0.000396751	0.0719382	-0.00414033	0.000122166	0.147816
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.000235508	0.0352647	0.0340536	0.028857	0.000585842

Std Dev:	0.000121295	0.000261585	0.000560917	0.000216678	1.4272e-005
%RSD:	51.5035	0.741774	1.64716	0.750866	2.43614
Repeat: 1	0.000354627	0.0353474	0.0336263	0.0288748	0.000596956
Repeat: 2	0.00023975	0.0349718	0.0338458	0.028632	0.000569747
Repeat: 3	0.000112148	0.035475	0.0346888	0.0290643	0.000590822
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.000700562	0.0453997	-0.00130603	1.0168e-005	0.000969925
Std Dev:	1.60399e-005	0.000310846	0.000792293	1.25086e-005	1.79582e-005
%RSD:	2.28958	0.684688	60.6645	123.019	1.85151
Repeat: 1	0.000716127	0.0452939	-0.00165785	1.75305e-006	0.000950058
Repeat: 2	0.000701474	0.0451556	-0.00186148	2.45419e-005	0.000985004
Repeat: 3	0.000684086	0.0457497	-0.00039875	4.20908e-006	0.000974714
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.00572634	0.005064	0.0111901	0.0330668	0.00147866
Std Dev:	2.92429e-005	0.000301324	0.000694976	0.00106066	0.00231506
%RSD:	0.510673	5.95032	6.21063	3.20762	156.565
Repeat: 1	0.00576009	0.00515018	0.0114947	0.0342635	0.00323514
Repeat: 2	0.00570852	0.00472898	0.0116808	0.0326939	0.00234557
Repeat: 3	0.0057104	0.00531285	0.0103948	0.0322429	-0.00114474
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00701297	0.00731544	166.96	0.00797284	-0.00306403
Std Dev:	0.00115683	0.000396191	1.46929	0.000477111	0.00016916
%RSD:	16.4955	5.41582	0.880027	5.9842	5.52083
Repeat: 1	-0.00798322	0.00763876	167.453	0.00743891	-0.00325931
Repeat: 2	-0.00573273	0.00687348	168.12	0.00812225	-0.00296271
Repeat: 3	-0.00732296	0.00743407	165.308	0.00835738	-0.00297006
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.0528036	-0.00250557	0.000475321	0.0889367	2528.24
Std Dev:	0.000170058	0.00085381	2.71087e-005	0.000536986	7.86966
%RSD:	0.322058	34.0764	5.70323	0.603785	0.31127
Repeat: 1	0.0526953	-0.00168815	0.000503952	0.0893816	2534.98
Repeat: 2	0.0529996	-0.00243694	0.000471962	0.0890883	2530.16
Repeat: 3	0.0527159	-0.00339163	0.000450048	0.0883402	2519.59
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	710509	20034.8			
Std Dev:	1144.3	87.3463			
%RSD:	0.161054	0.435973			
Repeat: 1	709335	19940.6			
Repeat: 2	711621	20113.1			
Repeat: 3	710571	20050.7			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-1.05317	1703.08	3.23415	2.73456	7.11912
Std Dev:	0.260975	22.1883	0.952239	0.844519	0.0422837
%RSD:	24.7799	1.30284	29.4433	30.8832	0.593945
Repeat: 1	-0.751864	1710.9	2.34706	3.70742	7.12425
Repeat: 2	-1.20802	1678.03	4.24033	2.19018	7.0745
Repeat: 3	-1.19963	1720.29	3.11506	2.30606	7.1586
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.0671202	0.417802	-0.0859785	0.912626	9.1936

Std Dev:	0.0466551	0.00314864	0.0194535	0.0266492	0.346589
%RSD:	69.5097	0.753621	22.626	2.92006	3.7699
Repeat: 1	0.112501	0.418797	-0.101217	0.915754	9.46361
Repeat: 2	0.0695712	0.414276	-0.0926512	0.884551	8.80277
Repeat: 3	0.019288	0.420333	-0.0640667	0.937573	9.31441
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	-0.783307	2375.48	0.238638	7.854	0.346758
Std Dev:	0.181476	16.214	0.0399795	1.6348	0.00626465
%RSD:	23.1679	0.682559	16.7532	20.8149	1.80663
Repeat: 1	-0.607284	2369.96	0.220885	6.75415	0.339824
Repeat: 2	-0.772854	2362.74	0.21061	9.73258	0.352011
Repeat: 3	-0.969784	2393.73	0.284419	7.07525	0.348439
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	16.3609	1.56289	-0.290017	1.68308	4.16411
Std Dev:	0.0842065	0.076122	0.0174041	0.217883	1.12123
%RSD:	0.514681	4.8706	6.00107	12.9455	26.926
Repeat: 1	16.4581	1.58467	-0.28239	1.92894	5.01884
Repeat: 2	16.3099	1.47825	-0.277729	1.60639	4.57889
Repeat: 3	16.3147	1.62574	-0.309933	1.51391	2.89458
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1.16511	-4.2761	2454.01	6.788	5.27522
Std Dev:	1.31094	0.885114	22.5233	0.319906	0.0845743
%RSD:	112.516	20.6991	0.917818	4.71282	1.60324
Repeat: 1	0.0661046	-3.55316	2461.56	6.43	5.17759
Repeat: 2	2.61611	-5.26323	2471.78	6.88815	5.32592
Repeat: 3	0.813112	-4.01192	2428.68	7.04585	5.32216
QC Status Pass/Fail:	Pass	Fail	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	219.154	0.264771	11.5931	8.28492	2528.24
Std Dev:	0.715964	1.12956	0.59233	0.0500356	7.86966
%RSD:	0.326695	426.617	5.10931	0.603936	0.31127
Repeat: 1	218.698	1.34513	12.2206	8.32669	2534.98
Repeat: 2	219.979	0.357462	11.5152	8.2986	2530.16
Repeat: 3	218.784	-0.908278	11.0436	8.22947	2519.59
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	710509	20034.8			
Std Dev:	1144.3	87.3463			
%RSD:	0.161054	0.435973			
Repeat: 1	709335	19940.6			
Repeat: 2	711621	20113.1			
Repeat: 3	710571	20050.7			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**

Avg. of Repeats:	2528.24	710509	20034.8
Std Dev:	7.86966	1144.3	87.3463
%RSD:	0.31127	0.161054	0.435973
Repeat: 1	2534.98	709335	19940.6
Repeat: 2	2530.16	711621	20113.1
Repeat: 3	2519.59	710571	20050.7

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608232-08@2X	9/9/2016 6:41:34PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000347089	4.82229	0.00619573	0.000795892	5.64696
Std Dev:	2.10499e-005	0.00368668	0.000373931	2.44152e-006	0.00547719
%RSD:	6.06471	0.0764508	6.03531	0.306765	0.0969935
Repeat: 1	0.000331343	4.82015	0.00577293	0.000793574	5.64312
Repeat: 2	0.000338926	4.82018	0.00633124	0.000795663	5.64454
Repeat: 3	0.000370998	4.82655	0.006483	0.00079844	5.65323
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	-0.000360765	1.53152	0.263805	0.332059	0.0105368
Std Dev:	0.000152754	0.00236248	0.00139592	0.000266642	0.000114205
%RSD:	42.3417	0.154258	0.529149	0.0802994	1.08387
Repeat: 1	-0.000529963	1.52943	0.262193	0.331751	0.0106656
Repeat: 2	-0.000233005	1.53103	0.264608	0.332223	0.010448
Repeat: 3	-0.000319328	1.53408	0.264613	0.332203	0.0104967
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00570825	4.34016	0.295357	0.00105056	0.0560059
Std Dev:	3.77754e-005	0.00798028	0.000862303	1.52026e-005	6.63523e-005
%RSD:	0.661769	0.183871	0.291953	1.4471	0.118474
Repeat: 1	0.00575063	4.34878	0.296191	0.00106405	0.0560304
Repeat: 2	0.00567813	4.33302	0.294469	0.00103409	0.0559308
Repeat: 3	0.00569599	4.33869	0.295412	0.00105354	0.0560565
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.179743	0.0189876	0.0898421	0.353096	0.100188
Std Dev:	0.000928742	0.00159198	0.000723817	0.000795206	0.00143029
%RSD:	0.516705	8.38431	0.805655	0.22521	1.4276
Repeat: 1	0.180793	0.0173771	0.0903318	0.353802	0.0992473
Repeat: 2	0.179029	0.0190253	0.0890106	0.35325	0.0994836
Repeat: 3	0.179408	0.0205604	0.0901838	0.352234	0.101834
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.00163419	0.0134371	1189.08	0.0222255	0.377671
Std Dev:	0.00032925	0.000568258	5.17387	0.000106018	0.000961864
%RSD:	20.1476	4.22903	0.435115	0.477009	0.254683
Repeat: 1	0.00160465	0.014006	1188.19	0.022239	0.378782
Repeat: 2	0.00132071	0.0128694	1184.41	0.0223241	0.377126
Repeat: 3	0.00197722	0.0134359	1194.64	0.0221134	0.377106
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.553053	-0.00385308	0.0141717	2.85925	2447.94
Std Dev:	0.000771472	0.000301554	0.00011645	0.0052662	4.83038
%RSD:	0.139493	7.8263	0.82171	0.184181	0.197324
Repeat: 1	0.553794	-0.00354712	0.0142956	2.86533	2444.61

Repeat: 2	0.552254	-0.00415003	0.0140645	2.85602	2445.73
Repeat: 3	0.55311	-0.0038621	0.0141549	2.8564	2453.48
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	702719	19516.4			
Std Dev:	2808.47	41.399			
%RSD:	0.399657	0.212125			
Repeat: 1	699548	19478.6			
Repeat: 2	704893	19509.9			
Repeat: 3	703717	19560.6			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-1.16861	116436	33.7844	59.3902	332.77
Std Dev:	0.398504	89.0034	0.822551	0.126739	0.322782
%RSD:	34.1008	0.0764399	2.43471	0.213401	0.0969983
Repeat: 1	-1.45807	116384	32.8558	59.2911	332.55
Repeat: 2	-1.33366	116385	34.0756	59.3466	332.621
Repeat: 3	-0.714096	116539	34.4216	59.533	333.141
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	1.69922	18.4279	-0.876444	27.2698	247.964
Std Dev:	0.0572338	0.0284367	0.063621	0.0477982	2.76739
%RSD:	3.36824	0.154314	7.25899	0.175279	1.11605
Repeat: 1	1.63557	18.4028	-0.949599	27.2154	251.086
Repeat: 2	1.74645	18.4221	-0.834047	27.305	245.813
Repeat: 3	1.71564	18.4588	-0.845685	27.289	246.992
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	65.4432	226391	15.2084	142.936	19.6651
Std Dev:	0.445655	416.269	0.0435122	1.9863	0.023289
%RSD:	0.680979	0.183872	0.286107	1.38964	0.118428
Repeat: 1	65.9426	226840	15.2504	144.699	19.6739
Repeat: 2	65.0859	226018	15.1635	140.784	19.6387
Repeat: 3	65.3012	226314	15.2111	143.326	19.6827
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	511.96	7.67077	1.67965	65.2212	76.9483
Std Dev:	2.66231	0.398149	0.0181264	0.161507	0.718802
%RSD:	0.520023	5.19047	1.07918	0.247629	0.934136
Repeat: 1	514.97	7.27018	1.69191	65.3622	76.4703
Repeat: 2	509.913	7.67572	1.65883	65.2564	76.5997
Repeat: 3	510.998	8.06643	1.6882	65.045	77.775
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	0.939202	0.810253	18140	16.2635	195.362
Std Dev:	0.367804	1.26277	79.323	0.0712378	0.481122
%RSD:	39.1613	155.849	0.437281	0.438021	0.246272
Repeat: 1	0.822183	2.07541	18126.5	16.2719	195.918
Repeat: 2	0.644144	-0.450122	18068.4	16.3302	195.09

Repeat: 3	1.35128	0.805474	18225.3	16.1885	195.079
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	2324.14	2.33662	316.716	266.668	2447.94
Std Dev:	3.24693	0.407995	2.57517	0.490441	4.83038
%RSD:	0.139705	17.4609	0.813086	0.183914	0.197324
Repeat: 1	2327.26	2.75013	319.459	267.234	2444.61
Repeat: 2	2320.78	1.93438	314.35	266.368	2445.73
Repeat: 3	2324.38	2.32534	316.339	266.403	2453.48
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	702719	19516.4
Std Dev:	2808.47	41.399
%RSD:	0.399657	0.212125
Repeat: 1	699548	19478.6
Repeat: 2	704893	19509.9
Repeat: 3	703717	19560.6
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2447.94	702719	19516.4
Std Dev:	4.83038	2808.47	41.399
%RSD:	0.197324	0.399657	0.212125
Repeat: 1	2444.61	699548	19478.6
Repeat: 2	2445.73	704893	19509.9
Repeat: 3	2453.48	703717	19560.6

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608232-09@2X	9/9/2016 6:45:53PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.00036224	4.33739	0.000590806	0.000616897	7.61946
Std Dev:	1.42005e-005	0.0122015	0.000638265	5.5098e-006	0.00793788
%RSD:	3.92019	0.281311	108.033	0.893148	0.104179
Repeat: 1	0.000362041	4.32555	0.000691133	0.000610571	7.61241
Repeat: 2	0.000348141	4.34992	-9.16819e-005	0.000620644	7.6179
Repeat: 3	0.00037654	4.3367	0.00117297	0.000619477	7.62806
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00254539	2.01184	0.167067	0.323531	0.00835514
Std Dev:	0.000346688	0.00306801	0.00074053	0.00270744	0.000135999
%RSD:	13.6202	0.152497	0.443253	0.83684	1.62773
Repeat: 1	0.0029313	2.01017	0.166215	0.321242	0.00845303
Repeat: 2	0.00244462	2.01539	0.167554	0.32652	0.00841254
Repeat: 3	0.00226025	2.00998	0.167432	0.322833	0.00819986
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00865383	1.57322	0.102536	0.000610875	0.028609
Std Dev:	0.000157085	0.00585812	0.000193536	1.42447e-005	2.49198e-005
%RSD:	1.8152	0.372364	0.188749	2.33185	0.087105

Repeat: 1	0.0087389	1.56673	0.102534	0.000625424	0.0286233
Repeat: 2	0.00875004	1.57483	0.102344	0.000610246	0.0286234
Repeat: 3	0.00847256	1.57811	0.102731	0.000596956	0.0285802
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.231278	0.0111777	0.0242816	0.353064	0.822355
Std Dev:	0.00370969	0.000853327	0.000626855	0.0018053	0.00248973
%RSD:	1.60399	7.63419	2.58161	0.511323	0.302756
Repeat: 1	0.234656	0.0121056	0.0240474	0.352882	0.824871
Repeat: 2	0.231872	0.0110008	0.0249918	0.351356	0.819892
Repeat: 3	0.227308	0.0104267	0.0238056	0.354953	0.822301
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00118555	0.011079	1800.01	0.0248736	0.518266
Std Dev:	0.000938055	0.000224921	5.75711	0.000401108	0.00150368
%RSD:	79.1239	2.03015	0.319838	1.61259	0.290137
Repeat: 1	-0.00221919	0.0112822	1805.26	0.0251967	0.516531
Repeat: 2	-0.000949178	0.0108373	1800.91	0.0249995	0.519187
Repeat: 3	-0.000388292	0.0111176	1793.86	0.0244247	0.519081
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.444785	-0.00488745	0.00836951	5.41067	2469.43
Std Dev:	0.0011045	0.000740158	0.000127647	0.0128768	1.15296
%RSD:	0.248322	15.1441	1.52514	0.237989	0.0466894
Repeat: 1	0.443511	-0.00572075	0.00848866	5.39774	2468.39
Repeat: 2	0.445468	-0.00430635	0.00838508	5.41078	2470.67
Repeat: 3	0.445377	-0.00463524	0.00823479	5.42349	2469.24
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	698545	19537.3			
Std Dev:	10234.9	17.4832			
%RSD:	1.46517	0.0894867			
Repeat: 1	691704	19547.8			
Repeat: 2	693621	19517.1			
Repeat: 3	710312	19546.9			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-1.22221	104716	17.7837	37.4959	449.853
Std Dev:	0.264253	294.701	1.41453	0.34325	0.459098
%RSD:	21.6209	0.281428	7.95408	0.915433	0.102055
Repeat: 1	-1.21564	104430	17.9906	37.1008	449.447
Repeat: 2	-1.48969	105019	16.2771	37.7209	449.761
Repeat: 3	-0.961307	104700	19.0834	37.666	450.351
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	2.44687	24.2095	0.911007	30.7945	196.457
Std Dev:	0.128819	0.036929	0.0141842	0.311003	3.29979
%RSD:	5.26463	0.152539	1.55698	1.00993	1.67965
Repeat: 1	2.58997	24.1893	0.895246	30.5418	198.833
Repeat: 2	2.41046	24.2521	0.922747	31.1418	197.849
Repeat: 3	2.34017	24.1871	0.915027	30.6999	192.689
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	93.2946	82069.5	5.47856	85.6062	10.0312

Std Dev:	1.7724	305.501	0.00976593	1.86268	0.00858074
%RSD:	1.89979	0.372246	0.178257	2.17587	0.0855409
Repeat: 1	94.2437	81730.8	5.47845	87.5097	10.036
Repeat: 2	94.3904	82153.5	5.46885	85.5215	10.0362
Repeat: 3	91.2498	82324.3	5.48838	83.7873	10.0212
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	663.367	4.14764	0.0378305	66.7609	426.972
Std Dev:	10.6765	0.211919	0.0156982	0.368162	1.13874
%RSD:	1.60944	5.10939	41.4962	0.551464	0.2667
Repeat: 1	673.088	4.37798	0.0319658	66.729	428.127
Repeat: 2	665.073	4.10401	0.0556167	66.4097	425.85
Repeat: 3	651.94	3.96094	0.025909	67.1439	426.939
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1.83293	-1.39436	27494.9	18.071	265.568
Std Dev:	1.11447	0.516133	88.2364	0.268126	0.751432
%RSD:	60.8025	37.0158	0.320919	1.48374	0.282953
Repeat: 1	0.620506	-0.927143	27575.5	18.2868	264.701
Repeat: 2	2.06557	-1.9484	27508.7	18.1553	266.028
Repeat: 3	2.81272	-1.30754	27400.6	17.7708	265.975
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1868.58	0.311897	186.565	505.129	2469.43
Std Dev:	4.65096	0.98657	2.81411	1.21403	1.15296
%RSD:	0.248903	316.313	1.50838	0.24034	0.0466894
Repeat: 1	1863.22	-0.799366	189.186	503.912	2468.39
Repeat: 2	1871.46	1.08465	186.919	505.136	2470.67
Repeat: 3	1871.07	0.650407	183.591	506.34	2469.24
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	698545	19537.3			
Std Dev:	10234.9	17.4832			
%RSD:	1.46517	0.0894867			
Repeat: 1	691704	19547.8			
Repeat: 2	693621	19517.1			
Repeat: 3	710312	19546.9			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2469.43	698545	19537.3
Std Dev:	1.15296	10234.9	17.4832
%RSD:	0.0466894	1.46517	0.0894867
Repeat: 1	2468.39	691704	19547.8
Repeat: 2	2470.67	693621	19517.1
Repeat: 3	2469.24	710312	19546.9

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608232-10@2X	9/9/2016 6:50:14PM	Unknown	1.00

Valid	Analyst Name	Method Name
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.000344764	1.76391	6.5868e-005	0.000587641	5.03163
Std Dev:	3.62679e-005	0.00972251	0.000527826	1.4265e-005	0.0121917
%RSD:	10.5196	0.55119	801.34	2.4275	0.242302
Repeat: 1	0.000328725	1.75425	5.75105e-005	0.000588968	5.03991
Repeat: 2	0.000386286	1.77369	0.000597824	0.000601197	5.01763
Repeat: 3	0.000319281	1.7638	-0.00045773	0.000572759	5.03735
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	0.000558754	4.93574	0.162303	0.203117	0.00503954
Std Dev:	0.000196069	0.0197374	0.00185112	0.00182062	3.18908e-005
%RSD:	35.0905	0.399888	1.14053	0.896341	0.632812
Repeat: 1	0.000726489	4.9137	0.160167	0.203343	0.0050544
Repeat: 2	0.000343198	4.95177	0.163421	0.201194	0.00506129
Repeat: 3	0.000606574	4.94174	0.163322	0.204814	0.00500293
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.0152693	1.10603	0.0763229	0.000501423	0.0244476
Std Dev:	0.000139567	0.0114295	0.000584016	2.89514e-005	0.000131598
%RSD:	0.914036	1.03338	0.765191	5.77383	0.538285
Repeat: 1	0.0153861	1.09315	0.0764052	0.000534748	0.0242982
Repeat: 2	0.0153069	1.11498	0.075702	0.000482465	0.0245465
Repeat: 3	0.0151147	1.10996	0.0768613	0.000487057	0.0244981
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.260648	0.0132449	0.0232509	0.239181	1.19188
Std Dev:	0.00249019	0.00298212	0.000223046	0.00146707	0.0039499
%RSD:	0.955386	22.5153	0.959301	0.613372	0.331401
Repeat: 1	0.262779	0.0166337	0.0234839	0.238933	1.1926
Repeat: 2	0.261254	0.0110212	0.0230394	0.237855	1.18762
Repeat: 3	0.25791	0.0120797	0.0232294	0.240757	1.19542
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	0.00101341	0.0102632	1257.15	0.73894	0.875675
Std Dev:	0.000101881	0.000442643	10.0557	0.00194652	0.00842514
%RSD:	10.0533	4.31291	0.799885	0.263421	0.962131
Repeat: 1	0.000909213	0.00975213	1262.6	0.740573	0.866539
Repeat: 2	0.00101821	0.0105124	1245.54	0.736786	0.883138
Repeat: 3	0.0011128	0.010525	1263.3	0.739461	0.877348
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.330873	-0.00220624	0.00533856	7.34247	2434.87
Std Dev:	0.00180651	0.000339125	1.89941e-005	0.0352667	6.08325
%RSD:	0.545982	15.3712	0.35579	0.480312	0.249839
Repeat: 1	0.328931	-0.00247569	0.00535828	7.34777	2431.91
Repeat: 2	0.332503	-0.00231759	0.00533702	7.30485	2441.87
Repeat: 3	0.331184	-0.00182544	0.00532038	7.37479	2430.83
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	685894	19181			
Std Dev:	5915.87	186.611			
%RSD:	0.862505	0.972893			
Repeat: 1	681647	19238.1			
Repeat: 2	683384	18972.5			
Repeat: 3	692651	19332.4			

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-1.8375	42478.5	14.7373	33.872	296.487
Std Dev:	0.691051	234.434	1.17822	0.8424	0.724454
%RSD:	37.6082	0.551888	7.99486	2.48701	0.244346
Repeat: 1	-2.14143	42245.5	14.6949	33.8968	296.982
Repeat: 2	-1.04657	42714.4	15.9361	34.7017	295.655
Repeat: 3	-2.32449	42475.7	13.5808	33.0175	296.823
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	1.25236	59.4038	1.97113	18.0148	116.204
Std Dev:	0.0691292	0.237575	0.042866	0.229726	0.772132
%RSD:	5.51991	0.399933	2.17469	1.2752	0.664463
Repeat: 1	1.30936	59.1385	1.92184	18.0756	116.57
Repeat: 2	1.17546	59.5968	1.99187	17.7609	116.725
Repeat: 3	1.27225	59.4761	1.99969	18.2081	115.317
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	167.174	57701.1	4.15582	70.8697	8.56656
Std Dev:	1.56871	596.135	0.0294697	3.78959	0.0462143
%RSD:	0.938366	1.03314	0.709117	5.34726	0.539474
Repeat: 1	168.47	57029.5	4.15998	75.2317	8.51411
Repeat: 2	167.623	58167.8	4.1245	68.3876	8.6013
Repeat: 3	165.43	57905.8	4.183	68.9898	8.58426
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	748.378	4.43738	0.0120186	43.5654	591.233
Std Dev:	7.17013	0.74578	0.0055857	0.300953	1.88522
%RSD:	0.958089	16.8068	46.4754	0.690807	0.318862
Repeat: 1	754.522	5.28476	0.0178539	43.5228	591.536
Repeat: 2	750.112	3.88083	0.00672146	43.2881	589.215
Repeat: 3	740.5	4.14656	0.0114804	43.8854	592.948
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	6.51786	-0.648254	19170.9	496.655	443.765
Std Dev:	0.119413	0.973661	154.127	1.30452	4.20852
%RSD:	1.83209	150.197	0.803964	0.262661	0.948367
Repeat: 1	6.40858	-1.77222	19254.4	497.749	439.202
Repeat: 2	6.49967	-0.10943	18993	495.211	447.493
Repeat: 3	6.64532	-0.0631089	19265.2	497.004	444.601
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1388.2	2.79079	119.438	685.705	2434.87
Std Dev:	7.59892	0.456945	0.414633	3.3033	6.08325
%RSD:	0.547395	16.3733	0.347152	0.481739	0.249839
Repeat: 1	1380.03	2.41671	119.864	686.194	2431.91
Repeat: 2	1395.06	2.65559	119.417	682.184	2441.87

Repeat: 3	1389.51	3.30008	119.035	688.736	2430.83
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	685894	19181			
Std Dev:	5915.87	186.611			
%RSD:	0.862505	0.972893			
Repeat: 1	681647	19238.1			
Repeat: 2	683384	18972.5			
Repeat: 3	692651	19332.4			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2434.87	685894	19181
Std Dev:	6.08325	5915.87	186.611
%RSD:	0.249839	0.862505	0.972893
Repeat: 1	2431.91	681647	19238.1
Repeat: 2	2441.87	683384	18972.5
Repeat: 3	2430.83	692651	19332.4

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608232-11@2X	9/9/2016 6:54:33PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000332642	6.78757	0.0080092	0.00093144	6.4665
Std Dev:	3.07055e-005	0.0342236	0.00082069	1.02992e-005	0.0254809
%RSD:	9.23078	0.50421	10.2468	1.10573	0.394044
Repeat: 1	0.000361004	6.7502	0.00787937	0.000924115	6.45518
Repeat: 2	0.000300035	6.79511	0.00888707	0.000943216	6.44864
Repeat: 3	0.000336888	6.81739	0.00726117	0.000926988	6.49568
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00113502	0.60403	0.310887	0.443378	0.0144321
Std Dev:	0.000210093	0.00150733	0.00188248	0.00175404	0.000171227
%RSD:	18.5101	0.249545	0.605519	0.395608	1.18643
Repeat: 1	0.00104288	0.602381	0.309674	0.442069	0.0145467
Repeat: 2	0.00137544	0.60437	0.30993	0.442693	0.0145144
Repeat: 3	0.000986737	0.605338	0.313055	0.445371	0.0142353
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00684464	5.32475	0.355441	0.00161197	0.0746919
Std Dev:	6.59128e-005	0.0369242	0.000974234	3.54733e-005	0.000352148
%RSD:	0.962984	0.693445	0.274092	2.20061	0.471467
Repeat: 1	0.00688289	5.28528	0.354503	0.00162603	0.0742925
Repeat: 2	0.00688249	5.33052	0.355371	0.00163826	0.0749576
Repeat: 3	0.00676853	5.35844	0.356448	0.00157163	0.0748257
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.230647	0.0168588	0.0760436	0.470411	0.136469
Std Dev:	0.00204313	0.000949688	0.000704327	0.000802649	0.000605609
%RSD:	0.885823	5.6332	0.926214	0.170627	0.44377
Repeat: 1	0.231714	0.0159906	0.0756642	0.47031	0.135793
Repeat: 2	0.231936	0.0167126	0.0768563	0.471259	0.136651

Repeat: 3	0.228292	0.017873	0.0756103	0.469663	0.136963
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.00587817	0.0151319	1952.81	0.0227135	0.215944
Std Dev:	0.00104572	0.000701901	6.56471	0.000332142	0.00178277
%RSD:	17.7899	4.63855	0.336167	1.46231	0.825569
Repeat: 1	0.00495624	0.0150865	1960.24	0.0226474	0.214093
Repeat: 2	0.00566381	0.0158554	1947.78	0.0230738	0.216091
Repeat: 3	0.00701447	0.0144538	1950.41	0.0224194	0.217649
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.745773	-0.00313343	0.0210807	4.11579	2442.52
Std Dev:	0.00385165	0.000403408	0.000276208	0.0129586	11.6175
%RSD:	0.516464	12.8743	1.31024	0.31485	0.475638
Repeat: 1	0.741805	-0.00301566	0.0212696	4.10696	2446.83
Repeat: 2	0.746016	-0.00280201	0.0212088	4.10975	2451.37
Repeat: 3	0.749497	-0.00358261	0.0207637	4.13067	2429.36
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	691908	19359.3			
Std Dev:	6650.69	82.5925			
%RSD:	0.96121	0.42663			
Repeat: 1	688524	19454.3			
Repeat: 2	687630	19319.2			
Repeat: 3	699570	19304.4			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.85202	163933	40.0661	71.3838	381.573
Std Dev:	0.587161	826.657	1.80709	0.660062	1.48226
%RSD:	68.914	0.504265	4.51027	0.924667	0.388461
Repeat: 1	-0.291424	163030	39.7094	70.7944	380.927
Repeat: 2	-1.46256	164115	42.0249	72.097	380.524
Repeat: 3	-0.80208	164653	38.4639	71.2599	383.269
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	2.98124	7.26391	-1.36724	37.6624	341.831
Std Dev:	0.0806307	0.0181434	0.0425713	0.141259	4.17342
%RSD:	2.7046	0.249775	3.11366	0.375065	1.2209
Repeat: 1	2.92809	7.24407	-1.32941	37.5906	344.636
Repeat: 2	3.07402	7.268	-1.41334	37.5715	343.823
Repeat: 3	2.94161	7.27966	-1.35898	37.8252	337.035
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	80.6849	277747	18.2402	216.303	26.2111
Std Dev:	0.685343	1925.91	0.0491603	4.6395	0.123707
%RSD:	0.849406	0.693404	0.269515	2.14491	0.471965
Repeat: 1	81.0338	275688	18.1929	218.146	26.0707
Repeat: 2	81.1257	278048	18.2367	219.738	26.304
Repeat: 3	79.8954	279505	18.2911	211.025	26.2587
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	657.247	7.75757	1.3341	88.8469	105.546

Std Dev:	5.90878	0.259528	0.0176383	0.172709	0.468955
%RSD:	0.899019	3.34548	1.32212	0.19439	0.444314
Repeat: 1	660.362	7.51627	1.32459	88.8488	105.026
Repeat: 2	660.948	7.72433	1.35445	89.0186	105.674
Repeat: 3	650.433	8.03212	1.32325	88.6732	105.937
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	2.52213	1.93351	29852	16.5524	114.665
Std Dev:	1.23735	1.58943	100.519	0.221553	0.890955
%RSD:	49.0599	82.204	0.336724	1.33849	0.777008
Repeat: 1	1.45788	1.90306	29965.7	16.507	113.74
Repeat: 2	2.22868	3.53795	29775	16.7931	114.738
Repeat: 3	3.87983	0.359537	29815.4	16.357	115.517
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	3135.54	5.07729	469.054	383.985	2442.52
Std Dev:	16.2144	0.524815	6.03858	1.21439	11.6175
%RSD:	0.517118	10.3365	1.2874	0.316258	0.475638
Repeat: 1	3118.84	5.21465	473.166	383.16	2446.83
Repeat: 2	3136.56	5.51977	471.876	383.417	2451.37
Repeat: 3	3151.22	4.49746	462.121	385.38	2429.36
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	691908	19359.3			
Std Dev:	6650.69	82.5925			
%RSD:	0.96121	0.42663			
Repeat: 1	688524	19454.3			
Repeat: 2	687630	19319.2			
Repeat: 3	699570	19304.4			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2442.52	691908	19359.3
Std Dev:	11.6175	6650.69	82.5925
%RSD:	0.475638	0.96121	0.42663
Repeat: 1	2446.83	688524	19454.3
Repeat: 2	2451.37	687630	19319.2
Repeat: 3	2429.36	699570	19304.4

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25301-CCV8	9/9/2016 6:58:52PM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.0259521	0.409347	0.446556	0.0179515	15.533
Std Dev:	0.000101744	0.000643549	0.00093728	6.01573e-005	0.0287876
%RSD:	0.392046	0.157213	0.209891	0.335111	0.185332
Repeat: 1	0.0259254	0.408629	0.447511	0.0178837	15.5478

Repeat: 2	0.0260645	0.409544	0.445637	0.0179984	15.4998
Repeat: 3	0.0258664	0.40987	0.446521	0.0179723	15.5514
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	2.73249	4.34644	29.3334	7.98714	0.0465609
Std Dev:	0.00304874	0.00238044	0.0724594	0.0126378	0.000135851
%RSD:	0.111574	0.0547675	0.247021	0.158227	0.29177
Repeat: 1	2.73023	4.346	29.3489	7.98591	0.0464825
Repeat: 2	2.73127	4.34431	29.2544	7.97516	0.0467178
Repeat: 3	2.73596	4.34901	29.3968	8.00034	0.0464825
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0908947	0.205414	0.186911	0.00784009	0.143191
Std Dev:	0.000245678	0.000798501	0.000736939	5.33701e-006	0.000266156
%RSD:	0.270289	0.388728	0.394273	0.0680734	0.185874
Repeat: 1	0.0906986	0.206153	0.187554	0.00784319	0.143491
Repeat: 2	0.0911703	0.204567	0.187072	0.00784315	0.142982
Repeat: 3	0.0908153	0.20552	0.186107	0.00783392	0.143102
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.332172	4.11377	1.99962	4.54722	1.89651
Std Dev:	0.000942392	0.0119296	0.0127706	0.00613005	0.000883795
%RSD:	0.283706	0.289991	0.638649	0.134809	0.0466011
Repeat: 1	0.331115	4.11418	2.01305	4.55429	1.89555
Repeat: 2	0.332925	4.10164	1.98763	4.54351	1.8973
Repeat: 3	0.332477	4.12549	1.99818	4.54385	1.89669
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.87864	0.472194	297.248	1.48243	2.03693
Std Dev:	0.00191769	0.00150091	2.43053	0.00523858	0.0107779
%RSD:	0.218256	0.317859	0.817678	0.353378	0.529122
Repeat: 1	0.88083	0.472115	294.649	1.48203	2.04836
Repeat: 2	0.877828	0.473732	299.465	1.4774	2.02695
Repeat: 3	0.877262	0.470734	297.631	1.48786	2.03549
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.243539	0.733173	0.0510884	11.2677	2404.43
Std Dev:	0.000244099	0.00102163	0.000111658	0.026563	6.77273
%RSD:	0.10023	0.139344	0.218557	0.235745	0.281677
Repeat: 1	0.243521	0.734345	0.0509928	11.2599	2398.28
Repeat: 2	0.243304	0.73247	0.0512111	11.2458	2411.69
Repeat: 3	0.243791	0.732704	0.0510613	11.2972	2403.33
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	670923	18643.7			
Std Dev:	1074.3	47.0191			
%RSD:	0.160122	0.252199			
Repeat: 1	671951	18603.5			
Repeat: 2	671010	18695.4			
Repeat: 3	669807	18632.1			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	490.774	9736.39	1001.12	1043.09	922.082
Std Dev:	1.94825	15.5041	2.07826	3.5151	1.69682
%RSD:	0.396974	0.159239	0.207594	0.336988	0.18402
Repeat: 1	490.256	9719.03	1003.24	1039.13	922.948
Repeat: 2	492.929	9741.29	999.083	1045.84	920.127
Repeat: 3	489.138	9748.85	1001.03	1044.31	923.171

QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	1057.19	52.3106	1046.48	945.859	1124.66
Std Dev:	1.18011	0.0286528	2.58792	1.50295	3.299
%RSD:	0.111627	0.0547745	0.247298	0.158897	0.293332
Repeat: 1	1056.32	52.3052	1047.03	945.712	1122.76
Repeat: 2	1056.72	52.285	1043.66	944.435	1128.47
Repeat: 3	1058.53	52.3415	1048.74	947.43	1122.76
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Fail
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	1022.38	10730.8	9.73614	1030.2	49.9814
Std Dev:	2.78559	41.6274	0.0371862	0.698234	0.0928837
%RSD:	0.272462	0.387925	0.38194	0.0677766	0.185837
Repeat: 1	1020.16	10769.4	9.76859	1030.6	50.0858
Repeat: 2	1025.5	10686.7	9.74427	1030.61	49.9081
Repeat: 3	1021.48	10736.4	9.69556	1029.39	49.9501
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	955.14	1038.27	49.5059	930.437	926.69
Std Dev:	2.71146	3.00915	0.319811	1.25798	0.431111
%RSD:	0.283881	0.289823	0.646006	0.135203	0.0465216
Repeat: 1	952.099	1038.37	49.8422	931.888	926.22
Repeat: 2	957.305	1035.21	49.2056	929.673	927.067
Repeat: 3	956.015	1041.23	49.4698	929.748	926.782
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	975.547	1034.85	4451.98	994.688	1024.37
Std Dev:	2.18839	3.35698	37.2575	3.51127	5.3877
%RSD:	0.224325	0.324391	0.836876	0.353003	0.525955
Repeat: 1	978.058	1034.68	4412.14	994.418	1030.08
Repeat: 2	974.535	1038.3	4485.95	991.319	1019.38
Repeat: 3	974.047	1031.59	4457.85	998.326	1023.64
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1018.53	975.628	1126.57	1048.62	2404.43
Std Dev:	1.02708	1.34684	2.46619	2.48295	6.77273
%RSD:	0.10084	0.138049	0.218911	0.236782	0.281677
Repeat: 1	1018.45	977.173	1124.47	1047.9	2398.28
Repeat: 2	1017.54	974.702	1129.29	1046.58	2411.69
Repeat: 3	1019.59	975.008	1125.96	1051.39	2403.33
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	670923	18643.7			
Std Dev:	1074.3	47.0191			
%RSD:	0.160122	0.252199			
Repeat: 1	671951	18603.5			
Repeat: 2	671010	18695.4			

Repeat: 3	669807	18632.1
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2404.43	670923	18643.7
Std Dev:	6.77273	1074.3	47.0191
%RSD:	0.281677	0.160122	0.252199
Repeat: 1	2398.28	671951	18603.5
Repeat: 2	2411.69	671010	18695.4
Repeat: 3	2403.33	669807	18632.1

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25301-CCB8	9/9/2016 7:03:18PM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000412585	-6.15838e-005	-0.00482593	9.00137e-005	0.0250418
Std Dev:	2.75279e-006	0.000300049	0.000420201	2.90766e-006	0.00104222
%RSD:	0.667207	487.222	8.70714	3.23024	4.16194
Repeat: 1	0.000410418	-0.000129693	-0.0048447	9.27324e-005	0.0238556
Repeat: 2	0.000411655	0.000266665	-0.00523643	9.03605e-005	0.0258109
Repeat: 3	0.000415682	-0.000321724	-0.00439666	8.69482e-005	0.0254589
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.000786188	0.000538359	0.0308377	0.0161896	0.000182501
Std Dev:	0.00038913	0.00021025	0.000822413	0.000628036	9.11026e-006
%RSD:	49.4958	39.0538	2.66691	3.87925	4.99189
Repeat: 1	0.00123208	0.000309317	0.0317624	0.0167847	0.000177277
Repeat: 2	0.000515208	0.000583169	0.0301881	0.0155331	0.000193021
Repeat: 3	0.000611276	0.000722592	0.0305626	0.0162511	0.000177206
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.000656671	-3.07841e-005	-0.00544161	-1.80241e-005	-4.55153e-005
Std Dev:	2.35443e-005	0.000173755	0.000691408	2.62224e-005	1.86128e-005
%RSD:	3.58541	564.43	12.7059	145.485	40.8935
Repeat: 1	0.000650005	-0.0001686	-0.00558067	8.50982e-006	-6.68205e-005
Repeat: 2	0.000637178	0.0001644	-0.00469124	-4.39234e-005	-3.24126e-005
Repeat: 3	0.000682829	-8.81524e-005	-0.00605291	-1.86587e-005	-3.73128e-005
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	6.0234e-005	0.00279692	0.00963032	0.0251831	-0.00593533
Std Dev:	1.93084e-005	0.00109331	0.000736875	0.00069075	0.00174689
%RSD:	32.0557	39.0899	7.65161	2.74291	29.432
Repeat: 1	6.55887e-005	0.0040386	0.0103887	0.0250182	-0.00738729
Repeat: 2	3.88133e-005	0.00197857	0.008917	0.0259414	-0.00399672
Repeat: 3	7.62999e-005	0.0023736	0.00958527	0.0245897	-0.00642198
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00565675	0.00814544	7.95812	-0.00106363	-0.0109339
Std Dev:	0.00196443	0.00109803	1.292	0.000353608	0.000307841
%RSD:	34.7273	13.4802	16.235	33.2454	2.81546
Repeat: 1	-0.0033894	0.00733332	7.90938	-0.000681666	-0.0106244
Repeat: 2	-0.00673256	0.00770829	6.69117	-0.00137958	-0.0112401
Repeat: 3	-0.00684828	0.00939471	9.2738	-0.00112964	-0.0109373
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**

Avg. of Repeats:	0.0006654	-0.00108768	-2.31359e-005	0.00508957	2461.4
Std Dev:	2.58255e-005	0.000997735	2.54386e-005	0.000733017	2.52041
%RSD:	3.8812	91.7306	109.953	14.4023	0.102397
Repeat: 1	0.000693856	-0.000933234	-5.12454e-005	0.00478609	2464.22
Repeat: 2	0.000658896	-0.000176174	-1.6977e-006	0.00592559	2459.36
Repeat: 3	0.000643448	-0.00215363	-1.64647e-005	0.00455703	2460.63
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	679514	19317.3			
Std Dev:	3970.86	73.6392			
%RSD:	0.584368	0.381209			
Repeat: 1	677852	19249.4			
Repeat: 2	676644	19306.8			
Repeat: 3	684046	19395.6			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.949255	-18.1592	1.46263	0.237358	-0.135958
Std Dev:	0.0535407	7.25238	0.932413	0.169794	0.0635784
%RSD:	5.64028	39.9378	63.7491	71.5351	46.7633
Repeat: 1	-0.993149	-19.8092	1.42007	0.395468	-0.208275
Repeat: 2	-0.965012	-10.224	0.552226	0.258707	-0.0888521
Repeat: 3	-0.889604	-24.4444	2.41559	0.0578989	-0.110746
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.077135	-0.00019262	-0.101429	-0.12298	-0.539748
Std Dev:	0.150841	0.00253074	0.0297428	0.0750852	0.221165
%RSD:	195.554	1313.85	29.3237	61.0547	40.9757
Repeat: 1	0.249979	-0.00294956	-0.0680752	-0.0518551	-0.666527
Repeat: 2	-0.0279047	0.000346743	-0.125196	-0.201481	-0.28437
Repeat: 3	0.00933045	0.00202495	-0.111017	-0.115605	-0.668347
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	-1.50536	5.73801	0.0299546	4.19646	-0.00875311
Std Dev:	0.266825	9.06361	0.0348887	3.42715	0.00649356
%RSD:	17.725	157.957	116.472	81.6677	74.1858
Repeat: 1	-1.5813	-1.45083	0.0229373	7.66439	-0.0161856
Repeat: 2	-1.72599	15.9195	0.0678186	0.811593	-0.00417931
Repeat: 3	-1.2088	2.74536	-0.000892144	4.11341	-0.00589447
QC Status Pass/Fail:	Fail	Pass	Pass	Fail	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	0.115531	0.961135	-0.329079	0.0755872	0.172607
Std Dev:	0.0557109	0.275543	0.0184534	0.141455	0.849218
%RSD:	48.2216	28.6685	5.6076	187.141	491.995
Repeat: 1	0.131091	1.27409	-0.310087	0.0417437	-0.532246
Repeat: 2	0.0536943	0.754964	-0.346942	0.230894	1.11542
Repeat: 3	0.161807	0.854355	-0.330207	-0.0458759	-0.065354
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	3.0125	-2.3333	16.3016	0.734492	1.34667

Std Dev:	2.2163	2.45593	19.8062	0.237126	0.15391
%RSD:	73.5701	105.256	121.498	32.2844	11.4289
Repeat: 1	5.57071	-4.14947	15.5539	0.990636	1.50144
Repeat: 2	1.79385	-3.3114	-3.12015	0.522625	1.19363
Repeat: 3	1.67294	0.460979	36.471	0.690215	1.34495
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**TI1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	-0.34971	1.62167	0.713695	0.458532	2461.4
Std Dev:	0.109151	1.31851	0.556735	0.069451	2.52041
%RSD:	31.212	81.3054	78.0074	15.1464	0.102397
Repeat: 1	-0.229372	1.82449	0.0990205	0.428709	2464.22
Repeat: 2	-0.377426	2.82701	1.18408	0.537913	2459.36
Repeat: 3	-0.442331	0.213504	0.857982	0.408973	2460.63
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	679514	19317.3
Std Dev:	3970.86	73.6392
%RSD:	0.584368	0.381209
Repeat: 1	677852	19249.4
Repeat: 2	676644	19306.8
Repeat: 3	684046	19395.6
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2461.4	679514	19317.3
Std Dev:	2.52041	3970.86	73.6392
%RSD:	0.102397	0.584368	0.381209
Repeat: 1	2464.22	677852	19249.4
Repeat: 2	2459.36	676644	19306.8
Repeat: 3	2460.63	684046	19395.6

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608237-06RE1@5X	9/9/2016 7:07:43PM	Unknown	1.00
	Valid	**Analyst Name**	**Method Name**
	Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.00037411	0.0339212	-0.00495981	0.010438	0.22444
Std Dev:	1.73133e-005	0.000905013	0.00113063	3.50488e-005	0.00097984
%RSD:	4.62787	2.66799	22.7958	0.335782	0.436571
Repeat: 1	0.000356292	0.0341065	-0.00556866	0.0104621	0.22424
Repeat: 2	0.000375168	0.0347192	-0.00365524	0.0103978	0.225504
Repeat: 3	0.00039087	0.0329379	-0.00565553	0.010454	0.223576
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.000792919	29.4782	0.0324065	0.0195418	0.000247026
Std Dev:	7.13506e-005	0.441224	0.00158285	0.00142702	2.37963e-005
%RSD:	8.99847	1.49678	4.88437	7.30242	9.63312
Repeat: 1	0.000787659	29.6592	0.0337521	0.0189772	0.000231771
Repeat: 2	0.000866754	29.8001	0.032805	0.0211647	0.000274446
Repeat: 3	0.000724344	28.9752	0.0306625	0.0184834	0.000234862

Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.000758487	-0.000100889	0.096574	0.00190407	0.548334
Std Dev:	2.25878e-005	8.38196e-005	0.00123875	1.45208e-005	0.00213646
%RSD:	2.97801	83.081	1.28269	0.762618	0.389628
Repeat: 1	0.000781963	-6.81366e-006	0.0957782	0.00190249	0.549495
Repeat: 2	0.000756593	-0.000167627	0.0959425	0.00189041	0.545868
Repeat: 3	0.000736906	-0.000128227	0.0980012	0.00191932	0.549639
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.000445769	0.00710823	22.3976	0.0384389	-0.0064444
Std Dev:	1.25156e-005	0.000659889	0.313307	0.000876104	0.00279149
%RSD:	2.80764	9.28346	1.39884	2.27921	43.3164
Repeat: 1	0.000432631	0.00690893	22.6993	0.0382418	-0.00603343
Repeat: 2	0.000447125	0.0078448	22.0738	0.0393968	-0.00388118
Repeat: 3	0.000457551	0.00657096	22.4197	0.0376781	-0.00941859
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	-0.00472372	0.0137104	1078.16	-0.00121875	8.28305
Std Dev:	0.00082561	0.000964733	10.0794	0.000372148	0.0812503
%RSD:	17.478	7.03649	0.934867	30.5353	0.980923
Repeat: 1	-0.00383566	0.0129975	1075.35	-0.000949305	8.28227
Repeat: 2	-0.005468	0.0148082	1069.79	-0.00164337	8.20219
Repeat: 3	-0.00486749	0.0133256	1089.35	-0.00106356	8.36468
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.0026188	-0.000458431	5.88968e-005	0.0255146	2249.01
Std Dev:	0.000164987	0.000953401	7.12993e-006	0.000396302	5.52926
%RSD:	6.30009	207.97	12.1058	1.55324	0.245852
Repeat: 1	0.00259328	-0.000434728	5.7436e-005	0.0259431	2253.98
Repeat: 2	0.00246807	-0.00142346	5.26104e-005	0.0251613	2243.06
Repeat: 3	0.00279507	0.000482898	6.6644e-005	0.0254393	2250
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	655509	18323.7			
Std Dev:	3733.17	20.939			
%RSD:	0.569507	0.114273			
Repeat: 1	653641	18336.3			
Repeat: 2	653079	18335.1			
Repeat: 3	659808	18299.5			

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-1.67573	114.378	1.16322	605.157	11.679
Std Dev:	0.330526	11.8823	2.50925	2.04949	0.0575571
%RSD:	19.7243	10.3886	215.716	0.33867	0.492825
Repeat: 1	-2.01561	114.628	-0.188021	606.568	11.667
Repeat: 2	-1.65614	126.133	4.05851	602.806	11.7416
Repeat: 3	-1.35543	102.373	-0.380833	606.098	11.6284
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.0709874	354.816	-1.3956	0.292653	-0.0451294
Std Dev:	0.0269389	5.31093	0.0393919	0.171051	0.582132
%RSD:	37.9488	1.49681	2.82258	58.4484	1289.92
Repeat: 1	0.0687995	356.995	-1.3562	0.225728	-0.417883
Repeat: 2	0.0989535	358.691	-1.39562	0.487049	0.625673
Repeat: 3	0.0452093	348.762	-1.43498	0.165183	-0.343178

QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	-0.548303	2.08993	5.17771	237.71	191.304
Std Dev:	0.25595	4.3702	0.0625077	1.91907	0.745346
%RSD:	46.6804	209.107	1.20725	0.807313	0.389613
Repeat: 1	-0.282373	6.99526	5.13755	237.309	191.709
Repeat: 2	-0.569592	-1.38842	5.14584	236.023	190.444
Repeat: 3	-0.792943	0.662958	5.24972	239.798	191.759
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1.22453	2.04906	560.329	2.40973	-0.0413258
Std Dev:	0.0360746	0.166365	7.84607	0.182093	1.35829
%RSD:	2.94599	8.11906	1.40026	7.55658	3286.77
Repeat: 1	1.18663	1.99886	567.883	2.36817	0.158055
Repeat: 2	1.22851	2.23475	552.22	2.60901	1.20625
Repeat: 3	1.25845	1.91358	560.883	2.25201	-1.48828
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	4.05791	8.84614	16422.8	0.630082	4142.73
Std Dev:	0.940767	2.1481	154.519	0.249389	40.6829
%RSD:	23.1835	24.2829	0.940884	39.5804	0.982033
Repeat: 1	5.0668	7.24379	16379.7	0.81067	4142.31
Repeat: 2	3.20469	11.287	16294.4	0.345531	4102.25
Repeat: 3	3.90225	8.00759	16594.3	0.734046	4183.62
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	-8.84067	2.43617	2.51421	2.07341	2249.01
Std Dev:	0.792325	1.26201	0.150989	0.0367808	5.52926
%RSD:	8.96227	51.803	6.00541	1.77393	0.245852
Repeat: 1	-9.01729	2.46708	2.47896	2.11088	2253.98
Repeat: 2	-9.52978	1.15899	2.38397	2.03736	2243.06
Repeat: 3	-7.97494	3.68244	2.67971	2.07198	2250
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	655509	18323.7			
Std Dev:	3733.17	20.939			
%RSD:	0.569507	0.114273			
Repeat: 1	653641	18336.3			
Repeat: 2	653079	18335.1			
Repeat: 3	659808	18299.5			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2249.01	655509	18323.7
Std Dev:	5.52926	3733.17	20.939
%RSD:	0.245852	0.569507	0.114273
Repeat: 1	2253.98	653641	18336.3
Repeat: 2	2243.06	653079	18335.1

Repeat: 3	2250	659808	18299.5

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608250-01RE1@5X	9/9/2016 7:12:23PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000362977	0.0309137	-0.00535304	0.0104525	0.153084
Std Dev:	3.08533e-005	0.000501742	0.000519413	6.3499e-005	0.000882652
%RSD:	8.50007	1.62304	9.70314	0.607501	0.576581
Repeat: 1	0.000375872	0.0310732	-0.00478207	0.0105255	0.152105
Repeat: 2	0.000327768	0.0303516	-0.0054795	0.01041	0.15382
Repeat: 3	0.00038529	0.0313163	-0.00579754	0.0104219	0.153326
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.000960054	24.4214	0.0343942	0.0205035	0.000270016
Std Dev:	0.000137089	0.193625	0.000260902	0.000255187	8.51121e-006
%RSD:	14.2793	0.79285	0.758562	1.2446	3.15211
Repeat: 1	0.0010952	24.1984	0.0346643	0.0202722	0.000261798
Repeat: 2	0.000963862	24.5181	0.0341435	0.0204612	0.000278793
Repeat: 3	0.000821101	24.5475	0.0343749	0.0207773	0.000269458
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.000772276	0.000100034	0.382382	0.00683666	1.42685
Std Dev:	2.43089e-005	0.000114768	0.00231583	2.99165e-005	0.00472922
%RSD:	3.1477	114.729	0.605633	0.43759	0.331445
Repeat: 1	0.000796931	1.43539e-006	0.380653	0.00686419	1.42342
Repeat: 2	0.000748329	7.26493e-005	0.38148	0.00680482	1.43224
Repeat: 3	0.000771566	0.000226017	0.385014	0.00684096	1.42489
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.0536188	0.0038886	30.6159	0.0646305	-0.00528893
Std Dev:	0.000402909	0.000113876	1.03074	0.000977798	0.000389467
%RSD:	0.751432	2.92845	3.36669	1.5129	7.3638
Repeat: 1	0.0540813	0.00377911	31.5788	0.063525	-0.00511831
Repeat: 2	0.0533438	0.00388028	30.7404	0.065382	-0.00501389
Repeat: 3	0.0534314	0.00400641	29.5286	0.0649846	-0.00573459
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00618341	0.0214011	763.717	-0.00157943	9.65114
Std Dev:	0.00113365	0.000759977	7.59557	0.000771339	0.0341482
%RSD:	18.3337	3.5511	0.994554	48.8366	0.353826
Repeat: 1	-0.00733863	0.0212063	761.923	-0.000884962	9.61798
Repeat: 2	-0.00507264	0.0222396	757.178	-0.0014437	9.64925
Repeat: 3	-0.00613896	0.0207576	772.048	-0.00240962	9.6862
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.00262329	0.000314705	1.65421e-005	0.0737803	2031.91
Std Dev:	0.000125496	0.000709109	4.02115e-005	0.00117204	1.65091
%RSD:	4.78392	225.325	243.086	1.58855	0.0812492
Repeat: 1	0.00276312	0.000986568	6.11545e-005	0.072781	2033.72
Repeat: 2	0.00252043	-0.000426548	-1.69115e-005	0.0734897	2031.54
Repeat: 3	0.00258633	0.000384095	5.3834e-006	0.0750704	2030.48
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	603591	17398.9			
Std Dev:	5511.29	51.7415			

%RSD:	0.913084	0.297384
Repeat: 1	597299	17380.4
Repeat: 2	605913	17358.9
Repeat: 3	607562	17457.3

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-1.90979	159.84	0.291465	606.007	7.45009
Std Dev:	0.590475	13.7645	1.15309	3.71194	0.0492599
%RSD:	30.9183	8.61139	395.619	0.612525	0.661199
Repeat: 1	-1.65987	168.901	1.55913	610.274	7.39549
Repeat: 2	-2.58413	144.001	0.0102976	603.524	7.4912
Repeat: 3	-1.48537	166.618	-0.695038	604.222	7.46358
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.124772	293.949	-1.09415	0.427059	-1.28812
Std Dev:	0.0531753	2.33062	0.0176708	0.0308792	0.198515
%RSD:	42.6179	0.792868	1.61503	7.23068	15.4113
Repeat: 1	0.177304	291.265	-1.07407	0.398366	-1.48172
Repeat: 2	0.126036	295.113	-1.10735	0.423073	-1.08503
Repeat: 3	0.0709762	295.467	-1.10102	0.459737	-1.29759
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	-0.705467	13.2653	19.5997	879.28	497.791
Std Dev:	0.277546	5.983	0.116858	3.81807	1.64988
%RSD:	39.3421	45.1025	0.596222	0.434227	0.33144
Repeat: 1	-0.424371	8.12768	19.5125	882.431	496.594
Repeat: 2	-0.979321	11.8342	19.5542	875.034	499.673
Repeat: 3	-0.71271	19.8341	19.7325	880.375	497.106
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	154.167	1.2383	766.137	7.1842	0.510337
Std Dev:	1.15898	0.0287248	25.8127	0.198254	0.187294
%RSD:	0.751771	2.3197	3.3692	2.75958	36.7001
Repeat: 1	155.497	1.21076	790.25	6.95959	0.595396
Repeat: 2	153.376	1.23606	769.254	7.33481	0.640009
Repeat: 3	153.628	1.26807	738.908	7.25821	0.295608
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	2.44311	26.1896	11602.2	0.388572	4827.44
Std Dev:	1.27261	1.69907	116.442	0.516824	17.0432
%RSD:	52.0897	6.48759	1.00362	133.006	0.353048
Repeat: 1	1.14608	25.7628	11574.7	0.85376	4810.9
Repeat: 2	3.68981	28.0614	11502	0.479719	4826.48
Repeat: 3	2.49345	24.7446	11730	-0.167762	4844.94
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	-20.6995	3.32802	1.62786	6.51631	2031.91

Std Dev:	0.638805	0.93975	0.8752	0.108625	1.65091
%RSD:	3.08609	28.2375	53.7638	1.66697	0.0812492
Repeat: 1	-19.9954	4.21897	2.599	6.42427	2033.72
Repeat: 2	-21.2419	2.34609	0.900129	6.48853	2031.54
Repeat: 3	-20.8613	3.41899	1.38446	6.63612	2030.48
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	603591	17398.9			
Std Dev:	5511.29	51.7415			
%RSD:	0.913084	0.297384			
Repeat: 1	597299	17380.4			
Repeat: 2	605913	17358.9			
Repeat: 3	607562	17457.3			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2031.91	603591	17398.9
Std Dev:	1.65091	5511.29	51.7415
%RSD:	0.0812492	0.913084	0.297384
Repeat: 1	2033.72	597299	17380.4
Repeat: 2	2031.54	605913	17358.9
Repeat: 3	2030.48	607562	17457.3

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608250-02RE1@5X	9/9/2016 7:17:02PM	Unknown	1.00
	Valid	**Analyst Name**	**Method Name**
	Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000373996	0.0261116	-0.00532698	0.0115616	0.811578
Std Dev:	3.30833e-005	0.000708097	0.00065336	0.000127575	0.00571782
%RSD:	8.84588	2.71181	12.2651	1.10344	0.704531
Repeat: 1	0.000336274	0.0253703	-0.00475804	0.0114171	0.806405
Repeat: 2	0.000387634	0.026781	-0.00518238	0.0116586	0.810611
Repeat: 3	0.000398081	0.0261835	-0.00604053	0.0116091	0.817718
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.000803246	20.2729	0.0330243	0.0199388	0.00022066
Std Dev:	1.10335e-005	0.11132	0.000575909	0.00270799	1.3462e-005
%RSD:	1.37362	0.549106	1.74389	13.5815	6.10079
Repeat: 1	0.00079149	20.1453	0.0331154	0.0172435	0.000206726
Repeat: 2	0.000804874	20.3233	0.0324083	0.0226593	0.000233594
Repeat: 3	0.000813376	20.3501	0.0335493	0.0199136	0.000221661
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.000791617	3.59219e-005	0.0913137	0.00214978	0.388053
Std Dev:	1.19126e-005	0.00013753	0.000729953	3.28055e-005	0.00206795
%RSD:	1.50485	382.857	0.799391	1.526	0.532903
Repeat: 1	0.000781833	0.000188254	0.0914665	0.00212131	0.38719
Repeat: 2	0.000804882	-7.91115e-005	0.0919551	0.00218565	0.390413
Repeat: 3	0.000788136	-1.37627e-006	0.0905194	0.00214237	0.386557
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.00468723	0.00578254	21.4637	0.0304848	-0.00660584

Std Dev:	1.80953e-005	0.00154091	0.0878356	0.00125731	0.00170096
%RSD:	0.386056	26.6476	0.409229	4.12438	25.7493
Repeat: 1	0.00466634	0.00412716	21.562	0.0311552	-0.00554265
Repeat: 2	0.00469715	0.0071752	21.3929	0.0290344	-0.00570723
Repeat: 3	0.00469819	0.00604528	21.4361	0.0312649	-0.00856764
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00559579	0.0313762	1246.3	-0.00117891	6.40247
Std Dev:	0.000252943	0.000220261	7.22047	0.000644952	0.0638604
%RSD:	4.52024	0.702001	0.579352	54.7073	0.997434
Repeat: 1	-0.00586237	0.0315293	1242.95	-0.0004993	6.35933
Repeat: 2	-0.00535915	0.0311238	1241.37	-0.00178246	6.47583
Repeat: 3	-0.00556583	0.0314754	1254.59	-0.00125498	6.37226
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.00245499	-0.000141004	4.65595e-005	0.0307667	2259.59
Std Dev:	0.000234037	0.000741762	2.1241e-005	0.000604749	11.672
%RSD:	9.53309	526.058	45.6211	1.96559	0.516553
Repeat: 1	0.00266853	0.000217342	4.38104e-005	0.0314497	2269.54
Repeat: 2	0.00249167	0.000353545	6.90412e-005	0.030299	2262.49
Repeat: 3	0.00220479	-0.000993899	2.68269e-005	0.0305516	2246.74
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	646555	18164.3			
Std Dev:	7032.2	18.9381			
%RSD:	1.08764	0.10426			
Repeat: 1	654245	18184.5			
Repeat: 2	640452	18161.5			
Repeat: 3	644968	18146.9			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-1.68019	140.694	0.350732	670.845	46.4497
Std Dev:	0.63065	14.9487	1.45099	7.45667	0.337811
%RSD:	37.5345	10.625	413.702	1.11153	0.727263
Repeat: 1	-2.39963	125.778	1.6149	662.398	46.1431
Repeat: 2	-1.41804	155.675	0.670899	676.514	46.3941
Repeat: 3	-1.22289	140.628	-1.2336	673.622	46.8118
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.0792126	244.014	-0.952775	0.330992	-0.379148
Std Dev:	0.00340038	1.33993	0.0211212	0.323152	0.324054
%RSD:	4.29273	0.549121	2.21681	97.6316	85.469
Repeat: 1	0.075578	242.478	-0.943761	0.00828018	-0.716011
Repeat: 2	0.0797434	244.621	-0.976908	0.654583	-0.0696371
Repeat: 3	0.0823163	244.943	-0.937657	0.330112	-0.351795
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	-0.113409	9.27915	4.91227	272.253	135.387
Std Dev:	0.133912	7.17217	0.0368338	4.31279	0.721444
%RSD:	118.079	77.2934	0.749832	1.58411	0.532875
Repeat: 1	-0.222958	17.2232	4.91998	268.508	135.086
Repeat: 2	0.0358733	3.28014	4.94463	276.968	136.21
Repeat: 3	-0.153141	7.33406	4.87219	271.283	134.865

QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	13.4242	1.71493	536.94	0.890648	-0.114672
Std Dev:	0.052198	0.388538	2.19965	0.259563	0.825614
%RSD:	0.388836	22.6561	0.409664	29.1431	719.978
Repeat: 1	13.3639	1.29756	539.402	1.02837	0.39716
Repeat: 2	13.4528	2.06614	535.168	0.59125	0.325945
Repeat: 3	13.4557	1.7811	536.251	1.05233	-1.06712
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	3.0812	48.7433	19000.3	0.656845	3204.12
Std Dev:	0.278857	0.49533	110.691	0.432306	31.9148
%RSD:	9.05029	1.0162	0.582575	65.8155	0.996056
Repeat: 1	2.78705	49.0918	18948.9	1.11234	3182.57
Repeat: 2	3.34172	48.1763	18924.7	0.252227	3240.78
Repeat: 3	3.11482	48.9618	19127.4	0.605971	3189
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	-4.47667	2.85723	2.2423	2.64592	2259.59
Std Dev:	1.00474	0.983054	0.464699	0.0580099	11.672
%RSD:	22.4438	34.4059	20.7242	2.19243	0.516553
Repeat: 1	-3.52806	3.33299	2.17854	2.7115	2269.54
Repeat: 2	-4.37254	3.51189	2.73558	2.60134	2262.49
Repeat: 3	-5.52942	1.7268	1.81277	2.6249	2246.74
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	646555	18164.3			
Std Dev:	7032.2	18.9381			
%RSD:	1.08764	0.10426			
Repeat: 1	654245	18184.5			
Repeat: 2	640452	18161.5			
Repeat: 3	644968	18146.9			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2259.59	646555	18164.3
Std Dev:	11.672	7032.2	18.9381
%RSD:	0.516553	1.08764	0.10426
Repeat: 1	2269.54	654245	18184.5
Repeat: 2	2262.49	640452	18161.5
Repeat: 3	2246.74	644968	18146.9

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608250-03RE1@10X	9/9/2016 7:21:42PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**

Avg. of Repeats:	0.000377953	0.0186694	-0.00536151	0.00788898	0.0762028
Std Dev:	2.89882e-005	0.000331317	8.0171e-005	6.0697e-005	0.00175223
%RSD:	7.66977	1.77465	1.49531	0.769391	2.29943
Repeat: 1	0.000355484	0.018291	-0.00529569	0.00789497	0.0750657
Repeat: 2	0.000410674	0.0189073	-0.0054508	0.00794645	0.0782207
Repeat: 3	0.000367701	0.0188099	-0.00533804	0.0078255	0.0753221
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.000746201	13.6537	0.031625	0.0191518	0.000214755
Std Dev:	0.00024952	0.00843137	0.00249941	0.00242499	2.25171e-006
%RSD:	33.4388	0.0617514	7.90326	12.6619	1.0485
Repeat: 1	0.000959951	13.6593	0.0318008	0.0194787	0.000214065
Repeat: 2	0.000806638	13.6578	0.0290423	0.01658	0.000212929
Repeat: 3	0.000472013	13.644	0.0340319	0.0213968	0.000217271
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.000711808	2.4343e-005	0.0361633	0.00153733	0.571159
Std Dev:	3.05146e-005	0.00014942	0.0015692	2.00358e-005	0.00209937
%RSD:	4.28692	613.813	4.3392	1.30328	0.367563
Repeat: 1	0.000733542	1.54378e-005	0.0344418	0.0015454	0.572673
Repeat: 2	0.000724958	0.000178017	0.0375135	0.00155208	0.572041
Repeat: 3	0.000676923	-0.000120426	0.0365346	0.00151452	0.568762
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.000115181	0.00304717	22.4692	0.0288155	-0.00548934
Std Dev:	1.2421e-005	0.0013104	0.193277	0.000220495	0.0026074
%RSD:	10.7839	43.0039	0.860185	0.765195	47.4993
Repeat: 1	0.000113464	0.0040762	22.6069	0.0289537	-0.00756058
Repeat: 2	0.000103707	0.00349336	22.5525	0.0289316	-0.00256137
Repeat: 3	0.000128371	0.00157194	22.2482	0.0285613	-0.00634607
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00518852	0.0485238	633.944	-0.00137643	5.30386
Std Dev:	0.000803793	0.000720062	3.26156	0.000301172	0.0449513
%RSD:	15.4918	1.48393	0.514487	21.8807	0.84752
Repeat: 1	-0.00469216	0.0480488	632.765	-0.00157687	5.34188
Repeat: 2	-0.00611589	0.0481704	637.631	-0.00152232	5.31546
Repeat: 3	-0.0047575	0.0493523	631.436	-0.0010301	5.25425
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.00170978	-0.000611436	8.82962e-006	0.0145593	2249.04
Std Dev:	0.000345566	0.000856924	1.89e-005	0.00121574	8.7654
%RSD:	20.2111	140.149	214.052	8.35027	0.389741
Repeat: 1	0.00183149	0.000213011	2.0605e-005	0.0137323	2253.1
Repeat: 2	0.00131983	-0.000549809	1.88547e-005	0.0139904	2255.03
Repeat: 3	0.00197803	-0.00149751	-1.29708e-005	0.0159552	2238.97
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	639115	17932.8			
Std Dev:	2029.63	134.772			
%RSD:	0.317569	0.751539			
Repeat: 1	639281	17783.2			
Repeat: 2	637008	17970.4			
Repeat: 3	641057	18044.7			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-1.60708	115.504	0.274651	456.149	2.8963
Std Dev:	0.553067	8.10067	0.178008	3.54971	0.104304

%RSD:	34.4145	7.01332	64.8124	0.778192	3.60127
Repeat: 1	-2.03433	106.223	0.41997	456.499	2.82984
Repeat: 2	-0.982383	121.152	0.0761004	459.51	3.01652
Repeat: 3	-1.80452	119.138	0.327881	452.437	2.84255
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.0536695	164.34	-0.699649	0.243945	-0.87311
Std Dev:	0.0957636	0.101487	0.0899009	0.285085	0.0583691
%RSD:	178.432	0.0617539	12.8494	116.864	6.68519
Repeat: 1	0.136706	164.408	-0.693498	0.282282	-0.892875
Repeat: 2	0.0753912	164.39	-0.792467	-0.0583678	-0.919031
Repeat: 3	-0.0510891	164.224	-0.612981	0.507922	-0.807425
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	-1.08472	8.61312	2.12936	193.071	199.267
Std Dev:	0.344857	7.79333	0.0791825	2.52302	0.732413
%RSD:	31.7923	90.4821	3.71861	1.30679	0.367554
Repeat: 1	-0.838581	8.14856	2.04249	194.053	199.795
Repeat: 2	-0.936697	16.6283	2.19749	194.955	199.575
Repeat: 3	-1.47887	1.06246	2.14809	190.204	198.431
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	0.273512	1.02459	562.121	0.415024	0.422147
Std Dev:	0.0358956	0.330559	4.84019	0.0434858	1.26735
%RSD:	13.124	32.2627	0.861058	10.4779	300.217
Repeat: 1	0.268585	1.28411	565.569	0.44224	-0.585492
Repeat: 2	0.240335	1.13722	564.206	0.437961	1.84503
Repeat: 3	0.311617	0.65243	556.587	0.364872	0.00689908
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	3.54115	87.3834	9612.79	0.524677	2655.99
Std Dev:	0.920193	1.61075	50.0009	0.201949	22.4696
%RSD:	25.9857	1.84332	0.52015	38.4901	0.845996
Repeat: 1	4.11064	86.3212	9594.72	0.390275	2674.99
Repeat: 2	2.47954	86.5922	9669.32	0.426846	2661.79
Repeat: 3	4.03326	89.2367	9574.34	0.756909	2631.19
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	-8.50379	2.23285	1.4135	1.20767	2249.04
Std Dev:	1.47441	1.13216	0.412607	0.114189	8.7654
%RSD:	17.3382	50.7045	29.1904	9.45533	0.389741
Repeat: 1	-8.01594	3.32391	1.66988	1.12956	2253.1
Repeat: 2	-10.1603	2.31099	1.63309	1.15472	2255.03
Repeat: 3	-7.33514	1.06365	0.937538	1.33872	2238.97
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	639115	17932.8			

Std Dev:	2029.63	134.772
%RSD:	0.317569	0.751539
Repeat: 1	639281	17783.2
Repeat: 2	637008	17970.4
Repeat: 3	641057	18044.7
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2249.04	639115	17932.8
Std Dev:	8.7654	2029.63	134.772
%RSD:	0.389741	0.317569	0.751539
Repeat: 1	2253.1	639281	17783.2
Repeat: 2	2255.03	637008	17970.4
Repeat: 3	2238.97	641057	18044.7

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I06004-SRL5@50X	9/9/2016 7:26:12PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000380495	0.00412069	-0.00471854	0.00165693	0.0376389
Std Dev:	2.99337e-005	0.000729741	0.000974689	2.82963e-005	0.000844641
%RSD:	7.86705	17.7092	20.6566	1.70776	2.24407
Repeat: 1	0.000391896	0.00342226	-0.00408128	0.00168377	0.038554
Repeat: 2	0.000403053	0.00487816	-0.00584056	0.00165963	0.0374735
Repeat: 3	0.000346536	0.00406164	-0.00423378	0.00162737	0.0368892
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.000910835	2.82373	0.0299506	0.016952	0.00020415
Std Dev:	0.000202818	0.00632954	0.0021501	0.00153277	1.64544e-005
%RSD:	22.2673	0.224155	7.17884	9.04178	8.05997
Repeat: 1	0.000862609	2.81655	0.0307918	0.0185093	0.000210419
Repeat: 2	0.000736477	2.82618	0.0315528	0.015445	0.000185482
Repeat: 3	0.00113342	2.82848	0.027507	0.0169017	0.000216548
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.000579792	-7.5525e-005	0.00174029	0.000265698	0.119659
Std Dev:	3.72354e-005	8.29572e-005	0.000240447	3.85603e-005	0.00018881
%RSD:	6.4222	109.841	13.8165	14.5128	0.15779
Repeat: 1	0.000537883	-0.000168363	0.00166552	0.000301592	0.119465
Repeat: 2	0.000609065	-4.95448e-005	0.00200924	0.000270568	0.11967
Repeat: 3	0.000592427	-8.66733e-006	0.00154612	0.000224934	0.119842
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	4.98396e-005	0.0001155	7.01691	0.0257745	-0.00631467
Std Dev:	4.46014e-006	0.000289439	0.0322265	0.000376671	0.00186424
%RSD:	8.94899	250.596	0.459269	1.46141	29.5223
Repeat: 1	4.97538e-005	0.000281106	7.0226	0.0254397	-0.00623408
Repeat: 2	4.5423e-005	-0.00021871	7.04591	0.0261824	-0.00449203
Repeat: 3	5.4342e-005	0.000284105	6.98221	0.0257013	-0.00821789
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00565525	0.0157815	136.59	-0.00156474	1.03377
Std Dev:	0.00127798	0.00122034	2.1791	0.00030156	0.0031948
%RSD:	22.5981	7.73271	1.59536	19.2722	0.309044

Repeat: 1	-0.00444854	0.0169961	134.075	-0.00182525	1.03291
Repeat: 2	-0.00552299	0.015793	137.929	-0.00123439	1.03731
Repeat: 3	-0.00699421	0.0145555	137.766	-0.00163458	1.03109
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.00100675	-0.00104918	-5.86818e-005	0.00682928	2408.55
Std Dev:	7.64595e-005	0.00016523	6.30188e-006	0.000888768	9.25933
%RSD:	7.59471	15.7485	10.7391	13.0141	0.384436
Repeat: 1	0.00109469	-0.00111282	-5.88991e-005	0.00613664	2413.96
Repeat: 2	0.000969472	-0.000861587	-6.48722e-005	0.00783142	2413.83
Repeat: 3	0.000956073	-0.00117311	-5.2274e-005	0.00651977	2397.85
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	671437	18662.2			
Std Dev:	8821.52	50.0278			
%RSD:	1.31383	0.26807			
Repeat: 1	663541	18613			
Repeat: 2	669813	18660.6			
Repeat: 3	680958	18713			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-1.56438	16.9694	1.70379	91.8353	0.607439
Std Dev:	0.570095	17.5262	2.1636	1.65357	0.0498669
%RSD:	36.4423	103.281	126.988	1.80058	8.20937
Repeat: 1	-1.34693	0.263334	3.11909	93.4038	0.661644
Repeat: 2	-1.135	35.2142	-0.786801	91.994	0.597161
Repeat: 3	-2.21119	15.4306	2.77907	90.1081	0.563512
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.124535	33.9821	-0.262548	-0.0312942	-0.248052
Std Dev:	0.0783008	0.0761874	0.0768353	0.181689	0.399524
%RSD:	62.8746	0.224199	29.2653	580.585	161.064
Repeat: 1	0.106239	33.8955	-0.23166	0.153119	-0.0954351
Repeat: 2	0.057002	34.0114	-0.205963	-0.210131	-0.70139
Repeat: 3	0.210364	34.0392	-0.35002	-0.0368701	0.0526676
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	-2.4196	3.40532	0.392356	37.084	41.7525
Std Dev:	0.422207	4.32691	0.0121331	5.02994	0.0658723
%RSD:	17.4494	127.063	3.09236	13.5637	0.157769
Repeat: 1	-2.89479	-1.43653	0.388583	41.7745	41.6848
Repeat: 2	-2.08762	4.75875	0.405928	37.705	41.7563
Repeat: 3	-2.2764	6.89375	0.382558	31.7723	41.8164
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	0.0856847	0.284806	175.153	0.111467	-0.00338838
Std Dev:	0.0128041	0.0729771	0.807042	0.0770986	0.907321
%RSD:	14.9433	25.6234	0.460765	69.167	26777.4
Repeat: 1	0.0855445	0.326498	175.295	0.0429718	0.0318747
Repeat: 2	0.0729513	0.200541	175.879	0.194964	0.885787
Repeat: 3	0.0985583	0.327379	174.284	0.0964662	-0.927827

QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	3.00595	14.6225	1988.25	0.398842	523.135
Std Dev:	1.44219	2.72995	33.4064	0.202127	1.59701
%RSD:	47.9781	18.6695	1.68019	50.6785	0.305277
Repeat: 1	4.36182	17.34	1949.7	0.224247	522.708
Repeat: 2	3.16534	14.6472	2008.78	0.620277	524.902
Repeat: 3	1.49068	11.8803	2006.27	0.352002	521.794
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	-1.53183	1.66769	-0.0582736	0.59446	2408.55
Std Dev:	0.32638	0.217892	0.14116	0.0826486	9.25933
%RSD:	21.3066	13.0655	242.236	13.9031	0.384436
Repeat: 1	-1.15654	1.58443	-0.0619047	0.529949	2413.96
Repeat: 2	-1.68956	1.91493	-0.197583	0.687622	2413.83
Repeat: 3	-1.74938	1.5037	0.0846667	0.56581	2397.85
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	671437	18662.2			
Std Dev:	8821.52	50.0278			
%RSD:	1.31383	0.26807			
Repeat: 1	663541	18613			
Repeat: 2	669813	18660.6			
Repeat: 3	680958	18713			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2408.55	671437	18662.2
Std Dev:	9.25933	8821.52	50.0278
%RSD:	0.384436	1.31383	0.26807
Repeat: 1	2413.96	663541	18613
Repeat: 2	2413.83	669813	18660.6
Repeat: 3	2397.85	680958	18713

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608250-04RE1@5X	9/9/2016 7:30:35PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000411649	0.0239379	-0.00497115	0.00971565	0.166329
Std Dev:	1.615e-005	0.000505193	0.000708965	7.11853e-005	0.00128408
%RSD:	3.92326	2.11043	14.2616	0.732686	0.772015
Repeat: 1	0.000397593	0.0234991	-0.00431733	0.00978682	0.167747
Repeat: 2	0.000408063	0.0238246	-0.00487141	0.00964445	0.165246
Repeat: 3	0.00042929	0.0244902	-0.0057247	0.0097157	0.165993
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.000459317	18.3837	0.0335309	0.0181426	0.00021974
Std Dev:	0.000209095	0.257307	0.00119328	0.00208749	2.72165e-005

%RSD:	45.5231	1.39965	3.55873	11.506	12.3858
Repeat: 1	0.000418207	18.1167	0.0325674	0.0186504	0.000218105
Repeat: 2	0.00027383	18.4042	0.0331597	0.0199293	0.000193378
Repeat: 3	0.00685914	18.6301	0.0348657	0.015848	0.000247737
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.000763866	-8.48712e-005	0.0463548	0.00124008	0.486487
Std Dev:	1.40019e-005	0.00016318	0.000149671	3.19618e-006	0.00113067
%RSD:	1.83304	192.268	0.322882	0.257739	0.232415
Repeat: 1	0.000777943	5.7155e-005	0.0465241	0.00123806	0.487739
Repeat: 2	0.000763715	-4.86499e-005	0.0463001	0.00124377	0.48554
Repeat: 3	0.00074994	-0.000263119	0.0462402	0.00123842	0.486183
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.0368835	0.00488839	18.686	0.0408325	-0.00775498
Std Dev:	0.000269198	0.00095164	0.259724	0.00161628	0.00243168
%RSD:	0.729861	19.4674	1.38994	3.95832	31.3563
Repeat: 1	0.0371901	0.00384399	18.9564	0.039701	-0.00593482
Repeat: 2	0.036686	0.00511469	18.4385	0.0426836	-0.0105166
Repeat: 3	0.0367743	0.00570647	18.663	0.0401129	-0.00681349
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00678427	0.0154493	1183.15	-0.00164435	5.47968
Std Dev:	0.00106355	0.000452615	14.3986	7.96367e-005	0.0314663
%RSD:	15.6766	2.92968	1.21697	4.84305	0.574236
Repeat: 1	-0.00615582	0.0153925	1166.58	-0.0017352	5.51521
Repeat: 2	-0.00618476	0.0159276	1192.6	-0.00158659	5.46847
Repeat: 3	-0.00801223	0.0150277	1190.28	-0.00161127	5.45535
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.00241192	-0.00105892	4.49084e-005	0.021377	2264.86
Std Dev:	0.000159036	0.00126447	1.22905e-005	0.000341567	5.30826
%RSD:	6.59376	119.412	27.3679	1.59782	0.234375
Repeat: 1	0.00258313	0.000236081	3.39041e-005	0.0211342	2258.81
Repeat: 2	0.00238385	-0.00112236	5.81716e-005	0.0217676	2268.72
Repeat: 3	0.00226879	-0.00229047	4.26494e-005	0.0212293	2267.06
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	645712	17953.9			
Std Dev:	2559.86	40.7614			
%RSD:	0.39644	0.227034			
Repeat: 1	642892	17906.8			
Repeat: 2	647888	17976.6			
Repeat: 3	646358	17978.2			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.972634	132.309	1.14069	562.933	8.23658
Std Dev:	0.308094	6.5895	1.57464	4.16167	0.0751798
%RSD:	31.6762	4.98039	138.043	0.739283	0.912755
Repeat: 1	-1.24195	127.949	2.59298	567.094	8.31973
Repeat: 2	-1.03928	129.088	1.36199	558.77	8.17342
Repeat: 3	-0.636671	139.889	-0.532894	562.935	8.21658
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	-0.0548889	221.274	-0.847863	0.119499	-0.64463
Std Dev:	0.0805648	3.09715	0.0319116	0.246693	0.660467

%RSD:	146.778	1.39969	3.76377	206.44	102.457
Repeat: 1	-0.0699604	218.06	-0.870142	0.177735	-0.687451
Repeat: 2	-0.126854	221.521	-0.862142	0.331863	-1.28264
Repeat: 3	0.0321473	224.24	-0.811306	-0.151102	0.0362046
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	-0.463335	3.40094	2.64362	155.171	169.728
Std Dev:	0.159416	8.51192	0.00755248	0.525235	0.394456
%RSD:	34.4062	250.282	0.285686	0.338489	0.232405
Repeat: 1	-0.303217	10.8126	2.65217	154.824	170.164
Repeat: 2	-0.464749	5.28553	2.64087	155.775	169.397
Repeat: 3	-0.62204	-5.89534	2.63784	154.913	169.621
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	106.031	1.48912	467.379	2.95883	-0.686172
Std Dev:	0.77418	0.23993	6.50421	0.332945	1.1809
%RSD:	0.730145	16.1122	1.39164	11.2526	172.1
Repeat: 1	106.913	1.22578	474.152	2.72484	0.195911
Repeat: 2	105.463	1.54627	461.181	3.34	-2.02776
Repeat: 3	105.717	1.69532	466.803	2.81164	-0.226669
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1.74824	13.1616	18032.3	0.344912	2743.12
Std Dev:	1.2109	1.01631	220.733	0.0533145	15.7699
%RSD:	69.2639	7.72175	1.2241	15.4574	0.574889
Repeat: 1	2.45608	13.0457	17778.2	0.284088	2760.93
Repeat: 2	2.43858	14.2309	18177.1	0.383554	2737.52
Repeat: 3	0.350049	12.2082	18141.5	0.367096	2730.92
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	-5.61192	1.58177	2.22939	1.71397	2264.86
Std Dev:	0.729398	1.67164	0.264462	0.031931	5.30826
%RSD:	12.9973	105.681	11.8625	1.86299	0.234375
Repeat: 1	-4.83389	3.29335	1.98877	1.6927	2258.81
Repeat: 2	-5.72161	1.49881	2.51254	1.75069	2268.72
Repeat: 3	-6.28026	-0.0468347	2.18687	1.69851	2267.06
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	645712	17953.9			
Std Dev:	2559.86	40.7614			
%RSD:	0.39644	0.227034			
Repeat: 1	642892	17906.8			
Repeat: 2	647888	17976.6			
Repeat: 3	646358	17978.2			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2264.86	645712	17953.9

Std Dev:	5.30826	2559.86	40.7614
%RSD:	0.234375	0.39644	0.227034
Repeat: 1	2258.81	642892	17906.8
Repeat: 2	2268.72	647888	17976.6
Repeat: 3	2267.06	646358	17978.2

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608250-05RE1@5X	9/9/2016 7:35:14PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000426467	0.0178715	-0.00522901	0.00681097	0.170901
Std Dev:	1.012e-005	0.000290144	8.39132e-005	2.61399e-005	0.00161101
%RSD:	2.37298	1.6235	1.60476	0.383791	0.942655
Repeat: 1	0.000430365	0.018202	-0.0051441	0.00681823	0.16907
Repeat: 2	0.000434059	0.0177533	-0.00531189	0.00678196	0.172102
Repeat: 3	0.000414978	0.017659	-0.00523105	0.00683271	0.171531
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.000662673	13.2632	0.0307447	0.018938	0.000227064
Std Dev:	0.000341097	0.0301552	0.000880284	0.00125257	1.17098e-005
%RSD:	51.473	0.227361	2.86321	6.61405	5.15706
Repeat: 1	0.00105635	13.2476	0.0298455	0.0176818	0.000213709
Repeat: 2	0.000455284	13.2979	0.0316047	0.0201869	0.000235575
Repeat: 3	0.000476385	13.244	0.0307838	0.0189454	0.000231906
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.000723611	3.67684e-005	0.032872	0.000681458	0.313241
Std Dev:	8.57676e-006	4.66584e-005	0.000314821	7.18769e-006	0.00122046
%RSD:	1.18527	126.898	0.95772	1.05475	0.389624
Repeat: 1	0.000728745	-1.69504e-005	0.032578	0.000674534	0.313502
Repeat: 2	0.000728379	6.71955e-005	0.0332042	0.000680957	0.314309
Repeat: 3	0.00071371	6.00601e-005	0.0328337	0.000688884	0.311911
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.0013228	0.00882166	12.7788	0.0375503	-0.00573077
Std Dev:	5.61053e-006	0.00105866	0.066779	0.000375584	0.00147689
%RSD:	0.42414	12.0007	0.522575	1.00022	25.7712
Repeat: 1	0.00131635	0.00925709	12.8495	0.0374279	-0.00584209
Repeat: 2	0.00132655	0.00959316	12.7702	0.0372512	-0.00420138
Repeat: 3	0.0013255	0.00761471	12.7168	0.0379718	-0.00714886
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00540804	0.0111338	1053.9	-0.00209877	3.4443
Std Dev:	0.00106602	0.00126313	0.372333	0.00052511	0.0312387
%RSD:	19.7117	11.3451	0.0353292	25.0199	0.906967
Repeat: 1	-0.00471875	0.0121723	1054.26	-0.00210959	3.44015
Repeat: 2	-0.00486947	0.00972759	1053.51	-0.00156833	3.47741
Repeat: 3	-0.00663589	0.0115014	1053.92	-0.00261838	3.41534
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.00162348	-0.000180567	2.09321e-005	0.0294728	2339.97
Std Dev:	0.00033178	0.00114359	2.68968e-005	0.00160601	9.02855
%RSD:	20.4363	633.335	128.495	5.44912	0.38584
Repeat: 1	0.00188624	0.000219809	4.33613e-005	0.0300565	2335.05
Repeat: 2	0.00125066	0.000709008	2.83222e-005	0.0307053	2350.39

Repeat: 3	0.00173355	-0.00147052	-8.88721e-006	0.0276566	2334.47
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	658253	18314.9			
Std Dev:	3255.89	96.4893			
%RSD:	0.494626	0.526834			
Repeat: 1	661748	18414			
Repeat: 2	657705	18221.3			
Repeat: 3	655306	18309.5			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.681064	105.299	0.565438	393.131	8.50545
Std Dev:	0.19516	7.24577	0.186758	1.52815	0.0942398
%RSD:	28.6552	6.88112	33.0288	0.388711	1.10799
Repeat: 1	-0.604597	113.646	0.754003	393.556	8.3987
Repeat: 2	-0.535717	101.627	0.380542	391.436	8.57712
Repeat: 3	-0.902879	100.625	0.56177	394.402	8.54052
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.0247442	159.64	-0.712914	0.208731	-0.0719427
Std Dev:	0.132706	0.362973	0.0303182	0.143359	0.284539
%RSD:	536.31	0.22737	4.25272	68.6811	395.508
Repeat: 1	0.17786	159.452	-0.744302	0.0630577	-0.396843
Repeat: 2	-0.057044	160.058	-0.683793	0.349657	0.132843
Repeat: 3	-0.0465837	159.409	-0.710647	0.213477	0.0481727
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	-0.859156	9.28144	1.96327	86.2672	109.287
Std Dev:	0.096451	2.43482	0.015886	0.973871	0.425785
%RSD:	11.2262	26.2332	0.809159	1.1289	0.389602
Repeat: 1	-0.800489	6.47819	1.94844	85.3292	109.379
Repeat: 2	-0.806505	10.8693	1.98004	86.1992	109.66
Repeat: 3	-0.970474	10.4969	1.96134	87.2733	108.823
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	3.747	2.48126	319.447	2.39488	0.303089
Std Dev:	0.0160841	0.267096	1.67233	0.0783766	0.717338
%RSD:	0.429254	10.7645	0.523508	3.27267	236.676
Repeat: 1	3.72851	2.59113	321.217	2.36938	0.251349
Repeat: 2	3.75774	2.6759	319.232	2.33243	1.0449
Repeat: 3	3.75474	2.17675	317.893	2.48283	-0.386978
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	3.28776	3.77639	16050.7	0.040501	1726.47
Std Dev:	1.20461	2.82628	5.70778	0.351828	15.6115
%RSD:	36.6393	74.8408	0.0355609	868.69	0.904243
Repeat: 1	4.07192	6.0997	16056.2	0.0331222	1724.4
Repeat: 2	3.89062	0.629905	16044.8	0.39596	1743.01
Repeat: 3	1.90074	4.59957	16051.1	-0.307579	1712

QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	-4.84564	2.80902	1.6839	2.60311	2339.97
Std Dev:	1.41622	1.51054	0.585105	0.149393	9.02855
%RSD:	29.2268	53.7745	34.7471	5.739	0.38584
Repeat: 1	-3.73886	3.34196	2.16925	2.65737	2335.05
Repeat: 2	-6.44161	3.98085	1.84825	2.7178	2350.39
Repeat: 3	-4.35645	1.10425	1.03419	2.43418	2334.47
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	658253	18314.9
Std Dev:	3255.89	96.4893
%RSD:	0.494626	0.526834
Repeat: 1	661748	18414
Repeat: 2	657705	18221.3
Repeat: 3	655306	18309.5
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2339.97	658253	18314.9
Std Dev:	9.02855	3255.89	96.4893
%RSD:	0.38584	0.494626	0.526834
Repeat: 1	2335.05	661748	18414
Repeat: 2	2350.39	657705	18221.3
Repeat: 3	2334.47	655306	18309.5

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608250-07RE1@5X	9/9/2016 7:39:45PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.0003802	0.0244434	-0.00514318	0.00996987	0.165825
Std Dev:	5.08049e-005	0.000301529	0.000246932	0.000104857	0.00139335
%RSD:	13.3627	1.23358	4.80115	1.05174	0.840253
Repeat: 1	0.000402744	0.0243415	-0.00488765	0.00998472	0.165137
Repeat: 2	0.000415831	0.0242061	-0.0053805	0.0100665	0.16491
Repeat: 3	0.000322024	0.0247827	-0.00516139	0.00985838	0.167429
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.000696426	18.4152	0.0314498	0.0186439	0.000228883
Std Dev:	0.000261378	0.185705	0.00109378	0.00144529	1.9593e-005
%RSD:	37.5313	1.00844	3.47788	7.75211	8.56027
Repeat: 1	0.000446968	18.2361	0.0313503	0.0201137	0.000213714
Repeat: 2	0.000674029	18.6068	0.0325899	0.0185934	0.000221931
Repeat: 3	0.000968281	18.4026	0.0304091	0.0172245	0.000251004
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.000709678	-9.60734e-005	0.0447437	0.00120188	0.491405
Std Dev:	1.64858e-005	0.000103271	0.0003283	2.7782e-005	0.00120286
%RSD:	2.323	107.492	0.733735	2.31155	0.244779
Repeat: 1	0.000696382	-2.45973e-005	0.0444902	0.00119159	0.490159

Repeat: 2	0.000728124	-4.9148e-005	0.0446263	0.00123333	0.49256
Repeat: 3	0.000704529	-0.000214475	0.0451145	0.0011807	0.491494
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.0312964	0.00552026	18.8076	0.0348686	-0.00651428
Std Dev:	0.000258565	0.00036331	0.18181	0.00158571	0.00115896
%RSD:	0.826181	6.5814	0.966683	4.54767	17.791
Repeat: 1	0.0312373	0.00530083	19.0174	0.0365823	-0.00576193
Repeat: 2	0.0315794	0.00532032	18.71	0.0345701	-0.00593199
Repeat: 3	0.0310725	0.00593962	18.6954	0.0334533	-0.00784893
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00626167	0.0157125	1196.29	-0.00196281	5.35782
Std Dev:	0.00108723	0.000599973	4.62815	0.000479274	0.0253888
%RSD:	17.3632	3.81844	0.386875	24.4178	0.473864
Repeat: 1	-0.00707805	0.0156055	1199.7	-0.00146126	5.33859
Repeat: 2	-0.00667945	0.0151733	1198.15	-0.00241616	5.3866
Repeat: 3	-0.00502753	0.0163588	1191.02	-0.00201101	5.34828
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.00223854	-0.00023326	3.6132e-005	0.0190354	2242.34
Std Dev:	0.000240524	0.000986143	3.68191e-005	0.000535601	5.92148
%RSD:	10.7447	422.766	101.902	2.81372	0.264076
Repeat: 1	0.00225311	-0.00136048	3.31206e-005	0.0190443	2248.91
Repeat: 2	0.00247144	0.000190671	9.11013e-007	0.0195664	2237.41
Repeat: 3	0.00199106	0.000470029	7.43643e-005	0.0184953	2240.7
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	636029	17812.6			
Std Dev:	4687.75	46.7604			
%RSD:	0.737034	0.262513			
Repeat: 1	636876	17777.6			
Repeat: 2	630976	17794.5			
Repeat: 3	640236	17865.7			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-1.57152	143.779	0.758427	577.794	8.20608
Std Dev:	0.965345	9.46603	0.54822	6.12962	0.0851287
%RSD:	61.4276	6.58373	72.2839	1.06087	1.03739
Repeat: 1	-1.14197	145.5	1.32603	578.661	8.16506
Repeat: 2	-0.895504	133.571	0.231894	583.443	8.14922
Repeat: 3	-2.67708	152.267	0.717361	571.276	8.30395
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.0361377	221.653	-0.923737	0.180883	-0.423312
Std Dev:	0.100287	2.23529	0.0343809	0.170289	0.475574
%RSD:	277.514	1.00847	3.72194	94.1429	112.346
Repeat: 1	-0.0601982	219.497	-0.919205	0.354954	-0.789204
Repeat: 2	0.0286542	223.96	-0.891846	0.17305	-0.594996
Repeat: 3	0.139957	221.501	-0.960159	0.0146466	0.114265
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	-1.08025	2.74339	2.56232	150.107	171.443
Std Dev:	0.187018	5.38724	0.0165662	3.62794	0.419639

%RSD:	17.3126	196.372	0.646529	2.41691	0.244769
Repeat: 1	-1.23036	6.46965	2.54953	148.693	171.009
Repeat: 2	-0.870747	5.19401	2.5564	154.229	171.846
Repeat: 3	-1.13963	-3.43351	2.58104	147.399	171.474
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	89.9607	1.64838	470.425	1.7274	-0.0783289
Std Dev:	0.743635	0.0916624	4.55303	0.326858	0.560567
%RSD:	0.826622	5.56076	0.967855	18.9219	715.657
Repeat: 1	89.7905	1.59307	475.678	2.08093	0.287185
Repeat: 2	90.7746	1.59788	467.981	1.66511	0.201552
Repeat: 3	89.3168	1.75419	467.616	1.43617	-0.723724
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	2.32425	13.7557	18233.7	0.131531	2682.2
Std Dev:	1.22365	1.34526	70.9508	0.321137	12.663
%RSD:	52.6472	9.77962	0.38912	244.154	0.472113
Repeat: 1	1.39629	13.524	18285.9	0.467689	2672.61
Repeat: 2	1.86547	12.5414	18262.2	-0.172112	2696.56
Repeat: 3	3.711	15.2018	18152.9	0.0990153	2677.43
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	-6.4255	2.68057	2.03627	1.50801	2242.34
Std Dev:	0.980975	1.30271	0.807262	0.0486681	5.92148
%RSD:	15.2669	48.5983	39.6441	3.2273	0.264076
Repeat: 1	-6.29415	1.19152	1.96698	1.51154	2248.91
Repeat: 2	-5.51681	3.24041	1.26589	1.55482	2237.41
Repeat: 3	-7.46553	3.60978	2.87595	1.45768	2240.7
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	636029	17812.6
Std Dev:	4687.75	46.7604
%RSD:	0.737034	0.262513
Repeat: 1	636876	17777.6
Repeat: 2	630976	17794.5
Repeat: 3	640236	17865.7
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2242.34	636029	17812.6
Std Dev:	5.92148	4687.75	46.7604
%RSD:	0.264076	0.737034	0.262513
Repeat: 1	2248.91	636876	17777.6
Repeat: 2	2237.41	630976	17794.5
Repeat: 3	2240.7	640236	17865.7

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25301-CCV9	9/9/2016 7:44:25PM	QC	1.00

Valid	**Analyst Name**	**Method Name**

Yes rburr 6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.0250101	0.401738	0.445393	0.0178351	15.4668
Std Dev:	0.00028035	0.00129089	0.000779995	0.000163492	0.0438749
%RSD:	1.12095	0.321327	0.175125	0.916687	0.283672
Repeat: 1	0.0246882	0.400522	0.446174	0.0176578	15.4945
Repeat: 2	0.0251409	0.401601	0.444614	0.0178677	15.4162
Repeat: 3	0.0252011	0.403092	0.44539	0.0179799	15.4897
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	2.68625	4.29368	29.1304	7.91933	0.0446663
Std Dev:	0.0077064	0.0103663	0.0693961	0.0177539	0.000478842
%RSD:	0.286883	0.241433	0.238226	0.224185	1.07204
Repeat: 1	2.67883	4.28182	29.1701	7.92113	0.0441155
Repeat: 2	2.6857	4.29823	29.0503	7.90074	0.0448998
Repeat: 3	2.69421	4.30099	29.1708	7.93611	0.0449836
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.0889328	0.196124	0.180463	0.00756649	0.140786
Std Dev:	0.000850648	0.0010054	0.00137438	0.00012278	0.000260143
%RSD:	0.956506	0.512636	0.761583	1.62268	0.184779
Repeat: 1	0.0879821	0.194996	0.178907	0.0074371	0.140487
Repeat: 2	0.0891942	0.196925	0.181511	0.00758101	0.140965
Repeat: 3	0.0896221	0.196451	0.180972	0.00768136	0.140905
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.328889	4.07068	1.86235	4.52118	1.87984
Std Dev:	0.00532717	0.00774918	0.00627329	0.011493	0.00332786
%RSD:	1.61974	0.190366	0.336848	0.254203	0.177029
Repeat: 1	0.324902	4.06861	1.85529	4.5279	1.87718
Repeat: 2	0.326827	4.06418	1.86728	4.50791	1.87878
Repeat: 3	0.334939	4.07925	1.86448	4.52774	1.88357
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	0.871661	0.470353	293.096	1.47724	1.93813
Std Dev:	0.00259872	0.000912956	3.26372	0.00536225	0.00668445
%RSD:	0.298134	0.1941	1.11353	0.36299	0.344891
Repeat: 1	0.872854	0.470459	295.364	1.47929	1.93058
Repeat: 2	0.86868	0.469392	289.355	1.47116	1.94329
Repeat: 3	0.873449	0.471208	294.568	1.48128	1.94053
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.237813	0.72983	0.0491232	11.1331	2393.39
Std Dev:	0.000919287	0.00342357	0.000521241	0.0241677	6.90746
%RSD:	0.386559	0.469092	1.06109	0.21708	0.288606
Repeat: 1	0.236812	0.730921	0.0485234	11.1223	2394.38
Repeat: 2	0.238006	0.725993	0.0493801	11.1162	2399.75
Repeat: 3	0.23862	0.732574	0.0494662	11.1608	2386.05
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	671344	18826.3			
Std Dev:	5431.68	40.3605			
%RSD:	0.809075	0.214383			
Repeat: 1	677368	18806.6			
Repeat: 2	669842	18799.6			
Repeat: 3	666821	18872.8			

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335

Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	472.628	9554.17	998.556	1036.26	918.014
Std Dev:	5.39306	30.9216	1.73075	9.56349	2.58008
%RSD:	1.14108	0.323644	0.173325	0.922885	0.28105
Repeat: 1	466.437	9525.08	1000.29	1025.88	919.61
Repeat: 2	475.148	9550.8	996.83	1038.17	915.037
Repeat: 3	476.301	9586.65	998.544	1044.72	919.395
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	1039.3	51.6755	1039.24	937.845	1078.67
Std Dev:	2.98012	0.124778	2.48091	2.10966	11.6211
%RSD:	0.286744	0.241464	0.238723	0.224947	1.07736
Repeat: 1	1036.43	51.5327	1040.66	938.067	1065.3
Repeat: 2	1039.08	51.7303	1036.38	935.633	1084.34
Repeat: 3	1042.38	51.7635	1040.68	939.835	1086.37
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	1000.1	10246	9.41078	994.506	49.1417
Std Dev:	9.6511	52.5125	0.0693515	16.0471	0.0907863
%RSD:	0.965013	0.512515	0.736937	1.61357	0.184744
Repeat: 1	989.315	10187.1	9.33226	977.596	49.0376
Repeat: 2	1003.07	10287.8	9.46364	996.4	49.2041
Repeat: 3	1007.92	10263.2	9.43644	1009.52	49.1835
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	945.708	1027.39	46.0682	925.072	918.552
Std Dev:	15.3221	1.95539	0.157101	2.36259	1.62105
%RSD:	1.62017	0.190326	0.341018	0.255395	0.176478
Repeat: 1	934.239	1026.86	45.8914	926.448	917.255
Repeat: 2	939.775	1025.75	46.1918	922.344	918.033
Repeat: 3	963.109	1029.55	46.1215	926.424	920.37
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	968.74	1030.75	4388.28	991.224	974.985
Std Dev:	3.02932	2.03716	50.0305	3.5945	3.33995
%RSD:	0.312707	0.19764	1.14009	0.362633	0.342564
Repeat: 1	970.397	1030.99	4423.05	992.6	971.211
Repeat: 2	965.244	1028.6	4330.94	987.144	977.559
Repeat: 3	970.58	1032.65	4410.86	993.926	976.183
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	994.482	971.067	1083.26	1036.11	2393.39
Std Dev:	3.86082	4.51245	11.4854	2.23442	6.90746
%RSD:	0.388224	0.46469	1.06027	0.215654	0.288606
Repeat: 1	990.281	972.476	1070.04	1035.12	2394.38
Repeat: 2	995.289	966.018	1088.92	1034.54	2399.75
Repeat: 3	997.875	974.706	1090.82	1038.67	2386.05
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	Sc3613	Sc3613-2
Units:	----	----
Avg. of Repeats:	671344	18826.3
Std Dev:	5431.68	40.3605
%RSD:	0.809075	0.214383
Repeat: 1	677368	18806.6
Repeat: 2	669842	18799.6
Repeat: 3	666821	18872.8
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	Sc1880	Sc3613	Sc3613-2
Avg. of Repeats:	2393.39	671344	18826.3
Std Dev:	6.90746	5431.68	40.3605
%RSD:	0.288606	0.809075	0.214383
Repeat: 1	2394.38	677368	18806.6
Repeat: 2	2399.75	669842	18799.6
Repeat: 3	2386.05	666821	18872.8

Sample Name	Acquisition Date	Sample type	Correction Factor
6I25301-CCB9	9/9/2016 7:48:48PM	QC	1.00

Valid	Analyst Name	Method Name
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.000405595	-9.85591e-007	-0.00459869	0.000105805	0.032177
Std Dev:	3.34298e-005	0.000403942	0.00059616	1.17803e-005	0.00126162
%RSD:	8.24217	40984.8	12.9637	11.134	3.92087
Repeat: 1	0.000372122	-0.000465451	-0.00424996	9.24554e-005	0.0334702
Repeat: 2	0.000405682	0.0002683	-0.00425905	0.000114741	0.0321112
Repeat: 3	0.000438981	0.000194195	-0.00528706	0.000110219	0.0309495
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	0.000938479	0.00115797	0.0346867	0.0192109	0.000198981
Std Dev:	7.26273e-005	0.000280364	0.00371182	0.000825654	4.97936e-006
%RSD:	7.73883	24.2116	10.701	4.29784	2.50243
Repeat: 1	0.000858587	0.000867133	0.0389101	0.0200626	0.000204435
Repeat: 2	0.00100051	0.00118026	0.0332073	0.019156	0.000194677
Repeat: 3	0.000956342	0.00142653	0.0319427	0.018414	0.000197832
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.000661675	-9.67377e-005	-0.0067526	-3.08373e-005	8.65002e-006
Std Dev:	2.85505e-005	0.000112714	0.000281181	1.90794e-005	3.69358e-005
%RSD:	4.31489	116.515	4.16404	61.8712	427.003
Repeat: 1	0.000641279	-0.000213661	-0.00651501	-1.30604e-005	1.84442e-005
Repeat: 2	0.000649442	1.12342e-005	-0.00706303	-2.84558e-005	3.97017e-005
Repeat: 3	0.000694303	-8.77866e-005	-0.00667976	-5.09957e-005	-3.21958e-005
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	8.75173e-005	0.00285323	0.0389919	0.0261347	-0.00515703
Std Dev:	2.05151e-005	0.000875238	0.000663926	0.000887661	0.000731771
%RSD:	23.4412	30.6753	1.70273	3.39648	14.1898
Repeat: 1	0.000102578	0.00384141	0.0382786	0.0261913	-0.0053313
Repeat: 2	6.41518e-005	0.00254264	0.0391052	0.0269927	-0.00435386
Repeat: 3	9.58219e-005	0.00217564	0.0395918	0.0252201	-0.00578594
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215

Avg. of Repeats:	-0.0050393	0.00809045	9.40434	-0.000734216	-0.0115111
Std Dev:	0.00139976	0.000142576	1.77799	0.000596747	0.000130406
%RSD:	27.7768	1.76228	18.906	81.2768	1.13288
Repeat: 1	-0.00380406	0.00804566	11.115	-0.000197867	-0.0114364
Repeat: 2	-0.00655967	0.00797564	7.56591	-0.00137703	-0.0114351
Repeat: 3	-0.00475417	0.00825004	9.53211	-0.000627751	-0.0116617
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.000703574	-0.000748127	-6.99993e-005	0.00546671	2392.39
Std Dev:	6.89233e-005	0.00121798	1.28228e-005	0.0012931	3.51946
%RSD:	9.79616	162.804	18.3184	23.6541	0.147111
Repeat: 1	0.000775752	0.000451471	-8.38496e-005	0.00646867	2391.86
Repeat: 2	0.000696523	-0.000712161	-6.76075e-005	0.00592447	2396.14
Repeat: 3	0.000638448	-0.00198369	-5.85409e-005	0.004007	2389.16
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	667729	18890			
Std Dev:	8506.01	114.346			
%RSD:	1.27387	0.605325			
Repeat: 1	669584	18996.7			
Repeat: 2	675153	18904			
Repeat: 3	658448	18769.3			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-1.08687	-16.71	1.96702	1.15909	0.283131
Std Dev:	0.638515	9.75964	1.32294	0.689344	0.0737835
%RSD:	58.7479	58.4058	67.2561	59.4729	26.0598
Repeat: 1	-1.72632	-27.9319	2.74019	0.377893	0.358716
Repeat: 2	-1.085	-10.2028	2.72141	1.68195	0.279385
Repeat: 3	-0.449297	-11.9955	0.439457	1.41743	0.211292
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.136616	0.00726556	0.0363047	0.235574	-0.139703
Std Dev:	0.0277946	0.00337469	0.133024	0.0979373	0.120923
%RSD:	20.345	46.4477	366.41	41.574	86.5567
Repeat: 1	0.106134	0.00376477	0.187666	0.336708	-0.0072997
Repeat: 2	0.160556	0.00753377	-0.0167334	0.22883	-0.244301
Repeat: 3	0.143158	0.0104981	-0.0620188	0.141182	-0.167509
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	-1.44866	2.2999	-0.0361986	2.50674	0.0101419
Std Dev:	0.323777	5.87847	0.0141885	2.49424	0.0128877
%RSD:	22.3501	255.597	39.1963	99.5012	127.074
Repeat: 1	-1.68013	-3.79804	-0.0242095	4.83073	0.0135588
Repeat: 2	-1.58719	7.93107	-0.0518632	2.81803	0.0209768
Repeat: 3	-1.07866	2.76665	-0.0325231	-0.128528	-0.00410994
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	0.194082	0.975148	0.406217	0.271224	0.550748
Std Dev:	0.0591258	0.220656	0.0166266	0.182183	0.355949
%RSD:	30.4643	22.628	4.09302	67.1708	64.6301

Repeat: 1	0.237536	1.22426	0.388354	0.282564	0.463788
Repeat: 2	0.126752	0.896902	0.409055	0.447472	0.94212
Repeat: 3	0.217958	0.804277	0.421242	0.0836354	0.246337
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	3.69887	-2.45652	38.4722	0.95552	1.05807
Std Dev:	1.57468	0.318793	27.2565	0.399975	0.0652265
%RSD:	42.5719	12.9774	70.8471	41.8594	6.16467
Repeat: 1	5.08804	-2.55614	64.6964	1.31506	1.09543
Repeat: 2	1.98828	-2.71361	10.2892	0.524694	1.09603
Repeat: 3	4.02029	-2.09982	40.431	1.02681	0.982754
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	-0.189818	2.06786	-0.304965	0.492868	2392.39
Std Dev:	0.289985	1.60916	0.279097	0.121282	3.51946
%RSD:	152.77	77.8176	91.5175	24.6073	0.147111
Repeat: 1	0.114071	3.65269	-0.606152	0.586153	2391.86
Repeat: 2	-0.219984	2.11546	-0.253671	0.536684	2396.14
Repeat: 3	-0.46354	0.435428	-0.0550739	0.355767	2389.16
QC Status Pass/Fail:	Pass	Fail	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	667729	18890			
Std Dev:	8506.01	114.346			
%RSD:	1.27387	0.605325			
Repeat: 1	669584	18996.7			
Repeat: 2	675153	18904			
Repeat: 3	658448	18769.3			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2392.39	667729	18890
Std Dev:	3.51946	8506.01	114.346
%RSD:	0.147111	1.27387	0.605325
Repeat: 1	2391.86	669584	18996.7
Repeat: 2	2396.14	675153	18904
Repeat: 3	2389.16	658448	18769.3

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25301-CRL	9/9/2016 7:53:13PM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000554149	0.0092825	-0.00284236	0.000611117	0.189437
Std Dev:	2.72707e-005	0.000842643	0.00029696	1.89264e-005	0.00116433
%RSD:	4.92119	9.07775	10.4477	3.09702	0.614623
Repeat: 1	0.000523123	0.0102554	-0.00279179	0.000620336	0.190766
Repeat: 2	0.000574323	0.008808	-0.00316135	0.000623668	0.188595
Repeat: 3	0.000565001	0.0087841	-0.00257392	0.000589348	0.188951

Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	0.00599656	0.182315	0.0937372	0.104743	0.000376167
Std Dev:	0.000230928	0.000598363	0.00142972	0.00118875	1.88434e-005
%RSD:	3.85101	0.328203	1.52524	1.13491	5.00931
Repeat: 1	0.00573545	0.182239	0.0950396	0.103636	0.000356846
Repeat: 2	0.00617395	0.181758	0.0939646	0.105999	0.000377162
Repeat: 3	0.00608028	0.182947	0.0922074	0.104595	0.000394494
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.00148307	0.00206789	0.0523188	2.1741e-005	0.00940466
Std Dev:	3.16858e-005	0.000119921	0.000417701	1.75103e-005	0.000115702
%RSD:	2.1365	5.79919	0.798376	80.5406	1.23027
Repeat: 1	0.00151277	0.00216587	0.0527669	2.45165e-006	0.00932903
Repeat: 2	0.00148672	0.00193416	0.0519402	2.61366e-005	0.0093471
Repeat: 3	0.00144972	0.00210364	0.0522493	3.66347e-005	0.00953785
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.00219271	0.0412195	0.159705	0.0533399	0.000630041
Std Dev:	1.78077e-005	0.000270247	0.000995281	0.000470901	0.00141749
%RSD:	0.812132	0.655629	0.6232	0.882831	224.983
Repeat: 1	0.00217495	0.0414487	0.160164	0.0527964	-4.55402e-005
Repeat: 2	0.00221056	0.0412883	0.158563	0.0535959	-0.000323276
Repeat: 3	0.00219261	0.0409215	0.160388	0.0536273	0.00225894
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	0.00341728	0.010908	10.3636	0.027276	0.00223827
Std Dev:	0.000250387	0.000668072	0.989368	0.000729087	9.03976e-005
%RSD:	7.32708	6.1246	9.54658	2.673	4.03873
Repeat: 1	0.00349802	0.0101602	9.4765	0.0269165	0.00213538
Repeat: 2	0.00313648	0.0114461	10.1837	0.028115	0.00230497
Repeat: 3	0.00361733	0.0111177	11.4306	0.0267965	0.00227446
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.00313821	0.00488162	0.000446769	0.121353	2412.3
Std Dev:	2.70556e-005	0.00075985	1.81145e-005	0.000323147	3.91883
%RSD:	0.862134	15.5655	4.05457	0.266287	0.162452
Repeat: 1	0.00310698	0.0042401	0.00043257	0.121722	2416.29
Repeat: 2	0.00315319	0.004684	0.00046717	0.121218	2412.15
Repeat: 3	0.00315446	0.00572075	0.000440565	0.121119	2408.45
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	670290	18813.9			
Std Dev:	4357.61	39.0862			
%RSD:	0.650108	0.207752			
Repeat: 1	668081	18823.1			
Repeat: 2	667479	18847.6			
Repeat: 3	675310	18771			

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	1.79392	203.009	5.84821	30.6878	9.63462
Std Dev:	0.521304	20.3567	0.659452	1.10617	0.0678631
%RSD:	29.0595	10.0275	11.2761	3.6046	0.704367
Repeat: 1	1.20103	226.512	5.96099	31.2273	9.71221
Repeat: 2	2.18047	191.559	5.13965	31.4207	9.5863
Repeat: 3	2.00026	190.956	6.44401	29.4154	9.60536
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677

Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	2.09805	2.18781	2.13355	10.3857	4.13917
Std Dev:	0.0892879	0.00720237	0.0508718	0.141122	0.457393
%RSD:	4.25576	0.329204	2.38437	1.3588	11.0504
Repeat: 1	1.99706	2.1869	2.1797	10.2544	3.6701
Repeat: 2	2.16654	2.18111	2.14194	10.5349	4.16349
Repeat: 3	2.13055	2.19543	2.079	10.3679	4.58392
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	7.86932	115.253	2.94457	9.28185	3.28831
Std Dev:	0.359337	6.2542	0.0210774	2.28931	0.0403648
%RSD:	4.56631	5.4265	0.715804	24.6644	1.22753
Repeat: 1	8.20626	120.361	2.96718	6.75974	3.26192
Repeat: 2	7.91056	108.278	2.92547	9.8572	3.26822
Repeat: 3	7.49115	117.119	2.94106	11.2286	3.33477
QC Status Pass/Fail:	Fail	Pass	Pass	Fail	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	6.24679	10.6565	3.42921	5.8664	3.42055
Std Dev:	0.0513536	0.0681615	0.0249246	0.0966682	0.686002
%RSD:	0.82208	0.639622	0.726832	1.64783	20.0553
Repeat: 1	6.1956	10.7144	3.4407	5.75482	3.09832
Repeat: 2	6.29831	10.6739	3.40061	5.9194	2.955
Repeat: 3	6.24647	10.5814	3.44632	5.92497	4.20835
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	13.1497	3.82918	53.1861	19.7251	7.90221
Std Dev:	0.280062	1.49506	15.1672	0.488539	0.045195
%RSD:	2.1298	39.0438	28.5172	2.47674	0.571929
Repeat: 1	13.2518	2.15577	39.5873	19.4843	7.85079
Repeat: 2	12.8329	5.03326	50.4279	20.2873	7.93564
Repeat: 3	13.3644	4.2985	69.543	19.4038	7.9202
QC Status Pass/Fail:	Fail	Fail	Fail	Pass	Fail
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	9.86459	9.54784	11.0087	11.3019	2412.3
Std Dev:	0.112781	1.00404	0.396194	0.0297567	3.91883
%RSD:	1.1433	10.5159	3.59893	0.263289	0.162452
Repeat: 1	9.73436	8.69927	10.6946	11.3359	2416.29
Repeat: 2	9.9286	9.28797	11.4538	11.2893	2412.15
Repeat: 3	9.93079	10.6563	10.8776	11.2805	2408.45
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	670290	18813.9			
Std Dev:	4357.61	39.0862			
%RSD:	0.650108	0.207752			
Repeat: 1	668081	18823.1			
Repeat: 2	667479	18847.6			
Repeat: 3	675310	18771			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	Sc1880	Sc3613	Sc3613-2
Avg. of Repeats:	2412.3	670290	18813.9
Std Dev:	3.91883	4357.61	39.0862
%RSD:	0.162452	0.650108	0.207752
Repeat: 1	2416.29	668081	18823.1
Repeat: 2	2412.15	667479	18847.6
Repeat: 3	2408.45	675310	18771

Sample Name	Acquisition Date	Sample type	Correction Factor
6I25301-CRL	9/9/2016 7:57:36PM	QC	1.00

Valid	Analyst Name	Method Name
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.000580847	0.00838681	-0.00260413	0.000611287	0.186759
Std Dev:	1.45438e-005	0.000419219	0.000617877	5.81687e-006	0.00161128
%RSD:	2.5039	4.99855	23.7268	0.951579	0.862761
Repeat: 1	0.000564515	0.00855061	-0.00289864	0.000616215	0.186946
Repeat: 2	0.000585627	0.0086994	-0.00189409	0.00060487	0.185062
Repeat: 3	0.000592399	0.00791042	-0.00301965	0.000612775	0.188268
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	0.0057712	0.182197	0.0923654	0.101815	0.00038159
Std Dev:	0.000335709	0.000926325	0.00184104	0.00183413	4.75491e-006
%RSD:	5.81698	0.508419	1.99322	1.80144	1.24608
Repeat: 1	0.0058691	0.181157	0.0917713	0.103008	0.000376853
Repeat: 2	0.00539742	0.182932	0.0908948	0.102734	0.000386363
Repeat: 3	0.00604707	0.182503	0.0944302	0.0997029	0.000381553
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.00153566	0.00191813	0.0522901	1.11546e-005	0.00936643
Std Dev:	3.1253e-005	5.11244e-005	0.00118865	1.99159e-005	0.000113402
%RSD:	2.03515	2.66533	2.27318	178.545	1.21073
Repeat: 1	0.00152909	0.00193752	0.0531262	1.31666e-005	0.00923767
Repeat: 2	0.00150821	0.00186014	0.0528147	2.99881e-005	0.00945144
Repeat: 3	0.00156967	0.00195671	0.0509294	-9.69102e-006	0.00941018
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.00220685	0.0415136	0.154943	0.0541631	0.0021456
Std Dev:	1.18055e-005	0.000555474	0.00039787	0.000488634	0.00147524
%RSD:	0.534945	1.33805	0.256785	0.902153	68.7564
Repeat: 1	0.00221	0.0408725	0.155186	0.0536266	0.000447178
Repeat: 2	0.00219379	0.0418177	0.154484	0.0542801	0.00310815
Repeat: 3	0.00221677	0.0418506	0.15516	0.0545826	0.00288148
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	0.00389854	0.0104108	9.12384	0.0274276	0.00142415
Std Dev:	0.000623548	0.000649094	1.48139	2.40415e-005	0.000103682
%RSD:	15.9944	6.23481	16.2365	0.0876543	7.28028
Repeat: 1	0.00444838	0.0110789	10.8309	0.0274312	0.00154384
Repeat: 2	0.00322104	0.00978253	8.36449	0.0274019	0.0013621
Repeat: 3	0.0040262	0.010371	8.17609	0.0274496	0.0013665
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.00291882	0.00584632	0.000480804	0.120365	2452.03
Std Dev:	0.000153163	0.000157296	3.83408e-005	0.00103012	7.24711

%RSD:	5.24742	2.69051	7.9743	0.855829	0.295555
Repeat: 1	0.00305877	0.00602255	0.000523891	0.12006	2456
Repeat: 2	0.0029425	0.00579625	0.000468074	0.119522	2456.43
Repeat: 3	0.0027552	0.00572015	0.000450448	0.121513	2443.67
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	681837	19077.5			
Std Dev:	7912.67	62.35			
%RSD:	1.16049	0.326826			
Repeat: 1	680301	19009.6			
Repeat: 2	690404	19090.5			
Repeat: 3	674804	19132.2			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	2.30607	181.371	6.37595	30.6981	9.47859
Std Dev:	0.273695	10.1318	1.37153	0.340371	0.0950773
%RSD:	11.8684	5.58622	21.511	1.10877	1.00307
Repeat: 1	1.99872	185.358	5.72277	30.9862	9.49288
Repeat: 2	2.39604	188.903	7.95198	30.3225	9.37717
Repeat: 3	2.52346	169.853	5.45308	30.7857	9.56571
QC Status Pass/Fail:	Fail	Pass	Fail	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	2.0097	2.1864	2.08506	10.0399	4.27111
Std Dev:	0.129602	0.01115	0.0656627	0.216765	0.115314
%RSD:	6.44882	0.509971	3.1492	2.15903	2.69985
Repeat: 1	2.04773	2.17387	2.06368	10.1803	4.15627
Repeat: 2	1.86534	2.19524	2.03275	10.1492	4.38689
Repeat: 3	2.11603	2.19008	2.15875	9.79028	4.27016
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	8.46495	107.442	2.94312	7.90123	3.27497
Std Dev:	0.354225	2.66644	0.0599797	2.60328	0.0395635
%RSD:	4.1846	2.48174	2.03796	32.9477	1.20806
Repeat: 1	8.391	108.454	2.98531	8.16384	3.23004
Repeat: 2	8.15354	104.418	2.96959	10.3632	3.30462
Repeat: 3	8.85031	109.455	2.87446	5.1766	3.29023
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	6.28766	10.7307	3.30996	6.03516	4.15099
Std Dev:	0.0338979	0.139955	0.00996378	0.100252	0.715642
%RSD:	0.539119	1.30425	0.301024	1.66114	17.2403
Repeat: 1	6.29668	10.5692	3.31604	5.92504	3.32731
Repeat: 2	6.25016	10.8073	3.29846	6.05931	4.62039
Repeat: 3	6.31613	10.8157	3.31538	6.12113	4.50525
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Fail
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	13.6892	2.71817	34.18	19.8265	7.49526
Std Dev:	0.704661	1.45189	22.7101	0.016135	0.0519753
%RSD:	5.14755	53.4144	66.4427	0.0813811	0.693442

Repeat: 1	14.3107	4.21246	60.3503	19.8287	7.55526
Repeat: 2	12.9236	1.31276	22.5387	19.8094	7.46412
Repeat: 3	13.8334	2.6293	19.651	19.8414	7.46639
QC Status Pass/Fail:	Fail	Fail	Fail	Pass	Fail
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	8.9413	10.8222	11.7529	11.2087	2452.03
Std Dev:	0.646073	0.211254	0.83522	0.0953374	7.24711
%RSD:	7.22572	1.95203	7.10649	0.850566	0.295555
Repeat: 1	9.53262	11.0588	12.6914	11.1803	2456
Repeat: 2	9.03954	10.7556	11.4762	11.1308	2456.43
Repeat: 3	8.25173	10.6524	11.0912	11.315	2443.67
QC Status Pass/Fail:	Pass	Fail	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	681837	19077.5			
Std Dev:	7912.67	62.35			
%RSD:	1.16049	0.326826			
Repeat: 1	680301	19009.6			
Repeat: 2	690404	19090.5			
Repeat: 3	674804	19132.2			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2452.03	681837	19077.5
Std Dev:	7.24711	7912.67	62.35
%RSD:	0.295555	1.16049	0.326826
Repeat: 1	2456	680301	19009.6
Repeat: 2	2456.43	690404	19090.5
Repeat: 3	2443.67	674804	19132.2

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25301-CCVA	9/9/2016 8:02:00PM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.0249749	0.400708	0.443805	0.0179769	15.2549
Std Dev:	0.000314927	0.000334267	0.00238668	9.43396e-005	0.0782802
%RSD:	1.26098	0.0834191	0.537778	0.524784	0.513146
Repeat: 1	0.0251534	0.400323	0.445653	0.01804	15.2747
Repeat: 2	0.0251601	0.400923	0.44111	0.0180222	15.1687
Repeat: 3	0.0246113	0.400878	0.444652	0.0178684	15.3214
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	2.7122	4.32288	29.59	7.92283	0.0462933
Std Dev:	0.00243777	0.00120438	0.125244	0.0367293	0.000563862
%RSD:	0.0898817	0.0278606	0.423264	0.463589	1.21802
Repeat: 1	2.71435	4.322	29.5981	7.93253	0.0465222
Repeat: 2	2.70956	4.32239	29.4608	7.88223	0.0467067
Repeat: 3	2.7127	4.32426	29.7109	7.95374	0.045651
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.08921	0.201225	0.181832	0.00752907	0.141911

Std Dev:	0.000806711	0.000408825	0.000216142	0.00011827	0.000515251
%RSD:	0.904283	0.203168	0.118869	1.57085	0.363081
Repeat: 1	0.0896652	0.201695	0.182063	0.00763404	0.14243
Repeat: 2	0.0896863	0.201033	0.181798	0.00755224	0.141902
Repeat: 3	0.0882786	0.200948	0.181635	0.00740093	0.1414
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.329045	4.09901	1.92563	4.50652	1.87736
Std Dev:	0.00179977	0.0199089	0.0114968	0.0223957	0.00768401
%RSD:	0.546967	0.485699	0.597042	0.496961	0.409298
Repeat: 1	0.329789	4.11231	1.9385	4.51075	1.87785
Repeat: 2	0.330353	4.07612	1.92199	4.48232	1.86945
Repeat: 3	0.326992	4.10861	1.91639	4.5265	1.88479
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.869398	0.479288	289.528	1.48695	1.98506
Std Dev:	0.00323265	0.00249751	2.63898	0.00731604	0.0105215
%RSD:	0.371827	0.521089	0.911475	0.492016	0.530032
Repeat: 1	0.870102	0.477476	289.169	1.48202	1.99625
Repeat: 2	0.865871	0.47825	287.087	1.48348	1.98358
Repeat: 3	0.87222	0.482137	292.329	1.49536	1.97536
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.240026	0.726531	0.0506221	11.3431	2438.99
Std Dev:	0.00046657	0.00481713	0.000617391	0.0389755	9.26482
%RSD:	0.194383	0.663031	1.21961	0.343605	0.379863
Repeat: 1	0.239491	0.727161	0.050883	11.3646	2434.54
Repeat: 2	0.240241	0.72143	0.0510663	11.2981	2449.64
Repeat: 3	0.240347	0.731003	0.0499171	11.3666	2432.79
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	679888	18885.4			
Std Dev:	6618.59	36.0608			
%RSD:	0.973482	0.190946			
Repeat: 1	676407	18843.9			
Repeat: 2	675737	18902.9			
Repeat: 3	687521	18909.3			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	472.1	9528.36	995.01	1044.57	905.581
Std Dev:	6.06113	8.16557	5.2868	5.5282	4.59742
%RSD:	1.28386	0.0856975	0.531332	0.529232	0.507676
Repeat: 1	475.527	9518.96	999.101	1048.26	906.773
Repeat: 2	475.671	9533.75	989.04	1047.24	900.505
Repeat: 3	465.102	9532.36	996.888	1038.21	909.466
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	1049.33	52.027	1055.65	938.251	1118.18
Std Dev:	0.9436	0.0144969	4.475	4.3686	13.6898
%RSD:	0.0899239	0.0278642	0.423908	0.465612	1.2243
Repeat: 1	1050.16	52.0164	1055.95	939.411	1123.73
Repeat: 2	1048.3	52.0211	1051.04	933.419	1128.21
Repeat: 3	1049.53	52.0435	1059.98	941.922	1102.58
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Fail
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**

Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	1003.26	10512.2	9.47986	989.574	49.5344
Std Dev:	9.14988	21.3578	0.0109066	15.4567	0.179773
%RSD:	0.912018	0.203171	0.11505	1.56195	0.362925
Repeat: 1	1008.42	10536.8	9.49153	1003.29	49.7158
Repeat: 2	1008.66	10502.3	9.47814	992.604	49.5311
Repeat: 3	992.692	10497.7	9.46992	972.827	49.3563
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	946.148	1034.55	47.6528	922.067	917.349
Std Dev:	5.17649	5.0207	0.287912	4.60262	3.73596
%RSD:	0.547111	0.485304	0.604186	0.499163	0.407256
Repeat: 1	948.29	1037.9	47.9753	922.939	917.584
Repeat: 2	949.911	1028.78	47.5616	917.091	913.501
Repeat: 3	940.245	1036.97	47.4216	926.172	920.961
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	965.283	1050.73	4333.61	997.721	998.441
Std Dev:	3.93069	5.58584	40.4557	4.90651	5.2598
%RSD:	0.407206	0.531614	0.933533	0.491772	0.526801
Repeat: 1	965.957	1046.68	4328.1	994.414	1004.03
Repeat: 2	961.059	1048.41	4296.19	995.391	997.7
Repeat: 3	968.833	1057.1	4376.54	1003.36	993.591
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1003.76	966.804	1116.34	1055.73	2438.99
Std Dev:	1.97347	6.33799	13.6034	3.64719	9.26482
%RSD:	0.196607	0.655561	1.21857	0.345467	0.379863
Repeat: 1	1001.5	967.642	1122.09	1057.73	2434.54
Repeat: 2	1004.67	960.088	1126.13	1051.52	2449.64
Repeat: 3	1005.13	972.681	1100.81	1057.94	2432.79
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	679888	18885.4			
Std Dev:	6618.59	36.0608			
%RSD:	0.973482	0.190946			
Repeat: 1	676407	18843.9			
Repeat: 2	675737	18902.9			
Repeat: 3	687521	18909.3			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2438.99	679888	18885.4
Std Dev:	9.26482	6618.59	36.0608
%RSD:	0.379863	0.973482	0.190946
Repeat: 1	2434.54	676407	18843.9
Repeat: 2	2449.64	675737	18902.9
Repeat: 3	2432.79	687521	18909.3

Sample Name	Acquisition Date	Sample type	Correction Factor
6I25301-CCBA	9/9/2016 8:06:26PM	QC	1.00

Valid	Analyst Name	Method Name
Yes	rburr	6500DUOBB (1136)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.000437344	0.000483688	-0.00497901	9.27522e-005	0.0287904
Std Dev:	3.38183e-005	0.000321536	0.000245873	3.17685e-006	0.00110171
%RSD:	7.73265	66.476	4.93819	3.42509	3.82665
Repeat: 1	0.000466566	0.000711537	-0.00488352	9.59438e-005	0.0276447
Repeat: 2	0.0004003	0.000115895	-0.0052583	9.27224e-005	0.0298421
Repeat: 3	0.000445165	0.000623632	-0.0047952	8.95903e-005	0.0288844
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	0.00113521	0.000958728	0.0333961	0.0191816	0.000193085
Std Dev:	0.000120216	0.000360978	0.00185218	0.000924625	1.88486e-005
%RSD:	10.5897	37.6518	5.54612	4.82038	9.76182
Repeat: 1	0.00126958	0.00137494	0.0344031	0.0197857	0.000210083
Repeat: 2	0.00103784	0.000731178	0.0345266	0.0181171	0.000172814
Repeat: 3	0.00109822	0.000770061	0.0312585	0.0196418	0.000196358
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.000684255	-0.000111846	-0.00646656	-2.83244e-005	-7.59213e-005
Std Dev:	2.7907e-005	7.42655e-005	0.000305523	1.19534e-005	3.54362e-005
%RSD:	4.07845	66.4	4.72466	42.2018	46.6749
Repeat: 1	0.00071648	-0.000188616	-0.00681813	-2.86946e-005	-4.50365e-005
Repeat: 2	0.000668149	-4.03678e-005	-0.00626547	-1.61901e-005	-6.81188e-005
Repeat: 3	0.000668138	-0.000106553	-0.00631607	-4.00883e-005	-0.000114609
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	9.17878e-005	0.00205772	0.0218934	0.0265511	-0.00611683
Std Dev:	2.27805e-005	0.00163978	0.000556275	0.000270282	0.00107778
%RSD:	24.8187	79.689	2.54084	1.01797	17.62
Repeat: 1	7.90805e-005	0.00395106	0.022162	0.0266165	-0.00644754
Repeat: 2	7.81953e-005	0.00112946	0.0212538	0.0267827	-0.00491244
Repeat: 3	0.000118087	0.00109265	0.0222643	0.0262541	-0.00699051
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	-0.00593181	0.00841716	8.66712	-0.00121096	-0.0119268
Std Dev:	0.00123322	0.0012549	2.5942	0.000566257	0.000571602
%RSD:	20.7899	14.9088	29.9315	46.7609	4.7926
Repeat: 1	-0.004654	0.00785069	11.3852	-0.000558591	-0.0115647
Repeat: 2	-0.00711498	0.00754536	8.39842	-0.00157528	-0.0116298
Repeat: 3	-0.00602644	0.00985543	6.21773	-0.00149902	-0.0125857
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.000716872	-0.00179001	-6.83431e-005	0.00562944	2413.76
Std Dev:	5.83882e-005	0.000535679	1.51041e-005	0.00046195	2.92379
%RSD:	8.14485	29.9261	22.1004	8.20596	0.12113
Repeat: 1	0.000777877	-0.00126927	-8.47741e-005	0.00539584	2410.51
Repeat: 2	0.000661511	-0.00233948	-5.5063e-005	0.00616154	2416.17
Repeat: 3	0.000711228	-0.00176128	-6.51923e-005	0.00533095	2414.59
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	675564	19155.5			
Std Dev:	5034.41	61.5863			
%RSD:	0.745215	0.321507			
Repeat: 1	673993	19201.7			

Repeat: 2	681197	19179.3
Repeat: 3	671503	19085.6

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.481402	-4.9899	1.12356	0.395946	0.0827025
Std Dev:	0.643504	7.75418	0.545504	0.185549	0.0663459
%RSD:	133.673	155.398	48.5514	46.8623	80.2224
Repeat: 1	0.074276	0.489291	1.33432	0.582085	0.0136489
Repeat: 2	-1.18646	-13.8623	0.504119	0.39476	0.14596
Repeat: 3	-0.332024	-1.59669	1.53224	0.210992	0.088498
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.212746	0.00486727	-0.0100045	0.231669	-0.282727
Std Dev:	0.0468717	0.00434502	0.0661674	0.109875	0.457709
%RSD:	22.0318	89.2701	661.377	47.4274	161.891
Repeat: 1	0.265119	0.00987718	0.0261805	0.303827	0.130011
Repeat: 2	0.174738	0.0021283	0.0301791	0.105217	-0.774986
Repeat: 3	0.19838	0.00259633	-0.0863731	0.285963	-0.203206
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	-1.19244	1.51146	-0.0217648	2.84402	-0.0193655
Std Dev:	0.316297	3.872	0.0154168	1.56219	0.0123659
%RSD:	26.5253	256.177	70.8336	54.9289	63.8555
Repeat: 1	-0.827207	-2.49144	-0.0395055	2.79601	-0.00858662
Repeat: 2	-1.375	5.23772	-0.0116179	4.42967	-0.0166445
Repeat: 3	-1.3751	1.78809	-0.0141711	1.30639	-0.0328653
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	0.206383	0.774533	-0.0219771	0.35723	0.087354
Std Dev:	0.0655204	0.413441	0.0139307	0.0555557	0.521335
%RSD:	31.7471	53.3794	63.3872	15.5518	596.807
Repeat: 1	0.169921	1.2519	-0.015249	0.37073	-0.0713293
Repeat: 2	0.167204	0.540535	-0.0379948	0.404792	0.669592
Repeat: 3	0.282023	0.531161	-0.0126876	0.296169	-0.336201
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	2.69623	-1.72626	27.1704	0.635994	0.850298
Std Dev:	1.37998	2.80641	39.7694	0.379585	0.285711
%RSD:	51.1816	162.571	146.37	59.6836	33.6013
Repeat: 1	4.12755	-2.99328	68.8389	1.0733	1.0312
Repeat: 2	1.37408	-3.67577	23.0515	0.391755	0.998772
Repeat: 3	2.58708	1.49026	-10.3792	0.442923	0.520919
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	-0.132478	0.691555	-0.270295	0.508047	2413.76
Std Dev:	0.245548	0.707384	0.325544	0.0440711	2.92379
%RSD:	185.35	102.289	120.44	8.6746	0.12113

Repeat: 1	0.123824	1.37918	-0.624984	0.484735	2410.51
Repeat: 2	-0.365633	-0.0340574	0.0148707	0.558878	2416.17
Repeat: 3	-0.155626	0.729543	-0.20077	0.480528	2414.59
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	675564	19155.5			
Std Dev:	5034.41	61.5863			
%RSD:	0.745215	0.321507			
Repeat: 1	673993	19201.7			
Repeat: 2	681197	19179.3			
Repeat: 3	671503	19085.6			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2413.76	675564	19155.5
Std Dev:	2.92379	5034.41	61.5863
%RSD:	0.12113	0.745215	0.321507
Repeat: 1	2410.51	673993	19201.7
Repeat: 2	2416.17	681197	19179.3
Repeat: 3	2414.59	671503	19085.6

PREPARATION BENCH SHEET

6H29010

Empirical Laboratories, LLC

Printed: 9/21/2016 2:21:36PM

Instrument: ME-ICP

Matrix: Solid **Prepared using: METALS - MET_3050B** **(No Surrogate)**

Lab Number	Cont ID	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	PH	Comments (Sample; Analysis; Extraction)
1608229-01	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.05	100.00					NA	see versions
1608229-02	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.03	100.00					NA	see versions
1608229-03	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.00	100.00					NA	see versions
1608229-04	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.03	100.00					NA	see versions
1608229-05	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.03	100.00					NA	see versions
1608229-06	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.04	100.00					NA	see versions
1608229-07	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.03	100.00					NA	see versions
1608229-08	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.05	100.00					NA	see versions
1608229-09	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.02	100.00					NA	see versions
1608229-10	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.00	100.00					NA	see versions
1608229-11	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.02	100.00					NA	see versions
1608229-12	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.02	100.00					NA	see versions
6H29010-BLK1		MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.00	100.00					NA	
6H29010-BS1		MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.00	100.00	16F0439		100		NA	

PREPARATION BENCH SHEET

6H29010

Empirical Laboratories, LLC

Printed: 9/21/2016 2:21:36PM

Instrument: ME-ICP

Matrix: Solid **Prepared using: METALS - MET_3050B** **(No Surrogate)**

Lab Number	Cont ID	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	PH	Comments (Sample; Analysis; Extraction)

Reagents Used:

Standard	Description
16G0295	Hydrochloric Acid
16F0401	Hydrogen Peroxide 30%
16I0030	Metals (PTFE Boiling Stones)
16F0730	Nitric acid

Jocelyn Bryant 9/8/2016

6H29010

26.1 Circle Sheet for Eppendorfs and Solutions

ICP Metals: Circle Applicable Digestion/Spike and pipette option then staple to bench sheet

Reminder: Make sure pipettes are verified daily at volume of use for QSM5 batches!

Soil 2g-100mL (3050B)

Amount	BS/MS/MSD Standards 6010 Soil
0.10mL	#01 CLP-CAL-1 (50-33000ug/mL)
0.10mL	SM-391-001 (125->1000ug/mL)
Circle	0.1ml Eppendorf 148897Z or 250847
	1mL FinnPipette FJ61963
Amount	**Reagents for Digestion 6010 Soil**
5mL	HNO3
5mL	HNO3
2mL	DI H2O
3mL	H2O2
3mL	H2O2
3mL	H2O2
2.5mL	DI H2O
2.5mL	Conc HCl
10mL	DI H2O

Soil 1g-200mL (3050B)

Amount	BS/MS/MSD Standards 6010 Soil
0.20mL	#01 CLP-CAL-1 (50-33000ug/mL)
0.20mL	SM-391-001 (125->1000ug/mL)
Circle	0.1ml Eppendorf 148897Z or 250847
	1mL FinnPipette FJ61963
5mL	HNO3
5mL	HNO3
2mL	DI H2O
3mL	H2O2
3mL	H2O2
3mL	H2O2
2.5mL	DI H2O
2.5mL	Conc HCl
10mL	DI H2O

TCLP 5mL-50mL (3010A)

Amount	MS/MSD Standards 6010 TCLP
5.0mL	Silver TCLP Spike
0.50mL	Main TCLP Spike
Circle	1mL Transfer 06M15889 or FinnPipette FJ61963
Circle	5mL FinnPipette KU04206 or Transfer 04M88005
Amount	**BS Standards TCLP 6010**
50mL	Water LCS (0.050-5.0ug/mL)
Amount	**Reagents for Digestion TCLP**
1.5mL	HNO3
1.5mL	HNO3
2.5mL	HCl

Water 100mL-25mL (3005A)

Amount	MS/MSD Standards 6010 Water
0.025m	#01 CLP-CAL-1 (50-33000ug/mL)
0.025m	#02 CAL-CAL-1 Solution B (250ug/mL)
0.0125m	#03 CLP-CAL-2 (1000ug/mL)
0.0125m	#04 CLP-CAL-3 (500ug/mL-1000ug/mL)
0.025m	#05 Boron (1000ug/mL)
0.025m	#06 Tin (1000ug/mL)
0.025m	#07 Molybdenum (1000ug/mL)
0.025m	#08 Titanium (1000ug/mL)
0.025m	#09 Strontium (1000ug/mL)
0.025m	#10 Lithium (1000ug/mL)
Circle	0.1ml Eppendorf 148897Z or 250847
Amount	**BS Standards 6010 Water**
5 ~~2~~.0mL	Water LCS (0.050-5.0ug/mL)
0.5mL	Salt Spike (25ug/mL)
Circle	1mL Transfer 06M15889 or FinnPipette FJ61963
Circle	5mL FinnPipette KU04206 or Transfer 04M88005
Amount	**Reagents for Digestion Low Water**
0.5mL	HNO3
1.25mL	HCl

Water 50mL-50mL (3005A)

Amount	MS/MSD Standards 6010 Water
0.050m	#01 CLP-CAL-1 (50-33000ug/mL)
0.050m	SM-391-001 (125->1000ug/mL)
Circle	0.1ml Eppendorf 148897Z or 250847
Amount	**BS Standards 6010 Water**
50mL	Water LCS (0.050-5.0ug/mL)
Amount	**Reagents for Digestion 6010 Water**
1.0mL	HNO3
2.5mL	HCl

Water 50mL-50mL (200.7)

Amount	MS/MSD Standards 6010 Water
0.050m	#01 CLP-CAL-1 (50-33000ug/mL)
0.050m	SM-391-001 (125->1000ug/mL)
Circle	0.1ml Eppendorf 148897Z or 250847
Amount	**BS Standards 6010 Water**
50mL	Water LCS (0.050-5.0ug/mL)
Amount	**Reagents for Digestion 6010 Water**
0.50mL	HNO3
0.25mL	HCl

9-9-16 RB

(1)

	Rack	Row	Col	Type	Samplename	Comment	Check	Check Table
1	1	1	1	QC	6I25301-ICV1	16I0160	☒	ICV
2	1	2	1	QC	6I25301-ICB1		☒	ICB
3	1	3	1	QC	6I25301-CRL	RLSTDA	☒	RLSTD-A
4	1	4	1	Unk	6I25301-IFA		☐	
5	1	5	1	QC	6I25301-IFB		☒	ICSAB
6	1	6	1	Unk	RINSE		☒	SAMPLE
7	1	7	1	QC	6I25301-CCV1	16I0161	☒	CCV
8	1	8	1	QC	6I25301-CCB1		☒	CCB
9	1	9	1	QC	6I08004-BLK1	PBW090816 TCLP	☒	PREPBLANK
10	1	10	1	QC	6I08004-BS1	LCSW090816 TCLP	☒	2007LCS
11	1	11	1	Unk	1609017-02	TCLP	☒	SAMPLE
12	1	12	1	Unk	6I08004-MS1	TCLP	☒	SAMPLE
13	1	1	2	Unk	6I08004-MSD1	TCLP	☒	SAMPLE
14	1	2	2	Unk	1609017-03	TCLP	☒	SAMPLE
15	1	3	2	Unk	1609017-04	TCLP	☒	SAMPLE
16	1	4	2	Unk	1609019-01	TCLP	☒	SAMPLE
17	1	5	2	Unk	1609020-01	TCLP	☒	SAMPLE
18	1	6	2	Unk	1609021-01	TCLP	☒	SAMPLE
19	1	7	2	Unk	1609022-01	TCLP	☒	SAMPLE
20	1	8	2	Unk	1609024-01	TCLP	☒	SAMPLE
21	1	9	2	Unk	1608148-15RE2@25X	LL H20 X25 Mg	☒	SAMPLE
22	1	10	2	Unk	1608163-12RE1@25X	LL H20 X25 Mg	☒	SAMPLE
23	1	11	2	QC	6I25301-CCV2 -13RE1	16I0161	☒	CCV
24	1	12	2	QC	6I25301-CCB2 9-9-16 RB		☒	CCB
25	1	1	3	Unk	1609026-01	TCLP	☒	SAMPLE
26	1	2	3	Unk	1609027-01	TCLP	☒	SAMPLE
27	1	3	3	Unk	1609028-01	TCLP	☒	SAMPLE
28	1	4	3	Unk	1609033-01	TCLP	☒	SAMPLE
29	1	5	3	QC	6I08003-BLK1	PBW090816 200.7	☒	PREPBLANK
30	1	6	3	QC	6I08003-BS1	LCSW090816 200.7	☒	2007LCS
31	1	7	3	Unk	1609037-01@5X	200.7	☒	SAMPLE
32	1	8	3	Unk	6I08003-MS1@5X	200.7	☒	SAMPLE
33	1	9	3	Unk	6I08003-MSD1@5X	200.7	☒	SAMPLE
34	1	10	3	Unk	1609037-02@5X	200.7	☒	SAMPLE
35	1	11	3	Unk	1609037-03@5X	200.7	☒	SAMPLE
36	1	12	3	Unk	1609037-04@5X	200.7	☒	SAMPLE
37	1	1	4	Unk	1609037-05@5X	200.7	☒	SAMPLE
38	1	2	4	Unk	1609037-06@5X	200.7	☒	SAMPLE
39	1	3	4	QC	6I25301-CCV3	16I0161	☒	CCV
40	1	4	4	QC	6I25301-CCB3		☒	CCB
41	1	5	4	Unk	1609037-07@5X	200.7	☒	SAMPLE
42	1	6	4	Unk	1609037-08@5X	200.7	☒	SAMPLE
43	1	7	4	Unk	1609037-09@5X	200.7	☒	SAMPLE
44	1	8	4	Unk	1609037-10@5X	200.7	☒	SAMPLE
45	1	9	4	Unk	1608218-01RE1@5X	LL H20 X5	☒	SAMPLE
46	1	10	4	Unk	1608218-02RE1@5X	LL H20 X5	☒	SAMPLE
47	1	11	4	Unk	1608218-03RE1@5X	LL H20 X5	☒	SAMPLE
48	1	12	4	Unk	1608237-01RE1@5X	LL H20 X5	☒	SAMPLE
49	1	1	5	Unk	1608237-02RE1@5X	LL H20 X5	☒	SAMPLE
50	1	2	5	Unk	1608237-03@5X	LL H20 X5	☒	SAMPLE
51	1	3	5	QC	6I25301-CCV4	16I0161	☒	CCV
52	1	4	5	QC	6I25301-CCB4		☒	CCB
53	1	5	5	QC	6I07003-BLK1	PBS090816 1g->200ml	☒	PREPBLANK
54	1	6	5	QC	6I07003-BS1	LCSS090816 1g->200ml	☒	2007LCS
55	1	7	5	Unk	1609032-01		☒	SAMPLE
56	1	8	5	Unk	1609032-02		☒	SAMPLE
57	1	9	5	Unk	1609032-03		☒	SAMPLE
58	1	10	5	Unk	1609032-04		☒	SAMPLE
59	1	11	5	Unk	1609032-05		☒	SAMPLE
60	1	12	5	Unk	1609032-06		☒	SAMPLE
61	2	1	1	Unk	1609032-07		☒	SAMPLE

	Rack	Row	Col	Type	Samplename	Comment	Check	Check Table
62	2	2	1	Unk	1609032-08		☒	SAMPLE
63	2	3	1	Unk	1609032-09		☒	SAMPLE
64	2	4	1	Unk	1609032-10		☒	SAMPLE
65	2	5	1	QC	6I25301-CCV5	16I0161	☒	CCV
66	2	6	1	QC	6I25301-CCB5		☒	CCB
67	2	7	1	Unk	1609032-11		☒	SAMPLE
68	2	8	1	Unk	1609032-12		☒	SAMPLE
69	2	9	1	Unk	1609032-13		☒	SAMPLE
70	2	10	1	Unk	1609032-14		☒	SAMPLE
71	2	11	1	Unk	1609032-15		☒	SAMPLE
72	2	12	1	Unk	6I07003-MS1		☒	SAMPLE
73	2	1	2	Unk	6I07003-MSD1		☒	SAMPLE
74	2	2	2	Unk	6I07003-PS1		☒	SAMPLE
75	2	3	2	Unk	6I07003-SRL1@5X	X5 SRL	☒	SAMPLE
76	2	4	2	Unk	1608237-04RE1@10X	LL H20 X10	☒	SAMPLE
77	2	5	2	Unk	6I06004-MS4@10X	LL H20 X10	☒	SAMPLE
78	2	6	2	Unk	6I06004-MSD4@10X	LL H20 X10	☒	SAMPLE
79	2	7	2	Unk	6I06004-SRL@50X SRL9	LL H20 X50	☒	SAMPLE
80	2	8	2	Unk	1608237-05RE1@5X	LL H20 X5	☒	SAMPLE
81	2	9	2	QC	6I25301-CCV6	16I0161	☒	CCV
82	2	10	2	QC	6I25301-CCB6		☒	CCB
83	2	11	2	QC	6H29010-BLK1	PBS090816 2g->100ml	☒	PREPBLANK
84	2	12	2	QC	6H29010-BS1	LCSS090816 2g->100ml	☒	2007LCS
85	2	1	3	Unk	1608229-01@2X		☒	SAMPLE
86	2	2	3	Unk	1608229-02@2X		☒	SAMPLE
87	2	3	3	Unk	1608229-03@2X		☒	SAMPLE
88	2	4	3	Unk	1608229-04@2X		☒	SAMPLE
89	2	5	3	Unk	1608229-05@2X		☒	SAMPLE
90	2	6	3	Unk	1608229-06@2X		☒	SAMPLE
91	2	7	3	Unk	1608229-07@2X		☒	SAMPLE
92	2	8	3	Unk	1608229-08@2X		☒	SAMPLE
93	2	9	3	Unk	1608229-09@2X		☒	SAMPLE
94	2	10	3	Unk	1608229-10@2X		☒	SAMPLE
95	2	11	3	QC	6I25301-CCV7	16I0161	☒	CCV
96	2	12	3	QC	6I25301-CCB7		☒	CCB
97	2	1	4	Unk	1608229-11@2X		☒	SAMPLE
98	2	2	4	Unk	1608229-12@2X		☒	SAMPLE
99	2	3	4	Unk	1608232-04@2X		☒	SAMPLE
100	2	4	4	Unk	1608232-05@2X		☒	SAMPLE
101	2	5	4	Unk	1608232-06@2X		☒	SAMPLE
102	2	6	4	Unk	1608232-07		☒	SAMPLE
103	2	7	4	Unk	6H29010-MS1		☒	SAMPLE
104	2	8	4	Unk	6H29010-MSD1		☒	SAMPLE
105	2	9	4	Unk	6H29010-PS1		☒	SAMPLE
106	2	10	4	Unk	6H29010-SRL1@5X	SRL X5	☒	SAMPLE
107	2	11	4	Unk	1608232-08@2X		☒	SAMPLE
108	2	12	4	Unk	1608232-09@2X		☒	SAMPLE
109	2	1	5	Unk	1608232-10@2X		☒	SAMPLE
110	2	2	5	Unk	1608232-11@2X		☒	SAMPLE
111	2	3	5	QC	6I25301-CCV8	16I0161	☒	CCV
112	2	4	5	QC	6I25301-CCB8		☒	CCB
113	2	5	5	Unk	1608237-06RE1@5X	LL H20 X5	☒	SAMPLE
114	2	6	5	Unk	1608250-01RE1@5X	LL H20 X5	☒	SAMPLE
115	2	7	5	Unk	1608250-02RE1@5X	LL H20 X5	☒	SAMPLE
116	2	8	5	Unk	1608250-03RE1@10X	LL H20 X10	☒	SAMPLE
117	2	9	5	Unk	6I06004-SRL5@50X	LL H20 SRL X50	☒	SAMPLE
118	2	10	5	Unk	1608250-04RE1@5X	LL H20 X10	☒	SAMPLE
119	2	11	5	Unk	1608250-05RE1@5X	LL H20 X5	☒	SAMPLE
120	2	12	5	Unk	1608250-07RE1@5X	LL H20 X5	☒	SAMPLE
121	3	1	1	QC	6I25301-CCV9	16I0161	☒	CCV
122	3	2	1	QC	6I25301-CCB9		☒	CCB

9-9-16 RB (3)

	Rack	Row	Col	Type	Samplename	Comment	Check	Check Table
123	3	3	1	QC	6I25301-CRL		☒	RLSTD-A
124	3	4	1	QC	6I25301-CRL		☒	RLSTD-A
125	3	5	1	QC	6I25301-CCVA	16I0161	☒	CCV
126	3	6	1	QC	6I25301-CCBA		☒	CCB

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: CH2M Hill, Inc.

SDG No.: 1608229

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 5/5/2016

Analyte	Wave-length (nm)	Interelement Correction Factors for: Al	Ca	Fe	Mg	Ag
Aluminum	396.152	0.000000	1.585975	0.000043	0.000000	0.000000
Antimony	206.833	0.000027	0.000000	0.00003	0.000000	0.000000
Arsenic	189.042	-0.000019	0.000000	-0.00011	0.000000	0.000000
Barium	233.527	0.000000	0.000000	0.000004	0.000000	0.000000
Beryllium	313.042	0.000000	0.000000	0.000000	0.000000	0.000000
Cadmium	214.438	0.000004	0.003803	0.000025	0.000000	0.000000
Calcium	317.933	0.000000	0.000000	0.000000	0.000000	0.000000
Chromium	267.716	0.000000	0.000000	0.00001	0.005608	0.000000
Cobalt	228.616	0.000000	0.000000	0.000021	0.000000	0.000000
Copper	324.754	0.000003	0.000000	-0.000044	0.001001	0.000000
Iron	261.187	0.000000	0.000000	0.000000	0.000000	0.000000
Lead	220.353	-0.000208	0.000000	0.000022	0.000000	0.000000
Magnesium	279.079	0.000000	0.000000	-0.000002	0.000000	0.000000
Manganese	257.610	0.000000	0.000000	0.000022	0.000000	0.000000
Molybdenum	202.030	0.000000	0.000000	-0.000011	0.000000	0.000000
Nickel	231.604	0	0.000000	0.000025	0.002042	0.000000
Potassium	766.490	0.000000	0.000000	0.000000	0.000000	0.000000
Selenium	196.090	0.000015	-0.000251	0.00002	0.000000	0.000000
Silver	328.068	0.000000	0.000000	0.000002	0.000000	0.000000
Sodium	589.592	0.000000	0.000000	0.000000	0.000000	0.000000
Thallium	190.856	-0.000005	0.000000	0.000006	0.000000	0.000000
Vanadium	292.402	0.000000	0.000000	-0.000011	0.000000	0.000000
Zinc	206.200	0.000002	0.000827	0	0.000000	0.000000

Comments:

FORM XA-IN

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: CH2M Hill, Inc.

SDG No.: 1608229

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 5/5/2016

Analyte	Wave-length (nm)	Interelement Correction Factors for: As	B	Ba	Be	Cd
Aluminum	396.152	0.000000	0.000000	0.000000	0.000000	0.000000
Antimony	206.833	0.000000	0.000000	0.000000	0.000000	0.000000
Arsenic	189.042	0.000000	0.000000	0.000000	0.000000	0.000000
Barium	233.527	0.000000	0.000000	0.000000	0.000000	0.000000
Beryllium	313.042	0.000000	0.000000	0.000000	0.000000	0.000000
Cadmium	214.438	-0.00125	0.000000	0.000000	0.000000	0.000000
Calcium	317.933	0.000000	0.000000	0.000000	0.000000	0.000000
Chromium	267.716	0.000000	0.000000	0.000000	0.000000	0.000043
Cobalt	228.616	0.000000	0.000000	0.000000	0.000000	0.000000
Copper	324.754	0.000000	0.000000	0.000000	0.000000	0.000000
Iron	261.187	0.000000	0.000000	0.000000	0.000000	0.000000
Lead	220.353	0.000000	0.000000	0.000000	0.000000	0.000000
Magnesium	279.079	0.000000	0.000000	0.000000	0.000000	0.000000
Manganese	257.610	0.000000	0.000000	0.000000	0.000000	0.000000
Molybdenum	202.030	0.000000	0.000000	0.000000	0.000000	0.000000
Nickel	231.604	0.000000	0.000000	0.000000	-0.000039	0.000000
Potassium	766.490	0.000000	0.000000	0.000000	0.000000	0.000000
Selenium	196.090	0.000000	0.000000	0.000000	0.000000	0.000000
Silver	328.068	0.000000	0.000000	0.000000	0.000000	0.000000
Sodium	589.592	0.000000	0.000000	0.000000	0.000000	0.000000
Thallium	190.856	0.000000	0.000000	0.000000	0.000000	0.000000
Vanadium	292.402	0.000000	0.000000	0.000000	0.000000	0.000000
Zinc	206.200	0.000000	0.000000	0.000000	0.001494	0.000729

Comments:

FORM XA-IN

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: CH2M Hill, Inc.

SDG No.: 1608229

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 5/5/2016

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		Co	Cr	Cu	K	Mn
Aluminum	396.152	0.000000	0.000000	0.000000	0.000000	0.000000
Antimony	206.833	0.000000	0.023282	0.000000	0.000000	0.000000
Arsenic	189.042	0.000000	0.000195	0.000000	0.000000	0.000000
Barium	233.527	0.000000	0.000000	0.000000	0.000000	0.000000
Beryllium	313.042	0.000000	0.000000	0.000000	0.000000	0.000000
Cadmium	214.438	0.000000	-0.00009	0.000000	0.000000	0.000000
Calcium	317.933	0.000000	0.000000	0.000000	0.000000	0.000000
Chromium	267.716	0.000000	0.000000	0.000000	0.000000	0.000548
Cobalt	228.616	0.000000	-0.000032	0.000000	0.000000	0.000000
Copper	324.754	0.000000	0.000000	0.000000	0.000000	0.000000
Iron	261.187	0.000000	-0.00372	0.000000	0.000000	-0.004555
Lead	220.353	0.000000	0.000000	0.0003	0.000000	0.000116
Magnesium	279.079	0.000000	0.000000	0.000000	0.000000	0.000000
Manganese	257.610	0.000000	0.000000	0.000000	0.000000	0.000000
Molybdenum	202.030	0.000000	0.000000	0.000000	0.000000	0.000000
Nickel	231.604	-0.000769	-0.000079	-0.000071	0.000000	-0.000125
Potassium	766.490	0.000000	0.000000	0.000000	0.000000	0.000000
Selenium	196.090	0.000000	0.000000	0.000000	0.000000	0.000454
Silver	328.068	0.000000	0.000000	0.000000	0.000000	0.000113
Sodium	589.592	0.000000	0.000000	0.000000	0.000000	0.000000
Thallium	190.856	0.000392	0.000203	0.000000	0.000000	0.00065
Vanadium	292.402	0.000000	-0.009679	0.000000	0.000000	-0.000271
Zinc	206.200	0.000000	0.000078	0.001561	0.000000	0.000797

Comments:

FORM XA-IN

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: CH2M Hill, Inc.

SDG No.: 1608229

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 5/5/2016

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		Mo	Na	Ni	Pb	Sb
Aluminum	396.152	0.032885	0.000000	0.000000	0.000000	0.000000
Antimony	206.833	-0.002824	0.000000	0.000000	0.000000	0.000000
Arsenic	189.042	0.002574	0.000000	0.000000	0.000000	0.000000
Barium	233.527	0.000000	0.000000	0.000000	0.000000	0.000000
Beryllium	313.042	-0.000025	0.000000	0.000000	0.000000	0.000000
Cadmium	214.438	-0.000105	0.000000	0.000000	0.000000	0.000000
Calcium	317.933	0.000000	0.000000	0.000000	0.000000	0.000000
Chromium	267.716	0.000000	0.000000	0.000000	0.000000	0.000000
Cobalt	228.616	-0.001642	0.000000	0.000049	0.000000	0.000000
Copper	324.754	0.000505	0.000000	0.000000	0.000000	0.000000
Iron	261.187	0.000000	0.000000	-0.000713	0.000000	0.000000
Lead	220.353	-0.001205	0.000000	0.000325	0.000000	0.000000
Magnesium	279.079	-0.000013	0.000000	0.000000	0.000000	0.000000
Manganese	257.610	0.000000	0.000000	0.000000	0.000000	0.000000
Molybdenum	202.030	0.000000	0.000000	0.000000	0.000000	0.000000
Nickel	231.604	-0.000442	0.000000	0.000000	0.000017	0.000051
Potassium	766.490	0.000000	0.000000	0.000000	0.000000	0.000000
Selenium	196.090	-0.000137	0.000000	-0.000022	0.000000	0.000000
Silver	328.068	-0.000046	0.000000	0.000000	0.000000	0.000000
Sodium	589.592	0.000000	0.000000	0.000000	0.000000	0.000000
Thallium	190.856	0.000023	0.000000	0.000000	0.000000	0.000000
Vanadium	292.402	-0.000106	0.000000	0.000000	0.000000	0.000000
Zinc	206.200	0.000173	0.000000	0.000024	0.000000	0.000417

Comments:

FORM XA-IN

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: CH2M Hill, Inc.

SDG No.: 1608229

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 5/5/2016

Analyte	Wave-length (nm)	Interelement Correction Factors for: Se	Sn	Ti	Tl	V
Aluminum	396.152	0.000000	0.000000	0.000000	0.000000	0.000000
Antimony	206.833	0.000000	0.000000	0.000252	0.000000	0.000048
Arsenic	189.042	0.000000	0.000000	-0.00021	0.000000	0.000084
Barium	233.527	0.000000	0.000000	0.000000	0.000000	-0.003424
Beryllium	313.042	0.000000	0.000000	-0.000945	0.000000	0.000417
Cadmium	214.438	0.000000	0.000000	0.000000	0.000000	0.00003
Calcium	317.933	0.000000	0.000000	0.000000	0.000000	0.000000
Chromium	267.716	0.000000	0.000000	0.000123	0.000000	-0.000018
Cobalt	228.616	0.000000	0.000000	0.001863	0.000000	0.000000
Copper	324.754	0.000000	0.000000	-0.000635	0.000000	0.000000
Iron	261.187	0.000000	0.000000	0.000000	0.000000	0.000000
Lead	220.353	0.000000	0.000000	-0.000015	0.000000	-0.00007
Magnesium	279.079	0.000000	0.000000	0.000000	0.000000	0.000000
Manganese	257.610	0.000000	0.000000	0.000000	0.000000	0.000000
Molybdenum	202.030	0.000000	0.000000	0.000000	0.000000	-0.000155
Nickel	231.604	0.000000	0.000000	-0.000038	0.000281	-0.000098
Potassium	766.490	0.000000	0.000000	0.000000	0.000000	0.000000
Selenium	196.090	0.000000	0.000000	-0.000141	0.000000	-0.000203
Silver	328.068	0.000000	0.000000	-0.000061	0.000000	-0.00427
Sodium	589.592	0.000000	0.000000	0.000000	0.000000	0.000000
Thallium	190.856	0.000000	0.000000	-0.002366	0.000000	-0.002503
Vanadium	292.402	0.000000	0.000000	0.000682	0.000000	0.000000
Zinc	206.200	0.000000	0.000000	0.000000	0.000000	-0.000257

Comments:

FORM XA-IN

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: CH2M Hill, Inc.

SDG No.: 1608229

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 5/5/2016

Analyte	Wave-length (nm)	Interelement Correction Factors for: Zn				
Aluminum	396.152	0.000000				
Antimony	206.833	0.000000				
Arsenic	189.042	-0.000011				
Barium	233.527	0.000000				
Beryllium	313.042	0.000000				
Cadmium	214.438	0.000000				
Calcium	317.933	0.000000				
Chromium	267.716	0.000000				
Cobalt	228.616	0.000000				
Copper	324.754	0.000000				
Iron	261.187	0.000000				
Lead	220.353	0.000000				
Magnesium	279.079	0.000000				
Manganese	257.610	0.000000				
Molybdenum	202.030	-0.000269				
Nickel	231.604	0.000063				
Potassium	766.490	0.000000				
Selenium	196.090	0.000000				
Silver	328.068	0.000000				
Sodium	589.592	0.000000				
Thallium	190.856	0.000000				
Vanadium	292.402	0.000000				
Zinc	206.200	0.000000				

Comments:

FORM XA-IN

ICP-AES AND ICP-MS LINEAR RANGES

Lab Name: Empirical Laboratories, LLC

Client: CH2M Hill, Inc. SDG: 1608229

Project: Raritan Arsenal - Phase III

ICP Instrument ID: ME-ICP Date: 01/30/2016

Analyte	Integ. Time (Sec.)	Concentration ug/L	M
Aluminum	15	500000	P
Antimony	15	25000	P
Arsenic	15	10000	P
Barium	15	5000	P
Beryllium	15	10000	P
Cadmium	15	10000	P
Calcium	15	500000	P
Chromium	15	10000	P
Cobalt	15	10000	P
Copper	15	25000	P
Iron	15	500000	P
Lead	15	25000	P
Magnesium	15	500000	P
Manganese	15	12000	P
Molybdenum	15	10000	P
Nickel	15	50000	P
Potassium	15	100000	P
Selenium	15	10000	P
Silver	15	2000	P
Sodium	15	500000	P
Thallium	15	10000	P
Vanadium	15	10000	P
Zinc	15	20000	P

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 1:56:47PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB17-0010
Lab Sample ID: 1608229-01

Sample Collection D/T : 08/22/2016 10:35
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0025	mg/Kg dry	1		09/13/16 12:34		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608229

Date Reported: 9/21/2016 1:56:47PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB18-0010
Lab Sample ID: 1608229-02

Sample Collection D/T : 08/22/2016 10:55
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	-0.0002	mg/Kg dry	1		09/13/16 12:38		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608229

Date Reported: 9/21/2016 1:56:47PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB19-0010
Lab Sample ID: 1608229-03

Sample Collection D/T : 08/22/2016 11:10
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0040	mg/Kg dry	1		09/13/16 12:39		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608229

Date Reported: 9/21/2016 1:56:47PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB20-0010
Lab Sample ID: 1608229-04

Sample Collection D/T : 08/22/2016 11:40
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0080	mg/Kg dry	1		09/13/16 12:40		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608229

Date Reported: 9/21/2016 1:56:47PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB21-0010
Lab Sample ID: 1608229-05

Sample Collection D/T : 08/22/2016 14:18
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.8322	mg/Kg dry	1		09/13/16 12:41		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608229

Date Reported: 9/21/2016 1:56:47PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB22-0010
Lab Sample ID: 1608229-06

Sample Collection D/T : 08/22/2016 14:48
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0951	mg/Kg dry	1		09/13/16 12:43		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608229

Date Reported: 9/21/2016 1:56:47PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB23-0010
Lab Sample ID: 1608229-07

Sample Collection D/T : 08/22/2016 15:22
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	-0.0018	mg/Kg dry	1		09/13/16 12:44		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608229

Date Reported: 9/21/2016 1:56:47PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB24-0010
Lab Sample ID: 1608229-08

Sample Collection D/T : 08/22/2016 15:45
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0109	mg/Kg dry	1		09/13/16 12:45		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608229

Date Reported: 9/21/2016 1:56:47PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA05-SB25-0010
Lab Sample ID: 1608229-09

Sample Collection D/T : 08/23/2016 10:30
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	-0.0096	mg/Kg dry	1		09/13/16 12:46		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608229

Date Reported: 9/21/2016 1:56:47PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA05-SB26-0010
Lab Sample ID: 1608229-10

Sample Collection D/T : 08/23/2016 11:01
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0260	mg/Kg dry	1		09/13/16 12:49		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608229

Date Reported: 9/21/2016 1:56:47PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA05-SB27-0010
Lab Sample ID: 1608229-11

Sample Collection D/T : 08/23/2016 12:55
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	-0.0124	mg/Kg dry	1		09/13/16 12:51		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 1:56:47PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA05-SB28-0010
Lab Sample ID: 1608229-12

Sample Collection D/T : 08/23/2016 13:16
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0093	mg/Kg dry	1		09/13/16 12:51		SW7471B

Data and Forms For

Mercury

Sample Extraction Data

Prep Method: MET_HG_S-SW7471B

Lab Number [Field ID]	Batch	Nominal Initial/Final	Initial [g]	Final [mL]	Dilution	% Solids	Notes	Date
1608229-01 [DSA03-SB17-0010]	6H29018	0.30/50.00	0.300	50.0	1.00	36.86		08/29/16
1608229-02 [DSA03-SB18-0010]	6H29018	0.30/50.00	0.350	50.0	1.00	76.40		08/29/16
1608229-03 [DSA03-SB19-0010]	6H29018	0.30/50.00	0.350	50.0	1.00	80.10		08/29/16
1608229-04 [DSA03-SB20-0010]	6H29018	0.30/50.00	0.340	50.0	1.00	66.30		08/29/16
1608229-05 [DSA03-SB21-0010]	6H29018	0.30/50.00	0.300	50.0	1.00	57.61		08/29/16
1608229-06 [DSA03-SB22-0010]	6H29018	0.30/50.00	0.310	50.0	1.00	49.95		08/29/16
1608229-07 [DSA03-SB23-0010]	6H29018	0.30/50.00	0.350	50.0	1.00	79.00		08/29/16
1608229-08 [DSA03-SB24-0010]	6H29018	0.30/50.00	0.300	50.0	1.00	58.85		08/29/16
1608229-09 [DSA05-SB25-0010]	6H29018	0.30/50.00	0.300	50.0	1.00	34.21		08/29/16
1608229-10 [DSA05-SB26-0010]	6H29018	0.30/50.00	0.310	50.0	1.00	43.50		08/29/16
1608229-11 [DSA05-SB27-0010]	6H29018	0.30/50.00	0.330	50.0	1.00	16.32		08/29/16
1608229-12 [DSA05-SB28-0010]	6H29018	0.30/50.00	0.330	50.0	1.00	38.73		08/29/16

ANALYSIS DATA SHEET

DSA03-SB17-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 10:35
% Solids: 36.86

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-01
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0353	0.0733	0.0895	1	U	SW7471B	6H29018	09/13/16 12:34

ANALYSIS DATA SHEET

DSA03-SB18-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 10:55
% Solids: 76.40

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-02
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0146	0.0303	0.0370	1	U	SW7471B	6H29018	09/13/16 12:38

ANALYSIS DATA SHEET

DSA03-SB19-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 11:10
% Solids: 80.10

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-03
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0139	0.0289	0.0353	1	U	SW7471B	6H29018	09/13/16 12:39

ANALYSIS DATA SHEET

DSA03-SB20-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 11:40
% Solids: 66.30

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-04
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0173	0.0359	0.0439	1	U	SW7471B	6H29018	09/13/16 12:40

ANALYSIS DATA SHEET

DSA03-SB21-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 14:18
% Solids: 57.61

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-05
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	**0.832**	**0.0226**	0.0469	0.0573	1		SW7471B	6H29018	09/13/16 12:41

ANALYSIS DATA SHEET

DSA03-SB22-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 14:48
% Solids: 49.95

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-06
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	**0.0951**	**0.0252**	0.0523	0.0639	1		SW7471B	6H29018	09/13/16 12:43

ANALYSIS DATA SHEET

DSA03-SB23-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 15:22
% Solids: 79.00

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-07
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0141	0.0293	0.0358	1	U	SW7471B	6H29018	09/13/16 12:44

ANALYSIS DATA SHEET

DSA03-SB24-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 15:45
% Solids: 58.85

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-08
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0221	0.0459	0.0561	1	U	SW7471B	6H29018	09/13/16 12:45

ANALYSIS DATA SHEET

DSA05-SB25-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/23/16 10:30
% Solids: 34.21

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-09
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0380	0.0789	0.0965	1	U	SW7471B	6H29018	09/13/16 12:46

ANALYSIS DATA SHEET

DSA05-SB26-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/23/16 11:01
% Solids: 43.50

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-10
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0289	0.0601	0.0734	1	U	SW7471B	6H29018	09/13/16 12:49

ANALYSIS DATA SHEET

DSA05-SB27-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/23/16 12:55
% Solids: 16.32

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-11
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0724	0.150	0.184	1	U	SW7471B	6H29018	09/13/16 12:51

ANALYSIS DATA SHEET

DSA05-SB28-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/23/16 13:16
% Solids: 38.73

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-12
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0305	0.0634	0.0775	1	U	SW7471B	6H29018	09/13/16 12:51

ANALYSIS DATA SHEET

Blank

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
% Solids:

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 6H29018-BLK1

CAS NO.	Analyte	Conc. (mg/Kg wet)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	ND	0.0130	0.0270	0.0330	1	U	SW7471B	6H29018	09/13/16 12:31

ANALYSIS DATA SHEET

LCS

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
% Solids:

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 6H29018-BS1

CAS NO.	Analyte	Conc. (mg/Kg wet)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	**0.3602**	**0.0130**	0.0270	0.0330	1		SW7471B	6H29018	09/13/16 12:32

ANALYSIS DATA SHEET

Matrix Spike

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
% Solids: 36.86

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 6H29018-MS1

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	**0.8503**	**0.0302**	0.0628	0.0767	1		SW7471B	6H29018	09/13/16 12:35

ANALYSIS DATA SHEET

Matrix Spike Dup

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
% Solids: 36.86

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 6H29018-MSD1

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	**0.8544**	**0.0311**	0.0646	0.0790	1		SW7471B	6H29018	09/13/16 12:37

INITIAL AND CONTINUING CALIBRATION CHECK

SW7471B

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Instrument ID: ME-FIMS
SDG: 1608229
Project: Raritan Arsenal - Phase III
Calibration: 6257002
Sequence: 6I25705

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
6I25705-ICV1	Mercury	4.000	4.028	101	ug/L	+/- 10.00%
6I25705-CCV1	Mercury	2.000	2.021	101	ug/L	+/- 10.00%
6I25705-CCV9	Mercury	2.000	1.911	95.5	ug/L	+/- 10.00%
6I25705-CCVA	Mercury	4.000	3.790	94.8	ug/L	+/- 10.00%
6I25705-CCVB	Mercury	2.000	1.957	97.8	ug/L	+/- 10.00%

BLANKS
SW7471B

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Instrument ID: ME-FIMS
Project: Raritan Arsenal - Phase III
Sequence: 6I25705
Calibration: 6257002

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
6I25705-ICB1	Mercury	-0.01577	0.0780	0.198	ug/L	U	SW7471B
6I25705-CCB1	Mercury	-0.0183	0.0780	0.198	ug/L	U	SW7471B
6I25705-CCB9	Mercury	-0.00539	0.0780	0.198	ug/L	U	SW7471B
6H29018-BLK1	Mercury	-0.00552	0.0130	0.0330	mg/Kg wet	U	SW7471B
6I25705-CCBA	Mercury	-0.0148	0.0780	0.198	ug/L	U	SW7471B
6I25705-CCBB	Mercury	-0.0129	0.0780	0.198	ug/L	U	SW7471B

LCS / LCS DUPLICATE RECOVERY

SW7471B

Laboratory:	Empirical Laboratories, LLC	SDG:	1608229
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Matrix:	Solid		
Batch:	6H29018	Laboratory ID:	6H29018-BS1
Preparation:	MET_HG_S	Initial/Final:	0.3 g / 50 mL

ANALYTE	SPIKE ADDED (mg/Kg wet)	LCS CONCENTRATION (mg/Kg wet)	LCS % REC.	QC LIMITS REC.
Mercury	0.3333	0.3602	108	80 - 124

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

SW7471B

DSA03-SB17-0010

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Matrix: Solid
Batch: 6H29018
% Solids: 36.86

Source Sample Name: **1608229-01**

ANALYTE	SPIKE ADDED (mg/Kg dry)	SAMPLE CONCENTRATION (mg/Kg dry)	MS CONCENTRATION (mg/Kg dry)	MS % REC.	Q	QC LIMITS REC.
Mercury	0.7752	ND	0.8503	110		80 - 124

ANALYTE	SPIKE ADDED (mg/Kg dry)	MSD CONCENTRATION (mg/Kg dry)	MSD % REC. #	% RPD	Q	QC LIMITS RPD	QC LIMITS REC.
Mercury	0.7980	0.8544	107	0.474		20	80 - 124

PREPARATION BATCH SUMMARY

SW7471B

Laboratory: Empirical Laboratories, LLC SDG: 1608229

Client: CH2M Hill, Inc. Project: Raritan Arsenal - Phase III

Batch: 6H29018 Batch Matrix: Solid Preparation: MET_HG_S

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT	FINAL VOL.
DSA03-SB17-0010	1608229-01	08/29/16 10:19	0.30	50.00
DSA03-SB18-0010	1608229-02	08/29/16 10:19	0.35	50.00
DSA03-SB19-0010	1608229-03	08/29/16 10:19	0.35	50.00
DSA03-SB20-0010	1608229-04	08/29/16 10:19	0.34	50.00
DSA03-SB21-0010	1608229-05	08/29/16 10:19	0.30	50.00
DSA03-SB22-0010	1608229-06	08/29/16 10:19	0.31	50.00
DSA03-SB23-0010	1608229-07	08/29/16 10:19	0.35	50.00
DSA03-SB24-0010	1608229-08	08/29/16 10:19	0.30	50.00
DSA05-SB25-0010	1608229-09	08/29/16 10:19	0.30	50.00
DSA05-SB26-0010	1608229-10	08/29/16 10:19	0.31	50.00
DSA05-SB27-0010	1608229-11	08/29/16 10:19	0.33	50.00
DSA05-SB28-0010	1608229-12	08/29/16 10:19	0.33	50.00
Blank	6H29018-BLK1	08/29/16 10:19	0.30	50.00
LCS	6H29018-BS1	08/29/16 10:19	0.30	50.00
DSA03-SB17-0010	6H29018-MS1	08/29/16 10:19	0.35	50.00
DSA03-SB17-0010	6H29018-MSD1	08/29/16 10:19	0.34	50.00

ANALYSIS SEQUENCE SUMMARY

SW7471B

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Sequence: 6I25705
Instrument: ME-FIMS
Calibration: 6257002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Cal Standard	6I25705-CAL1	20160913s-001	09/13/16 09:43
Cal Standard	6I25705-CAL2	20160913s-002	09/13/16 09:44
Cal Standard	6I25705-CAL3	20160913s-003	09/13/16 09:45
Cal Standard	6I25705-CAL4	20160913s-004	09/13/16 09:46
Cal Standard	6I25705-CAL5	20160913s-005	09/13/16 09:48
Cal Standard	6I25705-CAL6	20160913s-006	09/13/16 09:49
Cal Standard	6I25705-CAL7	20160913s-007	09/13/16 09:50
Cal Standard	6I25705-CAL8	20160913s-008	09/13/16 09:51
Initial Cal Check	6I25705-ICV1	20160913s-009	09/13/16 09:53
Initial Cal Blank	6I25705-ICB1	20160913s-010	09/13/16 09:54
Calibration Check	6I25705-CCV1	20160913s-023	09/13/16 10:08
Calibration Blank	6I25705-CCB1	20160913s-024	09/13/16 10:09
Calibration Check	6I25705-CCV9	20160913s-139	09/13/16 12:29
Calibration Blank	6I25705-CCB9	20160913s-140	09/13/16 12:30
Blank	6H29018-BLK1	20160913s-141	09/13/16 12:31
LCS	6H29018-BS1	20160913s-142	09/13/16 12:32
DSA03-SB17-0010	1608229-01	20160913s-144	09/13/16 12:34
DSA03-SB17-0010	6H29018-MS1	20160913s-145	09/13/16 12:35
DSA03-SB17-0010	6H29018-MSD1	20160913s-146	09/13/16 12:37
DSA03-SB18-0010	1608229-02	20160913s-147	09/13/16 12:38
DSA03-SB19-0010	1608229-03	20160913s-148	09/13/16 12:39
DSA03-SB20-0010	1608229-04	20160913s-149	09/13/16 12:40
DSA03-SB21-0010	1608229-05	20160913s-150	09/13/16 12:41
DSA03-SB22-0010	1608229-06	20160913s-151	09/13/16 12:43
DSA03-SB23-0010	1608229-07	20160913s-152	09/13/16 12:44
DSA03-SB24-0010	1608229-08	20160913s-153	09/13/16 12:45
DSA05-SB25-0010	1608229-09	20160913s-154	09/13/16 12:46
Calibration Check	6I25705-CCVA	20160913s-155	09/13/16 12:47
Calibration Blank	6I25705-CCBA	20160913s-156	09/13/16 12:48
DSA05-SB26-0010	1608229-10	20160913s-157	09/13/16 12:49
DSA05-SB27-0010	1608229-11	20160913s-158	09/13/16 12:51
DSA05-SB28-0010	1608229-12	20160913s-159	09/13/16 12:51
Calibration Check	6I25705-CCVB	20160913s-166	09/13/16 13:00

ANALYSIS SEQUENCE SUMMARY

SW7471B

Laboratory:	Empirical Laboratories, LLC	SDG:	1608229
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Sequence:	6I25705	Instrument:	ME-FIMS
Calibration:	6257002		

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Calibration Blank	6I25705-CCBB	20160913s-167	09/13/16 13:01

INITIAL CALIBRATION DATA

SW7471B

Laboratory:	Empirical Laboratories, LLC	SDG:	1608229
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Calibration:	6257002	Instrument:	ME-FIMS
Matrix:	Solid	Calibration Dates:	9/13/16 9:43 9/13/16 9:51

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Mercury	0	0	0.2	1.439965E-02	0.5	1.425915E-02	1	1.394806E-02	2	0.0138053	4	1.458505E-02

INITIAL CALIBRATION DATA (Continued)

SW7471B

Laboratory:	Empirical Laboratories, LLC	SDG:	1608229	
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III	
Calibration:	6257002	Instrument:	ME-FIMS	
Matrix:	Solid	Calibration Dates:	9/13/16 9:43	9/13/16 9:51

Compound	Level 07		Level 08		Level 09		Level 10		Level 11		Level 12	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Mercury	6	1.350032E-02	10	1.384799E-02								

INITIAL CALIBRATION DATA (Continued)

SW7471B

Laboratory:	Empirical Laboratories, LLC	SDG:	1608229
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Calibration:	6257002	Instrument:	ME-FIMS
Matrix:	Solid	Calibration Dates:	9/13/16 9:43 9/13/16 9:51

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
Mercury	1.229319E-02	40.50722	0	0	0.9992367		0.995	

HOLDING TIME SUMMARY

SW7471B

Laboratory: Empirical Laboratories, LLC SDG: 1608229

Client: CH2M Hill, Inc. Project: Raritan Arsenal - Phase III

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
DSA03-SB17-0010	08/22/16 10:35	08/24/16 08:35	08/29/16 10:19	7.03	28.00	09/13/16 12:34	15.09	28.00	
DSA03-SB18-0010	08/22/16 10:55	08/24/16 08:35	08/29/16 10:19	7.02	28.00	09/13/16 12:38	15.10	28.00	
DSA03-SB19-0010	08/22/16 11:10	08/24/16 08:35	08/29/16 10:19	7.01	28.00	09/13/16 12:39	15.10	28.00	
DSA03-SB20-0010	08/22/16 11:40	08/24/16 08:35	08/29/16 10:19	6.99	28.00	09/13/16 12:40	15.10	28.00	
DSA03-SB21-0010	08/22/16 14:18	08/24/16 08:35	08/29/16 10:19	6.88	28.00	09/13/16 12:41	15.10	28.00	
DSA03-SB22-0010	08/22/16 14:48	08/24/16 08:35	08/29/16 10:19	6.85	28.00	09/13/16 12:43	15.10	28.00	
DSA03-SB23-0010	08/22/16 15:22	08/24/16 08:35	08/29/16 10:19	6.83	28.00	09/13/16 12:44	15.10	28.00	
DSA03-SB24-0010	08/22/16 15:45	08/24/16 08:35	08/29/16 10:19	6.82	28.00	09/13/16 12:45	15.10	28.00	
DSA05-SB25-0010	08/23/16 10:30	08/24/16 08:35	08/29/16 10:19	6.03	28.00	09/13/16 12:46	15.10	28.00	
DSA05-SB26-0010	08/23/16 11:01	08/24/16 08:35	08/29/16 10:19	6.01	28.00	09/13/16 12:49	15.10	28.00	
DSA05-SB27-0010	08/23/16 12:55	08/24/16 08:35	08/29/16 10:19	5.93	28.00	09/13/16 12:51	15.11	28.00	
DSA05-SB28-0010	08/23/16 13:16	08/24/16 08:35	08/29/16 10:19	5.92	28.00	09/13/16 12:51	15.11	28.00	

==========

Analysis Begun

Logged In Analyst: mercury **Technique:** AA FIMS-MHS
Spectrometer Model: FIMS-100, S/N B050-9550 **Autosampler Model:** S10

Sample Information File: C:\data-AA\Sample Information\20160913s.sif
Batch ID: 20160913s
Results Data Set: 20160913s
Results Library: C:\data-AA\Results\Results.mdb

==========

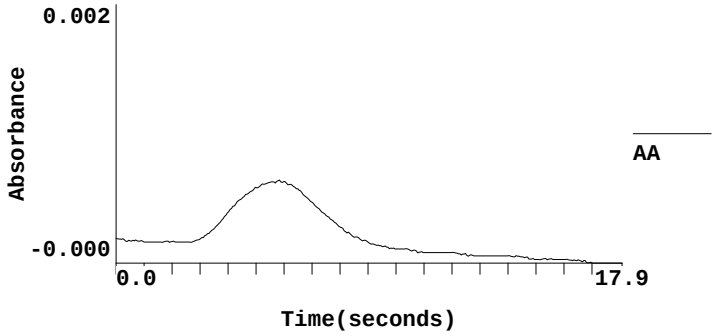
Method Loaded
Method Name: Hg CAL2 PAPERLESS S **Method Last Saved:** 9/13/2016 9:21:31 AM
Method Description: Hg CAL2

==========

Sequence No.: 1 **Autosampler Location:** 1
Sample ID: 6I25705-CAL1 **Date Collected:** 9/13/2016 9:43:37 AM
Analyst: **Data Type:** Original

Replicate Data: 6I25705-CAL1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.00]	0.0005	0.0001	0.0005	09:44:30	Yes

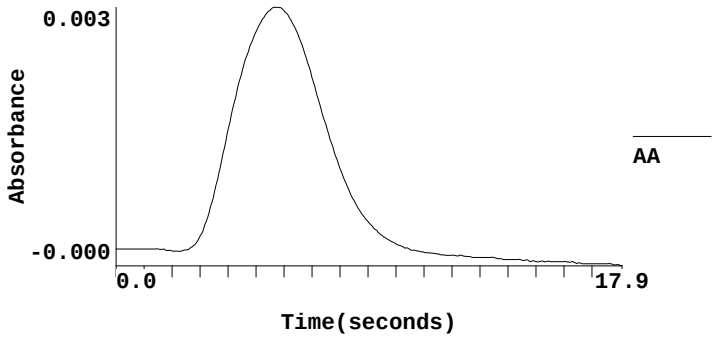


==========

Sequence No.: 2 **Autosampler Location:** 2
Sample ID: 6I25705-CAL2 **Date Collected:** 9/13/2016 9:44:31 AM
Analyst: **Data Type:** Original

Replicate Data: 6I25705-CAL2

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.20]	0.0029	0.0106	0.0034	09:45:24	Yes



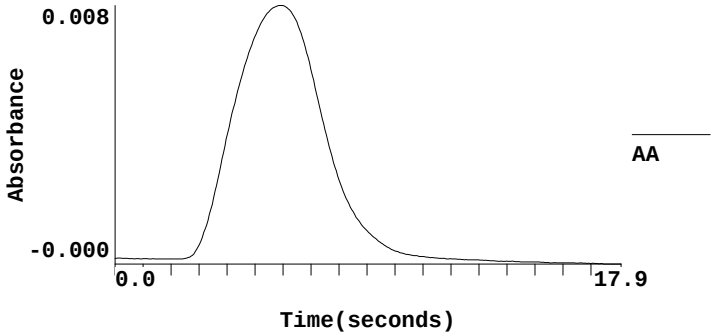
==========

Sequence No.: 3 **Autosampler Location:** 3
Sample ID: 6I25705-CAL3 **Date Collected:** 9/13/2016 9:45:43 AM
Analyst: **Data Type:** Original

Replicate Data: 6I25705-CAL3

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored

1	[0.50]	0.0071	0.0265	0.0076	09:46:37	Yes

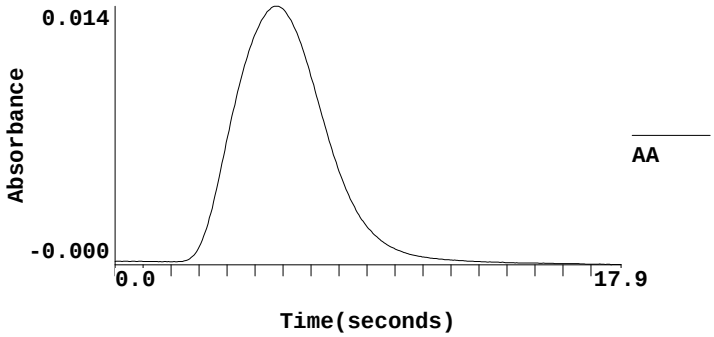


==========

Sequence No.: 4 **Autosampler Location: 4**
Sample ID: 6I25705-CAL4 **Date Collected: 9/13/2016 9:46:57 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CAL4

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[1.00]	0.0139	0.0521	0.0144	09:47:51	Yes

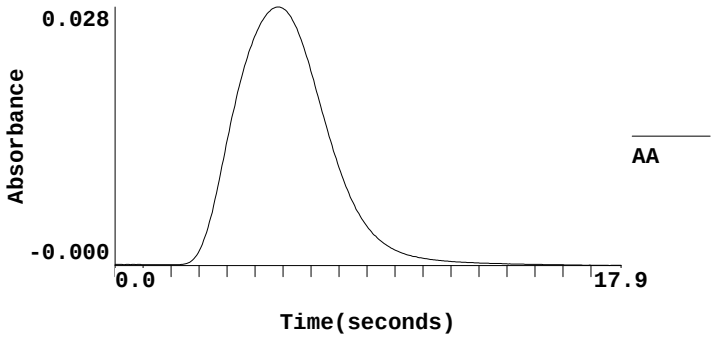


==========

Sequence No.: 5 **Autosampler Location: 5**
Sample ID: 6I25705-CAL5 **Date Collected: 9/13/2016 9:48:11 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CAL5

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[2.00]	0.0276	0.1052	0.0281	09:49:06	Yes

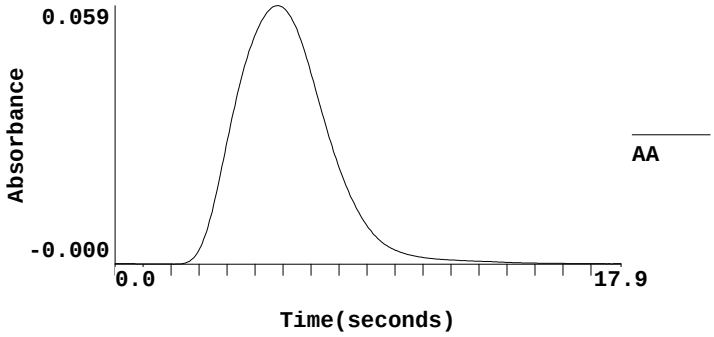


==========

Sequence No.: 6 **Autosampler Location: 6**
Sample ID: 6I25705-CAL6 **Date Collected: 9/13/2016 9:49:26 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CAL6

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[4.00]	0.0583	0.2205	0.0588	09:50:19	Yes

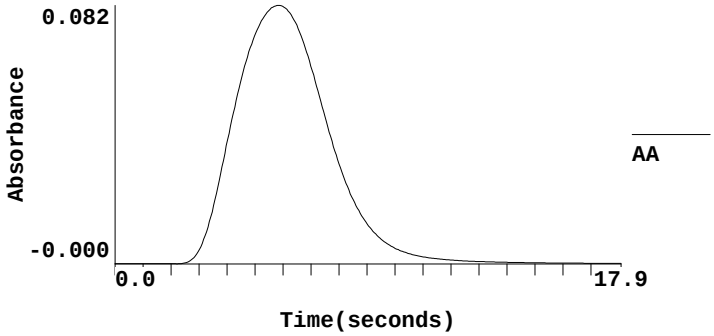


==========

Sequence No.: 7 **Autosampler Location: 7**
Sample ID: 6I25705-CAL7 **Date Collected: 9/13/2016 9:50:38 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CAL7

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[6.00]	0.0810	0.3099	0.0815	09:51:31	Yes

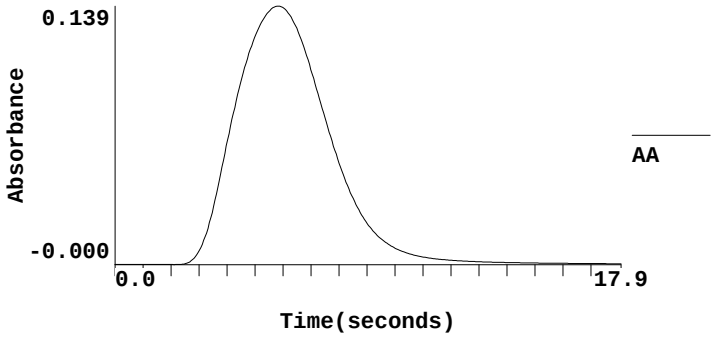


==========

Sequence No.: 8 **Autosampler Location: 8**
Sample ID: 6I25705-CAL8 **Date Collected: 9/13/2016 9:51:51 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CAL8

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[10.00]	0.1385	0.5309	0.1390	09:52:44	Yes



Calibration data for Hg 253.7 **Equation: Linear, Calculated Intercept**

	Entered Conc. ug/L	Calculated Conc. ug/L	Standard Deviation	%RSD
(Abs)				

6I25705-CAL1	0.0000	0	-0.021	----	----
6I25705-CAL2	0.0029	0.20	0.188	----	----
6I25705-CAL3	0.0071	0.50	0.495	----	----
6I25705-CAL4	0.0139	1.00	0.990	----	----
6I25705-CAL5	0.0276	2.00	1.980	----	----
6I25705-CAL6	0.0583	4.00	4.206	----	----
6I25705-CAL7	0.0810	6.00	5.849	----	----
6I25705-CAL8	0.1385	10.00	10.014	----	----

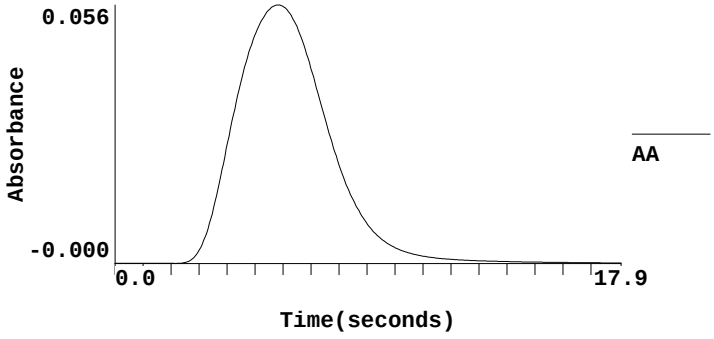
Correlation Coef.: 0.999616 Slope: 0.01380 Intercept: 0.00029

==========

Sequence No.: 9 **Autosampler Location: 9**
Sample ID: 6I25705-ICV1 **Date Collected: 9/13/2016 9:53:04 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-ICV1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	4.028	4.028	0.0559	0.2125	0.0564	09:53:57	Yes



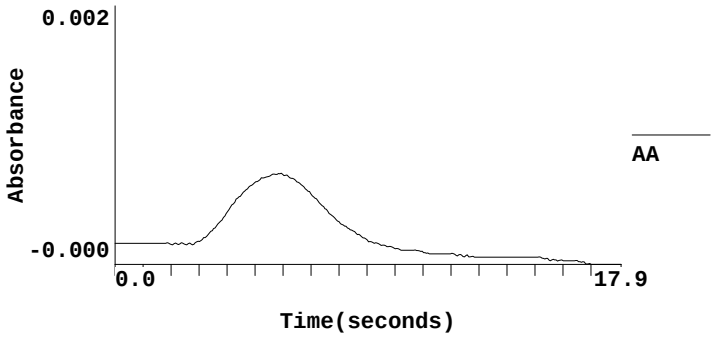
All analyte(s) passed QC.

==========

Sequence No.: 10 **Autosampler Location: 10**
Sample ID: 6I25705-ICB1 **Date Collected: 9/13/2016 9:54:17 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-ICB1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.016	-0.016	0.0001	0.0006	0.0006	09:55:11	Yes



All analyte(s) passed QC.

==========

Sequence No.: 11 **Autosampler Location: 11**
Sample ID: 6I09006-BLK1 **Date Collected: 9/13/2016 9:55:12 AM**
Analyst: **Data Type: Original**

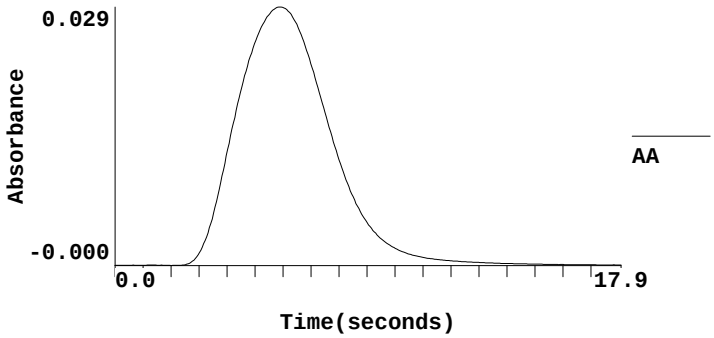
Replicate Data: 6I09006-BLK1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.018	-0.018	0.0000	0.0006	0.0005	09:56:05	Yes

Sample ID: 6I25705-CCV1 **Date Collected: 9/13/2016 10:08:34 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CCV1

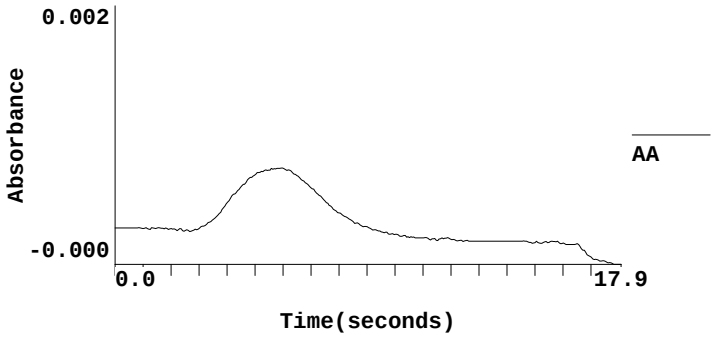
Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	2.021	2.021	0.0282	0.1091	0.0287	10:09:28	Yes



Sequence No.: 24 **Autosampler Location: 24**
Sample ID: 6I25705-CCB1 **Date Collected: 9/13/2016 10:09:49 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CCB1

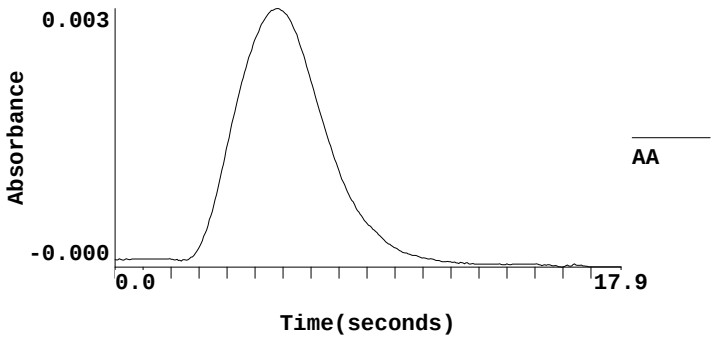
Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.018	-0.018	0.0000	0.0005	0.0005	10:10:43	Yes



Sequence No.: 25 **Autosampler Location: 25**
Sample ID: 1609041-09 **Date Collected: 9/13/2016 10:10:44 AM**
Analyst: **Data Type: Original**

Replicate Data: 1609041-09

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.153	0.153	0.0024	0.0100	0.0029	10:11:36	Yes

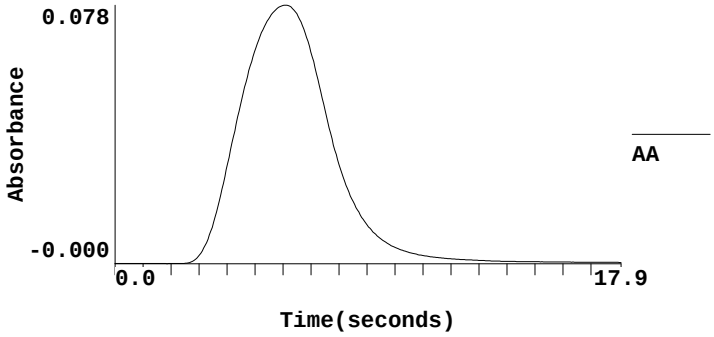


==========

Sequence No.: 137 **Autosampler Location: 137**
Sample ID: 1609051-59RE1@5X **Date Collected: 9/13/2016 12:26:32 PM**
Analyst: **Data Type: Original**

Replicate Data: 1609051-59RE1@5X

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	5.625	5.625	0.0779	0.2908	0.0784	12:27:27	Yes



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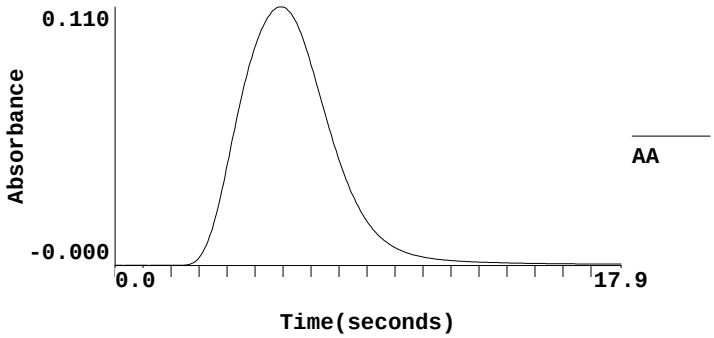
Sequence No.: 138 **Autosampler Location: 138**
Sample ID: 1609051-62RE1@2X **Date Collected: 9/13/2016 12:27:49 PM**
Analyst: **Data Type: Original**

Replicate Data: 1609051-62RE1@2X

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	7.894	7.894	0.1092	0.4120	0.1097	12:28:44	Yes

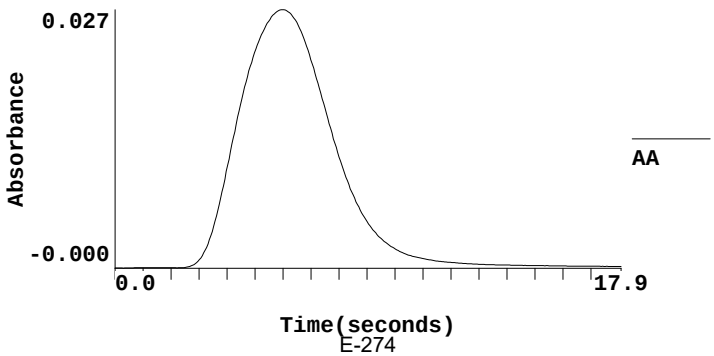


==========

Sequence No.: 139 **Autosampler Location: 139**
Sample ID: 6I25705-CCV9 **Date Collected: 9/13/2016 12:29:05 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CCV9

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	1.911	1.911	0.0267	0.1042	0.0272	12:30:00	Yes



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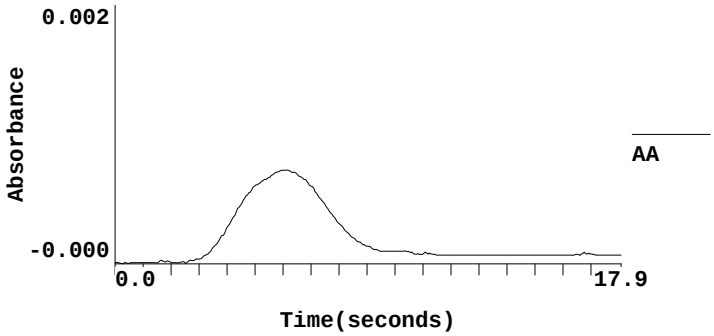
Sequence No.: 140 **Autosampler Location: 140**
Sample ID: 6I25705-CCB9 **Date Collected: 9/13/2016 12:30:22 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CCB9

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.005	-0.005	0.0002	0.0031	0.0007	12:31:16	Yes



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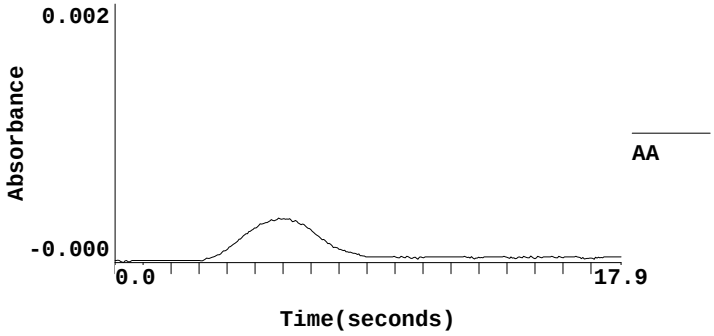
Sequence No.: 141 **Autosampler Location: 142**
Sample ID: 6H29018-BLK1 **Date Collected: 9/13/2016 12:31:18 PM**
Analyst: **Data Type: Original**

Replicate Data: 6H29018-BLK1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.033	-0.033	-0.0002	0.0013	0.0003	12:32:11	Yes



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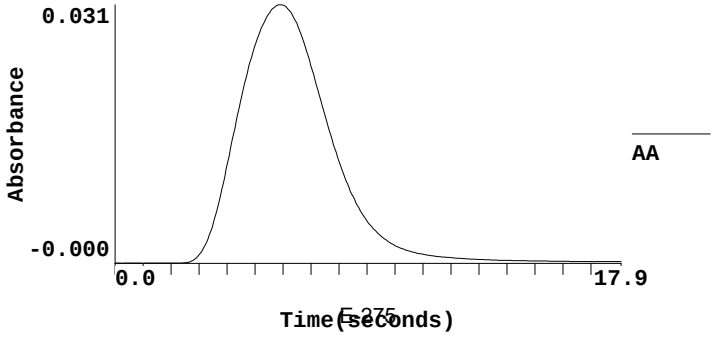
Sequence No.: 142 **Autosampler Location: 143**
Sample ID: 6H29018-BS1 **Date Collected: 9/13/2016 12:32:12 PM**
Analyst: **Data Type: Original**

Replicate Data: 6H29018-BS1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	2.161	2.161	0.0301	0.1139	0.0306	12:33:05	Yes

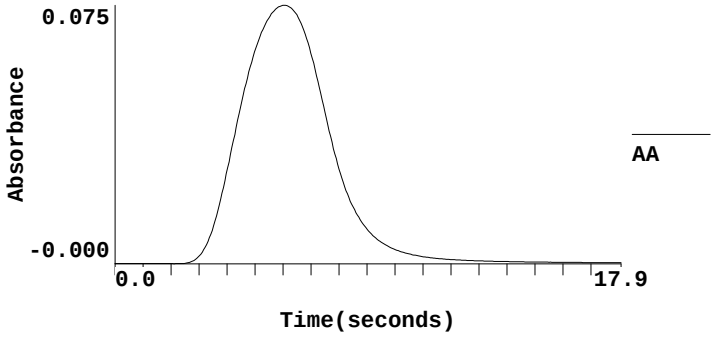


==========

Sequence No.: 143 **Autosampler Location: 141**
Sample ID: 1609051-69RE1@10X **Date Collected: 9/13/2016 12:33:26 PM**
Analyst: **Data Type: Original**

Replicate Data: 1609051-69RE1@10X

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	5.400	5.400	0.0748	0.2738	0.0753	12:34:21	Yes

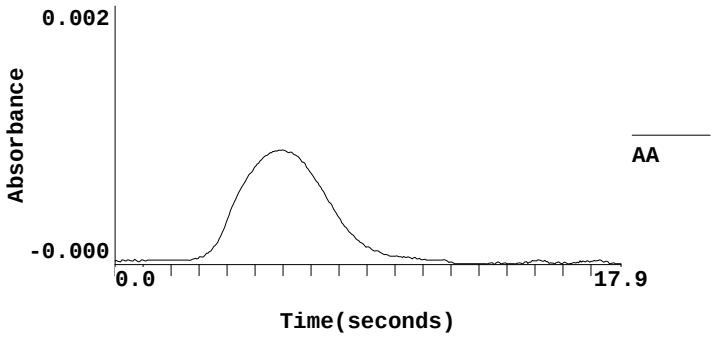


==========

Sequence No.: 144 **Autosampler Location: 144**
Sample ID: 1608229-01 **Date Collected: 9/13/2016 12:34:43 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-01

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.005	0.005	0.0004	0.0029	0.0009	12:35:37	Yes

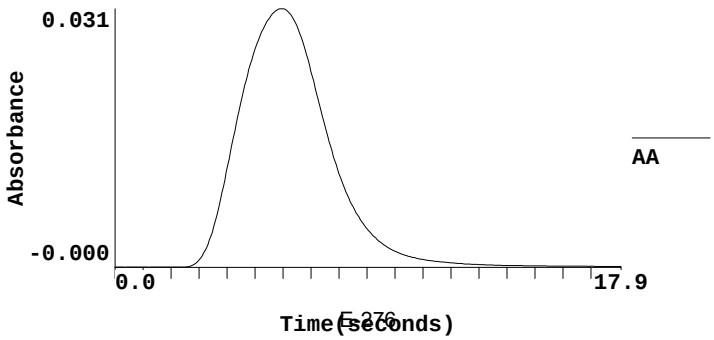


==========

Sequence No.: 145 **Autosampler Location: 145**
Sample ID: 6H29018-MS1 **Date Collected: 9/13/2016 12:35:58 PM**
Analyst: **Data Type: Original**

Replicate Data: 6H29018-MS1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	2.194	2.194	0.0306	0.1128	0.0311	12:36:53	Yes

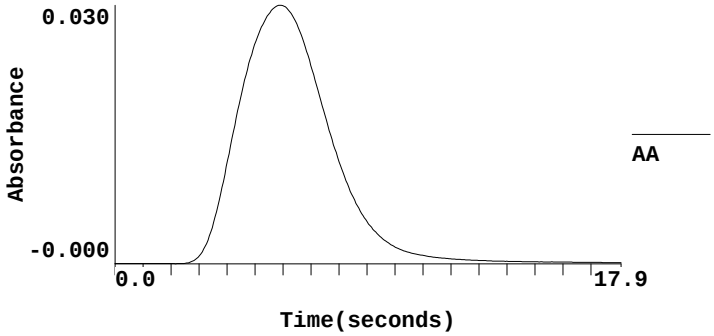


==========

Sequence No.: 146 **Autosampler Location: 146**
Sample ID: 6H29018-MSD1 **Date Collected: 9/13/2016 12:37:14 PM**
Analyst: **Data Type: Original**

Replicate Data: 6H29018-MSD1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	2.141	2.141	0.0298	0.1126	0.0303	12:38:09	Yes

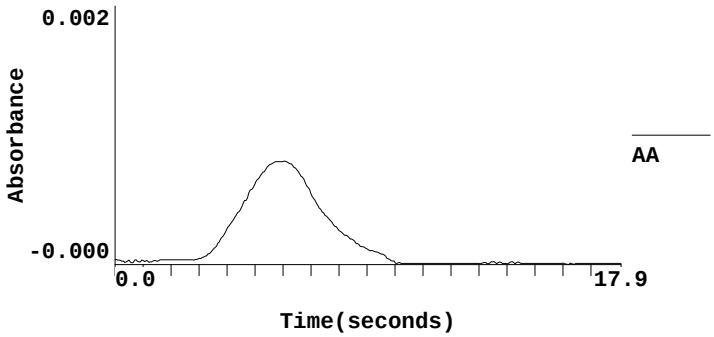


==========

Sequence No.: 147 **Autosampler Location: 147**
Sample ID: 1608229-02 **Date Collected: 9/13/2016 12:38:31 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-02

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.001	-0.001	0.0003	0.0022	0.0008	12:39:25	Yes

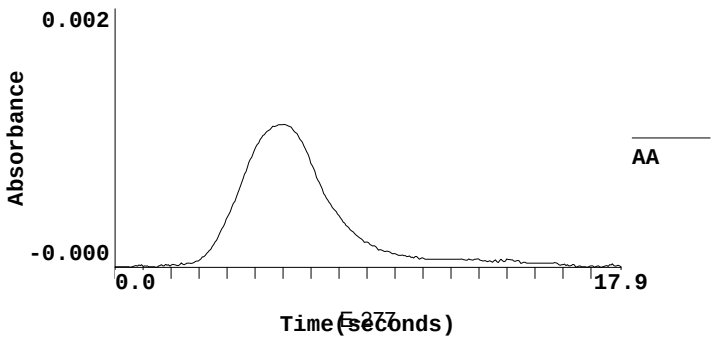


==========

Sequence No.: 148 **Autosampler Location: 148**
Sample ID: 1608229-03 **Date Collected: 9/13/2016 12:39:27 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-03

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.023	0.023	0.0006	0.0042	0.0011	12:40:18	Yes

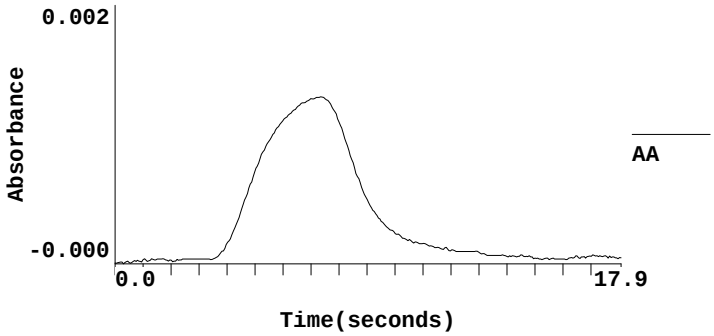


==========

Sequence No.: 149 **Autosampler Location: 149**
Sample ID: 1608229-04 **Date Collected: 9/13/2016 12:40:40 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-04

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.036	0.036	0.0008	0.0056	0.0013	12:41:35	Yes

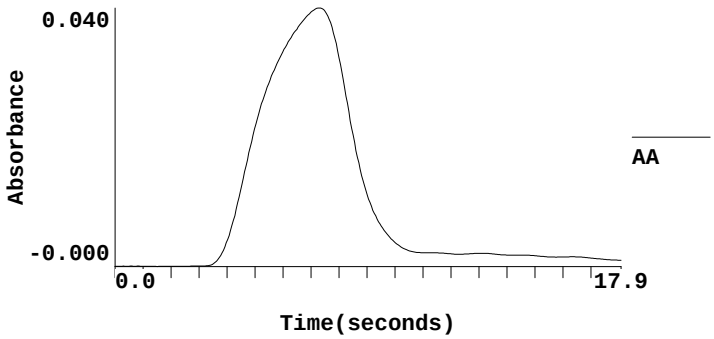


==========

Sequence No.: 150 **Autosampler Location: 150**
Sample ID: 1608229-05 **Date Collected: 9/13/2016 12:41:56 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-05

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	2.877	2.877	0.0400	0.1587	0.0405	12:42:51	Yes

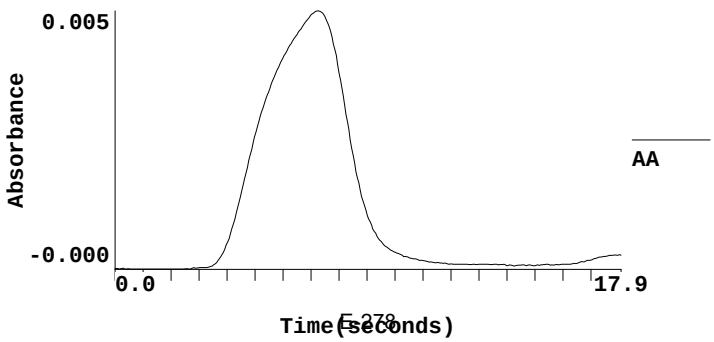


==========

Sequence No.: 151 **Autosampler Location: 151**
Sample ID: 1608229-06 **Date Collected: 9/13/2016 12:43:12 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-06

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.295	0.295	0.0044	0.0175	0.0049	12:44:07	Yes

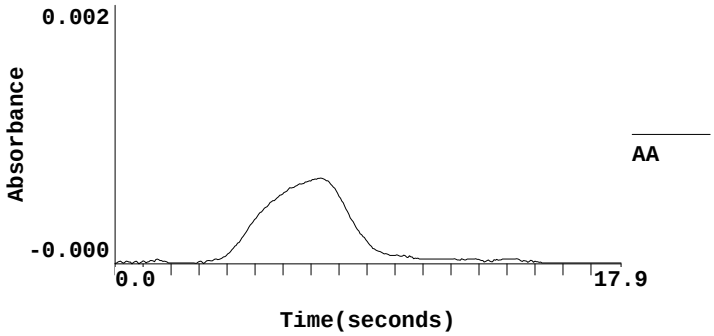


==========

Sequence No.: 152 **Autosampler Location: 152**
Sample ID: 1608229-07 **Date Collected: 9/13/2016 12:44:29 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-07

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.010	-0.010	0.0002	0.0023	0.0007	12:45:23	Yes

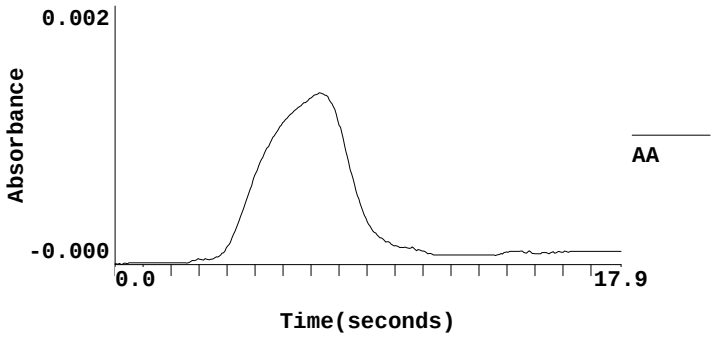


==========

Sequence No.: 153 **Autosampler Location: 153**
Sample ID: 1608229-08 **Date Collected: 9/13/2016 12:45:25 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-08

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.039	0.039	0.0008	0.0054	0.0013	12:46:17	Yes

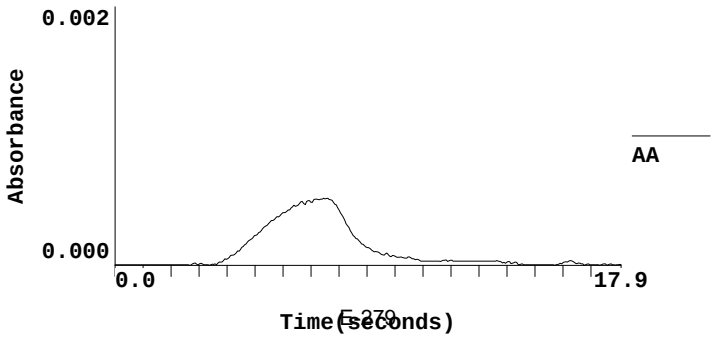


==========

Sequence No.: 154 **Autosampler Location: 154**
Sample ID: 1608229-09 **Date Collected: 9/13/2016 12:46:39 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-09

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.020	-0.020	0.0000	0.0020	0.0005	12:47:33	Yes

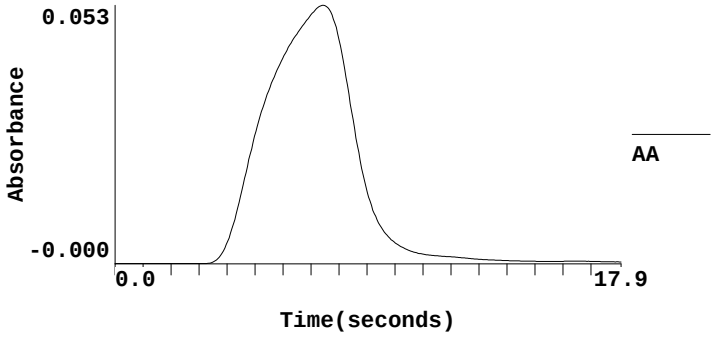


==========

Sequence No.: 155 **Autosampler Location: 155**
Sample ID: 6I25705-CCVA **Date Collected: 9/13/2016 12:47:35 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CCVA

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	3.790	3.790	0.0526	0.1944	0.0531	12:48:28	Yes

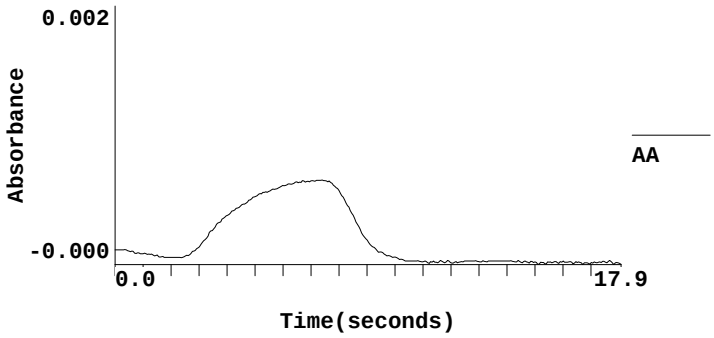


==========

Sequence No.: 156 **Autosampler Location: 156**
Sample ID: 6I25705-CCBA **Date Collected: 9/13/2016 12:48:49 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CCBA

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.015	-0.015	0.0001	0.0018	0.0006	12:49:44	Yes

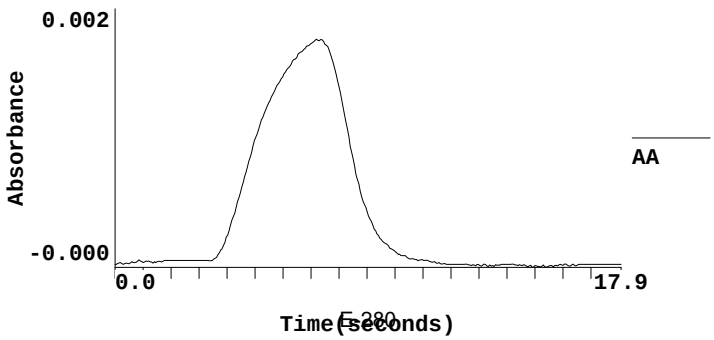


==========

Sequence No.: 157 **Autosampler Location: 9**
Sample ID: 1608229-10 **Date Collected: 9/13/2016 12:49:45 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-10

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.070	0.070	0.0013	0.0061	0.0018	12:50:40	Yes

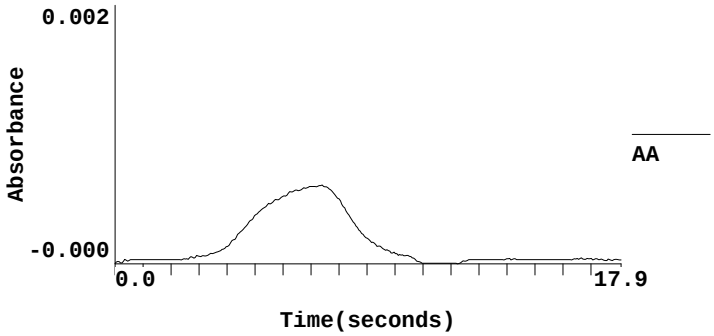


==========

Sequence No.: 158 **Autosampler Location: 10**
Sample ID: 1608229-11 **Date Collected: 9/13/2016 12:51:00 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-11

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.013	-0.013	0.0001	0.0027	0.0006	12:51:53	Yes

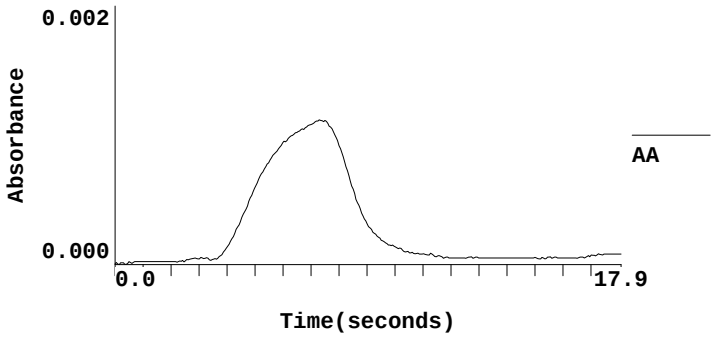


==========

Sequence No.: 159 **Autosampler Location: 11**
Sample ID: 1608229-12 **Date Collected: 9/13/2016 12:51:55 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-12

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.024	0.024	0.0006	0.0047	0.0011	12:52:47	Yes

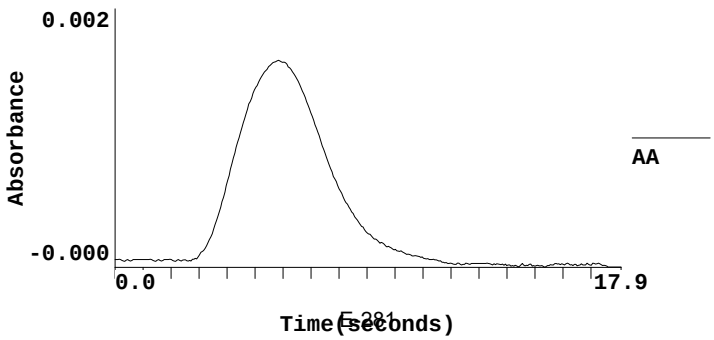


==========

Sequence No.: 160 **Autosampler Location: 12**
Sample ID: 1608244-06 **Date Collected: 9/13/2016 12:53:08 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608244-06

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.058	0.058	0.0011	0.0054	0.0016	12:54:01	Yes

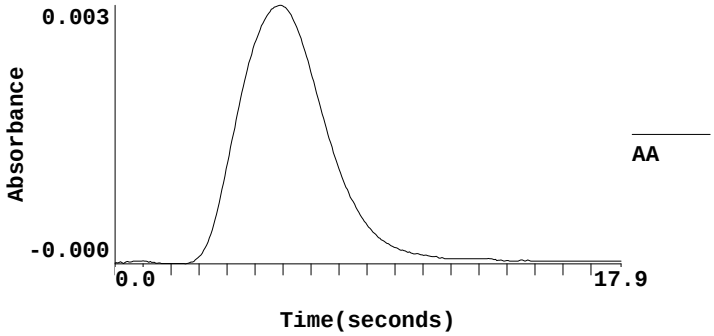


==========

Sequence No.: 161 **Autosampler Location: 13**
Sample ID: 1608244-07 **Date Collected: 9/13/2016 12:54:22 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608244-07

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.172	0.172	0.0027	0.0116	0.0032	12:55:16	Yes

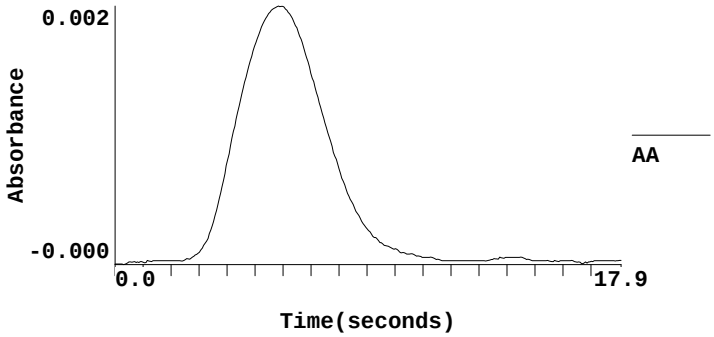


==========

Sequence No.: 162 **Autosampler Location: 14**
Sample ID: 1608244-08 **Date Collected: 9/13/2016 12:55:37 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608244-08

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.108	0.108	0.0018	0.0084	0.0023	12:56:30	Yes

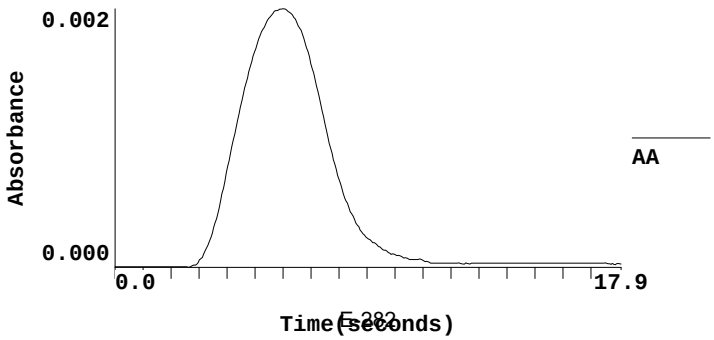


==========

Sequence No.: 163 **Autosampler Location: 15**
Sample ID: 1608244-09 **Date Collected: 9/13/2016 12:56:49 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608244-09

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.093	0.093	0.0016	0.0077	0.0021	12:57:42	Yes

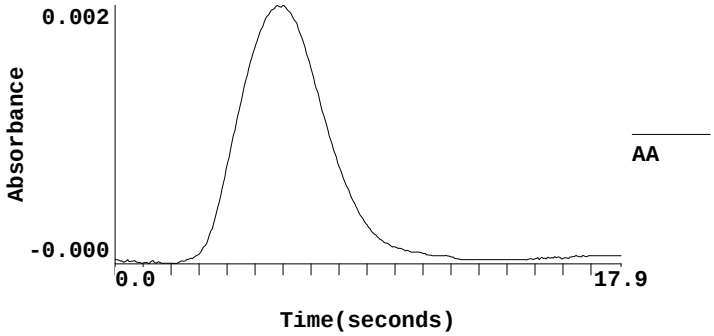


==========

Sequence No.: 164 **Autosampler Location: 16**
Sample ID: 1608244-10 **Date Collected: 9/13/2016 12:58:01 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608244-10

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.092	0.092	0.0016	0.0074	0.0021	12:58:54	Yes

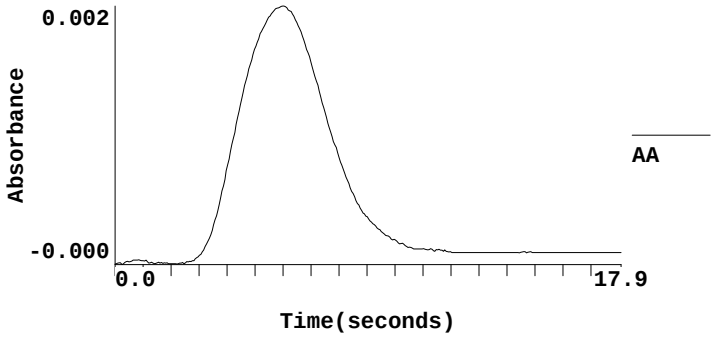


==========

Sequence No.: 165 **Autosampler Location: 17**
Sample ID: 1608244-11 **Date Collected: 9/13/2016 12:59:13 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608244-11

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.092	0.092	0.0016	0.0083	0.0021	13:00:06	Yes

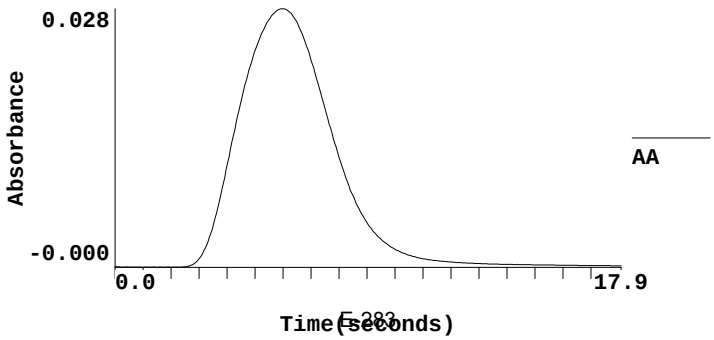


==========

Sequence No.: 166 **Autosampler Location: 18**
Sample ID: 6I25705-CCVB **Date Collected: 9/13/2016 1:00:25 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CCVB

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	1.957	1.957	0.0273	0.1055	0.0278	13:01:18	Yes

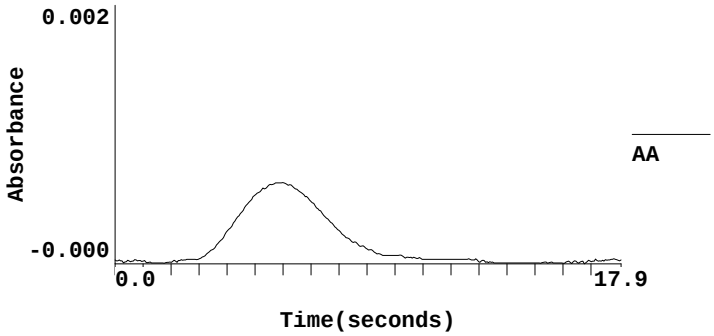


==========

Sequence No.: 167 **Autosampler Location: 19**
Sample ID: 6I25705-CCBB **Date Collected: 9/13/2016 1:01:37 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CCBB

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.013	-0.013	0.0001	0.0022	0.0006	13:02:30	Yes

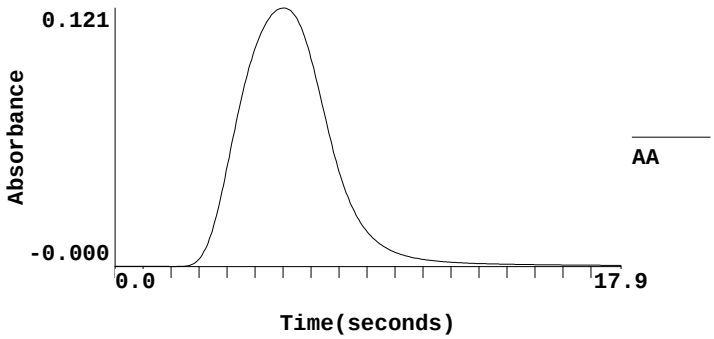


==========

Sequence No.: 168 **Autosampler Location: 20**
Sample ID: 1608251-01 **Date Collected: 9/13/2016 1:02:32 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-01

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	8.740	8.740	0.1209	0.4459	0.1214	13:03:24	Yes

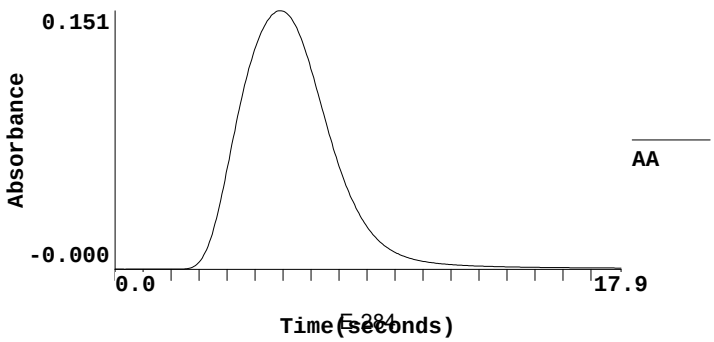


==========

Sequence No.: 169 **Autosampler Location: 21**
Sample ID: 1608251-02 **Date Collected: 9/13/2016 1:03:44 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-02

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	10.90	10.90	0.1507	0.5646	0.1512	13:04:38	Yes



PREPARATION BENCH SHEET

6H29018

Empirical Laboratories, LLC

Printed: 9/14/2016 2:39:00PM

Instrument: ME-FIMS

Matrix: Solid **Prepared using: METALS - MET_HG_S** **(No Surrogate)**

Lab Number	Cont ID	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	PH	Comments (Sample; Analysis; Extraction)
1608229-01	A	MET_7471B_MERCURY_Q5	08/29/2016	0.30	50.00					NA	
1608229-02	A	MET_7471B_MERCURY_Q5	08/29/2016	0.35	50.00					NA	
1608229-03	A	MET_7471B_MERCURY_Q5	08/29/2016	0.35	50.00					NA	
1608229-04	A	MET_7471B_MERCURY_Q5	08/29/2016	0.34	50.00					NA	
1608229-05	A	MET_7471B_MERCURY_Q5	08/29/2016	0.30	50.00					NA	
1608229-06	A	MET_7471B_MERCURY_Q5	08/29/2016	0.31	50.00					NA	
1608229-07	A	MET_7471B_MERCURY_Q5	08/29/2016	0.35	50.00					NA	
1608229-08	A	MET_7471B_MERCURY_Q5	08/29/2016	0.30	50.00					NA	
1608229-09	A	MET_7471B_MERCURY_Q5	08/29/2016	0.30	50.00					NA	
1608229-10	A	MET_7471B_MERCURY_Q5	08/29/2016	0.31	50.00					NA	
1608229-11	A	MET_7471B_MERCURY_Q5	08/29/2016	0.33	50.00					NA	
1608229-12	A	MET_7471B_MERCURY_Q5	08/29/2016	0.33	50.00					NA	
6H29018-BLK1		MET_7471B_MERCURY_Q5	08/29/2016	0.30	50.00					NA	
6H29018-BS1		MET_7471B_MERCURY_Q5	08/29/2016	0.30	50.00	16F0425		500		NA	
6H29018-MS1		MET_7471B_MERCURY_Q5	08/29/2016	0.35	50.00	16F0425	1608229-01	500		NA	
6H29018-MSD1		MET_7471B_MERCURY_Q5	08/29/2016	0.34	50.00	16F0425	1608229-01	500		NA	

PREPARATION BENCH SHEET

6H29018

Empirical Laboratories, LLC

Printed: 9/14/2016 2:39:00PM

Instrument: ME-FIMS

Matrix: Solid **Prepared using: METALS - MET_HG_S** **(No Surrogate)**

Lab Number	Cont ID	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	PH	Comments (Sample; Analysis; Extraction)

Reagents Used:

Standard	Description
16I0238	3% HCl Mercury Carrier
16I0186	Aqua Regia
16I0031	Mercury (Borosilicate Glassballs 3mm 1lb)
16H0697	NaCl-Hydroxylamine Hydrochloride (HG Reagent)
16I0035	Potassium Permanganate (KMn04)
16I0239	Stannous Chloride Mercury Reagent

Table 1

Mercury: Circle Applicable Digestion/Spike and 0.1mL Eppendorf option then staple to bench sheet

Reminder: Make sure pipettes are verified daily at volume of use for QSM5 batches!

Soil 6H29018

Amount	Curve Standards 7471 Soil
0.0 mL	
0.05mL	Mercury 1st Source (0.2ug/mL)
0.125mL	Mercury 1st Source (0.2ug/mL)
0.25mL	Mercury 1st Source (0.2ug/mL)
0.50mL	Mercury 1st Source (0.2ug/mL)
1.0mL	Mercury 1st Source (0.2ug/mL)
1.5mL	Mercury 1st Source (0.2ug/mL)
2.5mL	Mercury 1st Source (0.2ug/mL)
Circle	0.1ml Eppendorf 948897Z or 950847
Circle	1.0mL Eppendorf 1854694 or FinnPipette 1FJ61693
	5mL FinnPipette KU04206

Amount	BS/MS/MSD Standards 7471 Soil
0.50mL	Mercury 2nd Source (0.2ug/mL)
Circle	1.0mL Eppendorf 1854694 or FinnPipette 1FJ61693
Amount	**Reagents for Digestion Soil**
2.5mL	Aqua Regia
7.5mL	Potassium Permanganate

Sample Information Detail Report
Document Name: 20160913s

File Description
Default Sample Information File

Parameters Common to All Samples

Batch ID	20160913s
Volume Units	mL
Weight Units	g

Parameters That Vary By Sample

Sample No	A/S Location	Sample ID	Initial Sample Wt.
1	11	6I09006-BLK1	
2	12	6I09006-BS1	
3	13	1609019-02	
4	14	1609020-02	
5	15	1609021-02	
6	16	1609041-01	
7	17	1609041-02	
8	18	1609041-04	
9	19	1609041-05	
10	20	1609041-06	
11	21	1609041-07	
12	22	1609041-08	
13	23	6I25705-CCV1	
14	24	6I25705-CCB1	
15	25	1609041-09	
16	26	1609041-10	
17	27	1609041-11	
18	28	1609041-12	
19	29	1609041-13	
20	30	1609041-14	
21	31	1609041-15	
22	32	6I09006-MS1	
23	33	6I09006-MSD1	
24	34	1609041-16	
25	35	1609044-01	
26	36	1609044-02	
27	37	6I25705-CCV2	
28	38	6I25705-CCB2	
29	39	6I09022-BLK1	
30	40	6I09022-BS1	
31	41	1609051-02	
32	42	1609051-03	
33	43	1609051-04	
34	44	1609051-05	
35	45	1609051-06	
36	46	1609051-07	
37	47	1609051-08	
38	48	1609051-09	
39	49	1609051-10	
40	50	1609051-11	
41	51	6I25705-CCV3	
42	52	6I25705-CCB3	
43	53	1609051-12	
44	54	1609051-13	
45	55	1609051-14	
46	56	1609051-15	
47	57	1609051-16	
48	58	1609051-17	
49	59	1609051-26	
50	60	1609051-27	
51	61	1609051-28	
52	62	1609051-29	
53	63	6I09022-MS1	
54	64	6I09022-MSD1	
55	65	6I25705-CCV4	
56	66	6I25705-CCB4	
57	67	6I09023-BLK1	
58	68	6I09023-BS1	
59	69	1609051-30	
60	70	1609051-31	
61	71	1609051-32	
62	72	6I09023-MS1	
63	73	6I09023-MSD1	

64	74	1609051-33
65	75	1609051-34
66	76	1609051-35
67	77	1609051-36
68	78	1609051-37
69	79	1609051-38
70	80	1609051-39
71	81	6I25705-CCV5
72	82	6I25705-CCB5
73	83	1609051-40
74	84	1609051-41
75	85	1609051-42
76	86	1609051-43
77	87	1609051-44
78	88	1609051-45
79	89	1609051-46
80	90	1609051-47
81	91	1609051-48
82	92	1609051-49
83	93	6I25705-CCV6
84	94	6I25705-CCB6
85	95	6I09024-BLK1
86	96	6I09024-BS1
87	97	1609051-50
88	98	1609051-51
89	99	1609051-52
90	100	6I09024-MS1
91	101	6I09024-MSD1
92	102	1609051-53
93	103	1609051-54
94	104	1609051-55
95	105	1609051-56
96	106	1609051-57
97	107	1609051-58
98	108	1609051-59
99	109	6I25705-CCV7
100	110	6I25705-CCB7
101	111	1609051-60
102	112	1609051-61
103	113	1609051-62
104	114	1609051-63
105	115	1609051-64
106	116	1609051-65
107	117	1609051-66
108	118	1609051-67
109	119	1609051-68
110	120	1609051-69
111	121	6I25705-CCV8
112	122	6I25705-CCB8
113	123	6I09025-BLK1
114	124	6I09025-BS1
115	125	1609022-02
116	126	1609024-02
117	127	1609025-02
118	128	1609051-70
119	129	1609051-71
120	130	6I09025-MS1
121	131	6I09025-MSD1
122	132	1609051-44RE1@2X
123	133	1609051-48RE1@5X
124	134	1609051-52RE1@10X
125	135	6I09024-MS2@10X
126	136	6I09024-MSD2@10X
127	137	1609051-59RE1@5X
128	138	1609051-62RE1@2X
129	139	6I25705-CCV9
130	140	6I25705-CCB9
131	142	6H29018-BLK1
132	143	6H29018-BS1
133	141	1609051-69RE1@10X **9/13/2016 5:42:48 PM**
134	144	1608229-01
135	145	6H29018-MS1
136	146	6H29018-MSD1
137	147	1608229-02
138	148	1608229-03

139	149	1608229-04
140	150	1608229-05
141	151	1608229-06
142	152	1608229-07
143	153	1608229-08
144	154	1608229-09
145	155	6I25705-CCVA
146	156	6I25705-CCBA
147	9	1608229-10
148	10	1608229-11
149	11	1608229-12
150	12	1608244-06
151	13	1608244-07
152	14	1608244-08
153	15	1608244-09
154	16	1608244-10
155	17	1608244-11
156	18	6I25705-CCVB
157	19	6I25705-CCBB
158	20	1608251-01
159	21	1608251-02
160	0	RINSE
161	22	6H29019-BLK1
162	23	6H29019-BS1
163	24	1608251-03
164	25	1608251-04
165	26	1608251-05
166	27	1608251-06
167	28	1608251-07
168	29	1608251-08
169	30	1608251-09
170	31	1608251-10
171	32	6I25705-CCVC
172	33	6I25705-CCBC
173	34	1608251-11
174	35	1608251-12
175	36	1608251-13
176	37	1608251-14
177	38	1608251-15
178	39	1608251-16
179	40	1608251-17
180	41	1608251-18
181	42	1608251-19
182	43	1608251-20
183	44	6I25705-CCVD
184	45	6I25705-CCBD
185	46	1608252-20
186	47	6H29019-MS1
187	48	6H29019-MSD1
188	49	1608252-21
189	50	6I25705-CCVE
190	51	6I25705-CCBE

Sample No	Sample Prep. Vol.	Aliquot Volume	Diluted To Vol.
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*ANALYTICAL **SUMMARY** DATA PACKAGE*
SDG # 1608229

PROJECT NAME: Raritan Arsenal Phase III

SUBMITTAL TO:
Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

SUBMITTAL BY:
Empirical Laboratories, LLC (EL)
621 Mainstream Drive, Suite 270
Nashville, TN 37228
Tel (615)345-1115
Fax (866)417-0548

LABORATORY CONTACT PERSON:
Project Manager: Sonya Gordon
Tel (615)345-1115
Fax (866)417-0548
Email: sgordon@empirlabs.com

Original Report Date: September 22, 2016
Report Revision #: N/A
Revision Date: N/A

THIS DOCUMENT MEETS DoD QSM 5.0 STANDARDS

The results relate to only the samples associated with the referenced SDG and the submitted data has been produced in accordance with laboratory procedures. The Laboratory's Data Review Manager, Ms. Amy Barnett, is responsible for the final data produced and reported. Her signature is listed at the end of the Case Narrative within the Analytical Data Package. If applicable to this report package, details on report revisions and the information on subcontracted analysis are listed in the package Case Narrative. This report shall not be reproduced, except in full, without the written approval of Empirical Laboratories, LLC.

L-A-B Accredited - Certificate Number L2226 - Testing

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5	Data for Metals Required Data / QAQC / Calibration Forms Supporting Raw Data / Logs
5	Data for Mercury Required Data / QAQC / Calibration Forms Supporting Raw Data / Logs

Sample Delivery Group Case Narrative

Receipt Information:

The samples were received within the preservation guidelines for the associated methods. The information associated with sample receipt and the Sample Delivery Group (SDG) are included within section 4 of this package, which also provides information on the link between the client sample ID listed on the COC and laboratory's assigned unique sample ID or WorkOrder #. The sample is tracked through the laboratory for all analysis via the assigned WorkOrder #.

All samples that were received were analyzed and none of the samples were placed on hold without analyses. There were no subcontracted analyses for this SDG.

Changes to the Revision:

This is an original submittal of the final report package.

Analytical Information:

All samples were prepped (where applicable) and analyzed within the standard allowed holding times, unless noted within the exceptions listed below. The laboratory analyzed all samples within the program and method guidelines. Sample preparation and dilution information is provided within the final results report and at the beginning of each form set. The following information is provided specific to individual methods:

Metals:

The following compounds are qualified with an "M" to indicate that the LOD and/or DL were raised due to sample interference:
Cadmium in 1608229-03, -04, -05, -07
Silver in 1608229-01, -08, -09, -10, -11, -12

The following continuing calibration verifications exceeded criteria:
6I25301-CCV6 with a positive bias for Vanadium
6I25301-CCV8 with a positive bias for Chromium and Vanadium
Note – The associated samples are qualified with an "X".

No additional anomalies or deviations are noted and the proper data qualifiers have been applied.

Mercury:

No anomalies or deviations are noted.

Data Qualifiers:

As applicable and where required, the following general qualifiers are associated with the sample results. Additional qualifiers will be specified within the reporting sections of the data package or within the body of the Case Narrative.

Analytical Report Terms and Qualifiers

DL: The detection limit (DL) is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero. The DL is supported by the method detection limit (MDL) which is determined from analysis of a sample containing the analyte in a given matrix.

LOD: The Limit of Detection is an estimate of the minimum amount of a substance that an analytical process can reliably detect. An LOD is analyte- and matrix-specific and may be laboratory-dependent. This definition is further clarified in the DoD QSM 5.0 revisions as the smallest amount or concentration of a substance that must be present in a sample in order to be detected at a high level of confidence (99%). At the LOD, the false negative rate (Type II error) is 1%.

LOQ: The Limit of Quantitation is the minimum level, concentration, or quantity of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. This term is further clarified within the DoD QSM 5.0 as the lowest concentration that produces a quantitative result within specified limits of precision and bias.

*: Exceeding quality control criteria are associated with the reported result.

B: The presence of a "B" to the right of an analytical value indicates that this compound was also detected in the method blank and the data should be interpreted with caution. One should consider the possibility that the correct sample result might be less than the reported result and, perhaps, zero.

D: When a sample (or sample extract) is rerun diluted because one of the compound concentrations exceeded the highest concentration range for the standard curve, all of the values obtained in the dilution run will be flagged with a "D".

E: The concentration for any compound found which exceeds the highest concentration level on the standard curve for that compound will be flagged with an "E". Usually the sample will be rerun at a dilution to quantitate the flagged compound. For Metals, the qualifier indicates that the serial dilution was outside of the control limits and the compound should be considered estimated due to the presence of interference.

H: The result was analyzed, extracted, or received outside of the EPA recommended holding time.

J: The presence of a "J" to the right of an analytical result indicates that the reported result is estimated. The mass spectral data pass the identification criteria showing that the compound is present, but the calculated result is less than the LOQ. One should feel confident that the result is greater than zero and less than the LOQ.

M: Indicates that the sample matrix interfered with the quantitation of the analyte. In dual column analysis the result is reported from the column with the lower concentration. In inorganics, it

indicates that the parameters DL/LOD/LOQ have been raised.

N: The MS/MSD accuracy and/or precision are outside criteria. The predigested spike recovery is not within control limits for the associated parameter.

P: The associated numerical value is an estimated quantity. There is greater than a 40% difference between the two GC columns for the detected concentrations. The higher of the two values is reported unless matrix interference is obvious or for HPLC analysis where the primary column is reported.

Q: The relative percent difference (RPD) and/or percent recovery exceeded limits in the associated Blank Spike and/or Blank Spike Duplicate.

S: The associated internal standard exceeded criteria.

U: The presence of a "U" indicates that the analyte was analyzed for but was not detected or the concentration of the analyte quantitated below the DL.

X: The parameter shows a potential positive bias on a reported concentration due to an ICV or CCV exceeding the upper control limit on the high side.

Y: The parameter shows a potential negative bias on a reported concentration due to an ICV or CCV exceeding the lower control limit on the low side.

Z: The parameter shows lack of confirmation/detection, which may be due to a negative bias in the ICV or CCV which exceeds the lower control limit.

Chromatographic Flags for Manual Integration:

The following letters are used to denote manual integrations on the laboratory's raw data in association with chromatographic integrations:

A: The peak was manually integrated as it was not integrated in the original chromatogram.

B: The peak was manually integrated due to resolution or co-elution issues in the original chromatogram.

C: The peak was manually integrated to correct the baseline from the original chromatogram.

D: The peak was manually integrated to identify the correct peak as the wrong peak was identified in the original chromatogram.

E: The peak was manually integrated to include the entire peak as the original chromatogram only integrated part of the peak.

LIMS Definitions / Naming Conventions:

The following are general naming conventions that are used throughout the laboratory; however, on a method by method basis, there are additional QAQC items that are named in a consistent format.

BLK: LIMS assigns a unique identifier to the Method Blank by naming it as the letters BLK appended to the Batch ID. A Method Blank is an analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The Method Blank is used to

assess for possible contamination during preparation and/or analysis steps. Method Blanks within a Batch or Analytical sequence will be appended with a numerical value beginning with 1 that will increase incrementally.

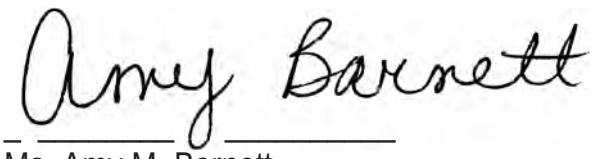
BS: LIMS assigns a unique identifier to the Blank Spike by naming it as the letters BS appended to the Batch ID. The Blank Spike or Lab Control Sample is a controlled analyte-free matrix, which is spiked with known and verified concentrations of target analytes. Spiking concentrations can be referenced in the method SOP. The BS is used to evaluate the viability of analytes taken through the entire prep (when applicable) and analytical process. Blank Spikes within a Batch or Analytical sequence will be appended with a numerical value beginning with 1 that will increase incrementally. A duplicate Blank Spike will be designated as a BSD.

MS: The LIMS assigns each Client sample with a unique identifier. The Matrix Spike is designated with a MS at the end of the sample's unique identifier. The Matrix Spike sample is used to assess the effect of the sample matrix on the precision and accuracy of the results generated using the selected method. A duplicate Matrix Spike will be designated as a MSD.

IDs: The LIMS assigns each Client sample with a unique identifier. The letter "RE" may potentially be appended to the end of the LIMS Sample ID. And "RE" implies that the sample was either re-prepped, re-analyzed straight, or re-analyzed at a dilution. Subsequent re-analysis for the sample will be appended with a numerical value beginning with 1 that will increase incrementally. Eg: RE1, RE2, RE3, etc.

Statement of Data Authenticity:

I certify that, based upon my inquiry of those individuals immediately responsible for obtaining the information and to the best of my knowledge, the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, with the exception of the conditions detailed in this Case Narrative, as verified by my signature below. During absences, the Data Quality Manager, Technical Directors or Project Managers are authorized to sign this Statement of Data Authenticity.



Ms. Amy M. Barnett
Data Review Manager

Empirical Laboratories, LLC
Certifications/Approvals
(Revised 06/30/2016)

DoD ELAP QSM5.0, Certificate Number L2226
- Aqueous
- Non-aqueous
- Expires: 11/30/2018

State of Florida, Department of Health – NELAP Primary, Lab ID: E87646
- Clean Water Act
- RCRA/CERCLA
- Expires: 06/30/2017

State of Georgia, Environmental Protection Agency – NELAP, Self Certification
- Expires: 06/30/2017

Commonwealth of Kentucky, Energy and Environment Cabinet – WWLCP, Laboratory Number: 98017
- Wastewater
- Expires: 12/31/2016

Commonwealth of Kentucky, Department of Environmental Protection – UST, Certificate Number: 77
- Aqueous
- Non-aqueous
- Expires: 06/30/2017

State of New Jersey, Department of Environmental Protection – NELAP, Lab ID: TN473
- Water Pollution
- Solid and Hazardous Waste
- Expires: 06/30/2017

State of North Carolina, Department of Environment and Natural Resources - Certificate Number: 643
- Aqueous
- Non-aqueous
- Expires: 12/31/2016

State of Texas, Commission on Environmental Quality – NELAP, Certificate Number: T104704307-16-12
- Aqueous
- Non-aqueous
- Expires: 12/31/2016

State of Utah, Department of Health – NELAP, Certificate Number: TN0042015-7
- Aqueous
- Non-aqueous
- Expires: 07/31/2016

Commonwealth of Virginia, Department of General Services – NELAP, Certificate Number: 8176, Lab ID: 460243
- Aqueous
- Non-aqueous
- Expires: 12/14/2016

State of Washington, Department of Ecology – NELAP, Lab ID: C934-16
- Groundwater
- Solid and Hazardous Waste
- Expires: 03/18/2017

ORGANIC CALCULATIONS

GC/MS Volatiles

$$\text{Final Concentration} = \frac{\text{On-column(ug/L or ug/Kg) * Expected Vol/Weight (mL or g) * Dilution}}{\text{Initial Vol/Weight (mL or g) * (Percent Solids/100) (if applicable)}}$$

Note - Expected Vol/Weight value is found in "Final Vol" column of Preparation Batch Summary.

GC/MS Extractables

$$\text{Final Concentration} = \frac{\text{On-column(ng/uL) * Final Vol (ml) * Dilution *(1000uL/mL)}}{\text{Initial Vol/Weight (mL or g) * (Percent Solids/100) (if applicable)}}$$

= ng/mL or ng/g

= ug/L or ug/kg

GC or LC Extractables

$$\text{Final Concentration} = \frac{\text{On-column(ng/mL) * Final Vol (mL) * Dilution}}{\text{Initial Vol/Weight (mL or g) * (Percent Solids/100) (if applicable)}}$$

= ng/mL or ng/g

= ug/L or ug/kg

Sample Receipt Information

1608229-01 A

EMPIRICAL LABORATORIES, LLC - CHAIN OF CUSTODY RECORD

32355

PO: 621 Mainstream Drive, Suite 270 ♦ Nashville, TN 37228 ♦ 877-345-1113 ♦ (fax) 866-417-0548

Send Results to:

Name Mike Zamboni
Company CH2M Hill
Address 2411 Dulles Corner Park, Suite 500
City Herndon
State, Zip VA, 20171
Phone 703-376-5301
Fax
E-mail Michael.Zamboni@ch2m.com

Project No./Name: PO: 100077100862

Send Invoice to:

Name CH2M Hill AP
Company CH2M Hill
Address
City
State, Zip
Phone
Fax
E-mail

Sampler's (Signature): Dan Holmes / [signature]

Analysis Requirements: TAL Metals, SW-846 6010B *

Lab Use Only:

VOA Headspace	Y	N	NA
Field Filtered	Y	N	NA
Correct Containers	Y	N	NA
Discrepancies	Y	N	NA
Cust. Seals Intact	Y	N	NA
Containers Intact	Y	N	NA

Airbill #:

CAR #:

Lab Use Only Lab #	Date/Time Sampled	Sample Description	Sample Matrix	TAL Metals, SW-846 6010B *	Comments	No. of Bottles	Lab Use Only Containers/Pres.
01	8/22/16 1035	DSA03-SB17-0010	Soil	X		1	
02	8/22/16 1055	DSA03-SB18-0010		X		1	
03	8/22/16 1110	DSA03-SB19-0010		X		1	
04	8/22/16 1140	DSA03-SB20-0010		X		1	
05	8/22/16 1418	DSA03-SB21-0010		X		1	
06	8/22/16 1448	DSA03-SB22-0010		X		1	
07	8/22/16 1522	DSA03-SB23-0010		X		1	
08	8/22/16 1545	DSA03-SB24-0010		X		1	
09	8/23/16 1030	DSA05-SB25-0010		X		1	
10	8/23/16 1101	DSA05-SB26-0010		X		1	
11	8/23/16 1255	DSA05-SB27-0010		X		1	
12	8/23/16 1316	DSA05-SB28-0010		X		1	

Sample Kit Prep'd by: (Signature)	Date/Time	Received By: (Signature)
[signature]	8/23/16 1600	
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Received for Laboratory by: (Signature)	Date/Time	Temperature
[signature]	8/24/16 833	

REMARKS:
* Metal (TAL from ILM05 (incl. Hg) + Mo)

Details:
Page 1 of 1
Cooler No. 1 of 1
Date Shipped 8/23/16
Shipped By DH
Turnaround Standard

Distribution: Original and yellow copies accompany sample shipment to laboratory; Pink retained by samplers.

II. EMPIRICAL LABORATORIES
COOLER RECEIPT FORM

Cooler Received/Opened On:8/24/16@0835 **Workorder#** 1608229

1. **Tracking #** 8731 **(last 4 digits, FedEx)**

   Courier: ___**FedEx**

2. **Temperature of rep. sample or temp blank when opened:** 1.8 *°C + correction factor (+0.1_) =* 1.9 *°C*

3. **If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen?** YES (NO)...NA

4. **Were custody seals on outside of cooler?** (YES)...NO...NA

   If yes, how many and where: 1 front

5. **Were the seals intact, signed, and dated correctly?** (YES)...NO...NA

6. **Were custody papers inside cooler?** (YES)...NO...NA

I certify that I opened the cooler and answered questions 1-6 (initial/date) TH 8/24/16

7. **Were custody seals on containers:** YES (NO) **and Intact** YES...NO...(NA)

   Were these signed and dated correctly? YES...NO...(NA)

8. **Packing material used? Bubblewrap (Plastic bag) Peanuts Vermiculite Foam Insert Paper Other None**

9. **Cooling process:** (Ice) **Ice-pack Ice (direct contact) Dry ice Other None**

10. **Did all containers arrive in good condition (unbroken)?** (YES)...NO...NA

11. **Were all container labels complete (#, date, signed, pres., etc)?** (YES)...NO...NA

12. **Did all container labels and tags agree with custody papers?** (YES)...NO...NA

13. **a. Were VOA vials received?** YES...(NO)...NA

    b. Was there observable headspace present in any VOA vial (>5mm-6mm)? YES...NO...(NA)

14. **Was there a Trip Blank in this cooler (custody seals present/intact)?** YES...(NO)...NA...**Comments**_____
    If multiple coolers, sequence #_____

I certify that I unloaded the cooler and answered questions 7-14 (initial/date) TH 8/24/16

15. **a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level?** YES...NO...(NA)

    b. Did the bottle labels indicate that the correct preservatives were used? YES...NO...(NA)

16. **Was residual chlorine present for Cyanide "Effluent" samples? If so, treated/documented?** YES...NO...(NA)

17. **For 608 Pest/PCB samples, was pH <5 or >9? Was residual chlorine present? If either, adjusted/documented?** YES...NO...(NA)

I certify that I checked for chlorine and pH as per SOP and answered questions 15-17 (initial/date) TH 8/24/16

18. **Were custody papers properly filled out (ink, signed, etc)?** (YES)...NO...NA

19. **Did you sign the custody papers in the appropriate place?** (YES)...NO...NA

20. **Were correct containers used for the analysis requested?** (YES)...NO...NA **If not, PM notified?** YES...NO...(NA)

21. **Was sufficient amount of sample sent in each container?** (YES)...NO...NA **If not, PM notified?** YES...NO...(NA)

22. **Were there Non-Conformance issues at login?** YES...(NO)...**NCR#**_____

I certify that I entered this project into LIMS and answered questions 18-22 (initial/date) TH 8/24/16

I certify that I attached a unique LIMS number label with matching sample name to each container (initial/date) TH 8/24/16

I certify that I notified the laboratory of any short holding time or RUSH parameters (initial/date) TH 8/24/16

Printed: 8/29/2016 1:19:26PM

Empirical Laboratories, LLC

WORK ORDER

1608229

Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Project Manager: Sonya Gordon
Project Number: Former Raritan Arsenal - RI/FS

Report To:
CH2M Hill, Inc.
Accounts Payable
P.O.Box 241329
Denver, CO 80224-____
Phone: (303) 771-0952
Fax: (303) 771-0952

Invoice To:
CH2M Hill, Inc.
Accounts Payable
P.O.Box 241329
Denver, CO 80224-____
Phone :(303) 771-0952
Fax: (303) 771-0952

Date Due: 09/22/2016 16:00 (20 day TAT)
Logged In By: Tiana L. Hutchings
Date Received: 08/24/2016 08:35
Received By: Tiana L. Hutchings

Samples Received at: **1.9°C**

Custody Seals	Yes	Received On Ice	Yes
Containers Intact	Yes		
COC/Labels Agree	Yes		
Preservation Confirme	No		

Analysis	TAT	Expires	Version	Comments
1608229-01 DSA03-SB17-0010 [Solid] Sampled 08/22/2016 10:35 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/19/2016 09:35		
MET_ICP_LOW6010C_FULL_Q5	20	02/18/2017 09:35	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/29/2016 09:35		
1608229-02 DSA03-SB18-0010 [Solid] Sampled 08/22/2016 10:55 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/19/2016 09:55		
MET_ICP_LOW6010C_FULL_Q5	20	02/18/2017 09:55	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/29/2016 09:55		
1608229-03 DSA03-SB19-0010 [Solid] Sampled 08/22/2016 11:10 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/19/2016 10:10		
MET_ICP_LOW6010C_FULL_Q5	20	02/18/2017 10:10	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/29/2016 10:10		
1608229-04 DSA03-SB20-0010 [Solid] Sampled 08/22/2016 11:40 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/19/2016 10:40		
MET_ICP_LOW6010C_FULL_Q5	20	02/18/2017 10:40	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/29/2016 10:40		

Printed: 8/29/2016 1:19:26PM

Empirical Laboratories, LLC

WORK ORDER

1608229

Client:	**CH2M Hill, Inc.**	**Project Manager:**	**Sonya Gordon**
Project:	**Raritan Arsenal - Phase III**	**Project Number:**	**Former Raritan Arsenal - RI/FS**

Analysis	TAT	Expires	Version	Comments
1608229-05 DSA03-SB21-0010 [Solid] Sampled 08/22/2016 14:18 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/19/2016 13:18		
MET_ICP_LOW6010C_FULL_Q5	20	02/18/2017 13:18	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/29/2016 13:18		
1608229-06 DSA03-SB22-0010 [Solid] Sampled 08/22/2016 14:48 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/19/2016 13:48		
MET_ICP_LOW6010C_FULL_Q5	20	02/18/2017 13:48	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/29/2016 13:48		
1608229-07 DSA03-SB23-0010 [Solid] Sampled 08/22/2016 15:22 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/19/2016 14:22		
MET_ICP_LOW6010C_FULL_Q5	20	02/18/2017 14:22	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/29/2016 14:22		
1608229-08 DSA03-SB24-0010 [Solid] Sampled 08/22/2016 15:45 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/19/2016 14:45		
MET_ICP_LOW6010C_FULL_Q5	20	02/18/2017 14:45	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/29/2016 14:45		
1608229-09 DSA05-SB25-0010 [Solid] Sampled 08/23/2016 10:30 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/20/2016 09:30		
MET_ICP_LOW6010C_FULL_Q5	20	02/19/2017 09:30	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/30/2016 09:30		
1608229-10 DSA05-SB26-0010 [Solid] Sampled 08/23/2016 11:01 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/20/2016 10:01		
MET_ICP_LOW6010C_FULL_Q5	20	02/19/2017 10:01	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/30/2016 10:01		

Printed: 8/29/2016 1:19:26PM

Empirical Laboratories, LLC

WORK ORDER

1608229

Client:	**CH2M Hill, Inc.**	**Project Manager:**	**Sonya Gordon**
Project:	**Raritan Arsenal - Phase III**	**Project Number:**	**Former Raritan Arsenal - RI/FS**

Analysis	TAT	Expires	Version	Comments
1608229-11 DSA05-SB27-0010 [Solid] Sampled 08/23/2016 12:55 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/20/2016 11:55		
MET_ICP_LOW6010C_FULL_Q5	20	02/19/2017 11:55	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/30/2016 11:55		
1608229-12 DSA05-SB28-0010 [Solid] Sampled 08/23/2016 13:16 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/20/2016 12:16		
MET_ICP_LOW6010C_FULL_Q5	20	02/19/2017 12:16	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/30/2016 12:16		

MET_ICP_LOW6010C_FULL_Q5 **Extraction: MET_3050B**

TAL + Mo

Aluminum
Antimony
Arsenic
Barium
Beryllium
Cadmium
Calcium
Chromium
Cobalt
Copper
Iron
Lead
Magnesium
Manganese
Molybdenum
Nickel
Potassium
Selenium
Silver
Sodium
Thallium
Vanadium
Zinc

Sample Delivery Group Assignment Form

CLIENT: CH2M Hill, Inc.
PROJECT NAME: Raritan Arsenal - Phase III
SDG #: 1608229

QC LEVEL: Level IV
Report Due: 9/22/2016
Client Sample Count: 12

Sample Type	Sampled	Received	Lab ID	Client ID	Lab Matrix	SM2540B	SW6010C	SW7471B
Client Sample	8/22/2016	8/24/2016	1608229-01	DSA03-SB17-0010	Solid	X	X	X
Client Sample	8/22/2016	8/24/2016	1608229-02	DSA03-SB18-0010	Solid	X	X	X
Client Sample	8/22/2016	8/24/2016	1608229-03	DSA03-SB19-0010	Solid	X	X	X
Client Sample	8/22/2016	8/24/2016	1608229-04	DSA03-SB20-0010	Solid	X	X	X
Client Sample	8/22/2016	8/24/2016	1608229-05	DSA03-SB21-0010	Solid	X	X	X
Client Sample	8/22/2016	8/24/2016	1608229-06	DSA03-SB22-0010	Solid	X	X	X
Client Sample	8/22/2016	8/24/2016	1608229-07	DSA03-SB23-0010	Solid	X	X	X
Client Sample	8/22/2016	8/24/2016	1608229-08	DSA03-SB24-0010	Solid	X	X	X
Client Sample	8/23/2016	8/24/2016	1608229-09	DSA05-SB25-0010	Solid	X	X	X
Client Sample	8/23/2016	8/24/2016	1608229-10	DSA05-SB26-0010	Solid	X	X	X
Client Sample	8/23/2016	8/24/2016	1608229-11	DSA05-SB27-0010	Solid	X	X	X
Client Sample	8/23/2016	8/24/2016	1608229-12	DSA05-SB28-0010	Solid	X	X	X

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB17-0010
Lab Sample ID: 1608229-01

Sample Collection D/T : 08/22/2016 10:35
Sample Matrix: Solid

Metals (Total) by ICP

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	15,654.0900	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Antimony	0.7987	mg/Kg dry	2		09/09/16 17:05		SW6010C
Arsenic	16.8733	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Barium	24.6568	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Beryllium	0.9889	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Cadmium	-0.1325	mg/Kg dry	2		09/09/16 17:05		SW6010C
Calcium	600.6511	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Chromium	28.6733	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Cobalt	15.5538	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Copper	8.2126	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Iron	46,244.6500	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Lead	8.8302	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Magnesium	3,466.0990	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Manganese	173.2785	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Molybdenum	12.3550	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Nickel	26.0794	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Potassium	2,480.3490	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Selenium	-0.2250	mg/Kg dry	2		09/09/16 17:05		SW6010C
Silver	-0.3547	mg/Kg dry	2	M	09/09/16 17:05		SW6010C
Sodium	2,414.7540	mg/Kg dry	2	D	09/09/16 17:05		SW6010C
Thallium	0.5397	mg/Kg dry	2		09/09/16 17:05		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Vanadium	45.9641	mg/Kg dry	2	X, D	09/09/16 17:05		SW6010C
Zinc	64.5916	mg/Kg dry	2	D	09/09/16 17:05		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB18-0010
Lab Sample ID: 1608229-02

Sample Collection D/T : 08/22/2016 10:55
Sample Matrix: Solid

Metals (Total) by ICP

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	7,666.7060	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Antimony	0.4080	mg/Kg dry	2		09/09/16 17:09		SW6010C
Arsenic	8.9453	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Barium	8.0373	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Beryllium	0.4667	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Cadmium	-0.0571	mg/Kg dry	2		09/09/16 17:09		SW6010C
Calcium	151.1238	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Chromium	20.9709	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Cobalt	4.9455	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Copper	8.0011	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Iron	20,487.2800	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Lead	4.6979	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Magnesium	2,715.9470	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Manganese	67.9096	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Molybdenum	0.7921	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Nickel	11.3136	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Potassium	1,569.9130	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Selenium	0.2341	mg/Kg dry	2		09/09/16 17:09		SW6010C
Silver	-0.1058	mg/Kg dry	2		09/09/16 17:09		SW6010C
Sodium	325.0858	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Thallium	0.4959	mg/Kg dry	2	D	09/09/16 17:09		SW6010C
Vanadium	30.8889	mg/Kg dry	2	X, D	09/09/16 17:09		SW6010C
Zinc	40.4162	mg/Kg dry	2	D	09/09/16 17:09		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB19-0010
Lab Sample ID: 1608229-03

Sample Collection D/T : 08/22/2016 11:10
Sample Matrix: Solid

Metals (Total) by ICP

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	7,981.7520	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Antimony	0.3735	mg/Kg dry	2		09/09/16 17:13		SW6010C
Arsenic	7.0937	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Barium	11.3281	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Beryllium	0.5912	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Cadmium	-0.1634	mg/Kg dry	2	M	09/09/16 17:13		SW6010C
Calcium	137.7236	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Chromium	17.2045	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Cobalt	3.7475	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Copper	5.9324	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Iron	28,532.3000	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Lead	5.9284	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Magnesium	1,676.8790	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Manganese	240.9632	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Molybdenum	0.8068	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Nickel	8.1834	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Potassium	1,134.1500	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Selenium	-0.0804	mg/Kg dry	2		09/09/16 17:13		SW6010C
Silver	-0.0961	mg/Kg dry	2		09/09/16 17:13		SW6010C
Sodium	402.1090	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Thallium	0.4453	mg/Kg dry	2	D	09/09/16 17:13		SW6010C
Vanadium	24.4809	mg/Kg dry	2	X, D	09/09/16 17:13		SW6010C
Zinc	35.1369	mg/Kg dry	2	D	09/09/16 17:13		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB20-0010
Lab Sample ID: 1608229-04

Sample Collection D/T : 08/22/2016 11:40
Sample Matrix: Solid

Metals (Total) by ICP

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	11,407.7700	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Antimony	0.6110	mg/Kg dry	2		09/09/16 17:18		SW6010C
Arsenic	10.7762	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Barium	11.9921	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Beryllium	1.0644	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Cadmium	-0.2564	mg/Kg dry	2	M	09/09/16 17:18		SW6010C
Calcium	237.0923	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Chromium	56.6495	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Cobalt	7.4312	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Copper	11.3638	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Iron	49,579.1000	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Lead	8.2815	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Magnesium	3,632.8390	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Manganese	190.4168	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Molybdenum	1.3602	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Nickel	17.0356	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Potassium	1,697.1670	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Selenium	0.1727	mg/Kg dry	2		09/09/16 17:18		SW6010C
Silver	-0.1239	mg/Kg dry	2		09/09/16 17:18		SW6010C
Sodium	1,087.4590	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Thallium	0.6452	mg/Kg dry	2	D	09/09/16 17:18		SW6010C
Vanadium	48.1139	mg/Kg dry	2	X, D	09/09/16 17:18		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	70.7502	mg/Kg dry	2	D	09/09/16 17:18		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB21-0010
Lab Sample ID: 1608229-05

Sample Collection D/T : 08/22/2016 14:18
Sample Matrix: Solid

Metals (Total) by ICP

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	12,490.0800	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Antimony	1.4204	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Arsenic	72.0689	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Barium	64.8123	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Beryllium	0.2985	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Cadmium	-0.2581	mg/Kg dry	2	M	09/09/16 17:22		SW6010C
Calcium	493.5146	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Chromium	54.6156	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Cobalt	5.0778	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Copper	51.4790	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Iron	52,698.4500	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Lead	97.6733	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Magnesium	4,014.1670	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Manganese	105.2909	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Molybdenum	2.8197	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Nickel	15.3406	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Potassium	3,579.9300	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Selenium	5.2763	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Silver	1.4029	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Sodium	2,607.9860	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Thallium	0.6592	mg/Kg dry	2	D	09/09/16 17:22		SW6010C
Vanadium	60.2630	mg/Kg dry	2	X, D	09/09/16 17:22		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	54.5490	mg/Kg dry	2	D	09/09/16 17:22		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB22-0010
Lab Sample ID: 1608229-06

Sample Collection D/T : 08/22/2016 14:48
Sample Matrix: Solid

Metals (Total) by ICP

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	21,496.2900	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Antimony	0.5270	mg/Kg dry	2		09/09/16 17:27		SW6010C
Arsenic	31.2238	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Barium	67.0228	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Beryllium	0.6736	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Cadmium	-0.1901	mg/Kg dry	2		09/09/16 17:27		SW6010C
Calcium	732.0161	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Chromium	59.9215	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Cobalt	6.3205	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Copper	35.0139	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Iron	37,804.9700	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Lead	62.3789	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Magnesium	5,607.2490	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Manganese	126.3770	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Molybdenum	2.8458	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Nickel	19.9536	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Potassium	4,557.7550	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Selenium	1.2242	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Silver	0.1726	mg/Kg dry	2		09/09/16 17:27		SW6010C
Sodium	1,122.0190	mg/Kg dry	2	D	09/09/16 17:27		SW6010C
Thallium	0.5585	mg/Kg dry	2		09/09/16 17:27		SW6010C
Vanadium	57.3149	mg/Kg dry	2	X, D	09/09/16 17:27		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	65.7627	mg/Kg dry	2	D	09/09/16 17:27		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB23-0010
Lab Sample ID: 1608229-07

Sample Collection D/T : 08/22/2016 15:22
Sample Matrix: Solid

Metals (Total) by ICP

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	9,185.2350	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Antimony	0.1882	mg/Kg dry	2		09/09/16 17:31		SW6010C
Arsenic	9.0003	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Barium	13.3047	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Beryllium	0.9159	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Cadmium	-0.1274	mg/Kg dry	2	M	09/09/16 17:31		SW6010C
Calcium	490.8711	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Chromium	19.3647	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Cobalt	4.2079	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Copper	6.7849	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Iron	29,953.1300	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Lead	6.1022	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Magnesium	2,101.3460	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Manganese	219.5881	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Molybdenum	1.1299	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Nickel	9.4428	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Potassium	1,512.3110	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Selenium	0.1737	mg/Kg dry	2		09/09/16 17:31		SW6010C
Silver	-0.0310	mg/Kg dry	2		09/09/16 17:31		SW6010C
Sodium	320.4213	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Thallium	0.4107	mg/Kg dry	2	D	09/09/16 17:31		SW6010C
Vanadium	29.1113	mg/Kg dry	2	X, D	09/09/16 17:31		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	39.9242	mg/Kg dry	2	D	09/09/16 17:31		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB24-0010
Lab Sample ID: 1608229-08

Sample Collection D/T : 08/22/2016 15:45
Sample Matrix: Solid

Metals (Total) by ICP

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	10,659.8800	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Antimony	0.5833	mg/Kg dry	2		09/09/16 17:35		SW6010C
Arsenic	19.7053	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Barium	18.3078	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Beryllium	0.8454	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Cadmium	-0.0403	mg/Kg dry	2		09/09/16 17:35		SW6010C
Calcium	1,333.4830	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Chromium	24.1832	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Cobalt	12.7259	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Copper	9.2606	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Iron	49,727.5200	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Lead	9.3273	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Magnesium	3,709.9600	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Manganese	227.2097	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Molybdenum	6.8085	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Nickel	17.9762	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Potassium	2,089.7330	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Selenium	-0.1424	mg/Kg dry	2		09/09/16 17:35		SW6010C
Silver	-0.2194	mg/Kg dry	2	M	09/09/16 17:35		SW6010C
Sodium	649.7983	mg/Kg dry	2	D	09/09/16 17:35		SW6010C
Thallium	0.4698	mg/Kg dry	2		09/09/16 17:35		SW6010C
Vanadium	37.2057	mg/Kg dry	2	X, D	09/09/16 17:35		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	58.0351	mg/Kg dry	2	D	09/09/16 17:35		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA05-SB25-0010
Lab Sample ID: 1608229-09

Sample Collection D/T : 08/23/2016 10:30
Sample Matrix: Solid

Metals (Total) by ICP

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	5,433.1590	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Antimony	0.6313	mg/Kg dry	2		09/09/16 17:40		SW6010C
Arsenic	2.2448	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Barium	11.8195	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Beryllium	0.3018	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Cadmium	-0.0241	mg/Kg dry	2		09/09/16 17:40		SW6010C
Calcium	2,554.8150	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Chromium	12.1847	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Cobalt	1.8859	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Copper	4.6625	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Iron	7,571.6970	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Lead	4.1827	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Magnesium	4,522.1830	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Manganese	53.0959	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Molybdenum	2.2324	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Nickel	5.2974	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Potassium	1,636.8060	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Selenium	0.0406	mg/Kg dry	2		09/09/16 17:40		SW6010C
Silver	-0.4068	mg/Kg dry	2	M	09/09/16 17:40		SW6010C
Sodium	17,011.0700	mg/Kg dry	2	D	09/09/16 17:40		SW6010C
Thallium	0.4699	mg/Kg dry	2		09/09/16 17:40		SW6010C
Vanadium	16.3767	mg/Kg dry	2	X, D	09/09/16 17:40		SW6010C
Zinc	18.1498	mg/Kg dry	2	D	09/09/16 17:40		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA05-SB26-0010
Lab Sample ID: 1608229-10

Sample Collection D/T : 08/23/2016 11:01
Sample Matrix: Solid

Metals (Total) by ICP

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	21,988.6700	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Antimony	0.3825	mg/Kg dry	2		09/09/16 17:44		SW6010C
Arsenic	13.8510	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Barium	40.9069	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Beryllium	1.1669	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Cadmium	-0.1909	mg/Kg dry	2		09/09/16 17:44		SW6010C
Calcium	2,348.5720	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Chromium	49.0244	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Cobalt	12.6436	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Copper	19.0033	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Iron	46,497.8600	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Lead	17.6879	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Magnesium	9,283.0210	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Manganese	283.6862	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Molybdenum	1.7331	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Nickel	30.1802	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Potassium	4,398.7450	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Selenium	0.4817	mg/Kg dry	2		09/09/16 17:44		SW6010C
Silver	-0.2463	mg/Kg dry	2	M	09/09/16 17:44		SW6010C
Sodium	10,302.1300	mg/Kg dry	2	D	09/09/16 17:44		SW6010C
Thallium	0.4128	mg/Kg dry	2		09/09/16 17:44		SW6010C
Vanadium	52.4222	mg/Kg dry	2	X, D	09/09/16 17:44		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	103.2926	mg/Kg dry	2	D	09/09/16 17:44		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA05-SB27-0010
Lab Sample ID: 1608229-11

Sample Collection D/T : 08/23/2016 12:55
Sample Matrix: Solid

Metals (Total) by ICP

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	20,611.6700	mg/Kg dry	2	D	09/09/16 17:57		SW6010C
Antimony	2.4641	mg/Kg dry	2		09/09/16 17:57		SW6010C
Arsenic	19.0921	mg/Kg dry	2	D	09/09/16 17:57		SW6010C
Barium	41.5819	mg/Kg dry	2	D	09/09/16 17:57		SW6010C
Beryllium	1.1540	mg/Kg dry	2	D	09/09/16 17:57		SW6010C
Cadmium	0.2246	mg/Kg dry	2		09/09/16 17:57		SW6010C
Calcium	5,887.9570	mg/Kg dry	2	D	09/09/16 17:57		SW6010C
Chromium	40.1126	mg/Kg dry	2	X, D	09/09/16 17:57		SW6010C
Cobalt	7.1399	mg/Kg dry	2	D	09/09/16 17:57		SW6010C
Copper	28.5572	mg/Kg dry	2	D	09/09/16 17:57		SW6010C
Iron	36,431.6600	mg/Kg dry	2	D	09/09/16 17:57		SW6010C
Lead	22.7943	mg/Kg dry	2	D	09/09/16 17:57		SW6010C
Magnesium	10,980.3900	mg/Kg dry	2	D	09/09/16 17:57		SW6010C
Manganese	113.3405	mg/Kg dry	2	D	09/09/16 17:57		SW6010C
Molybdenum	6.3464	mg/Kg dry	2	D	09/09/16 17:57		SW6010C
Nickel	27.0576	mg/Kg dry	2	D	09/09/16 17:57		SW6010C
Potassium	4,561.7680	mg/Kg dry	2	D	09/09/16 17:57		SW6010C
Selenium	0.0807	mg/Kg dry	2		09/09/16 17:57		SW6010C
Silver	-0.7891	mg/Kg dry	2	M	09/09/16 17:57		SW6010C
Sodium	35,516.8800	mg/Kg dry	2	D	09/09/16 17:57		SW6010C
Thallium	0.4932	mg/Kg dry	2		09/09/16 17:57		SW6010C
Vanadium	51.5207	mg/Kg dry	2	X, D	09/09/16 17:57		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	81.2565	mg/Kg dry	2	D	09/09/16 17:57		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA05-SB28-0010
Lab Sample ID: 1608229-12

Sample Collection D/T : 08/23/2016 13:16
Sample Matrix: Solid

Metals (Total) by ICP

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	20,415.0700	mg/Kg dry	2	D	09/09/16 18:02		SW6010C
Antimony	0.7272	mg/Kg dry	2		09/09/16 18:02		SW6010C
Arsenic	13.2692	mg/Kg dry	2	D	09/09/16 18:02		SW6010C
Barium	36.9921	mg/Kg dry	2	D	09/09/16 18:02		SW6010C
Beryllium	1.1740	mg/Kg dry	2	D	09/09/16 18:02		SW6010C
Cadmium	-0.0754	mg/Kg dry	2		09/09/16 18:02		SW6010C
Calcium	2,647.0420	mg/Kg dry	2	D	09/09/16 18:02		SW6010C
Chromium	39.9958	mg/Kg dry	2	X, D	09/09/16 18:02		SW6010C
Cobalt	9.2436	mg/Kg dry	2	D	09/09/16 18:02		SW6010C
Copper	13.8234	mg/Kg dry	2	D	09/09/16 18:02		SW6010C
Iron	35,713.9800	mg/Kg dry	2	D	09/09/16 18:02		SW6010C
Lead	13.8116	mg/Kg dry	2	D	09/09/16 18:02		SW6010C
Magnesium	8,745.0800	mg/Kg dry	2	D	09/09/16 18:02		SW6010C
Manganese	216.7558	mg/Kg dry	2	D	09/09/16 18:02		SW6010C
Molybdenum	2.1810	mg/Kg dry	2	D	09/09/16 18:02		SW6010C
Nickel	25.4850	mg/Kg dry	2	D	09/09/16 18:02		SW6010C
Potassium	4,171.8710	mg/Kg dry	2	D	09/09/16 18:02		SW6010C
Selenium	0.0205	mg/Kg dry	2		09/09/16 18:02		SW6010C
Silver	-0.4017	mg/Kg dry	2	M	09/09/16 18:02		SW6010C
Sodium	12,579.7800	mg/Kg dry	2	D	09/09/16 18:02		SW6010C
Thallium	0.3348	mg/Kg dry	2		09/09/16 18:02		SW6010C
Vanadium	46.9591	mg/Kg dry	2	X, D	09/09/16 18:02		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 2:41:03PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	79.4010	mg/Kg dry	2	D	09/09/16 18:02		SW6010C

Forms For

Metals

Sample Extraction Data

Prep Method: MET_3050B-SW6010C

Lab Number [Field ID]	Batch	Nominal Initial/Final	Initial [g]	Final [mL]	Dilution	% Solids	Notes	Date
1608229-01 [DSA03-SB17-0010]	6H29010	2.00/100.00	2.05	100	2.00	36.86		09/08/16
1608229-02 [DSA03-SB18-0010]	6H29010	2.00/100.00	2.03	100	2.00	76.40		09/08/16
1608229-03 [DSA03-SB19-0010]	6H29010	2.00/100.00	2.00	100	2.00	80.10		09/08/16
1608229-04 [DSA03-SB20-0010]	6H29010	2.00/100.00	2.03	100	2.00	66.30		09/08/16
1608229-05 [DSA03-SB21-0010]	6H29010	2.00/100.00	2.03	100	2.00	57.61		09/08/16
1608229-06 [DSA03-SB22-0010]	6H29010	2.00/100.00	2.04	100	2.00	49.95		09/08/16
1608229-07 [DSA03-SB23-0010]	6H29010	2.00/100.00	2.03	100	2.00	79.00		09/08/16
1608229-08 [DSA03-SB24-0010]	6H29010	2.00/100.00	2.05	100	2.00	58.85		09/08/16
1608229-09 [DSA05-SB25-0010]	6H29010	2.00/100.00	2.02	100	2.00	34.21		09/08/16
1608229-10 [DSA05-SB26-0010]	6H29010	2.00/100.00	2.00	100	2.00	43.50		09/08/16
1608229-11 [DSA05-SB27-0010]	6H29010	2.00/100.00	2.02	100	2.00	16.32		09/08/16
1608229-12 [DSA05-SB28-0010]	6H29010	2.00/100.00	2.02	100	2.00	38.73		09/08/16

ANALYSIS DATA SHEET

DSA03-SB17-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 10:35
% Solids: 36.86

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-01
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	15700	**13.2**	26.5	52.9	2	D	SW6010C	6H29010	09/09/16 17:05
7440-36-0	Antimony		1.32	2.12	2.65	2	U	SW6010C	6H29010	09/09/16 17:05
7440-38-2	Arsenic	16.9	**0.794**	1.59	2.65	2	D	SW6010C	6H29010	09/09/16 17:05
7440-39-3	Barium	24.7	**1.32**	2.65	10.6	2	D	SW6010C	6H29010	09/09/16 17:05
7440-41-7	Beryllium	0.989	**0.265**	0.529	1.32	2	J D	SW6010C	6H29010	09/09/16 17:05
7440-43-9	Cadmium		0.265	0.529	1.32	2	U	SW6010C	6H29010	09/09/16 17:05
7440-70-2	Calcium	601	**265**	529	1320	2	J D	SW6010C	6H29010	09/09/16 17:05
7440-47-3	Chromium	28.7	**0.529**	1.06	2.65	2	D	SW6010C	6H29010	09/09/16 17:05
7440-48-4	Cobalt	15.6	**1.32**	2.65	3.31	2	D	SW6010C	6H29010	09/09/16 17:05
7440-50-8	Copper	8.21	**1.06**	2.12	2.65	2	D	SW6010C	6H29010	09/09/16 17:05
7439-89-6	Iron	46200	**7.94**	15.9	26.5	2	D	SW6010C	6H29010	09/09/16 17:05
7439-92-1	Lead	8.83	**0.397**	0.794	1.32	2	D	SW6010C	6H29010	09/09/16 17:05
7439-95-4	Magnesium	3470	**265**	794	1320	2	D	SW6010C	6H29010	09/09/16 17:05
7439-96-5	Manganese	173	**0.794**	1.59	3.97	2	D	SW6010C	6H29010	09/09/16 17:05
7439-98-7	Molybdenum	12.4	**1.32**	2.65	5.29	2	D	SW6010C	6H29010	09/09/16 17:05
7440-02-0	Nickel	26.1	**0.794**	1.59	2.65	2	D	SW6010C	6H29010	09/09/16 17:05
7440-09-7	Potassium	2480	**265**	794	1320	2	D	SW6010C	6H29010	09/09/16 17:05
7782-49-2	Selenium		0.794	1.32	2.65	2	U	SW6010C	6H29010	09/09/16 17:05
7440-22-4	Silver		0.529	0.529	2.65	2	M U	SW6010C	6H29010	09/09/16 17:05
7440-23-5	Sodium	2410	**265**	794	1320	2	D	SW6010C	6H29010	09/09/16 17:05
7440-28-0	Thallium		0.794	1.06	2.12	2	U	SW6010C	6H29010	09/09/16 17:05
7440-62-2	Vanadium	46.0	**1.32**	2.65	3.31	2	X D	SW6010C	6H29010	09/09/16 17:05
7440-66-6	Zinc	64.6	**1.32**	2.65	5.29	2	D	SW6010C	6H29010	09/09/16 17:05

ANALYSIS DATA SHEET

DSA03-SB18-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 10:55
% Solids: 76.40

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-02
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	7670	**6.45**	12.9	25.8	2	D	SW6010C	6H29010	09/09/16 17:09
7440-36-0	Antimony		0.645	1.03	1.29	2	U	SW6010C	6H29010	09/09/16 17:09
7440-38-2	Arsenic	8.95	**0.387**	0.774	1.29	2	D	SW6010C	6H29010	09/09/16 17:09
7440-39-3	Barium	8.04	**0.645**	1.29	5.16	2	D	SW6010C	6H29010	09/09/16 17:09
7440-41-7	Beryllium	0.467	**0.129**	0.258	0.645	2	J D	SW6010C	6H29010	09/09/16 17:09
7440-43-9	Cadmium		0.129	0.258	0.645	2	U	SW6010C	6H29010	09/09/16 17:09
7440-70-2	Calcium	151	**129**	258	645	2	J D	SW6010C	6H29010	09/09/16 17:09
7440-47-3	Chromium	21.0	**0.258**	0.516	1.29	2	D	SW6010C	6H29010	09/09/16 17:09
7440-48-4	Cobalt	4.95	**0.645**	1.29	1.61	2	D	SW6010C	6H29010	09/09/16 17:09
7440-50-8	Copper	8.00	**0.516**	1.03	1.29	2	D	SW6010C	6H29010	09/09/16 17:09
7439-89-6	Iron	20500	**3.87**	7.74	12.9	2	D	SW6010C	6H29010	09/09/16 17:09
7439-92-1	Lead	4.70	**0.193**	0.387	0.645	2	D	SW6010C	6H29010	09/09/16 17:09
7439-95-4	Magnesium	2720	**129**	387	645	2	D	SW6010C	6H29010	09/09/16 17:09
7439-96-5	Manganese	67.9	**0.387**	0.774	1.93	2	D	SW6010C	6H29010	09/09/16 17:09
7439-98-7	Molybdenum	0.792	**0.645**	1.29	2.58	2	J D	SW6010C	6H29010	09/09/16 17:09
7440-02-0	Nickel	11.3	**0.387**	0.774	1.29	2	D	SW6010C	6H29010	09/09/16 17:09
7440-09-7	Potassium	1570	**129**	387	645	2	D	SW6010C	6H29010	09/09/16 17:09
7782-49-2	Selenium		0.387	0.645	1.29	2	U	SW6010C	6H29010	09/09/16 17:09
7440-22-4	Silver		0.129	0.258	1.29	2	U	SW6010C	6H29010	09/09/16 17:09
7440-23-5	Sodium	325	**129**	387	645	2	J D	SW6010C	6H29010	09/09/16 17:09
7440-28-0	Thallium	0.496	**0.387**	0.516	1.03	2	J D	SW6010C	6H29010	09/09/16 17:09
7440-62-2	Vanadium	30.9	**0.645**	1.29	1.61	2	X D	SW6010C	6H29010	09/09/16 17:09
7440-66-6	Zinc	40.4	**0.645**	1.29	2.58	2	D	SW6010C	6H29010	09/09/16 17:09

ANALYSIS DATA SHEET

DSA03-SB19-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 11:10
% Solids: 80.10

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-03
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	7980	**6.24**	12.5	25.0	2	D	SW6010C	6H29010	09/09/16 17:13
7440-36-0	Antimony		0.624	0.999	1.25	2	U	SW6010C	6H29010	09/09/16 17:13
7440-38-2	Arsenic	7.09	**0.375**	0.749	1.25	2	D	SW6010C	6H29010	09/09/16 17:13
7440-39-3	Barium	11.3	**0.624**	1.25	4.99	2	D	SW6010C	6H29010	09/09/16 17:13
7440-41-7	Beryllium	0.591	**0.125**	0.250	0.624	2	J D	SW6010C	6H29010	09/09/16 17:13
7440-43-9	Cadmium		0.250	0.250	0.624	2	M U	SW6010C	6H29010	09/09/16 17:13
7440-70-2	Calcium	138	**125**	250	624	2	J D	SW6010C	6H29010	09/09/16 17:13
7440-47-3	Chromium	17.2	**0.250**	0.499	1.25	2	D	SW6010C	6H29010	09/09/16 17:13
7440-48-4	Cobalt	3.75	**0.624**	1.25	1.56	2	D	SW6010C	6H29010	09/09/16 17:13
7440-50-8	Copper	5.93	**0.499**	0.999	1.25	2	D	SW6010C	6H29010	09/09/16 17:13
7439-89-6	Iron	28500	**3.75**	7.49	12.5	2	D	SW6010C	6H29010	09/09/16 17:13
7439-92-1	Lead	5.93	**0.187**	0.375	0.624	2	D	SW6010C	6H29010	09/09/16 17:13
7439-95-4	Magnesium	1680	**125**	375	624	2	D	SW6010C	6H29010	09/09/16 17:13
7439-96-5	Manganese	241	**0.375**	0.749	1.87	2	D	SW6010C	6H29010	09/09/16 17:13
7439-98-7	Molybdenum	0.807	**0.624**	1.25	2.50	2	J D	SW6010C	6H29010	09/09/16 17:13
7440-02-0	Nickel	8.18	**0.375**	0.749	1.25	2	D	SW6010C	6H29010	09/09/16 17:13
7440-09-7	Potassium	1130	**125**	375	624	2	D	SW6010C	6H29010	09/09/16 17:13
7782-49-2	Selenium		0.375	0.624	1.25	2	U	SW6010C	6H29010	09/09/16 17:13
7440-22-4	Silver		0.125	0.250	1.25	2	U	SW6010C	6H29010	09/09/16 17:13
7440-23-5	Sodium	402	**125**	375	624	2	J D	SW6010C	6H29010	09/09/16 17:13
7440-28-0	Thallium	0.445	**0.375**	0.499	0.999	2	J D	SW6010C	6H29010	09/09/16 17:13
7440-62-2	Vanadium	24.5	**0.624**	1.25	1.56	2	X D	SW6010C	6H29010	09/09/16 17:13
7440-66-6	Zinc	35.1	**0.624**	1.25	2.50	2	D	SW6010C	6H29010	09/09/16 17:13

ANALYSIS DATA SHEET

DSA03-SB20-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 11:40
% Solids: 66.30

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-04
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	11400	**7.43**	14.9	29.7	2	D	SW6010C	6H29010	09/09/16 17:18
7440-36-0	Antimony		0.743	1.19	1.49	2	U	SW6010C	6H29010	09/09/16 17:18
7440-38-2	Arsenic	10.8	**0.446**	0.892	1.49	2	D	SW6010C	6H29010	09/09/16 17:18
7440-39-3	Barium	12.0	**0.743**	1.49	5.94	2	D	SW6010C	6H29010	09/09/16 17:18
7440-41-7	Beryllium	1.06	**0.149**	0.297	0.743	2	D	SW6010C	6H29010	09/09/16 17:18
7440-43-9	Cadmium		0.297	0.297	0.743	2	M U	SW6010C	6H29010	09/09/16 17:18
7440-70-2	Calcium	237	**149**	297	743	2	J D	SW6010C	6H29010	09/09/16 17:18
7440-47-3	Chromium	56.6	**0.297**	0.594	1.49	2	D	SW6010C	6H29010	09/09/16 17:18
7440-48-4	Cobalt	7.43	**0.743**	1.49	1.86	2	D	SW6010C	6H29010	09/09/16 17:18
7440-50-8	Copper	11.4	**0.594**	1.19	1.49	2	D	SW6010C	6H29010	09/09/16 17:18
7439-89-6	Iron	49600	**4.46**	8.92	14.9	2	D	SW6010C	6H29010	09/09/16 17:18
7439-92-1	Lead	8.28	**0.223**	0.446	0.743	2	D	SW6010C	6H29010	09/09/16 17:18
7439-95-4	Magnesium	3630	**149**	446	743	2	D	SW6010C	6H29010	09/09/16 17:18
7439-96-5	Manganese	190	**0.446**	0.892	2.23	2	D	SW6010C	6H29010	09/09/16 17:18
7439-98-7	Molybdenum	1.36	**0.743**	1.49	2.97	2	J D	SW6010C	6H29010	09/09/16 17:18
7440-02-0	Nickel	17.0	**0.446**	0.892	1.49	2	D	SW6010C	6H29010	09/09/16 17:18
7440-09-7	Potassium	1700	**149**	446	743	2	D	SW6010C	6H29010	09/09/16 17:18
7782-49-2	Selenium		0.446	0.743	1.49	2	U	SW6010C	6H29010	09/09/16 17:18
7440-22-4	Silver		0.149	0.297	1.49	2	U	SW6010C	6H29010	09/09/16 17:18
7440-23-5	Sodium	1090	**149**	446	743	2	D	SW6010C	6H29010	09/09/16 17:18
7440-28-0	Thallium	0.645	**0.446**	0.594	1.19	2	J D	SW6010C	6H29010	09/09/16 17:18
7440-62-2	Vanadium	48.1	**0.743**	1.49	1.86	2	X D	SW6010C	6H29010	09/09/16 17:18
7440-66-6	Zinc	70.8	**0.743**	1.49	2.97	2	D	SW6010C	6H29010	09/09/16 17:18

ANALYSIS DATA SHEET

DSA03-SB21-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 14:18
% Solids: 57.61

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-05
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	12500	**8.55**	17.1	34.2	2	D	SW6010C	6H29010	09/09/16 17:22
7440-36-0	Antimony	1.42	**0.855**	1.37	1.71	2	J D	SW6010C	6H29010	09/09/16 17:22
7440-38-2	Arsenic	72.1	**0.513**	1.03	1.71	2	D	SW6010C	6H29010	09/09/16 17:22
7440-39-3	Barium	64.8	**0.855**	1.71	6.84	2	D	SW6010C	6H29010	09/09/16 17:22
7440-41-7	Beryllium	0.298	**0.171**	0.342	0.855	2	J D	SW6010C	6H29010	09/09/16 17:22
7440-43-9	Cadmium		0.342	0.342	0.855	2	M U	SW6010C	6H29010	09/09/16 17:22
7440-70-2	Calcium	494	**171**	342	855	2	J D	SW6010C	6H29010	09/09/16 17:22
7440-47-3	Chromium	54.6	**0.342**	0.684	1.71	2	D	SW6010C	6H29010	09/09/16 17:22
7440-48-4	Cobalt	5.08	**0.855**	1.71	2.14	2	D	SW6010C	6H29010	09/09/16 17:22
7440-50-8	Copper	51.5	**0.684**	1.37	1.71	2	D	SW6010C	6H29010	09/09/16 17:22
7439-89-6	Iron	52700	**5.13**	10.3	17.1	2	D	SW6010C	6H29010	09/09/16 17:22
7439-92-1	Lead	97.7	**0.257**	0.513	0.855	2	D	SW6010C	6H29010	09/09/16 17:22
7439-95-4	Magnesium	4010	**171**	513	855	2	D	SW6010C	6H29010	09/09/16 17:22
7439-96-5	Manganese	105	**0.513**	1.03	2.57	2	D	SW6010C	6H29010	09/09/16 17:22
7439-98-7	Molybdenum	2.82	**0.855**	1.71	3.42	2	J D	SW6010C	6H29010	09/09/16 17:22
7440-02-0	Nickel	15.3	**0.513**	1.03	1.71	2	D	SW6010C	6H29010	09/09/16 17:22
7440-09-7	Potassium	3580	**171**	513	855	2	D	SW6010C	6H29010	09/09/16 17:22
7782-49-2	Selenium	5.28	**0.513**	0.855	1.71	2	D	SW6010C	6H29010	09/09/16 17:22
7440-22-4	Silver	1.40	**0.171**	0.342	1.71	2	J D	SW6010C	6H29010	09/09/16 17:22
7440-23-5	Sodium	2610	**171**	513	855	2	D	SW6010C	6H29010	09/09/16 17:22
7440-28-0	Thallium	0.659	**0.513**	0.684	1.37	2	J D	SW6010C	6H29010	09/09/16 17:22
7440-62-2	Vanadium	60.3	**0.855**	1.71	2.14	2	X D	SW6010C	6H29010	09/09/16 17:22
7440-66-6	Zinc	54.5	**0.855**	1.71	3.42	2	D	SW6010C	6H29010	09/09/16 17:22

ANALYSIS DATA SHEET

DSA03-SB22-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 14:48
% Solids: 49.95

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-06
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	21500	**9.81**	19.6	39.3	2	D	SW6010C	6H29010	09/09/16 17:27
7440-36-0	Antimony		0.981	1.57	1.96	2	U	SW6010C	6H29010	09/09/16 17:27
7440-38-2	Arsenic	31.2	**0.589**	1.18	1.96	2	D	SW6010C	6H29010	09/09/16 17:27
7440-39-3	Barium	67.0	**0.981**	1.96	7.85	2	D	SW6010C	6H29010	09/09/16 17:27
7440-41-7	Beryllium	0.674	**0.196**	0.393	0.981	2	J D	SW6010C	6H29010	09/09/16 17:27
7440-43-9	Cadmium		0.196	0.393	0.981	2	U	SW6010C	6H29010	09/09/16 17:27
7440-70-2	Calcium	732	**196**	393	981	2	J D	SW6010C	6H29010	09/09/16 17:27
7440-47-3	Chromium	59.9	**0.393**	0.785	1.96	2	D	SW6010C	6H29010	09/09/16 17:27
7440-48-4	Cobalt	6.32	**0.981**	1.96	2.45	2	D	SW6010C	6H29010	09/09/16 17:27
7440-50-8	Copper	35.0	**0.785**	1.57	1.96	2	D	SW6010C	6H29010	09/09/16 17:27
7439-89-6	Iron	37800	**5.89**	11.8	19.6	2	D	SW6010C	6H29010	09/09/16 17:27
7439-92-1	Lead	62.4	**0.294**	0.589	0.981	2	D	SW6010C	6H29010	09/09/16 17:27
7439-95-4	Magnesium	5610	**196**	589	981	2	D	SW6010C	6H29010	09/09/16 17:27
7439-96-5	Manganese	126	**0.589**	1.18	2.94	2	D	SW6010C	6H29010	09/09/16 17:27
7439-98-7	Molybdenum	2.85	**0.981**	1.96	3.93	2	J D	SW6010C	6H29010	09/09/16 17:27
7440-02-0	Nickel	20.0	**0.589**	1.18	1.96	2	D	SW6010C	6H29010	09/09/16 17:27
7440-09-7	Potassium	4560	**196**	589	981	2	D	SW6010C	6H29010	09/09/16 17:27
7782-49-2	Selenium	1.22	**0.589**	0.981	1.96	2	J D	SW6010C	6H29010	09/09/16 17:27
7440-22-4	Silver		0.196	0.393	1.96	2	U	SW6010C	6H29010	09/09/16 17:27
7440-23-5	Sodium	1120	**196**	589	981	2	D	SW6010C	6H29010	09/09/16 17:27
7440-28-0	Thallium		0.589	0.785	1.57	2	U	SW6010C	6H29010	09/09/16 17:27
7440-62-2	Vanadium	57.3	**0.981**	1.96	2.45	2	X D	SW6010C	6H29010	09/09/16 17:27
7440-66-6	Zinc	65.8	**0.981**	1.96	3.93	2	D	SW6010C	6H29010	09/09/16 17:27

ANALYSIS DATA SHEET

DSA03-SB23-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 15:22
% Solids: 79.00

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-07
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	9190	**6.24**	12.5	24.9	2	D	SW6010C	6H29010	09/09/16 17:31
7440-36-0	Antimony		0.624	0.998	1.25	2	U	SW6010C	6H29010	09/09/16 17:31
7440-38-2	Arsenic	9.00	**0.374**	0.748	1.25	2	D	SW6010C	6H29010	09/09/16 17:31
7440-39-3	Barium	13.3	**0.624**	1.25	4.99	2	D	SW6010C	6H29010	09/09/16 17:31
7440-41-7	Beryllium	0.916	**0.125**	0.249	0.624	2	D	SW6010C	6H29010	09/09/16 17:31
7440-43-9	Cadmium		0.249	0.249	0.624	2	M U	SW6010C	6H29010	09/09/16 17:31
7440-70-2	Calcium	491	**125**	249	624	2	J D	SW6010C	6H29010	09/09/16 17:31
7440-47-3	Chromium	19.4	**0.249**	0.499	1.25	2	D	SW6010C	6H29010	09/09/16 17:31
7440-48-4	Cobalt	4.21	**0.624**	1.25	1.56	2	D	SW6010C	6H29010	09/09/16 17:31
7440-50-8	Copper	6.78	**0.499**	0.998	1.25	2	D	SW6010C	6H29010	09/09/16 17:31
7439-89-6	Iron	30000	**3.74**	7.48	12.5	2	D	SW6010C	6H29010	09/09/16 17:31
7439-92-1	Lead	6.10	**0.187**	0.374	0.624	2	D	SW6010C	6H29010	09/09/16 17:31
7439-95-4	Magnesium	2100	**125**	374	624	2	D	SW6010C	6H29010	09/09/16 17:31
7439-96-5	Manganese	220	**0.374**	0.748	1.87	2	D	SW6010C	6H29010	09/09/16 17:31
7439-98-7	Molybdenum	1.13	**0.624**	1.25	2.49	2	J D	SW6010C	6H29010	09/09/16 17:31
7440-02-0	Nickel	9.44	**0.374**	0.748	1.25	2	D	SW6010C	6H29010	09/09/16 17:31
7440-09-7	Potassium	1510	**125**	374	624	2	D	SW6010C	6H29010	09/09/16 17:31
7782-49-2	Selenium		0.374	0.624	1.25	2	U	SW6010C	6H29010	09/09/16 17:31
7440-22-4	Silver		0.125	0.249	1.25	2	U	SW6010C	6H29010	09/09/16 17:31
7440-23-5	Sodium	320	**125**	374	624	2	J D	SW6010C	6H29010	09/09/16 17:31
7440-28-0	Thallium	0.411	**0.374**	0.499	0.998	2	J D	SW6010C	6H29010	09/09/16 17:31
7440-62-2	Vanadium	29.1	**0.624**	1.25	1.56	2	X D	SW6010C	6H29010	09/09/16 17:31
7440-66-6	Zinc	39.9	**0.624**	1.25	2.49	2	D	SW6010C	6H29010	09/09/16 17:31

ANALYSIS DATA SHEET

DSA03-SB24-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 15:45
% Solids: 58.85

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-08
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	10700	**8.29**	16.6	33.2	2	D	SW6010C	6H29010	09/09/16 17:35
7440-36-0	Antimony		0.829	1.33	1.66	2	U	SW6010C	6H29010	09/09/16 17:35
7440-38-2	Arsenic	19.7	**0.497**	0.995	1.66	2	D	SW6010C	6H29010	09/09/16 17:35
7440-39-3	Barium	18.3	**0.829**	1.66	6.63	2	D	SW6010C	6H29010	09/09/16 17:35
7440-41-7	Beryllium	0.845	**0.166**	0.332	0.829	2	D	SW6010C	6H29010	09/09/16 17:35
7440-43-9	Cadmium		0.166	0.332	0.829	2	U	SW6010C	6H29010	09/09/16 17:35
7440-70-2	Calcium	1330	**166**	332	829	2	D	SW6010C	6H29010	09/09/16 17:35
7440-47-3	Chromium	24.2	**0.332**	0.663	1.66	2	D	SW6010C	6H29010	09/09/16 17:35
7440-48-4	Cobalt	12.7	**0.829**	1.66	2.07	2	D	SW6010C	6H29010	09/09/16 17:35
7440-50-8	Copper	9.26	**0.663**	1.33	1.66	2	D	SW6010C	6H29010	09/09/16 17:35
7439-89-6	Iron	49700	**4.97**	9.95	16.6	2	D	SW6010C	6H29010	09/09/16 17:35
7439-92-1	Lead	9.33	**0.249**	0.497	0.829	2	D	SW6010C	6H29010	09/09/16 17:35
7439-95-4	Magnesium	3710	**166**	497	829	2	D	SW6010C	6H29010	09/09/16 17:35
7439-96-5	Manganese	227	**0.497**	0.995	2.49	2	D	SW6010C	6H29010	09/09/16 17:35
7439-98-7	Molybdenum	6.81	**0.829**	1.66	3.32	2	D	SW6010C	6H29010	09/09/16 17:35
7440-02-0	Nickel	18.0	**0.497**	0.995	1.66	2	D	SW6010C	6H29010	09/09/16 17:35
7440-09-7	Potassium	2090	**166**	497	829	2	D	SW6010C	6H29010	09/09/16 17:35
7782-49-2	Selenium		0.497	0.829	1.66	2	U	SW6010C	6H29010	09/09/16 17:35
7440-22-4	Silver		0.332	0.332	1.66	2	M U	SW6010C	6H29010	09/09/16 17:35
7440-23-5	Sodium	650	**166**	497	829	2	J D	SW6010C	6H29010	09/09/16 17:35
7440-28-0	Thallium		0.497	0.663	1.33	2	U	SW6010C	6H29010	09/09/16 17:35
7440-62-2	Vanadium	37.2	**0.829**	1.66	2.07	2	X D	SW6010C	6H29010	09/09/16 17:35
7440-66-6	Zinc	58.0	**0.829**	1.66	3.32	2	D	SW6010C	6H29010	09/09/16 17:35

ANALYSIS DATA SHEET

DSA05-SB25-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/23/16 10:30
% Solids: 34.21

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-09
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	5430	**14.5**	28.9	57.9	2	D	SW6010C	6H29010	09/09/16 17:40
7440-36-0	Antimony		1.45	2.32	2.89	2	U	SW6010C	6H29010	09/09/16 17:40
7440-38-2	Arsenic	2.24	**0.868**	1.74	2.89	2	J D	SW6010C	6H29010	09/09/16 17:40
7440-39-3	Barium	11.8	**1.45**	2.89	11.6	2	D	SW6010C	6H29010	09/09/16 17:40
7440-41-7	Beryllium	0.302	**0.289**	0.579	1.45	2	J D	SW6010C	6H29010	09/09/16 17:40
7440-43-9	Cadmium		0.289	0.579	1.45	2	U	SW6010C	6H29010	09/09/16 17:40
7440-70-2	Calcium	2550	**289**	579	1450	2	D	SW6010C	6H29010	09/09/16 17:40
7440-47-3	Chromium	12.2	**0.579**	1.16	2.89	2	D	SW6010C	6H29010	09/09/16 17:40
7440-48-4	Cobalt	1.89	**1.45**	2.89	3.62	2	J D	SW6010C	6H29010	09/09/16 17:40
7440-50-8	Copper	4.66	**1.16**	2.32	2.89	2	D	SW6010C	6H29010	09/09/16 17:40
7439-89-6	Iron	7570	**8.68**	17.4	28.9	2	D	SW6010C	6H29010	09/09/16 17:40
7439-92-1	Lead	4.18	**0.434**	0.868	1.45	2	D	SW6010C	6H29010	09/09/16 17:40
7439-95-4	Magnesium	4520	**289**	868	1450	2	D	SW6010C	6H29010	09/09/16 17:40
7439-96-5	Manganese	53.1	**0.868**	1.74	4.34	2	D	SW6010C	6H29010	09/09/16 17:40
7439-98-7	Molybdenum	2.23	**1.45**	2.89	5.79	2	J D	SW6010C	6H29010	09/09/16 17:40
7440-02-0	Nickel	5.30	**0.868**	1.74	2.89	2	D	SW6010C	6H29010	09/09/16 17:40
7440-09-7	Potassium	1640	**289**	868	1450	2	D	SW6010C	6H29010	09/09/16 17:40
7782-49-2	Selenium		0.868	1.45	2.89	2	U	SW6010C	6H29010	09/09/16 17:40
7440-22-4	Silver		0.579	0.579	2.89	2	M U	SW6010C	6H29010	09/09/16 17:40
7440-23-5	Sodium	17000	**289**	868	1450	2	D	SW6010C	6H29010	09/09/16 17:40
7440-28-0	Thallium		0.868	1.16	2.32	2	U	SW6010C	6H29010	09/09/16 17:40
7440-62-2	Vanadium	16.4	**1.45**	2.89	3.62	2	X D	SW6010C	6H29010	09/09/16 17:40
7440-66-6	Zinc	18.1	**1.45**	2.89	5.79	2	D	SW6010C	6H29010	09/09/16 17:40

ANALYSIS DATA SHEET

DSA05-SB26-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/23/16 11:01
% Solids: 43.50

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-10
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	22000	**11.5**	23.0	46.0	2	D	SW6010C	6H29010	09/09/16 17:44
7440-36-0	Antimony		1.15	1.84	2.30	2	U	SW6010C	6H29010	09/09/16 17:44
7440-38-2	Arsenic	13.9	**0.690**	1.38	2.30	2	D	SW6010C	6H29010	09/09/16 17:44
7440-39-3	Barium	40.9	**1.15**	2.30	9.20	2	D	SW6010C	6H29010	09/09/16 17:44
7440-41-7	Beryllium	1.17	**0.230**	0.460	1.15	2	D	SW6010C	6H29010	09/09/16 17:44
7440-43-9	Cadmium		0.230	0.460	1.15	2	U	SW6010C	6H29010	09/09/16 17:44
7440-70-2	Calcium	2350	**230**	460	1150	2	D	SW6010C	6H29010	09/09/16 17:44
7440-47-3	Chromium	49.0	**0.460**	0.920	2.30	2	D	SW6010C	6H29010	09/09/16 17:44
7440-48-4	Cobalt	12.6	**1.15**	2.30	2.87	2	D	SW6010C	6H29010	09/09/16 17:44
7440-50-8	Copper	19.0	**0.920**	1.84	2.30	2	D	SW6010C	6H29010	09/09/16 17:44
7439-89-6	Iron	46500	**6.90**	13.8	23.0	2	D	SW6010C	6H29010	09/09/16 17:44
7439-92-1	Lead	17.7	**0.345**	0.690	1.15	2	D	SW6010C	6H29010	09/09/16 17:44
7439-95-4	Magnesium	9280	**230**	690	1150	2	D	SW6010C	6H29010	09/09/16 17:44
7439-96-5	Manganese	284	**0.690**	1.38	3.45	2	D	SW6010C	6H29010	09/09/16 17:44
7439-98-7	Molybdenum	1.73	**1.15**	2.30	4.60	2	J D	SW6010C	6H29010	09/09/16 17:44
7440-02-0	Nickel	30.2	**0.690**	1.38	2.30	2	D	SW6010C	6H29010	09/09/16 17:44
7440-09-7	Potassium	4400	**230**	690	1150	2	D	SW6010C	6H29010	09/09/16 17:44
7782-49-2	Selenium		0.690	1.15	2.30	2	U	SW6010C	6H29010	09/09/16 17:44
7440-22-4	Silver		0.460	0.460	2.30	2	M U	SW6010C	6H29010	09/09/16 17:44
7440-23-5	Sodium	10300	**230**	690	1150	2	D	SW6010C	6H29010	09/09/16 17:44
7440-28-0	Thallium		0.690	0.920	1.84	2	U	SW6010C	6H29010	09/09/16 17:44
7440-62-2	Vanadium	52.4	**1.15**	2.30	2.87	2	X D	SW6010C	6H29010	09/09/16 17:44
7440-66-6	Zinc	103	**1.15**	2.30	4.60	2	D	SW6010C	6H29010	09/09/16 17:44

ANALYSIS DATA SHEET

DSA05-SB27-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/23/16 12:55
% Solids: 16.32

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-11
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	20600	**30.3**	60.7	121	2	D	SW6010C	6H29010	09/09/16 17:57
7440-36-0	Antimony		3.03	4.85	6.07	2	U	SW6010C	6H29010	09/09/16 17:57
7440-38-2	Arsenic	19.1	**1.82**	3.64	6.07	2	D	SW6010C	6H29010	09/09/16 17:57
7440-39-3	Barium	41.6	**3.03**	6.07	24.3	2	D	SW6010C	6H29010	09/09/16 17:57
7440-41-7	Beryllium	1.15	**0.607**	1.21	3.03	2	J D	SW6010C	6H29010	09/09/16 17:57
7440-43-9	Cadmium		0.607	1.21	3.03	2	U	SW6010C	6H29010	09/09/16 17:57
7440-70-2	Calcium	5890	**607**	1210	3030	2	D	SW6010C	6H29010	09/09/16 17:57
7440-47-3	Chromium	40.1	**1.21**	2.43	6.07	2	X D	SW6010C	6H29010	09/09/16 17:57
7440-48-4	Cobalt	7.14	**3.03**	6.07	7.58	2	J D	SW6010C	6H29010	09/09/16 17:57
7440-50-8	Copper	28.6	**2.43**	4.85	6.07	2	D	SW6010C	6H29010	09/09/16 17:57
7439-89-6	Iron	36400	**18.2**	36.4	60.7	2	D	SW6010C	6H29010	09/09/16 17:57
7439-92-1	Lead	22.8	**0.910**	1.82	3.03	2	D	SW6010C	6H29010	09/09/16 17:57
7439-95-4	Magnesium	11000	**607**	1820	3030	2	D	SW6010C	6H29010	09/09/16 17:57
7439-96-5	Manganese	113	**1.82**	3.64	9.10	2	D	SW6010C	6H29010	09/09/16 17:57
7439-98-7	Molybdenum	6.35	**3.03**	6.07	12.1	2	J D	SW6010C	6H29010	09/09/16 17:57
7440-02-0	Nickel	27.1	**1.82**	3.64	6.07	2	D	SW6010C	6H29010	09/09/16 17:57
7440-09-7	Potassium	4560	**607**	1820	3030	2	D	SW6010C	6H29010	09/09/16 17:57
7782-49-2	Selenium		1.82	3.03	6.07	2	U	SW6010C	6H29010	09/09/16 17:57
7440-22-4	Silver		1.21	1.21	6.07	2	M U	SW6010C	6H29010	09/09/16 17:57
7440-23-5	Sodium	35500	**607**	1820	3030	2	D	SW6010C	6H29010	09/09/16 17:57
7440-28-0	Thallium		1.82	2.43	4.85	2	U	SW6010C	6H29010	09/09/16 17:57
7440-62-2	Vanadium	51.5	**3.03**	6.07	7.58	2	X D	SW6010C	6H29010	09/09/16 17:57
7440-66-6	Zinc	81.3	**3.03**	6.07	12.1	2	D	SW6010C	6H29010	09/09/16 17:57

ANALYSIS DATA SHEET

DSA05-SB28-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/23/16 13:16
% Solids: 38.73

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-12
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	20400	**12.8**	25.6	51.1	2	D	SW6010C	6H29010	09/09/16 18:02
7440-36-0	Antimony		1.28	2.05	2.56	2	U	SW6010C	6H29010	09/09/16 18:02
7440-38-2	Arsenic	13.3	**0.767**	1.53	2.56	2	D	SW6010C	6H29010	09/09/16 18:02
7440-39-3	Barium	37.0	**1.28**	2.56	10.2	2	D	SW6010C	6H29010	09/09/16 18:02
7440-41-7	Beryllium	1.17	**0.256**	0.511	1.28	2	J D	SW6010C	6H29010	09/09/16 18:02
7440-43-9	Cadmium		0.256	0.511	1.28	2	U	SW6010C	6H29010	09/09/16 18:02
7440-70-2	Calcium	2650	**256**	511	1280	2	D	SW6010C	6H29010	09/09/16 18:02
7440-47-3	Chromium	40.0	**0.511**	1.02	2.56	2	X D	SW6010C	6H29010	09/09/16 18:02
7440-48-4	Cobalt	9.24	**1.28**	2.56	3.20	2	D	SW6010C	6H29010	09/09/16 18:02
7440-50-8	Copper	13.8	**1.02**	2.05	2.56	2	D	SW6010C	6H29010	09/09/16 18:02
7439-89-6	Iron	35700	**7.67**	15.3	25.6	2	D	SW6010C	6H29010	09/09/16 18:02
7439-92-1	Lead	13.8	**0.383**	0.767	1.28	2	D	SW6010C	6H29010	09/09/16 18:02
7439-95-4	Magnesium	8750	**256**	767	1280	2	D	SW6010C	6H29010	09/09/16 18:02
7439-96-5	Manganese	217	**0.767**	1.53	3.83	2	D	SW6010C	6H29010	09/09/16 18:02
7439-98-7	Molybdenum	2.18	**1.28**	2.56	5.11	2	J D	SW6010C	6H29010	09/09/16 18:02
7440-02-0	Nickel	25.5	**0.767**	1.53	2.56	2	D	SW6010C	6H29010	09/09/16 18:02
7440-09-7	Potassium	4170	**256**	767	1280	2	D	SW6010C	6H29010	09/09/16 18:02
7782-49-2	Selenium		0.767	1.28	2.56	2	U	SW6010C	6H29010	09/09/16 18:02
7440-22-4	Silver		0.511	0.511	2.56	2	M U	SW6010C	6H29010	09/09/16 18:02
7440-23-5	Sodium	12600	**256**	767	1280	2	D	SW6010C	6H29010	09/09/16 18:02
7440-28-0	Thallium		0.767	1.02	2.05	2	U	SW6010C	6H29010	09/09/16 18:02
7440-62-2	Vanadium	47.0	**1.28**	2.56	3.20	2	X D	SW6010C	6H29010	09/09/16 18:02
7440-66-6	Zinc	79.4	**1.28**	2.56	5.11	2	D	SW6010C	6H29010	09/09/16 18:02

ANALYSIS DATA SHEET

Blank

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Matrix: Solid
Laboratory ID: 6H29010-BLK1
% Solids:

CAS NO.	Analyte	Conc. (mg/Kg wet)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	ND	2.50	5.00	10.0	1	U	SW6010C	6H29010	09/09/16 16:56
7440-36-0	Antimony	ND	0.250	0.400	0.500	1	U	SW6010C	6H29010	09/09/16 16:56
7440-38-2	Arsenic	ND	0.150	0.300	0.500	1	U	SW6010C	6H29010	09/09/16 16:56
7440-39-3	Barium	ND	0.250	0.500	2.00	1	U	SW6010C	6H29010	09/09/16 16:56
7440-41-7	Beryllium	ND	0.0500	0.100	0.250	1	U	SW6010C	6H29010	09/09/16 16:56
7440-43-9	Cadmium	ND	0.0500	0.100	0.250	1	U	SW6010C	6H29010	09/09/16 16:56
7440-70-2	Calcium	ND	50.0	100	250	1	U	SW6010C	6H29010	09/09/16 16:56
7440-47-3	Chromium	ND	0.100	0.200	0.500	1	U	SW6010C	6H29010	09/09/16 16:56
7440-48-4	Cobalt	ND	0.250	0.500	0.625	1	U	SW6010C	6H29010	09/09/16 16:56
7440-50-8	Copper	ND	0.200	0.400	0.500	1	U	SW6010C	6H29010	09/09/16 16:56
7439-89-6	Iron	ND	1.50	3.00	5.00	1	U	SW6010C	6H29010	09/09/16 16:56
7439-92-1	Lead	ND	0.0750	0.150	0.250	1	U	SW6010C	6H29010	09/09/16 16:56
7439-95-4	Magnesium	ND	50.0	150	250	1	U	SW6010C	6H29010	09/09/16 16:56
7439-96-5	Manganese	ND	0.150	0.300	0.750	1	U	SW6010C	6H29010	09/09/16 16:56
7439-98-7	Molybdenum	ND	0.250	0.500	1.00	1	U	SW6010C	6H29010	09/09/16 16:56
7440-02-0	Nickel	ND	0.150	0.300	0.500	1	U	SW6010C	6H29010	09/09/16 16:56
7440-09-7	Potassium	ND	50.0	150	250	1	U	SW6010C	6H29010	09/09/16 16:56
7782-49-2	Selenium	ND	0.150	0.250	0.500	1	U	SW6010C	6H29010	09/09/16 16:56
7440-22-4	Silver	ND	0.0500	0.100	0.500	1	U	SW6010C	6H29010	09/09/16 16:56
7440-23-5	Sodium	ND	50.0	150	250	1	U	SW6010C	6H29010	09/09/16 16:56
7440-28-0	Thallium	ND	0.150	0.200	0.400	1	U	SW6010C	6H29010	09/09/16 16:56
7440-62-2	Vanadium	ND	0.250	0.500	0.625	1	X U	SW6010C	6H29010	09/09/16 16:56
7440-66-6	Zinc	0.351	**0.250**	0.500	1.00	1	J	SW6010C	6H29010	09/09/16 16:56

ANALYSIS DATA SHEET

LCS

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Matrix: Solid
Laboratory ID: 6H29010-BS1
% Solids:

CAS NO.	Analyte	Conc. (mg/Kg wet)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	99.94	**2.50**	5.00	10.0	1		SW6010C	6H29010	09/09/16 17:00
7440-36-0	Antimony	12.00	**0.250**	0.400	0.500	1		SW6010C	6H29010	09/09/16 17:00
7440-38-2	Arsenic	12.25	**0.150**	0.300	0.500	1		SW6010C	6H29010	09/09/16 17:00
7440-39-3	Barium	95.68	**0.250**	0.500	2.00	1		SW6010C	6H29010	09/09/16 17:00
7440-41-7	Beryllium	2.557	**0.0500**	0.100	0.250	1		SW6010C	6H29010	09/09/16 17:00
7440-43-9	Cadmium	6.625	**0.0500**	0.100	0.250	1		SW6010C	6H29010	09/09/16 17:00
7440-70-2	Calcium	272.6	**50.0**	100	250	1		SW6010C	6H29010	09/09/16 17:00
7440-47-3	Chromium	11.30	**0.100**	0.200	0.500	1		SW6010C	6H29010	09/09/16 17:00
7440-48-4	Cobalt	25.06	**0.250**	0.500	0.625	1		SW6010C	6H29010	09/09/16 17:00
7440-50-8	Copper	12.67	**0.200**	0.400	0.500	1		SW6010C	6H29010	09/09/16 17:00
7439-89-6	Iron	55.34	**1.50**	3.00	5.00	1		SW6010C	6H29010	09/09/16 17:00
7439-92-1	Lead	11.90	**0.0750**	0.150	0.250	1		SW6010C	6H29010	09/09/16 17:00
7439-95-4	Magnesium	263.7	**50.0**	150	250	1		SW6010C	6H29010	09/09/16 17:00
7439-96-5	Manganese	24.90	**0.150**	0.300	0.750	1		SW6010C	6H29010	09/09/16 17:00
7439-98-7	Molybdenum	52.32	**0.250**	0.500	1.00	1		SW6010C	6H29010	09/09/16 17:00
7440-02-0	Nickel	24.56	**0.150**	0.300	0.500	1		SW6010C	6H29010	09/09/16 17:00
7440-09-7	Potassium	240.5	**50.0**	150	250	1	J	SW6010C	6H29010	09/09/16 17:00
7782-49-2	Selenium	12.16	**0.150**	0.250	0.500	1		SW6010C	6H29010	09/09/16 17:00
7440-22-4	Silver	11.90	**0.0500**	0.100	0.500	1		SW6010C	6H29010	09/09/16 17:00
7440-23-5	Sodium	251.9	**50.0**	150	250	1		SW6010C	6H29010	09/09/16 17:00
7440-28-0	Thallium	12.50	**0.150**	0.200	0.400	1		SW6010C	6H29010	09/09/16 17:00
7440-62-2	Vanadium	28.02	**0.250**	0.500	0.625	1	X	SW6010C	6H29010	09/09/16 17:00
7440-66-6	Zinc	27.24	**0.250**	0.500	1.00	1		SW6010C	6H29010	09/09/16 17:00

INITIAL AND CONTINUING CALIBRATION CHECK

SW6010C

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP
SDG: 1608229
Project: Raritan Arsenal - Phase III
Calibration: 6253002
Sequence: 6I25301

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
6I25301-ICV1	Aluminum	10000	9760	97.6	ug/L	+/- 10.00%
	Antimony	1000	1016	102	ug/L	+/- 10.00%
	Arsenic	1000	1052	105	ug/L	+/- 10.00%
	Barium	1000	981.3	98.1	ug/L	+/- 10.00%
	Beryllium	1000	1042	104	ug/L	+/- 10.00%
	Cadmium	1000	1018	102	ug/L	+/- 10.00%
	Calcium	50000	52860	106	ug/L	+/- 10.00%
	Chromium	1000	997.2	99.7	ug/L	+/- 10.00%
	Cobalt	1000	953.7	95.4	ug/L	+/- 10.00%
	Copper	1000	1066	107	ug/L	+/- 10.00%
	Iron	10000	10210	102	ug/L	+/- 10.00%
	Lead	1000	966.7	96.7	ug/L	+/- 10.00%
	Magnesium	50000	48650	97.3	ug/L	+/- 10.00%
	Manganese	1000	1005	100	ug/L	+/- 10.00%
	Molybdenum	1000	1017	102	ug/L	+/- 10.00%
	Nickel	1000	991.0	99.1	ug/L	+/- 10.00%
	Potassium	10000	9689	96.9	ug/L	+/- 10.00%
	Selenium	1000	1043	104	ug/L	+/- 10.00%
	Silver	500.0	488.4	97.7	ug/L	+/- 10.00%
	Sodium	50000	48140	96.3	ug/L	+/- 10.00%
	Thallium	1000	1020	102	ug/L	+/- 10.00%
	Vanadium	1000	1044	104	ug/L	+/- 10.00%
	Zinc	1000	1013	101	ug/L	+/- 10.00%
6I25301-CCV1	Aluminum	10000	9883	98.8	ug/L	+/- 10.00%
	Antimony	1000	996.2	99.6	ug/L	+/- 10.00%
	Arsenic	1000	1031	103	ug/L	+/- 10.00%
	Barium	1000	970.9	97.1	ug/L	+/- 10.00%
	Beryllium	1000	1030	103	ug/L	+/- 10.00%
	Cadmium	1000	1020	102	ug/L	+/- 10.00%
	Calcium	50000	50850	102	ug/L	+/- 10.00%
	Chromium	1000	981.6	98.2	ug/L	+/- 10.00%
	Cobalt	1000	957.7	95.8	ug/L	+/- 10.00%
	Copper	1000	1025	102	ug/L	+/- 10.00%
	Iron	10000	9943	99.4	ug/L	+/- 10.00%
	Lead	1000	963.0	96.3	ug/L	+/- 10.00%
	Magnesium	50000	48140	96.3	ug/L	+/- 10.00%
	Manganese	1000	988.5	98.9	ug/L	+/- 10.00%
	Molybdenum	1000	1006	101	ug/L	+/- 10.00%
	Nickel	1000	985.9	98.6	ug/L	+/- 10.00%

INITIAL AND CONTINUING CALIBRATION CHECK

SW6010C

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP
SDG: 1608229
Project: Raritan Arsenal - Phase III
Calibration: 6253002
Sequence: 6I25301

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
6I25301-CCV1	Potassium	10000	9563	95.6	ug/L	+/- 10.00%
	Selenium	1000	1026	103	ug/L	+/- 10.00%
	Silver	500.0	476.0	95.2	ug/L	+/- 10.00%
	Sodium	50000	47880	95.8	ug/L	+/- 10.00%
	Thallium	1000	1001	100	ug/L	+/- 10.00%
	Vanadium	1000	1005	101	ug/L	+/- 10.00%
	Zinc	1000	995.2	99.5	ug/L	+/- 10.00%
6I25301-CCV6	Aluminum	10000	9729	97.3	ug/L	+/- 10.00%
	Antimony	1000	979.7	98.0	ug/L	+/- 10.00%
	Arsenic	1000	1005	100	ug/L	+/- 10.00%
	Barium	1000	922.8	92.3	ug/L	+/- 10.00%
	Beryllium	1000	1051	105	ug/L	+/- 10.00%
	Cadmium	1000	1046	105	ug/L	+/- 10.00%
	Calcium	50000	51880	104	ug/L	+/- 10.00%
	Chromium	1000	1101	110	ug/L	+/- 10.00%
	Cobalt	1000	943.8	94.4	ug/L	+/- 10.00%
	Copper	1000	1022	102	ug/L	+/- 10.00%
	Iron	10000	10540	105	ug/L	+/- 10.00%
	Lead	1000	925.8	92.6	ug/L	+/- 10.00%
	Magnesium	50000	49440	98.9	ug/L	+/- 10.00%
	Manganese	1000	955.4	95.5	ug/L	+/- 10.00%
	Molybdenum	1000	1038	104	ug/L	+/- 10.00%
	Nickel	1000	935.6	93.6	ug/L	+/- 10.00%
	Potassium	10000	9708	97.1	ug/L	+/- 10.00%
	Selenium	1000	1037	104	ug/L	+/- 10.00%
	Silver	500.0	484.5	96.9	ug/L	+/- 10.00%
	Sodium	50000	48140	96.3	ug/L	+/- 10.00%
	Thallium	1000	975.1	97.5	ug/L	+/- 10.00%
	Vanadium	**1000**	**1110**	**111**	**ug/L**	+/- 10.00%
	Zinc	1000	1047	105	ug/L	+/- 10.00%
6I25301-CCV7	Aluminum	10000	9546	95.5	ug/L	+/- 10.00%
	Antimony	1000	973.6	97.4	ug/L	+/- 10.00%
	Arsenic	1000	1001	100	ug/L	+/- 10.00%
	Barium	1000	918.7	91.9	ug/L	+/- 10.00%
	Beryllium	1000	1043	104	ug/L	+/- 10.00%
	Cadmium	1000	1059	106	ug/L	+/- 10.00%
	Calcium	50000	51690	103	ug/L	+/- 10.00%
	Chromium	1000	1099	110	ug/L	+/- 10.00%
	Cobalt	1000	945.5	94.6	ug/L	+/- 10.00%

INITIAL AND CONTINUING CALIBRATION CHECK

SW6010C

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP
SDG: 1608229
Project: Raritan Arsenal - Phase III
Calibration: 6253002
Sequence: 6I25301

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
6I25301-CCV7	Copper	1000	1009	101	ug/L	+/- 10.00%
	Iron	10000	10360	104	ug/L	+/- 10.00%
	Lead	1000	924.1	92.4	ug/L	+/- 10.00%
	Magnesium	50000	49100	98.2	ug/L	+/- 10.00%
	Manganese	1000	957.1	95.7	ug/L	+/- 10.00%
	Molybdenum	1000	1033	103	ug/L	+/- 10.00%
	Nickel	1000	929.9	93.0	ug/L	+/- 10.00%
	Potassium	10000	9520	95.2	ug/L	+/- 10.00%
	Selenium	1000	1049	105	ug/L	+/- 10.00%
	Silver	500.0	471.4	94.3	ug/L	+/- 10.00%
	Sodium	50000	47230	94.5	ug/L	+/- 10.00%
	Thallium	1000	973.4	97.3	ug/L	+/- 10.00%
	Vanadium	1000	1097	110	ug/L	+/- 10.00%
	Zinc	1000	1054	105	ug/L	+/- 10.00%
6I25301-CCV8	Aluminum	10000	9736	97.4	ug/L	+/- 10.00%
	Antimony	1000	975.6	97.6	ug/L	+/- 10.00%
	Arsenic	1000	1001	100	ug/L	+/- 10.00%
	Barium	1000	922.1	92.2	ug/L	+/- 10.00%
	Beryllium	1000	1057	106	ug/L	+/- 10.00%
	Cadmium	1000	1046	105	ug/L	+/- 10.00%
	Calcium	50000	52310	105	ug/L	+/- 10.00%
	Chromium	**1000**	**1125**	**112**	**ug/L**	+/- 10.00%
	Cobalt	1000	945.9	94.6	ug/L	+/- 10.00%
	Copper	1000	1022	102	ug/L	+/- 10.00%
	Iron	10000	10730	107	ug/L	+/- 10.00%
	Lead	1000	926.7	92.7	ug/L	+/- 10.00%
	Magnesium	50000	49980	100	ug/L	+/- 10.00%
	Manganese	1000	955.1	95.5	ug/L	+/- 10.00%
	Molybdenum	1000	1038	104	ug/L	+/- 10.00%
	Nickel	1000	930.4	93.0	ug/L	+/- 10.00%
	Potassium	10000	9736	97.4	ug/L	+/- 10.00%
	Selenium	1000	1035	103	ug/L	+/- 10.00%
	Silver	500.0	490.8	98.2	ug/L	+/- 10.00%
	Sodium	50000	49510	99.0	ug/L	+/- 10.00%
	Thallium	1000	975.6	97.6	ug/L	+/- 10.00%
	Vanadium	**1000**	**1127**	**113**	**ug/L**	+/- 10.00%
	Zinc	1000	1049	105	ug/L	+/- 10.00%

CRDL STANDARD

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Instrument ID: ME-ICP
Calibration: 6253002
Sequence: 6I25301

Lab Sample ID	Analyte	True	Found	%R	Units	QC Limts
6I25301-CRL1	Aluminum	200.0	201.4	101	ug/L	80 - 120
	Antimony	10.00	11.72	117	ug/L	80 - 120
	Arsenic	5.000	5.737	115	ug/L	80 - 120
	Barium	10.00	10.19	102	ug/L	80 - 120
	Beryllium	2.000	2.091	105	ug/L	80 - 120
	Cadmium	2.000	2.082	104	ug/L	80 - 120
	Calcium	2000	2146	107	ug/L	80 - 120
	Chromium	4.000	3.713	92.8	ug/L	80 - 120
	Cobalt	10.00	10.71	107	ug/L	80 - 120
	Copper	10.00	10.97	110	ug/L	80 - 120
	Iron	100.0	116.8	117	ug/L	80 - 120
	Lead	3.000	3.106	104	ug/L	80 - 120
	Magnesium	3000	3179	106	ug/L	80 - 120
	Manganese	6.000	6.482	108	ug/L	80 - 120
	Molybdenum	10.00	10.60	106	ug/L	80 - 120
	Nickel	6.000	6.087	101	ug/L	80 - 120
	Potassium	3000	2941	98.0	ug/L	80 - 120
	Selenium	5.000	4.275	85.5	ug/L	80 - 120
	Silver	3.000	2.589	86.3	ug/L	80 - 120
	Sodium	3000	3085	103	ug/L	80 - 120
	Vanadium	10.00	9.678	96.8	ug/L	80 - 120
	Zinc	10.00	10.67	107	ug/L	80 - 120
6I25301-CRL2	Thallium	8.000	9.229	115	ug/L	80 - 120

BLANKS
SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP
Project: Raritan Arsenal - Phase III
Sequence: 6I25301
Calibration: 6253002

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
6I25301-ICB1	Aluminum	-7.233	50.0	200	ug/L	U	SW6010C
	Antimony	3.640	5.00	10.0	ug/L	U	SW6010C
	Arsenic	1.135	3.00	10.0	ug/L	U	SW6010C
	Barium	0.09826	5.00	40.0	ug/L	U	SW6010C
	Beryllium	0.1624	1.00	5.00	ug/L	U	SW6010C
	Cadmium	-0.002610	1.00	5.00	ug/L	U	SW6010C
	Calcium	1.760	1000	5000	ug/L	U	SW6010C
	Chromium	0.06311	2.00	10.0	ug/L	U	SW6010C
	Cobalt	0.2625	5.00	12.5	ug/L	U	SW6010C
	Copper	0.9346	4.00	10.0	ug/L	U	SW6010C
	Iron	12.99	30.0	100	ug/L	U	SW6010C
	Lead	0.1876	1.50	5.00	ug/L	U	SW6010C
	Magnesium	-1.860	1000	5000	ug/L	U	SW6010C
	Manganese	0.02616	3.00	15.0	ug/L	U	SW6010C
	Molybdenum	0.3571	5.00	20.0	ug/L	U	SW6010C
	Nickel	-0.1356	3.00	10.0	ug/L	U	SW6010C
	Potassium	-8.980	1000	5000	ug/L	U	SW6010C
	Selenium	1.069	3.00	10.0	ug/L	U	SW6010C
	Silver	-0.01680	1.00	10.0	ug/L	U	SW6010C
	Sodium	-36.31	1000	5000	ug/L	U	SW6010C
	Thallium	1.327	3.00	8.00	ug/L	U	SW6010C
	Vanadium	-0.2492	5.00	12.5	ug/L	U	SW6010C
	Zinc	0.08810	5.00	20.0	ug/L	U	SW6010C
6I25301-CCB1	Aluminum	-8.58	50.0	200	ug/L	U	SW6010C
	Antimony	0.924	5.00	10.0	ug/L	U	SW6010C
	Arsenic	0.0938	3.00	10.0	ug/L	U	SW6010C
	Barium	0.0482	5.00	40.0	ug/L	U	SW6010C
	Beryllium	0.236	1.00	5.00	ug/L	U	SW6010C
	Cadmium	-0.0331	1.00	5.00	ug/L	U	SW6010C
	Calcium	-0.420	1000	5000	ug/L	U	SW6010C
	Chromium	0.0236	2.00	10.0	ug/L	U	SW6010C
	Cobalt	0.162	5.00	12.5	ug/L	U	SW6010C
	Copper	1.17	4.00	10.0	ug/L	U	SW6010C
	Iron	7.16	30.0	100	ug/L	U	SW6010C

BLANKS
SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP
Project: Raritan Arsenal - Phase III
Sequence: 6I25301
Calibration: 6253002

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
6I25301-CCB1	Lead	0.664	1.50	5.00	ug/L	U	SW6010C
	Magnesium	8.65	1000	5000	ug/L	U	SW6010C
	Manganese	0.0589	3.00	15.0	ug/L	U	SW6010C
	Molybdenum	0.616	5.00	20.0	ug/L	U	SW6010C
	Nickel	-0.213	3.00	10.0	ug/L	U	SW6010C
	Potassium	-21.6	1000	5000	ug/L	U	SW6010C
	Selenium	0.129	3.00	10.0	ug/L	U	SW6010C
	Silver	0.582	1.00	10.0	ug/L	U	SW6010C
	Sodium	-140	1000	5000	ug/L	U	SW6010C
	Thallium	1.87	3.00	8.00	ug/L	U	SW6010C
	Vanadium	-0.0421	5.00	12.5	ug/L	U	SW6010C
	Zinc	0.220	5.00	20.0	ug/L	U	SW6010C
6I25301-CCB6	Aluminum	-23.1	50.0	200	ug/L	U	SW6010C
	Antimony	3.83	5.00	10.0	ug/L	U	SW6010C
	Arsenic	0.972	3.00	10.0	ug/L	U	SW6010C
	Barium	0.0960	5.00	40.0	ug/L	U	SW6010C
	Beryllium	0.135	1.00	5.00	ug/L	U	SW6010C
	Cadmium	-0.0508	1.00	5.00	ug/L	U	SW6010C
	Calcium	3.95	1000	5000	ug/L	U	SW6010C
	Chromium	-0.537	2.00	10.0	ug/L	U	SW6010C
	Cobalt	-0.0654	5.00	12.5	ug/L	U	SW6010C
	Copper	-0.713	4.00	10.0	ug/L	U	SW6010C
	Iron	2.25	30.0	100	ug/L	U	SW6010C
	Lead	0.263	1.50	5.00	ug/L	U	SW6010C
	Magnesium	-10.9	1000	5000	ug/L	U	SW6010C
	Manganese	0.658	3.00	15.0	ug/L	U	SW6010C
	Molybdenum	1.09	5.00	20.0	ug/L	U	SW6010C
	Nickel	0.220	3.00	10.0	ug/L	U	SW6010C
	Potassium	3.07	1000	5000	ug/L	U	SW6010C
	Selenium	-2.17	3.00	10.0	ug/L	U	SW6010C
	Silver	-0.748	1.00	10.0	ug/L	U	SW6010C
	Sodium	163	1000	5000	ug/L	U	SW6010C
	Thallium	1.49	3.00	8.00	ug/L	U	SW6010C
	Vanadium	0.486	5.00	12.5	ug/L	U	SW6010C

BLANKS
SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP
Project: Raritan Arsenal - Phase III
Sequence: 6I25301
Calibration: 6253002

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
6I25301-CCB6	Zinc	0.316	5.00	20.0	ug/L	U	SW6010C
6H29010-BLK1	Aluminum	-0.377	2.50	10.0	mg/Kg wet	U	SW6010C
	Antimony	0.176	0.250	0.500	mg/Kg wet	U	SW6010C
	Arsenic	0.0747	0.150	0.500	mg/Kg wet	U	SW6010C
	Barium	0.0151	0.250	2.00	mg/Kg wet	U	SW6010C
	Beryllium	0.00534	0.0500	0.250	mg/Kg wet	U	SW6010C
	Cadmium	0.00176	0.0500	0.250	mg/Kg wet	U	SW6010C
	Calcium	1.94	50.0	250	mg/Kg wet	U	SW6010C
	Chromium	0.0541	0.100	0.500	mg/Kg wet	U	SW6010C
	Cobalt	-0.0170	0.250	0.625	mg/Kg wet	U	SW6010C
	Copper	-0.0720	0.200	0.500	mg/Kg wet	U	SW6010C
	Iron	0.286	1.50	5.00	mg/Kg wet	U	SW6010C
	Lead	0.0200	0.0750	0.250	mg/Kg wet	U	SW6010C
	Magnesium	0.497	50.0	250	mg/Kg wet	U	SW6010C
	Manganese	0.0260	0.150	0.750	mg/Kg wet	U	SW6010C
	Molybdenum	0.0425	0.250	1.00	mg/Kg wet	U	SW6010C
	Nickel	0.00878	0.150	0.500	mg/Kg wet	U	SW6010C
	Potassium	1.17	50.0	250	mg/Kg wet	U	SW6010C
	Selenium	-0.107	0.150	0.500	mg/Kg wet	U	SW6010C
	Silver	-0.0606	0.0500	0.500	mg/Kg wet	J	SW6010C
	Sodium	-4.30	50.0	250	mg/Kg wet	U	SW6010C
	Thallium	0.0261	0.150	0.400	mg/Kg wet	U	SW6010C
	Vanadium	0.0136	0.250	0.625	mg/Kg wet	U	SW6010C
	Zinc	0.351	0.250	1.00	mg/Kg wet	J	SW6010C
6I25301-CCB7	Aluminum	-9.12	50.0	200	ug/L	U	SW6010C
	Antimony	2.93	5.00	10.0	ug/L	U	SW6010C
	Arsenic	0.647	3.00	10.0	ug/L	U	SW6010C
	Barium	0.00639	5.00	40.0	ug/L	U	SW6010C
	Beryllium	0.198	1.00	5.00	ug/L	U	SW6010C
	Cadmium	-0.0695	1.00	5.00	ug/L	U	SW6010C
	Calcium	2.87	1000	5000	ug/L	U	SW6010C
	Chromium	-0.318	2.00	10.0	ug/L	U	SW6010C
	Cobalt	-0.122	5.00	12.5	ug/L	U	SW6010C
	Copper	-1.34	4.00	10.0	ug/L	U	SW6010C

BLANKS
SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP
Project: Raritan Arsenal - Phase III
Sequence: 6I25301
Calibration: 6253002

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
6I25301-CCB7	Iron	9.05	30.0	100	ug/L	U	SW6010C
	Lead	1.04	1.50	5.00	ug/L	U	SW6010C
	Magnesium	-10.6	1000	5000	ug/L	U	SW6010C
	Manganese	0.307	3.00	15.0	ug/L	U	SW6010C
	Molybdenum	0.974	5.00	20.0	ug/L	U	SW6010C
	Nickel	-0.00141	3.00	10.0	ug/L	U	SW6010C
	Potassium	-2.01	1000	5000	ug/L	U	SW6010C
	Selenium	-2.35	3.00	10.0	ug/L	U	SW6010C
	Silver	-0.472	1.00	10.0	ug/L	U	SW6010C
	Sodium	-220	1000	5000	ug/L	U	SW6010C
	Thallium	1.13	3.00	8.00	ug/L	U	SW6010C
	Vanadium	-0.620	5.00	12.5	ug/L	U	SW6010C
	Zinc	0.503	5.00	20.0	ug/L	U	SW6010C
6I25301-CCB8	Aluminum	-18.2	50.0	200	ug/L	U	SW6010C
	Antimony	3.01	5.00	10.0	ug/L	U	SW6010C
	Arsenic	1.46	3.00	10.0	ug/L	U	SW6010C
	Barium	-0.136	5.00	40.0	ug/L	U	SW6010C
	Beryllium	0.0771	1.00	5.00	ug/L	U	SW6010C
	Cadmium	-0.101	1.00	5.00	ug/L	U	SW6010C
	Calcium	-0.190	1000	5000	ug/L	U	SW6010C
	Chromium	-0.540	2.00	10.0	ug/L	U	SW6010C
	Cobalt	-0.123	5.00	12.5	ug/L	U	SW6010C
	Copper	-1.51	4.00	10.0	ug/L	U	SW6010C
	Iron	5.74	30.0	100	ug/L	U	SW6010C
	Lead	0.173	1.50	5.00	ug/L	U	SW6010C
	Magnesium	-8.75	1000	5000	ug/L	U	SW6010C
	Manganese	0.116	3.00	15.0	ug/L	U	SW6010C
	Molybdenum	0.961	5.00	20.0	ug/L	U	SW6010C
	Nickel	0.0756	3.00	10.0	ug/L	U	SW6010C
	Potassium	30.0	1000	5000	ug/L	U	SW6010C
	Selenium	-2.33	3.00	10.0	ug/L	U	SW6010C
	Silver	-0.949	1.00	10.0	ug/L	U	SW6010C
	Sodium	-329	1000	5000	ug/L	U	SW6010C
	Thallium	1.62	3.00	8.00	ug/L	U	SW6010C

BLANKS
SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP
Project: Raritan Arsenal - Phase III
Sequence: 6I25301
Calibration: 6253002

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
6I25301-CCB8	Vanadium	0.714	5.00	12.5	ug/L	U	SW6010C
	Zinc	0.459	5.00	20.0	ug/L	U	SW6010C

ICP INTERFERENCE CHECK SAMPLE

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Instrument ID: ME-ICP
Calibration: 6253002
Sequence: 6I25301

Lab Sample ID	Analyte	True	Found	%R	Units
6I25301-IFA1	Aluminum	500000	496,990.00	99.4	ug/L
	Antimony		1.98		ug/L
	Arsenic		-1.95		ug/L
	Barium		0.31		ug/L
	Beryllium		0.12		ug/L
	Boron		2.01		ug/L
	Cadmium		-0.50		ug/L
	Calcium	500000	497,160.00	99.4	ug/L
	Chromium		-0.67		ug/L
	Cobalt		-1.94		ug/L
	Copper		-0.43		ug/L
	Iron	200000	194,490.00	97.2	ug/L
	Lead		1.04		ug/L
	Magnesium	500000	457,360.00	91.5	ug/L
	Manganese		-1.84		ug/L
	Molybdenum		0.35		ug/L
	Nickel		-1.43		ug/L
	Potassium		50.97		ug/L
	Selenium		0.53		ug/L
	Silver		-1.40		ug/L
	Sodium		345.16		ug/L
	Thallium		3.12		ug/L
	Tin		-3.60		ug/L
	Titanium		-16.72		ug/L
	Vanadium		2.70		ug/L
	Zinc		0.00		ug/L
	Strontium		-1.91		ug/L
6I25301-IFB1	Aluminum	500000	505,558.00	101	ug/L
	Antimony	600.0	661.94	110	ug/L
	Arsenic	100.0	108.11	108	ug/L

ICP INTERFERENCE CHECK SAMPLE

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Instrument ID: ME-ICP
Calibration: 6253002
Sequence: 6I25301

Lab Sample ID	Analyte	True	Found	%R	Units
6I25301-IFB1	Barium	500.0	533.05	107	ug/L
	Beryllium	500.0	519.87	104	ug/L
	Boron		40.00		ug/L
	Cadmium	1000	1,010.70	101	ug/L
	Calcium	500000	501,549.00	100	ug/L
	Chromium	500.0	471.87	94.4	ug/L
	Cobalt	500.0	482.36	96.5	ug/L
	Copper	500.0	556.04	111	ug/L
	Iron	200000	200,070.00	100	ug/L
	Lead	50.00	49.84	99.7	ug/L
	Magnesium	500000	464,080.00	92.8	ug/L
	Manganese	500.0	477.01	95.4	ug/L
	Molybdenum		0.67		ug/L
	Nickel	1000	962.90	96.3	ug/L
	Potassium		20.21		ug/L
	Selenium	50.00	54.34	109	ug/L
	Silver	200.0	201.84	101	ug/L
	Sodium		414.61		ug/L
	Thallium	100.0	107.87	108	ug/L
	Tin		-4.68		ug/L
	Titanium		-17.95		ug/L
	Vanadium	500.0	500.72	100	ug/L
	Zinc	1000	985.49	98.5	ug/L
	Strontium	1000	1,053.00	105	ug/L

LCS / LCS DUPLICATE RECOVERY

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Matrix: Solid
Batch: 6H29010
Laboratory ID: 6H29010-BS1
Preparation: MET_3050B
Initial/Final: 2 g / 100 mL

ANALYTE	SPIKE ADDED (mg/Kg wet)	LCS CONCENTRATION (mg/Kg wet)	LCS % REC.	QC LIMITS REC.
Aluminum	100.0	99.94	99.9	74 - 119
Antimony	12.50	12.00	96.0	79 - 114
Arsenic	12.50	12.25	98.0	82 - 111
Barium	100.0	95.68	95.7	83 - 113
Beryllium	2.500	2.557	102	83 - 113
Cadmium	6.250	6.625	106	82 - 113
Calcium	250.0	272.6	109	81 - 116
Chromium	10.00	11.30	113	85 - 113
Cobalt	25.00	25.06	100	85 - 112
Copper	12.50	12.67	101	81 - 117
Iron	50.00	55.34	111	81 - 118
Lead	12.50	11.90	95.2	81 - 112
Magnesium	250.0	263.7	105	78 - 115
Manganese	25.00	24.90	99.6	84 - 114
Molybdenum	50.00	52.32	105	82 - 116
Nickel	25.00	24.56	98.2	83 - 113
Potassium	250.0	240.5	96.2	81 - 116
Selenium	12.50	12.16	97.3	78 - 111
Silver	12.50	11.90	95.2	82 - 112
Sodium	250.0	251.9	101	83 - 118
Thallium	12.50	12.50	100	83 - 111
Vanadium	25.00	28.02	112	82 - 114
Zinc	25.00	27.24	109	82 - 113

PREPARATION BATCH SUMMARY

SW6010C

Laboratory: Empirical Laboratories, LLC SDG: 1608229

Client: CH2M Hill, Inc. Project: Raritan Arsenal - Phase III

Batch: 6H29010 Batch Matrix: Solid Preparation: MET_3050B

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT	FINAL VOL.
DSA03-SB17-0010	1608229-01	09/08/16 09:49	2.05	100.00
DSA03-SB18-0010	1608229-02	09/08/16 09:49	2.03	100.00
DSA03-SB19-0010	1608229-03	09/08/16 09:49	2.00	100.00
DSA03-SB20-0010	1608229-04	09/08/16 09:49	2.03	100.00
DSA03-SB21-0010	1608229-05	09/08/16 09:49	2.03	100.00
DSA03-SB22-0010	1608229-06	09/08/16 09:49	2.04	100.00
DSA03-SB23-0010	1608229-07	09/08/16 09:49	2.03	100.00
DSA03-SB24-0010	1608229-08	09/08/16 09:49	2.05	100.00
DSA05-SB25-0010	1608229-09	09/08/16 09:49	2.02	100.00
DSA05-SB26-0010	1608229-10	09/08/16 09:49	2.00	100.00
DSA05-SB27-0010	1608229-11	09/08/16 09:49	2.02	100.00
DSA05-SB28-0010	1608229-12	09/08/16 09:49	2.02	100.00
Blank	6H29010-BLK1	09/08/16 09:49	2.00	100.00
LCS	6H29010-BS1	09/08/16 09:49	2.00	100.00

ANALYSIS SEQUENCE SUMMARY

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Sequence: 6I25301
Instrument: ME-ICP
Calibration: 6253002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Cal Standard	6I25301-CAL1	09-09-16A-001	09/09/16 09:27
Cal Standard	6I25301-CAL2	09-09-16A-002	09/09/16 09:32
Cal Standard	6I25301-CAL3	09-09-16A-003	09/09/16 09:35
Cal Standard	6I25301-CAL4	09-09-16A-004	09/09/16 09:39
Cal Standard	6I25301-CAL5	09-09-16A-005	09/09/16 09:43
Cal Standard	6I25301-CAL6	09-09-16A-006	09/09/16 09:47
Cal Standard	6I25301-CAL7	09-09-16A-007	09/09/16 09:52
Cal Standard	6I25301-CAL8	09-09-16A-008	09/09/16 09:56
Cal Standard	6I25301-CAL9	09-09-16A-009	09/09/16 10:06
Initial Cal Check	6I25301-ICV1	09-09-16B-001	09/09/16 10:37
Initial Cal Blank	6I25301-ICB1	09-09-16B-002	09/09/16 10:42
Instrument RL Check	6I25301-CRL1	09-09-16B-003	09/09/16 10:47
Instrument RL Check	6I25301-CRL2	09-09-16B-004	09/09/16 10:55
Interference Check A	6I25301-IFA1	09-09-16B-005	09/09/16 10:59
Interference Check B	6I25301-IFB1	09-09-16B-006	09/09/16 11:04
Calibration Check	6I25301-CCV1	09-09-16B-008	09/09/16 11:13
Calibration Blank	6I25301-CCB1	09-09-16B-009	09/09/16 11:18
Calibration Check	6I25301-CCV6	09-09-16C-057	09/09/16 16:46
Calibration Blank	6I25301-CCB6	09-09-16C-058	09/09/16 16:50
Blank	6H29010-BLK1	09-09-16D-001	09/09/16 16:56
LCS	6H29010-BS1	09-09-16D-002	09/09/16 17:00
DSA03-SB17-0010	1608229-01	09-09-16D-003	09/09/16 17:05
DSA03-SB18-0010	1608229-02	09-09-16D-004	09/09/16 17:09
DSA03-SB19-0010	1608229-03	09-09-16D-005	09/09/16 17:13
DSA03-SB20-0010	1608229-04	09-09-16D-006	09/09/16 17:18
DSA03-SB21-0010	1608229-05	09-09-16D-007	09/09/16 17:22
DSA03-SB22-0010	1608229-06	09-09-16D-008	09/09/16 17:27
DSA03-SB23-0010	1608229-07	09-09-16D-009	09/09/16 17:31
DSA03-SB24-0010	1608229-08	09-09-16D-010	09/09/16 17:35
DSA05-SB25-0010	1608229-09	09-09-16D-011	09/09/16 17:40
DSA05-SB26-0010	1608229-10	09-09-16D-012	09/09/16 17:44
Calibration Check	6I25301-CCV7	09-09-16D-013	09/09/16 17:49
Calibration Blank	6I25301-CCB7	09-09-16D-014	09/09/16 17:53

ANALYSIS SEQUENCE SUMMARY

SW6010C

Laboratory:	Empirical Laboratories, LLC	SDG:	1608229
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Sequence:	6I25301	Instrument:	ME-ICP
Calibration:	6253002		

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
DSA05-SB27-0010	1608229-11	09-09-16D-015	09/09/16 17:57
DSA05-SB28-0010	1608229-12	09-09-16D-016	09/09/16 18:02
Calibration Check	6I25301-CCV8	09-09-16D-029	09/09/16 18:58
Calibration Blank	6I25301-CCB8	09-09-16D-030	09/09/16 19:03

INITIAL CALIBRATION DATA

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Calibration: 6253002
Instrument: ME-ICP
Matrix: Water
Calibration Dates: 9/9/16 9:27 9/9/16 10:06

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Aluminum	0	0	5000	4.3178E-05	10000	4.2603E-05			500000	4.1368E-05		
Antimony	0	0	100	0.0008575	1000	9.0869E-04					10000	9.0377E-04
Arsenic	0	0	100	0.0004141	1000	4.5634E-04					10000	4.4991E-04
Barium	0	0	50	0.0177138	1000	0.016047	5000	0.0170484				
Beryllium	0	0	100	0.0026623	1000	0.0026804					10000	0.0025737
Boron	0	0	50	0.0000186	1000	1.782E-05					5000	1.7084E-05
Cadmium	0	0	100	0.029842	1000	0.028423					10000	0.02793
Calcium	0	0	1100	9.030909E-05	50000	8.4856E-05					10000	
Chromium	0	0	100	0.0000449	1000	4.242E-05					10000	4.109E-05
Cobalt	0	0	100	8.690001E-03	1000	7.986899E-03					10000	0.0084704
Copper	0	0	100	9.650001E-05	1000	9.203E-05					10000	8.7923E-05
Iron	0	0	5100	1.995882E-05	10000	2.0201E-05			500000	1.91384E-05	10000	
Lead	0	0	100	0.002017	1000	0.0019339					10000	0.0020686
Magnesium	0	0	5100		50000	2.792E-06			500000	2.8254E-06	10000	
Manganese	0	0	100	0.0003629	1000	3.4074E-04	10000	3.4823E-04			10000	
Molybdenum	0	0	100	0.0039601	1000	0.0039992					10000	0.0039597
Nickel	0	0	100	0.0052359	1000	0.0047241					10000	0.0048779
Potassium	0	0	1000	1.514E-05	10000	1.8908E-05						
Selenium	0	0	100	0.0005575	1000	4.6173E-04					10000	4.4714E-04
Silver	0	0	20	0.0000725	500	5.206E-05	2000	5.2945E-05				
Sodium	0	0	1000		50000	4.0238E-05						
Thallium	0	0	100	0.0007513	1000	7.4056E-04					10000	7.5438E-04
Tin	0	0	50	0.0014766	1000	0.0014677					5000	1.49666E-03
Titanium	0	0	100	0.0002455	1000	2.4354E-04					10000	0.0002372
Vanadium	0	0	100	0.0000455	1000	4.768E-05					10000	4.5175E-05
Zinc	0	0	100	0.011205	1000	0.010777					10000	0.01073
Strontium	0	0	100	0.001919	1000	0.002029					10000	0.001994
Lithium (outside certification)	0	0	100	0.0000083	1000	8.05E-06					10000	7.588E-06

INITIAL CALIBRATION DATA (Continued)

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Calibration: 6253002
Instrument: ME-ICP
Matrix: Water
Calibration Dates: 9/9/16 9:27 9/9/16 10:06

Compound	Level 07		Level 08		Level 09		Level 10		Level 11		Level 12	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Aluminum												
Antimony												
Arsenic												
Barium												
Beryllium												
Boron												
Cadmium												
Calcium	100000		500000	8.2872E-05								
Chromium												
Cobalt												
Copper												
Iron												
Lead												
Magnesium			100000	0.0000031								
Manganese												
Molybdenum												
Nickel												
Potassium	100000	1.9774E-05										
Selenium												
Silver												
Sodium	100000	3.8894E-05	500000		500000	4.0246E-05						
Thallium												
Tin												
Titanium												
Vanadium												
Zinc												
Strontium												
Lithium (outside certification)												

INITIAL CALIBRATION DATA (Continued)

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Calibration: 6253002
Instrument: ME-ICP
Matrix: Water
Calibration Dates: 9/9/16 9:27 9/9/16 10:06

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
Aluminum	3.178725E-05	66.70898	13.64156	195.3851	0.9999998		0.998	
Antimony	6.6749E-04	66.75611	2.149573	176.3051	0.9999985		0.998	
Arsenic	3.300875E-04	66.90395	2.123825	147.3685	0.9999944		0.998	
Barium	0.0127023	66.88446	2.963057	177.5921	0.9998427		0.998	
Beryllium	0.0019791	66.70827	6.48765	187.9251	0.999984		0.998	
Boron	1.3376E-05	66.82708	4.000945	150.7616	0.9999328		0.998	
Cadmium	2.154875E-02	66.77269	1.163415	141.7823	0.9999978		0.998	
Calcium	6.450927E-05	66.84462	3.218652	173.1608	0.9999947		0.998	
Chromium	3.21025E-05	66.84784	1.82423	110.2175	0.9999931		0.998	
Cobalt	6.286825E-03	66.83015	2.58261	187.2826	0.9999649		0.998	
Copper	6.911325E-05	66.85902	1.223615	77.11854	0.9999853		0.998	
Iron	1.482456E-05	66.73717	25.37462	195.6822	0.9999991		0.998	
Lead	1.504875E-03	66.76856	3.10703	142.2417	0.9999608		0.998	
Magnesium	2.17935E-06	66.96669	14.85385	197.8452	0.999537		0.998	
Manganese	2.629675E-04	66.75848	14.40438	192.1777	0.9999944		0.998	
Molybdenum	2.97975E-03	66.66957	35.2272	199.0372	0.999999		0.998	
Nickel	3.709475E-03	66.91677	1.00997	158.9034	0.9999861		0.998	
Potassium	1.34555E-05	68.32251	3.953647	150.1945	0.9999959		0.998	
Selenium	3.665925E-04	67.99068	2.264467	150.4798	0.9999984		0.998	
Silver	4.437625E-05	69.97413	1.54097	83.60192	0.9999413		0.998	
Sodium	2.98445E-05	66.70066	0.88527	42.78231	0.9999392		0.998	
Thallium	5.6156E-04	66.67501	12.40072	190.9118	0.9999971		0.998	
Tin	1.11024E-03	66.67559	7.871637	187.5804	0.9999851		0.998	
Titanium	1.8156E-04	66.69521	15.41751	195.7735	0.9999943		0.998	
Vanadium	3.458875E-05	66.74417	8.557477	176.2718	0.9999687		0.998	
Zinc	0.008178	66.71786	132.8807	199.5321	0.9999998		0.998	
Strontium	0.0014855	66.73819	0.8088	38.08873	0.9999949		0.998	
Lithium (outside certification)	5.9845E-06	66.84858	3.41954	115.0406	0.9999623		0.998	

HOLDING TIME SUMMARY

SW6010C

Laboratory: Empirical Laboratories, LLC SDG: 1608229

Client: CH2M Hill, Inc. Project: Raritan Arsenal - Phase III

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
DSA03-SB17-0010	08/22/16 10:35	08/24/16 08:35	09/08/16 09:49	N/A	180.00	09/09/16 17:05	18.31	180.00	
DSA03-SB18-0010	08/22/16 10:55	08/24/16 08:35	09/08/16 09:49	N/A	180.00	09/09/16 17:09	18.30	180.00	
DSA03-SB19-0010	08/22/16 11:10	08/24/16 08:35	09/08/16 09:49	N/A	180.00	09/09/16 17:13	18.29	180.00	
DSA03-SB20-0010	08/22/16 11:40	08/24/16 08:35	09/08/16 09:49	N/A	180.00	09/09/16 17:18	18.28	180.00	
DSA03-SB21-0010	08/22/16 14:18	08/24/16 08:35	09/08/16 09:49	N/A	180.00	09/09/16 17:22	18.17	180.00	
DSA03-SB22-0010	08/22/16 14:48	08/24/16 08:35	09/08/16 09:49	N/A	180.00	09/09/16 17:27	18.15	180.00	
DSA03-SB23-0010	08/22/16 15:22	08/24/16 08:35	09/08/16 09:49	N/A	180.00	09/09/16 17:31	18.13	180.00	
DSA03-SB24-0010	08/22/16 15:45	08/24/16 08:35	09/08/16 09:49	N/A	180.00	09/09/16 17:35	18.12	180.00	
DSA05-SB25-0010	08/23/16 10:30	08/24/16 08:35	09/08/16 09:49	N/A	180.00	09/09/16 17:40	17.34	180.00	
DSA05-SB26-0010	08/23/16 11:01	08/24/16 08:35	09/08/16 09:49	N/A	180.00	09/09/16 17:44	17.32	180.00	
DSA05-SB27-0010	08/23/16 12:55	08/24/16 08:35	09/08/16 09:49	N/A	180.00	09/09/16 17:57	17.25	180.00	
DSA05-SB28-0010	08/23/16 13:16	08/24/16 08:35	09/08/16 09:49	N/A	180.00	09/09/16 18:02	17.24	180.00	

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: CH2M Hill, Inc.

SDG No.: 1608229

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 5/5/2016

Analyte	Wave-length (nm)	Interelement Correction Factors for: Al	Ca	Fe	Mg	Ag
Aluminum	396.152	0.000000	1.585975	0.000043	0.000000	0.000000
Antimony	206.833	0.000027	0.000000	0.00003	0.000000	0.000000
Arsenic	189.042	-0.000019	0.000000	-0.00011	0.000000	0.000000
Barium	233.527	0.000000	0.000000	0.000004	0.000000	0.000000
Beryllium	313.042	0.000000	0.000000	0.000000	0.000000	0.000000
Cadmium	214.438	0.000004	0.003803	0.000025	0.000000	0.000000
Calcium	317.933	0.000000	0.000000	0.000000	0.000000	0.000000
Chromium	267.716	0.000000	0.000000	0.00001	0.005608	0.000000
Cobalt	228.616	0.000000	0.000000	0.000021	0.000000	0.000000
Copper	324.754	0.000003	0.000000	-0.000044	0.001001	0.000000
Iron	261.187	0.000000	0.000000	0.000000	0.000000	0.000000
Lead	220.353	-0.000208	0.000000	0.000022	0.000000	0.000000
Magnesium	279.079	0.000000	0.000000	-0.000002	0.000000	0.000000
Manganese	257.610	0.000000	0.000000	0.000022	0.000000	0.000000
Molybdenum	202.030	0.000000	0.000000	-0.000011	0.000000	0.000000
Nickel	231.604	0	0.000000	0.000025	0.002042	0.000000
Potassium	766.490	0.000000	0.000000	0.000000	0.000000	0.000000
Selenium	196.090	0.000015	-0.000251	0.00002	0.000000	0.000000
Silver	328.068	0.000000	0.000000	0.000002	0.000000	0.000000
Sodium	589.592	0.000000	0.000000	0.000000	0.000000	0.000000
Thallium	190.856	-0.000005	0.000000	0.000006	0.000000	0.000000
Vanadium	292.402	0.000000	0.000000	-0.000011	0.000000	0.000000
Zinc	206.200	0.000002	0.000827	0	0.000000	0.000000

Comments:

FORM XA-IN

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: CH2M Hill, Inc.

SDG No.: 1608229

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 5/5/2016

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		As	B	Ba	Be	Cd
Aluminum	396.152	0.000000	0.000000	0.000000	0.000000	0.000000
Antimony	206.833	0.000000	0.000000	0.000000	0.000000	0.000000
Arsenic	189.042	0.000000	0.000000	0.000000	0.000000	0.000000
Barium	233.527	0.000000	0.000000	0.000000	0.000000	0.000000
Beryllium	313.042	0.000000	0.000000	0.000000	0.000000	0.000000
Cadmium	214.438	-0.00125	0.000000	0.000000	0.000000	0.000000
Calcium	317.933	0.000000	0.000000	0.000000	0.000000	0.000000
Chromium	267.716	0.000000	0.000000	0.000000	0.000000	0.000043
Cobalt	228.616	0.000000	0.000000	0.000000	0.000000	0.000000
Copper	324.754	0.000000	0.000000	0.000000	0.000000	0.000000
Iron	261.187	0.000000	0.000000	0.000000	0.000000	0.000000
Lead	220.353	0.000000	0.000000	0.000000	0.000000	0.000000
Magnesium	279.079	0.000000	0.000000	0.000000	0.000000	0.000000
Manganese	257.610	0.000000	0.000000	0.000000	0.000000	0.000000
Molybdenum	202.030	0.000000	0.000000	0.000000	0.000000	0.000000
Nickel	231.604	0.000000	0.000000	0.000000	-0.000039	0.000000
Potassium	766.490	0.000000	0.000000	0.000000	0.000000	0.000000
Selenium	196.090	0.000000	0.000000	0.000000	0.000000	0.000000
Silver	328.068	0.000000	0.000000	0.000000	0.000000	0.000000
Sodium	589.592	0.000000	0.000000	0.000000	0.000000	0.000000
Thallium	190.856	0.000000	0.000000	0.000000	0.000000	0.000000
Vanadium	292.402	0.000000	0.000000	0.000000	0.000000	0.000000
Zinc	206.200	0.000000	0.000000	0.000000	0.001494	0.000729

Comments:

FORM XA-IN

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: CH2M Hill, Inc.

SDG No.: 1608229

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 5/5/2016

Analyte	Wave-length (nm)	Interelement Correction Factors for: Co	Cr	Cu	K	Mn
Aluminum	396.152	0.000000	0.000000	0.000000	0.000000	0.000000
Antimony	206.833	0.000000	0.023282	0.000000	0.000000	0.000000
Arsenic	189.042	0.000000	0.000195	0.000000	0.000000	0.000000
Barium	233.527	0.000000	0.000000	0.000000	0.000000	0.000000
Beryllium	313.042	0.000000	0.000000	0.000000	0.000000	0.000000
Cadmium	214.438	0.000000	-0.00009	0.000000	0.000000	0.000000
Calcium	317.933	0.000000	0.000000	0.000000	0.000000	0.000000
Chromium	267.716	0.000000	0.000000	0.000000	0.000000	0.000548
Cobalt	228.616	0.000000	-0.000032	0.000000	0.000000	0.000000
Copper	324.754	0.000000	0.000000	0.000000	0.000000	0.000000
Iron	261.187	0.000000	-0.00372	0.000000	0.000000	-0.004555
Lead	220.353	0.000000	0.000000	0.0003	0.000000	0.000116
Magnesium	279.079	0.000000	0.000000	0.000000	0.000000	0.000000
Manganese	257.610	0.000000	0.000000	0.000000	0.000000	0.000000
Molybdenum	202.030	0.000000	0.000000	0.000000	0.000000	0.000000
Nickel	231.604	-0.000769	-0.000079	-0.000071	0.000000	-0.000125
Potassium	766.490	0.000000	0.000000	0.000000	0.000000	0.000000
Selenium	196.090	0.000000	0.000000	0.000000	0.000000	0.000454
Silver	328.068	0.000000	0.000000	0.000000	0.000000	0.000113
Sodium	589.592	0.000000	0.000000	0.000000	0.000000	0.000000
Thallium	190.856	0.000392	0.000203	0.000000	0.000000	0.00065
Vanadium	292.402	0.000000	-0.009679	0.000000	0.000000	-0.000271
Zinc	206.200	0.000000	0.000078	0.001561	0.000000	0.000797

Comments:

FORM XA-IN

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: CH2M Hill, Inc.

SDG No.: 1608229

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 5/5/2016

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		Mo	Na	Ni	Pb	Sb
Aluminum	396.152	0.032885	0.000000	0.000000	0.000000	0.000000
Antimony	206.833	-0.002824	0.000000	0.000000	0.000000	0.000000
Arsenic	189.042	0.002574	0.000000	0.000000	0.000000	0.000000
Barium	233.527	0.000000	0.000000	0.000000	0.000000	0.000000
Beryllium	313.042	-0.000025	0.000000	0.000000	0.000000	0.000000
Cadmium	214.438	-0.000105	0.000000	0.000000	0.000000	0.000000
Calcium	317.933	0.000000	0.000000	0.000000	0.000000	0.000000
Chromium	267.716	0.000000	0.000000	0.000000	0.000000	0.000000
Cobalt	228.616	-0.001642	0.000000	0.000049	0.000000	0.000000
Copper	324.754	0.000505	0.000000	0.000000	0.000000	0.000000
Iron	261.187	0.000000	0.000000	-0.000713	0.000000	0.000000
Lead	220.353	-0.001205	0.000000	0.000325	0.000000	0.000000
Magnesium	279.079	-0.000013	0.000000	0.000000	0.000000	0.000000
Manganese	257.610	0.000000	0.000000	0.000000	0.000000	0.000000
Molybdenum	202.030	0.000000	0.000000	0.000000	0.000000	0.000000
Nickel	231.604	-0.000442	0.000000	0.000000	0.000017	0.000051
Potassium	766.490	0.000000	0.000000	0.000000	0.000000	0.000000
Selenium	196.090	-0.000137	0.000000	-0.000022	0.000000	0.000000
Silver	328.068	-0.000046	0.000000	0.000000	0.000000	0.000000
Sodium	589.592	0.000000	0.000000	0.000000	0.000000	0.000000
Thallium	190.856	0.000023	0.000000	0.000000	0.000000	0.000000
Vanadium	292.402	-0.000106	0.000000	0.000000	0.000000	0.000000
Zinc	206.200	0.000173	0.000000	0.000024	0.000000	0.000417

Comments:

FORM XA-IN

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: CH2M Hill, Inc.

SDG No.: 1608229

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 5/5/2016

Analyte	Wave-length (nm)	Interelement Correction Factors for: Se	Sn	Ti	Tl	V
Aluminum	396.152	0.000000	0.000000	0.000000	0.000000	0.000000
Antimony	206.833	0.000000	0.000000	0.000252	0.000000	0.000048
Arsenic	189.042	0.000000	0.000000	-0.00021	0.000000	0.000084
Barium	233.527	0.000000	0.000000	0.000000	0.000000	-0.003424
Beryllium	313.042	0.000000	0.000000	-0.000945	0.000000	0.000417
Cadmium	214.438	0.000000	0.000000	0.000000	0.000000	0.00003
Calcium	317.933	0.000000	0.000000	0.000000	0.000000	0.000000
Chromium	267.716	0.000000	0.000000	0.000123	0.000000	-0.000018
Cobalt	228.616	0.000000	0.000000	0.001863	0.000000	0.000000
Copper	324.754	0.000000	0.000000	-0.000635	0.000000	0.000000
Iron	261.187	0.000000	0.000000	0.000000	0.000000	0.000000
Lead	220.353	0.000000	0.000000	-0.000015	0.000000	-0.00007
Magnesium	279.079	0.000000	0.000000	0.000000	0.000000	0.000000
Manganese	257.610	0.000000	0.000000	0.000000	0.000000	0.000000
Molybdenum	202.030	0.000000	0.000000	0.000000	0.000000	-0.000155
Nickel	231.604	0.000000	0.000000	-0.000038	0.000281	-0.000098
Potassium	766.490	0.000000	0.000000	0.000000	0.000000	0.000000
Selenium	196.090	0.000000	0.000000	-0.000141	0.000000	-0.000203
Silver	328.068	0.000000	0.000000	-0.000061	0.000000	-0.00427
Sodium	589.592	0.000000	0.000000	0.000000	0.000000	0.000000
Thallium	190.856	0.000000	0.000000	-0.002366	0.000000	-0.002503
Vanadium	292.402	0.000000	0.000000	0.000682	0.000000	0.000000
Zinc	206.200	0.000000	0.000000	0.000000	0.000000	-0.000257

Comments:

FORM XA-IN

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: CH2M Hill, Inc.

SDG No.: 1608229

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 5/5/2016

Analyte	Wave-length (nm)	Interelement Correction Factors for: Zn				
Aluminum	396.152	0.000000				
Antimony	206.833	0.000000				
Arsenic	189.042	-0.000011				
Barium	233.527	0.000000				
Beryllium	313.042	0.000000				
Cadmium	214.438	0.000000				
Calcium	317.933	0.000000				
Chromium	267.716	0.000000				
Cobalt	228.616	0.000000				
Copper	324.754	0.000000				
Iron	261.187	0.000000				
Lead	220.353	0.000000				
Magnesium	279.079	0.000000				
Manganese	257.610	0.000000				
Molybdenum	202.030	-0.000269				
Nickel	231.604	0.000063				
Potassium	766.490	0.000000				
Selenium	196.090	0.000000				
Silver	328.068	0.000000				
Sodium	589.592	0.000000				
Thallium	190.856	0.000000				
Vanadium	292.402	0.000000				
Zinc	206.200	0.000000				

Comments:

FORM XA-IN

ICP-AES AND ICP-MS LINEAR RANGES

Lab Name: Empirical Laboratories, LLC

Client: CH2M Hill, Inc. SDG: 1608229

Project: Raritan Arsenal - Phase III

ICP Instrument ID: ME-ICP Date: 01/30/2016

Analyte	Integ. Time (Sec.)	Concentration ug/L	M
Aluminum	15	500000	P
Antimony	15	25000	P
Arsenic	15	10000	P
Barium	15	5000	P
Beryllium	15	10000	P
Cadmium	15	10000	P
Calcium	15	500000	P
Chromium	15	10000	P
Cobalt	15	10000	P
Copper	15	25000	P
Iron	15	500000	P
Lead	15	25000	P
Magnesium	15	500000	P
Manganese	15	12000	P
Molybdenum	15	10000	P
Nickel	15	50000	P
Potassium	15	100000	P
Selenium	15	10000	P
Silver	15	2000	P
Sodium	15	500000	P
Thallium	15	10000	P
Vanadium	15	10000	P
Zinc	15	20000	P

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 1:56:47PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB17-0010
Lab Sample ID: 1608229-01

Sample Collection D/T : 08/22/2016 10:35
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0025	mg/Kg dry	1		09/13/16 12:34		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608229

Date Reported: 9/21/2016 1:56:47PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB18-0010
Lab Sample ID: 1608229-02

Sample Collection D/T : 08/22/2016 10:55
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	-0.0002	mg/Kg dry	1		09/13/16 12:38		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608229

Date Reported: 9/21/2016 1:56:47PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB19-0010
Lab Sample ID: 1608229-03

Sample Collection D/T : 08/22/2016 11:10
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0040	mg/Kg dry	1		09/13/16 12:39		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608229

Date Reported: 9/21/2016 1:56:47PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB20-0010
Lab Sample ID: 1608229-04

Sample Collection D/T : 08/22/2016 11:40
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0080	mg/Kg dry	1		09/13/16 12:40		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608229

Date Reported: 9/21/2016 1:56:47PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB21-0010
Lab Sample ID: 1608229-05

Sample Collection D/T : 08/22/2016 14:18
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.8322	mg/Kg dry	1		09/13/16 12:41		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 1:56:47PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB22-0010
Lab Sample ID: 1608229-06

Sample Collection D/T : 08/22/2016 14:48
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0951	mg/Kg dry	1		09/13/16 12:43		SW7471B

Empirical Laboratories, LLC
621 Mainstream Drive, Suite 270 I Nashville, TN 37228 I Main: 615.345.1115 I Fax: 877.345.1113 I www.empirlabs.com

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 1:56:47PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB23-0010
Lab Sample ID: 1608229-07

Sample Collection D/T : 08/22/2016 15:22
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	-0.0018	mg/Kg dry	1		09/13/16 12:44		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608229

Date Reported: 9/21/2016 1:56:47PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA03-SB24-0010
Lab Sample ID: 1608229-08

Sample Collection D/T : 08/22/2016 15:45
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0109	mg/Kg dry	1		09/13/16 12:45		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 1:56:47PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA05-SB25-0010
Lab Sample ID: 1608229-09

Sample Collection D/T : 08/23/2016 10:30
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	-0.0096	mg/Kg dry	1		09/13/16 12:46		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 1:56:47PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA05-SB26-0010
Lab Sample ID: 1608229-10

Sample Collection D/T : 08/23/2016 11:01
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0260	mg/Kg dry	1		09/13/16 12:49		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608229

Date Reported: 9/21/2016 1:56:47PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA05-SB27-0010
Lab Sample ID: 1608229-11

Sample Collection D/T : 08/23/2016 12:55
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	-0.0124	mg/Kg dry	1		09/13/16 12:51		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608229

Date Reported: 9/21/2016 1:56:47PM
Date Received: 8/24/2016 8:35:00AM
Client: CH2M Hill, Inc.
Project: Former Raritan Arsenal - RI/FS
PO #: 10007-7-101431

Client Sample ID: DSA05-SB28-0010
Lab Sample ID: 1608229-12

Sample Collection D/T : 08/23/2016 13:16
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0093	mg/Kg dry	1		09/13/16 12:51		SW7471B

Forms For

Mercury

Sample Extraction Data

Prep Method: MET_HG_S-SW7471B

Lab Number [Field ID]	Batch	Nominal Initial/Final	Initial [g]	Final [mL]	Dilution	% Solids	Notes	Date
1608229-01 [DSA03-SB17-0010]	6H29018	0.30/50.00	0.300	50.0	1.00	36.86		08/29/16
1608229-02 [DSA03-SB18-0010]	6H29018	0.30/50.00	0.350	50.0	1.00	76.40		08/29/16
1608229-03 [DSA03-SB19-0010]	6H29018	0.30/50.00	0.350	50.0	1.00	80.10		08/29/16
1608229-04 [DSA03-SB20-0010]	6H29018	0.30/50.00	0.340	50.0	1.00	66.30		08/29/16
1608229-05 [DSA03-SB21-0010]	6H29018	0.30/50.00	0.300	50.0	1.00	57.61		08/29/16
1608229-06 [DSA03-SB22-0010]	6H29018	0.30/50.00	0.310	50.0	1.00	49.95		08/29/16
1608229-07 [DSA03-SB23-0010]	6H29018	0.30/50.00	0.350	50.0	1.00	79.00		08/29/16
1608229-08 [DSA03-SB24-0010]	6H29018	0.30/50.00	0.300	50.0	1.00	58.85		08/29/16
1608229-09 [DSA05-SB25-0010]	6H29018	0.30/50.00	0.300	50.0	1.00	34.21		08/29/16
1608229-10 [DSA05-SB26-0010]	6H29018	0.30/50.00	0.310	50.0	1.00	43.50		08/29/16
1608229-11 [DSA05-SB27-0010]	6H29018	0.30/50.00	0.330	50.0	1.00	16.32		08/29/16
1608229-12 [DSA05-SB28-0010]	6H29018	0.30/50.00	0.330	50.0	1.00	38.73		08/29/16

ANALYSIS DATA SHEET

DSA03-SB17-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 10:35
% Solids: 36.86

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-01
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0353	0.0733	0.0895	1	U	SW7471B	6H29018	09/13/16 12:34

ANALYSIS DATA SHEET

DSA03-SB18-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 10:55
% Solids: 76.40

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-02
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0146	0.0303	0.0370	1	U	SW7471B	6H29018	09/13/16 12:38

ANALYSIS DATA SHEET

DSA03-SB19-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 11:10
% Solids: 80.10

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-03
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0139	0.0289	0.0353	1	U	SW7471B	6H29018	09/13/16 12:39

ANALYSIS DATA SHEET

DSA03-SB20-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 11:40
% Solids: 66.30

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-04
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0173	0.0359	0.0439	1	U	SW7471B	6H29018	09/13/16 12:40

ANALYSIS DATA SHEET

DSA03-SB21-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 14:18
% Solids: 57.61

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-05
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	**0.832**	**0.0226**	0.0469	0.0573	1		SW7471B	6H29018	09/13/16 12:41

ANALYSIS DATA SHEET

DSA03-SB22-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 14:48
% Solids: 49.95

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-06
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	**0.0951**	**0.0252**	0.0523	0.0639	1		SW7471B	6H29018	09/13/16 12:43

ANALYSIS DATA SHEET

DSA03-SB23-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 15:22
% Solids: 79.00

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-07
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0141	0.0293	0.0358	1	U	SW7471B	6H29018	09/13/16 12:44

ANALYSIS DATA SHEET

DSA03-SB24-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 15:45
% Solids: 58.85

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-08
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0221	0.0459	0.0561	1	U	SW7471B	6H29018	09/13/16 12:45

ANALYSIS DATA SHEET

DSA05-SB25-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/23/16 10:30
% Solids: 34.21

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-09
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0380	0.0789	0.0965	1	U	SW7471B	6H29018	09/13/16 12:46

ANALYSIS DATA SHEET

DSA05-SB26-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/23/16 11:01
% Solids: 43.50

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-10
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0289	0.0601	0.0734	1	U	SW7471B	6H29018	09/13/16 12:49

ANALYSIS DATA SHEET

DSA05-SB27-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/23/16 12:55
% Solids: 16.32

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-11
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0724	0.150	0.184	1	U	SW7471B	6H29018	09/13/16 12:51

ANALYSIS DATA SHEET

DSA05-SB28-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/23/16 13:16
% Solids: 38.73

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-12
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0305	0.0634	0.0775	1	U	SW7471B	6H29018	09/13/16 12:51

ANALYSIS DATA SHEET

Blank

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
% Solids:

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 6H29018-BLK1

CAS NO.	Analyte	Conc. (mg/Kg wet)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	ND	0.0130	0.0270	0.0330	1	U	SW7471B	6H29018	09/13/16 12:31

ANALYSIS DATA SHEET

LCS

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
% Solids:

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 6H29018-BS1

CAS NO.	Analyte	Conc. (mg/Kg wet)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	**0.3602**	**0.0130**	0.0270	0.0330	1		SW7471B	6H29018	09/13/16 12:32

ANALYSIS DATA SHEET

Matrix Spike

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
% Solids: 36.86

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 6H29018-MS1

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	**0.8503**	**0.0302**	0.0628	0.0767	1		SW7471B	6H29018	09/13/16 12:35

ANALYSIS DATA SHEET

Matrix Spike Dup

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
% Solids: 36.86

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 6H29018-MSD1

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	**0.8544**	**0.0311**	0.0646	0.0790	1		SW7471B	6H29018	09/13/16 12:37

INITIAL AND CONTINUING CALIBRATION CHECK

SW7471B

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Instrument ID: ME-FIMS
SDG: 1608229
Project: Raritan Arsenal - Phase III
Calibration: 6257002
Sequence: 6I25705

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
6I25705-ICV1	Mercury	4.000	4.028	101	ug/L	+/- 10.00%
6I25705-CCV1	Mercury	2.000	2.021	101	ug/L	+/- 10.00%
6I25705-CCV9	Mercury	2.000	1.911	95.5	ug/L	+/- 10.00%
6I25705-CCVA	Mercury	4.000	3.790	94.8	ug/L	+/- 10.00%
6I25705-CCVB	Mercury	2.000	1.957	97.8	ug/L	+/- 10.00%

BLANKS
SW7471B

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Instrument ID: ME-FIMS
Project: Raritan Arsenal - Phase III
Sequence: 6I25705
Calibration: 6257002

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
6I25705-ICB1	Mercury	-0.01577	0.0780	0.198	ug/L	U	SW7471B
6I25705-CCB1	Mercury	-0.0183	0.0780	0.198	ug/L	U	SW7471B
6I25705-CCB9	Mercury	-0.00539	0.0780	0.198	ug/L	U	SW7471B
6H29018-BLK1	Mercury	-0.00552	0.0130	0.0330	mg/Kg wet	U	SW7471B
6I25705-CCBA	Mercury	-0.0148	0.0780	0.198	ug/L	U	SW7471B
6I25705-CCBB	Mercury	-0.0129	0.0780	0.198	ug/L	U	SW7471B

LCS / LCS DUPLICATE RECOVERY

SW7471B

Laboratory:	Empirical Laboratories, LLC	SDG:	1608229
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Matrix:	Solid		
Batch:	6H29018	Laboratory ID:	6H29018-BS1
Preparation:	MET_HG_S	Initial/Final:	0.3 g / 50 mL

ANALYTE	SPIKE ADDED (mg/Kg wet)	LCS CONCENTRATION (mg/Kg wet)	LCS % REC.	QC LIMITS REC.
Mercury	0.3333	0.3602	108	80 - 124

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

SW7471B

DSA03-SB17-0010

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Matrix: Solid
Batch: 6H29018
% Solids: 36.86

Source Sample Name: **1608229-01**

ANALYTE	SPIKE ADDED (mg/Kg dry)	SAMPLE CONCENTRATION (mg/Kg dry)	MS CONCENTRATION (mg/Kg dry)	MS % REC.	Q	QC LIMITS REC.
Mercury	0.7752	ND	0.8503	110		80 - 124

ANALYTE	SPIKE ADDED (mg/Kg dry)	MSD CONCENTRATION (mg/Kg dry)	MSD % REC. #	% RPD	Q	QC LIMITS RPD	QC LIMITS REC.
Mercury	0.7980	0.8544	107	0.474		20	80 - 124

PREPARATION BATCH SUMMARY

SW7471B

Laboratory: Empirical Laboratories, LLC SDG: 1608229

Client: CH2M Hill, Inc. Project: Raritan Arsenal - Phase III

Batch: 6H29018 Batch Matrix: Solid Preparation: MET_HG_S

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT	FINAL VOL.
DSA03-SB17-0010	1608229-01	08/29/16 10:19	0.30	50.00
DSA03-SB18-0010	1608229-02	08/29/16 10:19	0.35	50.00
DSA03-SB19-0010	1608229-03	08/29/16 10:19	0.35	50.00
DSA03-SB20-0010	1608229-04	08/29/16 10:19	0.34	50.00
DSA03-SB21-0010	1608229-05	08/29/16 10:19	0.30	50.00
DSA03-SB22-0010	1608229-06	08/29/16 10:19	0.31	50.00
DSA03-SB23-0010	1608229-07	08/29/16 10:19	0.35	50.00
DSA03-SB24-0010	1608229-08	08/29/16 10:19	0.30	50.00
DSA05-SB25-0010	1608229-09	08/29/16 10:19	0.30	50.00
DSA05-SB26-0010	1608229-10	08/29/16 10:19	0.31	50.00
DSA05-SB27-0010	1608229-11	08/29/16 10:19	0.33	50.00
DSA05-SB28-0010	1608229-12	08/29/16 10:19	0.33	50.00
Blank	6H29018-BLK1	08/29/16 10:19	0.30	50.00
LCS	6H29018-BS1	08/29/16 10:19	0.30	50.00
DSA03-SB17-0010	6H29018-MS1	08/29/16 10:19	0.35	50.00
DSA03-SB17-0010	6H29018-MSD1	08/29/16 10:19	0.34	50.00

ANALYSIS SEQUENCE SUMMARY

SW7471B

Laboratory: Empirical Laboratories, LLC
SDG: 1608229
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Sequence: 6I25705
Instrument: ME-FIMS
Calibration: 6257002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Cal Standard	6I25705-CAL1	20160913s-001	09/13/16 09:43
Cal Standard	6I25705-CAL2	20160913s-002	09/13/16 09:44
Cal Standard	6I25705-CAL3	20160913s-003	09/13/16 09:45
Cal Standard	6I25705-CAL4	20160913s-004	09/13/16 09:46
Cal Standard	6I25705-CAL5	20160913s-005	09/13/16 09:48
Cal Standard	6I25705-CAL6	20160913s-006	09/13/16 09:49
Cal Standard	6I25705-CAL7	20160913s-007	09/13/16 09:50
Cal Standard	6I25705-CAL8	20160913s-008	09/13/16 09:51
Initial Cal Check	6I25705-ICV1	20160913s-009	09/13/16 09:53
Initial Cal Blank	6I25705-ICB1	20160913s-010	09/13/16 09:54
Calibration Check	6I25705-CCV1	20160913s-023	09/13/16 10:08
Calibration Blank	6I25705-CCB1	20160913s-024	09/13/16 10:09
Calibration Check	6I25705-CCV9	20160913s-139	09/13/16 12:29
Calibration Blank	6I25705-CCB9	20160913s-140	09/13/16 12:30
Blank	6H29018-BLK1	20160913s-141	09/13/16 12:31
LCS	6H29018-BS1	20160913s-142	09/13/16 12:32
DSA03-SB17-0010	1608229-01	20160913s-144	09/13/16 12:34
DSA03-SB17-0010	6H29018-MS1	20160913s-145	09/13/16 12:35
DSA03-SB17-0010	6H29018-MSD1	20160913s-146	09/13/16 12:37
DSA03-SB18-0010	1608229-02	20160913s-147	09/13/16 12:38
DSA03-SB19-0010	1608229-03	20160913s-148	09/13/16 12:39
DSA03-SB20-0010	1608229-04	20160913s-149	09/13/16 12:40
DSA03-SB21-0010	1608229-05	20160913s-150	09/13/16 12:41
DSA03-SB22-0010	1608229-06	20160913s-151	09/13/16 12:43
DSA03-SB23-0010	1608229-07	20160913s-152	09/13/16 12:44
DSA03-SB24-0010	1608229-08	20160913s-153	09/13/16 12:45
DSA05-SB25-0010	1608229-09	20160913s-154	09/13/16 12:46
Calibration Check	6I25705-CCVA	20160913s-155	09/13/16 12:47
Calibration Blank	6I25705-CCBA	20160913s-156	09/13/16 12:48
DSA05-SB26-0010	1608229-10	20160913s-157	09/13/16 12:49
DSA05-SB27-0010	1608229-11	20160913s-158	09/13/16 12:51
DSA05-SB28-0010	1608229-12	20160913s-159	09/13/16 12:51
Calibration Check	6I25705-CCVB	20160913s-166	09/13/16 13:00

ANALYSIS SEQUENCE SUMMARY

SW7471B

Laboratory:	Empirical Laboratories, LLC	SDG:	1608229
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Sequence:	6I25705	Instrument:	ME-FIMS
Calibration:	6257002		

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Calibration Blank	6I25705-CCBB	20160913s-167	09/13/16 13:01

INITIAL CALIBRATION DATA

SW7471B

Laboratory:	Empirical Laboratories, LLC	SDG:	1608229
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Calibration:	6257002	Instrument:	ME-FIMS
Matrix:	Solid	Calibration Dates:	9/13/16 9:43 9/13/16 9:51

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Mercury	0	0	0.2	1.439965E-02	0.5	1.425915E-02	1	1.394806E-02	2	0.0138053	4	1.458505E-02

INITIAL CALIBRATION DATA (Continued)

SW7471B

Laboratory:	Empirical Laboratories, LLC	SDG:	1608229
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Calibration:	6257002	Instrument:	ME-FIMS
Matrix:	Solid	Calibration Dates:	9/13/16 9:43 9/13/16 9:51

Compound	Level 07		Level 08		Level 09		Level 10		Level 11		Level 12	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Mercury	6	1.350032E-02	10	1.384799E-02								

INITIAL CALIBRATION DATA (Continued)

SW7471B

Laboratory:	Empirical Laboratories, LLC	SDG:	1608229
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Calibration:	6257002	Instrument:	ME-FIMS
Matrix:	Solid	Calibration Dates:	9/13/16 9:43 9/13/16 9:51

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
Mercury	1.229319E-02	40.50722	0	0	0.9992367		0.995	

HOLDING TIME SUMMARY

SW7471B

Laboratory: Empirical Laboratories, LLC SDG: 1608229

Client: CH2M Hill, Inc. Project: Raritan Arsenal - Phase III

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
DSA03-SB17-0010	08/22/16 10:35	08/24/16 08:35	08/29/16 10:19	7.03	28.00	09/13/16 12:34	15.09	28.00	
DSA03-SB18-0010	08/22/16 10:55	08/24/16 08:35	08/29/16 10:19	7.02	28.00	09/13/16 12:38	15.10	28.00	
DSA03-SB19-0010	08/22/16 11:10	08/24/16 08:35	08/29/16 10:19	7.01	28.00	09/13/16 12:39	15.10	28.00	
DSA03-SB20-0010	08/22/16 11:40	08/24/16 08:35	08/29/16 10:19	6.99	28.00	09/13/16 12:40	15.10	28.00	
DSA03-SB21-0010	08/22/16 14:18	08/24/16 08:35	08/29/16 10:19	6.88	28.00	09/13/16 12:41	15.10	28.00	
DSA03-SB22-0010	08/22/16 14:48	08/24/16 08:35	08/29/16 10:19	6.85	28.00	09/13/16 12:43	15.10	28.00	
DSA03-SB23-0010	08/22/16 15:22	08/24/16 08:35	08/29/16 10:19	6.83	28.00	09/13/16 12:44	15.10	28.00	
DSA03-SB24-0010	08/22/16 15:45	08/24/16 08:35	08/29/16 10:19	6.82	28.00	09/13/16 12:45	15.10	28.00	
DSA05-SB25-0010	08/23/16 10:30	08/24/16 08:35	08/29/16 10:19	6.03	28.00	09/13/16 12:46	15.10	28.00	
DSA05-SB26-0010	08/23/16 11:01	08/24/16 08:35	08/29/16 10:19	6.01	28.00	09/13/16 12:49	15.10	28.00	
DSA05-SB27-0010	08/23/16 12:55	08/24/16 08:35	08/29/16 10:19	5.93	28.00	09/13/16 12:51	15.11	28.00	
DSA05-SB28-0010	08/23/16 13:16	08/24/16 08:35	08/29/16 10:19	5.92	28.00	09/13/16 12:51	15.11	28.00	

ANALYSIS DATA SHEET

DSA03-SB17-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 10:35
% Solids: 36.86

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-01
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	15700	**13.2**	26.5	52.9	2	~~D~~	SW6010C	6H29010	09/09/16 17:05
7440-36-0	Antimony		1.32	2.12	2.65	2	U	SW6010C	6H29010	09/09/16 17:05
7440-38-2	Arsenic	16.9	**0.794**	1.59	2.65	2	~~D~~	SW6010C	6H29010	09/09/16 17:05
7440-39-3	Barium	24.7	**1.32**	2.65	10.6	2	~~D~~	SW6010C	6H29010	09/09/16 17:05
7440-41-7	Beryllium	0.989	**0.265**	0.529	1.32	2	J ~~D~~	SW6010C	6H29010	09/09/16 17:05
7440-43-9	Cadmium		0.265	0.529	1.32	2	U	SW6010C	6H29010	09/09/16 17:05
7440-70-2	Calcium	601	**265**	529	1320	2	J ~~D~~	SW6010C	6H29010	09/09/16 17:05
7440-47-3	Chromium	28.7	**0.529**	1.06	2.65	2	D	SW6010C	6H29010	09/09/16 17:05
7440-48-4	Cobalt	15.6	**1.32**	2.65	3.31	2	D	SW6010C	6H29010	09/09/16 17:05
7440-50-8	Copper	8.21	**1.06**	2.12	2.65	2	D	SW6010C	6H29010	09/09/16 17:05
7439-89-6	Iron	46200	**7.94**	15.9	26.5	2	D	SW6010C	6H29010	09/09/16 17:05
7439-92-1	Lead	8.83	**0.397**	0.794	1.32	2	D	SW6010C	6H29010	09/09/16 17:05
7439-95-4	Magnesium	3470	**265**	794	1320	2	D	SW6010C	6H29010	09/09/16 17:05
7439-96-5	Manganese	173	**0.794**	1.59	3.97	2	D	SW6010C	6H29010	09/09/16 17:05
7439-98-7	Molybdenum	12.4	**1.32**	2.65	5.29	2	D	SW6010C	6H29010	09/09/16 17:05
7440-02-0	Nickel	26.1	**0.794**	1.59	2.65	2	D	SW6010C	6H29010	09/09/16 17:05
7440-09-7	Potassium	2480	**265**	794	1320	2	D	SW6010C	6H29010	09/09/16 17:05
7782-49-2	Selenium		0.794	1.32	2.65	2	U	SW6010C	6H29010	09/09/16 17:05
7440-22-4	Silver		0.529	0.529	2.65	2	M U	SW6010C	6H29010	09/09/16 17:05
7440-23-5	Sodium	2410	**265**	794	1320	2	~~D~~	SW6010C	6H29010	09/09/16 17:05
7440-28-0	Thallium		0.794	1.06	2.12	2	U	SW6010C	6H29010	09/09/16 17:05
7440-62-2	Vanadium J+ -CCH	46.0	**1.32**	2.65	3.31	2	~~X D~~	SW6010C	6H29010	09/09/16 17:05
7440-66-6	Zinc	64.6	**1.32**	2.65	5.29	2	~~D~~	SW6010C	6H29010	09/09/16 17:05

ANALYSIS DATA SHEET

DSA03-SB18-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 10:55
% Solids: 76.40

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-02
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	7670	**6.45**	12.9	25.8	2	~~D~~	SW6010C	6H29010	09/09/16 17:09
7440-36-0	Antimony		0.645	1.03	1.29	2	U	SW6010C	6H29010	09/09/16 17:09
7440-38-2	Arsenic	8.95	**0.387**	0.774	1.29	2	D	SW6010C	6H29010	09/09/16 17:09
7440-39-3	Barium	8.04	**0.645**	1.29	5.16	2	D	SW6010C	6H29010	09/09/16 17:09
7440-41-7	Beryllium	0.467	**0.129**	0.258	0.645	2	J ~~D~~	SW6010C	6H29010	09/09/16 17:09
7440-43-9	Cadmium		0.129	0.258	0.645	2	U	SW6010C	6H29010	09/09/16 17:09
7440-70-2	Calcium	151	**129**	258	645	2	J D	SW6010C	6H29010	09/09/16 17:09
7440-47-3	Chromium	21.0	**0.258**	0.516	1.29	2	D	SW6010C	6H29010	09/09/16 17:09
7440-48-4	Cobalt	4.95	**0.645**	1.29	1.61	2	D	SW6010C	6H29010	09/09/16 17:09
7440-50-8	Copper	8.00	**0.516**	1.03	1.29	2	D	SW6010C	6H29010	09/09/16 17:09
7439-89-6	Iron	20500	**3.87**	7.74	12.9	2	D	SW6010C	6H29010	09/09/16 17:09
7439-92-1	Lead	4.70	**0.193**	0.387	0.645	2	D	SW6010C	6H29010	09/09/16 17:09
7439-95-4	Magnesium	2720	**129**	387	645	2	D	SW6010C	6H29010	09/09/16 17:09
7439-96-5	Manganese	67.9	**0.387**	0.774	1.93	2	D	SW6010C	6H29010	09/09/16 17:09
7439-98-7	Molybdenum	0.792	**0.645**	1.29	2.58	2	J D	SW6010C	6H29010	09/09/16 17:09
7440-02-0	Nickel	11.3	**0.387**	0.774	1.29	2	D	SW6010C	6H29010	09/09/16 17:09
7440-09-7	Potassium	1570	**129**	387	645	2	D	SW6010C	6H29010	09/09/16 17:09
7782-49-2	Selenium		0.387	0.645	1.29	2	U	SW6010C	6H29010	09/09/16 17:09
7440-22-4	Silver		0.129	0.258	1.29	2	U	SW6010C	6H29010	09/09/16 17:09
7440-23-5	Sodium	325	**129**	387	645	2	J D	SW6010C	6H29010	09/09/16 17:09
7440-28-0	Thallium	0.496	**0.387**	0.516	1.03	2	J D	SW6010C	6H29010	09/09/16 17:09
7440-62-2	Vanadium J+ -CCH	30.9	**0.645**	1.29	1.61	2	~~X D~~	SW6010C	6H29010	09/09/16 17:09
7440-66-6	Zinc	40.4	**0.645**	1.29	2.58	2	~~D~~	SW6010C	6H29010	09/09/16 17:09

ANALYSIS DATA SHEET

DSA03-SB19-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 11:10
% Solids: 80.10

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-03
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	7980	**6.24**	12.5	25.0	2	~~D~~	SW6010C	6H29010	09/09/16 17:13
7440-36-0	Antimony		0.624	0.999	1.25	2	U	SW6010C	6H29010	09/09/16 17:13
7440-38-2	Arsenic	7.09	**0.375**	0.749	1.25	2	D	SW6010C	6H29010	09/09/16 17:13
7440-39-3	Barium	11.3	**0.624**	1.25	4.99	2	D	SW6010C	6H29010	09/09/16 17:13
7440-41-7	Beryllium	0.591	**0.125**	0.250	0.624	2	J D	SW6010C	6H29010	09/09/16 17:13
7440-43-9	Cadmium		0.250	0.250	0.624	2	M U	SW6010C	6H29010	09/09/16 17:13
7440-70-2	Calcium	138	**125**	250	624	2	J D	SW6010C	6H29010	09/09/16 17:13
7440-47-3	Chromium	17.2	**0.250**	0.499	1.25	2	D	SW6010C	6H29010	09/09/16 17:13
7440-48-4	Cobalt	3.75	**0.624**	1.25	1.56	2	D	SW6010C	6H29010	09/09/16 17:13
7440-50-8	Copper	5.93	**0.499**	0.999	1.25	2	D	SW6010C	6H29010	09/09/16 17:13
7439-89-6	Iron	28500	**3.75**	7.49	12.5	2	D	SW6010C	6H29010	09/09/16 17:13
7439-92-1	Lead	5.93	**0.187**	0.375	0.624	2	D	SW6010C	6H29010	09/09/16 17:13
7439-95-4	Magnesium	1680	**125**	375	624	2	D	SW6010C	6H29010	09/09/16 17:13
7439-96-5	Manganese	241	**0.375**	0.749	1.87	2	D	SW6010C	6H29010	09/09/16 17:13
7439-98-7	Molybdenum	0.807	**0.624**	1.25	2.50	2	J D	SW6010C	6H29010	09/09/16 17:13
7440-02-0	Nickel	8.18	**0.375**	0.749	1.25	2	D	SW6010C	6H29010	09/09/16 17:13
7440-09-7	Potassium	1130	**125**	375	624	2	D	SW6010C	6H29010	09/09/16 17:13
7782-49-2	Selenium		0.375	0.624	1.25	2	U	SW6010C	6H29010	09/09/16 17:13
7440-22-4	Silver		0.125	0.250	1.25	2	U	SW6010C	6H29010	09/09/16 17:13
7440-23-5	Sodium	402	**125**	375	624	2	J D	SW6010C	6H29010	09/09/16 17:13
7440-28-0	Thallium	0.445	**0.375**	0.499	0.999	2	J D	SW6010C	6H29010	09/09/16 17:13
7440-62-2	Vanadium J+ -CCH	24.5	**0.624**	1.25	1.56	2	~~X D~~	SW6010C	6H29010	09/09/16 17:13
7440-66-6	Zinc	35.1	**0.624**	1.25	2.50	2	~~D~~	SW6010C	6H29010	09/09/16 17:13

ANALYSIS DATA SHEET

DSA03-SB20-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 11:40
% Solids: 66.30

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-04
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	11400	**7.43**	14.9	29.7	2	D	SW6010C	6H29010	09/09/16 17:18
7440-36-0	Antimony		0.743	1.19	1.49	2	U	SW6010C	6H29010	09/09/16 17:18
7440-38-2	Arsenic	10.8	**0.446**	0.892	1.49	2	D	SW6010C	6H29010	09/09/16 17:18
7440-39-3	Barium	12.0	**0.743**	1.49	5.94	2	D	SW6010C	6H29010	09/09/16 17:18
7440-41-7	Beryllium	1.06	**0.149**	0.297	0.743	2	D	SW6010C	6H29010	09/09/16 17:18
7440-43-9	Cadmium		0.297	0.297	0.743	2	M U	SW6010C	6H29010	09/09/16 17:18
7440-70-2	Calcium	237	**149**	297	743	2	J D	SW6010C	6H29010	09/09/16 17:18
7440-47-3	Chromium	56.6	**0.297**	0.594	1.49	2	D	SW6010C	6H29010	09/09/16 17:18
7440-48-4	Cobalt	7.43	**0.743**	1.49	1.86	2	D	SW6010C	6H29010	09/09/16 17:18
7440-50-8	Copper	11.4	**0.594**	1.19	1.49	2	D	SW6010C	6H29010	09/09/16 17:18
7439-89-6	Iron	49600	**4.46**	8.92	14.9	2	D	SW6010C	6H29010	09/09/16 17:18
7439-92-1	Lead	8.28	**0.223**	0.446	0.743	2	D	SW6010C	6H29010	09/09/16 17:18
7439-95-4	Magnesium	3630	**149**	446	743	2	D	SW6010C	6H29010	09/09/16 17:18
7439-96-5	Manganese	190	**0.446**	0.892	2.23	2	D	SW6010C	6H29010	09/09/16 17:18
7439-98-7	Molybdenum	1.36	**0.743**	1.49	2.97	2	J D	SW6010C	6H29010	09/09/16 17:18
7440-02-0	Nickel	17.0	**0.446**	0.892	1.49	2	D	SW6010C	6H29010	09/09/16 17:18
7440-09-7	Potassium	1700	**149**	446	743	2	D	SW6010C	6H29010	09/09/16 17:18
7782-49-2	Selenium		0.446	0.743	1.49	2	U	SW6010C	6H29010	09/09/16 17:18
7440-22-4	Silver		0.149	0.297	1.49	2	U	SW6010C	6H29010	09/09/16 17:18
7440-23-5	Sodium	1090	**149**	446	743	2	D	SW6010C	6H29010	09/09/16 17:18
7440-28-0	Thallium	0.645	**0.446**	0.594	1.19	2	J D	SW6010C	6H29010	09/09/16 17:18
7440-62-2	Vanadium J+ -CCH	48.1	**0.743**	1.49	1.86	2	X D	SW6010C	6H29010	09/09/16 17:18
7440-66-6	Zinc	70.8	**0.743**	1.49	2.97	2	D	SW6010C	6H29010	09/09/16 17:18

ANALYSIS DATA SHEET

DSA03-SB21-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 14:18
% Solids: 57.61

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-05
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	12500	**8.55**	17.1	34.2	2	D	SW6010C	6H29010	09/09/16 17:22
7440-36-0	Antimony	1.42	**0.855**	1.37	1.71	2	J D	SW6010C	6H29010	09/09/16 17:22
7440-38-2	Arsenic	72.1	**0.513**	1.03	1.71	2	D	SW6010C	6H29010	09/09/16 17:22
7440-39-3	Barium	64.8	**0.855**	1.71	6.84	2	D	SW6010C	6H29010	09/09/16 17:22
7440-41-7	Beryllium	0.298	**0.171**	0.342	0.855	2	J D	SW6010C	6H29010	09/09/16 17:22
7440-43-9	Cadmium		0.342	0.342	0.855	2	M U	SW6010C	6H29010	09/09/16 17:22
7440-70-2	Calcium	494	**171**	342	855	2	J D	SW6010C	6H29010	09/09/16 17:22
7440-47-3	Chromium	54.6	**0.342**	0.684	1.71	2	D	SW6010C	6H29010	09/09/16 17:22
7440-48-4	Cobalt	5.08	**0.855**	1.71	2.14	2	D	SW6010C	6H29010	09/09/16 17:22
7440-50-8	Copper	51.5	**0.684**	1.37	1.71	2	D	SW6010C	6H29010	09/09/16 17:22
7439-89-6	Iron	52700	**5.13**	10.3	17.1	2	D	SW6010C	6H29010	09/09/16 17:22
7439-92-1	Lead	97.7	**0.257**	0.513	0.855	2	D	SW6010C	6H29010	09/09/16 17:22
7439-95-4	Magnesium	4010	**171**	513	855	2	D	SW6010C	6H29010	09/09/16 17:22
7439-96-5	Manganese	105	**0.513**	1.03	2.57	2	D	SW6010C	6H29010	09/09/16 17:22
7439-98-7	Molybdenum	2.82	**0.855**	1.71	3.42	2	J D	SW6010C	6H29010	09/09/16 17:22
7440-02-0	Nickel	15.3	**0.513**	1.03	1.71	2	D	SW6010C	6H29010	09/09/16 17:22
7440-09-7	Potassium	3580	**171**	513	855	2	D	SW6010C	6H29010	09/09/16 17:22
7782-49-2	Selenium	5.28	**0.513**	0.855	1.71	2	D	SW6010C	6H29010	09/09/16 17:22
7440-22-4	Silver	1.40	**0.171**	0.342	1.71	2	J D	SW6010C	6H29010	09/09/16 17:22
7440-23-5	Sodium	2610	**171**	513	855	2	D	SW6010C	6H29010	09/09/16 17:22
7440-28-0	Thallium	0.659	**0.513**	0.684	1.37	2	J D	SW6010C	6H29010	09/09/16 17:22
7440-62-2	Vanadium J+ -CCH	60.3	**0.855**	1.71	2.14	2	X D	SW6010C	6H29010	09/09/16 17:22
7440-66-6	Zinc	54.5	**0.855**	1.71	3.42	2	D	SW6010C	6H29010	09/09/16 17:22

ANALYSIS DATA SHEET

DSA03-SB22-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 14:48
% Solids: 49.95

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-06
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	21500	**9.81**	19.6	39.3	2	~~J~~ D	SW6010C	6H29010	09/09/16 17:27
7440-36-0	Antimony		0.981	1.57	1.96	2	U	SW6010C	6H29010	09/09/16 17:27
7440-38-2	Arsenic	31.2	**0.589**	1.18	1.96	2	D	SW6010C	6H29010	09/09/16 17:27
7440-39-3	Barium	67.0	**0.981**	1.96	7.85	2	D	SW6010C	6H29010	09/09/16 17:27
7440-41-7	Beryllium	0.674	**0.196**	0.393	0.981	2	J D	SW6010C	6H29010	09/09/16 17:27
7440-43-9	Cadmium		0.196	0.393	0.981	2	U	SW6010C	6H29010	09/09/16 17:27
7440-70-2	Calcium	732	**196**	393	981	2	J D	SW6010C	6H29010	09/09/16 17:27
7440-47-3	Chromium	59.9	**0.393**	0.785	1.96	2	D	SW6010C	6H29010	09/09/16 17:27
7440-48-4	Cobalt	6.32	**0.981**	1.96	2.45	2	D	SW6010C	6H29010	09/09/16 17:27
7440-50-8	Copper	35.0	**0.785**	1.57	1.96	2	D	SW6010C	6H29010	09/09/16 17:27
7439-89-6	Iron	37800	**5.89**	11.8	19.6	2	D	SW6010C	6H29010	09/09/16 17:27
7439-92-1	Lead	62.4	**0.294**	0.589	0.981	2	D	SW6010C	6H29010	09/09/16 17:27
7439-95-4	Magnesium	5610	**196**	589	981	2	D	SW6010C	6H29010	09/09/16 17:27
7439-96-5	Manganese	126	**0.589**	1.18	2.94	2	D	SW6010C	6H29010	09/09/16 17:27
7439-98-7	Molybdenum	2.85	**0.981**	1.96	3.93	2	J D	SW6010C	6H29010	09/09/16 17:27
7440-02-0	Nickel	20.0	**0.589**	1.18	1.96	2	D	SW6010C	6H29010	09/09/16 17:27
7440-09-7	Potassium	4560	**196**	589	981	2	D	SW6010C	6H29010	09/09/16 17:27
7782-49-2	Selenium	1.22	**0.589**	0.981	1.96	2	J D	SW6010C	6H29010	09/09/16 17:27
7440-22-4	Silver		0.196	0.393	1.96	2	U	SW6010C	6H29010	09/09/16 17:27
7440-23-5	Sodium	1120	**196**	589	981	2	~~J~~ D	SW6010C	6H29010	09/09/16 17:27
7440-28-0	Thallium		0.589	0.785	1.57	2	U	SW6010C	6H29010	09/09/16 17:27
7440-62-2	Vanadium J+ -CCH	57.3	**0.981**	1.96	2.45	2	~~X D~~	SW6010C	6H29010	09/09/16 17:27
7440-66-6	Zinc	65.8	**0.981**	1.96	3.93	2	~~D~~	SW6010C	6H29010	09/09/16 17:27

ANALYSIS DATA SHEET

DSA03-SB23-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 15:22
% Solids: 79.00

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-07
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	9190	**6.24**	12.5	24.9	2	~~D~~	SW6010C	6H29010	09/09/16 17:31
7440-36-0	Antimony		0.624	0.998	1.25	2	U	SW6010C	6H29010	09/09/16 17:31
7440-38-2	Arsenic	9.00	**0.374**	0.748	1.25	2	D	SW6010C	6H29010	09/09/16 17:31
7440-39-3	Barium	13.3	**0.624**	1.25	4.99	2	D	SW6010C	6H29010	09/09/16 17:31
7440-41-7	Beryllium	0.916	**0.125**	0.249	0.624	2	D	SW6010C	6H29010	09/09/16 17:31
7440-43-9	Cadmium		0.249	0.249	0.624	2	~~M~~ U	SW6010C	6H29010	09/09/16 17:31
7440-70-2	Calcium	491	**125**	249	624	2	J ~~D~~	SW6010C	6H29010	09/09/16 17:31
7440-47-3	Chromium	19.4	**0.249**	0.499	1.25	2	D	SW6010C	6H29010	09/09/16 17:31
7440-48-4	Cobalt	4.21	**0.624**	1.25	1.56	2	D	SW6010C	6H29010	09/09/16 17:31
7440-50-8	Copper	6.78	**0.499**	0.998	1.25	2	D	SW6010C	6H29010	09/09/16 17:31
7439-89-6	Iron	30000	**3.74**	7.48	12.5	2	D	SW6010C	6H29010	09/09/16 17:31
7439-92-1	Lead	6.10	**0.187**	0.374	0.624	2	D	SW6010C	6H29010	09/09/16 17:31
7439-95-4	Magnesium	2100	**125**	374	624	2	D	SW6010C	6H29010	09/09/16 17:31
7439-96-5	Manganese	220	**0.374**	0.748	1.87	2	D	SW6010C	6H29010	09/09/16 17:31
7439-98-7	Molybdenum	1.13	**0.624**	1.25	2.49	2	~~J~~ D	SW6010C	6H29010	09/09/16 17:31
7440-02-0	Nickel	9.44	**0.374**	0.748	1.25	2	D	SW6010C	6H29010	09/09/16 17:31
7440-09-7	Potassium	1510	**125**	374	624	2	D	SW6010C	6H29010	09/09/16 17:31
7782-49-2	Selenium		0.374	0.624	1.25	2	U	SW6010C	6H29010	09/09/16 17:31
7440-22-4	Silver		0.125	0.249	1.25	2	U	SW6010C	6H29010	09/09/16 17:31
7440-23-5	Sodium	320	**125**	374	624	2	J D	SW6010C	6H29010	09/09/16 17:31
7440-28-0	Thallium	0.411	**0.374**	0.499	0.998	2	J D	SW6010C	6H29010	09/09/16 17:31
7440-62-2	Vanadium J+ -CCH	29.1	**0.624**	1.25	1.56	2	~~X D~~	SW6010C	6H29010	09/09/16 17:31
7440-66-6	Zinc	39.9	**0.624**	1.25	2.49	2	~~D~~	SW6010C	6H29010	09/09/16 17:31

ANALYSIS DATA SHEET

DSA03-SB24-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 15:45
% Solids: 58.85

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-08
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	10700	**8.29**	16.6	33.2	2	~~D~~	SW6010C	6H29010	09/09/16 17:35
7440-36-0	Antimony		0.829	1.33	1.66	2	U	SW6010C	6H29010	09/09/16 17:35
7440-38-2	Arsenic	19.7	**0.497**	0.995	1.66	2	D	SW6010C	6H29010	09/09/16 17:35
7440-39-3	Barium	18.3	**0.829**	1.66	6.63	2	D	SW6010C	6H29010	09/09/16 17:35
7440-41-7	Beryllium	0.845	**0.166**	0.332	0.829	2	D	SW6010C	6H29010	09/09/16 17:35
7440-43-9	Cadmium		0.166	0.332	0.829	2	U	SW6010C	6H29010	09/09/16 17:35
7440-70-2	Calcium	1330	**166**	332	829	2	D	SW6010C	6H29010	09/09/16 17:35
7440-47-3	Chromium	24.2	**0.332**	0.663	1.66	2	D	SW6010C	6H29010	09/09/16 17:35
7440-48-4	Cobalt	12.7	**0.829**	1.66	2.07	2	D	SW6010C	6H29010	09/09/16 17:35
7440-50-8	Copper	9.26	**0.663**	1.33	1.66	2	D	SW6010C	6H29010	09/09/16 17:35
7439-89-6	Iron	49700	**4.97**	9.95	16.6	2	D	SW6010C	6H29010	09/09/16 17:35
7439-92-1	Lead	9.33	**0.249**	0.497	0.829	2	D	SW6010C	6H29010	09/09/16 17:35
7439-95-4	Magnesium	3710	**166**	497	829	2	D	SW6010C	6H29010	09/09/16 17:35
7439-96-5	Manganese	227	**0.497**	0.995	2.49	2	D	SW6010C	6H29010	09/09/16 17:35
7439-98-7	Molybdenum	6.81	**0.829**	1.66	3.32	2	D	SW6010C	6H29010	09/09/16 17:35
7440-02-0	Nickel	18.0	**0.497**	0.995	1.66	2	D	SW6010C	6H29010	09/09/16 17:35
7440-09-7	Potassium	2090	**166**	497	829	2	D	SW6010C	6H29010	09/09/16 17:35
7782-49-2	Selenium		0.497	0.829	1.66	2	U	SW6010C	6H29010	09/09/16 17:35
7440-22-4	Silver		0.332	0.332	1.66	2	~~M~~ U	SW6010C	6H29010	09/09/16 17:35
7440-23-5	Sodium	650	**166**	497	829	2	J ~~D~~	SW6010C	6H29010	09/09/16 17:35
7440-28-0	Thallium		0.497	0.663	1.33	2	U	SW6010C	6H29010	09/09/16 17:35
7440-62-2	Vanadium J+ -CCH	37.2	**0.829**	1.66	2.07	2	~~X D~~	SW6010C	6H29010	09/09/16 17:35
7440-66-6	Zinc	58.0	**0.829**	1.66	3.32	2	~~D~~	SW6010C	6H29010	09/09/16 17:35

ANALYSIS DATA SHEET

DSA05-SB25-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/23/16 10:30
% Solids: 34.21

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-09
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	5430	**14.5**	28.9	57.9	2	D	SW6010C	6H29010	09/09/16 17:40
7440-36-0	Antimony		1.45	2.32	2.89	2	U	SW6010C	6H29010	09/09/16 17:40
7440-38-2	Arsenic	2.24	**0.868**	1.74	2.89	2	J D	SW6010C	6H29010	09/09/16 17:40
7440-39-3	Barium	11.8	**1.45**	2.89	11.6	2	D	SW6010C	6H29010	09/09/16 17:40
7440-41-7	Beryllium	0.302	**0.289**	0.579	1.45	2	J D	SW6010C	6H29010	09/09/16 17:40
7440-43-9	Cadmium		0.289	0.579	1.45	2	U	SW6010C	6H29010	09/09/16 17:40
7440-70-2	Calcium	2550	**289**	579	1450	2	D	SW6010C	6H29010	09/09/16 17:40
7440-47-3	Chromium	12.2	**0.579**	1.16	2.89	2	D	SW6010C	6H29010	09/09/16 17:40
7440-48-4	Cobalt	1.89	**1.45**	2.89	3.62	2	J D	SW6010C	6H29010	09/09/16 17:40
7440-50-8	Copper	4.66	**1.16**	2.32	2.89	2	D	SW6010C	6H29010	09/09/16 17:40
7439-89-6	Iron	7570	**8.68**	17.4	28.9	2	D	SW6010C	6H29010	09/09/16 17:40
7439-92-1	Lead	4.18	**0.434**	0.868	1.45	2	D	SW6010C	6H29010	09/09/16 17:40
7439-95-4	Magnesium	4520	**289**	868	1450	2	D	SW6010C	6H29010	09/09/16 17:40
7439-96-5	Manganese	53.1	**0.868**	1.74	4.34	2	D	SW6010C	6H29010	09/09/16 17:40
7439-98-7	Molybdenum	2.23	**1.45**	2.89	5.79	2	J D	SW6010C	6H29010	09/09/16 17:40
7440-02-0	Nickel	5.30	**0.868**	1.74	2.89	2	D	SW6010C	6H29010	09/09/16 17:40
7440-09-7	Potassium	1640	**289**	868	1450	2	D	SW6010C	6H29010	09/09/16 17:40
7782-49-2	Selenium		0.868	1.45	2.89	2	U	SW6010C	6H29010	09/09/16 17:40
7440-22-4	Silver		0.579	0.579	2.89	2	M U	SW6010C	6H29010	09/09/16 17:40
7440-23-5	Sodium	17000	**289**	868	1450	2	D	SW6010C	6H29010	09/09/16 17:40
7440-28-0	Thallium		0.868	1.16	2.32	2	U	SW6010C	6H29010	09/09/16 17:40
7440-62-2	Vanadium J+ -CCH	16.4	**1.45**	2.89	3.62	2	X D	SW6010C	6H29010	09/09/16 17:40
7440-66-6	Zinc	18.1	**1.45**	2.89	5.79	2	D	SW6010C	6H29010	09/09/16 17:40

ANALYSIS DATA SHEET

DSA05-SB26-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/23/16 11:01
% Solids: 43.50

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-10
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	22000	**11.5**	23.0	46.0	2	~~D~~	SW6010C	6H29010	09/09/16 17:44
7440-36-0	Antimony		1.15	1.84	2.30	2	U	SW6010C	6H29010	09/09/16 17:44
7440-38-2	Arsenic	13.9	**0.690**	1.38	2.30	2	D	SW6010C	6H29010	09/09/16 17:44
7440-39-3	Barium	40.9	**1.15**	2.30	9.20	2	D	SW6010C	6H29010	09/09/16 17:44
7440-41-7	Beryllium	1.17	**0.230**	0.460	1.15	2	D	SW6010C	6H29010	09/09/16 17:44
7440-43-9	Cadmium		0.230	0.460	1.15	2	U	SW6010C	6H29010	09/09/16 17:44
7440-70-2	Calcium	2350	**230**	460	1150	2	D	SW6010C	6H29010	09/09/16 17:44
7440-47-3	Chromium	49.0	**0.460**	0.920	2.30	2	D	SW6010C	6H29010	09/09/16 17:44
7440-48-4	Cobalt	12.6	**1.15**	2.30	2.87	2	D	SW6010C	6H29010	09/09/16 17:44
7440-50-8	Copper	19.0	**0.920**	1.84	2.30	2	D	SW6010C	6H29010	09/09/16 17:44
7439-89-6	Iron	46500	**6.90**	13.8	23.0	2	D	SW6010C	6H29010	09/09/16 17:44
7439-92-1	Lead	17.7	**0.345**	0.690	1.15	2	D	SW6010C	6H29010	09/09/16 17:44
7439-95-4	Magnesium	9280	**230**	690	1150	2	D	SW6010C	6H29010	09/09/16 17:44
7439-96-5	Manganese	284	**0.690**	1.38	3.45	2	D	SW6010C	6H29010	09/09/16 17:44
7439-98-7	Molybdenum	1.73	**1.15**	2.30	4.60	2	J ~~D~~	SW6010C	6H29010	09/09/16 17:44
7440-02-0	Nickel	30.2	**0.690**	1.38	2.30	2	D	SW6010C	6H29010	09/09/16 17:44
7440-09-7	Potassium	4400	**230**	690	1150	2	D	SW6010C	6H29010	09/09/16 17:44
7782-49-2	Selenium		0.690	1.15	2.30	2	U	SW6010C	6H29010	09/09/16 17:44
7440-22-4	Silver		0.460	0.460	2.30	2	~~M~~ U	SW6010C	6H29010	09/09/16 17:44
7440-23-5	Sodium	10300	**230**	690	1150	2	~~D~~	SW6010C	6H29010	09/09/16 17:44
7440-28-0	Thallium		0.690	0.920	1.84	2	U	SW6010C	6H29010	09/09/16 17:44
7440-62-2	Vanadium J+ -CCH	52.4	**1.15**	2.30	2.87	2	~~X D~~	SW6010C	6H29010	09/09/16 17:44
7440-66-6	Zinc	103	**1.15**	2.30	4.60	2	~~D~~	SW6010C	6H29010	09/09/16 17:44

ANALYSIS DATA SHEET

DSA05-SB27-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/23/16 12:55
% Solids: 16.32

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-11
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	20600	**30.3**	60.7	121	2	~~D~~	SW6010C	6H29010	09/09/16 17:57
7440-36-0	Antimony		3.03	4.85	6.07	2	U	SW6010C	6H29010	09/09/16 17:57
7440-38-2	Arsenic	19.1	**1.82**	3.64	6.07	2	D	SW6010C	6H29010	09/09/16 17:57
7440-39-3	Barium	41.6	**3.03**	6.07	24.3	2	D	SW6010C	6H29010	09/09/16 17:57
7440-41-7	Beryllium	1.15	**0.607**	1.21	3.03	2	J D	SW6010C	6H29010	09/09/16 17:57
7440-43-9	Cadmium		0.607	1.21	3.03	2	U	SW6010C	6H29010	09/09/16 17:57
7440-70-2	Calcium	5890	**607**	1210	3030	2	~~D~~	SW6010C	6H29010	09/09/16 17:57
7440-47-3	Chromium J+ -CCH	40.1	**1.21**	2.43	6.07	2	~~X D~~	SW6010C	6H29010	09/09/16 17:57
7440-48-4	Cobalt	7.14	**3.03**	6.07	7.58	2	J D	SW6010C	6H29010	09/09/16 17:57
7440-50-8	Copper	28.6	**2.43**	4.85	6.07	2	D	SW6010C	6H29010	09/09/16 17:57
7439-89-6	Iron	36400	**18.2**	36.4	60.7	2	D	SW6010C	6H29010	09/09/16 17:57
7439-92-1	Lead	22.8	**0.910**	1.82	3.03	2	D	SW6010C	6H29010	09/09/16 17:57
7439-95-4	Magnesium	11000	**607**	1820	3030	2	D	SW6010C	6H29010	09/09/16 17:57
7439-96-5	Manganese	113	**1.82**	3.64	9.10	2	D	SW6010C	6H29010	09/09/16 17:57
7439-98-7	Molybdenum	6.35	**3.03**	6.07	12.1	2	J ~~D~~	SW6010C	6H29010	09/09/16 17:57
7440-02-0	Nickel	27.1	**1.82**	3.64	6.07	2	D	SW6010C	6H29010	09/09/16 17:57
7440-09-7	Potassium	4560	**607**	1820	3030	2	D	SW6010C	6H29010	09/09/16 17:57
7782-49-2	Selenium		1.82	3.03	6.07	2	U	SW6010C	6H29010	09/09/16 17:57
7440-22-4	Silver		1.21	1.21	6.07	2	M U	SW6010C	6H29010	09/09/16 17:57
7440-23-5	Sodium	35500	**607**	1820	3030	2	~~D~~	SW6010C	6H29010	09/09/16 17:57
7440-28-0	Thallium		1.82	2.43	4.85	2	U	SW6010C	6H29010	09/09/16 17:57
7440-62-2	Vanadium J+ -CCH	51.5	**3.03**	6.07	7.58	2	~~X D~~	SW6010C	6H29010	09/09/16 17:57
7440-66-6	Zinc	81.3	**3.03**	6.07	12.1	2	~~D~~	SW6010C	6H29010	09/09/16 17:57

ANALYSIS DATA SHEET

DSA05-SB28-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/23/16 13:16
% Solids: 38.73

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-12
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	20400	**12.8**	25.6	51.1	2	~~D~~	SW6010C	6H29010	09/09/16 18:02
7440-36-0	Antimony		1.28	2.05	2.56	2	U	SW6010C	6H29010	09/09/16 18:02
7440-38-2	Arsenic	13.3	**0.767**	1.53	2.56	2	D	SW6010C	6H29010	09/09/16 18:02
7440-39-3	Barium	37.0	**1.28**	2.56	10.2	2	D	SW6010C	6H29010	09/09/16 18:02
7440-41-7	Beryllium	1.17	**0.256**	0.511	1.28	2	J D	SW6010C	6H29010	09/09/16 18:02
7440-43-9	Cadmium		0.256	0.511	1.28	2	U	SW6010C	6H29010	09/09/16 18:02
7440-70-2	Calcium	2650	**256**	511	1280	2	~~D~~	SW6010C	6H29010	09/09/16 18:02
7440-47-3	Chromium J+ -CCH	40.0	**0.511**	1.02	2.56	2	~~X D~~	SW6010C	6H29010	09/09/16 18:02
7440-48-4	Cobalt	9.24	**1.28**	2.56	3.20	2	D	SW6010C	6H29010	09/09/16 18:02
7440-50-8	Copper	13.8	**1.02**	2.05	2.56	2	D	SW6010C	6H29010	09/09/16 18:02
7439-89-6	Iron	35700	**7.67**	15.3	25.6	2	D	SW6010C	6H29010	09/09/16 18:02
7439-92-1	Lead	13.8	**0.383**	0.767	1.28	2	D	SW6010C	6H29010	09/09/16 18:02
7439-95-4	Magnesium	8750	**256**	767	1280	2	D	SW6010C	6H29010	09/09/16 18:02
7439-96-5	Manganese	217	**0.767**	1.53	3.83	2	D	SW6010C	6H29010	09/09/16 18:02
7439-98-7	Molybdenum	2.18	**1.28**	2.56	5.11	2	J D	SW6010C	6H29010	09/09/16 18:02
7440-02-0	Nickel	25.5	**0.767**	1.53	2.56	2	D	SW6010C	6H29010	09/09/16 18:02
7440-09-7	Potassium	4170	**256**	767	1280	2	D	SW6010C	6H29010	09/09/16 18:02
7782-49-2	Selenium		0.767	1.28	2.56	2	U	SW6010C	6H29010	09/09/16 18:02
7440-22-4	Silver		0.511	0.511	2.56	2	M U	SW6010C	6H29010	09/09/16 18:02
7440-23-5	Sodium	12600	**256**	767	1280	2	~~D~~	SW6010C	6H29010	09/09/16 18:02
7440-28-0	Thallium		0.767	1.02	2.05	2	U	SW6010C	6H29010	09/09/16 18:02
7440-62-2	Vanadium J+ -CCH	47.0	**1.28**	2.56	3.20	2	~~X D~~	SW6010C	6H29010	09/09/16 18:02
7440-66-6	Zinc	79.4	**1.28**	2.56	5.11	2	~~D~~	SW6010C	6H29010	09/09/16 18:02

ANALYSIS DATA SHEET

DSA03-SB17-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 10:35
% Solids: 36.86

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-01
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0353	0.0733	0.0895	1	U	SW7471B	6H29018	09/13/16 12:34

ANALYSIS DATA SHEET

DSA03-SB18-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 10:55
% Solids: 76.40

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-02
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0146	0.0303	0.0370	1	U	SW7471B	6H29018	09/13/16 12:38

ANALYSIS DATA SHEET

DSA03-SB19-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 11:10
% Solids: 80.10

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-03
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0139	0.0289	0.0353	1	U	SW7471B	6H29018	09/13/16 12:39

ANALYSIS DATA SHEET

DSA03-SB20-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 11:40
% Solids: 66.30

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-04
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0173	0.0359	0.0439	1	U	SW7471B	6H29018	09/13/16 12:40

ANALYSIS DATA SHEET

DSA03-SB21-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 14:18
% Solids: 57.61

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-05
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	**0.832**	**0.0226**	0.0469	0.0573	1		SW7471B	6H29018	09/13/16 12:41

ANALYSIS DATA SHEET

DSA03-SB22-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 14:48
% Solids: 49.95

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-06
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	**0.0951**	**0.0252**	0.0523	0.0639	1		SW7471B	6H29018	09/13/16 12:43

ANALYSIS DATA SHEET

DSA03-SB23-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 15:22
% Solids: 79.00

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-07
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0141	0.0293	0.0358	1	U	SW7471B	6H29018	09/13/16 12:44

ANALYSIS DATA SHEET

DSA03-SB24-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/22/16 15:45
% Solids: 58.85

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-08
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0221	0.0459	0.0561	1	U	SW7471B	6H29018	09/13/16 12:45

ANALYSIS DATA SHEET

DSA05-SB25-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/23/16 10:30
% Solids: 34.21

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-09
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0380	0.0789	0.0965	1	U	SW7471B	6H29018	09/13/16 12:46

ANALYSIS DATA SHEET

DSA05-SB26-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/23/16 11:01
% Solids: 43.50

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-10
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0289	0.0601	0.0734	1	U	SW7471B	6H29018	09/13/16 12:49

ANALYSIS DATA SHEET

DSA05-SB27-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/23/16 12:55
% Solids: 16.32

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-11
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0724	0.150	0.184	1	U	SW7471B	6H29018	09/13/16 12:51

ANALYSIS DATA SHEET

DSA05-SB28-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/23/16 13:16
% Solids: 38.73

SDG: 1608229
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608229-12
Received: 08/24/16 08:35

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0305	0.0634	0.0775	1	U	SW7471B	6H29018	09/13/16 12:51

MEMORANDUM CH2MHILL

Data Validation Summary

Raritan

TO: Mike Zamboni/WDC

Anita Dodson/VBO

FROM: Tiffany McGlynn/GNV

CC: Herb Kelly/GNV

DATE: October 21, 2016

Introduction

The following data validation report discusses the data validation process and findings for Empirical Laboratories, for Sample Delivery Group (SDG) 1608229.

Samples were analyzed using the following analytical methods:

- SW6010C Metals
- SW7471B Mercury

The samples included in this SDG are listed in the table below.

Sample Name	Matrix
DSA03-SB17-0010	Soil
DSA03-SB18-0010	Soil
DSA03-SB19-0010	Soil
DSA03-SB20-0010	Soil
DSA03-SB21-0010	Soil
DSA03-SB22-0010	Soil
DSA03-SB23-0010	Soil
DSA03-SB24-0010	Soil
DSA05-SB25-0010	Soil
DSA05-SB26-0010	Soil
DSA05-SB27-0010	Soil
DSA05-SB28-0010	Soil

Data Evaluation

Data was evaluated in accordance with the analytical methods and with the criteria found in the following guidance documents: Uniform Federal Policy- Quality Assurance Project Plan Addendum for the Remedial Investigation/Feasibility Study Military Munitions Response Program Former Raritan Arsenal Edison, New Jersey CTO 003 (August 2016) and National Functional Guidelines for Superfund Organic Methods Data Review (August 2014), as applicable. The samples were evaluated based on the following criteria:

- Data Completeness
- Technical Holding Times
- Instrument Tuning
- Initial/Continuing Calibrations
- Blanks
- Internal Standards
- Laboratory Control Samples
- Matrix Spike Recoveries
- Serial Dilution
- Interference Check Sample
- Identification/Quantitation
- Reporting Limits

Overall Evaluation of Data/Potential Usability Issues

Specific details regarding qualification of the data are addressed in the sections below. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte, the validator has chosen the qualifier that best indicates possible bias in the results and qualified these data accordingly.

Data Completeness

The SDG was received complete and intact.

Technical Holding Times

According to the chain of custody records, sampling was performed on 8/22/16 and 8/23/16. Samples were received at the laboratory on 8/24/16. All sample preparation analysis was performed within holding time requirements.

Calibration

Vanadium exhibited high responses in the continuing calibration. Affected data are summarized in the table below.

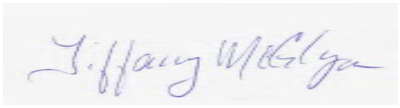
Sample ID	Compound	Q Flag	Qual Code
DSA03-SB17-0010	Vanadium	J+	CCH
DSA03-SB18-0010	Vanadium	J+	CCH
DSA03-SB19-0010	Vanadium	J+	CCH
DSA03-SB20-0010	Vanadium	J+	CCH
DSA03-SB21-0010	Vanadium	J+	CCH
DSA03-SB22-0010	Vanadium	J+	CCH
DSA03-SB23-0010	Vanadium	J+	CCH
DSA03-SB24-0010	Vanadium	J+	CCH
DSA05-SB25-0010	Vanadium	J+	CCH
DSA05-SB26-0010	Vanadium	J+	CCH
DSA05-SB27-0010	Vanadium	J+	CCH
DSA05-SB27-0010	Vanadium	J+	CCH
DSA05-SB28-0010	Vanadium	J+	CCH

Conclusion

These data can be used in the project decision-making process as qualified by the data quality evaluation process.

Please do not hesitate to contact us about this validation report.

Sincerely,



Tiffany McGlynn

Qualification Flags

Exclude	More appropriate data exist for this analyte.
R	Data were rejected for use.
UL	Analyte not detected, quantitation limit is potentially biased low.
UJ	Analyte not detected, estimated quantitation limit.
U	Analyte not detected.
B	Not detected substantially above the level reported in laboratory or field blanks.
L	Analyte present, estimated value potentially biased low.
K	Analyte present, estimated value potentially biased high.
N	Analyte identification presumptive; no second column analysis performed or GC/MS tentative identification.
J	Analyte present, estimated value.
NJ	Analysis indicates the presence of an analyte that was "tentatively identified" and the associated value represents its approximate concentration.
None	Placeholder for calculating quality control issues that do not require flagging.
=	Analyte was detected at a concentration greater than the quantitation limit.

Qualifier Code Reference

Value	Description
%SOL	High Moisture content
2C	Second Column – Poor Dual Column Reproducibility
2S	Second Source – Bad reproducibility between tandem detectors
BD	Blank Spike/Blank Spike Duplicate(LCS/LCSD) Precision
BRL	Below Reporting Limit
BSH	Blank Spike/LCS – High Recovery
BSL	Blank Spike/LCS – Low Recovery
CC	Continuing Calibration
CCBL	Continuing Calibration Blank Contamination
CCH	Continuing Calibration Verification – High Recovery
CCL	Continuing Calibration Verification – Low Recovery
DL	Redundant Result – due to Dilution
EBL	Equipment Blank Contamination
EMPC	Estimated Possible Maximum Concentration
ESH	Extraction Standard - High Recovery
ESL	Extraction Standard - Low Recovery
FBL	Field Blank Contamination
FD	Field Duplicate
HT	Holding Time
ICB	Initial Calibration – Bad Linearity or Curve Function
ICH	Initial Calibration – High Relative Response Factors
ICL	Initial Calibration – Low Relative Response Factors
IR15	Ion ratio exceeds +/- 15% difference
ISH	Internal Standard – High Recovery
ISL	Internal Standard – Low Recovery
LD	Lab Duplicate Reproducibility
LR	Concentration Exceeds Linear Range
MBL	Method Blank Contamination
MDP	Matrix Spike/Matrix Spike Duplicate Precision
MI	Matrix interference obscuring the raw data

MSH	Matrix Spike and/or Matrix Spike Duplicate – High Recovery
MSL	Matrix Spike and/or Matrix Spike Duplicate – Low Recovery
OT	Other
PD	Pesticide Degradation
RE	Redundant Result - due to Reanalysis or Re-extraction
SD	Serial Dilution Reproducibility
SSH	Spiked Surrogate – High Recovery
SSL	Spiked Surrogate – Low Recovery
TBL	Trip Blank Contamination
TN	Tune

ANALYTICAL DATA PACKAGE
SDG # 1608251

PROJECT NAME: Raritan Arsenal Phase III

SUBMITTAL TO:
Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

SUBMITTAL BY:
Empirical Laboratories, LLC (EL)
621 Mainstream Drive, Suite 270
Nashville, TN 37228
Tel (615)345-1115
Fax (866)417-0548

LABORATORY CONTACT PERSON:
Project Manager: Sonya Gordon
Tel (615)345-1115
Fax (866)417-0548
Email: sgordon@empirlabs.com

Original Report Date: September 22, 2016
Report Revision #: N/A
Revision Date: N/A

THIS DOCUMENT MEETS DoD QSM 5.0 STANDARDS

The results relate to only the samples associated with the referenced SDG and the submitted data has been produced in accordance with laboratory procedures. The Laboratory's Data Review Manager, Ms. Amy Barnett, is responsible for the final data produced and reported. Her signature is listed at the end of the Case Narrative within the Analytical Data Package. If applicable to this report package, details on report revisions and the information on subcontracted analysis are listed in the package Case Narrative. This report shall not be reproduced, except in full, without the written approval of Empirical Laboratories, LLC.

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5	Data for Mercury Required Data / QAQC / Calibration Forms Supporting Raw Data / Logs

Sample Delivery Group Case Narrative

Receipt Information:

The samples were received within the preservation guidelines for the associated methods. The information associated with sample receipt and the Sample Delivery Group (SDG) are included within section 4 of this package, which also provides information on the link between the client sample ID listed on the COC and laboratory's assigned unique sample ID or WorkOrder #. The sample is tracked through the laboratory for all analysis via the assigned WorkOrder #.

All samples that were received were analyzed and none of the samples were placed on hold without analyses. There were no subcontracted analyses for this SDG.

Changes to the Revision:

This is an original submittal of the final report package.

Analytical Information:

All samples were prepped (where applicable) and analyzed within the standard allowed holding times, unless noted within the exceptions listed below. The laboratory analyzed all samples within the program and method guidelines. Sample preparation and dilution information is provided within the final results report and at the beginning of each form set. The following information is provided specific to individual methods:

Metals:

Note – Sodium in the calibration 6258003 is less than the method requirement of 0.998 but within the DoD requirement of 0.99 at 0.995.

No additional anomalies or deviations are noted and the proper data qualifiers have been applied.

Mercury:

No anomalies or deviations are noted.

Data Qualifiers:

As applicable and where required, the following general qualifiers are associated with the sample results. Additional qualifiers will be specified within the reporting sections of the data package or within the body of the Case Narrative.

Analytical Report Terms and Qualifiers

DL: The detection limit (DL) is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero. The DL is supported by the method detection limit (MDL) which is determined from analysis of a sample containing the analyte in a given matrix.

LOD: The Limit of Detection is an estimate of the minimum amount of a substance that an analytical process can reliably detect. An LOD is analyte- and matrix-specific and may be laboratory-dependent. This definition is further clarified in the DoD QSM 5.0 revisions as the smallest amount or concentration of a substance that must be present in a sample in order to be detected at a high level of confidence (99%). At the LOD, the false negative rate (Type II error) is 1%.

LOQ: The Limit of Quantitation is the minimum level, concentration, or quantity of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. This term is further clarified within the DoD QSM 5.0 as the lowest concentration that produces a quantitative result within specified limits of precision and bias.

*: Exceeding quality control criteria are associated with the reported result.

B: The presence of a "B" to the right of an analytical value indicates that this compound was also detected in the method blank and the data should be interpreted with caution. One should consider the possibility that the correct sample result might be less than the reported result and, perhaps, zero.

D: When a sample (or sample extract) is rerun diluted because one of the compound concentrations exceeded the highest concentration range for the standard curve, all of the values obtained in the dilution run will be flagged with a "D".

E: The concentration for any compound found which exceeds the highest concentration level on the standard curve for that compound will be flagged with an "E". Usually the sample will be rerun at a dilution to quantitate the flagged compound. For Metals, the qualifier indicates that the serial dilution was outside of the control limits and the compound should be considered estimated due to the presence of interference.

H: The result was analyzed, extracted, or received outside of the EPA recommended holding time.

J: The presence of a "J" to the right of an analytical result indicates that the reported result is estimated. The mass spectral data pass the identification criteria showing that the compound is present, but the calculated result is less than the LOQ. One should feel confident that the result is greater than zero and less than the LOQ.

M: Indicates that the sample matrix interfered with the quantitation of the analyte. In dual column analysis the result is reported from the column with the lower concentration. In inorganics, it

indicates that the parameters DL/LOD/LOQ have been raised.

N: The MS/MSD accuracy and/or precision are outside criteria. The predigested spike recovery is not within control limits for the associated parameter.

P: The associated numerical value is an estimated quantity. There is greater than a 40% difference between the two GC columns for the detected concentrations. The higher of the two values is reported unless matrix interference is obvious or for HPLC analysis where the primary column is reported.

Q: The relative percent difference (RPD) and/or percent recovery exceeded limits in the associated Blank Spike and/or Blank Spike Duplicate.

S: The associated internal standard exceeded criteria.

U: The presence of a "U" indicates that the analyte was analyzed for but was not detected or the concentration of the analyte quantitated below the DL.

X: The parameter shows a potential positive bias on a reported concentration due to an ICV or CCV exceeding the upper control limit on the high side.

Y: The parameter shows a potential negative bias on a reported concentration due to an ICV or CCV exceeding the lower control limit on the low side.

Z: The parameter shows lack of confirmation/detection, which may be due to a negative bias in the ICV or CCV which exceeds the lower control limit.

Chromatographic Flags for Manual Integration:

The following letters are used to denote manual integrations on the laboratory's raw data in association with chromatographic integrations:

A: The peak was manually integrated as it was not integrated in the original chromatogram.

B: The peak was manually integrated due to resolution or co-elution issues in the original chromatogram.

C: The peak was manually integrated to correct the baseline from the original chromatogram.

D: The peak was manually integrated to identify the correct peak as the wrong peak was identified in the original chromatogram.

E: The peak was manually integrated to include the entire peak as the original chromatogram only integrated part of the peak.

LIMS Definitions / Naming Conventions:

The following are general naming conventions that are used throughout the laboratory; however, on a method by method basis, there are additional QAQC items that are named in a consistent format.

BLK: LIMS assigns a unique identifier to the Method Blank by naming it as the letters BLK appended to the Batch ID. A Method Blank is an analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The Method Blank is used to

assess for possible contamination during preparation and/or analysis steps. Method Blanks within a Batch or Analytical sequence will be appended with a numerical value beginning with 1 that will increase incrementally.

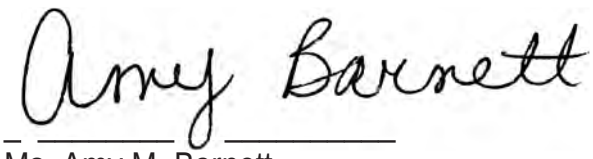
BS: LIMS assigns a unique identifier to the Blank Spike by naming it as the letters BS appended to the Batch ID. The Blank Spike or Lab Control Sample is a controlled analyte-free matrix, which is spiked with known and verified concentrations of target analytes. Spiking concentrations can be referenced in the method SOP. The BS is used to evaluate the viability of analytes taken through the entire prep (when applicable) and analytical process. Blank Spikes within a Batch or Analytical sequence will be appended with a numerical value beginning with 1 that will increase incrementally. A duplicate Blank Spike will be designated as a BSD.

MS: The LIMS assigns each Client sample with a unique identifier. The Matrix Spike is designated with a MS at the end of the sample's unique identifier. The Matrix Spike sample is used to assess the effect of the sample matrix on the precision and accuracy of the results generated using the selected method. A duplicate Matrix Spike will be designated as a MSD.

IDs: The LIMS assigns each Client sample with a unique identifier. The letter "RE" may potentially be appended to the end of the LIMS Sample ID. And "RE" implies that the sample was either re-prepped, re-analyzed straight, or re-analyzed at a dilution. Subsequent re-analysis for the sample will be appended with a numerical value beginning with 1 that will increase incrementally. Eg: RE1, RE2, RE3, etc.

Statement of Data Authenticity:

I certify that, based upon my inquiry of those individuals immediately responsible for obtaining the information and to the best of my knowledge, the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, with the exception of the conditions detailed in this Case Narrative, as verified by my signature below. During absences, the Data Quality Manager, Technical Directors or Project Managers are authorized to sign this Statement of Data Authenticity.



Ms. Amy M. Barnett
Data Review Manager

Empirical Laboratories, LLC
Certifications/Approvals
(Revised 06/30/2016)

DoD ELAP QSM5.0, Certificate Number L2226
- Aqueous
- Non-aqueous
- Expires: 11/30/2018

State of Florida, Department of Health – NELAP Primary, Lab ID: E87646
- Clean Water Act
- RCRA/CERCLA
- Expires: 06/30/2017

State of Georgia, Environmental Protection Agency – NELAP, Self Certification
- Expires: 06/30/2017

Commonwealth of Kentucky, Energy and Environment Cabinet – WWLCP, Laboratory Number: 98017
- Wastewater
- Expires: 12/31/2016

Commonwealth of Kentucky, Department of Environmental Protection – UST, Certificate Number: 77
- Aqueous
- Non-aqueous
- Expires: 06/30/2017

State of New Jersey, Department of Environmental Protection – NELAP, Lab ID: TN473
- Water Pollution
- Solid and Hazardous Waste
- Expires: 06/30/2017

State of North Carolina, Department of Environment and Natural Resources - Certificate Number: 643
- Aqueous
- Non-aqueous
- Expires: 12/31/2016

State of Texas, Commission on Environmental Quality – NELAP, Certificate Number: T104704307-16-12
- Aqueous
- Non-aqueous
- Expires: 12/31/2016

State of Utah, Department of Health – NELAP, Certificate Number: TN0042015-7
- Aqueous
- Non-aqueous
- Expires: 07/31/2016

Commonwealth of Virginia, Department of General Services – NELAP, Certificate Number: 8176, Lab ID: 460243
- Aqueous
- Non-aqueous
- Expires: 12/14/2016

State of Washington, Department of Ecology – NELAP, Lab ID: C934-16
- Groundwater
- Solid and Hazardous Waste
- Expires: 03/18/2017

ORGANIC CALCULATIONS

GC/MS Volatiles

$$\text{Final Concentration} = \frac{\text{On-column(ug/L or ug/Kg) * Expected Vol/Weight (mL or g) * Dilution}}{\text{Initial Vol/Weight (mL or g) * (Percent Solids/100) (if applicable)}}$$

Note - Expected Vol/Weight value is found in "Final Vol" column of Preparation Batch Summary.

GC/MS Extractables

$$\text{Final Concentration} = \frac{\text{On-column(ng/uL) * Final Vol (ml) * Dilution *(1000uL/mL)}}{\text{Initial Vol/Weight (mL or g) * (Percent Solids/100) (if applicable)}}$$

= ng/mL or ng/g

= ug/L or ug/kg

GC or LC Extractables

$$\text{Final Concentration} = \frac{\text{On-column(ng/mL) * Final Vol (mL) * Dilution}}{\text{Initial Vol/Weight (mL or g) * (Percent Solids/100) (if applicable)}}$$

= ng/mL or ng/g

= ug/L or ug/kg

Sample Receipt Information

EMPIRICAL LABORATORIES, LLC - CHAIN OF CUSTODY RECORD

32356

SHIP TO: 621 Mainstream Drive, Suite 270 ♦ Nashville, TN 37228 ♦ 877-345-1113 ♦ (fax) 866-417-0548

1608251-01 A

	Send Invoice to:
Name Mike Zamboni	Name CH2M Hill AP
Company CH2M Hill	Company CH2M Hill
Address 2411 Dulles Corner Park, Suite 600	Address
City Herndon	City
State, Zip VA, 20171	State, Zip
Phone 703-376-5301	Phone
Fax	Fax
E-mail Michael.Zamboni@CH2M.com	E-mail
Project No./Name: PO: 1000771000862	**Sampler's (Signature):**

Analysis Requirements: TAL Metals, SW-846 6010B*

Lab Use Only:

VOA Headspace	Y	N	NA
Field Filtered	Y	N	NA
Correct Containers	Y	N	NA
Discrepancies	Y	N	NA
Cust. Seals Intact	Y	N	NA
Containers Intact	Y	N	NA

Airbill #:

CAR #:

Lab Use Only Lab #	Date/Time Sampled	Sample Description	Sample Matrix	Comments	No. of Bottles	Lab Use Only Containers/Pres.
01	8/24/16 0921	DSA05-SB29-0010	Soil		1	
02	8/24/16 0949	DSA05-SB30-0010			1	
03	8/24/16 1006	DSA05-SB31-0010			1	
04	8/24/16 1036	DSA05-SB32-0010			1	
05	8/24/16 1228	DSA01-SB01-0010			1	
06	8/24/16 1245	DSA01-SB02-0010			1	
07	8/24/16 1257	DSA01-SB03-0010			1	
08	8/24/16 1312	DSA01-SB04-0010			1	
09	8/24/16 1349	DSA01-SB05-0010			1	
10	8/24/16 1402	DSA01-SB06-0010			1	
11	8/24/16 1420	DSA01-SB07-0010			1	
12	8/24/16 1435	DSA01-SB08-0010			1	

	Date/Time	Received By: (Signature)
Sample Kit Prep'd by: (Signature)	8/25/16 1530	
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Received for Laboratory by: (Signature)	Date/Time 8/25/16 845	Temperature

REMARKS:

* Metal (TAL from ILM05 (incl. Hg) + Mo)

Details:

Page 1 of 2

Cooler No. 1 of 1

Date Shipped 8/25/16

Shipped By DH

Turnaround Standard

Distribution: Original and yellow copies accompany sample shipment to laboratory; Pink retained by samplers.

EMPIRICAL LABORATORIES, LLC - CHAIN OF CUSTODY RECORD

32353

SHIP TO: 621 Mainstream Drive, Suite 270 ♦ Nashville, TN 37228 ♦ 877-345-1113 ♦ (fax) 866-417-0548

Send Results to:	Send Invoice to:
Name Mike Zamboni	Name CH2M Hill AP
Company CH2M Hill	Company CH2M Hill
Address 2411 Dulles Corner Park Suite 500	Address
City Herndon	City
State, Zip VA, 20171	State, Zip
Phone 703-376-5301	Phone
Fax	Fax
E-mail Michael.Zamboni@ch2m.com	E-mail
Project No./Name: PO: 1000077100862	**Sampler's (Signature):**

Analysis Requirements: TAL Metals, SW-846 6010B *

Lab Use Only:

VOA Headspace	Y	N	NA
Field Filtered	Y	N	NA
Correct Containers	Y	N	NA
Discrepancies	Y	N	NA
Cust. Seals Intact	Y	N	NA
Containers Intact	Y	N	NA

Airbill #:

CAR #:

Lab Use Only Lab #	Date/Time Sampled	Sample Description	Sample Matrix	Comments	No. of Bottles	Lab Use Only Containers/Pres.
13	8/25/16 0907	DSA02-SB09-0010	Soil		1	
14	8/25/16 0911	DSA02-SB10-0010	↓		1	
15	8/25/16 0955	DSA02-SB11-0010			1	
16	8/25/16 1144	DSA02-SB12-0010			1	
17	8/25/16 1234	DSA02-SB13-0010			1	
18	8/25/16 1314	DSA02-SB14-0010			1	
19	8/25/16 1328	DSA02-SB15-0010			1	
20	8/25/16 1340	DSA02-SB16-0010	↓		1	

	Date/Time	
Sample Kit Prep'd by: (Signature)	8/25/16 1530	Received By: (Signature)
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Received for Laboratory by: (Signature)	Date/Time 8/25/16 845	Temperature

REMARKS:

* Metal (TAL from ILM05 (incl. Hg) + Mo)

Details:

Page 2 of 2

Cooler No. 1 of 1

Date Shipped 8/25/16

Shipped By DH

Turnaround Standard

Distribution: Original and yellow copies accompany sample shipment to laboratory; Pink retained by samplers.

II. EMPIRICAL LABORATORIES
COOLER RECEIPT FORM

Cooler Received/Opened On:8/26/16@845 Workorder# 1608251

1. Tracking # 4237 (last 4 digits, FedEx)

   Courier: ___FedEx

2. Temperature of rep. sample or temp blank when opened: 2.5 °C + correction factor (+0.1_) = 2.6°C

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO...NA

4. Were custody seals on outside of cooler? YES...NO...NA

   If yes, how many and where: 1 front

5. Were the seals intact, signed, and dated correctly? YES...NO...NA

6. Were custody papers inside cooler? YES...NO...NA

I certify that I opened the cooler and answered questions 1-6 (initial/date) TH 8/26/16

7. Were custody seals on containers: YES NO and Intact YES...NO...NA

   Were these signed and dated correctly? YES...NO...NA

8. Packing material used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None

10. Did all containers arrive in good condition (unbroken)? YES...NO...NA

11. Were all container labels complete (#, date, signed, pres., etc)? YES...NO...NA

12. Did all container labels and tags agree with custody papers? YES...NO...NA

13. a. Were VOA vials received? YES...NO...NA

    b. Was there observable headspace present in any VOA vial (>5mm-6mm)? YES...NO...NA

14. Was there a Trip Blank in this cooler (custody seals present/intact)? YES...NO...NA...Comments_____
    If multiple coolers, sequence #_____

I certify that I unloaded the cooler and answered questions 7-14 (initial/date) TH 8/26/16

15. a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES...NO...NA

    b. Did the bottle labels indicate that the correct preservatives were used? YES...NO...NA

16. Was residual chlorine present for Cyanide "Effluent" samples? If so, treated/documented? YES...NO...NA

17. For 608 Pest/PCB samples, was pH <5 or >9? Was residual chlorine present? If either, adjusted/documented? YES...NO...NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-17 (initial/date) TH 8/26/16

18. Were custody papers properly filled out (ink, signed, etc)? YES...NO...NA

19. Did you sign the custody papers in the appropriate place? YES...NO...NA

20. Were correct containers used for the analysis requested? YES...NO...NA If not, PM notified? YES...NO...NA

21. Was sufficient amount of sample sent in each container? YES...NO...NA If not, PM notified? YES...NO...NA

22. Were there Non-Conformance issues at login? YES...NO...NCR#_____

I certify that I entered this project into LIMS and answered questions 18-22 (initial/date) TH 8/26/16

I certify that I attached a unique LIMS number label with matching sample name to each container (initial/date) TH 8/26/16

I certify that I notified the laboratory of any short holding time or RUSH parameters (initial/date) TH 8/26/16

Printed: 8/29/2016 1:20:53PM

Empirical Laboratories, LLC

WORK ORDER

1608251

Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Project Manager: Sonya Gordo
Project Number: CH2_Raritan

Report To:
CH2M Hill, Inc.
Michael Zamboni
2411 Dulles Corner Park
Herndon, VA 20171
Phone: (703) 376-5301
Fax: (303) 771-0952

Invoice To:
CH2M Hill, Inc.
Accounts Payable
P.O.Box 241329
Denver, CO 80224-____
Phone :(303) 771-0952
Fax: (303) 771-0952

Date Due: 09/26/2016 16:00 (20 day TAT)
Logged In By: Tiana L. Hutchings
Date Received: 08/26/2016 08:45
Received By: Tiana L. Hutchings

Samples Received at: **2.6°C**

Custody Seals	Yes	Received On Ice	Yes
Containers Intact	Yes		
COC/Labels Agree	Yes		
Preservation Confirme	No		

Analysis	TAT	Expires	Version	Comments
1608251-01 DSA05-SB29-0010 [Solid] Sampled 08/24/2016 09:21 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/21/2016 08:21		
MET_ICP_LOW6010C_FULL_Q5	20	02/20/2017 08:21	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/31/2016 08:21		
1608251-02 DSA05-SB30-0010 [Solid] Sampled 08/24/2016 09:49 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/21/2016 08:49		
MET_ICP_LOW6010C_FULL_Q5	20	02/20/2017 08:49	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/31/2016 08:49		
1608251-03 DSA05-SB31-0010 [Solid] Sampled 08/24/2016 10:06 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/21/2016 09:06		
MET_ICP_LOW6010C_FULL_Q5	20	02/20/2017 09:06	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/31/2016 09:06		
1608251-04 DSA05-SB32-0010 [Solid] Sampled 08/24/2016 10:36 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/21/2016 09:36		
MET_ICP_LOW6010C_FULL_Q5	20	02/20/2017 09:36	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/31/2016 09:36		

Printed: 8/29/2016 1:20:53PM

Empirical Laboratories, LLC

WORK ORDER

1608251

Client: CH2M Hill, Inc. **Project Manager:** Sonya Gordon
Project: Raritan Arsenal - Phase III **Project Number:** CH2_Raritan

Analysis	TAT	Expires	Version	Comments
1608251-05 DSA01-SB01-0010 [Solid] Sampled 08/24/2016 12:28 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/21/2016 11:28		
MET_ICP_LOW6010C_FULL_Q5	20	02/20/2017 11:28	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/31/2016 11:28		
1608251-06 DSA01-SB02-0010 [Solid] Sampled 08/24/2016 12:45 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/21/2016 11:45		
MET_ICP_LOW6010C_FULL_Q5	20	02/20/2017 11:45	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/31/2016 11:45		
1608251-07 DSA01-SB03-0010 [Solid] Sampled 08/24/2016 12:57 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/21/2016 11:57		
MET_ICP_LOW6010C_FULL_Q5	20	02/20/2017 11:57	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/31/2016 11:57		
1608251-08 DSA01-SB04-0010 [Solid] Sampled 08/24/2016 13:12 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/21/2016 12:12		
MET_ICP_LOW6010C_FULL_Q5	20	02/20/2017 12:12	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/31/2016 12:12		
1608251-09 DSA01-SB05-0010 [Solid] Sampled 08/24/2016 13:49 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/21/2016 12:49		
MET_ICP_LOW6010C_FULL_Q5	20	02/20/2017 12:49	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/31/2016 12:49		
1608251-10 DSA01-SB06-0010 [Solid] Sampled 08/24/2016 14:02 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/21/2016 13:02		
MET_ICP_LOW6010C_FULL_Q5	20	02/20/2017 13:02	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/31/2016 13:02		

Printed: 8/29/2016 1:20:53PM

Empirical Laboratories, LLC

WORK ORDER

1608251

Client: CH2M Hill, Inc. **Project Manager:** Sonya Gordon
Project: Raritan Arsenal - Phase III **Project Number:** CH2_Raritan

Analysis	TAT	Expires	Version	Comments
1608251-11 DSA01-SB07-0010 [Solid] Sampled 08/24/2016 14:20 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/21/2016 13:20		
MET_ICP_LOW6010C_FULL_Q5	20	02/20/2017 13:20	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/31/2016 13:20		
1608251-12 DSA01-SB08-0010 [Solid] Sampled 08/24/2016 14:35 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/21/2016 13:35		
MET_ICP_LOW6010C_FULL_Q5	20	02/20/2017 13:35	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/31/2016 13:35		
1608251-13 DSA02-SB09-0010 [Solid] Sampled 08/25/2016 09:07 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/22/2016 08:07		
MET_ICP_LOW6010C_FULL_Q5	20	02/21/2017 08:07	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	09/01/2016 08:07		
1608251-14 DSA02-SB10-0010 [Solid] Sampled 08/25/2016 09:19 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/22/2016 08:19		
MET_ICP_LOW6010C_FULL_Q5	20	02/21/2017 08:19	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	09/01/2016 08:19		
1608251-15 DSA02-SB11-0010 [Solid] Sampled 08/25/2016 09:55 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/22/2016 08:55		
MET_ICP_LOW6010C_FULL_Q5	20	02/21/2017 08:55	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	09/01/2016 08:55		
1608251-16 DSA02-SB12-0010 [Solid] Sampled 08/25/2016 11:44 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/22/2016 10:44		
MET_ICP_LOW6010C_FULL_Q5	20	02/21/2017 10:44	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	09/01/2016 10:44		

Printed: 8/29/2016 1:20:53PM

Empirical Laboratories, LLC

WORK ORDER

1608251

Client: CH2M Hill, Inc. **Project Manager:** Sonya Gordon
Project: Raritan Arsenal - Phase III **Project Number:** CH2_Raritan

Analysis	TAT	Expires	Version	Comments
1608251-17 DSA02-SB13-0010 [Solid] Sampled 08/25/2016 12:34 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/22/2016 11:34		
MET_ICP_LOW6010C_FULL_Q5	20	02/21/2017 11:34	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	09/01/2016 11:34		
1608251-18 DSA02-SB14-0010 [Solid] Sampled 08/25/2016 13:14 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/22/2016 12:14		
MET_ICP_LOW6010C_FULL_Q5	20	02/21/2017 12:14	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	09/01/2016 12:14		
1608251-19 DSA02-SB15-0010 [Solid] Sampled 08/25/2016 13:28 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/22/2016 12:28		
MET_ICP_LOW6010C_FULL_Q5	20	02/21/2017 12:28	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	09/01/2016 12:28		
1608251-20 DSA02-SB16-0010 [Solid] Sampled 08/25/2016 13:40 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/22/2016 12:40		
MET_ICP_LOW6010C_FULL_Q5	20	02/21/2017 12:40	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	09/01/2016 12:40		

Printed: 8/29/2016 1:20:53PM

Empirical Laboratories, LLC

WORK ORDER

1608251

Client:	**CH2M Hill, Inc.**	**Project Manager:**	**Sonya Gordon**
Project:	**Raritan Arsenal - Phase III**	**Project Number:**	**CH2_Raritan**

MET_ICP_LOW6010C_FULL_Q5 **Extraction: MET_3050B**

TAL + Mo

Aluminum
Antimony
Arsenic
Barium
Beryllium
Cadmium
Calcium
Chromium
Cobalt
Copper
Iron
Lead
Magnesium
Manganese
Molybdenum
Nickel
Potassium
Selenium
Silver
Sodium
Thallium
Vanadium
Zinc

Sample Delivery Group Assignment Form

CLIENT: CH2M Hill, Inc.
PROJECT NAME: Raritan Arsenal - Phase III
SDG #: 1608251

QC LEVEL: Level IV
Report Due: 9/26/2016
Client Sample Count: 20

Sample Type	Sampled	Received	Lab ID	Client ID	Lab Matrix	SM2540B	SW6010C	SW7471B
Client Sample	8/24/2016	8/26/2016	1608251-01	DSA05-SB29-0010	Solid	X	X	X
Client Sample	8/24/2016	8/26/2016	1608251-02	DSA05-SB30-0010	Solid	X	X	X
Client Sample	8/24/2016	8/26/2016	1608251-03	DSA05-SB31-0010	Solid	X	X	X
Client Sample	8/24/2016	8/26/2016	1608251-04	DSA05-SB32-0010	Solid	X	X	X
Client Sample	8/24/2016	8/26/2016	1608251-05	DSA01-SB01-0010	Solid	X	X	X
Client Sample	8/24/2016	8/26/2016	1608251-06	DSA01-SB02-0010	Solid	X	X	X
Client Sample	8/24/2016	8/26/2016	1608251-07	DSA01-SB03-0010	Solid	X	X	X
Client Sample	8/24/2016	8/26/2016	1608251-08	DSA01-SB04-0010	Solid	X	X	X
Client Sample	8/24/2016	8/26/2016	1608251-09	DSA01-SB05-0010	Solid	X	X	X
Client Sample	8/24/2016	8/26/2016	1608251-10	DSA01-SB06-0010	Solid	X	X	X
Client Sample	8/24/2016	8/26/2016	1608251-11	DSA01-SB07-0010	Solid	X	X	X
Client Sample	8/24/2016	8/26/2016	1608251-12	DSA01-SB08-0010	Solid	X	X	X
Client Sample	8/25/2016	8/26/2016	1608251-13	DSA02-SB09-0010	Solid	X	X	X
Client Sample	8/25/2016	8/26/2016	1608251-14	DSA02-SB10-0010	Solid	X	X	X
Client Sample	8/25/2016	8/26/2016	1608251-15	DSA02-SB11-0010	Solid	X	X	X
Client Sample	8/25/2016	8/26/2016	1608251-16	DSA02-SB12-0010	Solid	X	X	X
Client Sample	8/25/2016	8/26/2016	1608251-17	DSA02-SB13-0010	Solid	X	X	X
Client Sample	8/25/2016	8/26/2016	1608251-18	DSA02-SB14-0010	Solid	X	X	X
Client Sample	8/25/2016	8/26/2016	1608251-19	DSA02-SB15-0010	Solid	X	X	X
Client Sample	8/25/2016	8/26/2016	1608251-20	DSA02-SB16-0010	Solid	X	X	X

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA05-SB29-0010
Lab Sample ID: 1608251-01

Sample Collection D/T : 08/24/2016 09:21
Sample Matrix: Solid

Metals (Total) by ICP

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	24,177.6500	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Antimony	7.1060	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Arsenic	178.9938	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Barium	149.1830	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Beryllium	1.3058	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Cadmium	6.7901	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Calcium	3,122.4160	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Chromium	192.2786	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Cobalt	18.3074	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Copper	499.5538	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Iron	53,889.9400	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Lead	289.6559	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Magnesium	7,545.0020	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Manganese	334.4171	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Molybdenum	3.7668	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Nickel	55.3362	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Potassium	3,380.8910	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Selenium	9.7808	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Silver	7.5590	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Sodium	5,190.6250	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Thallium	1.0878	mg/Kg dry	2	D	09/14/16 15:00		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Vanadium	118.2994	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Zinc	708.6517	mg/Kg dry	2	D	09/14/16 15:00		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA05-SB30-0010
Lab Sample ID: 1608251-02

Sample Collection D/T : 08/24/2016 09:49
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	23,751.6000	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Antimony	1.4419	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Arsenic	67.6013	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Barium	131.6103	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Beryllium	1.0128	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Cadmium	0.8532	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Calcium	1,211.5680	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Chromium	145.1708	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Cobalt	11.2313	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Copper	410.8986	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Iron	52,545.4700	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Lead	246.5313	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Magnesium	6,146.2190	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Manganese	227.1986	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Molybdenum	2.3243	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Nickel	34.7278	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Potassium	2,621.1580	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Selenium	4.5116	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Silver	6.1569	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Sodium	1,910.0700	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Thallium	0.7086	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Vanadium	99.3661	mg/Kg dry	2	D	09/14/16 15:05		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	186.1462	mg/Kg dry	2	D	09/14/16 15:05		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA05-SB31-0010
Lab Sample ID: 1608251-03

Sample Collection D/T : 08/24/2016 10:06
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	23,825.7400	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Antimony	3.7067	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Arsenic	169.0133	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Barium	187.1795	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Beryllium	1.2302	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Cadmium	2.0932	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Calcium	2,973.7760	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Chromium	214.5794	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Cobalt	14.4424	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Copper	633.8444	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Iron	48,764.3100	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Lead	287.4837	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Magnesium	6,947.9740	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Manganese	322.2712	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Molybdenum	1.7465	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Nickel	52.5367	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Potassium	3,560.6760	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Selenium	17.5765	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Silver	10.1254	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Sodium	3,748.4540	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Thallium	0.6306	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Vanadium	104.6713	mg/Kg dry	2	D	09/14/16 15:49		SW6010C

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UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	434.7698	mg/Kg dry	2	D	09/14/16 15:49		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA05-SB32-0010
Lab Sample ID: 1608251-04

Sample Collection D/T : 08/24/2016 10:36
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	22,901.1300	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Antimony	8.7878	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Arsenic	136.3829	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Barium	155.3319	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Beryllium	0.9180	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Cadmium	3.3293	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Calcium	2,554.6730	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Chromium	186.8900	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Cobalt	15.1229	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Copper	395.5598	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Iron	44,679.0800	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Lead	293.7281	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Magnesium	6,949.0380	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Manganese	245.6108	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Molybdenum	2.5428	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Nickel	46.0945	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Potassium	3,234.6960	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Selenium	6.3156	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Silver	6.4065	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Sodium	5,012.8810	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Thallium	1.2503	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Vanadium	111.3252	mg/Kg dry	2	D	09/14/16 15:54		SW6010C

Empirical Laboratories, LLC
621 Mainstream Drive, Suite 270 I Nashville, TN 37228 I Main: 615.345.1115 I Fax: 877.345.1113 I www.empirlabs.com

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	415.3492	mg/Kg dry	2	D	09/14/16 15:54		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB01-0010
Lab Sample ID: 1608251-05

Sample Collection D/T : 08/24/2016 12:28
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	13,852.3300	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Antimony	-0.1082	mg/Kg dry	2		09/14/16 15:58		SW6010C
Arsenic	5.6097	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Barium	15.2200	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Beryllium	0.6905	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Cadmium	0.0074	mg/Kg dry	2		09/14/16 15:58		SW6010C
Calcium	424.3748	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Chromium	22.8852	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Cobalt	8.3840	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Copper	14.6663	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Iron	21,906.1300	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Lead	9.9247	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Magnesium	3,545.1900	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Manganese	117.2612	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Molybdenum	0.6255	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Nickel	15.6584	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Potassium	1,863.6130	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Selenium	0.2643	mg/Kg dry	2		09/14/16 15:58		SW6010C
Silver	-0.0777	mg/Kg dry	2		09/14/16 15:58		SW6010C
Sodium	1,083.9940	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Thallium	-0.0438	mg/Kg dry	2		09/14/16 15:58		SW6010C
Vanadium	34.6189	mg/Kg dry	2	D	09/14/16 15:58		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	42.0370	mg/Kg dry	2	D	09/14/16 15:58		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB02-0010
Lab Sample ID: 1608251-06

Sample Collection D/T : 08/24/2016 12:45
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	8,883.5340	mg/Kg dry	2	D	09/14/16 16:02		SW6010C
Antimony	-0.1040	mg/Kg dry	2		09/14/16 16:02		SW6010C
Arsenic	6.2183	mg/Kg dry	2	D	09/14/16 16:02		SW6010C
Barium	10.7101	mg/Kg dry	2	D	09/14/16 16:02		SW6010C
Beryllium	0.5155	mg/Kg dry	2	D	09/14/16 16:02		SW6010C
Cadmium	0.0310	mg/Kg dry	2		09/14/16 16:02		SW6010C
Calcium	303.5761	mg/Kg dry	2	D	09/14/16 16:02		SW6010C
Chromium	18.0261	mg/Kg dry	2	D	09/14/16 16:02		SW6010C
Cobalt	6.5959	mg/Kg dry	2	D	09/14/16 16:02		SW6010C
Copper	9.5686	mg/Kg dry	2	D	09/14/16 16:02		SW6010C
Iron	20,157.4100	mg/Kg dry	2	D	09/14/16 16:02		SW6010C
Lead	8.3920	mg/Kg dry	2	D	09/14/16 16:02		SW6010C
Magnesium	3,027.7400	mg/Kg dry	2	D	09/14/16 16:02		SW6010C
Manganese	71.3577	mg/Kg dry	2	D	09/14/16 16:02		SW6010C
Molybdenum	0.5605	mg/Kg dry	2		09/14/16 16:02		SW6010C
Nickel	12.7585	mg/Kg dry	2	D	09/14/16 16:02		SW6010C
Potassium	1,735.2600	mg/Kg dry	2	D	09/14/16 16:02		SW6010C
Selenium	0.1555	mg/Kg dry	2		09/14/16 16:02		SW6010C
Silver	-0.0334	mg/Kg dry	2		09/14/16 16:02		SW6010C
Sodium	975.2225	mg/Kg dry	2	D	09/14/16 16:02		SW6010C
Thallium	0.0131	mg/Kg dry	2		09/14/16 16:02		SW6010C
Vanadium	27.1824	mg/Kg dry	2	D	09/14/16 16:02		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	39.0422	mg/Kg dry	2	D	09/14/16 16:02		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB03-0010
Lab Sample ID: 1608251-07

Sample Collection D/T : 08/24/2016 12:57
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	11,680.9200	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Antimony	-0.3101	mg/Kg dry	2		09/14/16 16:07		SW6010C
Arsenic	4.5478	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Barium	11.0742	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Beryllium	0.5758	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Cadmium	-0.0175	mg/Kg dry	2		09/14/16 16:07		SW6010C
Calcium	318.6720	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Chromium	19.2292	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Cobalt	8.4601	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Copper	13.6224	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Iron	24,243.2600	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Lead	8.8874	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Magnesium	3,889.2480	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Manganese	94.1290	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Molybdenum	0.6856	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Nickel	15.4455	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Potassium	1,661.5780	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Selenium	0.4013	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Silver	-0.0649	mg/Kg dry	2		09/14/16 16:07		SW6010C
Sodium	767.3464	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Thallium	0.2025	mg/Kg dry	2		09/14/16 16:07		SW6010C
Vanadium	29.7877	mg/Kg dry	2	D	09/14/16 16:07		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	48.2031	mg/Kg dry	2	D	09/14/16 16:07		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB04-0010
Lab Sample ID: 1608251-08

Sample Collection D/T : 08/24/2016 13:12
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	8,669.1490	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Antimony	-0.1737	mg/Kg dry	2		09/14/16 16:11		SW6010C
Arsenic	6.1062	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Barium	7.9774	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Beryllium	0.4732	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Cadmium	-0.0023	mg/Kg dry	2		09/14/16 16:11		SW6010C
Calcium	266.1167	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Chromium	13.8360	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Cobalt	7.6949	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Copper	8.6435	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Iron	16,895.1800	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Lead	6.3980	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Magnesium	2,067.0230	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Manganese	83.1836	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Molybdenum	0.3910	mg/Kg dry	2		09/14/16 16:11		SW6010C
Nickel	10.4666	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Potassium	1,486.9400	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Selenium	0.3655	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Silver	-0.0904	mg/Kg dry	2		09/14/16 16:11		SW6010C
Sodium	535.9241	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Thallium	-0.0165	mg/Kg dry	2		09/14/16 16:11		SW6010C
Vanadium	19.3592	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Zinc	32.6035	mg/Kg dry	2	D	09/14/16 16:11		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB05-0010
Lab Sample ID: 1608251-09

Sample Collection D/T : 08/24/2016 13:49
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	10,026.3600	mg/Kg dry	2	D	09/14/16 16:15		SW6010C
Antimony	-0.2607	mg/Kg dry	2		09/14/16 16:15		SW6010C
Arsenic	4.3098	mg/Kg dry	2	D	09/14/16 16:15		SW6010C
Barium	12.1674	mg/Kg dry	2	D	09/14/16 16:15		SW6010C
Beryllium	0.5108	mg/Kg dry	2	D	09/14/16 16:15		SW6010C
Cadmium	0.0067	mg/Kg dry	2		09/14/16 16:15		SW6010C
Calcium	268.2064	mg/Kg dry	2	D	09/14/16 16:15		SW6010C
Chromium	17.4915	mg/Kg dry	2	D	09/14/16 16:15		SW6010C
Cobalt	6.7214	mg/Kg dry	2	D	09/14/16 16:15		SW6010C
Copper	12.3171	mg/Kg dry	2	D	09/14/16 16:15		SW6010C
Iron	18,519.2700	mg/Kg dry	2	D	09/14/16 16:15		SW6010C
Lead	8.1669	mg/Kg dry	2	D	09/14/16 16:15		SW6010C
Magnesium	3,186.6530	mg/Kg dry	2	D	09/14/16 16:15		SW6010C
Manganese	78.0845	mg/Kg dry	2	D	09/14/16 16:15		SW6010C
Molybdenum	0.4204	mg/Kg dry	2		09/14/16 16:15		SW6010C
Nickel	13.6219	mg/Kg dry	2	D	09/14/16 16:15		SW6010C
Potassium	1,729.2270	mg/Kg dry	2	D	09/14/16 16:15		SW6010C
Selenium	0.1466	mg/Kg dry	2		09/14/16 16:15		SW6010C
Silver	-0.1050	mg/Kg dry	2		09/14/16 16:15		SW6010C
Sodium	860.0403	mg/Kg dry	2	D	09/14/16 16:15		SW6010C
Thallium	-0.0670	mg/Kg dry	2		09/14/16 16:15		SW6010C
Vanadium	25.9732	mg/Kg dry	2	D	09/14/16 16:15		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	40.0335	mg/Kg dry	2	D	09/14/16 16:15		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB06-0010
Lab Sample ID: 1608251-10

Sample Collection D/T : 08/24/2016 14:02
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	5,617.1710	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Antimony	-0.2375	mg/Kg dry	2		09/14/16 16:20		SW6010C
Arsenic	4.8793	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Barium	8.0230	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Beryllium	0.3267	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Cadmium	-0.0006	mg/Kg dry	2		09/14/16 16:20		SW6010C
Calcium	184.0160	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Chromium	10.9539	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Cobalt	6.8929	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Copper	5.9500	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Iron	15,700.9800	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Lead	4.7606	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Magnesium	1,597.1040	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Manganese	60.8472	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Molybdenum	0.4021	mg/Kg dry	2		09/14/16 16:20		SW6010C
Nickel	7.6330	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Potassium	1,090.0620	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Selenium	0.2384	mg/Kg dry	2		09/14/16 16:20		SW6010C
Silver	-0.0775	mg/Kg dry	2		09/14/16 16:20		SW6010C
Sodium	312.9947	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Thallium	0.0886	mg/Kg dry	2		09/14/16 16:20		SW6010C
Vanadium	14.8872	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Zinc	22.8962	mg/Kg dry	2	D	09/14/16 16:20		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB07-0010
Lab Sample ID: 1608251-11

Sample Collection D/T : 08/24/2016 14:20
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	9,188.7980	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Antimony	-0.2687	mg/Kg dry	2		09/14/16 16:24		SW6010C
Arsenic	2.7315	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Barium	9.6678	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Beryllium	0.5279	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Cadmium	-0.0142	mg/Kg dry	2		09/14/16 16:24		SW6010C
Calcium	351.0481	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Chromium	18.9891	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Cobalt	4.8121	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Copper	10.2346	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Iron	16,685.4800	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Lead	7.0913	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Magnesium	2,742.9700	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Manganese	110.7024	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Molybdenum	0.3569	mg/Kg dry	2		09/14/16 16:24		SW6010C
Nickel	12.1604	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Potassium	1,662.5700	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Selenium	0.2053	mg/Kg dry	2		09/14/16 16:24		SW6010C
Silver	-0.0265	mg/Kg dry	2		09/14/16 16:24		SW6010C
Sodium	470.9871	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Thallium	0.0357	mg/Kg dry	2		09/14/16 16:24		SW6010C
Vanadium	30.1213	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Zinc	34.8235	mg/Kg dry	2	D	09/14/16 16:24		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB08-0010
Lab Sample ID: 1608251-12

Sample Collection D/T : 08/24/2016 14:35
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	13,657.3500	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Antimony	-0.5181	mg/Kg dry	5		09/14/16 16:53		SW6010C
Arsenic	6.6252	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Barium	17.9787	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Beryllium	0.9259	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Cadmium	-0.0137	mg/Kg dry	5		09/14/16 16:53		SW6010C
Calcium	475.6814	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Chromium	23.1802	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Cobalt	9.5335	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Copper	11.7604	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Iron	25,848.0000	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Lead	11.1473	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Magnesium	4,692.5050	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Manganese	141.7816	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Molybdenum	0.7601	mg/Kg dry	5		09/14/16 16:53		SW6010C
Nickel	17.7056	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Potassium	2,733.8920	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Selenium	0.4109	mg/Kg dry	5		09/14/16 16:53		SW6010C
Silver	0.0052	mg/Kg dry	5		09/14/16 16:53		SW6010C
Sodium	1,259.4670	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Thallium	0.1689	mg/Kg dry	5		09/14/16 16:53		SW6010C
Vanadium	30.5307	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Zinc	50.6913	mg/Kg dry	5	D	09/14/16 16:53		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB09-0010
Lab Sample ID: 1608251-13

Sample Collection D/T : 08/25/2016 09:07
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	25,618.4600	mg/Kg dry	5	D	09/14/16 16:57		SW6010C
Antimony	-0.5610	mg/Kg dry	5		09/14/16 16:57		SW6010C
Arsenic	13.1779	mg/Kg dry	5	D	09/14/16 16:57		SW6010C
Barium	45.0789	mg/Kg dry	5	D	09/14/16 16:57		SW6010C
Beryllium	1.3661	mg/Kg dry	5	D	09/14/16 16:57		SW6010C
Cadmium	0.0089	mg/Kg dry	5		09/14/16 16:57		SW6010C
Calcium	2,140.2470	mg/Kg dry	5	D	09/14/16 16:57		SW6010C
Chromium	47.5289	mg/Kg dry	5	D	09/14/16 16:57		SW6010C
Cobalt	15.7063	mg/Kg dry	5	D	09/14/16 16:57		SW6010C
Copper	17.8026	mg/Kg dry	5	D	09/14/16 16:57		SW6010C
Iron	42,715.4500	mg/Kg dry	5	D	09/14/16 16:57		SW6010C
Lead	18.0440	mg/Kg dry	5	D	09/14/16 16:57		SW6010C
Magnesium	8,790.8480	mg/Kg dry	5	D	09/14/16 16:57		SW6010C
Manganese	291.0506	mg/Kg dry	5	D	09/14/16 16:57		SW6010C
Molybdenum	2.3148	mg/Kg dry	5		09/14/16 16:57		SW6010C
Nickel	35.9352	mg/Kg dry	5	D	09/14/16 16:57		SW6010C
Potassium	5,275.3480	mg/Kg dry	5	D	09/14/16 16:57		SW6010C
Selenium	0.4697	mg/Kg dry	5		09/14/16 16:57		SW6010C
Silver	-0.0357	mg/Kg dry	5		09/14/16 16:57		SW6010C
Sodium	3,255.0190	mg/Kg dry	5	D	09/14/16 16:57		SW6010C
Thallium	-0.0164	mg/Kg dry	5		09/14/16 16:57		SW6010C
Vanadium	58.0340	mg/Kg dry	5	D	09/14/16 16:57		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	111.3187	mg/Kg dry	5	D	09/14/16 16:57		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB10-0010
Lab Sample ID: 1608251-14

Sample Collection D/T : 08/25/2016 09:19
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	25,111.7800	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Antimony	-1.1125	mg/Kg dry	5		09/14/16 17:01		SW6010C
Arsenic	26.4949	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Barium	41.8162	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Beryllium	1.1988	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Cadmium	-0.0416	mg/Kg dry	5		09/14/16 17:01		SW6010C
Calcium	1,776.0720	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Chromium	43.4997	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Cobalt	14.7361	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Copper	13.3358	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Iron	57,522.5500	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Lead	16.0434	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Magnesium	7,164.6330	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Manganese	314.0797	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Molybdenum	6.9145	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Nickel	32.7116	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Potassium	5,017.7070	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Selenium	0.6603	mg/Kg dry	5		09/14/16 17:01		SW6010C
Silver	-0.1423	mg/Kg dry	5		09/14/16 17:01		SW6010C
Sodium	2,844.5610	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Thallium	-0.2948	mg/Kg dry	5		09/14/16 17:01		SW6010C
Vanadium	52.0785	mg/Kg dry	5	D	09/14/16 17:01		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	96.0259	mg/Kg dry	5	D	09/14/16 17:01		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB11-0010
Lab Sample ID: 1608251-15

Sample Collection D/T : 08/25/2016 09:55
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	24,472.7400	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Antimony	-0.4082	mg/Kg dry	5		09/14/16 17:06		SW6010C
Arsenic	19.2262	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Barium	41.5312	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Beryllium	1.4653	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Cadmium	0.0302	mg/Kg dry	5		09/14/16 17:06		SW6010C
Calcium	2,268.3210	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Chromium	45.4295	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Cobalt	17.7727	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Copper	16.8190	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Iron	55,814.5600	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Lead	16.9698	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Magnesium	8,167.6670	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Manganese	840.6097	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Molybdenum	6.6520	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Nickel	33.7898	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Potassium	5,011.9370	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Selenium	0.7850	mg/Kg dry	5		09/14/16 17:06		SW6010C
Silver	-0.3422	mg/Kg dry	5		09/14/16 17:06		SW6010C
Sodium	3,072.0450	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Thallium	0.5019	mg/Kg dry	5		09/14/16 17:06		SW6010C
Vanadium	56.2424	mg/Kg dry	5	D	09/14/16 17:06		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	101.5337	mg/Kg dry	5	D	09/14/16 17:06		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB12-0010
Lab Sample ID: 1608251-16

Sample Collection D/T : 08/25/2016 11:44
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	23,085.8500	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Antimony	-0.4858	mg/Kg dry	5		09/14/16 17:10		SW6010C
Arsenic	16.5205	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Barium	39.0072	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Beryllium	1.2314	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Cadmium	0.0724	mg/Kg dry	5		09/14/16 17:10		SW6010C
Calcium	2,036.4210	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Chromium	43.8683	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Cobalt	13.2269	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Copper	16.3704	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Iron	48,561.9400	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Lead	16.5838	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Magnesium	7,385.4060	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Manganese	645.0871	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Molybdenum	3.0227	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Nickel	31.0143	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Potassium	4,623.6740	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Selenium	0.0157	mg/Kg dry	5		09/14/16 17:10		SW6010C
Silver	-0.0626	mg/Kg dry	5		09/14/16 17:10		SW6010C
Sodium	2,843.2480	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Thallium	-0.1376	mg/Kg dry	5		09/14/16 17:10		SW6010C
Vanadium	53.3682	mg/Kg dry	5	D	09/14/16 17:10		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	95.0080	mg/Kg dry	5	D	09/14/16 17:10		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB13-0010
Lab Sample ID: 1608251-17

Sample Collection D/T : 08/25/2016 12:34
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	24,621.3600	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Antimony	-0.6549	mg/Kg dry	5		09/14/16 17:15		SW6010C
Arsenic	18.1067	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Barium	45.3532	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Beryllium	1.2483	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Cadmium	-0.0675	mg/Kg dry	5		09/14/16 17:15		SW6010C
Calcium	3,875.9280	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Chromium	45.0546	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Cobalt	8.8687	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Copper	9.3421	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Iron	34,789.8400	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Lead	11.7040	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Magnesium	7,927.7360	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Manganese	359.2004	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Molybdenum	10.6511	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Nickel	29.2777	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Potassium	5,687.1210	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Selenium	0.4642	mg/Kg dry	5		09/14/16 17:15		SW6010C
Silver	-0.3925	mg/Kg dry	5		09/14/16 17:15		SW6010C
Sodium	12,252.7300	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Thallium	0.0085	mg/Kg dry	5		09/14/16 17:15		SW6010C
Vanadium	58.9260	mg/Kg dry	5	D	09/14/16 17:15		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	82.1913	mg/Kg dry	5	D	09/14/16 17:15		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB14-0010
Lab Sample ID: 1608251-18

Sample Collection D/T : 08/25/2016 13:14
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	22,388.7700	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Antimony	-1.3480	mg/Kg dry	5		09/14/16 17:19		SW6010C
Arsenic	13.8460	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Barium	41.9735	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Beryllium	1.1294	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Cadmium	-0.1333	mg/Kg dry	5		09/14/16 17:19		SW6010C
Calcium	3,465.1280	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Chromium	40.7365	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Cobalt	8.9784	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Copper	11.8433	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Iron	43,244.5400	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Lead	14.9085	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Magnesium	7,267.5010	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Manganese	239.7000	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Molybdenum	6.2713	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Nickel	27.3276	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Potassium	5,037.3060	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Selenium	-0.5512	mg/Kg dry	5		09/14/16 17:19		SW6010C
Silver	-0.2558	mg/Kg dry	5		09/14/16 17:19		SW6010C
Sodium	12,578.6100	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Thallium	-0.0594	mg/Kg dry	5		09/14/16 17:19		SW6010C
Vanadium	58.5879	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Zinc	83.4839	mg/Kg dry	5	D	09/14/16 17:19		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB15-0010
Lab Sample ID: 1608251-19

Sample Collection D/T : 08/25/2016 13:28
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	23,597.6900	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Antimony	-2.3380	mg/Kg dry	5		09/14/16 17:23		SW6010C
Arsenic	7.2024	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Barium	46.2574	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Beryllium	0.7759	mg/Kg dry	5		09/14/16 17:23		SW6010C
Cadmium	-0.0758	mg/Kg dry	5		09/14/16 17:23		SW6010C
Calcium	4,133.7090	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Chromium	44.1470	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Cobalt	6.9677	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Copper	12.3140	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Iron	30,101.5600	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Lead	14.0961	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Magnesium	7,779.3790	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Manganese	372.9004	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Molybdenum	6.7324	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Nickel	22.8109	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Potassium	5,363.3610	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Selenium	0.9946	mg/Kg dry	5		09/14/16 17:23		SW6010C
Silver	-0.3401	mg/Kg dry	5		09/14/16 17:23		SW6010C
Sodium	15,256.0000	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Thallium	0.2727	mg/Kg dry	5		09/14/16 17:23		SW6010C
Vanadium	54.4877	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Zinc	60.4706	mg/Kg dry	5	D	09/14/16 17:23		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB16-0010
Lab Sample ID: 1608251-20

Sample Collection D/T : 08/25/2016 13:40
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	24,235.1100	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Antimony	-1.4778	mg/Kg dry	5		09/14/16 17:28		SW6010C
Arsenic	12.8692	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Barium	37.0393	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Beryllium	1.1511	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Cadmium	-0.0099	mg/Kg dry	5		09/14/16 17:28		SW6010C
Calcium	2,611.3700	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Chromium	36.7757	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Cobalt	11.9524	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Copper	12.7817	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Iron	42,605.9800	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Lead	16.8808	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Magnesium	7,474.6230	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Manganese	333.3968	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Molybdenum	5.3376	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Nickel	36.3676	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Potassium	4,931.8580	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Selenium	1.7834	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Silver	-0.1347	mg/Kg dry	5		09/14/16 17:28		SW6010C
Sodium	12,667.2000	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Thallium	0.2894	mg/Kg dry	5		09/14/16 17:28		SW6010C
Vanadium	43.9787	mg/Kg dry	5	D	09/14/16 17:28		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	97.0314	mg/Kg dry	5	D	09/14/16 17:28		SW6010C

Data and Forms For

Metals

Sample Extraction Data

Prep Method: MET_3050B-SW6010C

Lab Number [Field ID]	Batch	Nominal Initial/Final	Initial [g]	Final [mL]	Dilution	% Solids	Notes	Date
1608251-01 [DSA05-SB29-0010]	6H29015	2.00/100.00	2.00	100	2.00	48.75		09/08/16
1608251-02 [DSA05-SB30-0010]	6H29015	2.00/100.00	2.00	100	2.00	50.69		09/08/16
1608251-03 [DSA05-SB31-0010]	6H29015	2.00/100.00	2.02	100	2.00	52.94		09/08/16
1608251-04 [DSA05-SB32-0010]	6H29015	2.00/100.00	2.03	100	2.00	51.58		09/08/16
1608251-05 [DSA01-SB01-0010]	6H29015	2.00/100.00	2.04	100	2.00	82.51		09/08/16
1608251-06 [DSA01-SB02-0010]	6H29015	2.00/100.00	2.04	100	2.00	83.12		09/08/16
1608251-07 [DSA01-SB03-0010]	6H29015	2.00/100.00	2.04	100	2.00	83.35		09/08/16
1608251-08 [DSA01-SB04-0010]	6H29015	2.00/100.00	2.05	100	2.00	83.27		09/08/16
1608251-09 [DSA01-SB05-0010]	6H29015	2.00/100.00	2.00	100	2.00	84.84		09/08/16
1608251-10 [DSA01-SB06-0010]	6H29015	2.00/100.00	2.04	100	2.00	81.32		09/08/16
1608251-11 [DSA01-SB07-0010]	6H29015	2.00/100.00	2.04	100	2.00	83.63		09/08/16

Sample Extraction Data

Prep Method: MET_3050B-SW6010C

Lab Number [Field ID]	Batch	Nominal Initial/Final	Initial [g]	Final [mL]	Dilution	% Solids	Notes	Date
1608251-12 [DSA01-SB08-0010]	6I08012	2.00/100.00	2.05	100	5.00	84.58		09/08/16
1608251-13 [DSA02-SB09-0010]	6I08012	2.00/100.00	2.01	100	5.00	53.37		09/08/16
1608251-14 [DSA02-SB10-0010]	6I08012	2.00/100.00	2.05	100	5.00	52.46		09/08/16
1608251-15 [DSA02-SB11-0010]	6I08012	2.00/100.00	2.05	100	5.00	46.75		09/08/16
1608251-16 [DSA02-SB12-0010]	6I08012	2.00/100.00	2.03	100	5.00	55.29		09/08/16
1608251-17 [DSA02-SB13-0010]	6I08012	2.00/100.00	2.03	100	5.00	37.62		09/08/16
1608251-18 [DSA02-SB14-0010]	6I08012	2.00/100.00	2.00	100	5.00	33.69		09/08/16
1608251-19 [DSA02-SB15-0010]	6I08012	2.00/100.00	2.02	100	5.00	29.79		09/08/16
1608251-20 [DSA02-SB16-0010]	6I08012	2.00/100.00	2.01	100	5.00	43.22		09/08/16

ANALYSIS DATA SHEET

DSA05-SB29-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 09:21
% Solids: 48.75

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-01
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	24200	**10.3**	20.5	41.0	2	D	SW6010C	6H29015	09/14/16 15:00
7440-36-0	Antimony	7.11	**1.03**	1.64	2.05	2	D	SW6010C	6H29015	09/14/16 15:00
7440-38-2	Arsenic	179	**0.615**	1.23	2.05	2	D	SW6010C	6H29015	09/14/16 15:00
7440-39-3	Barium	149	**1.03**	2.05	8.21	2	D	SW6010C	6H29015	09/14/16 15:00
7440-41-7	Beryllium	1.31	**0.205**	0.410	1.03	2	D	SW6010C	6H29015	09/14/16 15:00
7440-43-9	Cadmium	6.79	**0.205**	0.410	1.03	2	D	SW6010C	6H29015	09/14/16 15:00
7440-70-2	Calcium	3120	**205**	410	1030	2	D	SW6010C	6H29015	09/14/16 15:00
7440-47-3	Chromium	192	**0.410**	0.821	2.05	2	D	SW6010C	6H29015	09/14/16 15:00
7440-48-4	Cobalt	18.3	**1.03**	2.05	2.56	2	D	SW6010C	6H29015	09/14/16 15:00
7440-50-8	Copper	500	**0.821**	1.64	2.05	2	D	SW6010C	6H29015	09/14/16 15:00
7439-89-6	Iron	53900	**6.15**	12.3	20.5	2	D	SW6010C	6H29015	09/14/16 15:00
7439-92-1	Lead	290	**0.308**	0.615	1.03	2	D	SW6010C	6H29015	09/14/16 15:00
7439-95-4	Magnesium	7550	**205**	615	1030	2	D	SW6010C	6H29015	09/14/16 15:00
7439-96-5	Manganese	334	**0.615**	1.23	3.08	2	D	SW6010C	6H29015	09/14/16 15:00
7439-98-7	Molybdenum	3.77	**1.03**	2.05	4.10	2	J D	SW6010C	6H29015	09/14/16 15:00
7440-02-0	Nickel	55.3	**0.615**	1.23	2.05	2	D	SW6010C	6H29015	09/14/16 15:00
7440-09-7	Potassium	3380	**205**	615	1030	2	D	SW6010C	6H29015	09/14/16 15:00
7782-49-2	Selenium	9.78	**0.615**	1.03	2.05	2	D	SW6010C	6H29015	09/14/16 15:00
7440-22-4	Silver	7.56	**0.205**	0.410	2.05	2	D	SW6010C	6H29015	09/14/16 15:00
7440-23-5	Sodium	5190	**205**	615	1030	2	D	SW6010C	6H29015	09/14/16 15:00
7440-28-0	Thallium	1.09	**0.615**	0.821	1.64	2	J D	SW6010C	6H29015	09/14/16 15:00
7440-62-2	Vanadium	118	**1.03**	2.05	2.56	2	D	SW6010C	6H29015	09/14/16 15:00
7440-66-6	Zinc	709	**1.03**	2.05	4.10	2	D	SW6010C	6H29015	09/14/16 15:00

ANALYSIS DATA SHEET

DSA05-SB30-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 09:49
% Solids: 50.69

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-02
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	23800	**9.86**	19.7	39.5	2	D	SW6010C	6H29015	09/14/16 15:05
7440-36-0	Antimony	1.44	**0.986**	1.58	1.97	2	J D	SW6010C	6H29015	09/14/16 15:05
7440-38-2	Arsenic	67.6	**0.592**	1.18	1.97	2	D	SW6010C	6H29015	09/14/16 15:05
7440-39-3	Barium	132	**0.986**	1.97	7.89	2	D	SW6010C	6H29015	09/14/16 15:05
7440-41-7	Beryllium	1.01	**0.197**	0.395	0.986	2	D	SW6010C	6H29015	09/14/16 15:05
7440-43-9	Cadmium	0.853	**0.197**	0.395	0.986	2	J D	SW6010C	6H29015	09/14/16 15:05
7440-70-2	Calcium	1210	**197**	395	986	2	D	SW6010C	6H29015	09/14/16 15:05
7440-47-3	Chromium	145	**0.395**	0.789	1.97	2	D	SW6010C	6H29015	09/14/16 15:05
7440-48-4	Cobalt	11.2	**0.986**	1.97	2.47	2	D	SW6010C	6H29015	09/14/16 15:05
7440-50-8	Copper	411	**0.789**	1.58	1.97	2	D	SW6010C	6H29015	09/14/16 15:05
7439-89-6	Iron	52500	**5.92**	11.8	19.7	2	D	SW6010C	6H29015	09/14/16 15:05
7439-92-1	Lead	247	**0.296**	0.592	0.986	2	D	SW6010C	6H29015	09/14/16 15:05
7439-95-4	Magnesium	6150	**197**	592	986	2	D	SW6010C	6H29015	09/14/16 15:05
7439-96-5	Manganese	227	**0.592**	1.18	2.96	2	D	SW6010C	6H29015	09/14/16 15:05
7439-98-7	Molybdenum	2.32	**0.986**	1.97	3.95	2	J D	SW6010C	6H29015	09/14/16 15:05
7440-02-0	Nickel	34.7	**0.592**	1.18	1.97	2	D	SW6010C	6H29015	09/14/16 15:05
7440-09-7	Potassium	2620	**197**	592	986	2	D	SW6010C	6H29015	09/14/16 15:05
7782-49-2	Selenium	4.51	**0.592**	0.986	1.97	2	D	SW6010C	6H29015	09/14/16 15:05
7440-22-4	Silver	6.16	**0.197**	0.395	1.97	2	D	SW6010C	6H29015	09/14/16 15:05
7440-23-5	Sodium	1910	**197**	592	986	2	D	SW6010C	6H29015	09/14/16 15:05
7440-28-0	Thallium	0.709	**0.592**	0.789	1.58	2	J D	SW6010C	6H29015	09/14/16 15:05
7440-62-2	Vanadium	99.4	**0.986**	1.97	2.47	2	D	SW6010C	6H29015	09/14/16 15:05
7440-66-6	Zinc	186	**0.986**	1.97	3.95	2	D	SW6010C	6H29015	09/14/16 15:05

ANALYSIS DATA SHEET

DSA05-SB31-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 10:06
% Solids: 52.94

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-03
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	23800	**9.35**	18.7	37.4	2	D	SW6010C	6H29015	09/14/16 15:49
7440-36-0	Antimony	3.71	**0.935**	1.50	1.87	2	D	SW6010C	6H29015	09/14/16 15:49
7440-38-2	Arsenic	169	**0.561**	1.12	1.87	2	D	SW6010C	6H29015	09/14/16 15:49
7440-39-3	Barium	187	**0.935**	1.87	7.48	2	D	SW6010C	6H29015	09/14/16 15:49
7440-41-7	Beryllium	1.23	**0.187**	0.374	0.935	2	D	SW6010C	6H29015	09/14/16 15:49
7440-43-9	Cadmium	2.09	**0.187**	0.374	0.935	2	D	SW6010C	6H29015	09/14/16 15:49
7440-70-2	Calcium	2970	**187**	374	935	2	D	SW6010C	6H29015	09/14/16 15:49
7440-47-3	Chromium	215	**0.374**	0.748	1.87	2	D	SW6010C	6H29015	09/14/16 15:49
7440-48-4	Cobalt	14.4	**0.935**	1.87	2.34	2	D	SW6010C	6H29015	09/14/16 15:49
7440-50-8	Copper	634	**0.748**	1.50	1.87	2	D	SW6010C	6H29015	09/14/16 15:49
7439-89-6	Iron	48800	**5.61**	11.2	18.7	2	D	SW6010C	6H29015	09/14/16 15:49
7439-92-1	Lead	287	**0.281**	0.561	0.935	2	D	SW6010C	6H29015	09/14/16 15:49
7439-95-4	Magnesium	6950	**187**	561	935	2	D	SW6010C	6H29015	09/14/16 15:49
7439-96-5	Manganese	322	**0.561**	1.12	2.81	2	D	SW6010C	6H29015	09/14/16 15:49
7439-98-7	Molybdenum	1.75	**0.935**	1.87	3.74	2	J D	SW6010C	6H29015	09/14/16 15:49
7440-02-0	Nickel	52.5	**0.561**	1.12	1.87	2	D	SW6010C	6H29015	09/14/16 15:49
7440-09-7	Potassium	3560	**187**	561	935	2	D	SW6010C	6H29015	09/14/16 15:49
7782-49-2	Selenium	17.6	**0.561**	0.935	1.87	2	D	SW6010C	6H29015	09/14/16 15:49
7440-22-4	Silver	10.1	**0.187**	0.374	1.87	2	D	SW6010C	6H29015	09/14/16 15:49
7440-23-5	Sodium	3750	**187**	561	935	2	D	SW6010C	6H29015	09/14/16 15:49
7440-28-0	Thallium	0.631	**0.561**	0.748	1.50	2	J D	SW6010C	6H29015	09/14/16 15:49
7440-62-2	Vanadium	105	**0.935**	1.87	2.34	2	D	SW6010C	6H29015	09/14/16 15:49
7440-66-6	Zinc	435	**0.935**	1.87	3.74	2	D	SW6010C	6H29015	09/14/16 15:49

ANALYSIS DATA SHEET

DSA05-SB32-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 10:36
% Solids: 51.58

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-04
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	22900	**9.55**	19.1	38.2	2	D	SW6010C	6H29015	09/14/16 15:54
7440-36-0	Antimony	8.79	**0.955**	1.53	1.91	2	D	SW6010C	6H29015	09/14/16 15:54
7440-38-2	Arsenic	136	**0.573**	1.15	1.91	2	D	SW6010C	6H29015	09/14/16 15:54
7440-39-3	Barium	155	**0.955**	1.91	7.64	2	D	SW6010C	6H29015	09/14/16 15:54
7440-41-7	Beryllium	0.918	**0.191**	0.382	0.955	2	J D	SW6010C	6H29015	09/14/16 15:54
7440-43-9	Cadmium	3.33	**0.191**	0.382	0.955	2	D	SW6010C	6H29015	09/14/16 15:54
7440-70-2	Calcium	2550	**191**	382	955	2	D	SW6010C	6H29015	09/14/16 15:54
7440-47-3	Chromium	187	**0.382**	0.764	1.91	2	D	SW6010C	6H29015	09/14/16 15:54
7440-48-4	Cobalt	15.1	**0.955**	1.91	2.39	2	D	SW6010C	6H29015	09/14/16 15:54
7440-50-8	Copper	396	**0.764**	1.53	1.91	2	D	SW6010C	6H29015	09/14/16 15:54
7439-89-6	Iron	44700	**5.73**	11.5	19.1	2	D	SW6010C	6H29015	09/14/16 15:54
7439-92-1	Lead	294	**0.287**	0.573	0.955	2	D	SW6010C	6H29015	09/14/16 15:54
7439-95-4	Magnesium	6950	**191**	573	955	2	D	SW6010C	6H29015	09/14/16 15:54
7439-96-5	Manganese	246	**0.573**	1.15	2.87	2	D	SW6010C	6H29015	09/14/16 15:54
7439-98-7	Molybdenum	2.54	**0.955**	1.91	3.82	2	J D	SW6010C	6H29015	09/14/16 15:54
7440-02-0	Nickel	46.1	**0.573**	1.15	1.91	2	D	SW6010C	6H29015	09/14/16 15:54
7440-09-7	Potassium	3230	**191**	573	955	2	D	SW6010C	6H29015	09/14/16 15:54
7782-49-2	Selenium	6.32	**0.573**	0.955	1.91	2	D	SW6010C	6H29015	09/14/16 15:54
7440-22-4	Silver	6.41	**0.191**	0.382	1.91	2	D	SW6010C	6H29015	09/14/16 15:54
7440-23-5	Sodium	5010	**191**	573	955	2	D	SW6010C	6H29015	09/14/16 15:54
7440-28-0	Thallium	1.25	**0.573**	0.764	1.53	2	J D	SW6010C	6H29015	09/14/16 15:54
7440-62-2	Vanadium	111	**0.955**	1.91	2.39	2	D	SW6010C	6H29015	09/14/16 15:54
7440-66-6	Zinc	415	**0.955**	1.91	3.82	2	D	SW6010C	6H29015	09/14/16 15:54

ANALYSIS DATA SHEET

DSA01-SB01-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 12:28
% Solids: 82.51

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-05
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	13900	**5.94**	11.9	23.8	2	D	SW6010C	6H29015	09/14/16 15:58
7440-36-0	Antimony		0.594	0.951	1.19	2	U	SW6010C	6H29015	09/14/16 15:58
7440-38-2	Arsenic	5.61	**0.356**	0.713	1.19	2	D	SW6010C	6H29015	09/14/16 15:58
7440-39-3	Barium	15.2	**0.594**	1.19	4.75	2	D	SW6010C	6H29015	09/14/16 15:58
7440-41-7	Beryllium	0.690	**0.119**	0.238	0.594	2	D	SW6010C	6H29015	09/14/16 15:58
7440-43-9	Cadmium		0.119	0.238	0.594	2	U	SW6010C	6H29015	09/14/16 15:58
7440-70-2	Calcium	424	**119**	238	594	2	J D	SW6010C	6H29015	09/14/16 15:58
7440-47-3	Chromium	22.9	**0.238**	0.475	1.19	2	D	SW6010C	6H29015	09/14/16 15:58
7440-48-4	Cobalt	8.38	**0.594**	1.19	1.49	2	D	SW6010C	6H29015	09/14/16 15:58
7440-50-8	Copper	14.7	**0.475**	0.951	1.19	2	D	SW6010C	6H29015	09/14/16 15:58
7439-89-6	Iron	21900	**3.56**	7.13	11.9	2	D	SW6010C	6H29015	09/14/16 15:58
7439-92-1	Lead	9.92	**0.178**	0.356	0.594	2	D	SW6010C	6H29015	09/14/16 15:58
7439-95-4	Magnesium	3550	**119**	356	594	2	D	SW6010C	6H29015	09/14/16 15:58
7439-96-5	Manganese	117	**0.356**	0.713	1.78	2	D	SW6010C	6H29015	09/14/16 15:58
7439-98-7	Molybdenum	0.625	**0.594**	1.19	2.38	2	J D	SW6010C	6H29015	09/14/16 15:58
7440-02-0	Nickel	15.7	**0.356**	0.713	1.19	2	D	SW6010C	6H29015	09/14/16 15:58
7440-09-7	Potassium	1860	**119**	356	594	2	D	SW6010C	6H29015	09/14/16 15:58
7782-49-2	Selenium		0.356	0.594	1.19	2	U	SW6010C	6H29015	09/14/16 15:58
7440-22-4	Silver		0.119	0.238	1.19	2	U	SW6010C	6H29015	09/14/16 15:58
7440-23-5	Sodium	1080	**119**	356	594	2	D	SW6010C	6H29015	09/14/16 15:58
7440-28-0	Thallium		0.356	0.475	0.951	2	U	SW6010C	6H29015	09/14/16 15:58
7440-62-2	Vanadium	34.6	**0.594**	1.19	1.49	2	D	SW6010C	6H29015	09/14/16 15:58
7440-66-6	Zinc	42.0	**0.594**	1.19	2.38	2	D	SW6010C	6H29015	09/14/16 15:58

ANALYSIS DATA SHEET

DSA01-SB02-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 12:45
% Solids: 83.12

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-06
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	8880	**5.90**	11.8	23.6	2	D	SW6010C	6H29015	09/14/16 16:02
7440-36-0	Antimony		0.590	0.944	1.18	2	U	SW6010C	6H29015	09/14/16 16:02
7440-38-2	Arsenic	6.22	**0.354**	0.708	1.18	2	D	SW6010C	6H29015	09/14/16 16:02
7440-39-3	Barium	10.7	**0.590**	1.18	4.72	2	D	SW6010C	6H29015	09/14/16 16:02
7440-41-7	Beryllium	0.516	**0.118**	0.236	0.590	2	J D	SW6010C	6H29015	09/14/16 16:02
7440-43-9	Cadmium		0.118	0.236	0.590	2	U	SW6010C	6H29015	09/14/16 16:02
7440-70-2	Calcium	304	**118**	236	590	2	J D	SW6010C	6H29015	09/14/16 16:02
7440-47-3	Chromium	18.0	**0.236**	0.472	1.18	2	D	SW6010C	6H29015	09/14/16 16:02
7440-48-4	Cobalt	6.60	**0.590**	1.18	1.47	2	D	SW6010C	6H29015	09/14/16 16:02
7440-50-8	Copper	9.57	**0.472**	0.944	1.18	2	D	SW6010C	6H29015	09/14/16 16:02
7439-89-6	Iron	20200	**3.54**	7.08	11.8	2	D	SW6010C	6H29015	09/14/16 16:02
7439-92-1	Lead	8.39	**0.177**	0.354	0.590	2	D	SW6010C	6H29015	09/14/16 16:02
7439-95-4	Magnesium	3030	**118**	354	590	2	D	SW6010C	6H29015	09/14/16 16:02
7439-96-5	Manganese	71.4	**0.354**	0.708	1.77	2	D	SW6010C	6H29015	09/14/16 16:02
7439-98-7	Molybdenum		0.590	1.18	2.36	2	U	SW6010C	6H29015	09/14/16 16:02
7440-02-0	Nickel	12.8	**0.354**	0.708	1.18	2	D	SW6010C	6H29015	09/14/16 16:02
7440-09-7	Potassium	1740	**118**	354	590	2	D	SW6010C	6H29015	09/14/16 16:02
7782-49-2	Selenium		0.354	0.590	1.18	2	U	SW6010C	6H29015	09/14/16 16:02
7440-22-4	Silver		0.118	0.236	1.18	2	U	SW6010C	6H29015	09/14/16 16:02
7440-23-5	Sodium	975	**118**	354	590	2	D	SW6010C	6H29015	09/14/16 16:02
7440-28-0	Thallium		0.354	0.472	0.944	2	U	SW6010C	6H29015	09/14/16 16:02
7440-62-2	Vanadium	27.2	**0.590**	1.18	1.47	2	D	SW6010C	6H29015	09/14/16 16:02
7440-66-6	Zinc	39.0	**0.590**	1.18	2.36	2	D	SW6010C	6H29015	09/14/16 16:02

ANALYSIS DATA SHEET

DSA01-SB03-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 12:57
% Solids: 83.35

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-07
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	11700	**5.88**	11.8	23.5	2	D	SW6010C	6H29015	09/14/16 16:07
7440-36-0	Antimony		0.588	0.941	1.18	2	U	SW6010C	6H29015	09/14/16 16:07
7440-38-2	Arsenic	4.55	**0.353**	0.706	1.18	2	D	SW6010C	6H29015	09/14/16 16:07
7440-39-3	Barium	11.1	**0.588**	1.18	4.70	2	D	SW6010C	6H29015	09/14/16 16:07
7440-41-7	Beryllium	0.576	**0.118**	0.235	0.588	2	J D	SW6010C	6H29015	09/14/16 16:07
7440-43-9	Cadmium		0.118	0.235	0.588	2	U	SW6010C	6H29015	09/14/16 16:07
7440-70-2	Calcium	319	**118**	235	588	2	J D	SW6010C	6H29015	09/14/16 16:07
7440-47-3	Chromium	19.2	**0.235**	0.470	1.18	2	D	SW6010C	6H29015	09/14/16 16:07
7440-48-4	Cobalt	8.46	**0.588**	1.18	1.47	2	D	SW6010C	6H29015	09/14/16 16:07
7440-50-8	Copper	13.6	**0.470**	0.941	1.18	2	D	SW6010C	6H29015	09/14/16 16:07
7439-89-6	Iron	24200	**3.53**	7.06	11.8	2	D	SW6010C	6H29015	09/14/16 16:07
7439-92-1	Lead	8.89	**0.176**	0.353	0.588	2	D	SW6010C	6H29015	09/14/16 16:07
7439-95-4	Magnesium	3890	**118**	353	588	2	D	SW6010C	6H29015	09/14/16 16:07
7439-96-5	Manganese	94.1	**0.353**	0.706	1.76	2	D	SW6010C	6H29015	09/14/16 16:07
7439-98-7	Molybdenum	0.686	**0.588**	1.18	2.35	2	J D	SW6010C	6H29015	09/14/16 16:07
7440-02-0	Nickel	15.4	**0.353**	0.706	1.18	2	D	SW6010C	6H29015	09/14/16 16:07
7440-09-7	Potassium	1660	**118**	353	588	2	D	SW6010C	6H29015	09/14/16 16:07
7782-49-2	Selenium	0.401	**0.353**	0.588	1.18	2	J D	SW6010C	6H29015	09/14/16 16:07
7440-22-4	Silver		0.118	0.235	1.18	2	U	SW6010C	6H29015	09/14/16 16:07
7440-23-5	Sodium	767	**118**	353	588	2	D	SW6010C	6H29015	09/14/16 16:07
7440-28-0	Thallium		0.353	0.470	0.941	2	U	SW6010C	6H29015	09/14/16 16:07
7440-62-2	Vanadium	29.8	**0.588**	1.18	1.47	2	D	SW6010C	6H29015	09/14/16 16:07
7440-66-6	Zinc	48.2	**0.588**	1.18	2.35	2	D	SW6010C	6H29015	09/14/16 16:07

ANALYSIS DATA SHEET

DSA01-SB04-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 13:12
% Solids: 83.27

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-08
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	8670	**5.86**	11.7	23.4	2	D	SW6010C	6H29015	09/14/16 16:11
7440-36-0	Antimony		0.586	0.937	1.17	2	U	SW6010C	6H29015	09/14/16 16:11
7440-38-2	Arsenic	6.11	**0.351**	0.703	1.17	2	D	SW6010C	6H29015	09/14/16 16:11
7440-39-3	Barium	7.98	**0.586**	1.17	4.69	2	D	SW6010C	6H29015	09/14/16 16:11
7440-41-7	Beryllium	0.473	**0.117**	0.234	0.586	2	J D	SW6010C	6H29015	09/14/16 16:11
7440-43-9	Cadmium		0.117	0.234	0.586	2	U	SW6010C	6H29015	09/14/16 16:11
7440-70-2	Calcium	266	**117**	234	586	2	J D	SW6010C	6H29015	09/14/16 16:11
7440-47-3	Chromium	13.8	**0.234**	0.469	1.17	2	D	SW6010C	6H29015	09/14/16 16:11
7440-48-4	Cobalt	7.69	**0.586**	1.17	1.46	2	D	SW6010C	6H29015	09/14/16 16:11
7440-50-8	Copper	8.64	**0.469**	0.937	1.17	2	D	SW6010C	6H29015	09/14/16 16:11
7439-89-6	Iron	16900	**3.51**	7.03	11.7	2	D	SW6010C	6H29015	09/14/16 16:11
7439-92-1	Lead	6.40	**0.176**	0.351	0.586	2	D	SW6010C	6H29015	09/14/16 16:11
7439-95-4	Magnesium	2070	**117**	351	586	2	D	SW6010C	6H29015	09/14/16 16:11
7439-96-5	Manganese	83.2	**0.351**	0.703	1.76	2	D	SW6010C	6H29015	09/14/16 16:11
7439-98-7	Molybdenum		0.586	1.17	2.34	2	U	SW6010C	6H29015	09/14/16 16:11
7440-02-0	Nickel	10.5	**0.351**	0.703	1.17	2	D	SW6010C	6H29015	09/14/16 16:11
7440-09-7	Potassium	1490	**117**	351	586	2	D	SW6010C	6H29015	09/14/16 16:11
7782-49-2	Selenium	0.366	**0.351**	0.586	1.17	2	J D	SW6010C	6H29015	09/14/16 16:11
7440-22-4	Silver		0.117	0.234	1.17	2	U	SW6010C	6H29015	09/14/16 16:11
7440-23-5	Sodium	536	**117**	351	586	2	J D	SW6010C	6H29015	09/14/16 16:11
7440-28-0	Thallium		0.351	0.469	0.937	2	U	SW6010C	6H29015	09/14/16 16:11
7440-62-2	Vanadium	19.4	**0.586**	1.17	1.46	2	D	SW6010C	6H29015	09/14/16 16:11
7440-66-6	Zinc	32.6	**0.586**	1.17	2.34	2	D	SW6010C	6H29015	09/14/16 16:11

ANALYSIS DATA SHEET

DSA01-SB05-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 13:49
% Solids: 84.84

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-09
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	10000	**5.89**	11.8	23.6	2	D	SW6010C	6H29015	09/14/16 16:15
7440-36-0	Antimony		0.589	0.943	1.18	2	U	SW6010C	6H29015	09/14/16 16:15
7440-38-2	Arsenic	4.31	**0.354**	0.707	1.18	2	D	SW6010C	6H29015	09/14/16 16:15
7440-39-3	Barium	12.2	**0.589**	1.18	4.71	2	D	SW6010C	6H29015	09/14/16 16:15
7440-41-7	Beryllium	0.511	**0.118**	0.236	0.589	2	J D	SW6010C	6H29015	09/14/16 16:15
7440-43-9	Cadmium		0.118	0.236	0.589	2	U	SW6010C	6H29015	09/14/16 16:15
7440-70-2	Calcium	268	**118**	236	589	2	J D	SW6010C	6H29015	09/14/16 16:15
7440-47-3	Chromium	17.5	**0.236**	0.471	1.18	2	D	SW6010C	6H29015	09/14/16 16:15
7440-48-4	Cobalt	6.72	**0.589**	1.18	1.47	2	D	SW6010C	6H29015	09/14/16 16:15
7440-50-8	Copper	12.3	**0.471**	0.943	1.18	2	D	SW6010C	6H29015	09/14/16 16:15
7439-89-6	Iron	18500	**3.54**	7.07	11.8	2	D	SW6010C	6H29015	09/14/16 16:15
7439-92-1	Lead	8.17	**0.177**	0.354	0.589	2	D	SW6010C	6H29015	09/14/16 16:15
7439-95-4	Magnesium	3190	**118**	354	589	2	D	SW6010C	6H29015	09/14/16 16:15
7439-96-5	Manganese	78.1	**0.354**	0.707	1.77	2	D	SW6010C	6H29015	09/14/16 16:15
7439-98-7	Molybdenum		0.589	1.18	2.36	2	U	SW6010C	6H29015	09/14/16 16:15
7440-02-0	Nickel	13.6	**0.354**	0.707	1.18	2	D	SW6010C	6H29015	09/14/16 16:15
7440-09-7	Potassium	1730	**118**	354	589	2	D	SW6010C	6H29015	09/14/16 16:15
7782-49-2	Selenium		0.354	0.589	1.18	2	U	SW6010C	6H29015	09/14/16 16:15
7440-22-4	Silver		0.118	0.236	1.18	2	U	SW6010C	6H29015	09/14/16 16:15
7440-23-5	Sodium	860	**118**	354	589	2	D	SW6010C	6H29015	09/14/16 16:15
7440-28-0	Thallium		0.354	0.471	0.943	2	U	SW6010C	6H29015	09/14/16 16:15
7440-62-2	Vanadium	26.0	**0.589**	1.18	1.47	2	D	SW6010C	6H29015	09/14/16 16:15
7440-66-6	Zinc	40.0	**0.589**	1.18	2.36	2	D	SW6010C	6H29015	09/14/16 16:15

ANALYSIS DATA SHEET

DSA01-SB06-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 14:02
% Solids: 81.32

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-10
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	5620	**6.03**	12.1	24.1	2	D	SW6010C	6H29015	09/14/16 16:20
7440-36-0	Antimony		0.603	0.965	1.21	2	U	SW6010C	6H29015	09/14/16 16:20
7440-38-2	Arsenic	4.88	**0.362**	0.723	1.21	2	D	SW6010C	6H29015	09/14/16 16:20
7440-39-3	Barium	8.02	**0.603**	1.21	4.82	2	D	SW6010C	6H29015	09/14/16 16:20
7440-41-7	Beryllium	0.327	**0.121**	0.241	0.603	2	J D	SW6010C	6H29015	09/14/16 16:20
7440-43-9	Cadmium		0.121	0.241	0.603	2	U	SW6010C	6H29015	09/14/16 16:20
7440-70-2	Calcium	184	**121**	241	603	2	J D	SW6010C	6H29015	09/14/16 16:20
7440-47-3	Chromium	11.0	**0.241**	0.482	1.21	2	D	SW6010C	6H29015	09/14/16 16:20
7440-48-4	Cobalt	6.89	**0.603**	1.21	1.51	2	D	SW6010C	6H29015	09/14/16 16:20
7440-50-8	Copper	5.95	**0.482**	0.965	1.21	2	D	SW6010C	6H29015	09/14/16 16:20
7439-89-6	Iron	15700	**3.62**	7.23	12.1	2	D	SW6010C	6H29015	09/14/16 16:20
7439-92-1	Lead	4.76	**0.181**	0.362	0.603	2	D	SW6010C	6H29015	09/14/16 16:20
7439-95-4	Magnesium	1600	**121**	362	603	2	D	SW6010C	6H29015	09/14/16 16:20
7439-96-5	Manganese	60.8	**0.362**	0.723	1.81	2	D	SW6010C	6H29015	09/14/16 16:20
7439-98-7	Molybdenum		0.603	1.21	2.41	2	U	SW6010C	6H29015	09/14/16 16:20
7440-02-0	Nickel	7.63	**0.362**	0.723	1.21	2	D	SW6010C	6H29015	09/14/16 16:20
7440-09-7	Potassium	1090	**121**	362	603	2	D	SW6010C	6H29015	09/14/16 16:20
7782-49-2	Selenium		0.362	0.603	1.21	2	U	SW6010C	6H29015	09/14/16 16:20
7440-22-4	Silver		0.121	0.241	1.21	2	U	SW6010C	6H29015	09/14/16 16:20
7440-23-5	Sodium	313	**121**	362	603	2	J D	SW6010C	6H29015	09/14/16 16:20
7440-28-0	Thallium		0.362	0.482	0.965	2	U	SW6010C	6H29015	09/14/16 16:20
7440-62-2	Vanadium	14.9	**0.603**	1.21	1.51	2	D	SW6010C	6H29015	09/14/16 16:20
7440-66-6	Zinc	22.9	**0.603**	1.21	2.41	2	D	SW6010C	6H29015	09/14/16 16:20

ANALYSIS DATA SHEET

DSA01-SB07-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 14:20
% Solids: 83.63

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-11
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	9190	**5.86**	11.7	23.4	2	D	SW6010C	6H29015	09/14/16 16:24
7440-36-0	Antimony		0.586	0.938	1.17	2	U	SW6010C	6H29015	09/14/16 16:24
7440-38-2	Arsenic	2.73	**0.352**	0.703	1.17	2	D	SW6010C	6H29015	09/14/16 16:24
7440-39-3	Barium	9.67	**0.586**	1.17	4.69	2	D	SW6010C	6H29015	09/14/16 16:24
7440-41-7	Beryllium	0.528	**0.117**	0.234	0.586	2	J D	SW6010C	6H29015	09/14/16 16:24
7440-43-9	Cadmium		0.117	0.234	0.586	2	U	SW6010C	6H29015	09/14/16 16:24
7440-70-2	Calcium	351	**117**	234	586	2	J D	SW6010C	6H29015	09/14/16 16:24
7440-47-3	Chromium	19.0	**0.234**	0.469	1.17	2	D	SW6010C	6H29015	09/14/16 16:24
7440-48-4	Cobalt	4.81	**0.586**	1.17	1.47	2	D	SW6010C	6H29015	09/14/16 16:24
7440-50-8	Copper	10.2	**0.469**	0.938	1.17	2	D	SW6010C	6H29015	09/14/16 16:24
7439-89-6	Iron	16700	**3.52**	7.03	11.7	2	D	SW6010C	6H29015	09/14/16 16:24
7439-92-1	Lead	7.09	**0.176**	0.352	0.586	2	D	SW6010C	6H29015	09/14/16 16:24
7439-95-4	Magnesium	2740	**117**	352	586	2	D	SW6010C	6H29015	09/14/16 16:24
7439-96-5	Manganese	111	**0.352**	0.703	1.76	2	D	SW6010C	6H29015	09/14/16 16:24
7439-98-7	Molybdenum		0.586	1.17	2.34	2	U	SW6010C	6H29015	09/14/16 16:24
7440-02-0	Nickel	12.2	**0.352**	0.703	1.17	2	D	SW6010C	6H29015	09/14/16 16:24
7440-09-7	Potassium	1660	**117**	352	586	2	D	SW6010C	6H29015	09/14/16 16:24
7782-49-2	Selenium		0.352	0.586	1.17	2	U	SW6010C	6H29015	09/14/16 16:24
7440-22-4	Silver		0.117	0.234	1.17	2	U	SW6010C	6H29015	09/14/16 16:24
7440-23-5	Sodium	471	**117**	352	586	2	J D	SW6010C	6H29015	09/14/16 16:24
7440-28-0	Thallium		0.352	0.469	0.938	2	U	SW6010C	6H29015	09/14/16 16:24
7440-62-2	Vanadium	30.1	**0.586**	1.17	1.47	2	D	SW6010C	6H29015	09/14/16 16:24
7440-66-6	Zinc	34.8	**0.586**	1.17	2.34	2	D	SW6010C	6H29015	09/14/16 16:24

ANALYSIS DATA SHEET

DSA01-SB08-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 14:35
% Solids: 84.58

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-12
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	13700	**14.4**	28.8	57.7	5	D	SW6010C	6I08012	09/14/16 16:53
7440-36-0	Antimony		1.44	2.31	2.88	5	U	SW6010C	6I08012	09/14/16 16:53
7440-38-2	Arsenic	6.63	**0.865**	1.73	2.88	5	D	SW6010C	6I08012	09/14/16 16:53
7440-39-3	Barium	18.0	**1.44**	2.88	11.5	5	D	SW6010C	6I08012	09/14/16 16:53
7440-41-7	Beryllium	0.926	**0.288**	0.577	1.44	5	J D	SW6010C	6I08012	09/14/16 16:53
7440-43-9	Cadmium		0.288	0.577	1.44	5	U	SW6010C	6I08012	09/14/16 16:53
7440-70-2	Calcium	476	**288**	577	1440	5	J D	SW6010C	6I08012	09/14/16 16:53
7440-47-3	Chromium	23.2	**0.577**	1.15	2.88	5	D	SW6010C	6I08012	09/14/16 16:53
7440-48-4	Cobalt	9.53	**1.44**	2.88	3.60	5	D	SW6010C	6I08012	09/14/16 16:53
7440-50-8	Copper	11.8	**1.15**	2.31	2.88	5	D	SW6010C	6I08012	09/14/16 16:53
7439-89-6	Iron	25800	**8.65**	17.3	28.8	5	D	SW6010C	6I08012	09/14/16 16:53
7439-92-1	Lead	11.1	**0.433**	0.865	1.44	5	D	SW6010C	6I08012	09/14/16 16:53
7439-95-4	Magnesium	4690	**288**	865	1440	5	D	SW6010C	6I08012	09/14/16 16:53
7439-96-5	Manganese	142	**0.865**	1.73	4.33	5	D	SW6010C	6I08012	09/14/16 16:53
7439-98-7	Molybdenum		1.44	2.88	5.77	5	U	SW6010C	6I08012	09/14/16 16:53
7440-02-0	Nickel	17.7	**0.865**	1.73	2.88	5	D	SW6010C	6I08012	09/14/16 16:53
7440-09-7	Potassium	2730	**288**	865	1440	5	D	SW6010C	6I08012	09/14/16 16:53
7782-49-2	Selenium		0.865	1.44	2.88	5	U	SW6010C	6I08012	09/14/16 16:53
7440-22-4	Silver		0.288	0.577	2.88	5	U	SW6010C	6I08012	09/14/16 16:53
7440-23-5	Sodium	1260	**288**	865	1440	5	J D	SW6010C	6I08012	09/14/16 16:53
7440-28-0	Thallium		0.865	1.15	2.31	5	U	SW6010C	6I08012	09/14/16 16:53
7440-62-2	Vanadium	30.5	**1.44**	2.88	3.60	5	D	SW6010C	6I08012	09/14/16 16:53
7440-66-6	Zinc	50.7	**1.44**	2.88	5.77	5	D	SW6010C	6I08012	09/14/16 16:53

ANALYSIS DATA SHEET

DSA02-SB09-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 09:07
% Solids: 53.37

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-13
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	25600	**23.3**	46.6	93.2	5	D	SW6010C	6I08012	09/14/16 16:57
7440-36-0	Antimony		2.33	3.73	4.66	5	U	SW6010C	6I08012	09/14/16 16:57
7440-38-2	Arsenic	13.2	**1.40**	2.80	4.66	5	D	SW6010C	6I08012	09/14/16 16:57
7440-39-3	Barium	45.1	**2.33**	4.66	18.6	5	D	SW6010C	6I08012	09/14/16 16:57
7440-41-7	Beryllium	1.37	**0.466**	0.932	2.33	5	J D	SW6010C	6I08012	09/14/16 16:57
7440-43-9	Cadmium		0.466	0.932	2.33	5	U	SW6010C	6I08012	09/14/16 16:57
7440-70-2	Calcium	2140	**466**	932	2330	5	J D	SW6010C	6I08012	09/14/16 16:57
7440-47-3	Chromium	47.5	**0.932**	1.86	4.66	5	D	SW6010C	6I08012	09/14/16 16:57
7440-48-4	Cobalt	15.7	**2.33**	4.66	5.83	5	D	SW6010C	6I08012	09/14/16 16:57
7440-50-8	Copper	17.8	**1.86**	3.73	4.66	5	D	SW6010C	6I08012	09/14/16 16:57
7439-89-6	Iron	42700	**14.0**	28.0	46.6	5	D	SW6010C	6I08012	09/14/16 16:57
7439-92-1	Lead	18.0	**0.699**	1.40	2.33	5	D	SW6010C	6I08012	09/14/16 16:57
7439-95-4	Magnesium	8790	**466**	1400	2330	5	D	SW6010C	6I08012	09/14/16 16:57
7439-96-5	Manganese	291	**1.40**	2.80	6.99	5	D	SW6010C	6I08012	09/14/16 16:57
7439-98-7	Molybdenum		2.33	4.66	9.32	5	U	SW6010C	6I08012	09/14/16 16:57
7440-02-0	Nickel	35.9	**1.40**	2.80	4.66	5	D	SW6010C	6I08012	09/14/16 16:57
7440-09-7	Potassium	5280	**466**	1400	2330	5	D	SW6010C	6I08012	09/14/16 16:57
7782-49-2	Selenium		1.40	2.33	4.66	5	U	SW6010C	6I08012	09/14/16 16:57
7440-22-4	Silver		0.466	0.932	4.66	5	U	SW6010C	6I08012	09/14/16 16:57
7440-23-5	Sodium	3260	**466**	1400	2330	5	D	SW6010C	6I08012	09/14/16 16:57
7440-28-0	Thallium		1.40	1.86	3.73	5	U	SW6010C	6I08012	09/14/16 16:57
7440-62-2	Vanadium	58.0	**2.33**	4.66	5.83	5	D	SW6010C	6I08012	09/14/16 16:57
7440-66-6	Zinc	111	**2.33**	4.66	9.32	5	D	SW6010C	6I08012	09/14/16 16:57

ANALYSIS DATA SHEET

DSA02-SB10-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 09:19
% Solids: 52.46

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-14
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	25100	**23.2**	46.5	93.0	5	D	SW6010C	6I08012	09/14/16 17:01
7440-36-0	Antimony		2.32	3.72	4.65	5	U	SW6010C	6I08012	09/14/16 17:01
7440-38-2	Arsenic	26.5	**1.39**	2.79	4.65	5	D	SW6010C	6I08012	09/14/16 17:01
7440-39-3	Barium	41.8	**2.32**	4.65	18.6	5	D	SW6010C	6I08012	09/14/16 17:01
7440-41-7	Beryllium	1.20	**0.465**	0.930	2.32	5	J D	SW6010C	6I08012	09/14/16 17:01
7440-43-9	Cadmium		0.465	0.930	2.32	5	U	SW6010C	6I08012	09/14/16 17:01
7440-70-2	Calcium	1780	**465**	930	2320	5	J D	SW6010C	6I08012	09/14/16 17:01
7440-47-3	Chromium	43.5	**0.930**	1.86	4.65	5	D	SW6010C	6I08012	09/14/16 17:01
7440-48-4	Cobalt	14.7	**2.32**	4.65	5.81	5	D	SW6010C	6I08012	09/14/16 17:01
7440-50-8	Copper	13.3	**1.86**	3.72	4.65	5	D	SW6010C	6I08012	09/14/16 17:01
7439-89-6	Iron	57500	**13.9**	27.9	46.5	5	D	SW6010C	6I08012	09/14/16 17:01
7439-92-1	Lead	16.0	**0.697**	1.39	2.32	5	D	SW6010C	6I08012	09/14/16 17:01
7439-95-4	Magnesium	7160	**465**	1390	2320	5	D	SW6010C	6I08012	09/14/16 17:01
7439-96-5	Manganese	314	**1.39**	2.79	6.97	5	D	SW6010C	6I08012	09/14/16 17:01
7439-98-7	Molybdenum	6.91	**2.32**	4.65	9.30	5	J D	SW6010C	6I08012	09/14/16 17:01
7440-02-0	Nickel	32.7	**1.39**	2.79	4.65	5	D	SW6010C	6I08012	09/14/16 17:01
7440-09-7	Potassium	5020	**465**	1390	2320	5	D	SW6010C	6I08012	09/14/16 17:01
7782-49-2	Selenium		1.39	2.32	4.65	5	U	SW6010C	6I08012	09/14/16 17:01
7440-22-4	Silver		0.465	0.930	4.65	5	U	SW6010C	6I08012	09/14/16 17:01
7440-23-5	Sodium	2840	**465**	1390	2320	5	D	SW6010C	6I08012	09/14/16 17:01
7440-28-0	Thallium		1.39	1.86	3.72	5	U	SW6010C	6I08012	09/14/16 17:01
7440-62-2	Vanadium	52.1	**2.32**	4.65	5.81	5	D	SW6010C	6I08012	09/14/16 17:01
7440-66-6	Zinc	96.0	**2.32**	4.65	9.30	5	D	SW6010C	6I08012	09/14/16 17:01

ANALYSIS DATA SHEET

DSA02-SB11-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 09:55
% Solids: 46.75

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-15
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	24500	**26.1**	52.2	104	5	D	SW6010C	6I08012	09/14/16 17:06
7440-36-0	Antimony		2.61	4.17	5.22	5	U	SW6010C	6I08012	09/14/16 17:06
7440-38-2	Arsenic	19.2	**1.57**	3.13	5.22	5	D	SW6010C	6I08012	09/14/16 17:06
7440-39-3	Barium	41.5	**2.61**	5.22	20.9	5	D	SW6010C	6I08012	09/14/16 17:06
7440-41-7	Beryllium	1.47	**0.522**	1.04	2.61	5	J D	SW6010C	6I08012	09/14/16 17:06
7440-43-9	Cadmium		0.522	1.04	2.61	5	U	SW6010C	6I08012	09/14/16 17:06
7440-70-2	Calcium	2270	**522**	1040	2610	5	J D	SW6010C	6I08012	09/14/16 17:06
7440-47-3	Chromium	45.4	**1.04**	2.09	5.22	5	D	SW6010C	6I08012	09/14/16 17:06
7440-48-4	Cobalt	17.8	**2.61**	5.22	6.52	5	D	SW6010C	6I08012	09/14/16 17:06
7440-50-8	Copper	16.8	**2.09**	4.17	5.22	5	D	SW6010C	6I08012	09/14/16 17:06
7439-89-6	Iron	55800	**15.7**	31.3	52.2	5	D	SW6010C	6I08012	09/14/16 17:06
7439-92-1	Lead	17.0	**0.783**	1.57	2.61	5	D	SW6010C	6I08012	09/14/16 17:06
7439-95-4	Magnesium	8170	**522**	1570	2610	5	D	SW6010C	6I08012	09/14/16 17:06
7439-96-5	Manganese	841	**1.57**	3.13	7.83	5	D	SW6010C	6I08012	09/14/16 17:06
7439-98-7	Molybdenum	6.65	**2.61**	5.22	10.4	5	J D	SW6010C	6I08012	09/14/16 17:06
7440-02-0	Nickel	33.8	**1.57**	3.13	5.22	5	D	SW6010C	6I08012	09/14/16 17:06
7440-09-7	Potassium	5010	**522**	1570	2610	5	D	SW6010C	6I08012	09/14/16 17:06
7782-49-2	Selenium		1.57	2.61	5.22	5	U	SW6010C	6I08012	09/14/16 17:06
7440-22-4	Silver		0.522	1.04	5.22	5	U	SW6010C	6I08012	09/14/16 17:06
7440-23-5	Sodium	3070	**522**	1570	2610	5	D	SW6010C	6I08012	09/14/16 17:06
7440-28-0	Thallium		1.57	2.09	4.17	5	U	SW6010C	6I08012	09/14/16 17:06
7440-62-2	Vanadium	56.2	**2.61**	5.22	6.52	5	D	SW6010C	6I08012	09/14/16 17:06
7440-66-6	Zinc	102	**2.61**	5.22	10.4	5	D	SW6010C	6I08012	09/14/16 17:06

ANALYSIS DATA SHEET

DSA02-SB12-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 11:44
% Solids: 55.29

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-16
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	23100	**22.3**	44.5	89.1	5	D	SW6010C	6I08012	09/14/16 17:10
7440-36-0	Antimony		2.23	3.56	4.45	5	U	SW6010C	6I08012	09/14/16 17:10
7440-38-2	Arsenic	16.5	**1.34**	2.67	4.45	5	D	SW6010C	6I08012	09/14/16 17:10
7440-39-3	Barium	39.0	**2.23**	4.45	17.8	5	D	SW6010C	6I08012	09/14/16 17:10
7440-41-7	Beryllium	1.23	**0.445**	0.891	2.23	5	J D	SW6010C	6I08012	09/14/16 17:10
7440-43-9	Cadmium		0.445	0.891	2.23	5	U	SW6010C	6I08012	09/14/16 17:10
7440-70-2	Calcium	2040	**445**	891	2230	5	J D	SW6010C	6I08012	09/14/16 17:10
7440-47-3	Chromium	43.9	**0.891**	1.78	4.45	5	D	SW6010C	6I08012	09/14/16 17:10
7440-48-4	Cobalt	13.2	**2.23**	4.45	5.57	5	D	SW6010C	6I08012	09/14/16 17:10
7440-50-8	Copper	16.4	**1.78**	3.56	4.45	5	D	SW6010C	6I08012	09/14/16 17:10
7439-89-6	Iron	48600	**13.4**	26.7	44.5	5	D	SW6010C	6I08012	09/14/16 17:10
7439-92-1	Lead	16.6	**0.668**	1.34	2.23	5	D	SW6010C	6I08012	09/14/16 17:10
7439-95-4	Magnesium	7390	**445**	1340	2230	5	D	SW6010C	6I08012	09/14/16 17:10
7439-96-5	Manganese	645	**1.34**	2.67	6.68	5	D	SW6010C	6I08012	09/14/16 17:10
7439-98-7	Molybdenum	3.02	**2.23**	4.45	8.91	5	J D	SW6010C	6I08012	09/14/16 17:10
7440-02-0	Nickel	31.0	**1.34**	2.67	4.45	5	D	SW6010C	6I08012	09/14/16 17:10
7440-09-7	Potassium	4620	**445**	1340	2230	5	D	SW6010C	6I08012	09/14/16 17:10
7782-49-2	Selenium		1.34	2.23	4.45	5	U	SW6010C	6I08012	09/14/16 17:10
7440-22-4	Silver		0.445	0.891	4.45	5	U	SW6010C	6I08012	09/14/16 17:10
7440-23-5	Sodium	2840	**445**	1340	2230	5	D	SW6010C	6I08012	09/14/16 17:10
7440-28-0	Thallium		1.34	1.78	3.56	5	U	SW6010C	6I08012	09/14/16 17:10
7440-62-2	Vanadium	53.4	**2.23**	4.45	5.57	5	D	SW6010C	6I08012	09/14/16 17:10
7440-66-6	Zinc	95.0	**2.23**	4.45	8.91	5	D	SW6010C	6I08012	09/14/16 17:10

ANALYSIS DATA SHEET

DSA02-SB13-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 12:34
% Solids: 37.62

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-17
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	24600	**32.7**	65.5	131	5	D	SW6010C	6I08012	09/14/16 17:15
7440-36-0	Antimony		3.27	5.24	6.55	5	U	SW6010C	6I08012	09/14/16 17:15
7440-38-2	Arsenic	18.1	**1.96**	3.93	6.55	5	D	SW6010C	6I08012	09/14/16 17:15
7440-39-3	Barium	45.4	**3.27**	6.55	26.2	5	D	SW6010C	6I08012	09/14/16 17:15
7440-41-7	Beryllium	1.25	**0.655**	1.31	3.27	5	J D	SW6010C	6I08012	09/14/16 17:15
7440-43-9	Cadmium		0.655	1.31	3.27	5	U	SW6010C	6I08012	09/14/16 17:15
7440-70-2	Calcium	3880	**655**	1310	3270	5	D	SW6010C	6I08012	09/14/16 17:15
7440-47-3	Chromium	45.1	**1.31**	2.62	6.55	5	D	SW6010C	6I08012	09/14/16 17:15
7440-48-4	Cobalt	8.87	**3.27**	6.55	8.19	5	D	SW6010C	6I08012	09/14/16 17:15
7440-50-8	Copper	9.34	**2.62**	5.24	6.55	5	D	SW6010C	6I08012	09/14/16 17:15
7439-89-6	Iron	34800	**19.6**	39.3	65.5	5	D	SW6010C	6I08012	09/14/16 17:15
7439-92-1	Lead	11.7	**0.982**	1.96	3.27	5	D	SW6010C	6I08012	09/14/16 17:15
7439-95-4	Magnesium	7930	**655**	1960	3270	5	D	SW6010C	6I08012	09/14/16 17:15
7439-96-5	Manganese	359	**1.96**	3.93	9.82	5	D	SW6010C	6I08012	09/14/16 17:15
7439-98-7	Molybdenum	10.7	**3.27**	6.55	13.1	5	J D	SW6010C	6I08012	09/14/16 17:15
7440-02-0	Nickel	29.3	**1.96**	3.93	6.55	5	D	SW6010C	6I08012	09/14/16 17:15
7440-09-7	Potassium	5690	**655**	1960	3270	5	D	SW6010C	6I08012	09/14/16 17:15
7782-49-2	Selenium		1.96	3.27	6.55	5	U	SW6010C	6I08012	09/14/16 17:15
7440-22-4	Silver		0.655	1.31	6.55	5	U	SW6010C	6I08012	09/14/16 17:15
7440-23-5	Sodium	12300	**655**	1960	3270	5	D	SW6010C	6I08012	09/14/16 17:15
7440-28-0	Thallium		1.96	2.62	5.24	5	U	SW6010C	6I08012	09/14/16 17:15
7440-62-2	Vanadium	58.9	**3.27**	6.55	8.19	5	D	SW6010C	6I08012	09/14/16 17:15
7440-66-6	Zinc	82.2	**3.27**	6.55	13.1	5	D	SW6010C	6I08012	09/14/16 17:15

ANALYSIS DATA SHEET

DSA02-SB14-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 13:14
% Solids: 33.69

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-18
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	22400	**37.1**	74.2	148	5	D	SW6010C	6I08012	09/14/16 17:19
7440-36-0	Antimony		3.71	5.94	7.42	5	U	SW6010C	6I08012	09/14/16 17:19
7440-38-2	Arsenic	13.8	**2.23**	4.45	7.42	5	D	SW6010C	6I08012	09/14/16 17:19
7440-39-3	Barium	42.0	**3.71**	7.42	29.7	5	D	SW6010C	6I08012	09/14/16 17:19
7440-41-7	Beryllium	1.13	**0.742**	1.48	3.71	5	J D	SW6010C	6I08012	09/14/16 17:19
7440-43-9	Cadmium		0.742	1.48	3.71	5	U	SW6010C	6I08012	09/14/16 17:19
7440-70-2	Calcium	3470	**742**	1480	3710	5	J D	SW6010C	6I08012	09/14/16 17:19
7440-47-3	Chromium	40.7	**1.48**	2.97	7.42	5	D	SW6010C	6I08012	09/14/16 17:19
7440-48-4	Cobalt	8.98	**3.71**	7.42	9.28	5	J D	SW6010C	6I08012	09/14/16 17:19
7440-50-8	Copper	11.8	**2.97**	5.94	7.42	5	D	SW6010C	6I08012	09/14/16 17:19
7439-89-6	Iron	43200	**22.3**	44.5	74.2	5	D	SW6010C	6I08012	09/14/16 17:19
7439-92-1	Lead	14.9	**1.11**	2.23	3.71	5	D	SW6010C	6I08012	09/14/16 17:19
7439-95-4	Magnesium	7270	**742**	2230	3710	5	D	SW6010C	6I08012	09/14/16 17:19
7439-96-5	Manganese	240	**2.23**	4.45	11.1	5	D	SW6010C	6I08012	09/14/16 17:19
7439-98-7	Molybdenum	6.27	**3.71**	7.42	14.8	5	J D	SW6010C	6I08012	09/14/16 17:19
7440-02-0	Nickel	27.3	**2.23**	4.45	7.42	5	D	SW6010C	6I08012	09/14/16 17:19
7440-09-7	Potassium	5040	**742**	2230	3710	5	D	SW6010C	6I08012	09/14/16 17:19
7782-49-2	Selenium		2.23	3.71	7.42	5	U	SW6010C	6I08012	09/14/16 17:19
7440-22-4	Silver		0.742	1.48	7.42	5	U	SW6010C	6I08012	09/14/16 17:19
7440-23-5	Sodium	12600	**742**	2230	3710	5	D	SW6010C	6I08012	09/14/16 17:19
7440-28-0	Thallium		2.23	2.97	5.94	5	U	SW6010C	6I08012	09/14/16 17:19
7440-62-2	Vanadium	58.6	**3.71**	7.42	9.28	5	D	SW6010C	6I08012	09/14/16 17:19
7440-66-6	Zinc	83.5	**3.71**	7.42	14.8	5	D	SW6010C	6I08012	09/14/16 17:19

ANALYSIS DATA SHEET

DSA02-SB15-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 13:28
% Solids: 29.79

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-19
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	23600	**41.5**	83.1	166	5	D	SW6010C	6I08012	09/14/16 17:23
7440-36-0	Antimony		4.15	6.65	8.31	5	U	SW6010C	6I08012	09/14/16 17:23
7440-38-2	Arsenic	7.20	**2.49**	4.99	8.31	5	J D	SW6010C	6I08012	09/14/16 17:23
7440-39-3	Barium	46.3	**4.15**	8.31	33.2	5	D	SW6010C	6I08012	09/14/16 17:23
7440-41-7	Beryllium		0.831	1.66	4.15	5	U	SW6010C	6I08012	09/14/16 17:23
7440-43-9	Cadmium		0.831	1.66	4.15	5	U	SW6010C	6I08012	09/14/16 17:23
7440-70-2	Calcium	4130	**831**	1660	4150	5	J D	SW6010C	6I08012	09/14/16 17:23
7440-47-3	Chromium	44.1	**1.66**	3.32	8.31	5	D	SW6010C	6I08012	09/14/16 17:23
7440-48-4	Cobalt	6.97	**4.15**	8.31	10.4	5	J D	SW6010C	6I08012	09/14/16 17:23
7440-50-8	Copper	12.3	**3.32**	6.65	8.31	5	D	SW6010C	6I08012	09/14/16 17:23
7439-89-6	Iron	30100	**24.9**	49.9	83.1	5	D	SW6010C	6I08012	09/14/16 17:23
7439-92-1	Lead	14.1	**1.25**	2.49	4.15	5	D	SW6010C	6I08012	09/14/16 17:23
7439-95-4	Magnesium	7780	**831**	2490	4150	5	D	SW6010C	6I08012	09/14/16 17:23
7439-96-5	Manganese	373	**2.49**	4.99	12.5	5	D	SW6010C	6I08012	09/14/16 17:23
7439-98-7	Molybdenum	6.73	**4.15**	8.31	16.6	5	J D	SW6010C	6I08012	09/14/16 17:23
7440-02-0	Nickel	22.8	**2.49**	4.99	8.31	5	D	SW6010C	6I08012	09/14/16 17:23
7440-09-7	Potassium	5360	**831**	2490	4150	5	D	SW6010C	6I08012	09/14/16 17:23
7782-49-2	Selenium		2.49	4.15	8.31	5	U	SW6010C	6I08012	09/14/16 17:23
7440-22-4	Silver		0.831	1.66	8.31	5	U	SW6010C	6I08012	09/14/16 17:23
7440-23-5	Sodium	15300	**831**	2490	4150	5	D	SW6010C	6I08012	09/14/16 17:23
7440-28-0	Thallium		2.49	3.32	6.65	5	U	SW6010C	6I08012	09/14/16 17:23
7440-62-2	Vanadium	54.5	**4.15**	8.31	10.4	5	D	SW6010C	6I08012	09/14/16 17:23
7440-66-6	Zinc	60.5	**4.15**	8.31	16.6	5	D	SW6010C	6I08012	09/14/16 17:23

ANALYSIS DATA SHEET

DSA02-SB16-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 13:40
% Solids: 43.22

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-20
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	24200	**28.8**	57.6	115	5	D	SW6010C	6I08012	09/14/16 17:28
7440-36-0	Antimony		2.88	4.60	5.76	5	U	SW6010C	6I08012	09/14/16 17:28
7440-38-2	Arsenic	12.9	**1.73**	3.45	5.76	5	D	SW6010C	6I08012	09/14/16 17:28
7440-39-3	Barium	37.0	**2.88**	5.76	23.0	5	D	SW6010C	6I08012	09/14/16 17:28
7440-41-7	Beryllium	1.15	**0.576**	1.15	2.88	5	J D	SW6010C	6I08012	09/14/16 17:28
7440-43-9	Cadmium		0.576	1.15	2.88	5	U	SW6010C	6I08012	09/14/16 17:28
7440-70-2	Calcium	2610	**576**	1150	2880	5	J D	SW6010C	6I08012	09/14/16 17:28
7440-47-3	Chromium	36.8	**1.15**	2.30	5.76	5	D	SW6010C	6I08012	09/14/16 17:28
7440-48-4	Cobalt	12.0	**2.88**	5.76	7.19	5	D	SW6010C	6I08012	09/14/16 17:28
7440-50-8	Copper	12.8	**2.30**	4.60	5.76	5	D	SW6010C	6I08012	09/14/16 17:28
7439-89-6	Iron	42600	**17.3**	34.5	57.6	5	D	SW6010C	6I08012	09/14/16 17:28
7439-92-1	Lead	16.9	**0.863**	1.73	2.88	5	D	SW6010C	6I08012	09/14/16 17:28
7439-95-4	Magnesium	7470	**576**	1730	2880	5	D	SW6010C	6I08012	09/14/16 17:28
7439-96-5	Manganese	333	**1.73**	3.45	8.63	5	D	SW6010C	6I08012	09/14/16 17:28
7439-98-7	Molybdenum	5.34	**2.88**	5.76	11.5	5	J D	SW6010C	6I08012	09/14/16 17:28
7440-02-0	Nickel	36.4	**1.73**	3.45	5.76	5	D	SW6010C	6I08012	09/14/16 17:28
7440-09-7	Potassium	4930	**576**	1730	2880	5	D	SW6010C	6I08012	09/14/16 17:28
7782-49-2	Selenium	1.78	**1.73**	2.88	5.76	5	J D	SW6010C	6I08012	09/14/16 17:28
7440-22-4	Silver		0.576	1.15	5.76	5	U	SW6010C	6I08012	09/14/16 17:28
7440-23-5	Sodium	12700	**576**	1730	2880	5	D	SW6010C	6I08012	09/14/16 17:28
7440-28-0	Thallium		1.73	2.30	4.60	5	U	SW6010C	6I08012	09/14/16 17:28
7440-62-2	Vanadium	44.0	**2.88**	5.76	7.19	5	D	SW6010C	6I08012	09/14/16 17:28
7440-66-6	Zinc	97.0	**2.88**	5.76	11.5	5	D	SW6010C	6I08012	09/14/16 17:28

ANALYSIS DATA SHEET

Blank

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
% Solids:

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 6H29015-BLK1

CAS NO.	Analyte	Conc. (mg/Kg wet)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	ND	2.50	5.00	10.0	1	U	SW6010C	6H29015	09/14/16 13:59
7440-36-0	Antimony	ND	0.250	0.400	0.500	1	U	SW6010C	6H29015	09/14/16 13:59
7440-38-2	Arsenic	ND	0.150	0.300	0.500	1	U	SW6010C	6H29015	09/14/16 13:59
7440-39-3	Barium	ND	0.250	0.500	2.00	1	U	SW6010C	6H29015	09/14/16 13:59
7440-41-7	Beryllium	ND	0.0500	0.100	0.250	1	U	SW6010C	6H29015	09/14/16 13:59
7440-43-9	Cadmium	ND	0.0500	0.100	0.250	1	U	SW6010C	6H29015	09/14/16 13:59
7440-70-2	Calcium	ND	50.0	100	250	1	U	SW6010C	6H29015	09/14/16 13:59
7440-47-3	Chromium	ND	0.100	0.200	0.500	1	U	SW6010C	6H29015	09/14/16 13:59
7440-48-4	Cobalt	ND	0.250	0.500	0.625	1	U	SW6010C	6H29015	09/14/16 13:59
7440-50-8	Copper	ND	0.200	0.400	0.500	1	U	SW6010C	6H29015	09/14/16 13:59
7439-89-6	Iron	ND	1.50	3.00	5.00	1	U	SW6010C	6H29015	09/14/16 13:59
7439-92-1	Lead	ND	0.0750	0.150	0.250	1	U	SW6010C	6H29015	09/14/16 13:59
7439-95-4	Magnesium	ND	50.0	150	250	1	U	SW6010C	6H29015	09/14/16 13:59
7439-96-5	Manganese	ND	0.150	0.300	0.750	1	U	SW6010C	6H29015	09/14/16 13:59
7439-98-7	Molybdenum	ND	0.250	0.500	1.00	1	U	SW6010C	6H29015	09/14/16 13:59
7440-02-0	Nickel	ND	0.150	0.300	0.500	1	U	SW6010C	6H29015	09/14/16 13:59
7440-09-7	Potassium	ND	50.0	150	250	1	U	SW6010C	6H29015	09/14/16 13:59
7782-49-2	Selenium	ND	0.150	0.250	0.500	1	U	SW6010C	6H29015	09/14/16 13:59
7440-22-4	Silver	ND	0.0500	0.100	0.500	1	U	SW6010C	6H29015	09/14/16 13:59
7440-23-5	Sodium	ND	50.0	150	250	1	U	SW6010C	6H29015	09/14/16 13:59
7440-28-0	Thallium	ND	0.150	0.200	0.400	1	U	SW6010C	6H29015	09/14/16 13:59
7440-62-2	Vanadium	ND	0.250	0.500	0.625	1	U	SW6010C	6H29015	09/14/16 13:59
7440-66-6	Zinc	0.252	**0.250**	0.500	1.00	1	J	SW6010C	6H29015	09/14/16 13:59

ANALYSIS DATA SHEET

LCS

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Matrix: Solid
Laboratory ID: 6H29015-BS1
% Solids:

CAS NO.	Analyte	Conc. (mg/Kg wet)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	101.6	**2.50**	5.00	10.0	1		SW6010C	6H29015	09/14/16 14:04
7440-36-0	Antimony	12.02	**0.250**	0.400	0.500	1		SW6010C	6H29015	09/14/16 14:04
7440-38-2	Arsenic	12.51	**0.150**	0.300	0.500	1		SW6010C	6H29015	09/14/16 14:04
7440-39-3	Barium	98.54	**0.250**	0.500	2.00	1		SW6010C	6H29015	09/14/16 14:04
7440-41-7	Beryllium	2.466	**0.0500**	0.100	0.250	1		SW6010C	6H29015	09/14/16 14:04
7440-43-9	Cadmium	6.449	**0.0500**	0.100	0.250	1		SW6010C	6H29015	09/14/16 14:04
7440-70-2	Calcium	262.8	**50.0**	100	250	1		SW6010C	6H29015	09/14/16 14:04
7440-47-3	Chromium	9.778	**0.100**	0.200	0.500	1		SW6010C	6H29015	09/14/16 14:04
7440-48-4	Cobalt	25.20	**0.250**	0.500	0.625	1		SW6010C	6H29015	09/14/16 14:04
7440-50-8	Copper	12.43	**0.200**	0.400	0.500	1		SW6010C	6H29015	09/14/16 14:04
7439-89-6	Iron	50.10	**1.50**	3.00	5.00	1		SW6010C	6H29015	09/14/16 14:04
7439-92-1	Lead	12.46	**0.0750**	0.150	0.250	1		SW6010C	6H29015	09/14/16 14:04
7439-95-4	Magnesium	248.7	**50.0**	150	250	1	J	SW6010C	6H29015	09/14/16 14:04
7439-96-5	Manganese	24.58	**0.150**	0.300	0.750	1		SW6010C	6H29015	09/14/16 14:04
7439-98-7	Molybdenum	50.80	**0.250**	0.500	1.00	1		SW6010C	6H29015	09/14/16 14:04
7440-02-0	Nickel	25.41	**0.150**	0.300	0.500	1		SW6010C	6H29015	09/14/16 14:04
7440-09-7	Potassium	248.9	**50.0**	150	250	1	J	SW6010C	6H29015	09/14/16 14:04
7782-49-2	Selenium	12.14	**0.150**	0.250	0.500	1		SW6010C	6H29015	09/14/16 14:04
7440-22-4	Silver	11.57	**0.0500**	0.100	0.500	1		SW6010C	6H29015	09/14/16 14:04
7440-23-5	Sodium	262.9	**50.0**	150	250	1		SW6010C	6H29015	09/14/16 14:04
7440-28-0	Thallium	12.84	**0.150**	0.200	0.400	1		SW6010C	6H29015	09/14/16 14:04
7440-62-2	Vanadium	24.52	**0.250**	0.500	0.625	1		SW6010C	6H29015	09/14/16 14:04
7440-66-6	Zinc	25.48	**0.250**	0.500	1.00	1		SW6010C	6H29015	09/14/16 14:04

ANALYSIS DATA SHEET

Blank

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
% Solids:

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 6I08012-BLK1

CAS NO.	Analyte	Conc. (mg/Kg wet)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	ND	2.50	5.00	10.0	1	U	SW6010C	6I08012	09/14/16 16:44
7440-36-0	Antimony	ND	0.250	0.400	0.500	1	U	SW6010C	6I08012	09/14/16 16:44
7440-38-2	Arsenic	ND	0.150	0.300	0.500	1	U	SW6010C	6I08012	09/14/16 16:44
7440-39-3	Barium	ND	0.250	0.500	2.00	1	U	SW6010C	6I08012	09/14/16 16:44
7440-41-7	Beryllium	ND	0.0500	0.100	0.250	1	U	SW6010C	6I08012	09/14/16 16:44
7440-43-9	Cadmium	ND	0.0500	0.100	0.250	1	U	SW6010C	6I08012	09/14/16 16:44
7440-70-2	Calcium	ND	50.0	100	250	1	U	SW6010C	6I08012	09/14/16 16:44
7440-47-3	Chromium	ND	0.100	0.200	0.500	1	U	SW6010C	6I08012	09/14/16 16:44
7440-48-4	Cobalt	ND	0.250	0.500	0.625	1	U	SW6010C	6I08012	09/14/16 16:44
7440-50-8	Copper	ND	0.200	0.400	0.500	1	U	SW6010C	6I08012	09/14/16 16:44
7439-89-6	Iron	ND	1.50	3.00	5.00	1	U	SW6010C	6I08012	09/14/16 16:44
7439-92-1	Lead	ND	0.0750	0.150	0.250	1	U	SW6010C	6I08012	09/14/16 16:44
7439-95-4	Magnesium	ND	50.0	150	250	1	U	SW6010C	6I08012	09/14/16 16:44
7439-96-5	Manganese	ND	0.150	0.300	0.750	1	U	SW6010C	6I08012	09/14/16 16:44
7439-98-7	Molybdenum	ND	0.250	0.500	1.00	1	U	SW6010C	6I08012	09/14/16 16:44
7440-02-0	Nickel	ND	0.150	0.300	0.500	1	U	SW6010C	6I08012	09/14/16 16:44
7440-09-7	Potassium	ND	50.0	150	250	1	U	SW6010C	6I08012	09/14/16 16:44
7782-49-2	Selenium	ND	0.150	0.250	0.500	1	U	SW6010C	6I08012	09/14/16 16:44
7440-22-4	Silver	ND	0.0500	0.100	0.500	1	U	SW6010C	6I08012	09/14/16 16:44
7440-23-5	Sodium	ND	50.0	150	250	1	U	SW6010C	6I08012	09/14/16 16:44
7440-28-0	Thallium	ND	0.150	0.200	0.400	1	U	SW6010C	6I08012	09/14/16 16:44
7440-62-2	Vanadium	ND	0.250	0.500	0.625	1	U	SW6010C	6I08012	09/14/16 16:44
7440-66-6	Zinc	0.365	**0.250**	0.500	1.00	1	J	SW6010C	6I08012	09/14/16 16:44

ANALYSIS DATA SHEET

LCS

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Matrix: Solid
Laboratory ID: 6I08012-BS1
% Solids:

CAS NO.	Analyte	Conc. (mg/Kg wet)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	102.6	**2.50**	5.00	10.0	1		SW6010C	6I08012	09/14/16 16:48
7440-36-0	Antimony	12.75	**0.250**	0.400	0.500	1		SW6010C	6I08012	09/14/16 16:48
7440-38-2	Arsenic	13.33	**0.150**	0.300	0.500	1		SW6010C	6I08012	09/14/16 16:48
7440-39-3	Barium	103.0	**0.250**	0.500	2.00	1		SW6010C	6I08012	09/14/16 16:48
7440-41-7	Beryllium	2.552	**0.0500**	0.100	0.250	1		SW6010C	6I08012	09/14/16 16:48
7440-43-9	Cadmium	6.857	**0.0500**	0.100	0.250	1		SW6010C	6I08012	09/14/16 16:48
7440-70-2	Calcium	271.6	**50.0**	100	250	1		SW6010C	6I08012	09/14/16 16:48
7440-47-3	Chromium	10.17	**0.100**	0.200	0.500	1		SW6010C	6I08012	09/14/16 16:48
7440-48-4	Cobalt	26.30	**0.250**	0.500	0.625	1		SW6010C	6I08012	09/14/16 16:48
7440-50-8	Copper	13.42	**0.200**	0.400	0.500	1		SW6010C	6I08012	09/14/16 16:48
7439-89-6	Iron	52.10	**1.50**	3.00	5.00	1		SW6010C	6I08012	09/14/16 16:48
7439-92-1	Lead	13.27	**0.0750**	0.150	0.250	1		SW6010C	6I08012	09/14/16 16:48
7439-95-4	Magnesium	252.6	**50.0**	150	250	1		SW6010C	6I08012	09/14/16 16:48
7439-96-5	Manganese	25.84	**0.150**	0.300	0.750	1		SW6010C	6I08012	09/14/16 16:48
7439-98-7	Molybdenum	53.25	**0.250**	0.500	1.00	1		SW6010C	6I08012	09/14/16 16:48
7440-02-0	Nickel	26.67	**0.150**	0.300	0.500	1		SW6010C	6I08012	09/14/16 16:48
7440-09-7	Potassium	260.1	**50.0**	150	250	1		SW6010C	6I08012	09/14/16 16:48
7782-49-2	Selenium	13.06	**0.150**	0.250	0.500	1		SW6010C	6I08012	09/14/16 16:48
7440-22-4	Silver	12.44	**0.0500**	0.100	0.500	1		SW6010C	6I08012	09/14/16 16:48
7440-23-5	Sodium	256.6	**50.0**	150	250	1		SW6010C	6I08012	09/14/16 16:48
7440-28-0	Thallium	13.76	**0.150**	0.200	0.400	1		SW6010C	6I08012	09/14/16 16:48
7440-62-2	Vanadium	25.60	**0.250**	0.500	0.625	1		SW6010C	6I08012	09/14/16 16:48
7440-66-6	Zinc	26.78	**0.250**	0.500	1.00	1		SW6010C	6I08012	09/14/16 16:48

INITIAL AND CONTINUING CALIBRATION CHECK

SW6010C

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP

SDG: 1608251
Project: Raritan Arsenal - Phase III
Calibration: 6258003
Sequence: 6I25804

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
6I25804-ICV1	Aluminum	10000	9799	98.0	ug/L	+/- 10.00%
	Antimony	1000	1011	101	ug/L	+/- 10.00%
	Arsenic	1000	1051	105	ug/L	+/- 10.00%
	Barium	1000	967.5	96.8	ug/L	+/- 10.00%
	Beryllium	1000	1019	102	ug/L	+/- 10.00%
	Cadmium	1000	1009	101	ug/L	+/- 10.00%
	Calcium	50000	52300	105	ug/L	+/- 10.00%
	Chromium	1000	962.3	96.2	ug/L	+/- 10.00%
	Cobalt	1000	953.7	95.4	ug/L	+/- 10.00%
	Copper	1000	1014	101	ug/L	+/- 10.00%
	Iron	10000	10080	101	ug/L	+/- 10.00%
	Lead	1000	963.0	96.3	ug/L	+/- 10.00%
	Magnesium	50000	47800	95.6	ug/L	+/- 10.00%
	Manganese	1000	958.9	95.9	ug/L	+/- 10.00%
	Molybdenum	1000	1007	101	ug/L	+/- 10.00%
	Nickel	1000	987.0	98.7	ug/L	+/- 10.00%
	Potassium	10000	10260	103	ug/L	+/- 10.00%
	Selenium	1000	1036	104	ug/L	+/- 10.00%
	Silver	500.0	476.8	95.4	ug/L	+/- 10.00%
	Sodium	50000	50810	102	ug/L	+/- 10.00%
	Thallium	1000	1010	101	ug/L	+/- 10.00%
	Vanadium	1000	999.2	99.9	ug/L	+/- 10.00%
	Zinc	1000	1000	100	ug/L	+/- 10.00%
6I25804-CCV1	Aluminum	10000	10020	100	ug/L	+/- 10.00%
	Antimony	1000	998.5	99.9	ug/L	+/- 10.00%
	Arsenic	1000	1040	104	ug/L	+/- 10.00%
	Barium	1000	958.6	95.9	ug/L	+/- 10.00%
	Beryllium	1000	1013	101	ug/L	+/- 10.00%
	Cadmium	1000	1008	101	ug/L	+/- 10.00%
	Calcium	50000	50430	101	ug/L	+/- 10.00%
	Chromium	1000	961.3	96.1	ug/L	+/- 10.00%
	Cobalt	1000	955.2	95.5	ug/L	+/- 10.00%
	Copper	1000	1012	101	ug/L	+/- 10.00%
	Iron	10000	9769	97.7	ug/L	+/- 10.00%
	Lead	1000	962.1	96.2	ug/L	+/- 10.00%
	Magnesium	50000	47310	94.6	ug/L	+/- 10.00%
	Manganese	1000	977.3	97.7	ug/L	+/- 10.00%
	Molybdenum	1000	993.5	99.4	ug/L	+/- 10.00%
	Nickel	1000	986.8	98.7	ug/L	+/- 10.00%

INITIAL AND CONTINUING CALIBRATION CHECK

SW6010C

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP

SDG: 1608251
Project: Raritan Arsenal - Phase III
Calibration: 6258003
Sequence: 6I25804

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
6I25804-CCV1	Potassium	10000	10290	103	ug/L	+/- 10.00%
	Selenium	1000	1030	103	ug/L	+/- 10.00%
	Silver	500.0	476.0	95.2	ug/L	+/- 10.00%
	Sodium	50000	50210	100	ug/L	+/- 10.00%
	Thallium	1000	998.0	99.8	ug/L	+/- 10.00%
	Vanadium	1000	976.7	97.7	ug/L	+/- 10.00%
	Zinc	1000	976.9	97.7	ug/L	+/- 10.00%
6I25804-CCV3	Aluminum	10000	9969	99.7	ug/L	+/- 10.00%
	Antimony	1000	995.4	99.5	ug/L	+/- 10.00%
	Arsenic	1000	1032	103	ug/L	+/- 10.00%
	Barium	1000	951.5	95.2	ug/L	+/- 10.00%
	Beryllium	1000	1016	102	ug/L	+/- 10.00%
	Cadmium	1000	1020	102	ug/L	+/- 10.00%
	Calcium	50000	50700	101	ug/L	+/- 10.00%
	Chromium	1000	986.2	98.6	ug/L	+/- 10.00%
	Cobalt	1000	957.6	95.8	ug/L	+/- 10.00%
	Copper	1000	1010	101	ug/L	+/- 10.00%
	Iron	10000	9820	98.2	ug/L	+/- 10.00%
	Lead	1000	960.4	96.0	ug/L	+/- 10.00%
	Magnesium	50000	47580	95.2	ug/L	+/- 10.00%
	Manganese	1000	972.5	97.2	ug/L	+/- 10.00%
	Molybdenum	1000	1007	101	ug/L	+/- 10.00%
	Nickel	1000	978.6	97.9	ug/L	+/- 10.00%
	Potassium	10000	10140	101	ug/L	+/- 10.00%
	Selenium	1000	1032	103	ug/L	+/- 10.00%
	Silver	500.0	475.8	95.2	ug/L	+/- 10.00%
	Sodium	50000	50170	100	ug/L	+/- 10.00%
	Thallium	1000	995.1	99.5	ug/L	+/- 10.00%
	Vanadium	1000	998.2	99.8	ug/L	+/- 10.00%
	Zinc	1000	992.2	99.2	ug/L	+/- 10.00%
6I25804-CCV4	Aluminum	10000	9924	99.2	ug/L	+/- 10.00%
	Antimony	1000	1006	101	ug/L	+/- 10.00%
	Arsenic	1000	1043	104	ug/L	+/- 10.00%
	Barium	1000	954.7	95.5	ug/L	+/- 10.00%
	Beryllium	1000	1016	102	ug/L	+/- 10.00%
	Cadmium	1000	1031	103	ug/L	+/- 10.00%
	Calcium	50000	50830	102	ug/L	+/- 10.00%
	Chromium	1000	982.8	98.3	ug/L	+/- 10.00%
	Cobalt	1000	962.6	96.3	ug/L	+/- 10.00%

INITIAL AND CONTINUING CALIBRATION CHECK

SW6010C

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP

SDG: 1608251
Project: Raritan Arsenal - Phase III
Calibration: 6258003
Sequence: 6I25804

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
6I25804-CCV4	Copper	1000	1014	101	ug/L	+/- 10.00%
	Iron	10000	9886	98.9	ug/L	+/- 10.00%
	Lead	1000	967.6	96.8	ug/L	+/- 10.00%
	Magnesium	50000	47700	95.4	ug/L	+/- 10.00%
	Manganese	1000	970.9	97.1	ug/L	+/- 10.00%
	Molybdenum	1000	1014	101	ug/L	+/- 10.00%
	Nickel	1000	984.2	98.4	ug/L	+/- 10.00%
	Potassium	10000	10300	103	ug/L	+/- 10.00%
	Selenium	1000	1046	105	ug/L	+/- 10.00%
	Silver	500.0	477.0	95.4	ug/L	+/- 10.00%
	Sodium	50000	49530	99.1	ug/L	+/- 10.00%
	Thallium	1000	1009	101	ug/L	+/- 10.00%
	Vanadium	1000	992.6	99.3	ug/L	+/- 10.00%
	Zinc	1000	1004	100	ug/L	+/- 10.00%
6I25804-CCV5	Aluminum	10000	9999	100	ug/L	+/- 10.00%
	Antimony	1000	1013	101	ug/L	+/- 10.00%
	Arsenic	1000	1051	105	ug/L	+/- 10.00%
	Barium	1000	965.9	96.6	ug/L	+/- 10.00%
	Beryllium	1000	1017	102	ug/L	+/- 10.00%
	Cadmium	1000	1038	104	ug/L	+/- 10.00%
	Calcium	50000	51170	102	ug/L	+/- 10.00%
	Chromium	1000	990.2	99.0	ug/L	+/- 10.00%
	Cobalt	1000	969.1	96.9	ug/L	+/- 10.00%
	Copper	1000	1046	105	ug/L	+/- 10.00%
	Iron	10000	10100	101	ug/L	+/- 10.00%
	Lead	1000	984.6	98.5	ug/L	+/- 10.00%
	Magnesium	50000	48010	96.0	ug/L	+/- 10.00%
	Manganese	1000	988.7	98.9	ug/L	+/- 10.00%
	Molybdenum	1000	1011	101	ug/L	+/- 10.00%
	Nickel	1000	996.1	99.6	ug/L	+/- 10.00%
	Potassium	10000	10540	105	ug/L	+/- 10.00%
	Selenium	1000	1049	105	ug/L	+/- 10.00%
	Silver	500.0	489.3	97.9	ug/L	+/- 10.00%
	Sodium	50000	50120	100	ug/L	+/- 10.00%
	Thallium	1000	1020	102	ug/L	+/- 10.00%
	Vanadium	1000	1003	100	ug/L	+/- 10.00%
	Zinc	1000	1008	101	ug/L	+/- 10.00%
6I25804-CCV6	Aluminum	10000	9884	98.8	ug/L	+/- 10.00%
	Antimony	1000	995.2	99.5	ug/L	+/- 10.00%

INITIAL AND CONTINUING CALIBRATION CHECK

SW6010C

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP
SDG: 1608251
Project: Raritan Arsenal - Phase III
Calibration: 6258003
Sequence: 6I25804

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
6I25804-CCV6	Arsenic	1000	1027	103	ug/L	+/- 10.00%
	Barium	1000	941.2	94.1	ug/L	+/- 10.00%
	Beryllium	1000	1015	102	ug/L	+/- 10.00%
	Cadmium	1000	1044	104	ug/L	+/- 10.00%
	Calcium	50000	51320	103	ug/L	+/- 10.00%
	Chromium	1000	1023	102	ug/L	+/- 10.00%
	Cobalt	1000	959.9	96.0	ug/L	+/- 10.00%
	Copper	1000	1013	101	ug/L	+/- 10.00%
	Iron	10000	10170	102	ug/L	+/- 10.00%
	Lead	1000	962.2	96.2	ug/L	+/- 10.00%
	Magnesium	50000	48370	96.7	ug/L	+/- 10.00%
	Manganese	1000	963.6	96.4	ug/L	+/- 10.00%
	Molybdenum	1000	1019	102	ug/L	+/- 10.00%
	Nickel	1000	968.2	96.8	ug/L	+/- 10.00%
	Potassium	10000	10380	104	ug/L	+/- 10.00%
	Selenium	1000	1047	105	ug/L	+/- 10.00%
	Silver	500.0	480.8	96.2	ug/L	+/- 10.00%
	Sodium	50000	50420	101	ug/L	+/- 10.00%
	Thallium	1000	1000	100	ug/L	+/- 10.00%
	Vanadium	1000	1025	103	ug/L	+/- 10.00%
	Zinc	1000	1022	102	ug/L	+/- 10.00%

CRDL STANDARD

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Instrument ID: ME-ICP
Calibration: 6258003
Sequence: 6I25804

Lab Sample ID	Analyte	True	Found	%R	Units	QC Limts
6I25804-CRL1	Aluminum	200.0	197.5	98.7	ug/L	80 - 120
	Antimony	10.00	8.108	81.1	ug/L	80 - 120
	Arsenic	5.000	5.226	105	ug/L	80 - 120
	Barium	10.00	9.655	96.6	ug/L	80 - 120
	Beryllium	2.000	1.991	99.6	ug/L	80 - 120
	Cadmium	2.000	1.973	98.6	ug/L	80 - 120
	Calcium	2000	2017	101	ug/L	80 - 120
	Chromium	4.000	3.583	89.6	ug/L	80 - 120
	Cobalt	10.00	9.872	98.7	ug/L	80 - 120
	Copper	10.00	10.12	101	ug/L	80 - 120
	Iron	100.0	92.30	92.3	ug/L	80 - 120
	Lead	3.000	3.301	110	ug/L	80 - 120
	Magnesium	3000	2984	99.5	ug/L	80 - 120
	Manganese	6.000	6.062	101	ug/L	80 - 120
	Molybdenum	10.00	9.406	94.1	ug/L	80 - 120
	Nickel	6.000	5.660	94.3	ug/L	80 - 120
	Potassium	3000	3023	101	ug/L	80 - 120
	Silver	3.000	2.894	96.5	ug/L	80 - 120
	Sodium	3000	3312	110	ug/L	80 - 120
	Thallium	8.000	8.389	105	ug/L	80 - 120
	Vanadium	10.00	8.783	87.8	ug/L	80 - 120
	Zinc	10.00	9.492	94.9	ug/L	80 - 120
6I25804-CRL2	Selenium	5.000	5.931	119	ug/L	80 - 120

BLANKS
SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP
Project: Raritan Arsenal - Phase III
Sequence: 6I25804
Calibration: 6258003

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
6I25804-ICB1	Aluminum	0.1637	50.0	200	ug/L	U	SW6010C
	Antimony	-0.7246	5.00	10.0	ug/L	U	SW6010C
	Arsenic	0.4796	3.00	10.0	ug/L	U	SW6010C
	Barium	0.09004	5.00	40.0	ug/L	U	SW6010C
	Beryllium	0.1509	1.00	5.00	ug/L	U	SW6010C
	Cadmium	-0.005130	1.00	5.00	ug/L	U	SW6010C
	Calcium	-2.960	1000	5000	ug/L	U	SW6010C
	Chromium	-0.008080	2.00	10.0	ug/L	U	SW6010C
	Cobalt	0.2933	5.00	12.5	ug/L	U	SW6010C
	Copper	1.272	4.00	10.0	ug/L	U	SW6010C
	Iron	1.940	30.0	100	ug/L	U	SW6010C
	Lead	1.310	1.50	5.00	ug/L	U	SW6010C
	Magnesium	-16.09	1000	5000	ug/L	U	SW6010C
	Manganese	0.07376	3.00	15.0	ug/L	U	SW6010C
	Molybdenum	0.3571	5.00	20.0	ug/L	U	SW6010C
	Nickel	-0.2317	3.00	10.0	ug/L	U	SW6010C
	Potassium	100.1	1000	5000	ug/L	U	SW6010C
	Selenium	1.985	3.00	10.0	ug/L	U	SW6010C
	Silver	0.4160	1.00	10.0	ug/L	U	SW6010C
	Sodium	130.6	1000	5000	ug/L	U	SW6010C
	Thallium	0.8491	3.00	8.00	ug/L	U	SW6010C
	Vanadium	-0.2000	5.00	12.5	ug/L	U	SW6010C
	Zinc	0.1432	5.00	20.0	ug/L	U	SW6010C
6I25804-CCB1	Aluminum	-30.9	50.0	200	ug/L	U	SW6010C
	Antimony	-1.02	5.00	10.0	ug/L	U	SW6010C
	Arsenic	-0.594	3.00	10.0	ug/L	U	SW6010C
	Barium	0.220	5.00	40.0	ug/L	U	SW6010C
	Beryllium	0.156	1.00	5.00	ug/L	U	SW6010C
	Cadmium	0.0212	1.00	5.00	ug/L	U	SW6010C
	Calcium	3.42	1000	5000	ug/L	U	SW6010C
	Chromium	-0.219	2.00	10.0	ug/L	U	SW6010C
	Cobalt	0.331	5.00	12.5	ug/L	U	SW6010C
	Copper	0.581	4.00	10.0	ug/L	U	SW6010C
	Iron	-0.971	30.0	100	ug/L	U	SW6010C

BLANKS
SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP
Project: Raritan Arsenal - Phase III
Sequence: 6I25804
Calibration: 6258003

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
6I25804-CCB1	Lead	2.20	1.50	5.00	ug/L	J	SW6010C
	Magnesium	-19.6	1000	5000	ug/L	U	SW6010C
	Manganese	0.0370	3.00	15.0	ug/L	U	SW6010C
	Molybdenum	0.454	5.00	20.0	ug/L	U	SW6010C
	Nickel	-0.408	3.00	10.0	ug/L	U	SW6010C
	Potassium	99.7	1000	5000	ug/L	U	SW6010C
	Selenium	0.346	3.00	10.0	ug/L	U	SW6010C
	Silver	0.463	1.00	10.0	ug/L	U	SW6010C
	Sodium	63.4	1000	5000	ug/L	U	SW6010C
	Thallium	0.0780	3.00	8.00	ug/L	U	SW6010C
	Vanadium	-0.609	5.00	12.5	ug/L	U	SW6010C
	Zinc	0.240	5.00	20.0	ug/L	U	SW6010C
6I25804-CCB3	Aluminum	-5.78	50.0	200	ug/L	U	SW6010C
	Antimony	-1.83	5.00	10.0	ug/L	U	SW6010C
	Arsenic	1.74	3.00	10.0	ug/L	U	SW6010C
	Barium	0.280	5.00	40.0	ug/L	U	SW6010C
	Beryllium	0.205	1.00	5.00	ug/L	U	SW6010C
	Cadmium	-0.0266	1.00	5.00	ug/L	U	SW6010C
	Calcium	0.880	1000	5000	ug/L	U	SW6010C
	Chromium	0.162	2.00	10.0	ug/L	U	SW6010C
	Cobalt	-0.0251	5.00	12.5	ug/L	U	SW6010C
	Copper	0.257	4.00	10.0	ug/L	U	SW6010C
	Iron	-8.14	30.0	100	ug/L	U	SW6010C
	Lead	1.01	1.50	5.00	ug/L	U	SW6010C
	Magnesium	-12.8	1000	5000	ug/L	U	SW6010C
	Manganese	0.0956	3.00	15.0	ug/L	U	SW6010C
	Molybdenum	0.423	5.00	20.0	ug/L	U	SW6010C
	Nickel	-0.330	3.00	10.0	ug/L	U	SW6010C
	Potassium	63.8	1000	5000	ug/L	U	SW6010C
	Selenium	1.40	3.00	10.0	ug/L	U	SW6010C
	Silver	-0.273	1.00	10.0	ug/L	U	SW6010C
	Sodium	10.7	1000	5000	ug/L	U	SW6010C
	Thallium	-0.226	3.00	8.00	ug/L	U	SW6010C
	Vanadium	-0.0265	5.00	12.5	ug/L	U	SW6010C

BLANKS
SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP
Project: Raritan Arsenal - Phase III
Sequence: 6I25804
Calibration: 6258003

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
6I25804-CCB3	Zinc	0.194	5.00	20.0	ug/L	U	SW6010C
6H29015-BLK1	Aluminum	-0.669	2.50	10.0	mg/Kg wet	U	SW6010C
	Antimony	-0.149	0.250	0.500	mg/Kg wet	U	SW6010C
	Arsenic	0.0816	0.150	0.500	mg/Kg wet	U	SW6010C
	Barium	0.0252	0.250	2.00	mg/Kg wet	U	SW6010C
	Beryllium	-0.0000485	0.0500	0.250	mg/Kg wet	U	SW6010C
	Cadmium	0.00694	0.0500	0.250	mg/Kg wet	U	SW6010C
	Calcium	1.37	50.0	250	mg/Kg wet	U	SW6010C
	Chromium	0.0312	0.100	0.500	mg/Kg wet	U	SW6010C
	Cobalt	-0.0115	0.250	0.625	mg/Kg wet	U	SW6010C
	Copper	-0.0222	0.200	0.500	mg/Kg wet	U	SW6010C
	Iron	-0.412	1.50	5.00	mg/Kg wet	U	SW6010C
	Lead	0.0526	0.0750	0.250	mg/Kg wet	U	SW6010C
	Magnesium	-0.178	50.0	250	mg/Kg wet	U	SW6010C
	Manganese	0.00822	0.150	0.750	mg/Kg wet	U	SW6010C
	Molybdenum	0.0361	0.250	1.00	mg/Kg wet	U	SW6010C
	Nickel	-0.00890	0.150	0.500	mg/Kg wet	U	SW6010C
	Potassium	4.61	50.0	250	mg/Kg wet	U	SW6010C
	Selenium	-0.000513	0.150	0.500	mg/Kg wet	U	SW6010C
	Silver	-0.0396	0.0500	0.500	mg/Kg wet	U	SW6010C
	Sodium	0.544	50.0	250	mg/Kg wet	U	SW6010C
	Thallium	-0.0208	0.150	0.400	mg/Kg wet	U	SW6010C
	Vanadium	-0.0141	0.250	0.625	mg/Kg wet	U	SW6010C
	Zinc	0.252	0.250	1.00	mg/Kg wet	J	SW6010C
6I25804-CCB4	Aluminum	-7.81	50.0	200	ug/L	U	SW6010C
	Antimony	-2.14	5.00	10.0	ug/L	U	SW6010C
	Arsenic	0.175	3.00	10.0	ug/L	U	SW6010C
	Barium	0.0584	5.00	40.0	ug/L	U	SW6010C
	Beryllium	-0.0536	1.00	5.00	ug/L	U	SW6010C
	Cadmium	-0.0401	1.00	5.00	ug/L	U	SW6010C
	Calcium	-4.44	1000	5000	ug/L	U	SW6010C
	Chromium	-0.528	2.00	10.0	ug/L	U	SW6010C
	Cobalt	0.102	5.00	12.5	ug/L	U	SW6010C
	Copper	-0.364	4.00	10.0	ug/L	U	SW6010C

BLANKS
SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP
Project: Raritan Arsenal - Phase III
Sequence: 6I25804
Calibration: 6258003

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
6I25804-CCB4	Iron	-3.60	30.0	100	ug/L	U	SW6010C
	Lead	1.47	1.50	5.00	ug/L	U	SW6010C
	Magnesium	-17.8	1000	5000	ug/L	U	SW6010C
	Manganese	0.152	3.00	15.0	ug/L	U	SW6010C
	Molybdenum	0.227	5.00	20.0	ug/L	U	SW6010C
	Nickel	-0.505	3.00	10.0	ug/L	U	SW6010C
	Potassium	62.6	1000	5000	ug/L	U	SW6010C
	Selenium	-0.788	3.00	10.0	ug/L	U	SW6010C
	Silver	-0.541	1.00	10.0	ug/L	U	SW6010C
	Sodium	-2.08	1000	5000	ug/L	U	SW6010C
	Thallium	0.427	3.00	8.00	ug/L	U	SW6010C
	Vanadium	-0.965	5.00	12.5	ug/L	U	SW6010C
	Zinc	0.365	5.00	20.0	ug/L	U	SW6010C
6I25804-CCB5	Aluminum	-11.4	50.0	200	ug/L	U	SW6010C
	Antimony	-1.31	5.00	10.0	ug/L	U	SW6010C
	Arsenic	0.993	3.00	10.0	ug/L	U	SW6010C
	Barium	0.144	5.00	40.0	ug/L	U	SW6010C
	Beryllium	0.0558	1.00	5.00	ug/L	U	SW6010C
	Cadmium	-0.0163	1.00	5.00	ug/L	U	SW6010C
	Calcium	0.690	1000	5000	ug/L	U	SW6010C
	Chromium	-0.190	2.00	10.0	ug/L	U	SW6010C
	Cobalt	0.0290	5.00	12.5	ug/L	U	SW6010C
	Copper	-0.417	4.00	10.0	ug/L	U	SW6010C
	Iron	-9.20	30.0	100	ug/L	U	SW6010C
	Lead	1.37	1.50	5.00	ug/L	U	SW6010C
	Magnesium	-15.8	1000	5000	ug/L	U	SW6010C
	Manganese	-0.0512	3.00	15.0	ug/L	U	SW6010C
	Molybdenum	0.562	5.00	20.0	ug/L	U	SW6010C
	Nickel	-0.792	3.00	10.0	ug/L	U	SW6010C
	Potassium	36.4	1000	5000	ug/L	U	SW6010C
	Selenium	1.62	3.00	10.0	ug/L	U	SW6010C
	Silver	-0.312	1.00	10.0	ug/L	U	SW6010C
	Sodium	8.44	1000	5000	ug/L	U	SW6010C
	Thallium	0.871	3.00	8.00	ug/L	U	SW6010C

BLANKS
SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP
Project: Raritan Arsenal - Phase III
Sequence: 6I25804
Calibration: 6258003

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
6I25804-CCB5	Vanadium	-0.728	5.00	12.5	ug/L	U	SW6010C
	Zinc	0.448	5.00	20.0	ug/L	U	SW6010C
6I08012-BLK1	Aluminum	-0.198	2.50	10.0	mg/Kg wet	U	SW6010C
	Antimony	-0.114	0.250	0.500	mg/Kg wet	U	SW6010C
	Arsenic	0.00639	0.150	0.500	mg/Kg wet	U	SW6010C
	Barium	0.0141	0.250	2.00	mg/Kg wet	U	SW6010C
	Beryllium	-0.00135	0.0500	0.250	mg/Kg wet	U	SW6010C
	Cadmium	0.00636	0.0500	0.250	mg/Kg wet	U	SW6010C
	Calcium	1.49	50.0	250	mg/Kg wet	U	SW6010C
	Chromium	0.0387	0.100	0.500	mg/Kg wet	U	SW6010C
	Cobalt	-0.00435	0.250	0.625	mg/Kg wet	U	SW6010C
	Copper	-0.0169	0.200	0.500	mg/Kg wet	U	SW6010C
	Iron	0.328	1.50	5.00	mg/Kg wet	U	SW6010C
	Lead	0.0228	0.0750	0.250	mg/Kg wet	U	SW6010C
	Magnesium	-0.760	50.0	250	mg/Kg wet	U	SW6010C
	Manganese	0.0125	0.150	0.750	mg/Kg wet	U	SW6010C
	Molybdenum	0.00956	0.250	1.00	mg/Kg wet	U	SW6010C
	Nickel	-0.0203	0.150	0.500	mg/Kg wet	U	SW6010C
	Potassium	6.61	50.0	250	mg/Kg wet	U	SW6010C
	Selenium	-0.0525	0.150	0.500	mg/Kg wet	U	SW6010C
	Silver	-0.0468	0.0500	0.500	mg/Kg wet	U	SW6010C
	Sodium	-2.66	50.0	250	mg/Kg wet	U	SW6010C
	Thallium	-0.0456	0.150	0.400	mg/Kg wet	U	SW6010C
	Vanadium	-0.0110	0.250	0.625	mg/Kg wet	U	SW6010C
	Zinc	0.365	0.250	1.00	mg/Kg wet	J	SW6010C
6I25804-CCB6	Aluminum	-23.6	50.0	200	ug/L	U	SW6010C
	Antimony	1.00	5.00	10.0	ug/L	U	SW6010C
	Arsenic	0.392	3.00	10.0	ug/L	U	SW6010C
	Barium	0.423	5.00	40.0	ug/L	U	SW6010C
	Beryllium	0.0939	1.00	5.00	ug/L	U	SW6010C
	Cadmium	0.112	1.00	5.00	ug/L	U	SW6010C
	Calcium	2.15	1000	5000	ug/L	U	SW6010C
	Chromium	0.0486	2.00	10.0	ug/L	U	SW6010C
	Cobalt	0.0616	5.00	12.5	ug/L	U	SW6010C

BLANKS
SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP
Project: Raritan Arsenal - Phase III
Sequence: 6I25804
Calibration: 6258003

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
6I25804-CCB6	Copper	-0.932	4.00	10.0	ug/L	U	SW6010C
	Iron	-9.63	30.0	100	ug/L	U	SW6010C
	Lead	1.43	1.50	5.00	ug/L	U	SW6010C
	Magnesium	-28.6	1000	5000	ug/L	U	SW6010C
	Manganese	0.0704	3.00	15.0	ug/L	U	SW6010C
	Molybdenum	0.493	5.00	20.0	ug/L	U	SW6010C
	Nickel	0.00530	3.00	10.0	ug/L	U	SW6010C
	Potassium	70.2	1000	5000	ug/L	U	SW6010C
	Selenium	-0.763	3.00	10.0	ug/L	U	SW6010C
	Silver	0.170	1.00	10.0	ug/L	U	SW6010C
	Sodium	19.1	1000	5000	ug/L	U	SW6010C
	Thallium	0.950	3.00	8.00	ug/L	U	SW6010C
	Vanadium	-0.640	5.00	12.5	ug/L	U	SW6010C
	Zinc	0.568	5.00	20.0	ug/L	U	SW6010C

ICP INTERFERENCE CHECK SAMPLE

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Instrument ID: ME-ICP
Calibration: 6258003
Sequence: 6I25804

Lab Sample ID	Analyte	True	Found	%R	Units
6I25804-IFA1	Aluminum	500000	497,010.00	99.4	ug/L
	Antimony		-3.21		ug/L
	Arsenic		-4.64		ug/L
	Barium		0.06		ug/L
	Beryllium		0.08		ug/L
	Boron		16.65		ug/L
	Cadmium		-1.33		ug/L
	Calcium	500000	501,390.00	100	ug/L
	Chromium		-0.98		ug/L
	Cobalt		-2.24		ug/L
	Copper		-0.71		ug/L
	Iron	200000	194,400.00	97.2	ug/L
	Lead		0.55		ug/L
	Magnesium	500000	460,840.00	92.2	ug/L
	Manganese		-1.69		ug/L
	Molybdenum		-0.04		ug/L
	Nickel		-1.42		ug/L
	Potassium		56.45		ug/L
	Selenium		-0.33		ug/L
	Silver		-0.51		ug/L
	Sodium		330.88		ug/L
	Thallium		-1.74		ug/L
	Tin		-5.28		ug/L
	Titanium		-19.62		ug/L
	Vanadium		1.77		ug/L
	Zinc		-0.52		ug/L
	Strontium		-2.03		ug/L
6I25804-IFB1	Aluminum	500000	504,300.00	101	ug/L
	Antimony	600.0	671.10	112	ug/L
	Arsenic	100.0	108.27	108	ug/L

ICP INTERFERENCE CHECK SAMPLE

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Instrument ID: ME-ICP
Calibration: 6258003
Sequence: 6I25804

Lab Sample ID	Analyte	True	Found	%R	Units
6I25804-IFB1	Barium	500.0	548.85	110	ug/L
	Beryllium	500.0	520.62	104	ug/L
	Boron		70.74		ug/L
	Cadmium	1000	1,061.00	106	ug/L
	Calcium	500000	506,940.00	101	ug/L
	Chromium	500.0	478.93	95.8	ug/L
	Cobalt	500.0	499.94	100	ug/L
	Copper	500.0	537.51	108	ug/L
	Iron	200000	197,910.00	99.0	ug/L
	Lead	50.00	51.55	103	ug/L
	Magnesium	500000	467,070.00	93.4	ug/L
	Manganese	500.0	480.58	96.1	ug/L
	Molybdenum		0.39		ug/L
	Nickel	1000	995.67	99.6	ug/L
	Potassium		80.10		ug/L
	Selenium	50.00	50.66	101	ug/L
	Silver	200.0	203.61	102	ug/L
	Sodium		407.63		ug/L
	Thallium	100.0	103.07	103	ug/L
	Tin		-4.76		ug/L
	Titanium		-20.15		ug/L
	Vanadium	500.0	498.17	99.6	ug/L
	Zinc	1000	1,035.60	104	ug/L
	Strontium	1000	1,060.00	106	ug/L

LCS / LCS DUPLICATE RECOVERY

SW6010C

Laboratory:	Empirical Laboratories, LLC	SDG:	1608251
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Matrix:	Solid		
Batch:	6H29015	Laboratory ID:	6H29015-BS1
Preparation:	MET_3050B	Initial/Final:	2 g / 100 mL

ANALYTE	SPIKE ADDED (mg/Kg wet)	LCS CONCENTRATION (mg/Kg wet)	LCS % REC.	QC LIMITS REC.
Aluminum	100.0	101.6	102	74 - 119
Antimony	12.50	12.02	96.1	79 - 114
Arsenic	12.50	12.51	100	82 - 111
Barium	100.0	98.54	98.5	83 - 113
Beryllium	2.500	2.466	98.7	83 - 113
Cadmium	6.250	6.449	103	82 - 113
Calcium	250.0	262.8	105	81 - 116
Chromium	10.00	9.778	97.8	85 - 113
Cobalt	25.00	25.20	101	85 - 112
Copper	12.50	12.43	99.4	81 - 117
Iron	50.00	50.10	100	81 - 118
Lead	12.50	12.46	99.6	81 - 112
Magnesium	250.0	248.7	99.5	78 - 115
Manganese	25.00	24.58	98.3	84 - 114
Molybdenum	50.00	50.80	102	82 - 116
Nickel	25.00	25.41	102	83 - 113
Potassium	250.0	248.9	99.6	81 - 116
Selenium	12.50	12.14	97.1	78 - 111
Silver	12.50	11.57	92.6	82 - 112
Sodium	250.0	262.9	105	83 - 118
Thallium	12.50	12.84	103	83 - 111
Vanadium	25.00	24.52	98.1	82 - 114
Zinc	25.00	25.48	102	82 - 113

LCS / LCS DUPLICATE RECOVERY

SW6010C

Laboratory:	Empirical Laboratories, LLC	SDG:	1608251
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Matrix:	Solid		
Batch:	6I08012	Laboratory ID:	6I08012-BS1
Preparation:	MET_3050B	Initial/Final:	2 g / 100 mL

ANALYTE	SPIKE ADDED (mg/Kg wet)	LCS CONCENTRATION (mg/Kg wet)	LCS % REC.	QC LIMITS REC.
Aluminum	100.0	102.6	103	74 - 119
Antimony	12.50	12.75	102	79 - 114
Arsenic	12.50	13.33	107	82 - 111
Barium	100.0	103.0	103	83 - 113
Beryllium	2.500	2.552	102	83 - 113
Cadmium	6.250	6.857	110	82 - 113
Calcium	250.0	271.6	109	81 - 116
Chromium	10.00	10.17	102	85 - 113
Cobalt	25.00	26.30	105	85 - 112
Copper	12.50	13.42	107	81 - 117
Iron	50.00	52.10	104	81 - 118
Lead	12.50	13.27	106	81 - 112
Magnesium	250.0	252.6	101	78 - 115
Manganese	25.00	25.84	103	84 - 114
Molybdenum	50.00	53.25	106	82 - 116
Nickel	25.00	26.67	107	83 - 113
Potassium	250.0	260.1	104	81 - 116
Selenium	12.50	13.06	104	78 - 111
Silver	12.50	12.44	99.5	82 - 112
Sodium	250.0	256.6	103	83 - 118
Thallium	12.50	13.76	110	83 - 111
Vanadium	25.00	25.60	102	82 - 114
Zinc	25.00	26.78	107	82 - 113

PREPARATION BATCH SUMMARY

SW6010C

Laboratory: Empirical Laboratories, LLC SDG: 1608251

Client: CH2M Hill, Inc. Project: Raritan Arsenal - Phase III

Batch: 6H29015 Batch Matrix: Solid Preparation: MET_3050B

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT	FINAL VOL.
DSA05-SB29-0010	1608251-01	09/08/16 10:00	2.00	100.00
DSA05-SB30-0010	1608251-02	09/08/16 10:00	2.00	100.00
DSA05-SB31-0010	1608251-03	09/08/16 10:00	2.02	100.00
DSA05-SB32-0010	1608251-04	09/08/16 10:00	2.03	100.00
DSA01-SB01-0010	1608251-05	09/08/16 10:00	2.04	100.00
DSA01-SB02-0010	1608251-06	09/08/16 10:00	2.04	100.00
DSA01-SB03-0010	1608251-07	09/08/16 10:00	2.04	100.00
DSA01-SB04-0010	1608251-08	09/08/16 10:00	2.05	100.00
DSA01-SB05-0010	1608251-09	09/08/16 10:00	2.00	100.00
DSA01-SB06-0010	1608251-10	09/08/16 10:00	2.04	100.00
DSA01-SB07-0010	1608251-11	09/08/16 10:00	2.04	100.00
Blank	6H29015-BLK1	09/08/16 10:00	2.00	100.00
LCS	6H29015-BS1	09/08/16 10:00	2.00	100.00

PREPARATION BATCH SUMMARY

SW6010C

Laboratory: Empirical Laboratories, LLC SDG: 1608251

Client: CH2M Hill, Inc. Project: Raritan Arsenal - Phase III

Batch: 6I08012 Batch Matrix: Solid Preparation: MET_3050B

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT	FINAL VOL.
DSA01-SB08-0010	1608251-12	09/08/16 09:40	2.05	100.00
DSA02-SB09-0010	1608251-13	09/08/16 09:40	2.01	100.00
DSA02-SB10-0010	1608251-14	09/08/16 09:40	2.05	100.00
DSA02-SB11-0010	1608251-15	09/08/16 09:40	2.05	100.00
DSA02-SB12-0010	1608251-16	09/08/16 09:40	2.03	100.00
DSA02-SB13-0010	1608251-17	09/08/16 09:40	2.03	100.00
DSA02-SB14-0010	1608251-18	09/08/16 09:40	2.00	100.00
DSA02-SB15-0010	1608251-19	09/08/16 09:40	2.02	100.00
DSA02-SB16-0010	1608251-20	09/08/16 09:40	2.01	100.00
Blank	6I08012-BLK1	09/08/16 09:40	2.00	100.00
LCS	6I08012-BS1	09/08/16 09:40	2.00	100.00

ANALYSIS SEQUENCE SUMMARY

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Sequence: 6I25804
Instrument: ME-ICP
Calibration: 6258003

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Cal Standard	6I25804-CAL1	09-14-16A-001	09/14/16 09:51
Cal Standard	6I25804-CAL2	09-14-16A-002	09/14/16 09:55
Cal Standard	6I25804-CAL3	09-14-16A-003	09/14/16 09:58
Cal Standard	6I25804-CAL4	09-14-16A-004	09/14/16 10:02
Cal Standard	6I25804-CAL5	09-14-16A-005	09/14/16 10:06
Cal Standard	6I25804-CAL6	09-14-16A-006	09/14/16 10:10
Cal Standard	6I25804-CAL7	09-14-16A-007	09/14/16 10:15
Cal Standard	6I25804-CAL8	09-14-16A-008	09/14/16 10:19
Cal Standard	6I25804-CAL9	09-14-16A-009	09/14/16 10:23
Initial Cal Check	6I25804-ICV1	09-14-16B-001	09/14/16 10:58
Initial Cal Blank	6I25804-ICB1	09-14-16B-002	09/14/16 11:03
Instrument RL Check	6I25804-CRL1	09-14-16B-003	09/14/16 11:12
Instrument RL Check	6I25804-CRL2	09-14-16B-004	09/14/16 11:17
Interference Check A	6I25804-IFA1	09-14-16B-005	09/14/16 11:21
Interference Check B	6I25804-IFB1	09-14-16B-006	09/14/16 11:26
Calibration Check	6I25804-CCV1	09-14-16B-007	09/14/16 11:34
Calibration Blank	6I25804-CCB1	09-14-16B-008	09/14/16 11:39
Calibration Check	6I25804-CCV3	09-14-16C-012	09/14/16 13:51
Calibration Blank	6I25804-CCB3	09-14-16C-013	09/14/16 13:55
Blank	6H29015-BLK1	09-14-16C-014	09/14/16 13:59
LCS	6H29015-BS1	09-14-16C-015	09/14/16 14:04
DSA05-SB29-0010	1608251-01	09-14-16C-028	09/14/16 15:00
DSA05-SB30-0010	1608251-02	09-14-16C-029	09/14/16 15:05
Calibration Check	6I25804-CCV4	09-14-16D-001	09/14/16 15:18
Calibration Blank	6I25804-CCB4	09-14-16D-002	09/14/16 15:23
DSA05-SB31-0010	1608251-03	09-14-16D-008	09/14/16 15:49
DSA05-SB32-0010	1608251-04	09-14-16D-009	09/14/16 15:54
DSA01-SB01-0010	1608251-05	09-14-16D-010	09/14/16 15:58
DSA01-SB02-0010	1608251-06	09-14-16D-011	09/14/16 16:02
DSA01-SB03-0010	1608251-07	09-14-16D-012	09/14/16 16:07
DSA01-SB04-0010	1608251-08	09-14-16D-013	09/14/16 16:11
DSA01-SB05-0010	1608251-09	09-14-16D-014	09/14/16 16:15
DSA01-SB06-0010	1608251-10	09-14-16D-015	09/14/16 16:20

ANALYSIS SEQUENCE SUMMARY

SW6010C

Laboratory:	Empirical Laboratories, LLC	SDG:	1608251
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Sequence:	6I25804	Instrument:	ME-ICP
Calibration:	6258003		

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
DSA01-SB07-0010	1608251-11	09-14-16D-016	09/14/16 16:24
Calibration Check	6I25804-CCV5	09-14-16D-017	09/14/16 16:29
Calibration Blank	6I25804-CCB5	09-14-16D-018	09/14/16 16:34
Blank	6I08012-BLK1	09-14-16E-001	09/14/16 16:44
LCS	6I08012-BS1	09-14-16E-002	09/14/16 16:48
DSA01-SB08-0010	1608251-12	09-14-16E-003	09/14/16 16:53
DSA02-SB09-0010	1608251-13	09-14-16E-004	09/14/16 16:57
DSA02-SB10-0010	1608251-14	09-14-16E-005	09/14/16 17:01
DSA02-SB11-0010	1608251-15	09-14-16E-006	09/14/16 17:06
DSA02-SB12-0010	1608251-16	09-14-16E-007	09/14/16 17:10
DSA02-SB13-0010	1608251-17	09-14-16E-008	09/14/16 17:15
DSA02-SB14-0010	1608251-18	09-14-16E-009	09/14/16 17:19
DSA02-SB15-0010	1608251-19	09-14-16E-010	09/14/16 17:23
DSA02-SB16-0010	1608251-20	09-14-16E-011	09/14/16 17:28
Calibration Check	6I25804-CCV6	09-14-16E-017	09/14/16 17:54
Calibration Blank	6I25804-CCB6	09-14-16E-018	09/14/16 17:58

INITIAL CALIBRATION DATA

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Calibration: 6258003
Instrument: ME-ICP
Matrix: Water
Calibration Dates: 9/14/16 9:51 9/14/16 10:23

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Aluminum	0	0	5000	4.4398E-05	10000	4.1921E-05			500000	4.1656E-05		
Antimony	0	0	100	0.0008211	1000	8.8544E-04					10000	0.00088
Arsenic	0	0	100	0.00039	1000	0.0004393					10000	4.3082E-04
Barium	0	0	50	0.0175498	1000	0.015883	5000	0.0170954				
Beryllium	0	0	100	0.0027615	1000	0.0027488					10000	0.0026952
Boron	0	0	50	0.0000186	1000	1.752E-05					5000	1.678E-05
Cadmium	0	0	100	0.030858	1000	0.02964					10000	0.028846
Calcium	0	0	1100	9.661818E-05	50000	8.9678E-05					10000	
Chromium	0	0	100	0.0000512	1000	4.719E-05					10000	4.6764E-05
Cobalt	0	0	100	8.674299E-03	1000	0.008005					10000	0.0084034
Copper	0	0	100	0.0001019	1000	9.588E-05					10000	9.5539E-05
Iron	0	0	5100	2.231961E-05	10000	2.1734E-05			500000	2.1582E-05	10000	
Lead	0	0	100	0.00199	1000	0.0019436					10000	0.0020619
Magnesium	0	0	5100		50000	2.9542E-06			500000	3.0466E-06	10000	
Manganese	0	0	100	0.0003668	1000	3.3779E-04	10000	3.5599E-04			10000	
Molybdenum	0	0	100	0.0040234	1000	0.0040927					10000	0.0040448
Nickel	0	0	100	0.004983	1000	0.0045359					10000	0.0046652
Potassium	0	0	1000	1.374E-05	10000	2.0407E-05						
Selenium	0	0	100	0.0005597	1000	4.7159E-04					10000	4.4449E-04
Silver	0	0	20	0.0000795	500	5.312E-05	2000	5.5635E-05				
Sodium	0	0	1000		50000	3.9304E-05						
Thallium	0	0	100	0.0007969	1000	7.7289E-04					10000	7.8113E-04
Tin	0	0	50	0.0015102	1000	0.0015266					5000	0.0015354
Titanium	0	0	100	0.0002599	1000	2.5246E-04					10000	2.5077E-04
Vanadium	0	0	100	0.0000503	1000	5.158E-05					10000	5.0926E-05
Zinc	0	0	100	0.011639	1000	0.011284					10000	0.011218
Strontium	0	0	100	0.002057	1000	0.002075					10000	0.002136
Lithium (outside certification)	0	0	100	0.000006	1000	6.04E-06					10000	5.668E-06

INITIAL CALIBRATION DATA (Continued)

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Calibration: 6258003
Instrument: ME-ICP
Matrix: Water
Calibration Dates: 9/14/16 9:51 9/14/16 10:23

Compound	Level 07		Level 08		Level 09		Level 10		Level 11		Level 12	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Aluminum												
Antimony												
Arsenic												
Barium												
Beryllium												
Boron												
Cadmium												
Calcium	100000		500000	8.8248E-05								
Chromium												
Cobalt												
Copper												
Iron												
Lead												
Magnesium			100000	3.3043E-06								
Manganese												
Molybdenum												
Nickel												
Potassium	100000	2.0672E-05										
Selenium												
Silver												
Sodium	100000	3.848E-05	500000		500000	2.8532E-05						
Thallium												
Tin												
Titanium												
Vanadium												
Zinc												
Strontium												
Lithium (outside certification)												

INITIAL CALIBRATION DATA (Continued)

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Calibration: 6258003
Instrument: ME-ICP
Matrix: Water
Calibration Dates: 9/14/16 9:51 9/14/16 10:23

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
Aluminum	3.199375E-05	66.7783	19.01493	193.4511	0.9999997		0.998	
Antimony	6.46635E-04	66.81872	10.7109	187.1674	0.9999985		0.998	
Arsenic	3.1503E-04	67.01579	4.385185	169.5921	0.9999909		0.998	
Barium	1.263205E-02	66.8989	2.313225	191.3831	0.9997741		0.998	
Beryllium	2.051375E-03	66.68137	7.803715	183.4293	0.9999965		0.998	
Boron	1.3225E-05	66.90573	2.897553	143.4336	0.9999299		0.998	
Cadmium	0.022336	66.76951	1.588413	162.7482	0.999994		0.998	
Calcium	6.863605E-05	66.87908	23.36306	193.5191	0.9999977		0.998	
Chromium	3.62885E-05	66.89371	2.181613	76.34845	0.9999998		0.998	
Cobalt	6.270675E-03	66.81064	1.475635	159.7988	0.999975		0.998	
Copper	7.332975E-05	66.78561	1.236437	64.88954	0.9999999		0.998	
Iron	1.64089E-05	66.69484	149.1862	199.3276	0.9999999		0.998	
Lead	1.498875E-03	66.74569	4.763095	178.744	0.999971		0.998	
Magnesium	2.326275E-06	66.97013	335.3032	199.7191	0.9996096		0.998	
Manganese	2.65145E-04	66.81937	9.056925	160.6451	0.9999723		0.998	
Molybdenum	3.040225E-03	66.67348	59.15442	199.1912	0.9999985		0.998	
Nickel	3.546025E-03	66.87683	1.080995	164.3125	0.999989		0.998	
Potassium	1.370475E-05	70.65467	4.792637	107.7725	0.9999909		0.998	
Selenium	3.68945E-04	67.98644	2.98835	154.2312	0.9999841		0.998	
Silver	4.706375E-05	71.29097	2.998682	86.06446	0.9997578		0.998	
Sodium	2.6579E-05	69.16406	7.54359	159.5355	0.9951191		0.998	*
Thallium	5.8773E-04	66.6882	11.38936	195.4159	0.9999988		0.998	
Tin	1.14305E-03	66.67293	6.075645	187.0785	0.9999989		0.998	
Titanium	1.907825E-04	66.69907	9.710932	182.3035	0.9999999		0.998	
Vanadium	3.82015E-05	66.6807	4.987185	147.5042	0.999998		0.998	
Zinc	8.53525E-03	66.70185	7.959762	189.2864	0.9999998		0.998	
Strontium	0.001567	66.70156	1.03175	68.49214	0.9999944		0.998	
Lithium (outside certification)	4.427E-06	66.77297	2.42149	99.93841	0.9999532		0.998	

HOLDING TIME SUMMARY

SW6010C

Laboratory: Empirical Laboratories, LLC SDG: 1608251

Client: CH2M Hill, Inc. Project: Raritan Arsenal - Phase III

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
DSA05-SB29-0010	08/24/16 09:21	08/26/16 08:45	09/08/16 10:00	N/A	180.00	09/14/16 15:00	21.28	180.00	
DSA05-SB30-0010	08/24/16 09:49	08/26/16 08:45	09/08/16 10:00	N/A	180.00	09/14/16 15:05	21.26	180.00	
DSA05-SB31-0010	08/24/16 10:06	08/26/16 08:45	09/08/16 10:00	N/A	180.00	09/14/16 15:49	21.28	180.00	
DSA05-SB32-0010	08/24/16 10:36	08/26/16 08:45	09/08/16 10:00	N/A	180.00	09/14/16 15:54	21.26	180.00	
DSA01-SB01-0010	08/24/16 12:28	08/26/16 08:45	09/08/16 10:00	N/A	180.00	09/14/16 15:58	21.19	180.00	
DSA01-SB02-0010	08/24/16 12:45	08/26/16 08:45	09/08/16 10:00	N/A	180.00	09/14/16 16:02	21.18	180.00	
DSA01-SB03-0010	08/24/16 12:57	08/26/16 08:45	09/08/16 10:00	N/A	180.00	09/14/16 16:07	21.17	180.00	
DSA01-SB04-0010	08/24/16 13:12	08/26/16 08:45	09/08/16 10:00	N/A	180.00	09/14/16 16:11	21.17	180.00	
DSA01-SB05-0010	08/24/16 13:49	08/26/16 08:45	09/08/16 10:00	N/A	180.00	09/14/16 16:15	21.14	180.00	
DSA01-SB06-0010	08/24/16 14:02	08/26/16 08:45	09/08/16 10:00	N/A	180.00	09/14/16 16:20	21.14	180.00	
DSA01-SB07-0010	08/24/16 14:20	08/26/16 08:45	09/08/16 10:00	N/A	180.00	09/14/16 16:24	21.13	180.00	

HOLDING TIME SUMMARY

SW6010C

Laboratory: Empirical Laboratories, LLC SDG: 1608251

Client: CH2M Hill, Inc. Project: Raritan Arsenal - Phase III

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
DSA01-SB08-0010	08/24/16 14:35	08/26/16 08:45	09/08/16 09:40	N/A	180.00	09/14/16 16:53	21.14	180.00	
DSA02-SB09-0010	08/25/16 09:07	08/26/16 08:45	09/08/16 09:40	N/A	180.00	09/14/16 16:57	20.37	180.00	
DSA02-SB10-0010	08/25/16 09:19	08/26/16 08:45	09/08/16 09:40	N/A	180.00	09/14/16 17:01	20.36	180.00	
DSA02-SB11-0010	08/25/16 09:55	08/26/16 08:45	09/08/16 09:40	N/A	180.00	09/14/16 17:06	20.34	180.00	
DSA02-SB12-0010	08/25/16 11:44	08/26/16 08:45	09/08/16 09:40	N/A	180.00	09/14/16 17:10	20.27	180.00	
DSA02-SB13-0010	08/25/16 12:34	08/26/16 08:45	09/08/16 09:40	N/A	180.00	09/14/16 17:15	20.24	180.00	
DSA02-SB14-0010	08/25/16 13:14	08/26/16 08:45	09/08/16 09:40	N/A	180.00	09/14/16 17:19	20.21	180.00	
DSA02-SB15-0010	08/25/16 13:28	08/26/16 08:45	09/08/16 09:40	N/A	180.00	09/14/16 17:23	20.21	180.00	
DSA02-SB16-0010	08/25/16 13:40	08/26/16 08:45	09/08/16 09:40	N/A	180.00	09/14/16 17:28	20.20	180.00	

Flexible Report By Sample

Author:

Published: 9 5/ 6 8: 5: AM

Instrument Name: iCAP 6500 Duo Serial Number: 20062310

Sample Name	Acquisition Date	Sample type	Correction Factor
SEQ-CAL1	9/14/2016 9:51:23AM	Standard	1.00

Valid	Analyst Name	Method Name
Yes	rburr	6500DUOBB (1142)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.000515454	0.000728183	-0.00571806	8.39911e-005	0.0294791
Std Dev:	3.34412e-005	0.000540245	0.000887693	7.59701e-006	0.00263918
%RSD:	6.48772	74.1908	15.5244	9.04502	8.95271
Repeat: 1	0.000479259	0.000106698	-0.00665393	9.04543e-005	0.0310441
Repeat: 2	0.000521899	0.00108563	-0.00561223	8.5896e-005	0.026432
Repeat: 3	0.000545204	0.000992217	-0.00488803	7.56229e-005	0.0309613
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	0.000826284	0.000381319	0.0353887	0.0193386	0.000236185
Std Dev:	0.000241844	0.000347666	0.00193312	0.000969305	1.0876e-005
%RSD:	29.2689	91.1746	5.46252	5.01229	4.60485
Repeat: 1	0.000645269	0.000105004	0.0376156	0.019075	0.000223634
Repeat: 2	0.00110095	0.000771685	0.0341425	0.0185283	0.000242074
Repeat: 3	0.000732635	0.000267267	0.034408	0.0204124	0.000242846
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.000655143	2.20173e-005	-0.0108106	-5.18637e-005	-6.71507e-006
Std Dev:	1.43427e-005	0.000131056	0.000748345	3.10127e-006	8.9969e-005
%RSD:	2.18924	595.242	6.92235	5.97966	1339.81
Repeat: 1	0.000665408	7.62129e-006	-0.0100178	-4.84134e-005	-8.56689e-005
Repeat: 2	0.000638755	-0.000101246	-0.0115047	-5.27588e-005	9.12352e-005
Repeat: 3	0.000661267	0.000159677	-0.0109093	-5.4419e-005	-2.57115e-005
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	5.46914e-005	-0.000604688	0.00339544	0.0238819	-0.00891702
Std Dev:	1.68853e-005	0.00142645	0.00086478	0.000893887	0.0015629
%RSD:	30.8738	235.899	25.4688	3.74295	17.5271
Repeat: 1	4.341e-005	-0.00222556	0.00239881	0.02393	-0.00759131
Repeat: 2	4.65604e-005	0.000459441	0.00394753	0.0229649	-0.0106403
Repeat: 3	7.41038e-005	-4.79495e-005	0.00383999	0.0247507	-0.00851943
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	-0.00554068	0.00963757	6.44725	-0.0014114	-0.0160282
Std Dev:	0.0022591	0.000950873	1.27784	0.000326353	0.000317211
%RSD:	40.773	9.86632	19.8199	23.1226	1.97908
Repeat: 1	-0.00658571	0.0107355	7.83058	-0.00103746	-0.0157456
Repeat: 2	-0.00294827	0.00909215	5.31098	-0.001558	-0.0163713
Repeat: 3	-0.00708807	0.00908502	6.20021	-0.00163875	-0.0159677
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.000774371	-0.0018193	-7.64093e-005	0.00396731	2351.01
Std Dev:	0.000280722	0.000814581	1.21911e-005	0.00121227	10.6352
%RSD:	36.2517	44.7744	15.955	30.5565	0.452367
Repeat: 1	0.000690997	-0.00162866	-6.27623e-005	0.00256758	2345.17
Repeat: 2	0.00108734	-0.00271229	-8.02423e-005	0.00465411	2344.57
Repeat: 3	0.00054478	-0.00111694	-8.62232e-005	0.00468025	2363.28
Element/Wavelength	Sc3613	Sc3613-2			

Avg. of Repeats:	636502	14682.2
Std Dev:	6017.51	52.3357
%RSD:	0.945403	0.356457
Repeat: 1	642773	14733.3
Repeat: 2	630775	14684.5
Repeat: 3	635956	14628.7

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	z *****	z *****	z *****	z *****	z *****
Std Dev:	----	----	----	----	----
%RSD:	----	----	----	----	----
Repeat: 1	z ----	z ----	z ----	z ----	z ----
Repeat: 2	z ----	z ----	z ----	z ----	z ----
Repeat: 3	z ----	z ----	z ----	z ----	z ----
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	z *****	z *****	z *****	z *****	z *****
Std Dev:	----	----	----	----	----
%RSD:	----	----	----	----	----
Repeat: 1	z ----	z ----	z ----	z ----	z ----
Repeat: 2	z ----	z ----	z ----	z ----	z ----
Repeat: 3	z ----	z ----	z ----	z ----	z ----
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	z *****	z *****	z *****	z *****	z *****
Std Dev:	----	----	----	----	----
%RSD:	----	----	----	----	----
Repeat: 1	z ----	z ----	z ----	z ----	z ----
Repeat: 2	z ----	z ----	z ----	z ----	z ----
Repeat: 3	z ----	z ----	z ----	z ----	z ----
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	z *****	z *****	z *****	z *****	z *****
Std Dev:	----	----	----	----	----
%RSD:	----	----	----	----	----
Repeat: 1	z ----	z ----	z ----	z ----	z ----
Repeat: 2	z ----	z ----	z ----	z ----	z ----
Repeat: 3	z ----	z ----	z ----	z ----	z ----
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	z *****	z *****	z *****	z *****	z *****
Std Dev:	----	----	----	----	----
%RSD:	----	----	----	----	----
Repeat: 1	z ----	z ----	z ----	z ----	z ----
Repeat: 2	z ----	z ----	z ----	z ----	z ----
Repeat: 3	z ----	z ----	z ----	z ----	z ----
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	z *****	z *****	z *****	0	2351.01
Std Dev:	----	----	----	0	10.6352
%RSD:	----	----	----	0	0.452367
Repeat: 1	z ----	z ----	z ----	0	2345.17

Repeat: 2	z ----	z ----	z ----	0	2344.57
Repeat: 3	z ----	z ----	z ----	0	2363.28

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	636502	14682.2
Std Dev:	6017.51	52.3357
%RSD:	0.945403	0.356457
Repeat: 1	642773	14733.3
Repeat: 2	630775	14684.5
Repeat: 3	635956	14628.7

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2351.01	636502	14682.2
Std Dev:	10.6352	6017.51	52.3357
%RSD:	0.452367	0.945403	0.356457
Repeat: 1	2345.17	642773	14733.3
Repeat: 2	2344.57	630775	14684.5
Repeat: 3	2363.28	635956	14628.7

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
SEQ-CAL2	9/14/2016 9:55:02AM	Standard	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1142)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.00158683	0.221987	0.0390046	0.000929739	0.877491
Std Dev:	5.37773e-005	0.00100391	0.000476895	1.69395e-005	0.000642439
%RSD:	3.38899	0.452238	1.22266	1.82196	0.0732132
Repeat: 1	0.00163686	0.220832	0.0385082	0.000926031	0.87689
Repeat: 2	0.00152996	0.222645	0.0394592	0.000914962	0.878168
Repeat: 3	0.00159365	0.222485	0.0390463	0.000948226	0.877415
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.276149	0.106283	3.0858	0.867425	0.00512426
Std Dev:	0.000715185	9.43298e-005	0.00436125	0.00291026	9.87507e-005
%RSD:	0.258985	0.0887536	0.141333	0.335506	1.92712
Repeat: 1	0.275717	0.106198	3.0835	0.869917	0.00521004
Repeat: 2	0.276975	0.106385	3.08308	0.864227	0.00501631
Repeat: 3	0.275756	0.106265	3.09083	0.868133	0.00514643
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mn2576**
Avg. of Repeats:	0.0101851	0.113834	0.0137361	0.000601042	0.0366782
Std Dev:	0.000162122	0.000108932	0.00152421	1.13038e-005	0.000610023
%RSD:	1.59176	0.0956935	11.0964	1.8807	1.66318
Repeat: 1	0.0103155	0.113708	0.012266	0.000607111	0.037157
Repeat: 2	0.0100036	0.113892	0.0136332	0.000588	0.0359914
Repeat: 3	0.0102362	0.113902	0.0153092	0.000608014	0.0368863
Element/Wavelength	**Mo2020**	**Ni2316**	**Pb2203**	**Sb2068**	**Se1960**
Avg. of Repeats:	0.402335	0.498299	0.198998	0.0821139	0.0559727
Std Dev:	0.000559471	0.000470721	0.00176567	0.00112357	0.00075857
%RSD:	0.139056	0.0944656	0.88728	1.36831	1.35525
Repeat: 1	0.401806	0.497927	0.199387	0.0808417	0.055638
Repeat: 2	0.40228	0.498142	0.197071	0.0829705	0.055439
Repeat: 3	0.40292	0.498829	0.200537	0.0825294	0.056841

Element/Wavelength	Si2516	Sn1899	Sr4215	Ti3349	Tl1908
Avg. of Repeats:	9.86201	0.0755136	0.205675	0.0259909	0.0796851
Std Dev:	4.23013	0.000480075	0.00064864	0.000429215	0.00018573
%RSD:	42.8932	0.635747	0.315371	1.6514	0.23308
Repeat: 1	14.4333	0.0760261	0.205387	0.0262586	0.0798875
Repeat: 2	9.06686	0.0754401	0.206418	0.0262183	0.0796453
Repeat: 3	6.08588	0.0750745	0.205221	0.0254959	0.0795224
Element/Wavelength	V_2924	Zn2062	Sc1880	Sc3613	Sc3613-2
Avg. of Repeats:	0.00503431	1.16386	2399.27	645354	14773.2
Std Dev:	0.000124397	0.00169508	8.67575	10917.9	17.1055
%RSD:	2.47097	0.145642	0.361599	1.69177	0.115788
Repeat: 1	0.00512204	1.16305	2408.3	636978	14753.7
Repeat: 2	0.00489195	1.16272	2390.99	657702	14786
Repeat: 3	0.00508895	1.16581	2398.52	641384	14779.8

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	z *****	z *****	z *****	z *****	z *****
Std Dev:	----	----	----	----	----
%RSD:	----	----	----	----	----
Repeat: 1	z ----	z ----	z ----	z ----	z ----
Repeat: 2	z ----	z ----	z ----	z ----	z ----
Repeat: 3	z ----	z ----	z ----	z ----	z ----
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	z *****	z *****	z *****	z *****	z *****
Std Dev:	----	----	----	----	----
%RSD:	----	----	----	----	----
Repeat: 1	z ----	z ----	z ----	z ----	z ----
Repeat: 2	z ----	z ----	z ----	z ----	z ----
Repeat: 3	z ----	z ----	z ----	z ----	z ----
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mn2576
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	z *****	z *****	z *****	z *****	z *****
Std Dev:	----	----	----	----	----
%RSD:	----	----	----	----	----
Repeat: 1	z ----	z ----	z ----	z ----	z ----
Repeat: 2	z ----	z ----	z ----	z ----	z ----
Repeat: 3	z ----	z ----	z ----	z ----	z ----
Element/Wavelength	Mo2020	Ni2316	Pb2203	Sb2068	Se1960
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	z *****	z *****	z *****	z *****	z *****
Std Dev:	----	----	----	----	----
%RSD:	----	----	----	----	----
Repeat: 1	z ----	z ----	z ----	z ----	z ----
Repeat: 2	z ----	z ----	z ----	z ----	z ----
Repeat: 3	z ----	z ----	z ----	z ----	z ----
Element/Wavelength	Si2516	Sn1899	Sr4215	Ti3349	Tl1908
Units:	ppm	ppb	ppb	ppb	ppb
Avg. of Repeats:	z *****	z *****	z *****	z *****	z *****
Std Dev:	----	----	----	----	----
%RSD:	----	----	----	----	----
Repeat: 1	z ----	z ----	z ----	z ----	z ----

Repeat: 2	z ----	z ----	z ----	z ----	z ----
Repeat: 3	z ----	z ----	z ----	z ----	z ----
Element/Wavelength	**V_2924**	**Zn2062**	**Sc1880**	**Sc3613**	**Sc3613-2**
Units:	ppb	ppb	----	----	----
Avg. of Repeats:	0	0	2399.27	645354	14773.2
Std Dev:	0	0	8.67575	10917.9	17.1055
%RSD:	0	0	0.361599	1.69177	0.115788
Repeat: 1	0	0	2408.3	636978	14753.7
Repeat: 2	0	0	2390.99	657702	14786
Repeat: 3	0	0	2398.52	641384	14779.8

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2399.27	645354	14773.2
Std Dev:	8.67575	10917.9	17.1055
%RSD:	0.361599	1.69177	0.115788
Repeat: 1	2408.3	636978	14753.7
Repeat: 2	2390.99	657702	14786
Repeat: 3	2398.52	641384	14779.8

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
SEQ-CAL3	9/14/2016 9:58:46AM	Standard	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1142)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.0265633	0.419209	0.439305	0.0175183	15.8833
Std Dev:	0.000213232	0.00378362	0.00235132	5.18356e-005	0.0340335
%RSD:	0.802733	0.902563	0.535237	0.295894	0.214272
Repeat: 1	0.0265031	0.414848	0.43789	0.0174586	15.8441
Repeat: 2	0.0268002	0.42116	0.438005	0.0175444	15.9006
Repeat: 3	0.0263867	0.421619	0.442019	0.0175519	15.9052
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	2.74881	4.48389	29.6403	8.005	0.0471917
Std Dev:	0.0163082	0.0285305	0.10575	0.0244497	0.000455612
%RSD:	0.593283	0.636288	0.356778	0.30543	0.965451
Repeat: 1	2.73003	4.45144	29.5182	7.97718	0.0471281
Repeat: 2	2.75703	4.49522	29.6982	8.01475	0.0476757
Repeat: 3	2.75937	4.50502	29.7044	8.02307	0.0467712
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0958832	0.21734	0.204072	0.00604009	0.147707
Std Dev:	0.000420269	0.00138343	0.00183548	4.43742e-005	0.00101027
%RSD:	0.438313	0.636528	0.899425	0.734661	0.683972
Repeat: 1	0.0954354	0.215796	0.201985	0.00599061	0.146573
Repeat: 2	0.096269	0.217756	0.205435	0.00607634	0.148036
Repeat: 3	0.0959452	0.218468	0.204797	0.00605332	0.148511
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.337792	4.09273	1.96517	4.53591	1.94357
Std Dev:	0.00473	0.0139594	0.0122624	0.012336	0.00778765
%RSD:	1.40027	0.341078	0.623985	0.271964	0.400688
Repeat: 1	0.332341	4.07717	1.95113	4.52189	1.93502
Repeat: 2	0.340219	4.0969	1.97061	4.54074	1.94545
Repeat: 3	0.340815	4.10414	1.97378	4.5451	1.95025

Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	0.885436	0.471591	238.079	1.52662	2.07542
Std Dev:	0.00403533	0.0017772	3.19773	0.00366036	0.0153917
%RSD:	0.455745	0.376852	1.34314	0.239769	0.741619
Repeat: 1	0.880939	0.469863	236.028	1.52386	2.059
Repeat: 2	0.886627	0.473413	241.764	1.52523	2.07773
Repeat: 3	0.888742	0.471496	236.446	1.53077	2.08952
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.252463	0.772887	0.0515777	11.2844	2297.13
Std Dev:	0.00162455	0.0012538	0.000422276	0.0371391	13.6604
%RSD:	0.643481	0.162223	0.818717	0.329117	0.594672
Repeat: 1	0.250784	0.771658	0.051513	11.243	2312.9
Repeat: 2	0.252578	0.774164	0.0520286	11.2958	2289.6
Repeat: 3	0.254027	0.772838	0.0511915	11.3146	2288.89
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	626117	14343			
Std Dev:	2297.48	93.7686			
%RSD:	0.366941	0.653757			
Repeat: 1	628522	14441.8			
Repeat: 2	625886	14332.1			
Repeat: 3	623944	14255.2			

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	k 476.101	k 9384.96	k 996.086	k 1025.93	k 928.823
Std Dev:	3.89745	85.0758	5.26292	3.0503	1.99391
%RSD:	0.818618	0.906512	0.52836	0.29732	0.214671
Repeat: 1	475	9286.9	992.919	1022.42	926.526
Repeat: 2	480.431	9428.89	993.178	1027.47	929.836
Repeat: 3	472.873	9439.09	1002.16	1027.91	930.108
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	k 997.542	42.3366	k 972.241	k 943.04	k 961.764
Std Dev:	5.92002	0.269406	3.47245	2.8873	9.33206
%RSD:	0.593461	0.636342	0.357159	0.30617	0.970307
Repeat: 1	990.724	42.0302	968.233	939.754	960.461
Repeat: 2	1000.53	42.4436	974.142	944.191	971.678
Repeat: 3	1001.38	42.5361	974.348	945.174	953.151
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	k 997.331	k 9545.53	8.75406	k 932.878	z *****
Std Dev:	4.40151	60.7661	0.074775	6.79317	----
%RSD:	0.441329	0.636593	0.854175	0.728194	----
Repeat: 1	992.641	9477.72	8.66903	925.304	z ----
Repeat: 2	1001.37	9563.8	8.80956	938.431	z ----
Repeat: 3	997.981	9595.06	8.78359	934.901	z ----
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	k 923.201	k 1014.87	z *****	k 950.38	k 928.057
Std Dev:	12.9294	3.461	----	2.59837	3.70163
%RSD:	1.4005	0.341027	----	0.273403	0.398858
Repeat: 1	908.301	1011.02	z ----	947.427	923.991
Repeat: 2	929.835	1015.91	z ----	951.398	928.949

Repeat: 3	931.466	1017.7	z ----	952.316	931.231
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	k 1036.24	k 1000.29	k 4010.51	k 993.694	942.914
Std Dev:	4.69326	3.84813	55.3659	2.38037	6.93988
%RSD:	0.452911	0.384702	1.38052	0.239547	0.736004
Repeat: 1	1031.01	996.547	3974.99	991.898	935.512
Repeat: 2	1037.63	1004.23	4074.3	992.791	943.955
Repeat: 3	1040.09	1000.08	3982.23	996.394	949.274
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	k 997.653	k 948.028	k 1001.17	977.497	2297.13
Std Dev:	6.43982	1.53431	8.1846	3.21813	13.6604
%RSD:	0.645497	0.161843	0.817506	0.329222	0.594672
Repeat: 1	990.999	946.525	999.912	973.902	2312.9
Repeat: 2	998.105	949.592	1009.91	978.477	2289.6
Repeat: 3	1003.85	947.969	993.681	980.111	2288.89

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	626117	14343
Std Dev:	2297.48	93.7686
%RSD:	0.366941	0.653757
Repeat: 1	628522	14441.8
Repeat: 2	625886	14332.1
Repeat: 3	623944	14255.2

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2297.13	626117	14343
Std Dev:	13.6604	2297.48	93.7686
%RSD:	0.594672	0.366941	0.653757
Repeat: 1	2312.9	628522	14441.8
Repeat: 2	2289.6	625886	14332.1
Repeat: 3	2288.89	623944	14255.2

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
SEQ-CAL4	9/14/2016 10:02:36AM	Standard	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1142)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Ba2335**	**Mn2576**	**Sc1880**	**Sc3613**
Avg. of Repeats:	0.111268	85.4767	3.55988	2390.95	647278
Std Dev:	0.00146353	0.0108685	0.0815277	1.19423	5643.65
%RSD:	1.31532	0.0127152	2.29018	0.049948	0.871905
Repeat: 1	0.111708	85.4757	3.55172	2391.57	643934
Repeat: 2	0.112462	85.4664	3.64518	2389.58	644107
Repeat: 3	0.109635	85.4881	3.48274	2391.71	653794

Concentration

Element/Wavelength	**Ag3280**	**Ba2335**	**Mn2576**	**Sc1880**	**Sc3613**
Units:	ppb	ppb	ppb	----	----
Avg. of Repeats:	k 2104.64	z *****	10463.2	2390.95	647278
Std Dev:	27.8115	----	239.63	1.19423	5643.65
%RSD:	1.32144	----	2.29022	0.049948	0.871905

Repeat: 1	2113	z ----	10439.2	2391.57	643934
Repeat: 2	2127.31	z ----	10713.9	2389.58	644107
Repeat: 3	2073.61	z ----	10236.4	2391.71	653794

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**
Avg. of Repeats:	2390.95	647278
Std Dev:	1.19423	5643.65
%RSD:	0.049948	0.871905
Repeat: 1	2391.57	643934
Repeat: 2	2389.58	644107
Repeat: 3	2391.71	653794

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
SEQ-CAL5	9/14/2016 10:06:53AM	Standard	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1142)

Corrected CTS/S

Element/Wavelength	**Al3961**	**Fe2611**	**Mg2790**	**Sc3613-2**
Avg. of Repeats:	20.8281	10.7909	1.52332	13669.2
Std Dev:	0.107036	0.0833689	0.00681895	61.4583
%RSD:	0.513901	0.772583	0.447638	0.449613
Repeat: 1	20.722	10.7392	1.51683	13610.6
Repeat: 2	20.8262	10.7465	1.5227	13733.1
Repeat: 3	20.9361	10.8871	1.53043	13663.8

Concentration

Element/Wavelength	**Al3961**	**Fe2611**	**Mg2790**	**Sc3613-2**
Units:	ppb	ppb	ppm	----
Avg. of Repeats:	k 492835	488501	515.447	13669.2
Std Dev:	2532.74	3774.08	2.30733	61.4583
%RSD:	0.513911	0.772585	0.447636	0.449613
Repeat: 1	490325	486159	513.251	13610.6
Repeat: 2	492790	486489	515.238	13733.1
Repeat: 3	495390	492855	517.851	13663.8

Internal Standards

Element/Wavelength	**Sc3613-2**
Avg. of Repeats:	13669.2
Std Dev:	61.4583
%RSD:	0.449613
Repeat: 1	13610.6
Repeat: 2	13733.1
Repeat: 3	13663.8

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
SEQ-CAL6	9/14/2016 10:10:54AM	Standard	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1142)

Corrected CTS/S

Element/Wavelength	**As1890**	**B_2496**	**Be3130**	**Cd2144**	**Co2286**
Avg. of Repeats:	4.30818	0.0839003	26.9518	288.46	84.0336
Std Dev:	0.0111494	0.000358519	0.294757	1.13376	0.209496
%RSD:	0.258795	0.427316	1.09364	0.393039	0.2493

Repeat: 1	4.29531	0.0843142	26.6137	289.709	83.793
Repeat: 2	4.31448	0.0836988	27.1548	287.496	84.1321
Repeat: 3	4.31475	0.0836877	27.0869	288.174	84.1757
Element/Wavelength	**Cr2677**	**Cu3247**	**Li6707**	**Mo2020**	**Ni2316**
Avg. of Repeats:	0.467641	0.955394	0.0566819	40.4483	46.6516
Std Dev:	0.00574761	0.0069404	0.000618316	0.0960892	0.100092
%RSD:	1.22907	0.726443	1.09085	0.23756	0.214551
Repeat: 1	0.473137	0.951818	0.0573605	40.3472	46.5459
Repeat: 2	0.461671	0.950972	0.0565347	40.4593	46.7449
Repeat: 3	0.468114	0.963394	0.0561505	40.5384	46.6642
Element/Wavelength	**Pb2203**	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**
Avg. of Repeats:	20.6191	8.8	4.44494	390.739	7.67702
Std Dev:	0.0489512	0.0216982	0.0157773	5.49495	0.0233426
%RSD:	0.237408	0.24657	0.354949	1.4063	0.304058
Repeat: 1	20.5659	8.77499	4.42869	394.312	7.65143
Repeat: 2	20.6622	8.81122	4.44594	393.494	7.68248
Repeat: 3	20.6292	8.8138	4.4602	384.412	7.69714
Element/Wavelength	**Sr4215**	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**
Avg. of Repeats:	21.3581	2.50767	7.81132	0.509265	112.181
Std Dev:	0.233113	0.00744393	0.0303194	0.00358535	0.906746
%RSD:	1.09145	0.296846	0.388147	0.704024	0.80829
Repeat: 1	21.1493	2.49974	7.77637	0.512083	111.292
Repeat: 2	21.6096	2.51451	7.83059	0.510483	113.105
Repeat: 3	21.3154	2.50876	7.827	0.505229	112.145
Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**		
Avg. of Repeats:	2339.55	641630	14606.2		
Std Dev:	2.54475	6040.61	63.9232		
%RSD:	0.108771	0.941448	0.437645		
Repeat: 1	2342.18	635092	14680		
Repeat: 2	2339.36	642796	14570		
Repeat: 3	2337.1	647003	14568.6		

Concentration

Element/Wavelength	**As1890**	**B_2496**	**Be3130**	**Cd2144**	**Co2286**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	k 9710.55	k 4819.56	k 9800.43	k 9720.34	k 10467.8
Std Dev:	25.0971	20.6154	107.185	38.2094	26.1024
%RSD:	0.258452	0.427744	1.09368	0.393087	0.249358
Repeat: 1	9681.57	4843.36	9677.49	9762.44	10437.9
Repeat: 2	9724.73	4807.98	9874.24	9687.86	10480.1
Repeat: 3	9725.34	4807.34	9849.56	9710.72	10485.6
Element/Wavelength	**Cr2677**	**Cu3247**	**Li6707**	**Mo2020**	**Ni2316**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	k 9928.08	k 10019.4	z *****	k 9889.98	k 10275.6
Std Dev:	122.084	72.8352	----	23.4943	22.0578
%RSD:	1.22969	0.726942	----	0.237557	0.214661
Repeat: 1	10044.8	9981.86	z ----	9865.26	10252.3
Repeat: 2	9801.28	9972.98	z ----	9892.66	10296.2
Repeat: 3	9938.13	10103.3	z ----	9912.02	10278.4
Element/Wavelength	**Pb2203**	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**
Units:	ppb	ppb	ppb	ppm	ppb
Avg. of Repeats:	k 10466.7	k 10098.8	9608.78	9904.31	5024.73
Std Dev:	24.8347	24.885	34.1804	141.621	15.2753
%RSD:	0.237272	0.246415	0.35572	1.42989	0.304002

Repeat: 1	10439.7	10070.1	9573.57	9996.38	5007.99
Repeat: 2	10488.6	10111.7	9610.94	9975.31	5028.31
Repeat: 3	10471.8	10114.6	9641.83	9741.23	5037.9
Element/Wavelength	**Sr4215**	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	10170.7	9992.31	10004.4	9777.41	9969.33
Std Dev:	110.925	29.671	38.8227	68.825	80.5839
%RSD:	1.09063	0.296938	0.388056	0.703918	0.808318
Repeat: 1	10071.3	9960.71	9959.64	9831.51	9890.36
Repeat: 2	10290.4	10019.6	10029.1	9800.79	10051.4
Repeat: 3	10150.4	9996.65	10024.5	9699.95	9966.19

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Units:	----	----	----
Avg. of Repeats:	2339.55	641630	14606.2
Std Dev:	2.54475	6040.61	63.9232
%RSD:	0.108771	0.941448	0.437645
Repeat: 1	2342.18	635092	14680
Repeat: 2	2339.36	642796	14570
Repeat: 3	2337.1	647003	14568.6

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2339.55	641630	14606.2
Std Dev:	2.54475	6040.61	63.9232
%RSD:	0.108771	0.941448	0.437645
Repeat: 1	2342.18	635092	14680
Repeat: 2	2339.36	642796	14570
Repeat: 3	2337.1	647003	14568.6

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
SEQ-CAL7	9/14/2016 10:15:50AM	Standard	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1142)

Corrected CTS/S

Element/Wavelength	**K_7664**	**Na5895**	**Sc3613-2**
Avg. of Repeats:	2.06722	3.84796	14423.4
Std Dev:	0.00522453	0.0193042	58.331
%RSD:	0.252732	0.501673	0.40442
Repeat: 1	2.07223	3.86631	14362.9
Repeat: 2	2.06181	3.82782	14479.3
Repeat: 3	2.06762	3.84976	14427.8

Concentration

Element/Wavelength	**K_7664**	**Na5895**	**Sc3613-2**
Units:	ppm	ppm	----
Avg. of Repeats:	95.4718	97.9868	14423.4
Std Dev:	0.240033	0.492008	58.331
%RSD:	0.251418	0.502116	0.40442
Repeat: 1	95.7021	98.4544	14362.9
Repeat: 2	95.2231	97.4736	14479.3
Repeat: 3	95.4902	98.0325	14427.8

Internal Standards

Element/Wavelength	**Sc3613-2**
Avg. of Repeats:	14423.4

Std Dev:	58.331
%RSD:	0.40442
Repeat: 1	14362.9
Repeat: 2	14479.3
Repeat: 3	14427.8

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
SEQ-CAL8	9/14/2016 10:19:32AM	Standard	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1142)

Corrected CTS/S

Element/Wavelength	**Ca3179**	**Mg2790**	**Sc3613-2**
Avg. of Repeats:	44.1244	0.330427	13579.2
Std Dev:	0.684884	0.000928406	51.2438
%RSD:	1.55216	0.280972	0.377369
Repeat: 1	43.8429	0.331357	13532.1
Repeat: 2	43.6252	0.3295	13571.7
Repeat: 3	44.9052	0.330422	13633.8

Concentration

Element/Wavelength	**Ca3179**	**Mg2790**	**Sc3613-2**
Units:	ppm	ppm	----
Avg. of Repeats:	490.333	108.703	13579.2
Std Dev:	7.61084	0.305415	51.2438
%RSD:	1.55218	0.280963	0.377369
Repeat: 1	487.205	109.009	13532.1
Repeat: 2	484.785	108.398	13571.7
Repeat: 3	499.01	108.701	13633.8

Internal Standards

Element/Wavelength	**Sc3613-2**
Avg. of Repeats:	13579.2
Std Dev:	51.2438
%RSD:	0.377369
Repeat: 1	13532.1
Repeat: 2	13571.7
Repeat: 3	13633.8

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
SEQ-CAL9	9/14/2016 10:23:32AM	Standard	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1142)

Corrected CTS/S

Element/Wavelength	**Na5895**	**Sc3613-2**
Avg. of Repeats:	14.266	13496.8
Std Dev:	0.510675	48.4777
%RSD:	3.57967	0.359179
Repeat: 1	14.7043	13497.7
Repeat: 2	14.3885	13447.8
Repeat: 3	13.7052	13544.8

Concentration

Element/Wavelength	**Na5895**	**Sc3613-2**
Units:	ppm	----

Avg. of Repeats:	368.458	13496.8
Std Dev:	13.1927	48.4777
%RSD:	3.58052	0.359179
Repeat: 1	379.781	13497.7
Repeat: 2	371.622	13447.8
Repeat: 3	353.971	13544.8

Internal Standards

Element/Wavelength	**Sc3613-2**
Avg. of Repeats:	13496.8
Std Dev:	48.4777
%RSD:	0.359179
Repeat: 1	13497.7
Repeat: 2	13447.8
Repeat: 3	13544.8

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25804-ICV1	9/14/2016 10:58:19AM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.0264093	0.414713	0.44891	0.0178444	16.3188
Std Dev:	6.6723e-005	0.000328124	0.00119443	0.000103558	0.0338074
%RSD:	0.25265	0.0791209	0.266073	0.580338	0.207168
Repeat: 1	0.0263648	0.414597	0.449633	0.0179528	16.3536
Repeat: 2	0.026377	0.414458	0.449565	0.0177465	16.3166
Repeat: 3	0.026486	0.415083	0.447531	0.017834	16.2861
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	2.75295	4.62465	29.2493	7.99885	0.0452902
Std Dev:	0.00456278	0.00877765	0.0787134	0.0142775	6.93801e-005
%RSD:	0.165742	0.189801	0.269112	0.178495	0.15319
Repeat: 1	2.74839	4.61556	29.3391	8.01528	0.0452334
Repeat: 2	2.75294	4.6253	29.1923	7.99179	0.0453675
Repeat: 3	2.75752	4.63308	29.2165	7.98948	0.0452697
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0974598	0.217634	0.203509	0.00624572	0.147172
Std Dev:	0.000308206	0.00120213	0.00178919	2.82689e-005	0.000619115
%RSD:	0.316239	0.552362	0.87917	0.452613	0.420674
Repeat: 1	0.0976495	0.218847	0.205391	0.00627391	0.147632
Repeat: 2	0.0971042	0.216443	0.201831	0.00624588	0.146468
Repeat: 3	0.0976258	0.217612	0.203304	0.00621737	0.147416
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.339994	4.07674	1.97033	4.61405	1.96464
Std Dev:	0.00150944	0.0013341	0.0180244	0.00761858	0.00399219
%RSD:	0.443961	0.0327247	0.914794	0.165117	0.203203
Repeat: 1	0.341497	4.0782	1.99084	4.62285	1.96897
Repeat: 2	0.338478	4.07558	1.95702	4.60979	1.96384
Repeat: 3	0.340009	4.07646	1.96312	4.60952	1.9611
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.884594	0.471463	1120.83	1.51024	2.08511
Std Dev:	0.00101587	0.00291948	6.31587	0.00238844	0.00899206

%RSD:	0.11484	0.619238	0.5635	0.158149	0.431251
Repeat: 1	0.883998	0.472164	1114.21	1.51295	2.09289
Repeat: 2	0.885767	0.468257	1121.49	1.50844	2.07527
Repeat: 3	0.884016	0.473968	1126.79	1.50933	2.08719
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.250978	0.787719	0.05088	11.2445	2261.52
Std Dev:	0.000520512	0.00212789	5.94296e-005	0.0110545	7.02
%RSD:	0.207393	0.270134	0.116803	0.0983105	0.310411
Repeat: 1	0.250604	0.790146	0.0508114	11.2406	2254.64
Repeat: 2	0.251573	0.786834	0.0509156	11.2359	2261.23
Repeat: 3	0.250758	0.786176	0.0509131	11.257	2268.68
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	626710	14414.9			
Std Dev:	1922.81	51.5776			
%RSD:	0.30681	0.357806			
Repeat: 1	625040	14367.3			
Repeat: 2	626277	14469.7			
Repeat: 3	628812	14407.9			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	476.831	9799.34	1051.05	1055.27	967.522
Std Dev:	1.22052	7.74039	2.76703	6.16056	1.99737
%RSD:	0.255965	0.0789889	0.263264	0.583789	0.206442
Repeat: 1	476.013	9796.75	1052.73	1061.72	969.58
Repeat: 2	476.246	9793.22	1052.57	1049.44	967.394
Repeat: 3	478.233	9808.04	1047.86	1054.66	965.592
QC Status Pass/Fail:	Pass	Pass	Fail	Fail	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	1019.14	52.3051	1009.38	953.74	962.309
Std Dev:	1.68861	0.0992844	2.71915	1.70871	1.48728
%RSD:	0.165689	0.189818	0.269387	0.179158	0.154553
Repeat: 1	1017.45	52.2023	1012.48	955.707	961.09
Repeat: 2	1019.14	52.3125	1007.41	952.892	963.966
Repeat: 3	1020.83	52.4005	1008.25	952.621	961.87
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	1014.45	10084.6	10.2652	1099.92	47.7946
Std Dev:	3.22855	55.6779	0.0856976	4.9369	0.201008
%RSD:	0.318256	0.55211	0.834839	0.448843	0.420567
Repeat: 1	1016.44	10140.7	10.3553	1104.84	47.9439
Repeat: 2	1010.73	10029.4	10.1848	1099.95	47.566
Repeat: 3	1016.19	10083.6	10.2553	1094.96	47.8738
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	958.922	1007.07	50.8132	987.054	962.951
Std Dev:	4.25768	0.329776	0.465641	1.63681	1.94013
%RSD:	0.444007	0.0327462	0.916379	0.165828	0.201478
Repeat: 1	963.159	1007.42	51.3431	988.944	965.056
Repeat: 2	954.644	1006.78	50.4694	986.139	962.563

Repeat: 3	958.962	1006.99	50.627	986.08	961.234
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1010.75	1035.86	19895.5	985.351	983.969
Std Dev:	1.14285	6.55015	112.74	1.55756	4.2145
%RSD:	0.11307	0.632339	0.566661	0.158071	0.428316
Repeat: 1	1010.09	1037.43	19777.4	987.118	987.614
Repeat: 2	1012.07	1028.67	19907.3	984.177	979.354
Repeat: 3	1010.09	1041.48	20001.9	984.757	984.94
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	994.643	1010.13	999.169	1000.42	2261.52
Std Dev:	2.08466	2.70449	1.16225	0.98377	7.02
%RSD:	0.209589	0.267736	0.116322	0.0983353	0.310411
Repeat: 1	993.148	1013.22	997.827	1000.07	2254.64
Repeat: 2	997.024	1009.02	999.872	999.667	2261.23
Repeat: 3	993.757	1008.17	999.807	1001.54	2268.68
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	626710	14414.9
Std Dev:	1922.81	51.5776
%RSD:	0.30681	0.357806
Repeat: 1	625040	14367.3
Repeat: 2	626277	14469.7
Repeat: 3	628812	14407.9
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2261.52	626710	14414.9
Std Dev:	7.02	1922.81	51.5776
%RSD:	0.310411	0.30681	0.357806
Repeat: 1	2254.64	625040	14367.3
Repeat: 2	2261.23	626277	14469.7
Repeat: 3	2268.68	628812	14407.9

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25804-ICB1	9/14/2016 11:03:29AM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000538258	0.000746001	-0.00550806	9.65354e-005	0.0309812
Std Dev:	2.77605e-005	0.000428232	0.00087456	8.97287e-006	0.000990433
%RSD:	5.15747	57.4037	15.8778	9.29491	3.19689
Repeat: 1	0.000565016	0.00122581	-0.00494179	0.000102917	0.0298835
Repeat: 2	0.000509593	0.000609624	-0.00651532	0.000100413	0.0312523
Repeat: 3	0.000540166	0.000402566	-0.00506707	8.62757e-005	0.0318079
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00124207	0.0001378	0.0354484	0.0217702	0.000236024

Std Dev:	0.000363637	0.000109909	0.00234835	0.000189204	1.55896e-005
%RSD:	29.2766	79.76	6.62468	0.869094	6.6051
Repeat: 1	0.00166094	0.000153227	0.0329577	0.0215772	0.000228044
Repeat: 2	0.00105803	2.09926e-005	0.0357653	0.0217781	0.000253988
Repeat: 3	0.00100726	0.000239181	0.0376222	0.0219554	0.00022604
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.000776588	7.04541e-005	-0.00871675	-4.91145e-005	-5.29933e-005
Std Dev:	2.99567e-005	0.000104104	0.000471138	4.47922e-006	7.43988e-005
%RSD:	3.85748	147.761	5.40497	9.11995	140.393
Repeat: 1	0.000755001	0.000184549	-0.00829455	-4.39488e-005	-1.34979e-005
Repeat: 2	0.000810789	4.61836e-005	-0.00922497	-5.1474e-005	-6.67097e-006
Repeat: 3	0.000763975	-1.93703e-005	-0.00863074	-5.19208e-005	-0.000138811
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	8.04714e-005	0.000844083	0.00846237	0.0227989	-0.0062303
Std Dev:	1.90929e-005	0.000885218	0.000133276	0.00106214	0.00300915
%RSD:	23.7263	104.873	1.57492	4.65872	48.2986
Repeat: 1	8.89922e-005	0.00147219	0.00836806	0.0232755	-0.0028257
Repeat: 2	5.86017e-005	-0.000168341	0.00861484	0.0215819	-0.00733136
Repeat: 3	9.38201e-005	0.0012284	0.00840421	0.0235392	-0.00853385
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.0061671	0.0105251	7.39397	-0.00179668	-0.0163819
Std Dev:	0.000215345	0.00104199	0.68263	0.000693229	0.000256067
%RSD:	3.49185	9.90008	9.23226	38.5839	1.56311
Repeat: 1	-0.00595888	0.0111363	8.18209	-0.00226403	-0.0166636
Repeat: 2	-0.00638892	0.00932197	6.98829	-0.00212581	-0.0163188
Repeat: 3	-0.00615349	0.0111171	7.01153	-0.00100019	-0.0161633
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.000888017	-0.00115105	-8.66113e-005	0.00563096	2319.89
Std Dev:	0.000314722	0.00115178	2.33531e-005	0.000587209	0.581055
%RSD:	35.441	100.063	26.963	10.4282	0.0250467
Repeat: 1	0.000545182	-0.00128142	-0.00010941	0.00627166	2320.04
Repeat: 2	0.00116383	-0.0022321	-6.27405e-005	0.00550278	2320.37
Repeat: 3	0.00095504	6.03565e-005	-8.76839e-005	0.00511842	2319.24
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	641530	14822.5			
Std Dev:	2695.44	62.3751			
%RSD:	0.420158	0.420813			
Repeat: 1	638802	14753.9			
Repeat: 2	644192	14875.8			
Repeat: 3	641594	14837.9			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	0.416024	0.163699	0.47964	0.743943	0.0900356
Std Dev:	0.504631	10.2737	2.0255	0.534231	0.0596855
%RSD:	121.299	6275.99	422.297	71.8107	66.291
Repeat: 1	0.902382	11.6724	1.79124	1.12406	0.0235159
Repeat: 2	-0.105083	-3.09818	-1.8532	0.974643	0.107685
Repeat: 3	0.450773	-8.08307	1.50088	0.133128	0.138906
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.150892	-0.00296454	-0.00513287	0.293332	-0.00808207

Std Dev:	0.133653	0.00124319	0.0813595	0.0211933	0.333194
%RSD:	88.5749	41.9354	1585.07	7.22502	4122.63
Repeat: 1	0.304816	-0.00279005	-0.091324	0.272911	-0.178686
Repeat: 2	0.083612	-0.00428575	0.00559474	0.291864	0.375865
Repeat: 3	0.0642493	-0.00181781	0.0703307	0.315221	-0.221425
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	1.27248	1.9402	0.100088	0.458706	-0.0160937
Std Dev:	0.314511	4.82024	0.0225663	0.783702	0.024152
%RSD:	24.7164	248.44	22.5465	170.851	150.071
Repeat: 1	1.04558	7.22276	0.120311	1.36256	-0.00326791
Repeat: 2	1.6315	0.817349	0.0757457	0.0450975	-0.0010604
Repeat: 3	1.14036	-2.21951	0.104208	-0.0315437	-0.0439529
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	0.0737595	0.35711	0.130559	-0.231675	1.30958
Std Dev:	0.0538626	0.21848	0.00344304	0.227804	1.46667
%RSD:	73.0246	61.1802	2.63716	98.3291	111.995
Repeat: 1	0.097685	0.51217	0.128122	-0.12943	2.96902
Repeat: 2	0.012079	0.10724	0.134498	-0.492688	0.772792
Repeat: 3	0.111515	0.451919	0.129056	-0.0729067	0.186929
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-0.724584	1.98518	16.895	-0.25112	-0.167707
Std Dev:	0.256957	2.33842	12.1869	0.45198	0.119999
%RSD:	35.4626	117.794	72.1336	179.985	71.5529
Repeat: 1	-0.478779	3.35609	30.9652	-0.555723	-0.299732
Repeat: 2	-0.991402	-0.714891	9.65271	-0.465832	-0.138119
Repeat: 3	-0.703572	3.31433	10.067	0.268194	-0.0652695
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	0.453639	0.849069	-0.199994	0.14318	2319.89
Std Dev:	1.25573	1.46742	0.455542	0.0523906	0.581055
%RSD:	276.811	172.826	227.778	36.5907	0.0250467
Repeat: 1	-0.914661	0.678408	-0.643525	0.200407	2320.04
Repeat: 2	1.55332	-0.525554	0.266677	0.131554	2320.37
Repeat: 3	0.722264	2.39435	-0.223133	0.0975787	2319.24
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	641530	14822.5			
Std Dev:	2695.44	62.3751			
%RSD:	0.420158	0.420813			
Repeat: 1	638802	14753.9			
Repeat: 2	644192	14875.8			
Repeat: 3	641594	14837.9			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**

Avg. of Repeats:	2319.89	641530	14822.5
Std Dev:	0.581055	2695.44	62.3751
%RSD:	0.0250467	0.420158	0.420813
Repeat: 1	2320.04	638802	14753.9
Repeat: 2	2320.37	644192	14875.8
Repeat: 3	2319.24	641594	14837.9

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25804-CRL	9/14/2016 11:12:43AM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000671902	0.00914375	-0.00345202	0.000565703	0.19207
Std Dev:	6.90635e-006	0.000964921	0.000213671	2.01047e-005	0.00315502
%RSD:	1.02788	10.5528	6.18975	3.55392	1.64264
Repeat: 1	0.000667526	0.0102273	-0.00368681	0.000559798	0.192355
Repeat: 2	0.000679863	0.00837709	-0.00326897	0.000588099	0.188782
Repeat: 3	0.000668315	0.00882691	-0.00340028	0.000549212	0.195072
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00620177	0.178748	0.0929869	0.101898	0.000405011
Std Dev:	0.000156404	0.000201693	0.00116081	0.00231356	6.90931e-007
%RSD:	2.52193	0.112836	1.24836	2.27048	0.170596
Repeat: 1	0.00605864	0.178839	0.0943213	0.100664	0.000404358
Repeat: 2	0.00617795	0.178517	0.0924294	0.100463	0.000404941
Repeat: 3	0.00636872	0.178889	0.0922101	0.104566	0.000405735
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00162139	0.0020209	0.0523042	-3.84015e-005	0.00918986
Std Dev:	2.74869e-005	6.68548e-005	0.0003424	2.84558e-005	0.000148584
%RSD:	1.69526	3.30816	0.654632	74.1009	1.61683
Repeat: 1	0.00159691	0.00201103	0.052394	-2.44109e-005	0.00918924
Repeat: 2	0.00161614	0.00209215	0.0519259	-1.96493e-005	0.00904158
Repeat: 3	0.00165113	0.00195954	0.0525928	-7.11443e-005	0.00933875
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.00220341	0.0374805	0.131596	0.0502067	-0.002239
Std Dev:	1.93605e-005	0.00112117	0.000433429	0.000589564	0.000846885
%RSD:	0.878659	2.99134	0.329363	1.17427	37.8242
Repeat: 1	0.0021931	0.0379724	0.132051	0.0503619	-0.00279896
Repeat: 2	0.00222574	0.0361974	0.13155	0.0507031	-0.00126472
Repeat: 3	0.00219138	0.0382716	0.131188	0.0495551	-0.00265332
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.00151385	0.0125815	6.647	0.0263004	-0.00392632
Std Dev:	0.000457701	0.000596059	1.23094	0.000284643	0.000385824
%RSD:	30.2342	4.73758	18.5187	1.08228	9.82661
Repeat: 1	0.0020343	0.0122913	7.96954	0.0261553	-0.00388656
Repeat: 2	0.00117399	0.0121861	5.53476	0.0261176	-0.00356192
Repeat: 3	0.00133328	0.0132671	6.43671	0.0266284	-0.00433049
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.00305462	0.00473719	0.000374039	0.110456	2339.78
Std Dev:	0.000182284	0.000368962	2.38832e-005	0.000843928	5.09481
%RSD:	5.96747	7.78863	6.38522	0.764037	0.217748
Repeat: 1	0.00303699	0.00462988	0.000347665	0.1101	2339.56

Repeat: 2	0.0028818	0.00514792	0.000380247	0.109849	2344.97
Repeat: 3	0.00324509	0.00443378	0.000394205	0.11142	2334.79
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	633178	14661.6			
Std Dev:	3705.07	50.7123			
%RSD:	0.585155	0.345886			
Repeat: 1	635491	14663.3			
Repeat: 2	628904	14711.4			
Repeat: 3	635138	14610			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	2.89357	197.468	5.22573	28.6458	9.65502
Std Dev:	0.12656	23.1479	0.495117	1.19681	0.187107
%RSD:	4.37383	11.7223	9.4746	4.17798	1.93792
Repeat: 1	2.81154	223.464	4.68187	28.2947	9.67017
Repeat: 2	3.03933	179.086	5.65031	29.9788	9.4608
Repeat: 3	2.82985	189.855	5.34501	27.6638	9.83409
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	1.99102	2.01731	1.9727	9.87178	3.58326
Std Dev:	0.0581728	0.00228136	0.0399125	0.27578	0.0145899
%RSD:	2.92176	0.113089	2.02324	2.79362	0.40717
Repeat: 1	1.93819	2.01833	2.01859	9.72456	3.56932
Repeat: 2	1.9815	2.01469	1.95348	9.70085	3.58204
Repeat: 3	2.05337	2.01889	1.94603	10.1899	3.59842
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	10.1227	92.298	3.02284	2.23476	2.98449
Std Dev:	0.288122	3.09592	0.0164001	4.97513	0.0482351
%RSD:	2.84628	3.35426	0.54254	222.625	1.61619
Repeat: 1	9.86616	91.8404	3.02714	4.68051	2.98429
Repeat: 2	10.0676	95.5973	3.00472	5.51363	2.93635
Repeat: 3	10.4344	89.4564	3.03666	-3.48985	3.03282
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	6.06166	9.40604	3.31159	5.66007	3.30066
Std Dev:	0.0545617	0.276745	0.0111972	0.126227	0.407846
%RSD:	0.900112	2.94221	0.338121	2.23013	12.3565
Repeat: 1	6.03259	9.52739	3.32334	5.69329	3.03418
Repeat: 2	6.1246	9.08935	3.31039	5.76636	3.77017
Repeat: 3	6.02779	9.60138	3.30104	5.52055	3.09762
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	8.1083	6.58563	3.58026	18.066	5.64247
Std Dev:	0.530798	1.33829	21.9737	0.185508	0.180838
%RSD:	6.54636	20.3213	613.746	1.02684	3.20494
Repeat: 1	8.71179	5.93307	27.1894	17.9715	5.66109
Repeat: 2	7.71385	5.69879	-16.2741	17.9468	5.81328

Repeat: 3	7.89925	8.12502	-0.174472	18.2797	5.45305
QC Status Pass/Fail:	Pass	Fail	Pass	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	8.91758	8.38876	8.78276	9.49225	2339.78
Std Dev:	0.725106	0.468806	0.463949	0.0751588	5.09481
%RSD:	8.13119	5.5885	5.2825	0.791791	0.217748
Repeat: 1	8.84731	8.25051	8.27026	9.46034	2339.56
Repeat: 2	8.23018	8.91115	8.90387	9.43831	2344.97
Repeat: 3	9.67527	8.00463	9.17414	9.5781	2334.79
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	633178	14661.6			
Std Dev:	3705.07	50.7123			
%RSD:	0.585155	0.345886			
Repeat: 1	635491	14663.3			
Repeat: 2	628904	14711.4			
Repeat: 3	635138	14610			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2339.78	633178	14661.6
Std Dev:	5.09481	3705.07	50.7123
%RSD:	0.217748	0.585155	0.345886
Repeat: 1	2339.56	635491	14663.3
Repeat: 2	2344.97	628904	14711.4
Repeat: 3	2334.79	635138	14610

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25804-CRL	9/14/2016 11:17:26AM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000681433	0.00827645	-0.00382846	0.0005313	0.183517
Std Dev:	2.9906e-005	0.000426805	0.000492386	3.58001e-006	0.00266923
%RSD:	4.3887	5.15686	12.8612	0.673821	1.45449
Repeat: 1	0.00070564	0.00821107	-0.00356458	0.000531425	0.181058
Repeat: 2	0.000648001	0.00873217	-0.00439654	0.000534816	0.183138
Repeat: 3	0.000690656	0.00788611	-0.00352425	0.000527659	0.186356
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00556544	0.169418	0.0902055	0.0987836	0.000399859
Std Dev:	0.000370331	0.00092119	0.00200217	0.00192493	1.31488e-005
%RSD:	6.65412	0.543738	2.21957	1.94863	3.28836
Repeat: 1	0.00573348	0.16848	0.0891488	0.0969567	0.000402728
Repeat: 2	0.00514088	0.169453	0.0925147	0.0986007	0.000385512
Repeat: 3	0.00582196	0.170321	0.0889531	0.100793	0.000411335
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00154276	0.00181868	0.049098	-3.30005e-005	0.00871475
Std Dev:	6.07014e-005	0.000187914	0.000462515	2.83164e-005	4.03078e-005
%RSD:	3.93458	10.3324	0.942025	85.8062	0.462524

Repeat: 1	0.00147312	0.0019644	0.0495247	-6.19236e-005	0.00868579
Repeat: 2	0.00157078	0.00188505	0.0491627	-3.17453e-005	0.00869767
Repeat: 3	0.0015844	0.00160659	0.0486065	-5.33246e-006	0.00876079
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.00205303	0.0357471	0.127612	0.0478371	0.00153702
Std Dev:	3.31214e-005	0.00114874	0.00208232	0.000792508	0.00064628
%RSD:	1.61329	3.21351	1.63176	1.65668	42.0475
Repeat: 1	0.00208829	0.0367146	0.125319	0.0478327	0.00105195
Repeat: 2	0.00204823	0.0344775	0.128133	0.0470468	0.00227069
Repeat: 3	0.00202257	0.0360491	0.129385	0.0486318	0.00128843
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.00190634	0.0122893	8.63064	0.0241842	-0.00451129
Std Dev:	0.000677788	0.000806285	0.494266	0.00062589	0.000581387
%RSD:	35.5545	6.56088	5.72687	2.58801	12.8874
Repeat: 1	0.00207887	0.0130663	8.19907	0.0235747	-0.00438337
Repeat: 2	0.00115896	0.0123449	9.16986	0.0248253	-0.00514599
Repeat: 3	0.00248118	0.0114566	8.52301	0.0241525	-0.00400452
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.00301938	0.00405299	0.000381397	0.107297	2331.65
Std Dev:	0.000174866	0.000167216	2.23911e-005	0.00127193	17.3673
%RSD:	5.79147	4.12574	5.87082	1.18542	0.744849
Repeat: 1	0.00282256	0.00407788	0.00036943	0.108658	2337.5
Repeat: 2	0.00307874	0.00387472	0.000367533	0.106138	2312.12
Repeat: 3	0.00315683	0.00420636	0.000407229	0.107096	2345.34
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	636012	14656.2			
Std Dev:	2143.61	33.0068			
%RSD:	0.337039	0.225207			
Repeat: 1	634343	14689.8			
Repeat: 2	635263	14655			
Repeat: 3	638429	14623.8			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	3.06816	176.874	4.35412	26.599	9.14936
Std Dev:	0.546381	10.2563	1.13967	0.213644	0.159381
%RSD:	17.8081	5.79866	26.1746	0.803201	1.74199
Repeat: 1	3.50892	175.318	4.96486	26.6075	9.00296
Repeat: 2	2.45685	187.82	3.03925	26.8083	9.12596
Repeat: 3	3.23871	167.485	5.05826	26.3813	9.31914
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	1.75531	1.91177	1.8773	9.49921	3.4743
Std Dev:	0.136838	0.0104196	0.0688292	0.229103	0.281172
%RSD:	7.79565	0.545024	3.66639	2.41182	8.09291
Repeat: 1	1.81686	1.90116	1.8407	9.28243	3.53568
Repeat: 2	1.59851	1.91217	1.9567	9.4763	3.1675
Repeat: 3	1.85056	1.92199	1.8345	9.73891	3.7197
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	9.29908	82.9315	2.86927	3.18281	2.83025

Std Dev:	0.636122	8.70076	0.0221533	4.94927	0.0130805
%RSD:	6.8407	10.4915	0.772089	155.5	0.462166
Repeat: 1	8.56915	89.6798	2.88971	-1.87205	2.82085
Repeat: 2	9.59296	86.0032	2.87237	3.40122	2.8247
Repeat: 3	9.73513	73.1115	2.84573	8.01925	2.84519
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	5.63758	8.97798	3.20867	5.15107	5.13373
Std Dev:	0.0932788	0.283621	0.0537945	0.170453	0.316004
%RSD:	1.65459	3.15908	1.67654	3.30907	6.15545
Repeat: 1	5.73692	9.2169	3.14943	5.1499	4.89765
Repeat: 2	5.62397	8.66454	3.22211	4.9812	5.49273
Repeat: 3	5.55185	9.0525	3.25447	5.3221	5.01082
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Fail
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	8.56425	5.93129	38.9891	16.6861	5.36974
Std Dev:	0.779067	1.80921	8.82331	0.408091	0.272418
%RSD:	9.09673	30.5028	22.6302	2.44569	5.0732
Repeat: 1	8.76332	7.67517	31.2863	16.2889	5.42983
Repeat: 2	7.70496	6.05554	48.6155	17.1042	5.0723
Repeat: 3	9.22446	4.06315	37.0655	16.6654	5.6071
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	8.78613	7.51708	8.92442	9.21177	2331.65
Std Dev:	0.696944	0.214311	0.436687	0.114257	17.3673
%RSD:	7.93232	2.85099	4.89317	1.24034	0.744849
Repeat: 1	8.00156	7.54627	8.69322	9.33429	2337.5
Repeat: 2	9.0233	7.28966	8.65194	9.10813	2312.12
Repeat: 3	9.33354	7.71529	9.4281	9.1929	2345.34
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	636012	14656.2			
Std Dev:	2143.61	33.0068			
%RSD:	0.337039	0.225207			
Repeat: 1	634343	14689.8			
Repeat: 2	635263	14655			
Repeat: 3	638429	14623.8			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2331.65	636012	14656.2
Std Dev:	17.3673	2143.61	33.0068
%RSD:	0.744849	0.337039	0.225207
Repeat: 1	2337.5	634343	14689.8
Repeat: 2	2312.12	635263	14655
Repeat: 3	2345.34	638429	14623.8

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25804-IFA	9/14/2016 11:21:18AM	Unknown	1.00

Valid	Analyst Name	Method Name
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.000506286	20.7524	-0.0134987	0.000114437	0.046614
Std Dev:	2.19852e-005	0.0457376	0.000128327	8.60219e-006	0.00341296
%RSD:	4.34245	0.220396	0.950665	7.51699	7.32174
Repeat: 1	0.000526763	20.7318	-0.0136404	0.000113403	0.0453877
Repeat: 2	0.000483052	20.8048	-0.0133903	0.000123509	0.0439837
Repeat: 3	0.000509043	20.7207	-0.0134654	0.000106398	0.0504707
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	0.00111628	44.3281	0.36857	0.0418753	0.00040231
Std Dev:	0.000474756	0.607508	0.00341308	0.00298316	2.48998e-005
%RSD:	42.5302	1.37048	0.926034	7.12393	6.18921
Repeat: 1	0.000727609	44.3125	0.367202	0.0384455	0.000379307
Repeat: 2	0.000975811	44.9433	0.372455	0.0433135	0.000398875
Repeat: 3	0.00164542	43.7286	0.366054	0.0438669	0.000428749
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	-1.10786e-005	4.19835	-0.00962776	0.000103255	1.4193
Std Dev:	2.72709e-005	0.0260628	0.000299366	5.82997e-006	0.00522272
%RSD:	246.158	0.620786	3.10941	5.64618	0.367978
Repeat: 1	-3.01269e-005	4.20117	-0.00994117	9.78345e-005	1.42041
Repeat: 2	-2.32703e-005	4.2229	-0.00934476	0.000102508	1.42388
Repeat: 3	2.01613e-005	4.171	-0.00959735	0.000109422	1.41362
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.000969524	-0.00947544	0.0162166	0.0307647	-0.228601
Std Dev:	3.62422e-005	0.00232741	0.000778328	0.00159134	0.00440869
%RSD:	3.73815	24.5626	4.79958	5.1726	1.92855
Repeat: 1	0.000942982	-0.0106271	0.016992	0.0290358	-0.229056
Repeat: 2	0.00101081	-0.0110025	0.0154353	0.0310902	-0.232765
Repeat: 3	0.000954774	-0.00679673	0.0162225	0.0321681	-0.223983
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	-0.00563389	0.0208147	44.9694	-0.00950504	-0.00608136
Std Dev:	0.00130304	0.000468361	1.35536	0.00046656	4.57365e-005
%RSD:	23.1285	2.25014	3.01396	4.90856	0.752076
Repeat: 1	-0.00676439	0.0203211	46.1488	-0.00997225	-0.00603615
Repeat: 2	-0.00420877	0.0208702	45.2706	-0.00903913	-0.0061276
Repeat: 3	-0.00592852	0.0212528	43.4887	-0.00950373	-0.00608033
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.00385288	0.000398824	-0.00016183	0.0140662	1913.39
Std Dev:	0.000436876	0.00151743	3.55396e-005	0.00253861	4.61458
%RSD:	11.3389	380.475	21.961	18.0475	0.241173
Repeat: 1	0.0037941	0.00176781	-0.000174597	0.0155709	1909.3
Repeat: 2	0.00344837	-0.00123277	-0.000189223	0.0154926	1918.39
Repeat: 3	0.00431617	0.000661432	-0.000121671	0.0111353	1912.49

Element/Wavelength	Sc3613	Sc3613-2
Avg. of Repeats:	566813	13252.5
Std Dev:	3309.95	18.847
%RSD:	0.583958	0.142215
Repeat: 1	562994	13273.1
Repeat: 2	568867	13236.1
Repeat: 3	568576	13248.2

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.508324	497009	-4.64397	16.654	0.0616312
Std Dev:	0.403321	1085.19	0.319004	0.602156	0.210133
%RSD:	79.3432	0.218343	6.86921	3.61568	340.952
Repeat: 1	-0.135928	496514	-4.97424	16.6034	-0.0124577
Repeat: 2	-0.936717	498253	-4.33757	17.2799	-0.101422
Repeat: 3	-0.452326	496260	-4.62011	16.0788	0.298773
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.08453	501.393	-1.32986	-2.24384	-0.983509
Std Dev:	0.176932	6.87156	0.0529783	0.363255	0.547601
%RSD:	209.312	1.37049	3.98375	16.189	55.6783
Repeat: 1	-0.0594572	501.217	-1.37732	-2.65733	-1.47864
Repeat: 2	0.0310025	508.352	-1.2727	-2.09812	-1.07654
Repeat: 3	0.282045	494.612	-1.33956	-1.97607	-0.395354
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	-0.713856	194398	0.0564531	17.8558	460.838
Std Dev:	0.251735	1206.8	0.0143389	1.09425	1.69603
%RSD:	35.2642	0.620789	25.3997	6.12825	0.368031
Repeat: 1	-0.9086	194528	0.0414415	16.9113	461.198
Repeat: 2	-0.80337	195534	0.0700081	17.6013	462.325
Repeat: 3	-0.429597	193131	0.0579097	19.0549	458.991
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-1.69448	-0.0383904	0.330881	-1.42262	0.55177
Std Dev:	0.0854639	0.562054	0.0201073	0.350301	1.96057
%RSD:	5.04366	1464.05	6.07689	24.6236	355.324
Repeat: 1	-1.77224	-0.321239	0.350911	-1.79729	0.216502
Repeat: 2	-1.60298	-0.402834	0.310698	-1.36731	-1.21955
Repeat: 3	-1.70823	0.608901	0.331033	-1.10327	2.65836
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-3.21004	-0.327419	730.222	-5.27662	-2.02494
Std Dev:	1.49164	1.07666	24.3873	0.304233	0.104668
%RSD:	46.468	328.831	3.33971	5.76569	5.16896
Repeat: 1	-4.51389	-1.41762	751.304	-5.58118	-2.00139
Repeat: 2	-1.58345	-0.299796	735.848	-4.97271	-2.13937
Repeat: 3	-3.53277	0.73516	703.513	-5.27596	-1.93405
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	-19.6174	-1.74079	1.76535	-0.524024	1913.39
Std Dev:	1.97763	1.95197	0.672946	0.221468	4.61458
%RSD:	10.081	112.131	38.1196	42.2629	0.241173
Repeat: 1	-19.8633	0.0026456	1.51494	-0.387109	1909.3
Repeat: 2	-21.4606	-3.84965	1.25352	-0.405429	1918.39
Repeat: 3	-17.5283	-1.37538	2.52761	-0.779534	1912.49
Element/Wavelength	Sc3613	Sc3613-2			
Units:	----	----			
Avg. of Repeats:	566813	13252.5			
Std Dev:	3309.95	18.847			

%RSD:	0.583958	0.142215
Repeat: 1	562994	13273.1
Repeat: 2	568867	13236.1
Repeat: 3	568576	13248.2

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	1913.39	566813	13252.5
Std Dev:	4.61458	3309.95	18.847
%RSD:	0.241173	0.583958	0.142215
Repeat: 1	1909.3	562994	13273.1
Repeat: 2	1918.39	568867	13236.1
Repeat: 3	1912.49	568576	13248.2

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25804-IFB	9/14/2016 11:26:02AM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.0115775	21.0566	0.0351987	0.00104498	9.28991
Std Dev:	3.95073e-005	0.0889502	0.000582324	1.39135e-005	0.00860061
%RSD:	0.341243	0.422434	1.65439	1.33146	0.0925801
Repeat: 1	0.0115441	20.9827	0.0345317	0.00104579	9.29796
Repeat: 2	0.0116211	21.1553	0.035606	0.00105847	9.28085
Repeat: 3	0.0115672	21.0317	0.0354583	0.00103068	9.29091
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	1.4081	44.8186	31.1083	4.24236	0.0228644
Std Dev:	0.00604737	0.167185	0.0400244	0.00758725	0.000146236
%RSD:	0.429471	0.373026	0.128661	0.178845	0.639582
Repeat: 1	1.40133	44.706	31.1503	4.24918	0.0227064
Repeat: 2	1.41297	45.0107	31.0706	4.23419	0.022995
Repeat: 3	1.40999	44.7389	31.104	4.2437	0.0228918
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.05136	4.27406	-0.00913403	9.32384e-005	1.43849
Std Dev:	0.000122714	0.0326824	0.000306908	2.78137e-005	0.00816598
%RSD:	0.23893	0.764668	3.36005	29.8307	0.567677
Repeat: 1	0.0512322	4.23994	-0.00936775	7.19245e-005	1.42926
Repeat: 2	0.0514769	4.30509	-0.00924787	0.000124701	1.44477
Repeat: 3	0.0513707	4.27716	-0.00878647	8.30894e-005	1.44144
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.171925	-0.00933014	0.0191873	4.67042	-0.125976
Std Dev:	0.000213961	0.00151696	0.000479257	0.00251982	0.00138824
%RSD:	0.12445	16.2587	2.49779	0.0539527	1.10199
Repeat: 1	0.171833	-0.00802317	0.0187962	4.67204	-0.127545
Repeat: 2	0.17217	-0.00897366	0.0190438	4.66752	-0.125477
Repeat: 3	0.171772	-0.0109936	0.0197219	4.67171	-0.124907
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.58642	0.0437446	151.699	-0.00851866	2.2604
Std Dev:	0.00206601	0.00193576	2.18881	0.000473014	0.0187364
%RSD:	0.352309	4.42514	1.44286	5.55268	0.828894
Repeat: 1	0.58621	0.0459741	153.303	-0.00906301	2.24288
Repeat: 2	0.588583	0.0427693	149.206	-0.00828529	2.28015

Repeat: 3	0.584467	0.0424905	152.589	-0.00820769	2.25819
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.00385753	0.0821657	0.0251399	11.63	1926.36
Std Dev:	0.000449408	0.000263875	0.000141928	0.0251005	4.52181
%RSD:	11.6501	0.32115	0.564554	0.215826	0.234734
Repeat: 1	0.00432401	0.0822955	0.0249864	11.6586	1921.71
Repeat: 2	0.00382117	0.0818621	0.0252664	11.6114	1930.75
Repeat: 3	0.00342741	0.0823396	0.0251669	11.62	1926.6
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	567183	13294.9			
Std Dev:	4424.63	57.3778			
%RSD:	0.780106	0.431578			
Repeat: 1	566449	13302.3			
Repeat: 2	563172	13234.2			
Repeat: 3	571929	13348.2			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	203.609	504297	108.265	70.7347	548.846
Std Dev:	0.729464	2130.92	1.41997	0.880646	0.507114
%RSD:	0.358268	0.422552	1.31157	1.245	0.0923963
Repeat: 1	202.99	502528	106.644	70.6586	549.32
Repeat: 2	204.413	506663	109.288	71.6508	548.312
Repeat: 3	203.423	503701	108.864	69.8945	548.907
QC Status Pass/Fail:	Pass	Pass	Pass	None	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	520.618	506.94	1060.98	499.94	478.935
Std Dev:	2.2356	1.89104	1.45959	0.943266	3.09712
%RSD:	0.429413	0.37303	0.13757	0.188676	0.646668
Repeat: 1	518.116	505.668	1062.51	500.794	475.588
Repeat: 2	522.419	509.113	1059.6	498.927	481.701
Repeat: 3	521.318	506.04	1060.83	500.099	479.515
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	537.506	197908	0.0801015	16.2841	467.068
Std Dev:	1.33597	1513.33	0.0147001	4.82808	2.65161
%RSD:	0.24855	0.764662	18.3519	29.6491	0.567714
Repeat: 1	536.115	196328	0.0689067	12.5819	464.071
Repeat: 2	538.78	199345	0.0746489	21.745	469.107
Repeat: 3	537.622	198052	0.0967488	14.5253	468.027
QC Status Pass/Fail:	Pass	Pass	None	None	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	480.58	0.392042	0.407625	995.672	51.5478
Std Dev:	0.579757	0.36843	0.0123811	0.558666	0.992503
%RSD:	0.120637	93.9773	3.03737	0.0561094	1.9254
Repeat: 1	480.357	0.697407	0.397521	996.041	50.4209
Repeat: 2	481.239	0.495883	0.403917	995.029	52.2918
Repeat: 3	480.146	-0.0171653	0.421436	995.946	51.9309
QC Status Pass/Fail:	Pass	None	None	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**

Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	671.103	50.6637	2636.27	-4.75892	1060.06
Std Dev:	2.34969	4.43138	38.7742	0.307767	8.75661
%RSD:	0.350124	8.74665	1.4708	6.46717	0.826052
Repeat: 1	670.973	55.7734	2664.55	-5.11307	1051.86
Repeat: 2	673.515	48.3448	2592.07	-4.60739	1069.28
Repeat: 3	668.821	47.8731	2652.19	-4.5563	1059.03
QC Status Pass/Fail:	Pass	Pass	Fail	None	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	-20.1535	103.071	498.17	1035.58	1926.36
Std Dev:	1.89584	0.357569	2.81497	2.25443	4.52181
%RSD:	9.40703	0.346914	0.565063	0.217697	0.234734
Repeat: 1	-18.1309	103.266	495.126	1038.15	1921.71
Repeat: 2	-20.4394	102.659	500.68	1033.91	1930.75
Repeat: 3	-21.8901	103.289	498.704	1034.69	1926.6
QC Status Pass/Fail:	None	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	567183	13294.9			
Std Dev:	4424.63	57.3778			
%RSD:	0.780106	0.431578			
Repeat: 1	566449	13302.3			
Repeat: 2	563172	13234.2			
Repeat: 3	571929	13348.2			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	1926.36	567183	13294.9
Std Dev:	4.52181	4424.63	57.3778
%RSD:	0.234734	0.780106	0.431578
Repeat: 1	1921.71	566449	13302.3
Repeat: 2	1930.75	563172	13234.2
Repeat: 3	1926.6	571929	13348.2

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25804-CCV1	9/14/2016 11:34:51AM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.0263666	0.423607	0.444291	0.0175492	16.1685
Std Dev:	0.000146983	0.000134318	0.000874343	6.17621e-005	0.0158154
%RSD:	0.55746	0.0317081	0.196795	0.351938	0.0978162
Repeat: 1	0.0265275	0.423623	0.444659	0.0176198	16.1678
Repeat: 2	0.0263329	0.423732	0.443292	0.0175224	16.1531
Repeat: 3	0.0262394	0.423465	0.444921	0.0175053	16.1847
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	2.73535	4.45869	29.2019	8.0113	0.0452417
Std Dev:	0.00109866	0.00383615	0.0666718	0.00392149	0.000356877
%RSD:	0.0401652	0.0860376	0.228313	0.0489495	0.788823
Repeat: 1	2.73634	4.46246	29.1344	8.0145	0.0456333

Repeat: 2	2.73554	4.4588	29.2035	8.00692	0.0451569
Repeat: 3	2.73417	4.45479	29.2677	8.01246	0.0449349
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0972149	0.210809	0.204008	0.00621935	0.145674
Std Dev:	0.000444669	0.00105509	0.00172645	7.33923e-005	0.000396158
%RSD:	0.457408	0.500495	0.846268	1.18006	0.271948
Repeat: 1	0.097518	0.211387	0.205326	0.00628439	0.145695
Repeat: 2	0.0974223	0.209591	0.202054	0.00623389	0.145268
Repeat: 3	0.0967045	0.211448	0.204644	0.00613978	0.14606
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.346511	4.02184	1.94715	4.61267	1.96273
Std Dev:	0.00102958	0.00156432	0.006157	0.00336691	0.0057354
%RSD:	0.297127	0.0388956	0.316206	0.0729927	0.292215
Repeat: 1	0.34607	4.02291	1.95115	4.6095	1.9564
Repeat: 2	0.347687	4.02005	1.94006	4.61232	1.96758
Repeat: 3	0.345774	4.02258	1.95024	4.6162	1.96422
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.874043	0.46879	239.2	1.52297	2.02812
Std Dev:	0.000891161	0.00252135	2.96148	0.00352046	0.00893895
%RSD:	0.101958	0.537841	1.23808	0.231158	0.440751
Repeat: 1	0.873224	0.466112	235.986	1.51916	2.03088
Repeat: 2	0.874992	0.471119	241.819	1.52365	2.01812
Repeat: 3	0.873913	0.469138	239.793	1.5261	2.03535
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.25311	0.778206	0.0497226	10.982	2248.21
Std Dev:	0.00033903	0.000579493	0.000362631	0.0126822	2.30149
%RSD:	0.133945	0.0744652	0.729308	0.115482	0.10237
Repeat: 1	0.25343	0.777922	0.050138	10.9752	2250.53
Repeat: 2	0.252755	0.777823	0.0495606	10.9966	2248.16
Repeat: 3	0.253147	0.778873	0.0494693	10.9741	2245.93
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	619921	14408.9			
Std Dev:	4811.81	96.7729			
%RSD:	0.776197	0.671618			
Repeat: 1	614550	14347.6			
Repeat: 2	621372	14520.5			
Repeat: 3	623839	14358.6			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	475.954	10016.9	1040.38	1037.67	958.552
Std Dev:	2.71244	3.18423	2.02615	3.67854	0.932135
%RSD:	0.569894	0.0317886	0.194751	0.354501	0.0972441
Repeat: 1	478.926	10017.2	1041.23	1041.88	958.538
Repeat: 2	475.326	10019.9	1038.07	1036.07	957.628
Repeat: 3	473.611	10013.6	1041.84	1035.06	959.492
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	1012.64	50.4279	1007.76	955.198	961.266
Std Dev:	0.404439	0.0433908	2.30413	0.466014	7.63116
%RSD:	0.039939	0.0860453	0.228639	0.0487871	0.793866
Repeat: 1	1013.01	50.4706	1005.43	955.579	969.641

Repeat: 2	1012.71	50.4292	1007.82	954.678	959.453
Repeat: 3	1012.21	50.3839	1010.03	955.337	954.705
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	1011.89	9768.61	10.2891	1095.35	47.308
Std Dev:	4.65724	48.8463	0.0826929	12.8326	0.128628
%RSD:	0.460253	0.500033	0.803696	1.17156	0.271896
Repeat: 1	1015.06	9795.4	10.3522	1106.72	47.3148
Repeat: 2	1014.06	9712.23	10.1955	1097.89	47.1761
Repeat: 3	1006.54	9798.2	10.3196	1081.43	47.4331
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	977.314	993.5	50.2144	986.763	962.062
Std Dev:	2.90603	0.386934	0.15906	0.721158	2.79119
%RSD:	0.297349	0.0389465	0.316761	0.0730832	0.290126
Repeat: 1	976.071	993.764	50.3177	986.082	958.981
Repeat: 2	980.635	993.056	50.0312	986.688	964.421
Repeat: 3	975.236	993.68	50.2942	987.519	962.783
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	998.524	1029.85	4157.1	993.653	957.285
Std Dev:	1.14289	5.65759	52.8587	2.29709	4.18927
%RSD:	0.114458	0.54936	1.27153	0.231176	0.43762
Repeat: 1	997.38	1023.84	4099.74	991.165	958.581
Repeat: 2	999.666	1035.08	4203.85	994.1	952.601
Repeat: 3	998.526	1030.63	4167.7	995.694	960.673
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1003.22	997.963	976.664	976.941	2248.21
Std Dev:	1.34727	0.731886	7.11725	1.12805	2.30149
%RSD:	0.134295	0.073338	0.728731	0.115467	0.10237
Repeat: 1	1004.49	997.623	984.815	976.332	2250.53
Repeat: 2	1001.81	997.463	973.499	978.243	2248.16
Repeat: 3	1003.36	998.803	971.678	976.248	2245.93
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	619921	14408.9
Std Dev:	4811.81	96.7729
%RSD:	0.776197	0.671618
Repeat: 1	614550	14347.6
Repeat: 2	621372	14520.5
Repeat: 3	623839	14358.6
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2248.21	619921	14408.9
Std Dev:	2.30149	4811.81	96.7729
%RSD:	0.10237	0.776197	0.671618

Repeat: 1	2250.53	614550	14347.6
Repeat: 2	2248.16	621372	14520.5
Repeat: 3	2245.93	623839	14358.6

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25804-CCB1	9/14/2016 11:39:11AM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000540923	-0.000548732	-0.00597115	9.94368e-005	0.0332012
Std Dev:	3.06456e-005	0.000199014	0.00034138	7.46241e-006	0.00235628
%RSD:	5.66543	36.268	5.71717	7.50468	7.09698
Repeat: 1	0.000513986	-0.00031912	-0.00636198	9.10842e-005	0.0307645
Repeat: 2	0.000534518	-0.00067162	-0.00582022	0.000101779	0.0333712
Repeat: 3	0.000574265	-0.000655456	-0.00573124	0.000105447	0.0354678
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00125408	0.00070254	0.0362041	0.0220917	0.000226169
Std Dev:	0.000429619	0.000396613	0.00106035	0.000609581	1.89293e-005
%RSD:	34.2576	56.4542	2.92882	2.75932	8.36955
Repeat: 1	0.00147785	0.000575098	0.0371091	0.0224619	0.000245615
Repeat: 2	0.00152563	0.00114721	0.0364657	0.0224252	0.000207802
Repeat: 3	0.000758771	0.000385313	0.0350374	0.0213882	0.000225091
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.000710542	7.60986e-006	-0.00872473	-8.81658e-005	-6.39502e-005
Std Dev:	9.12753e-006	2.20645e-005	0.000411875	1.74534e-005	5.42993e-005
%RSD:	1.28459	289.946	4.72078	19.7961	84.9087
Repeat: 1	0.000719763	7.67935e-006	-0.00860343	-6.99205e-005	-4.34689e-005
Repeat: 2	0.00071035	-1.44893e-005	-0.00918363	-8.98755e-005	-2.28703e-005
Repeat: 3	0.000701511	2.96395e-005	-0.00838713	-0.000104701	-0.000125511
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	6.74216e-005	0.00123774	0.00586155	0.0219789	-0.00438277
Std Dev:	3.10887e-006	0.000521767	0.000387152	0.000531529	0.00216824
%RSD:	4.61109	42.1547	6.60493	2.41836	49.4719
Repeat: 1	6.77134e-005	0.00183726	0.00621746	0.021551	-0.0064129
Repeat: 2	6.41771e-005	0.000886288	0.00544933	0.0225739	-0.00209878
Repeat: 3	7.03742e-005	0.000989679	0.00591787	0.0218119	-0.00463664
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00642516	0.0097944	6.72743	-0.00135452	-0.0173503
Std Dev:	0.00109786	0.000450275	0.259655	0.000219858	0.000641114
%RSD:	17.0869	4.59727	3.85965	16.2314	3.69512
Repeat: 1	-0.00670275	0.00985919	6.69464	-0.00160277	-0.018055
Repeat: 2	-0.00521515	0.00931524	7.00192	-0.00127642	-0.0168016
Repeat: 3	-0.00735759	0.0102088	6.48572	-0.00118438	-0.0171943
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.000994931	-0.00175592	-0.000107541	0.00669948	2309.72
Std Dev:	0.000360988	0.00121712	2.37407e-005	0.000846716	3.25546
%RSD:	36.2827	69.3154	22.076	12.6385	0.140946
Repeat: 1	0.000684316	-0.000658434	-8.20784e-005	0.00656374	2308.2
Repeat: 2	0.00139097	-0.00154438	-0.000129068	0.00760586	2313.46
Repeat: 3	0.000909509	-0.00306494	-0.000111476	0.00592883	2307.51
Element/Wavelength	**Sc3613**	**Sc3613-2**			

Avg. of Repeats:	638552	14680.9
Std Dev:	7921.42	59.5883
%RSD:	1.24053	0.40589
Repeat: 1	644377	14638
Repeat: 2	629532	14655.8
Repeat: 3	641747	14748.9

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	0.462935	-30.9222	-0.593811	0.916156	0.220047
Std Dev:	0.558393	4.77439	0.791429	0.44401	0.138406
%RSD:	120.62	15.44	133.28	48.4645	62.8983
Repeat: 1	-0.0266306	-25.4141	-1.49993	0.419267	0.0775325
Repeat: 2	0.344335	-33.8781	-0.243577	1.05519	0.228668
Repeat: 3	1.0711	-33.4744	-0.0379267	1.27401	0.353942
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.155914	0.00342327	0.021183	0.331218	-0.218794
Std Dev:	0.159351	0.00448611	0.0365742	0.0725965	0.404937
%RSD:	102.204	131.048	172.658	21.918	185.077
Repeat: 1	0.237355	0.00198176	0.0523506	0.37805	0.197113
Repeat: 2	0.258086	0.00845293	0.0302793	0.368012	-0.611789
Repeat: 3	-0.0276986	-0.000164903	-0.0190809	0.247591	-0.241707
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	0.580795	-0.970795	0.099706	-6.36774	-0.0196508
Std Dev:	0.0952244	1.02234	0.0197278	3.05114	0.0176265
%RSD:	16.3955	105.309	19.786	47.9155	89.6986
Repeat: 1	0.676518	-0.966092	0.105516	-3.17816	-0.0130003
Repeat: 2	0.579789	-1.99548	0.0777256	-6.66662	-0.00631713
Repeat: 3	0.486077	0.0491841	0.115876	-9.25844	-0.0396351
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	0.0370035	0.454218	0.0633692	-0.407598	2.2021
Std Dev:	0.00874927	0.128869	0.0100016	0.114091	1.05409
%RSD:	23.6445	28.3715	15.7831	27.991	47.8675
Repeat: 1	0.0378268	0.602289	0.0725637	-0.499755	1.2156
Repeat: 2	0.0278716	0.367403	0.0527198	-0.27999	3.31278
Repeat: 3	0.045312	0.392962	0.0648242	-0.44305	2.07792
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Fail
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-1.01837	0.346377	4.99554	0.0372694	-0.621625
Std Dev:	1.27695	1.0105	4.63499	0.143445	0.300415
%RSD:	125.392	291.735	92.7826	384.886	48.3274
Repeat: 1	-1.34873	0.491522	4.41032	-0.124713	-0.951862
Repeat: 2	0.391306	-0.728849	9.89535	0.0883001	-0.364545
Repeat: 3	-2.09767	1.27646	0.68095	0.148221	-0.548467
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**

Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	0.880315	0.0779936	-0.608994	0.239928	2309.72
Std Dev:	1.44002	1.55184	0.466084	0.0749113	3.25546
%RSD:	163.58	1989.71	76.5334	31.2224	0.140946
Repeat: 1	-0.359381	1.47554	-0.109421	0.22769	2308.2
Repeat: 2	2.45986	0.350494	-1.03214	0.320205	2313.46
Repeat: 3	0.540467	-1.59205	-0.685418	0.171889	2307.51
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	638552	14680.9
Std Dev:	7921.42	59.5883
%RSD:	1.24053	0.40589
Repeat: 1	644377	14638
Repeat: 2	629532	14655.8
Repeat: 3	641747	14748.9
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2309.72	638552	14680.9
Std Dev:	3.25546	7921.42	59.5883
%RSD:	0.140946	1.24053	0.40589
Repeat: 1	2308.2	644377	14638
Repeat: 2	2313.46	629532	14655.8
Repeat: 3	2307.51	641747	14748.9

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I09019-BLK2	9/14/2016 11:43:34AM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000490767	0.000662033	-0.00530012	9.99537e-005	0.032267
Std Dev:	1.31204e-005	0.000586689	0.000704917	1.31523e-005	0.00170929
%RSD:	2.67345	88.6193	13.3	13.1584	5.29734
Repeat: 1	0.000495044	0.00110529	-0.00600945	8.48499e-005	0.0312835
Repeat: 2	0.000476042	0.000884077	-0.00529122	0.00010888	0.0342407
Repeat: 3	0.000501215	-3.26871e-006	-0.0045997	0.000106131	0.0312768
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00100847	0.000842948	0.0354549	0.0188851	0.000255333
Std Dev:	0.000128069	0.000302066	0.000859798	0.00116039	1.16239e-005
%RSD:	12.6993	35.8345	2.42505	6.14447	4.55245
Repeat: 1	0.00105118	0.000590364	0.0362064	0.0201932	0.000247034
Repeat: 2	0.000864504	0.000760926	0.035641	0.0179796	0.000250347
Repeat: 3	0.00110973	0.00117755	0.0345173	0.0184825	0.000268618
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.000646762	-0.000132307	-0.00871589	-7.31084e-005	-9.20068e-005
Std Dev:	2.21459e-005	0.000238875	0.0003158	3.49021e-005	4.92243e-005
%RSD:	3.42411	180.545	3.62327	47.7403	53.5007
Repeat: 1	0.000650198	-0.000117253	-0.00837906	-8.62765e-005	-3.89112e-005
Repeat: 2	0.000666989	9.86839e-005	-0.00876329	-9.95108e-005	-0.000100986
Repeat: 3	0.000623099	-0.000378353	-0.0090053	-3.35378e-005	-0.000136124

Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	7.94163e-005	-0.000226191	0.00491602	0.0215357	-0.00612943
Std Dev:	2.10297e-005	0.0012826	0.000820361	0.000631888	0.00176839
%RSD:	26.4803	567.044	16.6875	2.93414	28.8508
Repeat: 1	6.08607e-005	-0.000180173	0.00555948	0.0208206	-0.00414947
Repeat: 2	7.51288e-005	0.00103278	0.00519635	0.0220189	-0.00668695
Repeat: 3	0.000102259	-0.00153119	0.00399224	0.0217676	-0.00755186
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	-0.00627381	0.00986873	9.10423	0.0124624	-0.0168467
Std Dev:	0.000383431	0.000362047	2.20771	0.00048947	0.000783808
%RSD:	6.11161	3.66863	24.2492	3.92758	4.65261
Repeat: 1	-0.00608152	0.0102532	11.5327	0.0125844	-0.0163875
Repeat: 2	-0.00602458	0.00981865	8.56133	0.0128794	-0.0177517
Repeat: 3	-0.00671533	0.00953432	7.21861	0.0119235	-0.0164008
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.0010018	-0.00109481	-9.70833e-005	0.0146416	2400.58
Std Dev:	0.000184781	0.00129728	5.06828e-006	0.000623724	10.857
%RSD:	18.4448	118.494	5.22055	4.25994	0.452265
Repeat: 1	0.00109053	-0.00214821	-9.1779e-005	0.0150325	2404.78
Repeat: 2	0.00112549	0.000354224	-0.000101877	0.0139223	2408.7
Repeat: 3	0.000789394	-0.00149044	-9.75941e-005	0.01497	2388.24
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	668867	15272.6			
Std Dev:	5531.81	44.9719			
%RSD:	0.827041	0.294462			
Repeat: 1	665869	15225			
Repeat: 2	675251	15314.5			
Repeat: 3	665482	15278.2			

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.451558	-1.85769	0.961752	0.947343	0.165504
Std Dev:	0.239711	14.0773	1.63295	0.782893	0.100847
%RSD:	53.0853	757.782	169.789	82.6409	60.9331
Repeat: 1	-0.373047	8.78458	-0.681288	0.0484014	0.107633
Repeat: 2	-0.720679	3.46194	0.982127	1.47957	0.281951
Repeat: 3	-0.260947	-17.8196	2.58442	1.31406	0.106928
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.0649385	0.00501143	-0.00451086	-0.0526899	0.404892
Std Dev:	0.0468431	0.00341668	0.0291447	0.138433	0.24877
%RSD:	72.1345	68.1778	646.101	262.733	61.441
Repeat: 1	0.0810367	0.00215443	0.0211408	0.103076	0.227318
Repeat: 2	0.0121691	0.00408368	0.00152889	-0.161662	0.298137
Repeat: 3	0.10161	0.00879617	-0.0362022	-0.0994835	0.689223
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	-0.0873401	-7.44707	0.10013	-3.73493	-0.0287667
Std Dev:	0.232651	11.0598	0.015126	6.10279	0.0159832
%RSD:	266.374	148.513	15.1065	163.398	55.5614
Repeat: 1	-0.0511249	-6.75099	0.116263	-6.03795	-0.0115302

Repeat: 2	0.125079	3.24829	0.0978589	-8.3511	-0.0316717
Repeat: 3	-0.335975	-18.8385	0.0862673	3.18426	-0.0430981
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	0.0709891	0.0929845	0.0389424	-0.50342	1.35858
Std Dev:	0.0595025	0.316727	0.0211931	0.135299	0.863218
%RSD:	83.8192	340.623	54.4217	26.8759	63.538
Repeat: 1	0.0186191	0.104378	0.0555654	-0.656589	2.32455
Repeat: 2	0.0586567	0.403861	0.0461843	-0.400188	1.08852
Repeat: 3	0.135691	-0.229285	0.0150776	-0.453483	0.662684
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-0.858403	0.512141	47.4234	9.04588	-0.385624
Std Dev:	0.450096	0.812162	39.4116	0.319141	0.36731
%RSD:	52.4341	158.582	83.1058	3.52803	95.2508
Repeat: 1	-0.631638	1.37477	90.776	9.12537	-0.170415
Repeat: 2	-0.566793	0.399426	37.7343	9.31776	-0.809741
Repeat: 3	-1.37678	-0.237777	13.76	8.69451	-0.176716
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	0.907983	0.921589	-0.399952	0.951515	2400.58
Std Dev:	0.736849	1.65439	0.0978654	0.0561708	10.857
%RSD:	81.1522	179.515	24.4693	5.9033	0.452265
Repeat: 1	1.26131	-0.42049	-0.298859	0.986352	2404.78
Repeat: 2	1.40163	2.76997	-0.494234	0.886715	2408.7
Repeat: 3	0.0610093	0.415285	-0.406762	0.981477	2388.24
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	668867	15272.6
Std Dev:	5531.81	44.9719
%RSD:	0.827041	0.294462
Repeat: 1	665869	15225
Repeat: 2	675251	15314.5
Repeat: 3	665482	15278.2
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2400.58	668867	15272.6
Std Dev:	10.857	5531.81	44.9719
%RSD:	0.452265	0.827041	0.294462
Repeat: 1	2404.78	665869	15225
Repeat: 2	2408.7	675251	15314.5
Repeat: 3	2388.24	665482	15278.2

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I09019-BS2	9/14/2016 11:47:59AM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.0135533	0.0894016	0.105665	0.0164965	34.0197
Std Dev:	0.000113689	0.000219686	0.000895453	0.000127202	0.161643
%RSD:	0.838829	0.245729	0.847441	0.771089	0.475146
Repeat: 1	0.0136693	0.0891572	0.104978	0.0166	33.992
Repeat: 2	0.0134421	0.0895828	0.105341	0.0163545	33.8737
Repeat: 3	0.0135486	0.0894647	0.106678	0.0165349	34.1934
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	0.134013	0.469489	3.7407	4.27573	0.00927817
Std Dev:	0.000808404	0.00175366	0.0187494	0.0206049	9.75935e-005
%RSD:	0.603228	0.373525	0.501227	0.481903	1.05186
Repeat: 1	0.133425	0.467598	3.73334	4.2693	0.00935766
Repeat: 2	0.134935	0.471062	3.72676	4.25911	0.00916925
Repeat: 3	0.133679	0.469807	3.76202	4.29878	0.00930761
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.02613	0.021861	0.0967878	0.00568354	0.0154599
Std Dev:	0.000184628	0.000188182	0.00174344	4.93423e-005	5.03576e-005
%RSD:	0.706576	0.86081	1.80131	0.868162	0.32573
Repeat: 1	0.0262698	0.0216489	0.0976668	0.00571497	0.0154769
Repeat: 2	0.0259207	0.0219261	0.0979167	0.00562667	0.0154996
Repeat: 3	0.0261995	0.0220079	0.0947798	0.00570898	0.0154033
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.179574	4.03032	0.216873	2.46977	0.508741
Std Dev:	0.00128986	0.0180853	0.000820998	0.0116946	0.0026075
%RSD:	0.718289	0.448732	0.378562	0.473509	0.51254
Repeat: 1	0.180786	4.02381	0.217246	2.4689	0.506414
Repeat: 2	0.178218	4.0164	0.217441	2.45853	0.50825
Repeat: 3	0.179718	4.05076	0.215931	2.48187	0.511559
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	0.208927	0.119181	14.8733	1.56899	2.15052
Std Dev:	0.0016369	0.000141794	1.97625	0.00780535	0.0077954
%RSD:	0.783483	0.118974	13.2872	0.497476	0.362489
Repeat: 1	0.208883	0.119232	13.4805	1.56465	2.155
Repeat: 2	0.207312	0.119021	17.1352	1.56431	2.15503
Repeat: 3	0.210585	0.11929	14.0044	1.578	2.14152
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.256184	0.199678	0.0249374	5.88194	2340.39
Std Dev:	0.000136228	0.00204911	0.000227932	0.025351	15.4801
%RSD:	0.0531757	1.0262	0.914014	0.430996	0.661433
Repeat: 1	0.256282	0.198455	0.0250855	5.86841	2349.5
Repeat: 2	0.256242	0.198536	0.024675	5.86623	2349.15
Repeat: 3	0.256029	0.202044	0.0250519	5.91119	2322.51
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	647036	14822.5			
Std Dev:	3501.18	76.3892			
%RSD:	0.54111	0.515359			
Repeat: 1	644401	14734.9			
Repeat: 2	651009	14858.1			
Repeat: 3	645699	14874.7			

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Units:	ppb	ppb	ppb	ppb	ppb

Avg. of Repeats:	240.082	2084.62	255.677	975.684	2013.51
Std Dev:	2.09139	5.22864	2.06401	7.56648	9.57866
%RSD:	0.871112	0.25082	0.807273	0.775505	0.475719
Repeat: 1	242.211	2078.85	254.087	981.846	2011.88
Repeat: 2	238.03	2089.05	254.935	967.239	2004.85
Repeat: 3	240.006	2085.96	258.01	977.968	2023.8
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	50.0752	5.30589	128.127	508.685	192.895
Std Dev:	0.301104	0.0198357	0.648586	2.47206	2.08497
%RSD:	0.601303	0.373843	0.506204	0.485971	1.08088
Repeat: 1	49.8569	5.2845	127.873	507.913	194.593
Repeat: 2	50.4187	5.32368	127.645	506.691	190.568
Repeat: 3	49.9501	5.30949	128.865	511.451	193.525
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	267.02	1014.32	5.15349	1003.14	5.03318
Std Dev:	1.93259	8.6988	0.0835066	8.63014	0.0162868
%RSD:	0.723763	0.857599	1.62039	0.860316	0.323588
Repeat: 1	268.485	1004.52	5.1956	1008.63	5.03867
Repeat: 2	264.83	1017.31	5.20757	993.189	5.04602
Repeat: 3	267.746	1021.13	5.05732	1007.59	5.01486
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	506.494	995.299	5.51462	526.293	253.297
Std Dev:	3.63948	4.4656	0.0212096	2.51585	1.27351
%RSD:	0.718563	0.448669	0.384607	0.478031	0.502773
Repeat: 1	509.913	993.691	5.52427	526.107	252.161
Repeat: 2	502.668	991.86	5.52929	523.876	253.057
Repeat: 3	506.899	1000.35	5.4903	528.897	254.674
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	246.464	245.903	150.634	1023.78	1015.25
Std Dev:	1.87461	0.318474	35.2797	5.08859	3.65324
%RSD:	0.760601	0.129512	23.4208	0.497039	0.359837
Repeat: 1	246.37	246.017	125.767	1020.95	1017.35
Repeat: 2	244.638	245.543	191.012	1020.73	1017.36
Repeat: 3	248.384	246.148	135.123	1029.66	1011.03
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1018.57	259.932	487.405	524.643	2340.39
Std Dev:	0.543293	2.61465	4.4494	2.26497	15.4801
%RSD:	0.0533386	1.0059	0.912876	0.431717	0.661433
Repeat: 1	1018.96	258.378	490.298	523.429	2349.5
Repeat: 2	1018.81	258.467	482.281	523.244	2349.15
Repeat: 3	1017.95	262.951	489.635	527.256	2322.51
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			

Units:	----	----
Avg. of Repeats:	647036	14822.5
Std Dev:	3501.18	76.3892
%RSD:	0.54111	0.515359
Repeat: 1	644401	14734.9
Repeat: 2	651009	14858.1
Repeat: 3	645699	14874.7
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2340.39	647036	14822.5
Std Dev:	15.4801	3501.18	76.3892
%RSD:	0.661433	0.54111	0.515359
Repeat: 1	2349.5	644401	14734.9
Repeat: 2	2349.15	651009	14858.1
Repeat: 3	2322.51	645699	14874.7

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I09020-BLK2	9/14/2016 11:52:19AM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000478572	4.70848e-005	-0.00532875	0.000117741	0.0320624
Std Dev:	1.58692e-005	0.00123959	0.000123339	7.49026e-006	0.000996407
%RSD:	3.31596	2632.67	2.31459	6.36164	3.10771
Repeat: 1	0.000478479	0.000939574	-0.00541824	0.000115711	0.0309206
Repeat: 2	0.000494487	0.000569949	-0.00537996	0.000126037	0.0327555
Repeat: 3	0.000462749	-0.00136827	-0.00518806	0.000111475	0.0325113
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00109369	0.000898734	0.0375474	0.0184137	0.000253157
Std Dev:	0.000307537	9.96484e-005	0.00114575	0.000141405	3.30284e-005
%RSD:	28.1192	11.0876	3.05148	0.767934	13.0466
Repeat: 1	0.000775108	0.000890723	0.0364081	0.0183399	0.000241607
Repeat: 2	0.00138884	0.000803334	0.0375346	0.0185767	0.000227455
Repeat: 3	0.00111712	0.00100215	0.0386995	0.0183244	0.000290409
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.000606184	-3.19536e-005	-0.00864782	-5.67304e-005	-4.55247e-005
Std Dev:	1.89678e-005	7.88174e-005	0.000513509	8.61765e-006	4.03118e-005
%RSD:	3.12905	246.662	5.93801	15.1905	88.5494
Repeat: 1	0.000621114	-0.000113172	-0.00867925	-4.68584e-005	-3.0125e-006
Repeat: 2	0.000584841	4.42202e-005	-0.00811932	-6.27486e-005	-5.03619e-005
Repeat: 3	0.000612598	-2.69087e-005	-0.0091449	-6.05842e-005	-8.31997e-005
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	8.48187e-005	0.00267235	0.00378232	0.0224441	-0.00572358
Std Dev:	3.56176e-006	0.000546209	0.000532738	0.00134993	0.00177119
%RSD:	4.19927	20.4393	14.0849	6.01461	30.9455
Repeat: 1	8.26273e-005	0.00292929	0.00318519	0.0209955	-0.00442607
Repeat: 2	8.29003e-005	0.00304271	0.0039529	0.0236669	-0.00500323
Repeat: 3	8.89284e-005	0.00204505	0.00420888	0.0226699	-0.00774144
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00577322	0.00976183	6.94784	0.0127815	-0.016612

Std Dev:	0.00155417	0.000355458	0.582977	0.000316024	0.000585811
%RSD:	26.9204	3.6413	8.39076	2.47251	3.52643
Repeat: 1	-0.00402347	0.00961363	6.54731	0.0130409	-0.0170239
Repeat: 2	-0.0069934	0.0101674	7.61666	0.0128741	-0.0168708
Repeat: 3	-0.00630278	0.00950446	6.67955	0.0124295	-0.0159414
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.000991943	-0.00205039	-0.00012983	0.0188003	2395.35
Std Dev:	0.000366468	0.000176249	1.13127e-005	0.00144677	9.01897
%RSD:	36.9445	8.5959	8.71345	7.69546	0.376519
Repeat: 1	0.00127828	-0.00184952	-0.000131024	0.0204584	2403.91
Repeat: 2	0.00111861	-0.0021225	-0.000140499	0.0177947	2396.23
Repeat: 3	0.000578946	-0.00217915	-0.000117968	0.0181479	2385.93
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	663607	15296.7			
Std Dev:	9055.07	32.3766			
%RSD:	1.36452	0.211657			
Repeat: 1	665204	15325.1			
Repeat: 2	671757	15261.5			
Repeat: 3	653860	15303.6			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.676827	-16.6399	0.893581	2.00613	0.151192
Std Dev:	0.288731	29.7446	0.285224	0.445732	0.0589475
%RSD:	42.6594	178.755	31.9192	22.2185	38.9885
Repeat: 1	-0.678544	4.7759	0.686585	1.88508	0.0835332
Repeat: 2	-0.387242	-4.09351	0.775228	2.49988	0.191466
Repeat: 3	-0.964696	-50.6022	1.21893	1.63343	0.178577
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.0967261	0.00564243	0.0678438	-0.107945	0.358215
Std Dev:	0.113476	0.00112713	0.0398154	0.0161589	0.706436
%RSD:	117.317	19.9759	58.6869	14.9696	197.21
Repeat: 1	-0.0200931	0.00555181	0.0283901	-0.118687	0.111072
Repeat: 2	0.206535	0.00456335	0.0671299	-0.0893617	-0.191446
Repeat: 3	0.103737	0.00681213	0.108011	-0.115787	1.15502
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	-0.512601	-2.80029	0.10339	-0.871056	-0.0136659
Std Dev:	0.198515	3.64932	0.0245958	1.50682	0.0130861
%RSD:	38.727	130.32	23.7894	172.988	95.7576
Repeat: 1	-0.355692	-6.56217	0.101884	0.855125	0.000133273
Repeat: 2	-0.735772	0.724957	0.128704	-1.9232	-0.0152331
Repeat: 3	-0.44634	-2.56364	0.0795812	-1.54509	-0.0258978
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	0.0861298	0.808569	0.00965458	-0.307894	1.55355
Std Dev:	0.0100423	0.134815	0.0137627	0.290091	0.868816
%RSD:	11.6595	16.6733	142.551	94.2181	55.9247
Repeat: 1	0.0800297	0.87199	-0.00577179	-0.619206	2.18999

Repeat: 2	0.0806395	0.899978	0.0140613	-0.0451553	1.90692
Repeat: 3	0.0977203	0.653738	0.0206742	-0.25932	0.563726
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Fail
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-0.275708	0.272672	8.92982	9.2541	-0.27568
Std Dev:	1.80115	0.797254	10.4077	0.206091	0.274519
%RSD:	653.282	292.386	116.55	2.22702	99.5789
Repeat: 1	1.75626	-0.0605944	1.77889	9.42324	-0.468683
Repeat: 2	-1.67572	1.18248	20.87	9.31451	-0.396947
Repeat: 3	-0.907664	-0.303873	4.14058	9.02456	0.0385901
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	0.868098	-0.298556	-1.03643	1.32359	2395.35
Std Dev:	1.46175	0.227376	0.227231	0.128602	9.01897
%RSD:	168.385	76.1585	21.9245	9.71618	0.376519
Repeat: 1	2.00995	-0.039728	-1.06285	1.47099	2403.91
Repeat: 2	1.37366	-0.389816	-1.24929	1.23434	2396.23
Repeat: 3	-0.779318	-0.466124	-0.797141	1.26542	2385.93
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	663607	15296.7			
Std Dev:	9055.07	32.3766			
%RSD:	1.36452	0.211657			
Repeat: 1	665204	15325.1			
Repeat: 2	671757	15261.5			
Repeat: 3	653860	15303.6			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2395.35	663607	15296.7
Std Dev:	9.01897	9055.07	32.3766
%RSD:	0.376519	1.36452	0.211657
Repeat: 1	2403.91	665204	15325.1
Repeat: 2	2396.23	671757	15261.5
Repeat: 3	2385.93	653860	15303.6

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I09020-BS2	9/14/2016 11:56:43AM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.0134093	0.0894334	0.106189	0.0164258	33.7327
Std Dev:	0.00015393	0.00120699	0.000516638	0.000109562	0.091339
%RSD:	1.14793	1.3496	0.486525	0.667013	0.270773
Repeat: 1	0.0133254	0.089681	0.106784	0.0163383	33.735
Repeat: 2	0.013587	0.0904974	0.105845	0.0165487	33.6403
Repeat: 3	0.0133156	0.0881218	0.105939	0.0163903	33.8229
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**

Avg. of Repeats:	0.133709	0.468639	3.73325	4.26027	0.00919769
Std Dev:	0.00107059	0.0024019	0.0125255	0.014255	8.38831e-005
%RSD:	0.800686	0.512526	0.335512	0.334602	0.912002
Repeat: 1	0.134714	0.47072	3.72106	4.24904	0.00917047
Repeat: 2	0.133829	0.469185	3.73261	4.25547	0.0092918
Repeat: 3	0.132583	0.466011	3.74609	4.27631	0.00913079
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0243601	0.0219539	0.096344	0.00568025	0.015483
Std Dev:	0.000205517	0.000125235	0.000530318	6.69353e-005	0.000144838
%RSD:	0.843661	0.570446	0.550442	1.17839	0.935466
Repeat: 1	0.0242192	0.0218755	0.0960934	0.00566326	0.0155302
Repeat: 2	0.0245959	0.0220983	0.0969532	0.00575404	0.0155983
Repeat: 3	0.0242652	0.0218879	0.0959854	0.00562345	0.0153204
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.177312	4.04517	0.217538	2.43591	0.507997
Std Dev:	0.00133266	0.0214119	0.00231628	0.00546294	0.00152802
%RSD:	0.751587	0.529322	1.06477	0.224267	0.300792
Repeat: 1	0.176313	4.02566	0.219331	2.43464	0.507
Repeat: 2	0.178825	4.04176	0.218361	2.43119	0.507235
Repeat: 3	0.176798	4.06807	0.214923	2.44189	0.509756
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.208927	0.120633	13.988	1.56071	2.16807
Std Dev:	0.00301872	0.000653496	0.661523	0.00477441	0.017611
%RSD:	1.44487	0.541722	4.72922	0.305913	0.812288
Repeat: 1	0.207553	0.121375	13.8109	1.55635	2.1758
Repeat: 2	0.20684	0.120382	14.72	1.55997	2.1805
Repeat: 3	0.212388	0.120142	13.4331	1.56581	2.14792
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.256949	0.200193	0.0248117	5.63143	2394.84
Std Dev:	0.000897665	0.00192088	0.00024688	0.0320093	5.53031
%RSD:	0.349355	0.959517	0.995018	0.568406	0.230926
Repeat: 1	0.257598	0.201301	0.0246897	5.60592	2390.62
Repeat: 2	0.257325	0.197975	0.0250958	5.62101	2401.1
Repeat: 3	0.255925	0.201302	0.0246495	5.66735	2392.8
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	663021	15099.6			
Std Dev:	4911.02	48.5635			
%RSD:	0.740703	0.321621			
Repeat: 1	666585	15049.8			
Repeat: 2	657419	15102.2			
Repeat: 3	665059	15146.8			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	237.445	2085.28	256.883	971.484	1996.52
Std Dev:	2.82948	29.053	1.20751	6.52058	5.39126
%RSD:	1.19164	1.39324	0.470062	0.671198	0.270032
Repeat: 1	235.903	2091.34	258.272	966.282	1996.65
Repeat: 2	240.711	2110.83	256.088	978.799	1991.07
Repeat: 3	235.721	2053.68	256.288	969.372	2001.85
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb

Avg. of Repeats:	49.9666	5.29628	127.87	506.837	191.177
Std Dev:	0.399006	0.027168	0.433589	1.71983	1.79129
%RSD:	0.798544	0.512964	0.339086	0.339326	0.936978
Repeat: 1	50.342	5.31982	127.448	505.481	190.596
Repeat: 2	50.0102	5.30246	127.847	506.258	193.187
Repeat: 3	49.5476	5.26655	128.315	508.771	189.749
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	248.481	1018.58	5.13224	1002.56	5.04072
Std Dev:	2.15358	5.82161	0.0254009	11.7016	0.0469636
%RSD:	0.866697	0.57154	0.494929	1.16717	0.931685
Repeat: 1	247.009	1014.94	5.12024	999.585	5.05599
Repeat: 2	250.953	1025.3	5.16142	1015.46	5.07815
Repeat: 3	247.481	1015.52	5.11506	992.629	4.98802
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	500.112	998.956	5.53181	519.018	252.949
Std Dev:	3.75997	5.28632	0.0598385	1.1747	0.743507
%RSD:	0.751826	0.529185	1.08172	0.226331	0.293936
Repeat: 1	497.293	994.139	5.57813	518.742	252.46
Repeat: 2	504.381	998.117	5.55306	518.007	252.582
Repeat: 3	498.662	1004.61	5.46425	520.307	253.804
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	246.514	249.165	134.83	1018.39	1023.47
Std Dev:	3.54228	1.46666	11.8103	3.11319	8.25281
%RSD:	1.43695	0.58863	8.75942	0.305698	0.806352
Repeat: 1	244.922	250.83	131.668	1015.54	1027.1
Repeat: 2	244.047	248.601	147.9	1017.9	1029.3
Repeat: 3	250.573	248.064	124.923	1021.71	1014.03
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1021.63	260.594	484.941	502.266	2394.84
Std Dev:	3.57846	2.43686	4.81345	2.862	5.53031
%RSD:	0.350271	0.935117	0.992585	0.569817	0.230926
Repeat: 1	1024.22	262.011	482.562	499.99	2390.62
Repeat: 2	1023.12	257.78	490.481	501.33	2401.1
Repeat: 3	1017.54	261.992	481.78	505.479	2392.8
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	663021	15099.6			
Std Dev:	4911.02	48.5635			
%RSD:	0.740703	0.321621			
Repeat: 1	666585	15049.8			
Repeat: 2	657419	15102.2			
Repeat: 3	665059	15146.8			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	Sc1880	Sc3613	Sc3613-2
Avg. of Repeats:	2394.84	663021	15099.6
Std Dev:	5.53031	4911.02	48.5635
%RSD:	0.230926	0.740703	0.321621
Repeat: 1	2390.62	666585	15049.8
Repeat: 2	2401.1	657419	15102.2
Repeat: 3	2392.8	665059	15146.8

Sample Name	Acquisition Date	Sample type	Correction Factor
6I13006-BLK1	9/14/2016 12:01:00PM	QC	1.00

Valid	Analyst Name	Method Name
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.000506688	0.00653897	-0.00592769	0.000464328	0.0365338
Std Dev:	1.10497e-005	0.000629175	0.00107882	2.64845e-005	0.000349692
%RSD:	2.18076	9.62192	18.1996	5.70383	0.957173
Repeat: 1	0.000519277	0.00704507	-0.00716836	0.000462292	0.036137
Repeat: 2	0.000502193	0.00583453	-0.00521037	0.000491772	0.036797
Repeat: 3	0.000498594	0.00673732	-0.00540434	0.000438921	0.0366673
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	0.000976393	0.0269649	0.0352787	0.0200081	0.00024452
Std Dev:	0.000279448	0.000730541	0.00211678	0.000846488	1.24023e-005
%RSD:	28.6204	2.70923	6.00017	4.23073	5.07213
Repeat: 1	0.00110708	0.0261559	0.0329956	0.0194749	0.00024279
Repeat: 2	0.000655547	0.0271627	0.0356644	0.0209841	0.000257696
Repeat: 3	0.00116655	0.0275762	0.0371762	0.0195652	0.000233073
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.000695202	-0.000125904	-0.00854289	-6.46792e-005	0.000122852
Std Dev:	2.5559e-005	0.000147011	0.000405498	2.05135e-005	4.29423e-005
%RSD:	3.67648	116.764	4.74661	31.7158	34.9544
Repeat: 1	0.000671657	-0.000287083	-0.0089903	-5.69158e-005	0.000122377
Repeat: 2	0.000691563	8.1739e-007	-0.00843873	-4.91805e-005	8.01496e-005
Repeat: 3	0.000722385	-9.14457e-005	-0.00819963	-8.79414e-005	0.00016603
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.0001877	0.00298478	0.00533573	0.0237903	-0.00541307
Std Dev:	7.55051e-006	0.000527336	0.000946893	0.00122689	0.00326394
%RSD:	4.02264	17.6675	17.7463	5.1571	60.2974
Repeat: 1	0.00019083	0.00247746	0.00504941	0.0241302	-0.0091155
Repeat: 2	0.000193183	0.00353008	0.00456504	0.0248113	-0.0029517
Repeat: 3	0.000179088	0.00294681	0.00639274	0.0224292	-0.004172
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	-0.00602619	0.00885994	13.2512	-0.000667411	-0.0150243
Std Dev:	0.000859341	0.000452267	3.04014	0.000176784	0.000538579
%RSD:	14.2601	5.10463	22.9424	26.4879	3.58472
Repeat: 1	-0.00539994	0.00934616	11.2593	-0.000648884	-0.0156229
Repeat: 2	-0.0070059	0.00878184	16.7505	-0.000500621	-0.014579
Repeat: 3	-0.00567274	0.0084518	11.7438	-0.000852729	-0.014871
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.000908517	-0.00132963	-0.000115787	0.0405488	2387.04
Std Dev:	0.000317702	0.00108413	2.74203e-005	0.000872174	5.64141
%RSD:	34.9693	81.536	23.6817	2.15092	0.236335

Repeat: 1	0.000595614	-0.000949655	-8.57709e-005	0.0397518	2393.53
Repeat: 2	0.000899129	-0.000486637	-0.000139522	0.0414805	2383.39
Repeat: 3	0.00123081	-0.00255259	-0.000122068	0.0404141	2384.18
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	658711	15183.2			
Std Dev:	5790.26	74.6193			
%RSD:	0.879029	0.491459			
Repeat: 1	659183	15128.2			
Repeat: 2	652700	15268.2			
Repeat: 3	664252	15153.2			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.162567	138.575	-0.492138	22.6263	0.416798
Std Dev:	0.20361	15.1106	2.49929	1.57573	0.01886
%RSD:	125.247	10.9042	507.844	6.96414	4.52496
Repeat: 1	0.069603	150.743	-3.36644	22.5049	0.395348
Repeat: 2	-0.246562	121.661	1.16925	24.2593	0.430781
Repeat: 3	-0.310742	143.322	0.720772	21.1148	0.424266
QC Status Pass/Fail:	Pass	Fail	Pass	Fail	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.0528782	0.300478	-0.0129613	0.0835724	0.173155
Std Dev:	0.103442	0.00826318	0.0732858	0.101246	0.265289
%RSD:	195.622	2.75001	565.42	121.147	153.209
Repeat: 1	0.0998212	0.291327	-0.0920605	0.0221182	0.136412
Repeat: 2	-0.0657112	0.302715	0.000544124	0.200429	0.4549
Repeat: 3	0.124525	0.307393	0.0526324	0.0281704	-0.071847
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	0.419256	-7.14967	0.108416	-2.26658	0.0409914
Std Dev:	0.268643	6.80755	0.0194223	3.5874	0.0139379
%RSD:	64.0761	95.2149	17.9147	158.274	34.0021
Repeat: 1	0.171614	-14.6129	0.0869857	-0.909047	0.0408315
Repeat: 2	0.381293	-1.28076	0.113405	0.443947	0.0271341
Repeat: 3	0.704861	-5.55538	0.124857	-6.33463	0.0550086
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	0.376506	0.886212	0.0497851	-0.0188295	1.73928
Std Dev:	0.0213115	0.130192	0.024462	0.263259	1.5855
%RSD:	5.66034	14.6908	49.1351	1398.12	91.1588
Repeat: 1	0.3855	0.760964	0.0423883	0.0540376	-0.0596515
Repeat: 2	0.391846	1.02084	0.0298752	0.200321	2.93321
Repeat: 3	0.352172	0.876833	0.0770919	-0.310847	2.34426
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Fail
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-0.563272	-1.75891	121.453	0.485305	0.464454
Std Dev:	1.00018	1.01491	54.2721	0.115293	0.252304
%RSD:	177.566	57.701	44.6858	23.7569	54.3227
Repeat: 1	0.16292	-0.667952	85.8923	0.497238	0.184052

Repeat: 2	-1.70408	-1.93372	183.921	0.594168	0.673126
Repeat: 3	-0.148653	-2.67506	94.5445	0.364509	0.536185
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	0.525857	0.619822	-0.765136	3.26719	2387.04
Std Dev:	1.26714	1.37996	0.532053	0.0782785	5.64141
%RSD:	240.966	222.638	69.5371	2.3959	0.236335
Repeat: 1	-0.722454	1.10295	-0.18163	3.19612	2393.53
Repeat: 2	0.489005	1.69326	-1.22339	3.35109	2383.39
Repeat: 3	1.81102	-0.936743	-0.890393	3.25437	2384.18
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	658711	15183.2
Std Dev:	5790.26	74.6193
%RSD:	0.879029	0.491459
Repeat: 1	659183	15128.2
Repeat: 2	652700	15268.2
Repeat: 3	664252	15153.2
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2387.04	658711	15183.2
Std Dev:	5.64141	5790.26	74.6193
%RSD:	0.236335	0.879029	0.491459
Repeat: 1	2393.53	659183	15128.2
Repeat: 2	2383.39	652700	15268.2
Repeat: 3	2384.18	664252	15153.2

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I13006-BS1	9/14/2016 12:05:22PM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.0133931	0.0912494	0.10445	0.0173335	33.7208
Std Dev:	4.48805e-005	0.000795708	0.000342446	9.93624e-005	0.121567
%RSD:	0.335101	0.872014	0.327855	0.573239	0.36051
Repeat: 1	0.0134364	0.0906476	0.104409	0.0173957	33.7716
Repeat: 2	0.0133468	0.0921516	0.104131	0.0173858	33.5821
Repeat: 3	0.0133963	0.0909491	0.104812	0.0172189	33.8087
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.132246	0.481562	3.72548	4.18065	0.00911665
Std Dev:	0.000235411	0.00158852	0.00950061	0.0124352	2.01975e-005
%RSD:	0.178009	0.329867	0.255017	0.297447	0.221545
Repeat: 1	0.132192	0.479728	3.7336	4.18439	0.00910209
Repeat: 2	0.132504	0.482459	3.71503	4.16677	0.00913971
Repeat: 3	0.132043	0.4825	3.72781	4.19078	0.00910814
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0248435	0.0214263	0.0961991	0.00634167	0.0154386
Std Dev:	7.04765e-005	0.000116941	0.000657776	3.42755e-005	0.000152733

%RSD:	0.283682	0.545782	0.683765	0.540481	0.98929
Repeat: 1	0.0248871	0.0213976	0.096937	0.00636177	0.015264
Repeat: 2	0.0248811	0.021555	0.0956742	0.00636115	0.015505
Repeat: 3	0.0247622	0.0213264	0.0959862	0.0063021	0.015547
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.177524	4.0525	0.214689	2.41518	0.50057
Std Dev:	0.000775154	0.00903846	0.00136515	0.00969999	0.00153995
%RSD:	0.436647	0.223034	0.635874	0.401626	0.30764
Repeat: 1	0.178156	4.05672	0.213682	2.41946	0.499664
Repeat: 2	0.177757	4.04212	0.216243	2.40408	0.499698
Repeat: 3	0.176659	4.05865	0.214141	2.422	0.502348
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.20914	0.117732	21.4735	1.51912	2.13437
Std Dev:	0.0009594	0.000710898	0.862649	0.00542091	0.0144318
%RSD:	0.458735	0.603827	4.01728	0.356846	0.676163
Repeat: 1	0.208332	0.117432	20.6337	1.52343	2.12975
Repeat: 2	0.2102	0.11722	22.3573	1.51303	2.15054
Repeat: 3	0.208888	0.118544	21.4293	1.52089	2.1228
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.254009	0.199213	0.0242681	5.55477	2354.49
Std Dev:	0.00103898	0.000308628	1.4983e-005	0.00899194	14.6088
%RSD:	0.409034	0.154923	0.0617394	0.161878	0.620465
Repeat: 1	0.2529	0.199198	0.024281	5.55115	2361.99
Repeat: 2	0.254959	0.199529	0.0242517	5.54816	2363.82
Repeat: 3	0.254167	0.198912	0.0242717	5.56501	2337.65
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	653215	15137			
Std Dev:	2242.8	64.9966			
%RSD:	0.343349	0.429389			
Repeat: 1	650706	15195.6			
Repeat: 2	653914	15067.1			
Repeat: 3	655024	15148.3			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	237.104	2128.52	252.847	1025.51	1995.78
Std Dev:	0.820123	19.1426	0.787828	5.91413	7.19634
%RSD:	0.345892	0.899337	0.311582	0.576702	0.360578
Repeat: 1	237.894	2114.08	252.747	1029.21	1998.79
Repeat: 2	236.257	2150.24	252.115	1028.63	1987.57
Repeat: 3	237.161	2121.24	253.681	1018.69	2000.98
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	49.4188	5.44245	127.601	497.34	189.446
Std Dev:	0.0894243	0.0179678	0.328959	1.4954	0.431106
%RSD:	0.180952	0.330142	0.257802	0.30068	0.227561
Repeat: 1	49.3942	5.42171	127.882	497.798	189.135
Repeat: 2	49.5179	5.45259	127.239	495.67	189.938
Repeat: 3	49.3441	5.45306	127.682	498.554	189.265
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm

Avg. of Repeats:	253.535	994.147	5.1253	1118.2	5.02633
Std Dev:	0.738574	5.42017	0.0315059	5.9916	0.0495725
%RSD:	0.291311	0.545208	0.614712	0.535826	0.986255
Repeat: 1	253.989	992.825	5.16064	1121.71	4.96964
Repeat: 2	253.933	1000.11	5.10016	1121.6	5.04783
Repeat: 3	252.683	989.51	5.1151	1111.28	5.06153
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	500.71	1000.76	5.4582	514.559	249.345
Std Dev:	2.18704	2.23136	0.0352672	2.08579	0.749747
%RSD:	0.436787	0.222967	0.646133	0.405355	0.300686
Repeat: 1	502.493	1001.8	5.4322	515.48	248.902
Repeat: 2	501.367	998.2	5.49834	512.172	248.923
Repeat: 3	498.27	1002.28	5.44405	516.027	250.211
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	246.811	242.648	268.452	991.268	1007.68
Std Dev:	1.094	1.59721	15.4004	3.53437	6.76319
%RSD:	0.443256	0.65824	5.73674	0.35655	0.671167
Repeat: 1	245.887	241.974	253.461	994.079	1005.52
Repeat: 2	248.019	241.498	284.231	987.3	1015.26
Repeat: 3	246.528	244.472	267.663	992.426	1002.26
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1009.89	259.295	474.372	495.399	2354.49
Std Dev:	4.1431	0.396701	0.28981	0.807043	14.6088
%RSD:	0.410251	0.152992	0.0610933	0.162908	0.620465
Repeat: 1	1005.47	259.265	474.622	495.073	2361.99
Repeat: 2	1013.69	259.706	474.054	494.806	2363.82
Repeat: 3	1010.52	258.914	474.44	496.318	2337.65
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	653215	15137			
Std Dev:	2242.8	64.9966			
%RSD:	0.343349	0.429389			
Repeat: 1	650706	15195.6			
Repeat: 2	653914	15067.1			
Repeat: 3	655024	15148.3			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2354.49	653215	15137
Std Dev:	14.6088	2242.8	64.9966
%RSD:	0.620465	0.343349	0.429389
Repeat: 1	2361.99	650706	15195.6
Repeat: 2	2363.82	653914	15067.1
Repeat: 3	2337.65	655024	15148.3

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**

1609071-01@10X 9/14/2016 12:09:38PM Unknown 1.00

Valid	Analyst Name	Method Name
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.00048299	0.812105	-0.00592825	0.000554906	0.240228
Std Dev:	1.70874e-005	0.000356912	0.000224245	1.49581e-005	0.000659409
%RSD:	3.53783	0.043949	3.78265	2.69561	0.274493
Repeat: 1	0.000494348	0.812233	-0.00618454	0.000572085	0.240585
Repeat: 2	0.000491284	0.812381	-0.00576811	0.00054786	0.239467
Repeat: 3	0.000463339	0.811702	-0.0058321	0.000544771	0.240631
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	0.000967288	0.444097	0.0380288	0.031202	0.000377865
Std Dev:	0.000279728	0.000388418	0.00164693	0.000314526	1.67916e-005
%RSD:	28.9188	0.0874625	4.33076	1.00803	4.4438
Repeat: 1	0.00125819	0.44436	0.037569	0.0310896	0.000381582
Repeat: 2	0.000700266	0.44365	0.0398567	0.0315573	0.000359526
Repeat: 3	0.000943407	0.444279	0.0366605	0.0309591	0.000392486
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.000961821	0.00260167	0.665625	-6.26763e-005	0.0147977
Std Dev:	2.12907e-005	0.000267229	0.000829439	1.1701e-005	5.35861e-005
%RSD:	2.21358	10.2714	0.124611	18.6689	0.362126
Repeat: 1	0.000986332	0.00288624	0.666579	-5.18965e-005	0.0148486
Repeat: 2	0.000951216	0.00256271	0.665222	-6.1012e-005	0.0148027
Repeat: 3	0.000947916	0.00235606	0.665074	-7.51203e-005	0.0147418
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.118841	0.000165435	3.13207	0.0342027	-0.011831
Std Dev:	0.0015117	0.000265286	0.00799222	0.000897169	0.00172828
%RSD:	1.27204	160.357	0.255174	2.62309	14.608
Repeat: 1	0.120384	0.0003817	3.13639	0.0336708	-0.00983969
Repeat: 2	0.118775	-0.000130578	3.13698	0.0336988	-0.0127135
Repeat: 3	0.117363	0.000245182	3.12285	0.0352385	-0.0129399
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	-0.00637145	0.0101078	144.408	-0.00190969	0.0166218
Std Dev:	0.00238752	0.000631146	0.59332	0.000286966	0.000343674
%RSD:	37.4722	6.24417	0.410863	15.0268	2.0676
Repeat: 1	-0.00907232	0.00998484	144.356	-0.001583	0.016794
Repeat: 2	-0.00549976	0.00954713	145.026	-0.00202506	0.0162261
Repeat: 3	-0.00454226	0.0107913	143.843	-0.00212102	0.0168454
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.000851574	-0.00079958	-0.000102908	10.3506	2400.1
Std Dev:	0.000178242	0.000575761	1.43748e-005	0.0497471	6.38412
%RSD:	20.9309	72.0079	13.9686	0.480618	0.265993
Repeat: 1	0.0010551	-0.00142442	-0.000101563	10.3193	2395.5
Repeat: 2	0.000723279	-0.000290481	-8.92527e-005	10.3247	2407.39
Repeat: 3	0.000776346	-0.00068384	-0.000117908	10.408	2397.42
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	655666	15189.7			
Std Dev:	7516.92	63.3597			
%RSD:	1.14645	0.417123			
Repeat: 1	648421	15122.6			
Repeat: 2	655151	15197.9			

Repeat: 3	663428	15248.6

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.63149	19461.1	-0.204134	28.0221	12.4739
Std Dev:	0.312452	8.57071	0.519166	0.890919	0.038232
%RSD:	49.4786	0.0440403	254.326	3.17934	0.306497
Repeat: 1	-0.424547	19464.1	-0.797411	29.0453	12.4951
Repeat: 2	-0.479018	19467.7	0.167001	27.6027	12.4297
Repeat: 3	-0.990906	19451.4	0.0180083	27.4183	12.4968
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.0488263	5.01868	-0.0941679	1.41916	2.81298
Std Dev:	0.104215	0.00439341	0.0567946	0.0381042	0.359758
%RSD:	213.44	0.0875413	60.3121	2.68499	12.7892
Repeat: 1	0.15725	5.02166	-0.110628	1.40397	2.88975
Repeat: 2	-0.0505968	5.01363	-0.0309612	1.46251	2.42103
Repeat: 3	0.0398262	5.02074	-0.140914	1.39099	3.12816
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	3.19696	120.683	32.3994	-3.65077	4.80479
Std Dev:	0.223849	12.3926	0.0397281	2.04207	0.0174017
%RSD:	7.00193	10.2687	0.12262	55.9354	0.362173
Repeat: 1	3.45466	133.88	32.4451	-1.76838	4.82133
Repeat: 2	3.08551	118.877	32.3801	-3.36212	4.80641
Repeat: 3	3.05071	109.293	32.373	-5.8218	4.78664
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	335.154	0.439736	80.8256	2.19742	2.90844
Std Dev:	4.26501	0.0657687	0.20647	0.191971	0.841089
%RSD:	1.27255	14.9564	0.255452	8.73619	28.9189
Repeat: 1	339.508	0.492518	80.9372	2.08414	3.87745
Repeat: 2	334.97	0.366058	80.9523	2.08904	2.48054
Repeat: 3	330.984	0.460632	80.5874	2.41907	2.36734
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-0.948396	0.0991122	2462.82	-0.324748	15.2321
Std Dev:	2.76489	1.41821	10.5925	0.187079	0.161
%RSD:	291.534	1430.91	0.430095	57.6074	1.05698
Repeat: 1	-4.07807	-0.179036	2461.9	-0.111758	15.3127
Repeat: 2	0.0700765	-1.15941	2473.85	-0.400016	15.0467
Repeat: 3	1.1628	1.63579	2452.72	-0.462469	15.3368
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	-0.0204587	1.03148	-0.39614	925.256	2400.1
Std Dev:	0.710516	0.734705	0.276671	4.45254	6.38412
%RSD:	3472.93	71.2284	69.8419	0.481222	0.265993
Repeat: 1	0.790754	0.233686	-0.368399	922.447	2395.5

Repeat: 2	-0.532286	1.68025	-0.134384	922.931	2407.39
Repeat: 3	-0.319845	1.1805	-0.685636	930.39	2397.42
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	655666	15189.7			
Std Dev:	7516.92	63.3597			
%RSD:	1.14645	0.417123			
Repeat: 1	648421	15122.6			
Repeat: 2	655151	15197.9			
Repeat: 3	663428	15248.6			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2400.1	655666	15189.7
Std Dev:	6.38412	7516.92	63.3597
%RSD:	0.265993	1.14645	0.417123
Repeat: 1	2395.5	648421	15122.6
Repeat: 2	2407.39	655151	15197.9
Repeat: 3	2397.42	663428	15248.6

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1609071-02@10X	9/14/2016 12:13:58PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000474855	0.781478	-0.00584434	0.000632333	0.231836
Std Dev:	4.05351e-006	0.00129337	0.000613587	1.01146e-005	0.00137177
%RSD:	0.853631	0.165503	10.4988	1.59956	0.591698
Repeat: 1	0.000470471	0.779995	-0.00648264	0.000626985	0.232587
Repeat: 2	0.000478468	0.782067	-0.00579149	0.000643998	0.230253
Repeat: 3	0.000475626	0.782371	-0.00525889	0.000626014	0.232669
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00122967	0.685336	0.0394738	0.0325326	0.000378971
Std Dev:	0.000175207	0.000831328	0.000612791	0.00160696	1.50852e-005
%RSD:	14.2483	0.121302	1.5524	4.93952	3.98057
Repeat: 1	0.00136272	0.685954	0.0394406	0.0320491	0.000381169
Repeat: 2	0.00103116	0.684391	0.0388782	0.0343258	0.000362907
Repeat: 3	0.00129513	0.685664	0.0401025	0.0312229	0.000392836
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.000867377	0.000785743	0.596146	-5.73429e-005	0.0158524
Std Dev:	8.14952e-006	8.84959e-005	0.000897589	1.33642e-005	0.000306156
%RSD:	0.939559	11.2627	0.150565	23.3058	1.93129
Repeat: 1	0.000858039	0.000717907	0.595112	-5.17932e-005	0.0155031
Repeat: 2	0.000873054	0.000753477	0.596726	-7.25879e-005	0.0160739
Repeat: 3	0.000871039	0.000885844	0.596599	-4.76476e-005	0.0159804
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.0931854	-8.21431e-006	3.16442	0.0348976	-0.0116774
Std Dev:	0.000886373	0.000481596	0.0140943	0.00166068	0.000885919
%RSD:	0.951193	5862.89	0.445398	4.75872	7.58659
Repeat: 1	0.09261	0.000186157	3.15369	0.0346638	-0.0124344

Repeat: 2	0.0942062	-0.00055662	3.18038	0.0366628	-0.010703
Repeat: 3	0.0927402	0.00034582	3.15919	0.0333662	-0.0118949
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00544528	0.00876431	190.897	-0.00186465	0.0193597
Std Dev:	0.000532165	0.000744878	2.20919	7.35308e-005	0.00120307
%RSD:	9.77295	8.499	1.15727	3.94341	6.21431
Repeat: 1	-0.0048921	0.00813889	192.797	-0.00186431	0.0187574
Repeat: 2	-0.00595358	0.00958837	188.473	-0.00179129	0.020745
Repeat: 3	-0.00549017	0.00856566	191.42	-0.00193836	0.0185768
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.000949857	-0.00142508	-8.18119e-005	5.21088	2425.86
Std Dev:	0.000323199	0.000191657	2.38216e-005	0.0144041	6.87623
%RSD:	34.0261	13.4489	29.1175	0.276424	0.283456
Repeat: 1	0.00105899	-0.00158233	-5.99743e-005	5.21703	2432.63
Repeat: 2	0.000586218	-0.0012116	-0.000107216	5.19442	2426.07
Repeat: 3	0.00120436	-0.0014813	-7.82459e-005	5.22118	2418.88
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	666423	15378.3			
Std Dev:	4823.58	16.1256			
%RSD:	0.723802	0.104859			
Repeat: 1	669252	15368.9			
Repeat: 2	660853	15369.2			
Repeat: 3	669163	15397			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.769989	18720.8	-0.0276088	32.6217	11.9787
Std Dev:	0.0718073	31.0485	1.42204	0.601076	0.0824417
%RSD:	9.32575	0.16585	5150.68	1.84256	0.688235
Repeat: 1	-0.847966	18685.2	-1.50704	32.3036	12.0245
Repeat: 2	-0.706587	18735	0.095126	33.315	11.8835
Repeat: 3	-0.755415	18742.2	1.32909	32.2466	12.0281
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.146067	7.74735	-0.0456764	1.57958	2.87519
Std Dev:	0.0657769	0.00940319	0.0211168	0.194404	0.323755
%RSD:	45.0321	0.121373	46.2312	12.3073	11.2603
Repeat: 1	0.195551	7.75434	-0.0466401	1.5211	2.92371
Repeat: 2	0.071424	7.73666	-0.0662948	1.79651	2.52991
Repeat: 3	0.171225	7.75106	-0.0240943	1.42112	3.17194
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	2.20509	36.2698	29.0715	-2.78558	5.14715
Std Dev:	0.0850222	4.09552	0.0429923	2.34325	0.0993848
%RSD:	3.85572	11.2918	0.147885	84.1207	1.93087
Repeat: 1	2.10756	33.1215	29.022	-1.81009	5.03373
Repeat: 2	2.26356	34.7878	29.0993	-5.459	5.21903
Repeat: 3	2.24416	40.9	29.0932	-1.08766	5.18868
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb

Avg. of Repeats:	262.769	0.27232	81.6613	2.36678	2.82732
Std Dev:	2.50093	0.119316	0.36411	0.357021	0.435157
%RSD:	0.951759	43.8145	0.445878	15.0847	15.3912
Repeat: 1	261.146	0.320482	81.3841	2.31664	2.45137
Repeat: 2	265.649	0.136451	82.0737	2.74623	3.30401
Repeat: 3	261.513	0.360027	81.5263	2.03749	2.72658
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	0.119728	-2.86184	3292.69	-0.295472	16.4787
Std Dev:	0.612267	1.66976	39.4373	0.0480001	0.563924
%RSD:	511.381	58.3457	1.19772	16.2452	3.42213
Repeat: 1	0.760575	-4.26324	3326.62	-0.295345	16.1964
Repeat: 2	-0.459263	-1.01434	3249.42	-0.247535	17.1281
Repeat: 3	0.0578725	-3.30794	3302.04	-0.343535	16.1118
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	0.292101	0.285755	-0.00700419	465.529	2425.86
Std Dev:	1.29107	0.238885	0.46367	1.29033	6.87623
%RSD:	441.994	83.5981	6619.9	0.277174	0.283456
Repeat: 1	0.732212	0.0885474	0.41694	466.081	2432.63
Repeat: 2	-1.16148	0.551386	-0.502161	464.055	2426.07
Repeat: 3	1.30557	0.217331	0.0642084	466.452	2418.88
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	666423	15378.3			
Std Dev:	4823.58	16.1256			
%RSD:	0.723802	0.104859			
Repeat: 1	669252	15368.9			
Repeat: 2	660853	15369.2			
Repeat: 3	669163	15397			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2425.86	666423	15378.3
Std Dev:	6.87623	4823.58	16.1256
%RSD:	0.283456	0.723802	0.104859
Repeat: 1	2432.63	669252	15368.9
Repeat: 2	2426.07	660853	15369.2
Repeat: 3	2418.88	669163	15397

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1609071-03@5X	9/14/2016 12:18:18PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000525556	0.787278	-0.0055867	0.000484228	0.262679
Std Dev:	2.98252e-005	0.00241918	0.000675738	1.31372e-005	0.000655212
%RSD:	5.67499	0.307284	12.0955	2.71302	0.249434

Repeat: 1	0.000554481	0.786592	-0.00635185	0.000499395	0.262391
Repeat: 2	0.000494906	0.785276	-0.00533651	0.000476447	0.262217
Repeat: 3	0.000527282	0.789966	-0.00507174	0.000476841	0.263429
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.000920462	0.249411	0.0387835	0.0312593	0.000303929
Std Dev:	0.000232838	0.000693013	0.000972119	0.00136245	2.66303e-005
%RSD:	25.2958	0.27786	2.50653	4.35855	8.762
Repeat: 1	0.00106295	0.249202	0.0384957	0.0320045	0.00033168
Repeat: 2	0.000651768	0.248846	0.039867	0.0296868	0.000301525
Repeat: 3	0.00104666	0.250184	0.0379878	0.0320866	0.000278583
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00160547	0.00121943	0.924615	-6.97565e-005	0.0140874
Std Dev:	2.37007e-005	0.000122337	0.00465764	7.68848e-006	4.35753e-005
%RSD:	1.47624	10.0323	0.503739	11.0219	0.309321
Repeat: 1	0.0016308	0.00130799	0.928313	-7.21387e-005	0.0141118
Repeat: 2	0.00160179	0.00127045	0.919384	-7.59718e-005	0.0140371
Repeat: 3	0.00158383	0.00107984	0.926148	-6.11588e-005	0.0141134
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.114032	-8.65236e-005	2.63999	0.031068	-0.0128574
Std Dev:	0.000794124	0.000409166	0.0231909	0.000470476	0.00107734
%RSD:	0.696405	472.896	0.878446	1.51434	8.37921
Repeat: 1	0.114767	-0.000387968	2.65506	0.0316029	-0.0121802
Repeat: 2	0.11319	-0.000250866	2.61328	0.0307185	-0.0122922
Repeat: 3	0.114139	0.000379263	2.65162	0.0308826	-0.0140997
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00585839	0.0106013	155.668	-0.0010525	0.00434503
Std Dev:	0.00075657	0.000615617	0.605366	0.000879505	0.000622173
%RSD:	12.9143	5.80698	0.388883	83.5634	14.3192
Repeat: 1	-0.00553801	0.00996954	155.356	-0.000340029	0.00386355
Repeat: 2	-0.00672243	0.0111994	156.365	-0.00203549	0.004124
Repeat: 3	-0.00531471	0.010635	155.281	-0.000781986	0.00504754
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.00116832	-0.000744943	-0.000110369	0.575687	2386.39
Std Dev:	0.000184453	0.00112013	1.47266e-005	0.00148102	5.44428
%RSD:	15.7878	150.365	13.3431	0.257261	0.228139
Repeat: 1	0.00125832	0.000468237	-0.000100761	0.574449	2391.63
Repeat: 2	0.000956147	-0.000963147	-0.000127323	0.577328	2380.76
Repeat: 3	0.0012905	-0.00173992	-0.000103022	0.575285	2386.77
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	652110	15079			
Std Dev:	7505.3	20.7321			
%RSD:	1.15093	0.137489			
Repeat: 1	643760	15091.9			
Repeat: 2	658293	15090.1			
Repeat: 3	654277	15055.1			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	0.146373	18869.6	0.568392	23.8116	13.8025
Std Dev:	0.545259	58.0364	1.56557	0.781759	0.0393388
%RSD:	372.513	0.307566	275.438	3.2831	0.285012
Repeat: 1	0.674879	18853.1	-1.2042	24.7142	13.7861
Repeat: 2	-0.414221	18821.5	1.14737	23.3492	13.774

Repeat: 3	0.178462	18934	1.76201	23.3714	13.8474
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.0328107	2.81658	-0.0527674	1.42467	1.24128
Std Dev:	0.0867473	0.00783871	0.0339333	0.161675	0.568789
%RSD:	264.387	0.278306	64.3074	11.3482	45.8229
Repeat: 1	0.0858052	2.81421	-0.0629027	1.51291	1.83339
Repeat: 2	-0.0672989	2.81019	-0.0149212	1.23808	1.19133
Repeat: 3	0.0799259	2.82532	-0.0804782	1.52303	0.699106
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	9.93844	56.6122	44.8044	-4.5891	4.5742
Std Dev:	0.248535	5.66697	0.22309	1.33619	0.0141448
%RSD:	2.50075	10.0101	0.497919	29.1167	0.30923
Repeat: 1	10.2042	60.7249	44.9815	-5.0131	4.5821
Repeat: 2	9.89945	58.9637	44.5538	-5.66185	4.55787
Repeat: 3	9.7117	50.1481	44.8778	-3.09235	4.58263
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	321.587	0.141565	68.1132	1.57863	2.27701
Std Dev:	2.24062	0.100953	0.599111	0.101048	0.511647
%RSD:	0.696738	71.3119	0.879582	6.40102	22.4701
Repeat: 1	323.662	0.0671957	68.5026	1.69342	2.60234
Repeat: 2	319.211	0.10101	67.4233	1.50313	2.54143
Repeat: 3	321.889	0.256489	68.4137	1.53934	1.68726
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-0.319654	1.24582	2663.81	0.234174	9.50807
Std Dev:	0.877351	1.38318	10.8072	0.573368	0.291479
%RSD:	274.469	111.026	0.405704	244.847	3.0656
Repeat: 1	0.0370412	-0.172473	2658.25	0.69866	9.28246
Repeat: 2	-1.31917	2.59099	2676.26	-0.406653	9.40457
Repeat: 3	0.323168	1.31895	2656.91	0.410516	9.83717
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1.30569	1.11545	-0.562042	50.8281	2386.39
Std Dev:	0.735123	1.42763	0.287062	0.134859	5.44428
%RSD:	56.3016	127.987	51.0749	0.265324	0.228139
Repeat: 1	1.66438	2.6621	-0.369266	50.7151	2391.63
Repeat: 2	0.460076	0.836094	-0.891952	50.9774	2380.76
Repeat: 3	1.79261	-0.151857	-0.424907	50.7919	2386.77
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	652110	15079			
Std Dev:	7505.3	20.7321			
%RSD:	1.15093	0.137489			
Repeat: 1	643760	15091.9			

Repeat: 2	658293	15090.1
Repeat: 3	654277	15055.1
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2386.39	652110	15079
Std Dev:	5.44428	7505.3	20.7321
%RSD:	0.228139	1.15093	0.137489
Repeat: 1	2391.63	643760	15091.9
Repeat: 2	2380.76	658293	15090.1
Repeat: 3	2386.77	654277	15055.1

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1609051-52RE1@10X	9/14/2016 12:22:40PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000670223	0.773794	-0.0017505	0.000229127	4.1255
Std Dev:	2.25333e-005	0.00174981	0.000265157	6.04386e-006	0.00763606
%RSD:	3.36206	0.226134	15.1475	2.63778	0.185094
Repeat: 1	0.000694738	0.775137	-0.00197137	0.000232243	4.11765
Repeat: 2	0.000665518	0.774429	-0.00145643	0.000232978	4.12595
Repeat: 3	0.000650414	0.771815	-0.0018237	0.000222161	4.1329
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.000680174	0.375142	0.50318	0.128938	0.00580588
Std Dev:	0.000551385	0.000955072	0.00102938	0.00103469	4.32051e-005
%RSD:	81.0653	0.25459	0.204574	0.802467	0.744161
Repeat: 1	0.000981702	0.376032	0.503307	0.129535	0.00582089
Repeat: 2	0.00101504	0.37526	0.502093	0.127743	0.00583958
Repeat: 3	4.37806e-005	0.374133	0.50414	0.129536	0.00575717
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.173167	1.69398	-0.00217786	3.44676e-006	0.00348699
Std Dev:	0.00140741	0.0121001	0.000736049	8.65395e-006	2.23462e-005
%RSD:	0.812748	0.714299	33.7969	251.075	0.640843
Repeat: 1	0.173584	1.69941	-0.00238495	-2.27366e-006	0.00346539
Repeat: 2	0.174319	1.70241	-0.00136045	-7.88695e-007	0.00351002
Repeat: 3	0.171599	1.68012	-0.00278818	1.34026e-005	0.00348557
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.364962	0.0372586	0.0151574	1.26383	2.24898
Std Dev:	0.00296783	0.000657611	0.000422235	0.00327661	0.001472
%RSD:	0.813188	1.76499	2.78566	0.25926	0.0654519
Repeat: 1	0.363165	0.0366453	0.0150826	1.26117	2.24728
Repeat: 2	0.368388	0.0371774	0.0156121	1.26283	2.24981
Repeat: 3	0.363334	0.037953	0.0147776	1.26749	2.24985
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.0116466	0.01057	131.781	0.108163	0.0846429
Std Dev:	0.00116062	0.00124409	2.7348	0.000714816	0.00117183
%RSD:	9.96525	11.7701	2.07526	0.660866	1.38444
Repeat: 1	0.0129673	0.0119886	131.009	0.107936	0.0851717
Repeat: 2	0.0107892	0.0100568	134.819	0.108964	0.0854573
Repeat: 3	0.0111834	0.00966452	129.515	0.10759	0.0832999

Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.0525747	-0.000677315	0.000529318	70.9343	2407.31
Std Dev:	0.000597366	0.000516973	2.88895e-005	0.0636979	4.08793
%RSD:	1.13622	76.3268	5.45788	0.0897985	0.169813
Repeat: 1	0.0532011	-0.000978771	0.000499685	70.8614	2410.22
Repeat: 2	0.0525116	-0.000972798	0.000557402	70.9622	2409.07
Repeat: 3	0.0520114	-8.0376e-005	0.000530866	70.9793	2402.64

Element/Wavelength	Sc3613	Sc3613-2
Avg. of Repeats:	666360	15351.4
Std Dev:	5756.98	47.3142
%RSD:	0.863944	0.308208
Repeat: 1	670567	15312.1
Repeat: 2	659799	15338.1
Repeat: 3	668714	15403.9

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	2.64384	18539.5	12.0615	14.6032	242.103
Std Dev:	0.409316	41.953	0.620758	0.402544	0.455168
%RSD:	15.4819	0.22629	5.14661	2.75654	0.188006
Repeat: 1	3.08908	18571.7	11.5593	14.8075	241.635
Repeat: 2	2.55856	18554.7	12.7555	14.8627	242.13
Repeat: 3	2.28388	18492	11.8697	14.1395	242.544
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.131905	4.23872	13.1974	10.7258	117.705
Std Dev:	0.205873	0.0108029	0.0542195	0.132956	0.915029
%RSD:	156.076	0.254861	0.410835	1.23959	0.777389
Repeat: 1	0.246102	4.24879	13.1924	10.7859	118.026
Repeat: 2	0.25537	4.24007	13.1458	10.5734	118.417
Repeat: 3	-0.105756	4.22731	13.2539	10.8181	116.673
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	1810.02	78441.4	0.413285	9.40643	1.17449
Std Dev:	14.7638	560.302	0.0352549	1.51495	0.00731322
%RSD:	0.815667	0.714294	8.53041	16.1055	0.622669
Repeat: 1	1814.4	78692.8	0.403366	8.40537	1.16761
Repeat: 2	1822.1	78832	0.452437	8.6646	1.18217
Repeat: 3	1793.57	77799.4	0.384052	11.1493	1.1737
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1027.86	11.9228	0.303519	265.388	1100.56
Std Dev:	8.3666	0.158461	0.010908	0.707866	0.715419
%RSD:	0.813979	1.32906	3.59385	0.266728	0.0650051
Repeat: 1	1022.79	11.7724	0.301585	264.814	1099.73
Repeat: 2	1037.52	11.9079	0.315264	265.171	1100.95
Repeat: 3	1023.29	12.0882	0.293707	266.179	1100.99
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Units:	ppb	ppb	ppm	ppb	ppb

Avg. of Repeats:	15.1204	-0.621363	2254.55	71.4401	47.1195
Std Dev:	1.3374	2.78699	48.9182	0.465965	0.54904
%RSD:	8.84496	448.528	2.16975	0.652245	1.16521
Repeat: 1	16.6346	2.55897	2240.82	71.2918	47.3672
Repeat: 2	14.1006	-1.78561	2308.87	71.9622	47.5011
Repeat: 3	14.6261	-2.63745	2213.97	71.0663	46.4903
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**TI1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	206.505	-0.140826	14.4259	6341.43	2407.31
Std Dev:	2.38328	0.667183	0.566775	5.70528	4.08793
%RSD:	1.1541	473.765	3.92887	0.0899683	0.169813
Repeat: 1	209.004	-0.521996	13.8547	6334.91	2410.22
Repeat: 2	206.253	-0.530039	14.9881	6343.9	2409.07
Repeat: 3	204.258	0.629557	14.435	6345.48	2402.64
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	666360	15351.4			
Std Dev:	5756.98	47.3142			
%RSD:	0.863944	0.308208			
Repeat: 1	670567	15312.1			
Repeat: 2	659799	15338.1			
Repeat: 3	668714	15403.9			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2407.31	666360	15351.4
Std Dev:	4.08793	5756.98	47.3142
%RSD:	0.169813	0.863944	0.308208
Repeat: 1	2410.22	670567	15312.1
Repeat: 2	2409.07	659799	15338.1
Repeat: 3	2402.64	668714	15403.9

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I09020-SRL2@50X	9/14/2016 12:27:08PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000522005	0.158066	-0.00530018	0.000120457	0.864466
Std Dev:	1.82422e-005	0.000440578	0.000611388	8.00721e-006	0.00383236
%RSD:	3.49463	0.278731	11.5352	6.64738	0.443321
Repeat: 1	0.000515991	0.158097	-0.00501442	0.00011486	0.868605
Repeat: 2	0.00050753	0.15849	-0.004884	0.000129629	0.86375
Repeat: 3	0.000542495	0.157611	-0.00600213	0.000116881	0.861042
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.000622979	0.0884957	0.127757	0.0429251	0.0014233
Std Dev:	0.000390233	0.000363798	0.000819028	0.00132423	6.43116e-006
%RSD:	62.6399	0.411092	0.641082	3.08497	0.451848
Repeat: 1	0.000841852	0.0882267	0.128332	0.0414193	0.00141714
Repeat: 2	0.000854647	0.0883507	0.126819	0.0434481	0.00142997

Repeat: 3	0.000172437	0.0889096	0.12812	0.043908	0.0014228
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0349944	0.343651	-0.00788327	-5.29467e-005	0.000751304
Std Dev:	0.000159125	0.002507	0.000866192	1.02253e-005	2.34783e-005
%RSD:	0.454716	0.729518	10.9877	19.3124	3.12501
Repeat: 1	0.035084	0.345545	-0.0071251	-4.12668e-005	0.000772127
Repeat: 2	0.0350885	0.344599	-0.00882731	-6.0284e-005	0.000755927
Repeat: 3	0.0348106	0.340808	-0.00769739	-5.72893e-005	0.000725858
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.076423	0.00690303	0.00678679	0.27468	0.456648
Std Dev:	0.000288296	0.000336476	0.000533049	0.00124261	0.0033008
%RSD:	0.377237	4.87432	7.85422	0.452386	0.722833
Repeat: 1	0.0767086	0.00693859	0.00727876	0.27509	0.454104
Repeat: 2	0.0764284	0.00722031	0.00622047	0.273284	0.455461
Repeat: 3	0.0761321	0.00655018	0.00686113	0.275666	0.460378
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.0027606	0.00921579	31.0745	0.0200936	0.00460549
Std Dev:	0.00206721	0.00124367	1.89834	0.000357876	0.00132481
%RSD:	74.8827	13.4949	6.109	1.78105	28.7659
Repeat: 1	-0.00206476	0.0104396	30.9352	0.0204822	0.00586151
Repeat: 2	-0.00113109	0.00925463	29.2496	0.0197776	0.00473374
Repeat: 3	-0.00508594	0.00795316	33.0387	0.0200209	0.00322122
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.011005	-0.00103281	3.23407e-006	14.4119	2418.68
Std Dev:	0.000284375	0.000753179	1.82454e-005	0.0434118	5.97801
%RSD:	2.58406	72.9251	564.162	0.301223	0.247159
Repeat: 1	0.0109247	-0.00178909	-1.76549e-005	14.3688	2415.14
Repeat: 2	0.0113208	-0.000282773	1.60522e-005	14.4112	2425.59
Repeat: 3	0.0107693	-0.00102657	1.13049e-005	14.4556	2415.33
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	662321	15514.1			
Std Dev:	3682.21	111.962			
%RSD:	0.555955	0.721677			
Repeat: 1	658261	15473.7			
Repeat: 2	663260	15428			
Repeat: 3	665444	15640.7			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	0.079052	3772.77	1.54527	3.37824	49.3525
Std Dev:	0.333363	10.5725	1.42011	0.478241	0.225263
%RSD:	421.702	0.280232	91.9001	14.1565	0.456438
Repeat: 1	-0.0327156	3773.52	2.21009	3.05229	49.5957
Repeat: 2	-0.184066	3782.95	2.51101	3.92726	49.3107
Repeat: 3	0.453937	3761.84	-0.0852958	3.15516	49.151
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	-0.0410291	0.996456	2.5835	2.34199	25.0945
Std Dev:	0.145269	0.00411494	0.0293823	0.160523	0.137769
%RSD:	354.062	0.412958	1.1373	6.85412	0.549001
Repeat: 1	0.0398451	0.993414	2.60032	2.16027	24.9614
Repeat: 2	0.0458031	0.994817	2.54958	2.40121	25.2365

Repeat: 3	-0.208736	1.00114	2.60061	2.46449	25.0857
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	360.303	15912.1	0.14001	-0.260808	0.253398
Std Dev:	1.67144	116.086	0.0414885	1.78743	0.00768261
%RSD:	0.4639	0.729549	29.6325	685.344	3.03183
Repeat: 1	361.244	15999.8	0.176325	1.78088	0.260204
Repeat: 2	361.291	15956	0.0947929	-1.54345	0.254923
Repeat: 3	358.373	15780.4	0.148913	-1.01986	0.245067
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	215.125	2.37578	0.0872717	53.6787	226.928
Std Dev:	0.811003	0.0834941	0.0137708	0.267615	1.60731
%RSD:	0.376992	3.51439	15.7792	0.49855	0.708292
Repeat: 1	215.929	2.38443	0.0999813	53.7662	225.688
Repeat: 2	215.139	2.45461	0.0726415	53.3782	226.352
Repeat: 3	214.307	2.2883	0.0891922	53.8916	228.744
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	2.22088	-1.50707	443.109	14.0209	9.65439
Std Dev:	2.39004	2.78867	33.8679	0.233423	0.620906
%RSD:	107.616	185.039	7.64325	1.66482	6.43134
Repeat: 1	3.02751	1.23753	440.642	14.2744	10.243
Repeat: 2	4.10324	-1.42094	410.543	13.8149	9.71452
Repeat: 3	-0.468099	-4.33782	478.144	13.9735	9.00561
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	40.7796	0.666869	2.0996	1288.12	2418.68
Std Dev:	1.13448	0.963592	0.354098	3.88738	5.97801
%RSD:	2.78198	144.495	16.865	0.301786	0.247159
Repeat: 1	40.4593	-0.301167	1.69446	1284.27	2415.14
Repeat: 2	42.0398	1.62595	2.34993	1288.06	2425.59
Repeat: 3	39.8397	0.675819	2.25441	1292.04	2415.33
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	662321	15514.1			
Std Dev:	3682.21	111.962			
%RSD:	0.555955	0.721677			
Repeat: 1	658261	15473.7			
Repeat: 2	663260	15428			
Repeat: 3	665444	15640.7			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2418.68	662321	15514.1
Std Dev:	5.97801	3682.21	111.962
%RSD:	0.247159	0.555955	0.721677
Repeat: 1	2415.14	658261	15473.7

Repeat: 2	2425.59	663260	15428
Repeat: 3	2415.33	665444	15640.7

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1609051-62RE1@10X	9/14/2016 12:31:32PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000568449	0.561738	-0.00179535	0.000240444	3.45328
Std Dev:	3.43652e-005	0.00077093	0.000339176	6.11345e-006	0.0101509
%RSD:	6.04543	0.13724	18.8919	2.54256	0.29395
Repeat: 1	0.000571526	0.562386	-0.00142836	0.000234473	3.45195
Repeat: 2	0.000601172	0.560886	-0.00186041	0.000246691	3.44386
Repeat: 3	0.000532649	0.561944	-0.00209729	0.000240169	3.46403
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00113534	0.378682	0.68078	0.094134	0.00303508
Std Dev:	6.65167e-005	0.000495934	0.00296737	0.00206217	4.30392e-006
%RSD:	5.85875	0.130963	0.435878	2.19067	0.141806
Repeat: 1	0.00111304	0.378697	0.680784	0.0920933	0.00303047
Repeat: 2	0.00108284	0.37917	0.677811	0.096217	0.0030358
Repeat: 3	0.00121014	0.378179	0.683746	0.0940918	0.00303899
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.302228	1.18384	-0.00392062	-4.56947e-005	0.00278751
Std Dev:	0.00315536	0.0073065	0.000817737	1.64306e-005	9.18518e-005
%RSD:	1.04403	0.617187	20.8574	35.9573	3.29512
Repeat: 1	0.302517	1.18603	-0.00318995	-6.24564e-005	0.00268756
Repeat: 2	0.298938	1.1898	-0.00376798	-4.50112e-005	0.00280675
Repeat: 3	0.305229	1.17569	-0.00480392	-2.96165e-005	0.00286821
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.199032	0.0305328	0.00817032	0.856391	2.73916
Std Dev:	0.00164901	0.00215014	0.000573823	0.00596385	0.00696774
%RSD:	0.828515	7.04207	7.02327	0.696394	0.254376
Repeat: 1	0.199299	0.0290431	0.00859402	0.860525	2.73829
Repeat: 2	0.197266	0.0329978	0.0075173	0.849554	2.73266
Repeat: 3	0.200532	0.0295576	0.00839962	0.859092	2.74652
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.0158588	0.0109264	93.5897	0.0748502	0.0715513
Std Dev:	0.000149458	0.00055679	1.97056	0.00071486	0.00131459
%RSD:	0.942427	5.09581	2.10553	0.955055	1.83727
Repeat: 1	0.0158443	0.0113248	92.7591	0.0755596	0.0719305
Repeat: 2	0.016015	0.0102902	92.1703	0.0748609	0.0726347
Repeat: 3	0.0157171	0.0111642	95.8395	0.07413	0.0700888
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.0370302	-1.03414e-005	0.000393278	80.1949	2408.81
Std Dev:	0.000179019	0.000707652	2.80998e-005	0.296727	10.5776
%RSD:	0.48344	6842.92	7.14502	0.370007	0.43912
Repeat: 1	0.0368664	-0.000761056	0.000417487	79.9059	2416.4
Repeat: 2	0.0372213	8.55679e-005	0.000362464	80.4988	2413.3
Repeat: 3	0.037003	0.000644464	0.000399883	80.1801	2396.73
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	667551	15303.6			

Std Dev:	5023.24	61.9247
%RSD:	0.752488	0.404641
Repeat: 1	666819	15232.7
Repeat: 2	672900	15347.1
Repeat: 3	662933	15331

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	0.861648	13451.6	11.1282	13.4731	202.419
Std Dev:	0.625758	18.5321	0.792445	0.371649	0.603542
%RSD:	72.6234	0.137769	7.12103	2.75845	0.298164
Repeat: 1	0.9195	13467.2	11.9825	13.1262	202.341
Repeat: 2	1.45647	13431.1	10.9851	13.8653	201.858
Repeat: 3	0.208973	13456.6	10.4171	13.4278	203.058
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.24326	4.27877	20.2179	7.28397	58.9615
Std Dev:	0.0242919	0.00560954	0.114153	0.243909	0.0932363
%RSD:	9.98597	0.131102	0.564611	3.34857	0.158131
Repeat: 1	0.234184	4.27894	20.2144	7.0379	58.8616
Repeat: 2	0.224813	4.28429	20.1056	7.52566	58.9766
Repeat: 3	0.270783	4.27308	20.3338	7.28836	59.0463
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	3161.01	54817.7	0.329811	0.728225	0.93497
Std Dev:	33.0401	338.297	0.0391676	2.8721	0.0297184
%RSD:	1.04524	0.617132	11.8758	394.397	3.17854
Repeat: 1	3164.05	54919	0.364808	-2.20297	0.902573
Repeat: 2	3126.56	55093.7	0.337122	0.850324	0.941372
Repeat: 3	3192.43	54440.3	0.287503	3.53732	0.960966
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	560.212	10.2228	0.123014	178.087	1338.12
Std Dev:	4.65955	0.539705	0.0148241	1.28713	3.38923
%RSD:	0.831747	5.27941	12.0508	0.722753	0.253282
Repeat: 1	560.963	9.84933	0.13396	178.976	1337.7
Repeat: 2	555.223	10.8416	0.106144	176.611	1334.97
Repeat: 3	564.451	9.97756	0.128938	178.673	1341.7
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	21.9878	1.04158	1567.61	49.7204	40.9838
Std Dev:	0.166369	1.25108	35.1037	0.466049	0.61599
%RSD:	0.756643	120.114	2.23931	0.937339	1.50301
Repeat: 1	21.9697	1.93286	1552.81	50.1829	41.1615
Repeat: 2	22.1625	-0.388653	1542.33	49.7276	41.4914
Repeat: 3	21.8312	1.58053	1607.69	49.2509	40.2985
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----

Avg. of Repeats:	144.502	1.29797	10.7138	7168.13	2408.81
Std Dev:	0.713568	0.905358	0.544255	26.5774	10.5776
%RSD:	0.49381	69.7518	5.07993	0.370772	0.43912
Repeat: 1	143.85	0.33823	11.1856	7142.27	2416.4
Repeat: 2	145.265	1.41889	10.1184	7195.37	2413.3
Repeat: 3	144.393	2.13679	10.8375	7166.74	2396.73
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	667551	15303.6			
Std Dev:	5023.24	61.9247			
%RSD:	0.752488	0.404641			
Repeat: 1	666819	15232.7			
Repeat: 2	672900	15347.1			
Repeat: 3	662933	15331			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2408.81	667551	15303.6
Std Dev:	10.5776	5023.24	61.9247
%RSD:	0.43912	0.752488	0.404641
Repeat: 1	2416.4	666819	15232.7
Repeat: 2	2413.3	672900	15347.1
Repeat: 3	2396.73	662933	15331

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1609017-01@5X	9/14/2016 12:35:59PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000498995	0.183185	0.000277928	0.000724883	0.449924
Std Dev:	2.23846e-005	0.00116127	0.000916897	4.11194e-006	0.00126801
%RSD:	4.48594	0.633933	329.904	0.567256	0.281827
Repeat: 1	0.000479305	0.182545	0.000618215	0.000722444	0.449696
Repeat: 2	0.000523342	0.184525	-0.000760462	0.000722574	0.448786
Repeat: 3	0.000494339	0.182483	0.000976033	0.00072963	0.451291
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00123849	0.456981	0.0508077	0.0468983	0.00143736
Std Dev:	0.000293274	0.0009281	0.00167887	0.000780375	2.56324e-005
%RSD:	23.6801	0.203094	3.30435	1.66397	1.7833
Repeat: 1	0.00132579	0.456926	0.048982	0.0477861	0.00145108
Repeat: 2	0.000911472	0.457935	0.0511559	0.0463208	0.00140778
Repeat: 3	0.00147819	0.456082	0.0522851	0.046588	0.0014532
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00751462	0.222425	0.0554532	-8.49646e-006	0.0125903
Std Dev:	1.69703e-005	0.000603924	0.000311904	6.66903e-006	2.73434e-005
%RSD:	0.22583	0.271518	0.562464	78.4919	0.217179
Repeat: 1	0.00753132	0.221761	0.0557369	-2.41918e-006	0.012571
Repeat: 2	0.00749739	0.222941	0.0551192	-1.56309e-005	0.0126216
Repeat: 3	0.00751515	0.222573	0.0555034	-7.43925e-006	0.0125782
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**

Avg. of Repeats:	0.0422605	0.054755	3.9344	0.0756127	0.111883
Std Dev:	8.96676e-005	0.000269863	0.0305499	0.0018166	0.000917968
%RSD:	0.212178	0.492855	0.776482	2.40251	0.820472
Repeat: 1	0.0423586	0.0546917	3.96351	0.0763155	0.112936
Repeat: 2	0.0421828	0.0545225	3.93712	0.0769728	0.111253
Repeat: 3	0.0422399	0.0550509	3.90259	0.0735496	0.11146
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00446908	0.00928473	1699.97	0.00256264	0.0495862
Std Dev:	0.000684378	0.000916809	2.82519	0.000162211	0.00071978
%RSD:	15.3136	9.87438	0.16619	6.32984	1.45158
Repeat: 1	-0.0050699	0.00917603	1700.75	0.00261324	0.0488835
Repeat: 2	-0.00372411	0.00842711	1696.84	0.00238116	0.0503219
Repeat: 3	-0.00461324	0.010251	1702.32	0.00269353	0.049553
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.0470942	-0.00209911	0.000770296	1.66302	2470.05
Std Dev:	0.000353334	0.00102276	1.321e-005	0.00440874	1.35284
%RSD:	0.75027	48.7237	1.71493	0.265104	0.0547697
Repeat: 1	0.0474944	-0.000928672	0.000784412	1.66809	2468.65
Repeat: 2	0.0468253	-0.00282072	0.000758232	1.66005	2471.36
Repeat: 3	0.046963	-0.00254793	0.000768244	1.66092	2470.13
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	674308	15587.8			
Std Dev:	769.566	13.2826			
%RSD:	0.114127	0.0852118			
Repeat: 1	673743	15585.1			
Repeat: 2	675185	15576.1			
Repeat: 3	673998	15602.2			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.247935	4367.34	14.2805	38.9181	24.8942
Std Dev:	0.407383	27.85	2.12312	0.245229	0.0752961
%RSD:	164.31	0.637689	14.8672	0.630115	0.302465
Repeat: 1	-0.606	4352	15.068	38.7705	24.8818
Repeat: 2	0.1953	4399.48	11.8762	38.7826	24.8259
Repeat: 3	-0.333105	4350.52	15.8975	39.2012	24.9749
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.316804	5.16441	0.106975	2.71395	25.4653
Std Dev:	0.109073	0.0104978	0.0572271	0.0914058	0.54812
%RSD:	34.4292	0.203272	53.4957	3.368	2.15242
Repeat: 1	0.350511	5.1638	0.0452159	2.8179	25.7588
Repeat: 2	0.194856	5.17521	0.117501	2.64614	24.833
Repeat: 3	0.405046	5.15424	0.158209	2.67779	25.8042
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	72.3321	10298.4	3.17367	5.36679	4.09376
Std Dev:	0.177622	27.9613	0.0149394	1.16142	0.00888776
%RSD:	0.245564	0.271511	0.470731	21.6408	0.217105
Repeat: 1	72.5069	10267.6	3.18726	6.4139	4.08749
Repeat: 2	72.1518	10322.3	3.15767	4.11759	4.10393

Repeat: 3	72.3376	10305.3	3.17608	5.56887	4.08986
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	118.858	13.822	101.553	11.0233	59.5332
Std Dev:	0.253613	0.0665826	0.789224	0.3901	0.443661
%RSD:	0.213374	0.481716	0.777155	3.53885	0.745234
Repeat: 1	119.136	13.8062	102.305	11.1745	60.0428
Repeat: 2	118.639	13.7647	101.623	11.3153	59.2332
Repeat: 3	118.8	13.895	100.731	10.5803	59.3236
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	0.383299	-1.21422	30234.1	2.5869	30.6784
Std Dev:	0.803983	2.05887	50.4304	0.105721	0.337234
%RSD:	209.754	169.563	0.1668	4.08679	1.09926
Repeat: 1	-0.318956	-1.45682	30248	2.61982	30.3491
Repeat: 2	1.26027	-3.14104	30178.1	2.46864	31.023
Repeat: 3	0.208577	0.955199	30276.1	2.67225	30.663
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	184.5	-0.156425	16.7841	148.186	2470.05
Std Dev:	1.41	1.30829	0.259365	0.39427	1.35284
%RSD:	0.764224	836.369	1.54531	0.266064	0.0547697
Repeat: 1	186.097	1.3407	17.0596	148.639	2468.65
Repeat: 2	183.427	-1.07985	16.5447	147.921	2471.36
Repeat: 3	183.977	-0.730125	16.748	147.999	2470.13
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	674308	15587.8			
Std Dev:	769.566	13.2826			
%RSD:	0.114127	0.0852118			
Repeat: 1	673743	15585.1			
Repeat: 2	675185	15576.1			
Repeat: 3	673998	15602.2			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2470.05	674308	15587.8
Std Dev:	1.35284	769.566	13.2826
%RSD:	0.0547697	0.114127	0.0852118
Repeat: 1	2468.65	673743	15585.1
Repeat: 2	2471.36	675185	15576.1
Repeat: 3	2470.13	673998	15602.2

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1609034-01	9/14/2016 12:40:19PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.000463317	0.0103963	-0.00519619	0.00046615	0.189689
Std Dev:	1.64637e-005	0.000629283	0.000439139	8.30999e-006	0.00155911
%RSD:	3.55344	6.05296	8.45117	1.78268	0.821928
Repeat: 1	0.000451009	0.0100806	-0.00567783	0.000457051	0.189913
Repeat: 2	0.000482018	0.0099873	-0.00509274	0.000468063	0.18803
Repeat: 3	0.000456923	0.0111209	-0.00481802	0.000473337	0.191124
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	0.000809951	2.64409	0.0303292	0.0187729	0.000312174
Std Dev:	0.000146121	0.00301984	0.00243596	0.000282591	9.66415e-006
%RSD:	18.0407	0.114211	8.03172	1.50532	3.09576
Repeat: 1	0.000941967	2.64566	0.0289159	0.0187271	0.000309728
Repeat: 2	0.000834936	2.64061	0.0289298	0.0190755	0.000303967
Repeat: 3	0.000652948	2.646	0.033142	0.0185159	0.000322826
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.00074682	1.7042e-005	0.0266729	-3.51812e-005	0.00970018
Std Dev:	1.42385e-005	0.000146965	0.000431534	1.7323e-005	5.76542e-005
%RSD:	1.90655	862.374	1.61788	49.2394	0.594362
Repeat: 1	0.000736798	0.00016684	0.0261899	-4.93238e-005	0.00971361
Repeat: 2	0.000763118	-0.000126917	0.0268082	-4.03606e-005	0.00963699
Repeat: 3	0.000740543	1.12025e-005	0.0270205	-1.58593e-005	0.00974993
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	9.55415e-005	0.00168486	0.404149	0.0211525	-0.00646603
Std Dev:	1.18913e-005	0.00046894	0.00275739	0.000561793	0.00144061
%RSD:	12.4463	27.8325	0.682271	2.65591	22.2797
Repeat: 1	8.6523e-005	0.00208961	0.40619	0.0205122	-0.00781448
Repeat: 2	9.1084e-005	0.00117098	0.401012	0.0213825	-0.00663539
Repeat: 3	0.000109018	0.001794	0.405245	0.0215629	-0.00494823
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	-0.0064801	0.00925774	376.694	-0.00189129	0.151578
Std Dev:	0.000547115	0.00119418	2.62104	0.000877963	0.000603001
%RSD:	8.443	12.8992	0.6958	46.4213	0.397816
Repeat: 1	-0.00705001	0.0101671	379.4	-0.00289294	0.151527
Repeat: 2	-0.00643123	0.00970071	376.517	-0.00125501	0.151001
Repeat: 3	-0.00595906	0.00790538	374.167	-0.00152593	0.152204
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.0010275	-0.00115963	6.59923e-008	0.0284804	2461.58
Std Dev:	0.000191003	0.000981682	2.59957e-005	0.00202066	17.4384
%RSD:	18.5891	84.6549	39392.1	7.09491	0.708423
Repeat: 1	0.00109204	-4.32185e-005	2.19492e-005	0.0305153	2467.75
Repeat: 2	0.000812586	-0.00188789	6.91823e-006	0.0284516	2475.09
Repeat: 3	0.00117787	-0.00154777	-2.86695e-005	0.0264743	2441.89
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	685362	15627.9			
Std Dev:	5048.29	19.8361			
%RSD:	0.736587	0.126927			
Repeat: 1	685989	15633.7			
Repeat: 2	690068	15644.2			
Repeat: 3	680030	15605.8			

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.944477	173.719	1.20349	22.7362	9.48963

Std Dev:	0.30055	15.0601	1.01751	0.493928	0.09126
%RSD:	31.8218	8.66922	84.547	2.17243	0.961682
Repeat: 1	-1.16728	166.106	0.0875907	22.1955	9.50429
Repeat: 2	-0.602643	163.985	1.44298	22.8494	9.39192
Repeat: 3	-1.06351	191.066	2.07989	23.1637	9.57266
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	-0.0100201	29.9029	-0.296891	-0.0640869	1.60249
Std Dev:	0.0536128	0.0341576	0.0841446	0.0351455	0.206419
%RSD:	535.052	0.114228	28.342	54.8403	12.8811
Repeat: 1	0.0389091	29.9207	-0.346143	-0.0700462	1.5501
Repeat: 2	-0.00163984	29.8635	-0.344797	-0.0263428	1.42732
Repeat: 3	-0.0673295	29.9245	-0.199732	-0.0958717	1.83006
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	0.956974	-0.527049	1.79516	2.16252	3.14998
Std Dev:	0.148546	6.80513	0.0206694	3.02844	0.0187192
%RSD:	15.5225	1291.18	1.1514	140.042	0.594263
Repeat: 1	0.852368	6.40874	1.77203	-0.311654	3.15435
Repeat: 2	1.127	-7.19353	1.80164	1.25944	3.12947
Repeat: 3	0.891553	-0.796353	1.81182	5.53977	3.16613
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	0.116334	0.565443	10.3527	-0.591758	1.23443
Std Dev:	0.0335857	0.115858	0.0712342	0.120982	0.703994
%RSD:	28.8699	20.4899	0.688074	20.4446	57.0297
Repeat: 1	0.0907359	0.665551	10.4054	-0.729679	0.576613
Repeat: 2	0.103904	0.438532	10.2717	-0.542039	1.14975
Repeat: 3	0.154363	0.592246	10.381	-0.503557	1.97694
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-1.12313	-0.972268	6609.44	-0.313235	78.1454
Std Dev:	0.630589	2.681	46.7902	0.572511	0.282197
%RSD:	56.1456	275.747	0.70793	182.773	0.361118
Repeat: 1	-1.78185	1.06914	6657.74	-0.966416	78.1216
Repeat: 2	-1.06249	0.022524	6606.27	0.101591	77.8758
Repeat: 3	-0.525056	-4.00847	6564.32	-0.0748822	78.4387
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	0.163918	0.841143	1.49976	2.16349	2461.58
Std Dev:	0.760481	1.25318	0.503655	0.181214	17.4384
%RSD:	463.941	148.985	33.5823	8.37602	0.708423
Repeat: 1	0.42075	2.26621	1.92436	2.34604	2467.75
Repeat: 2	-0.691726	-0.0889548	1.63164	2.16078	2475.09
Repeat: 3	0.762729	0.346171	0.943289	1.98364	2441.89
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			

Avg. of Repeats:	685362	15627.9
Std Dev:	5048.29	19.8361
%RSD:	0.736587	0.126927
Repeat: 1	685989	15633.7
Repeat: 2	690068	15644.2
Repeat: 3	680030	15605.8
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2461.58	685362	15627.9
Std Dev:	17.4384	5048.29	19.8361
%RSD:	0.708423	0.736587	0.126927
Repeat: 1	2467.75	685989	15633.7
Repeat: 2	2475.09	690068	15644.2
Repeat: 3	2441.89	680030	15605.8

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1609034-02	9/14/2016 12:44:42PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000471149	0.00920426	-0.00479733	0.000444395	0.352463
Std Dev:	9.64881e-006	0.000331996	0.000273748	1.42152e-005	0.0020164
%RSD:	2.04793	3.60698	5.70625	3.19879	0.572089
Repeat: 1	0.00047409	0.00938854	-0.00449917	0.000428287	0.354552
Repeat: 2	0.000478986	0.008821	-0.00503731	0.000455184	0.350528
Repeat: 3	0.000460373	0.00940324	-0.00485551	0.000449714	0.352308
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.000832863	2.73734	0.0338933	0.0216961	0.000247516
Std Dev:	0.000215323	0.00444885	0.000983015	0.000287298	1.16846e-005
%RSD:	25.8534	0.162525	2.90032	1.32419	4.72074
Repeat: 1	0.000940484	2.7322	0.0327628	0.0220273	0.000251984
Repeat: 2	0.000973159	2.74	0.0345475	0.0215465	0.000256307
Repeat: 3	0.000584945	2.73981	0.0343695	0.0215144	0.000234257
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00224587	0.000376436	0.0258927	-4.21391e-005	0.0176948
Std Dev:	3.37735e-005	3.30075e-005	0.00114707	1.71215e-005	8.30038e-005
%RSD:	1.50381	8.76844	4.4301	40.6308	0.469087
Repeat: 1	0.00220698	0.000409934	0.025442	-6.15518e-005	0.017634
Repeat: 2	0.00226279	0.000375432	0.0250395	-2.91917e-005	0.0177893
Repeat: 3	0.00226783	0.000343941	0.0271967	-3.56739e-005	0.017661
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.000829176	0.00111959	0.442818	0.0239679	-0.00552725
Std Dev:	8.62846e-006	0.000656476	0.00284416	0.000689111	0.0024852
%RSD:	1.04061	58.6353	0.642286	2.87514	44.9626
Repeat: 1	0.000819624	0.00136345	0.440448	0.0245265	-0.00784221
Repeat: 2	0.000831498	0.000376083	0.445972	0.0231978	-0.00290112
Repeat: 3	0.000836406	0.00161924	0.442034	0.0241794	-0.00583843
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00566056	0.00966203	441.26	-0.00188422	0.194852
Std Dev:	0.00218803	0.000440356	1.97668	0.000583184	0.00148256

%RSD:	38.6539	4.55759	0.447963	30.9509	0.760867
Repeat: 1	-0.00640899	0.00943949	443.285	-0.00214546	0.194203
Repeat: 2	-0.00737616	0.00937736	439.336	-0.00121609	0.196548
Repeat: 3	-0.00319652	0.0101692	441.158	-0.00229112	0.193805
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.00106458	-0.00157688	-6.96246e-005	0.0329011	2425.25
Std Dev:	0.000342421	0.00123976	1.76057e-005	0.00081568	9.31943
%RSD:	32.1649	78.6208	25.2866	2.47919	0.384268
Repeat: 1	0.000761189	-0.00178652	-6.34463e-005	0.0338068	2432.72
Repeat: 2	0.00143586	-0.00269846	-8.94867e-005	0.0322244	2428.22
Repeat: 3	0.000996695	-0.000245674	-5.59408e-005	0.0326722	2414.8
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	663316	15257.4			
Std Dev:	2506.14	92.2027			
%RSD:	0.377819	0.604314			
Repeat: 1	666178	15330.2			
Repeat: 2	662257	15153.7			
Repeat: 3	661514	15288.3			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.807613	143.071	2.12839	21.4417	19.1193
Std Dev:	0.174918	8.01098	0.633765	0.845672	0.120159
%RSD:	21.6587	5.59931	29.7768	3.94405	0.628471
Repeat: 1	-0.753467	147.604	2.81881	20.4835	19.2434
Repeat: 2	-0.66617	133.821	1.57307	22.0835	19.0035
Repeat: 3	-1.0032	147.788	1.99328	21.7582	19.111
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	-0.000963036	30.9576	-0.178052	0.284731	0.204077
Std Dev:	0.0801228	0.0503212	0.0337821	0.036301	0.249697
%RSD:	8319.81	0.162548	18.9732	12.7492	122.355
Repeat: 1	0.0376773	30.8996	-0.216896	0.326648	0.299881
Repeat: 2	0.0525168	30.9877	-0.15554	0.263804	0.391685
Repeat: 3	-0.0930833	30.9857	-0.161719	0.263742	-0.0793351
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	16.6574	16.1188	1.7578	0.908192	5.7452
Std Dev:	0.35435	1.52898	0.0549419	2.99111	0.0269426
%RSD:	2.12729	9.48567	3.12561	329.348	0.468959
Repeat: 1	16.2493	17.6702	1.73621	-2.48337	5.72547
Repeat: 2	16.8357	16.073	1.71693	3.16944	5.7759
Repeat: 3	16.8871	14.6133	1.82025	2.03851	5.73422
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	2.18592	0.425972	11.3517	0.00895649	1.67864
Std Dev:	0.0243782	0.162118	0.0734757	0.14781	1.20757
%RSD:	1.11523	38.0584	0.647268	1650.32	71.9374
Repeat: 1	2.15894	0.486229	11.2904	0.129106	0.553231
Repeat: 2	2.19248	0.242354	11.4331	-0.156099	2.9543

Repeat: 3	2.20636	0.549333	11.3314	0.0538633	1.52838
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-0.142504	-0.0688967	7762.03	-0.308284	98.4112
Std Dev:	2.54	0.988164	35.2868	0.380323	0.694515
%RSD:	1782.41	1434.27	0.454607	123.368	0.705728
Repeat: 1	-1.01093	-0.568524	7798.19	-0.478643	98.1076
Repeat: 2	-2.13439	-0.707479	7727.68	0.127436	99.2058
Repeat: 3	2.71781	1.06931	7760.22	-0.573645	97.9201
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	0.174543	0.304306	0.1331	2.53123	2425.25
Std Dev:	1.36416	1.57988	0.340922	0.0735992	9.31943
%RSD:	781.564	519.173	256.139	2.90765	0.384268
Repeat: 1	-1.03374	0.0344051	0.254911	2.61329	2432.72
Repeat: 2	1.65389	-1.12323	-0.251995	2.47105	2428.22
Repeat: 3	-0.0965184	2.00175	0.396386	2.50935	2414.8
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	663316	15257.4
Std Dev:	2506.14	92.2027
%RSD:	0.377819	0.604314
Repeat: 1	666178	15330.2
Repeat: 2	662257	15153.7
Repeat: 3	661514	15288.3
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2425.25	663316	15257.4
Std Dev:	9.31943	2506.14	92.2027
%RSD:	0.384268	0.377819	0.604314
Repeat: 1	2432.72	666178	15330.2
Repeat: 2	2428.22	662257	15153.7
Repeat: 3	2414.8	661514	15288.3

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1609051-01	9/14/2016 12:49:03PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000497184	0.00896753	-0.00547451	0.000448355	0.427455
Std Dev:	3.5595e-005	0.00125832	0.000985413	5.72151e-006	0.00119988
%RSD:	7.15933	14.032	18	1.27611	0.280703
Repeat: 1	0.000537694	0.00847758	-0.00449772	0.000448476	0.426773
Repeat: 2	0.000470914	0.00802787	-0.00646833	0.000454015	0.426752
Repeat: 3	0.000482943	0.0103971	-0.00545747	0.000442574	0.428841
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.000881162	3.08794	0.0328345	0.0207832	0.000251014

Std Dev:	0.000167608	0.00218749	0.00204925	0.000965645	2.43192e-005
%RSD:	19.0212	0.0708396	6.24116	4.64627	9.68841
Repeat: 1	0.000702039	3.08588	0.0320885	0.0218484	0.000222983
Repeat: 2	0.00103419	3.08772	0.0312627	0.0199652	0.000263563
Repeat: 3	0.000907253	3.09024	0.0351522	0.0205361	0.000266494
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.000783554	0.00140712	0.0340979	-4.74426e-005	0.0159283
Std Dev:	1.34185e-005	0.000117362	0.0012408	8.29203e-006	0.00010056
%RSD:	1.71252	8.34064	3.63892	17.478	0.631326
Repeat: 1	0.0007693	0.00148125	0.0326847	-5.22965e-005	0.0158126
Repeat: 2	0.000795942	0.00146829	0.0346007	-5.21632e-005	0.0159938
Repeat: 3	0.00078542	0.0012718	0.0350084	-3.78681e-005	0.0159787
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.00154587	0.0125509	0.354773	0.0249842	-0.00559874
Std Dev:	1.40079e-005	0.00113063	0.00123918	0.000696203	0.00189347
%RSD:	0.906149	9.00835	0.349287	2.78657	33.8196
Repeat: 1	0.00155263	0.0138438	0.353981	0.025739	-0.0038169
Repeat: 2	0.00155522	0.0120619	0.354137	0.0248464	-0.00758694
Repeat: 3	0.00152977	0.0117471	0.356201	0.0243672	-0.00539239
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00744232	0.00928472	478.55	-0.00183351	0.208344
Std Dev:	0.000538543	0.000498355	2.1775	0.00126597	0.0014814
%RSD:	7.23622	5.36748	0.455019	69.0461	0.711035
Repeat: 1	-0.00725076	0.00872069	476.412	-0.00265138	0.207092
Repeat: 2	-0.00702575	0.00946793	478.474	-0.000375295	0.20796
Repeat: 3	-0.00805046	0.00966554	480.765	-0.00247387	0.20998
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.00137894	-0.00161779	-5.5022e-005	0.0667937	2415.94
Std Dev:	0.000346916	0.000131102	1.24844e-005	0.000829891	9.96665
%RSD:	25.1582	8.1038	22.6899	1.24247	0.412538
Repeat: 1	0.00164307	-0.00167325	-5.28148e-005	0.0658778	2426.09
Repeat: 2	0.000986054	-0.00146807	-4.37883e-005	0.0670075	2415.55
Repeat: 3	0.00150769	-0.00171204	-6.84628e-005	0.0674957	2406.17
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	658414	15083.4			
Std Dev:	7562.96	58.7733			
%RSD:	1.14866	0.389655			
Repeat: 1	650255	15054.2			
Repeat: 2	659796	15045			
Repeat: 3	665191	15151.1			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.331366	129.601	0.553928	21.6822	23.5588
Std Dev:	0.649663	30.1619	2.28279	0.340935	0.0702703
%RSD:	196.056	23.2729	412.11	1.57242	0.298277
Repeat: 1	0.408198	117.878	2.81629	21.6894	23.5185
Repeat: 2	-0.809986	107.06	-1.74876	22.0195	23.5179
Repeat: 3	-0.592311	163.864	0.594259	21.3377	23.6399
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.0179862	34.9234	-0.231236	0.176768	0.280354

Std Dev:	0.0608329	0.0247428	0.0707755	0.113637	0.519963
%RSD:	338.22	0.0708487	30.6074	64.286	185.467
Repeat: 1	-0.0473183	34.9	-0.256698	0.302587	-0.31896
Repeat: 2	0.0730469	34.9208	-0.285758	0.0816011	0.548729
Repeat: 3	0.02823	34.9493	-0.151252	0.146115	0.611293
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	1.34154	63.8527	2.15081	-0.0394479	5.17184
Std Dev:	0.13982	5.43342	0.0594311	1.44856	0.0326388
%RSD:	10.4223	8.5093	2.7632	3672.09	0.631087
Repeat: 1	1.19291	67.2835	2.08311	-0.886588	5.13426
Repeat: 2	1.47046	66.6865	2.17489	-0.864916	5.19309
Repeat: 3	1.36124	57.5882	2.19442	1.63316	5.18818
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	4.20703	3.24929	9.07711	0.228265	1.64756
Std Dev:	0.0394051	0.279136	0.0320128	0.149717	0.923565
%RSD:	0.936649	8.59068	0.352675	65.589	56.0566
Repeat: 1	4.22603	3.56846	9.05665	0.390666	2.51236
Repeat: 2	4.23334	3.12864	9.06069	0.198393	0.674728
Repeat: 3	4.16173	3.05078	9.11401	0.0957366	1.75559
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-2.20087	-0.930568	8427.73	-0.275292	104.681
Std Dev:	0.62839	1.11779	38.8704	0.825368	0.69391
%RSD:	28.5519	120.119	0.46122	299.816	0.662879
Repeat: 1	-1.96457	-2.19586	8389.56	-0.80855	104.095
Repeat: 2	-1.72489	-0.518697	8426.37	0.675413	104.501
Repeat: 3	-2.91315	-0.0771483	8467.26	-0.692738	105.447
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1.35972	0.253511	0.418419	5.58261	2415.94
Std Dev:	1.38527	0.164589	0.242257	0.0740779	9.96665
%RSD:	101.879	64.9238	57.8981	1.32694	0.412538
Repeat: 1	2.4158	0.185397	0.454878	5.50095	2426.09
Repeat: 2	-0.208755	0.441223	0.640381	5.60139	2415.55
Repeat: 3	1.8721	0.133913	0.159999	5.6455	2406.17
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	658414	15083.4			
Std Dev:	7562.96	58.7733			
%RSD:	1.14866	0.389655			
Repeat: 1	650255	15054.2			
Repeat: 2	659796	15045			
Repeat: 3	665191	15151.1			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**

Avg. of Repeats:	2415.94	658414	15083.4
Std Dev:	9.96665	7562.96	58.7733
%RSD:	0.412538	1.14866	0.389655
Repeat: 1	2426.09	650255	15054.2
Repeat: 2	2415.55	659796	15045
Repeat: 3	2406.17	665191	15151.1

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25804-CCV2	9/14/2016 12:53:26PM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.0261243	0.422543	0.442045	0.0173534	16.1432
Std Dev:	0.00027802	0.000720499	0.0019112	0.000127056	0.0482405
%RSD:	1.06422	0.170515	0.432355	0.732171	0.298828
Repeat: 1	0.0260566	0.422899	0.440201	0.0172505	16.1269
Repeat: 2	0.0264299	0.421714	0.441917	0.0174954	16.1053
Repeat: 3	0.0258864	0.423016	0.444017	0.0173142	16.1975
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	2.73312	4.45583	29.4268	8.0289	0.0451765
Std Dev:	0.00490607	0.00309189	0.0938402	0.0224634	0.000468681
%RSD:	0.179504	0.0693896	0.318894	0.279781	1.03745
Repeat: 1	2.72925	4.45311	29.374	8.02158	0.0451601
Repeat: 2	2.73148	4.45519	29.3713	8.011	0.0456531
Repeat: 3	2.73864	4.4592	29.5351	8.05411	0.0447162
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0963611	0.211294	0.201761	0.00613461	0.145947
Std Dev:	0.000930186	0.000357435	0.00157025	8.22081e-006	0.000502166
%RSD:	0.965313	0.169165	0.778272	0.134007	0.344074
Repeat: 1	0.0958482	0.211467	0.201448	0.0061261	0.146204
Repeat: 2	0.0974348	0.210883	0.200371	0.00614251	0.145368
Repeat: 3	0.0958003	0.211533	0.203464	0.00613521	0.146269
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.34149	4.05251	1.93667	4.59657	1.96551
Std Dev:	0.0037939	0.0120926	0.00926297	0.010604	0.00301956
%RSD:	1.11098	0.298397	0.478295	0.230693	0.153627
Repeat: 1	0.340945	4.04393	1.94627	4.59287	1.96445
Repeat: 2	0.345527	4.04727	1.92778	4.5883	1.96316
Repeat: 3	0.337998	4.06634	1.93595	4.60852	1.96892
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.873812	0.468797	246.029	1.53308	2.03675
Std Dev:	0.000328932	0.00127883	1.52008	0.00511553	0.00990755
%RSD:	0.0376433	0.272789	0.617843	0.333678	0.486439
Repeat: 1	0.874188	0.468673	247.668	1.53293	2.04536
Repeat: 2	0.873576	0.467585	245.755	1.52803	2.02592
Repeat: 3	0.873673	0.470133	244.665	1.53826	2.03897
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.253227	0.777546	0.0495513	11.0658	2295.24
Std Dev:	0.000424057	0.00256628	0.000548113	0.0282806	3.07794
%RSD:	0.167461	0.330049	1.10615	0.255568	0.134101
Repeat: 1	0.253621	0.776401	0.0495584	11.0508	2295.96

Repeat: 2	0.252778	0.775752	0.0500958	11.0481	2297.9
Repeat: 3	0.253281	0.780486	0.0489996	11.0984	2291.87
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	637834	14675.6			
Std Dev:	2724.41	41.703			
%RSD:	0.427134	0.284167			
Repeat: 1	637839	14627.4			
Repeat: 2	635107	14699.9			
Repeat: 3	640556	14699.4			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	471.52	9991.16	1035.16	1026.01	957.045
Std Dev:	5.11752	17.2285	4.42193	7.56404	2.81996
%RSD:	1.08532	0.172437	0.427174	0.737226	0.294653
Repeat: 1	470.285	9999.83	1030.89	1019.9	956.08
Repeat: 2	477.142	9971.32	1034.86	1034.47	954.835
Repeat: 3	467.133	10002.3	1039.72	1023.67	960.221
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	1011.82	50.3956	1015.53	957.314	959.878
Std Dev:	1.819	0.0349725	3.2432	2.68899	10.017
%RSD:	0.179775	0.0693959	0.31936	0.280889	1.04357
Repeat: 1	1010.39	50.3649	1013.7	956.433	959.529
Repeat: 2	1011.21	50.3884	1013.61	955.176	970.065
Repeat: 3	1013.87	50.4337	1019.28	960.333	950.04
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	1002.94	9791.03	10.1814	1080.53	47.3966
Std Dev:	9.74276	16.471	0.0752109	1.44437	0.163039
%RSD:	0.97142	0.168225	0.738706	0.133672	0.343988
Repeat: 1	997.57	9799	10.1664	1079.04	47.48
Repeat: 2	1014.19	9772.09	10.1149	1081.92	47.2088
Repeat: 3	997.064	9801.99	10.263	1080.64	47.5012
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	963.148	1001.07	49.9436	983.305	963.42
Std Dev:	10.7049	2.9846	0.239299	2.27639	1.47705
%RSD:	1.11144	0.29814	0.479138	0.231504	0.153313
Repeat: 1	961.61	998.953	50.1916	982.509	962.906
Repeat: 2	974.538	999.778	49.7141	981.533	962.269
Repeat: 3	953.295	1004.49	49.9251	985.872	965.086
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	998.31	1029.87	4279.03	1000.24	961.332
Std Dev:	0.480054	2.87248	27.1358	3.33803	4.6431
%RSD:	0.0480867	0.278916	0.634158	0.333722	0.482986
Repeat: 1	998.746	1029.6	4308.28	1000.15	965.368
Repeat: 2	997.796	1027.15	4274.13	996.955	956.257

Repeat: 3	998.388	1032.88	4254.67	1003.63	962.371
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1003.68	997.122	973.319	984.458	2295.24
Std Dev:	1.68775	3.2547	10.7487	2.5381	3.07794
%RSD:	0.168155	0.326409	1.10434	0.257817	0.134101
Repeat: 1	1005.25	995.668	973.452	983.132	2295.96
Repeat: 2	1001.9	994.848	984	982.858	2297.9
Repeat: 3	1003.9	1000.85	962.504	987.385	2291.87
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	637834	14675.6
Std Dev:	2724.41	41.703
%RSD:	0.427134	0.284167
Repeat: 1	637839	14627.4
Repeat: 2	635107	14699.9
Repeat: 3	640556	14699.4
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2295.24	637834	14675.6
Std Dev:	3.07794	2724.41	41.703
%RSD:	0.134101	0.427134	0.284167
Repeat: 1	2295.96	637839	14627.4
Repeat: 2	2297.9	635107	14699.9
Repeat: 3	2291.87	640556	14699.4

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25804-CCB2	9/14/2016 12:57:43PM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000511361	-0.000123515	-0.00535298	0.000105906	0.0319893
Std Dev:	9.23683e-006	0.000476357	0.000732085	7.42295e-006	0.000807438
%RSD:	1.80632	385.667	13.6762	7.00897	2.52409
Repeat: 1	0.000513349	-0.000468033	-0.00544466	0.000108054	0.0329184
Repeat: 2	0.000519442	-0.000322601	-0.0060349	9.76464e-005	0.0315919
Repeat: 3	0.000501292	0.000420088	-0.00457937	0.000112019	0.0314575
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.0014667	0.00120649	0.0343434	0.0192937	0.000242456
Std Dev:	0.000276761	0.00052559	0.0010526	0.000663357	7.46159e-006
%RSD:	18.8696	43.5636	3.06493	3.43821	3.0775
Repeat: 1	0.00177448	0.00180816	0.0355042	0.0185315	0.000246732
Repeat: 2	0.00123832	0.000974523	0.034075	0.0196085	0.000246796
Repeat: 3	0.00138731	0.000836788	0.033451	0.019741	0.00023384
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.000677527	2.59995e-005	-0.00877941	-7.21157e-005	5.18281e-005
Std Dev:	2.75569e-005	0.000163632	0.00108566	2.4455e-005	7.55483e-005
%RSD:	4.06728	629.367	12.366	33.9108	145.767

Repeat: 1	0.000689285	-8.83875e-005	-0.00971252	-9.77872e-005	0.000133432
Repeat: 2	0.000697254	-4.7046e-005	-0.00903786	-4.90928e-005	3.77301e-005
Repeat: 3	0.000646041	0.000213432	-0.00758784	-6.94672e-005	-1.5678e-005
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	7.5025e-005	0.000571078	0.00596099	0.0218924	-0.00683678
Std Dev:	1.61206e-005	0.000572383	0.000675167	0.000806407	0.00211306
%RSD:	21.487	100.229	11.3264	3.6835	30.9072
Repeat: 1	8.9103e-005	0.000531241	0.00654227	0.0209628	-0.00609205
Repeat: 2	5.74394e-005	0.00116234	0.00522042	0.0223102	-0.00922137
Repeat: 3	7.85326e-005	1.96539e-005	0.00612027	0.0224042	-0.00519693
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00636309	0.00977832	5.821	-0.00166227	-0.0163266
Std Dev:	0.000215342	0.000475691	0.55302	0.000933992	0.000419314
%RSD:	3.38425	4.86475	9.50044	56.1878	2.56829
Repeat: 1	-0.00619875	0.00946836	6.08543	-0.00105235	-0.0165394
Repeat: 2	-0.00660686	0.010326	5.1854	-0.00119694	-0.0158436
Repeat: 3	-0.00628364	0.00954058	6.19215	-0.00273751	-0.0165969
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.00104227	-0.00129237	-8.10736e-005	0.00633617	2377.4
Std Dev:	7.54539e-005	0.00096079	6.09244e-006	0.00134164	10.4655
%RSD:	7.23935	74.3431	7.51471	21.1743	0.440207
Repeat: 1	0.00100509	-0.0017164	-8.42312e-005	0.0077906	2368.98
Repeat: 2	0.0011291	-0.000192514	-7.40505e-005	0.00514692	2389.12
Repeat: 3	0.000992627	-0.0019682	-8.4939e-005	0.00607101	2374.1
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	648796	14812.8			
Std Dev:	5328.78	59.1531			
%RSD:	0.821334	0.399338			
Repeat: 1	649867	14836			
Repeat: 2	643014	14856.8			
Repeat: 3	653508	14745.5			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.0743819	-20.7237	0.838827	1.30208	0.150081
Std Dev:	0.169017	11.4429	1.6967	0.441957	0.0476711
%RSD:	227.229	55.2163	202.271	33.9423	31.7635
Repeat: 1	-0.0383709	-29.004	0.626121	1.42966	0.204896
Repeat: 2	0.0737275	-25.5009	-0.741494	0.810372	0.127043
Repeat: 3	-0.258502	-7.66635	2.63185	1.66622	0.118306
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.234563	0.00912346	-0.0430843	-0.00400728	0.129213
Std Dev:	0.102277	0.00594497	0.0365862	0.0789836	0.159498
%RSD:	43.6034	65.1614	84.9178	1971	123.438
Repeat: 1	0.34836	0.0159289	-0.00274994	-0.0947367	0.220538
Repeat: 2	0.150309	0.00649968	-0.0523699	0.0333234	0.22206
Repeat: 3	0.20502	0.00494175	-0.074133	0.0493914	-0.0549575
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	0.235157	-0.11791	0.0970871	-3.56187	0.0179315

Std Dev:	0.288445	7.57626	0.0520006	4.27609	0.0245217
%RSD:	122.661	6425.45	53.5608	120.052	136.752
Repeat: 1	0.358022	-5.41406	0.0523933	-8.05062	0.0444189
Repeat: 2	0.441826	-3.5	0.0847077	0.463882	0.0133551
Repeat: 3	-0.0943773	8.56033	0.15416	-3.09887	-0.00397959
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	0.0584379	0.289727	0.065938	-0.426677	1.01011
Std Dev:	0.0454742	0.141238	0.0174422	0.17318	1.02951
%RSD:	77.8164	48.7488	26.4525	40.5881	101.92
Repeat: 1	0.0982755	0.27986	0.0809549	-0.626299	1.37078
Repeat: 2	0.00889426	0.43564	0.0468063	-0.337096	-0.151207
Repeat: 3	0.0681438	0.153681	0.0700529	-0.316636	1.81076
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-0.955118	0.309935	-11.1854	-0.163512	-0.141968
Std Dev:	0.2503	1.06799	9.873	0.60895	0.196531
%RSD:	26.2062	344.584	88.2671	372.42	138.433
Repeat: 1	-0.766831	-0.385424	-6.46597	0.234169	-0.24178
Repeat: 2	-1.23916	1.53963	-22.5324	0.139851	0.0844389
Repeat: 3	-0.859363	-0.224403	-4.55777	-0.864555	-0.268562
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1.06729	0.670786	-0.0915423	0.207962	2377.4
Std Dev:	0.301143	1.22614	0.118964	0.119701	10.4655
%RSD:	28.2155	182.791	129.955	57.5589	0.440207
Repeat: 1	0.917634	0.129724	-0.151986	0.337563	2368.98
Repeat: 2	1.41395	2.07439	0.0455077	0.101556	2389.12
Repeat: 3	0.870301	-0.191755	-0.168149	0.184767	2374.1
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	648796	14812.8			
Std Dev:	5328.78	59.1531			
%RSD:	0.821334	0.399338			
Repeat: 1	649867	14836			
Repeat: 2	643014	14856.8			
Repeat: 3	653508	14745.5			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2377.4	648796	14812.8
Std Dev:	10.4655	5328.78	59.1531
%RSD:	0.440207	0.821334	0.399338
Repeat: 1	2368.98	649867	14836
Repeat: 2	2389.12	643014	14856.8
Repeat: 3	2374.1	653508	14745.5

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1609054-02	9/14/2016 1:03:10PM	Unknown	1.00

Valid	Analyst Name	Method Name
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.000496205	0.0388876	-0.00556034	0.000209449	0.190978
Std Dev:	9.40611e-006	0.000884087	0.000422807	2.73872e-006	0.00042793
%RSD:	1.89561	2.27344	7.60397	1.30758	0.224073
Repeat: 1	0.000489223	0.0382979	-0.00584996	0.000209168	0.190486
Repeat: 2	0.000492491	0.0384607	-0.0057559	0.000212318	0.191267
Repeat: 3	0.000506901	0.0399041	-0.00507515	0.000206862	0.191181
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	0.00104837	3.31401	0.0399294	0.0237722	0.00039072
Std Dev:	0.000202112	0.0143209	0.000733495	0.00149917	1.33187e-005
%RSD:	19.2787	0.432133	1.83698	6.30641	3.40875
Repeat: 1	0.000848476	3.29789	0.0396561	0.022694	0.000392837
Repeat: 2	0.00125263	3.32527	0.0393717	0.0254842	0.000402854
Repeat: 3	0.001044	3.31888	0.0407603	0.0231384	0.00037647
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.000808922	0.0266291	0.00554847	-3.834e-005	0.0121127
Std Dev:	2.06545e-005	0.000259258	0.0008245	2.5439e-005	0.000188119
%RSD:	2.55334	0.973587	14.8599	66.3511	1.55308
Repeat: 1	0.000814207	0.0265021	0.00488981	-4.15024e-005	0.0119302
Repeat: 2	0.000826421	0.0269274	0.00528247	-6.20498e-005	0.0121019
Repeat: 3	0.000786138	0.0264579	0.00647314	-1.14676e-005	0.012306
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.0115531	-0.000905198	0.0406369	0.0323695	-0.00448762
Std Dev:	6.6688e-005	0.00141537	0.000524177	0.00105291	0.00144844
%RSD:	0.577229	156.361	1.2899	3.2528	32.2764
Repeat: 1	0.01152	0.000728911	0.0412397	0.0332992	-0.00556703
Repeat: 2	0.0116299	-0.00174566	0.0402881	0.0312262	-0.00505432
Repeat: 3	0.0115095	-0.00169885	0.0403829	0.032583	-0.00284151
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	-0.00537988	0.00896401	975.879	-0.00133321	0.0365724
Std Dev:	0.000728008	0.00116268	7.94079	0.00069036	0.000421783
%RSD:	13.532	12.9706	0.813707	51.7819	1.15328
Repeat: 1	-0.00552588	0.00968127	970.073	-0.0015545	0.0362777
Repeat: 2	-0.00458994	0.00762254	972.636	-0.00188579	0.0370556
Repeat: 3	-0.00602383	0.00958823	984.928	-0.000559336	0.036384
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.00548039	-0.00164155	7.06148e-005	0.264986	2431.2
Std Dev:	0.000409233	0.000905692	2.25337e-005	0.000744543	4.19659
%RSD:	7.46724	55.173	31.9108	0.280974	0.172614
Repeat: 1	0.00504326	-0.00123865	9.0044e-005	0.265658	2427.04
Repeat: 2	0.00585439	-0.00100721	7.58884e-005	0.265115	2435.44
Repeat: 3	0.0055435	-0.00267878	4.59119e-005	0.264185	2431.13
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	656794	15225.2			
Std Dev:	2663.37	70.6142			
%RSD:	0.405511	0.463798			
Repeat: 1	658092	15228.6			
Repeat: 2	653730	15152.9			
Repeat: 3	658559	15294			

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.343035	842.706	0.414589	7.5563	9.56464
Std Dev:	0.169845	21.1049	0.980314	0.163534	0.0243046
%RSD:	49.5125	2.50442	236.455	2.16421	0.254109
Repeat: 1	-0.468917	828.897	-0.258205	7.53962	9.53687
Repeat: 2	-0.410334	832.221	-0.0373849	7.72754	9.58203
Repeat: 3	-0.149853	867.001	1.53936	7.40175	9.57503
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.0942123	37.4805	-0.0434754	0.468398	3.24538
Std Dev:	0.0763727	0.161985	0.0255461	0.175988	0.284777
%RSD:	81.0645	0.432185	58.76	37.5722	8.77483
Repeat: 1	0.018439	37.2981	-0.0519536	0.343506	3.2913
Repeat: 2	0.171171	37.6078	-0.0637045	0.669672	3.50441
Repeat: 3	0.0930272	37.5355	-0.014768	0.392016	2.94044
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	1.66279	1231.86	0.783357	1.66839	3.93377
Std Dev:	0.2169	12.0062	0.0394915	4.4481	0.0610627
%RSD:	13.0443	0.974635	5.04131	266.61	1.55227
Repeat: 1	1.7167	1225.98	0.751809	1.11834	3.87454
Repeat: 2	1.84766	1245.68	0.770616	-2.4791	3.93026
Repeat: 3	1.42403	1223.93	0.827646	6.36593	3.99651
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	32.4168	-0.054395	0.961752	1.80702	2.31637
Std Dev:	0.187896	0.349403	0.0135415	0.226361	0.709458
%RSD:	0.579626	642.345	1.40801	12.5268	30.628
Repeat: 1	32.3235	0.349009	0.977325	2.00685	1.78853
Repeat: 2	32.6331	-0.261698	0.952742	1.56119	2.03773
Repeat: 3	32.2939	-0.250496	0.95519	1.85301	3.12285
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	0.076109	-1.72107	17306	0.0502837	24.1488
Std Dev:	0.835898	2.60988	141.754	0.45021	0.196009
%RSD:	1098.29	151.643	0.819099	895.339	0.811672
Repeat: 1	-0.0923158	-0.109926	17202.4	-0.0940921	24.0131
Repeat: 2	0.983395	-4.73224	17248.1	-0.310027	24.3736
Repeat: 3	-0.662752	-0.321055	17467.6	0.554971	24.0598
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	17.7161	0.227008	2.90471	23.2852	2431.2
Std Dev:	1.62749	1.15551	0.44048	0.0663733	4.19659
%RSD:	9.18651	509.018	15.1643	0.285045	0.172614
Repeat: 1	15.9789	0.737785	3.28373	23.3457	2427.04
Repeat: 2	19.2054	1.03911	3.00894	23.2958	2435.44

Repeat: 3	17.9641	-1.09587	2.42146	23.2142	2431.13
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	656794	15225.2
Std Dev:	2663.37	70.6142
%RSD:	0.405511	0.463798
Repeat: 1	658092	15228.6
Repeat: 2	653730	15152.9
Repeat: 3	658559	15294
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2431.2	656794	15225.2
Std Dev:	4.19659	2663.37	70.6142
%RSD:	0.172614	0.405511	0.463798
Repeat: 1	2427.04	658092	15228.6
Repeat: 2	2435.44	653730	15152.9
Repeat: 3	2431.13	658559	15294

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1609054-03	9/14/2016 1:07:30PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000486462	0.0587001	-0.00507248	0.000236118	0.291171
Std Dev:	4.03242e-006	0.00106343	0.000347468	8.11298e-006	0.00114131
%RSD:	0.828928	1.81164	6.85007	3.43598	0.391973
Repeat: 1	0.000490792	0.0594272	-0.00491879	0.000241347	0.290729
Repeat: 2	0.000482813	0.0591936	-0.00482836	0.000226772	0.290317
Repeat: 3	0.000485781	0.0574796	-0.00547029	0.000240235	0.292467
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.0010637	3.85932	0.0459816	0.0461586	0.000490609
Std Dev:	0.000210968	0.00211755	0.000430535	0.000446637	2.32353e-005
%RSD:	19.8334	0.0548684	0.936321	0.967614	4.736
Repeat: 1	0.00117938	3.85772	0.0455276	0.0460747	0.000510111
Repeat: 2	0.00119154	3.86172	0.046384	0.0457599	0.000464901
Repeat: 3	0.000820201	3.85851	0.0460332	0.0466413	0.000496817
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.000806686	0.0412563	0.0104105	-3.132e-005	0.013499
Std Dev:	3.79369e-005	0.000204494	0.00029226	8.01108e-006	2.28119e-005
%RSD:	4.70281	0.495668	2.80734	25.5782	0.168989
Repeat: 1	0.000849247	0.0414697	0.0105543	-2.29886e-005	0.0135125
Repeat: 2	0.000776427	0.0410621	0.0106031	-3.20045e-005	0.0134727
Repeat: 3	0.000794384	0.0412371	0.0100742	-3.89668e-005	0.0135118
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.482399	0.00686929	0.0448386	0.0421191	-0.00353152
Std Dev:	0.00860797	0.00118628	0.000497032	0.00113398	0.000534871
%RSD:	1.78441	17.2693	1.10849	2.69232	15.1456
Repeat: 1	0.479348	0.00620567	0.0450456	0.0432442	-0.00349432
Repeat: 2	0.475733	0.00823887	0.0451987	0.0421367	-0.00408402

Repeat: 3	0.492117	0.00616332	0.0442715	0.0409765	-0.00301622
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00682375	0.00967093	977.401	-0.00155248	0.0987155
Std Dev:	0.000898352	0.000485058	3.17719	0.00144249	0.00013845
%RSD:	13.1651	5.01563	0.325065	92.9148	0.140252
Repeat: 1	-0.00605138	0.0100592	974.455	-0.00147454	0.0988322
Repeat: 2	-0.00661025	0.00982642	976.982	-0.000150544	0.0985625
Repeat: 3	-0.00780961	0.0091272	980.767	-0.00303235	0.0987519
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.0078005	-0.00077601	8.33829e-005	0.198284	2435.1
Std Dev:	0.0005862	0.00108566	2.09053e-005	0.000192717	1.58765
%RSD:	7.51491	139.903	25.0714	0.0971925	0.0651984
Repeat: 1	0.00800086	0.000462334	0.000107481	0.198502	2436.59
Repeat: 2	0.00826024	-0.00122625	7.25516e-005	0.198215	2435.29
Repeat: 3	0.00714038	-0.00156411	7.01158e-005	0.198136	2433.43
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	672000	15570.9			
Std Dev:	5467.84	44.3259			
%RSD:	0.813667	0.284672			
Repeat: 1	675594	15575			
Repeat: 2	674699	15524.6			
Repeat: 3	665708	15613			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.668433	1306.1	1.57019	9.18952	15.4928
Std Dev:	0.075059	25.5055	0.805348	0.483236	0.0667526
%RSD:	11.2291	1.95279	51.2898	5.25855	0.430862
Repeat: 1	-0.586417	1323.59	1.92727	9.50152	15.4692
Repeat: 2	-0.733708	1317.88	2.13526	8.63289	15.4411
Repeat: 3	-0.685174	1276.83	0.648042	9.43416	15.5682
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.108269	43.6484	0.11451	3.11409	4.64266
Std Dev:	0.0801722	0.0239517	0.0151784	0.0573079	0.491234
%RSD:	74.0489	0.0548741	13.2551	1.84028	10.5809
Repeat: 1	0.151637	43.6303	0.0984453	3.10204	5.06415
Repeat: 2	0.157416	43.6756	0.128611	3.06376	4.10318
Repeat: 3	0.0157546	43.6393	0.116472	3.17646	4.76067
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	1.6684	1915.21	1.01624	2.82981	4.38418
Std Dev:	0.397903	9.48567	0.0139985	1.40013	0.00740557
%RSD:	23.8494	0.49528	1.37748	49.478	0.168916
Repeat: 1	2.11516	1925.06	1.02312	4.28658	4.38858
Repeat: 2	1.35211	1906.13	1.02546	2.70866	4.37563
Repeat: 3	1.53794	1914.45	1.00013	1.49419	4.38834
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1360.9	1.87058	1.0703	4.06324	2.71897

Std Dev:	24.2874	0.292732	0.0128403	0.240968	0.252859
%RSD:	1.78466	15.6493	1.19969	5.93043	9.29981
Repeat: 1	1352.29	1.70695	1.07565	4.30331	2.74142
Repeat: 2	1342.09	2.20854	1.0796	4.06503	2.45563
Repeat: 3	1388.32	1.69625	1.05565	3.82139	2.95985
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-1.64141	-0.789313	17333.3	-0.0928408	53.1891
Std Dev:	1.03878	1.09793	56.7165	0.940496	0.0652003
%RSD:	63.2863	139.1	0.32721	1013.02	0.122582
Repeat: 1	-0.757738	0.0853875	17280.8	-0.042143	53.244
Repeat: 2	-1.3808	-0.43191	17325.9	0.821281	53.117
Repeat: 3	-2.78568	-2.02142	17393.4	-1.05766	53.2062
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	26.807	0.475868	3.53206	16.2533	2435.1
Std Dev:	2.33874	1.39475	0.406835	0.030793	1.58765
%RSD:	8.72435	293.095	11.5183	0.189457	0.0651984
Repeat: 1	27.6065	2.06319	4.00161	16.2787	2436.59
Repeat: 2	28.6411	-0.0819463	3.30994	16.2623	2435.29
Repeat: 3	24.1734	-0.553638	3.28464	16.2191	2433.43
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	672000	15570.9			
Std Dev:	5467.84	44.3259			
%RSD:	0.813667	0.284672			
Repeat: 1	675594	15575			
Repeat: 2	674699	15524.6			
Repeat: 3	665708	15613			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2435.1	672000	15570.9
Std Dev:	1.58765	5467.84	44.3259
%RSD:	0.0651984	0.813667	0.284672
Repeat: 1	2436.59	675594	15575
Repeat: 2	2435.29	674699	15524.6
Repeat: 3	2433.43	665708	15613

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1609054-04	9/14/2016 1:11:57PM	Unknown	1.00
	Valid	**Analyst Name**	**Method Name**
	Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000490704	0.0379619	-0.00503512	0.000183847	0.186672
Std Dev:	3.25564e-005	0.000459533	0.000273644	9.04723e-006	0.00177008
%RSD:	6.63462	1.21051	5.43471	4.92107	0.948232
Repeat: 1	0.000465566	0.0383591	-0.00482751	0.000184555	0.185627

Repeat: 2	0.00052748	0.038068	-0.00493264	0.000192519	0.188716
Repeat: 3	0.000479066	0.0374586	-0.00534521	0.000174466	0.185673
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.000881883	3.27729	0.0390729	0.0228212	0.000365685
Std Dev:	7.26564e-005	0.00901013	0.000896877	0.00128798	9.18593e-006
%RSD:	8.23878	0.274926	2.29539	5.64378	2.51198
Repeat: 1	0.000918527	3.26707	0.0400697	0.0214559	0.000366566
Repeat: 2	0.00092892	3.28071	0.0388179	0.0240146	0.00035609
Repeat: 3	0.000798202	3.28409	0.0383312	0.0229932	0.000374398
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.000803947	0.0229178	0.00436921	-3.28885e-005	0.011875
Std Dev:	1.6005e-005	0.000221966	0.000813178	2.03652e-005	9.31463e-005
%RSD:	1.99081	0.96853	18.6116	61.9221	0.784391
Repeat: 1	0.000788008	0.0227141	0.00520688	-9.68669e-006	0.0119391
Repeat: 2	0.000803816	0.0228849	0.00431779	-4.11728e-005	0.0119177
Repeat: 3	0.000820017	0.0231543	0.00358297	-4.7806e-005	0.0117681
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.00974057	9.01349e-005	0.0393635	0.0300644	-0.00563946
Std Dev:	5.04115e-005	0.000976678	0.000191622	0.000277518	0.00215431
%RSD:	0.517542	1083.57	0.486802	0.923079	38.2007
Repeat: 1	0.00979428	0.00121735	0.0395524	0.0303331	-0.00511567
Repeat: 2	0.00973313	-0.000504164	0.0391693	0.0297788	-0.00800737
Repeat: 3	0.00969429	-0.000442779	0.0393688	0.0300812	-0.00379534
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00603836	0.00956285	995.476	-0.00152897	0.0354466
Std Dev:	0.0013522	0.000746854	2.75173	0.000857808	0.00115484
%RSD:	22.3934	7.80995	0.276424	56.1036	3.25797
Repeat: 1	-0.00452834	0.00967134	994.929	-0.00237432	0.0341665
Repeat: 2	-0.00713733	0.0102495	993.039	-0.00155337	0.0357634
Repeat: 3	-0.00644941	0.00876769	998.46	-0.000659225	0.03641
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.00571916	-0.00188726	0.000102671	0.219085	2441.21
Std Dev:	0.000265849	0.000308118	3.1216e-005	0.000992289	12.7487
%RSD:	4.64839	16.3262	30.404	0.452925	0.522227
Repeat: 1	0.0057692	-0.00222745	8.46735e-005	0.2184	2450.9
Repeat: 2	0.00543185	-0.00162695	8.46229e-005	0.218631	2445.97
Repeat: 3	0.00595644	-0.00180737	0.000138716	0.220223	2426.77

Element/Wavelength	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	662802	15424.5
Std Dev:	3081.32	73.7844
%RSD:	0.464893	0.478358
Repeat: 1	661756	15394.3
Repeat: 2	660380	15508.6
Repeat: 3	666270	15370.6

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.439861	821.298	1.62504	6.02036	9.31272
Std Dev:	0.593318	11.1927	0.63332	0.537489	0.103771
%RSD:	134.888	1.36281	38.9725	8.92785	1.11429
Repeat: 1	-0.90012	831.045	2.10519	6.06218	9.2497
Repeat: 2	0.229753	823.775	1.86266	6.53573	9.43249
Repeat: 3	-0.649216	809.074	0.90728	5.46319	9.25597

QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.0332573	37.065	-0.065052	0.357686	2.71492
Std Dev:	0.0263352	0.101914	0.0317475	0.154609	0.196391
%RSD:	79.1863	0.27496	48.8032	43.2248	7.23375
Repeat: 1	0.0471634	36.9495	-0.0297989	0.194736	2.73363
Repeat: 2	0.0497245	37.1037	-0.0739713	0.502323	2.50984
Repeat: 3	0.00288399	37.1419	-0.0913858	0.375997	2.90129
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	1.60497	1059.99	0.726874	2.62933	3.85652
Std Dev:	0.168405	10.2776	0.0389492	3.56217	0.0302338
%RSD:	10.4927	0.969591	5.35846	135.478	0.783964
Repeat: 1	1.43762	1050.56	0.766996	6.68753	3.87733
Repeat: 2	1.60288	1058.47	0.724411	1.18104	3.87039
Repeat: 3	1.77442	1070.94	0.689214	0.0194309	3.82184
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	27.3065	0.188401	0.928857	1.31368	1.75576
Std Dev:	0.142455	0.240955	0.00495036	0.0596862	1.04715
%RSD:	0.521689	127.895	0.532952	4.54345	59.641
Repeat: 1	27.4583	0.466489	0.933737	1.37147	2.01337
Repeat: 2	27.2856	0.0416107	0.923839	1.25226	0.603846
Repeat: 3	27.1757	0.0571039	0.928993	1.31729	2.65007
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-0.669078	-0.368699	17655.8	-0.0775085	23.6268
Std Dev:	1.56505	1.67596	49.1241	0.559158	0.539847
%RSD:	233.911	454.559	0.278232	721.416	2.28489
Repeat: 1	1.0801	-0.125065	17646	-0.628589	23.0284
Repeat: 2	-1.93693	1.1721	17612.3	-0.0933289	23.7747
Repeat: 3	-1.1504	-2.15314	17709.1	0.489392	24.0772
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	18.6819	-0.0759268	3.51732	19.1842	2441.21
Std Dev:	1.06142	0.392041	0.607598	0.089053	12.7487
%RSD:	5.68156	516.34	17.2744	0.464199	0.522227
Repeat: 1	18.8835	-0.50999	3.16762	19.1223	2450.9
Repeat: 2	17.5342	0.252406	3.16543	19.1441	2445.97
Repeat: 3	19.6281	0.0298035	4.21891	19.2863	2426.77
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	662802	15424.5			
Std Dev:	3081.32	73.7844			
%RSD:	0.464893	0.478358			
Repeat: 1	661756	15394.3			
Repeat: 2	660380	15508.6			

Repeat: 3	666270	15370.6
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2441.21	662802	15424.5
Std Dev:	12.7487	3081.32	73.7844
%RSD:	0.522227	0.464893	0.478358
Repeat: 1	2450.9	661756	15394.3
Repeat: 2	2445.97	660380	15508.6
Repeat: 3	2426.77	666270	15370.6

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1609054-05	9/14/2016 1:16:17PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000481014	0.0194398	-0.0048733	0.000144788	0.161487
Std Dev:	3.28942e-005	0.000279601	0.000390805	1.6703e-006	0.00260384
%RSD:	6.8385	1.43829	8.01931	1.15362	1.61242
Repeat: 1	0.000444468	0.0194855	-0.00528841	0.000145978	0.161697
Repeat: 2	0.000508247	0.0191401	-0.00451248	0.000142879	0.163979
Repeat: 3	0.000490328	0.0196937	-0.00481901	0.000145508	0.158784
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.000855598	0.20949	0.0350544	0.0220812	0.00031425
Std Dev:	0.000267075	0.00131354	0.00174481	0.00211908	2.60393e-005
%RSD:	31.215	0.627016	4.97744	9.59677	8.28616
Repeat: 1	0.00108004	0.209847	0.0369252	0.0208243	0.000342765
Repeat: 2	0.000560215	0.208035	0.0347668	0.0208915	0.000291733
Repeat: 3	0.000926537	0.210588	0.0334713	0.0245278	0.000308252
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00105915	0.0153192	8.70407e-005	-5.6675e-005	0.00271261
Std Dev:	2.86509e-005	0.000287824	0.000342156	1.65765e-005	3.58196e-005
%RSD:	2.70509	1.87885	393.099	29.2485	1.32048
Repeat: 1	0.00104867	0.0155232	-0.000281993	-7.50338e-005	0.00267967
Repeat: 2	0.00103721	0.0154443	0.000393751	-4.28054e-005	0.00275074
Repeat: 3	0.00109156	0.0149899	0.000149364	-5.21857e-005	0.00270742
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.011485	-0.000906271	0.0585155	0.0283706	-0.00525507
Std Dev:	0.00012208	0.00121068	0.00059007	0.00171394	0.00164543
%RSD:	1.06295	133.589	1.0084	6.04125	31.3113
Repeat: 1	0.0113883	-0.00150057	0.0588889	0.0303459	-0.00679152
Repeat: 2	0.0114446	-0.00170495	0.0588224	0.027489	-0.00545478
Repeat: 3	0.0116222	0.000486709	0.0578352	0.027277	-0.0035189
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00626586	0.00878637	1179.93	-0.000917602	-0.00031628
Std Dev:	0.000439525	0.000575472	4.70806	0.000400934	0.000708798
%RSD:	7.0146	6.5496	0.399012	43.6936	224.105
Repeat: 1	-0.00676114	0.00943078	1180.07	-0.000490015	-0.000538423
Repeat: 2	-0.0061142	0.00860458	1184.57	-0.0012851	0.000476983
Repeat: 3	-0.00592225	0.00832374	1175.15	-0.000977693	-0.000887399
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**

Avg. of Repeats:	0.0036795	-0.00147491	-2.23191e-005	0.674509	2496.68
Std Dev:	0.000107473	0.000677843	2.06973e-005	0.0013074	8.04485
%RSD:	2.92086	45.9583	92.7333	0.193829	0.322222
Repeat: 1	0.00357564	-0.00166016	-2.82521e-005	0.674904	2489.39
Repeat: 2	0.00379025	-0.0007237	6.96698e-007	0.67305	2505.31
Repeat: 3	0.0036726	-0.00204087	-3.9402e-005	0.675573	2495.34
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	679849	15622.1			
Std Dev:	8699.51	27.5783			
%RSD:	1.27962	0.176534			
Repeat: 1	687552	15631.9			
Repeat: 2	681583	15590.9			
Repeat: 3	670414	15643.4			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.627548	444.158	1.98308	3.66908	7.81539
Std Dev:	0.601286	6.67324	0.905363	0.0988946	0.155362
%RSD:	95.8153	1.50245	45.6543	2.69535	1.9879
Repeat: 1	-1.29514	445.251	1.0219	3.74089	7.82732
Repeat: 2	-0.128564	437.005	2.81974	3.55628	7.96444
Repeat: 3	-0.45894	450.217	2.10761	3.71007	7.6544
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.0177471	2.36503	-0.0563642	0.291182	1.63348
Std Dev:	0.0985912	0.0148575	0.0598485	0.254272	0.55692
%RSD:	555.534	0.628216	106.182	87.3241	34.094
Repeat: 1	0.100467	2.36906	0.00785466	0.141166	2.24335
Repeat: 2	-0.0913498	2.34857	-0.066365	0.147614	1.15191
Repeat: 3	0.0441244	2.37745	-0.110582	0.584766	1.50518
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	4.26409	708.164	0.521768	-0.931107	0.882044
Std Dev:	0.299433	13.3266	0.0163884	2.89892	0.0116269
%RSD:	7.0222	1.88185	3.14094	311.341	1.31817
Repeat: 1	4.15448	717.613	0.504092	-4.1417	0.871354
Repeat: 2	4.03491	713.957	0.536459	1.49442	0.894423
Repeat: 3	4.60288	692.921	0.524753	-0.146041	0.880356
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	32.2363	-0.0508776	1.42363	0.956954	1.86374
Std Dev:	0.344742	0.298698	0.0152438	0.367998	0.801989
%RSD:	1.06942	587.092	1.07077	38.4551	43.0311
Repeat: 1	31.9632	-0.197489	1.43327	1.38111	1.11583
Repeat: 2	32.122	-0.247941	1.43155	0.766989	1.76478
Repeat: 3	32.6237	0.292797	1.40605	0.722759	2.71062
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-0.898262	-1.97013	20948.5	0.321717	7.32963

Std Dev:	0.52082	1.29155	84.0481	0.261469	0.332366
%RSD:	57.9809	65.5568	0.401212	81.2727	4.53455
Repeat: 1	-1.48653	-0.523944	20951.1	0.600532	7.22547
Repeat: 2	-0.712323	-2.37776	21031.3	0.0819979	7.7016
Repeat: 3	-0.495929	-3.00869	20863.2	0.282622	7.06182
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	11.4956	0.430816	1.07855	59.9458	2496.68
Std Dev:	0.428554	0.866149	0.399067	0.116122	8.04485
%RSD:	3.72799	201.048	37.0005	0.193711	0.322222
Repeat: 1	11.0815	0.193307	0.969542	59.9815	2489.39
Repeat: 2	11.9373	1.39094	1.52079	59.816	2505.31
Repeat: 3	11.4679	-0.2918	0.745306	60.0398	2495.34
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	679849	15622.1			
Std Dev:	8699.51	27.5783			
%RSD:	1.27962	0.176534			
Repeat: 1	687552	15631.9			
Repeat: 2	681583	15590.9			
Repeat: 3	670414	15643.4			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2496.68	679849	15622.1
Std Dev:	8.04485	8699.51	27.5783
%RSD:	0.322222	1.27962	0.176534
Repeat: 1	2489.39	687552	15631.9
Repeat: 2	2505.31	681583	15590.9
Repeat: 3	2495.34	670414	15643.4

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1609054-06	9/14/2016 1:20:40PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000486211	0.0117949	-0.00591443	0.000165702	0.354348
Std Dev:	6.51032e-006	0.000696641	0.000558082	1.10399e-005	0.000752939
%RSD:	1.33899	5.90631	9.43593	6.66251	0.212486
Repeat: 1	0.000478734	0.0125554	-0.0053015	0.000176024	0.355203
Repeat: 2	0.000490622	0.0111877	-0.00604859	0.00016702	0.354054
Repeat: 3	0.000489276	0.0116414	-0.00639321	0.000154062	0.353786
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.000918459	6.22128	0.0368356	0.020517	0.000327749
Std Dev:	0.00019414	0.152058	0.00207269	0.00198336	2.39762e-005
%RSD:	21.1376	2.44416	5.62688	9.66688	7.3154
Repeat: 1	0.00102662	6.09416	0.0387861	0.0207871	0.000318752
Repeat: 2	0.000694331	6.38973	0.0370614	0.0184125	0.000354923
Repeat: 3	0.00103443	6.17996	0.0346592	0.0223515	0.000309574

Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.000824465	0.000919771	-0.00162558	-3.0535e-005	0.0151127
Std Dev:	1.20387e-005	0.000115305	0.0010287	1.38593e-005	0.000357383
%RSD:	1.46018	12.5363	63.2821	45.3884	2.36479
Repeat: 1	0.000812443	0.000819677	-0.00258837	-3.49654e-005	0.0148275
Repeat: 2	0.000824432	0.000893784	-0.00174668	-4.16374e-005	0.0155136
Repeat: 3	0.00083652	0.00104585	-0.000541689	-1.50021e-005	0.0149969
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.00375574	0.00058756	0.0863473	0.0250286	-0.00662252
Std Dev:	1.37044e-005	0.00157877	0.00131796	0.00100376	0.0010327
%RSD:	0.364892	268.699	1.52635	4.01046	15.5937
Repeat: 1	0.00374094	0.000636402	0.0851493	0.0255965	-0.0061147
Repeat: 2	0.00375828	-0.00101506	0.0877591	0.0238697	-0.0078108
Repeat: 3	0.00376799	0.00214134	0.0861336	0.0256198	-0.00594206
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	-0.00939431	0.00999581	827.882	-0.00239068	0.264863
Std Dev:	0.00150836	0.000902021	5.9956	0.000629991	0.00414239
%RSD:	16.0561	9.02399	0.72421	26.352	1.56397
Repeat: 1	-0.00857784	0.00921036	823.943	-0.0024524	0.260505
Repeat: 2	-0.0111349	0.0109809	834.782	-0.0017321	0.26875
Repeat: 3	-0.00847018	0.00979614	824.92	-0.00298753	0.265335
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.00159226	-0.00147634	-7.59748e-005	0.0636105	2416.78
Std Dev:	0.000287059	0.000685568	6.66446e-006	0.00115911	12.1509
%RSD:	18.0284	46.4371	8.77194	1.8222	0.502773
Repeat: 1	0.00172019	-0.000760132	-7.92425e-005	0.0636045	2402.77
Repeat: 2	0.00126348	-0.00154239	-6.83072e-005	0.0624544	2424.48
Repeat: 3	0.00179312	-0.00212649	-8.03747e-005	0.0647726	2423.08
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	671284	15243.1			
Std Dev:	2967.39	252.617			
%RSD:	0.442047	1.65725			
Repeat: 1	672691	15451.1			
Repeat: 2	673285	14962			
Repeat: 3	667874	15316.3			

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.534103	128.787	-0.45868	4.86279	19.2303
Std Dev:	0.119068	19.7951	1.29327	0.656634	0.0444768
%RSD:	22.2931	15.3704	281.954	13.5032	0.231285
Repeat: 1	-0.670803	149.829	0.961567	5.47641	19.2808
Repeat: 2	-0.453023	110.534	-0.769168	4.94169	19.2135
Repeat: 3	-0.478483	125.999	-1.56844	4.17028	19.1968
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.0319003	70.3648	-0.22719	0.140667	1.91942
Std Dev:	0.0730367	1.71993	0.0734077	0.235592	0.512242
%RSD:	228.953	2.44431	32.3111	167.482	26.6873
Repeat: 1	0.072477	68.9269	-0.154142	0.17207	1.72754
Repeat: 2	-0.0524154	72.2701	-0.226477	-0.109051	2.4999
Repeat: 3	0.0756394	69.8973	-0.300952	0.358983	1.53082

QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	1.77102	41.3214	0.439738	2.4375	4.90701
Std Dev:	0.126271	5.33851	0.0492722	2.43718	0.11601
%RSD:	7.12984	12.9195	11.2049	99.9869	2.36417
Repeat: 1	1.64534	36.6858	0.393623	1.68891	4.81444
Repeat: 2	1.76985	40.1201	0.433938	0.462423	5.03715
Repeat: 3	1.89787	47.1582	0.491654	5.16118	4.86943
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	10.4427	0.295633	2.14263	0.238255	1.1452
Std Dev:	0.038557	0.38978	0.0340482	0.21604	0.5062
%RSD:	0.369225	131.846	1.58908	90.676	44.2018
Repeat: 1	10.401	0.307629	2.11168	0.360185	1.39717
Repeat: 2	10.4499	-0.100006	2.1791	-0.0111859	0.562467
Repeat: 3	10.4771	0.679276	2.13711	0.365765	1.47597
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-4.50736	0.536728	14663.8	-0.63846	130.696
Std Dev:	1.75915	2.01906	107.03	0.410724	1.91964
%RSD:	39.0285	376.179	0.729893	64.3305	1.46879
Repeat: 1	-3.55735	-1.22179	14593.5	-0.678686	128.672
Repeat: 2	-6.53727	2.74162	14787	-0.209102	132.491
Repeat: 3	-3.42746	0.0903566	14610.9	-1.02759	130.923
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1.38305	0.42904	0.0281718	5.26413	2416.78
Std Dev:	1.18754	0.874165	0.135154	0.10376	12.1509
%RSD:	85.8636	203.749	479.75	1.97108	0.502773
Repeat: 1	1.93155	1.34346	-0.0376367	5.26446	2402.77
Repeat: 2	0.0204043	0.342029	0.183627	5.16021	2424.48
Repeat: 3	2.19719	-0.398366	-0.0614745	5.36773	2423.08
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	671284	15243.1			
Std Dev:	2967.39	252.617			
%RSD:	0.442047	1.65725			
Repeat: 1	672691	15451.1			
Repeat: 2	673285	14962			
Repeat: 3	667874	15316.3			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2416.78	671284	15243.1
Std Dev:	12.1509	2967.39	252.617
%RSD:	0.502773	0.442047	1.65725
Repeat: 1	2402.77	672691	15451.1
Repeat: 2	2424.48	673285	14962

Repeat: 3	2423.08	667874	15316.3

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I13006-MS1	9/14/2016 1:25:01PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.0147029	0.0989473	0.114343	0.0188267	33.7541
Std Dev:	6.62431e-005	0.00104751	0.000225716	9.78347e-005	0.118003
%RSD:	0.450545	1.05866	0.197403	0.519658	0.349597
Repeat: 1	0.0146419	0.0977508	0.114089	0.0187614	33.655
Repeat: 2	0.0147734	0.0996989	0.114522	0.0189392	33.7226
Repeat: 3	0.0146934	0.0993922	0.114417	0.0187796	33.8846
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.137033	6.38135	4.03541	4.15429	0.00953449
Std Dev:	4.34393e-005	0.00667179	0.00854816	0.0125501	8.41381e-005
%RSD:	0.0316999	0.104551	0.211829	0.302099	0.882461
Repeat: 1	0.137036	6.38796	4.02727	4.14567	0.0094446
Repeat: 2	0.137075	6.37462	4.03463	4.14851	0.00961135
Repeat: 3	0.136988	6.38148	4.04431	4.16869	0.00954752
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0249395	0.0230038	0.108652	0.00690771	0.0296122
Std Dev:	0.000175507	0.000214	0.00205694	3.13137e-005	5.83922e-005
%RSD:	0.703732	0.930283	1.89315	0.453316	0.197189
Repeat: 1	0.0247577	0.0232094	0.10964	0.00688357	0.0296614
Repeat: 2	0.025108	0.0227823	0.106287	0.00694309	0.0295477
Repeat: 3	0.0249526	0.0230196	0.110028	0.00689647	0.0296276
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.181818	4.38159	0.300192	2.37039	0.534719
Std Dev:	0.00102745	0.00809447	0.00316317	0.00480311	0.00269622
%RSD:	0.565094	0.184738	1.05372	0.20263	0.504232
Repeat: 1	0.180947	4.38152	0.302995	2.36592	0.532515
Repeat: 2	0.182951	4.37353	0.296762	2.36978	0.533916
Repeat: 3	0.181557	4.38971	0.300818	2.37547	0.537725
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.224639	0.131437	829.433	1.66531	2.54663
Std Dev:	0.00113538	0.000505243	7.33224	0.00572232	0.0201315
%RSD:	0.505423	0.384399	0.884005	0.34362	0.790517
Repeat: 1	0.22398	0.131968	824.385	1.65966	2.56155
Repeat: 2	0.223986	0.130962	837.844	1.66516	2.52373
Repeat: 3	0.22595	0.131381	826.071	1.6711	2.5546
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.269898	0.216092	0.0255942	5.69287	2367.53
Std Dev:	0.00099249	0.00123797	0.00016643	0.0171628	5.89891
%RSD:	0.367728	0.572892	0.650265	0.301478	0.249159
Repeat: 1	0.269333	0.214933	0.025406	5.69794	2374.08
Repeat: 2	0.269316	0.215946	0.0257221	5.67374	2362.64
Repeat: 3	0.271044	0.217396	0.0256544	5.70693	2365.85
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	650530	15034.4			
Std Dev:	3085.88	87.3029			

%RSD:	0.474364	0.580688
Repeat: 1	653470	14986.3
Repeat: 2	647316	15135.2
Repeat: 3	650804	14981.7

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	261.124	2181.11	275.568	1114.39	1997.84
Std Dev:	1.22115	25.2828	0.52375	5.82151	6.99087
%RSD:	0.467653	1.15918	0.190062	0.522394	0.349922
Repeat: 1	259.996	2152.25	274.981	1110.51	1991.96
Repeat: 2	262.421	2199.36	275.988	1121.08	1995.98
Repeat: 3	260.956	2191.71	275.736	1111.58	2005.57
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	51.2398	72.1753	138.068	494.206	198.339
Std Dev:	0.0124719	0.075465	0.295743	1.49608	1.79776
%RSD:	0.0243403	0.104558	0.214201	0.302723	0.906404
Repeat: 1	51.2402	72.25	137.786	493.18	196.419
Repeat: 2	51.252	72.0991	138.042	493.516	199.982
Repeat: 3	51.227	72.1767	138.376	495.923	198.618
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	254.537	1067.27	5.72176	1215.97	9.62846
Std Dev:	1.83863	9.88913	0.0985226	5.47846	0.0189781
%RSD:	0.722345	0.926582	1.72189	0.450541	0.197104
Repeat: 1	252.632	1076.77	5.7691	1211.75	9.64442
Repeat: 2	256.301	1057.04	5.6085	1222.16	9.60748
Repeat: 3	254.676	1068	5.78768	1214.01	9.63348
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	512.825	1082.01	7.66707	504.961	266.076
Std Dev:	2.89916	1.99855	0.0817172	1.03346	1.31685
%RSD:	0.565331	0.184707	1.06582	0.204661	0.494917
Repeat: 1	510.366	1081.99	7.73949	503.999	264.998
Repeat: 2	516.022	1080.02	7.57847	504.83	265.686
Repeat: 3	512.089	1084.02	7.68325	506.053	267.543
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	264.77	273.188	14691.7	1086.58	1199.99
Std Dev:	1.31378	1.1352	130.889	3.73037	9.4334
%RSD:	0.496198	0.415537	0.890903	0.343314	0.786125
Repeat: 1	264.052	274.381	14601.6	1082.9	1206.98
Repeat: 2	263.971	272.121	14841.9	1086.48	1189.26
Repeat: 3	266.286	273.063	14631.7	1090.36	1203.72
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1071.5	281.014	500.192	507.66	2367.53

Std Dev:	3.95939	1.59133	3.25018	1.53804	5.89891
%RSD:	0.369518	0.566282	0.649787	0.302967	0.249159
Repeat: 1	1069.25	279.524	496.519	508.118	2374.08
Repeat: 2	1069.18	280.828	502.695	505.945	2362.64
Repeat: 3	1076.07	282.691	501.363	508.917	2365.85
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	650530	15034.4			
Std Dev:	3085.88	87.3029			
%RSD:	0.474364	0.580688			
Repeat: 1	653470	14986.3			
Repeat: 2	647316	15135.2			
Repeat: 3	650804	14981.7			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2367.53	650530	15034.4
Std Dev:	5.89891	3085.88	87.3029
%RSD:	0.249159	0.474364	0.580688
Repeat: 1	2374.08	653470	14986.3
Repeat: 2	2362.64	647316	15135.2
Repeat: 3	2365.85	650804	14981.7

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I13006-MSD1	9/14/2016 1:29:18PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.0148747	0.100217	0.116008	0.0190028	34.1972
Std Dev:	6.12568e-005	0.00140611	0.000255252	4.92258e-005	0.0303625
%RSD:	0.411819	1.40308	0.22003	0.259045	0.0887864
Repeat: 1	0.0149303	0.101754	0.116177	0.0190391	34.2011
Repeat: 2	0.014809	0.0998991	0.116132	0.0190226	34.1651
Repeat: 3	0.0148847	0.0989963	0.115714	0.0189468	34.2255
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.138831	6.4874	4.06673	4.21493	0.00960082
Std Dev:	0.000235072	0.000936564	0.00835937	0.00606539	1.61303e-005
%RSD:	0.169323	0.0144366	0.205555	0.143903	0.16801
Repeat: 1	0.139007	6.48838	4.07158	4.21606	0.00958577
Repeat: 2	0.138922	6.48651	4.05708	4.20838	0.00959883
Repeat: 3	0.138564	6.48732	4.07154	4.22035	0.00961785
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0253654	0.0237475	0.111134	0.00710175	0.030133
Std Dev:	6.1656e-005	0.000194523	0.000252168	3.69713e-005	0.000143939
%RSD:	0.243071	0.81913	0.226905	0.520595	0.477679
Repeat: 1	0.0254298	0.0239232	0.11105	0.00710327	0.0301459
Repeat: 2	0.0253595	0.0237806	0.111417	0.00713794	0.03027
Repeat: 3	0.0253069	0.0235385	0.110934	0.00706404	0.029983
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.18485	4.43211	0.310149	2.40006	0.5377

Std Dev:	0.00064655	0.0094119	0.00149668	0.00115377	0.00380975
%RSD:	0.34977	0.212357	0.482569	0.0480723	0.708526
Repeat: 1	0.185565	4.42895	0.309913	2.39977	0.53354
Repeat: 2	0.184679	4.42469	0.31175	2.39908	0.541019
Repeat: 3	0.184307	4.4427	0.308784	2.40134	0.538542
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.225543	0.132771	839.117	1.67517	2.64032
Std Dev:	5.66892e-005	0.000768695	3.97835	0.00141277	0.012474
%RSD:	0.0251345	0.578962	0.474111	0.0843359	0.472442
Repeat: 1	0.225479	0.133629	834.74	1.6765	2.6501
Repeat: 2	0.225563	0.13254	842.514	1.67533	2.64459
Repeat: 3	0.225588	0.132145	840.096	1.67369	2.62627
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.275484	0.218168	0.0259725	5.7612	2364.66
Std Dev:	0.000809979	0.00109128	9.66809e-005	0.0156552	11.3574
%RSD:	0.29402	0.5002	0.372244	0.271734	0.480297
Repeat: 1	0.276146	0.218703	0.0260053	5.75694	2375.72
Repeat: 2	0.275726	0.218889	0.0258636	5.74812	2365.24
Repeat: 3	0.274581	0.216912	0.0260484	5.77855	2353.02
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	648347	14979.6			
Std Dev:	2616.49	47.2727			
%RSD:	0.403563	0.31558			
Repeat: 1	645339	14926.4			
Repeat: 2	649607	15016.6			
Repeat: 3	650096	14995.9			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	264.292	2208.83	279.399	1124.86	2024.09
Std Dev:	1.12452	33.7729	0.598509	2.92981	1.80348
%RSD:	0.425485	1.529	0.214213	0.260461	0.0891007
Repeat: 1	265.31	2245.73	279.795	1127.01	2024.32
Repeat: 2	263.085	2201.29	279.693	1126.03	2022.18
Repeat: 3	264.481	2179.46	278.711	1121.52	2025.77
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	51.9235	73.3748	139.146	501.435	199.749
Std Dev:	0.0904167	0.0105935	0.288974	0.732392	0.346509
%RSD:	0.174134	0.0144375	0.207676	0.146059	0.173472
Repeat: 1	51.9909	73.3859	139.313	501.564	199.426
Repeat: 2	51.9589	73.3647	138.813	500.647	199.706
Repeat: 3	51.8208	73.3739	139.313	502.095	200.115
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	259.007	1101.75	5.84064	1249.88	9.79768
Std Dev:	0.64883	9.01339	0.0120782	6.46258	0.0466992
%RSD:	0.250507	0.818095	0.206797	0.517057	0.476635
Repeat: 1	259.684	1109.9	5.83663	1250.15	9.80187
Repeat: 2	258.947	1103.29	5.85421	1256.21	9.84215
Repeat: 3	258.391	1092.07	5.83108	1243.29	9.74903

QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	521.379	1094.48	7.92431	511.347	267.544
Std Dev:	1.82406	2.32395	0.0386652	0.249794	1.84819
%RSD:	0.349853	0.212333	0.487931	0.0488502	0.690801
Repeat: 1	523.396	1093.7	7.91822	511.285	265.526
Repeat: 2	520.895	1092.65	7.96566	511.135	269.155
Repeat: 3	519.845	1097.1	7.88906	511.623	267.95
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	265.814	276.179	14864.6	1093.01	1243.88
Std Dev:	0.062448	1.72322	71.0181	0.921281	5.84571
%RSD:	0.0234931	0.623951	0.477767	0.0842886	0.469958
Repeat: 1	265.745	278.102	14786.5	1093.87	1248.46
Repeat: 2	265.832	275.66	14925.2	1093.11	1245.88
Repeat: 3	265.865	274.775	14882.1	1092.04	1237.3
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1093.75	283.723	507.544	513.755	2364.66
Std Dev:	3.23025	1.3945	1.88061	1.4018	11.3574
%RSD:	0.295336	0.491499	0.370531	0.272854	0.480297
Repeat: 1	1096.39	284.411	508.178	513.372	2375.72
Repeat: 2	1094.72	284.64	505.429	512.585	2365.24
Repeat: 3	1090.15	282.118	509.026	515.309	2353.02
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	648347	14979.6			
Std Dev:	2616.49	47.2727			
%RSD:	0.403563	0.31558			
Repeat: 1	645339	14926.4			
Repeat: 2	649607	15016.6			
Repeat: 3	650096	14995.9			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2364.66	648347	14979.6
Std Dev:	11.3574	2616.49	47.2727
%RSD:	0.480297	0.403563	0.31558
Repeat: 1	2375.72	645339	14926.4
Repeat: 2	2365.24	649607	15016.6
Repeat: 3	2353.02	650096	14995.9

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I13006-PS1	9/14/2016 1:33:36PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**

Avg. of Repeats:	0.0135048	0.0972685	0.105908	0.0176664	33.0377
Std Dev:	6.16963e-005	0.000747652	0.000519286	0.000111346	0.0542022
%RSD:	0.456848	0.768648	0.49032	0.630271	0.164062
Repeat: 1	0.0134341	0.0980403	0.106481	0.017565	32.9834
Repeat: 2	0.0135479	0.0972177	0.105774	0.0176485	33.0379
Repeat: 3	0.0135323	0.0965476	0.105468	0.0177856	33.0918
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.135414	6.58065	3.70844	4.05506	0.00934987
Std Dev:	0.000215309	0.0078771	0.00455811	0.00232924	4.37254e-005
%RSD:	0.159001	0.119701	0.122912	0.0574404	0.467657
Repeat: 1	0.135468	6.57163	3.71046	4.05238	0.00930355
Repeat: 2	0.135597	6.58619	3.70323	4.05618	0.00935563
Repeat: 3	0.135177	6.58412	3.71165	4.05662	0.00939043
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0243745	0.0229793	0.107541	0.00646494	0.0300654
Std Dev:	7.14166e-005	0.000109706	0.000978081	2.70852e-005	9.98842e-005
%RSD:	0.292997	0.477412	0.909497	0.418955	0.332223
Repeat: 1	0.0242925	0.0228647	0.107733	0.00643572	0.029985
Repeat: 2	0.0244081	0.0229898	0.106481	0.00648921	0.0301772
Repeat: 3	0.0244229	0.0230834	0.108409	0.00646988	0.0300339
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.177412	4.08897	0.305255	2.30704	0.489804
Std Dev:	0.000780842	0.00419977	0.00148309	0.00148025	0.00128839
%RSD:	0.440129	0.10271	0.485852	0.0641623	0.263042
Repeat: 1	0.176608	4.0891	0.304425	2.30557	0.491117
Repeat: 2	0.17746	4.08471	0.306967	2.30701	0.488541
Repeat: 3	0.178168	4.09311	0.304372	2.30853	0.489754
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.208742	0.123219	851.214	1.53637	2.44837
Std Dev:	0.000955178	0.000926423	8.30645	0.00479076	0.00331393
%RSD:	0.457589	0.75185	0.975836	0.311824	0.135352
Repeat: 1	0.209635	0.122206	855.18	1.53117	2.4477
Repeat: 2	0.207735	0.124023	841.667	1.53732	2.45197
Repeat: 3	0.208854	0.123429	856.793	1.54061	2.44544
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.255993	0.198181	0.0251503	5.57054	2386.39
Std Dev:	0.000512696	0.00129233	0.00010344	0.00841694	7.77177
%RSD:	0.200277	0.652092	0.411287	0.151097	0.32567
Repeat: 1	0.255722	0.196771	0.0250334	5.57124	2378.1
Repeat: 2	0.256584	0.199309	0.0251877	5.56179	2393.51
Repeat: 3	0.255673	0.198464	0.02523	5.57858	2387.57
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	657786	15028.3			
Std Dev:	2150.54	46.3628			
%RSD:	0.326936	0.308504			
Repeat: 1	660111	14991.2			
Repeat: 2	655868	15013.4			
Repeat: 3	657380	15080.3			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	239.216	2138.82	256.202	1045.36	1955.4
Std Dev:	1.134	18.0997	1.20411	6.62519	3.21473

%RSD:	0.47405	0.846245	0.469986	0.63377	0.164402
Repeat: 1	237.916	2157.54	257.53	1039.33	1952.18
Repeat: 2	240.006	2137.51	255.895	1044.3	1955.42
Repeat: 3	239.725	2121.41	255.181	1052.46	1958.61
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	50.5898	74.4295	126.749	482.326	194.405
Std Dev:	0.0814978	0.0890983	0.157844	0.277188	0.933645
%RSD:	0.161095	0.119708	0.124533	0.0574691	0.480257
Repeat: 1	50.6099	74.3275	126.819	482.008	193.416
Repeat: 2	50.6594	74.4923	126.568	482.453	194.528
Repeat: 3	50.5002	74.4688	126.859	482.516	195.271
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	248.62	1066.06	5.66854	1138.49	9.77462
Std Dev:	0.748676	5.09352	0.0468477	4.73445	0.0324154
%RSD:	0.301133	0.477791	0.82645	0.415854	0.331628
Repeat: 1	247.76	1060.74	5.67776	1133.38	9.74853
Repeat: 2	248.974	1066.54	5.61778	1142.73	9.81091
Repeat: 3	249.126	1070.89	5.7101	1139.35	9.76442
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	500.393	1009.77	7.79787	491.313	244.128
Std Dev:	2.20304	1.03703	0.0383139	0.318614	0.630273
%RSD:	0.440262	0.1027	0.491338	0.0648495	0.258173
Repeat: 1	498.125	1009.8	7.77644	490.998	244.772
Repeat: 2	500.528	1008.72	7.84211	491.306	243.512
Repeat: 3	502.525	1010.79	7.77507	491.635	244.101
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	246.256	254.722	15080.5	1002.51	1153.91
Std Dev:	1.11972	2.07931	148.282	3.12309	1.55266
%RSD:	0.454697	0.816306	0.983269	0.311526	0.134557
Repeat: 1	247.315	252.448	15151.3	999.124	1153.6
Repeat: 2	245.084	256.526	14910.1	1003.13	1155.59
Repeat: 3	246.37	255.193	15180.1	1005.28	1152.54
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1015.97	258.041	491.558	496.762	2386.39
Std Dev:	2.0429	1.65434	2.01882	0.751839	7.77177
%RSD:	0.201079	0.641118	0.410698	0.151348	0.32567
Repeat: 1	1014.89	256.236	489.277	496.827	2378.1
Repeat: 2	1018.32	259.485	492.282	495.98	2393.51
Repeat: 3	1014.69	258.4	493.115	497.479	2387.57
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	657786	15028.3			

Std Dev:	2150.54	46.3628
%RSD:	0.326936	0.308504
Repeat: 1	660111	14991.2
Repeat: 2	655868	15013.4
Repeat: 3	657380	15080.3
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2386.39	657786	15028.3
Std Dev:	7.77177	2150.54	46.3628
%RSD:	0.32567	0.326936	0.308504
Repeat: 1	2378.1	660111	14991.2
Repeat: 2	2393.51	655868	15013.4
Repeat: 3	2387.57	657380	15080.3

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I13006-SRL1@5X	9/14/2016 1:37:53PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000507779	0.00301176	-0.00519238	0.000138189	0.106006
Std Dev:	5.04807e-005	0.00102573	0.000273987	1.01223e-005	0.00143239
%RSD:	9.94148	34.0573	5.27672	7.32494	1.35124
Repeat: 1	0.000556473	0.00185268	-0.00532237	0.00012654	0.107288
Repeat: 2	0.000511179	0.00380228	-0.00537717	0.000143186	0.10446
Repeat: 3	0.000455684	0.00338033	-0.00487759	0.000144841	0.106269
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.000849205	1.28389	0.0353031	0.021308	0.0002515
Std Dev:	0.000271026	0.00160408	0.000762345	0.0012999	1.75974e-005
%RSD:	31.9153	0.124939	2.15943	6.10053	6.99699
Repeat: 1	0.000871659	1.28343	0.0344594	0.0198524	0.000231551
Repeat: 2	0.00056765	1.28568	0.0355073	0.0217184	0.000258129
Repeat: 3	0.00110831	1.28257	0.0359424	0.0223531	0.000264821
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.000719389	0.000159269	-0.00687442	-6.18577e-005	0.0032114
Std Dev:	1.24452e-005	0.000121066	0.000977238	2.20384e-005	6.91326e-005
%RSD:	1.72997	76.0134	14.2156	35.6277	2.15273
Repeat: 1	0.000730306	0.000146909	-0.00593348	-4.89631e-005	0.00315796
Repeat: 2	0.000705837	4.48574e-005	-0.00788431	-8.73047e-005	0.00328947
Repeat: 3	0.000722023	0.000286041	-0.00680548	-4.93052e-005	0.00318676
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.000922568	0.00397578	0.0212346	0.0221168	-0.00418145
Std Dev:	1.59829e-005	0.00100319	0.000580442	0.00114926	0.00196326
%RSD:	1.73244	25.2326	2.73347	5.19631	46.9517
Repeat: 1	0.000912594	0.0050454	0.0206883	0.0207901	-0.00344558
Repeat: 2	0.000941003	0.00382613	0.0211715	0.0227554	-0.00269244
Repeat: 3	0.000914106	0.00305582	0.021844	0.022805	-0.00640634
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00500691	0.00930905	175.111	-0.000561235	0.0443357
Std Dev:	0.000745183	0.000176602	0.380852	0.000707141	0.00010696
%RSD:	14.8831	1.8971	0.217492	125.997	0.241251

Repeat: 1	-0.00537732	0.00934506	174.935	-0.0010881	0.0442155
Repeat: 2	-0.00549431	0.00911723	174.85	0.000242436	0.0444203
Repeat: 3	-0.0041491	0.00946488	175.548	-0.000838036	0.0443713
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.00110947	-0.000947255	-6.99847e-005	0.0355632	2435.64
Std Dev:	0.00055964	0.000729655	2.90749e-005	0.000557349	10.6723
%RSD:	50.442	77.0284	41.5446	1.5672	0.438172
Repeat: 1	0.000463579	-0.000914997	-3.64402e-005	0.0361952	2425.91
Repeat: 2	0.00145012	-0.000234264	-8.5564e-005	0.035142	2447.06
Repeat: 3	0.00141472	-0.0016925	-8.79499e-005	0.0353525	2433.94
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	665017	15307			
Std Dev:	4446.49	10.2419			
%RSD:	0.668628	0.0669101			
Repeat: 1	665361	15309.5			
Repeat: 2	660408	15295.7			
Repeat: 3	669281	15315.8			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.139073	26.339	1.20986	3.22296	4.53176
Std Dev:	0.923277	24.606	0.63573	0.601751	0.0862274
%RSD:	663.878	93.4206	52.546	18.6707	1.90273
Repeat: 1	0.752272	-1.47461	0.90678	2.53048	4.6099
Repeat: 2	-0.0782204	45.2717	0.782374	3.51967	4.43925
Repeat: 3	-1.09127	35.2198	1.94041	3.61873	4.54613
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.00583642	14.5177	-0.0655434	0.238319	0.315492
Std Dev:	0.100111	0.0181439	0.0261812	0.150999	0.375904
%RSD:	1715.28	0.124978	39.9449	63.3601	119.148
Repeat: 1	0.0114471	14.5124	-0.0945093	0.0695061	-0.110616
Repeat: 2	-0.0969617	14.5379	-0.058556	0.284946	0.456937
Repeat: 3	0.103024	14.5027	-0.0435647	0.360506	0.600156
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	0.672466	6.06457	0.188331	-2.02943	1.04361
Std Dev:	0.129264	5.60603	0.0468073	3.85336	0.0224388
%RSD:	19.2224	92.439	24.8537	189.874	2.15012
Repeat: 1	0.784916	5.49033	0.2334	0.226095	1.02626
Repeat: 2	0.531238	0.767761	0.13996	-6.47876	1.06895
Repeat: 3	0.701243	11.9356	0.191633	0.164374	1.03561
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	2.44965	1.13101	0.460516	-0.380092	2.31333
Std Dev:	0.0451936	0.247712	0.0149951	0.246921	0.955075
%RSD:	1.8449	21.9018	3.25615	64.9635	41.2858
Repeat: 1	2.42152	1.39516	0.446403	-0.665141	2.66559
Repeat: 2	2.50178	1.09395	0.458886	-0.243099	3.04224
Repeat: 3	2.42565	0.903916	0.47626	-0.232037	1.23215

QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	0.613446	-0.797821	3010.89	0.554309	28.0931
Std Dev:	0.856853	0.396674	6.79993	0.461144	0.0500129
%RSD:	139.679	49.7196	0.225845	83.1927	0.178026
Repeat: 1	0.195735	-0.716063	3007.74	0.210626	28.0368
Repeat: 2	0.0455558	-1.229	3006.23	1.07838	28.1325
Repeat: 3	1.59905	-0.448397	3018.69	0.373921	28.11
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	0.947227	1.10917	0.126624	2.80742	2435.64
Std Dev:	2.23213	0.930523	0.562799	0.0499744	10.6723
%RSD:	235.649	83.8936	444.464	1.78008	0.438172
Repeat: 1	-1.62896	1.14607	0.775975	2.86421	2425.91
Repeat: 2	2.3048	2.0207	-0.175693	2.77016	2447.06
Repeat: 3	2.16584	0.160747	-0.22041	2.78789	2433.94
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	665017	15307			
Std Dev:	4446.49	10.2419			
%RSD:	0.668628	0.0669101			
Repeat: 1	665361	15309.5			
Repeat: 2	660408	15295.7			
Repeat: 3	669281	15315.8			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2435.64	665017	15307
Std Dev:	10.6723	4446.49	10.2419
%RSD:	0.438172	0.668628	0.0669101
Repeat: 1	2425.91	665361	15309.5
Repeat: 2	2447.06	660408	15295.7
Repeat: 3	2433.94	669281	15315.8

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1609054-07	9/14/2016 1:42:17PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000476092	0.0271155	-0.00474236	0.000202461	0.742592
Std Dev:	9.77356e-006	0.000171252	0.000649002	1.29135e-005	0.00117548
%RSD:	2.05287	0.631565	13.6852	6.3783	0.158294
Repeat: 1	0.000486801	0.0270278	-0.00432084	0.000194701	0.742306
Repeat: 2	0.000473823	0.0273128	-0.00548972	0.000195313	0.741586
Repeat: 3	0.000467653	0.0270058	-0.00441652	0.000217368	0.743884
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.000919324	10.7871	0.0360292	0.0253515	0.000302534
Std Dev:	0.000337598	0.0165263	0.0031222	0.00143617	1.179e-005

%RSD:	36.7224	0.153203	8.66577	5.66504	3.89708
Repeat: 1	0.000766945	10.8005	0.0372652	0.0240378	0.000315491
Repeat: 2	0.00130625	10.7687	0.0383441	0.0251319	0.000292438
Repeat: 3	0.000684776	10.7922	0.0324782	0.0268848	0.000299672
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00122135	0.00841222	0.00168189	-1.4648e-005	0.0111147
Std Dev:	1.3738e-005	0.000145026	0.00120322	1.41678e-005	5.94497e-005
%RSD:	1.12482	1.72399	71.5397	96.7218	0.534875
Repeat: 1	0.00121295	0.00844464	0.00305293	-1.48666e-005	0.0111819
Repeat: 2	0.0012139	0.00825373	0.00119109	-3.7217e-007	0.0110931
Repeat: 3	0.00123721	0.0085383	0.000801648	-2.87053e-005	0.0110691
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.0416735	0.00597023	0.325879	0.0280696	-0.00478912
Std Dev:	0.000381704	0.00126731	0.00139033	0.00180758	0.00113418
%RSD:	0.915939	21.2272	0.426641	6.43963	23.6823
Repeat: 1	0.0417496	0.0070544	0.324834	0.030153	-0.00372083
Repeat: 2	0.0412594	0.00627933	0.327457	0.0269176	-0.00597933
Repeat: 3	0.0420114	0.00457696	0.325345	0.0271384	-0.0046672
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00638102	0.00969327	1107.34	-0.000932245	0.591686
Std Dev:	0.00049626	0.000261035	6.67103	0.000244431	0.00179831
%RSD:	7.77713	2.69296	0.602437	26.2196	0.30393
Repeat: 1	-0.00694401	0.00940549	1100.2	-0.000911558	0.591519
Repeat: 2	-0.00619203	0.00975951	1113.42	-0.00118636	0.593562
Repeat: 3	-0.00600702	0.0099148	1108.4	-0.000698816	0.589977
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.0034781	-0.00149606	-3.44443e-005	0.459523	2386.06
Std Dev:	0.000150297	0.000780461	1.34874e-005	0.00252478	4.59824
%RSD:	4.32125	52.1677	39.1573	0.549436	0.192713
Repeat: 1	0.00341909	-0.0020517	-3.72616e-005	0.457003	2391.19
Repeat: 2	0.00364895	-0.00183271	-4.63005e-005	0.459514	2382.32
Repeat: 3	0.00336627	-0.000603777	-1.97707e-005	0.462052	2384.67
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	661687	15168.3			
Std Dev:	5273.06	27.7154			
%RSD:	0.796911	0.18272			
Repeat: 1	659395	15139.4			
Repeat: 2	667718	15194.6			
Repeat: 3	657948	15170.8			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.727445	396.188	2.27008	7.07564	42.2112
Std Dev:	0.177877	4.45331	1.50361	0.768331	0.0704421
%RSD:	24.4523	1.12404	66.2359	10.8588	0.16688
Repeat: 1	-0.532253	393.781	3.24583	6.61453	42.1941
Repeat: 2	-0.769675	401.327	0.538512	6.64979	42.1509
Repeat: 3	-0.880407	393.456	3.02589	7.9626	42.2886
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.0379172	122.009	-0.465653	0.700197	1.32466
Std Dev:	0.125614	0.18693	0.108331	0.171503	0.251741

%RSD:	331.286	0.153209	23.2643	24.4935	19.0041
Repeat: 1	-0.0186787	122.161	-0.423367	0.543937	1.60149
Repeat: 2	0.181873	121.801	-0.384843	0.672969	1.10946
Repeat: 3	-0.0494423	122.067	-0.58875	0.883685	1.26304
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	5.94552	388.735	0.598158	4.19134	3.60938
Std Dev:	0.144014	6.72067	0.0576312	2.4786	0.019302
%RSD:	2.42223	1.72886	9.63479	59.1362	0.534774
Repeat: 1	5.8573	390.238	0.663827	4.15128	3.63121
Repeat: 2	5.86755	381.39	0.574649	6.68974	3.60236
Repeat: 3	6.1117	394.576	0.555996	1.73302	3.59458
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	117.42	1.63786	8.33067	0.903062	2.07801
Std Dev:	1.07683	0.312717	0.0359177	0.388464	0.550819
%RSD:	0.917075	19.093	0.43115	43.0163	26.507
Repeat: 1	117.635	1.90544	8.30368	1.3508	2.59748
Repeat: 2	116.252	1.71405	8.37144	0.655643	1.50045
Repeat: 3	118.373	1.29409	8.31689	0.702747	2.13611
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-1.01017	-0.390549	19652.6	0.312225	283.168
Std Dev:	0.579004	0.586075	119.087	0.159305	0.844666
%RSD:	57.3174	150.064	0.605958	51.0225	0.298292
Repeat: 1	-1.66774	-1.03703	19525.2	0.325727	283.087
Repeat: 2	-0.78604	-0.240603	19761.2	0.146599	284.05
Repeat: 3	-0.576739	0.105986	19671.5	0.46435	282.366
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	7.74061	0.344646	0.860169	40.5446	2386.06
Std Dev:	0.603869	0.994372	0.263074	0.225375	4.59824
%RSD:	7.8013	288.52	30.584	0.55587	0.192713
Repeat: 1	7.50061	-0.364682	0.80839	40.3192	2391.19
Repeat: 2	8.42759	-0.0826218	0.626834	40.5445	2382.32
Repeat: 3	7.29364	1.48124	1.14528	40.7699	2384.67
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	661687	15168.3			
Std Dev:	5273.06	27.7154			
%RSD:	0.796911	0.18272			
Repeat: 1	659395	15139.4			
Repeat: 2	667718	15194.6			
Repeat: 3	657948	15170.8			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2386.06	661687	15168.3

Std Dev:	4.59824	5273.06	27.7154
%RSD:	0.192713	0.796911	0.18272
Repeat: 1	2391.19	659395	15139.4
Repeat: 2	2382.32	667718	15194.6
Repeat: 3	2384.67	657948	15170.8

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1609059-23	9/14/2016 1:46:39PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000504891	0.00550281	-0.00532701	0.00034829	0.356186
Std Dev:	4.621e-005	0.000517002	0.000503049	4.79075e-006	0.00189378
%RSD:	9.15248	9.39524	9.44336	1.37551	0.531682
Repeat: 1	0.000557502	0.00600964	-0.00545563	0.000352057	0.357547
Repeat: 2	0.000486295	0.0055226	-0.00575326	0.000349913	0.354023
Repeat: 3	0.000470876	0.0049762	-0.00477214	0.000342898	0.356989
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.000905953	2.80822	0.0317866	0.0211559	0.000243455
Std Dev:	0.000180338	0.0077064	0.00105804	0.00141275	2.63659e-005
%RSD:	19.9059	0.274423	3.32855	6.67782	10.8299
Repeat: 1	0.00108791	2.81667	0.0329778	0.0200076	0.000256792
Repeat: 2	0.000902671	2.80158	0.0314263	0.0207265	0.000213085
Repeat: 3	0.000727278	2.8064	0.0309558	0.0227335	0.000260487
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.000635856	-7.51859e-005	0.0262819	-4.16924e-005	0.0168789
Std Dev:	2.11526e-005	0.000207216	0.00092354	1.3439e-005	5.09346e-005
%RSD:	3.32663	275.605	3.51398	32.2338	0.301765
Repeat: 1	0.000611436	-0.000312815	0.025329	-4.69213e-005	0.0168952
Repeat: 2	0.000647667	1.93776e-005	0.027173	-2.64248e-005	0.0168218
Repeat: 3	0.000648466	6.78793e-005	0.0263436	-5.1731e-005	0.0169196
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.000413387	0.00132663	0.370173	0.024277	-0.00502729
Std Dev:	1.23931e-005	0.00085405	0.00350544	0.000614682	0.00186908
%RSD:	2.99795	64.3775	0.946973	2.53195	37.1786
Repeat: 1	0.000407781	0.000356946	0.372348	0.0248844	-0.00308008
Repeat: 2	0.000404787	0.00165594	0.366129	0.0236553	-0.00680695
Repeat: 3	0.000427593	0.001967	0.372041	0.0242911	-0.00519485
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00694129	0.00921869	504.52	-0.00225271	0.198425
Std Dev:	0.000546509	0.000258983	1.9406	0.000431214	0.00134558
%RSD:	7.8733	2.80933	0.384642	19.142	0.678127
Repeat: 1	-0.00744049	0.0095076	502.383	-0.00176006	0.199553
Repeat: 2	-0.00702601	0.00900736	505.008	-0.00243648	0.196936
Repeat: 3	-0.00635737	0.00914112	506.171	-0.0025616	0.198787
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.00115959	-0.00188253	-5.9391e-005	0.029433	2435.9
Std Dev:	0.000223869	0.000824562	2.09426e-005	0.00117679	8.60911
%RSD:	19.3058	43.8007	35.2623	3.99819	0.353427
Repeat: 1	0.000947428	-0.00269217	-3.52342e-005	0.0283821	2431.42
Repeat: 2	0.00139357	-0.00104382	-7.24346e-005	0.0307044	2445.82

Repeat: 3	0.00113779	-0.0019116	-7.05041e-005	0.0292124	2430.45
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	668665	15390.6			
Std Dev:	1059.44	95.8246			
%RSD:	0.158442	0.622616			
Repeat: 1	669669	15280.1			
Repeat: 2	668767	15450.9			
Repeat: 3	667558	15440.8			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.190737	52.6889	0.900344	15.7224	19.3405
Std Dev:	0.845012	12.3058	1.16502	0.284872	0.113042
%RSD:	443.025	23.3557	129.398	1.81188	0.584484
Repeat: 1	0.771386	64.6742	0.602535	15.9461	19.4227
Repeat: 2	-0.531141	53.3065	-0.0868679	15.8194	19.2116
Repeat: 3	-0.812456	40.0858	2.18537	15.4017	19.3872
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.0263588	31.7594	-0.252605	0.220051	0.119533
Std Dev:	0.0662291	0.0871675	0.0364498	0.168761	0.563789
%RSD:	251.26	0.274462	14.4296	76.6918	471.658
Repeat: 1	0.0926971	31.855	-0.21155	0.084215	0.404915
Repeat: 2	0.02614	31.6843	-0.265101	0.166965	-0.529888
Repeat: 3	-0.0397606	31.7388	-0.281163	0.408971	0.483574
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	-0.207456	-4.79849	1.77644	1.01226	5.48033
Std Dev:	0.222288	9.59419	0.0442353	2.35216	0.0165333
%RSD:	107.149	199.942	2.49011	232.366	0.301685
Repeat: 1	-0.464093	-15.8005	1.7308	0.0957973	5.48562
Repeat: 2	-0.0830053	-0.422481	1.81912	3.6847	5.4618
Repeat: 3	-0.0752697	1.82749	1.77939	-0.743713	5.49357
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1.01323	0.476804	9.47496	0.0749409	1.90735
Std Dev:	0.034863	0.210892	0.0905592	0.132331	0.911017
%RSD:	3.44077	44.2305	0.955773	176.581	47.7634
Repeat: 1	0.997658	0.237355	9.53117	0.205669	2.85762
Repeat: 2	0.988872	0.558135	9.37049	-0.0589377	1.04146
Repeat: 3	1.05317	0.63492	9.52322	0.0780917	1.82297
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-1.62334	-1.06218	8891.32	-0.548589	100.075
Std Dev:	0.630521	0.580765	34.6445	0.281052	0.629533
%RSD:	38.8411	54.6765	0.389644	51.2317	0.629061
Repeat: 1	-2.20819	-0.414382	8853.15	-0.227495	100.602
Repeat: 2	-1.70642	-1.53626	8900.03	-0.668345	99.378
Repeat: 3	-0.95539	-1.23591	8920.78	-0.749928	100.245

QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	0.546124	-0.0826626	0.330168	2.24845	2435.9
Std Dev:	0.895853	1.05253	0.40985	0.105011	8.60911
%RSD:	164.038	1273.29	124.134	4.67037	0.353427
Repeat: 1	-0.302998	-1.11565	0.802608	2.155	2431.42
Repeat: 2	1.48235	0.988388	0.0699096	2.36209	2445.82
Repeat: 3	0.459024	-0.120729	0.117987	2.22825	2430.45
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	668665	15390.6			
Std Dev:	1059.44	95.8246			
%RSD:	0.158442	0.622616			
Repeat: 1	669669	15280.1			
Repeat: 2	668767	15450.9			
Repeat: 3	667558	15440.8			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2435.9	668665	15390.6
Std Dev:	8.60911	1059.44	95.8246
%RSD:	0.353427	0.158442	0.622616
Repeat: 1	2431.42	669669	15280.1
Repeat: 2	2445.82	668767	15450.9
Repeat: 3	2430.45	667558	15440.8

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25804-CCV3	9/14/2016 1:51:00PM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.0263505	0.421638	0.440644	0.0176926	16.0484
Std Dev:	0.000211486	0.00215251	0.00173841	0.000119794	0.0398338
%RSD:	0.80259	0.510512	0.394515	0.677086	0.248211
Repeat: 1	0.0263627	0.419512	0.438975	0.0177455	16.0304
Repeat: 2	0.0261331	0.421585	0.440512	0.0175555	16.0207
Repeat: 3	0.0265556	0.423816	0.442445	0.0177769	16.094
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	2.74344	4.48299	29.5574	8.03132	0.0464057
Std Dev:	0.00668957	0.00382739	0.126349	0.0236961	0.000400362
%RSD:	0.243839	0.0853758	0.427471	0.295046	0.862743
Repeat: 1	2.73838	4.47871	29.5467	8.02861	0.0464915
Repeat: 2	2.75103	4.48609	29.4368	8.00909	0.0459694
Repeat: 3	2.74091	4.48417	29.6888	8.05625	0.0467562
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0970869	0.211921	0.200891	0.006173	0.146511
Std Dev:	0.00066408	0.00153071	0.00180289	3.91393e-005	0.00054406
%RSD:	0.684005	0.722302	0.897447	0.63404	0.371345
Repeat: 1	0.0973861	0.210367	0.199276	0.00613	0.14595

Repeat: 2	0.0963259	0.213427	0.202836	0.00618246	0.147037
Repeat: 3	0.0975488	0.211969	0.20056	0.00620654	0.146545
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.344798	4.07558	1.94559	4.57463	1.95928
Std Dev:	0.00294458	0.00726145	0.0144191	0.0152466	0.00146353
%RSD:	0.854002	0.17817	0.741115	0.333286	0.0746974
Repeat: 1	0.342314	4.07263	1.93844	4.56599	1.95925
Repeat: 2	0.344029	4.07025	1.96219	4.56567	1.95783
Repeat: 3	0.348051	4.08385	1.93615	4.59224	1.96076
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.871778	0.469818	244.758	1.53269	2.03804
Std Dev:	0.00166206	0.00218716	0.932754	0.00625036	0.0142297
%RSD:	0.190652	0.465534	0.381093	0.407803	0.698206
Repeat: 1	0.869925	0.468026	245.773	1.53137	2.02602
Repeat: 2	0.872271	0.469173	243.939	1.52721	2.05375
Repeat: 3	0.873137	0.472255	244.561	1.5395	2.03436
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.252929	0.775913	0.05082	11.1531	2314.69
Std Dev:	0.00082268	0.00276627	0.000516897	0.042162	6.71033
%RSD:	0.325261	0.356517	1.01711	0.378029	0.289902
Repeat: 1	0.252077	0.773239	0.0509056	11.1451	2311.94
Repeat: 2	0.253719	0.775737	0.0502657	11.1155	2322.34
Repeat: 3	0.252992	0.778763	0.0512888	11.1987	2309.79
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	634243	14724			
Std Dev:	5420.15	76.9835			
%RSD:	0.854587	0.522843			
Repeat: 1	635497	14812.7			
Repeat: 2	638926	14684.8			
Repeat: 3	628305	14674.6			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	475.753	9968.65	1031.89	1046.21	951.516
Std Dev:	3.90229	51.5485	4.02477	7.11862	2.38745
%RSD:	0.820233	0.517106	0.390038	0.680421	0.25091
Repeat: 1	475.984	9917.77	1028.02	1049.35	950.455
Repeat: 2	471.741	9967.35	1031.6	1038.06	949.842
Repeat: 3	479.535	10020.8	1036.06	1051.21	954.25
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	1015.63	50.7028	1020.05	957.615	986.155
Std Dev:	2.48228	0.0432918	4.36884	2.83946	8.55949
%RSD:	0.244409	0.0853834	0.428299	0.296514	0.867966
Repeat: 1	1013.75	50.6544	1019.68	957.298	987.995
Repeat: 2	1018.44	50.7378	1015.87	954.948	976.825
Repeat: 3	1014.69	50.7162	1024.59	960.6	993.645
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	1010.54	9820.19	10.1398	1087.24	47.5797
Std Dev:	6.952	70.8694	0.0863539	6.8435	0.176648

%RSD:	0.687948	0.72167	0.851636	0.629439	0.371267
Repeat: 1	1013.67	9748.21	10.0624	1079.72	47.3977
Repeat: 2	1002.57	9889.9	10.2329	1088.88	47.7505
Repeat: 3	1015.38	9822.46	10.1239	1093.11	47.5909
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	972.481	1006.77	50.1742	978.601	960.39
Std Dev:	8.30766	1.79482	0.372501	3.2794	0.718296
%RSD:	0.854275	0.178274	0.742416	0.335111	0.0747922
Repeat: 1	965.474	1006.05	49.9894	976.745	960.367
Repeat: 2	970.31	1005.46	50.603	976.671	959.683
Repeat: 3	981.658	1008.82	49.9302	982.388	961.119
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	995.358	1032.17	4256.33	999.989	961.933
Std Dev:	1.92033	4.90453	16.6357	4.07284	6.66805
%RSD:	0.192929	0.475169	0.390846	0.407289	0.693193
Repeat: 1	993.17	1028.15	4274.44	999.124	956.297
Repeat: 2	996.14	1030.72	4241.74	996.417	969.294
Repeat: 3	996.763	1037.63	4252.81	1004.42	960.208
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1002.47	995.088	998.227	992.246	2314.69
Std Dev:	3.27537	3.53435	10.1271	3.75759	6.71033
%RSD:	0.32673	0.35518	1.01451	0.378695	0.289902
Repeat: 1	999.079	991.68	999.907	991.539	2311.94
Repeat: 2	1005.62	994.847	987.366	988.892	2322.34
Repeat: 3	1002.72	998.736	1007.41	996.307	2309.79
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	634243	14724			
Std Dev:	5420.15	76.9835			
%RSD:	0.854587	0.522843			
Repeat: 1	635497	14812.7			
Repeat: 2	638926	14684.8			
Repeat: 3	628305	14674.6			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2314.69	634243	14724
Std Dev:	6.71033	5420.15	76.9835
%RSD:	0.289902	0.854587	0.522843
Repeat: 1	2311.94	635497	14812.7
Repeat: 2	2322.34	638926	14684.8
Repeat: 3	2309.79	628305	14674.6

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25804-CCB3	9/14/2016 1:55:17PM	QC	1.00

Valid	**Analyst Name**	**Method Name**

Yes rburr 6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.000500451	0.000498607	-0.00496514	0.000112457	0.0341802
Std Dev:	1.17891e-005	0.000342468	5.59387e-005	1.43131e-006	0.000876836
%RSD:	2.3557	68.6851	1.12663	1.27276	2.56533
Repeat: 1	0.000487977	0.000613393	-0.00490058	0.000110933	0.0341381
Repeat: 2	0.000501967	0.00011349	-0.00499544	0.000113772	0.0333252
Repeat: 3	0.000511409	0.000768938	-0.00499938	0.000112667	0.0350774
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	0.0013885	0.000477483	0.0348101	0.0190956	0.000243985
Std Dev:	4.96136e-005	9.89394e-005	0.00100368	0.00372681	1.43903e-005
%RSD:	3.57318	20.7211	2.88331	19.5166	5.89801
Repeat: 1	0.00144466	0.000424012	0.0359076	0.0153994	0.000231342
Repeat: 2	0.00137023	0.000591652	0.0345838	0.019035	0.000259645
Repeat: 3	0.00135061	0.000416784	0.0339389	0.0228523	0.000240968
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.000679741	-0.000147342	-0.00947476	-5.72026e-005	-4.26886e-005
Std Dev:	2.09369e-006	0.000125661	0.00125305	4.08651e-005	3.67859e-005
%RSD:	0.308013	85.2854	13.2252	71.4392	86.1725
Repeat: 1	0.000678573	-0.000164242	-0.00926626	-1.26395e-005	-8.50911e-005
Repeat: 2	0.000682158	-0.000263698	-0.00833904	-6.60473e-005	-1.93138e-005
Repeat: 3	0.00067849	-1.40861e-005	-0.010819	-9.29211e-005	-2.3661e-005
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	8.81377e-005	0.00111164	0.00382214	0.0223396	-0.00684369
Std Dev:	8.04721e-006	0.000796536	0.000309019	0.000906326	0.000498139
%RSD:	9.13027	71.654	8.08498	4.05704	7.27881
Repeat: 1	8.00632e-005	0.0019833	0.00352916	0.0232064	-0.00741611
Repeat: 2	8.81924e-005	0.000930032	0.00379225	0.0224141	-0.0066064
Repeat: 3	9.61574e-005	0.000421594	0.00414503	0.0213983	-0.00650856
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	-0.00712229	0.0102662	7.63635	-0.00124386	-0.0167284
Std Dev:	0.000248843	0.000414489	0.47326	0.000765681	0.000543183
%RSD:	3.49386	4.03742	6.19747	61.5568	3.24707
Repeat: 1	-0.00697953	0.00982648	7.34814	-0.0012153	-0.0168029
Repeat: 2	-0.00740963	0.0103222	7.37837	-0.000492861	-0.0172305
Repeat: 3	-0.00697771	0.0106498	8.18254	-0.00202342	-0.0161518
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.000755153	-0.00199349	-7.7777e-005	0.00617934	2376.21
Std Dev:	0.000186581	0.000601112	3.027e-005	0.000144558	15.4244
%RSD:	24.7077	30.1538	38.919	2.33938	0.649116
Repeat: 1	0.000601661	-0.0026866	-8.23684e-005	0.00625617	2369.47
Repeat: 2	0.00070097	-0.00167907	-0.000105489	0.00626927	2393.86
Repeat: 3	0.000962829	-0.00161479	-4.54736e-005	0.0060126	2365.31
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	647003	14970.1			
Std Dev:	4487.94	89.0881			
%RSD:	0.693651	0.595108			
Repeat: 1	646317	14890.2			
Repeat: 2	642897	14953.8			
Repeat: 3	651794	15066.2			

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335

Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.273268	-5.78234	1.73669	1.69133	0.280028
Std Dev:	0.216498	8.22051	0.129048	0.0843529	0.0538693
%RSD:	79.2257	142.166	7.43068	4.98736	19.2371
Repeat: 1	-0.501333	-3.03362	1.88562	1.60163	0.277225
Repeat: 2	-0.2479	-15.025	1.66621	1.76906	0.227615
Repeat: 3	-0.0705711	0.711604	1.65822	1.7033	0.335244
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.204515	0.00087763	-0.0266265	-0.025144	0.162278
Std Dev:	0.0178596	0.00111911	0.0348142	0.443922	0.307658
%RSD:	8.73268	127.515	130.75	1765.52	189.587
Repeat: 1	0.224764	0.000272822	0.0113351	-0.465646	-0.107879
Repeat: 2	0.197771	0.002169	-0.0341523	-0.0319072	0.497143
Repeat: 3	0.191009	0.000191065	-0.0570623	0.422121	0.0975706
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	0.257276	-8.14389	0.0637815	-0.95329	-0.0127531
Std Dev:	0.0216573	5.81791	0.0600181	7.14473	0.0119392
%RSD:	8.41794	71.4389	94.0996	749.481	93.6186
Repeat: 1	0.244537	-8.92739	0.0737682	6.83793	-0.0265154
Repeat: 2	0.282282	-13.5303	0.11818	-2.49948	-0.00516853
Repeat: 3	0.245009	-1.97394	-0.00060359	-7.19833	-0.00657529
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	0.0956119	0.423088	0.0106833	-0.33015	1.01038
Std Dev:	0.0226296	0.196567	0.00798319	0.194611	0.241869
%RSD:	23.6682	46.46	74.7259	58.9464	23.9385
Repeat: 1	0.0728471	0.638244	0.00311437	-0.143973	0.732644
Repeat: 2	0.0958849	0.378115	0.0099109	-0.314256	1.12378
Repeat: 3	0.118104	0.252904	0.0190246	-0.53222	1.17471
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-1.83406	1.40435	21.2195	0.109273	-0.330164
Std Dev:	0.29486	0.930349	8.44954	0.499372	0.254567
%RSD:	16.0769	66.2478	39.8196	456.995	77.1033
Repeat: 1	-1.66164	0.417337	16.0744	0.127918	-0.365078
Repeat: 2	-2.17453	1.53056	16.613	0.599061	-0.565472
Repeat: 3	-1.66601	2.26515	30.9713	-0.39916	-0.0599414
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	-0.0767485	-0.225631	-0.0265136	0.194235	2376.21
Std Dev:	0.743988	0.767823	0.586172	0.0127953	15.4244
%RSD:	969.384	340.3	2210.84	6.58754	0.649116
Repeat: 1	-0.688491	-1.11081	-0.11791	0.200966	2369.47
Repeat: 2	-0.293225	0.173466	-0.561619	0.202259	2393.86
Repeat: 3	0.75147	0.260453	0.599988	0.179479	2365.31
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	Sc3613	Sc3613-2
Units:	----	----
Avg. of Repeats:	647003	14970.1
Std Dev:	4487.94	89.0881
%RSD:	0.693651	0.595108
Repeat: 1	646317	14890.2
Repeat: 2	642897	14953.8
Repeat: 3	651794	15066.2
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	Sc1880	Sc3613	Sc3613-2
Avg. of Repeats:	2376.21	647003	14970.1
Std Dev:	15.4244	4487.94	89.0881
%RSD:	0.649116	0.693651	0.595108
Repeat: 1	2369.47	646317	14890.2
Repeat: 2	2393.86	642897	14953.8
Repeat: 3	2365.31	651794	15066.2

Sample Name	Acquisition Date	Sample type	Correction Factor
6H29015-BLK1	9/14/2016 1:59:40PM	QC	1.00

Valid	Analyst Name	Method Name
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.000472134	0.000184543	-0.00500953	0.000114888	0.0379939
Std Dev:	1.74497e-005	0.00022594	0.000859276	1.89372e-005	0.00167887
%RSD:	3.69592	122.432	17.1528	16.4832	4.41878
Repeat: 1	0.00046393	0.000383785	-0.00595991	0.000105772	0.0380716
Repeat: 2	0.000460299	-6.09402e-005	-0.00478121	0.000102233	0.0362776
Repeat: 3	0.000492174	0.000230784	-0.00428748	0.000136659	0.0396326
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	0.000833214	0.00282316	0.0395935	0.0173787	0.000265538
Std Dev:	0.000105059	0.000113932	0.00135981	0.00142163	1.89687e-005
%RSD:	12.6089	4.03563	3.43443	8.18029	7.1435
Repeat: 1	0.000780471	0.00285259	0.0381314	0.0166094	0.000280551
Repeat: 2	0.000954195	0.00269741	0.0408204	0.0190192	0.000271844
Repeat: 3	0.000764976	0.0029195	0.0398286	0.0165075	0.00024422
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.000612883	-0.000149432	-0.00888088	-7.33231e-005	-1.43782e-005
Std Dev:	1.414e-005	0.000130848	0.000113424	1.89129e-005	7.8657e-005
%RSD:	2.30714	87.5639	1.27717	25.7939	547.057
Repeat: 1	0.000627119	-0.000110459	-0.00892059	-7.6911e-005	6.69833e-005
Repeat: 2	0.000598841	-4.24978e-005	-0.00875294	-9.01851e-005	-2.00996e-005
Repeat: 3	0.00061269	-0.000295339	-0.00896911	-5.28733e-005	-9.00183e-005
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.000112522	0.00232135	0.00382993	0.023049	-0.00675564
Std Dev:	3.83925e-006	0.000509202	0.000646405	0.00105203	0.00104552
%RSD:	3.41199	21.9356	16.8777	4.56432	15.4763
Repeat: 1	0.000109725	0.00265925	0.0032994	0.0238498	-0.00785915
Repeat: 2	0.000116899	0.00256912	0.00454988	0.0218575	-0.00577984
Repeat: 3	0.000110943	0.00173568	0.0036405	0.0234395	-0.00662793
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215

Avg. of Repeats:	-0.00811187	0.00963584	12.5958	0.045355	-0.0158539
Std Dev:	0.000506044	0.000255964	3.86595	0.000342683	0.000710838
%RSD:	6.23831	2.65637	30.6924	0.755557	4.48369
Repeat: 1	-0.00753217	0.00993137	17.008	0.0454922	-0.0164479
Repeat: 2	-0.00846531	0.00949198	10.9768	0.044965	-0.0160473
Repeat: 3	-0.00833812	0.00948417	9.80254	0.0456079	-0.0150663
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.000733036	-0.00214155	-9.11551e-005	0.0603705	2453.29
Std Dev:	0.000234074	0.00048956	4.64003e-005	0.00062948	6.48261
%RSD:	31.9321	22.8601	50.9026	1.0427	0.264242
Repeat: 1	0.000474088	-0.00183068	-3.78741e-005	0.0610219	2450.49
Repeat: 2	0.00079543	-0.0018881	-0.000122678	0.0597655	2460.7
Repeat: 3	0.000929591	-0.00270587	-0.000112913	0.0603239	2448.67
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	689877	15505			
Std Dev:	5903.96	49.8986			
%RSD:	0.855799	0.321823			
Repeat: 1	688328	15475.6			
Repeat: 2	696401	15562.6			
Repeat: 3	684902	15476.7			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.79116	-13.3804	1.63292	1.8364	0.504883
Std Dev:	0.317327	5.42049	1.99112	1.12637	0.0998833
%RSD:	40.1092	40.5105	121.936	61.3357	19.7835
Repeat: 1	-0.936521	-8.60259	-0.569266	1.2947	0.513029
Repeat: 2	-1.00977	-19.2709	2.16187	1.08322	0.401176
Repeat: 3	-0.42719	-12.2678	3.30615	3.13127	0.600443
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	-0.000974075	0.0274098	0.138735	-0.229788	0.623045
Std Dev:	0.039241	0.0012887	0.0472254	0.169666	0.405515
%RSD:	4028.54	4.7016	34.0401	73.8359	65.0861
Repeat: 1	-0.0219046	0.0277426	0.0878285	-0.319759	0.944043
Repeat: 2	0.0442948	0.0259873	0.181119	-0.0340859	0.757778
Repeat: 3	-0.0253124	0.0284994	0.147257	-0.335517	0.167312
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	-0.443257	-8.23853	0.0922269	-3.77242	-0.00355909
Std Dev:	0.147622	6.06003	0.00543271	3.30705	0.0255372
%RSD:	33.3039	73.5572	5.89059	87.664	717.521
Repeat: 1	-0.294805	-6.43267	0.0903248	-4.3998	0.0228545
Repeat: 2	-0.590035	-3.28671	0.0983549	-6.72084	-0.00541296
Repeat: 3	-0.44493	-14.9962	0.0880011	-0.196611	-0.0281188
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	0.164415	0.722979	0.0108843	-0.17805	1.05202
Std Dev:	0.0107548	0.125835	0.0166992	0.225962	0.507631
%RSD:	6.54125	17.4051	153.424	126.91	48.2531

Repeat: 1	0.156482	0.806588	-0.00282129	-0.0061515	0.516103
Repeat: 2	0.176656	0.784089	0.0294836	-0.43399	1.52561
Repeat: 3	0.160107	0.578259	0.00599061	-0.0940072	1.11434
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-2.98979	-0.0102567	109.753	30.4919	0.0793345
Std Dev:	0.580807	0.574388	69.0134	0.22333	0.333115
%RSD:	19.4264	5600.14	62.8808	0.732423	419.886
Repeat: 1	-2.32557	0.652913	188.518	30.5811	-0.199078
Repeat: 2	-3.40221	-0.333095	80.8524	30.2378	-0.0113078
Repeat: 3	-3.24159	-0.350588	59.8877	30.6569	0.448389
QC Status Pass/Fail:	Pass	Pass	Fail	Fail	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	-0.166022	-0.415318	-0.281854	5.04351	2453.29
Std Dev:	0.935206	0.623349	0.904463	0.0561298	6.48261
%RSD:	563.302	150.09	320.897	1.11291	0.264242
Repeat: 1	-1.20057	-0.0188547	0.757149	5.10157	2450.49
Repeat: 2	0.0831358	-0.093284	-0.893052	4.98953	2460.7
Repeat: 3	0.619372	-1.13382	-0.70966	5.03944	2448.67
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	689877	15505			
Std Dev:	5903.96	49.8986			
%RSD:	0.855799	0.321823			
Repeat: 1	688328	15475.6			
Repeat: 2	696401	15562.6			
Repeat: 3	684902	15476.7			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2453.29	689877	15505
Std Dev:	6.48261	5903.96	49.8986
%RSD:	0.264242	0.855799	0.321823
Repeat: 1	2450.49	688328	15475.6
Repeat: 2	2460.7	696401	15562.6
Repeat: 3	2448.67	684902	15476.7

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6H29015-BS1	9/14/2016 2:04:02PM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.0130768	0.0872247	0.10332	0.0160395	33.299
Std Dev:	5.42898e-006	0.00146957	0.00064756	6.2003e-005	0.0380522
%RSD:	0.041516	1.68481	0.626751	0.386564	0.114274
Repeat: 1	0.0130804	0.0855936	0.104056	0.0159792	33.2554
Repeat: 2	0.0130706	0.0876349	0.102836	0.0160362	33.3161
Repeat: 3	0.0130796	0.0884456	0.103068	0.0161031	33.3255

Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	0.13202	0.465046	3.76529	4.23655	0.00940208
Std Dev:	0.000869381	0.00161008	0.00971278	0.00483826	3.08324e-005
%RSD:	0.658524	0.34622	0.257955	0.114203	0.327932
Repeat: 1	0.131025	0.464216	3.75441	4.23303	0.00939126
Repeat: 2	0.132399	0.464021	3.77309	4.23456	0.00937812
Repeat: 3	0.132635	0.466902	3.76838	4.24207	0.00943686
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.0243648	0.0215965	0.0931158	0.00541525	0.0152777
Std Dev:	2.7145e-005	0.000507712	0.000284348	0.000113404	0.000167736
%RSD:	0.111411	2.35089	0.30537	2.09416	1.09791
Repeat: 1	0.0243389	0.0213051	0.0928203	0.00528821	0.0152179
Repeat: 2	0.0243624	0.0213018	0.0933875	0.00545128	0.0151481
Repeat: 3	0.024393	0.0221828	0.0931397	0.00550627	0.0154672
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.174301	4.1145	0.206953	2.38548	0.500094
Std Dev:	0.000721909	0.012882	0.00206055	0.0015073	0.00370826
%RSD:	0.414173	0.313088	0.99566	0.0631866	0.741513
Repeat: 1	0.173748	4.10852	0.205826	2.38378	0.50276
Repeat: 2	0.174038	4.1057	0.205701	2.38663	0.501661
Repeat: 3	0.175118	4.12929	0.209331	2.38604	0.495859
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	0.203641	0.117768	17.2239	1.59601	2.12245
Std Dev:	0.000367098	0.000688715	0.622025	0.00314415	0.0213828
%RSD:	0.180267	0.584805	3.61142	0.197001	1.00746
Repeat: 1	0.203625	0.11782	16.8905	1.59386	2.1069
Repeat: 2	0.203282	0.117055	16.8396	1.59455	2.11361
Repeat: 3	0.204015	0.11843	17.9415	1.59962	2.14684
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.253946	0.19722	0.0250952	5.71236	2387.52
Std Dev:	0.00107285	0.00109025	6.1322e-005	0.0188467	5.36488
%RSD:	0.422473	0.552812	0.244358	0.329929	0.224705
Repeat: 1	0.25349	0.198379	0.0251067	5.70924	2388.18
Repeat: 2	0.253177	0.196215	0.0250289	5.69526	2392.52
Repeat: 3	0.255171	0.197064	0.02515	5.73257	2381.85
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	662370	15047.8			
Std Dev:	5491.72	62.8805			
%RSD:	0.829102	0.417872			
Repeat: 1	668570	14985.2			
Repeat: 2	660424	15111			
Repeat: 3	658116	15047.1			

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	231.402	2031.8	250.186	948.514	1970.87
Std Dev:	0.103884	35.1748	1.50121	3.69002	2.25205
%RSD:	0.0448935	1.73122	0.600036	0.389032	0.114267
Repeat: 1	231.467	1992.72	251.893	944.928	1968.29
Repeat: 2	231.282	2041.73	249.07	948.315	1971.88
Repeat: 3	231.456	2060.93	249.596	952.3	1972.44
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677

Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	49.3283	5.25564	128.98	504.052	195.554
Std Dev:	0.323825	0.0182117	0.335108	0.575424	0.657204
%RSD:	0.65647	0.346518	0.259814	0.11416	0.336072
Repeat: 1	48.9583	5.24624	128.605	503.632	195.324
Repeat: 2	49.4661	5.24405	129.25	503.816	195.043
Repeat: 3	49.5603	5.27663	129.086	504.708	196.296
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	248.513	1002.01	4.97762	956.222	4.9743
Std Dev:	0.285937	23.5205	0.0136196	19.8263	0.0545038
%RSD:	0.115059	2.34734	0.273616	2.0734	1.09571
Repeat: 1	248.241	988.501	4.96346	934.012	4.95484
Repeat: 2	248.487	988.351	4.99063	962.522	4.93219
Repeat: 3	248.811	1029.16	4.97876	972.134	5.03586
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	491.617	1016.08	5.25835	508.193	249.116
Std Dev:	2.03637	3.18089	0.053232	0.324775	1.79519
%RSD:	0.414218	0.313057	1.01233	0.0639078	0.720624
Repeat: 1	490.056	1014.6	5.22925	507.825	250.404
Repeat: 2	490.874	1013.9	5.22601	508.439	249.879
Repeat: 3	493.92	1019.73	5.31979	508.314	247.065
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	240.344	242.743	192.592	1041.4	1002.09
Std Dev:	0.417404	1.54562	11.1092	2.04978	10.0205
%RSD:	0.173669	0.63673	5.76827	0.19683	0.999956
Repeat: 1	240.328	242.861	186.638	1040	994.809
Repeat: 2	239.935	241.142	185.728	1040.45	997.954
Repeat: 3	240.77	244.226	205.409	1043.75	1013.52
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1009.65	256.795	490.499	509.514	2387.52
Std Dev:	4.27741	1.39257	1.19549	1.68368	5.36488
%RSD:	0.423654	0.54229	0.24373	0.330448	0.224705
Repeat: 1	1007.83	258.271	490.721	509.238	2388.18
Repeat: 2	1006.58	255.505	489.209	507.985	2392.52
Repeat: 3	1014.53	256.608	491.569	511.319	2381.85
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	662370	15047.8			
Std Dev:	5491.72	62.8805			
%RSD:	0.829102	0.417872			
Repeat: 1	668570	14985.2			
Repeat: 2	660424	15111			
Repeat: 3	658116	15047.1			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	Sc1880	Sc3613	Sc3613-2
Avg. of Repeats:	2387.52	662370	15047.8
Std Dev:	5.36488	5491.72	62.8805
%RSD:	0.224705	0.829102	0.417872
Repeat: 1	2388.18	668570	14985.2
Repeat: 2	2392.52	660424	15111
Repeat: 3	2381.85	658116	15047.1

Sample Name	Acquisition Date	Sample type	Correction Factor
1608232-16	9/14/2016 2:08:19PM	Unknown	1.00

Valid	Analyst Name	Method Name
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.000367797	16.6033	0.00464711	0.000415806	33.2524
Std Dev:	1.77723e-005	0.0403592	0.000803462	1.39212e-005	0.0254223
%RSD:	4.8321	0.24308	17.2895	3.34801	0.0764525
Repeat: 1	0.000356786	16.5618	0.00541838	0.000401365	33.2565
Repeat: 2	0.0003883	16.6424	0.00470802	0.000429142	33.2251
Repeat: 3	0.000358306	16.6058	0.00381492	0.00041691	33.2755
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	-0.000162408	1.06428	0.324402	0.94155	0.0218651
Std Dev:	0.000440413	0.00270412	0.00224447	0.00292419	0.000388249
%RSD:	271.177	0.25408	0.691878	0.310572	1.77566
Repeat: 1	-0.000506231	1.062	0.326909	0.941326	0.0216824
Repeat: 2	-0.000315	1.06726	0.323719	0.938744	0.0216019
Repeat: 3	0.000334007	1.06356	0.322579	0.944579	0.022311
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.0117292	4.07688	0.301009	0.00124691	0.107721
Std Dev:	0.000182094	0.0112535	0.00231534	1.86993e-005	0.000378167
%RSD:	1.55248	0.276032	0.769194	1.49965	0.351062
Repeat: 1	0.0116198	4.08203	0.303192	0.00126641	0.107425
Repeat: 2	0.0116285	4.08464	0.301254	0.00122913	0.108147
Repeat: 3	0.0119394	4.06398	0.298581	0.00124519	0.107591
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	1.49267	0.00267145	0.0499081	1.07018	0.143355
Std Dev:	0.0129016	0.000229522	0.000683882	0.00234762	0.00127011
%RSD:	0.864329	8.59167	1.37028	0.219367	0.885993
Repeat: 1	1.50011	0.0029183	0.0506815	1.07034	0.142242
Repeat: 2	1.47777	0.00246449	0.0493833	1.06775	0.144739
Repeat: 3	1.50013	0.00263154	0.0496595	1.07244	0.143084
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	0.00398543	0.0191534	6157.16	0.0378791	0.413446
Std Dev:	0.00210908	0.000120164	13.4486	0.000502956	0.00137029
%RSD:	52.9199	0.627374	0.218422	1.32779	0.331431
Repeat: 1	0.00489486	0.0190618	6141.72	0.0377076	0.414844
Repeat: 2	0.0015742	0.019109	6166.34	0.0384454	0.41339
Repeat: 3	0.00548722	0.0192895	6163.42	0.0374844	0.412105
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	2.01931	-0.0127129	0.0217503	5.80385	2289.48
Std Dev:	0.00505248	0.00202065	0.000340884	0.0174773	4.56662

%RSD:	0.250209	15.8945	1.56726	0.301134	0.199461
Repeat: 1	2.01655	-0.0129541	0.0215556	5.80747	2290.67
Repeat: 2	2.02514	-0.0146021	0.0215514	5.78485	2284.44
Repeat: 3	2.01623	-0.0105825	0.0221439	5.81924	2293.34
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	655383	15079			
Std Dev:	9230.76	33.6968			
%RSD:	1.40845	0.223468			
Repeat: 1	658563	15059.3			
Repeat: 2	662604	15059.8			
Repeat: 3	644983	15117.9			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-1.18612	398390	37.378	34.0671	1966.96
Std Dev:	0.316715	968.468	1.87127	0.831519	1.52521
%RSD:	26.7018	0.243095	5.00633	2.44083	0.0775413
Repeat: 1	-1.40679	397393	39.1571	33.225	1967.2
Repeat: 2	-0.823222	399327	37.5506	34.8876	1965.34
Repeat: 3	-1.32834	398449	35.4265	34.0888	1968.36
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	7.06381	12.0336	0.025281	90.4535	457.091
Std Dev:	0.155107	0.0305864	0.0745909	0.394657	8.29705
%RSD:	2.19579	0.254176	295.048	0.43631	1.81519
Repeat: 1	6.92776	12.0078	0.111396	90.4411	453.172
Repeat: 2	7.03097	12.0674	-0.0191718	90.0651	451.479
Repeat: 3	7.23271	12.0255	-0.0163813	90.8542	466.621
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	127.687	188794	14.9352	226.434	35.0689
Std Dev:	1.88205	520.947	0.110899	3.27226	0.122872
%RSD:	1.47396	0.275934	0.742536	1.44513	0.350372
Repeat: 1	126.543	189033	15.0398	229.846	34.973
Repeat: 2	126.658	189153	14.9469	223.321	35.2074
Repeat: 3	129.859	188197	14.8189	226.136	35.0264
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	4207.27	3.10271	1.20126	223.719	159.1
Std Dev:	36.4088	0.0570995	0.0176674	0.513439	0.832479
%RSD:	0.865377	1.84031	1.47073	0.229502	0.523243
Repeat: 1	4228.25	3.16579	1.22124	223.754	158.328
Repeat: 2	4165.23	3.05454	1.18771	223.189	159.982
Repeat: 3	4228.34	3.08781	1.19484	224.214	158.991
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-5.04146	1.04807	109840	25.5103	201.104
Std Dev:	2.32343	0.265757	240.044	0.329087	0.642297
%RSD:	46.0865	25.3568	0.218538	1.29002	0.319385

Repeat: 1	-3.90455	0.865782	109565	25.3994	201.76
Repeat: 2	-7.71442	0.925426	110004	25.8805	201.077
Repeat: 3	-3.50542	1.353	109952	25.2509	200.476
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	8051.61	-0.847892	427.448	514.512	2289.48
Std Dev:	20.1539	2.54139	6.70593	1.5349	4.56662
%RSD:	0.250308	299.73	1.56883	0.298322	0.199461
Repeat: 1	8040.62	-1.20574	423.644	514.821	2290.67
Repeat: 2	8074.87	-3.19139	423.509	512.846	2284.44
Repeat: 3	8039.34	1.85345	435.191	515.869	2293.34
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	655383	15079			
Std Dev:	9230.76	33.6968			
%RSD:	1.40845	0.223468			
Repeat: 1	658563	15059.3			
Repeat: 2	662604	15059.8			
Repeat: 3	644983	15117.9			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2289.48	655383	15079
Std Dev:	4.56662	9230.76	33.6968
%RSD:	0.199461	1.40845	0.223468
Repeat: 1	2290.67	658563	15059.3
Repeat: 2	2284.44	662604	15059.8
Repeat: 3	2293.34	644983	15117.9

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6H29015-MS1	9/14/2016 2:12:43PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.0133373	10.9399	0.110164	0.0157309	51.6449
Std Dev:	0.000168884	0.0364877	0.000804268	0.000211756	0.157861
%RSD:	1.26626	0.333529	0.730064	1.34611	0.305667
Repeat: 1	0.0135321	10.9072	0.111041	0.0159741	51.4719
Repeat: 2	0.0132324	10.9793	0.10946	0.0155869	51.6817
Repeat: 3	0.0132473	10.9332	0.109992	0.0156317	51.7811
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.144262	1.81752	4.0552	4.8738	0.0238705
Std Dev:	0.000564497	0.00541674	0.0130297	0.0140799	0.000319653
%RSD:	0.3913	0.298029	0.321309	0.28889	1.33911
Repeat: 1	0.143764	1.81423	4.041	4.86149	0.0242385
Repeat: 2	0.144875	1.82377	4.05798	4.87076	0.023662
Repeat: 3	0.144147	1.81456	4.06661	4.88916	0.0237111
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0351669	2.70627	0.372505	0.00759068	0.0879014

Std Dev:	0.00045902	0.0137239	0.00194831	9.97804e-005	0.000333104
%RSD:	1.30526	0.507114	0.52303	1.31451	0.378952
Repeat: 1	0.0356858	2.69377	0.372301	0.00770589	0.0879545
Repeat: 2	0.0348138	2.72096	0.374548	0.00753393	0.0882047
Repeat: 3	0.0350011	2.7041	0.370667	0.00753221	0.0875449
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	1.31291	3.75727	0.256676	3.11651	0.691171
Std Dev:	0.0172367	0.00313881	0.00261288	0.0104739	0.00246331
%RSD:	1.31286	0.0835398	1.01797	0.336077	0.356397
Repeat: 1	1.33178	3.75483	0.255348	3.1058	0.688406
Repeat: 2	1.30894	3.75615	0.259686	3.11698	0.691977
Repeat: 3	1.298	3.76081	0.254994	3.12673	0.693131
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.0439319	0.122711	5467.03	1.35786	2.48918
Std Dev:	0.00316646	0.000889438	27.3114	0.00343871	0.012594
%RSD:	7.20765	0.724823	0.499565	0.253245	0.50595
Repeat: 1	0.0429416	0.121684	5496.86	1.35393	2.47993
Repeat: 2	0.041379	0.123241	5443.25	1.36034	2.50352
Repeat: 3	0.0474752	0.123208	5460.99	1.35931	2.48408
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	1.19256	0.190567	0.0399494	12.6456	2310.53
Std Dev:	0.00333689	0.0011537	0.000537487	0.0221601	10.2083
%RSD:	0.27981	0.605403	1.34542	0.175239	0.441817
Repeat: 1	1.19054	0.191304	0.0405632	12.6211	2320.53
Repeat: 2	1.19641	0.189238	0.0395626	12.6513	2310.93
Repeat: 3	1.19072	0.19116	0.0397226	12.6644	2300.12
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	649543	14898.1			
Std Dev:	7715.64	100.025			
%RSD:	1.18786	0.671397			
Repeat: 1	640652	14983.7			
Repeat: 2	653498	14788.2			
Repeat: 3	654479	14922.4			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	237.044	262438	274.721	939.549	3057.13
Std Dev:	3.12226	875.477	1.82844	12.5634	9.30982
%RSD:	1.31717	0.333594	0.66556	1.33717	0.304528
Repeat: 1	240.646	261654	276.719	953.978	3046.93
Repeat: 2	235.099	263382	273.131	931.035	3059.28
Repeat: 3	235.388	262278	274.313	933.634	3065.18
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	57.2739	20.5535	132.421	569.956	501.328
Std Dev:	0.224615	0.061269	0.434693	1.68604	6.8168
%RSD:	0.392177	0.298095	0.328265	0.295818	1.35975
Repeat: 1	57.077	20.5164	131.958	568.514	509.175
Repeat: 2	57.5186	20.6243	132.485	569.546	496.865
Repeat: 3	57.2262	20.52	132.821	571.81	497.944
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**

Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	368.416	125328	18.3597	1336.08	28.6137
Std Dev:	4.78231	635.323	0.0933194	17.4493	0.108291
%RSD:	1.29808	0.506928	0.508284	1.306	0.37846
Repeat: 1	373.825	124749	18.3499	1356.23	28.6307
Repeat: 2	364.751	126008	18.4575	1326.15	28.7125
Repeat: 3	366.67	125227	18.2716	1325.86	28.4979
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	3701.46	929.475	6.5429	664.498	397.444
Std Dev:	48.6411	0.774947	0.067501	2.2412	1.32397
%RSD:	1.3141	0.0833747	1.03167	0.337276	0.333122
Repeat: 1	3754.73	928.87	6.50859	662.212	395.927
Repeat: 2	3690.25	929.207	6.62066	664.592	398.035
Repeat: 3	3659.4	930.349	6.49944	666.691	398.369
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	44.8386	240.089	97506.8	886.05	1173.75
Std Dev:	3.70945	1.97898	487.416	2.24468	5.90118
%RSD:	8.27288	0.824267	0.49988	0.253336	0.502762
Repeat: 1	43.5211	237.804	98039.1	883.487	1169.42
Repeat: 2	41.9678	241.232	97082.3	887.667	1180.47
Repeat: 3	49.027	241.232	97398.9	886.995	1171.36
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	4753.04	252.96	782.545	1126.57	2310.53
Std Dev:	13.3102	1.46049	10.516	2.02315	10.2083
%RSD:	0.280037	0.57736	1.34382	0.179585	0.441817
Repeat: 1	4745.01	253.886	794.555	1124.34	2320.53
Repeat: 2	4768.4	251.276	774.985	1127.09	2310.93
Repeat: 3	4745.7	253.717	778.097	1128.28	2300.12
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	649543	14898.1			
Std Dev:	7715.64	100.025			
%RSD:	1.18786	0.671397			
Repeat: 1	640652	14983.7			
Repeat: 2	653498	14788.2			
Repeat: 3	654479	14922.4			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2310.53	649543	14898.1
Std Dev:	10.2083	7715.64	100.025
%RSD:	0.441817	1.18786	0.671397
Repeat: 1	2320.53	640652	14983.7
Repeat: 2	2310.93	653498	14788.2
Repeat: 3	2300.12	654479	14922.4

Sample Name	Acquisition Date	Sample type	Correction Factor
6H29015-MSD1	9/14/2016 2:17:08PM	Unknown	1.00

Valid	Analyst Name	Method Name
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.0135509	12.4134	0.113645	0.0155717	53.9051
Std Dev:	0.000160793	0.0192517	0.000995028	0.000108246	0.1119
%RSD:	1.18658	0.155088	0.875558	0.695145	0.207586
Repeat: 1	0.0135038	12.3924	0.112668	0.0155333	53.8847
Repeat: 2	0.01373	12.4303	0.11361	0.0156939	53.8048
Repeat: 3	0.013419	12.4174	0.114657	0.0154879	54.0258
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	0.148705	1.57807	4.15463	4.98989	0.0256047
Std Dev:	0.000480157	0.00155092	0.00991192	0.0106249	0.000290876
%RSD:	0.322892	0.0982798	0.238575	0.212929	1.13603
Repeat: 1	0.149229	1.57629	4.15057	4.98256	0.0254786
Repeat: 2	0.148599	1.57879	4.14739	4.98504	0.0259373
Repeat: 3	0.148287	1.57912	4.16593	5.00208	0.0253981
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.0357888	3.17329	0.3681	0.00779419	0.0936436
Std Dev:	0.000310704	0.00741289	0.000785144	9.12778e-005	0.000600136
%RSD:	0.868161	0.233603	0.213297	1.1711	0.640873
Repeat: 1	0.0357095	3.1806	0.368009	0.00781274	0.0936775
Repeat: 2	0.0361314	3.17349	0.368926	0.00787476	0.094226
Repeat: 3	0.0355254	3.16578	0.367364	0.00769506	0.0930271
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	1.4542	3.78094	0.260372	3.21245	0.702546
Std Dev:	0.0113992	0.00975266	0.000855915	0.00800933	0.00388722
%RSD:	0.783877	0.257943	0.328728	0.249321	0.553306
Repeat: 1	1.46612	3.77342	0.260835	3.2083	0.706478
Repeat: 2	1.4434	3.77745	0.259384	3.20737	0.698705
Repeat: 3	1.45309	3.79196	0.260896	3.22168	0.702454
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	0.0405884	0.125336	5795.52	1.36295	2.50875
Std Dev:	0.000656346	0.000591252	13.3457	0.00272633	0.0060944
%RSD:	1.61708	0.471733	0.230276	0.200032	0.242926
Repeat: 1	0.0413378	0.125274	5783.19	1.36195	2.51449
Repeat: 2	0.0401159	0.124778	5793.67	1.36086	2.50942
Repeat: 3	0.0403115	0.125956	5809.69	1.36603	2.50235
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	1.21778	0.194441	0.042906	12.2981	2313.53
Std Dev:	0.0012291	0.00145619	0.000498318	0.0471797	4.05035
%RSD:	0.10093	0.748909	1.16142	0.383635	0.175072
Repeat: 1	1.21715	0.193114	0.0427239	12.2513	2309.34
Repeat: 2	1.21699	0.19421	0.0434698	12.2973	2313.83
Repeat: 3	1.2192	0.195999	0.0425244	12.3456	2317.43
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	652900	14913.6			
Std Dev:	6207.82	45.7151			
%RSD:	0.950808	0.306532			
Repeat: 1	651631	14874			

Repeat: 2	647424	14903.3
Repeat: 3	659644	14963.6

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	241.115	297801	283.985	931.712	3191.01
Std Dev:	2.97797	461.942	2.29347	6.45075	6.59477
%RSD:	1.23508	0.155118	0.807601	0.692355	0.206667
Repeat: 1	240.234	297298	281.731	929.454	3189.78
Repeat: 2	244.434	298207	283.909	938.988	3185.11
Repeat: 3	238.676	297898	286.316	926.693	3198.13
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	58.9894	17.8451	134.815	583.108	537.951
Std Dev:	0.174475	0.0175425	0.352504	1.27347	6.23157
%RSD:	0.295774	0.0983048	0.261473	0.218393	1.15839
Repeat: 1	59.1825	17.8249	134.666	582.224	535.234
Repeat: 2	58.9426	17.8532	134.561	582.532	545.08
Repeat: 3	58.8431	17.857	135.217	584.567	533.54
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	375.754	146955	18.1487	1371.7	30.4892
Std Dev:	3.2565	343.327	0.0376065	15.9582	0.194894
%RSD:	0.866658	0.233628	0.207213	1.16339	0.639222
Repeat: 1	374.936	147293	18.1443	1374.94	30.5004
Repeat: 2	379.341	146964	18.1882	1385.79	30.6783
Repeat: 3	372.984	146607	18.1134	1354.37	30.289
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	4099.66	935.56	6.63837	684.968	410.419
Std Dev:	32.1587	2.40423	0.0221116	1.72428	1.7817
%RSD:	0.784423	0.256983	0.333088	0.251732	0.434117
Repeat: 1	4133.27	933.705	6.65034	684.075	412.207
Repeat: 2	4069.18	934.7	6.61286	683.873	408.644
Repeat: 3	4096.54	938.276	6.65192	686.955	410.407
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	39.6726	244.005	103375	889.353	1182.96
Std Dev:	0.833049	1.32977	238.165	1.77953	2.85626
%RSD:	2.09981	0.544975	0.230389	0.200092	0.24145
Repeat: 1	40.5879	243.863	103155	888.703	1185.65
Repeat: 2	38.9587	242.752	103343	887.991	1183.27
Repeat: 3	39.4713	245.4	103628	891.367	1179.96
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	4853.65	257.552	840.762	1095.09	2313.53
Std Dev:	4.91327	1.87409	9.73919	4.2353	4.05035
%RSD:	0.101228	0.727657	1.15838	0.386753	0.175072

Repeat: 1	4851.14	255.819	837.213	1090.88	2309.34
Repeat: 2	4850.49	257.296	851.777	1095.04	2313.83
Repeat: 3	4859.31	259.541	833.294	1099.35	2317.43
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	652900	14913.6
Std Dev:	6207.82	45.7151
%RSD:	0.950808	0.306532
Repeat: 1	651631	14874
Repeat: 2	647424	14903.3
Repeat: 3	659644	14963.6
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2313.53	652900	14913.6
Std Dev:	4.05035	6207.82	45.7151
%RSD:	0.175072	0.950808	0.306532
Repeat: 1	2309.34	651631	14874
Repeat: 2	2313.83	647424	14903.3
Repeat: 3	2317.43	659644	14963.6

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6H29015-PS1	9/14/2016 2:21:34PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.0134824	16.533	0.114349	0.0167409	66.5723
Std Dev:	6.8948e-005	0.0099205	0.000936917	0.000123605	0.184443
%RSD:	0.511392	0.0600043	0.819348	0.738344	0.277057
Repeat: 1	0.0134252	16.5222	0.114229	0.0166981	66.6709
Repeat: 2	0.013559	16.5351	0.113478	0.0168802	66.3595
Repeat: 3	0.013463	16.5417	0.11534	0.0166444	66.6865
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.131298	1.49961	4.1126	5.14259	0.0310899
Std Dev:	0.000329984	0.00126588	0.00820577	0.00993813	0.000226065
%RSD:	0.251324	0.0844138	0.199528	0.193251	0.727133
Repeat: 1	0.131164	1.49827	4.12075	5.15009	0.0308718
Repeat: 2	0.131674	1.50078	4.10434	5.13132	0.0313231
Repeat: 3	0.131057	1.49977	4.1127	5.14637	0.0310747
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0367872	4.10415	0.410414	0.0078505	0.121832
Std Dev:	0.000317898	0.0117476	0.00200416	7.66203e-005	0.000229136
%RSD:	0.864155	0.286238	0.488326	0.975992	0.188075
Repeat: 1	0.0365644	4.11694	0.412706	0.00780629	0.121572
Repeat: 2	0.0371512	4.10168	0.409545	0.00793897	0.121923
Repeat: 3	0.0366459	4.09384	0.408992	0.00780624	0.122003
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	1.65508	4.0611	0.264723	3.38957	0.643842
Std Dev:	0.0158327	0.00483261	0.00108865	0.00976927	0.00163636
%RSD:	0.956613	0.118998	0.411242	0.288216	0.254156

Repeat: 1	1.66411	4.06667	0.265557	3.3976	0.644266
Repeat: 2	1.66434	4.05814	0.263492	3.37869	0.642035
Repeat: 3	1.6368	4.05848	0.265121	3.3924	0.645225
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.21377	0.130768	6127.19	1.57521	2.47554
Std Dev:	0.000764693	0.000640909	19.2773	0.00225915	0.00966222
%RSD:	0.357717	0.49011	0.314619	0.143419	0.390308
Repeat: 1	0.213936	0.131477	6105.69	1.57745	2.48657
Repeat: 2	0.212936	0.130229	6132.93	1.57293	2.47143
Repeat: 3	0.214438	0.130599	6142.94	1.57525	2.4686
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	2.26673	0.18451	0.046786	11.7033	2312.17
Std Dev:	0.00125322	0.00083438	0.000290313	0.0137697	5.71323
%RSD:	0.0552875	0.452213	0.620512	0.117657	0.247093
Repeat: 1	2.26802	0.184462	0.0465434	11.7187	2312.42
Repeat: 2	2.26665	0.183701	0.0471076	11.6924	2317.76
Repeat: 3	2.26552	0.185368	0.0467069	11.6986	2306.34
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	654678	15007.7			
Std Dev:	5818.8	43.9159			
%RSD:	0.888804	0.292622			
Repeat: 1	657068	14957.4			
Repeat: 2	648045	15027.6			
Repeat: 3	658922	15038.2			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	240.302	396660	289.095	1004.59	3940.81
Std Dev:	1.28167	238.108	2.16471	7.3598	10.8982
%RSD:	0.533359	0.0600282	0.748788	0.732617	0.276548
Repeat: 1	239.235	396401	288.831	1002.09	3946.62
Repeat: 2	241.724	396710	287.073	1012.88	3928.23
Repeat: 3	239.947	396869	291.379	998.81	3947.56
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	56.4736	16.9576	131.048	592.582	653.929
Std Dev:	0.120615	0.0143184	0.272679	1.18236	4.83567
%RSD:	0.213578	0.0844363	0.208076	0.199527	0.739479
Repeat: 1	56.4308	16.9424	131.31	593.456	649.245
Repeat: 2	56.6097	16.9709	130.766	591.237	658.904
Repeat: 3	56.3802	16.9595	131.067	593.054	653.638
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	390.329	190060	20.1754	1381.38	39.6634
Std Dev:	3.32359	544.102	0.0959943	13.3951	0.0740844
%RSD:	0.851486	0.286279	0.475798	0.96969	0.186782
Repeat: 1	388.019	190652	20.2852	1373.65	39.5792
Repeat: 2	394.138	189946	20.1338	1396.85	39.6927
Repeat: 3	388.828	189582	20.1073	1373.64	39.7185
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**

Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	4665.49	1005.19	6.75079	722.828	403.202
Std Dev:	44.6632	1.19824	0.0281242	2.09452	0.810542
%RSD:	0.957308	0.119205	0.416606	0.289767	0.201026
Repeat: 1	4690.94	1006.58	6.77232	724.552	403.336
Repeat: 2	4691.61	1004.46	6.71897	720.497	402.332
Repeat: 3	4613.92	1004.54	6.76107	723.435	403.937
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	235.914	251.774	109306	1027.73	1167.41
Std Dev:	0.969507	1.43305	344.009	1.47436	4.52822
%RSD:	0.410958	0.569182	0.314722	0.143458	0.387887
Repeat: 1	236.201	253.352	108922	1029.19	1172.58
Repeat: 2	234.833	250.553	109408	1026.24	1165.48
Repeat: 3	236.708	251.418	109587	1027.75	1164.16
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	9038.35	253.601	915.33	1041.13	2312.17
Std Dev:	5.00406	1.07848	5.68591	1.22514	5.71323
%RSD:	0.0553647	0.425266	0.621187	0.117674	0.247093
Repeat: 1	9043.51	253.513	910.585	1042.5	2312.42
Repeat: 2	9038.01	252.568	921.633	1040.13	2317.76
Repeat: 3	9033.52	254.72	913.773	1040.76	2306.34
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	654678	15007.7			
Std Dev:	5818.8	43.9159			
%RSD:	0.888804	0.292622			
Repeat: 1	657068	14957.4			
Repeat: 2	648045	15027.6			
Repeat: 3	658922	15038.2			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2312.17	654678	15007.7
Std Dev:	5.71323	5818.8	43.9159
%RSD:	0.247093	0.888804	0.292622
Repeat: 1	2312.42	657068	14957.4
Repeat: 2	2317.76	648045	15027.6
Repeat: 3	2306.34	658922	15038.2

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6H29015-SRL1@5X	9/14/2016 2:25:59PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000456048	3.51195	-0.00314062	0.000185833	6.69743
Std Dev:	1.83781e-005	0.0114978	0.000774879	1.20485e-005	0.0257464

%RSD:	4.02985	0.327391	24.6728	6.48351	0.384422
Repeat: 1	0.000436061	3.50052	-0.00305839	0.000189981	6.68797
Repeat: 2	0.000472217	3.51181	-0.00395333	0.00019526	6.67774
Repeat: 3	0.000459867	3.52352	-0.00241013	0.000172259	6.72656
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.000629477	0.230247	0.0923223	0.209432	0.00477623
Std Dev:	0.000102427	0.000228818	0.000772079	0.000938381	1.8215e-005
%RSD:	16.2718	0.0993796	0.836286	0.44806	0.381367
Repeat: 1	0.000734051	0.230081	0.0925164	0.20839	0.00479379
Repeat: 2	0.00052934	0.230152	0.0914717	0.210209	0.00475743
Repeat: 3	0.000625039	0.230508	0.0929789	0.209698	0.00477748
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00285972	0.844166	0.0537608	0.000210452	0.0232391
Std Dev:	1.87001e-005	0.00275753	0.00140467	1.63746e-005	1.93711e-005
%RSD:	0.653913	0.326657	2.61281	7.7807	0.0833554
Repeat: 1	0.0028797	0.84131	0.0527111	0.000228767	0.0232411
Repeat: 2	0.0028568	0.844374	0.0532149	0.000205364	0.0232575
Repeat: 3	0.00284265	0.846814	0.0553565	0.000197225	0.0232189
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.323455	0.00214771	0.0135735	0.239871	0.0248149
Std Dev:	0.00196399	0.000714641	0.00101757	0.000403765	0.00158734
%RSD:	0.607192	33.2746	7.49676	0.168326	6.39675
Repeat: 1	0.322562	0.00160919	0.012427	0.239407	0.0231612
Repeat: 2	0.322095	0.00187547	0.0143695	0.240144	0.024957
Repeat: 3	0.325707	0.00295846	0.013924	0.240061	0.0263264
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00499668	0.0113446	1280.39	0.00704752	0.0749736
Std Dev:	0.000982131	0.000569586	11.9861	0.000139071	0.000781449
%RSD:	19.6557	5.02074	0.936134	1.97334	1.0423
Repeat: 1	-0.00526784	0.0107071	1292.31	0.00719974	0.0745624
Repeat: 2	-0.00390746	0.0118033	1280.51	0.0069271	0.0744837
Repeat: 3	-0.00581474	0.0115235	1268.34	0.00701573	0.0758748
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.415775	-0.00258541	0.00440723	1.20235	2455.8
Std Dev:	0.00132801	0.00027424	5.05145e-005	0.00377725	10.9585
%RSD:	0.319406	10.6072	1.14617	0.314157	0.446231
Repeat: 1	0.414633	-0.00229652	0.0044592	1.2014	2448.13
Repeat: 2	0.41546	-0.00261756	0.00435831	1.19913	2468.35
Repeat: 3	0.417232	-0.00284216	0.0044042	1.2065	2450.92
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	672249	15474.5			
Std Dev:	4001.49	85.1348			
%RSD:	0.59524	0.550163			
Repeat: 1	668609	15562.8			
Repeat: 2	676534	15467.8			
Repeat: 3	671604	15392.9			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.779391	84253.8	8.7547	9.02424	394.779
Std Dev:	0.331203	275.904	1.7986	0.710057	1.52396
%RSD:	42.4951	0.327468	20.5444	7.86833	0.38603
Repeat: 1	-1.13961	83979.6	8.93622	9.26142	394.224

Repeat: 2	-0.488036	84250.4	6.87222	9.58535	393.611
Repeat: 3	-0.710524	84531.4	10.4557	8.22595	396.503
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	1.45189	2.59981	-0.115192	18.6517	95.9356
Std Dev:	0.0360687	0.00258818	0.0259821	0.105118	0.389812
%RSD:	2.48425	0.0995525	22.5554	0.563584	0.406326
Repeat: 1	1.48586	2.59793	-0.101539	18.5387	96.3143
Repeat: 2	1.41404	2.59874	-0.145155	18.7466	95.5356
Repeat: 3	1.45578	2.60276	-0.0988829	18.6698	95.9569
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	25.5032	39091.2	3.09261	45.7114	7.56559
Std Dev:	0.188336	127.702	0.0672802	2.86343	0.00625183
%RSD:	0.738478	0.326678	2.17552	6.26414	0.0826351
Repeat: 1	25.7051	38958.9	3.04233	48.9142	7.56615
Repeat: 2	25.4722	39100.8	3.06646	44.8212	7.57155
Repeat: 3	25.3323	39213.8	3.16904	43.3988	7.55908
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	911.617	1.15382	0.262598	46.1868	34.4084
Std Dev:	5.53928	0.17776	0.0262879	0.086013	0.831249
%RSD:	0.607632	15.4062	10.0107	0.186228	2.41583
Repeat: 1	909.102	1.01955	0.23298	46.088	33.545
Repeat: 2	907.781	1.0865	0.283162	46.2448	34.4768
Repeat: 3	917.968	1.35541	0.271653	46.2277	35.2033
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-2.71639	-0.470257	22750.2	5.49322	42.61
Std Dev:	1.14462	1.26863	213.942	0.0904303	0.366181
%RSD:	42.1374	269.774	0.940396	1.64622	0.859377
Repeat: 1	-3.03609	-1.88704	22963	5.59221	42.4173
Repeat: 2	-1.44591	0.56057	22752.4	5.41494	42.3804
Repeat: 3	-3.66717	-0.0842983	22535.2	5.47251	43.0323
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1655.35	1.66093	87.8424	106.27	2455.8
Std Dev:	5.29871	0.344777	0.985214	0.333758	10.9585
%RSD:	0.320096	20.7581	1.12157	0.314065	0.446231
Repeat: 1	1650.8	2.02559	88.8557	106.189	2448.13
Repeat: 2	1654.1	1.61695	86.8879	105.985	2468.35
Repeat: 3	1661.17	1.34025	87.7836	106.637	2450.92
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	672249	15474.5			
Std Dev:	4001.49	85.1348			
%RSD:	0.59524	0.550163			

Repeat: 1	668609	15562.8
Repeat: 2	676534	15467.8
Repeat: 3	671604	15392.9
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2455.8	672249	15474.5
Std Dev:	10.9585	4001.49	85.1348
%RSD:	0.446231	0.59524	0.550163
Repeat: 1	2448.13	668609	15562.8
Repeat: 2	2468.35	676534	15467.8
Repeat: 3	2450.92	671604	15392.9

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608232-17@2X	9/14/2016 2:30:21PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000501743	2.53019	-0.0011605	0.000386068	6.71115
Std Dev:	3.67282e-005	0.00400935	0.000848111	1.28585e-005	0.0181671
%RSD:	7.32011	0.15846	73.0816	3.33064	0.270701
Repeat: 1	0.000484113	2.53259	-0.000746196	0.000373498	6.72343
Repeat: 2	0.000543963	2.52556	-0.00213613	0.000399197	6.69028
Repeat: 3	0.000477155	2.53243	-0.000599173	0.000385507	6.71973
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00332263	1.98969	0.131388	0.194452	0.00431622
Std Dev:	8.3731e-005	0.00187176	0.00150295	0.00111483	3.55253e-005
%RSD:	2.52002	0.0940729	1.14391	0.573317	0.823066
Repeat: 1	0.0034143	1.99147	0.131962	0.194921	0.00427528
Repeat: 2	0.00325018	1.98774	0.129682	0.19318	0.00433898
Repeat: 3	0.00330341	1.98984	0.132519	0.195257	0.0043344
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00491954	0.89479	0.0798692	0.000222582	0.0267558
Std Dev:	2.50755e-005	0.00319714	0.00103785	1.42786e-005	0.000161007
%RSD:	0.509712	0.357306	1.29944	6.415	0.601766
Repeat: 1	0.00489092	0.894152	0.0810519	0.000208073	0.0269046
Repeat: 2	0.00493003	0.891961	0.0791106	0.000223054	0.0267779
Repeat: 3	0.00493767	0.898259	0.0794449	0.000236618	0.0265848
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.888145	0.00358854	0.0156915	0.204833	0.16724
Std Dev:	0.00502511	0.00098965	0.000419423	0.000820221	0.000543117
%RSD:	0.565798	27.5781	2.67293	0.400433	0.324753
Repeat: 1	0.891695	0.00245482	0.0161684	0.205286	0.166967
Repeat: 2	0.882395	0.00403123	0.01538	0.203887	0.166888
Repeat: 3	0.890346	0.00427957	0.0155262	0.205328	0.167865
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00475049	0.0117875	2255.41	0.0162211	0.453799
Std Dev:	0.00128419	0.000464665	12.6385	0.000492322	0.00246703
%RSD:	27.0328	3.94201	0.560362	3.03508	0.543639
Repeat: 1	-0.00568362	0.0112746	2243.54	0.0160187	0.452182
Repeat: 2	-0.00528196	0.0119075	2268.7	0.0158622	0.452577

Repeat: 3	-0.00328588	0.0121805	2253.99	0.0167823	0.456639
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.240022	-0.0014314	0.00417818	2.36355	2444.17
Std Dev:	0.00027214	0.00142035	4.83855e-005	0.00781272	9.97014
%RSD:	0.113381	99.2279	1.15805	0.33055	0.407915
Repeat: 1	0.239975	0.000136167	0.00412622	2.36092	2444.39
Repeat: 2	0.239777	-0.00263284	0.00418636	2.3574	2454.03
Repeat: 3	0.240315	-0.00179752	0.00422195	2.37234	2434.09
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	675407	15325.1			
Std Dev:	2300.6	60.6707			
%RSD:	0.340625	0.395892			
Repeat: 1	678061	15272.5			
Repeat: 2	674188	15391.5			
Repeat: 3	673972	15311.3			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.187642	60655.3	12.9384	21.1162	395.567
Std Dev:	0.672255	96.1758	1.97058	0.761339	1.074
%RSD:	358.265	0.158561	15.2305	3.60547	0.271508
Repeat: 1	-0.514856	60712.7	13.899	20.3656	396.291
Repeat: 2	0.585575	60544.2	10.6717	21.8878	394.333
Repeat: 3	-0.633644	60708.9	14.2445	21.0952	396.077
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	1.78679	22.5009	1.26277	18.1085	85.2825
Std Dev:	0.0314686	0.0211715	0.0467709	0.128233	0.764851
%RSD:	1.76119	0.0940919	3.70385	0.708135	0.896844
Repeat: 1	1.82095	22.5211	1.2832	18.1651	84.4017
Repeat: 2	1.75898	22.4789	1.20926	17.9617	85.7794
Repeat: 3	1.78043	22.5027	1.29585	18.1987	85.6663
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	46.7367	41442.5	4.34313	47.587	8.7084
Std Dev:	0.264623	148.083	0.0497107	2.49623	0.0522066
%RSD:	0.5662	0.357322	1.14458	5.24562	0.599497
Repeat: 1	46.4358	41413	4.39979	45.0504	8.75668
Repeat: 2	46.8411	41311.4	4.3068	47.6696	8.71552
Repeat: 3	46.9332	41603.1	4.32281	50.0408	8.653
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	2504.84	1.56257	0.317316	38.7911	98.1735
Std Dev:	14.1762	0.245014	0.0108354	0.176357	0.272935
%RSD:	0.565951	15.6802	3.41469	0.454634	0.278013
Repeat: 1	2514.86	1.28215	0.329636	38.889	98.0525
Repeat: 2	2488.62	1.67028	0.309268	38.5875	97.982
Repeat: 3	2511.05	1.73528	0.313044	38.8968	98.4861
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**

Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-2.16678	0.526827	40156.3	11.4753	219.876
Std Dev:	1.47385	1.04525	225.601	0.320834	1.15614
%RSD:	68.0201	198.405	0.561807	2.79587	0.525814
Repeat: 1	-3.2265	-0.630949	39944.4	11.3436	219.117
Repeat: 2	-2.79018	0.810398	40393.5	11.2412	219.303
Repeat: 3	-0.483677	1.40103	40131	11.841	221.206
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	953.615	0.441326	84.2405	208.873	2444.17
Std Dev:	1.08709	1.80165	0.946654	0.691603	9.97014
%RSD:	0.113997	408.235	1.12375	0.331112	0.407915
Repeat: 1	953.423	2.4311	83.2249	208.63	2444.39
Repeat: 2	952.637	-1.07944	84.3982	208.336	2454.03
Repeat: 3	954.786	-0.0276788	85.0984	209.653	2434.09
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	675407	15325.1			
Std Dev:	2300.6	60.6707			
%RSD:	0.340625	0.395892			
Repeat: 1	678061	15272.5			
Repeat: 2	674188	15391.5			
Repeat: 3	673972	15311.3			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2444.17	675407	15325.1
Std Dev:	9.97014	2300.6	60.6707
%RSD:	0.407915	0.340625	0.395892
Repeat: 1	2444.39	678061	15272.5
Repeat: 2	2454.03	674188	15391.5
Repeat: 3	2434.09	673972	15311.3

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608232-18@2X	9/14/2016 2:34:50PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000480591	2.49858	-0.000693423	0.000528831	6.66568
Std Dev:	4.12317e-005	0.00393715	0.000753628	9.03875e-006	0.0241975
%RSD:	8.57938	0.157575	108.682	1.70919	0.363017
Repeat: 1	0.000475143	2.49471	0.000111798	0.000533881	6.6556
Repeat: 2	0.000524275	2.50258	-0.000810256	0.000518396	6.64815
Repeat: 3	0.000442354	2.49846	-0.00138181	0.000534217	6.69328
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00238867	2.37924	0.315951	0.181849	0.00498257
Std Dev:	0.000335024	0.0015271	0.000708087	0.00136962	2.37871e-005
%RSD:	14.0256	0.0641844	0.224113	0.75316	0.477406
Repeat: 1	0.00276957	2.37748	0.316746	0.181429	0.0050084

Repeat: 2	0.00213968	2.37996	0.315389	0.180739	0.00496157
Repeat: 3	0.00225675	2.38027	0.315718	0.18338	0.00497774
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0393927	0.928792	0.0591738	0.000187776	0.0218297
Std Dev:	0.000124867	0.000797534	0.000734768	2.17915e-005	0.000265768
%RSD:	0.31698	0.0858678	1.24171	11.605	1.21746
Repeat: 1	0.039525	0.929041	0.0586628	0.000210822	0.022063
Repeat: 2	0.0392769	0.929436	0.0600159	0.000185001	0.0218858
Repeat: 3	0.0393762	0.9279	0.0588428	0.000167505	0.0215404
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.296625	0.0130036	0.0196674	0.254297	0.843403
Std Dev:	0.00080576	0.000405492	0.000813796	0.00138764	0.00404745
%RSD:	0.271642	3.1183	4.1378	0.545676	0.479896
Repeat: 1	0.29753	0.0132789	0.0200392	0.252879	0.84234
Repeat: 2	0.295985	0.012538	0.0187341	0.255652	0.839993
Repeat: 3	0.296361	0.013194	0.0202288	0.254361	0.847876
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.000963714	0.0104822	2494.88	0.0288594	0.39009
Std Dev:	0.00126311	0.00175367	8.11225	0.000534442	0.000373348
%RSD:	131.067	16.7299	0.325156	1.85188	0.0957081
Repeat: 1	-0.000163607	0.0115834	2486.15	0.0292557	0.390516
Repeat: 2	-0.00241986	0.00845995	2502.19	0.029071	0.38982
Repeat: 3	-0.00030768	0.0114034	2496.3	0.0282516	0.389935
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.219349	-0.00341861	0.00393544	10.3637	2436.87
Std Dev:	0.000669079	0.000377327	4.73631e-005	0.00841885	11.7171
%RSD:	0.30503	11.0374	1.2035	0.0812338	0.480827
Repeat: 1	0.218603	-0.0030131	0.00395881	10.3541	2444.39
Repeat: 2	0.219548	-0.00375937	0.00388093	10.3673	2442.86
Repeat: 3	0.219896	-0.00348337	0.00396657	10.3698	2423.37
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	670388	15307.8			
Std Dev:	1340.02	72.8365			
%RSD:	0.199886	0.475814			
Repeat: 1	670631	15233.9			
Repeat: 2	668944	15379.5			
Repeat: 3	671590	15310			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.414483	59888	14.0421	29.7307	392.851
Std Dev:	0.748782	94.4582	1.74517	0.535756	1.43458
%RSD:	180.655	0.157725	12.4281	1.80203	0.365171
Repeat: 1	-0.512417	59795.1	15.9056	30.0323	392.256
Repeat: 2	0.378448	59984	13.7744	29.1121	391.81
Repeat: 3	-1.10948	59885	12.4462	30.0477	394.488
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	1.36523	26.9071	7.577	16.7192	100.448
Std Dev:	0.121488	0.0172731	0.0254497	0.16237	0.507452
%RSD:	8.89873	0.0641951	0.335881	0.971158	0.505187
Repeat: 1	1.5032	26.8873	7.60516	16.6744	100.999

Repeat: 2	1.27427	26.9153	7.55565	16.584	99.9997
Repeat: 3	1.31822	26.9188	7.57018	16.8993	100.346
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	407.843	43009.4	3.35188	41.3453	7.11016
Std Dev:	1.30644	36.929	0.0351936	3.81069	0.0862897
%RSD:	0.320329	0.0858627	1.04997	9.21675	1.21361
Repeat: 1	409.228	43020.9	3.3274	45.3751	7.18589
Repeat: 2	406.632	43039.1	3.39221	40.8606	7.12837
Repeat: 3	407.67	42968	3.33603	37.8001	7.01622
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	835.831	4.09608	0.420028	49.1669	427.096
Std Dev:	2.27343	0.0998923	0.0210235	0.297786	1.9639
%RSD:	0.271996	2.43873	5.00527	0.605664	0.459827
Repeat: 1	838.383	4.164	0.429634	48.8622	426.557
Repeat: 2	834.023	3.98138	0.395917	49.4572	425.458
Repeat: 3	835.087	4.14285	0.434532	49.1813	429.273
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1.8483	-1.67295	44431.6	19.7168	189.961
Std Dev:	1.45393	3.93936	144.816	0.348553	0.175187
%RSD:	78.6632	235.475	0.325931	1.7678	0.0922225
Repeat: 1	2.76219	0.800672	44275.8	19.975	190.161
Repeat: 2	0.171714	-6.21574	44562.1	19.855	189.834
Repeat: 3	2.61099	0.396224	44456.8	19.3203	189.888
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	871.096	-1.24378	79.3036	925.294	2436.87
Std Dev:	2.67256	0.47646	0.923916	0.756785	11.7171
%RSD:	0.306804	38.3074	1.16504	0.0817886	0.480827
Repeat: 1	868.116	-0.734371	79.7659	924.429	2444.39
Repeat: 2	871.891	-1.67846	78.2398	925.618	2442.86
Repeat: 3	873.281	-1.31851	79.9051	925.835	2423.37
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	670388	15307.8
Std Dev:	1340.02	72.8365
%RSD:	0.199886	0.475814
Repeat: 1	670631	15233.9
Repeat: 2	668944	15379.5
Repeat: 3	671590	15310
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2436.87	670388	15307.8
Std Dev:	11.7171	1340.02	72.8365
%RSD:	0.480827	0.199886	0.475814

Repeat: 1	2444.39	670631	15233.9
Repeat: 2	2442.86	668944	15379.5
Repeat: 3	2423.37	671590	15310

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608232-19@2X	9/14/2016 2:39:10PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000408165	4.06892	-0.00323434	0.000261807	7.55299
Std Dev:	2.95786e-005	0.00735991	0.000220467	1.2475e-005	0.0225179
%RSD:	7.24674	0.180881	6.81645	4.76498	0.298133
Repeat: 1	0.000392944	4.0649	-0.00298764	0.000257143	7.55486
Repeat: 2	0.000442254	4.06445	-0.00330329	0.000275942	7.5296
Repeat: 3	0.000389295	4.07741	-0.0034121	0.000252336	7.57452
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00324303	0.682206	0.105145	0.233935	0.00675326
Std Dev:	9.33359e-005	0.00110757	0.00061853	0.00314925	3.0144e-005
%RSD:	2.87804	0.162352	0.588261	1.34621	0.446363
Repeat: 1	0.00322644	0.681348	0.105785	0.231892	0.00678578
Repeat: 2	0.00315911	0.683457	0.104551	0.232352	0.00672626
Repeat: 3	0.00334356	0.681815	0.1051	0.237562	0.00674772
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0040045	0.98535	0.0662581	0.000337979	0.0312187
Std Dev:	4.86837e-005	0.00290684	0.00140741	1.45935e-005	0.000172481
%RSD:	1.21573	0.295006	2.12413	4.31787	0.552493
Repeat: 1	0.00398152	0.982007	0.0667722	0.000346703	0.0310214
Repeat: 2	0.00406041	0.98677	0.0673362	0.000321131	0.031341
Repeat: 3	0.00397155	0.987275	0.0646659	0.000346102	0.0312937
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.235612	0.00615141	0.01944	0.285848	0.0692185
Std Dev:	0.00139644	0.000621008	0.000529234	0.00112007	0.00167478
%RSD:	0.592687	10.0954	2.7224	0.39184	2.41955
Repeat: 1	0.234664	0.00653313	0.0189143	0.286974	0.0681155
Repeat: 2	0.237216	0.00543485	0.019433	0.285837	0.0711457
Repeat: 3	0.234957	0.00648627	0.0199727	0.284734	0.0683943
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00265208	0.0115627	2846.9	0.0191431	0.180332
Std Dev:	0.000987577	0.000741684	4.50917	0.000159447	0.000711384
%RSD:	37.2379	6.41446	0.158389	0.832921	0.394485
Repeat: 1	-0.00333833	0.0107871	2842.87	0.0189861	0.179675
Repeat: 2	-0.00152022	0.011636	2846.07	0.0193049	0.180233
Repeat: 3	-0.00309768	0.012265	2851.77	0.0191384	0.181088
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.427353	-0.00357522	0.00629543	1.88562	2447.63
Std Dev:	0.00098398	0.00133137	1.63157e-005	0.00742727	11.0018
%RSD:	0.23025	37.2387	0.259167	0.393891	0.449489
Repeat: 1	0.426815	-0.00229986	0.00631345	1.88254	2450.04
Repeat: 2	0.426756	-0.00495629	0.00629116	1.88022	2457.23
Repeat: 3	0.428489	-0.00346951	0.00628166	1.89409	2435.62
Element/Wavelength	**Sc3613**	**Sc3613-2**			

Avg. of Repeats:	678708	15312.5
Std Dev:	3585.73	29.4064
%RSD:	0.528316	0.192042
Repeat: 1	680300	15282
Repeat: 2	674602	15314.9
Repeat: 3	681223	15340.6

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-1.47574	97609.5	8.93633	14.0489	445.514
Std Dev:	0.538933	176.623	0.503927	0.745222	1.33256
%RSD:	36.5196	0.180948	5.63908	5.30449	0.299107
Repeat: 1	-1.75155	97513.1	9.50059	13.7603	445.627
Repeat: 2	-0.85472	97502.1	8.77728	14.8953	444.129
Repeat: 3	-1.82094	97813.4	8.53111	13.4911	446.787
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	2.44718	7.71195	-0.0293998	21.3315	138.26
Std Dev:	0.0381305	0.0125278	0.0260036	0.367259	0.64794
%RSD:	1.55814	0.162447	88.4482	1.72168	0.468641
Repeat: 1	2.43886	7.70224	-0.000786813	21.0952	138.959
Repeat: 2	2.41389	7.72609	-0.0515905	21.1446	137.679
Repeat: 3	2.48878	7.70752	-0.0358222	21.7546	138.141
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	37.7498	45627.6	3.6912	67.8996	10.1594
Std Dev:	0.510218	134.604	0.0674115	2.55171	0.0560587
%RSD:	1.35158	0.295006	1.82628	3.75806	0.551793
Repeat: 1	37.5022	45472.7	3.71582	69.4259	10.0952
Repeat: 2	38.3366	45693.3	3.74284	64.9538	10.1991
Repeat: 3	37.4106	45716.7	3.61494	69.3191	10.1838
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	663.624	2.23676	0.414153	55.9686	58.9033
Std Dev:	3.93855	0.152749	0.0136722	0.241448	0.795474
%RSD:	0.593491	6.82901	3.30124	0.4314	1.35047
Repeat: 1	660.952	2.32926	0.400572	56.2113	58.3485
Repeat: 2	668.147	2.06045	0.413974	55.966	59.8147
Repeat: 3	661.773	2.32057	0.427914	55.7285	58.5466
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-1.11623	-0.53248	50716.2	13.3703	91.9166
Std Dev:	1.15411	1.65663	80.5197	0.104013	0.333364
%RSD:	103.393	311.116	0.158765	0.777945	0.362681
Repeat: 1	-1.92262	-2.2655	50644.2	13.2678	91.609
Repeat: 2	0.205799	-0.367315	50701.3	13.4757	91.87
Repeat: 3	-1.63187	1.03538	50803.2	13.3672	92.2708
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**

Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1701.3	0.607238	124.953	167.544	2447.63
Std Dev:	3.9252	1.70308	0.321176	0.666473	11.0018
%RSD:	0.230717	280.464	0.257037	0.39779	0.449489
Repeat: 1	1699.16	2.23383	125.308	167.271	2450.04
Repeat: 2	1698.92	-1.16321	124.868	167.057	2457.23
Repeat: 3	1705.83	0.751096	124.682	168.303	2435.62
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	678708	15312.5
Std Dev:	3585.73	29.4064
%RSD:	0.528316	0.192042
Repeat: 1	680300	15282
Repeat: 2	674602	15314.9
Repeat: 3	681223	15340.6
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2447.63	678708	15312.5
Std Dev:	11.0018	3585.73	29.4064
%RSD:	0.449489	0.528316	0.192042
Repeat: 1	2450.04	680300	15282
Repeat: 2	2457.23	674602	15314.9
Repeat: 3	2435.62	681223	15340.6

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608232-20@2X	9/14/2016 2:43:29PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000487134	2.41725	0.0102215	0.000865386	7.2853
Std Dev:	1.22026e-005	0.00748381	0.000538942	8.76545e-007	0.0208977
%RSD:	2.50498	0.309599	5.27262	0.10129	0.286847
Repeat: 1	0.000490834	2.40862	0.0107626	0.000865919	7.26656
Repeat: 2	0.000473509	2.42181	0.0102172	0.000865865	7.2815
Repeat: 3	0.000497058	2.42133	0.00968476	0.000864374	7.30784
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00315047	1.96476	0.335295	0.187112	0.00513169
Std Dev:	7.73845e-005	0.00378444	0.00163847	0.00268115	3.9774e-005
%RSD:	2.45628	0.192616	0.488666	1.43291	0.775066
Repeat: 1	0.00310385	1.96048	0.334609	0.189992	0.00508948
Repeat: 2	0.0032398	1.96765	0.334111	0.186656	0.00513712
Repeat: 3	0.00310777	1.96615	0.337165	0.184688	0.00516848
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0402906	1.6535	0.0434282	0.000220442	0.0199782
Std Dev:	0.000203855	0.00929274	0.00143013	1.33801e-005	6.44802e-005
%RSD:	0.505961	0.562005	3.2931	6.06969	0.322753
Repeat: 1	0.0400858	1.64531	0.0433488	0.000220082	0.0199293
Repeat: 2	0.0402927	1.6636	0.0448965	0.000207245	0.0200513
Repeat: 3	0.0404935	1.65159	0.0420395	0.000233998	0.019954

Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.734229	0.0089288	0.0187534	0.245969	0.999642
Std Dev:	0.00580848	0.00018853	0.000563394	0.000836377	0.00269715
%RSD:	0.7911	2.11148	3.00422	0.340033	0.269812
Repeat: 1	0.733351	0.00903876	0.0190251	0.245009	0.998889
Repeat: 2	0.728909	0.00903654	0.0191295	0.246359	0.997401
Repeat: 3	0.740426	0.00871111	0.0181057	0.24654	1.00264
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	-0.000994758	0.0124336	2657.21	0.0304515	0.428963
Std Dev:	0.000734276	0.000809316	8.24422	0.00060695	0.00286909
%RSD:	73.8145	6.50912	0.310259	1.99317	0.668843
Repeat: 1	-0.000578403	0.0133357	2655.4	0.0298283	0.426914
Repeat: 2	-0.00184258	0.0117713	2650.02	0.0304856	0.432242
Repeat: 3	-0.000563289	0.0121937	2666.21	0.0310408	0.427732
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.250782	-0.00136032	0.0041297	12.0074	2454.05
Std Dev:	0.000342981	0.00136738	2.23346e-005	0.0132328	9.9787
%RSD:	0.136764	100.52	0.540828	0.110205	0.406621
Repeat: 1	0.250388	0.000216225	0.00410413	11.9965	2465.58
Repeat: 2	0.25101	-0.00222362	0.00413961	12.0221	2448.32
Repeat: 3	0.250949	-0.00207356	0.00414538	12.0036	2448.27
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	673050	15359.4			
Std Dev:	4610.36	77.1623			
%RSD:	0.684996	0.502377			
Repeat: 1	677167	15445.8			
Repeat: 2	673915	15297.3			
Repeat: 3	668069	15335.2			

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.466737	57944	40.4226	52.3189	429.376
Std Dev:	0.221354	179.497	1.2415	0.0653087	1.23782
%RSD:	47.4258	0.309777	3.07131	0.124828	0.288284
Repeat: 1	-0.400526	57736.9	41.6607	52.3206	428.267
Repeat: 2	-0.713641	58053.3	40.4295	52.3833	429.15
Repeat: 3	-0.286045	58041.8	39.1777	52.2527	430.712
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	1.76392	22.219	7.07864	16.2543	102.612
Std Dev:	0.0293474	0.042806	0.063164	0.328324	0.84377
%RSD:	1.66376	0.192656	0.892318	2.01992	0.822293
Repeat: 1	1.7454	22.1705	7.07044	16.6113	101.715
Repeat: 2	1.79776	22.2517	7.01997	16.1861	102.731
Repeat: 3	1.74861	22.2347	7.1455	15.9654	103.39
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	418.561	76571.6	2.5977	47.1366	6.52678
Std Dev:	2.14147	430.249	0.0684999	2.3409	0.0211557
%RSD:	0.511627	0.561891	2.63694	4.96619	0.324138
Repeat: 1	416.4	76192.3	2.5939	47.0755	6.5107

Repeat: 2	418.6	77039.1	2.66803	44.8269	6.55074
Repeat: 3	420.683	76483.2	2.53119	49.5075	6.51889
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	2069.79	3.5017	0.396416	47.1642	501.844
Std Dev:	16.3938	0.0476669	0.0145547	0.177542	1.32296
%RSD:	0.79205	1.36125	3.67156	0.376433	0.26362
Repeat: 1	2067.32	3.5243	0.403435	46.9611	501.44
Repeat: 2	2054.78	3.53386	0.406132	47.2413	500.77
Repeat: 3	2087.28	3.44693	0.379682	47.2902	503.322
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	0.82149	1.60712	47336.7	20.7537	208.24
Std Dev:	0.863313	1.82997	147.125	0.395627	1.34412
%RSD:	105.091	113.866	0.310806	1.9063	0.645466
Repeat: 1	1.33427	3.64858	47304.2	20.3474	207.281
Repeat: 2	-0.175239	0.114057	47208.4	20.7758	209.777
Repeat: 3	1.30544	1.05873	47497.3	21.1377	207.663
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	996.645	0.300653	83.9382	1071.34	2454.05
Std Dev:	1.36658	1.74644	0.447123	1.19075	9.9787
%RSD:	0.137118	580.884	0.532681	0.111147	0.406621
Repeat: 1	995.074	2.3146	83.4264	1070.36	2465.58
Repeat: 2	997.552	-0.79617	84.1352	1072.66	2448.32
Repeat: 3	997.311	-0.616473	84.2529	1070.98	2448.27
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	673050	15359.4			
Std Dev:	4610.36	77.1623			
%RSD:	0.684996	0.502377			
Repeat: 1	677167	15445.8			
Repeat: 2	673915	15297.3			
Repeat: 3	668069	15335.2			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2454.05	673050	15359.4
Std Dev:	9.9787	4610.36	77.1623
%RSD:	0.406621	0.684996	0.502377
Repeat: 1	2465.58	677167	15445.8
Repeat: 2	2448.32	673915	15297.3
Repeat: 3	2448.27	668069	15335.2

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608232-21@2X	9/14/2016 2:47:55PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.000459281	1.55164	0.00285692	0.000195655	2.52656
Std Dev:	1.32795e-006	0.00139894	0.000544548	1.33464e-005	0.00995036
%RSD:	0.289136	0.0901585	19.0606	6.82139	0.393831
Repeat: 1	0.000458379	1.55009	0.00306086	0.000197263	2.52129
Repeat: 2	0.000458659	1.55281	0.00223984	0.000208124	2.52034
Repeat: 3	0.000460806	1.55202	0.00327007	0.000181577	2.53803
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	0.000846514	0.306891	0.092432	0.143978	0.00389981
Std Dev:	2.1978e-005	0.000125851	0.00236132	0.00155534	1.53861e-005
%RSD:	2.5963	0.0410084	2.55465	1.08026	0.394534
Repeat: 1	0.000831596	0.306898	0.092651	0.143383	0.00391506
Repeat: 2	0.000836192	0.306761	0.0899689	0.142809	0.00390009
Repeat: 3	0.000871753	0.307013	0.0946763	0.145744	0.00388429
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.00325694	0.986668	0.0283214	7.38524e-005	0.00993288
Std Dev:	6.81174e-005	0.00396987	0.000678704	7.70542e-006	6.14298e-005
%RSD:	2.09146	0.402351	2.39644	10.4335	0.618449
Repeat: 1	0.00333442	0.991242	0.0290986	8.26615e-005	0.00994588
Repeat: 2	0.00322989	0.984121	0.0280198	7.05307e-005	0.00986598
Repeat: 3	0.0032065	0.984641	0.0278458	6.83649e-005	0.00998676
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.116922	0.0383912	0.00943609	0.129855	0.102683
Std Dev:	0.00106752	0.00174177	0.00139227	0.00172249	0.0015871
%RSD:	0.913025	4.53691	14.7547	1.32648	1.54563
Repeat: 1	0.118037	0.0371105	0.01095	0.128106	0.104197
Repeat: 2	0.116818	0.0403745	0.0082106	0.13155	0.101032
Repeat: 3	0.11591	0.0376885	0.00914769	0.129907	0.102822
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	-0.00306371	0.011181	1873.72	0.0205054	0.0709948
Std Dev:	0.000328431	0.000476754	10.519	0.00080624	0.00091163
%RSD:	10.7201	4.26396	0.561395	3.93184	1.28408
Repeat: 1	-0.00330627	0.0114317	1883.98	0.0214098	0.0719959
Repeat: 2	-0.00268996	0.0106312	1874.22	0.0202443	0.0702125
Repeat: 3	-0.00319489	0.0114801	1862.96	0.019862	0.0707759
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.256877	-0.00315555	0.00424594	1.06626	2478.4
Std Dev:	0.00046827	0.000613733	3.50522e-005	0.00279318	7.1618
%RSD:	0.182293	19.4493	0.825545	0.261961	0.288969
Repeat: 1	0.257045	-0.00262667	0.00427405	1.06851	2470.76
Repeat: 2	0.256348	-0.00301147	0.00425711	1.06313	2484.95
Repeat: 3	0.257238	-0.0038285	0.00420667	1.06713	2479.49
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	681654	15402.4			
Std Dev:	4094.63	70.1507			
%RSD:	0.60069	0.455453			
Repeat: 1	676926	15481.4			
Repeat: 2	684024	15347.3			
Repeat: 3	684012	15378.5			

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Units:	ppb	ppb	ppb	ppb	ppb

Avg. of Repeats:	-0.717537	37208.9	22.0429	10.1288	147.867
Std Dev:	0.0218653	33.5681	1.26506	0.79543	0.587062
%RSD:	3.04727	0.0902153	5.73907	7.85315	0.397022
Repeat: 1	-0.732359	37171.7	22.5226	10.2409	147.556
Repeat: 2	-0.727828	37237	20.6082	10.8622	147.5
Repeat: 3	-0.692425	37218.1	22.998	9.28327	148.544
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.934504	3.46674	0.024633	11.8521	77.5512
Std Dev:	0.00955078	0.00142351	0.0811046	0.184268	0.325938
%RSD:	1.02202	0.0410619	329.252	1.55473	0.420288
Repeat: 1	0.929377	3.46682	0.0249391	11.7737	77.8732
Repeat: 2	0.928611	3.46527	-0.0566243	11.72	77.5589
Repeat: 3	0.945523	3.46811	0.105584	12.0626	77.2214
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	29.539	45686.8	1.87412	21.7925	3.2497
Std Dev:	0.720367	183.832	0.0325083	1.34633	0.0199606
%RSD:	2.4387	0.402374	1.73458	6.17795	0.61423
Repeat: 1	30.359	45898.6	1.91135	23.3316	3.25402
Repeat: 2	29.2498	45568.9	1.85968	21.2125	3.22793
Repeat: 3	29.0082	45592.9	1.85134	20.8334	3.26714
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	328.737	10.1703	0.155713	22.3781	61.6821
Std Dev:	3.00848	0.428524	0.0359677	0.371762	0.761194
%RSD:	0.915165	4.2135	23.0987	1.66127	1.23406
Repeat: 1	331.88	9.85662	0.194823	22.0004	62.405
Repeat: 2	328.446	10.6585	0.124054	22.7436	60.8877
Repeat: 3	325.884	9.99567	0.148263	22.3904	61.7538
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-0.237167	1.08502	33343.5	14.2685	40.7338
Std Dev:	0.38679	1.06928	187.811	0.525524	0.427215
%RSD:	163.088	98.5486	0.563262	3.6831	1.0488
Repeat: 1	-0.532477	1.64377	33526.6	14.8581	41.203
Repeat: 2	0.200662	-0.14787	33352.5	14.0982	40.3672
Repeat: 3	-0.379685	1.75918	33151.3	13.8492	40.6312
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1021.55	-0.199129	84.9223	94.6467	2478.4
Std Dev:	1.86749	0.778382	0.687506	0.248692	7.1618
%RSD:	0.182809	390.894	0.809571	0.262758	0.288969
Repeat: 1	1022.22	0.472465	85.4756	94.8447	2470.76
Repeat: 2	1019.44	-0.0176249	85.1387	94.3676	2484.95
Repeat: 3	1022.99	-1.05223	84.1527	94.7279	2479.49
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			

Units:	----	----
Avg. of Repeats:	681654	15402.4
Std Dev:	4094.63	70.1507
%RSD:	0.60069	0.455453
Repeat: 1	676926	15481.4
Repeat: 2	684024	15347.3
Repeat: 3	684012	15378.5
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2478.4	681654	15402.4
Std Dev:	7.1618	4094.63	70.1507
%RSD:	0.288969	0.60069	0.455453
Repeat: 1	2470.76	676926	15481.4
Repeat: 2	2484.95	684024	15347.3
Repeat: 3	2479.49	684012	15378.5

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608232-22@2X	9/14/2016 2:52:14PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000573001	3.54678	0.0300366	0.00171737	22.7674
Std Dev:	2.31408e-005	0.00717799	0.000151087	2.74856e-005	0.0603367
%RSD:	4.03853	0.20238	0.50301	1.60045	0.265014
Repeat: 1	0.000572479	3.53954	0.0298644	0.0017146	22.7812
Repeat: 2	0.000550125	3.54691	0.0300981	0.00169137	22.7014
Repeat: 3	0.000596398	3.5539	0.0301472	0.00174613	22.8197
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00330838	11.2367	1.18821	0.361749	0.0112901
Std Dev:	0.000103689	0.0302167	0.00333991	0.000950027	9.0586e-005
%RSD:	3.13414	0.268911	0.281088	0.26262	0.802348
Repeat: 1	0.0032134	11.2049	1.18691	0.360863	0.0113777
Repeat: 2	0.00329275	11.24	1.18571	0.361631	0.0112957
Repeat: 3	0.003419	11.2651	1.192	0.362752	0.0111968
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.386598	2.71874	0.0856473	0.000363205	0.0507816
Std Dev:	0.00234726	0.0162669	0.000984133	2.45517e-005	0.000229916
%RSD:	0.607158	0.598324	1.14905	6.75973	0.452754
Repeat: 1	0.388087	2.71034	0.0846692	0.000374204	0.0507092
Repeat: 2	0.383892	2.7084	0.0856355	0.000335077	0.0505966
Repeat: 3	0.387815	2.73749	0.0866373	0.000380334	0.051039
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.639102	0.0424661	0.0277489	0.720573	5.1536
Std Dev:	0.00255502	0.00137454	0.000208637	0.00242092	0.00918213
%RSD:	0.399783	3.23679	0.751876	0.335972	0.178169
Repeat: 1	0.636236	0.0414316	0.0275585	0.718682	5.15351
Repeat: 2	0.639929	0.0440258	0.0277162	0.719735	5.14447
Repeat: 3	0.641142	0.0419409	0.0279719	0.723302	5.16283
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.0172352	0.0127483	2843.39	0.092318	1.57068

Std Dev:	0.00224653	0.000175751	19.7974	0.000390655	0.00658268
%RSD:	13.0346	1.37862	0.69626	0.423163	0.419098
Repeat: 1	0.0153623	0.0127194	2835.84	0.0923296	1.5678
Repeat: 2	0.0166171	0.0129367	2828.49	0.0919216	1.56602
Repeat: 3	0.019726	0.0125887	2865.86	0.0927026	1.57821
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.380783	-0.00192413	0.00594258	75.1949	2356.1
Std Dev:	0.00105252	0.00106981	1.85443e-005	0.165929	5.58872
%RSD:	0.276409	55.5997	0.312058	0.220666	0.237202
Repeat: 1	0.379764	-0.00079797	0.00596145	75.058	2354.72
Repeat: 2	0.380718	-0.00204753	0.00594191	75.1473	2362.25
Repeat: 3	0.381866	-0.00292689	0.00592438	75.3794	2351.33
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	660768	15106.2			
Std Dev:	1970.21	107.337			
%RSD:	0.29817	0.710544			
Repeat: 1	659682	15057.9			
Repeat: 2	663042	15031.5			
Repeat: 3	659581	15229.2			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	1.23232	84844	88.4314	106.737	1345.63
Std Dev:	0.420302	171.564	0.368214	1.68854	3.56799
%RSD:	34.1065	0.202211	0.416383	1.58196	0.265154
Repeat: 1	1.22577	84671	88.0167	106.543	1346.45
Repeat: 2	0.815334	84847.1	88.5573	105.153	1341.72
Repeat: 3	1.65586	85014	88.7202	108.514	1348.72
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	2.29476	127.094	34.1941	34.9299	233.825
Std Dev:	0.0424789	0.341782	0.0867128	0.0890895	1.94802
%RSD:	1.85112	0.26892	0.25359	0.255052	0.833108
Repeat: 1	2.25561	126.735	34.1659	34.8412	235.708
Repeat: 2	2.28875	127.132	34.1249	34.9292	233.95
Repeat: 3	2.33993	127.416	34.2914	35.0194	231.818
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	4048.17	125896	4.6199	70.0897	16.5523
Std Dev:	24.6012	753.232	0.0471376	4.29077	0.0750225
%RSD:	0.60771	0.598299	1.02032	6.12182	0.453246
Repeat: 1	4063.75	125506	4.57304	72.0191	16.5286
Repeat: 2	4019.81	125417	4.61933	65.1729	16.492
Repeat: 3	4060.96	126764	4.66731	73.077	16.6363
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1800.31	13.8515	0.628804	148.456	2527.24
Std Dev:	7.19831	0.336033	0.00538991	0.512562	4.46656
%RSD:	0.399837	2.42597	0.857169	0.345262	0.176737
Repeat: 1	1792.23	13.5886	0.623886	148.054	2527.16

Repeat: 2	1802.65	14.2301	0.627961	148.28	2522.81
Repeat: 3	1806.04	13.7358	0.634566	149.033	2531.75
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	17.5662	0.113988	50671.1	61.0814	741.889
Std Dev:	2.62666	0.409837	353.576	0.254748	3.08156
%RSD:	14.953	359.543	0.697785	0.417064	0.415366
Repeat: 1	15.3636	0.0681096	50536.2	61.0889	740.546
Repeat: 2	16.8616	0.544835	50404.9	60.823	739.707
Repeat: 3	20.4733	-0.270979	51072.3	61.3323	745.415
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1512.38	0.107258	120.874	6718.22	2356.1
Std Dev:	4.18918	1.37011	0.369217	14.8293	5.58872
%RSD:	0.276992	1277.4	0.305457	0.220732	0.237202
Repeat: 1	1508.33	1.54667	121.252	6705.96	2354.72
Repeat: 2	1512.12	-0.0438767	120.854	6714	2362.25
Repeat: 3	1516.69	-1.18102	120.515	6734.7	2351.33
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	660768	15106.2			
Std Dev:	1970.21	107.337			
%RSD:	0.29817	0.710544			
Repeat: 1	659682	15057.9			
Repeat: 2	663042	15031.5			
Repeat: 3	659581	15229.2			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2356.1	660768	15106.2
Std Dev:	5.58872	1970.21	107.337
%RSD:	0.237202	0.29817	0.710544
Repeat: 1	2354.72	659682	15057.9
Repeat: 2	2362.25	663042	15031.5
Repeat: 3	2351.33	659581	15229.2

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608232-23@2X	9/14/2016 2:56:40PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000471237	2.05331	0.00017212	0.000341496	5.75647
Std Dev:	4.3719e-005	0.00549139	0.00114646	1.24539e-005	0.0186882
%RSD:	9.2775	0.267441	666.081	3.64687	0.324647
Repeat: 1	0.000517005	2.05764	0.00144559	0.000330311	5.74442
Repeat: 2	0.000429905	2.05516	-0.000777787	0.000354916	5.74699
Repeat: 3	0.000466801	2.04713	-0.000151439	0.000339262	5.778
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**

Avg. of Repeats:	0.00208008	1.7029	0.364854	0.171573	0.00445632
Std Dev:	0.000215014	0.00207123	0.00115737	0.000799779	4.10574e-005
%RSD:	10.3368	0.121629	0.317216	0.466144	0.921329
Repeat: 1	0.00185578	1.70414	0.363535	0.171785	0.00449718
Repeat: 2	0.00228442	1.70405	0.365325	0.170689	0.00441506
Repeat: 3	0.00210002	1.70051	0.365701	0.172246	0.00445671
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0570058	1.03473	0.0440716	0.000165558	0.0174784
Std Dev:	0.000360855	0.00565298	0.00105227	2.0392e-005	5.01108e-005
%RSD:	0.633015	0.546323	2.38764	12.3171	0.286701
Repeat: 1	0.0574024	1.03653	0.0450772	0.000154526	0.0175276
Repeat: 2	0.0566969	1.03927	0.0429781	0.00018909	0.0174275
Repeat: 3	0.056918	1.0284	0.0441595	0.000153059	0.0174802
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.257794	0.00872739	0.0113172	0.286924	1.97614
Std Dev:	0.00167661	0.000276329	0.000568331	0.00215523	0.00865319
%RSD:	0.650368	3.16623	5.02182	0.751149	0.437883
Repeat: 1	0.25947	0.00904431	0.0118727	0.284658	1.97028
Repeat: 2	0.256117	0.00860102	0.0107368	0.287168	1.97207
Repeat: 3	0.257794	0.00853684	0.0113422	0.288948	1.98608
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.0010138	0.011694	2272.91	0.0333229	0.250218
Std Dev:	0.0013885	0.000695804	8.45007	0.000755203	0.00332233
%RSD:	136.961	5.95011	0.371772	2.26632	1.32777
Repeat: 1	0.0026171	0.0117904	2281.39	0.0324988	0.251959
Repeat: 2	0.000210651	0.0123366	2264.49	0.033488	0.252309
Repeat: 3	0.000213637	0.010955	2272.87	0.0339819	0.246387
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.220392	-0.00283215	0.00340888	10.1144	2470.37
Std Dev:	0.000392552	0.000930818	4.52171e-005	0.0081423	8.65911
%RSD:	0.178116	32.8661	1.32645	0.0805019	0.350519
Repeat: 1	0.220788	-0.00346618	0.00345008	10.1209	2480.13
Repeat: 2	0.220385	-0.00176352	0.0033605	10.1053	2467.39
Repeat: 3	0.220003	-0.00326676	0.00341604	10.1171	2463.59
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	682543	15366.9			
Std Dev:	8770.5	60.4218			
%RSD:	1.28497	0.393194			
Repeat: 1	673615	15352.4			
Repeat: 2	691147	15315			
Repeat: 3	682866	15433.3			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.625322	49217.2	16.0617	18.9583	338.972
Std Dev:	0.8012	131.724	2.65672	0.74889	1.10758
%RSD:	128.126	0.267638	16.5407	3.9502	0.326746
Repeat: 1	0.212855	49321	19.016	18.2994	338.261
Repeat: 2	-1.38355	49261.6	13.8689	19.7727	338.407
Repeat: 3	-0.705271	49069	15.3003	18.8027	340.249
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb

Avg. of Repeats:	1.25945	19.2571	9.2049	15.3542	89.2138
Std Dev:	0.079091	0.0234278	0.045531	0.102481	0.875795
%RSD:	6.2798	0.121658	0.494638	0.667445	0.981681
Repeat: 1	1.17759	19.2711	9.1559	15.3747	90.0838
Repeat: 2	1.33545	19.2701	9.21292	15.243	88.3323
Repeat: 3	1.26531	19.23	9.2459	15.4449	89.2254
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	592.53	47914.3	2.62852	37.5669	5.70022
Std Dev:	3.78019	261.748	0.0504012	3.56448	0.0162308
%RSD:	0.637974	0.546283	1.91747	9.48835	0.28474
Repeat: 1	596.689	47997.4	2.67668	35.6379	5.71623
Repeat: 2	589.303	48124.4	2.57615	41.6802	5.68378
Repeat: 3	591.6	47621.1	2.63273	35.3827	5.70063
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	726.16	3.08711	0.204311	56.1104	975.784
Std Dev:	4.73197	0.0695847	0.0146822	0.464079	4.18697
%RSD:	0.651643	2.25404	7.18622	0.827082	0.429088
Repeat: 1	730.888	3.16654	0.21866	55.6239	972.948
Repeat: 2	721.424	3.05787	0.189317	56.1591	973.811
Repeat: 3	726.167	3.03691	0.204956	56.5482	980.593
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	4.22022	1.45307	40470.2	22.6295	124.514
Std Dev:	1.58855	1.55329	150.832	0.492516	1.55665
%RSD:	37.6415	106.897	0.3727	2.17643	1.25018
Repeat: 1	6.05452	1.66188	40621.5	22.092	125.329
Repeat: 2	3.30526	2.89139	40319.8	22.7374	125.493
Repeat: 3	3.30087	-0.194055	40469.3	23.0592	122.719
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	875.503	-0.499829	69.0183	902.814	2470.37
Std Dev:	1.56526	1.18439	0.886043	0.719474	8.65911
%RSD:	0.178784	236.959	1.28378	0.0796924	0.350519
Repeat: 1	877.082	-1.30743	69.8289	903.381	2480.13
Repeat: 2	875.476	0.859801	68.0724	902.005	2467.39
Repeat: 3	873.952	-1.05185	69.1535	903.057	2463.59
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	682543	15366.9			
Std Dev:	8770.5	60.4218			
%RSD:	1.28497	0.393194			
Repeat: 1	673615	15352.4			
Repeat: 2	691147	15315			
Repeat: 3	682866	15433.3			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	Sc1880	Sc3613	Sc3613-2
Avg. of Repeats:	2470.37	682543	15366.9
Std Dev:	8.65911	8770.5	60.4218
%RSD:	0.350519	1.28497	0.393194
Repeat: 1	2480.13	673615	15352.4
Repeat: 2	2467.39	691147	15315
Repeat: 3	2463.59	682866	15433.3

Sample Name	Acquisition Date	Sample type	Correction Factor
1608251-01@2X	9/14/2016 3:00:58PM	Unknown	1.00

Valid	Analyst Name	Method Name
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.00239084	4.9138	0.365412	0.00220702	12.3046
Std Dev:	1.57969e-005	0.020366	0.000232524	4.41765e-005	0.0229714
%RSD:	0.660726	0.414466	0.0636333	2.00164	0.186689
Repeat: 1	0.00239996	4.89347	0.365487	0.0022376	12.2797
Repeat: 2	0.00239996	4.93421	0.365598	0.00222709	12.3092
Repeat: 3	0.0023726	4.91371	0.365151	0.00215637	12.325
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	-0.0150326	1.3461	1.28951	1.02717	0.0443226
Std Dev:	0.000198087	0.00235743	0.00302592	0.00319001	0.000416476
%RSD:	1.31772	0.175131	0.234657	0.310563	0.939647
Repeat: 1	-0.0150453	1.34448	1.29021	1.02485	0.0447892
Repeat: 2	-0.015224	1.3488	1.28619	1.02585	0.0441903
Repeat: 3	-0.0148285	1.34501	1.29212	1.03081	0.0439883
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.231434	5.67317	0.333283	0.0014138	0.11287
Std Dev:	0.00186784	0.0379255	0.00108479	8.96115e-006	0.000194122
%RSD:	0.807073	0.668505	0.325485	0.633833	0.171987
Repeat: 1	0.233222	5.62985	0.332077	0.00141202	0.112651
Repeat: 2	0.231584	5.70038	0.334178	0.00140587	0.112939
Repeat: 3	0.229496	5.68928	0.333594	0.00142352	0.113021
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.579885	0.0578743	0.98287	1.28914	2.85123
Std Dev:	0.0055553	0.00105066	0.00752539	0.00201528	0.00679881
%RSD:	0.957999	1.81542	0.765655	0.156327	0.238451
Repeat: 1	0.584435	0.0568057	0.974243	1.28682	2.84411
Repeat: 2	0.581527	0.058906	0.988085	1.29043	2.85194
Repeat: 3	0.573694	0.0579114	0.986283	1.29018	2.85765
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	0.0517179	0.0347244	3141.41	0.278719	0.728411
Std Dev:	0.00068166	0.000302911	22.0601	0.00113417	0.00692735
%RSD:	1.31804	0.872331	0.702235	0.406921	0.951023
Repeat: 1	0.0524976	0.0350142	3117.66	0.27984	0.720643
Repeat: 2	0.0514212	0.0344099	3161.26	0.277572	0.73395
Repeat: 3	0.0512348	0.034749	3145.31	0.278745	0.730638
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	3.30978	-0.0184398	0.029342	38.6802	2378.78
Std Dev:	0.015123	0.000737539	0.000320758	0.124129	4.74015
%RSD:	0.456919	3.99972	1.09317	0.320911	0.199268

Repeat: 1	3.29419	-0.0188897	0.029689	38.5678	2382.93
Repeat: 2	3.32438	-0.018841	0.0292804	38.6595	2373.61
Repeat: 3	3.31078	-0.0175886	0.0290564	38.8134	2379.78
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	669306	15384.8			
Std Dev:	6671.08	63.066			
%RSD:	0.996716	0.409924			
Repeat: 1	662549	15354.4			
Repeat: 2	669482	15342.7			
Repeat: 3	675887	15457.3			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	36.8484	117860	872.547	146.339	727.233
Std Dev:	0.308705	488.609	0.539056	2.56983	1.33039
%RSD:	0.837772	0.414567	0.0617796	1.75607	0.182939
Repeat: 1	37.0424	117373	872.633	148.008	725.793
Repeat: 2	37.0104	118350	873.037	147.63	727.491
Repeat: 3	36.4924	117858	871.97	143.38	728.416
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	6.36543	15.2212	33.1	89.2436	937.312
Std Dev:	0.0752035	0.026665	0.143218	0.366117	8.92017
%RSD:	1.18144	0.175183	0.432682	0.410245	0.951676
Repeat: 1	6.29904	15.2029	33.2008	89.1339	947.309
Repeat: 2	6.35017	15.2518	32.9361	88.9448	934.461
Repeat: 3	6.4471	15.209	33.1631	89.652	930.166
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	2435.24	262698	16.481	254.376	36.7796
Std Dev:	19.4996	1756.01	0.0519586	1.56851	0.063885
%RSD:	0.800723	0.668453	0.315263	0.61661	0.173697
Repeat: 1	2453.86	260692	16.4233	254.076	36.7074
Repeat: 2	2436.9	263958	16.5239	252.98	36.8026
Repeat: 3	2414.97	263444	16.4959	256.073	36.8288
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1630.22	18.3622	25.3033	269.755	1412.05
Std Dev:	15.6975	0.278326	0.19441	0.411914	3.34896
%RSD:	0.962905	1.51576	0.768319	0.152699	0.237171
Repeat: 1	1643.1	18.0745	25.0805	269.28	1408.5
Repeat: 2	1634.82	18.6301	25.4381	270.02	1412.47
Repeat: 3	1612.73	18.3819	25.3915	269.964	1415.16
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	34.6401	47.6794	56021.2	182.501	348.665
Std Dev:	0.639286	0.721162	394.179	0.738489	3.24613
%RSD:	1.84551	1.51252	0.703626	0.40465	0.931016
Repeat: 1	35.3764	48.3752	55596.8	183.23	345.026

Repeat: 2	34.3174	46.9353	56375.8	181.753	351.261
Repeat: 3	34.2264	47.7276	56090.9	182.519	349.71
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	13200.1	5.30272	576.682	3454.47	2378.78
Std Dev:	60.3369	0.945564	6.32232	11.1456	4.74015
%RSD:	0.457093	17.8317	1.09633	0.322644	0.199268
Repeat: 1	13137.9	4.62496	583.533	3444.37	2382.93
Repeat: 2	13258.4	4.90027	575.442	3452.6	2373.61
Repeat: 3	13204.1	6.38293	571.072	3466.43	2379.78
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	669306	15384.8
Std Dev:	6671.08	63.066
%RSD:	0.996716	0.409924
Repeat: 1	662549	15354.4
Repeat: 2	669482	15342.7
Repeat: 3	675887	15457.3
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2378.78	669306	15384.8
Std Dev:	4.74015	6671.08	63.066
%RSD:	0.199268	0.996716	0.409924
Repeat: 1	2382.93	662549	15354.4
Repeat: 2	2373.61	669482	15342.7
Repeat: 3	2379.78	675887	15457.3

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608251-02@2X	9/14/2016 3:05:22PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.00211132	5.01872	0.137015	0.00132136	11.294
Std Dev:	1.61406e-005	0.0207175	0.000624444	1.40555e-005	0.00284555
%RSD:	0.764478	0.412805	0.455748	1.06372	0.0251952
Repeat: 1	0.00211662	5.01211	0.137444	0.00133382	11.2911
Repeat: 2	0.0020932	5.00211	0.136299	0.00130612	11.2942
Repeat: 3	0.00212415	5.04193	0.137303	0.00132415	11.2968
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	-0.00711529	0.543377	0.462755	0.688759	0.0348648
Std Dev:	0.000384064	0.00113785	0.00187034	0.00155413	0.000510657
%RSD:	5.39773	0.209404	0.404174	0.225642	1.46468
Repeat: 1	-0.00731233	0.544199	0.460841	0.687318	0.0348114
Repeat: 2	-0.0066727	0.542078	0.462847	0.688553	0.034383
Repeat: 3	-0.00736085	0.543854	0.464578	0.690406	0.0354001
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.198055	5.75223	0.266606	0.00133692	0.0955403
Std Dev:	0.00237913	0.0261802	0.000615702	1.67214e-005	0.00051549

%RSD:	1.20124	0.45513	0.230941	1.25074	0.539552
Repeat: 1	0.197653	5.74636	0.266493	0.00132321	0.0958108
Repeat: 2	0.195903	5.72949	0.266055	0.00133201	0.0949458
Repeat: 3	0.20061	5.78085	0.267271	0.00135555	0.0958642
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.410308	0.0338375	0.378202	0.853675	2.51633
Std Dev:	0.0115555	0.00143114	0.0017504	0.000211145	0.00507805
%RSD:	2.8163	4.22945	0.462821	0.0247337	0.201804
Repeat: 1	0.404649	0.0327791	0.378319	0.853659	2.51233
Repeat: 2	0.402673	0.0332676	0.376396	0.853472	2.51462
Repeat: 3	0.423603	0.0354658	0.379891	0.853894	2.52204
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.0231902	0.0239231	3228.98	0.221062	0.237648
Std Dev:	0.00178335	0.000785804	19.7161	0.000358025	0.000506963
%RSD:	7.69012	3.2847	0.610598	0.161957	0.213325
Repeat: 1	0.021444	0.0231391	3208.98	0.221469	0.23713
Repeat: 2	0.0231179	0.0247107	3229.58	0.220917	0.23767
Repeat: 3	0.0250085	0.0239196	3248.4	0.220799	0.238143
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	2.19819	-0.011642	0.0255335	10.6012	2407.63
Std Dev:	0.00856788	0.000404649	0.000386267	0.0339142	3.04383
%RSD:	0.389769	3.47576	1.51279	0.319907	0.126424
Repeat: 1	2.19613	-0.0120037	0.0255544	10.5802	2409.96
Repeat: 2	2.19084	-0.011205	0.0251372	10.5832	2408.74
Repeat: 3	2.2076	-0.0117174	0.0259088	10.6404	2404.19
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	676404	15389.9			
Std Dev:	8999.17	112.44			
%RSD:	1.33044	0.730608			
Repeat: 1	678868	15278.5			
Repeat: 2	683914	15503.3			
Repeat: 3	666429	15388			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	31.2099	120396	342.681	93.9831	667.148
Std Dev:	0.323367	497.092	1.48041	0.886441	0.17655
%RSD:	1.0361	0.412883	0.432009	0.943192	0.0264634
Repeat: 1	31.31	120237	343.662	94.7038	666.978
Repeat: 2	30.8483	119997	340.979	92.9933	667.137
Repeat: 3	31.4713	120953	343.404	94.2523	667.33
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	5.13381	6.14164	4.32492	56.9328	735.886
Std Dev:	0.121204	0.0128703	0.050311	0.131686	10.8853
%RSD:	2.36089	0.209558	1.16328	0.231301	1.47921
Repeat: 1	5.05294	6.15094	4.26971	56.7823	734.755
Repeat: 2	5.27317	6.12695	4.36818	56.9892	725.61
Repeat: 3	5.07533	6.14704	4.33687	57.0269	747.293
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm

Avg. of Repeats:	2082.93	266356	13.2874	241.611	31.1558
Std Dev:	24.9863	1212.42	0.0294906	2.91962	0.167842
%RSD:	1.19958	0.455188	0.221945	1.2084	0.538719
Repeat: 1	2078.7	266084	13.282	239.214	31.2434
Repeat: 2	2060.33	265303	13.261	240.758	30.9622
Repeat: 3	2109.76	267682	13.3192	244.863	31.2616
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1151.67	11.7822	9.68238	176.041	1249.68
Std Dev:	32.578	0.366809	0.0452197	0.0406059	2.54066
%RSD:	2.82875	3.11326	0.46703	0.0230662	0.203305
Repeat: 1	1135.71	11.5174	9.68542	176.037	1247.7
Repeat: 2	1130.16	11.6282	9.63572	176.002	1248.78
Repeat: 3	1189.16	12.2009	9.72601	176.083	1252.54
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	7.30932	22.8703	57585.3	144.927	118.798
Std Dev:	1.90009	1.77603	352.131	0.233671	0.237613
%RSD:	25.9955	7.76569	0.611495	0.161234	0.200015
Repeat: 1	5.32162	21.1282	57228	145.192	118.555
Repeat: 2	7.49871	24.6784	57595.7	144.834	118.808
Repeat: 3	9.10762	22.8042	57932.1	144.753	119.03
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	8765.59	3.59221	503.699	943.597	2407.63
Std Dev:	34.1756	0.485081	7.61486	2.97161	3.04383
%RSD:	0.389884	13.5037	1.51179	0.314924	0.126424
Repeat: 1	8757.36	3.12838	504.091	941.736	2409.96
Repeat: 2	8736.28	4.09606	495.896	942.031	2408.74
Repeat: 3	8803.13	3.55217	511.11	947.024	2404.19
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	676404	15389.9			
Std Dev:	8999.17	112.44			
%RSD:	1.33044	0.730608			
Repeat: 1	678868	15278.5			
Repeat: 2	683914	15503.3			
Repeat: 3	666429	15388			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2407.63	676404	15389.9
Std Dev:	3.04383	8999.17	112.44
%RSD:	0.126424	1.33044	0.730608
Repeat: 1	2409.96	678868	15278.5
Repeat: 2	2408.74	683914	15503.3
Repeat: 3	2404.19	666429	15388

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**

6I25804-CCV4 9/14/2016 3:18:48PM QC 1.00

Valid	Analyst Name	Method Name
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.0264221	0.419792	0.445447	0.0177082	16.1026
Std Dev:	3.67096e-005	0.00157077	0.00206461	0.000109826	0.0528832
%RSD:	0.138935	0.374178	0.463493	0.620196	0.328414
Repeat: 1	0.0264546	0.421577	0.444792	0.0177656	16.0469
Repeat: 2	0.0264294	0.418623	0.443789	0.0177775	16.1086
Repeat: 3	0.0263822	0.419175	0.44776	0.0175816	16.1522
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	2.74588	4.49402	29.8871	8.0728	0.0462478
Std Dev:	0.0127332	0.0140477	0.126023	0.0298999	0.000261318
%RSD:	0.46372	0.312586	0.421663	0.370379	0.565038
Repeat: 1	2.76058	4.51019	29.7454	8.04092	0.0463857
Repeat: 2	2.7382	4.48478	29.9866	8.07727	0.0464114
Repeat: 3	2.73886	4.4871	29.9293	8.10021	0.0459465
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.0974335	0.213339	0.204195	0.00599222	0.14689
Std Dev:	0.000347821	0.00223694	0.000747071	2.81967e-005	0.000588202
%RSD:	0.356983	1.04854	0.365861	0.470556	0.400439
Repeat: 1	0.0977291	0.215186	0.204554	0.00599666	0.147547
Repeat: 2	0.0975211	0.210852	0.203337	0.00601794	0.146412
Repeat: 3	0.0970502	0.21398	0.204695	0.00596207	0.146709
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.344247	4.10269	1.92052	4.60045	1.97419
Std Dev:	0.00479976	0.0165998	0.0156231	0.0163166	0.00981208
%RSD:	1.39428	0.404607	0.813485	0.354675	0.497019
Repeat: 1	0.347038	4.08513	1.9362	4.58448	1.96507
Repeat: 2	0.346999	4.10483	1.90495	4.59978	1.97292
Repeat: 3	0.338705	4.11812	1.9204	4.61709	1.98457
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	0.880876	0.47595	246.962	1.54283	2.04495
Std Dev:	0.0037466	0.00188771	1.15494	0.00543672	0.0151994
%RSD:	0.425326	0.396619	0.46766	0.352387	0.743268
Repeat: 1	0.880186	0.474183	247.967	1.53673	2.056
Repeat: 2	0.877523	0.477939	247.218	1.54459	2.02761
Repeat: 3	0.88492	0.47573	245.7	1.54716	2.05123
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.253591	0.787102	0.0505333	11.2867	2345.53
Std Dev:	0.00125467	0.00191904	0.000174587	0.0359781	8.6698
%RSD:	0.49476	0.243811	0.34549	0.318767	0.36963
Repeat: 1	0.254959	0.785034	0.0506234	11.2487	2350.89
Repeat: 2	0.252494	0.787448	0.0506445	11.2911	2350.17
Repeat: 3	0.25332	0.788825	0.0503321	11.3202	2335.53
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	646567	14834.6			
Std Dev:	4136.31	86.1379			
%RSD:	0.639734	0.580655			
Repeat: 1	645848	14754.2			
Repeat: 2	642837	14925.5			

Repeat: 3	651015	14824

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	477.036	9923.88	1043	1047.12	954.704
Std Dev:	0.682022	37.4962	4.77935	6.5393	3.12114
%RSD:	0.142971	0.377838	0.458229	0.624501	0.326922
Repeat: 1	477.636	9966.52	1041.5	1050.55	951.417
Repeat: 2	477.179	9896.03	1039.16	1051.23	955.067
Repeat: 3	476.294	9909.1	1048.35	1039.58	957.627
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	1016.54	50.8276	1031.44	962.58	982.779
Std Dev:	4.71651	0.158894	4.36014	3.58993	5.58024
%RSD:	0.463978	0.312614	0.422723	0.372949	0.567803
Repeat: 1	1021.98	51.0105	1026.54	958.748	985.72
Repeat: 2	1013.69	50.723	1034.88	963.126	986.273
Repeat: 3	1013.94	50.7493	1032.9	965.865	976.343
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	1014.17	9885.85	10.2981	1055.65	47.7028
Std Dev:	3.64691	103.557	0.0357829	4.93273	0.190948
%RSD:	0.359595	1.04752	0.347472	0.467271	0.400287
Repeat: 1	1017.28	9971.41	10.3152	1056.41	47.9161
Repeat: 2	1015.08	9770.72	10.2569	1060.15	47.5479
Repeat: 3	1010.16	9915.42	10.322	1050.38	47.6444
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	970.925	1013.47	49.5264	984.147	967.638
Std Dev:	13.5431	4.09784	0.403606	3.50634	4.77541
%RSD:	1.39487	0.404337	0.814931	0.356283	0.493512
Repeat: 1	978.797	1009.13	49.9316	980.713	963.204
Repeat: 2	978.692	1014	49.1244	984.008	967.016
Repeat: 3	955.287	1017.28	49.5233	987.721	972.694
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1005.99	1045.93	4295.69	1006.6	965.166
Std Dev:	4.46713	4.23997	20.6192	3.54531	7.12153
%RSD:	0.444053	0.405377	0.479997	0.352207	0.737855
Repeat: 1	1005.1	1041.96	4313.66	1002.62	970.342
Repeat: 2	1002.03	1050.39	4300.24	1007.75	957.044
Repeat: 3	1010.83	1045.44	4273.18	1009.43	968.113
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1005.11	1009.35	992.624	1004.17	2345.53
Std Dev:	4.99379	2.43854	3.44826	3.23445	8.6698
%RSD:	0.496843	0.241596	0.347388	0.3221	0.36963
Repeat: 1	1010.55	1006.72	994.401	1000.76	2350.89

Repeat: 2	1000.74	1009.78	994.821	1004.57	2350.17
Repeat: 3	1004.03	1011.54	988.65	1007.19	2335.53
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	646567	14834.6			
Std Dev:	4136.31	86.1379			
%RSD:	0.639734	0.580655			
Repeat: 1	645848	14754.2			
Repeat: 2	642837	14925.5			
Repeat: 3	651015	14824			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2345.53	646567	14834.6
Std Dev:	8.6698	4136.31	86.1379
%RSD:	0.36963	0.639734	0.580655
Repeat: 1	2350.89	645848	14754.2
Repeat: 2	2350.17	642837	14925.5
Repeat: 3	2335.53	651015	14824

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25804-CCB4	9/14/2016 3:23:11PM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.00048601	0.000413494	-0.00563979	9.78622e-005	0.0304912
Std Dev:	4.36581e-005	0.000571805	0.00056436	6.30738e-006	0.00161682
%RSD:	8.98298	138.286	10.0067	6.44516	5.30259
Repeat: 1	0.00051828	0.000168563	-0.0050313	0.00010509	0.0289046
Repeat: 2	0.000436333	0.00106697	-0.00614603	9.34717e-005	0.0321366
Repeat: 3	0.000503416	4.953e-006	-0.00574205	9.5025e-005	0.0304323
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.000689658	7.48131e-006	0.034432	0.0201664	0.000211719
Std Dev:	0.000144789	0.000271209	0.00175026	0.00236334	1.25903e-005
%RSD:	20.9943	3625.15	5.08323	11.7192	5.94669
Repeat: 1	0.000614759	-0.000143774	0.0353315	0.0216085	0.000203326
Repeat: 2	0.000856555	0.000320587	0.0355496	0.017439	0.000226196
Repeat: 3	0.000597661	-0.000154368	0.0324149	0.0214518	0.000205635
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.000620354	-4.9113e-005	-0.00949962	-7.91989e-005	-5.80959e-005
Std Dev:	2.55331e-005	5.10591e-005	0.0012842	8.3679e-006	3.37026e-005
%RSD:	4.11589	103.962	13.5184	10.5657	58.012
Repeat: 1	0.000590901	-2.5615e-005	-0.0109161	-7.52624e-005	-4.75759e-005
Repeat: 2	0.000636235	-0.000107691	-0.00841147	-8.88091e-005	-3.09081e-005
Repeat: 3	0.000633925	-1.40335e-005	-0.0091713	-7.35252e-005	-9.58038e-005
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.000107979	0.000317645	0.00332808	0.0215263	-0.00589692
Std Dev:	7.18456e-006	0.000628747	0.000380151	0.000620278	0.00192532
%RSD:	6.65364	197.94	11.4226	2.88148	32.6496
Repeat: 1	9.96906e-005	0.000396472	0.00362083	0.0215965	-0.00598072

Repeat: 2	0.000112424	-0.000346798	0.00346496	0.020874	-0.00393108
Repeat: 3	0.000111823	0.000903262	0.00289844	0.0221086	-0.00777898
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00739677	0.00928932	8.05138	-0.000918952	-0.0157018
Std Dev:	0.000254912	0.00169551	1.89331	0.000126367	0.000110382
%RSD:	3.44626	18.2523	23.5153	13.7512	0.702989
Repeat: 1	-0.00751815	0.0112471	8.28161	-0.000937713	-0.015659
Repeat: 2	-0.00710386	0.00832315	9.81905	-0.00103489	-0.0158272
Repeat: 3	-0.00756831	0.00829772	6.05349	-0.000784253	-0.0156193
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.000784308	-0.00147963	-0.000125726	0.00806878	2427.94
Std Dev:	0.000297394	0.000122921	1.41454e-005	0.000577447	5.28906
%RSD:	37.918	8.30753	11.2509	7.15657	0.217841
Repeat: 1	0.00111053	-0.00150528	-0.000110397	0.00872237	2431.12
Repeat: 2	0.000714072	-0.00134591	-0.000128508	0.00762772	2421.84
Repeat: 3	0.00052832	-0.0015877	-0.000138274	0.00785624	2430.86
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	655328	15105.3			
Std Dev:	1290.55	30.6473			
%RSD:	0.196931	0.202891			
Repeat: 1	656818	15123.3			
Repeat: 2	654619	15069.9			
Repeat: 3	654547	15122.7			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.54086	-7.80828	0.174579	0.822686	0.0584397
Std Dev:	0.797208	13.721	1.3074	0.374984	0.0951411
%RSD:	147.396	175.724	748.891	45.5804	162.802
Repeat: 1	0.0494392	-13.6834	1.58446	1.25244	-0.0344631
Repeat: 2	-1.44773	7.87209	-0.997782	0.56199	0.155671
Repeat: 3	-0.22429	-17.6135	-0.0629431	0.653634	0.0541108
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	-0.0536384	-0.00443858	-0.0400724	0.102242	-0.527714
Std Dev:	0.0534408	0.00306766	0.0604776	0.282254	0.269227
%RSD:	99.6316	69.1135	150.921	276.066	51.0175
Repeat: 1	-0.0802519	-0.00614944	-0.00881448	0.272263	-0.707348
Repeat: 2	0.00788362	-0.000897029	-0.00162045	-0.223574	-0.218166
Repeat: 3	-0.0885469	-0.00626927	-0.109782	0.258035	-0.657629
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	-0.364446	-3.59797	0.0625905	-4.79903	-0.0177548
Std Dev:	0.266722	2.36329	0.0615099	1.46373	0.0109377
%RSD:	73.1857	65.6841	98.2735	30.5005	61.6044
Repeat: 1	-0.672102	-2.51069	-0.0052557	-4.11047	-0.0143389
Repeat: 2	-0.198306	-6.30922	0.114711	-6.48006	-0.0089326
Repeat: 3	-0.22293	-1.974	0.0783166	-3.80655	-0.0299927
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb

Avg. of Repeats:	0.151496	0.227033	-0.00208046	-0.505255	1.47049
Std Dev:	0.020294	0.155231	0.00982079	0.133536	0.939736
%RSD:	13.3958	68.3736	472.048	26.4294	63.9061
Repeat: 1	0.128085	0.246566	0.0054825	-0.49002	1.42853
Repeat: 2	0.164096	0.0629605	0.00145579	-0.645755	2.43051
Repeat: 3	0.162306	0.371573	-0.0131797	-0.37999	0.552443
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-2.13652	-0.788407	28.6295	0.32135	0.151007
Std Dev:	0.288746	3.80601	33.7978	0.0824239	0.0517693
%RSD:	13.5147	482.747	118.052	25.6492	34.2828
Repeat: 1	-2.27323	3.60628	32.7396	0.309044	0.171096
Repeat: 2	-1.80481	-2.95764	60.1844	0.245771	0.092204
Repeat: 3	-2.33153	-3.01386	-7.03536	0.409236	0.189721
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	0.0401789	0.427477	-0.964765	0.364563	2427.94
Std Dev:	1.18625	0.157334	0.273336	0.0522729	5.28906
%RSD:	2952.42	36.8052	28.3319	14.3385	0.217841
Repeat: 1	1.34161	0.39857	-0.669549	0.423703	2431.12
Repeat: 2	-0.240544	0.59726	-1.01569	0.32454	2421.84
Repeat: 3	-0.980528	0.286601	-1.20906	0.345445	2430.86
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	655328	15105.3			
Std Dev:	1290.55	30.6473			
%RSD:	0.196931	0.202891			
Repeat: 1	656818	15123.3			
Repeat: 2	654619	15069.9			
Repeat: 3	654547	15122.7			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2427.94	655328	15105.3
Std Dev:	5.28906	1290.55	30.6473
%RSD:	0.217841	0.196931	0.202891
Repeat: 1	2431.12	656818	15123.3
Repeat: 2	2421.84	654619	15069.9
Repeat: 3	2430.86	654547	15122.7

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608232-24	9/14/2016 3:27:35PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000311596	14.5702	0.0129952	0.0003324	20.1146
Std Dev:	1.62169e-005	0.0113009	0.000464054	7.54218e-006	0.0335921
%RSD:	5.20445	0.0775619	3.57098	2.269	0.167004

Repeat: 1	0.000302072	14.5794	0.0126676	0.0003339	20.1054
Repeat: 2	0.000302395	14.5576	0.0127917	0.000324221	20.0865
Repeat: 3	0.00033032	14.5737	0.0135262	0.00033908	20.1518
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	-0.0201268	0.958401	0.293497	1.04662	0.0209843
Std Dev:	0.000283256	0.00190439	0.00117725	0.0042803	0.000108529
%RSD:	1.40736	0.198705	0.40111	0.408965	0.517191
Repeat: 1	-0.0203866	0.956406	0.292179	1.04759	0.02086
Repeat: 2	-0.0198248	0.958599	0.293866	1.04193	0.0210599
Repeat: 3	-0.0201691	0.960199	0.294445	1.05033	0.0210331
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0131123	3.73315	0.292872	0.00115032	0.141419
Std Dev:	0.00012096	0.0226142	0.00198035	3.61206e-005	0.000216042
%RSD:	0.922493	0.605767	0.676182	3.14005	0.152768
Repeat: 1	0.0131229	3.75902	0.293615	0.00118518	0.141474
Repeat: 2	0.0129863	3.71717	0.290628	0.00111306	0.141602
Repeat: 3	0.0132275	3.72325	0.294374	0.00115271	0.141181
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.488669	0.00413059	0.0684357	1.08113	0.0303703
Std Dev:	0.00430713	0.000161598	0.0004906	0.00255083	0.00127645
%RSD:	0.881401	3.91222	0.716877	0.235942	4.20295
Repeat: 1	0.488795	0.00394724	0.0687035	1.07983	0.0290412
Repeat: 2	0.4843	0.00425229	0.0678695	1.07948	0.0315866
Repeat: 3	0.492911	0.00419224	0.0687341	1.08406	0.030483
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.00567125	0.0169741	6354.6	0.0449953	0.342247
Std Dev:	0.00292203	0.000519496	20.6406	0.00126588	0.00311655
%RSD:	51.5236	3.06053	0.324814	2.81336	0.910614
Repeat: 1	0.00719704	0.0164116	6339.92	0.0447746	0.345816
Repeat: 2	0.00230216	0.0174359	6378.2	0.046357	0.340065
Repeat: 3	0.00751455	0.0170746	6345.67	0.0438543	0.340858
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	3.47866	-0.0238538	0.0230484	5.80251	2339.05
Std Dev:	0.00645957	0.000565182	8.94496e-005	0.0126236	4.89754
%RSD:	0.185691	2.36936	0.388095	0.217555	0.209382
Repeat: 1	3.48193	-0.0242679	0.0229452	5.81556	2335.83
Repeat: 2	3.47122	-0.0232099	0.0230953	5.80161	2336.62
Repeat: 3	3.48284	-0.0240835	0.0231046	5.79036	2344.68
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	659436	15149.8			
Std Dev:	2021.84	50.9918			
%RSD:	0.306601	0.336584			
Repeat: 1	660384	15093.7			
Repeat: 2	660809	15193.5			
Repeat: 3	657114	15162.1			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-1.42075	349604	56.73	27.8875	1189.5
Std Dev:	0.300583	271.175	1.06132	0.477796	1.99053
%RSD:	21.1565	0.0775663	1.87083	1.7133	0.167342
Repeat: 1	-1.60457	349823	56.0168	28.0674	1188.94
Repeat: 2	-1.58382	349301	56.2236	27.3459	1187.85

Repeat: 3	-1.07388	349688	57.9497	28.2493	1191.71
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	5.17032	10.836	-0.0782169	92.576	439.193
Std Dev:	0.0831531	0.0215406	0.0783985	0.458052	2.33389
%RSD:	1.60828	0.198788	100.232	0.494784	0.531405
Repeat: 1	5.08735	10.8134	-0.168656	92.6377	436.52
Repeat: 2	5.25365	10.8382	-0.036451	92.0902	440.827
Repeat: 3	5.16997	10.8563	-0.029544	93.0001	440.232
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	145.315	172865	14.5455	208.942	45.9996
Std Dev:	1.29095	1047.12	0.0948539	6.31237	0.0701818
%RSD:	0.888377	0.605743	0.65212	3.02111	0.152571
Repeat: 1	145.479	174063	14.581	215.035	46.018
Repeat: 2	143.95	172125	14.438	202.431	46.0587
Repeat: 3	146.516	172407	14.6174	209.36	45.922
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1374.83	3.29029	1.67991	226.076	93.9151
Std Dev:	12.1489	0.028349	0.0126741	0.554278	0.586133
%RSD:	0.883671	0.861594	0.754455	0.245173	0.624109
Repeat: 1	1375.16	3.2583	1.68682	225.785	93.2924
Repeat: 2	1362.51	3.31227	1.66528	225.728	94.4561
Repeat: 3	1386.81	3.30031	1.68761	226.715	93.9969
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-3.91638	0.528664	113362	30.145	167.754
Std Dev:	3.39285	1.19537	368.301	0.825308	1.46077
%RSD:	86.6323	226.111	0.32489	2.73779	0.87078
Repeat: 1	-2.1218	-0.7644	113100	30.0016	169.427
Repeat: 2	-7.82964	1.5934	113783	31.0326	166.731
Repeat: 3	-1.7977	0.756991	113202	29.4008	167.103
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	13873.7	1.00188	447.477	516.732	2339.05
Std Dev:	25.7751	0.68454	1.74896	1.13376	4.89754
%RSD:	0.185784	68.3257	0.390848	0.219409	0.209382
Repeat: 1	13886.7	0.478318	445.459	517.897	2335.83
Repeat: 2	13844	1.7765	448.407	516.666	2336.62
Repeat: 3	13890.4	0.750815	448.563	515.633	2344.68
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	659436	15149.8			
Std Dev:	2021.84	50.9918			
%RSD:	0.306601	0.336584			
Repeat: 1	660384	15093.7			

Repeat: 2	660809	15193.5
Repeat: 3	657114	15162.1
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2339.05	659436	15149.8
Std Dev:	4.89754	2021.84	50.9918
%RSD:	0.209382	0.306601	0.336584
Repeat: 1	2335.83	660384	15093.7
Repeat: 2	2336.62	660809	15193.5
Repeat: 3	2344.68	657114	15162.1

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6H29015-MS2	9/14/2016 3:32:01PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.0134485	18.0556	0.10976	0.016359	57.5732
Std Dev:	0.000209021	0.0735766	0.000656357	0.000154043	0.183497
%RSD:	1.55423	0.407501	0.597991	0.941642	0.318719
Repeat: 1	0.0136159	17.9722	0.109061	0.0164252	57.5009
Repeat: 2	0.0132142	18.0832	0.109857	0.0161829	57.4369
Repeat: 3	0.0135154	18.1114	0.110363	0.0164688	57.7819
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.114104	1.62866	4.14082	5.32361	0.0319252
Std Dev:	0.000543933	0.00183303	0.0109267	0.0162759	0.000438373
%RSD:	0.476699	0.112548	0.263878	0.305731	1.37312
Repeat: 1	0.114021	1.62694	4.14131	5.31748	0.0322693
Repeat: 2	0.114685	1.62847	4.12966	5.31129	0.0314317
Repeat: 3	0.113606	1.63059	4.1515	5.34206	0.0320747
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0401697	3.85475	0.442304	0.00784075	0.161776
Std Dev:	0.00040157	0.0194501	0.00338653	6.0678e-005	0.000167115
%RSD:	0.999682	0.504574	0.765657	0.77388	0.1033
Repeat: 1	0.0403777	3.83261	0.439504	0.00783467	0.161911
Repeat: 2	0.0397068	3.86252	0.441339	0.00778334	0.161828
Repeat: 3	0.0404247	3.8691	0.446068	0.00790424	0.161589
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.683849	3.60426	0.294267	3.52614	0.505024
Std Dev:	0.00234261	0.00759296	0.00193508	0.0100158	0.00333264
%RSD:	0.342562	0.210667	0.657594	0.284045	0.659898
Repeat: 1	0.685226	3.60273	0.292265	3.52178	0.503179
Repeat: 2	0.681144	3.59754	0.294408	3.51905	0.503021
Repeat: 3	0.685177	3.6125	0.296127	3.5376	0.508871
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.0395239	0.129074	7041.94	1.45624	2.47177
Std Dev:	0.000864696	0.000834416	46.0369	0.00429548	0.0142787
%RSD:	2.18778	0.646464	0.653754	0.294972	0.577673
Repeat: 1	0.0400946	0.129306	7008.6	1.45742	2.45568
Repeat: 2	0.0385291	0.128148	7022.75	1.45147	2.47668
Repeat: 3	0.0399481	0.129767	7094.47	1.45981	2.48295

Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	3.69328	0.172438	0.0451249	12.2553	2335.34
Std Dev:	0.0201766	0.002583	0.000633911	0.0198718	11.0665
%RSD:	0.546307	1.49792	1.40479	0.162149	0.47387
Repeat: 1	3.67029	0.172282	0.0455726	12.2447	2339.91
Repeat: 2	3.70146	0.169937	0.0443995	12.2429	2343.39
Repeat: 3	3.70807	0.175096	0.0454025	12.2782	2322.72

Element/Wavelength	Sc3613	Sc3613-2
Avg. of Repeats:	662163	15260
Std Dev:	5251.91	16.4769
%RSD:	0.793144	0.107974
Repeat: 1	659357	15271.5
Repeat: 2	668221	15241.2
Repeat: 3	658910	15267.4

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	240.2	433200	280.092	980.918	3408.09
Std Dev:	3.86501	1765.56	1.58863	9.15093	10.8815
%RSD:	1.60908	0.407563	0.567179	0.932895	0.319285
Repeat: 1	243.288	431199	278.39	984.786	3403.84
Repeat: 2	235.866	433862	280.351	970.468	3399.97
Repeat: 3	241.446	434538	281.535	987.5	3420.45
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass

Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	55.5024	18.4174	132.131	603.733	672.636
Std Dev:	0.217998	0.0207335	0.374668	1.87307	9.38048
%RSD:	0.392772	0.112576	0.283558	0.310247	1.39459
Repeat: 1	55.3813	18.3978	132.201	603.197	680.013
Repeat: 2	55.754	18.4151	131.727	602.187	662.079
Repeat: 3	55.3718	18.4391	132.466	605.816	675.815
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass

Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	428.968	178499	21.7029	1379.05	52.6224
Std Dev:	4.18201	900.579	0.162206	10.6103	0.0538454
%RSD:	0.9749	0.504528	0.747396	0.769398	0.102324
Repeat: 1	431.053	177474	21.5688	1377.99	52.6656
Repeat: 2	424.153	178859	21.6567	1369	52.6394
Repeat: 3	431.698	179164	21.8831	1390.14	52.5621
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass

Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1925.4	892.298	7.51401	752.116	344.333
Std Dev:	6.61676	1.87953	0.0499908	2.15121	1.88706
%RSD:	0.343656	0.210639	0.665301	0.286021	0.548033
Repeat: 1	1929.31	891.911	7.46229	751.188	343.006
Repeat: 2	1917.77	890.643	7.51767	750.585	343.5
Repeat: 3	1929.14	894.341	7.56207	754.576	346.493
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass

Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Units:	ppb	ppb	ppm	ppb	ppb

Avg. of Repeats:	32.4102	248.755	125633	950.169	1165.62
Std Dev:	0.804296	1.87808	821.974	2.79782	6.69127
%RSD:	2.48161	0.754993	0.654267	0.294455	0.574051
Repeat: 1	32.9399	249.363	125037	950.94	1158.08
Repeat: 2	31.4847	246.648	125290	947.066	1167.92
Repeat: 3	32.8059	250.253	126571	952.5	1170.86
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	14729.4	253.476	878.4	1092.66	2335.34
Std Dev:	80.5041	3.3512	12.4267	1.76922	11.0665
%RSD:	0.546554	1.3221	1.4147	0.161919	0.47387
Repeat: 1	14637.7	253.1	887.215	1091.71	2339.91
Repeat: 2	14762.1	250.328	864.187	1091.56	2343.39
Repeat: 3	14788.4	256.999	883.798	1094.7	2322.72
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	662163	15260			
Std Dev:	5251.91	16.4769			
%RSD:	0.793144	0.107974			
Repeat: 1	659357	15271.5			
Repeat: 2	668221	15241.2			
Repeat: 3	658910	15267.4			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2335.34	662163	15260
Std Dev:	11.0665	5251.91	16.4769
%RSD:	0.47387	0.793144	0.107974
Repeat: 1	2339.91	659357	15271.5
Repeat: 2	2343.39	668221	15241.2
Repeat: 3	2322.72	658910	15267.4

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6H29015-MSD2	9/14/2016 3:36:28PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.0135801	17.1371	0.113954	0.0164601	56.1735
Std Dev:	8.90725e-005	0.0554525	0.000868367	5.77004e-005	0.22496
%RSD:	0.655903	0.323582	0.762034	0.350548	0.400473
Repeat: 1	0.0136815	17.0733	0.114952	0.0165267	55.9996
Repeat: 2	0.0135444	17.1641	0.113541	0.0164244	56.0934
Repeat: 3	0.0135145	17.1738	0.113369	0.0164292	56.4276
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.114133	1.60086	4.14327	5.30493	0.0310789
Std Dev:	0.000605818	0.00291378	0.0105129	0.024994	0.000105447
%RSD:	0.5308	0.182013	0.253734	0.471147	0.339287
Repeat: 1	0.114623	1.59756	4.14109	5.2973	0.031193
Repeat: 2	0.11432	1.60308	4.13401	5.28464	0.0310588

Repeat: 3	0.113456	1.60195	4.1547	5.33285	0.030985
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0397545	3.73366	0.432799	0.00776918	0.158867
Std Dev:	0.000118601	0.00988242	0.00251472	2.03765e-005	0.000214671
%RSD:	0.298334	0.264685	0.581036	0.262274	0.135126
Repeat: 1	0.0398887	3.72362	0.429895	0.00778458	0.158832
Repeat: 2	0.0396638	3.73398	0.434262	0.00774608	0.159098
Repeat: 3	0.039711	3.74338	0.434239	0.00777689	0.158673
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.68259	3.67682	0.292839	3.49109	0.52927
Std Dev:	0.00256887	0.0168093	0.00137608	0.015615	0.00334838
%RSD:	0.376342	0.457171	0.469909	0.447281	0.63264
Repeat: 1	0.685308	3.67747	0.292268	3.47945	0.532514
Repeat: 2	0.68226	3.65969	0.291841	3.48498	0.525826
Repeat: 3	0.680202	3.69329	0.294409	3.50883	0.52947
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.0412678	0.126103	6881.95	1.4658	2.47609
Std Dev:	0.00120937	0.00144697	15.7491	0.00297138	0.010825
%RSD:	2.93054	1.14745	0.228847	0.202714	0.43718
Repeat: 1	0.0426642	0.12594	6871.33	1.46505	2.4674
Repeat: 2	0.0405556	0.127624	6900.04	1.46328	2.47265
Repeat: 3	0.0405836	0.124744	6874.48	1.46908	2.48821
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	3.61105	0.174094	0.0452441	12.023	2325.48
Std Dev:	0.0118183	0.00145009	0.00026267	0.0453285	12.3975
%RSD:	0.327282	0.832935	0.580562	0.377014	0.533115
Repeat: 1	3.59782	0.174283	0.045477	12.0344	2338.58
Repeat: 2	3.6148	0.172559	0.0452959	11.9731	2323.92
Repeat: 3	3.62054	0.175441	0.0449594	12.0616	2313.94
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	663398	15169.7			
Std Dev:	2043.81	12.9433			
%RSD:	0.308082	0.085323			
Repeat: 1	661230	15181			
Repeat: 2	663673	15155.6			
Repeat: 3	665290	15172.7			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	242.603	411158	289.2	986.514	3325.28
Std Dev:	1.64178	1330.64	1.96922	3.40554	13.2956
%RSD:	0.676738	0.323632	0.680921	0.34521	0.399834
Repeat: 1	244.469	409627	291.462	990.443	3315
Repeat: 2	241.955	411808	288.268	984.395	3320.54
Repeat: 3	241.383	412039	287.87	984.705	3340.29
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	55.2025	18.1029	132.595	602.284	654.644
Std Dev:	0.18548	0.0329579	0.351455	2.94526	2.26104
%RSD:	0.335999	0.182058	0.26506	0.489016	0.345384
Repeat: 1	55.332	18.0656	132.549	601.482	657.09
Repeat: 2	55.2855	18.128	132.269	599.822	654.212

Repeat: 3	54.99	18.1152	132.967	605.547	652.63
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	424.213	172893	21.2476	1366.56	51.6755
Std Dev:	1.20314	457.553	0.120449	3.56602	0.0695505
%RSD:	0.283617	0.264646	0.566882	0.260948	0.134591
Repeat: 1	425.57	172428	21.1085	1369.26	51.6637
Repeat: 2	423.275	172908	21.3177	1362.52	51.7502
Repeat: 3	423.796	173342	21.3166	1367.91	51.6126
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1921.98	910.143	7.47713	744.635	351.324
Std Dev:	7.25813	4.15238	0.0355495	3.35296	1.41183
%RSD:	0.377639	0.456234	0.475443	0.450283	0.401858
Repeat: 1	1929.65	910.3	7.46238	742.138	352.569
Repeat: 2	1921.04	905.914	7.45134	743.321	349.79
Repeat: 3	1915.23	914.214	7.51769	748.446	351.615
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	35.0411	243.034	122776	956.406	1167.65
Std Dev:	1.36851	3.24898	281.157	1.93837	5.07272
%RSD:	3.90543	1.33684	0.229001	0.202672	0.434438
Repeat: 1	36.6207	242.729	122586	955.916	1163.58
Repeat: 2	34.2126	246.424	123099	954.76	1166.04
Repeat: 3	34.29	239.948	122642	958.543	1173.33
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	14401.4	254.971	880.669	1071.93	2325.48
Std Dev:	47.1536	1.85638	5.14656	4.05405	12.3975
%RSD:	0.327424	0.728075	0.584392	0.3782	0.533115
Repeat: 1	14348.6	255.105	885.247	1072.94	2338.58
Repeat: 2	14416.4	253.051	881.661	1067.47	2323.92
Repeat: 3	14439.3	256.757	875.098	1075.39	2313.94
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	663398	15169.7			
Std Dev:	2043.81	12.9433			
%RSD:	0.308082	0.085323			
Repeat: 1	661230	15181			
Repeat: 2	663673	15155.6			
Repeat: 3	665290	15172.7			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2325.48	663398	15169.7
Std Dev:	12.3975	2043.81	12.9433
%RSD:	0.533115	0.308082	0.085323
Repeat: 1	2338.58	661230	15181

Repeat: 2	2323.92	663673	15155.6
Repeat: 3	2313.94	665290	15172.7

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6H29015-PS2	9/14/2016 3:40:53PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.0133171	14.5683	0.125616	0.0167145	54.2464
Std Dev:	0.000165727	0.0250002	0.000114856	0.000145207	0.224782
%RSD:	1.24447	0.171607	0.0914339	0.86875	0.414373
Repeat: 1	0.0134234	14.5435	0.125531	0.0168017	54.0685
Repeat: 2	0.0131261	14.5678	0.125747	0.0165468	54.1717
Repeat: 3	0.0134016	14.5935	0.12557	0.0167949	54.499
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.109699	1.38845	4.09557	5.23945	0.0293115
Std Dev:	0.000455689	0.000460238	0.0162958	0.0237034	0.000375648
%RSD:	0.415401	0.0331476	0.397889	0.452402	1.28157
Repeat: 1	0.110159	1.38891	4.08747	5.22525	0.0295942
Repeat: 2	0.109248	1.38799	4.08491	5.22628	0.0288852
Repeat: 3	0.109688	1.38844	4.11432	5.26681	0.0294551
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0378423	3.73158	0.401349	0.00739204	0.154544
Std Dev:	0.000352999	0.0203534	0.00126033	0.000104035	0.000707044
%RSD:	0.932816	0.545437	0.314022	1.40739	0.457504
Repeat: 1	0.0380323	3.73557	0.399897	0.0074562	0.155072
Repeat: 2	0.037435	3.70953	0.401995	0.00727201	0.15374
Repeat: 3	0.0380596	3.74965	0.402155	0.00744792	0.154819
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.65516	4.06778	0.276719	3.43668	0.547112
Std Dev:	0.00496932	0.0166028	0.00023106	0.011808	0.00116186
%RSD:	0.75849	0.408155	0.0834998	0.343588	0.212362
Repeat: 1	0.659392	4.06017	0.276733	3.43065	0.54605
Repeat: 2	0.649688	4.05634	0.276482	3.4291	0.546933
Repeat: 3	0.656401	4.08682	0.276943	3.45028	0.548353
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.215967	0.130053	6413.15	1.60266	2.35577
Std Dev:	0.000582962	0.000447863	29.3068	0.00635586	0.010886
%RSD:	0.269931	0.34437	0.456981	0.396581	0.462101
Repeat: 1	0.215888	0.130211	6383.45	1.59923	2.35936
Repeat: 2	0.216586	0.1304	6413.94	1.59876	2.34354
Repeat: 3	0.215428	0.129547	6442.05	1.61	2.36441
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	3.72698	0.173556	0.0469242	11.5993	2317.48
Std Dev:	0.0065292	0.0027412	0.000569078	0.0485804	5.10029
%RSD:	0.175188	1.57944	1.21276	0.418823	0.220079
Repeat: 1	3.72016	0.171107	0.0473255	11.5758	2320.43
Repeat: 2	3.7276	0.173043	0.0462729	11.5668	2320.42
Repeat: 3	3.73317	0.176517	0.0471741	11.6551	2311.59
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	664655	15154.5			

Std Dev:	6539.17	36.7134
%RSD:	0.983844	0.242261
Repeat: 1	660954	15127.9
Repeat: 2	672205	15139.1
Repeat: 3	660806	15196.4

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	237.98	349515	315.191	1001.69	3211.32
Std Dev:	3.06897	599.824	0.250175	8.7069	13.3079
%RSD:	1.28959	0.171616	0.0793725	0.869217	0.414405
Repeat: 1	239.951	348921	314.99	1006.9	3200.82
Repeat: 2	234.444	349503	315.471	991.643	3206.86
Repeat: 3	239.544	350121	315.112	1006.54	3226.29
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	53.9878	15.7003	131.459	593.751	616.847
Std Dev:	0.151057	0.00520577	0.532478	2.7825	8.01622
%RSD:	0.279798	0.0331571	0.405053	0.46863	1.29955
Repeat: 1	54.1293	15.7056	131.177	592.096	622.885
Repeat: 2	53.8287	15.6952	131.126	592.193	607.752
Repeat: 3	54.0055	15.7002	132.073	596.964	619.904
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	404.474	172796	19.7412	1300.64	50.2731
Std Dev:	3.72824	942.516	0.0603665	18.1907	0.229972
%RSD:	0.921749	0.545451	0.305789	1.39859	0.457445
Repeat: 1	406.455	172981	19.6717	1311.86	50.4447
Repeat: 2	400.174	171775	19.7722	1279.65	50.0118
Repeat: 3	406.794	173632	19.7798	1310.41	50.3629
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1844.58	1006.65	7.06068	732.966	346.32
Std Dev:	14.0046	4.10931	0.00596918	2.53321	0.694685
%RSD:	0.759227	0.408216	0.0845412	0.345611	0.20059
Repeat: 1	1856.52	1004.77	7.06104	731.67	345.663
Repeat: 2	1829.17	1003.81	7.05455	731.343	346.251
Repeat: 3	1848.07	1011.36	7.06647	735.885	347.047
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	238.124	254.492	114407	1045.63	1111.3
Std Dev:	0.853024	1.03775	523.236	4.14288	5.10153
%RSD:	0.358226	0.407775	0.457348	0.396209	0.459061
Repeat: 1	237.885	254.859	113877	1043.39	1112.98
Repeat: 2	239.071	255.296	114421	1043.09	1105.57
Repeat: 3	237.416	253.32	114923	1050.41	1115.34
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----

Avg. of Repeats:	14864	255.656	912.615	1034.15	2317.48
Std Dev:	26.0536	3.54648	11.1561	4.33793	5.10029
%RSD:	0.17528	1.38721	1.22243	0.419466	0.220079
Repeat: 1	14836.8	252.479	920.496	1032.05	2320.43
Repeat: 2	14866.5	255.006	899.85	1031.27	2320.42
Repeat: 3	14888.7	259.482	917.5	1039.14	2311.59
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	664655	15154.5
Std Dev:	6539.17	36.7134
%RSD:	0.983844	0.242261
Repeat: 1	660954	15127.9
Repeat: 2	672205	15139.1
Repeat: 3	660806	15196.4
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2317.48	664655	15154.5
Std Dev:	5.10029	6539.17	36.7134
%RSD:	0.220079	0.983844	0.242261
Repeat: 1	2320.43	660954	15127.9
Repeat: 2	2320.42	672205	15139.1
Repeat: 3	2311.59	660806	15196.4

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6H29015-SRL2@5X	9/14/2016 3:45:17PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000436177	3.12019	-0.00185624	0.00015848	4.13136
Std Dev:	6.77102e-006	0.00378632	0.000459997	6.65997e-006	0.00710022
%RSD:	1.55236	0.121349	24.7812	4.20241	0.171862
Repeat: 1	0.00044397	3.11633	-0.00238361	0.000164278	4.12786
Repeat: 2	0.000431736	3.1239	-0.00153769	0.000159956	4.12668
Repeat: 3	0.000432824	3.12034	-0.00164742	0.000151206	4.13953
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	-0.00364982	0.205779	0.0877556	0.232374	0.004431
Std Dev:	0.000325284	0.000451303	0.00214537	0.000893329	6.26038e-005
%RSD:	8.91235	0.219315	2.44471	0.384435	1.41286
Repeat: 1	-0.00368445	0.205455	0.0900301	0.232769	0.00449468
Repeat: 2	-0.0033086	0.205587	0.0857683	0.231352	0.00436954
Repeat: 3	-0.0039564	0.206294	0.0874684	0.233002	0.00442879
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0032303	0.772563	0.0526781	0.000200178	0.0306669
Std Dev:	2.85298e-005	0.00559213	0.000394663	3.62594e-005	0.000123013
%RSD:	0.883194	0.723842	0.749198	18.1136	0.401126
Repeat: 1	0.00325983	0.778561	0.0523832	0.000180539	0.0306878
Repeat: 2	0.00320289	0.767494	0.0525246	0.000242021	0.0307781
Repeat: 3	0.00322818	0.771633	0.0531264	0.000177974	0.0305348
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**

Avg. of Repeats:	0.103857	0.0029945	0.0159771	0.24348	0.00230023
Std Dev:	0.000941564	0.00101613	0.000473897	0.00132245	0.00145914
%RSD:	0.906599	33.9332	2.9661	0.543146	63.4344
Repeat: 1	0.104817	0.00394111	0.0162452	0.243515	0.000657794
Repeat: 2	0.102935	0.00312156	0.0162562	0.24214	0.00344684
Repeat: 3	0.103819	0.00192081	0.0154299	0.244784	0.00279605
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00509085	0.00977697	1343.88	0.00826203	0.0592615
Std Dev:	0.000827605	0.000702697	5.36505	0.000949572	0.000246458
%RSD:	16.2567	7.18727	0.399222	11.4932	0.415883
Repeat: 1	-0.00536583	0.00928409	1339.51	0.00906913	0.059333
Repeat: 2	-0.00574596	0.00946521	1342.25	0.00721573	0.0589871
Repeat: 3	-0.00416076	0.0105816	1349.87	0.00850123	0.0594642
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.717568	-0.00707998	0.00450041	1.18528	2448.3
Std Dev:	0.000514226	0.000416119	3.05831e-005	0.0036023	3.59785
%RSD:	0.0716622	5.87741	0.679563	0.30392	0.146953
Repeat: 1	0.717872	-0.0066311	0.00453496	1.18943	2446.64
Repeat: 2	0.716975	-0.00715596	0.00447682	1.183	2452.43
Repeat: 3	0.717859	-0.00745287	0.00448944	1.18341	2445.83
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	682798	15432			
Std Dev:	6607.26	62.1981			
%RSD:	0.967674	0.403046			
Repeat: 1	675762	15379.8			
Repeat: 2	688871	15415.5			
Repeat: 3	683762	15500.8			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.989336	74853.2	11.7423	7.14181	242.915
Std Dev:	0.125526	90.8754	1.05923	0.405926	0.419864
%RSD:	12.6879	0.121405	9.02064	5.68379	0.172844
Repeat: 1	-0.844877	74760.7	10.5276	7.50818	242.709
Repeat: 2	-1.07183	74942.3	12.4736	7.21181	242.637
Repeat: 3	-1.0513	74856.7	12.2257	6.70544	243.398
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	1.006	2.32305	-0.0783617	19.2365	88.765
Std Dev:	0.11872	0.00510471	0.0655848	0.0984622	1.33444
%RSD:	11.8013	0.219742	83.6949	0.51185	1.50334
Repeat: 1	0.994039	2.31939	-0.00898308	19.2748	90.1222
Repeat: 2	1.13024	2.32088	-0.139344	19.1247	87.4545
Repeat: 3	0.893707	2.32888	-0.0867583	19.3101	88.7183
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	30.0331	35772.8	3.04075	43.7912	9.97505
Std Dev:	0.309416	258.953	0.0189034	6.3396	0.0399037
%RSD:	1.03025	0.723882	0.621668	14.4769	0.400035
Repeat: 1	30.3533	36050.6	3.02663	40.3573	9.98199
Repeat: 2	29.7357	35538.1	3.0334	51.107	10.011

Repeat: 3	30.0102	35729.8	3.06222	39.9093	9.93214
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	292.092	1.32596	0.324693	46.9597	21.5005
Std Dev:	2.65097	0.252504	0.0122426	0.28338	0.735278
%RSD:	0.907579	19.0432	3.77052	0.603454	3.41982
Repeat: 1	294.795	1.56292	0.331619	46.9647	20.6746
Repeat: 2	289.496	1.3546	0.331903	46.6738	22.0838
Repeat: 3	291.987	1.06035	0.310558	47.2405	21.7431
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-2.91161	-3.09703	23882.9	6.28491	35.2504
Std Dev:	0.951249	1.57819	95.7517	0.61899	0.115458
%RSD:	32.6709	50.9583	0.400922	9.84884	0.327537
Repeat: 1	-3.2691	-4.20588	23805	6.81096	35.284
Repeat: 2	-3.63233	-3.79502	23853.8	5.60284	35.1219
Repeat: 3	-1.83341	-1.29019	23989.8	6.44092	35.3454
QC Status Pass/Fail:	Pass	Fail	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	2859.35	-0.736868	88.5358	105.251	2448.3
Std Dev:	2.05275	0.528145	0.610831	0.320143	3.59785
%RSD:	0.0717905	71.6743	0.689925	0.30417	0.146953
Repeat: 1	2860.56	-0.166679	89.2251	105.62	2446.64
Repeat: 2	2856.98	-0.834611	88.0616	105.05	2452.43
Repeat: 3	2860.51	-1.20931	88.3208	105.084	2445.83
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	682798	15432			
Std Dev:	6607.26	62.1981			
%RSD:	0.967674	0.403046			
Repeat: 1	675762	15379.8			
Repeat: 2	688871	15415.5			
Repeat: 3	683762	15500.8			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2448.3	682798	15432
Std Dev:	3.59785	6607.26	62.1981
%RSD:	0.146953	0.967674	0.403046
Repeat: 1	2446.64	675762	15379.8
Repeat: 2	2452.43	688871	15415.5
Repeat: 3	2445.83	683762	15500.8

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608251-03@2X	9/14/2016 3:49:36PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.00335758	5.311	0.379234	0.00261576	16.9271
Std Dev:	3.24487e-005	0.0265462	0.00180235	5.43733e-005	0.0423531
%RSD:	0.966432	0.499835	0.475262	2.07868	0.250209
Repeat: 1	0.00332019	5.2849	0.377205	0.00255773	16.8807
Repeat: 2	0.00337412	5.31013	0.379846	0.00262401	16.9369
Repeat: 3	0.00337843	5.33797	0.380651	0.00266553	16.9637
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	-0.00308615	1.40608	0.655248	0.856775	0.0541178
Std Dev:	0.000187968	0.00500266	0.00171352	0.00112331	0.000730015
%RSD:	6.09068	0.355788	0.261507	0.13111	1.34894
Repeat: 1	-0.00288779	1.40154	0.653446	0.855888	0.0532754
Repeat: 2	-0.00310904	1.40525	0.655441	0.856399	0.0545131
Repeat: 3	-0.00326162	1.41145	0.656857	0.858038	0.0545649
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.322761	5.63055	0.386666	0.00144628	0.114011
Std Dev:	0.00358968	0.0313508	0.000606557	4.43884e-005	0.00032777
%RSD:	1.11218	0.556799	0.156868	3.06914	0.28749
Repeat: 1	0.318628	5.6108	0.386027	0.00139601	0.113633
Repeat: 2	0.324562	5.61416	0.386738	0.00146275	0.114199
Repeat: 3	0.325094	5.6667	0.387233	0.00148007	0.114202
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.612807	0.0226494	0.779215	1.341	3.10448
Std Dev:	0.007357	0.000752033	0.00366697	0.000818403	0.00923529
%RSD:	1.20054	3.32031	0.470598	0.0610293	0.297483
Repeat: 1	0.605447	0.0234779	0.77632	1.34089	3.09468
Repeat: 2	0.620161	0.0220098	0.777985	1.34024	3.11302
Repeat: 3	0.612812	0.0224607	0.783338	1.34187	3.10574
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	0.0421121	0.0558059	3260.63	0.365	0.999103
Std Dev:	0.000618581	0.000253446	19.1926	0.00216675	0.00728425
%RSD:	1.46889	0.454156	0.588614	0.593631	0.729079
Repeat: 1	0.0414112	0.0556516	3240.96	0.363322	0.99463
Repeat: 2	0.042343	0.0560984	3261.64	0.364232	0.995171
Repeat: 3	0.0425819	0.0556677	3279.3	0.367446	1.00751
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	2.192	-0.0115805	0.0282046	26.0679	2350.35
Std Dev:	0.0116105	0.00247808	0.000336969	0.0750895	5.09366
%RSD:	0.529674	21.3987	1.19473	0.288053	0.216719
Repeat: 1	2.18351	-0.0131652	0.0278156	25.9868	2355.11
Repeat: 2	2.18727	-0.0128514	0.0283899	26.135	2350.96
Repeat: 3	2.20523	-0.00872478	0.0284082	26.082	2344.97
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	668424	14962.8			
Std Dev:	7526.7	12.6661			
%RSD:	1.12604	0.0846503			
Repeat: 1	676731	14950.6			
Repeat: 2	666485	14962			
Repeat: 3	662057	14975.9			

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	54.1379	127391	903.675	170.554	1000.79

Std Dev:	0.61922	636.883	4.22286	3.32936	2.52318
%RSD:	1.14378	0.499943	0.467298	1.95209	0.25212
Repeat: 1	53.4245	126765	898.933	167.029	998.018
Repeat: 2	54.4534	127370	905.062	170.989	1001.38
Repeat: 3	54.5359	128038	907.029	173.645	1002.96
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	6.57777	15.8997	11.1924	77.2199	1147.27
Std Dev:	0.0390383	0.0565854	0.031475	0.0171406	15.5871
%RSD:	0.593488	0.355889	0.281218	0.0221971	1.35862
Repeat: 1	6.62239	15.8484	11.1662	77.2001	1129.28
Repeat: 2	6.54989	15.8904	11.2273	77.2296	1155.72
Repeat: 3	6.56103	15.9604	11.1838	77.2299	1156.81
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	3388.97	260726	19.038	260.485	37.1487
Std Dev:	37.6535	1451.7	0.0290526	7.75509	0.106821
%RSD:	1.11106	0.55679	0.152603	2.97717	0.287549
Repeat: 1	3345.62	259811	19.0073	251.701	37.0254
Repeat: 2	3407.8	259967	19.0414	263.369	37.2092
Repeat: 3	3413.5	262400	19.0651	266.385	37.2116
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1723.15	9.33817	20.0421	280.901	1537.09
Std Dev:	20.7561	0.179238	0.0947321	0.162378	4.56006
%RSD:	1.20454	1.91941	0.472665	0.0578064	0.29667
Repeat: 1	1702.4	9.52942	19.9673	280.878	1532.21
Repeat: 2	1743.92	9.17403	20.0104	280.751	1541.24
Repeat: 3	1723.13	9.31106	20.1486	281.073	1537.8
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	19.8189	93.9774	58149	238.76	475.512
Std Dev:	0.324497	0.57306	342.891	1.41157	3.41295
%RSD:	1.63731	0.609785	0.589677	0.591207	0.717741
Repeat: 1	19.4575	93.6772	57797.5	237.668	473.417
Repeat: 2	19.9139	94.6382	58166.9	238.259	473.67
Repeat: 3	20.0852	93.6168	58482.6	240.354	479.451
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	8740.35	3.37172	559.648	2324.64	2350.35
Std Dev:	46.3172	3.24883	6.69619	6.64725	5.09366
%RSD:	0.529924	96.3552	1.1965	0.285948	0.216719
Repeat: 1	8706.47	1.2862	551.919	2317.47	2355.11
Repeat: 2	8721.46	1.71395	563.336	2330.59	2350.96
Repeat: 3	8793.13	7.11501	563.689	2325.86	2344.97
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			

Avg. of Repeats:	668424	14962.8
Std Dev:	7526.7	12.6661
%RSD:	1.12604	0.0846503
Repeat: 1	676731	14950.6
Repeat: 2	666485	14962
Repeat: 3	662057	14975.9
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2350.35	668424	14962.8
Std Dev:	5.09366	7526.7	12.6661
%RSD:	0.216719	1.12604	0.0846503
Repeat: 1	2355.11	676731	14950.6
Repeat: 2	2350.96	666485	14962
Repeat: 3	2344.97	662057	14975.9

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608251-04@2X	9/14/2016 3:54:01PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.00219418	4.99836	0.297122	0.00231214	13.7539
Std Dev:	3.81257e-005	0.0155291	0.000423742	6.10276e-006	0.0605727
%RSD:	1.73758	0.310683	0.142615	0.263944	0.440405
Repeat: 1	0.00215464	4.98088	0.297517	0.00230637	13.6875
Repeat: 2	0.00223071	5.01056	0.296674	0.00231853	13.7679
Repeat: 3	0.0021972	5.00364	0.297174	0.00231154	13.8062
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	-0.026012	1.18275	0.806984	0.978132	0.0462366
Std Dev:	0.000372201	0.00526923	0.00352229	0.00206531	0.000523679
%RSD:	1.43088	0.445507	0.436476	0.211148	1.13261
Repeat: 1	-0.025726	1.17668	0.804961	0.977728	0.0461659
Repeat: 2	-0.0264329	1.1862	0.80494	0.976299	0.046792
Repeat: 3	-0.0258773	1.18536	0.811051	0.98037	0.0457518
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.196583	5.05128	0.342734	0.00138458	0.111682
Std Dev:	0.00210186	0.0125452	0.000344139	2.21841e-005	0.000343361
%RSD:	1.0692	0.248357	0.10041	1.60222	0.307444
Repeat: 1	0.195566	5.04674	0.34313	0.00138208	0.111456
Repeat: 2	0.198999	5.04164	0.342567	0.00140791	0.111513
Repeat: 3	0.195182	5.06546	0.342506	0.00136376	0.112078
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.457579	0.040098	1.01926	1.15481	3.10686
Std Dev:	0.000505397	0.000936972	0.00226479	0.00670046	0.0156582
%RSD:	0.11045	2.33671	0.2222	0.58022	0.503988
Repeat: 1	0.458163	0.0403621	1.02175	1.14865	3.09133
Repeat: 2	0.457282	0.0390573	1.01733	1.15385	3.10661
Repeat: 3	0.457293	0.0408746	1.0187	1.16194	3.12265
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.0622745	0.0277602	3242.21	0.289133	0.665513
Std Dev:	0.00229001	0.00105019	15.2957	0.000864555	0.00167468

%RSD:	3.67729	3.78307	0.471768	0.299016	0.251638
Repeat: 1	0.0640722	0.0277477	3239.64	0.288255	0.666776
Repeat: 2	0.063055	0.0267163	3258.62	0.28916	0.663613
Repeat: 3	0.0596962	0.0288166	3228.36	0.289984	0.666151
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	3.9744	-0.0229631	0.0297602	24.3611	2338.64
Std Dev:	0.00833283	0.000973277	0.000352643	0.0491781	5.27186
%RSD:	0.209663	4.23843	1.18495	0.201872	0.225424
Repeat: 1	3.96499	-0.0240317	0.0296795	24.4032	2343.81
Repeat: 2	3.98085	-0.0221274	0.0301462	24.307	2338.83
Repeat: 3	3.97736	-0.0227303	0.0294549	24.373	2333.27
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	663698	15014			
Std Dev:	5206.18	18.5151			
%RSD:	0.784421	0.123318			
Repeat: 1	665206	14992.9			
Repeat: 2	657904	15027.6			
Repeat: 3	667983	15021.5			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	33.5386	119894	713.979	150.43	813.176
Std Dev:	0.716447	372.547	0.978059	0.354718	3.58064
%RSD:	2.13619	0.310729	0.136987	0.235802	0.440327
Repeat: 1	32.8081	119475	714.873	150.07	809.245
Repeat: 2	34.2401	120187	712.934	150.779	814.035
Repeat: 3	33.5676	120021	714.128	150.442	816.25
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	4.80597	13.3736	17.429	79.1699	978.392
Std Dev:	0.116623	0.0596005	0.0997651	0.243377	11.2021
%RSD:	2.42662	0.445658	0.572408	0.307411	1.14495
Repeat: 1	4.87701	13.305	17.3703	79.197	976.886
Repeat: 2	4.67137	13.4127	17.3726	78.9141	990.27
Repeat: 3	4.86952	13.4031	17.5442	79.3986	968.019
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	2070.81	233901	16.9337	249.162	36.3788
Std Dev:	22.0137	580.851	0.0164834	3.87806	0.111757
%RSD:	1.06305	0.248332	0.0973408	1.55644	0.307205
Repeat: 1	2060.14	233691	16.9527	248.726	36.3053
Repeat: 2	2096.13	233455	16.9257	253.239	36.3236
Repeat: 3	2056.17	234558	16.9228	245.52	36.5074
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1285.76	13.3117	26.2434	241.314	1537.7
Std Dev:	1.42991	0.236662	0.0585084	1.43365	7.67198
%RSD:	0.111211	1.77784	0.222945	0.594101	0.498927
Repeat: 1	1287.41	13.3754	26.3078	239.989	1530.05
Repeat: 2	1284.94	13.0498	26.1934	241.116	1537.64

Repeat: 3	1284.94	13.5101	26.2289	242.836	1545.4
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	46.0047	33.0634	57814.2	189.289	319.214
Std Dev:	2.50736	2.34737	272.937	0.56421	0.785381
%RSD:	5.45024	7.0996	0.472093	0.298068	0.246036
Repeat: 1	48.135	33.0499	57768.4	188.717	319.807
Repeat: 2	46.6375	30.7227	58107.2	189.305	318.323
Repeat: 3	43.2415	35.4174	57567.1	189.845	319.512
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	15851.9	6.54527	582.797	2174.38	2338.64
Std Dev:	33.2422	1.32687	6.94127	4.42967	5.27186
%RSD:	0.209705	20.2723	1.19103	0.203721	0.225424
Repeat: 1	15814.4	5.09395	581.237	2178.17	2343.81
Repeat: 2	15877.6	7.69619	590.385	2169.51	2338.83
Repeat: 3	15863.7	6.84567	576.768	2175.47	2333.27
QC Status Pass/Fail:	Fail	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	663698	15014
Std Dev:	5206.18	18.5151
%RSD:	0.784421	0.123318
Repeat: 1	665206	14992.9
Repeat: 2	657904	15027.6
Repeat: 3	667983	15021.5
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2338.64	663698	15014
Std Dev:	5.27186	5206.18	18.5151
%RSD:	0.225424	0.784421	0.123318
Repeat: 1	2343.81	665206	14992.9
Repeat: 2	2338.83	657904	15027.6
Repeat: 3	2333.27	667983	15021.5

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608251-05@2X	9/14/2016 3:58:25PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000425789	4.85937	0.0111233	0.00158832	2.19198
Std Dev:	8.25057e-006	0.00845908	0.000623335	1.48164e-005	0.00322447
%RSD:	1.93771	0.174078	5.60385	0.932837	0.147103
Repeat: 1	0.000430445	4.85116	0.0118007	0.00157128	2.19414
Repeat: 2	0.000416262	4.86806	0.010574	0.00159816	2.18827
Repeat: 3	0.000430658	4.85891	0.0109952	0.00159552	2.19353
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00941097	0.316152	0.255512	0.694244	0.00937995

Std Dev:	0.000169543	0.00107532	0.00191361	0.00192644	1.84933e-005
%RSD:	1.80155	0.340129	0.748932	0.277488	0.197158
Repeat: 1	0.0093256	0.315188	0.257714	0.696448	0.00937903
Repeat: 2	0.00930108	0.315958	0.254254	0.693402	0.00939889
Repeat: 3	0.00960623	0.317312	0.254567	0.692882	0.00936193
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0116282	3.98142	0.316649	0.00152832	0.0916077
Std Dev:	2.32739e-005	0.0097365	0.000887281	1.51564e-005	4.76907e-005
%RSD:	0.200151	0.244549	0.28021	0.9917	0.0520597
Repeat: 1	0.011614	3.97617	0.31568	0.00154566	0.0916059
Repeat: 2	0.011655	3.99265	0.317421	0.00151756	0.0916563
Repeat: 3	0.0116155	3.97543	0.316846	0.00152176	0.091561
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.351254	0.0118854	0.35654	0.645249	0.117152
Std Dev:	0.00358311	0.00132223	0.00116055	0.00224366	0.000711567
%RSD:	1.02009	11.1249	0.325504	0.34772	0.607386
Repeat: 1	0.347966	0.0134116	0.356526	0.646503	0.117623
Repeat: 2	0.355073	0.0110879	0.357707	0.642659	0.116334
Repeat: 3	0.350724	0.0111565	0.355386	0.646586	0.117501
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.00202175	0.0142964	3359.83	0.0266196	0.125308
Std Dev:	0.00108834	0.000637989	7.71949	0.000629165	0.000151697
%RSD:	53.8316	4.46259	0.229758	2.36354	0.121059
Repeat: 1	0.000866059	0.0147677	3360.86	0.0268869	0.125413
Repeat: 2	0.00217209	0.014551	3366.98	0.025901	0.125134
Repeat: 3	0.00302711	0.0135704	3351.65	0.027071	0.125378
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.732577	-0.00478806	0.0147457	3.97202	2388.57
Std Dev:	0.00138377	0.0015556	1.07283e-006	0.0120227	5.31697
%RSD:	0.188891	32.4892	0.0072756	0.302684	0.2226
Repeat: 1	0.730994	-0.00407886	0.0147457	3.97059	2383.43
Repeat: 2	0.733182	-0.00657188	0.0147446	3.96078	2394.05
Repeat: 3	0.733556	-0.00371344	0.0147467	3.9847	2388.24
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	665239	15015.9			
Std Dev:	2811.74	6.38118			
%RSD:	0.422666	0.0424961			
Repeat: 1	668383	15015.2			
Repeat: 2	664366	15022.6			
Repeat: 3	662967	15009.9			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.653499	116580	47.211	103.487	128.085
Std Dev:	0.15234	202.982	1.42867	0.901235	0.193079
%RSD:	23.3114	0.174113	3.02614	0.870867	0.150743
Repeat: 1	-0.567413	116383	48.7673	102.454	128.214
Repeat: 2	-0.829392	116789	45.9591	104.113	127.863
Repeat: 3	-0.563691	116569	46.9064	103.895	128.178
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	5.8111	3.57149	0.0624006	70.559	192.598

Std Dev:	0.0657761	0.0121631	0.0778363	0.24538	0.387833
%RSD:	1.1319	0.340559	124.737	0.347766	0.201369
Repeat: 1	5.77355	3.56058	0.149076	70.8412	192.587
Repeat: 2	5.77271	3.56929	-0.00152819	70.4402	192.992
Repeat: 3	5.88705	3.58461	0.0396537	70.3956	192.216
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	123.426	184358	15.6843	275.545	29.8359
Std Dev:	0.261641	450.878	0.0424986	2.65106	0.015695
%RSD:	0.211983	0.244566	0.270962	0.962113	0.0526042
Repeat: 1	123.264	184115	15.6379	278.577	29.8352
Repeat: 2	123.727	184878	15.7213	273.661	29.852
Repeat: 3	123.286	184081	15.6937	274.398	29.8206
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	986.857	5.26381	9.12277	131.778	83.5251
Std Dev:	10.1008	0.323966	0.0299816	0.485093	0.315256
%RSD:	1.02353	6.15459	0.328646	0.368112	0.377438
Repeat: 1	977.584	5.63786	9.12241	132.049	83.7161
Repeat: 2	997.62	5.07244	9.15293	131.218	83.1612
Repeat: 3	985.367	5.08112	9.09297	132.068	83.6979
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-0.910707	2.22421	59903.1	18.2032	66.1856
Std Dev:	1.26103	1.42946	137.885	0.410215	0.0710841
%RSD:	138.467	64.2682	0.230181	2.25353	0.107401
Repeat: 1	-2.24032	3.29811	59921.5	18.3775	66.2347
Repeat: 2	-0.760014	2.77279	60030.9	17.7346	66.1041
Repeat: 3	0.268207	0.601716	59757	18.4975	66.2181
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	2918.29	-0.368214	291.352	353.776	2388.57
Std Dev:	5.5208	1.99406	0.00813073	1.07993	5.31697
%RSD:	0.189179	541.55	0.00279069	0.305258	0.2226
Repeat: 1	2911.97	0.531734	291.35	353.656	2383.43
Repeat: 2	2920.7	-2.65363	291.345	352.761	2394.05
Repeat: 3	2922.2	1.01725	291.361	354.911	2388.24
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	665239	15015.9			
Std Dev:	2811.74	6.38118			
%RSD:	0.422666	0.0424961			
Repeat: 1	668383	15015.2			
Repeat: 2	664366	15022.6			
Repeat: 3	662967	15009.9			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**

Avg. of Repeats:	2388.57	665239	15015.9
Std Dev:	5.31697	2811.74	6.38118
%RSD:	0.2226	0.422666	0.0424961
Repeat: 1	2383.43	668383	15015.2
Repeat: 2	2394.05	664366	15022.6
Repeat: 3	2388.24	662967	15009.9

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608251-06@2X	9/14/2016 4:02:52PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000459071	3.13978	0.0140032	0.00133052	1.5645
Std Dev:	2.22403e-005	0.00696882	0.000715217	4.7759e-005	0.0022785
%RSD:	4.84462	0.221953	5.10752	3.58951	0.145637
Repeat: 1	0.000440036	3.14018	0.0134123	0.00137812	1.56224
Repeat: 2	0.000483518	3.14654	0.013799	0.0012826	1.5668
Repeat: 3	0.000453661	3.13262	0.0147983	0.00133083	1.56446
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00729632	0.227951	0.237751	0.55771	0.00749897
Std Dev:	0.000383926	0.000233839	0.00129736	0.00274621	0.000159165
%RSD:	5.26191	0.102583	0.54568	0.492408	2.1225
Repeat: 1	0.00750909	0.228051	0.238156	0.558534	0.0076353
Repeat: 2	0.00685312	0.228119	0.238797	0.554646	0.00732406
Repeat: 3	0.00752675	0.227684	0.236299	0.55995	0.00753756
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00767726	3.69079	0.296353	0.00110103	0.0787957
Std Dev:	0.000186136	0.0235554	0.00108417	5.16482e-005	0.000154687
%RSD:	2.42451	0.638221	0.365837	4.69089	0.196313
Repeat: 1	0.00784465	3.70706	0.297431	0.00114524	0.0789286
Repeat: 2	0.00747681	3.70154	0.296365	0.00104426	0.0788326
Repeat: 3	0.00771032	3.66378	0.295263	0.0011136	0.0786259
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.215808	0.0104803	0.323462	0.535132	0.110069
Std Dev:	0.00444223	0.000869846	0.00297511	0.00140271	0.00250515
%RSD:	2.05841	8.29978	0.919771	0.262123	2.27597
Repeat: 1	0.219739	0.0103506	0.325477	0.533723	0.110378
Repeat: 2	0.210989	0.00968268	0.324865	0.535147	0.112406
Repeat: 3	0.216697	0.0114078	0.320045	0.536528	0.107424
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.000926219	0.0130144	2832.98	0.0267082	0.10418
Std Dev:	7.68341e-005	0.000535299	8.61385	0.000299187	0.000245855
%RSD:	8.29545	4.11313	0.304056	1.12021	0.23599
Repeat: 1	0.000856926	0.0130944	2839.16	0.0267333	0.104317
Repeat: 2	0.000912883	0.0124436	2823.14	0.0269941	0.104326
Repeat: 3	0.00100885	0.0135052	2836.65	0.0263973	0.103896
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.551425	-0.00341507	0.0116236	3.7126	2397.88
Std Dev:	0.00244636	0.0010091	0.000239904	0.00978923	9.9342
%RSD:	0.443644	29.5485	2.06394	0.263676	0.414292
Repeat: 1	0.551159	-0.0045113	0.011837	3.71581	2409.31

Repeat: 2	0.553993	-0.00320901	0.0113639	3.70161	2392.95
Repeat: 3	0.549122	-0.00252491	0.0116699	3.72038	2391.37
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	669337	15060			
Std Dev:	13747.8	58.6745			
%RSD:	2.05395	0.389606			
Repeat: 1	659033	15045.4			
Repeat: 2	684947	15009.9			
Repeat: 3	664031	15124.5			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.28336	75316.9	52.7204	87.1394	90.8032
Std Dev:	0.387516	167.198	1.61854	2.8528	0.119748
%RSD:	136.758	0.221993	3.07004	3.27383	0.131877
Repeat: 1	-0.615543	75326.5	51.375	90.0301	90.6802
Repeat: 2	0.142365	75479	52.2697	84.3261	90.9194
Repeat: 3	-0.376901	75145.1	54.5166	87.062	90.8101
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	4.37079	2.57385	0.262597	55.922	152.834
Std Dev:	0.131834	0.00264496	0.0152597	0.364871	3.39844
%RSD:	3.01625	0.102763	5.81109	0.652464	2.22361
Repeat: 1	4.44678	2.57497	0.249491	56.0033	155.735
Repeat: 2	4.21856	2.57574	0.27935	55.5234	149.095
Repeat: 3	4.44703	2.57082	0.258949	56.2394	153.672
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	81.1247	170899	14.7122	200.944	25.6698
Std Dev:	1.94445	1090.7	0.051929	9.03053	0.0507754
%RSD:	2.39687	0.638211	0.352966	4.49406	0.197802
Repeat: 1	82.905	171652	14.7638	208.669	25.7133
Repeat: 2	79.0497	171397	14.7128	191.016	25.682
Repeat: 3	81.4195	169649	14.66	203.146	25.614
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	604.992	4.75242	8.26824	108.168	71.1497
Std Dev:	12.5352	0.204908	0.0768588	0.311061	1.23786
%RSD:	2.07195	4.31166	0.929566	0.287572	1.7398
Repeat: 1	616.066	4.72944	8.32029	107.86	71.2846
Repeat: 2	591.383	4.55997	8.30447	108.163	72.3146
Repeat: 3	607.527	4.96785	8.17997	108.482	69.8499
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-0.882139	1.31818	50495.2	18.2762	56.2975
Std Dev:	0.148069	1.21858	153.709	0.195754	0.115181
%RSD:	16.7852	92.4437	0.304402	1.07109	0.204594
Repeat: 1	-1.05005	1.47837	50605.6	18.2916	56.3618
Repeat: 2	-0.826081	0.0274368	50319.6	18.4639	56.3661

Repeat: 3	-0.770284	2.44875	50560.3	18.0733	56.1645
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**TI1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	2195.75	0.111408	230.464	331.014	2397.88
Std Dev:	9.76009	1.29548	4.70092	0.865889	9.9342
%RSD:	0.444499	1162.83	2.03977	0.261586	0.414292
Repeat: 1	2194.68	-1.29947	234.654	331.291	2409.31
Repeat: 2	2206	0.386321	225.38	330.044	2392.95
Repeat: 3	2186.56	1.24737	231.356	331.709	2391.37
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	669337	15060
Std Dev:	13747.8	58.6745
%RSD:	2.05395	0.389606
Repeat: 1	659033	15045.4
Repeat: 2	684947	15009.9
Repeat: 3	664031	15124.5
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2397.88	669337	15060
Std Dev:	9.9342	13747.8	58.6745
%RSD:	0.414292	2.05395	0.389606
Repeat: 1	2409.31	659033	15045.4
Repeat: 2	2392.95	684947	15009.9
Repeat: 3	2391.37	664031	15124.5

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608251-07@2X	9/14/2016 4:07:09PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.00044317	4.13978	0.00728265	0.00138985	1.62275
Std Dev:	7.88606e-006	0.0163924	0.00147699	2.07693e-005	0.00537573
%RSD:	1.77947	0.395973	20.2809	1.49435	0.331273
Repeat: 1	0.000448286	4.12365	0.00895587	0.00137488	1.62326
Repeat: 2	0.000447136	4.13925	0.00616012	0.00141356	1.62785
Repeat: 3	0.000434088	4.15643	0.00673196	0.00138112	1.61714
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00834187	0.239939	0.267971	0.701526	0.0080216
Std Dev:	0.000331001	0.00160503	0.00102748	0.00248208	5.7015e-005
%RSD:	3.96794	0.668932	0.383429	0.353812	0.710769
Repeat: 1	0.00803848	0.238147	0.267365	0.698667	0.00798382
Repeat: 2	0.00869488	0.240429	0.269157	0.703125	0.00808718
Repeat: 3	0.00829225	0.241243	0.26739	0.702787	0.0079938
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0108593	4.45151	0.284145	0.00145564	0.101527
Std Dev:	9.76554e-005	0.0460443	0.00105466	1.38802e-005	0.000786563
%RSD:	0.899275	1.03435	0.371171	0.953542	0.774736

Repeat: 1	0.0107571	4.40941	0.283036	0.00144165	0.100619
Repeat: 2	0.0109517	4.44444	0.284262	0.00146941	0.101945
Repeat: 3	0.0108693	4.50068	0.285136	0.00145588	0.102016
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.285305	0.013163	0.255949	0.644539	0.10966
Std Dev:	0.00273688	0.00113757	0.00256841	0.00182733	0.000445721
%RSD:	0.959283	8.64219	1.00349	0.283509	0.406457
Repeat: 1	0.282506	0.0138872	0.253578	0.642504	0.109553
Repeat: 2	0.287975	0.0118519	0.255591	0.646038	0.11015
Repeat: 3	0.285434	0.01375	0.258677	0.645076	0.109278
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.000385324	0.0147069	3010.36	0.0219243	0.110743
Std Dev:	0.000360757	0.0012979	13.373	0.0006258	0.00076703
%RSD:	93.6243	8.82512	0.444232	2.85437	0.692623
Repeat: 1	9.50373e-005	0.0160529	3018.62	0.0224652	0.109996
Repeat: 2	0.000271729	0.0134632	2994.93	0.0220689	0.110704
Repeat: 3	0.000789207	0.0146045	3017.53	0.0212389	0.111529
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.590563	-0.00185201	0.0127626	4.59651	2382.71
Std Dev:	0.0019837	0.000352092	7.26732e-005	0.0129322	5.24215
%RSD:	0.335899	19.0113	0.569424	0.281349	0.220008
Repeat: 1	0.58941	-0.00147028	0.0127406	4.58181	2383.91
Repeat: 2	0.589425	-0.00192171	0.0128437	4.60159	2376.97
Repeat: 3	0.592854	-0.00216404	0.0127034	4.60613	2387.24
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	663239	14867.6			
Std Dev:	6471.61	14.6309			
%RSD:	0.975758	0.0984078			
Repeat: 1	668576	14884.5			
Repeat: 2	656041	14859.2			
Repeat: 3	665101	14859.1			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.551692	99312.6	38.6658	93.3265	94.1549
Std Dev:	0.150994	393.253	3.37158	1.24897	0.329844
%RSD:	27.3693	0.395975	8.71981	1.33828	0.350321
Repeat: 1	-0.456215	98925.8	42.472	92.2872	94.193
Repeat: 2	-0.473089	99300	36.0539	94.7121	94.464
Repeat: 3	-0.725772	99712	37.4715	92.9803	93.8076
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	4.89558	2.70944	-0.149139	71.9285	163.488
Std Dev:	0.121319	0.0181546	0.0910219	0.253977	1.21625
%RSD:	2.47812	0.670048	61.0316	0.353097	0.743937
Repeat: 1	4.77916	2.68917	-0.096571	71.6453	162.707
Repeat: 2	5.02127	2.71498	-0.0966041	72.1361	164.89
Repeat: 3	4.88632	2.72419	-0.254242	72.0042	162.869
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	115.819	206124	14.1274	262.907	33.0673

Std Dev:	1.06162	2132.03	0.0505157	2.42444	0.256252
%RSD:	0.916618	1.03434	0.357572	0.922165	0.774942
Repeat: 1	114.675	204175	14.0743	260.465	32.7717
Repeat: 2	116.772	205797	14.1331	265.314	33.2028
Repeat: 3	116.012	208401	14.1749	262.942	33.2273
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	800.302	5.82932	6.5241	131.325	75.5616
Std Dev:	7.70266	0.283208	0.0663522	0.380035	0.209764
%RSD:	0.962468	4.85834	1.01703	0.289386	0.277607
Repeat: 1	792.448	5.98608	6.46285	130.907	75.4648
Repeat: 2	807.844	5.50239	6.51487	131.651	75.8023
Repeat: 3	800.615	5.99949	6.59458	131.415	75.4177
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-2.63676	3.41217	53669.3	15.1514	59.3713
Std Dev:	0.368792	2.94361	238.771	0.407874	0.359227
%RSD:	13.9866	86.268	0.444893	2.69199	0.605052
Repeat: 1	-2.90247	6.48965	53816.3	15.5041	59.0216
Repeat: 2	-2.7921	0.623768	53393.8	15.2453	59.3529
Repeat: 3	-2.21571	3.12308	53797.8	14.7048	59.7393
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	2351.57	1.72137	253.262	409.829	2382.71
Std Dev:	7.90846	0.474887	1.41437	1.14948	5.24215
%RSD:	0.336305	27.5877	0.558463	0.280479	0.220008
Repeat: 1	2346.99	2.23662	252.794	408.523	2383.91
Repeat: 2	2347.03	1.62625	254.851	410.276	2376.97
Repeat: 3	2360.71	1.30125	252.141	410.687	2387.24
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	663239	14867.6			
Std Dev:	6471.61	14.6309			
%RSD:	0.975758	0.0984078			
Repeat: 1	668576	14884.5			
Repeat: 2	656041	14859.2			
Repeat: 3	665101	14859.1			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2382.71	663239	14867.6
Std Dev:	5.24215	6471.61	14.6309
%RSD:	0.220008	0.975758	0.0984078
Repeat: 1	2383.91	668576	14884.5
Repeat: 2	2376.97	656041	14859.2
Repeat: 3	2387.24	665101	14859.1

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608251-08@2X	9/14/2016 4:11:27PM	Unknown	1.00

Valid	Analyst Name	Method Name
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.000447063	3.08446	0.0141582	0.00134035	1.18226
Std Dev:	1.17417e-005	0.0096353	0.00079066	2.38201e-005	0.00332017
%RSD:	2.6264	0.312382	5.58445	1.77716	0.280833
Repeat: 1	0.000447241	3.07855	0.0143087	0.00135608	1.1801
Repeat: 2	0.000458715	3.09557	0.0148629	0.00131294	1.18059
Repeat: 3	0.000435234	3.07924	0.0133032	0.00135202	1.18608
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	0.00743329	0.201205	0.201583	0.62682	0.0058598
Std Dev:	0.000334033	0.000380502	0.0022814	0.00278086	0.000112087
%RSD:	4.49375	0.189112	1.13175	0.443646	1.91281
Repeat: 1	0.00776941	0.201264	0.203606	0.623683	0.00591429
Repeat: 2	0.00710138	0.201553	0.19911	0.627797	0.00573089
Repeat: 3	0.00742908	0.200799	0.202032	0.628981	0.00593423
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.00709412	3.11417	0.254162	0.000930014	0.05411
Std Dev:	0.000125695	0.0252382	0.00246219	2.2396e-005	0.000189699
%RSD:	1.77183	0.810431	0.968748	2.40813	0.350581
Repeat: 1	0.0072092	3.0956	0.25309	0.000939983	0.0539559
Repeat: 2	0.00695999	3.14291	0.256978	0.000904364	0.0543218
Repeat: 3	0.00711317	3.10401	0.252417	0.000945694	0.0540521
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.252805	0.00604233	0.180467	0.44604	0.0755714
Std Dev:	0.00315257	0.00143748	0.0012544	0.000405193	0.00124577
%RSD:	1.24703	23.7902	0.695086	0.0908424	1.64847
Repeat: 1	0.25548	0.00505987	0.18019	0.445754	0.0767981
Repeat: 2	0.24933	0.0076922	0.181837	0.446504	0.0756086
Repeat: 3	0.253606	0.00537494	0.179375	0.445863	0.0743074
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	-0.000996688	0.0136163	2898.35	0.0207956	0.0757048
Std Dev:	0.00111837	0.000598311	19.4903	0.000980266	0.00137849
%RSD:	112.209	4.39407	0.672464	4.71383	1.82088
Repeat: 1	-0.00030214	0.0132831	2885.56	0.019689	0.0741132
Repeat: 2	-0.00228681	0.0143071	2920.78	0.0211426	0.0765202
Repeat: 3	-0.000401115	0.0132589	2888.7	0.0215551	0.076481
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.442566	-0.00299994	0.00829074	3.12385	2406.62
Std Dev:	0.00166306	0.000652411	0.000131507	0.0101192	2.52703
%RSD:	0.375776	21.7475	1.58618	0.323932	0.105004
Repeat: 1	0.441338	-0.00375318	0.0083786	3.1152	2404.11
Repeat: 2	0.444459	-0.0026131	0.00813955	3.12138	2409.16
Repeat: 3	0.441901	-0.00263352	0.00835408	3.13498	2406.58
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	676948	15061.8			
Std Dev:	8889.26	54.1935			
%RSD:	1.31314	0.359807			
Repeat: 1	668947	14999.2			
Repeat: 2	686517	15093.1			
Repeat: 3	675382	15093.1			

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.771813	73991	52.1155	85.6445	68.0871
Std Dev:	0.204948	231.156	1.86015	1.32917	0.201689
%RSD:	26.5542	0.31241	3.56929	1.55196	0.296221
Repeat: 1	-0.760901	73849.4	52.4332	86.5161	67.9698
Repeat: 2	-0.572539	74257.8	53.7964	84.1147	67.9716
Repeat: 3	-0.982	73865.9	50.117	86.3027	68.32
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	4.03845	2.27132	-0.0197197	65.6763	118.093
Std Dev:	0.116826	0.00430388	0.12204	0.315532	2.40464
%RSD:	2.89286	0.189488	618.875	0.480435	2.03624
Repeat: 1	4.1575	2.27198	0.0822526	65.3319	119.263
Repeat: 2	3.92398	2.27525	-0.154938	65.7456	115.327
Repeat: 3	4.03386	2.26672	0.0135262	65.9514	119.688
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	73.7725	144200	12.6913	171.193	17.6422
Std Dev:	1.27125	1168.57	0.117933	3.91822	0.0621977
%RSD:	1.7232	0.810384	0.929239	2.28877	0.35255
Repeat: 1	74.9437	143340	12.64	172.938	17.5918
Repeat: 2	72.4205	145530	12.8262	166.706	17.7117
Repeat: 3	73.9533	143729	12.6078	173.936	17.6232
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	709.966	3.337	4.57412	89.3323	54.6072
Std Dev:	8.92047	0.36735	0.0324062	0.0731286	0.609418
%RSD:	1.25646	11.0084	0.708467	0.0818613	1.116
Repeat: 1	717.533	3.08501	4.56696	89.2811	55.1889
Repeat: 2	700.13	3.7585	4.60951	89.4161	54.6592
Repeat: 3	712.235	3.1675	4.5459	89.2997	53.9734
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-1.48223	3.1197	51656.1	14.4375	42.957
Std Dev:	1.27014	1.31567	348.185	0.639388	0.646017
%RSD:	85.6913	42.1729	0.674045	4.42865	1.50387
Repeat: 1	-0.682366	2.39018	51427.7	13.7156	42.2112
Repeat: 2	-2.94678	4.63852	52056.9	14.6646	43.3391
Repeat: 3	-0.817534	2.33041	51483.9	14.9324	43.3208
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1761.8	-0.141166	165.23	278.269	2406.62
Std Dev:	6.63329	0.829084	2.56414	0.906359	2.52703
%RSD:	0.376507	587.312	1.55186	0.325714	0.105004
Repeat: 1	1756.9	-1.09847	166.938	277.487	2404.11
Repeat: 2	1769.35	0.345454	162.282	278.057	2409.16

Repeat: 3	1759.14	0.329514	166.47	279.262	2406.58
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	676948	15061.8			
Std Dev:	8889.26	54.1935			
%RSD:	1.31314	0.359807			
Repeat: 1	668947	14999.2			
Repeat: 2	686517	15093.1			
Repeat: 3	675382	15093.1			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2406.62	676948	15061.8
Std Dev:	2.52703	8889.26	54.1935
%RSD:	0.105004	1.31314	0.359807
Repeat: 1	2404.11	668947	14999.2
Repeat: 2	2409.16	686517	15093.1
Repeat: 3	2406.58	675382	15093.1

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608251-09@2X	9/14/2016 4:15:46PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000426383	3.54594	0.00714092	0.00146717	1.77391
Std Dev:	4.51706e-005	0.00522302	0.000257907	1.01758e-005	0.00364513
%RSD:	10.5939	0.147296	3.61167	0.69357	0.205485
Repeat: 1	0.0004672	3.54045	0.00715802	0.00146318	1.77082
Repeat: 2	0.000434096	3.55085	0.00687489	0.00147873	1.77298
Repeat: 3	0.000377852	3.54652	0.00738985	0.00145959	1.77793
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00659676	0.201571	0.219785	0.56759	0.00728839
Std Dev:	0.000295366	0.0005106	0.00128335	0.000762555	8.82754e-005
%RSD:	4.47744	0.253311	0.583914	0.13435	1.21118
Repeat: 1	0.00654664	0.201149	0.220926	0.566783	0.00721076
Repeat: 2	0.00632966	0.202138	0.218395	0.568299	0.00738441
Repeat: 3	0.00691398	0.201425	0.220034	0.567687	0.00727001
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00994376	3.39313	0.295487	0.00098051	0.0830269
Std Dev:	9.02079e-005	0.0121193	0.000855908	3.18487e-005	0.000218964
%RSD:	0.90718	0.357173	0.28966	3.24818	0.263726
Repeat: 1	0.00986924	3.39699	0.294982	0.000958703	0.0831553
Repeat: 2	0.0100441	3.40284	0.296476	0.00101706	0.0831513
Repeat: 3	0.009918	3.37955	0.295005	0.000965768	0.0827741
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.236075	0.00629214	0.285855	0.56883	0.101187
Std Dev:	0.00216422	0.000585795	0.00110826	0.00140012	0.00241368
%RSD:	0.916751	9.30994	0.3877	0.246141	2.38538
Repeat: 1	0.234209	0.00589652	0.285351	0.569952	0.103112
Repeat: 2	0.238448	0.00696511	0.287126	0.567261	0.0984788

Repeat: 3	0.235568	0.00601481	0.285088	0.569277	0.101969
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.000612136	0.0130329	2883.35	0.0212373	0.0964426
Std Dev:	0.000618016	0.00172977	3.77855	0.000154423	8.23236e-005
%RSD:	100.961	13.2724	0.131047	0.727132	0.0853603
Repeat: 1	-0.00116837	0.0149853	2881.96	0.0211896	0.0965372
Repeat: 2	-0.000721181	0.0124216	2880.46	0.0214099	0.0963873
Repeat: 3	5.31443e-005	0.0116917	2887.63	0.0211123	0.0964032
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.609088	-0.0044994	0.0111258	3.81029	2388.43
Std Dev:	0.00195878	0.000355715	0.000155045	0.00277785	5.58695
%RSD:	0.321592	7.90583	1.39357	0.072904	0.233918
Repeat: 1	0.607223	-0.0040907	0.0109547	3.81028	2390.15
Repeat: 2	0.611129	-0.00473919	0.0112571	3.80752	2392.94
Repeat: 3	0.608913	-0.0046683	0.0111654	3.81308	2382.18
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	661543	14986.1			
Std Dev:	5555.96	10.4055			
%RSD:	0.839848	0.0694344			
Repeat: 1	667605	14997.3			
Repeat: 2	656692	14984.3			
Repeat: 3	660334	14976.8			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.890784	85065	36.5655	94.2119	103.232
Std Dev:	0.816397	125.322	0.579099	0.641128	0.223388
%RSD:	91.6493	0.147324	1.58373	0.680517	0.216395
Repeat: 1	-0.160252	84933.3	36.6084	93.9874	103.037
Repeat: 2	-0.740058	85182.7	35.9662	94.9351	103.183
Repeat: 3	-1.77204	85078.9	37.122	93.7132	103.475
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	4.33351	2.27545	0.0571296	57.0254	148.402
Std Dev:	0.106418	0.00577543	0.0563781	0.0771078	1.8809
%RSD:	2.45569	0.253814	98.6846	0.135217	1.26743
Repeat: 1	4.30931	2.27068	0.0911483	56.938	146.744
Repeat: 2	4.24128	2.28187	-0.00794782	57.0838	150.446
Repeat: 3	4.44994	2.27381	0.0881883	57.0542	148.017
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	104.499	157116	14.6707	179.898	27.0361
Std Dev:	0.959519	561.184	0.0409959	5.5666	0.0713669
%RSD:	0.918209	0.357177	0.27944	3.0943	0.263969
Repeat: 1	103.72	157295	14.6465	176.087	27.0778
Repeat: 2	105.571	157566	14.7181	186.287	27.0767
Repeat: 3	104.206	156488	14.6476	177.322	26.9537
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	662.477	3.56671	7.2967	115.573	69.2885

Std Dev:	6.10102	0.148839	0.0286307	0.302109	1.15501
%RSD:	0.92094	4.173	0.392379	0.261402	1.66695
Repeat: 1	657.21	3.47052	7.28367	115.81	70.1926
Repeat: 2	669.162	3.73815	7.32952	115.233	67.9874
Repeat: 3	661.061	3.49148	7.27689	115.675	69.6856
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-2.21137	1.24368	51391.2	14.7117	52.6754
Std Dev:	0.721055	3.88173	67.3299	0.100273	0.0386399
%RSD:	32.6066	312.116	0.131014	0.681583	0.0733546
Repeat: 1	-2.82045	5.62836	51366.4	14.6815	52.7198
Repeat: 2	-2.39845	-0.143181	51339.8	14.8236	52.6494
Repeat: 3	-1.41522	-1.75413	51467.4	14.63	52.657
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	2425.77	-0.568273	220.364	339.652	2388.43
Std Dev:	7.81401	0.431987	3.02568	0.252459	5.58695
%RSD:	0.322126	76.0175	1.37303	0.0743286	0.233918
Repeat: 1	2418.32	-0.0721668	217.033	339.656	2390.15
Repeat: 2	2433.9	-0.861288	222.941	339.398	2392.94
Repeat: 3	2425.07	-0.771366	221.119	339.903	2382.18
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	661543	14986.1			
Std Dev:	5555.96	10.4055			
%RSD:	0.839848	0.0694344			
Repeat: 1	667605	14997.3			
Repeat: 2	656692	14984.3			
Repeat: 3	660334	14976.8			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2388.43	661543	14986.1
Std Dev:	5.58695	5555.96	10.4055
%RSD:	0.233918	0.839848	0.0694344
Repeat: 1	2390.15	667605	14997.3
Repeat: 2	2392.94	656692	14984.3
Repeat: 3	2382.18	660334	14976.8

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608251-10@2X	9/14/2016 4:20:05PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000462569	1.9426	0.00952749	0.0011147	1.15748
Std Dev:	1.8671e-005	0.00617526	0.000306252	1.15028e-005	0.00139149
%RSD:	4.03637	0.317886	3.2144	1.03192	0.120217
Repeat: 1	0.000476311	1.93629	0.0093109	0.00112773	1.15743

Repeat: 2	0.000470086	1.94288	0.00939371	0.00110595	1.15611
Repeat: 3	0.000441312	1.94863	0.00987788	0.00111041	1.15889
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00477137	0.135337	0.18118	0.546751	0.00457089
Std Dev:	7.02535e-005	0.000613837	0.0013682	0.001916	5.9385e-005
%RSD:	1.4724	0.453563	0.755161	0.350433	1.2992
Repeat: 1	0.00471749	0.135042	0.182254	0.545547	0.0046256
Repeat: 2	0.00474579	0.134926	0.179639	0.545746	0.00457934
Repeat: 3	0.00485083	0.136042	0.181645	0.548961	0.00450774
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00483234	2.8124	0.177958	0.000832495	0.0405934
Std Dev:	4.2132e-005	0.0179979	0.00149938	2.64694e-005	0.000210632
%RSD:	0.871876	0.639946	0.842547	3.17953	0.518883
Repeat: 1	0.00487057	2.79168	0.176598	0.000854474	0.0403622
Repeat: 2	0.00478717	2.82413	0.179566	0.000839897	0.0406437
Repeat: 3	0.00483928	2.82141	0.177712	0.000803112	0.0407743
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.179941	0.00678297	0.103901	0.324426	0.0564679
Std Dev:	0.000683312	0.000809924	0.000851916	0.00248379	0.000761057
%RSD:	0.379742	11.9406	0.819932	0.765594	1.34777
Repeat: 1	0.180536	0.00676907	0.103421	0.326526	0.0573104
Repeat: 2	0.180092	0.00598009	0.103397	0.321685	0.0558301
Repeat: 3	0.179195	0.00759976	0.104884	0.325067	0.0562633
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00227432	0.0124843	2358.09	0.0215776	0.0539981
Std Dev:	0.00159172	0.000312023	10.1172	0.00127221	0.000271515
%RSD:	69.9866	2.49934	0.429042	5.89595	0.502824
Repeat: 1	-0.00164148	0.0121245	2349.84	0.0214848	0.0536856
Repeat: 2	-0.00109634	0.0126474	2355.05	0.0203544	0.0541325
Repeat: 3	-0.00408512	0.0126809	2369.38	0.0228937	0.0541761
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.346744	-0.00187396	0.00615758	2.13329	2433.16
Std Dev:	0.00147752	0.00138119	8.20216e-005	0.00946504	12.5491
%RSD:	0.426113	73.7043	1.33204	0.443684	0.515752
Repeat: 1	0.345316	-0.00346139	0.00622512	2.13368	2426.43
Repeat: 2	0.346649	-0.00121332	0.00618132	2.12363	2447.64
Repeat: 3	0.348266	-0.000947156	0.00606631	2.14255	2425.41
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	666828	15014.4			
Std Dev:	2000.87	8.93363			
%RSD:	0.300058	0.0595005			
Repeat: 1	666626	15006.5			
Repeat: 2	664936	15012.6			
Repeat: 3	668923	15024.1			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.642411	46591.3	40.4708	71.161	66.5465
Std Dev:	0.34786	148.147	0.72789	0.621642	0.0789566
%RSD:	54.1492	0.317971	1.79855	0.873571	0.118649
Repeat: 1	-0.384843	46439.9	39.9341	71.8637	66.5527
Repeat: 2	-0.504267	46597.9	40.179	70.6827	66.4646
Repeat: 3	-1.03812	46735.9	41.2993	70.9367	66.6221

QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	2.70945	1.52628	-0.00532618	57.1717	90.8564
Std Dev:	0.0320834	0.00694314	0.0727791	0.21038	1.27612
%RSD:	1.18413	0.454907	1366.44	0.367979	1.40455
Repeat: 1	2.68358	1.52295	0.0674413	57.0628	92.0361
Repeat: 2	2.69943	1.52163	-0.0781169	57.0381	91.0312
Repeat: 3	2.74535	1.53426	-0.0053029	57.4142	89.5019
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	49.3516	130226	9.04137	154.249	13.2471
Std Dev:	0.415307	833.357	0.0718168	4.62953	0.0687821
%RSD:	0.841527	0.639932	0.794313	3.00134	0.519223
Repeat: 1	49.7135	129266	8.97619	158.094	13.1716
Repeat: 2	48.8982	130769	9.11836	155.543	13.2637
Repeat: 3	49.4431	130643	9.02956	149.11	13.3061
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	504.687	3.33491	2.59611	63.3106	39.4861
Std Dev:	1.94089	0.199631	0.0220083	0.541149	0.363827
%RSD:	0.384573	5.9861	0.847744	0.854753	0.921406
Repeat: 1	506.387	3.32107	2.58371	63.7729	39.8817
Repeat: 2	505.102	3.14256	2.5831	62.7154	39.1659
Repeat: 3	502.572	3.5411	2.62152	63.4434	39.4106
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-1.96962	1.97736	42008.7	14.9579	32.7944
Std Dev:	1.82442	0.680058	180.725	0.829781	0.127197
%RSD:	92.6281	34.3923	0.430209	5.54743	0.38786
Repeat: 1	-1.2379	1.19325	41861.3	14.8971	32.648
Repeat: 2	-0.624646	2.33248	41954.6	14.1603	32.8575
Repeat: 3	-4.04632	2.40634	42210.4	15.8165	32.8778
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1379.7	0.735288	123.482	189.909	2433.16
Std Dev:	5.89246	1.75679	1.60059	0.847483	12.5491
%RSD:	0.427081	238.926	1.29621	0.446257	0.515752
Repeat: 1	1374.01	-1.28304	124.793	189.943	2426.43
Repeat: 2	1379.33	1.5681	123.955	189.045	2447.64
Repeat: 3	1385.78	1.9208	121.698	190.739	2425.41
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	666828	15014.4			
Std Dev:	2000.87	8.93363			
%RSD:	0.300058	0.0595005			
Repeat: 1	666626	15006.5			
Repeat: 2	664936	15012.6			

Repeat: 3	668923	15024.1
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2433.16	666828	15014.4
Std Dev:	12.5491	2000.87	8.93363
%RSD:	0.515752	0.300058	0.0595005
Repeat: 1	2426.43	666626	15006.5
Repeat: 2	2447.64	664936	15012.6
Repeat: 3	2425.41	668923	15024.1

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608251-11@2X	9/14/2016 4:24:25PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000454947	3.2675	0.00167653	0.00158515	1.41976
Std Dev:	3.98799e-005	0.00520249	9.49048e-005	1.56172e-005	0.00426655
%RSD:	8.76584	0.159219	5.66077	0.985222	0.300513
Repeat: 1	0.000409927	3.26338	0.00171863	0.00158877	1.41839
Repeat: 2	0.000485841	3.27334	0.00156786	0.00156804	1.41634
Repeat: 3	0.000469074	3.26576	0.00174311	0.00159864	1.42454
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00739462	0.265142	0.197864	0.428992	0.00792192
Std Dev:	0.000538817	0.000273862	0.00196753	0.00110233	2.52764e-005
%RSD:	7.2866	0.103289	0.994387	0.256959	0.319069
Repeat: 1	0.00677666	0.265278	0.195743	0.42844	0.00790814
Repeat: 2	0.00776618	0.265321	0.198219	0.428274	0.0079511
Repeat: 3	0.00764103	0.264827	0.199629	0.430261	0.00790653
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00836008	3.07375	0.285281	0.000812909	0.0718431
Std Dev:	5.04537e-005	0.00761825	0.000181727	3.84286e-005	0.000231026
%RSD:	0.603508	0.247848	0.063701	4.7273	0.32157
Repeat: 1	0.00832584	3.07548	0.285394	0.00085372	0.0721067
Repeat: 2	0.00841802	3.06542	0.285379	0.000807589	0.0717469
Repeat: 3	0.00833638	3.08036	0.285072	0.000777417	0.0716758
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.335846	0.00486433	0.158926	0.512812	0.0855997
Std Dev:	0.00323141	0.00100683	0.00097162	0.00160071	0.002478
%RSD:	0.962171	20.6982	0.611367	0.312143	2.89487
Repeat: 1	0.338177	0.00594228	0.160023	0.512164	0.0828116
Repeat: 2	0.337203	0.00470247	0.15858	0.511637	0.0875508
Repeat: 3	0.332157	0.00394823	0.158175	0.514636	0.0864367
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.000749258	0.0130743	2814.21	0.0214457	0.102021
Std Dev:	0.0017942	0.00057895	6.71629	0.000608905	0.000220925
%RSD:	239.464	4.42816	0.238656	2.83929	0.216548
Repeat: 1	-0.00271907	0.0137323	2807.45	0.0216799	0.102276
Repeat: 2	-0.000320256	0.0126432	2814.3	0.0219027	0.101884
Repeat: 3	0.000791556	0.0128473	2820.88	0.0207545	0.101904
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**

Avg. of Repeats:	0.579777	-0.00374455	0.0130069	3.33598	2382.8
Std Dev:	0.00116483	0.000520641	6.1503e-005	0.00670874	8.55854
%RSD:	0.20091	13.904	0.472849	0.201103	0.35918
Repeat: 1	0.578462	-0.00357979	0.0129564	3.32823	2383.39
Repeat: 2	0.580192	-0.00432763	0.0130754	3.34004	2391.05
Repeat: 3	0.580678	-0.00332622	0.0129889	3.33966	2373.96
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	659132	14770.8			
Std Dev:	3961.28	57.5735			
%RSD:	0.600984	0.38978			
Repeat: 1	662587	14727.8			
Repeat: 2	654808	14748.4			
Repeat: 3	660001	14836.2			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.225768	78382.2	23.3004	100.151	82.4679
Std Dev:	0.733091	124.861	0.229512	0.955584	0.249062
%RSD:	324.709	0.159297	0.985013	0.954145	0.30201
Repeat: 1	-1.05279	78283.6	23.3975	100.372	82.3831
Repeat: 2	0.344102	78522.6	23.0383	99.1039	82.2722
Repeat: 3	0.0313833	78340.6	23.4654	100.976	82.7482
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	4.5031	2.99451	-0.121365	41.0479	161.978
Std Dev:	0.203197	0.00309767	0.0664831	0.118994	0.541895
%RSD:	4.51239	0.103445	54.7795	0.28989	0.334549
Repeat: 1	4.26983	2.99605	-0.196718	40.9901	161.679
Repeat: 2	4.64162	2.99654	-0.0963917	40.9689	162.603
Repeat: 3	4.59784	2.99095	-0.0709847	41.1848	161.651
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	87.3033	142330	14.1819	150.685	23.3978
Std Dev:	0.517991	352.724	0.00870428	6.71846	0.0750072
%RSD:	0.593323	0.247822	0.0613761	4.45861	0.320574
Repeat: 1	86.9441	142410	14.1872	157.82	23.4834
Repeat: 2	87.8971	141944	14.1866	149.756	23.3663
Repeat: 3	87.0687	142636	14.1718	144.479	23.3436
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	944.306	3.04477	4.01762	103.729	60.4902
Std Dev:	9.12243	0.247626	0.0251008	0.339383	1.2326
%RSD:	0.966046	8.13281	0.624767	0.327183	2.03769
Repeat: 1	950.883	3.31142	4.04597	103.589	59.1091
Repeat: 2	948.144	3.00085	4.00868	103.482	61.4788
Repeat: 3	933.892	2.82205	3.99821	104.116	60.8826
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-2.292	1.75104	50153.8	14.8384	55.2802

Std Dev:	2.07251	1.2982	119.919	0.396879	0.103517
%RSD:	90.4237	74.1384	0.239103	2.67467	0.187259
Repeat: 1	-4.5664	3.22651	50033.1	14.9914	55.3996
Repeat: 2	-1.79949	0.784043	50155.3	15.1361	55.2159
Repeat: 3	-0.51011	1.24258	50272.9	14.3878	55.2252
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	2308.95	0.304858	256.938	297.047	2382.8
Std Dev:	4.65061	0.658273	1.19328	0.602951	8.55854
%RSD:	0.201417	215.928	0.464422	0.202982	0.35918
Repeat: 1	2303.7	0.49468	255.962	296.351	2383.39
Repeat: 2	2310.61	-0.42747	258.268	297.406	2391.05
Repeat: 3	2312.55	0.847363	256.585	297.384	2373.96
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	659132	14770.8			
Std Dev:	3961.28	57.5735			
%RSD:	0.600984	0.38978			
Repeat: 1	662587	14727.8			
Repeat: 2	654808	14748.4			
Repeat: 3	660001	14836.2			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2382.8	659132	14770.8
Std Dev:	8.55854	3961.28	57.5735
%RSD:	0.35918	0.600984	0.38978
Repeat: 1	2383.39	662587	14727.8
Repeat: 2	2391.05	654808	14748.4
Repeat: 3	2373.96	660001	14836.2

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25804-CCV5	9/14/2016 4:29:20PM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.0270907	0.422962	0.449025	0.0180556	16.2913
Std Dev:	0.000299342	0.00221257	0.00307478	0.000203747	0.060893
%RSD:	1.10497	0.523114	0.684768	1.12844	0.373775
Repeat: 1	0.0272336	0.421174	0.446412	0.018032	16.2259
Repeat: 2	0.0272917	0.422276	0.448251	0.0182701	16.3019
Repeat: 3	0.0267466	0.425437	0.452413	0.0178647	16.3463
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	2.74718	4.5246	30.0636	8.12734	0.0465956
Std Dev:	0.0110697	0.0154066	0.102668	0.0329991	0.000587249
%RSD:	0.402949	0.340507	0.341501	0.406025	1.26031
Repeat: 1	2.73481	4.50712	30.0041	8.09516	0.0468428
Repeat: 2	2.75616	4.5362	30.0046	8.12578	0.0470188
Repeat: 3	2.75056	4.53048	30.1822	8.1611	0.0459252

Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.10044	0.218047	0.209248	0.00584669	0.147825
Std Dev:	0.000977994	0.00130886	0.00121515	6.01304e-005	0.000917982
%RSD:	0.973708	0.600264	0.580723	1.02845	0.620992
Repeat: 1	0.100688	0.216866	0.208929	0.00580597	0.146856
Repeat: 2	0.101271	0.219455	0.208224	0.00591575	0.148682
Repeat: 3	0.0993621	0.217821	0.21059	0.00581834	0.147937
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.350537	4.09207	1.94344	4.65596	2.00904
Std Dev:	0.00226037	0.0176671	0.00518195	0.0183465	0.00750859
%RSD:	0.64483	0.43174	0.266639	0.394043	0.373741
Repeat: 1	0.348545	4.07653	1.93833	4.63707	2.0005
Repeat: 2	0.352994	4.0884	1.94869	4.65711	2.01197
Repeat: 3	0.350071	4.11129	1.94328	4.67371	2.01463
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	0.886813	0.477387	251.868	1.56083	2.09367
Std Dev:	0.00470049	0.00209172	1.88197	0.00522612	0.0125293
%RSD:	0.530042	0.43816	0.747207	0.334829	0.598434
Repeat: 1	0.885328	0.474972	251.034	1.55489	2.07932
Repeat: 2	0.883035	0.47857	254.023	1.56289	2.0993
Repeat: 3	0.892077	0.478619	250.547	1.56471	2.10241
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.256488	0.795645	0.0510817	11.3281	2323.93
Std Dev:	0.00171702	0.0019251	0.000618026	0.0247155	7.99971
%RSD:	0.669437	0.241954	1.20988	0.218179	0.344232
Repeat: 1	0.254981	0.794093	0.0513045	11.3046	2333.1
Repeat: 2	0.256126	0.795044	0.0515574	11.3258	2320.33
Repeat: 3	0.258357	0.797799	0.0503831	11.3538	2318.37
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	632396	14381.6			
Std Dev:	5960.02	8.95783			
%RSD:	0.942452	0.0622866			
Repeat: 1	631952	14389.7			
Repeat: 2	626670	14383.2			
Repeat: 3	638565	14372			

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	489.283	9999.38	1051.31	1067.79	965.913
Std Dev:	5.51396	52.7665	7.1177	12.1339	3.5777
%RSD:	1.12695	0.527698	0.677032	1.13635	0.370396
Repeat: 1	491.911	9956.98	1045.26	1066.39	962.053
Repeat: 2	492.991	9982.67	1049.52	1080.56	966.567
Repeat: 3	482.946	10058.5	1059.15	1056.42	969.118
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	1017.02	51.1735	1037.53	969.071	990.199
Std Dev:	4.10111	0.174265	3.54877	3.93957	12.5564
%RSD:	0.403247	0.340537	0.342039	0.40653	1.26807
Repeat: 1	1012.44	50.9758	1035.48	965.228	995.491
Repeat: 2	1020.34	51.3047	1035.49	968.884	999.243
Repeat: 3	1018.29	51.24	1041.63	973.1	975.863

QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	1045.68	10104	10.54	1030.19	48.0066
Std Dev:	10.2436	60.649	0.0582026	10.5103	0.298051
%RSD:	0.979605	0.60025	0.552205	1.02023	0.620854
Repeat: 1	1048.27	10049.3	10.5248	1023.08	47.692
Repeat: 2	1054.38	10169.2	10.491	1042.27	48.2848
Repeat: 3	1034.39	10093.4	10.6044	1025.24	48.0429
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	988.666	1010.85	50.1185	996.076	984.591
Std Dev:	6.37631	4.3604	0.13387	3.94299	3.66646
%RSD:	0.64494	0.431359	0.267107	0.395852	0.372384
Repeat: 1	983.049	1007.02	49.9866	992.014	980.427
Repeat: 2	995.597	1009.95	50.2543	996.324	986.012
Repeat: 3	987.352	1015.59	50.1146	999.888	987.335
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1012.67	1049.14	4383.32	1018.33	987.996
Std Dev:	5.74458	4.69018	33.6076	3.40888	5.86944
%RSD:	0.567268	0.447049	0.766716	0.334751	0.594075
Repeat: 1	1010.82	1043.73	4368.42	1014.46	981.271
Repeat: 2	1008.08	1051.8	4421.8	1019.68	990.629
Repeat: 3	1019.12	1051.91	4359.74	1020.87	992.088
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1016.64	1020.27	1003.35	1007.81	2323.93
Std Dev:	6.84575	2.4437	12.1331	2.21047	7.99971
%RSD:	0.673371	0.239514	1.20926	0.219335	0.344232
Repeat: 1	1010.64	1018.3	1007.73	1005.72	2333.1
Repeat: 2	1015.18	1019.52	1012.68	1007.59	2320.33
Repeat: 3	1024.1	1023	989.634	1010.12	2318.37
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	632396	14381.6			
Std Dev:	5960.02	8.95783			
%RSD:	0.942452	0.0622866			
Repeat: 1	631952	14389.7			
Repeat: 2	626670	14383.2			
Repeat: 3	638565	14372			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2323.93	632396	14381.6
Std Dev:	7.99971	5960.02	8.95783
%RSD:	0.344232	0.942452	0.0622866
Repeat: 1	2333.1	631952	14389.7
Repeat: 2	2320.33	626670	14383.2

Repeat: 3	2318.37	638565	14372

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25804-CCB5	9/14/2016 4:34:04PM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000498515	0.000265272	-0.00528617	0.000109282	0.0319161
Std Dev:	9.58584e-006	0.000641712	0.000414087	1.08757e-005	0.0017826
%RSD:	1.92288	241.907	7.8334	9.95191	5.58527
Repeat: 1	0.00048979	0.000965033	-0.00509342	0.000107564	0.0318174
Repeat: 2	0.000508776	-0.000295665	-0.0050036	9.93679e-005	0.033746
Repeat: 3	0.000496979	0.000126448	-0.0057615	0.000120915	0.0301849
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00098491	0.000461052	0.0351091	0.0195519	0.000227531
Std Dev:	0.000142973	0.000314351	0.000815719	0.00174656	2.08062e-005
%RSD:	14.5163	68.1812	2.32338	8.93292	9.14433
Repeat: 1	0.000827656	0.000101761	0.0353184	0.0206102	0.000203543
Repeat: 2	0.00110706	0.000685405	0.0342092	0.017536	0.000238369
Repeat: 3	0.00102001	0.00059599	0.0357998	0.0205096	0.00024068
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.000615364	-0.000170158	-0.0100463	-7.89919e-005	-5.2202e-005
Std Dev:	2.82871e-005	2.02523e-005	0.000590511	2.43697e-005	8.0068e-006
%RSD:	4.59681	11.902	5.87791	30.8509	15.3381
Repeat: 1	0.000614283	-0.000186562	-0.0093654	-0.000106458	-4.95614e-005
Repeat: 2	0.000587632	-0.000176391	-0.010355	-5.99576e-005	-6.11956e-005
Repeat: 3	0.000644176	-0.000147522	-0.0104184	-7.05603e-005	-4.5849e-005
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	3.61145e-005	0.00167342	0.00373534	0.0201926	-0.00609671
Std Dev:	7.81897e-006	0.000837383	0.000922915	0.00177891	0.000214945
%RSD:	21.6505	50.0403	24.7076	8.80974	3.52559
Repeat: 1	4.50379e-005	0.000768413	0.00460152	0.0185064	-0.00591517
Repeat: 2	3.28428e-005	0.00183107	0.00383992	0.0220516	-0.0060409
Repeat: 3	3.04628e-005	0.00242077	0.0027646	0.0200197	-0.00633405
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00667689	0.0103634	6.90558	-0.00121803	-0.0167809
Std Dev:	0.00129341	0.000891438	2.13308	0.000666187	0.000310577
%RSD:	19.3714	8.60181	30.8893	54.6938	1.85077
Repeat: 1	-0.00539319	0.0097028	4.4623	-0.00162813	-0.0164327
Repeat: 2	-0.00665768	0.0113773	7.85735	-0.000449359	-0.0170293
Repeat: 3	-0.0079798	0.01001	8.39709	-0.0015766	-0.0168808
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.000842252	-0.00113308	-0.000113669	0.00900818	2417.2
Std Dev:	0.000448663	0.00131029	1.94961e-005	0.00124498	6.92374
%RSD:	53.2695	115.639	17.1516	13.8205	0.286437
Repeat: 1	0.000946377	-0.000104509	-0.000136176	0.00866633	2423.72
Repeat: 2	0.0012297	-0.000686444	-0.000101978	0.0103884	2417.94
Repeat: 3	0.000350682	-0.0026083	-0.000102855	0.00796984	2409.93
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	655547	14803			
Std Dev:	3362.43	66.9038			

%RSD:	0.512921	0.451962
Repeat: 1	658943	14736
Repeat: 2	652219	14869.8
Repeat: 3	655479	14803.1

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.311546	-11.386	0.992678	1.50206	0.143621
Std Dev:	0.176315	15.4115	0.960091	0.646764	0.105609
%RSD:	56.5937	135.356	96.7173	43.0586	73.5332
Repeat: 1	-0.472659	5.42187	1.44024	1.39928	0.136264
Repeat: 2	-0.123198	-24.8533	1.64727	0.912831	0.252715
Repeat: 3	-0.338781	-14.7265	-0.109478	2.19405	0.0418822
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.0557656	0.000691782	-0.0162965	0.0290464	-0.189498
Std Dev:	0.0529755	0.00355564	0.0280185	0.211244	0.444954
%RSD:	94.9967	513.982	171.929	727.265	234.806
Repeat: 1	-0.00186417	-0.00337218	-0.00915504	0.154475	-0.702481
Repeat: 2	0.102343	0.00322945	-0.0471946	-0.214844	0.0420911
Repeat: 3	0.0668179	0.00221807	0.00746003	0.147508	0.0918958
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	-0.416942	-9.20268	0.0364071	-4.76271	-0.01584
Std Dev:	0.295161	0.938945	0.028284	4.26099	0.0025996
%RSD:	70.7919	10.203	77.6882	89.4655	16.4116
Repeat: 1	-0.427927	-9.96427	0.0690195	-9.56506	-0.0149862
Repeat: 2	-0.706458	-9.49017	0.0216205	-1.43464	-0.0187592
Repeat: 3	-0.116442	-8.1536	0.0185813	-3.28844	-0.0137748
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-0.0511485	0.561715	0.0084409	-0.791758	1.37314
Std Dev:	0.0220779	0.206777	0.0238425	0.382212	0.106135
%RSD:	43.1643	36.8117	282.464	48.2738	7.72931
Repeat: 1	-0.0259543	0.338221	0.0308175	-1.15448	1.4651
Repeat: 2	-0.0603732	0.600698	0.0111425	-0.392659	1.39733
Repeat: 3	-0.0671179	0.746225	-0.0166374	-0.828132	1.257
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-1.30976	1.62278	8.17401	0.126291	-0.35476
Std Dev:	1.50608	2.0016	38.0788	0.434303	0.145594
%RSD:	114.989	123.343	465.852	343.89	41.0402
Repeat: 1	0.187998	0.139381	-35.4423	-0.140986	-0.191518
Repeat: 2	-1.29324	3.89942	25.1644	0.627409	-0.471191
Repeat: 3	-2.82403	0.829554	34.7998	-0.107549	-0.401571
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	0.271074	0.870667	-0.727521	0.448302	2417.2

Std Dev:	1.79021	1.67375	0.383314	0.111645	6.92374
%RSD:	660.416	192.238	52.6876	24.9039	0.286437
Repeat: 1	0.686717	2.18205	-1.17006	0.417118	2423.72
Repeat: 2	1.8169	1.44447	-0.499187	0.572224	2417.94
Repeat: 3	-1.6904	-1.01452	-0.513318	0.355566	2409.93
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	655547	14803
Std Dev:	3362.43	66.9038
%RSD:	0.512921	0.451962
Repeat: 1	658943	14736
Repeat: 2	652219	14869.8
Repeat: 3	655479	14803.1
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2417.2	655547	14803
Std Dev:	6.92374	3362.43	66.9038
%RSD:	0.286437	0.512921	0.451962
Repeat: 1	2423.72	658943	14736
Repeat: 2	2417.94	652219	14869.8
Repeat: 3	2409.93	655479	14803.1

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I08012-BLK1	9/14/2016 4:44:37PM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000464146	0.000576691	-0.00566009	0.000109438	0.0342302
Std Dev:	1.08585e-005	0.000202362	0.000474164	1.76509e-005	0.00191032
%RSD:	2.33945	35.0903	8.37733	16.1286	5.58081
Repeat: 1	0.000472143	0.00073361	-0.00523406	0.000105494	0.03221
Repeat: 2	0.000451784	0.000648174	-0.00617094	0.000128727	0.0344732
Repeat: 3	0.00046851	0.000348288	-0.00557526	9.4093e-005	0.0360074
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.000761749	0.00302709	0.0392853	0.0185914	0.000272577
Std Dev:	0.000103782	6.76927e-005	0.001383	0.000330873	3.02495e-006
%RSD:	13.6241	2.23623	3.52041	1.77971	1.10976
Repeat: 1	0.000663583	0.00302197	0.0407312	0.0188604	0.000275937
Repeat: 2	0.000870357	0.0030972	0.0391495	0.0186918	0.000270071
Repeat: 3	0.000751307	0.00296211	0.0379752	0.0182219	0.000271724
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0006229	0.00017025	-0.00804655	-7.39159e-005	-5.02115e-005
Std Dev:	3.8149e-005	0.000158442	0.000449945	5.802e-006	7.27297e-005
%RSD:	6.12442	93.0641	5.59178	7.84946	144.847
Repeat: 1	0.000622146	0.000270102	-0.007527	-7.52228e-005	-0.000133458
Repeat: 2	0.00066142	0.000253089	-0.00830598	-6.75719e-005	1.01161e-006
Repeat: 3	0.000585134	-1.24389e-005	-0.00830667	-7.8953e-005	-1.81884e-005
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.000143211	0.000164024	0.00134609	0.0219914	-0.00798124

Std Dev:	1.45322e-005	0.00100697	0.000486781	0.00034869	0.00117212
%RSD:	10.1474	613.912	36.1625	1.58558	14.6859
Repeat: 1	0.000158428	0.00132664	0.00177981	0.0222373	-0.00719163
Repeat: 2	0.000141726	-0.000402535	0.0008196	0.0221445	-0.00742407
Repeat: 3	0.000129478	-0.000432035	0.00143887	0.0215923	-0.00932802
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.0074908	0.00917288	12.5127	0.0274334	-0.0165715
Std Dev:	0.00133549	0.00123824	2.31706	0.000273218	0.000666417
%RSD:	17.8285	13.4989	18.5176	0.995931	4.02147
Repeat: 1	-0.00613102	0.00859095	14.9001	0.0272767	-0.0170339
Repeat: 2	-0.00754075	0.0083328	12.3651	0.0277489	-0.0158076
Repeat: 3	-0.00880061	0.0105949	10.273	0.0272746	-0.0168729
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.000878964	-0.00253142	-8.80004e-005	0.0855561	2466.3
Std Dev:	0.000374922	0.000390363	3.23294e-005	0.00049132	13.7377
%RSD:	42.655	15.4207	36.7378	0.574266	0.557018
Repeat: 1	0.00131049	-0.0028359	-6.05199e-005	0.0853665	2482.13
Repeat: 2	0.000633139	-0.00209134	-0.000123622	0.0851877	2457.43
Repeat: 3	0.000693259	-0.00266702	-7.98589e-005	0.0861139	2459.35
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	686431	14999.1			
Std Dev:	3154.86	51.1232			
%RSD:	0.459604	0.340843			
Repeat: 1	683665	14989.9			
Repeat: 2	689867	14953.2			
Repeat: 3	685760	15054.2			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.936725	-3.95748	0.127887	1.51283	0.282253
Std Dev:	0.2009	4.84929	1.09817	1.05038	0.112254
%RSD:	21.4471	122.535	858.708	69.4313	39.7706
Repeat: 1	-0.788375	-0.201332	1.11462	1.27864	0.164484
Repeat: 2	-1.16535	-2.23915	-1.05523	2.66053	0.294245
Repeat: 3	-0.85645	-9.43195	0.324272	0.599314	0.388029
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	-0.0269129	0.0297164	0.127235	-0.0870933	0.773356
Std Dev:	0.0374528	0.000765675	0.0476231	0.0379162	0.0646006
%RSD:	139.163	2.57661	37.4292	43.5351	8.35328
Repeat: 1	-0.0618323	0.0296585	0.177158	-0.0577849	0.845075
Repeat: 2	0.0126418	0.0305094	0.122242	-0.0735802	0.719734
Repeat: 3	-0.0315483	0.0289814	0.0823053	-0.129915	0.755259
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	-0.337148	6.56472	0.132189	-3.87532	-0.0151904
Std Dev:	0.39973	7.33673	0.0215513	1.01447	0.0236047
%RSD:	118.562	111.76	16.3034	26.1776	155.392
Repeat: 1	-0.343902	11.1887	0.157074	-4.10407	-0.0422076
Repeat: 2	0.0659166	10.4002	0.119763	-2.76601	0.00143784
Repeat: 3	-0.733458	-1.89476	0.11973	-4.75588	-0.00480146

QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	0.250677	0.191203	-0.0532828	-0.40546	0.456807
Std Dev:	0.0408659	0.24869	0.0125755	0.0749019	0.571382
%RSD:	16.3022	130.066	23.6014	18.4733	125.082
Repeat: 1	0.293511	0.478335	-0.0420783	-0.352324	0.842194
Repeat: 2	0.246404	0.0512689	-0.0668842	-0.37293	0.727887
Repeat: 3	0.212115	0.0440052	-0.050886	-0.491127	-0.199659
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-2.27618	-1.05007	108.273	18.807	-0.256993
Std Dev:	1.54553	2.77954	41.3643	0.178289	0.312298
%RSD:	67.9001	264.7	38.2036	0.947994	121.52
Repeat: 1	-0.703022	-2.35608	150.892	18.7047	-0.473709
Repeat: 2	-2.333	-2.93608	105.639	19.0128	0.100976
Repeat: 3	-3.79251	2.14195	68.2891	18.7034	-0.398246
QC Status Pass/Fail:	Pass	Pass	Fail	Fail	Pass
Element/Wavelength	**Ti3349**	**TI1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	0.416621	-0.911292	-0.219279	7.29611	2466.3
Std Dev:	1.49679	0.493567	0.627858	0.0451721	13.7377
%RSD:	359.269	54.1613	286.328	0.619126	0.557018
Repeat: 1	2.1394	-1.29426	0.314258	7.27856	2482.13
Repeat: 2	-0.564773	-0.354281	-0.911146	7.26234	2457.43
Repeat: 3	-0.324767	-1.08533	-0.0609496	7.34742	2459.35
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	686431	14999.1			
Std Dev:	3154.86	51.1232			
%RSD:	0.459604	0.340843			
Repeat: 1	683665	14989.9			
Repeat: 2	689867	14953.2			
Repeat: 3	685760	15054.2			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2466.3	686431	14999.1
Std Dev:	13.7377	3154.86	51.1232
%RSD:	0.557018	0.459604	0.340843
Repeat: 1	2482.13	683665	14989.9
Repeat: 2	2457.43	689867	14953.2
Repeat: 3	2459.35	685760	15054.2

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I08012-BS1	9/14/2016 4:48:57PM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**

Avg. of Repeats:	0.0140223	0.0881061	0.110476	0.0170987	34.8125
Std Dev:	6.31204e-005	0.00064415	0.000586834	0.000124424	0.103311
%RSD:	0.450142	0.731107	0.531188	0.72768	0.296764
Repeat: 1	0.0140407	0.0888484	0.110573	0.0171627	34.7178
Repeat: 2	0.0140743	0.0877761	0.109847	0.017178	34.7971
Repeat: 3	0.0139521	0.0876939	0.111008	0.0169553	34.9227
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.136553	0.48065	4.00116	4.4202	0.00976984
Std Dev:	0.000366879	0.0010653	0.007465	0.0176612	2.6863e-005
%RSD:	0.268671	0.221637	0.186571	0.399556	0.274959
Repeat: 1	0.136654	0.480404	3.99439	4.40573	0.00974014
Repeat: 2	0.136859	0.481817	3.99992	4.41498	0.00979244
Repeat: 3	0.136147	0.479729	4.00916	4.43988	0.00977694
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.02626	0.0224546	0.0977963	0.00490551	0.015516
Std Dev:	8.57187e-005	0.000152987	0.00170352	4.37821e-005	9.3438e-005
%RSD:	0.326423	0.681316	1.74191	0.89251	0.602203
Repeat: 1	0.0262304	0.0224351	0.0984871	0.00492374	0.0155589
Repeat: 2	0.0263565	0.0226164	0.0990459	0.00493723	0.0155803
Repeat: 3	0.0261929	0.0223122	0.0958559	0.00485556	0.0154089
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.183245	4.31283	0.202043	2.50275	0.533596
Std Dev:	0.000858285	0.0163842	0.000645274	0.00690364	0.00183316
%RSD:	0.46838	0.379896	0.319374	0.275842	0.343549
Repeat: 1	0.183683	4.29996	0.202181	2.49526	0.531484
Repeat: 2	0.183796	4.30724	0.202609	2.50412	0.534783
Repeat: 3	0.182256	4.33127	0.20134	2.50886	0.53452
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.2164	0.125955	17.9767	1.68077	2.21353
Std Dev:	0.000903077	0.000362496	4.53121	0.00491373	0.0171238
%RSD:	0.417318	0.287797	25.2059	0.29235	0.773598
Repeat: 1	0.216663	0.126155	12.9093	1.68048	2.22578
Repeat: 2	0.215395	0.125537	21.6384	1.67601	2.22084
Repeat: 3	0.217143	0.126174	19.3826	1.68582	2.19396
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.266278	0.211617	0.0261957	6.00573	2387.58
Std Dev:	0.00137436	0.000534387	0.000102587	0.0225365	5.74715
%RSD:	0.51614	0.252526	0.391617	0.37525	0.240711
Repeat: 1	0.267522	0.211225	0.026098	5.99077	2392.8
Repeat: 2	0.266509	0.212226	0.0263026	5.99478	2388.51
Repeat: 3	0.264802	0.2114	0.0261867	6.03165	2381.42
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	654977	14471.1			
Std Dev:	4011.56	12.7471			
%RSD:	0.612473	0.0880865			
Repeat: 1	652550	14458.1			
Repeat: 2	652774	14483.6			
Repeat: 3	659608	14471.7			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	248.752	2050.99	266.647	1011.5	2060.53
Std Dev:	1.15473	15.5579	1.35239	7.40723	6.11707

%RSD:	0.464209	0.758555	0.507183	0.732304	0.296869
Repeat: 1	249.078	2068.92	266.881	1015.31	2054.91
Repeat: 2	249.708	2043.09	265.192	1016.22	2059.62
Repeat: 3	247.469	2040.97	267.867	1002.96	2067.05
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	51.045	5.43213	137.137	525.999	203.397
Std Dev:	0.139548	0.0120496	0.258789	2.12882	0.575019
%RSD:	0.273383	0.221822	0.188708	0.404719	0.282707
Repeat: 1	51.0876	5.42935	136.903	524.255	202.761
Repeat: 2	51.1582	5.44533	137.094	525.371	203.879
Repeat: 3	50.8891	5.42172	137.415	528.371	203.552
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	268.373	1041.9	5.2018	867.133	5.05232
Std Dev:	0.9004	7.09371	0.0815944	7.65337	0.0302855
%RSD:	0.335503	0.680846	1.56858	0.882606	0.599439
Repeat: 1	268.068	1041	5.23489	870.319	5.06619
Repeat: 2	269.386	1049.4	5.26165	872.679	5.07318
Repeat: 3	267.664	1035.3	5.10886	858.402	5.01758
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	516.852	1065.04	5.13151	533.423	265.467
Std Dev:	2.42153	4.04513	0.0166699	1.48571	0.891282
%RSD:	0.468514	0.379809	0.324855	0.278523	0.335741
Repeat: 1	518.088	1061.87	5.13506	531.812	264.44
Repeat: 2	518.406	1063.67	5.14612	533.717	266.041
Repeat: 3	514.062	1069.6	5.11335	534.739	265.92
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	255.065	261.124	206.04	1096.66	1044.77
Std Dev:	1.05984	0.813852	80.8892	3.20402	8.02472
%RSD:	0.415517	0.311672	39.2589	0.292163	0.768082
Repeat: 1	255.374	261.571	115.578	1096.47	1050.52
Repeat: 2	253.886	260.185	271.409	1093.55	1048.2
Repeat: 3	255.937	261.616	231.135	1099.95	1035.61
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1058.83	275.293	511.936	535.688	2387.58
Std Dev:	5.48232	0.685289	1.99973	2.01783	5.74715
%RSD:	0.517769	0.24893	0.390621	0.376679	0.240711
Repeat: 1	1063.8	274.801	510.028	534.349	2392.8
Repeat: 2	1059.75	276.076	514.016	534.707	2388.51
Repeat: 3	1052.95	275.003	511.765	538.009	2381.42
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	654977	14471.1			

Std Dev:	4011.56	12.7471
%RSD:	0.612473	0.0880865
Repeat: 1	652550	14458.1
Repeat: 2	652774	14483.6
Repeat: 3	659608	14471.7
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2387.58	654977	14471.1
Std Dev:	5.74715	4011.56	12.7471
%RSD:	0.240711	0.612473	0.0880865
Repeat: 1	2392.8	652550	14458.1
Repeat: 2	2388.51	652774	14483.6
Repeat: 3	2381.42	659608	14471.7

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608251-12@5X	9/14/2016 4:53:15PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000499882	1.97454	0.00256766	0.00110988	1.08411
Std Dev:	7.89857e-006	0.00466173	0.000204551	2.30966e-005	0.00405131
%RSD:	1.58009	0.236092	7.96644	2.08101	0.373699
Repeat: 1	0.000505274	1.96992	0.00261207	0.00109627	1.0808
Repeat: 2	0.000503558	1.97445	0.00234456	0.00113654	1.0829
Repeat: 3	0.000490816	1.97925	0.00274637	0.00109682	1.08863
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00692132	0.146231	0.138106	0.331455	0.00406055
Std Dev:	0.000241861	0.000296834	0.00210423	0.000836766	3.32856e-005
%RSD:	3.49443	0.20299	1.52363	0.252453	0.819731
Repeat: 1	0.00664763	0.146146	0.139239	0.332385	0.00404124
Repeat: 2	0.00701002	0.146561	0.135679	0.330764	0.00409899
Repeat: 3	0.00710631	0.145986	0.139402	0.331215	0.00404143
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00417579	1.93572	0.18712	0.000666727	0.0499761
Std Dev:	2.2736e-005	0.0106314	0.00184395	5.2445e-006	8.50117e-005
%RSD:	0.544473	0.549221	0.985438	0.786604	0.170105
Repeat: 1	0.00416605	1.93088	0.186313	0.000662053	0.0499328
Repeat: 2	0.00420177	1.9479	0.18923	0.00066573	0.050074
Repeat: 3	0.00415954	1.92836	0.185818	0.000672399	0.0499213
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.175006	0.00579756	0.172467	0.31366	0.0526628
Std Dev:	0.0011519	0.00084697	0.00110432	0.00160857	0.0012864
%RSD:	0.658208	14.6091	0.64031	0.512837	2.44271
Repeat: 1	0.173996	0.00660236	0.172822	0.315469	0.0520025
Repeat: 2	0.176261	0.00491393	0.17335	0.313122	0.0518406
Repeat: 3	0.174761	0.0058764	0.171228	0.31239	0.0541453
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00334554	0.0119194	635.984	0.00547533	0.0506759
Std Dev:	0.00158114	0.00095115	6.14044	0.00115978	0.000941998
%RSD:	47.2612	7.97987	0.965503	21.1819	1.85887

Repeat: 1	-0.00515525	0.0109828	630.74	0.00646404	0.0495885
Repeat: 2	-0.0022316	0.0118908	634.474	0.00419871	0.0512453
Repeat: 3	-0.00264976	0.0128845	642.739	0.00576323	0.0511937
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.266765	-0.00193933	0.00528201	1.97508	2416.12
Std Dev:	0.000675296	0.000506527	4.63542e-005	0.00998599	3.127
%RSD:	0.253142	26.1186	0.877587	0.505601	0.129422
Repeat: 1	0.266036	-0.00179097	0.00523587	1.96571	2417.28
Repeat: 2	0.26737	-0.00152355	0.00532857	1.97393	2418.5
Repeat: 3	0.26689	-0.00250347	0.0052816	1.98558	2412.58
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	663608	14912.4			
Std Dev:	4472.33	41.7974			
%RSD:	0.673941	0.280287			
Repeat: 1	666452	14864.2			
Repeat: 2	658453	14938.9			
Repeat: 3	665919	14934			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	0.0178907	47359.3	22.9742	67.8286	62.3442
Std Dev:	0.143309	111.878	0.458323	1.41188	0.241454
%RSD:	801.026	0.236232	1.99495	2.08155	0.387292
Repeat: 1	0.112981	47248.5	23.0672	67.0015	62.1465
Repeat: 2	0.0876311	47357.1	22.4765	69.4589	62.2729
Repeat: 3	-0.14694	47472.3	23.3789	67.0256	62.6133
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	3.21073	1.6495	-0.047615	33.059	80.3806
Std Dev:	0.0913906	0.00335751	0.0903241	0.113719	0.704749
%RSD:	2.84642	0.203546	189.697	0.343987	0.876765
Repeat: 1	3.10707	1.64854	0.000446524	33.1817	79.9718
Repeat: 2	3.24544	1.65324	-0.151808	32.9572	81.1944
Repeat: 3	3.27967	1.64674	0.00851661	33.0381	79.9756
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	40.7813	89632	9.4802	125.307	16.2716
Std Dev:	0.257417	492.286	0.0883209	0.917395	0.027853
%RSD:	0.631214	0.549231	0.931635	0.732119	0.171176
Repeat: 1	40.6693	89408.2	9.44152	124.49	16.2574
Repeat: 2	41.0757	90196.4	9.58127	125.131	16.3036
Repeat: 3	40.5989	89291.3	9.41783	126.299	16.2536
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	491.655	2.63577	4.36743	61.3967	38.6552
Std Dev:	3.24039	0.204267	0.0285289	0.34628	0.654105
%RSD:	0.659078	7.74981	0.65322	0.564005	1.69215
Repeat: 1	488.811	2.8316	4.37661	61.7873	38.3141
Repeat: 2	495.183	2.424	4.39025	61.2752	38.2422
Repeat: 3	490.971	2.65171	4.33545	61.1275	39.4094

QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-1.79666	1.42473	11257.8	4.46362	31.2359
Std Dev:	1.8134	2.13166	109.581	0.756403	0.441441
%RSD:	100.932	149.618	0.973378	16.9459	1.41325
Repeat: 1	-3.87583	-0.667897	11164.1	5.10849	30.7263
Repeat: 2	-0.542109	1.34871	11230.9	3.63104	31.5027
Repeat: 3	-0.972033	3.59339	11378.3	4.65134	31.4786
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1060.48	0.585518	105.869	175.778	2416.12
Std Dev:	2.69313	0.63949	0.912574	0.89201	3.127
%RSD:	0.253955	109.218	0.861982	0.507463	0.129422
Repeat: 1	1057.57	0.771606	104.966	174.944	2417.28
Repeat: 2	1062.89	1.11132	106.791	175.672	2418.5
Repeat: 3	1060.97	-0.126376	105.851	176.718	2412.58
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	663608	14912.4			
Std Dev:	4472.33	41.7974			
%RSD:	0.673941	0.280287			
Repeat: 1	666452	14864.2			
Repeat: 2	658453	14938.9			
Repeat: 3	665919	14934			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2416.12	663608	14912.4
Std Dev:	3.127	4472.33	41.7974
%RSD:	0.129422	0.673941	0.280287
Repeat: 1	2417.28	666452	14864.2
Repeat: 2	2418.5	658453	14938.9
Repeat: 3	2412.58	665919	14934

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608251-13@5X	9/14/2016 4:57:33PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000491197	2.29183	0.00478126	0.00124873	1.66402
Std Dev:	3.86996e-005	0.00329387	0.000693998	2.51069e-005	0.00194923
%RSD:	7.87862	0.143723	14.515	2.01059	0.11714
Repeat: 1	0.000492248	2.28838	0.00433035	0.00126386	1.6619
Repeat: 2	0.000529361	2.29495	0.004433	0.00126259	1.66444
Repeat: 3	0.000451983	2.29216	0.00558042	0.00121975	1.66573
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00607185	0.406397	0.144143	0.337918	0.00507576
Std Dev:	0.000117239	0.00110742	0.00202065	0.000994554	5.65705e-005

%RSD:	1.93086	0.272498	1.40183	0.294318	1.11452
Repeat: 1	0.00596496	0.406379	0.142472	0.33677	0.00511856
Repeat: 2	0.00605335	0.405298	0.146389	0.338498	0.0050971
Repeat: 3	0.00619724	0.407513	0.143569	0.338486	0.00501163
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00392032	1.97933	0.225508	0.000647944	0.0579534
Std Dev:	6.5704e-005	0.00428089	0.00140722	1.26493e-005	4.8215e-005
%RSD:	1.67598	0.21628	0.624021	1.95222	0.0831962
Repeat: 1	0.00398524	1.97926	0.226322	0.00063364	0.0579511
Repeat: 2	0.00392187	1.98364	0.226319	0.000657656	0.0579064
Repeat: 3	0.00385386	1.97508	0.223883	0.000652535	0.0580027
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.222101	0.0150689	0.273754	0.386803	0.0493975
Std Dev:	0.0022977	0.000316246	0.00116476	0.00122475	0.001923
%RSD:	1.03453	2.09867	0.425476	0.316634	3.8929
Repeat: 1	0.223934	0.0149981	0.27482	0.385435	0.0503716
Repeat: 2	0.222845	0.0154146	0.273931	0.387795	0.0471824
Repeat: 3	0.219523	0.0147941	0.272511	0.38718	0.0506386
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00237531	0.0119132	822.437	0.0050924	0.121109
Std Dev:	0.000599782	0.000760722	5.96468	0.000327003	0.000698558
%RSD:	25.2507	6.38553	0.725245	6.42139	0.576802
Repeat: 1	-0.00190348	0.0125338	827.565	0.00515124	0.121213
Repeat: 2	-0.00305028	0.0110645	815.891	0.00473997	0.121749
Repeat: 3	-0.00217217	0.0121414	823.855	0.00538598	0.120364
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.278109	-0.0024338	0.00622908	2.68139	2408.74
Std Dev:	0.000317915	0.000411336	9.0798e-005	0.0103289	9.4859
%RSD:	0.114313	16.901	1.45765	0.385205	0.393811
Repeat: 1	0.27785	-0.00277671	0.00625402	2.67655	2417.87
Repeat: 2	0.278464	-0.00254697	0.00630481	2.67437	2409.42
Repeat: 3	0.278013	-0.00197773	0.00612842	2.69325	2398.94
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	663137	14909.1			
Std Dev:	5543.2	72.4317			
%RSD:	0.835906	0.485821			
Repeat: 1	658923	14945			
Repeat: 2	661070	14825.8			
Repeat: 3	669416	14956.6			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.0766898	54967.6	28.2747	76.2494	96.7225
Std Dev:	0.712874	79.0497	1.60316	1.50726	0.112424
%RSD:	929.556	0.143811	5.66995	1.97675	0.116234
Repeat: 1	-0.0560498	54884.9	27.2284	77.1494	96.5985
Repeat: 2	0.62564	55042.4	27.4753	77.0895	96.7515
Repeat: 3	-0.79966	54975.4	30.1203	74.5093	96.8176
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	2.93121	4.59225	0.0190713	33.6999	101.975
Std Dev:	0.0441258	0.0125261	0.0643839	0.117324	1.20466

%RSD:	1.50538	0.272766	337.596	0.348142	1.18133
Repeat: 1	2.89046	4.59205	-0.0379835	33.5646	102.888
Repeat: 2	2.92508	4.57983	0.0888764	33.7617	102.428
Repeat: 3	2.97808	4.60488	0.00632103	33.7734	100.61
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	38.1983	91652.1	11.3189	121.922	18.8623
Std Dev:	0.69178	198.245	0.0674022	2.21193	0.0155464
%RSD:	1.81102	0.216302	0.595486	1.81422	0.0824205
Repeat: 1	38.8776	91648.8	11.3578	119.42	18.8615
Repeat: 2	38.2226	91852	11.3577	123.62	18.8471
Repeat: 3	37.4947	91455.5	11.241	122.725	18.8782
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	624.49	4.96671	6.98408	77.1035	38.7162
Std Dev:	6.47987	0.0802734	0.0300902	0.262185	0.925986
%RSD:	1.03763	1.61623	0.43084	0.340043	2.39172
Repeat: 1	629.663	4.94914	7.01163	76.8103	39.1711
Repeat: 2	626.586	5.05431	6.98865	77.3153	37.6508
Repeat: 3	617.222	4.89667	6.95197	77.1851	39.3269
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-1.20367	1.00792	14586.7	4.20927	64.2041
Std Dev:	0.701988	1.71285	106.449	0.213617	0.327535
%RSD:	58.3207	169.939	0.729769	5.07493	0.510147
Repeat: 1	-0.678626	2.40169	14678.2	4.24751	64.253
Repeat: 2	-2.00101	-0.904245	14469.8	3.97912	64.5044
Repeat: 3	-0.931369	1.52631	14611.9	4.40119	63.8548
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1105.55	-0.0351472	124.519	238.845	2408.74
Std Dev:	1.2689	0.5275	1.77887	0.929225	9.4859
%RSD:	0.114775	1500.83	1.42859	0.389049	0.393811
Repeat: 1	1104.51	-0.476824	125.014	238.407	2417.87
Repeat: 2	1106.96	-0.177554	125.998	238.216	2409.42
Repeat: 3	1105.16	0.548937	122.545	239.912	2398.94
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	663137	14909.1			
Std Dev:	5543.2	72.4317			
%RSD:	0.835906	0.485821			
Repeat: 1	658923	14945			
Repeat: 2	661070	14825.8			
Repeat: 3	669416	14956.6			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2408.74	663137	14909.1

Std Dev:	9.4859	5543.2	72.4317
%RSD:	0.393811	0.835906	0.485821
Repeat: 1	2417.87	658923	14945
Repeat: 2	2409.42	661070	14825.8
Repeat: 3	2398.94	669416	14956.6

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608251-14@5X	9/14/2016 5:01:53PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000484925	2.25215	0.0167395	0.00113137	1.55293
Std Dev:	1.19856e-005	0.0117523	3.97969e-005	2.34935e-005	0.0083491
%RSD:	2.47164	0.521823	0.237742	2.07655	0.537637
Repeat: 1	0.000485856	2.25697	0.0167743	0.00110747	1.55106
Repeat: 2	0.000496418	2.23876	0.0167482	0.00115444	1.54567
Repeat: 3	0.000472501	2.26073	0.0166961	0.00113221	1.56205
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00505561	0.338149	0.173865	0.3282	0.00469809
Std Dev:	0.000223941	0.00236672	0.00134487	0.00248103	2.08451e-005
%RSD:	4.42955	0.699906	0.773514	0.755951	0.443694
Repeat: 1	0.00514007	0.340465	0.172875	0.326384	0.00468403
Repeat: 2	0.00522504	0.335734	0.173324	0.327189	0.00472204
Repeat: 3	0.00480172	0.338247	0.175396	0.331027	0.00468821
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00289881	2.6722	0.214526	0.000662696	0.0472687
Std Dev:	3.49951e-005	0.025213	0.00247412	2.84423e-005	0.000302172
%RSD:	1.20722	0.94353	1.1533	4.29191	0.639265
Repeat: 1	0.00291103	2.69804	0.216851	0.000684103	0.0476077
Repeat: 2	0.00292606	2.64767	0.211926	0.000673562	0.0470278
Repeat: 3	0.00285934	2.67089	0.214801	0.000630423	0.0471705
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.240458	0.0538035	0.240253	0.35696	0.0425521
Std Dev:	0.00114621	0.00129339	0.00322945	0.000954737	0.00224665
%RSD:	0.476676	2.4039	1.34419	0.267463	5.27975
Repeat: 1	0.240609	0.0551162	0.243349	0.357835	0.0432429
Repeat: 2	0.241522	0.0525304	0.236904	0.357103	0.0400412
Repeat: 3	0.239244	0.053764	0.240505	0.355942	0.0443723
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00284745	0.0123663	941.186	0.0053014	0.0904207
Std Dev:	0.00209693	0.000552564	5.83723	0.000387381	0.00214112
%RSD:	73.6426	4.4683	0.620199	7.30716	2.36795
Repeat: 1	-0.0013837	0.0125465	947.349	0.00572935	0.0920629
Repeat: 2	-0.00190892	0.0117462	940.467	0.00497469	0.087999
Repeat: 3	-0.00524971	0.0128063	935.742	0.00520016	0.0912001
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.28286	-0.00244912	0.00556099	2.32066	2428.18
Std Dev:	0.00153716	0.000576512	3.22843e-005	0.0079408	8.72066
%RSD:	0.543436	23.5396	0.580549	0.342178	0.359143
Repeat: 1	0.284127	-0.0030277	0.00556461	2.31529	2430.66
Repeat: 2	0.28115	-0.00244495	0.00552704	2.31692	2435.4

Repeat: 3	0.283303	-0.0018747	0.00559131	2.32978	2418.49
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	669501	15026.8			
Std Dev:	2031.5	100.061			
%RSD:	0.303435	0.665882			
Repeat: 1	668603	15001.6			
Repeat: 2	668074	15137.1			
Repeat: 3	671827	14941.8			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.306106	54015.3	56.9903	71.7197	89.9456
Std Dev:	0.21632	281.939	0.111954	1.30828	0.494644
%RSD:	70.6684	0.521961	0.196445	1.82416	0.549936
Repeat: 1	-0.290615	54130.9	57.1117	70.3897	89.8292
Repeat: 2	-0.0979483	53693.9	56.9682	73.0051	89.5196
Repeat: 3	-0.529756	54221	56.8911	71.7642	90.4881
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	2.57863	3.82029	-0.0893753	31.6968	93.5667
Std Dev:	0.0807949	0.0267701	0.0691658	0.304399	0.456048
%RSD:	3.13324	0.700735	77.3881	0.960344	0.487404
Repeat: 1	2.61464	3.84649	-0.167504	31.4402	93.2525
Repeat: 2	2.63517	3.79298	-0.0646567	31.6172	94.0898
Repeat: 3	2.4861	3.82141	-0.0359648	32.0331	93.3578
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	28.6847	123735	10.7929	124.492	15.4108
Std Dev:	0.360557	1167.45	0.118504	4.9723	0.0986923
%RSD:	1.25697	0.943508	1.09799	3.99407	0.64041
Repeat: 1	28.8593	124931	10.9042	128.231	15.5215
Repeat: 2	28.9247	122599	10.6683	126.397	15.332
Repeat: 3	28.2701	123674	10.8061	118.849	15.3789
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	675.58	14.8732	6.11861	70.3618	34.5095
Std Dev:	3.24327	0.332237	0.0834295	0.200176	1.14057
%RSD:	0.480072	2.23379	1.36354	0.284495	3.30509
Repeat: 1	675.979	15.2104	6.19859	70.537	34.8468
Repeat: 2	678.605	14.5461	6.03211	70.4049	33.2383
Repeat: 3	672.155	14.8631	6.12512	70.1436	35.4433
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-2.39303	1.42017	16713.5	4.34868	49.8328
Std Dev:	2.41971	1.21563	104.363	0.25251	1.00306
%RSD:	101.115	85.5974	0.624423	5.80659	2.01286
Repeat: 1	-0.722615	1.79714	16823.8	4.62768	50.602
Repeat: 2	-1.28857	0.0607123	16700.4	4.13583	48.6983
Repeat: 3	-5.16789	2.40265	16616.3	4.28253	50.198

QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1124.67	-0.634178	112.025	206.546	2428.18
Std Dev:	6.12864	0.743917	0.630715	0.714093	8.72066
%RSD:	0.544926	117.304	0.563014	0.345731	0.359143
Repeat: 1	1129.72	-1.38117	112.11	206.064	2430.66
Repeat: 2	1117.85	-0.627999	111.356	206.208	2435.4
Repeat: 3	1126.44	0.106631	112.608	207.366	2418.49
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	669501	15026.8
Std Dev:	2031.5	100.061
%RSD:	0.303435	0.665882
Repeat: 1	668603	15001.6
Repeat: 2	668074	15137.1
Repeat: 3	671827	14941.8
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2428.18	669501	15026.8
Std Dev:	8.72066	2031.5	100.061
%RSD:	0.359143	0.303435	0.665882
Repeat: 1	2430.66	668603	15001.6
Repeat: 2	2435.4	668074	15137.1
Repeat: 3	2418.49	671827	14941.8

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608251-15@5X	9/14/2016 5:06:11PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000471262	1.95595	0.00833275	0.00098788	1.37703
Std Dev:	3.21012e-005	0.00213942	0.000334838	7.07428e-006	0.00436447
%RSD:	6.81175	0.10938	4.01834	0.716107	0.316948
Repeat: 1	0.000508318	1.95423	0.00795018	0.000983008	1.37392
Repeat: 2	0.000453533	1.95527	0.00857248	0.000995995	1.37515
Repeat: 3	0.000451936	1.95835	0.00847559	0.000984639	1.38202
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00596214	0.384776	0.159256	0.342675	0.00441003
Std Dev:	9.33466e-005	0.000593452	0.000977737	0.0015028	3.23774e-005
%RSD:	1.56566	0.154233	0.613942	0.43855	0.734177
Repeat: 1	0.00588412	0.384778	0.158128	0.341768	0.00440021
Repeat: 2	0.00606556	0.384181	0.159867	0.341848	0.00444618
Repeat: 3	0.00593674	0.385368	0.159772	0.34441	0.0043837
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00330279	2.31029	0.189755	0.000564998	0.0480478
Std Dev:	2.80307e-005	0.00770024	0.0011186	4.54664e-005	0.000119767
%RSD:	0.848697	0.333302	0.589496	8.04719	0.249266
Repeat: 1	0.00333466	2.31123	0.190462	0.00061315	0.0481581

Repeat: 2	0.00329177	2.30216	0.188466	0.000559037	0.0479204
Repeat: 3	0.00328195	2.31747	0.190338	0.000522806	0.048065
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.571924	0.0459682	0.231335	0.329549	0.0412636
Std Dev:	0.00382894	0.000408655	0.00109685	0.0013013	0.000309162
%RSD:	0.669483	0.888993	0.474139	0.394873	0.749236
Repeat: 1	0.573529	0.0461388	0.230309	0.328193	0.0414828
Repeat: 2	0.57469	0.0455019	0.231205	0.330788	0.0413981
Repeat: 3	0.567554	0.046264	0.232491	0.329667	0.04091
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00196839	0.0123301	848.725	0.00958426	0.0903176
Std Dev:	0.00148956	0.000674881	5.53055	0.000460814	0.000145039
%RSD:	75.6739	5.47345	0.65163	4.80803	0.160587
Repeat: 1	-0.000415998	0.0121836	842.352	0.00905679	0.0904355
Repeat: 2	-0.00338595	0.0117405	852.265	0.00978739	0.0903616
Repeat: 3	-0.00210323	0.0130662	851.559	0.00990862	0.0901556
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.254433	-0.000745656	0.00534509	2.19542	2447.26
Std Dev:	0.00116292	0.000399063	5.69684e-005	0.0077319	3.54717
%RSD:	0.457063	53.5184	1.06581	0.352183	0.144945
Repeat: 1	0.253335	-0.00120449	0.00538969	2.19678	2451.28
Repeat: 2	0.254312	-0.000479427	0.00536465	2.1871	2444.6
Repeat: 3	0.255652	-0.000553052	0.00528091	2.20239	2445.89
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	667935	15026.7			
Std Dev:	4861.19	77.8857			
%RSD:	0.727794	0.518314			
Repeat: 1	666872	14991			
Repeat: 2	663693	15116.1			
Repeat: 3	673240	14973.1			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.655963	46906.9	36.851	61.8957	79.6027
Std Dev:	0.588423	51.3202	0.774186	0.397866	0.253272
%RSD:	89.7036	0.109409	2.10085	0.642801	0.31817
Repeat: 1	0.0231916	46865.7	35.9645	61.6096	79.4214
Repeat: 2	-0.978142	46890.6	37.3939	62.35	79.4947
Repeat: 3	-1.01294	46964.3	37.1946	61.7274	79.8921
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	2.80862	4.34769	0.0579084	34.0649	87.0751
Std Dev:	0.0357128	0.00671257	0.0379284	0.16464	0.691452
%RSD:	1.27154	0.154394	65.4973	0.483314	0.794088
Repeat: 1	2.77524	4.34772	0.0175399	33.9635	86.8625
Repeat: 2	2.84628	4.34097	0.0928016	33.9762	87.8478
Repeat: 3	2.80434	4.35439	0.0633836	34.2548	86.5149
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	32.2369	106981	9.60641	107.466	15.6549
Std Dev:	0.290381	356.503	0.0535782	7.95059	0.0390087

%RSD:	0.900772	0.333239	0.557733	7.39824	0.249179
Repeat: 1	32.5695	107025	9.64027	115.886	15.6907
Repeat: 2	32.1074	106605	9.54464	106.425	15.6133
Repeat: 3	32.0337	107314	9.63433	100.087	15.6606
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1611.18	12.7497	5.88823	64.7655	32.5261
Std Dev:	10.8103	0.104802	0.0283359	0.281816	0.1432
%RSD:	0.670957	0.821994	0.481229	0.435133	0.440261
Repeat: 1	1615.71	12.7924	5.86173	64.4741	32.6221
Repeat: 2	1618.99	12.6303	5.88487	65.0366	32.5947
Repeat: 3	1598.84	12.8264	5.9181	64.7857	32.3615
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-0.782468	1.50461	15059.3	7.14217	49.7774
Std Dev:	1.7311	1.51153	98.7151	0.300663	0.0680336
%RSD:	221.236	100.46	0.655509	4.20969	0.136676
Repeat: 1	1.01993	1.17403	14945.5	6.79804	49.8327
Repeat: 2	-2.43216	0.185723	15122.4	7.27451	49.7981
Repeat: 3	-0.93517	3.15406	15110	7.35396	49.7014
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1011.23	0.961947	107.803	194.606	2447.26
Std Dev:	4.64048	0.518546	1.112	0.698537	3.54717
%RSD:	0.458893	53.9059	1.03152	0.35895	0.144945
Repeat: 1	1006.85	0.365183	108.672	194.722	2451.28
Repeat: 2	1010.75	1.30269	108.186	193.856	2444.6
Repeat: 3	1016.1	1.21797	106.55	195.238	2445.89
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	667935	15026.7			
Std Dev:	4861.19	77.8857			
%RSD:	0.727794	0.518314			
Repeat: 1	666872	14991			
Repeat: 2	663693	15116.1			
Repeat: 3	673240	14973.1			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2447.26	667935	15026.7
Std Dev:	3.54717	4861.19	77.8857
%RSD:	0.144945	0.727794	0.518314
Repeat: 1	2451.28	666872	14991
Repeat: 2	2444.6	663693	15116.1
Repeat: 3	2445.89	673240	14973.1

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608251-16@5X	9/14/2016 5:10:39PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**

Yes rburr 6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.000495306	2.16098	0.00835501	0.00114109	1.51112
Std Dev:	4.87632e-006	0.00216929	0.000845151	4.86812e-006	0.00811722
%RSD:	0.984506	0.100384	10.1155	0.426622	0.537167
Repeat: 1	0.000500422	2.15997	0.0092899	0.0011375	1.50215
Repeat: 2	0.000490711	2.15951	0.00764514	0.00113913	1.51324
Repeat: 3	0.000494786	2.16348	0.00812998	0.00114663	1.51796
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	0.00540485	0.404582	0.165555	0.309395	0.0049416
Std Dev:	0.000385997	0.000725312	0.00154646	0.00102762	1.97845e-005
%RSD:	7.14168	0.179274	0.934111	0.332138	0.400366
Repeat: 1	0.00561967	0.404701	0.165475	0.310283	0.00494748
Repeat: 2	0.00495923	0.405241	0.16405	0.308269	0.00495778
Repeat: 3	0.00563564	0.403805	0.167139	0.309634	0.00491954
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.00371608	2.35432	0.205911	0.000624681	0.0508959
Std Dev:	2.35094e-005	0.015026	0.00138746	3.39317e-005	0.000237275
%RSD:	0.632639	0.638232	0.673817	5.43185	0.466196
Repeat: 1	0.00369616	2.34173	0.204372	0.000632454	0.0506587
Repeat: 2	0.00374201	2.35028	0.206293	0.000654051	0.0508957
Repeat: 3	0.00371007	2.37096	0.207067	0.000587537	0.0511333
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.514178	0.0216903	0.250486	0.352364	0.0487236
Std Dev:	0.008395	0.000810339	0.0024023	0.00136792	0.00149137
%RSD:	1.6327	3.73595	0.959055	0.388213	3.06088
Repeat: 1	0.508382	0.0207609	0.251325	0.351545	0.0499932
Repeat: 2	0.523805	0.0222488	0.247777	0.351603	0.0490964
Repeat: 3	0.510346	0.0220612	0.252356	0.353943	0.0470812
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	-0.0019218	0.0117361	786.807	0.00484512	0.109478
Std Dev:	0.00233451	0.000948584	6.34344	8.78003e-005	0.00178593
%RSD:	121.475	8.0826	0.806226	1.81214	1.63132
Repeat: 1	-0.00131857	0.0128233	779.691	0.00492283	0.108034
Repeat: 2	5.18963e-005	0.0113079	788.859	0.00474988	0.108926
Repeat: 3	-0.00449872	0.0110771	791.869	0.00486267	0.111475
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.298774	-0.00214002	0.00596435	2.40298	2439.15
Std Dev:	0.000499491	0.00158594	5.21501e-005	0.00224823	5.92241
%RSD:	0.16718	74.1088	0.874363	0.0935602	0.242806
Repeat: 1	0.298823	-0.00126953	0.0059175	2.40162	2444.82
Repeat: 2	0.298252	-0.00117996	0.00602054	2.40174	2439.63
Repeat: 3	0.299247	-0.00397058	0.00595501	2.40557	2433.01
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	670692	14997.3			
Std Dev:	2018.13	85.9534			
%RSD:	0.300903	0.573124			
Repeat: 1	672047	14901.4			
Repeat: 2	668373	15067.4			
Repeat: 3	671657	15023.2			

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335

Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.140543	51826.9	37.0883	71.179	87.5703
Std Dev:	0.0876161	52.0432	1.94743	0.342474	0.479381
%RSD:	62.341	0.100417	5.2508	0.481145	0.547424
Repeat: 1	-0.048239	51802.5	39.2355	70.9204	87.0392
Repeat: 2	-0.222563	51791.5	35.4362	71.0493	87.7006
Repeat: 3	-0.150828	51886.7	36.5932	71.5674	87.9711
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	2.76439	4.57173	0.162542	29.6937	98.4834
Std Dev:	0.144977	0.00820404	0.0393948	0.123099	0.421694
%RSD:	5.24444	0.179452	24.2367	0.41456	0.428188
Repeat: 1	2.84447	4.57307	0.181165	29.814	98.6243
Repeat: 2	2.59704	4.57918	0.117289	29.568	98.8166
Repeat: 3	2.85167	4.56294	0.189173	29.6992	98.0093
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	36.7513	109019	10.3802	117.866	16.5804
Std Dev:	0.248276	695.746	0.066456	5.93514	0.0773826
%RSD:	0.675557	0.638186	0.640218	5.03549	0.466711
Repeat: 1	36.5216	108436	10.3065	119.226	16.5031
Repeat: 2	37.0147	108832	10.3985	123.004	16.5803
Repeat: 3	36.7176	109790	10.4356	111.369	16.6579
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1448.2	6.78589	6.38298	69.6257	37.23
Std Dev:	23.6884	0.205218	0.0620608	0.286108	0.729286
%RSD:	1.63571	3.02419	0.972285	0.410923	1.95887
Repeat: 1	1431.87	6.54983	6.40466	69.4539	37.8563
Repeat: 2	1475.37	6.92182	6.31298	69.4672	37.4044
Repeat: 3	1437.38	6.88603	6.43129	69.956	36.4293
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-1.09069	0.0352038	13954.4	4.04923	58.7538
Std Dev:	2.70915	2.14619	113.372	0.0575027	0.83704
%RSD:	248.389	6096.47	0.812445	1.42009	1.42466
Repeat: 1	-0.380636	2.49496	13827.3	4.10013	58.0768
Repeat: 2	1.19273	-0.933268	13991	3.98685	58.4947
Repeat: 3	-4.08416	-1.45608	14045	4.06071	59.6897
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1188.1	-0.308855	119.815	213.288	2439.15
Std Dev:	1.99181	2.02393	1.02353	0.209656	5.92241
%RSD:	0.167647	655.303	0.854259	0.098297	0.242806
Repeat: 1	1188.3	0.820093	118.891	213.18	2444.82
Repeat: 2	1186.01	0.898792	120.915	213.156	2439.63
Repeat: 3	1189.98	-2.64545	119.638	213.53	2433.01
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	Sc3613	Sc3613-2
Units:	----	----
Avg. of Repeats:	670692	14997.3
Std Dev:	2018.13	85.9534
%RSD:	0.300903	0.573124
Repeat: 1	672047	14901.4
Repeat: 2	668373	15067.4
Repeat: 3	671657	15023.2
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	Sc1880	Sc3613	Sc3613-2
Avg. of Repeats:	2439.15	670692	14997.3
Std Dev:	5.92241	2018.13	85.9534
%RSD:	0.242806	0.300903	0.573124
Repeat: 1	2444.82	672047	14901.4
Repeat: 2	2439.63	668373	15067.4
Repeat: 3	2433.01	671657	15023.2

Sample Name	Acquisition Date	Sample type	Correction Factor
1608251-17@5X	9/14/2016 5:15:07PM	Unknown	1.00

Valid	Analyst Name	Method Name
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.00046716	1.56818	0.00519087	0.00122176	1.19886
Std Dev:	8.47145e-006	0.00275965	0.000300127	2.09631e-005	0.00285862
%RSD:	1.81339	0.175977	5.78183	1.71582	0.238445
Repeat: 1	0.000475386	1.56585	0.00511439	0.00123346	1.19689
Repeat: 2	0.000458462	1.57123	0.00493638	0.00123425	1.19755
Repeat: 3	0.000467632	1.56747	0.00552183	0.00119755	1.20214
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	0.00387053	0.523711	0.0968067	0.157248	0.00350139
Std Dev:	0.000181586	0.0016584	0.0023542	0.000561572	5.38058e-005
%RSD:	4.69149	0.316662	2.43186	0.357126	1.5367
Repeat: 1	0.00366187	0.52181	0.0983528	0.157881	0.00352889
Repeat: 2	0.00399268	0.524863	0.0940973	0.156811	0.0035359
Repeat: 3	0.00395705	0.52446	0.09797	0.157051	0.0034394
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.00178345	1.1474	0.170522	0.000534118	0.0372042
Std Dev:	4.87721e-005	0.00743594	0.00122437	2.98495e-005	0.000244571
%RSD:	2.7347	0.648068	0.718011	5.58856	0.657374
Repeat: 1	0.00181914	1.13935	0.169639	0.000511144	0.0369224
Repeat: 2	0.00180333	1.15401	0.17192	0.000567857	0.0373294
Repeat: 3	0.00172788	1.14884	0.170006	0.000523354	0.0373608
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.19489	0.0627148	0.727725	0.234173	0.0128477
Std Dev:	0.00195938	0.001045	0.00530756	0.000657368	0.000692828
%RSD:	1.00538	1.66628	0.729336	0.280719	5.39262
Repeat: 1	0.196031	0.0615604	0.723082	0.233439	0.0134611
Repeat: 2	0.196012	0.0635962	0.733511	0.234707	0.0129859
Repeat: 3	0.192628	0.0629878	0.726582	0.234374	0.0120962
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215

Avg. of Repeats:	-0.00377628	0.0111418	864.361	0.00530133	0.0954816
Std Dev:	0.00135149	0.00156239	2.53269	0.000531929	0.00118231
%RSD:	35.7891	14.0227	0.293013	10.0339	1.23826
Repeat: 1	-0.00224935	0.0106474	866.22	0.00526763	0.0945377
Repeat: 2	-0.00481884	0.00988642	861.477	0.00584931	0.0968077
Repeat: 3	-0.00426064	0.0128916	865.387	0.00478705	0.0950995
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.21842	-0.00249894	0.0044959	1.41311	2434.38
Std Dev:	0.000343705	0.00145572	4.16593e-005	0.00473509	3.16909
%RSD:	0.15736	58.2537	0.926608	0.335083	0.130181
Repeat: 1	0.218635	-0.000974169	0.00450659	1.41378	2434.32
Repeat: 2	0.218601	-0.00264859	0.00453117	1.40808	2437.57
Repeat: 3	0.218024	-0.00387406	0.00444993	1.41747	2431.24
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	670749	14883			
Std Dev:	6466.52	96.8102			
%RSD:	0.964073	0.650474			
Repeat: 1	667204	14921.1			
Repeat: 2	666830	14773			
Repeat: 3	678213	14955			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.599382	37600.6	27.6515	71.745	69.2621
Std Dev:	0.154046	66.174	0.693506	1.24382	0.166153
%RSD:	25.7008	0.175992	2.50802	1.73367	0.23989
Repeat: 1	-0.448033	37544.7	27.4622	72.413	69.148
Repeat: 2	-0.755991	37673.6	27.0723	72.5121	69.1856
Repeat: 3	-0.594122	37583.4	28.42	70.3099	69.4527
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	1.9063	5.9192	-0.103138	13.5437	68.8062
Std Dev:	0.066665	0.0187582	0.092334	0.0746601	1.1479
%RSD:	3.49709	0.316904	89.5249	0.551256	1.6683
Repeat: 1	1.82979	5.8977	-0.0358124	13.6269	69.3965
Repeat: 2	1.9519	5.93223	-0.208397	13.4826	69.5389
Repeat: 3	1.9372	5.92767	-0.0652042	13.5215	67.4833
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	14.2671	53130.3	8.68517	101.83	12.1065
Std Dev:	0.507882	344.307	0.0586441	5.2151	0.0795613
%RSD:	3.55981	0.648042	0.675221	5.1214	0.657178
Repeat: 1	14.6282	52757.6	8.64291	97.8166	12.0148
Repeat: 2	14.4868	53436.4	8.75212	107.724	12.1473
Repeat: 3	13.6864	53197	8.66047	99.9477	12.1574
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	548.563	16.2663	18.7119	44.7123	17.8741
Std Dev:	5.52972	0.261737	0.137115	0.137692	0.338171
%RSD:	1.00804	1.60908	0.732768	0.307952	1.89196

Repeat: 1	551.79	15.9772	18.592	44.5586	18.1671
Repeat: 2	551.721	16.4872	18.8614	44.8244	17.9512
Repeat: 3	542.178	16.3344	18.6824	44.754	17.504
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-1.00007	0.708875	15326.6	4.35416	52.1765
Std Dev:	1.5665	3.5106	45.1471	0.34662	0.553877
%RSD:	156.64	495.235	0.294567	7.96067	1.06154
Repeat: 1	0.762986	-0.392532	15359.7	4.33213	51.7344
Repeat: 2	-2.23183	-2.11895	15275.2	4.71127	52.7978
Repeat: 3	-1.53135	4.63811	15345	4.01908	51.9973
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	867.672	0.0129836	89.99	125.519	2434.38
Std Dev:	1.37328	1.86129	0.821512	0.427422	3.16909
%RSD:	0.158272	14335.7	0.912892	0.340523	0.130181
Repeat: 1	868.534	1.96414	90.1972	125.575	2434.32
Repeat: 2	868.394	-0.182105	90.6881	125.066	2437.57
Repeat: 3	866.088	-1.74308	89.0848	125.916	2431.24
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	670749	14883			
Std Dev:	6466.52	96.8102			
%RSD:	0.964073	0.650474			
Repeat: 1	667204	14921.1			
Repeat: 2	666830	14773			
Repeat: 3	678213	14955			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2434.38	670749	14883
Std Dev:	3.16909	6466.52	96.8102
%RSD:	0.130181	0.964073	0.650474
Repeat: 1	2434.32	667204	14921.1
Repeat: 2	2437.57	666830	14773
Repeat: 3	2431.24	678213	14955

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608251-18@5X	9/14/2016 5:19:27PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000483382	1.25858	0.00128741	0.00100417	0.985436
Std Dev:	1.72518e-005	0.0043641	0.0004373	1.47525e-005	0.00176677
%RSD:	3.56897	0.346748	33.9675	1.46911	0.179289
Repeat: 1	0.000464019	1.25363	0.000946054	0.000995823	0.986339
Repeat: 2	0.000497116	1.26024	0.00113584	0.000995493	0.983401
Repeat: 3	0.000489012	1.26186	0.00178033	0.00102121	0.98657

Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	0.00324173	0.413264	0.098169	0.143817	0.00284613
Std Dev:	2.90013e-005	0.000879334	0.000851534	0.00101758	1.58627e-005
%RSD:	0.894623	0.212778	0.867416	0.70755	0.557343
Repeat: 1	0.00322125	0.412506	0.0976998	0.143514	0.00283207
Repeat: 2	0.00327492	0.414228	0.0976553	0.144952	0.00286333
Repeat: 3	0.00322903	0.413059	0.0991519	0.142986	0.00284301
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.00193596	1.25864	0.130928	0.000382123	0.0300733
Std Dev:	3.36841e-005	0.00574538	0.00134252	2.39974e-005	7.05763e-005
%RSD:	1.73991	0.456476	1.02539	6.28002	0.234681
Repeat: 1	0.00193823	1.25253	0.132477	0.000390656	0.030011
Repeat: 2	0.0019012	1.25946	0.130215	0.000355025	0.03015
Repeat: 3	0.00196845	1.26393	0.130093	0.000400688	0.030059
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.115	0.0308492	0.659602	0.197911	0.0210201
Std Dev:	0.000407213	0.00131234	0.00311128	0.00170826	0.00186816
%RSD:	0.354097	4.25404	0.47169	0.863146	8.88749
Repeat: 1	0.115048	0.030259	0.656049	0.198928	0.0209074
Repeat: 2	0.114571	0.0299356	0.660923	0.195939	0.0192109
Repeat: 3	0.115382	0.032353	0.661836	0.198867	0.0229421
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	-0.00463177	0.0103718	706.364	0.00401521	0.0914083
Std Dev:	0.00124137	0.000534857	1.88646	0.000149198	0.000227606
%RSD:	26.8012	5.15683	0.267066	3.71583	0.248999
Repeat: 1	-0.00546094	0.00989948	707.191	0.00394507	0.0915489
Repeat: 2	-0.00522978	0.0109526	704.205	0.00418655	0.0915302
Repeat: 3	-0.00320459	0.0102634	707.695	0.003914	0.0911457
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.177062	-0.00230402	0.00392772	1.26555	2447.36
Std Dev:	0.000890175	0.00054792	1.00627e-005	0.00179657	4.34119
%RSD:	0.502747	23.7811	0.256197	0.14196	0.177383
Repeat: 1	0.17617	-0.00269094	0.00393934	1.26747	2443.94
Repeat: 2	0.177067	-0.00254407	0.00392223	1.26392	2445.89
Repeat: 3	0.17795	-0.00167704	0.00392161	1.26525	2452.24
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	670930	14951			
Std Dev:	1608.69	57.2527			
%RSD:	0.239771	0.382936			
Repeat: 1	670599	15016.7			
Repeat: 2	672678	14912.1			
Repeat: 3	669512	14924.1			

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.344731	30173.2	18.6596	59.1905	56.5665
Std Dev:	0.313896	104.699	1.0221	0.894155	0.104934
%RSD:	91.0553	0.346992	5.4776	1.51064	0.185506
Repeat: 1	-0.696923	30054.4	17.8576	58.6721	56.6221
Repeat: 2	-0.0944652	30213.2	18.3108	58.6765	56.4455
Repeat: 3	-0.242804	30252	19.8104	60.223	56.632
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677

Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	1.52211	4.66993	-0.17966	12.1001	54.9003
Std Dev:	0.011742	0.0099462	0.0225876	0.124582	0.338142
%RSD:	0.77143	0.212984	12.5724	1.0296	0.615919
Repeat: 1	1.51107	4.66135	-0.184901	12.0774	54.6029
Repeat: 2	1.53445	4.68083	-0.199167	12.2345	55.2681
Repeat: 3	1.52082	4.66761	-0.154913	11.9884	54.83
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	15.9606	58279.9	6.78874	75.3074	9.7943
Std Dev:	0.357131	266.034	0.0643034	4.19599	0.0229732
%RSD:	2.23759	0.456476	0.947207	5.57182	0.234557
Repeat: 1	15.9719	57997	6.86291	76.8015	9.77391
Repeat: 2	15.5979	58317.8	6.75455	70.5689	9.81919
Repeat: 3	16.3119	58525	6.74875	78.5519	9.7898
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	323.039	8.45175	16.9521	36.8292	20.092
Std Dev:	1.14724	0.326067	0.0803765	0.367422	0.912472
%RSD:	0.355141	3.85798	0.47414	0.997638	4.54146
Repeat: 1	323.178	8.303	16.8603	37.0506	20.0162
Repeat: 2	321.828	8.22659	16.9862	36.4051	19.2199
Repeat: 3	324.11	8.82567	17.0098	37.0319	21.0401
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-1.81668	-0.742863	12507.3	3.51838	50.2843
Std Dev:	1.43257	1.19599	33.6767	0.0972955	0.106643
%RSD:	78.8566	160.998	0.269257	2.76535	0.21208
Repeat: 1	-2.76236	-1.79328	12522	3.47259	50.3503
Repeat: 2	-2.51922	0.558794	12468.7	3.63012	50.3413
Repeat: 3	-0.168456	-0.994108	12531.1	3.45242	50.1612
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	702.796	-0.0800973	78.9581	112.512	2447.36
Std Dev:	3.55122	0.701316	0.190856	0.160496	4.34119
%RSD:	0.505299	875.58	0.241718	0.142647	0.177383
Repeat: 1	699.237	-0.576083	79.1783	112.685	2443.94
Repeat: 2	702.813	-0.386489	78.8552	112.368	2445.89
Repeat: 3	706.339	0.72228	78.8408	112.483	2452.24
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	670930	14951			
Std Dev:	1608.69	57.2527			
%RSD:	0.239771	0.382936			
Repeat: 1	670599	15016.7			
Repeat: 2	672678	14912.1			
Repeat: 3	669512	14924.1			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	Sc1880	Sc3613	Sc3613-2
Avg. of Repeats:	2447.36	670930	14951
Std Dev:	4.34119	1608.69	57.2527
%RSD:	0.177383	0.239771	0.382936
Repeat: 1	2443.94	670599	15016.7
Repeat: 2	2445.89	672678	14912.1
Repeat: 3	2452.24	669512	14924.1

Sample Name	Acquisition Date	Sample type	Correction Factor
1608251-19@5X	9/14/2016 5:23:48PM	Unknown	1.00

Valid	Analyst Name	Method Name
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.000481715	1.18473	-0.00270172	0.00113397	0.96931
Std Dev:	2.36442e-005	0.00311928	0.000134276	1.39842e-005	0.0026309
%RSD:	4.90834	0.263289	4.97003	1.23321	0.27142
Repeat: 1	0.000496993	1.18818	-0.00285632	0.00112729	0.969912
Repeat: 2	0.000493673	1.18393	-0.0026142	0.00115005	0.96643
Repeat: 3	0.000454481	1.1821	-0.00263463	0.00112459	0.971588
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	0.00173546	0.440261	0.0775059	0.107441	0.00275613
Std Dev:	8.13844e-005	0.000629498	0.0011466	0.00168676	4.46383e-005
%RSD:	4.6895	0.142983	1.47937	1.56993	1.6196
Repeat: 1	0.0017383	0.439791	0.0769661	0.10744	0.00278055
Repeat: 2	0.00165269	0.440016	0.0788227	0.105755	0.00278323
Repeat: 3	0.00181538	0.440976	0.0767288	0.109129	0.00270461
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.00190638	0.782426	0.123967	0.000422866	0.0287811
Std Dev:	2.84134e-005	0.000556745	0.000584679	4.71731e-006	5.21187e-005
%RSD:	1.49044	0.0711563	0.47164	1.11556	0.181086
Repeat: 1	0.00187554	0.78305	0.124631	0.000427907	0.0288395
Repeat: 2	0.0019315	0.782249	0.123741	0.000418557	0.0287392
Repeat: 3	0.0019121	0.781979	0.12353	0.000422134	0.0287646
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.159407	0.0304775	0.714178	0.153104	0.0144908
Std Dev:	0.00116031	0.000320454	0.00157058	0.00144678	0.00135895
%RSD:	0.727892	1.05144	0.219915	0.944966	9.37802
Repeat: 1	0.159664	0.0301897	0.715944	0.154589	0.0157415
Repeat: 2	0.160417	0.0308228	0.713651	0.153025	0.0146861
Repeat: 3	0.15814	0.0304199	0.712938	0.151698	0.0130448
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	-0.00604015	0.0110433	696.143	0.00454473	0.0751535
Std Dev:	0.00103729	0.000930477	4.43232	0.000459968	0.000542721
%RSD:	17.1733	8.42573	0.636696	10.1209	0.72215
Repeat: 1	-0.007008	0.0111461	700.736	0.00496739	0.0756702
Repeat: 2	-0.00494514	0.0100656	691.891	0.00405485	0.0752023
Repeat: 3	-0.0061673	0.011918	695.803	0.00461195	0.0745881
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.167424	-0.00213097	0.00325694	0.822477	2463.45
Std Dev:	0.00017896	0.000293597	3.12607e-005	0.00351514	6.2698

%RSD:	0.106891	13.7776	0.959817	0.427384	0.254513
Repeat: 1	0.167614	-0.00234413	0.00326623	0.825743	2457.26
Repeat: 2	0.167259	-0.00225269	0.0032825	0.818757	2469.8
Repeat: 3	0.167398	-0.00179609	0.00322209	0.822932	2463.3
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	670529	15040.8			
Std Dev:	4752.71	44.0527			
%RSD:	0.708801	0.292888			
Repeat: 1	668974	15002			
Repeat: 2	666748	15031.7			
Repeat: 3	675864	15088.7			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.40933	28401.6	8.66869	65.2357	55.6751
Std Dev:	0.433655	74.8672	0.309063	0.83226	0.153836
%RSD:	105.943	0.263602	3.56528	1.27577	0.276311
Repeat: 1	-0.129801	28484.2	8.31287	64.8403	55.7112
Repeat: 2	-0.189296	28382.3	8.87037	66.1919	55.5065
Repeat: 3	-0.908892	28338.2	8.82283	64.6747	55.8077
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.933856	4.97529	-0.0912159	8.38627	53.135
Std Dev:	0.0306524	0.00712028	0.0399649	0.201261	0.952557
%RSD:	3.28235	0.143113	43.8136	2.39988	1.79271
Repeat: 1	0.935547	4.96997	-0.111558	8.38382	53.6563
Repeat: 2	0.902393	4.97252	-0.0451723	8.18624	53.7131
Repeat: 3	0.963628	4.98338	-0.116918	8.58874	52.0356
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	14.8205	36230.1	6.45532	82.4356	9.36321
Std Dev:	0.296416	25.7883	0.0280047	0.824056	0.0169298
%RSD:	2.00004	0.0711791	0.433823	0.999636	0.180812
Repeat: 1	14.499	36259	6.48713	83.3161	9.38217
Repeat: 2	15.0829	36222	6.44448	81.6829	9.34962
Repeat: 3	14.8797	36209.4	6.43437	82.3078	9.35784
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	448.818	8.10315	18.362	27.455	16.966
Std Dev:	3.27358	0.0788896	0.0405743	0.310896	0.676304
%RSD:	0.72938	0.973568	0.220969	1.13238	3.98623
Repeat: 1	449.542	8.03253	18.4076	27.7739	17.5924
Repeat: 2	451.668	8.18829	18.3484	27.4385	17.0566
Repeat: 3	445.242	8.08862	18.3299	27.1527	16.249
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-2.81403	1.19707	12320	3.86698	42.6627
Std Dev:	1.19899	2.09047	79.1276	0.299958	0.25443
%RSD:	42.6075	174.633	0.642269	7.75691	0.596376

Repeat: 1	-3.94773	1.42392	12402	4.14251	42.9049
Repeat: 2	-1.55899	-0.997585	12244.1	3.54745	42.6856
Repeat: 3	-2.93536	3.16486	12313.9	3.91098	42.3975
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	664.354	0.328217	65.5809	72.7821	2463.45
Std Dev:	0.713346	0.374982	0.617485	0.316391	6.2698
%RSD:	0.107374	114.248	0.941563	0.43471	0.254513
Repeat: 1	665.113	0.0574234	65.7665	73.0745	2457.26
Repeat: 2	663.697	0.171014	66.0843	72.4462	2469.8
Repeat: 3	664.252	0.756214	64.8919	72.8256	2463.3
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	670529	15040.8			
Std Dev:	4752.71	44.0527			
%RSD:	0.708801	0.292888			
Repeat: 1	668974	15002			
Repeat: 2	666748	15031.7			
Repeat: 3	675864	15088.7			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2463.45	670529	15040.8
Std Dev:	6.2698	4751.71	44.0527
%RSD:	0.254513	0.708801	0.292888
Repeat: 1	2457.26	668974	15002
Repeat: 2	2469.8	666748	15031.7
Repeat: 3	2463.3	675864	15088.7

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608251-20@5X	9/14/2016 5:28:10PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000492879	1.75591	0.00258373	0.00131495	1.11849
Std Dev:	1.88477e-006	0.00466366	0.0010199	4.98146e-006	0.00534391
%RSD:	0.3824	0.265597	39.4738	0.378832	0.477781
Repeat: 1	0.000494319	1.75061	0.00251457	0.00130999	1.11357
Repeat: 2	0.000493573	1.75778	0.00363644	0.00131995	1.11771
Repeat: 3	0.000490746	1.75936	0.00160017	0.00131492	1.12418
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00431444	0.401528	0.121903	0.220982	0.00328218
Std Dev:	0.000169983	0.000283893	0.000717412	0.00050888	4.41003e-005
%RSD:	3.93986	0.0707031	0.58851	0.230282	1.34363
Repeat: 1	0.00421183	0.401206	0.121149	0.221517	0.00323487
Repeat: 2	0.00422084	0.401744	0.121983	0.220504	0.00332215
Repeat: 3	0.00451065	0.401634	0.122577	0.220924	0.00328951
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.00247342	1.59869	0.168096	0.00057953	0.0398845

Std Dev:	3.62371e-005	0.00628967	0.00107115	8.94906e-006	0.000254426
%RSD:	1.46506	0.393426	0.637226	1.54419	0.637907
Repeat: 1	0.00243159	1.60585	0.169328	0.000571489	0.039989
Repeat: 2	0.00249371	1.59404	0.167569	0.000589171	0.04007
Repeat: 3	0.00249497	1.59619	0.16739	0.000577929	0.0395944
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.205937	0.0334146	0.855361	0.321239	0.0352575
Std Dev:	0.00167644	0.000391816	0.00297032	0.00159111	0.00219123
%RSD:	0.814052	1.17259	0.347259	0.495304	6.21494
Repeat: 1	0.204005	0.0337372	0.85879	0.319959	0.0356016
Repeat: 2	0.207001	0.0329786	0.85361	0.320737	0.0329146
Repeat: 3	0.206806	0.0335279	0.853682	0.323021	0.0372563
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00476204	0.0124783	814.308	0.00557019	0.106483
Std Dev:	0.00134053	0.000568334	10.1951	0.000499952	0.00106672
%RSD:	28.1504	4.55459	1.252	8.97549	1.00177
Repeat: 1	-0.00496921	0.0121915	824.504	0.00532338	0.107612
Repeat: 2	-0.00332998	0.0121105	804.114	0.00614555	0.105492
Repeat: 3	-0.00598692	0.0131329	814.307	0.00524164	0.106346
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.198259	-0.00162568	0.00377732	1.89518	2436.76
Std Dev:	0.000901263	0.00158652	4.10631e-005	0.00674867	7.36234
%RSD:	0.454588	97.5908	1.0871	0.356096	0.302137
Repeat: 1	0.198272	-0.000182531	0.00376686	1.89143	2444.79
Repeat: 2	0.197352	-0.00332451	0.0038226	1.89115	2435.15
Repeat: 3	0.199154	-0.00137	0.00374249	1.90297	2430.33
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	672869	14831.8			
Std Dev:	2497.12	55.8716			
%RSD:	0.371116	0.376702			
Repeat: 1	675745	14886.6			
Repeat: 2	671621	14774.9			
Repeat: 3	671243	14833.8			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.234119	42107.7	22.3598	78.8622	64.3551
Std Dev:	0.0363854	111.924	2.35973	0.275957	0.31617
%RSD:	15.5414	0.265805	10.5535	0.349923	0.49129
Repeat: 1	-0.20871	41980.3	22.2086	78.592	64.062
Repeat: 2	-0.217846	42152.4	24.7915	79.1435	64.3131
Repeat: 3	-0.275801	42190.3	20.0793	78.8511	64.6902
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	2.00004	4.53718	-0.0171676	20.7674	63.8971
Std Dev:	0.0660643	0.00321113	0.0330468	0.0510936	0.943528
%RSD:	3.30315	0.0707736	192.496	0.246028	1.47664
Repeat: 1	1.9622	4.53354	-0.0541822	20.8229	62.885
Repeat: 2	1.9616	4.53962	-0.00669334	20.7223	64.7525
Repeat: 3	2.07632	4.53838	0.00937283	20.7568	64.0539
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**

Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	22.2081	74026.9	8.56898	109.698	12.9875
Std Dev:	0.36912	291.21	0.0513055	1.56634	0.0826207
%RSD:	1.6621	0.393383	0.598735	1.42786	0.636156
Repeat: 1	21.782	74358.2	8.62801	108.29	13.0216
Repeat: 2	22.4104	73811.6	8.54375	111.386	13.0476
Repeat: 3	22.4318	73910.9	8.53517	109.419	12.8933
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	579.271	9.27403	22.0093	63.1881	29.3304
Std Dev:	4.73644	0.0993295	0.0767349	0.34431	1.06589
%RSD:	0.817655	1.07105	0.348648	0.544897	3.63409
Repeat: 1	573.811	9.35724	22.0979	62.9082	29.4633
Repeat: 2	582.278	9.16406	21.964	63.0834	28.2043
Repeat: 3	581.725	9.3008	21.9659	63.5726	30.3237
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-2.56756	3.09871	14437.7	4.53286	57.3508
Std Dev:	1.54449	1.27411	182.057	0.325771	0.499945
%RSD:	60.1541	41.1173	1.26099	7.18686	0.871732
Repeat: 1	-2.79306	2.45604	14619.8	4.372	57.8799
Repeat: 2	-0.922715	2.27394	14255.7	4.90778	56.8863
Repeat: 3	-3.98691	4.56616	14437.6	4.31882	57.2862
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	787.231	0.502735	76.4123	168.595	2436.76
Std Dev:	3.59942	2.025	0.803735	0.601911	7.36234
%RSD:	0.457225	402.796	1.05184	0.357016	0.302137
Repeat: 1	787.28	2.3406	76.2036	168.264	2444.79
Repeat: 2	783.608	-1.66812	77.2997	168.23	2435.15
Repeat: 3	790.806	0.835728	75.7334	169.29	2430.33
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	672869	14831.8			
Std Dev:	2497.12	55.8716			
%RSD:	0.371116	0.376702			
Repeat: 1	675745	14886.6			
Repeat: 2	671621	14774.9			
Repeat: 3	671243	14833.8			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2436.76	672869	14831.8
Std Dev:	7.36234	2497.12	55.8716
%RSD:	0.302137	0.371116	0.376702
Repeat: 1	2444.79	675745	14886.6
Repeat: 2	2435.15	671621	14774.9
Repeat: 3	2430.33	671243	14833.8

Sample Name	Acquisition Date	Sample type	Correction Factor
1608252-20	9/14/2016 5:32:30PM	Unknown	1.00

Valid	Analyst Name	Method Name
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Avg. of Repeats:	0.000458875	1.37628	-0.00250591	0.000214491	2.06539
Std Dev:	2.42865e-005	0.00364274	0.000457487	7.49075e-006	0.00160587
%RSD:	5.29261	0.264679	18.2564	3.49234	0.0777516
Repeat: 1	0.000483201	1.37265	-0.00293449	0.000222422	2.06359
Repeat: 2	0.000434628	1.37626	-0.00255906	0.000213514	2.06668
Repeat: 3	0.000458796	1.37994	-0.00202416	0.000207536	2.06588
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Avg. of Repeats:	-0.00179343	0.362024	0.0810723	0.130825	0.00772524
Std Dev:	0.00019384	0.000593878	0.000834845	0.000849487	7.90673e-005
%RSD:	10.8083	0.164044	1.02975	0.649329	1.02349
Repeat: 1	-0.0017839	0.361783	0.0804078	0.129882	0.00772887
Repeat: 2	-0.00160453	0.361588	0.0820094	0.13153	0.00780243
Repeat: 3	-0.00199186	0.362701	0.0807996	0.131064	0.00764442
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Avg. of Repeats:	0.00599227	0.534885	0.0472822	4.92638e-005	0.00882256
Std Dev:	4.80409e-005	0.00100116	0.000456787	1.15782e-005	9.8398e-005
%RSD:	0.801715	0.187173	0.966088	23.5024	1.1153
Repeat: 1	0.00603764	0.534572	0.0468178	5.70412e-005	0.00886285
Repeat: 2	0.00599724	0.534077	0.047731	3.59576e-005	0.00871041
Repeat: 3	0.00594194	0.536005	0.0472977	5.47925e-005	0.00889441
Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	0.0706074	0.127511	0.0163944	0.129167	0.186369
Std Dev:	0.000585438	0.000670176	0.000526105	0.00062499	0.000859426
%RSD:	0.829145	0.525582	3.20906	0.48386	0.461143
Repeat: 1	0.0707771	0.126903	0.0163003	0.129822	0.185376
Repeat: 2	0.0710893	0.127402	0.0169612	0.129104	0.186858
Repeat: 3	0.0699559	0.12823	0.0159217	0.128577	0.186872
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	-0.00303484	0.0113427	1740.46	0.0301098	0.0789086
Std Dev:	0.00154628	0.000927212	12.6852	0.000984044	0.000166666
%RSD:	50.951	8.17451	0.728842	3.26819	0.211214
Repeat: 1	-0.00131574	0.0112712	1726.39	0.0300983	0.0790244
Repeat: 2	-0.00431214	0.0104533	1743.95	0.0310995	0.0787176
Repeat: 3	-0.00347664	0.0123036	1751.03	0.0291315	0.0789838
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.454815	-0.00487081	0.00391692	1.26756	2442.86
Std Dev:	0.000611488	0.000499687	6.11114e-005	0.0053464	9.43484
%RSD:	0.134448	10.2588	1.56019	0.421787	0.386222
Repeat: 1	0.455515	-0.00513468	0.00395686	1.26375	2439.45
Repeat: 2	0.454545	-0.00518325	0.00394732	1.27367	2453.52
Repeat: 3	0.454386	-0.00429451	0.00384657	1.26526	2435.6
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	666916	14606.4			
Std Dev:	5701.22	80.7122			
%RSD:	0.854863	0.552582			
Repeat: 1	663578	14515.9			

Repeat: 2	663671	14632.3
Repeat: 3	673499	14670.9

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.65119	32999.7	8.97249	9.66834	120.651
Std Dev:	0.443794	87.3999	1.06169	0.443899	0.0937612
%RSD:	68.1513	0.264851	11.8328	4.59126	0.0777126
Repeat: 1	-0.203776	32912.5	7.97877	10.1396	120.548
Repeat: 2	-1.09127	32999.1	8.8476	9.6074	120.73
Repeat: 3	-0.658521	33087.3	10.0911	9.25806	120.676
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.707281	4.09035	0.421581	9.38166	159.533
Std Dev:	0.0717393	0.00671739	0.0297451	0.10594	1.69034
%RSD:	10.143	0.164225	7.0556	1.12923	1.05955
Repeat: 1	0.713122	4.08763	0.399683	9.26376	159.61
Repeat: 2	0.775921	4.08542	0.455446	9.46886	161.184
Repeat: 3	0.6328	4.098	0.409615	9.41236	157.806
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	57.9192	24767.3	2.7823	17.4572	2.87854
Std Dev:	0.503439	46.3437	0.021879	2.02452	0.0319623
%RSD:	0.86921	0.187116	0.786364	11.597	1.11037
Repeat: 1	58.3958	24752.8	2.76006	18.817	2.89161
Repeat: 2	57.9692	24729.9	2.8038	15.1306	2.84211
Repeat: 3	57.3926	24819.2	2.78304	18.4242	2.90189
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	198.521	31.9427	0.335473	22.4838	101.944
Std Dev:	1.65284	0.165677	0.0135914	0.134938	0.435351
%RSD:	0.832574	0.518669	4.0514	0.600155	0.427048
Repeat: 1	199	31.7923	0.333042	22.6246	101.442
Repeat: 2	199.882	31.9154	0.350116	22.4712	102.183
Repeat: 3	196.682	32.1203	0.323261	22.3556	102.208
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-1.70467	2.19254	30960	20.5322	44.4342
Std Dev:	1.79893	2.07875	226.454	0.641351	0.0780575
%RSD:	105.529	94.8103	0.731442	3.12363	0.17567
Repeat: 1	0.283012	2.03606	30708.9	20.5246	44.4885
Repeat: 2	-3.22099	0.196444	31022.3	21.1774	44.3447
Repeat: 3	-2.17603	4.3451	31148.8	19.8947	44.4693
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1811.28	-0.0884242	78.3836	112.713	2442.86
Std Dev:	2.43929	0.631265	1.19968	0.478009	9.43484
%RSD:	0.134672	713.906	1.53053	0.424094	0.386222

Repeat: 1	1814.07	-0.416152	79.1584	112.37	2439.45
Repeat: 2	1810.2	-0.488423	78.9907	113.259	2453.52
Repeat: 3	1809.56	0.639303	77.0017	112.509	2435.6
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	666916	14606.4
Std Dev:	5701.22	80.7122
%RSD:	0.854863	0.552582
Repeat: 1	663578	14515.9
Repeat: 2	663671	14632.3
Repeat: 3	673499	14670.9
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2442.86	666916	14606.4
Std Dev:	9.43484	5701.22	80.7122
%RSD:	0.386222	0.854863	0.552582
Repeat: 1	2439.45	663578	14515.9
Repeat: 2	2453.52	663671	14632.3
Repeat: 3	2435.6	673499	14670.9

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I08012-MS1	9/14/2016 5:36:50PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.0142792	2.23553	0.105577	0.017301	37.7195
Std Dev:	0.000102856	0.00640734	0.000655563	4.75053e-005	0.0488333
%RSD:	0.720317	0.286614	0.620933	0.274581	0.129464
Repeat: 1	0.0141719	2.22815	0.105333	0.0173263	37.6731
Repeat: 2	0.014289	2.23875	0.105079	0.0173306	37.715
Repeat: 3	0.0143769	2.23969	0.10632	0.0172462	37.7704
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.138809	0.883971	4.0909	4.63377	0.0157581
Std Dev:	0.000544542	0.00208471	0.00770629	0.00986689	0.000114104
%RSD:	0.392296	0.235834	0.188377	0.212934	0.724099
Repeat: 1	0.138445	0.881622	4.08395	4.62455	0.0156309
Repeat: 2	0.139435	0.884691	4.08955	4.63258	0.0157917
Repeat: 3	0.138547	0.885601	4.09919	4.64418	0.0158516
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0317717	0.550531	0.171154	0.00573239	0.0263831
Std Dev:	5.67605e-005	0.00191852	0.000693474	3.94683e-005	0.000138454
%RSD:	0.178651	0.348485	0.405176	0.688514	0.524784
Repeat: 1	0.0317065	0.548517	0.17037	0.00568913	0.026266
Repeat: 2	0.0317985	0.552336	0.171689	0.00576644	0.0265359
Repeat: 3	0.03181	0.55074	0.171402	0.00574159	0.0263475
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.248746	4.20056	0.239365	2.64375	0.686216
Std Dev:	0.000283339	0.0102246	0.00246216	0.00580603	0.00207425
%RSD:	0.113907	0.24341	1.02862	0.219613	0.302273

Repeat: 1	0.248603	4.19243	0.237526	2.63812	0.683827
Repeat: 2	0.249072	4.19719	0.242162	2.64342	0.687553
Repeat: 3	0.248563	4.21204	0.238407	2.64972	0.687269
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.151718	0.124475	2734.49	1.62239	2.32043
Std Dev:	0.000683543	0.00088032	5.07414	0.00432242	0.00884362
%RSD:	0.450536	0.707227	0.18556	0.266423	0.381119
Repeat: 1	0.151924	0.124077	2734.12	1.6186	2.31641
Repeat: 2	0.152274	0.123864	2729.62	1.62147	2.33057
Repeat: 3	0.150955	0.125484	2739.74	1.62709	2.31431
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.72834	0.206562	0.0318753	7.59556	2387.7
Std Dev:	0.00183787	0.000863438	0.000181126	0.0200229	7.75756
%RSD:	0.252336	0.418004	0.568234	0.263614	0.324896
Repeat: 1	0.72687	0.207076	0.0316699	7.57814	2390.98
Repeat: 2	0.7304	0.205565	0.0319439	7.5911	2378.85
Repeat: 3	0.727748	0.207045	0.0320121	7.61743	2393.29
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	654639	14499.6			
Std Dev:	2801.59	33.3127			
%RSD:	0.427959	0.229749			
Repeat: 1	657866	14523.5			
Repeat: 2	653218	14461.6			
Repeat: 3	652832	14513.7			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	253.961	53575	257.251	1025.38	2232.84
Std Dev:	1.892	153.651	1.51229	2.82746	2.90128
%RSD:	0.744996	0.286796	0.587866	0.275749	0.129937
Repeat: 1	251.984	53398	256.684	1026.87	2230.08
Repeat: 2	254.145	53652.2	256.104	1027.14	2232.58
Repeat: 3	255.755	53674.7	258.965	1022.11	2235.87
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	53.5753	9.99412	138.938	547.435	330.848
Std Dev:	0.207772	0.0235802	0.264388	1.18113	2.43852
%RSD:	0.387813	0.235941	0.190292	0.215757	0.737052
Repeat: 1	53.4368	9.96755	138.703	546.343	328.131
Repeat: 2	53.8142	10.0023	138.888	547.275	331.565
Repeat: 3	53.475	10.0126	139.224	548.689	332.848
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	328.144	25495.1	8.71544	1011.47	8.59252
Std Dev:	0.599149	88.8446	0.0332157	6.89954	0.0449899
%RSD:	0.182587	0.348477	0.381113	0.682132	0.523594
Repeat: 1	327.456	25401.8	8.67792	1003.9	8.55441
Repeat: 2	328.435	25578.7	8.74107	1017.42	8.64215
Repeat: 3	328.543	25504.8	8.72734	1013.08	8.58099
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**

Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	701.125	1037.65	6.09568	563.573	350.74
Std Dev:	0.797934	2.52527	0.0636072	1.24921	1.04353
%RSD:	0.113808	0.243364	1.04348	0.221658	0.297522
Repeat: 1	700.723	1035.65	6.04817	562.361	349.537
Repeat: 2	702.044	1036.83	6.16794	563.501	351.405
Repeat: 3	700.608	1040.49	6.07093	564.857	351.278
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	176.209	255.448	48705.1	1058.56	1094.81
Std Dev:	0.813742	1.97367	90.5738	2.81745	4.14438
%RSD:	0.461804	0.77263	0.185963	0.266158	0.378546
Repeat: 1	176.509	254.561	48698.5	1056.09	1092.93
Repeat: 2	176.831	254.073	48618.1	1057.97	1099.56
Repeat: 3	175.288	257.709	48798.9	1061.63	1091.95
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	2902.08	272.787	622.733	677.609	2387.7
Std Dev:	7.32998	1.08305	3.54131	1.7906	7.75756
%RSD:	0.252577	0.397032	0.568673	0.264253	0.324896
Repeat: 1	2896.22	273.422	618.718	676.052	2390.98
Repeat: 2	2910.29	271.537	624.069	677.208	2378.85
Repeat: 3	2899.71	273.404	625.412	679.566	2393.29
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	654639	14499.6			
Std Dev:	2801.59	33.3127			
%RSD:	0.427959	0.229749			
Repeat: 1	657866	14523.5			
Repeat: 2	653218	14461.6			
Repeat: 3	652832	14513.7			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2387.7	654639	14499.6
Std Dev:	7.75756	2801.59	33.3127
%RSD:	0.324896	0.427959	0.229749
Repeat: 1	2390.98	657866	14523.5
Repeat: 2	2378.85	653218	14461.6
Repeat: 3	2393.29	652832	14513.7

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I08012-MSD1	9/14/2016 5:41:07PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.0143244	3.01551	0.109056	0.0174458	39.1637
Std Dev:	0.000103369	0.00940922	0.000452426	0.000115978	0.0392226

%RSD:	0.72163	0.312028	0.414858	0.66479	0.10015
Repeat: 1	0.0142169	3.00592	0.109094	0.0173123	39.1527
Repeat: 2	0.0144231	3.01586	0.109488	0.0175216	39.1312
Repeat: 3	0.0143331	3.02473	0.108585	0.0175035	39.2073
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.139988	1.07807	4.20296	4.69942	0.0162122
Std Dev:	0.000487945	0.00291022	0.00737935	0.00333411	0.000129533
%RSD:	0.348561	0.269948	0.175575	0.0709473	0.798986
Repeat: 1	0.139435	1.07543	4.19445	4.69811	0.0160962
Repeat: 2	0.140176	1.07759	4.20761	4.69694	0.016352
Repeat: 3	0.140355	1.08119	4.20682	4.70321	0.0161885
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0318916	0.725896	0.198435	0.00600155	0.0310123
Std Dev:	0.000256036	0.00604125	0.000450292	5.61364e-005	0.000171712
%RSD:	0.802835	0.832247	0.226922	0.935366	0.553691
Repeat: 1	0.0315959	0.720387	0.19816	0.00593752	0.0308476
Repeat: 2	0.0320433	0.724945	0.198954	0.00604232	0.0309991
Repeat: 3	0.0320354	0.732357	0.19819	0.00602481	0.0311903
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.266218	4.28439	0.240519	2.70066	0.836404
Std Dev:	0.0018487	0.00721514	0.00158679	0.00196406	0.00278441
%RSD:	0.694431	0.168405	0.659733	0.072725	0.332903
Repeat: 1	0.264113	4.27923	0.240143	2.6993	0.833683
Repeat: 2	0.267577	4.2813	0.239154	2.69978	0.83628
Repeat: 3	0.266964	4.29263	0.24226	2.70291	0.839248
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.138163	0.127128	2882.79	1.64247	2.4282
Std Dev:	0.00112806	0.000875939	21.5772	0.00556745	0.0179427
%RSD:	0.816466	0.68902	0.748482	0.338969	0.738933
Repeat: 1	0.13715	0.126401	2901.87	1.63665	2.41545
Repeat: 2	0.137961	0.1281	2887.13	1.64301	2.42042
Repeat: 3	0.139379	0.126884	2859.37	1.64774	2.44872
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.779964	0.209992	0.0329017	8.57309	2361.41
Std Dev:	0.00238515	0.000419408	0.000258387	0.0128964	4.39683
%RSD:	0.305802	0.199726	0.785329	0.150429	0.186195
Repeat: 1	0.777398	0.209669	0.0326253	8.56789	2357.23
Repeat: 2	0.780381	0.210466	0.0331372	8.5636	2365.99
Repeat: 3	0.782113	0.209842	0.0329425	8.58777	2361.01
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	655354	14381.2			
Std Dev:	4107.1	39.2723			
%RSD:	0.6267	0.273082			
Repeat: 1	659628	14393.1			
Repeat: 2	651437	14413.1			
Repeat: 3	654996	14337.3			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	254.864	72287.2	265.827	1034.6	2318.35
Std Dev:	1.9077	225.67	1.04284	6.91736	2.31808
%RSD:	0.748515	0.312185	0.392299	0.668603	0.099988
Repeat: 1	252.881	72057.4	265.906	1026.64	2317.68

Repeat: 2	256.686	72295.8	266.828	1039.11	2316.45
Repeat: 3	255.027	72508.5	264.747	1038.06	2320.93
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	54.1987	12.1896	142.366	554.728	340.417
Std Dev:	0.187714	0.0329177	0.246124	0.384063	2.76601
%RSD:	0.346344	0.270048	0.17288	0.0692343	0.812536
Repeat: 1	53.9862	12.1597	142.083	554.596	337.943
Repeat: 2	54.2678	12.1841	142.529	554.428	343.403
Repeat: 3	54.3421	12.2249	142.487	555.161	339.904
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	329.802	33615.4	10.0221	1058.48	10.0998
Std Dev:	2.6948	279.751	0.0215679	9.81456	0.0559103
%RSD:	0.817096	0.832209	0.215202	0.927235	0.553579
Repeat: 1	326.691	33360.3	10.009	1047.28	10.0462
Repeat: 2	331.391	33571.4	10.047	1065.61	10.0954
Repeat: 3	331.324	33914.6	10.0104	1062.54	10.1577
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	750.244	1058.47	6.1255	575.737	427.875
Std Dev:	5.21196	1.78464	0.0409929	0.420721	1.40079
%RSD:	0.694702	0.168606	0.669217	0.0730753	0.327382
Repeat: 1	744.31	1057.19	6.11579	575.444	426.504
Repeat: 2	754.079	1057.7	6.09023	575.548	427.816
Repeat: 3	752.342	1060.51	6.17048	576.219	429.304
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	160.16	260.504	51354.3	1071.65	1145.29
Std Dev:	1.29079	1.96208	385.123	3.62913	8.40818
%RSD:	0.805936	0.753185	0.749934	0.338649	0.734155
Repeat: 1	159.049	258.885	51694.8	1067.86	1139.31
Repeat: 2	159.855	262.686	51431.8	1072	1141.64
Repeat: 3	161.576	259.941	50936.3	1075.09	1154.9
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	3107.92	277.477	642.785	764.977	2361.41
Std Dev:	9.51228	0.550779	5.04475	1.15016	4.39683
%RSD:	0.306065	0.198496	0.784827	0.150352	0.186195
Repeat: 1	3097.69	277.036	637.392	764.522	2357.23
Repeat: 2	3109.59	278.094	647.389	764.124	2365.99
Repeat: 3	3116.49	277.3	643.574	766.285	2361.01
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	655354	14381.2			
Std Dev:	4107.1	39.2723			
%RSD:	0.6267	0.273082			

Repeat: 1	659628	14393.1
Repeat: 2	651437	14413.1
Repeat: 3	654996	14337.3
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2361.41	655354	14381.2
Std Dev:	4.39683	4107.1	39.2723
%RSD:	0.186195	0.6267	0.273082
Repeat: 1	2357.23	659628	14393.1
Repeat: 2	2365.99	651437	14413.1
Repeat: 3	2361.01	654996	14337.3

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I08012-PS1	9/14/2016 5:45:24PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.0136838	1.41599	0.108177	0.0169443	36.0458
Std Dev:	0.000180605	0.00531921	0.00100561	0.000213736	0.0490552
%RSD:	1.31985	0.375655	0.9296	1.26141	0.136091
Repeat: 1	0.0136723	1.41004	0.107467	0.017074	36.0139
Repeat: 2	0.0135092	1.41763	0.107735	0.0166976	36.0211
Repeat: 3	0.0138699	1.42029	0.109327	0.0170612	36.1022
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.131702	0.82527	3.94415	4.45925	0.0172975
Std Dev:	0.00032124	0.00145449	0.011014	0.00625229	0.000179462
%RSD:	0.243913	0.176245	0.27925	0.140209	1.0375
Repeat: 1	0.131992	0.823896	3.9338	4.45453	0.0171861
Repeat: 2	0.131759	0.825121	3.94292	4.45688	0.0172018
Repeat: 3	0.131357	0.826793	3.95572	4.46634	0.0175045
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0310225	0.539926	0.151477	0.00537754	0.0242184
Std Dev:	0.000397391	0.00147537	0.000517059	8.53115e-005	5.41852e-005
%RSD:	1.28097	0.273255	0.341344	1.58644	0.223735
Repeat: 1	0.0312062	0.539014	0.151178	0.00542209	0.0242078
Repeat: 2	0.0305666	0.539135	0.152074	0.00527917	0.0241704
Repeat: 3	0.0312949	0.541628	0.15118	0.00543134	0.0242772
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.247574	4.29267	0.223192	2.53668	0.695903
Std Dev:	0.00329163	0.0144027	0.00133255	0.00439404	0.00438152
%RSD:	1.32956	0.335519	0.597044	0.17322	0.629617
Repeat: 1	0.249335	4.28592	0.223088	2.53475	0.698983
Repeat: 2	0.243776	4.28288	0.221914	2.53358	0.690887
Repeat: 3	0.24961	4.30921	0.224573	2.54171	0.697839
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.209498	0.12432	1730.38	1.62774	2.23645
Std Dev:	0.00238908	0.00158998	3.41186	0.00407079	0.00463548
%RSD:	1.14039	1.27895	0.197174	0.250089	0.207269
Repeat: 1	0.210762	0.123879	1730.57	1.62668	2.23526
Repeat: 2	0.206742	0.122996	1726.88	1.6243	2.23253

Repeat: 3	0.210988	0.126083	1733.69	1.63223	2.24157
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.704415	0.200383	0.0300355	7.16849	2373.8
Std Dev:	0.000623442	0.00120338	0.000375091	0.0347028	5.38232
%RSD:	0.0885049	0.600539	1.24882	0.484103	0.226739
Repeat: 1	0.703806	0.200331	0.0299684	7.16158	2379.42
Repeat: 2	0.704388	0.201612	0.0296985	7.13775	2368.69
Repeat: 3	0.705052	0.199207	0.0304396	7.20612	2373.3
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	655641	14430.5			
Std Dev:	10425.4	19.5269			
%RSD:	1.5901	0.135317			
Repeat: 1	651372	14431.1			
Repeat: 2	667524	14410.7			
Repeat: 3	648029	14449.8			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	242.939	33908.4	262.895	1004.17	2133.66
Std Dev:	3.32653	127.544	2.32367	12.7204	2.9259
%RSD:	1.36928	0.376141	0.883876	1.26676	0.137131
Repeat: 1	242.722	33765.8	261.253	1011.88	2131.77
Repeat: 2	239.726	33948.1	261.879	989.484	2132.18
Repeat: 3	246.369	34011.5	265.554	1011.13	2137.03
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	50.8703	9.33015	134.05	526.796	363.786
Std Dev:	0.118767	0.0164519	0.378168	0.747182	3.83381
%RSD:	0.23347	0.17633	0.28211	0.141835	1.05386
Repeat: 1	50.9756	9.3146	133.695	526.235	361.404
Repeat: 2	50.8938	9.32846	134.008	526.509	361.746
Repeat: 3	50.7416	9.34738	134.447	527.644	368.209
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	320.223	25004.1	7.77299	949.443	7.88985
Std Dev:	4.16303	68.3512	0.0247659	14.9168	0.0176677
%RSD:	1.30004	0.27336	0.318614	1.57111	0.22393
Repeat: 1	322.145	24961.9	7.75865	957.233	7.88635
Repeat: 2	315.447	24967.5	7.80159	932.244	7.87419
Repeat: 3	323.079	25083	7.75873	958.852	7.909
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	697.828	1060.37	5.67786	540.563	351.085
Std Dev:	9.28662	3.55809	0.034425	0.94741	2.12063
%RSD:	1.33079	0.335551	0.606303	0.175264	0.604021
Repeat: 1	702.798	1058.71	5.67519	540.148	352.549
Repeat: 2	687.114	1057.95	5.64484	539.894	348.653
Repeat: 3	703.572	1064.46	5.71354	541.647	352.052
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**

Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	242.372	255.88	30780.2	1062.06	1055.47
Std Dev:	2.72768	3.5641	60.9188	2.65233	2.17219
%RSD:	1.12541	1.39288	0.197916	0.249735	0.205804
Repeat: 1	243.889	254.895	30783.5	1061.37	1054.91
Repeat: 2	239.224	252.912	30717.6	1059.82	1053.63
Repeat: 3	244.005	259.833	30839.3	1064.99	1057.86
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	2806.67	264.65	587.366	639.424	2373.8
Std Dev:	2.48517	1.52091	7.3237	3.09302	5.38232
%RSD:	0.0885451	0.574687	1.24687	0.48372	0.226739
Repeat: 1	2804.24	264.573	586.041	638.8	2379.42
Repeat: 2	2806.56	266.208	580.795	636.691	2368.69
Repeat: 3	2809.21	263.169	595.262	642.782	2373.3
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	655641	14430.5			
Std Dev:	10425.4	19.5269			
%RSD:	1.5901	0.135317			
Repeat: 1	651372	14431.1			
Repeat: 2	667524	14410.7			
Repeat: 3	648029	14449.8			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2373.8	655641	14430.5
Std Dev:	5.38232	10425.4	19.5269
%RSD:	0.226739	1.5901	0.135317
Repeat: 1	2379.42	651372	14431.1
Repeat: 2	2368.69	667524	14410.7
Repeat: 3	2373.3	648029	14449.8

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I08012-SRL1@5X	9/14/2016 5:49:40PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000503887	0.290307	-0.00468835	0.000144357	0.45252
Std Dev:	3.26337e-005	0.00108878	0.000480718	9.19099e-006	0.00334318
%RSD:	6.47639	0.375045	10.2535	6.36685	0.738792
Repeat: 1	0.000468818	0.289142	-0.00415778	0.000133882	0.456198
Repeat: 2	0.000533363	0.290478	-0.00509492	0.000148116	0.451694
Repeat: 3	0.000509482	0.291299	-0.00481234	0.000151072	0.449666
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.000135401	0.0781666	0.0436743	0.0433817	0.00180741
Std Dev:	0.000121919	0.000333546	0.000630016	0.00218959	5.61023e-006
%RSD:	90.0427	0.426712	1.44253	5.04727	0.310401
Repeat: 1	0.000102285	0.0778068	0.0437852	0.0454435	0.00181244

Repeat: 2	3.34619e-005	0.0782272	0.0442415	0.0410835	0.00180136
Repeat: 3	0.000270457	0.0784656	0.0429962	0.0436179	0.00180843
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.0016638	0.108825	0.00229086	-1.42204e-005	0.00184831
Std Dev:	4.88585e-005	0.000757026	0.00054832	2.80602e-005	5.39914e-005
%RSD:	2.93656	0.695634	23.9351	197.324	2.92112
Repeat: 1	0.00162103	0.108439	0.00185789	1.06304e-005	0.00182057
Repeat: 2	0.00165332	0.10834	0.00210726	-8.64016e-006	0.00181384
Repeat: 3	0.00171704	0.109698	0.00290742	-4.46515e-005	0.00191054
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.0147916	0.0289672	0.00518694	0.0445427	0.0330255
Std Dev:	7.4827e-005	0.00201689	0.000221128	0.00193699	0.00116942
%RSD:	0.505874	6.96266	4.26317	4.34862	3.54097
Repeat: 1	0.0147384	0.0312192	0.00496688	0.0459804	0.0329893
Repeat: 2	0.0147593	0.0273272	0.00540912	0.04234	0.0342127
Repeat: 3	0.0148772	0.0283552	0.00518484	0.0453077	0.0318747
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	-0.00559074	0.00891577	352.713	0.0054297	0.00464591
Std Dev:	0.000755503	0.000707514	6.80865	0.000277239	0.000549181
%RSD:	13.5135	7.93553	1.93037	5.10597	11.8208
Repeat: 1	-0.00572766	0.00891832	355.482	0.00554281	0.00438902
Repeat: 2	-0.00477615	0.00820698	357.7	0.0056325	0.00427225
Repeat: 3	-0.00626843	0.009622	344.956	0.00511379	0.00527645
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.0914511	-0.00216229	0.000731796	0.280353	2477.43
Std Dev:	0.000386428	0.00119501	2.61194e-005	0.00254669	10.3673
%RSD:	0.422551	55.2657	3.56922	0.908385	0.418469
Repeat: 1	0.0914074	-0.00193154	0.000704081	0.282945	2488.18
Repeat: 2	0.0910883	-0.00109949	0.000735351	0.277854	2467.49
Repeat: 3	0.0918575	-0.00345584	0.000755955	0.280261	2476.63
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Avg. of Repeats:	667190	14861.7			
Std Dev:	5009.02	85.0783			
%RSD:	0.750765	0.572467			
Repeat: 1	672912	14879.6			
Repeat: 2	665061	14936.4			
Repeat: 3	663597	14769.1			

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	-0.133772	6946.76	2.69157	3.97726	25.0707
Std Dev:	0.597069	26.1327	1.112	0.548838	0.196272
%RSD:	446.334	0.376186	41.3143	13.7994	0.782876
Repeat: 1	-0.776043	6918.81	3.91832	3.35211	25.2867
Repeat: 2	0.404406	6950.88	1.74975	4.19976	25.0222
Repeat: 3	-0.0296788	6970.58	2.40664	4.37991	24.9032
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.0762966	0.879623	0.0434278	2.08784	33.4708
Std Dev:	0.0464411	0.00377276	0.0230787	0.261045	0.119752
%RSD:	60.8692	0.428906	53.1427	12.5031	0.357781
Repeat: 1	0.064114	0.875554	0.0483796	2.33609	33.5788

Repeat: 2	0.037161	0.880309	0.0636288	1.81565	33.342
Repeat: 3	0.127615	0.883005	0.0182752	2.11179	33.4917
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	10.9703	5038	0.627326	6.52074	0.603851
Std Dev:	0.513782	35.0542	0.0262632	4.90639	0.0175438
%RSD:	4.68338	0.695796	4.18653	75.2427	2.90533
Repeat: 1	10.5213	5020.1	0.606588	10.8657	0.594841
Repeat: 2	10.8591	5015.51	0.618532	7.49682	0.592643
Repeat: 3	11.5306	5078.39	0.656857	1.19969	0.624069
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	41.4706	7.36439	0.0459414	4.41201	21.8719
Std Dev:	0.21037	0.497808	0.00571262	0.416657	0.567705
%RSD:	0.507275	6.75966	12.4346	9.4437	2.59559
Repeat: 1	41.3207	7.9201	0.0402562	4.7213	21.849
Repeat: 2	41.38	6.95925	0.051681	3.93821	22.4507
Repeat: 3	41.7111	7.21382	0.045887	4.57651	21.3159
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	-1.01373	-1.96898	6182.44	4.45646	9.67489
Std Dev:	0.877435	1.58723	121.537	0.180849	0.25733
%RSD:	86.555	80.6117	1.96584	4.05813	2.65978
Repeat: 1	-1.17273	-1.96174	6231.87	4.53034	9.55456
Repeat: 2	-0.0676702	-3.55981	6271.46	4.58867	9.49977
Repeat: 3	-1.8008	-0.385381	6043.97	4.25036	9.97034
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	361.728	0.315899	15.8784	24.6559	2477.43
Std Dev:	1.54096	1.52016	0.506878	0.228194	10.3673
%RSD:	0.426001	481.218	3.19224	0.925516	0.418469
Repeat: 1	361.554	0.6087	15.3409	24.8884	2488.18
Repeat: 2	360.281	1.66836	15.9468	24.4323	2467.49
Repeat: 3	363.348	-1.32937	16.3477	24.647	2476.63
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None
Element/Wavelength	**Sc3613**	**Sc3613-2**			
Units:	----	----			
Avg. of Repeats:	667190	14861.7			
Std Dev:	5009.02	85.0783			
%RSD:	0.750765	0.572467			
Repeat: 1	672912	14879.6			
Repeat: 2	665061	14936.4			
Repeat: 3	663597	14769.1			
QC Status Pass/Fail:	None	None			

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2477.43	667190	14861.7
Std Dev:	10.3673	5009.02	85.0783
%RSD:	0.418469	0.750765	0.572467

Repeat: 1	2488.18	672912	14879.6
Repeat: 2	2467.49	665061	14936.4
Repeat: 3	2476.63	663597	14769.1

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25804-CCV6	9/14/2016 5:54:02PM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.026621	0.418187	0.438634	0.0176693	15.8722
Std Dev:	0.000157196	0.000752104	0.000981443	2.87748e-005	0.035287
%RSD:	0.590496	0.179849	0.22375	0.162852	0.22232
Repeat: 1	0.0267123	0.417615	0.439191	0.0176622	15.8725
Repeat: 2	0.0264395	0.419039	0.437501	0.0176447	15.8368
Repeat: 3	0.0267113	0.417907	0.43921	0.0177009	15.9073
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	2.7429	4.53758	30.2417	8.05078	0.0481407
Std Dev:	0.00446908	0.0110679	0.128786	0.0137332	0.000342178
%RSD:	0.162933	0.243916	0.425857	0.170583	0.710788
Repeat: 1	2.73883	4.53081	30.2293	8.049	0.0483989
Repeat: 2	2.74217	4.53157	30.1196	8.03803	0.0477526
Repeat: 3	2.74768	4.55035	30.3763	8.06532	0.0482706
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.097327	0.219399	0.205994	0.00571658	0.148957
Std Dev:	0.000221087	0.0013874	0.00143641	3.95791e-005	0.000796845
%RSD:	0.227159	0.632364	0.697305	0.692357	0.53495
Repeat: 1	0.0973653	0.21825	0.205019	0.00569148	0.148389
Repeat: 2	0.0970893	0.219008	0.20532	0.00569606	0.148614
Repeat: 3	0.0975265	0.22094	0.207644	0.00576221	0.149868
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Avg. of Repeats:	0.341638	4.12579	1.95497	4.52625	1.96298
Std Dev:	0.00411384	0.010696	0.00928311	0.0128443	0.00706911
%RSD:	1.20415	0.259248	0.474848	0.283774	0.360121
Repeat: 1	0.337036	4.12242	1.95449	4.52171	1.95823
Repeat: 2	0.342919	4.11718	1.94593	4.51628	1.95961
Repeat: 3	0.344959	4.13776	1.96448	4.54074	1.9711
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Avg. of Repeats:	0.872366	0.476401	232.779	1.54827	2.10124
Std Dev:	0.00402091	0.00374664	1.91116	0.00478693	0.0115298
%RSD:	0.46092	0.786447	0.821021	0.309179	0.548717
Repeat: 1	0.869789	0.4741	232.065	1.54552	2.09178
Repeat: 2	0.870309	0.474379	234.944	1.54549	2.09785
Repeat: 3	0.876999	0.480725	231.327	1.5538	2.11408
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Avg. of Repeats:	0.255159	0.779858	0.0521967	11.4857	2318.75
Std Dev:	0.000819232	0.00110313	0.000349929	0.0235213	7.4838
%RSD:	0.321067	0.141452	0.670404	0.204788	0.322752
Repeat: 1	0.254234	0.780966	0.0523713	11.4748	2314.69
Repeat: 2	0.255448	0.77876	0.0517938	11.4696	2327.38
Repeat: 3	0.255794	0.779848	0.0524249	11.5127	2314.17
Element/Wavelength	**Sc3613**	**Sc3613-2**			

Avg. of Repeats:	631968	14025
Std Dev:	2036.04	10.8826
%RSD:	0.322174	0.0775941
Repeat: 1	631248	14015.4
Repeat: 2	634267	14022.9
Repeat: 3	630390	14036.8

Concentration

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	480.809	9884.22	1027.21	1044.84	941.178
Std Dev:	2.89854	18.1692	2.26702	1.71243	2.10966
%RSD:	0.602846	0.18382	0.220698	0.163894	0.224151
Repeat: 1	482.491	9870.68	1028.49	1044.41	941.206
Repeat: 2	477.462	9904.87	1024.59	1043.38	939.055
Repeat: 3	482.473	9877.12	1028.54	1046.73	943.274
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	1015.43	51.3202	1043.69	959.94	1023.25
Std Dev:	1.65628	0.12519	4.45004	1.64338	7.31924
%RSD:	0.163112	0.243938	0.426377	0.171197	0.715294
Repeat: 1	1013.92	51.2437	1043.26	959.734	1028.78
Repeat: 2	1015.16	51.2523	1039.47	958.409	1014.95
Repeat: 3	1017.2	51.4647	1048.34	961.676	1026.02
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	1013.07	10166.6	10.3842	1007.43	48.3742
Std Dev:	2.31596	64.2909	0.0688004	6.91485	0.258737
%RSD:	0.228609	0.632377	0.662548	0.686388	0.534867
Repeat: 1	1013.46	10113.3	10.3375	1003.04	48.1898
Repeat: 2	1010.58	10148.4	10.3519	1003.84	48.2628
Repeat: 3	1015.16	10238	10.4632	1015.4	48.6699
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	963.557	1019.18	50.4164	968.211	962.186
Std Dev:	11.606	2.64238	0.239819	2.76181	3.43863
%RSD:	1.2045	0.259265	0.475677	0.285249	0.357377
Repeat: 1	950.573	1018.35	50.404	967.236	959.871
Repeat: 2	967.172	1017.06	50.183	966.068	960.549
Repeat: 3	972.925	1022.14	50.6621	971.328	966.137
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	995.198	1046.95	4042.56	1010.14	991.54
Std Dev:	4.61843	8.4056	34.111	3.12011	5.40167
%RSD:	0.464071	0.802866	0.843796	0.30888	0.544776
Repeat: 1	992.086	1041.79	4029.81	1008.34	987.109
Repeat: 2	993.004	1042.41	4081.21	1008.33	989.953
Repeat: 3	1000.5	1056.65	4016.66	1013.74	997.557
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**

Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	1011.31	1000.2	1025.33	1021.99	2318.75
Std Dev:	3.2586	1.41904	6.86732	2.08856	7.4838
%RSD:	0.322216	0.141876	0.669766	0.204363	0.322752
Repeat: 1	1007.63	1001.62	1028.78	1021.03	2314.69
Repeat: 2	1012.47	998.78	1017.42	1020.55	2327.38
Repeat: 3	1013.83	1000.19	1029.79	1024.38	2314.17
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	631968	14025
Std Dev:	2036.04	10.8826
%RSD:	0.322174	0.0775941
Repeat: 1	631248	14015.4
Repeat: 2	634267	14022.9
Repeat: 3	630390	14036.8
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2318.75	631968	14025
Std Dev:	7.4838	2036.04	10.8826
%RSD:	0.322752	0.322174	0.0775941
Repeat: 1	2314.69	631248	14015.4
Repeat: 2	2327.38	634267	14022.9
Repeat: 3	2314.17	630390	14036.8

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
6I25804-CCB6	9/14/2016 5:58:24PM	QC	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

Corrected CTS/S

Element/Wavelength	**Ag3280**	**Al3961**	**As1890**	**B_2496**	**Ba2335**
Avg. of Repeats:	0.000524901	-0.000242694	-0.00554522	0.000113699	0.0366259
Std Dev:	2.48292e-005	0.001008	0.000834442	4.00139e-006	0.00086166
%RSD:	4.73026	415.339	15.048	3.51928	2.3526
Repeat: 1	0.000553413	0.000862098	-0.00460791	0.00011472	0.0372769
Repeat: 2	0.000513248	-0.00111233	-0.00582051	0.000117091	0.036952
Repeat: 3	0.000508042	-0.000477846	-0.00620723	0.000109286	0.0356488
Element/Wavelength	**Be3130**	**Ca3179**	**Cd2144**	**Co2286**	**Cr2677**
Avg. of Repeats:	0.00108918	0.00058956	0.0388281	0.0198188	0.000238665
Std Dev:	0.000152565	0.000349772	0.00292817	0.00204276	1.73649e-005
%RSD:	14.0073	59.3277	7.54139	10.3072	7.27586
Repeat: 1	0.00119593	0.000822521	0.0413637	0.0208528	0.000251985
Repeat: 2	0.00115717	0.000758802	0.0356232	0.0211378	0.000219025
Repeat: 3	0.000914439	0.000187357	0.0394973	0.0174658	0.000244985
Element/Wavelength	**Cu3247**	**Fe2611**	**K_7664**	**Li6707**	**Mg2790**
Avg. of Repeats:	0.000566186	-0.00017941	-0.00934134	-6.97404e-005	-9.14605e-005
Std Dev:	8.0429e-006	0.000133274	0.00117663	6.35426e-007	6.43054e-005
%RSD:	1.42054	74.2847	12.5959	0.91113	70.3095
Repeat: 1	0.000565207	-4.64604e-005	-0.0083775	-7.04403e-005	-0.000152344
Repeat: 2	0.000558678	-0.000313006	-0.0106525	-6.95813e-005	-9.78298e-005
Repeat: 3	0.000574674	-0.000178762	-0.00899399	-6.91997e-005	-2.42074e-005

Element/Wavelength	Mn2576	Mo2020	Na5895	Ni2316	Pb2203
Avg. of Repeats:	7.9195e-005	0.00139488	0.00414774	0.0239036	-0.00596661
Std Dev:	4.20125e-006	0.000669629	0.000447606	0.000643121	0.00116657
%RSD:	5.30494	48.0063	10.7916	2.69048	19.5516
Repeat: 1	8.25797e-005	0.0013104	0.00426724	0.0242477	-0.00513216
Repeat: 2	7.44929e-005	0.000771493	0.00365251	0.0243014	-0.00729961
Repeat: 3	8.05122e-005	0.00210273	0.00452346	0.0231616	-0.00546806
Element/Wavelength	Sb2068	Se1960	Si2516	Sn1899	Sr4215
Avg. of Repeats:	-0.00467699	0.00930009	7.03199	-0.000641821	-0.0161871
Std Dev:	0.00162564	0.000816127	0.988877	0.000966781	0.000700073
%RSD:	34.7583	8.77547	14.0625	150.631	4.32489
Repeat: 1	-0.00377788	0.00891249	8.16666	0.000474304	-0.0168359
Repeat: 2	-0.00655357	0.00874999	6.35384	-0.00121901	-0.0154451
Repeat: 3	-0.00369951	0.0102378	6.57549	-0.00118075	-0.0162803
Element/Wavelength	Ti3349	Tl1908	V_2924	Zn2062	Sc1880
Avg. of Repeats:	0.000739791	-0.00107013	-0.000109293	0.0103482	2420.45
Std Dev:	0.000151964	0.00132981	9.3644e-006	0.00131658	6.44907
%RSD:	20.5414	124.267	8.56817	12.7228	0.266441
Repeat: 1	0.000681419	0.00017097	-9.97918e-005	0.0117863	2417.26
Repeat: 2	0.000912287	-0.00247372	-0.000118514	0.0100561	2427.87
Repeat: 3	0.000625669	-0.000907635	-0.000109572	0.00920215	2416.21
Element/Wavelength	Sc3613	Sc3613-2			
Avg. of Repeats:	658033	14498			
Std Dev:	4140.67	25.2655			
%RSD:	0.629249	0.174268			
Repeat: 1	653480	14509.6			
Repeat: 2	661573	14469.1			
Repeat: 3	659047	14515.4			

Concentration

Element/Wavelength	Ag3280	Al3961	As1890	B_2496	Ba2335
Units:	ppb	ppb	ppb	ppb	ppb
Avg. of Repeats:	0.170346	-23.5765	0.392395	1.7647	0.422693
Std Dev:	0.453781	24.186	1.93367	0.237308	0.0511296
%RSD:	266.389	102.585	492.785	13.4475	12.0962
Repeat: 1	0.69149	2.93119	2.56435	1.82562	0.461838
Repeat: 2	-0.04307	-44.4441	-0.245237	1.96561	0.441395
Repeat: 3	-0.137383	-29.2165	-1.14193	1.50287	0.364845
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Be3130	Ca3179	Cd2144	Co2286	Cr2677
Units:	ppb	ppm	ppb	ppb	ppb
Avg. of Repeats:	0.0939324	0.00214534	0.112286	0.0615858	0.048629
Std Dev:	0.0567692	0.00395629	0.100992	0.243231	0.371317
%RSD:	60.4362	184.413	89.9421	394.947	763.571
Repeat: 1	0.133142	0.00478038	0.199773	0.185482	0.333513
Repeat: 2	0.119821	0.00405964	0.0017672	0.217924	-0.371315
Repeat: 3	0.0288337	-0.002404	0.135317	-0.218648	0.183688
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	Cu3247	Fe2611	K_7664	Li6707	Mg2790
Units:	ppb	ppb	ppm	ppb	ppm
Avg. of Repeats:	-0.932285	-9.62903	0.0701719	-3.14505	-0.0285853
Std Dev:	0.0838921	6.17242	0.0563575	0.110413	0.0208749
%RSD:	8.99855	64.1022	80.3135	3.5107	73.0267
Repeat: 1	-0.942461	-3.47185	0.116338	-3.2666	-0.0483464

Repeat: 2	-1.01063	-15.8166	0.00736864	-3.11759	-0.0306582
Repeat: 3	-0.843769	-9.59867	0.0868093	-3.05096	-0.00675128
QC Status Pass/Fail:	Pass	Pass	Pass	Fail	Pass
Element/Wavelength	**Mn2576**	**Mo2020**	**Na5895**	**Ni2316**	**Pb2203**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	0.0704128	0.492995	0.0190947	0.00530114	1.43353
Std Dev:	0.0117231	0.165329	0.0115634	0.138439	0.572256
%RSD:	16.6491	33.5356	60.5584	2611.5	39.9194
Repeat: 1	0.0798274	0.472274	0.022182	0.0788153	1.84538
Repeat: 2	0.0572821	0.339004	0.00630094	0.091476	0.780097
Repeat: 3	0.0741287	0.667709	0.0288011	-0.154388	1.6751
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	Pass
Element/Wavelength	**Sb2068**	**Se1960**	**Si2516**	**Sn1899**	**Sr4215**
Units:	ppb	ppb	ppm	ppb	ppb
Avg. of Repeats:	1.00035	-0.763375	10.4306	0.501959	-0.0764814
Std Dev:	1.87447	1.83187	17.6541	0.630302	0.328078
%RSD:	187.381	239.969	169.253	125.569	428.964
Repeat: 1	2.03478	-1.63453	30.6873	1.22963	-0.380568
Repeat: 2	-1.16341	-1.99709	-1.67684	0.125674	0.271224
Repeat: 3	2.12968	1.3415	2.28127	0.150575	-0.1201
QC Status Pass/Fail:	Pass	Pass	Fail	Pass	Pass
Element/Wavelength	**Ti3349**	**Tl1908**	**V_2924**	**Zn2062**	**Sc1880**
Units:	ppb	ppb	ppb	ppb	----
Avg. of Repeats:	-0.137249	0.95009	-0.639893	0.567784	2420.45
Std Dev:	0.606562	1.69463	0.185745	0.117582	6.44907
%RSD:	441.941	178.365	29.0275	20.7089	0.266441
Repeat: 1	-0.369417	2.53219	-0.45228	0.695854	2417.26
Repeat: 2	0.551102	-0.838198	-0.823712	0.54279	2427.87
Repeat: 3	-0.593433	1.15628	-0.643685	0.464709	2416.21
QC Status Pass/Fail:	Pass	Pass	Pass	Pass	None

Element/Wavelength	**Sc3613**	**Sc3613-2**
Units:	----	----
Avg. of Repeats:	658033	14498
Std Dev:	4140.67	25.2655
%RSD:	0.629249	0.174268
Repeat: 1	653480	14509.6
Repeat: 2	661573	14469.1
Repeat: 3	659047	14515.4
QC Status Pass/Fail:	None	None

Internal Standards

Element/Wavelength	**Sc1880**	**Sc3613**	**Sc3613-2**
Avg. of Repeats:	2420.45	658033	14498
Std Dev:	6.44907	4140.67	25.2655
%RSD:	0.266441	0.629249	0.174268
Repeat: 1	2417.26	653480	14509.6
Repeat: 2	2427.87	661573	14469.1
Repeat: 3	2416.21	659047	14515.4

Sample Name	**Acquisition Date**	**Sample type**	**Correction Factor**
1608252-21@2X	9/14/2016 6:02:47PM	Unknown	1.00

Valid	**Analyst Name**	**Method Name**
Yes	rburr	6500DUOBB (1145)

PREPARATION BENCH SHEET

6H29015

Empirical Laboratories, LLC

Printed: 9/21/2016 3:12:28PM

Instrument: ME-ICP

Matrix: Solid **Prepared using: METALS - MET_3050B** **(No Surrogate)**

Lab Number	Cont ID	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	PH	Comments (Sample; Analysis; Extraction)
1608251-01	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.00	100.00					NA	see versions
1608251-02	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.00	100.00					NA	see versions
1608251-03	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.02	100.00					NA	see versions
1608251-04	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.03	100.00					NA	see versions
1608251-05	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.04	100.00					NA	see versions
1608251-06	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.04	100.00					NA	see versions
1608251-07	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.04	100.00					NA	see versions
1608251-08	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.05	100.00					NA	see versions
1608251-09	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.00	100.00					NA	see versions
1608251-10	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.04	100.00					NA	see versions
1608251-11	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.04	100.00					NA	see versions
6H29015-BLK1		MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.00	100.00					NA	
6H29015-BS1		MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.00	100.00	16F0439		100		NA	

Reagents Used:

Standard	Description
16G0295	Hydrochloric Acid
16F0401	Hydrogen Peroxide 30%
16I0030	Metals (PTFE Boiling Stones)
16F0730	Nitric acid

PREPARATION BENCH SHEET

6H29015

Empirical Laboratories, LLC

Printed: 9/21/2016 3:12:28PM

Instrument: ME-ICP

Matrix: Solid **Prepared using: METALS - MET_3050B** **(No Surrogate)**

Lab Number	Cont ID	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	PH	Comments (Sample; Analysis; Extraction)

PREPARATION BENCH SHEET

6I08012

Empirical Laboratories, LLC

Printed: 9/21/2016 3:12:29PM

Instrument: ME-ICP

Matrix: Solid **Prepared using: METALS - MET_3050B** **(No Surrogate)**

Lab Number	Cont ID	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	PH	Comments (Sample; Analysis; Extraction)
1608251-12	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.05	100.00					NA	see versions
1608251-13	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.01	100.00					NA	see versions
1608251-14	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.05	100.00					NA	see versions
1608251-15	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.05	100.00					NA	see versions
1608251-16	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.03	100.00					NA	see versions
1608251-17	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.03	100.00					NA	see versions
1608251-18	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.00	100.00					NA	see versions
1608251-19	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.02	100.00					NA	see versions
1608251-20	A	MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.01	100.00					NA	see versions
6I08012-BLK1		MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.00	100.00					NA	
6I08012-BS1		MET_ICP_LOW6010C_FULL_Q5	09/08/2016	2.00	100.00	16F0439		100		NA	

Reagents Used:

Standard	Description
16G0295	Hydrochloric Acid
16F0401	Hydrogen Peroxide 30%
16I0030	Metals (PTFE Boiling Stones)
16F0730	Nitric acid

Jocelyn Bryant 9/8/2016

6H29015

26.1 Circle Sheet for Eppendorfs and Solutions

ICP Metals: Circle Applicable Digestion/Spike and pipette option then staple to bench sheet

Reminder: Make sure pipettes are verified daily at volume of use for QSM5 batches!

Soil 2g-100mL (3050B)

Amount	BS/MS/MSD Standards 6010 Soil
0.10mL	#01 CLP-CAL-1 (50-33000ug/mL)
0.10mL	SM-391-001 (125->1000ug/mL)
Circle	0.1ml Eppendorf 148897Z or 250847
	1mL FinnPipette FJ61963
Amount	**Reagents for Digestion 6010 Soil**
5mL	HNO3
5mL	HNO3
2mL	DI H2O
3mL	H2O2
3mL	H2O2
3mL	H2O2
2.5mL	DI H2O
2.5mL	Conc HCl
10mL	DI H2O

Soil 1g-200mL (3050B)

Amount	BS/MS/MSD Standards 6010 Soil
0.20mL	#01 CLP-CAL-1 (50-33000ug/mL)
0.20mL	SM-391-001 (125->1000ug/mL)
Circle	0.1ml Eppendorf 148897Z or 250847
	1mL FinnPipette FJ61963
5mL	HNO3
5mL	HNO3
2mL	DI H2O
3mL	H2O2
3mL	H2O2
3mL	H2O2
2.5mL	DI H2O
2.5mL	Conc HCl
10mL	DI H2O

TCLP 5mL-50mL (3010A)

Amount	MS/MSD Standards 6010 TCLP
5.0mL	Silver TCLP Spike
0.50mL	Main TCLP Spike
Circle	1mL Transfer 06M15889 or FinnPipette FJ61963
Circle	5mL FinnPipette KU04206 or Transfer 04M88005
Amount	**BS Standards TCLP 6010**
50mL	Water LCS (0.050-5.0ug/mL)
Amount	**Reagents for Digestion TCLP**
1.5mL	HNO3
1.5mL	HNO3
2.5mL	HCl

Water 100mL-25mL (3005A)

Amount	MS/MSD Standards 6010 Water
0.025m	#01 CLP-CAL-1 (50-33000ug/mL)
0.025m	#02 CAL-CAL-1 Solution B (250ug/mL)
0.0125m	#03 CLP-CAL-2 (1000ug/mL)
0.0125m	#04 CLP-CAL-3 (500ug/mL-1000ug/mL)
0.025m	#05 Boron (1000ug/mL)
0.025m	#06 Tin (1000ug/mL)
0.025m	#07 Molybdenum (1000ug/mL)
0.025m	#08 Titanium (1000ug/mL)
0.025m	#09 Strontium (1000ug/mL)
0.025m	#10 Lithium (1000ug/mL)
Circle	0.1ml Eppendorf 148897Z or 250847
Amount	**BS Standards 6010 Water**
5 ~~2~~.0mL	Water LCS (0.050-5.0ug/mL)
0.5mL	Salt Spike (25ug/mL)
Circle	1mL Transfer 06M15889 or FinnPipette FJ61963
Circle	5mL FinnPipette KU04206 or Transfer 04M88005
Amount	**Reagents for Digestion Low Water**
0.5mL	HNO3
1.25mL	HCl

Water 50mL-50mL (3005A)

Amount	MS/MSD Standards 6010 Water
0.050m	#01 CLP-CAL-1 (50-33000ug/mL)
0.050m	SM-391-001 (125->1000ug/mL)
Circle	0.1ml Eppendorf 148897Z or 250847
Amount	**BS Standards 6010 Water**
50mL	Water LCS (0.050-5.0ug/mL)
Amount	**Reagents for Digestion 6010 Water**
1.0mL	HNO3
2.5mL	HCl

Water 50mL-50mL (200.7)

Amount	MS/MSD Standards 6010 Water
0.050m	#01 CLP-CAL-1 (50-33000ug/mL)
0.050m	SM-391-001 (125->1000ug/mL)
Circle	0.1ml Eppendorf 148897Z or 250847
Amount	**BS Standards 6010 Water**
50mL	Water LCS (0.050-5.0ug/mL)
Amount	**Reagents for Digestion 6010 Water**
0.50mL	HNO3
0.25mL	HCl

Batch 6F08012

26.1 Circle Sheet for Eppendorfs and Solutions

ICP Metals: Circle Applicable Digestion/Spike and pipette option then staple to bench sheet

Reminder: Make sure pipettes are verified daily at volume of use for QSM5 batches!

Soil 2g-100mL (3050B)

Amount	BS/MS/MSD Standards 6010 Soil
0.10mL	#01 CLP-CAL-1 (50-33000ug/mL)
0.10mL	SM-391-001 (125->1000ug/mL)
Circle	0.1ml Eppendorf 148897Z or 250847
	1mL FinnPipette FJ61963
Amount	**Reagents for Digestion 6010 Soil**
5mL	HNO3
5mL	HNO3
2mL	DI H2O
3mL	H2O2
3mL	H2O2
3mL	H2O2
2.5mL	DI H2O
2.5mL	Conc HCl
10mL	DI H2O

Soil 1g-200mL (3050B)

Amount	BS/MS/MSD Standards 6010 Soil
0.20mL	#01 CLP-CAL-1 (50-33000ug/mL)
0.20mL	SM-391-001 (125->1000ug/mL)
Circle	0.1ml Eppendorf 148897Z or 250847
	1mL FinnPipette FJ61963
5mL	HNO3
5mL	HNO3
2mL	DI H2O
3mL	H2O2
3mL	H2O2
3mL	H2O2
2.5mL	DI H2O
2.5mL	Conc HCl
10mL	DI H2O

TCLP 5mL-50mL (3010A)

Amount	MS/MSD Standards 6010 TCLP
5.0mL	Silver TCLP Spike
0.50mL	Main TCLP Spike
Circle	1mL Transfer 06M15889 or FinnPipette FJ61963
Circle	5mL FinnPipette KU04206 or Transfer 04M88005
Amount	**BS Standards TCLP 6010**
50mL	Water LCS (0.050-5.0ug/mL)
Amount	**Reagents for Digestion TCLP**
1.5mL	HNO3
1.5mL	HNO3
2.5mL	HCl

Water 100mL-25mL (3005A)

Amount	MS/MSD Standards 6010 Water
0.025m	#01 CLP-CAL-1 (50-33000ug/mL)
0.025m	#02 CAL-CAL-1 Solution B (250ug/mL)
0.0125m	#03 CLP-CAL-2 (1000ug/mL)
0.0125m	#04 CLP-CAL-3 (500ug/mL-1000ug/mL)
0.025m	#05 Boron (1000ug/mL)
0.025m	#06 Tin (1000ug/mL)
0.025m	#07 Molybdenum (1000ug/mL)
0.025m	#08 Titanium (1000ug/mL)
0.025m	#09 Strontium (1000ug/mL)
0.025m	#10 Lithium (1000ug/mL)
Circle	0.1ml Eppendorf 148897Z or 250847
Amount	**BS Standards 6010 Water**
5 2.0mL	Water LCS (0.050-5.0ug/mL)
0.5mL	Salt Spike (25ug/mL)
Circle	1mL Transfer 06M15889 or FinnPipette FJ61963
Circle	5mL FinnPipette KU04206 or Transfer 04M88005
Amount	**Reagents for Digestion Low Water**
0.5mL	HNO3
1.25mL	HCl

Water 50mL-50mL (3005A)

Amount	MS/MSD Standards 6010 Water
0.050m	#01 CLP-CAL-1 (50-33000ug/mL)
0.050m	SM-391-001 (125->1000ug/mL)
Circle	0.1ml Eppendorf 148897Z or 250847
Amount	**BS Standards 6010 Water**
50mL	Water LCS (0.050-5.0ug/mL)
Amount	**Reagents for Digestion 6010 Water**
1.0mL	HNO3
2.5mL	HCl

Water 50mL-50mL (200.7)

Amount	MS/MSD Standards 6010 Water
0.050m	#01 CLP-CAL-1 (50-33000ug/mL)
0.050m	SM-391-001 (125->1000ug/mL)
Circle	0.1ml Eppendorf 148897Z or 250847
Amount	**BS Standards 6010 Water**
50mL	Water LCS (0.050-5.0ug/mL)
Amount	**Reagents for Digestion 6010 Water**
0.50mL	HNO3
0.25mL	HCl

9-14-16 RB (1)

	Rack	Row	Col	Type	Samplename	Comment	Check	Check Table
1	0	0	0	QC	6I25804-ICV1	16I0251	☒	ICV
2	0	0	0	QC	6I25804-ICB1		☒	ICB
3	0	0	0	QC	6I25804-CRL	RLSTDA	☒	RLSTD-A
4	0	0	0	Unk	6I25804-IFA		☐	
5	0	0	0	QC	6I25804-IFB		☒	ICSAB
6	0	0	0	Unk	RINSE		☒	SAMPLE
7	0	0	0	QC	6I25804-CCV1	16I0252	☒	CCV
8	0	0	0	QC	6I25804-CCB1		☒	CCB
9	0	0	0	QC	6I09019-BLK2	PBS091316 1g->200ml	☒	PREPBLANK
10	0	0	0	QC	6I09019-BS2	LCSS091316 1g->200ml	☒	2007LCS
11	0	0	0	QC	6I09020-BLK2	PBS091316 1g->200ml	☒	PREPBLANK
12	0	0	0	QC	6I09020-BS2	LCSS091316 1g->200ml	☒	2007LCS
13	0	0	0	QC	6I13006-BLK1	PBW091316	☒	PREPBLANK
14	0	0	0	QC	6I13006-BS1	LCSW091316	☒	2007LCS
15	0	0	0	Unk	1609071-01@10X	X10	☒	SAMPLE
16	0	0	0	Unk	1609071-02@10X	X10	☒	SAMPLE
17	0	0	0	Unk	1609071-03@5X	X5	☒	SAMPLE
18	0	0	0	Unk	1609051-52RE1@10X	X10 Fe Zn Cu Pb	☒	SAMPLE
19	0	0	0	Unk	6I09020-SRL2@50X	SRL X50	☒	SAMPLE
20	0	0	0	Unk	1609051-62RE1@10X	X10 Zn	☒	SAMPLE
21	0	0	0	Unk	1609017-01@5X	X5	☒	SAMPLE
22	0	0	0	Unk	1609034-01		☒	SAMPLE
23	0	0	0	Unk	1609034-02		☒	SAMPLE
24	0	0	0	Unk	1609051-01		☒	SAMPLE
25	0	0	0	QC	6I25804-CCV2	16I0252	☒	CCV
26	0	0	0	QC	6I25804-CCB2		☒	CCB
27	0	0	0	Unk	1609054-02		☒	SAMPLE
28	0	0	0	Unk	1609054-03		☒	SAMPLE
29	0	0	0	Unk	1609054-04		☒	SAMPLE
30	0	0	0	Unk	1609054-05		☒	SAMPLE
31	0	0	0	Unk	1609054-06		☒	SAMPLE
32	0	0	0	Unk	6I13006-MS1		☒	SAMPLE
33	0	0	0	Unk	6I13006-MSD1		☒	SAMPLE
34	0	0	0	Unk	6I13006-PS1		☒	SAMPLE
35	0	0	0	Unk	6I13006-SRL1@5X	SRL X5	☒	SAMPLE
36	0	0	0	Unk	1609054-07		☒	SAMPLE
37	0	0	0	Unk	1609059-23		☒	SAMPLE
38	0	0	0	QC	6I25804-CCV3	16I0252	☒	CCV
39	0	0	0	QC	6I25804-CCB3		☒	CCB
40	0	0	0	QC	6H29015-BLK1	PBS090816 2g->100ml	☒	PREPBLANK
41	0	0	0	QC	6H29015-BS1	LCSS090816 2g->100ml	☒	2007LCS
42	0	0	0	Unk	1608232-16		☒	SAMPLE
43	0	0	0	Unk	6H29015-MS1		☒	SAMPLE
44	0	0	0	Unk	6H29015-MSD1		☒	SAMPLE
45	0	0	0	Unk	6H29015-PS1		☒	SAMPLE
46	0	0	0	Unk	6H29015-SRL1@5X	SRL X5	☒	SAMPLE
47	0	0	0	Unk	1608232-17@2X		☒	SAMPLE
48	0	0	0	Unk	1608232-18@2X		☒	SAMPLE
49	0	0	0	Unk	1608232-19@2X		☒	SAMPLE
50	0	0	0	Unk	1608232-20@2X		☒	SAMPLE
51	0	0	0	Unk	1608232-21@2X		☒	SAMPLE
52	0	0	0	Unk	1608232-22@2X		☒	SAMPLE
53	0	0	0	Unk	1608232-23@2X		☒	SAMPLE
54	0	0	0	Unk	1608251-01@2X		☒	SAMPLE
55	0	0	0	Unk	1608251-02@2X		☒	SAMPLE
56	0	0	0	QC	6I25804-CCV4	16I0252	☒	CCV
57	0	0	0	QC	6I25804-CCB4		☒	CCB
58	0	0	0	Unk	1608232-24		☒	SAMPLE
59	0	0	0	Unk	6H29015-MS2		☒	SAMPLE
60	0	0	0	Unk	6H29015-MSD2		☒	SAMPLE
61	0	0	0	Unk	6H29015-PS2		☒	SAMPLE

9-14-16 PB (2)

	Rack	Row	Col	Type	Samplename	Comment	Check	Check Table
62	0	0	0	Unk	6H29015-SRL2@5X	SRL X5	☒	SAMPLE
63	0	0	0	Unk	1608251-03@2X		☒	SAMPLE
64	0	0	0	Unk	1608251-04@2X		☒	SAMPLE
65	0	0	0	Unk	1608251-05@2X		☒	SAMPLE
66	0	0	0	Unk	1608251-06@2X		☒	SAMPLE
67	0	0	0	Unk	1608251-07@2X		☒	SAMPLE
68	0	0	0	Unk	1608251-08@2X		☒	SAMPLE
69	0	0	0	Unk	1608251-09@2X		☒	SAMPLE
70	0	0	0	Unk	1608251-10@2X		☒	SAMPLE
71	0	0	0	Unk	1608251-11@2X		☒	SAMPLE
72	0	0	0	QC	6I25804-CCV5	16I0252	☒	CCV
73	0	0	0	QC	6I25804-CCB5		☒	CCB
74	2	2	2	QC	6I08012-BLK1	PBS091316 2g->100ml	☒	PREPBLANK
75	2	3	2	QC	6I08012-BS1	LCSS091316 2g->100ml	☒	2007LCS
76	2	4	2	Unk	1608251-12@5X		☒	SAMPLE
77	2	5	2	Unk	1608251-13@5X		☒	SAMPLE
78	2	6	2	Unk	1608251-14@5X		☒	SAMPLE
79	2	7	2	Unk	1608251-15@5X		☒	SAMPLE
80	2	8	2	Unk	1608251-16@5X		☒	SAMPLE
81	2	9	2	Unk	1608251-17@5X		☒	SAMPLE
82	2	10	2	Unk	1608251-18@5X		☒	SAMPLE
83	2	11	2	Unk	1608251-19@5X		☒	SAMPLE
84	2	12	2	Unk	1608251-20@5X		☒	SAMPLE
85	2	1	3	Unk	1608252-20		☒	SAMPLE
86	2	2	3	Unk	6I08012-MS1		☒	SAMPLE
87	2	3	3	Unk	6I08012-MSD1		☒	SAMPLE
88	2	4	3	Unk	6I08012-PS1		☒	SAMPLE
89	2	5	3	Unk	6I08012-SRL1@5X	SRL X5	☒	SAMPLE
90	2	6	3	QC	6I25804-CCV6	16I0252	☒	CCV
91	2	7	3	QC	6I25804-CCB6		☒	CCB
92	2	8	3	Unk	1608252-21@2X		☒	SAMPLE
93	2	9	3	Unk	1608252-22@2X		☒	SAMPLE
94	2	10	3	Unk	1609016-76@5X		☒	SAMPLE
95	2	11	3	Unk	1609016-77@5X		☒	SAMPLE
96	2	12	3	Unk	1609016-78@5X		☒	SAMPLE
97	2	1	4	Unk	1609016-79@5X		☒	SAMPLE
98	2	2	4	Unk	6I08012-MS2@5X		☒	SAMPLE
99	2	3	4	Unk	6I08012-MSD2@5X		☒	SAMPLE
100	2	4	4	Unk	6I08012-PS2@5X		☒	SAMPLE
101	2	5	4	Unk	6I08012-SRL2@25X	SRL X25	☒	SAMPLE
102	2	6	4	Unk	1609016-80@5X		☒	SAMPLE
103	2	7	4	Unk	1609016-81@5X		☒	SAMPLE
104	2	8	4	Unk	1609016-82@5X		☒	SAMPLE
105	2	9	4	Unk	1609016-83@5X		☒	SAMPLE
106	2	10	4	QC	6I25804-CCV7	16I0252	☒	CCV
107	2	11	4	QC	6I25804-CCB7		☒	CCB
108	2	12	4	QC	6I13007-BLK1	PBS091416 1g->200ml	☒	PREPBLANK
109	2	1	5	QC	6I13007-BS1	LCSS091416 1G->200ml	☒	2007LCS
110	2	2	5	Unk	1609059-01@5X		☒	SAMPLE
111	2	3	5	Unk	1609059-02		☒	SAMPLE
112	2	4	5	Unk	6I13007-MS1		☒	SAMPLE
113	2	5	5	Unk	6I13007-MSD1		☒	SAMPLE
114	2	6	5	Unk	6I13007-PS1		☒	SAMPLE
115	2	7	5	Unk	6I13007-SRL1@5X	X5 SRL	☒	SAMPLE
116	2	8	5	Unk	1609059-03@5X		☒	SAMPLE
117	2	9	5	Unk	1609059-04@5X		☒	SAMPLE
118	2	10	5	Unk	1609059-05@5X		☒	SAMPLE
119	2	11	5	Unk	1609059-06@5X		☒	SAMPLE
120	2	12	5	Unk	1609059-07@5X		☒	SAMPLE
121	3	1	1	Unk	1609059-08@5X		☒	SAMPLE
122	3	2	1	Unk	1609059-09@5X		☒	SAMPLE

9-14-16 RA (3)

	Rack	Row	Col	Type	Samplename	Comment	Check	Check Table
123	3	3	1	Unk	1609059-10@5X		☒	SAMPLE
124	3	4	1	QC	6I25804-CCV8	16I0252	☒	CCV
125	3	5	1	QC	6I25804-CCB8		☒	CCB
126	3	6	1	Unk	1609059-11@5X		☒	SAMPLE
127	3	7	1	Unk	1609059-12@5X		☒	SAMPLE
128	3	8	1	Unk	1609059-13@5X		☒	SAMPLE
129	3	9	1	Unk	1609059-14@5X		☒	SAMPLE
130	3	10	1	Unk	1609059-15@5X		☒	SAMPLE
131	3	11	1	Unk	1609059-16@5X		☒	SAMPLE
132	3	12	1	Unk	1609059-17@5X		☒	SAMPLE
133	3	1	2	Unk	1609059-18@5X		☒	SAMPLE
134	3	2	2	Unk	1609059-19@5X		☒	SAMPLE
135	3	3	2	Unk	1609059-20@5X		☒	SAMPLE
136	3	4	2	QC	6I25804-CCV9	16I0252	☒	CCV
137	3	5	2	QC	6I25804-CCB9		☒	CCB
138	3	6	2	QC	6I13008-BLK1	PBS091416 1g->200ml	☒	PREPBLANK
139	3	7	2	QC	6I13008-BS1	LCSS091416 1g->200ml	☒	2007LCS
140	3	8	2	Unk	1608266-04@5X		☒	SAMPLE
141	3	9	2	Unk	1608266-05@5X		☒	SAMPLE
142	3	10	2	Unk	1608266-06@5X		☒	SAMPLE
143	3	11	2	Unk	1608266-07@5X		☒	SAMPLE
144	3	12	2	Unk	1608266-08		☒	SAMPLE
145	3	1	3	Unk	6I13008-MS1		☒	SAMPLE
146	3	2	3	Unk	6I13008-MSD1		☒	SAMPLE
147	3	3	3	Unk	6I13008-PS1		☒	SAMPLE
148	3	4	3	Unk	6I13008-SRL1@5X	X5 SRL	☒	SAMPLE
149	3	5	3	Unk	1608266-09@5X		☒	SAMPLE
150	3	6	3	Unk	1608266-10@5X		☒	SAMPLE
151	3	7	3	Unk	1608266-11@5X		☒	SAMPLE
152	3	8	3	Unk	1608266-12@5X		☒	SAMPLE
153	3	9	3	Unk	1608266-13@5X		☒	SAMPLE
154	3	10	3	QC	6I25804-CCVA	16I0252	☒	CCV
155	3	11	3	QC	6I25804-CCBA		☒	CCB
156	3	12	3	Unk	1608266-14@5X		☒	SAMPLE
157	3	1	4	Unk	1608266-15@5X		☒	SAMPLE
158	3	2	4	Unk	1608266-22@5X		☒	SAMPLE
159	3	3	4	Unk	1608266-23@5X		☒	SAMPLE
160	3	4	4	Unk	1609059-21@5X		☒	SAMPLE
161	3	5	4	Unk	1609059-22@5X		☒	SAMPLE
162	3	6	4	Unk	1609069-01@5X		☒	SAMPLE
163	3	7	4	Unk	1609069-02@5X		☒	SAMPLE
164	3	8	4	Unk	1609069-03@5X		☒	SAMPLE
165	3	9	4	Unk	1609073-01@5X		☒	SAMPLE
166	3	10	4	QC	6I25804-CCVB	16I0252	☒	CCV
167	3	11	4	QC	6I25804-CCBB		☒	CCB
168	3	12	4	QC	6I25804-CRL		☒	RLSTD-A
169	3	1	5	QC	6I25804-CRL		☒	RLSTD-A
170	3	2	5	QC	6I25804-CCVC	16I0252	☒	CCV
171	3	3	5	QC	6I25804-CCBC		☒	CCB

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: CH2M Hill, Inc.

SDG No.: 1608251

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 5/5/2016

Analyte	Wave-length (nm)	Interelement Correction Factors for: Al	Ca	Fe	Mg	Ag
Aluminum	396.152	0.000000	1.585975	0.000043	0.000000	0.000000
Antimony	206.833	0.000027	0.000000	0.00003	0.000000	0.000000
Arsenic	189.042	-0.000019	0.000000	-0.00011	0.000000	0.000000
Barium	233.527	0.000000	0.000000	0.000004	0.000000	0.000000
Beryllium	313.042	0.000000	0.000000	0.000000	0.000000	0.000000
Cadmium	214.438	0.000004	0.003803	0.000025	0.000000	0.000000
Calcium	317.933	0.000000	0.000000	0.000000	0.000000	0.000000
Chromium	267.716	0.000000	0.000000	0.00001	0.005608	0.000000
Cobalt	228.616	0.000000	0.000000	0.000021	0.000000	0.000000
Copper	324.754	0.000003	0.000000	-0.000044	0.001001	0.000000
Iron	261.187	0.000000	0.000000	0.000000	0.000000	0.000000
Lead	220.353	-0.000208	0.000000	0.000022	0.000000	0.000000
Magnesium	279.079	0.000000	0.000000	-0.000002	0.000000	0.000000
Manganese	257.610	0.000000	0.000000	0.000022	0.000000	0.000000
Molybdenum	202.030	0.000000	0.000000	-0.000011	0.000000	0.000000
Nickel	231.604	0	0.000000	0.000025	0.002042	0.000000
Potassium	766.490	0.000000	0.000000	0.000000	0.000000	0.000000
Selenium	196.090	0.000015	-0.000251	0.00002	0.000000	0.000000
Silver	328.068	0.000000	0.000000	0.000002	0.000000	0.000000
Sodium	589.592	0.000000	0.000000	0.000000	0.000000	0.000000
Thallium	190.856	-0.000005	0.000000	0.000006	0.000000	0.000000
Vanadium	292.402	0.000000	0.000000	-0.000011	0.000000	0.000000
Zinc	206.200	0.000002	0.000827	0	0.000000	0.000000

Comments:

FORM XA-IN

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: CH2M Hill, Inc.

SDG No.: 1608251

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 5/5/2016

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		As	B	Ba	Be	Cd
Aluminum	396.152	0.000000	0.000000	0.000000	0.000000	0.000000
Antimony	206.833	0.000000	0.000000	0.000000	0.000000	0.000000
Arsenic	189.042	0.000000	0.000000	0.000000	0.000000	0.000000
Barium	233.527	0.000000	0.000000	0.000000	0.000000	0.000000
Beryllium	313.042	0.000000	0.000000	0.000000	0.000000	0.000000
Cadmium	214.438	-0.00125	0.000000	0.000000	0.000000	0.000000
Calcium	317.933	0.000000	0.000000	0.000000	0.000000	0.000000
Chromium	267.716	0.000000	0.000000	0.000000	0.000000	0.000043
Cobalt	228.616	0.000000	0.000000	0.000000	0.000000	0.000000
Copper	324.754	0.000000	0.000000	0.000000	0.000000	0.000000
Iron	261.187	0.000000	0.000000	0.000000	0.000000	0.000000
Lead	220.353	0.000000	0.000000	0.000000	0.000000	0.000000
Magnesium	279.079	0.000000	0.000000	0.000000	0.000000	0.000000
Manganese	257.610	0.000000	0.000000	0.000000	0.000000	0.000000
Molybdenum	202.030	0.000000	0.000000	0.000000	0.000000	0.000000
Nickel	231.604	0.000000	0.000000	0.000000	-0.000039	0.000000
Potassium	766.490	0.000000	0.000000	0.000000	0.000000	0.000000
Selenium	196.090	0.000000	0.000000	0.000000	0.000000	0.000000
Silver	328.068	0.000000	0.000000	0.000000	0.000000	0.000000
Sodium	589.592	0.000000	0.000000	0.000000	0.000000	0.000000
Thallium	190.856	0.000000	0.000000	0.000000	0.000000	0.000000
Vanadium	292.402	0.000000	0.000000	0.000000	0.000000	0.000000
Zinc	206.200	0.000000	0.000000	0.000000	0.001494	0.000729

Comments:

FORM XA-IN

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: CH2M Hill, Inc.

SDG No.: 1608251

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 5/5/2016

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		Co	Cr	Cu	K	Mn
Aluminum	396.152	0.000000	0.000000	0.000000	0.000000	0.000000
Antimony	206.833	0.000000	0.023282	0.000000	0.000000	0.000000
Arsenic	189.042	0.000000	0.000195	0.000000	0.000000	0.000000
Barium	233.527	0.000000	0.000000	0.000000	0.000000	0.000000
Beryllium	313.042	0.000000	0.000000	0.000000	0.000000	0.000000
Cadmium	214.438	0.000000	-0.00009	0.000000	0.000000	0.000000
Calcium	317.933	0.000000	0.000000	0.000000	0.000000	0.000000
Chromium	267.716	0.000000	0.000000	0.000000	0.000000	0.000548
Cobalt	228.616	0.000000	-0.000032	0.000000	0.000000	0.000000
Copper	324.754	0.000000	0.000000	0.000000	0.000000	0.000000
Iron	261.187	0.000000	-0.00372	0.000000	0.000000	-0.004555
Lead	220.353	0.000000	0.000000	0.0003	0.000000	0.000116
Magnesium	279.079	0.000000	0.000000	0.000000	0.000000	0.000000
Manganese	257.610	0.000000	0.000000	0.000000	0.000000	0.000000
Molybdenum	202.030	0.000000	0.000000	0.000000	0.000000	0.000000
Nickel	231.604	-0.000769	-0.000079	-0.000071	0.000000	-0.000125
Potassium	766.490	0.000000	0.000000	0.000000	0.000000	0.000000
Selenium	196.090	0.000000	0.000000	0.000000	0.000000	0.000454
Silver	328.068	0.000000	0.000000	0.000000	0.000000	0.000113
Sodium	589.592	0.000000	0.000000	0.000000	0.000000	0.000000
Thallium	190.856	0.000392	0.000203	0.000000	0.000000	0.00065
Vanadium	292.402	0.000000	-0.009679	0.000000	0.000000	-0.000271
Zinc	206.200	0.000000	0.000078	0.001561	0.000000	0.000797

Comments:

FORM XA-IN

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: CH2M Hill, Inc.

SDG No.: 1608251

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 5/5/2016

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		Mo	Na	Ni	Pb	Sb
Aluminum	396.152	0.032885	0.000000	0.000000	0.000000	0.000000
Antimony	206.833	-0.002824	0.000000	0.000000	0.000000	0.000000
Arsenic	189.042	0.002574	0.000000	0.000000	0.000000	0.000000
Barium	233.527	0.000000	0.000000	0.000000	0.000000	0.000000
Beryllium	313.042	-0.000025	0.000000	0.000000	0.000000	0.000000
Cadmium	214.438	-0.000105	0.000000	0.000000	0.000000	0.000000
Calcium	317.933	0.000000	0.000000	0.000000	0.000000	0.000000
Chromium	267.716	0.000000	0.000000	0.000000	0.000000	0.000000
Cobalt	228.616	-0.001642	0.000000	0.000049	0.000000	0.000000
Copper	324.754	0.000505	0.000000	0.000000	0.000000	0.000000
Iron	261.187	0.000000	0.000000	-0.000713	0.000000	0.000000
Lead	220.353	-0.001205	0.000000	0.000325	0.000000	0.000000
Magnesium	279.079	-0.000013	0.000000	0.000000	0.000000	0.000000
Manganese	257.610	0.000000	0.000000	0.000000	0.000000	0.000000
Molybdenum	202.030	0.000000	0.000000	0.000000	0.000000	0.000000
Nickel	231.604	-0.000442	0.000000	0.000000	0.000017	0.000051
Potassium	766.490	0.000000	0.000000	0.000000	0.000000	0.000000
Selenium	196.090	-0.000137	0.000000	-0.000022	0.000000	0.000000
Silver	328.068	-0.000046	0.000000	0.000000	0.000000	0.000000
Sodium	589.592	0.000000	0.000000	0.000000	0.000000	0.000000
Thallium	190.856	0.000023	0.000000	0.000000	0.000000	0.000000
Vanadium	292.402	-0.000106	0.000000	0.000000	0.000000	0.000000
Zinc	206.200	0.000173	0.000000	0.000024	0.000000	0.000417

Comments:

FORM XA-IN

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: CH2M Hill, Inc.

SDG No.: 1608251

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 5/5/2016

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		Se	Sn	Ti	Tl	V
Aluminum	396.152	0.000000	0.000000	0.000000	0.000000	0.000000
Antimony	206.833	0.000000	0.000000	0.000252	0.000000	0.000048
Arsenic	189.042	0.000000	0.000000	-0.00021	0.000000	0.000084
Barium	233.527	0.000000	0.000000	0.000000	0.000000	-0.003424
Beryllium	313.042	0.000000	0.000000	-0.000945	0.000000	0.000417
Cadmium	214.438	0.000000	0.000000	0.000000	0.000000	0.00003
Calcium	317.933	0.000000	0.000000	0.000000	0.000000	0.000000
Chromium	267.716	0.000000	0.000000	0.000123	0.000000	-0.000018
Cobalt	228.616	0.000000	0.000000	0.001863	0.000000	0.000000
Copper	324.754	0.000000	0.000000	-0.000635	0.000000	0.000000
Iron	261.187	0.000000	0.000000	0.000000	0.000000	0.000000
Lead	220.353	0.000000	0.000000	-0.000015	0.000000	-0.00007
Magnesium	279.079	0.000000	0.000000	0.000000	0.000000	0.000000
Manganese	257.610	0.000000	0.000000	0.000000	0.000000	0.000000
Molybdenum	202.030	0.000000	0.000000	0.000000	0.000000	-0.000155
Nickel	231.604	0.000000	0.000000	-0.000038	0.000281	-0.000098
Potassium	766.490	0.000000	0.000000	0.000000	0.000000	0.000000
Selenium	196.090	0.000000	0.000000	-0.000141	0.000000	-0.000203
Silver	328.068	0.000000	0.000000	-0.000061	0.000000	-0.00427
Sodium	589.592	0.000000	0.000000	0.000000	0.000000	0.000000
Thallium	190.856	0.000000	0.000000	-0.002366	0.000000	-0.002503
Vanadium	292.402	0.000000	0.000000	0.000682	0.000000	0.000000
Zinc	206.200	0.000000	0.000000	0.000000	0.000000	-0.000257

Comments:

FORM XA-IN

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: CH2M Hill, Inc.

SDG No.: 1608251

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 5/5/2016

Analyte	Wave-length (nm)	Interelement Correction Factors for: Zn				
Aluminum	396.152	0.000000				
Antimony	206.833	0.000000				
Arsenic	189.042	-0.000011				
Barium	233.527	0.000000				
Beryllium	313.042	0.000000				
Cadmium	214.438	0.000000				
Calcium	317.933	0.000000				
Chromium	267.716	0.000000				
Cobalt	228.616	0.000000				
Copper	324.754	0.000000				
Iron	261.187	0.000000				
Lead	220.353	0.000000				
Magnesium	279.079	0.000000				
Manganese	257.610	0.000000				
Molybdenum	202.030	-0.000269				
Nickel	231.604	0.000063				
Potassium	766.490	0.000000				
Selenium	196.090	0.000000				
Silver	328.068	0.000000				
Sodium	589.592	0.000000				
Thallium	190.856	0.000000				
Vanadium	292.402	0.000000				
Zinc	206.200	0.000000				

Comments:

FORM XA-IN

ICP-AES AND ICP-MS LINEAR RANGES

Lab Name: Empirical Laboratories, LLC

Client: CH2M Hill, Inc. SDG: 1608251

Project: Raritan Arsenal - Phase III

ICP Instrument ID: ME-ICP Date: 01/30/2016

Analyte	Integ. Time (Sec.)	Concentration ug/L	M
Aluminum	15	500000	P
Antimony	15	25000	P
Arsenic	15	10000	P
Barium	15	5000	P
Beryllium	15	10000	P
Cadmium	15	10000	P
Calcium	15	500000	P
Chromium	15	10000	P
Cobalt	15	10000	P
Copper	15	25000	P
Iron	15	500000	P
Lead	15	25000	P
Magnesium	15	500000	P
Manganese	15	12000	P
Molybdenum	15	10000	P
Nickel	15	50000	P
Potassium	15	100000	P
Selenium	15	10000	P
Silver	15	2000	P
Sodium	15	500000	P
Thallium	15	10000	P
Vanadium	15	10000	P
Zinc	15	20000	P

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA05-SB29-0010
Lab Sample ID: 1608251-01

Sample Collection D/T : 08/24/2016 09:21
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	2.9883	mg/Kg dry	1		09/13/16 13:02		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA05-SB30-0010
Lab Sample ID: 1608251-02RE1

Sample Collection D/T : 08/24/2016 09:49
Sample Matrix: Solid

Mercury by CVAA **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	3.3251	mg/Kg dry	2	D	09/14/16 16:21		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA05-SB31-0010
Lab Sample ID: 1608251-03RE1

Sample Collection D/T : 08/24/2016 10:06
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	5.7195	mg/Kg dry	5	D	09/14/16 16:11		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA05-SB32-0010
Lab Sample ID: 1608251-04RE1

Sample Collection D/T : 08/24/2016 10:36
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	4.1521	mg/Kg dry	5	D	09/14/16 16:13		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB01-0010
Lab Sample ID: 1608251-05

Sample Collection D/T : 08/24/2016 12:28
Sample Matrix: Solid

Mercury by CVAA **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0119	mg/Kg dry	1		09/13/16 13:10		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB02-0010
Lab Sample ID: 1608251-06

Sample Collection D/T : 08/24/2016 12:45
Sample Matrix: Solid

Mercury by CVAA **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0083	mg/Kg dry	1		09/13/16 13:11		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB03-0010
Lab Sample ID: 1608251-07

Sample Collection D/T : 08/24/2016 12:57
Sample Matrix: Solid

Mercury by CVAA **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0060	mg/Kg dry	1		09/13/16 13:12		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB04-0010
Lab Sample ID: 1608251-08

Sample Collection D/T : 08/24/2016 13:12
Sample Matrix: Solid

Mercury by CVAA **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0095	mg/Kg dry	1		09/13/16 13:14		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB05-0010
Lab Sample ID: 1608251-09

Sample Collection D/T : 08/24/2016 13:49
Sample Matrix: Solid

Mercury by CVAA **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0096	mg/Kg dry	1		09/13/16 13:15		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB06-0010
Lab Sample ID: 1608251-10

Sample Collection D/T : 08/24/2016 14:02
Sample Matrix: Solid

Mercury by CVAA **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0038	mg/Kg dry	1		09/13/16 13:16		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB07-0010
Lab Sample ID: 1608251-11

Sample Collection D/T : 08/24/2016 14:20
Sample Matrix: Solid

Mercury by CVAA **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0073	mg/Kg dry	1		09/13/16 13:20		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB08-0010
Lab Sample ID: 1608251-12

Sample Collection D/T : 08/24/2016 14:35
Sample Matrix: Solid

Mercury by CVAA **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	-0.0099	mg/Kg dry	1		09/13/16 13:21		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB09-0010
Lab Sample ID: 1608251-13

Sample Collection D/T : 08/25/2016 09:07
Sample Matrix: Solid

Mercury by CVAA **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0315	mg/Kg dry	1		09/13/16 13:22		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB10-0010
Lab Sample ID: 1608251-14

Sample Collection D/T : 08/25/2016 09:19
Sample Matrix: Solid

Mercury by CVAA **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0209	mg/Kg dry	1		09/13/16 13:23		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB11-0010
Lab Sample ID: 1608251-15

Sample Collection D/T : 08/25/2016 09:55
Sample Matrix: Solid

Mercury by CVAA **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0161	mg/Kg dry	1		09/13/16 13:24		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB12-0010
Lab Sample ID: 1608251-16

Sample Collection D/T : 08/25/2016 11:44
Sample Matrix: Solid

Mercury by CVAA **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0212	mg/Kg dry	1		09/13/16 13:25		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB13-0010
Lab Sample ID: 1608251-17

Sample Collection D/T : 08/25/2016 12:34
Sample Matrix: Solid

Mercury by CVAA **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0169	mg/Kg dry	1		09/13/16 13:27		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB14-0010
Lab Sample ID: 1608251-18

Sample Collection D/T : 08/25/2016 13:14
Sample Matrix: Solid

Mercury by CVAA **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0169	mg/Kg dry	1		09/13/16 13:28		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB15-0010
Lab Sample ID: 1608251-19

Sample Collection D/T : 08/25/2016 13:28
Sample Matrix: Solid

Mercury by CVAA **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0149	mg/Kg dry	1		09/13/16 13:29		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB16-0010
Lab Sample ID: 1608251-20

Sample Collection D/T : 08/25/2016 13:40
Sample Matrix: Solid

Mercury by CVAA **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0183	mg/Kg dry	1		09/13/16 13:30		SW7471B

Data and Forms For

Mercury

Sample Extraction Data

Prep Method: MET_HG_S-SW7471B

Lab Number [Field ID]	Batch	Nominal Initial/Final	Initial [g]	Final [mL]	Dilution	% Solids	Notes	Date
1608251-01 [DSA05-SB29-0010]	6H29018	0.30/50.00	0.300	50.0	1.00	48.75		08/29/16
1608251-02RE1 [DSA05-SB30-0010]	6H29018	0.30/50.00	0.310	50.0	2.00	50.69		08/29/16

Sample Extraction Data

Prep Method: MET_HG_S-SW7471B

Lab Number [Field ID]	Batch	Nominal Initial/Final	Initial [g]	Final [mL]	Dilution	% Solids	Notes	Date
1608251-03RE1 [DSA05-SB31-0010]	6H29019	0.30/50.00	0.320	50.0	5.00	52.94		08/29/16
1608251-04RE1 [DSA05-SB32-0010]	6H29019	0.30/50.00	0.340	50.0	5.00	51.58		08/29/16
1608251-05 [DSA01-SB01-0010]	6H29019	0.30/50.00	0.320	50.0	1.00	82.51		08/29/16
1608251-06 [DSA01-SB02-0010]	6H29019	0.30/50.00	0.300	50.0	1.00	83.12		08/29/16
1608251-07 [DSA01-SB03-0010]	6H29019	0.30/50.00	0.320	50.0	1.00	83.35		08/29/16
1608251-08 [DSA01-SB04-0010]	6H29019	0.30/50.00	0.320	50.0	1.00	83.27		08/29/16
1608251-09 [DSA01-SB05-0010]	6H29019	0.30/50.00	0.320	50.0	1.00	84.84		08/29/16
1608251-10 [DSA01-SB06-0010]	6H29019	0.30/50.00	0.300	50.0	1.00	81.32		08/29/16
1608251-11 [DSA01-SB07-0010]	6H29019	0.30/50.00	0.300	50.0	1.00	83.63		08/29/16
1608251-12 [DSA01-SB08-0010]	6H29019	0.30/50.00	0.330	50.0	1.00	84.58		08/29/16
1608251-13 [DSA02-SB09-0010]	6H29019	0.30/50.00	0.310	50.0	1.00	53.37		08/29/16
1608251-14 [DSA02-SB10-0010]	6H29019	0.30/50.00	0.330	50.0	1.00	52.46		08/29/16
1608251-15 [DSA02-SB11-0010]	6H29019	0.30/50.00	0.340	50.0	1.00	46.75		08/29/16
1608251-16 [DSA02-SB12-0010]	6H29019	0.30/50.00	0.350	50.0	1.00	55.29		08/29/16
1608251-17 [DSA02-SB13-0010]	6H29019	0.30/50.00	0.300	50.0	1.00	37.62		08/29/16
1608251-18 [DSA02-SB14-0010]	6H29019	0.30/50.00	0.340	50.0	1.00	33.69		08/29/16
1608251-19 [DSA02-SB15-0010]	6H29019	0.30/50.00	0.350	50.0	1.00	29.79		08/29/16
1608251-20 [DSA02-SB16-0010]	6H29019	0.30/50.00	0.310	50.0	1.00	43.22		08/29/16

ANALYSIS DATA SHEET

DSA05-SB29-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 09:21
% Solids: 48.75

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-01
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	2.99	**0.0267**	0.0554	0.0677	1		SW7471B	6H29018	09/13/16 13:02

ANALYSIS DATA SHEET

DSA05-SB30-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 09:49
% Solids: 50.69

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-02
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	3.33	**0.0496**	0.103	0.126	2	D	SW7471B	6H29018	09/14/16 16:21

ANALYSIS DATA SHEET

DSA05-SB31-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 10:06
% Solids: 52.94

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-03
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	5.72	**0.115**	0.239	0.292	5	D	SW7471B	6H29019	09/14/16 16:11

ANALYSIS DATA SHEET

DSA05-SB32-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 10:36
% Solids: 51.58

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-04
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	4.15	**0.111**	0.231	0.282	5	D	SW7471B	6H29019	09/14/16 16:13

ANALYSIS DATA SHEET

DSA01-SB01-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 12:28
% Solids: 82.51

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-05
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0148	0.0307	0.0375	1	U	SW7471B	6H29019	09/13/16 13:10

ANALYSIS DATA SHEET

DSA01-SB02-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 12:45
% Solids: 83.12

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-06
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0156	0.0325	0.0397	1	U	SW7471B	6H29019	09/13/16 13:11

ANALYSIS DATA SHEET

DSA01-SB03-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 12:57
% Solids: 83.35

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-07
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0146	0.0304	0.0371	1	U	SW7471B	6H29019	09/13/16 13:12

ANALYSIS DATA SHEET

DSA01-SB04-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 13:12
% Solids: 83.27

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-08
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0146	0.0304	0.0372	1	U	SW7471B	6H29019	09/13/16 13:14

ANALYSIS DATA SHEET

DSA01-SB05-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 13:49
% Solids: 84.84

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-09
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0144	0.0298	0.0365	1	U	SW7471B	6H29019	09/13/16 13:15

ANALYSIS DATA SHEET

DSA01-SB06-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 14:02
% Solids: 81.32

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-10
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0160	0.0332	0.0406	1	U	SW7471B	6H29019	09/13/16 13:16

ANALYSIS DATA SHEET

DSA01-SB07-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 14:20
% Solids: 83.63

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-11
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0155	0.0323	0.0395	1	U	SW7471B	6H29019	09/13/16 13:20

ANALYSIS DATA SHEET

DSA01-SB08-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 14:35
% Solids: 84.58

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-12
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0140	0.0290	0.0355	1	U	SW7471B	6H29019	09/13/16 13:21

ANALYSIS DATA SHEET

DSA02-SB09-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 09:07
% Solids: 53.37

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-13
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	0.0315	**0.0236**	0.0490	0.0598	1	J	SW7471B	6H29019	09/13/16 13:22

ANALYSIS DATA SHEET

DSA02-SB10-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 09:19
% Solids: 52.46

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-14
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0225	0.0468	0.0572	1	U	SW7471B	6H29019	09/13/16 13:23

ANALYSIS DATA SHEET

DSA02-SB11-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 09:55
% Solids: 46.75

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-15
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0245	0.0510	0.0623	1	U	SW7471B	6H29019	09/13/16 13:24

ANALYSIS DATA SHEET

DSA02-SB12-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 11:44
% Solids: 55.29

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-16
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	0.0212	**0.0202**	0.0419	0.0512	1	J	SW7471B	6H29019	09/13/16 13:25

ANALYSIS DATA SHEET

DSA02-SB13-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 12:34
% Solids: 37.62

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-17
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0346	0.0718	0.0877	1	U	SW7471B	6H29019	09/13/16 13:27

ANALYSIS DATA SHEET

DSA02-SB14-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 13:14
% Solids: 33.69

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-18
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0340	0.0707	0.0864	1	U	SW7471B	6H29019	09/13/16 13:28

ANALYSIS DATA SHEET

DSA02-SB15-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 13:28
% Solids: 29.79

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-19
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0374	0.0777	0.0949	1	U	SW7471B	6H29019	09/13/16 13:29

ANALYSIS DATA SHEET

DSA02-SB16-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 13:40
% Solids: 43.22

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-20
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0291	0.0605	0.0739	1	U	SW7471B	6H29019	09/13/16 13:30

ANALYSIS DATA SHEET

Blank

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
% Solids:

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 6H29018-BLK1

CAS NO.	Analyte	Conc. (mg/Kg wet)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	ND	0.0130	0.0270	0.0330	1	U	SW7471B	6H29018	09/13/16 12:31

ANALYSIS DATA SHEET

Blank

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
% Solids:

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 6H29019-BLK1

CAS NO.	Analyte	Conc. (mg/Kg wet)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	ND	0.0130	0.0270	0.0330	1	U	SW7471B	6H29019	09/13/16 13:05

ANALYSIS DATA SHEET

LCS

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
% Solids:

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 6H29018-BS1

CAS NO.	Analyte	Conc. (mg/Kg wet)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	0.3602	**0.0130**	0.0270	0.0330	1		SW7471B	6H29018	09/13/16 12:32

ANALYSIS DATA SHEET

LCS

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
% Solids:

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 6H29019-BS1

CAS NO.	Analyte	Conc. (mg/Kg wet)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	0.3816	**0.0130**	0.0270	0.0330	1		SW7471B	6H29019	09/13/16 13:06

INITIAL AND CONTINUING CALIBRATION CHECK

SW7471B

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Instrument ID: ME-FIMS
SDG: 1608251
Project: Raritan Arsenal - Phase III
Calibration: 6257002
Sequence: 6I25705

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
6I25705-ICV1	Mercury	4.000	4.028	101	ug/L	+/- 10.00%
6I25705-CCV1	Mercury	2.000	2.021	101	ug/L	+/- 10.00%
6I25705-CCV9	Mercury	2.000	1.911	95.5	ug/L	+/- 10.00%
6I25705-CCVA	Mercury	4.000	3.790	94.8	ug/L	+/- 10.00%
6I25705-CCVB	Mercury	2.000	1.957	97.8	ug/L	+/- 10.00%
6I25705-CCVC	Mercury	4.000	3.956	98.9	ug/L	+/- 10.00%
6I25705-CCVD	Mercury	2.000	1.954	97.7	ug/L	+/- 10.00%

INITIAL AND CONTINUING CALIBRATION CHECK

SW7471B

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Instrument ID: ME-FIMS
SDG: 1608251
Project: Raritan Arsenal - Phase III
Calibration: 6258004
Sequence: 6I25809

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
6I25809-ICV1	Mercury	4.000	3.814	95.3	ug/L	+/- 10.00%
6I25809-CCV1	Mercury	2.000	1.850	92.5	ug/L	+/- 10.00%

BLANKS
SW7471B

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Instrument ID: ME-FIMS
Project: Raritan Arsenal - Phase III
Sequence: 6I25705
Calibration: 6257002

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
6I25705-ICB1	Mercury	-0.01577	0.0780	0.198	ug/L	U	SW7471B
6I25705-CCB1	Mercury	-0.0183	0.0780	0.198	ug/L	U	SW7471B
6I25705-CCB9	Mercury	-0.00539	0.0780	0.198	ug/L	U	SW7471B
6H29018-BLK1	Mercury	-0.00552	0.0130	0.0330	mg/Kg wet	U	SW7471B
6I25705-CCBA	Mercury	-0.0148	0.0780	0.198	ug/L	U	SW7471B
6I25705-CCBB	Mercury	-0.0129	0.0780	0.198	ug/L	U	SW7471B
6H29019-BLK1	Mercury	-0.000874	0.0130	0.0330	mg/Kg wet	U	SW7471B
6I25705-CCBC	Mercury	0.00462	0.0780	0.198	ug/L	U	SW7471B
6I25705-CCBD	Mercury	-0.0146	0.0780	0.198	ug/L	U	SW7471B

BLANKS
SW7471B

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Instrument ID: ME-FIMS
Project: Raritan Arsenal - Phase III
Sequence: 6I25809
Calibration: 6258004

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
6I25809-ICB1	Mercury	-0.0009272	0.0780	0.198	ug/L	U	SW7471B
6I25809-CCB1	Mercury	0.00302	0.0780	0.198	ug/L	U	SW7471B

LCS / LCS DUPLICATE RECOVERY

SW7471B

Laboratory:	Empirical Laboratories, LLC	SDG:	1608251
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Matrix:	Solid		
Batch:	6H29018	Laboratory ID:	6H29018-BS1
Preparation:	MET_HG_S	Initial/Final:	0.3 g / 50 mL

ANALYTE	SPIKE ADDED (mg/Kg wet)	LCS CONCENTRATION (mg/Kg wet)	LCS % REC.	QC LIMITS REC.
Mercury	0.3333	0.3602	108	80 - 124

LCS / LCS DUPLICATE RECOVERY

SW7471B

Laboratory:	Empirical Laboratories, LLC	SDG:	1608251
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Matrix:	Solid		
Batch:	6H29019	Laboratory ID:	6H29019-BS1
Preparation:	MET_HG_S	Initial/Final:	0.3 g / 50 mL

ANALYTE	SPIKE ADDED (mg/Kg wet)	LCS CONCENTRATION (mg/Kg wet)	LCS % REC.	QC LIMITS REC.
Mercury	0.3333	0.3816	114	80 - 124

PREPARATION BATCH SUMMARY

SW7471B

Laboratory: Empirical Laboratories, LLC SDG: 1608251

Client: CH2M Hill, Inc. Project: Raritan Arsenal - Phase III

Batch: 6H29018 Batch Matrix: Solid Preparation: MET_HG_S

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT	FINAL VOL.
DSA05-SB29-0010	1608251-01	08/29/16 10:19	0.30	50.00
DSA05-SB30-0010	1608251-02RE1	08/29/16 10:19	0.31	50.00
Blank	6H29018-BLK1	08/29/16 10:19	0.30	50.00
LCS	6H29018-BS1	08/29/16 10:19	0.30	50.00

PREPARATION BATCH SUMMARY

SW7471B

Laboratory: Empirical Laboratories, LLC SDG: 1608251

Client: CH2M Hill, Inc. Project: Raritan Arsenal - Phase III

Batch: 6H29019 Batch Matrix: Solid Preparation: MET_HG_S

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT	FINAL VOL.
DSA05-SB31-0010	1608251-03RE1	08/29/16 10:23	0.32	50.00
DSA05-SB32-0010	1608251-04RE1	08/29/16 10:23	0.34	50.00
DSA01-SB01-0010	1608251-05	08/29/16 10:23	0.32	50.00
DSA01-SB02-0010	1608251-06	08/29/16 10:23	0.30	50.00
DSA01-SB03-0010	1608251-07	08/29/16 10:23	0.32	50.00
DSA01-SB04-0010	1608251-08	08/29/16 10:23	0.32	50.00
DSA01-SB05-0010	1608251-09	08/29/16 10:23	0.32	50.00
DSA01-SB06-0010	1608251-10	08/29/16 10:23	0.30	50.00
DSA01-SB07-0010	1608251-11	08/29/16 10:23	0.30	50.00
DSA01-SB08-0010	1608251-12	08/29/16 10:23	0.33	50.00
DSA02-SB09-0010	1608251-13	08/29/16 10:23	0.31	50.00
DSA02-SB10-0010	1608251-14	08/29/16 10:23	0.33	50.00
DSA02-SB11-0010	1608251-15	08/29/16 10:23	0.34	50.00
DSA02-SB12-0010	1608251-16	08/29/16 10:23	0.35	50.00
DSA02-SB13-0010	1608251-17	08/29/16 10:23	0.30	50.00
DSA02-SB14-0010	1608251-18	08/29/16 10:23	0.34	50.00
DSA02-SB15-0010	1608251-19	08/29/16 10:23	0.35	50.00
DSA02-SB16-0010	1608251-20	08/29/16 10:23	0.31	50.00
Blank	6H29019-BLK1	08/29/16 10:23	0.30	50.00
LCS	6H29019-BS1	08/29/16 10:23	0.30	50.00

ANALYSIS SEQUENCE SUMMARY

SW7471B

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Sequence: 6I25705
Instrument: ME-FIMS
Calibration: 6257002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Cal Standard	6I25705-CAL1	20160913s-001	09/13/16 09:43
Cal Standard	6I25705-CAL2	20160913s-002	09/13/16 09:44
Cal Standard	6I25705-CAL3	20160913s-003	09/13/16 09:45
Cal Standard	6I25705-CAL4	20160913s-004	09/13/16 09:46
Cal Standard	6I25705-CAL5	20160913s-005	09/13/16 09:48
Cal Standard	6I25705-CAL6	20160913s-006	09/13/16 09:49
Cal Standard	6I25705-CAL7	20160913s-007	09/13/16 09:50
Cal Standard	6I25705-CAL8	20160913s-008	09/13/16 09:51
Initial Cal Check	6I25705-ICV1	20160913s-009	09/13/16 09:53
Initial Cal Blank	6I25705-ICB1	20160913s-010	09/13/16 09:54
Calibration Check	6I25705-CCV1	20160913s-023	09/13/16 10:08
Calibration Blank	6I25705-CCB1	20160913s-024	09/13/16 10:09
Calibration Check	6I25705-CCV9	20160913s-139	09/13/16 12:29
Calibration Blank	6I25705-CCB9	20160913s-140	09/13/16 12:30
Blank	6H29018-BLK1	20160913s-141	09/13/16 12:31
LCS	6H29018-BS1	20160913s-142	09/13/16 12:32
Calibration Check	6I25705-CCVA	20160913s-155	09/13/16 12:47
Calibration Blank	6I25705-CCBA	20160913s-156	09/13/16 12:48
Calibration Check	6I25705-CCVB	20160913s-166	09/13/16 13:00
Calibration Blank	6I25705-CCBB	20160913s-167	09/13/16 13:01
DSA05-SB29-0010	1608251-01	20160913s-168	09/13/16 13:02
Blank	6H29019-BLK1	20160913s-171	09/13/16 13:05
LCS	6H29019-BS1	20160913s-172	09/13/16 13:06
DSA01-SB01-0010	1608251-05	20160913s-175	09/13/16 13:10
DSA01-SB02-0010	1608251-06	20160913s-176	09/13/16 13:11
DSA01-SB03-0010	1608251-07	20160913s-177	09/13/16 13:12
DSA01-SB04-0010	1608251-08	20160913s-178	09/13/16 13:14
DSA01-SB05-0010	1608251-09	20160913s-179	09/13/16 13:15
DSA01-SB06-0010	1608251-10	20160913s-180	09/13/16 13:16
Calibration Check	6I25705-CCVC	20160913s-181	09/13/16 13:17
Calibration Blank	6I25705-CCBC	20160913s-182	09/13/16 13:18
DSA01-SB07-0010	1608251-11	20160913s-183	09/13/16 13:20
DSA01-SB08-0010	1608251-12	20160913s-184	09/13/16 13:21

ANALYSIS SEQUENCE SUMMARY

SW7471B

Laboratory:	Empirical Laboratories, LLC	SDG:	1608251
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Sequence:	6I25705	Instrument:	ME-FIMS
Calibration:	6257002		

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
DSA02-SB09-0010	1608251-13	20160913s-185	09/13/16 13:22
DSA02-SB10-0010	1608251-14	20160913s-186	09/13/16 13:23
DSA02-SB11-0010	1608251-15	20160913s-187	09/13/16 13:24
DSA02-SB12-0010	1608251-16	20160913s-188	09/13/16 13:25
DSA02-SB13-0010	1608251-17	20160913s-189	09/13/16 13:27
DSA02-SB14-0010	1608251-18	20160913s-190	09/13/16 13:28
DSA02-SB15-0010	1608251-19	20160913s-191	09/13/16 13:29
DSA02-SB16-0010	1608251-20	20160913s-192	09/13/16 13:30
Calibration Check	6I25705-CCVD	20160913s-193	09/13/16 13:32
Calibration Blank	6I25705-CCBD	20160913s-194	09/13/16 13:33

ANALYSIS SEQUENCE SUMMARY

SW7471B

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Sequence: 6I25809
Instrument: ME-FIMS
Calibration: 6258004

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Cal Standard	6I25809-CAL1	20160914sB-001	09/14/16 15:55
Cal Standard	6I25809-CAL2	20160914sB-002	09/14/16 15:56
Cal Standard	6I25809-CAL3	20160914sB-003	09/14/16 15:57
Cal Standard	6I25809-CAL4	20160914sB-004	09/14/16 15:58
Cal Standard	6I25809-CAL5	20160914sB-005	09/14/16 16:00
Cal Standard	6I25809-CAL6	20160914sB-006	09/14/16 16:01
Cal Standard	6I25809-CAL7	20160914sB-007	09/14/16 16:02
Cal Standard	6I25809-CAL8	20160914sB-008	09/14/16 16:03
Initial Cal Check	6I25809-ICV1	20160914sB-009	09/14/16 16:04
Initial Cal Blank	6I25809-ICB1	20160914sB-010	09/14/16 16:06
DSA05-SB31-0010	1608251-03RE1	20160914sB-015	09/14/16 16:11
DSA05-SB32-0010	1608251-04RE1	20160914sB-016	09/14/16 16:13
DSA05-SB30-0010	1608251-02RE1	20160914sB-023	09/14/16 16:21
Calibration Check	6I25809-CCV1	20160914sB-024	09/14/16 16:23
Calibration Blank	6I25809-CCB1	20160914sB-025	09/14/16 16:24

INITIAL CALIBRATION DATA

SW7471B

Laboratory:	Empirical Laboratories, LLC	SDG:	1608251
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Calibration:	6257002	Instrument:	ME-FIMS
Matrix:	Solid	Calibration Dates:	9/13/16 9:43 9/13/16 9:51

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Mercury	0	0	0.2	1.439965E-02	0.5	1.425915E-02	1	1.394806E-02	2	0.0138053	4	1.458505E-02

INITIAL CALIBRATION DATA (Continued)

SW7471B

Laboratory:	Empirical Laboratories, LLC	SDG:	1608251
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Calibration:	6257002	Instrument:	ME-FIMS
Matrix:	Solid	Calibration Dates:	9/13/16 9:43 9/13/16 9:51

Compound	Level 07		Level 08		Level 09		Level 10		Level 11		Level 12	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Mercury	6	1.350032E-02	10	1.384799E-02								

INITIAL CALIBRATION DATA (Continued)

SW7471B

Laboratory:	Empirical Laboratories, LLC	SDG:	1608251
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Calibration:	6257002	Instrument:	ME-FIMS
Matrix:	Solid	Calibration Dates:	9/13/16 9:43 9/13/16 9:51

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
Mercury	1.229319E-02	40.50722	0	0	0.9992367		0.995	

INITIAL CALIBRATION DATA

SW7471B

Laboratory:	Empirical Laboratories, LLC	SDG:	1608251
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Calibration:	6258004	Instrument:	ME-FIMS
Matrix:	Solid	Calibration Dates:	9/14/16 15:55 9/14/16 16:03

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Mercury	0	0	0.2	1.283898E-02	0.5	0.0124992	1	1.251725E-02	2	1.204318E-02	4	1.178458E-02

INITIAL CALIBRATION DATA (Continued)

SW7471B

Laboratory:	Empirical Laboratories, LLC	SDG:	1608251
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Calibration:	6258004	Instrument:	ME-FIMS
Matrix:	Solid	Calibration Dates:	9/14/16 15:55 9/14/16 16:03

Compound	Level 07		Level 08		Level 09		Level 10		Level 11		Level 12	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Mercury	6	1.163333E-02	10	1.206765E-02								

INITIAL CALIBRATION DATA (Continued)

SW7471B

Laboratory:	Empirical Laboratories, LLC	SDG:	1608251
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Calibration:	6258004	Instrument:	ME-FIMS
Matrix:	Solid	Calibration Dates:	9/14/16 15:55 9/14/16 16:03

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
Mercury	1.067302E-02	40.58174	0	0	0.9995204		0.995	

HOLDING TIME SUMMARY

SW7471B

Laboratory: Empirical Laboratories, LLC

SDG: 1608251

Client: CH2M Hill, Inc.

Project: Raritan Arsenal - Phase III

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
DSA05-SB29-0010	08/24/16 09:21	08/26/16 08:45	08/29/16 10:19	5.08	28.00	09/13/16 13:02	15.11	28.00	
DSA05-SB30-0010	08/24/16 09:49	08/26/16 08:45	08/29/16 10:19	5.06	28.00	09/14/16 16:21	16.25	28.00	

HOLDING TIME SUMMARY

SW7471B

Laboratory: Empirical Laboratories, LLC SDG: 1608251

Client: CH2M Hill, Inc. Project: Raritan Arsenal - Phase III

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
DSA05-SB31-0010	08/24/16 10:06	08/26/16 08:45	08/29/16 10:23	5.05	28.00	09/14/16 16:11	16.24	28.00	
DSA05-SB32-0010	08/24/16 10:36	08/26/16 08:45	08/29/16 10:23	5.03	28.00	09/14/16 16:13	16.24	28.00	
DSA01-SB01-0010	08/24/16 12:28	08/26/16 08:45	08/29/16 10:23	4.95	28.00	09/13/16 13:10	15.12	28.00	
DSA01-SB02-0010	08/24/16 12:45	08/26/16 08:45	08/29/16 10:23	4.94	28.00	09/13/16 13:11	15.12	28.00	
DSA01-SB03-0010	08/24/16 12:57	08/26/16 08:45	08/29/16 10:23	4.93	28.00	09/13/16 13:12	15.12	28.00	
DSA01-SB04-0010	08/24/16 13:12	08/26/16 08:45	08/29/16 10:23	4.92	28.00	09/13/16 13:14	15.12	28.00	
DSA01-SB05-0010	08/24/16 13:49	08/26/16 08:45	08/29/16 10:23	4.90	28.00	09/13/16 13:15	15.12	28.00	
DSA01-SB06-0010	08/24/16 14:02	08/26/16 08:45	08/29/16 10:23	4.89	28.00	09/13/16 13:16	15.12	28.00	
DSA01-SB07-0010	08/24/16 14:20	08/26/16 08:45	08/29/16 10:23	4.88	28.00	09/13/16 13:20	15.12	28.00	
DSA01-SB08-0010	08/24/16 14:35	08/26/16 08:45	08/29/16 10:23	4.87	28.00	09/13/16 13:21	15.12	28.00	
DSA02-SB09-0010	08/25/16 09:07	08/26/16 08:45	08/29/16 10:23	4.09	28.00	09/13/16 13:22	15.12	28.00	
DSA02-SB10-0010	08/25/16 09:19	08/26/16 08:45	08/29/16 10:23	4.09	28.00	09/13/16 13:23	15.13	28.00	
DSA02-SB11-0010	08/25/16 09:55	08/26/16 08:45	08/29/16 10:23	4.06	28.00	09/13/16 13:24	15.13	28.00	
DSA02-SB12-0010	08/25/16 11:44	08/26/16 08:45	08/29/16 10:23	3.99	28.00	09/13/16 13:25	15.13	28.00	
DSA02-SB13-0010	08/25/16 12:34	08/26/16 08:45	08/29/16 10:23	3.95	28.00	09/13/16 13:27	15.13	28.00	
DSA02-SB14-0010	08/25/16 13:14	08/26/16 08:45	08/29/16 10:23	3.92	28.00	09/13/16 13:28	15.13	28.00	
DSA02-SB15-0010	08/25/16 13:28	08/26/16 08:45	08/29/16 10:23	3.91	28.00	09/13/16 13:29	15.13	28.00	
DSA02-SB16-0010	08/25/16 13:40	08/26/16 08:45	08/29/16 10:23	3.90	28.00	09/13/16 13:30	15.13	28.00	

==========

Analysis Begun

Logged In Analyst: mercury **Technique: AA FIMS-MHS**
Spectrometer Model: FIMS-100, S/N B050-9550 **Autosampler Model: S10**

Sample Information File: C:\data-AA\Sample Information\20160913s.sif
Batch ID: 20160913s
Results Data Set: 20160913s
Results Library: C:\data-AA\Results\Results.mdb

==========

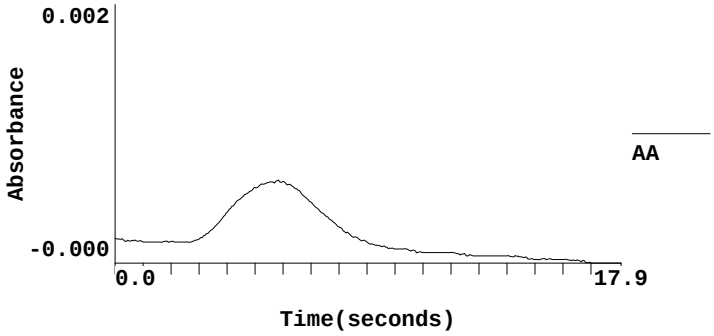
Method Loaded
Method Name: Hg CAL2 PAPERLESS S **Method Last Saved: 9/13/2016 9:21:31 AM**
Method Description: Hg CAL2

==========

Sequence No.: 1 **Autosampler Location: 1**
Sample ID: 6I25705-CAL1 **Date Collected: 9/13/2016 9:43:37 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CAL1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.00]	0.0005	0.0001	0.0005	09:44:30	Yes

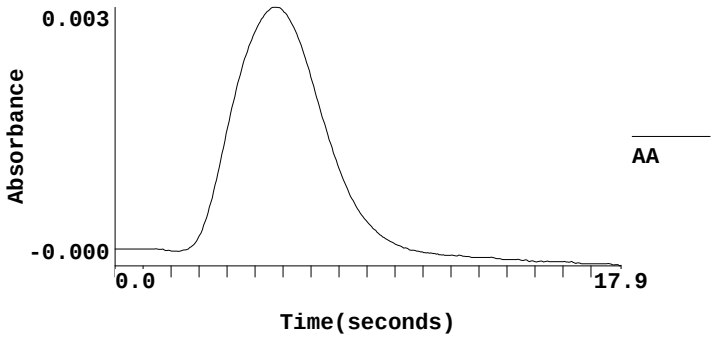


==========

Sequence No.: 2 **Autosampler Location: 2**
Sample ID: 6I25705-CAL2 **Date Collected: 9/13/2016 9:44:31 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CAL2

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.20]	0.0029	0.0106	0.0034	09:45:24	Yes



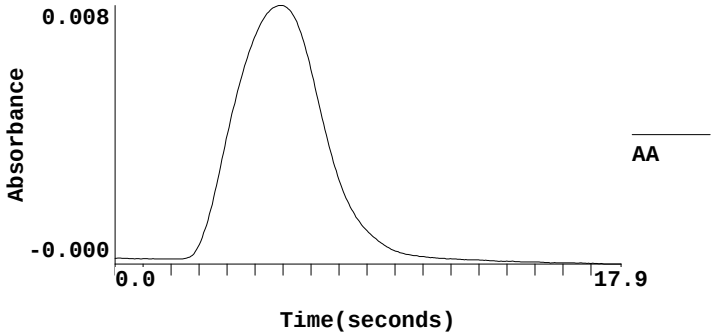
==========

Sequence No.: 3 **Autosampler Location: 3**
Sample ID: 6I25705-CAL3 **Date Collected: 9/13/2016 9:45:43 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CAL3

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored

1	[0.50]	0.0071	0.0265	0.0076	09:46:37	Yes

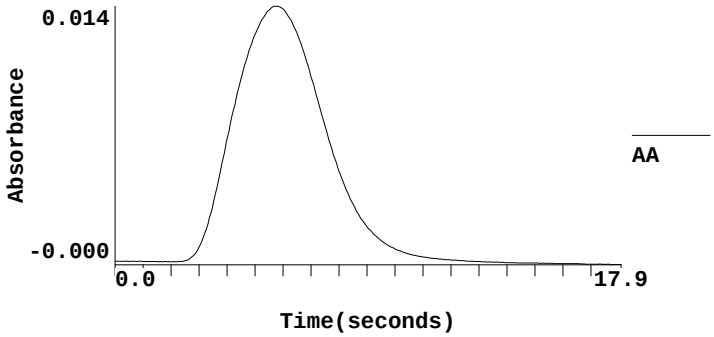


==========

Sequence No.: 4 **Autosampler Location: 4**
Sample ID: 6I25705-CAL4 **Date Collected: 9/13/2016 9:46:57 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CAL4

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[1.00]	0.0139	0.0521	0.0144	09:47:51	Yes

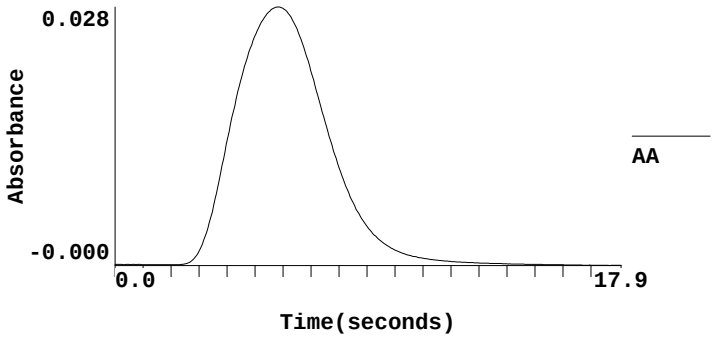


==========

Sequence No.: 5 **Autosampler Location: 5**
Sample ID: 6I25705-CAL5 **Date Collected: 9/13/2016 9:48:11 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CAL5

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[2.00]	0.0276	0.1052	0.0281	09:49:06	Yes

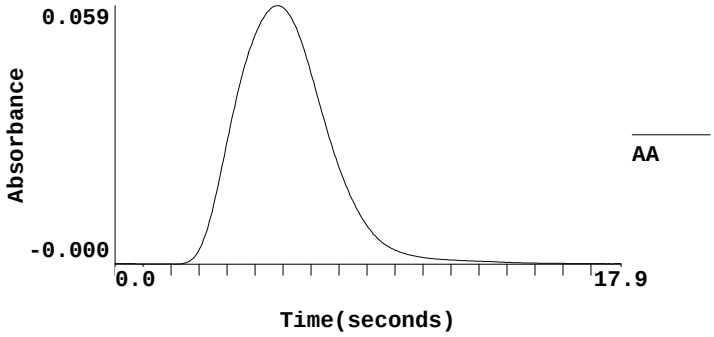


==========

Sequence No.: 6 **Autosampler Location: 6**
Sample ID: 6I25705-CAL6 **Date Collected: 9/13/2016 9:49:26 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CAL6

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[4.00]	0.0583	0.2205	0.0588	09:50:19	Yes



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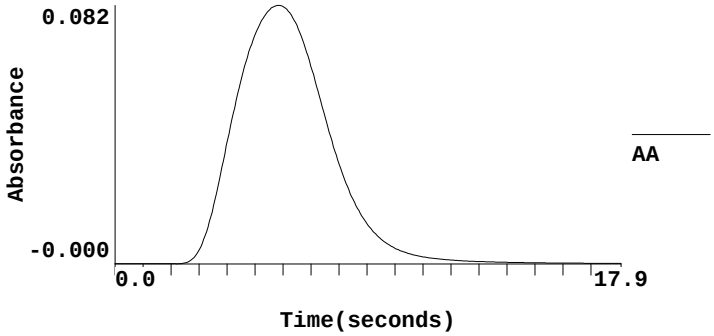
Sequence No.: 7 Autosampler Location: 7
Sample ID: 6I25705-CAL7 Date Collected: 9/13/2016 9:50:38 AM
Analyst: Data Type: Original

Replicate Data: 6I25705-CAL7

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[6.00]	0.0810	0.3099	0.0815	09:51:31	Yes

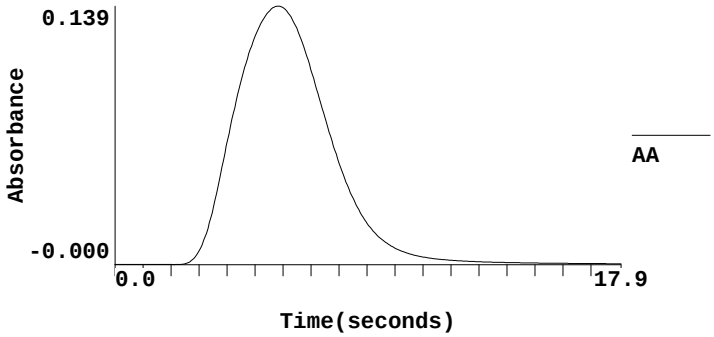


==========

Sequence No.: 8 Autosampler Location: 8
Sample ID: 6I25705-CAL8 Date Collected: 9/13/2016 9:51:51 AM
Analyst: Data Type: Original

Replicate Data: 6I25705-CAL8

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[10.00]	0.1385	0.5309	0.1390	09:52:44	Yes



Calibration data for Hg 253.7 Equation: Linear, Calculated Intercept

ID	Mean Signal (Abs)	Entered Conc. ug/L	Calculated Conc. ug/L	Standard Deviation	%RSD

6I25705-CAL1	0.0000	0	-0.021	----	----
6I25705-CAL2	0.0029	0.20	0.188	----	----
6I25705-CAL3	0.0071	0.50	0.495	----	----
6I25705-CAL4	0.0139	1.00	0.990	----	----
6I25705-CAL5	0.0276	2.00	1.980	----	----
6I25705-CAL6	0.0583	4.00	4.206	----	----
6I25705-CAL7	0.0810	6.00	5.849	----	----
6I25705-CAL8	0.1385	10.00	10.014	----	----

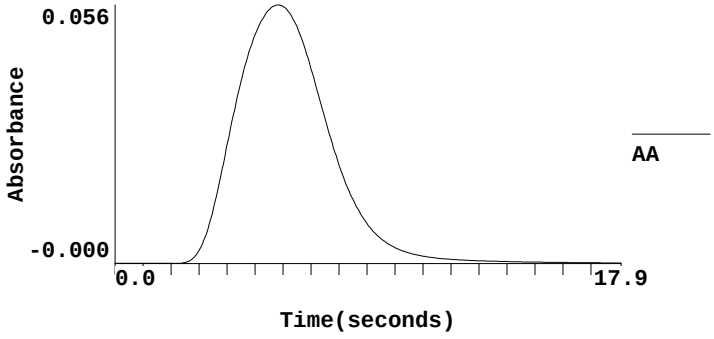
Correlation Coef.: 0.999616 Slope: 0.01380 Intercept: 0.00029

==========

Sequence No.: 9 **Autosampler Location: 9**
Sample ID: 6I25705-ICV1 **Date Collected: 9/13/2016 9:53:04 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-ICV1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	4.028	4.028	0.0559	0.2125	0.0564	09:53:57	Yes



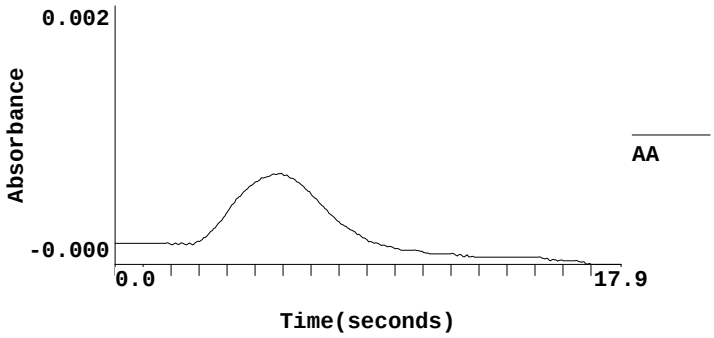
All analyte(s) passed QC.

==========

Sequence No.: 10 **Autosampler Location: 10**
Sample ID: 6I25705-ICB1 **Date Collected: 9/13/2016 9:54:17 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-ICB1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.016	-0.016	0.0001	0.0006	0.0006	09:55:11	Yes



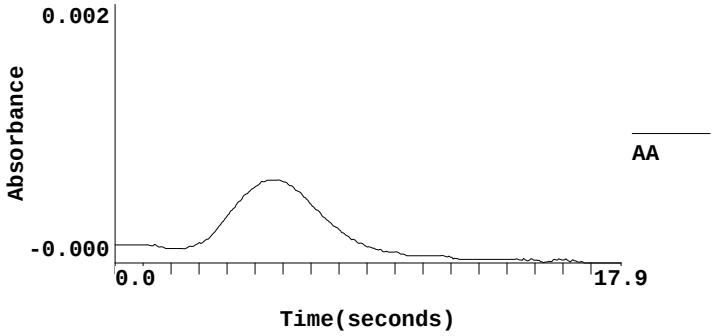
All analyte(s) passed QC.

==========

Sequence No.: 11 **Autosampler Location: 11**
Sample ID: 6I09006-BLK1 **Date Collected: 9/13/2016 9:55:12 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I09006-BLK1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.018	-0.018	0.0000	0.0006	0.0005	09:56:05	Yes

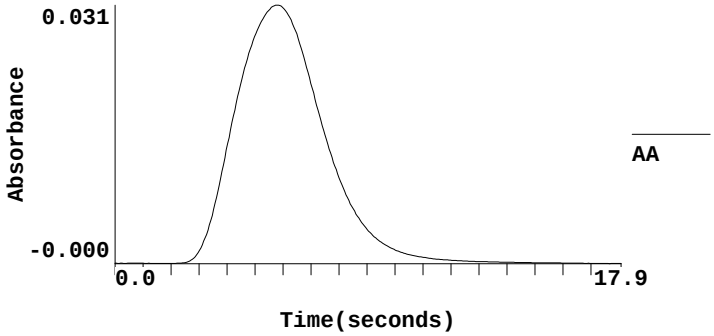


==========

Sequence No.: 12 **Autosampler Location:** 12
Sample ID: 6I09006-BS1 **Date Collected:** 9/13/2016 9:56:07 AM
Analyst: **Data Type:** Original

Replicate Data: 6I09006-BS1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	2.211	2.211	0.0308	0.1124	0.0313	09:56:59	Yes

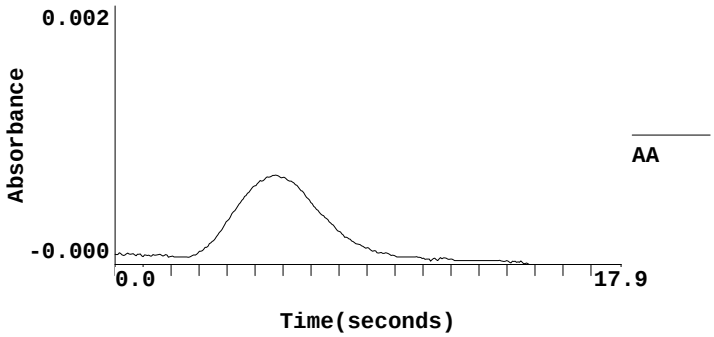


==========

Sequence No.: 13 **Autosampler Location:** 13
Sample ID: 1609019-02 **Date Collected:** 9/13/2016 9:57:19 AM
Analyst: **Data Type:** Original

Replicate Data: 1609019-02

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.011	-0.011	0.0001	0.0016	0.0006	09:58:14	Yes



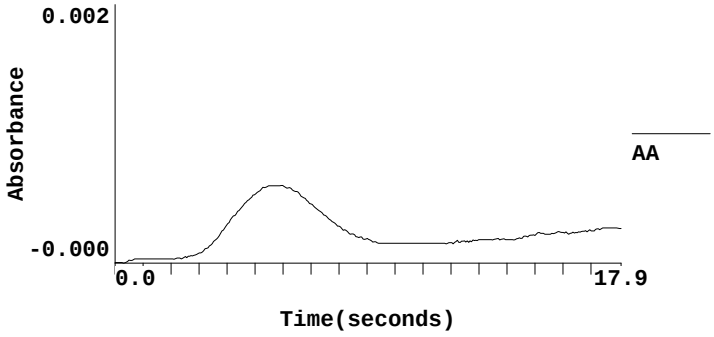
==========

Sequence No.: 14 **Autosampler Location:** 14
Sample ID: 1609020-02 **Date Collected:** 9/13/2016 9:58:15 AM
Analyst: **Data Type:** Original

Replicate Data: 1609020-02

Repl #	SampleConc	StndConc	BlnkCorr	Peak	Peak	Time	Peak

#	ug/L	ug/L	Signal	Area	Height		Stored
1	-0.014	-0.014	0.0001	0.0041	0.0006	09:59:10	Yes

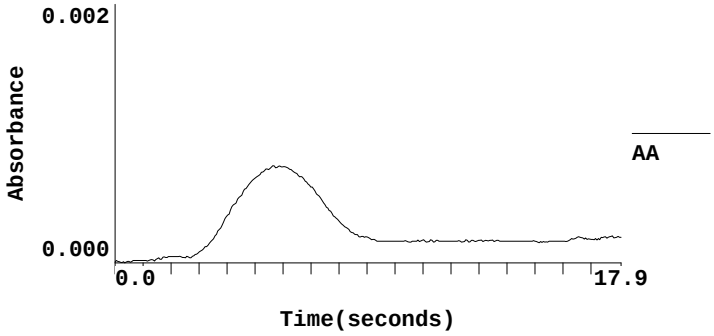


==========

Sequence No.: 15 **Autosampler Location: 15**
Sample ID: 1609021-02 **Date Collected: 9/13/2016 9:59:11 AM**
Analyst: **Data Type: Original**

Replicate Data: 1609021-02

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.002	-0.002	0.0003	0.0048	0.0008	10:00:04	Yes



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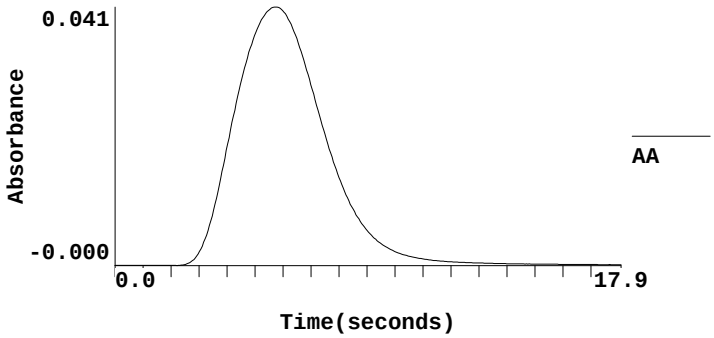
Sequence No.: 16 **Autosampler Location: 16**
Sample ID: 1609041-01 **Date Collected: 9/13/2016 10:00:05 AM**
Analyst: **Data Type: Original**

Replicate Data: 1609041-01

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	2.938	2.938	0.0408	0.1510	0.0413	10:00:58	Yes

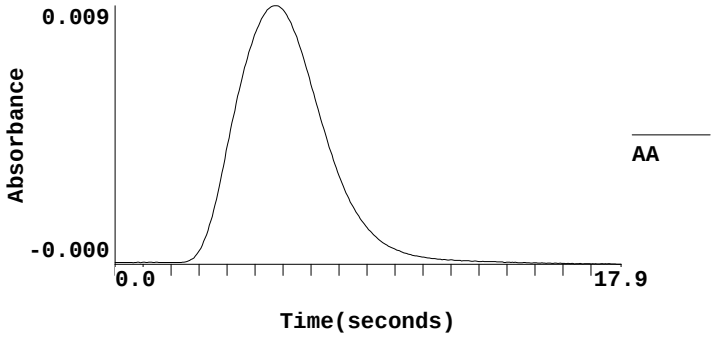


==========

Sequence No.: 17 **Autosampler Location: 17**
Sample ID: 1609041-02 **Date Collected: 9/13/2016 10:01:17 AM**
Analyst: **Data Type: Original**

Replicate Data: 1609041-02

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.603	0.603	0.0086	0.0323	0.0091	10:02:09	Yes



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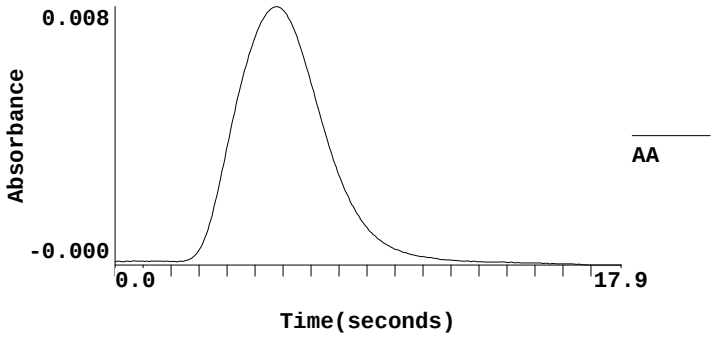
Sequence No.: 18 Autosampler Location: 18
Sample ID: 1609041-04 Date Collected: 9/13/2016 10:02:29 AM
Analyst: Data Type: Original

Replicate Data: 1609041-04

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.503	0.503	0.0072	0.0272	0.0077	10:03:22	Yes



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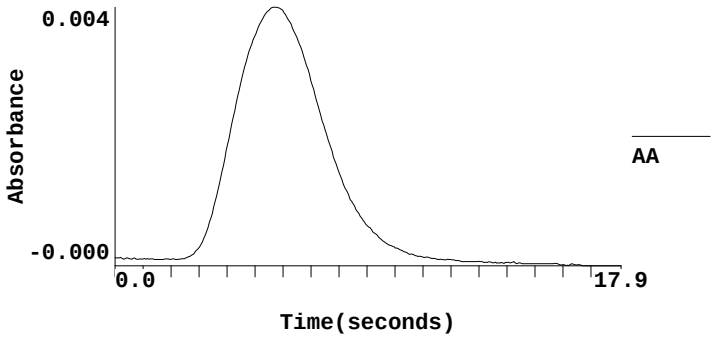
Sequence No.: 19 Autosampler Location: 19
Sample ID: 1609041-05 Date Collected: 9/13/2016 10:03:42 AM
Analyst: Data Type: Original

Replicate Data: 1609041-05

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.200	0.200	0.0031	0.0120	0.0036	10:04:35	Yes



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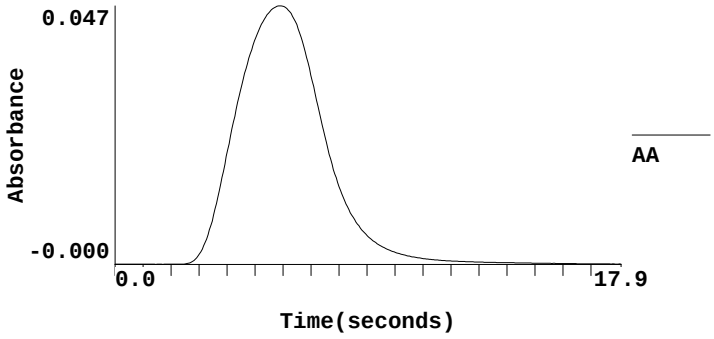
Sequence No.: 20 Autosampler Location: 20
Sample ID: 1609041-06 Date Collected: 9/13/2016 10:04:54 AM
Analyst: Data Type: Original

Replicate Data: 1609041-06

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	3.349	3.349	0.0465	0.1671	0.0470	10:05:47	Yes

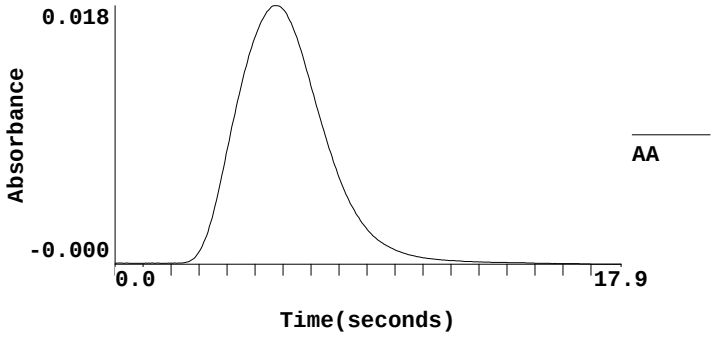


==========

Sequence No.: 21 **Autosampler Location: 21**
Sample ID: 1609041-07 **Date Collected: 9/13/2016 10:06:07 AM**
Analyst: **Data Type: Original**

Replicate Data: 1609041-07

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	1.278	1.278	0.0179	0.0652	0.0184	10:07:01	Yes



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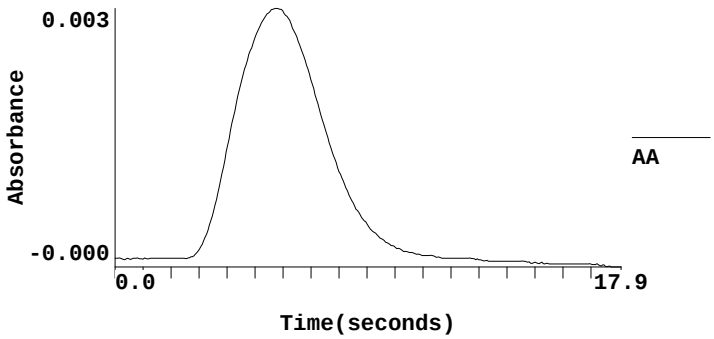
Sequence No.: 22 **Autosampler Location: 22**
Sample ID: 1609041-08 **Date Collected: 9/13/2016 10:07:21 AM**
Analyst: **Data Type: Original**

Replicate Data: 1609041-08

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.133	0.133	0.0021	0.0091	0.0026	10:08:14	Yes



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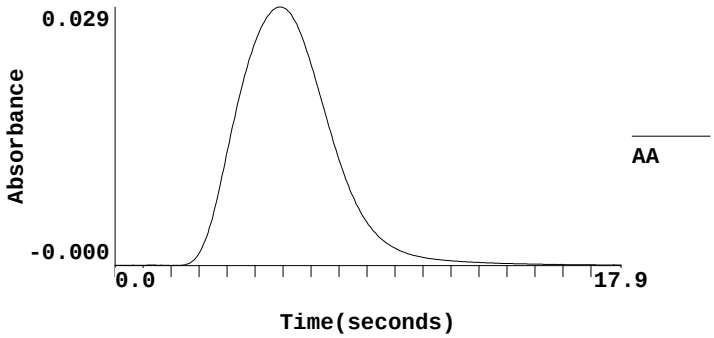
Sequence No.: 23 **Autosampler Location: 23**

Sample ID: 6I25705-CCV1 **Date Collected: 9/13/2016 10:08:34 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CCV1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	2.021	2.021	0.0282	0.1091	0.0287	10:09:28	Yes

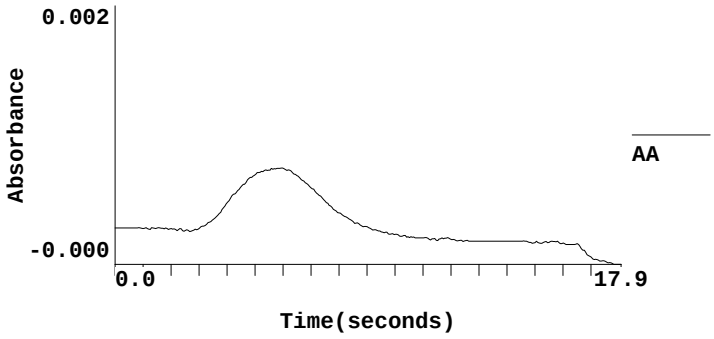


==========

Sequence No.: 24 **Autosampler Location: 24**
Sample ID: 6I25705-CCB1 **Date Collected: 9/13/2016 10:09:49 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CCB1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.018	-0.018	0.0000	0.0005	0.0005	10:10:43	Yes

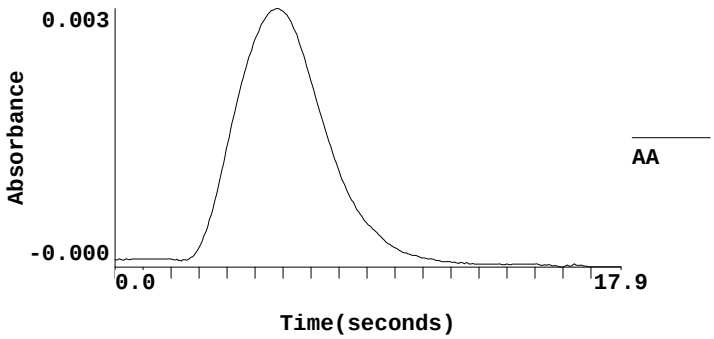


==========

Sequence No.: 25 **Autosampler Location: 25**
Sample ID: 1609041-09 **Date Collected: 9/13/2016 10:10:44 AM**
Analyst: **Data Type: Original**

Replicate Data: 1609041-09

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.153	0.153	0.0024	0.0100	0.0029	10:11:36	Yes



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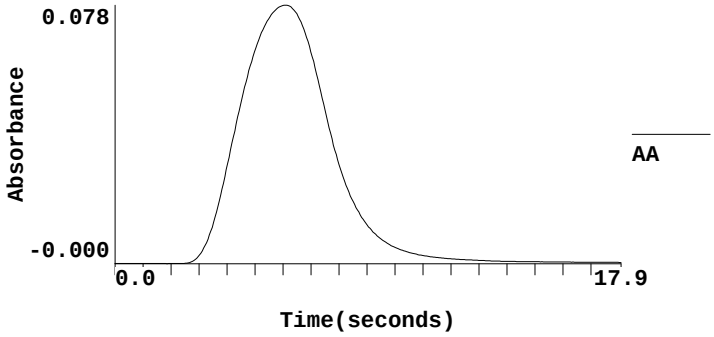
Sequence No.: 137 **Autosampler Location: 137**
Sample ID: 1609051-59RE1@5X **Date Collected: 9/13/2016 12:26:32 PM**
Analyst: **Data Type: Original**

Replicate Data: 1609051-59RE1@5X

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	5.625	5.625	0.0779	0.2908	0.0784	12:27:27	Yes



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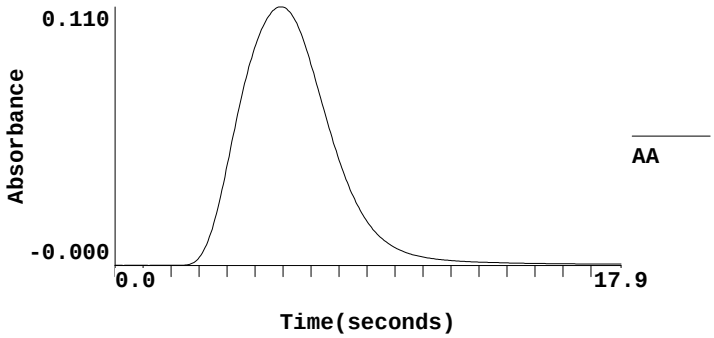
Sequence No.: 138 **Autosampler Location: 138**
Sample ID: 1609051-62RE1@2X **Date Collected: 9/13/2016 12:27:49 PM**
Analyst: **Data Type: Original**

Replicate Data: 1609051-62RE1@2X

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	7.894	7.894	0.1092	0.4120	0.1097	12:28:44	Yes



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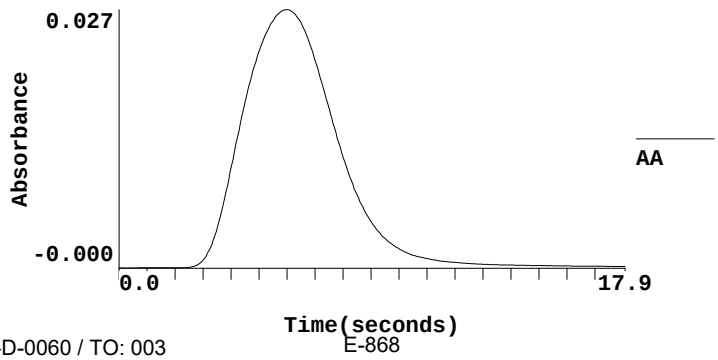
Sequence No.: 139 **Autosampler Location: 139**
Sample ID: 6I25705-CCV9 **Date Collected: 9/13/2016 12:29:05 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CCV9

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	1.911	1.911	0.0267	0.1042	0.0272	12:30:00	Yes



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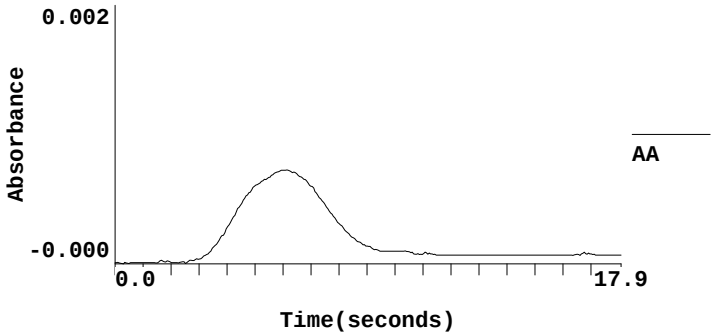
Sequence No.: 140 **Autosampler Location: 140**
Sample ID: 6I25705-CCB9 **Date Collected: 9/13/2016 12:30:22 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CCB9

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.005	-0.005	0.0002	0.0031	0.0007	12:31:16	Yes



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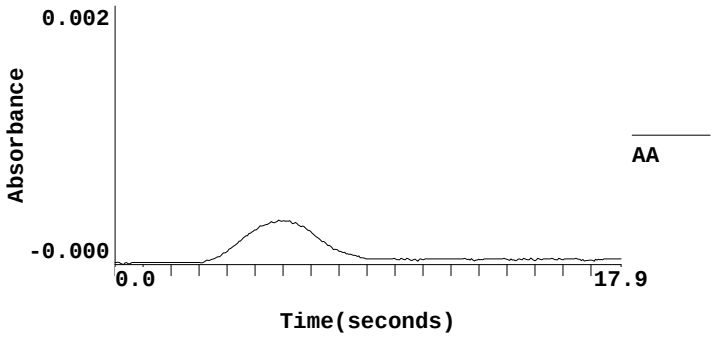
Sequence No.: 141 **Autosampler Location: 142**
Sample ID: 6H29018-BLK1 **Date Collected: 9/13/2016 12:31:18 PM**
Analyst: **Data Type: Original**

Replicate Data: 6H29018-BLK1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.033	-0.033	-0.0002	0.0013	0.0003	12:32:11	Yes



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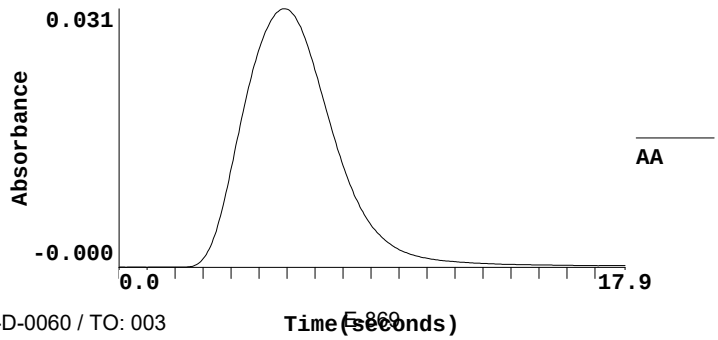
Sequence No.: 142 **Autosampler Location: 143**
Sample ID: 6H29018-BS1 **Date Collected: 9/13/2016 12:32:12 PM**
Analyst: **Data Type: Original**

Replicate Data: 6H29018-BS1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	2.161	2.161	0.0301	0.1139	0.0306	12:33:05	Yes



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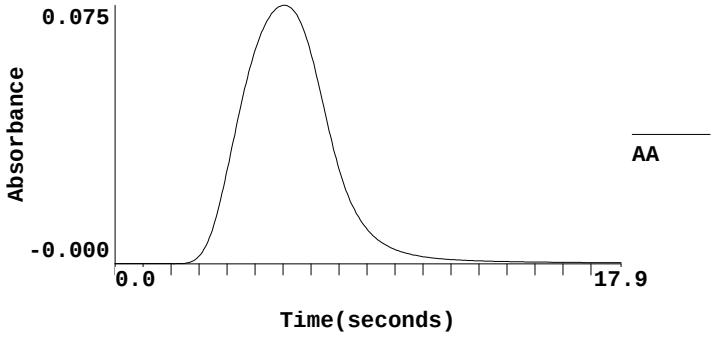
Sequence No.: 143 **Autosampler Location: 141**
Sample ID: 1609051-69RE1@10X **Date Collected: 9/13/2016 12:33:26 PM**
Analyst: **Data Type: Original**

Replicate Data: 1609051-69RE1@10X

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	5.400	5.400	0.0748	0.2738	0.0753	12:34:21	Yes



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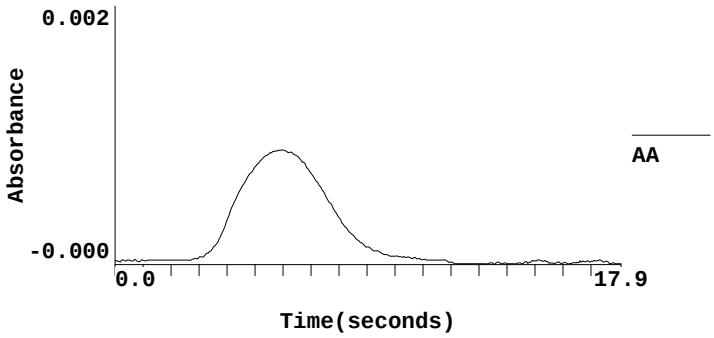
Sequence No.: 144 **Autosampler Location: 144**
Sample ID: 1608229-01 **Date Collected: 9/13/2016 12:34:43 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-01

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.005	0.005	0.0004	0.0029	0.0009	12:35:37	Yes



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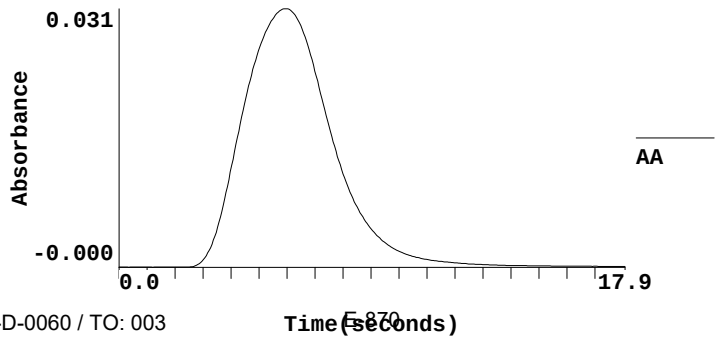
Sequence No.: 145 **Autosampler Location: 145**
Sample ID: 6H29018-MS1 **Date Collected: 9/13/2016 12:35:58 PM**
Analyst: **Data Type: Original**

Replicate Data: 6H29018-MS1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	2.194	2.194	0.0306	0.1128	0.0311	12:36:53	Yes



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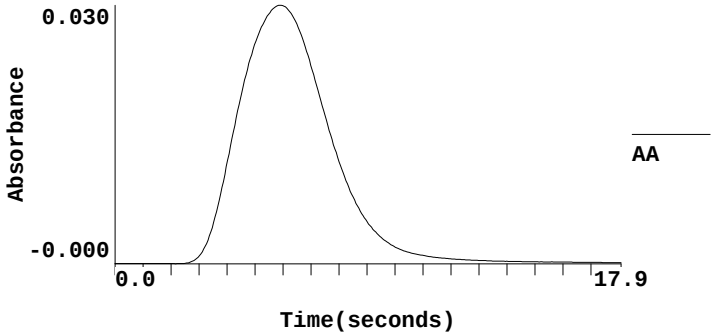
Sequence No.: 146 **Autosampler Location: 146**
Sample ID: 6H29018-MSD1 **Date Collected: 9/13/2016 12:37:14 PM**
Analyst: **Data Type: Original**

Replicate Data: 6H29018-MSD1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	2.141	2.141	0.0298	0.1126	0.0303	12:38:09	Yes



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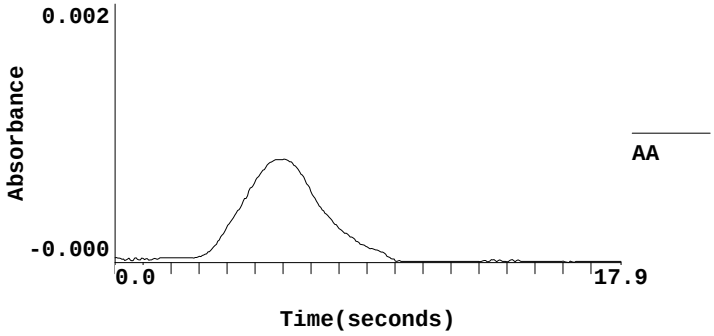
Sequence No.: 147 **Autosampler Location: 147**
Sample ID: 1608229-02 **Date Collected: 9/13/2016 12:38:31 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-02

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.001	-0.001	0.0003	0.0022	0.0008	12:39:25	Yes



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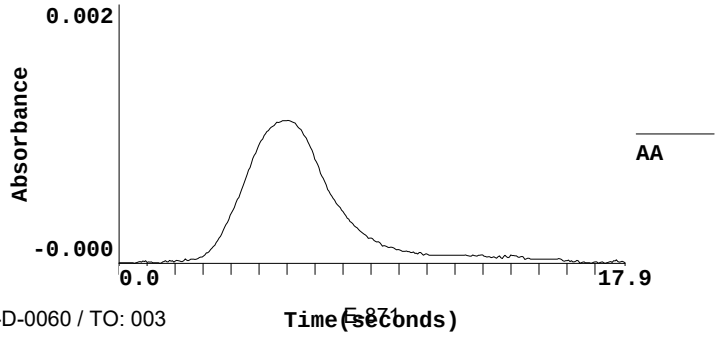
Sequence No.: 148 **Autosampler Location: 148**
Sample ID: 1608229-03 **Date Collected: 9/13/2016 12:39:27 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-03

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.023	0.023	0.0006	0.0042	0.0011	12:40:18	Yes



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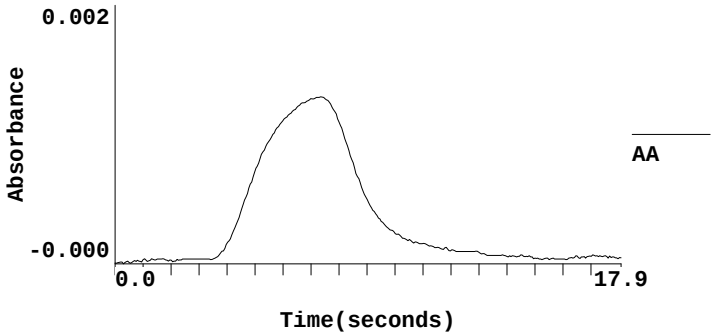
Sequence No.: 149 **Autosampler Location: 149**
Sample ID: 1608229-04 **Date Collected: 9/13/2016 12:40:40 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-04

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.036	0.036	0.0008	0.0056	0.0013	12:41:35	Yes



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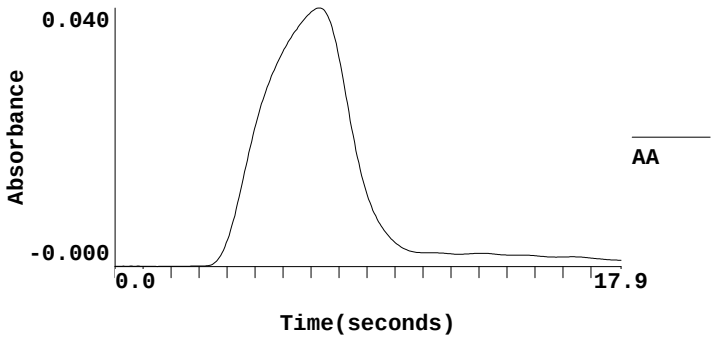
Sequence No.: 150 **Autosampler Location: 150**
Sample ID: 1608229-05 **Date Collected: 9/13/2016 12:41:56 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-05

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	2.877	2.877	0.0400	0.1587	0.0405	12:42:51	Yes



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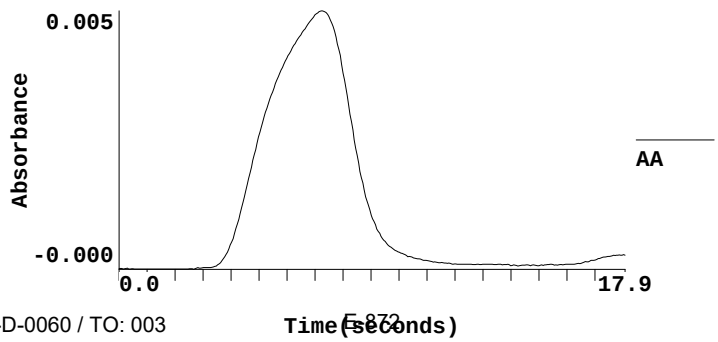
Sequence No.: 151 **Autosampler Location: 151**
Sample ID: 1608229-06 **Date Collected: 9/13/2016 12:43:12 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-06

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.295	0.295	0.0044	0.0175	0.0049	12:44:07	Yes



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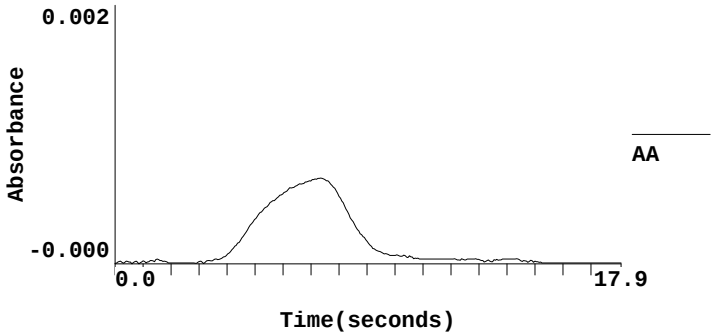
Sequence No.: 152 **Autosampler Location: 152**
Sample ID: 1608229-07 **Date Collected: 9/13/2016 12:44:29 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-07

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.010	-0.010	0.0002	0.0023	0.0007	12:45:23	Yes



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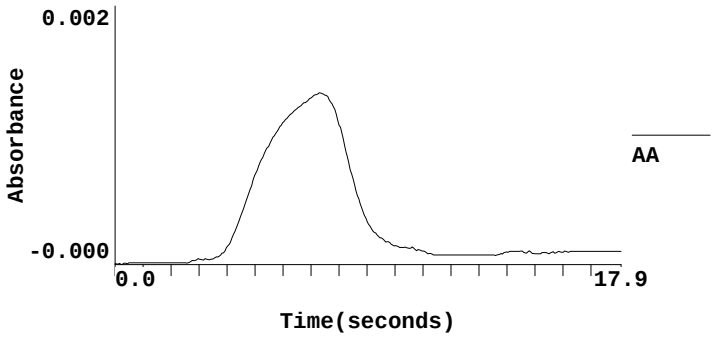
Sequence No.: 153 **Autosampler Location: 153**
Sample ID: 1608229-08 **Date Collected: 9/13/2016 12:45:25 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-08

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.039	0.039	0.0008	0.0054	0.0013	12:46:17	Yes



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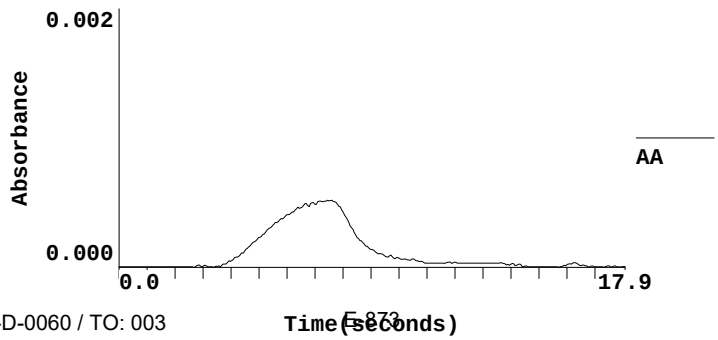
Sequence No.: 154 **Autosampler Location: 154**
Sample ID: 1608229-09 **Date Collected: 9/13/2016 12:46:39 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-09

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.020	-0.020	0.0000	0.0020	0.0005	12:47:33	Yes



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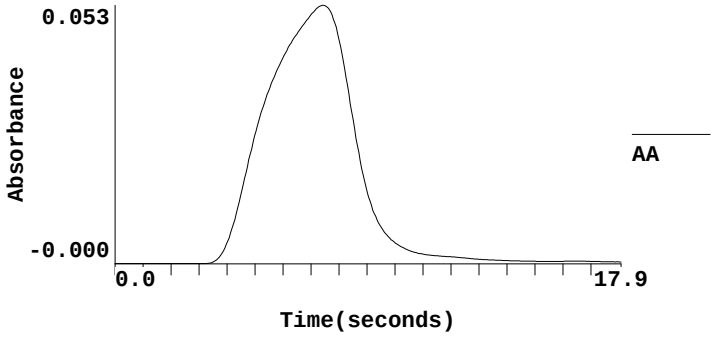
Sequence No.: 155 **Autosampler Location: 155**
Sample ID: 6I25705-CCVA **Date Collected: 9/13/2016 12:47:35 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CCVA

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	3.790	3.790	0.0526	0.1944	0.0531	12:48:28	Yes



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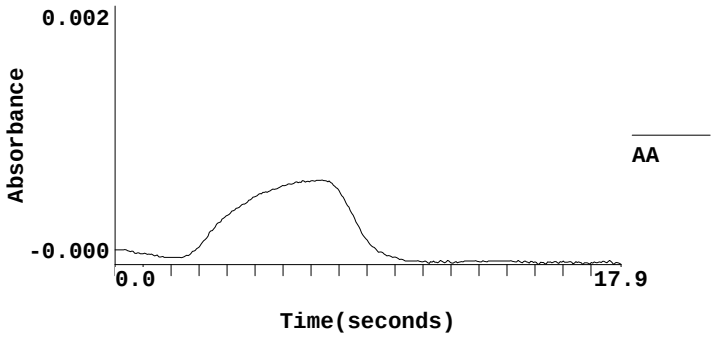
Sequence No.: 156 **Autosampler Location: 156**
Sample ID: 6I25705-CCBA **Date Collected: 9/13/2016 12:48:49 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CCBA

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.015	-0.015	0.0001	0.0018	0.0006	12:49:44	Yes



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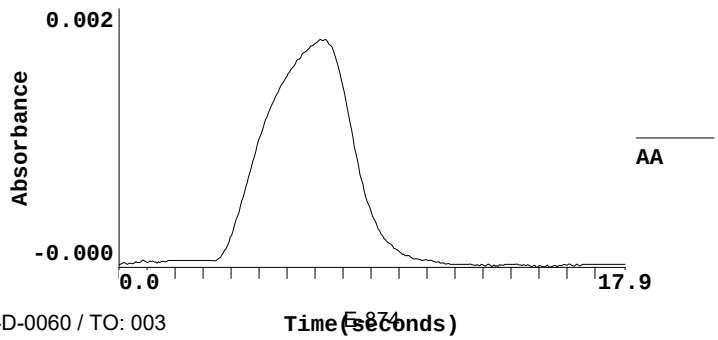
Sequence No.: 157 **Autosampler Location: 9**
Sample ID: 1608229-10 **Date Collected: 9/13/2016 12:49:45 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-10

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.070	0.070	0.0013	0.0061	0.0018	12:50:40	Yes



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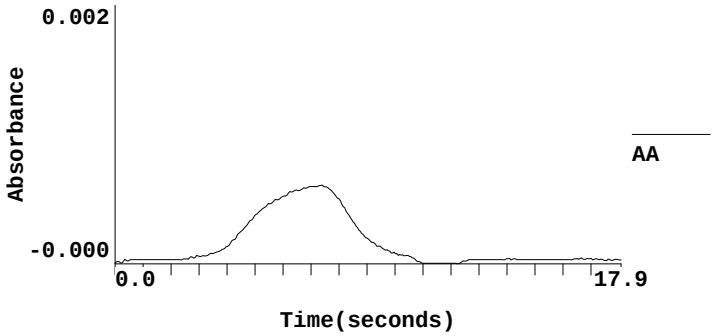
Sequence No.: 158 **Autosampler Location: 10**
Sample ID: 1608229-11 **Date Collected: 9/13/2016 12:51:00 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-11

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.013	-0.013	0.0001	0.0027	0.0006	12:51:53	Yes



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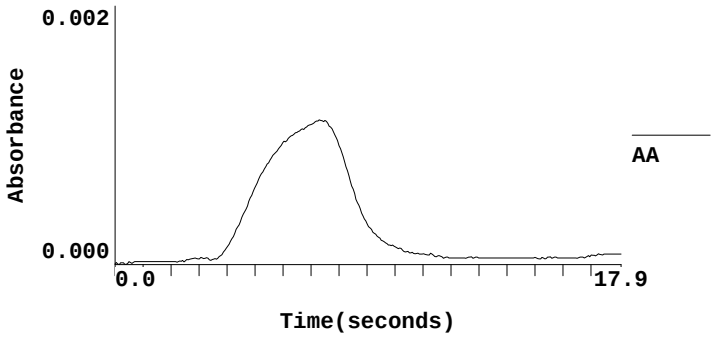
Sequence No.: 159 **Autosampler Location: 11**
Sample ID: 1608229-12 **Date Collected: 9/13/2016 12:51:55 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-12

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.024	0.024	0.0006	0.0047	0.0011	12:52:47	Yes



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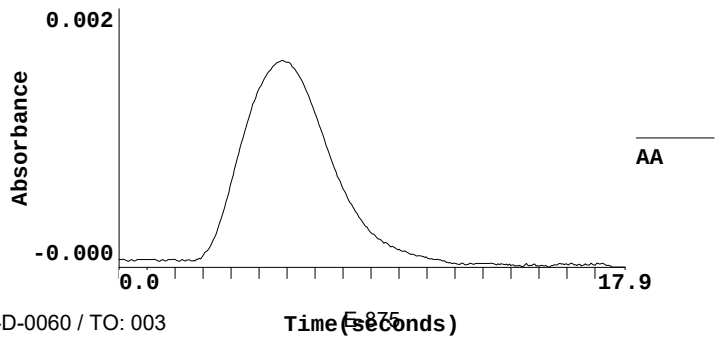
Sequence No.: 160 **Autosampler Location: 12**
Sample ID: 1608244-06 **Date Collected: 9/13/2016 12:53:08 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608244-06

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.058	0.058	0.0011	0.0054	0.0016	12:54:01	Yes



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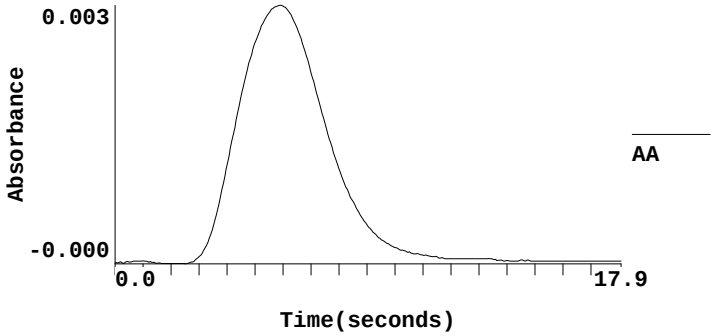
Sequence No.: 161 **Autosampler Location: 13**
Sample ID: 1608244-07 **Date Collected: 9/13/2016 12:54:22 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608244-07

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.172	0.172	0.0027	0.0116	0.0032	12:55:16	Yes



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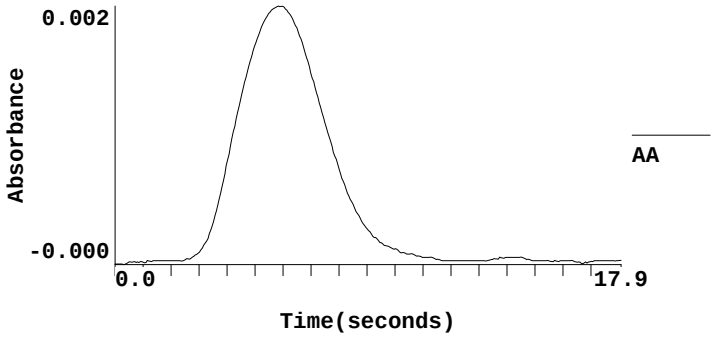
Sequence No.: 162 **Autosampler Location: 14**
Sample ID: 1608244-08 **Date Collected: 9/13/2016 12:55:37 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608244-08

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.108	0.108	0.0018	0.0084	0.0023	12:56:30	Yes



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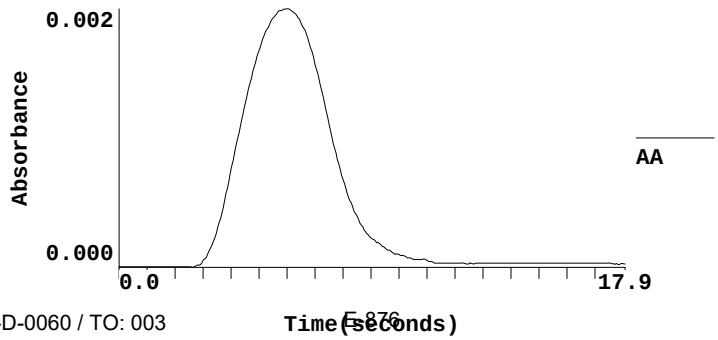
Sequence No.: 163 **Autosampler Location: 15**
Sample ID: 1608244-09 **Date Collected: 9/13/2016 12:56:49 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608244-09

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.093	0.093	0.0016	0.0077	0.0021	12:57:42	Yes



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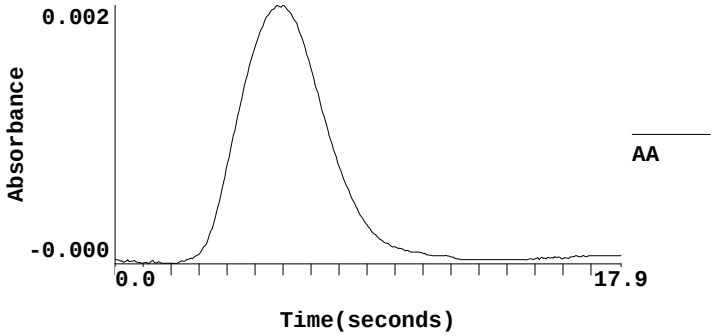
Sequence No.: 164 **Autosampler Location: 16**
Sample ID: 1608244-10 **Date Collected: 9/13/2016 12:58:01 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608244-10

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.092	0.092	0.0016	0.0074	0.0021	12:58:54	Yes



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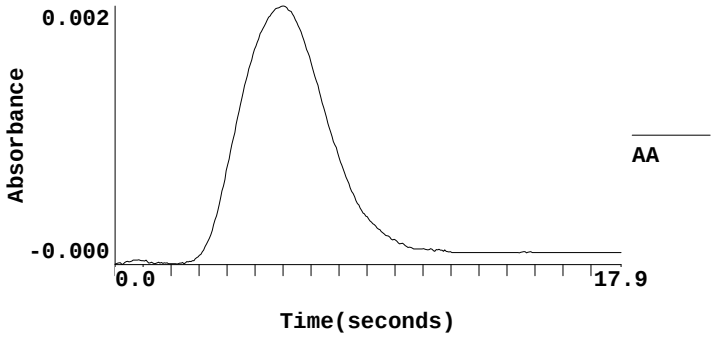
Sequence No.: 165 **Autosampler Location: 17**
Sample ID: 1608244-11 **Date Collected: 9/13/2016 12:59:13 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608244-11

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.092	0.092	0.0016	0.0083	0.0021	13:00:06	Yes



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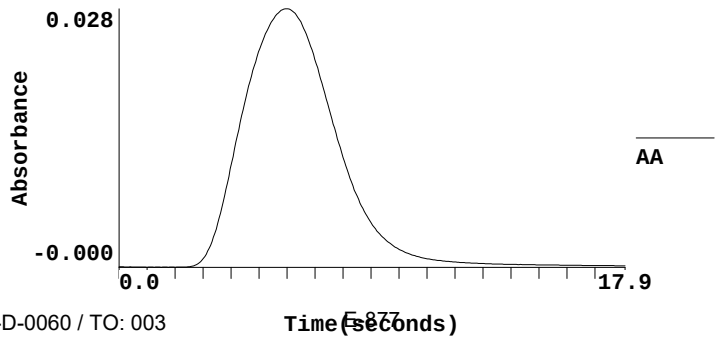
Sequence No.: 166 **Autosampler Location: 18**
Sample ID: 6I25705-CCVB **Date Collected: 9/13/2016 1:00:25 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CCVB

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	1.957	1.957	0.0273	0.1055	0.0278	13:01:18	Yes



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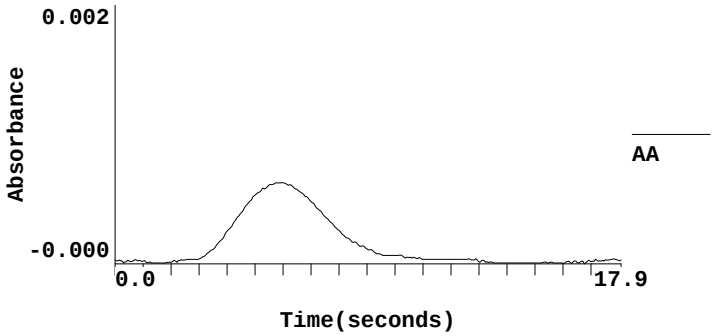
Sequence No.: 167 **Autosampler Location: 19**
Sample ID: 6I25705-CCBB **Date Collected: 9/13/2016 1:01:37 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CCBB

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.013	-0.013	0.0001	0.0022	0.0006	13:02:30	Yes

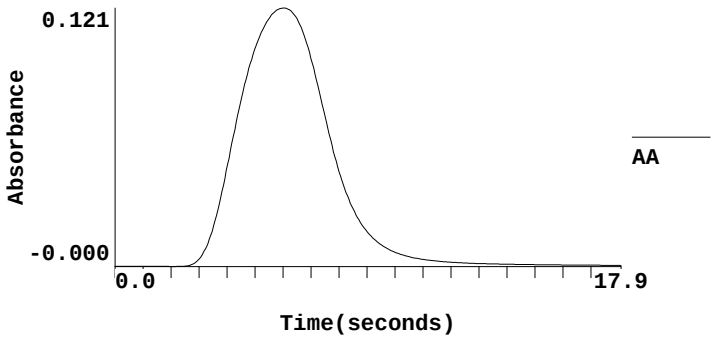


==========

Sequence No.: 168 **Autosampler Location: 20**
Sample ID: 1608251-01 **Date Collected: 9/13/2016 1:02:32 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-01

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	8.740	8.740	0.1209	0.4459	0.1214	13:03:24	Yes



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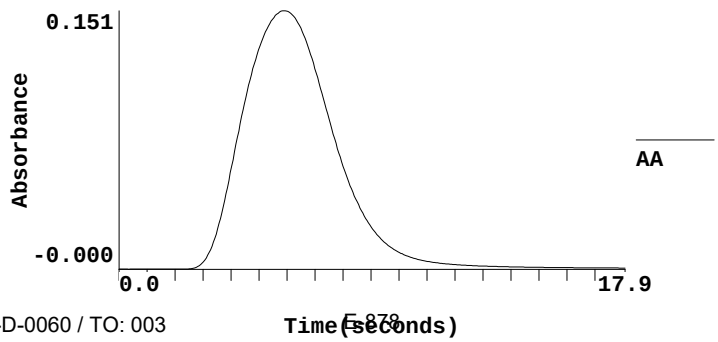
Sequence No.: 169 **Autosampler Location: 21**
Sample ID: 1608251-02 **Date Collected: 9/13/2016 1:03:44 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-02

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	10.90	10.90	0.1507	0.5646	0.1512	13:04:38	Yes



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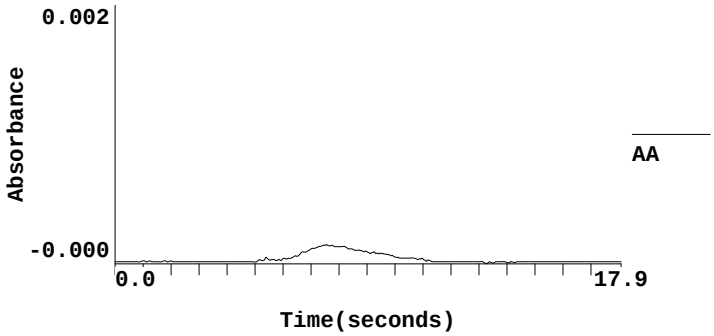
Sequence No.: 170 **Autosampler Location: 0**
Sample ID: RINSE **Date Collected: 9/13/2016 1:04:58 PM**
Analyst: **Data Type: Original**

Replicate Data: RINSE

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.049	-0.049	-0.0004	0.0001	0.0001	13:05:46	Yes



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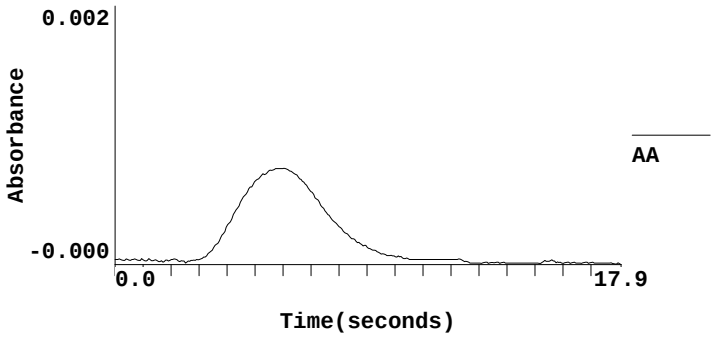
Sequence No.: 171 **Autosampler Location: 22**
Sample ID: 6H29019-BLK1 **Date Collected: 9/13/2016 1:05:47 PM**
Analyst: **Data Type: Original**

Replicate Data: 6H29019-BLK1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.005	-0.005	0.0002	0.0023	0.0007	13:06:41	Yes



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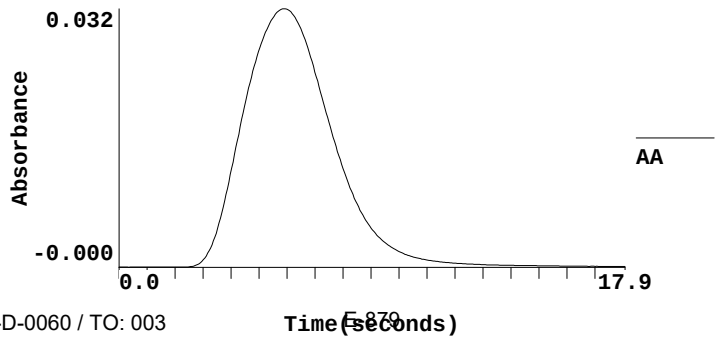
Sequence No.: 172 **Autosampler Location: 23**
Sample ID: 6H29019-BS1 **Date Collected: 9/13/2016 1:06:42 PM**
Analyst: **Data Type: Original**

Replicate Data: 6H29019-BS1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	2.289	2.289	0.0319	0.1176	0.0324	13:07:35	Yes



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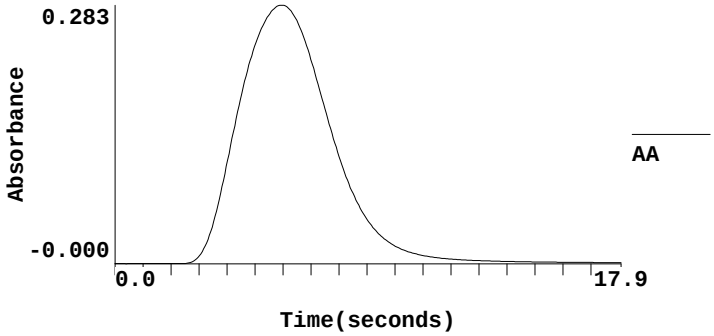
Sequence No.: 173 **Autosampler Location: 24**
Sample ID: 1608251-03 **Date Collected: 9/13/2016 1:07:55 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-03

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	20.43	20.43	0.2822	1.0656	0.2827	13:08:49	Yes



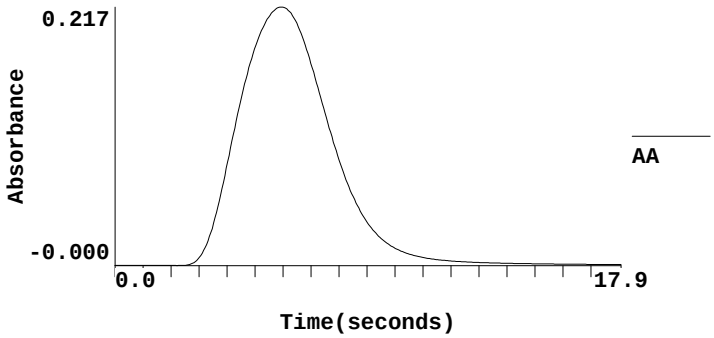
Sample concentration is greater than that of the highest standard.

==========

Sequence No.: 174 **Autosampler Location: 25**
Sample ID: 1608251-04 **Date Collected: 9/13/2016 1:09:10 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-04

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	15.69	15.69	0.2167	0.8145	0.2172	13:10:04	Yes



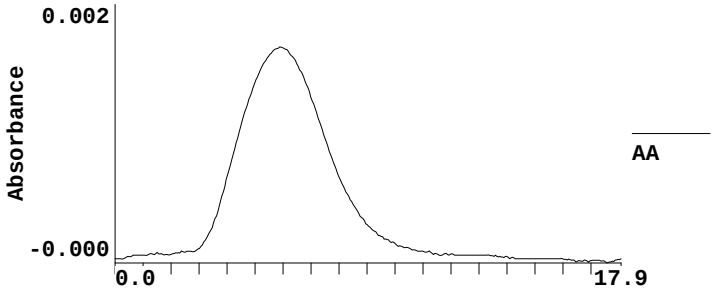
Sample concentration is greater than that of the highest standard.

==========

Sequence No.: 175 **Autosampler Location: 26**
Sample ID: 1608251-05 **Date Collected: 9/13/2016 1:10:25 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-05

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.063	0.063	0.0012	0.0055	0.0017	13:11:17	Yes



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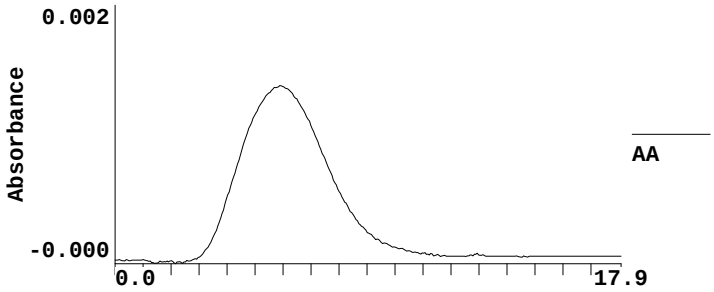
Sequence No.: 176 **Autosampler Location:** 27
Sample ID: 1608251-06 **Date Collected:** 9/13/2016 1:11:36 PM
Analyst: **Data Type:** Original

Replicate Data: 1608251-06

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.042	0.042	0.0009	0.0050	0.0014	13:12:30	Yes



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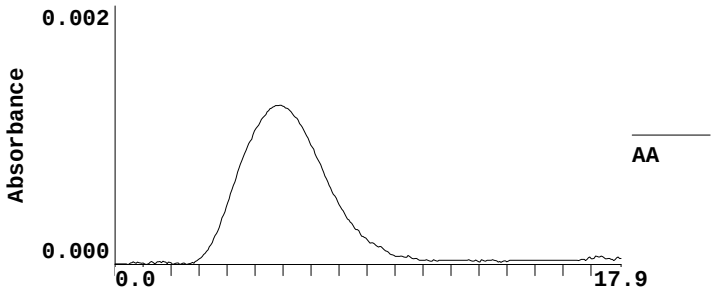
Sequence No.: 177 **Autosampler Location:** 28
Sample ID: 1608251-07 **Date Collected:** 9/13/2016 1:12:49 PM
Analyst: **Data Type:** Original

Replicate Data: 1608251-07

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.032	0.032	0.0007	0.0048	0.0012	13:13:42	Yes



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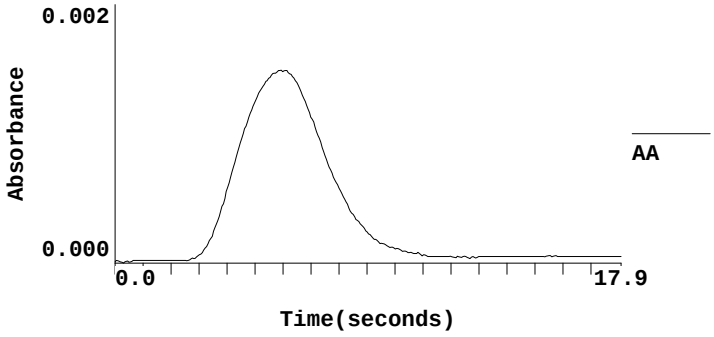
Sequence No.: 178 **Autosampler Location:** 29
Sample ID: 1608251-08 **Date Collected:** 9/13/2016 1:14:01 PM
Analyst: **Data Type:** Original

Replicate Data: 1608251-08

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored

#	ug/L	ug/L	Signal	Area	Height		Stored
1	0.051	0.051	0.0010	0.0058	0.0015	13:14:54	Yes



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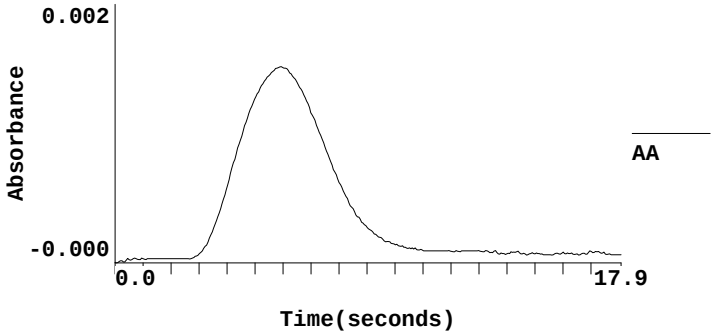
Sequence No.: 179 **Autosampler Location:** 30
Sample ID: 1608251-09 **Date Collected:** 9/13/2016 1:15:13 PM
Analyst: **Data Type:** Original

Replicate Data: 1608251-09

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.052	0.052	0.0010	0.0062	0.0015	13:16:06	Yes



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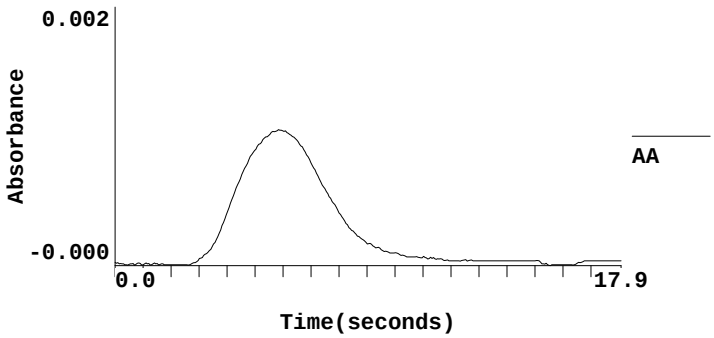
Sequence No.: 180 **Autosampler Location:** 31
Sample ID: 1608251-10 **Date Collected:** 9/13/2016 1:16:26 PM
Analyst: **Data Type:** Original

Replicate Data: 1608251-10

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.019	0.019	0.0005	0.0040	0.0010	13:17:19	Yes



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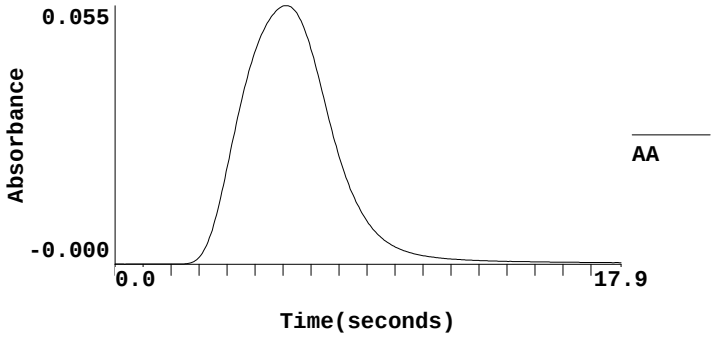
Sequence No.: 181 **Autosampler Location:** 32
Sample ID: 6I25705-CCVC **Date Collected:** 9/13/2016 1:17:38 PM
Analyst: **Data Type:** Original

Replicate Data: 6I25705-CCVC

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	3.956	3.956	0.0549	0.2094	0.0554	13:18:31	Yes



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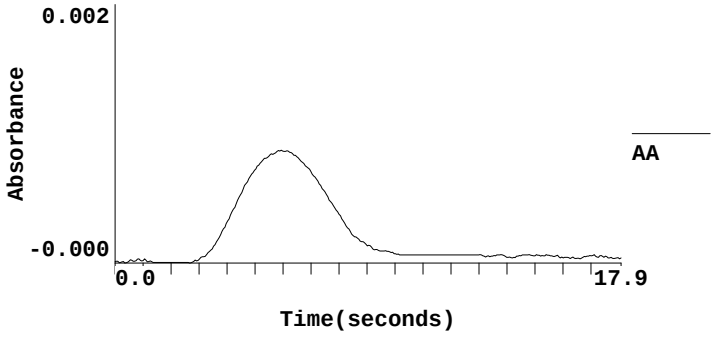
Sequence No.: 182 **Autosampler Location: 33**
Sample ID: 6I25705-CCBC **Date Collected: 9/13/2016 1:18:51 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CCBC

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.005	0.005	0.0004	0.0031	0.0009	13:19:44	Yes



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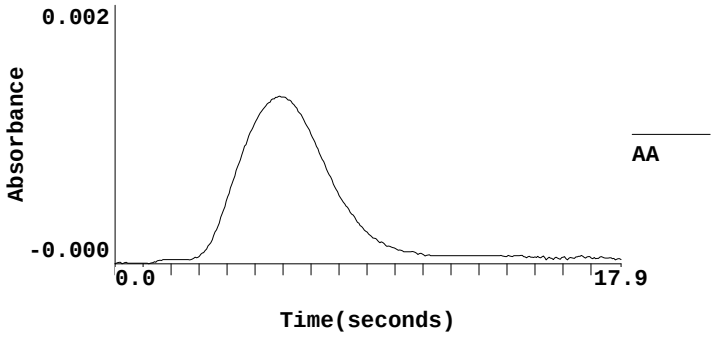
Sequence No.: 183 **Autosampler Location: 34**
Sample ID: 1608251-11 **Date Collected: 9/13/2016 1:20:04 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-11

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.036	0.036	0.0008	0.0052	0.0013	13:20:57	Yes



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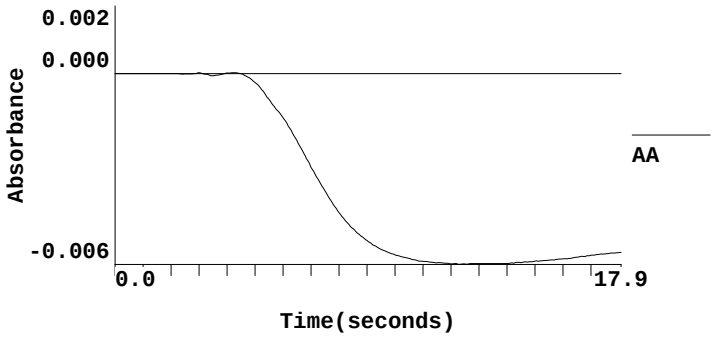
Sequence No.: 184 **Autosampler Location: 35**
Sample ID: 1608251-12 **Date Collected: 9/13/2016 1:21:17 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-12

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.055	-0.055	-0.0005	-0.0604	0.0000	13:22:11	Yes



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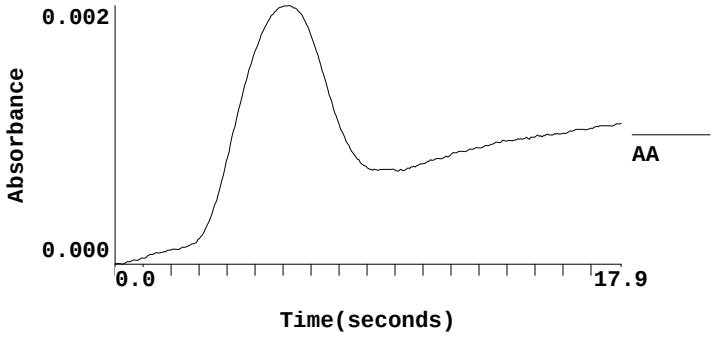
Sequence No.: 185 **Autosampler Location: 36**
Sample ID: 1608251-13 **Date Collected: 9/13/2016 1:22:12 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-13

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.104	0.104	0.0017	0.0190	0.0022	13:23:05	Yes



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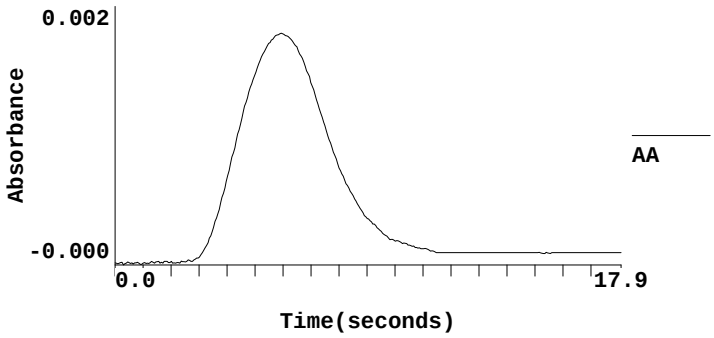
Sequence No.: 186 **Autosampler Location: 37**
Sample ID: 1608251-14 **Date Collected: 9/13/2016 1:23:26 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-14

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.072	0.072	0.0013	0.0074	0.0018	13:24:20	Yes



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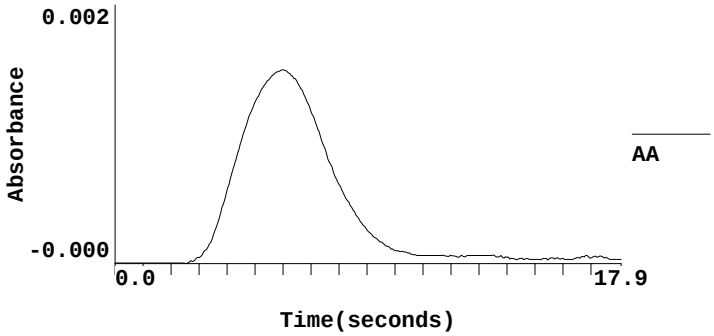
Sequence No.: 187 **Autosampler Location: 38**

Sample ID: 1608251-15 **Date Collected: 9/13/2016 1:24:41 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-15

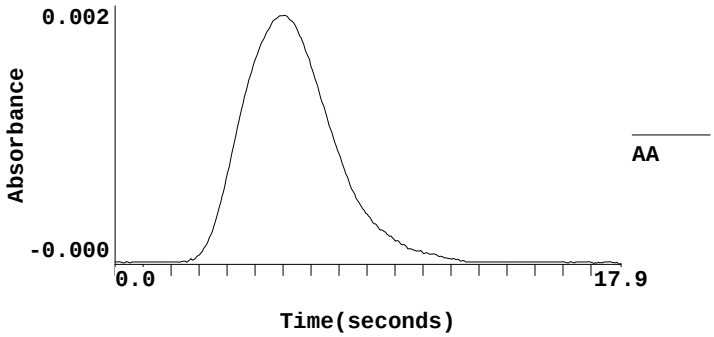
Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.051	0.051	0.0010	0.0058	0.0015	13:25:34	Yes



Sequence No.: 188 **Autosampler Location: 39**
Sample ID: 1608251-16 **Date Collected: 9/13/2016 1:25:54 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-16

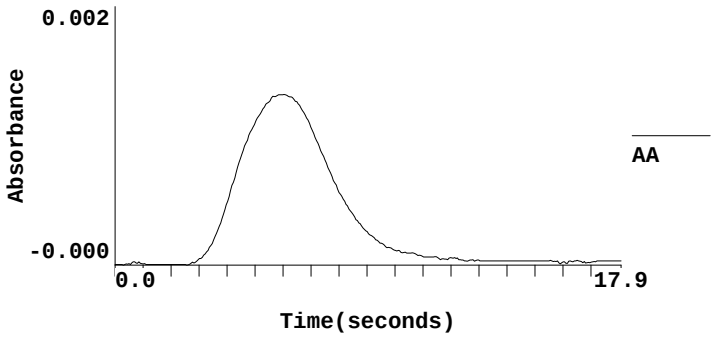
Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.082	0.082	0.0014	0.0073	0.0019	13:26:47	Yes



Sequence No.: 189 **Autosampler Location: 40**
Sample ID: 1608251-17 **Date Collected: 9/13/2016 1:27:07 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-17

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.038	0.038	0.0008	0.0052	0.0013	13:28:00	Yes



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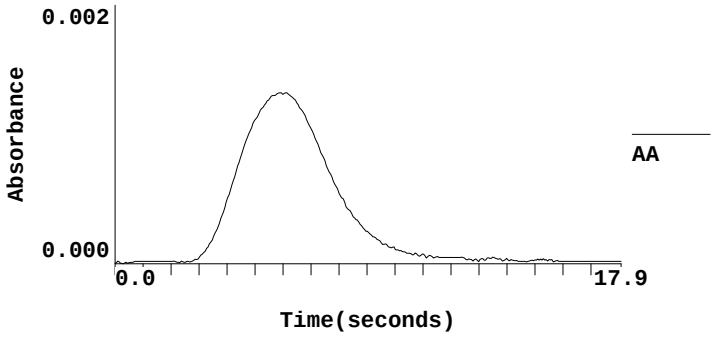
Sequence No.: 190 **Autosampler Location: 41**
Sample ID: 1608251-18 **Date Collected: 9/13/2016 1:28:20 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-18

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.039	0.039	0.0008	0.0054	0.0013	13:29:13	Yes



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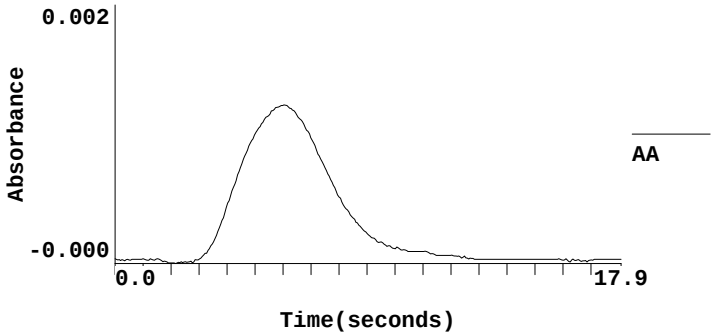
Sequence No.: 191 **Autosampler Location: 42**
Sample ID: 1608251-19 **Date Collected: 9/13/2016 1:29:33 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-19

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.031	0.031	0.0007	0.0047	0.0012	13:30:27	Yes

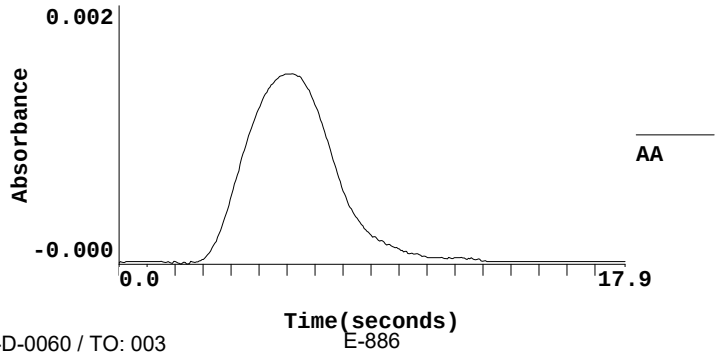


==========

Sequence No.: 192 **Autosampler Location: 43**
Sample ID: 1608251-20 **Date Collected: 9/13/2016 1:30:46 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-20

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.049	0.049	0.0010	0.0053	0.0015	13:31:40	Yes

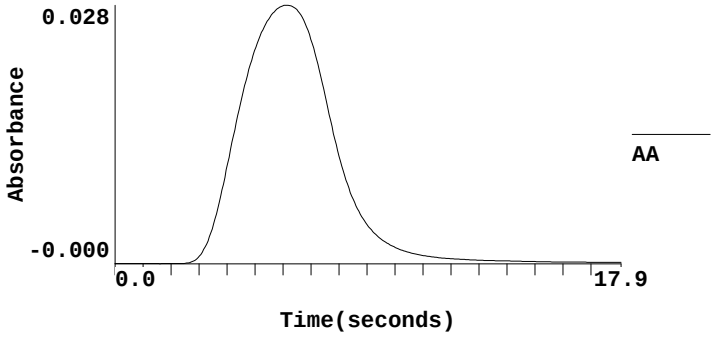


==========

Sequence No.: 193 **Autosampler Location: 44**
Sample ID: 6I25705-CCVD **Date Collected: 9/13/2016 1:32:00 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CCVD

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	1.954	1.954	0.0273	0.1053	0.0278	13:32:53	Yes

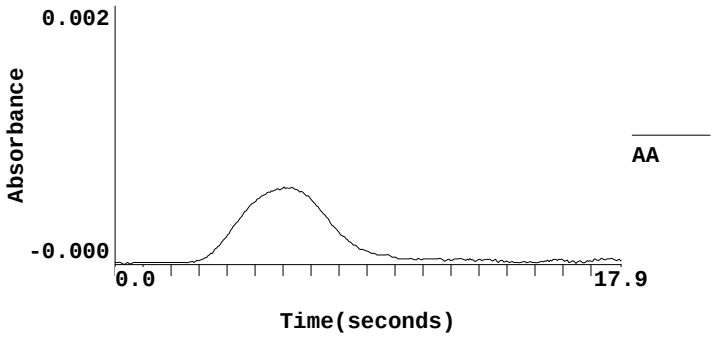


==========

Sequence No.: 194 **Autosampler Location: 45**
Sample ID: 6I25705-CCBD **Date Collected: 9/13/2016 1:33:13 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CCBD

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.015	-0.015	0.0001	0.0023	0.0006	13:34:07	Yes

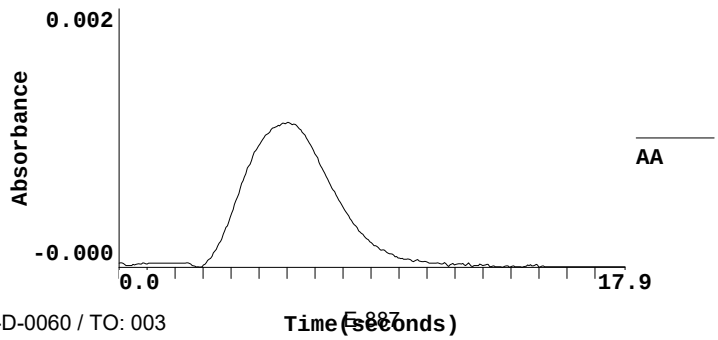


==========

Sequence No.: 195 **Autosampler Location: 46**
Sample ID: 1608252-20 **Date Collected: 9/13/2016 1:34:08 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608252-20

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.023	0.023	0.0006	0.0038	0.0011	13:35:01	Yes



==========

Analysis Begun

Logged In Analyst: mercury **Technique: AA FIMS-MHS**
Spectrometer Model: FIMS-100, S/N B050-9550 **Autosampler Model: S10**

Sample Information File: C:\data-AA\Sample Information\20160914s.sif
Batch ID: 20160914s
Results Data Set: 20160914sB
Results Library: C:\data-AA\Results\Results.mdb

==========

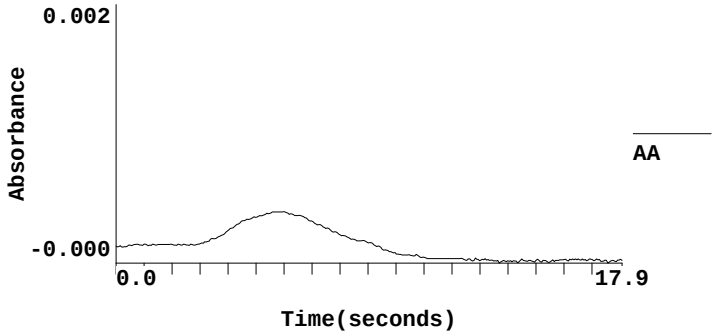
Method Loaded
Method Name: Hg CAL2 PAPERLESS S **Method Last Saved: 9/14/2016 2:47:44 PM**
Method Description: Hg CAL2

==========

Sequence No.: 1 **Autosampler Location: 1**
Sample ID: 6I25809-CAL1 **Date Collected: 9/14/2016 3:55:32 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25809-CAL1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.00]	0.0003	0.0001	0.0003	15:56:25	Yes

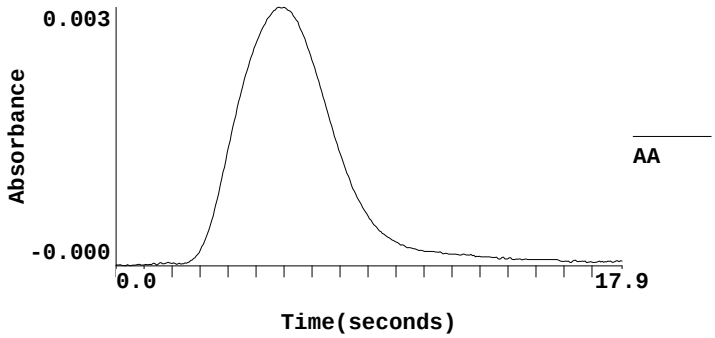


==========

Sequence No.: 2 **Autosampler Location: 2**
Sample ID: 6I25809-CAL2 **Date Collected: 9/14/2016 3:56:27 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25809-CAL2

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.20]	0.0026	0.0116	0.0029	15:57:19	Yes



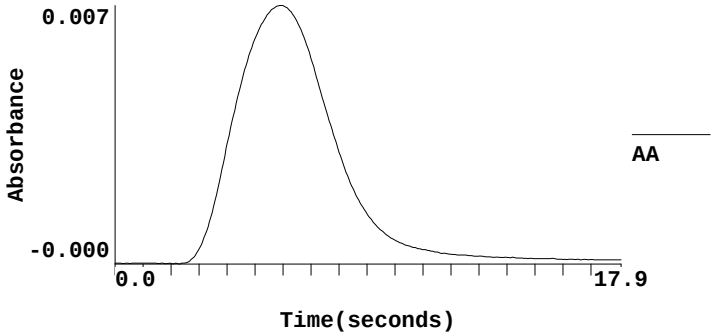
==========

Sequence No.: 3 **Autosampler Location: 3**
Sample ID: 6I25809-CAL3 **Date Collected: 9/14/2016 3:57:39 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25809-CAL3

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored

1	[0.50]	0.0062	0.0265	0.0065	15:58:32	Yes

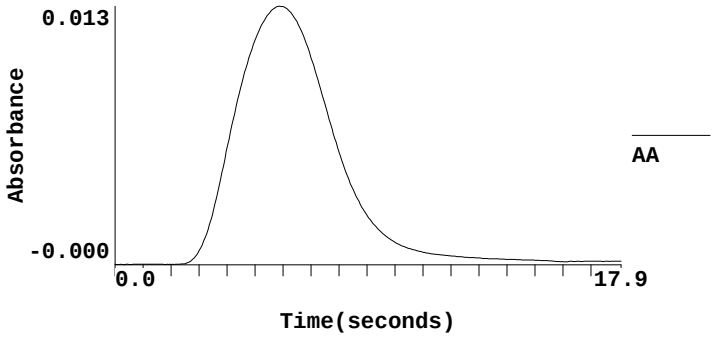


==========

Sequence No.: 4 **Autosampler Location: 4**
Sample ID: 6I25809-CAL4 **Date Collected: 9/14/2016 3:58:52 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25809-CAL4

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[1.00]	0.0125	0.0514	0.0128	15:59:46	Yes

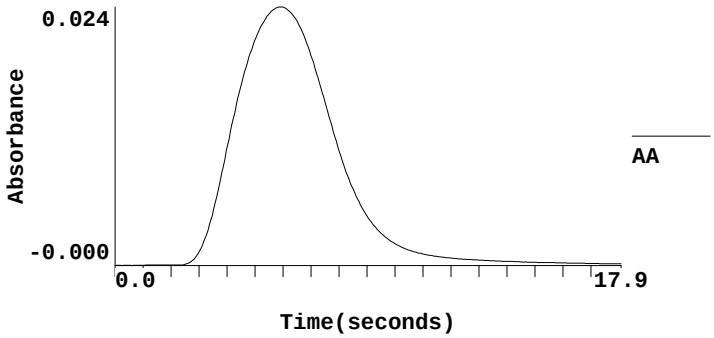


==========

Sequence No.: 5 **Autosampler Location: 5**
Sample ID: 6I25809-CAL5 **Date Collected: 9/14/2016 4:00:06 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25809-CAL5

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[2.00]	0.0241	0.0981	0.0244	16:01:00	Yes

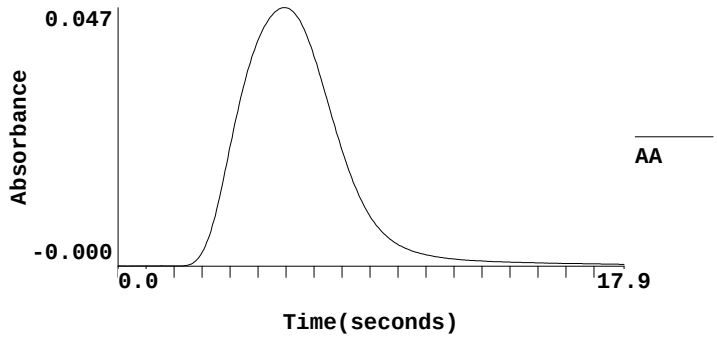


==========

Sequence No.: 6 **Autosampler Location: 6**
Sample ID: 6I25809-CAL6 **Date Collected: 9/14/2016 4:01:21 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25809-CAL6

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[4.00]	0.0471	0.1910	0.0474	16:02:13	Yes

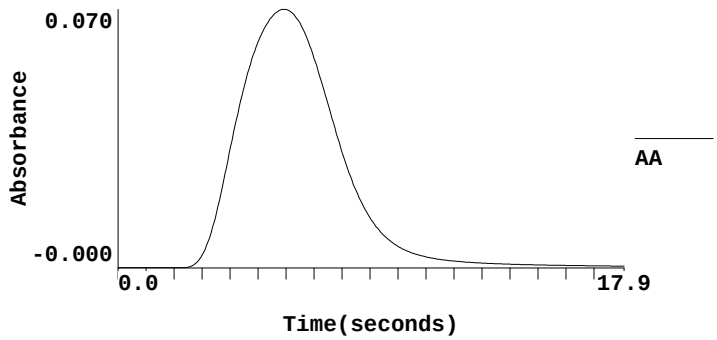


==========

Sequence No.: 7 Autosampler Location: 7
Sample ID: 6I25809-CAL7 Date Collected: 9/14/2016 4:02:32 PM
Analyst: Data Type: Original

Replicate Data: 6I25809-CAL7

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[6.00]	0.0698	0.2816	0.0701	16:03:25	Yes

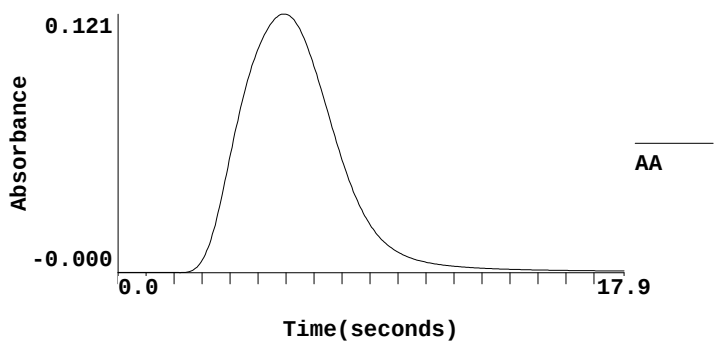


==========

Sequence No.: 8 Autosampler Location: 8
Sample ID: 6I25809-CAL8 Date Collected: 9/14/2016 4:03:44 PM
Analyst: Data Type: Original

Replicate Data: 6I25809-CAL8

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[10.00]	0.1207	0.4778	0.1210	16:04:37	Yes



Calibration data for Hg 253.7 Equation: Linear, Calculated Intercept

ID	Mean Signal (Abs)	Entered Conc. ug/L	Calculated Conc. ug/L	Standard Deviation	%RSD

6I25809-CAL1	0.0000	0	0.000	----	----
6I25809-CAL2	0.0026	0.20	0.215	----	----
6I25809-CAL3	0.0062	0.50	0.523	----	----
6I25809-CAL4	0.0125	1.00	1.048	----	----
6I25809-CAL5	0.0241	2.00	2.017	----	----
6I25809-CAL6	0.0471	4.00	3.947	----	----
6I25809-CAL7	0.0698	6.00	5.845	----	----
6I25809-CAL8	0.1207	10.00	10.105	----	----

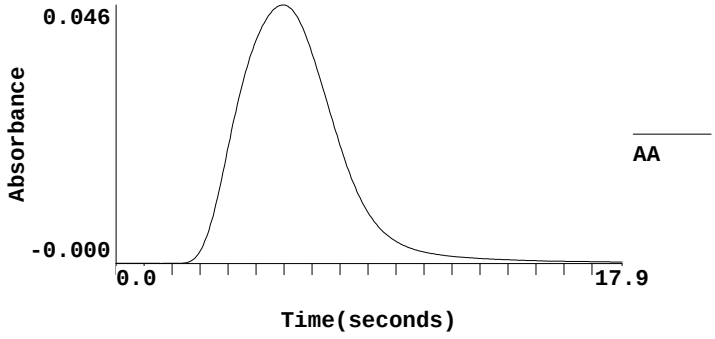
Correlation Coef.: 0.999763 Slope: 0.01194 Intercept: -0.00000

==========

Sequence No.: 9 **Autosampler Location: 9**
Sample ID: 6I25809-ICV1 **Date Collected: 9/14/2016 4:04:56 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25809-ICV1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	3.814	3.814	0.0455	0.1837	0.0458	16:05:50	Yes



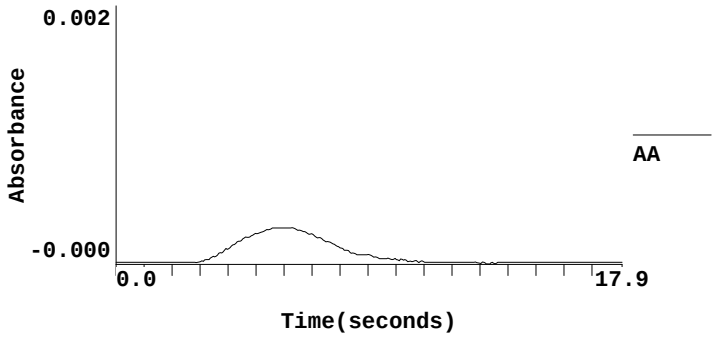
All analyte(s) passed QC.

==========

Sequence No.: 10 **Autosampler Location: 10**
Sample ID: 6I25809-ICB1 **Date Collected: 9/14/2016 4:06:09 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25809-ICB1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.001	-0.001	-0.0000	0.0010	0.0003	16:07:02	Yes



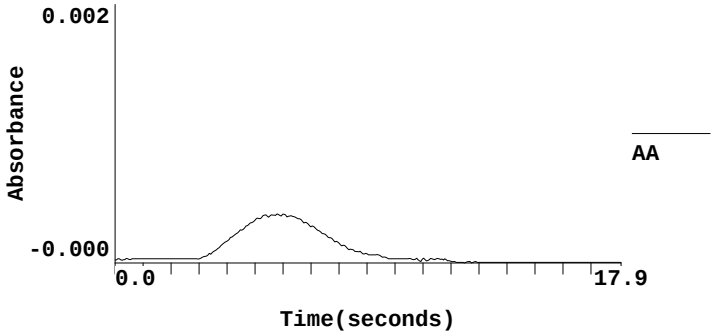
All analyte(s) passed QC.

==========

Sequence No.: 11 **Autosampler Location: 11**
Sample ID: 6I13010-BLK1 **Date Collected: 9/14/2016 4:07:04 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I13010-BLK1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.007	0.007	0.0001	0.0013	0.0004	16:07:56	Yes

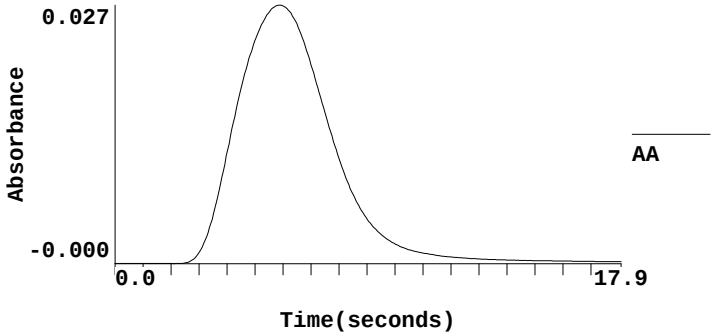


==========

Sequence No.: 12 **Autosampler Location:** 12
Sample ID: 6I13010-BS1 **Date Collected:** 9/14/2016 4:08:17 PM
Analyst: **Data Type:** Original

Replicate Data: 6I13010-BS1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	2.232	2.232	0.0267	0.1038	0.0269	16:09:11	Yes

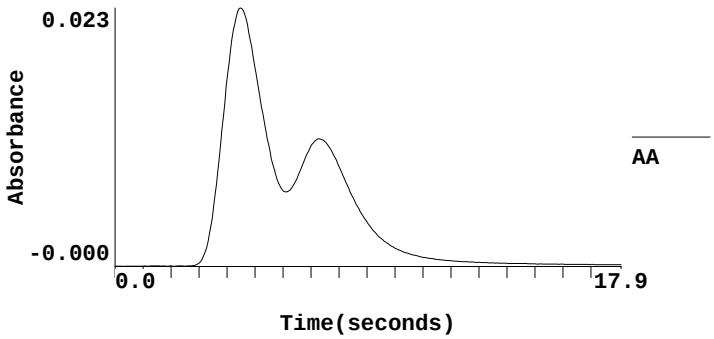


==========

Sequence No.: 13 **Autosampler Location:** 13
Sample ID: 1609051-50RE1@2X **Date Collected:** 9/14/2016 4:09:32 PM
Analyst: **Data Type:** Original

Replicate Data: 1609051-50RE1@2X

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	1.886	1.886	0.0225	0.0678	0.0228	16:10:25	Yes



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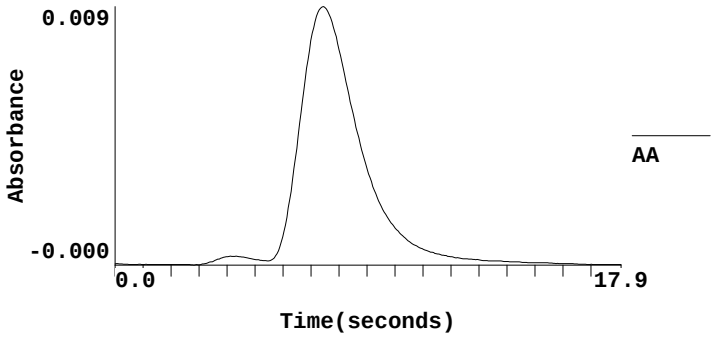
Sequence No.: 14 **Autosampler Location:** 14
Sample ID: 1608251-02RE1@2X **Date Collected:** 9/14/2016 4:10:46 PM
Analyst: **Data Type:** Original

Replicate Data: 1608251-02RE1@2X

Repl #	SampleConc	StndConc	BlnkCorr	Peak	Peak	Time	Peak

#	ug/L	ug/L	Signal	Area	Height		Stored
1	0.695	0.695	0.0083	0.0214	0.0086	16:11:39	Yes

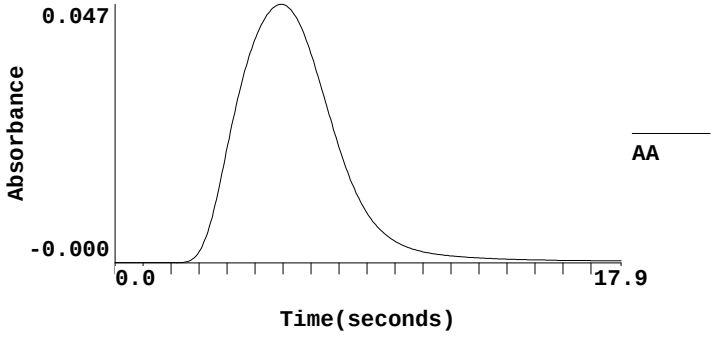


==========

Sequence No.: 15 **Autosampler Location: 15**
Sample ID: 1608251-03RE1@5X **Date Collected: 9/14/2016 4:11:58 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-03RE1@5X

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	3.876	3.876	0.0463	0.1851	0.0466	16:12:51	Yes

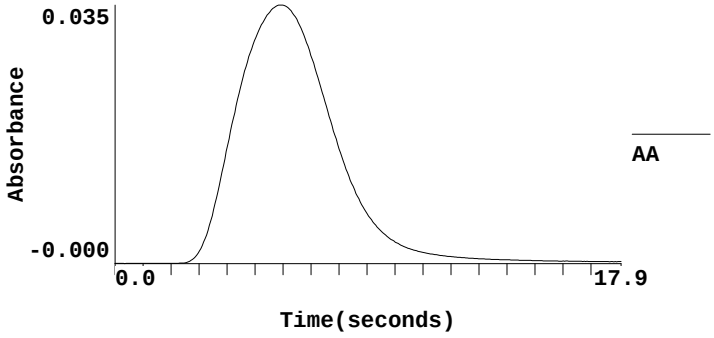


==========

Sequence No.: 16 **Autosampler Location: 16**
Sample ID: 1608251-04RE1@5X **Date Collected: 9/14/2016 4:13:10 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-04RE1@5X

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	2.912	2.912	0.0348	0.1400	0.0351	16:14:03	Yes

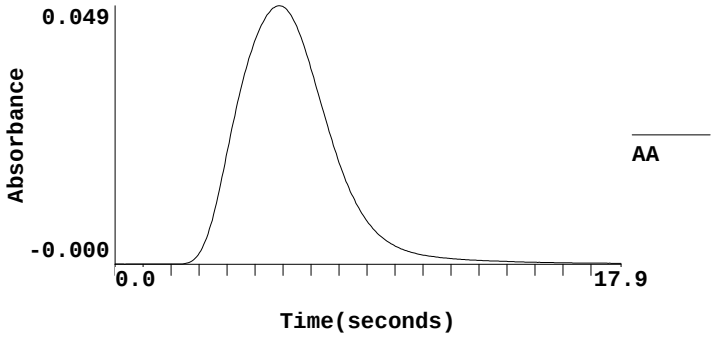


==========

Sequence No.: 17 **Autosampler Location: 17**
Sample ID: 1609059-21 **Date Collected: 9/14/2016 4:14:22 PM**
Analyst: **Data Type: Original**

Replicate Data: 1609059-21

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	4.052	4.052	0.0484	0.1846	0.0487	16:15:15	Yes

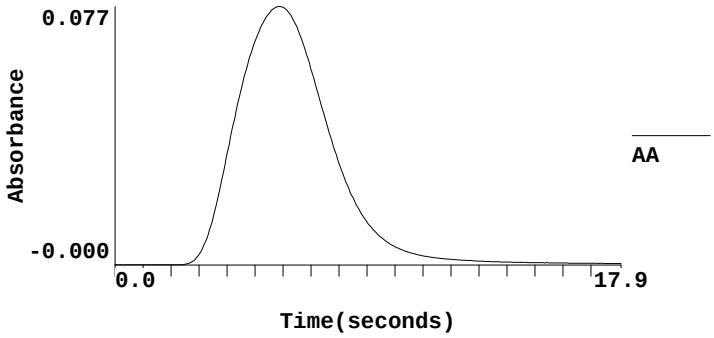


==========

Sequence No.: 18 **Autosampler Location: 18**
Sample ID: 1609059-22 **Date Collected: 9/14/2016 4:15:34 PM**
Analyst: **Data Type: Original**

Replicate Data: 1609059-22

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	6.445	6.445	0.0770	0.2931	0.0772	16:16:27	Yes

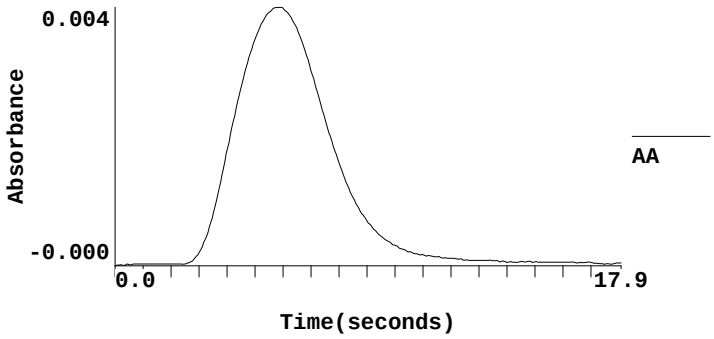


==========

Sequence No.: 19 **Autosampler Location: 19**
Sample ID: 1609060-01 **Date Collected: 9/14/2016 4:16:46 PM**
Analyst: **Data Type: Original**

Replicate Data: 1609060-01

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.314	0.314	0.0038	0.0154	0.0040	16:17:39	Yes



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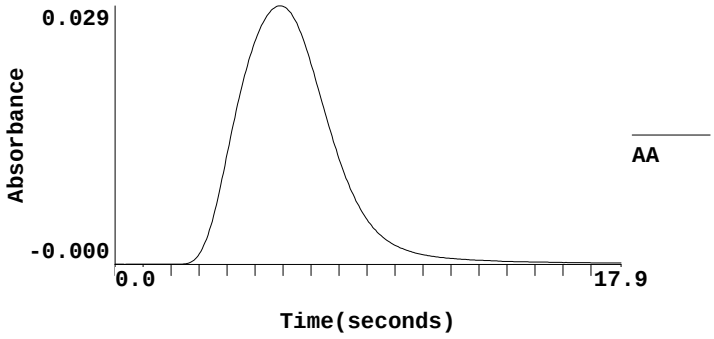
Sequence No.: 20 **Autosampler Location: 20**
Sample ID: 1613040-MS1 **Date Collected: 9/14/2016 4:17:58 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I13010-MS1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	2.441	2.441	0.0292	0.1129	0.0294	16:18:52	Yes

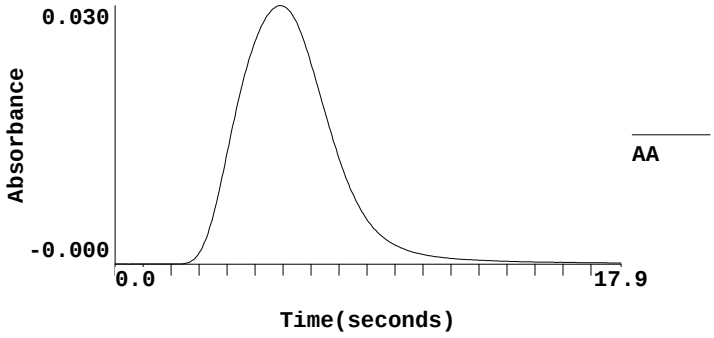


==========

Sequence No.: 21 **Autosampler Location: 21**
Sample ID: 6I13010-MSD1 **Date Collected: 9/14/2016 4:19:12 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I13010-MSD1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	2.515	2.515	0.0300	0.1163	0.0303	16:20:05	Yes



User canceled analysis.

==========

Analysis Begun

Logged In Analyst: mercury **Technique: AA FIMS-MHS**
Spectrometer Model: FIMS-100, S/N B050-9550 **Autosampler Model: S10**

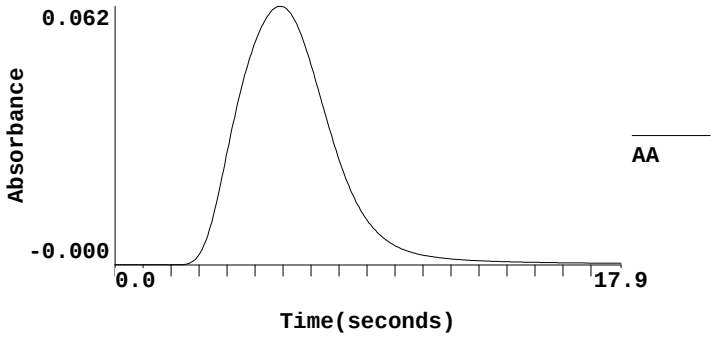
Sample Information File: C:\data-AA\Sample Information\20160914s.sif
Batch ID: 20160914s
Results Data Set: 20160914sB
Results Library: C:\data-AA\Results\Results.mdb

==========

Sequence No.: 13 **Autosampler Location: 13**
Sample ID: 1609051-50RE1@2X **Date Collected: 9/14/2016 4:20:40 PM**
Analyst: **Data Type: Original**

Replicate Data: 1609051-50RE1@2X

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	5.127	5.127	0.0612	0.2367	0.0615	16:21:34	Yes

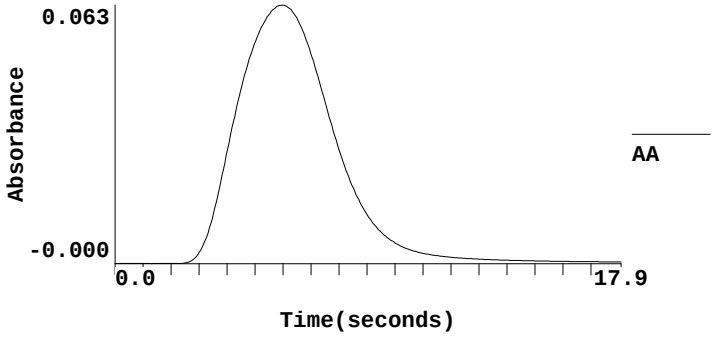


==========

Sequence No.: 14 **Autosampler Location: 14**
Sample ID: 1608251-02RE1@2X **Date Collected: 9/14/2016 4:21:55 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-02RE1@2X

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	5.225	5.225	0.0624	0.2473	0.0627	16:22:48	Yes



User canceled analysis.

==========

Analysis Begun

Logged In Analyst: mercury **Technique: AA FIMS-MHS**
Spectrometer Model: FIMS-100, S/N B050-9550 **Autosampler Model: S10**

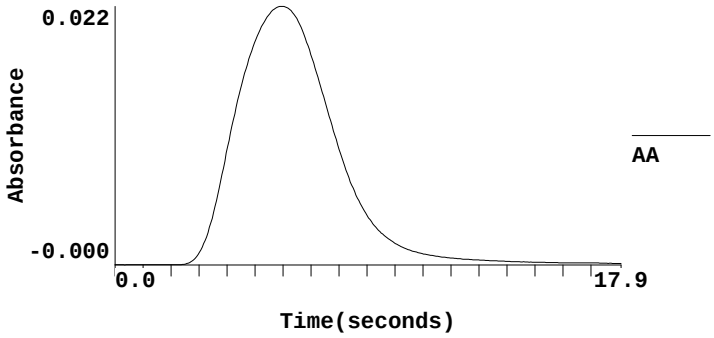
Sample Information File: C:\data-AA\Sample Information\20160914s.sif
Batch ID: 20160914s
Results Data Set: 20160914sB
Results Library: C:\data-AA\Results\Results.mdb

==========

Sequence No.: 25 **Autosampler Location: 25**
Sample ID: 6I25809-CCV1 **Date Collected: 9/14/2016 4:23:30 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25809-CCV1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	1.850	1.850	0.0221	0.0892	0.0224	16:24:24	Yes

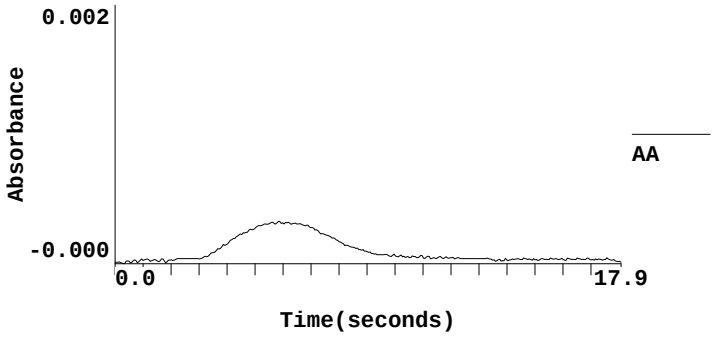


==========

Sequence No.: 26 **Autosampler Location: 26**
Sample ID: 6I25809-CCB1 **Date Collected: 9/14/2016 4:24:44 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25809-CCB1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.003	0.003	0.0000	0.0016	0.0003	16:25:37	Yes



User canceled analysis.

PREPARATION BENCH SHEET

6H29018

Empirical Laboratories, LLC

Printed: 9/21/2016 2:31:41PM

Instrument: ME-FIMS

Matrix: Solid **Prepared using: METALS - MET_HG_S** **(No Surrogate)**

Lab Number	Cont ID	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	PH	Comments (Sample; Analysis; Extraction)
1608251-01	A	MET_7471B_MERCURY_Q5	08/29/2016	0.30	50.00					NA	
1608251-02RE1	A	MET_7471B_MERCURY_Q5	08/29/2016	0.31	50.00					NA	Added 9/13/2016 by JDB
6H29018-BLK1		MET_7471B_MERCURY_Q5	08/29/2016	0.30	50.00					NA	
6H29018-BS1		MET_7471B_MERCURY_Q5	08/29/2016	0.30	50.00	16F0425		500		NA	

Reagents Used:

Standard	Description
16I0238	3% HCl Mercury Carrier
16I0186	Aqua Regia
16I0031	Mercury (Borosilicate Glassballs 3mm 1lb)
16H0697	NaCl-Hydroxylamine Hydrochloride (HG Reagent)
16I0035	Potassium Permanganate (KMn04)
16I0239	Stannous Chloride Mercury Reagent

PREPARATION BENCH SHEET

6H29019

Empirical Laboratories, LLC

Printed: 9/21/2016 2:31:43PM

Instrument: ME-FIMS

Matrix: Solid **Prepared using: METALS - MET_HG_S** **(No Surrogate)**

Lab Number	Cont ID	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	PH	Comments (Sample; Analysis; Extraction)
1608251-03RE1	A	MET_7471B_MERCURY_Q5	08/29/2016	0.32	50.00					NA	Added 9/13/2016 by JDB
1608251-04RE1	A	MET_7471B_MERCURY_Q5	08/29/2016	0.34	50.00					NA	Added 9/13/2016 by JDB
1608251-05	A	MET_7471B_MERCURY_Q5	08/29/2016	0.32	50.00					NA	
1608251-06	A	MET_7471B_MERCURY_Q5	08/29/2016	0.30	50.00					NA	
1608251-07	A	MET_7471B_MERCURY_Q5	08/29/2016	0.32	50.00					NA	
1608251-08	A	MET_7471B_MERCURY_Q5	08/29/2016	0.32	50.00					NA	
1608251-09	A	MET_7471B_MERCURY_Q5	08/29/2016	0.32	50.00					NA	
1608251-10	A	MET_7471B_MERCURY_Q5	08/29/2016	0.30	50.00					NA	
1608251-11	A	MET_7471B_MERCURY_Q5	08/29/2016	0.30	50.00					NA	
1608251-12	A	MET_7471B_MERCURY_Q5	08/29/2016	0.33	50.00					NA	
1608251-13	A	MET_7471B_MERCURY_Q5	08/29/2016	0.31	50.00					NA	
1608251-14	A	MET_7471B_MERCURY_Q5	08/29/2016	0.33	50.00					NA	
1608251-15	A	MET_7471B_MERCURY_Q5	08/29/2016	0.34	50.00					NA	
1608251-16	A	MET_7471B_MERCURY_Q5	08/29/2016	0.35	50.00					NA	
1608251-17	A	MET_7471B_MERCURY_Q5	08/29/2016	0.30	50.00					NA	
1608251-18	A	MET_7471B_MERCURY_Q5	08/29/2016	0.34	50.00					NA	
1608251-19	A	MET_7471B_MERCURY_Q5	08/29/2016	0.35	50.00					NA	

PREPARATION BENCH SHEET

6H29019

Empirical Laboratories, LLC

Printed: 9/21/2016 2:31:43PM

Instrument: ME-FIMS

Matrix: Solid **Prepared using: METALS - MET_HG_S** **(No Surrogate)**

Lab Number	Cont ID	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	PH	Comments (Sample; Analysis; Extraction)
1608251-20	A	MET_7471B_MERCURY_Q5	08/29/2016	0.31	50.00					NA	
6H29019-BLK1		MET_7471B_MERCURY_Q5	08/29/2016	0.30	50.00					NA	
6H29019-BS1		MET_7471B_MERCURY_Q5	08/29/2016	0.30	50.00	16F0425		500		NA	

Reagents Used:

Standard	Description
16I0238	3% HCl Mercury Carrier
16I0186	Aqua Regia
16I0031	Mercury (Borosilicate Glassballs 3mm 1lb)
16H0697	NaCl-Hydroxylamine Hydrochloride (HG Reagent)
16I0035	Potassium Permanganate (KMn04)
16I0239	Stannous Chloride Mercury Reagent

Table 1

Mercury: Circle Applicable Digestion/Spike and 0.1mL Eppendorf option then staple to bench sheet

Reminder: Make sure pipettes are verified daily at volume of use for QSM5 batches!

Soil 6H29018

Amount	Curve Standards 7471 Soil
0.0 mL	
0.05mL	Mercury 1st Source (0.2ug/mL)
0.125mL	Mercury 1st Source (0.2ug/mL)
0.25mL	Mercury 1st Source (0.2ug/mL)
0.50mL	Mercury 1st Source (0.2ug/mL)
1.0mL	Mercury 1st Source (0.2ug/mL)
1.5mL	Mercury 1st Source (0.2ug/mL)
2.5mL	Mercury 1st Source (0.2ug/mL)
Circle	0.1ml Eppendorf 948897Z or 950847
Circle	1.0mL Eppendorf 1854694 or FinnPipette 1FJ61693
	5mL FinnPipette KU04206

Amount	BS/MS/MSD Standards 7471 Soil
0.50mL	Mercury 2nd Source (0.2ug/mL)
Circle	1.0mL Eppendorf 1854694 or FinnPipette 1FJ61693
Amount	**Reagents for Digestion Soil**
2.5mL	Aqua Regia
7.5mL	Potassium Permanganate

Table 1

Mercury: Circle Applicable Digestion/Spike and 0.1mL Eppendorf option then staple to bench sheet

Reminder: Make sure pipettes are verified daily at volume of use for QSM5 batches!

Soil 6H29019

Amount	Curve Standards 7471 Soil
0.0 mL	
0.05mL	Mercury 1st Source (0.2ug/mL)
0.125mL	Mercury 1st Source (0.2ug/mL)
0.25mL	Mercury 1st Source (0.2ug/mL)
0.50mL	Mercury 1st Source (0.2ug/mL)
1.0mL	Mercury 1st Source (0.2ug/mL)
1.5mL	Mercury 1st Source (0.2ug/mL)
2.5mL	Mercury 1st Source (0.2ug/mL)
Circle	0.1ml Eppendorf 148897Z or 250847
Circle	1.0mL Eppendorf 1854694 or FinnPipette 1FJ61693
	5mL FinnPipette KU04206

Amount	BS/MS/MSD Standards 7471 Soil
0.50mL	Mercury 2nd Source (0.2ug/mL)
Circle	1.0mL Eppendorf 1854694 or FinnPipette 1FJ61693
Amount	**Reagents for Digestion Soil**
2.5mL	Aqua Regia
7.5mL	Potassium Permanganate

Sample Information Detail Report
Document Name: 20160913s

File Description
Default Sample Information File

Parameters Common to All Samples

Batch ID	20160913s
Volume Units	mL
Weight Units	g

Parameters That Vary By Sample

Sample No	A/S Location	Sample ID	Initial Sample Wt.
1	11	6I09006-BLK1	
2	12	6I09006-BS1	
3	13	1609019-02	
4	14	1609020-02	
5	15	1609021-02	
6	16	1609041-01	
7	17	1609041-02	
8	18	1609041-04	
9	19	1609041-05	
10	20	1609041-06	
11	21	1609041-07	
12	22	1609041-08	
13	23	6I25705-CCV1	
14	24	6I25705-CCB1	
15	25	1609041-09	
16	26	1609041-10	
17	27	1609041-11	
18	28	1609041-12	
19	29	1609041-13	
20	30	1609041-14	
21	31	1609041-15	
22	32	6I09006-MS1	
23	33	6I09006-MSD1	
24	34	1609041-16	
25	35	1609044-01	
26	36	1609044-02	
27	37	6I25705-CCV2	
28	38	6I25705-CCB2	
29	39	6I09022-BLK1	
30	40	6I09022-BS1	
31	41	1609051-02	
32	42	1609051-03	
33	43	1609051-04	
34	44	1609051-05	
35	45	1609051-06	
36	46	1609051-07	
37	47	1609051-08	
38	48	1609051-09	
39	49	1609051-10	
40	50	1609051-11	
41	51	6I25705-CCV3	
42	52	6I25705-CCB3	
43	53	1609051-12	
44	54	1609051-13	
45	55	1609051-14	
46	56	1609051-15	
47	57	1609051-16	
48	58	1609051-17	
49	59	1609051-26	
50	60	1609051-27	
51	61	1609051-28	
52	62	1609051-29	
53	63	6I09022-MS1	
54	64	6I09022-MSD1	
55	65	6I25705-CCV4	
56	66	6I25705-CCB4	
57	67	6I09023-BLK1	
58	68	6I09023-BS1	
59	69	1609051-30	
60	70	1609051-31	
61	71	1609051-32	
62	72	6I09023-MS1	
63	73	6I09023-MSD1	

64	74	1609051-33
65	75	1609051-34
66	76	1609051-35
67	77	1609051-36
68	78	1609051-37
69	79	1609051-38
70	80	1609051-39
71	81	6I25705-CCV5
72	82	6I25705-CCB5
73	83	1609051-40
74	84	1609051-41
75	85	1609051-42
76	86	1609051-43
77	87	1609051-44
78	88	1609051-45
79	89	1609051-46
80	90	1609051-47
81	91	1609051-48
82	92	1609051-49
83	93	6I25705-CCV6
84	94	6I25705-CCB6
85	95	6I09024-BLK1
86	96	6I09024-BS1
87	97	1609051-50
88	98	1609051-51
89	99	1609051-52
90	100	6I09024-MS1
91	101	6I09024-MSD1
92	102	1609051-53
93	103	1609051-54
94	104	1609051-55
95	105	1609051-56
96	106	1609051-57
97	107	1609051-58
98	108	1609051-59
99	109	6I25705-CCV7
100	110	6I25705-CCB7
101	111	1609051-60
102	112	1609051-61
103	113	1609051-62
104	114	1609051-63
105	115	1609051-64
106	116	1609051-65
107	117	1609051-66
108	118	1609051-67
109	119	1609051-68
110	120	1609051-69
111	121	6I25705-CCV8
112	122	6I25705-CCB8
113	123	6I09025-BLK1
114	124	6I09025-BS1
115	125	1609022-02
116	126	1609024-02
117	127	1609025-02
118	128	1609051-70
119	129	1609051-71
120	130	6I09025-MS1
121	131	6I09025-MSD1
122	132	1609051-44RE1@2X
123	133	1609051-48RE1@5X
124	134	1609051-52RE1@10X
125	135	6I09024-MS2@10X
126	136	6I09024-MSD2@10X
127	137	1609051-59RE1@5X
128	138	1609051-62RE1@2X
129	139	6I25705-CCV9
130	140	6I25705-CCB9
131	142	6H29018-BLK1
132	143	6H29018-BS1
133	141	1609051-69RE1@10X **9/13/2016 5:42:48 PM**
134	144	1608229-01
135	145	6H29018-MS1
136	146	6H29018-MSD1
137	147	1608229-02
138	148	1608229-03

139	149	1608229-04
140	150	1608229-05
141	151	1608229-06
142	152	1608229-07
143	153	1608229-08
144	154	1608229-09
145	155	6I25705-CCVA
146	156	6I25705-CCBA
147	9	1608229-10
148	10	1608229-11
149	11	1608229-12
150	12	1608244-06
151	13	1608244-07
152	14	1608244-08
153	15	1608244-09
154	16	1608244-10
155	17	1608244-11
156	18	6I25705-CCVB
157	19	6I25705-CCBB
158	20	1608251-01
159	21	1608251-02
160	0	RINSE
161	22	6H29019-BLK1
162	23	6H29019-BS1
163	24	1608251-03
164	25	1608251-04
165	26	1608251-05
166	27	1608251-06
167	28	1608251-07
168	29	1608251-08
169	30	1608251-09
170	31	1608251-10
171	32	6I25705-CCVC
172	33	6I25705-CCBC
173	34	1608251-11
174	35	1608251-12
175	36	1608251-13
176	37	1608251-14
177	38	1608251-15
178	39	1608251-16
179	40	1608251-17
180	41	1608251-18
181	42	1608251-19
182	43	1608251-20
183	44	6I25705-CCVD
184	45	6I25705-CCBD
185	46	1608252-20
186	47	6H29019-MS1
187	48	6H29019-MSD1
188	49	1608252-21
189	50	6I25705-CCVE
190	51	6I25705-CCBE

Sample No	Sample Prep. Vol.	Aliquot Volume	Diluted To Vol.
1			
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Sample Information Detail Report
Document Name: 20160914s

File Description
Default Sample Information File

Parameters Common to All Samples

Batch ID	20160914s
Volume Units	mL
Weight Units	g

Parameters That Vary By Sample

Sample No	A/S Location	Sample ID	Initial Sample Wt.
1	11	6I13010-BLK1	
2	12	6I13010-BS1	
3	13	dnr1609051-50RE1@2X	
4	14	dnr1608251-02RE1@2X	
5	15	1608251-03RE1@5X	
6	16	1608251-04RE1@5X	
7	17	1609059-21	
8	18	1609059-22	
9	19	1609060-01	
10	20	6I13010-MS1	
11	21	6I13010-MSD1	
12	13	1609051-50RE1@2X	
13	14	1608251-02RE1@2X	
14	25	6I25809-CCV1	
15	26	6I25809-CCB1	
16	22	1609060-02	
17	23	1609060-03	
18	24	1609060-04	
19	27	1609060-05	
20	28	1609060-06	
21	29	1609060-07	
22	30	1609060-08	
23	31	1609060-09	
24	32	1609060-10	
25	33	1609060-11	
26	37	6I25809-CCV2	
27	38	6I25809-CCB2	
28	34	1609060-12	
29	35	1609069-01	
30	36	1609069-02	
31	41	1609069-03	
32	25	6I25809-CCV3	
33	26	6I25809-CCB3	
34	39	6I13009-BLK1	
35	40	6I13009-BS1	
36	42	1609059-01	
37	43	1609059-02	
38	44	6I13009-MS1	
39	45	6I13009-MSD1	
40	46	1609059-03	
41	47	1609059-04	
42	48	1609059-05	
43	49	1609059-06	
44	50	1609059-07	
45	51	1609059-08	
46	52	1609059-09	
47	55	1609059-10	
48	53	6I25809-CCV4	
49	54	6I25809-CCB4	
50	56	1609059-11	
51	57	1609059-12	
52	58	1609059-13	
53	59	1609059-14	
54	60	1609059-15	
55	61	1609059-16	
56	62	1609059-17	
57	63	1609059-18	
58	64	1609059-19	
59	67	1609059-20	
60	65	6I25809-CCV5	
61	66	6I25809-CCB5	
62	68	1609059-20RE1@5X	
63	69	6I25809-CCV6	

64	70	6I25809-CCB6

Sample No	Sample Prep. Vol.	Aliquot Volume	Diluted To Vol.
1			
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*ANALYTICAL **SUMMARY** DATA PACKAGE*
SDG # 1608251

PROJECT NAME: Raritan Arsenal Phase III

SUBMITTAL TO:
Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

SUBMITTAL BY:
Empirical Laboratories, LLC (EL)
621 Mainstream Drive, Suite 270
Nashville, TN 37228
Tel (615)345-1115
Fax (866)417-0548

LABORATORY CONTACT PERSON:
Project Manager: Sonya Gordon
Tel (615)345-1115
Fax (866)417-0548
Email: sgordon@empirlabs.com

Original Report Date: September 22, 2016
Report Revision #: N/A
Revision Date: N/A

THIS DOCUMENT MEETS DoD QSM 5.0 STANDARDS

The results relate to only the samples associated with the referenced SDG and the submitted data has been produced in accordance with laboratory procedures. The Laboratory's Data Review Manager, Ms. Amy Barnett, is responsible for the final data produced and reported. Her signature is listed at the end of the Case Narrative within the Analytical Data Package. If applicable to this report package, details on report revisions and the information on subcontracted analysis are listed in the package Case Narrative. This report shall not be reproduced, except in full, without the written approval of Empirical Laboratories, LLC.

L-A-B Accredited - Certificate Number L2226 - Testing

Table of Contents

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3	Case Narrative
4	Sample Receipt Information Chain of Custody Forms Sample Receipt Confirmations WorkOrder Summary Sample Delivery Group (SDG) Sheets
5	Data for Metals Required Data / QAQC / Calibration Forms Supporting Raw Data / Logs
5	Data for Mercury Required Data / QAQC / Calibration Forms Supporting Raw Data / Logs

Sample Delivery Group Case Narrative

Receipt Information:

The samples were received within the preservation guidelines for the associated methods. The information associated with sample receipt and the Sample Delivery Group (SDG) are included within section 4 of this package, which also provides information on the link between the client sample ID listed on the COC and laboratory's assigned unique sample ID or WorkOrder #. The sample is tracked through the laboratory for all analysis via the assigned WorkOrder #.

All samples that were received were analyzed and none of the samples were placed on hold without analyses. There were no subcontracted analyses for this SDG.

Changes to the Revision:

This is an original submittal of the final report package.

Analytical Information:

All samples were prepped (where applicable) and analyzed within the standard allowed holding times, unless noted within the exceptions listed below. The laboratory analyzed all samples within the program and method guidelines. Sample preparation and dilution information is provided within the final results report and at the beginning of each form set. The following information is provided specific to individual methods:

Metals:

Note – Sodium in the calibration 6258003 is less than the method requirement of 0.998 but within the DoD requirement of 0.99 at 0.995.

No additional anomalies or deviations are noted and the proper data qualifiers have been applied.

Mercury:

No anomalies or deviations are noted.

Data Qualifiers:

As applicable and where required, the following general qualifiers are associated with the sample results. Additional qualifiers will be specified within the reporting sections of the data package or within the body of the Case Narrative.

Analytical Report Terms and Qualifiers

DL: The detection limit (DL) is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero. The DL is supported by the method detection limit (MDL) which is determined from analysis of a sample containing the analyte in a given matrix.

LOD: The Limit of Detection is an estimate of the minimum amount of a substance that an analytical process can reliably detect. An LOD is analyte- and matrix-specific and may be laboratory-dependent. This definition is further clarified in the DoD QSM 5.0 revisions as the smallest amount or concentration of a substance that must be present in a sample in order to be detected at a high level of confidence (99%). At the LOD, the false negative rate (Type II error) is 1%.

LOQ: The Limit of Quantitation is the minimum level, concentration, or quantity of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. This term is further clarified within the DoD QSM 5.0 as the lowest concentration that produces a quantitative result within specified limits of precision and bias.

*: Exceeding quality control criteria are associated with the reported result.

B: The presence of a "B" to the right of an analytical value indicates that this compound was also detected in the method blank and the data should be interpreted with caution. One should consider the possibility that the correct sample result might be less than the reported result and, perhaps, zero.

D: When a sample (or sample extract) is rerun diluted because one of the compound concentrations exceeded the highest concentration range for the standard curve, all of the values obtained in the dilution run will be flagged with a "D".

E: The concentration for any compound found which exceeds the highest concentration level on the standard curve for that compound will be flagged with an "E". Usually the sample will be rerun at a dilution to quantitate the flagged compound. For Metals, the qualifier indicates that the serial dilution was outside of the control limits and the compound should be considered estimated due to the presence of interference.

H: The result was analyzed, extracted, or received outside of the EPA recommended holding time.

J: The presence of a "J" to the right of an analytical result indicates that the reported result is estimated. The mass spectral data pass the identification criteria showing that the compound is present, but the calculated result is less than the LOQ. One should feel confident that the result is greater than zero and less than the LOQ.

M: Indicates that the sample matrix interfered with the quantitation of the analyte. In dual column analysis the result is reported from the column with the lower concentration. In inorganics, it

indicates that the parameters DL/LOD/LOQ have been raised.

N: The MS/MSD accuracy and/or precision are outside criteria. The predigested spike recovery is not within control limits for the associated parameter.

P: The associated numerical value is an estimated quantity. There is greater than a 40% difference between the two GC columns for the detected concentrations. The higher of the two values is reported unless matrix interference is obvious or for HPLC analysis where the primary column is reported.

Q: The relative percent difference (RPD) and/or percent recovery exceeded limits in the associated Blank Spike and/or Blank Spike Duplicate.

S: The associated internal standard exceeded criteria.

U: The presence of a "U" indicates that the analyte was analyzed for but was not detected or the concentration of the analyte quantitated below the DL.

X: The parameter shows a potential positive bias on a reported concentration due to an ICV or CCV exceeding the upper control limit on the high side.

Y: The parameter shows a potential negative bias on a reported concentration due to an ICV or CCV exceeding the lower control limit on the low side.

Z: The parameter shows lack of confirmation/detection, which may be due to a negative bias in the ICV or CCV which exceeds the lower control limit.

Chromatographic Flags for Manual Integration:

The following letters are used to denote manual integrations on the laboratory's raw data in association with chromatographic integrations:

A: The peak was manually integrated as it was not integrated in the original chromatogram.

B: The peak was manually integrated due to resolution or co-elution issues in the original chromatogram.

C: The peak was manually integrated to correct the baseline from the original chromatogram.

D: The peak was manually integrated to identify the correct peak as the wrong peak was identified in the original chromatogram.

E: The peak was manually integrated to include the entire peak as the original chromatogram only integrated part of the peak.

LIMS Definitions / Naming Conventions:

The following are general naming conventions that are used throughout the laboratory; however, on a method by method basis, there are additional QAQC items that are named in a consistent format.

BLK: LIMS assigns a unique identifier to the Method Blank by naming it as the letters BLK appended to the Batch ID. A Method Blank is an analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The Method Blank is used to

assess for possible contamination during preparation and/or analysis steps. Method Blanks within a Batch or Analytical sequence will be appended with a numerical value beginning with 1 that will increase incrementally.

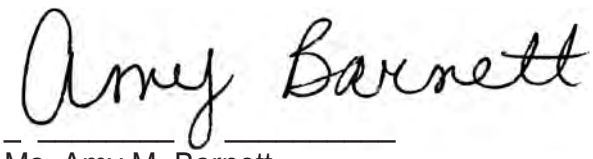
BS: LIMS assigns a unique identifier to the Blank Spike by naming it as the letters BS appended to the Batch ID. The Blank Spike or Lab Control Sample is a controlled analyte-free matrix, which is spiked with known and verified concentrations of target analytes. Spiking concentrations can be referenced in the method SOP. The BS is used to evaluate the viability of analytes taken through the entire prep (when applicable) and analytical process. Blank Spikes within a Batch or Analytical sequence will be appended with a numerical value beginning with 1 that will increase incrementally. A duplicate Blank Spike will be designated as a BSD.

MS: The LIMS assigns each Client sample with a unique identifier. The Matrix Spike is designated with a MS at the end of the sample's unique identifier. The Matrix Spike sample is used to assess the effect of the sample matrix on the precision and accuracy of the results generated using the selected method. A duplicate Matrix Spike will be designated as a MSD.

IDs: The LIMS assigns each Client sample with a unique identifier. The letter "RE" may potentially be appended to the end of the LIMS Sample ID. And "RE" implies that the sample was either re-prepped, re-analyzed straight, or re-analyzed at a dilution. Subsequent re-analysis for the sample will be appended with a numerical value beginning with 1 that will increase incrementally. Eg: RE1, RE2, RE3, etc.

Statement of Data Authenticity:

I certify that, based upon my inquiry of those individuals immediately responsible for obtaining the information and to the best of my knowledge, the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, with the exception of the conditions detailed in this Case Narrative, as verified by my signature below. During absences, the Data Quality Manager, Technical Directors or Project Managers are authorized to sign this Statement of Data Authenticity.



Ms. Amy M. Barnett
Data Review Manager

Empirical Laboratories, LLC
Certifications/Approvals
(Revised 06/30/2016)

DoD ELAP QSM5.0, Certificate Number L2226
- Aqueous
- Non-aqueous
- Expires: 11/30/2018

State of Florida, Department of Health – NELAP Primary, Lab ID: E87646
- Clean Water Act
- RCRA/CERCLA
- Expires: 06/30/2017

State of Georgia, Environmental Protection Agency – NELAP, Self Certification
- Expires: 06/30/2017

Commonwealth of Kentucky, Energy and Environment Cabinet – WWLCP, Laboratory Number: 98017
- Wastewater
- Expires: 12/31/2016

Commonwealth of Kentucky, Department of Environmental Protection – UST, Certificate Number: 77
- Aqueous
- Non-aqueous
- Expires: 06/30/2017

State of New Jersey, Department of Environmental Protection – NELAP, Lab ID: TN473
- Water Pollution
- Solid and Hazardous Waste
- Expires: 06/30/2017

State of North Carolina, Department of Environment and Natural Resources - Certificate Number: 643
- Aqueous
- Non-aqueous
- Expires: 12/31/2016

State of Texas, Commission on Environmental Quality – NELAP, Certificate Number: T104704307-16-12
- Aqueous
- Non-aqueous
- Expires: 12/31/2016

State of Utah, Department of Health – NELAP, Certificate Number: TN0042015-7
- Aqueous
- Non-aqueous
- Expires: 07/31/2016

Commonwealth of Virginia, Department of General Services – NELAP, Certificate Number: 8176, Lab ID: 460243
- Aqueous
- Non-aqueous
- Expires: 12/14/2016

State of Washington, Department of Ecology – NELAP, Lab ID: C934-16
- Groundwater
- Solid and Hazardous Waste
- Expires: 03/18/2017

ORGANIC CALCULATIONS

GC/MS Volatiles

$$\text{Final Concentration} = \frac{\text{On-column(ug/L or ug/Kg) * Expected Vol/Weight (mL or g) * Dilution}}{\text{Initial Vol/Weight (mL or g) * (Percent Solids/100) (if applicable)}}$$

Note - Expected Vol/Weight value is found in "Final Vol" column of Preparation Batch Summary.

GC/MS Extractables

$$\text{Final Concentration} = \frac{\text{On-column(ng/uL) * Final Vol (ml) * Dilution *(1000uL/mL)}}{\text{Initial Vol/Weight (mL or g) * (Percent Solids/100) (if applicable)}}$$

= ng/mL or ng/g

= ug/L or ug/kg

GC or LC Extractables

$$\text{Final Concentration} = \frac{\text{On-column(ng/mL) * Final Vol (mL) * Dilution}}{\text{Initial Vol/Weight (mL or g) * (Percent Solids/100) (if applicable)}}$$

= ng/mL or ng/g

= ug/L or ug/kg

Sample Receipt Information

EMPIRICAL LABORATORIES, LLC - CHAIN OF CUSTODY RECORD

32356

SHIP TO: 621 Mainstream Drive, Suite 270 ♦ Nashville, TN 37228 ♦ 877-345-1113 ♦ (fax) 866-417-0548

1608251-01 A

	Send Invoice to:
Name Mike Zamboni	Name CH2M Hill AP
Company CH2M Hill	Company CH2M Hill
Address 2411 Dulles Corner Park, Suite 600	Address
City Herndon	City
State, Zip VA, 20171	State, Zip
Phone 703-376-5301	Phone
Fax	Fax
E-mail Michael.Zamboni@CH2M.com	E-mail
Project No./Name: PO: 100077100862	**Sampler's (Signature):**

Analysis Requirements: TAL Metals, SW-846 6010B*

Lab Use Only:

VOA Headspace	Y	N	NA
Field Filtered	Y	N	NA
Correct Containers	Y	N	NA
Discrepancies	Y	N	NA
Cust. Seals Intact	Y	N	NA
Containers Intact	Y	N	NA

Airbill #:

CAR #:

Lab Use Only Lab #	Date/Time Sampled	Sample Description	Sample Matrix	Comments	No. of Bottles	Lab Use Only Containers/Pres.
01	8/24/16 0921	DSA05-SB29-0010	Soil		1	
02	8/24/16 0949	DSA05-SB30-0010			1	
03	8/24/16 1006	DSA05-SB31-0010			1	
04	8/24/16 1036	DSA05-SB32-0010			1	
05	8/24/16 1228	DSA01-SB01-0010			1	
06	8/24/16 1245	DSA01-SB02-0010			1	
07	8/24/16 1257	DSA01-SB03-0010			1	
08	8/24/16 1312	DSA01-SB04-0010			1	
09	8/24/16 1349	DSA01-SB05-0010			1	
10	8/24/16 1402	DSA01-SB06-0010			1	
11	8/24/16 1420	DSA01-SB07-0010			1	
12	8/24/16 1435	DSA01-SB08-0010			1	

	Date/Time	Received By: (Signature)
Sample Kit Prep'd by: (Signature)	8/25/16 1530	
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Received for Laboratory by: (Signature)	Date/Time 8/25/16 845	Temperature

REMARKS:

* Metal (TAL from ILM05 (incl. Hg) + Mo)

Details:

Page 1 of 2

Cooler No. 1 of 1

Date Shipped 8/25/16

Shipped By DH

Turnaround Standard

Distribution: Original and yellow copies accompany sample shipment to laboratory; Pink retained by samplers.

EMPIRICAL LABORATORIES, LLC - CHAIN OF CUSTODY RECORD

32353

SHIP TO: 621 Mainstream Drive, Suite 270 ♦ Nashville, TN 37228 ♦ 877-345-1113 ♦ (fax) 866-417-0548

Send Results to:	Send Invoice to:
Name Mike Zamboni	Name CH2M Hill AP
Company CH2M Hill	Company CH2M Hill
Address 2411 Dulles Corner Park Suite 500	Address
City Herndon	City
State, Zip VA, 20171	State, Zip
Phone 703-376-5301	Phone
Fax	Fax
E-mail Michael.Zamboni@ch2m.com	E-mail
Project No./Name: PO: 1000077100862	**Sampler's (Signature):**

Analysis Requirements: TAL Metals, SW-846 6010B*

Lab Use Only:

VOA Headspace	Y	N	NA
Field Filtered	Y	N	NA
Correct Containers	Y	N	NA
Discrepancies	Y	N	NA
Cust. Seals Intact	Y	N	NA
Containers Intact	Y	N	NA

Airbill #:

CAR #:

Lab Use Only Lab #	Date/Time Sampled	Sample Description	Sample Matrix	Comments	No. of Bottles	Lab Use Only Containers/Pres.
13	8/25/16 0907	DSA02-SB09-0010	Soil		1	
14	8/25/16 0911	DSA02-SB10-0010	↓		1	
15	8/25/16 0955	DSA02-SB11-0010			1	
16	8/25/16 1144	DSA02-SB12-0010			1	
17	8/25/16 1234	DSA02-SB13-0010			1	
18	8/25/16 1314	DSA02-SB14-0010			1	
19	8/25/16 1328	DSA02-SB15-0010			1	
20	8/25/16 1340	DSA02-SB16-0010	↓		1	

	Date/Time	
Sample Kit Prep'd by: (Signature)	8/25/16 1530	Received By: (Signature)
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Received for Laboratory by: (Signature)	Date/Time 8/25/16 845	Temperature

REMARKS:

* Metal (TAL from ILM05 (incl. Hg) + Mo)

Details:

Page 2 of 2

Cooler No. 1 of 1

Date Shipped 8/25/16

Shipped By DH

Turnaround Standard

Distribution: Original and yellow copies accompany sample shipment to laboratory; Pink retained by samplers.

II. EMPIRICAL LABORATORIES
COOLER RECEIPT FORM

Cooler Received/Opened On: 8/26/16@845 Workorder# 1608251

1. Tracking # 4237 (last 4 digits, FedEx)

   Courier: FedEx

2. Temperature of rep. sample or temp blank when opened: 2.5 °C + *correction factor (+0.1)* = 2.6 °C

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO...NA

4. Were custody seals on outside of cooler? YES...NO...NA

   If yes, how many and where: 1 front

5. Were the seals intact, signed, and dated correctly? YES...NO...NA

6. Were custody papers inside cooler? YES...NO...NA

I certify that I opened the cooler and answered questions 1-6 (initial/date) TH 8/26/16

7. Were custody seals on containers: YES NO and Intact YES...NO...NA

   Were these signed and dated correctly? YES...NO...NA

8. Packing material used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None

10. Did all containers arrive in good condition (unbroken)? YES...NO...NA

11. Were all container labels complete (#, date, signed, pres., etc)? YES...NO...NA

12. Did all container labels and tags agree with custody papers? YES...NO...NA

13. a. Were VOA vials received? YES...NO...NA

    b. Was there observable headspace present in any VOA vial (>5mm-6mm)? YES...NO...NA

14. Was there a Trip Blank in this cooler (custody seals present/intact)? YES...NO...NA...Comments_____
    If multiple coolers, sequence #_____

I certify that I unloaded the cooler and answered questions 7-14 (initial/date) TH 8/26/16

15. a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES...NO...NA

    b. Did the bottle labels indicate that the correct preservatives were used? YES...NO...NA

16. Was residual chlorine present for Cyanide "Effluent" samples? If so, treated/documented? YES...NO...NA

17. For 608 Pest/PCB samples, was pH <5 or >9? Was residual chlorine present? If either, adjusted/documented? YES...NO...NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-17 (initial/date) TH 8/26/16

18. Were custody papers properly filled out (ink, signed, etc)? YES...NO...NA

19. Did you sign the custody papers in the appropriate place? YES...NO...NA

20. Were correct containers used for the analysis requested? YES...NO...NA If not, PM notified? YES...NO...NA

21. Was sufficient amount of sample sent in each container? YES...NO...NA If not, PM notified? YES...NO...NA

22. Were there Non-Conformance issues at login? YES...NO...NCR#_____

I certify that I entered this project into LIMS and answered questions 18-22 (initial/date) TH 8/26/16

I certify that I attached a unique LIMS number label with matching sample name to each container (initial/date) TH 8/26/16

I certify that I notified the laboratory of any short holding time or RUSH parameters (initial/date) TH 8/26/16

Printed: 8/29/2016 1:20:53PM

Empirical Laboratories, LLC

WORK ORDER

1608251

Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Project Manager: Sonya Gordo
Project Number: CH2_Raritan

Report To:
CH2M Hill, Inc.
Michael Zamboni
2411 Dulles Corner Park
Herndon, VA 20171
Phone: (703) 376-5301
Fax: (303) 771-0952

Invoice To:
CH2M Hill, Inc.
Accounts Payable
P.O.Box 241329
Denver, CO 80224-____
Phone :(303) 771-0952
Fax: (303) 771-0952

Date Due: 09/26/2016 16:00 (20 day TAT)
Logged In By: Tiana L. Hutchings
Date Received: 08/26/2016 08:45
Received By: Tiana L. Hutchings

Samples Received at: **2.6°C**

Custody Seals	Yes	Received On Ice	Yes
Containers Intact	Yes		
COC/Labels Agree	Yes		
Preservation Confirme	No		

Analysis	TAT	Expires	Version	Comments
1608251-01 DSA05-SB29-0010 [Solid] Sampled 08/24/2016 09:21 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/21/2016 08:21		
MET_ICP_LOW6010C_FULL_Q5	20	02/20/2017 08:21	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/31/2016 08:21		
1608251-02 DSA05-SB30-0010 [Solid] Sampled 08/24/2016 09:49 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/21/2016 08:49		
MET_ICP_LOW6010C_FULL_Q5	20	02/20/2017 08:49	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/31/2016 08:49		
1608251-03 DSA05-SB31-0010 [Solid] Sampled 08/24/2016 10:06 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/21/2016 09:06		
MET_ICP_LOW6010C_FULL_Q5	20	02/20/2017 09:06	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/31/2016 09:06		
1608251-04 DSA05-SB32-0010 [Solid] Sampled 08/24/2016 10:36 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/21/2016 09:36		
MET_ICP_LOW6010C_FULL_Q5	20	02/20/2017 09:36	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/31/2016 09:36		

Printed: 8/29/2016 1:20:53PM

Empirical Laboratories, LLC

WORK ORDER

1608251

Client:	**CH2M Hill, Inc.**	**Project Manager:**	**Sonya Gordon**
Project:	**Raritan Arsenal - Phase III**	**Project Number:**	**CH2_Raritan**

Analysis	TAT	Expires	Version	Comments
1608251-05 DSA01-SB01-0010 [Solid] Sampled 08/24/2016 12:28 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/21/2016 11:28		
MET_ICP_LOW6010C_FULL_Q5	20	02/20/2017 11:28	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/31/2016 11:28		
1608251-06 DSA01-SB02-0010 [Solid] Sampled 08/24/2016 12:45 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/21/2016 11:45		
MET_ICP_LOW6010C_FULL_Q5	20	02/20/2017 11:45	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/31/2016 11:45		
1608251-07 DSA01-SB03-0010 [Solid] Sampled 08/24/2016 12:57 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/21/2016 11:57		
MET_ICP_LOW6010C_FULL_Q5	20	02/20/2017 11:57	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/31/2016 11:57		
1608251-08 DSA01-SB04-0010 [Solid] Sampled 08/24/2016 13:12 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/21/2016 12:12		
MET_ICP_LOW6010C_FULL_Q5	20	02/20/2017 12:12	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/31/2016 12:12		
1608251-09 DSA01-SB05-0010 [Solid] Sampled 08/24/2016 13:49 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/21/2016 12:49		
MET_ICP_LOW6010C_FULL_Q5	20	02/20/2017 12:49	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/31/2016 12:49		
1608251-10 DSA01-SB06-0010 [Solid] Sampled 08/24/2016 14:02 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/21/2016 13:02		
MET_ICP_LOW6010C_FULL_Q5	20	02/20/2017 13:02	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/31/2016 13:02		

Printed: 8/29/2016 1:20:53PM

Empirical Laboratories, LLC

WORK ORDER

1608251

Client: CH2M Hill, Inc. **Project Manager:** Sonya Gordon
Project: Raritan Arsenal - Phase III **Project Number:** CH2_Raritan

Analysis	TAT	Expires	Version	Comments
1608251-11 DSA01-SB07-0010 [Solid] Sampled 08/24/2016 14:20 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/21/2016 13:20		
MET_ICP_LOW6010C_FULL_Q5	20	02/20/2017 13:20	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/31/2016 13:20		
1608251-12 DSA01-SB08-0010 [Solid] Sampled 08/24/2016 14:35 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/21/2016 13:35		
MET_ICP_LOW6010C_FULL_Q5	20	02/20/2017 13:35	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	08/31/2016 13:35		
1608251-13 DSA02-SB09-0010 [Solid] Sampled 08/25/2016 09:07 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/22/2016 08:07		
MET_ICP_LOW6010C_FULL_Q5	20	02/21/2017 08:07	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	09/01/2016 08:07		
1608251-14 DSA02-SB10-0010 [Solid] Sampled 08/25/2016 09:19 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/22/2016 08:19		
MET_ICP_LOW6010C_FULL_Q5	20	02/21/2017 08:19	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	09/01/2016 08:19		
1608251-15 DSA02-SB11-0010 [Solid] Sampled 08/25/2016 09:55 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/22/2016 08:55		
MET_ICP_LOW6010C_FULL_Q5	20	02/21/2017 08:55	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	09/01/2016 08:55		
1608251-16 DSA02-SB12-0010 [Solid] Sampled 08/25/2016 11:44 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/22/2016 10:44		
MET_ICP_LOW6010C_FULL_Q5	20	02/21/2017 10:44	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	09/01/2016 10:44		

Printed: 8/29/2016 1:20:53PM

Empirical Laboratories, LLC

WORK ORDER

1608251

Client: CH2M Hill, Inc. **Project Manager:** Sonya Gordon
Project: Raritan Arsenal - Phase III **Project Number:** CH2_Raritan

Analysis	TAT	Expires	Version	Comments
1608251-17 DSA02-SB13-0010 [Solid] Sampled 08/25/2016 12:34 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/22/2016 11:34		
MET_ICP_LOW6010C_FULL_Q5	20	02/21/2017 11:34	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	09/01/2016 11:34		
1608251-18 DSA02-SB14-0010 [Solid] Sampled 08/25/2016 13:14 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/22/2016 12:14		
MET_ICP_LOW6010C_FULL_Q5	20	02/21/2017 12:14	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	09/01/2016 12:14		
1608251-19 DSA02-SB15-0010 [Solid] Sampled 08/25/2016 13:28 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/22/2016 12:28		
MET_ICP_LOW6010C_FULL_Q5	20	02/21/2017 12:28	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	09/01/2016 12:28		
1608251-20 DSA02-SB16-0010 [Solid] Sampled 08/25/2016 13:40 (GMT-05:00) Eastern Time (US & Canada)				
MET_7471B_MERCURY_Q5	20	09/22/2016 12:40		
MET_ICP_LOW6010C_FULL_Q5	20	02/21/2017 12:40	TAL + Mo	
WC_PERCENT_SOLIDS_2540B	20	09/01/2016 12:40		

Printed: 8/29/2016 1:20:53PM

Empirical Laboratories, LLC

WORK ORDER

1608251

Client:	**CH2M Hill, Inc.**	**Project Manager:**	**Sonya Gordon**
Project:	**Raritan Arsenal - Phase III**	**Project Number:**	**CH2_Raritan**

MET_ICP_LOW6010C_FULL_Q5 **Extraction: MET_3050B**

TAL + Mo

Aluminum
Antimony
Arsenic
Barium
Beryllium
Cadmium
Calcium
Chromium
Cobalt
Copper
Iron
Lead
Magnesium
Manganese
Molybdenum
Nickel
Potassium
Selenium
Silver
Sodium
Thallium
Vanadium
Zinc

Sample Delivery Group Assignment Form

CLIENT: CH2M Hill, Inc.
PROJECT NAME: Raritan Arsenal - Phase III
SDG #: 1608251

QC LEVEL: Level IV
Report Due: 9/26/2016
Client Sample Count: 20

Sample Type	Sampled	Received	Lab ID	Client ID	Lab Matrix	SM2540B	SW6010C	SW7471B
Client Sample	8/24/2016	8/26/2016	1608251-01	DSA05-SB29-0010	Solid	X	X	X
Client Sample	8/24/2016	8/26/2016	1608251-02	DSA05-SB30-0010	Solid	X	X	X
Client Sample	8/24/2016	8/26/2016	1608251-03	DSA05-SB31-0010	Solid	X	X	X
Client Sample	8/24/2016	8/26/2016	1608251-04	DSA05-SB32-0010	Solid	X	X	X
Client Sample	8/24/2016	8/26/2016	1608251-05	DSA01-SB01-0010	Solid	X	X	X
Client Sample	8/24/2016	8/26/2016	1608251-06	DSA01-SB02-0010	Solid	X	X	X
Client Sample	8/24/2016	8/26/2016	1608251-07	DSA01-SB03-0010	Solid	X	X	X
Client Sample	8/24/2016	8/26/2016	1608251-08	DSA01-SB04-0010	Solid	X	X	X
Client Sample	8/24/2016	8/26/2016	1608251-09	DSA01-SB05-0010	Solid	X	X	X
Client Sample	8/24/2016	8/26/2016	1608251-10	DSA01-SB06-0010	Solid	X	X	X
Client Sample	8/24/2016	8/26/2016	1608251-11	DSA01-SB07-0010	Solid	X	X	X
Client Sample	8/24/2016	8/26/2016	1608251-12	DSA01-SB08-0010	Solid	X	X	X
Client Sample	8/25/2016	8/26/2016	1608251-13	DSA02-SB09-0010	Solid	X	X	X
Client Sample	8/25/2016	8/26/2016	1608251-14	DSA02-SB10-0010	Solid	X	X	X
Client Sample	8/25/2016	8/26/2016	1608251-15	DSA02-SB11-0010	Solid	X	X	X
Client Sample	8/25/2016	8/26/2016	1608251-16	DSA02-SB12-0010	Solid	X	X	X
Client Sample	8/25/2016	8/26/2016	1608251-17	DSA02-SB13-0010	Solid	X	X	X
Client Sample	8/25/2016	8/26/2016	1608251-18	DSA02-SB14-0010	Solid	X	X	X
Client Sample	8/25/2016	8/26/2016	1608251-19	DSA02-SB15-0010	Solid	X	X	X
Client Sample	8/25/2016	8/26/2016	1608251-20	DSA02-SB16-0010	Solid	X	X	X

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA05-SB29-0010
Lab Sample ID: 1608251-01

Sample Collection D/T : 08/24/2016 09:21
Sample Matrix: Solid

Metals (Total) by ICP

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	24,177.6500	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Antimony	7.1060	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Arsenic	178.9938	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Barium	149.1830	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Beryllium	1.3058	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Cadmium	6.7901	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Calcium	3,122.4160	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Chromium	192.2786	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Cobalt	18.3074	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Copper	499.5538	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Iron	53,889.9400	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Lead	289.6559	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Magnesium	7,545.0020	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Manganese	334.4171	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Molybdenum	3.7668	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Nickel	55.3362	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Potassium	3,380.8910	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Selenium	9.7808	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Silver	7.5590	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Sodium	5,190.6250	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Thallium	1.0878	mg/Kg dry	2	D	09/14/16 15:00		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Vanadium	118.2994	mg/Kg dry	2	D	09/14/16 15:00		SW6010C
Zinc	708.6517	mg/Kg dry	2	D	09/14/16 15:00		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA05-SB30-0010
Lab Sample ID: 1608251-02

Sample Collection D/T : 08/24/2016 09:49
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	23,751.6000	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Antimony	1.4419	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Arsenic	67.6013	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Barium	131.6103	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Beryllium	1.0128	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Cadmium	0.8532	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Calcium	1,211.5680	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Chromium	145.1708	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Cobalt	11.2313	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Copper	410.8986	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Iron	52,545.4700	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Lead	246.5313	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Magnesium	6,146.2190	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Manganese	227.1986	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Molybdenum	2.3243	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Nickel	34.7278	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Potassium	2,621.1580	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Selenium	4.5116	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Silver	6.1569	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Sodium	1,910.0700	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Thallium	0.7086	mg/Kg dry	2	D	09/14/16 15:05		SW6010C
Vanadium	99.3661	mg/Kg dry	2	D	09/14/16 15:05		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	186.1462	mg/Kg dry	2	D	09/14/16 15:05		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA05-SB31-0010
Lab Sample ID: 1608251-03

Sample Collection D/T : 08/24/2016 10:06
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	23,825.7400	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Antimony	3.7067	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Arsenic	169.0133	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Barium	187.1795	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Beryllium	1.2302	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Cadmium	2.0932	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Calcium	2,973.7760	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Chromium	214.5794	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Cobalt	14.4424	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Copper	633.8444	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Iron	48,764.3100	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Lead	287.4837	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Magnesium	6,947.9740	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Manganese	322.2712	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Molybdenum	1.7465	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Nickel	52.5367	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Potassium	3,560.6760	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Selenium	17.5765	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Silver	10.1254	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Sodium	3,748.4540	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Thallium	0.6306	mg/Kg dry	2	D	09/14/16 15:49		SW6010C
Vanadium	104.6713	mg/Kg dry	2	D	09/14/16 15:49		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	434.7698	mg/Kg dry	2	D	09/14/16 15:49		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA05-SB32-0010
Lab Sample ID: 1608251-04

Sample Collection D/T : 08/24/2016 10:36
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	22,901.1300	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Antimony	8.7878	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Arsenic	136.3829	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Barium	155.3319	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Beryllium	0.9180	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Cadmium	3.3293	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Calcium	2,554.6730	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Chromium	186.8900	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Cobalt	15.1229	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Copper	395.5598	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Iron	44,679.0800	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Lead	293.7281	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Magnesium	6,949.0380	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Manganese	245.6108	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Molybdenum	2.5428	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Nickel	46.0945	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Potassium	3,234.6960	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Selenium	6.3156	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Silver	6.4065	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Sodium	5,012.8810	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Thallium	1.2503	mg/Kg dry	2	D	09/14/16 15:54		SW6010C
Vanadium	111.3252	mg/Kg dry	2	D	09/14/16 15:54		SW6010C

Empirical Laboratories, LLC
621 Mainstream Drive, Suite 270 I Nashville, TN 37228 I Main: 615.345.1115 I Fax: 877.345.1113 I www.empirlabs.com

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	415.3492	mg/Kg dry	2	D	09/14/16 15:54		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB01-0010
Lab Sample ID: 1608251-05

Sample Collection D/T : 08/24/2016 12:28
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	13,852.3300	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Antimony	-0.1082	mg/Kg dry	2		09/14/16 15:58		SW6010C
Arsenic	5.6097	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Barium	15.2200	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Beryllium	0.6905	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Cadmium	0.0074	mg/Kg dry	2		09/14/16 15:58		SW6010C
Calcium	424.3748	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Chromium	22.8852	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Cobalt	8.3840	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Copper	14.6663	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Iron	21,906.1300	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Lead	9.9247	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Magnesium	3,545.1900	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Manganese	117.2612	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Molybdenum	0.6255	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Nickel	15.6584	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Potassium	1,863.6130	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Selenium	0.2643	mg/Kg dry	2		09/14/16 15:58		SW6010C
Silver	-0.0777	mg/Kg dry	2		09/14/16 15:58		SW6010C
Sodium	1,083.9940	mg/Kg dry	2	D	09/14/16 15:58		SW6010C
Thallium	-0.0438	mg/Kg dry	2		09/14/16 15:58		SW6010C
Vanadium	34.6189	mg/Kg dry	2	D	09/14/16 15:58		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	42.0370	mg/Kg dry	2	D	09/14/16 15:58		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB02-0010
Lab Sample ID: 1608251-06

Sample Collection D/T : 08/24/2016 12:45
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	8,883.5340	mg/Kg dry	2	D	09/14/16 16:02		SW6010C
Antimony	-0.1040	mg/Kg dry	2		09/14/16 16:02		SW6010C
Arsenic	6.2183	mg/Kg dry	2	D	09/14/16 16:02		SW6010C
Barium	10.7101	mg/Kg dry	2	D	09/14/16 16:02		SW6010C
Beryllium	0.5155	mg/Kg dry	2	D	09/14/16 16:02		SW6010C
Cadmium	0.0310	mg/Kg dry	2		09/14/16 16:02		SW6010C
Calcium	303.5761	mg/Kg dry	2	D	09/14/16 16:02		SW6010C
Chromium	18.0261	mg/Kg dry	2	D	09/14/16 16:02		SW6010C
Cobalt	6.5959	mg/Kg dry	2	D	09/14/16 16:02		SW6010C
Copper	9.5686	mg/Kg dry	2	D	09/14/16 16:02		SW6010C
Iron	20,157.4100	mg/Kg dry	2	D	09/14/16 16:02		SW6010C
Lead	8.3920	mg/Kg dry	2	D	09/14/16 16:02		SW6010C
Magnesium	3,027.7400	mg/Kg dry	2	D	09/14/16 16:02		SW6010C
Manganese	71.3577	mg/Kg dry	2	D	09/14/16 16:02		SW6010C
Molybdenum	0.5605	mg/Kg dry	2		09/14/16 16:02		SW6010C
Nickel	12.7585	mg/Kg dry	2	D	09/14/16 16:02		SW6010C
Potassium	1,735.2600	mg/Kg dry	2	D	09/14/16 16:02		SW6010C
Selenium	0.1555	mg/Kg dry	2		09/14/16 16:02		SW6010C
Silver	-0.0334	mg/Kg dry	2		09/14/16 16:02		SW6010C
Sodium	975.2225	mg/Kg dry	2	D	09/14/16 16:02		SW6010C
Thallium	0.0131	mg/Kg dry	2		09/14/16 16:02		SW6010C
Vanadium	27.1824	mg/Kg dry	2	D	09/14/16 16:02		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	39.0422	mg/Kg dry	2	D	09/14/16 16:02		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB03-0010
Lab Sample ID: 1608251-07

Sample Collection D/T : 08/24/2016 12:57
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	11,680.9200	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Antimony	-0.3101	mg/Kg dry	2		09/14/16 16:07		SW6010C
Arsenic	4.5478	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Barium	11.0742	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Beryllium	0.5758	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Cadmium	-0.0175	mg/Kg dry	2		09/14/16 16:07		SW6010C
Calcium	318.6720	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Chromium	19.2292	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Cobalt	8.4601	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Copper	13.6224	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Iron	24,243.2600	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Lead	8.8874	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Magnesium	3,889.2480	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Manganese	94.1290	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Molybdenum	0.6856	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Nickel	15.4455	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Potassium	1,661.5780	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Selenium	0.4013	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Silver	-0.0649	mg/Kg dry	2		09/14/16 16:07		SW6010C
Sodium	767.3464	mg/Kg dry	2	D	09/14/16 16:07		SW6010C
Thallium	0.2025	mg/Kg dry	2		09/14/16 16:07		SW6010C
Vanadium	29.7877	mg/Kg dry	2	D	09/14/16 16:07		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	48.2031	mg/Kg dry	2	D	09/14/16 16:07		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB04-0010
Lab Sample ID: 1608251-08

Sample Collection D/T : 08/24/2016 13:12
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	8,669.1490	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Antimony	-0.1737	mg/Kg dry	2		09/14/16 16:11		SW6010C
Arsenic	6.1062	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Barium	7.9774	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Beryllium	0.4732	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Cadmium	-0.0023	mg/Kg dry	2		09/14/16 16:11		SW6010C
Calcium	266.1167	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Chromium	13.8360	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Cobalt	7.6949	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Copper	8.6435	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Iron	16,895.1800	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Lead	6.3980	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Magnesium	2,067.0230	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Manganese	83.1836	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Molybdenum	0.3910	mg/Kg dry	2		09/14/16 16:11		SW6010C
Nickel	10.4666	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Potassium	1,486.9400	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Selenium	0.3655	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Silver	-0.0904	mg/Kg dry	2		09/14/16 16:11		SW6010C
Sodium	535.9241	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Thallium	-0.0165	mg/Kg dry	2		09/14/16 16:11		SW6010C
Vanadium	19.3592	mg/Kg dry	2	D	09/14/16 16:11		SW6010C
Zinc	32.6035	mg/Kg dry	2	D	09/14/16 16:11		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB05-0010
Lab Sample ID: 1608251-09

Sample Collection D/T : 08/24/2016 13:49
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	10,026.3600	mg/Kg dry	2	D	09/14/16 16:15		SW6010C
Antimony	-0.2607	mg/Kg dry	2		09/14/16 16:15		SW6010C
Arsenic	4.3098	mg/Kg dry	2	D	09/14/16 16:15		SW6010C
Barium	12.1674	mg/Kg dry	2	D	09/14/16 16:15		SW6010C
Beryllium	0.5108	mg/Kg dry	2	D	09/14/16 16:15		SW6010C
Cadmium	0.0067	mg/Kg dry	2		09/14/16 16:15		SW6010C
Calcium	268.2064	mg/Kg dry	2	D	09/14/16 16:15		SW6010C
Chromium	17.4915	mg/Kg dry	2	D	09/14/16 16:15		SW6010C
Cobalt	6.7214	mg/Kg dry	2	D	09/14/16 16:15		SW6010C
Copper	12.3171	mg/Kg dry	2	D	09/14/16 16:15		SW6010C
Iron	18,519.2700	mg/Kg dry	2	D	09/14/16 16:15		SW6010C
Lead	8.1669	mg/Kg dry	2	D	09/14/16 16:15		SW6010C
Magnesium	3,186.6530	mg/Kg dry	2	D	09/14/16 16:15		SW6010C
Manganese	78.0845	mg/Kg dry	2	D	09/14/16 16:15		SW6010C
Molybdenum	0.4204	mg/Kg dry	2		09/14/16 16:15		SW6010C
Nickel	13.6219	mg/Kg dry	2	D	09/14/16 16:15		SW6010C
Potassium	1,729.2270	mg/Kg dry	2	D	09/14/16 16:15		SW6010C
Selenium	0.1466	mg/Kg dry	2		09/14/16 16:15		SW6010C
Silver	-0.1050	mg/Kg dry	2		09/14/16 16:15		SW6010C
Sodium	860.0403	mg/Kg dry	2	D	09/14/16 16:15		SW6010C
Thallium	-0.0670	mg/Kg dry	2		09/14/16 16:15		SW6010C
Vanadium	25.9732	mg/Kg dry	2	D	09/14/16 16:15		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	40.0335	mg/Kg dry	2	D	09/14/16 16:15		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB06-0010
Lab Sample ID: 1608251-10

Sample Collection D/T : 08/24/2016 14:02
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	5,617.1710	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Antimony	-0.2375	mg/Kg dry	2		09/14/16 16:20		SW6010C
Arsenic	4.8793	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Barium	8.0230	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Beryllium	0.3267	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Cadmium	-0.0006	mg/Kg dry	2		09/14/16 16:20		SW6010C
Calcium	184.0160	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Chromium	10.9539	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Cobalt	6.8929	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Copper	5.9500	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Iron	15,700.9800	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Lead	4.7606	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Magnesium	1,597.1040	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Manganese	60.8472	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Molybdenum	0.4021	mg/Kg dry	2		09/14/16 16:20		SW6010C
Nickel	7.6330	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Potassium	1,090.0620	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Selenium	0.2384	mg/Kg dry	2		09/14/16 16:20		SW6010C
Silver	-0.0775	mg/Kg dry	2		09/14/16 16:20		SW6010C
Sodium	312.9947	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Thallium	0.0886	mg/Kg dry	2		09/14/16 16:20		SW6010C
Vanadium	14.8872	mg/Kg dry	2	D	09/14/16 16:20		SW6010C
Zinc	22.8962	mg/Kg dry	2	D	09/14/16 16:20		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB07-0010
Lab Sample ID: 1608251-11

Sample Collection D/T : 08/24/2016 14:20
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	9,188.7980	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Antimony	-0.2687	mg/Kg dry	2		09/14/16 16:24		SW6010C
Arsenic	2.7315	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Barium	9.6678	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Beryllium	0.5279	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Cadmium	-0.0142	mg/Kg dry	2		09/14/16 16:24		SW6010C
Calcium	351.0481	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Chromium	18.9891	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Cobalt	4.8121	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Copper	10.2346	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Iron	16,685.4800	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Lead	7.0913	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Magnesium	2,742.9700	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Manganese	110.7024	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Molybdenum	0.3569	mg/Kg dry	2		09/14/16 16:24		SW6010C
Nickel	12.1604	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Potassium	1,662.5700	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Selenium	0.2053	mg/Kg dry	2		09/14/16 16:24		SW6010C
Silver	-0.0265	mg/Kg dry	2		09/14/16 16:24		SW6010C
Sodium	470.9871	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Thallium	0.0357	mg/Kg dry	2		09/14/16 16:24		SW6010C
Vanadium	30.1213	mg/Kg dry	2	D	09/14/16 16:24		SW6010C
Zinc	34.8235	mg/Kg dry	2	D	09/14/16 16:24		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB08-0010
Lab Sample ID: 1608251-12

Sample Collection D/T : 08/24/2016 14:35
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	13,657.3500	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Antimony	-0.5181	mg/Kg dry	5		09/14/16 16:53		SW6010C
Arsenic	6.6252	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Barium	17.9787	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Beryllium	0.9259	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Cadmium	-0.0137	mg/Kg dry	5		09/14/16 16:53		SW6010C
Calcium	475.6814	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Chromium	23.1802	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Cobalt	9.5335	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Copper	11.7604	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Iron	25,848.0000	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Lead	11.1473	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Magnesium	4,692.5050	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Manganese	141.7816	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Molybdenum	0.7601	mg/Kg dry	5		09/14/16 16:53		SW6010C
Nickel	17.7056	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Potassium	2,733.8920	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Selenium	0.4109	mg/Kg dry	5		09/14/16 16:53		SW6010C
Silver	0.0052	mg/Kg dry	5		09/14/16 16:53		SW6010C
Sodium	1,259.4670	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Thallium	0.1689	mg/Kg dry	5		09/14/16 16:53		SW6010C
Vanadium	30.5307	mg/Kg dry	5	D	09/14/16 16:53		SW6010C
Zinc	50.6913	mg/Kg dry	5	D	09/14/16 16:53		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB09-0010
Lab Sample ID: 1608251-13

Sample Collection D/T : 08/25/2016 09:07
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	25,618.4600	mg/Kg dry	5	D	09/14/16 16:57		SW6010C
Antimony	-0.5610	mg/Kg dry	5		09/14/16 16:57		SW6010C
Arsenic	13.1779	mg/Kg dry	5	D	09/14/16 16:57		SW6010C
Barium	45.0789	mg/Kg dry	5	D	09/14/16 16:57		SW6010C
Beryllium	1.3661	mg/Kg dry	5	D	09/14/16 16:57		SW6010C
Cadmium	0.0089	mg/Kg dry	5		09/14/16 16:57		SW6010C
Calcium	2,140.2470	mg/Kg dry	5	D	09/14/16 16:57		SW6010C
Chromium	47.5289	mg/Kg dry	5	D	09/14/16 16:57		SW6010C
Cobalt	15.7063	mg/Kg dry	5	D	09/14/16 16:57		SW6010C
Copper	17.8026	mg/Kg dry	5	D	09/14/16 16:57		SW6010C
Iron	42,715.4500	mg/Kg dry	5	D	09/14/16 16:57		SW6010C
Lead	18.0440	mg/Kg dry	5	D	09/14/16 16:57		SW6010C
Magnesium	8,790.8480	mg/Kg dry	5	D	09/14/16 16:57		SW6010C
Manganese	291.0506	mg/Kg dry	5	D	09/14/16 16:57		SW6010C
Molybdenum	2.3148	mg/Kg dry	5		09/14/16 16:57		SW6010C
Nickel	35.9352	mg/Kg dry	5	D	09/14/16 16:57		SW6010C
Potassium	5,275.3480	mg/Kg dry	5	D	09/14/16 16:57		SW6010C
Selenium	0.4697	mg/Kg dry	5		09/14/16 16:57		SW6010C
Silver	-0.0357	mg/Kg dry	5		09/14/16 16:57		SW6010C
Sodium	3,255.0190	mg/Kg dry	5	D	09/14/16 16:57		SW6010C
Thallium	-0.0164	mg/Kg dry	5		09/14/16 16:57		SW6010C
Vanadium	58.0340	mg/Kg dry	5	D	09/14/16 16:57		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	111.3187	mg/Kg dry	5	D	09/14/16 16:57		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB10-0010
Lab Sample ID: 1608251-14

Sample Collection D/T : 08/25/2016 09:19
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	25,111.7800	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Antimony	-1.1125	mg/Kg dry	5		09/14/16 17:01		SW6010C
Arsenic	26.4949	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Barium	41.8162	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Beryllium	1.1988	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Cadmium	-0.0416	mg/Kg dry	5		09/14/16 17:01		SW6010C
Calcium	1,776.0720	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Chromium	43.4997	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Cobalt	14.7361	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Copper	13.3358	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Iron	57,522.5500	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Lead	16.0434	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Magnesium	7,164.6330	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Manganese	314.0797	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Molybdenum	6.9145	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Nickel	32.7116	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Potassium	5,017.7070	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Selenium	0.6603	mg/Kg dry	5		09/14/16 17:01		SW6010C
Silver	-0.1423	mg/Kg dry	5		09/14/16 17:01		SW6010C
Sodium	2,844.5610	mg/Kg dry	5	D	09/14/16 17:01		SW6010C
Thallium	-0.2948	mg/Kg dry	5		09/14/16 17:01		SW6010C
Vanadium	52.0785	mg/Kg dry	5	D	09/14/16 17:01		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	96.0259	mg/Kg dry	5	D	09/14/16 17:01		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB11-0010
Lab Sample ID: 1608251-15

Sample Collection D/T : 08/25/2016 09:55
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	24,472.7400	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Antimony	-0.4082	mg/Kg dry	5		09/14/16 17:06		SW6010C
Arsenic	19.2262	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Barium	41.5312	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Beryllium	1.4653	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Cadmium	0.0302	mg/Kg dry	5		09/14/16 17:06		SW6010C
Calcium	2,268.3210	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Chromium	45.4295	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Cobalt	17.7727	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Copper	16.8190	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Iron	55,814.5600	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Lead	16.9698	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Magnesium	8,167.6670	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Manganese	840.6097	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Molybdenum	6.6520	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Nickel	33.7898	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Potassium	5,011.9370	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Selenium	0.7850	mg/Kg dry	5		09/14/16 17:06		SW6010C
Silver	-0.3422	mg/Kg dry	5		09/14/16 17:06		SW6010C
Sodium	3,072.0450	mg/Kg dry	5	D	09/14/16 17:06		SW6010C
Thallium	0.5019	mg/Kg dry	5		09/14/16 17:06		SW6010C
Vanadium	56.2424	mg/Kg dry	5	D	09/14/16 17:06		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	101.5337	mg/Kg dry	5	D	09/14/16 17:06		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB12-0010
Lab Sample ID: 1608251-16

Sample Collection D/T : 08/25/2016 11:44
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	23,085.8500	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Antimony	-0.4858	mg/Kg dry	5		09/14/16 17:10		SW6010C
Arsenic	16.5205	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Barium	39.0072	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Beryllium	1.2314	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Cadmium	0.0724	mg/Kg dry	5		09/14/16 17:10		SW6010C
Calcium	2,036.4210	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Chromium	43.8683	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Cobalt	13.2269	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Copper	16.3704	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Iron	48,561.9400	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Lead	16.5838	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Magnesium	7,385.4060	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Manganese	645.0871	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Molybdenum	3.0227	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Nickel	31.0143	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Potassium	4,623.6740	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Selenium	0.0157	mg/Kg dry	5		09/14/16 17:10		SW6010C
Silver	-0.0626	mg/Kg dry	5		09/14/16 17:10		SW6010C
Sodium	2,843.2480	mg/Kg dry	5	D	09/14/16 17:10		SW6010C
Thallium	-0.1376	mg/Kg dry	5		09/14/16 17:10		SW6010C
Vanadium	53.3682	mg/Kg dry	5	D	09/14/16 17:10		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	95.0080	mg/Kg dry	5	D	09/14/16 17:10		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB13-0010
Lab Sample ID: 1608251-17

Sample Collection D/T : 08/25/2016 12:34
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	24,621.3600	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Antimony	-0.6549	mg/Kg dry	5		09/14/16 17:15		SW6010C
Arsenic	18.1067	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Barium	45.3532	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Beryllium	1.2483	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Cadmium	-0.0675	mg/Kg dry	5		09/14/16 17:15		SW6010C
Calcium	3,875.9280	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Chromium	45.0546	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Cobalt	8.8687	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Copper	9.3421	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Iron	34,789.8400	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Lead	11.7040	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Magnesium	7,927.7360	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Manganese	359.2004	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Molybdenum	10.6511	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Nickel	29.2777	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Potassium	5,687.1210	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Selenium	0.4642	mg/Kg dry	5		09/14/16 17:15		SW6010C
Silver	-0.3925	mg/Kg dry	5		09/14/16 17:15		SW6010C
Sodium	12,252.7300	mg/Kg dry	5	D	09/14/16 17:15		SW6010C
Thallium	0.0085	mg/Kg dry	5		09/14/16 17:15		SW6010C
Vanadium	58.9260	mg/Kg dry	5	D	09/14/16 17:15		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	82.1913	mg/Kg dry	5	D	09/14/16 17:15		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB14-0010
Lab Sample ID: 1608251-18

Sample Collection D/T : 08/25/2016 13:14
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	22,388.7700	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Antimony	-1.3480	mg/Kg dry	5		09/14/16 17:19		SW6010C
Arsenic	13.8460	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Barium	41.9735	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Beryllium	1.1294	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Cadmium	-0.1333	mg/Kg dry	5		09/14/16 17:19		SW6010C
Calcium	3,465.1280	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Chromium	40.7365	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Cobalt	8.9784	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Copper	11.8433	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Iron	43,244.5400	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Lead	14.9085	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Magnesium	7,267.5010	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Manganese	239.7000	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Molybdenum	6.2713	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Nickel	27.3276	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Potassium	5,037.3060	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Selenium	-0.5512	mg/Kg dry	5		09/14/16 17:19		SW6010C
Silver	-0.2558	mg/Kg dry	5		09/14/16 17:19		SW6010C
Sodium	12,578.6100	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Thallium	-0.0594	mg/Kg dry	5		09/14/16 17:19		SW6010C
Vanadium	58.5879	mg/Kg dry	5	D	09/14/16 17:19		SW6010C
Zinc	83.4839	mg/Kg dry	5	D	09/14/16 17:19		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB15-0010
Lab Sample ID: 1608251-19

Sample Collection D/T : 08/25/2016 13:28
Sample Matrix: Solid

Metals (Total) by ICP

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	23,597.6900	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Antimony	-2.3380	mg/Kg dry	5		09/14/16 17:23		SW6010C
Arsenic	7.2024	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Barium	46.2574	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Beryllium	0.7759	mg/Kg dry	5		09/14/16 17:23		SW6010C
Cadmium	-0.0758	mg/Kg dry	5		09/14/16 17:23		SW6010C
Calcium	4,133.7090	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Chromium	44.1470	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Cobalt	6.9677	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Copper	12.3140	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Iron	30,101.5600	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Lead	14.0961	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Magnesium	7,779.3790	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Manganese	372.9004	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Molybdenum	6.7324	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Nickel	22.8109	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Potassium	5,363.3610	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Selenium	0.9946	mg/Kg dry	5		09/14/16 17:23		SW6010C
Silver	-0.3401	mg/Kg dry	5		09/14/16 17:23		SW6010C
Sodium	15,256.0000	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Thallium	0.2727	mg/Kg dry	5		09/14/16 17:23		SW6010C
Vanadium	54.4877	mg/Kg dry	5	D	09/14/16 17:23		SW6010C
Zinc	60.4706	mg/Kg dry	5	D	09/14/16 17:23		SW6010C

Empirical Laboratories, LLC
621 Mainstream Drive, Suite 270 I Nashville, TN 37228 I Main: 615.345.1115 I Fax: 877.345.1113 I www.empirlabs.com

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB16-0010
Lab Sample ID: 1608251-20

Sample Collection D/T : 08/25/2016 13:40
Sample Matrix: Solid

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Aluminum	24,235.1100	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Antimony	-1.4778	mg/Kg dry	5		09/14/16 17:28		SW6010C
Arsenic	12.8692	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Barium	37.0393	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Beryllium	1.1511	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Cadmium	-0.0099	mg/Kg dry	5		09/14/16 17:28		SW6010C
Calcium	2,611.3700	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Chromium	36.7757	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Cobalt	11.9524	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Copper	12.7817	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Iron	42,605.9800	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Lead	16.8808	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Magnesium	7,474.6230	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Manganese	333.3968	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Molybdenum	5.3376	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Nickel	36.3676	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Potassium	4,931.8580	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Selenium	1.7834	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Silver	-0.1347	mg/Kg dry	5		09/14/16 17:28		SW6010C
Sodium	12,667.2000	mg/Kg dry	5	D	09/14/16 17:28		SW6010C
Thallium	0.2894	mg/Kg dry	5		09/14/16 17:28		SW6010C
Vanadium	43.9787	mg/Kg dry	5	D	09/14/16 17:28		SW6010C

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 4:11:44PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Metals (Total) by ICP **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Zinc	97.0314	mg/Kg dry	5	D	09/14/16 17:28		SW6010C

Forms For

Metals

Sample Extraction Data

Prep Method: MET_3050B-SW6010C

Lab Number [Field ID]	Batch	Nominal Initial/Final	Initial [g]	Final [mL]	Dilution	% Solids	Notes	Date
1608251-01 [DSA05-SB29-0010]	6H29015	2.00/100.00	2.00	100	2.00	48.75		09/08/16
1608251-02 [DSA05-SB30-0010]	6H29015	2.00/100.00	2.00	100	2.00	50.69		09/08/16
1608251-03 [DSA05-SB31-0010]	6H29015	2.00/100.00	2.02	100	2.00	52.94		09/08/16
1608251-04 [DSA05-SB32-0010]	6H29015	2.00/100.00	2.03	100	2.00	51.58		09/08/16
1608251-05 [DSA01-SB01-0010]	6H29015	2.00/100.00	2.04	100	2.00	82.51		09/08/16
1608251-06 [DSA01-SB02-0010]	6H29015	2.00/100.00	2.04	100	2.00	83.12		09/08/16
1608251-07 [DSA01-SB03-0010]	6H29015	2.00/100.00	2.04	100	2.00	83.35		09/08/16
1608251-08 [DSA01-SB04-0010]	6H29015	2.00/100.00	2.05	100	2.00	83.27		09/08/16
1608251-09 [DSA01-SB05-0010]	6H29015	2.00/100.00	2.00	100	2.00	84.84		09/08/16
1608251-10 [DSA01-SB06-0010]	6H29015	2.00/100.00	2.04	100	2.00	81.32		09/08/16
1608251-11 [DSA01-SB07-0010]	6H29015	2.00/100.00	2.04	100	2.00	83.63		09/08/16

Sample Extraction Data

Prep Method: MET_3050B-SW6010C

Lab Number [Field ID]	Batch	Nominal Initial/Final	Initial [g]	Final [mL]	Dilution	% Solids	Notes	Date
1608251-12 [DSA01-SB08-0010]	6I08012	2.00/100.00	2.05	100	5.00	84.58		09/08/16
1608251-13 [DSA02-SB09-0010]	6I08012	2.00/100.00	2.01	100	5.00	53.37		09/08/16
1608251-14 [DSA02-SB10-0010]	6I08012	2.00/100.00	2.05	100	5.00	52.46		09/08/16
1608251-15 [DSA02-SB11-0010]	6I08012	2.00/100.00	2.05	100	5.00	46.75		09/08/16
1608251-16 [DSA02-SB12-0010]	6I08012	2.00/100.00	2.03	100	5.00	55.29		09/08/16
1608251-17 [DSA02-SB13-0010]	6I08012	2.00/100.00	2.03	100	5.00	37.62		09/08/16
1608251-18 [DSA02-SB14-0010]	6I08012	2.00/100.00	2.00	100	5.00	33.69		09/08/16
1608251-19 [DSA02-SB15-0010]	6I08012	2.00/100.00	2.02	100	5.00	29.79		09/08/16
1608251-20 [DSA02-SB16-0010]	6I08012	2.00/100.00	2.01	100	5.00	43.22		09/08/16

ANALYSIS DATA SHEET

DSA05-SB29-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 09:21
% Solids: 48.75

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-01
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	24200	**10.3**	20.5	41.0	2	D	SW6010C	6H29015	09/14/16 15:00
7440-36-0	Antimony	7.11	**1.03**	1.64	2.05	2	D	SW6010C	6H29015	09/14/16 15:00
7440-38-2	Arsenic	179	**0.615**	1.23	2.05	2	D	SW6010C	6H29015	09/14/16 15:00
7440-39-3	Barium	149	**1.03**	2.05	8.21	2	D	SW6010C	6H29015	09/14/16 15:00
7440-41-7	Beryllium	1.31	**0.205**	0.410	1.03	2	D	SW6010C	6H29015	09/14/16 15:00
7440-43-9	Cadmium	6.79	**0.205**	0.410	1.03	2	D	SW6010C	6H29015	09/14/16 15:00
7440-70-2	Calcium	3120	**205**	410	1030	2	D	SW6010C	6H29015	09/14/16 15:00
7440-47-3	Chromium	192	**0.410**	0.821	2.05	2	D	SW6010C	6H29015	09/14/16 15:00
7440-48-4	Cobalt	18.3	**1.03**	2.05	2.56	2	D	SW6010C	6H29015	09/14/16 15:00
7440-50-8	Copper	500	**0.821**	1.64	2.05	2	D	SW6010C	6H29015	09/14/16 15:00
7439-89-6	Iron	53900	**6.15**	12.3	20.5	2	D	SW6010C	6H29015	09/14/16 15:00
7439-92-1	Lead	290	**0.308**	0.615	1.03	2	D	SW6010C	6H29015	09/14/16 15:00
7439-95-4	Magnesium	7550	**205**	615	1030	2	D	SW6010C	6H29015	09/14/16 15:00
7439-96-5	Manganese	334	**0.615**	1.23	3.08	2	D	SW6010C	6H29015	09/14/16 15:00
7439-98-7	Molybdenum	3.77	**1.03**	2.05	4.10	2	J D	SW6010C	6H29015	09/14/16 15:00
7440-02-0	Nickel	55.3	**0.615**	1.23	2.05	2	D	SW6010C	6H29015	09/14/16 15:00
7440-09-7	Potassium	3380	**205**	615	1030	2	D	SW6010C	6H29015	09/14/16 15:00
7782-49-2	Selenium	9.78	**0.615**	1.03	2.05	2	D	SW6010C	6H29015	09/14/16 15:00
7440-22-4	Silver	7.56	**0.205**	0.410	2.05	2	D	SW6010C	6H29015	09/14/16 15:00
7440-23-5	Sodium	5190	**205**	615	1030	2	D	SW6010C	6H29015	09/14/16 15:00
7440-28-0	Thallium	1.09	**0.615**	0.821	1.64	2	J D	SW6010C	6H29015	09/14/16 15:00
7440-62-2	Vanadium	118	**1.03**	2.05	2.56	2	D	SW6010C	6H29015	09/14/16 15:00
7440-66-6	Zinc	709	**1.03**	2.05	4.10	2	D	SW6010C	6H29015	09/14/16 15:00

ANALYSIS DATA SHEET

DSA05-SB30-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 09:49
% Solids: 50.69

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-02
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	23800	**9.86**	19.7	39.5	2	D	SW6010C	6H29015	09/14/16 15:05
7440-36-0	Antimony	1.44	**0.986**	1.58	1.97	2	J D	SW6010C	6H29015	09/14/16 15:05
7440-38-2	Arsenic	67.6	**0.592**	1.18	1.97	2	D	SW6010C	6H29015	09/14/16 15:05
7440-39-3	Barium	132	**0.986**	1.97	7.89	2	D	SW6010C	6H29015	09/14/16 15:05
7440-41-7	Beryllium	1.01	**0.197**	0.395	0.986	2	D	SW6010C	6H29015	09/14/16 15:05
7440-43-9	Cadmium	0.853	**0.197**	0.395	0.986	2	J D	SW6010C	6H29015	09/14/16 15:05
7440-70-2	Calcium	1210	**197**	395	986	2	D	SW6010C	6H29015	09/14/16 15:05
7440-47-3	Chromium	145	**0.395**	0.789	1.97	2	D	SW6010C	6H29015	09/14/16 15:05
7440-48-4	Cobalt	11.2	**0.986**	1.97	2.47	2	D	SW6010C	6H29015	09/14/16 15:05
7440-50-8	Copper	411	**0.789**	1.58	1.97	2	D	SW6010C	6H29015	09/14/16 15:05
7439-89-6	Iron	52500	**5.92**	11.8	19.7	2	D	SW6010C	6H29015	09/14/16 15:05
7439-92-1	Lead	247	**0.296**	0.592	0.986	2	D	SW6010C	6H29015	09/14/16 15:05
7439-95-4	Magnesium	6150	**197**	592	986	2	D	SW6010C	6H29015	09/14/16 15:05
7439-96-5	Manganese	227	**0.592**	1.18	2.96	2	D	SW6010C	6H29015	09/14/16 15:05
7439-98-7	Molybdenum	2.32	**0.986**	1.97	3.95	2	J D	SW6010C	6H29015	09/14/16 15:05
7440-02-0	Nickel	34.7	**0.592**	1.18	1.97	2	D	SW6010C	6H29015	09/14/16 15:05
7440-09-7	Potassium	2620	**197**	592	986	2	D	SW6010C	6H29015	09/14/16 15:05
7782-49-2	Selenium	4.51	**0.592**	0.986	1.97	2	D	SW6010C	6H29015	09/14/16 15:05
7440-22-4	Silver	6.16	**0.197**	0.395	1.97	2	D	SW6010C	6H29015	09/14/16 15:05
7440-23-5	Sodium	1910	**197**	592	986	2	D	SW6010C	6H29015	09/14/16 15:05
7440-28-0	Thallium	0.709	**0.592**	0.789	1.58	2	J D	SW6010C	6H29015	09/14/16 15:05
7440-62-2	Vanadium	99.4	**0.986**	1.97	2.47	2	D	SW6010C	6H29015	09/14/16 15:05
7440-66-6	Zinc	186	**0.986**	1.97	3.95	2	D	SW6010C	6H29015	09/14/16 15:05

ANALYSIS DATA SHEET

DSA05-SB31-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 10:06
% Solids: 52.94

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-03
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	23800	**9.35**	18.7	37.4	2	D	SW6010C	6H29015	09/14/16 15:49
7440-36-0	Antimony	3.71	**0.935**	1.50	1.87	2	D	SW6010C	6H29015	09/14/16 15:49
7440-38-2	Arsenic	169	**0.561**	1.12	1.87	2	D	SW6010C	6H29015	09/14/16 15:49
7440-39-3	Barium	187	**0.935**	1.87	7.48	2	D	SW6010C	6H29015	09/14/16 15:49
7440-41-7	Beryllium	1.23	**0.187**	0.374	0.935	2	D	SW6010C	6H29015	09/14/16 15:49
7440-43-9	Cadmium	2.09	**0.187**	0.374	0.935	2	D	SW6010C	6H29015	09/14/16 15:49
7440-70-2	Calcium	2970	**187**	374	935	2	D	SW6010C	6H29015	09/14/16 15:49
7440-47-3	Chromium	215	**0.374**	0.748	1.87	2	D	SW6010C	6H29015	09/14/16 15:49
7440-48-4	Cobalt	14.4	**0.935**	1.87	2.34	2	D	SW6010C	6H29015	09/14/16 15:49
7440-50-8	Copper	634	**0.748**	1.50	1.87	2	D	SW6010C	6H29015	09/14/16 15:49
7439-89-6	Iron	48800	**5.61**	11.2	18.7	2	D	SW6010C	6H29015	09/14/16 15:49
7439-92-1	Lead	287	**0.281**	0.561	0.935	2	D	SW6010C	6H29015	09/14/16 15:49
7439-95-4	Magnesium	6950	**187**	561	935	2	D	SW6010C	6H29015	09/14/16 15:49
7439-96-5	Manganese	322	**0.561**	1.12	2.81	2	D	SW6010C	6H29015	09/14/16 15:49
7439-98-7	Molybdenum	1.75	**0.935**	1.87	3.74	2	J D	SW6010C	6H29015	09/14/16 15:49
7440-02-0	Nickel	52.5	**0.561**	1.12	1.87	2	D	SW6010C	6H29015	09/14/16 15:49
7440-09-7	Potassium	3560	**187**	561	935	2	D	SW6010C	6H29015	09/14/16 15:49
7782-49-2	Selenium	17.6	**0.561**	0.935	1.87	2	D	SW6010C	6H29015	09/14/16 15:49
7440-22-4	Silver	10.1	**0.187**	0.374	1.87	2	D	SW6010C	6H29015	09/14/16 15:49
7440-23-5	Sodium	3750	**187**	561	935	2	D	SW6010C	6H29015	09/14/16 15:49
7440-28-0	Thallium	0.631	**0.561**	0.748	1.50	2	J D	SW6010C	6H29015	09/14/16 15:49
7440-62-2	Vanadium	105	**0.935**	1.87	2.34	2	D	SW6010C	6H29015	09/14/16 15:49
7440-66-6	Zinc	435	**0.935**	1.87	3.74	2	D	SW6010C	6H29015	09/14/16 15:49

ANALYSIS DATA SHEET

DSA05-SB32-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 10:36
% Solids: 51.58

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-04
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	22900	**9.55**	19.1	38.2	2	D	SW6010C	6H29015	09/14/16 15:54
7440-36-0	Antimony	8.79	**0.955**	1.53	1.91	2	D	SW6010C	6H29015	09/14/16 15:54
7440-38-2	Arsenic	136	**0.573**	1.15	1.91	2	D	SW6010C	6H29015	09/14/16 15:54
7440-39-3	Barium	155	**0.955**	1.91	7.64	2	D	SW6010C	6H29015	09/14/16 15:54
7440-41-7	Beryllium	0.918	**0.191**	0.382	0.955	2	J D	SW6010C	6H29015	09/14/16 15:54
7440-43-9	Cadmium	3.33	**0.191**	0.382	0.955	2	D	SW6010C	6H29015	09/14/16 15:54
7440-70-2	Calcium	2550	**191**	382	955	2	D	SW6010C	6H29015	09/14/16 15:54
7440-47-3	Chromium	187	**0.382**	0.764	1.91	2	D	SW6010C	6H29015	09/14/16 15:54
7440-48-4	Cobalt	15.1	**0.955**	1.91	2.39	2	D	SW6010C	6H29015	09/14/16 15:54
7440-50-8	Copper	396	**0.764**	1.53	1.91	2	D	SW6010C	6H29015	09/14/16 15:54
7439-89-6	Iron	44700	**5.73**	11.5	19.1	2	D	SW6010C	6H29015	09/14/16 15:54
7439-92-1	Lead	294	**0.287**	0.573	0.955	2	D	SW6010C	6H29015	09/14/16 15:54
7439-95-4	Magnesium	6950	**191**	573	955	2	D	SW6010C	6H29015	09/14/16 15:54
7439-96-5	Manganese	246	**0.573**	1.15	2.87	2	D	SW6010C	6H29015	09/14/16 15:54
7439-98-7	Molybdenum	2.54	**0.955**	1.91	3.82	2	J D	SW6010C	6H29015	09/14/16 15:54
7440-02-0	Nickel	46.1	**0.573**	1.15	1.91	2	D	SW6010C	6H29015	09/14/16 15:54
7440-09-7	Potassium	3230	**191**	573	955	2	D	SW6010C	6H29015	09/14/16 15:54
7782-49-2	Selenium	6.32	**0.573**	0.955	1.91	2	D	SW6010C	6H29015	09/14/16 15:54
7440-22-4	Silver	6.41	**0.191**	0.382	1.91	2	D	SW6010C	6H29015	09/14/16 15:54
7440-23-5	Sodium	5010	**191**	573	955	2	D	SW6010C	6H29015	09/14/16 15:54
7440-28-0	Thallium	1.25	**0.573**	0.764	1.53	2	J D	SW6010C	6H29015	09/14/16 15:54
7440-62-2	Vanadium	111	**0.955**	1.91	2.39	2	D	SW6010C	6H29015	09/14/16 15:54
7440-66-6	Zinc	415	**0.955**	1.91	3.82	2	D	SW6010C	6H29015	09/14/16 15:54

ANALYSIS DATA SHEET

DSA01-SB01-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 12:28
% Solids: 82.51

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-05
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	13900	**5.94**	11.9	23.8	2	D	SW6010C	6H29015	09/14/16 15:58
7440-36-0	Antimony		0.594	0.951	1.19	2	U	SW6010C	6H29015	09/14/16 15:58
7440-38-2	Arsenic	5.61	**0.356**	0.713	1.19	2	D	SW6010C	6H29015	09/14/16 15:58
7440-39-3	Barium	15.2	**0.594**	1.19	4.75	2	D	SW6010C	6H29015	09/14/16 15:58
7440-41-7	Beryllium	0.690	**0.119**	0.238	0.594	2	D	SW6010C	6H29015	09/14/16 15:58
7440-43-9	Cadmium		0.119	0.238	0.594	2	U	SW6010C	6H29015	09/14/16 15:58
7440-70-2	Calcium	424	**119**	238	594	2	J D	SW6010C	6H29015	09/14/16 15:58
7440-47-3	Chromium	22.9	**0.238**	0.475	1.19	2	D	SW6010C	6H29015	09/14/16 15:58
7440-48-4	Cobalt	8.38	**0.594**	1.19	1.49	2	D	SW6010C	6H29015	09/14/16 15:58
7440-50-8	Copper	14.7	**0.475**	0.951	1.19	2	D	SW6010C	6H29015	09/14/16 15:58
7439-89-6	Iron	21900	**3.56**	7.13	11.9	2	D	SW6010C	6H29015	09/14/16 15:58
7439-92-1	Lead	9.92	**0.178**	0.356	0.594	2	D	SW6010C	6H29015	09/14/16 15:58
7439-95-4	Magnesium	3550	**119**	356	594	2	D	SW6010C	6H29015	09/14/16 15:58
7439-96-5	Manganese	117	**0.356**	0.713	1.78	2	D	SW6010C	6H29015	09/14/16 15:58
7439-98-7	Molybdenum	0.625	**0.594**	1.19	2.38	2	J D	SW6010C	6H29015	09/14/16 15:58
7440-02-0	Nickel	15.7	**0.356**	0.713	1.19	2	D	SW6010C	6H29015	09/14/16 15:58
7440-09-7	Potassium	1860	**119**	356	594	2	D	SW6010C	6H29015	09/14/16 15:58
7782-49-2	Selenium		0.356	0.594	1.19	2	U	SW6010C	6H29015	09/14/16 15:58
7440-22-4	Silver		0.119	0.238	1.19	2	U	SW6010C	6H29015	09/14/16 15:58
7440-23-5	Sodium	1080	**119**	356	594	2	D	SW6010C	6H29015	09/14/16 15:58
7440-28-0	Thallium		0.356	0.475	0.951	2	U	SW6010C	6H29015	09/14/16 15:58
7440-62-2	Vanadium	34.6	**0.594**	1.19	1.49	2	D	SW6010C	6H29015	09/14/16 15:58
7440-66-6	Zinc	42.0	**0.594**	1.19	2.38	2	D	SW6010C	6H29015	09/14/16 15:58

ANALYSIS DATA SHEET

DSA01-SB02-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 12:45
% Solids: 83.12

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-06
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	8880	**5.90**	11.8	23.6	2	D	SW6010C	6H29015	09/14/16 16:02
7440-36-0	Antimony		0.590	0.944	1.18	2	U	SW6010C	6H29015	09/14/16 16:02
7440-38-2	Arsenic	6.22	**0.354**	0.708	1.18	2	D	SW6010C	6H29015	09/14/16 16:02
7440-39-3	Barium	10.7	**0.590**	1.18	4.72	2	D	SW6010C	6H29015	09/14/16 16:02
7440-41-7	Beryllium	0.516	**0.118**	0.236	0.590	2	J D	SW6010C	6H29015	09/14/16 16:02
7440-43-9	Cadmium		0.118	0.236	0.590	2	U	SW6010C	6H29015	09/14/16 16:02
7440-70-2	Calcium	304	**118**	236	590	2	J D	SW6010C	6H29015	09/14/16 16:02
7440-47-3	Chromium	18.0	**0.236**	0.472	1.18	2	D	SW6010C	6H29015	09/14/16 16:02
7440-48-4	Cobalt	6.60	**0.590**	1.18	1.47	2	D	SW6010C	6H29015	09/14/16 16:02
7440-50-8	Copper	9.57	**0.472**	0.944	1.18	2	D	SW6010C	6H29015	09/14/16 16:02
7439-89-6	Iron	20200	**3.54**	7.08	11.8	2	D	SW6010C	6H29015	09/14/16 16:02
7439-92-1	Lead	8.39	**0.177**	0.354	0.590	2	D	SW6010C	6H29015	09/14/16 16:02
7439-95-4	Magnesium	3030	**118**	354	590	2	D	SW6010C	6H29015	09/14/16 16:02
7439-96-5	Manganese	71.4	**0.354**	0.708	1.77	2	D	SW6010C	6H29015	09/14/16 16:02
7439-98-7	Molybdenum		0.590	1.18	2.36	2	U	SW6010C	6H29015	09/14/16 16:02
7440-02-0	Nickel	12.8	**0.354**	0.708	1.18	2	D	SW6010C	6H29015	09/14/16 16:02
7440-09-7	Potassium	1740	**118**	354	590	2	D	SW6010C	6H29015	09/14/16 16:02
7782-49-2	Selenium		0.354	0.590	1.18	2	U	SW6010C	6H29015	09/14/16 16:02
7440-22-4	Silver		0.118	0.236	1.18	2	U	SW6010C	6H29015	09/14/16 16:02
7440-23-5	Sodium	975	**118**	354	590	2	D	SW6010C	6H29015	09/14/16 16:02
7440-28-0	Thallium		0.354	0.472	0.944	2	U	SW6010C	6H29015	09/14/16 16:02
7440-62-2	Vanadium	27.2	**0.590**	1.18	1.47	2	D	SW6010C	6H29015	09/14/16 16:02
7440-66-6	Zinc	39.0	**0.590**	1.18	2.36	2	D	SW6010C	6H29015	09/14/16 16:02

ANALYSIS DATA SHEET

DSA01-SB03-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 12:57
% Solids: 83.35

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-07
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	11700	**5.88**	11.8	23.5	2	D	SW6010C	6H29015	09/14/16 16:07
7440-36-0	Antimony		0.588	0.941	1.18	2	U	SW6010C	6H29015	09/14/16 16:07
7440-38-2	Arsenic	4.55	**0.353**	0.706	1.18	2	D	SW6010C	6H29015	09/14/16 16:07
7440-39-3	Barium	11.1	**0.588**	1.18	4.70	2	D	SW6010C	6H29015	09/14/16 16:07
7440-41-7	Beryllium	0.576	**0.118**	0.235	0.588	2	J D	SW6010C	6H29015	09/14/16 16:07
7440-43-9	Cadmium		0.118	0.235	0.588	2	U	SW6010C	6H29015	09/14/16 16:07
7440-70-2	Calcium	319	**118**	235	588	2	J D	SW6010C	6H29015	09/14/16 16:07
7440-47-3	Chromium	19.2	**0.235**	0.470	1.18	2	D	SW6010C	6H29015	09/14/16 16:07
7440-48-4	Cobalt	8.46	**0.588**	1.18	1.47	2	D	SW6010C	6H29015	09/14/16 16:07
7440-50-8	Copper	13.6	**0.470**	0.941	1.18	2	D	SW6010C	6H29015	09/14/16 16:07
7439-89-6	Iron	24200	**3.53**	7.06	11.8	2	D	SW6010C	6H29015	09/14/16 16:07
7439-92-1	Lead	8.89	**0.176**	0.353	0.588	2	D	SW6010C	6H29015	09/14/16 16:07
7439-95-4	Magnesium	3890	**118**	353	588	2	D	SW6010C	6H29015	09/14/16 16:07
7439-96-5	Manganese	94.1	**0.353**	0.706	1.76	2	D	SW6010C	6H29015	09/14/16 16:07
7439-98-7	Molybdenum	0.686	**0.588**	1.18	2.35	2	J D	SW6010C	6H29015	09/14/16 16:07
7440-02-0	Nickel	15.4	**0.353**	0.706	1.18	2	D	SW6010C	6H29015	09/14/16 16:07
7440-09-7	Potassium	1660	**118**	353	588	2	D	SW6010C	6H29015	09/14/16 16:07
7782-49-2	Selenium	0.401	**0.353**	0.588	1.18	2	J D	SW6010C	6H29015	09/14/16 16:07
7440-22-4	Silver		0.118	0.235	1.18	2	U	SW6010C	6H29015	09/14/16 16:07
7440-23-5	Sodium	767	**118**	353	588	2	D	SW6010C	6H29015	09/14/16 16:07
7440-28-0	Thallium		0.353	0.470	0.941	2	U	SW6010C	6H29015	09/14/16 16:07
7440-62-2	Vanadium	29.8	**0.588**	1.18	1.47	2	D	SW6010C	6H29015	09/14/16 16:07
7440-66-6	Zinc	48.2	**0.588**	1.18	2.35	2	D	SW6010C	6H29015	09/14/16 16:07

ANALYSIS DATA SHEET

DSA01-SB04-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 13:12
% Solids: 83.27

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-08
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	8670	**5.86**	11.7	23.4	2	D	SW6010C	6H29015	09/14/16 16:11
7440-36-0	Antimony		0.586	0.937	1.17	2	U	SW6010C	6H29015	09/14/16 16:11
7440-38-2	Arsenic	6.11	**0.351**	0.703	1.17	2	D	SW6010C	6H29015	09/14/16 16:11
7440-39-3	Barium	7.98	**0.586**	1.17	4.69	2	D	SW6010C	6H29015	09/14/16 16:11
7440-41-7	Beryllium	0.473	**0.117**	0.234	0.586	2	J D	SW6010C	6H29015	09/14/16 16:11
7440-43-9	Cadmium		0.117	0.234	0.586	2	U	SW6010C	6H29015	09/14/16 16:11
7440-70-2	Calcium	266	**117**	234	586	2	J D	SW6010C	6H29015	09/14/16 16:11
7440-47-3	Chromium	13.8	**0.234**	0.469	1.17	2	D	SW6010C	6H29015	09/14/16 16:11
7440-48-4	Cobalt	7.69	**0.586**	1.17	1.46	2	D	SW6010C	6H29015	09/14/16 16:11
7440-50-8	Copper	8.64	**0.469**	0.937	1.17	2	D	SW6010C	6H29015	09/14/16 16:11
7439-89-6	Iron	16900	**3.51**	7.03	11.7	2	D	SW6010C	6H29015	09/14/16 16:11
7439-92-1	Lead	6.40	**0.176**	0.351	0.586	2	D	SW6010C	6H29015	09/14/16 16:11
7439-95-4	Magnesium	2070	**117**	351	586	2	D	SW6010C	6H29015	09/14/16 16:11
7439-96-5	Manganese	83.2	**0.351**	0.703	1.76	2	D	SW6010C	6H29015	09/14/16 16:11
7439-98-7	Molybdenum		0.586	1.17	2.34	2	U	SW6010C	6H29015	09/14/16 16:11
7440-02-0	Nickel	10.5	**0.351**	0.703	1.17	2	D	SW6010C	6H29015	09/14/16 16:11
7440-09-7	Potassium	1490	**117**	351	586	2	D	SW6010C	6H29015	09/14/16 16:11
7782-49-2	Selenium	0.366	**0.351**	0.586	1.17	2	J D	SW6010C	6H29015	09/14/16 16:11
7440-22-4	Silver		0.117	0.234	1.17	2	U	SW6010C	6H29015	09/14/16 16:11
7440-23-5	Sodium	536	**117**	351	586	2	J D	SW6010C	6H29015	09/14/16 16:11
7440-28-0	Thallium		0.351	0.469	0.937	2	U	SW6010C	6H29015	09/14/16 16:11
7440-62-2	Vanadium	19.4	**0.586**	1.17	1.46	2	D	SW6010C	6H29015	09/14/16 16:11
7440-66-6	Zinc	32.6	**0.586**	1.17	2.34	2	D	SW6010C	6H29015	09/14/16 16:11

ANALYSIS DATA SHEET

DSA01-SB05-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 13:49
% Solids: 84.84

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-09
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	10000	**5.89**	11.8	23.6	2	D	SW6010C	6H29015	09/14/16 16:15
7440-36-0	Antimony		0.589	0.943	1.18	2	U	SW6010C	6H29015	09/14/16 16:15
7440-38-2	Arsenic	4.31	**0.354**	0.707	1.18	2	D	SW6010C	6H29015	09/14/16 16:15
7440-39-3	Barium	12.2	**0.589**	1.18	4.71	2	D	SW6010C	6H29015	09/14/16 16:15
7440-41-7	Beryllium	0.511	**0.118**	0.236	0.589	2	J D	SW6010C	6H29015	09/14/16 16:15
7440-43-9	Cadmium		0.118	0.236	0.589	2	U	SW6010C	6H29015	09/14/16 16:15
7440-70-2	Calcium	268	**118**	236	589	2	J D	SW6010C	6H29015	09/14/16 16:15
7440-47-3	Chromium	17.5	**0.236**	0.471	1.18	2	D	SW6010C	6H29015	09/14/16 16:15
7440-48-4	Cobalt	6.72	**0.589**	1.18	1.47	2	D	SW6010C	6H29015	09/14/16 16:15
7440-50-8	Copper	12.3	**0.471**	0.943	1.18	2	D	SW6010C	6H29015	09/14/16 16:15
7439-89-6	Iron	18500	**3.54**	7.07	11.8	2	D	SW6010C	6H29015	09/14/16 16:15
7439-92-1	Lead	8.17	**0.177**	0.354	0.589	2	D	SW6010C	6H29015	09/14/16 16:15
7439-95-4	Magnesium	3190	**118**	354	589	2	D	SW6010C	6H29015	09/14/16 16:15
7439-96-5	Manganese	78.1	**0.354**	0.707	1.77	2	D	SW6010C	6H29015	09/14/16 16:15
7439-98-7	Molybdenum		0.589	1.18	2.36	2	U	SW6010C	6H29015	09/14/16 16:15
7440-02-0	Nickel	13.6	**0.354**	0.707	1.18	2	D	SW6010C	6H29015	09/14/16 16:15
7440-09-7	Potassium	1730	**118**	354	589	2	D	SW6010C	6H29015	09/14/16 16:15
7782-49-2	Selenium		0.354	0.589	1.18	2	U	SW6010C	6H29015	09/14/16 16:15
7440-22-4	Silver		0.118	0.236	1.18	2	U	SW6010C	6H29015	09/14/16 16:15
7440-23-5	Sodium	860	**118**	354	589	2	D	SW6010C	6H29015	09/14/16 16:15
7440-28-0	Thallium		0.354	0.471	0.943	2	U	SW6010C	6H29015	09/14/16 16:15
7440-62-2	Vanadium	26.0	**0.589**	1.18	1.47	2	D	SW6010C	6H29015	09/14/16 16:15
7440-66-6	Zinc	40.0	**0.589**	1.18	2.36	2	D	SW6010C	6H29015	09/14/16 16:15

ANALYSIS DATA SHEET

DSA01-SB06-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 14:02
% Solids: 81.32

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-10
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	5620	**6.03**	12.1	24.1	2	D	SW6010C	6H29015	09/14/16 16:20
7440-36-0	Antimony		0.603	0.965	1.21	2	U	SW6010C	6H29015	09/14/16 16:20
7440-38-2	Arsenic	4.88	**0.362**	0.723	1.21	2	D	SW6010C	6H29015	09/14/16 16:20
7440-39-3	Barium	8.02	**0.603**	1.21	4.82	2	D	SW6010C	6H29015	09/14/16 16:20
7440-41-7	Beryllium	0.327	**0.121**	0.241	0.603	2	J D	SW6010C	6H29015	09/14/16 16:20
7440-43-9	Cadmium		0.121	0.241	0.603	2	U	SW6010C	6H29015	09/14/16 16:20
7440-70-2	Calcium	184	**121**	241	603	2	J D	SW6010C	6H29015	09/14/16 16:20
7440-47-3	Chromium	11.0	**0.241**	0.482	1.21	2	D	SW6010C	6H29015	09/14/16 16:20
7440-48-4	Cobalt	6.89	**0.603**	1.21	1.51	2	D	SW6010C	6H29015	09/14/16 16:20
7440-50-8	Copper	5.95	**0.482**	0.965	1.21	2	D	SW6010C	6H29015	09/14/16 16:20
7439-89-6	Iron	15700	**3.62**	7.23	12.1	2	D	SW6010C	6H29015	09/14/16 16:20
7439-92-1	Lead	4.76	**0.181**	0.362	0.603	2	D	SW6010C	6H29015	09/14/16 16:20
7439-95-4	Magnesium	1600	**121**	362	603	2	D	SW6010C	6H29015	09/14/16 16:20
7439-96-5	Manganese	60.8	**0.362**	0.723	1.81	2	D	SW6010C	6H29015	09/14/16 16:20
7439-98-7	Molybdenum		0.603	1.21	2.41	2	U	SW6010C	6H29015	09/14/16 16:20
7440-02-0	Nickel	7.63	**0.362**	0.723	1.21	2	D	SW6010C	6H29015	09/14/16 16:20
7440-09-7	Potassium	1090	**121**	362	603	2	D	SW6010C	6H29015	09/14/16 16:20
7782-49-2	Selenium		0.362	0.603	1.21	2	U	SW6010C	6H29015	09/14/16 16:20
7440-22-4	Silver		0.121	0.241	1.21	2	U	SW6010C	6H29015	09/14/16 16:20
7440-23-5	Sodium	313	**121**	362	603	2	J D	SW6010C	6H29015	09/14/16 16:20
7440-28-0	Thallium		0.362	0.482	0.965	2	U	SW6010C	6H29015	09/14/16 16:20
7440-62-2	Vanadium	14.9	**0.603**	1.21	1.51	2	D	SW6010C	6H29015	09/14/16 16:20
7440-66-6	Zinc	22.9	**0.603**	1.21	2.41	2	D	SW6010C	6H29015	09/14/16 16:20

ANALYSIS DATA SHEET

DSA01-SB07-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 14:20
% Solids: 83.63

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-11
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	9190	**5.86**	11.7	23.4	2	D	SW6010C	6H29015	09/14/16 16:24
7440-36-0	Antimony		0.586	0.938	1.17	2	U	SW6010C	6H29015	09/14/16 16:24
7440-38-2	Arsenic	2.73	**0.352**	0.703	1.17	2	D	SW6010C	6H29015	09/14/16 16:24
7440-39-3	Barium	9.67	**0.586**	1.17	4.69	2	D	SW6010C	6H29015	09/14/16 16:24
7440-41-7	Beryllium	0.528	**0.117**	0.234	0.586	2	J D	SW6010C	6H29015	09/14/16 16:24
7440-43-9	Cadmium		0.117	0.234	0.586	2	U	SW6010C	6H29015	09/14/16 16:24
7440-70-2	Calcium	351	**117**	234	586	2	J D	SW6010C	6H29015	09/14/16 16:24
7440-47-3	Chromium	19.0	**0.234**	0.469	1.17	2	D	SW6010C	6H29015	09/14/16 16:24
7440-48-4	Cobalt	4.81	**0.586**	1.17	1.47	2	D	SW6010C	6H29015	09/14/16 16:24
7440-50-8	Copper	10.2	**0.469**	0.938	1.17	2	D	SW6010C	6H29015	09/14/16 16:24
7439-89-6	Iron	16700	**3.52**	7.03	11.7	2	D	SW6010C	6H29015	09/14/16 16:24
7439-92-1	Lead	7.09	**0.176**	0.352	0.586	2	D	SW6010C	6H29015	09/14/16 16:24
7439-95-4	Magnesium	2740	**117**	352	586	2	D	SW6010C	6H29015	09/14/16 16:24
7439-96-5	Manganese	111	**0.352**	0.703	1.76	2	D	SW6010C	6H29015	09/14/16 16:24
7439-98-7	Molybdenum		0.586	1.17	2.34	2	U	SW6010C	6H29015	09/14/16 16:24
7440-02-0	Nickel	12.2	**0.352**	0.703	1.17	2	D	SW6010C	6H29015	09/14/16 16:24
7440-09-7	Potassium	1660	**117**	352	586	2	D	SW6010C	6H29015	09/14/16 16:24
7782-49-2	Selenium		0.352	0.586	1.17	2	U	SW6010C	6H29015	09/14/16 16:24
7440-22-4	Silver		0.117	0.234	1.17	2	U	SW6010C	6H29015	09/14/16 16:24
7440-23-5	Sodium	471	**117**	352	586	2	J D	SW6010C	6H29015	09/14/16 16:24
7440-28-0	Thallium		0.352	0.469	0.938	2	U	SW6010C	6H29015	09/14/16 16:24
7440-62-2	Vanadium	30.1	**0.586**	1.17	1.47	2	D	SW6010C	6H29015	09/14/16 16:24
7440-66-6	Zinc	34.8	**0.586**	1.17	2.34	2	D	SW6010C	6H29015	09/14/16 16:24

ANALYSIS DATA SHEET

DSA01-SB08-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 14:35
% Solids: 84.58

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-12
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	13700	**14.4**	28.8	57.7	5	D	SW6010C	6I08012	09/14/16 16:53
7440-36-0	Antimony		1.44	2.31	2.88	5	U	SW6010C	6I08012	09/14/16 16:53
7440-38-2	Arsenic	6.63	**0.865**	1.73	2.88	5	D	SW6010C	6I08012	09/14/16 16:53
7440-39-3	Barium	18.0	**1.44**	2.88	11.5	5	D	SW6010C	6I08012	09/14/16 16:53
7440-41-7	Beryllium	0.926	**0.288**	0.577	1.44	5	J D	SW6010C	6I08012	09/14/16 16:53
7440-43-9	Cadmium		0.288	0.577	1.44	5	U	SW6010C	6I08012	09/14/16 16:53
7440-70-2	Calcium	476	**288**	577	1440	5	J D	SW6010C	6I08012	09/14/16 16:53
7440-47-3	Chromium	23.2	**0.577**	1.15	2.88	5	D	SW6010C	6I08012	09/14/16 16:53
7440-48-4	Cobalt	9.53	**1.44**	2.88	3.60	5	D	SW6010C	6I08012	09/14/16 16:53
7440-50-8	Copper	11.8	**1.15**	2.31	2.88	5	D	SW6010C	6I08012	09/14/16 16:53
7439-89-6	Iron	25800	**8.65**	17.3	28.8	5	D	SW6010C	6I08012	09/14/16 16:53
7439-92-1	Lead	11.1	**0.433**	0.865	1.44	5	D	SW6010C	6I08012	09/14/16 16:53
7439-95-4	Magnesium	4690	**288**	865	1440	5	D	SW6010C	6I08012	09/14/16 16:53
7439-96-5	Manganese	142	**0.865**	1.73	4.33	5	D	SW6010C	6I08012	09/14/16 16:53
7439-98-7	Molybdenum		1.44	2.88	5.77	5	U	SW6010C	6I08012	09/14/16 16:53
7440-02-0	Nickel	17.7	**0.865**	1.73	2.88	5	D	SW6010C	6I08012	09/14/16 16:53
7440-09-7	Potassium	2730	**288**	865	1440	5	D	SW6010C	6I08012	09/14/16 16:53
7782-49-2	Selenium		0.865	1.44	2.88	5	U	SW6010C	6I08012	09/14/16 16:53
7440-22-4	Silver		0.288	0.577	2.88	5	U	SW6010C	6I08012	09/14/16 16:53
7440-23-5	Sodium	1260	**288**	865	1440	5	J D	SW6010C	6I08012	09/14/16 16:53
7440-28-0	Thallium		0.865	1.15	2.31	5	U	SW6010C	6I08012	09/14/16 16:53
7440-62-2	Vanadium	30.5	**1.44**	2.88	3.60	5	D	SW6010C	6I08012	09/14/16 16:53
7440-66-6	Zinc	50.7	**1.44**	2.88	5.77	5	D	SW6010C	6I08012	09/14/16 16:53

ANALYSIS DATA SHEET

DSA02-SB09-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 09:07
% Solids: 53.37

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-13
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	25600	**23.3**	46.6	93.2	5	D	SW6010C	6I08012	09/14/16 16:57
7440-36-0	Antimony		2.33	3.73	4.66	5	U	SW6010C	6I08012	09/14/16 16:57
7440-38-2	Arsenic	13.2	**1.40**	2.80	4.66	5	D	SW6010C	6I08012	09/14/16 16:57
7440-39-3	Barium	45.1	**2.33**	4.66	18.6	5	D	SW6010C	6I08012	09/14/16 16:57
7440-41-7	Beryllium	1.37	**0.466**	0.932	2.33	5	J D	SW6010C	6I08012	09/14/16 16:57
7440-43-9	Cadmium		0.466	0.932	2.33	5	U	SW6010C	6I08012	09/14/16 16:57
7440-70-2	Calcium	2140	**466**	932	2330	5	J D	SW6010C	6I08012	09/14/16 16:57
7440-47-3	Chromium	47.5	**0.932**	1.86	4.66	5	D	SW6010C	6I08012	09/14/16 16:57
7440-48-4	Cobalt	15.7	**2.33**	4.66	5.83	5	D	SW6010C	6I08012	09/14/16 16:57
7440-50-8	Copper	17.8	**1.86**	3.73	4.66	5	D	SW6010C	6I08012	09/14/16 16:57
7439-89-6	Iron	42700	**14.0**	28.0	46.6	5	D	SW6010C	6I08012	09/14/16 16:57
7439-92-1	Lead	18.0	**0.699**	1.40	2.33	5	D	SW6010C	6I08012	09/14/16 16:57
7439-95-4	Magnesium	8790	**466**	1400	2330	5	D	SW6010C	6I08012	09/14/16 16:57
7439-96-5	Manganese	291	**1.40**	2.80	6.99	5	D	SW6010C	6I08012	09/14/16 16:57
7439-98-7	Molybdenum		2.33	4.66	9.32	5	U	SW6010C	6I08012	09/14/16 16:57
7440-02-0	Nickel	35.9	**1.40**	2.80	4.66	5	D	SW6010C	6I08012	09/14/16 16:57
7440-09-7	Potassium	5280	**466**	1400	2330	5	D	SW6010C	6I08012	09/14/16 16:57
7782-49-2	Selenium		1.40	2.33	4.66	5	U	SW6010C	6I08012	09/14/16 16:57
7440-22-4	Silver		0.466	0.932	4.66	5	U	SW6010C	6I08012	09/14/16 16:57
7440-23-5	Sodium	3260	**466**	1400	2330	5	D	SW6010C	6I08012	09/14/16 16:57
7440-28-0	Thallium		1.40	1.86	3.73	5	U	SW6010C	6I08012	09/14/16 16:57
7440-62-2	Vanadium	58.0	**2.33**	4.66	5.83	5	D	SW6010C	6I08012	09/14/16 16:57
7440-66-6	Zinc	111	**2.33**	4.66	9.32	5	D	SW6010C	6I08012	09/14/16 16:57

ANALYSIS DATA SHEET

DSA02-SB10-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 09:19
% Solids: 52.46

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-14
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	25100	**23.2**	46.5	93.0	5	D	SW6010C	6I08012	09/14/16 17:01
7440-36-0	Antimony		2.32	3.72	4.65	5	U	SW6010C	6I08012	09/14/16 17:01
7440-38-2	Arsenic	26.5	**1.39**	2.79	4.65	5	D	SW6010C	6I08012	09/14/16 17:01
7440-39-3	Barium	41.8	**2.32**	4.65	18.6	5	D	SW6010C	6I08012	09/14/16 17:01
7440-41-7	Beryllium	1.20	**0.465**	0.930	2.32	5	J D	SW6010C	6I08012	09/14/16 17:01
7440-43-9	Cadmium		0.465	0.930	2.32	5	U	SW6010C	6I08012	09/14/16 17:01
7440-70-2	Calcium	1780	**465**	930	2320	5	J D	SW6010C	6I08012	09/14/16 17:01
7440-47-3	Chromium	43.5	**0.930**	1.86	4.65	5	D	SW6010C	6I08012	09/14/16 17:01
7440-48-4	Cobalt	14.7	**2.32**	4.65	5.81	5	D	SW6010C	6I08012	09/14/16 17:01
7440-50-8	Copper	13.3	**1.86**	3.72	4.65	5	D	SW6010C	6I08012	09/14/16 17:01
7439-89-6	Iron	57500	**13.9**	27.9	46.5	5	D	SW6010C	6I08012	09/14/16 17:01
7439-92-1	Lead	16.0	**0.697**	1.39	2.32	5	D	SW6010C	6I08012	09/14/16 17:01
7439-95-4	Magnesium	7160	**465**	1390	2320	5	D	SW6010C	6I08012	09/14/16 17:01
7439-96-5	Manganese	314	**1.39**	2.79	6.97	5	D	SW6010C	6I08012	09/14/16 17:01
7439-98-7	Molybdenum	6.91	**2.32**	4.65	9.30	5	J D	SW6010C	6I08012	09/14/16 17:01
7440-02-0	Nickel	32.7	**1.39**	2.79	4.65	5	D	SW6010C	6I08012	09/14/16 17:01
7440-09-7	Potassium	5020	**465**	1390	2320	5	D	SW6010C	6I08012	09/14/16 17:01
7782-49-2	Selenium		1.39	2.32	4.65	5	U	SW6010C	6I08012	09/14/16 17:01
7440-22-4	Silver		0.465	0.930	4.65	5	U	SW6010C	6I08012	09/14/16 17:01
7440-23-5	Sodium	2840	**465**	1390	2320	5	D	SW6010C	6I08012	09/14/16 17:01
7440-28-0	Thallium		1.39	1.86	3.72	5	U	SW6010C	6I08012	09/14/16 17:01
7440-62-2	Vanadium	52.1	**2.32**	4.65	5.81	5	D	SW6010C	6I08012	09/14/16 17:01
7440-66-6	Zinc	96.0	**2.32**	4.65	9.30	5	D	SW6010C	6I08012	09/14/16 17:01

ANALYSIS DATA SHEET

DSA02-SB11-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 09:55
% Solids: 46.75

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-15
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	24500	**26.1**	52.2	104	5	D	SW6010C	6I08012	09/14/16 17:06
7440-36-0	Antimony		2.61	4.17	5.22	5	U	SW6010C	6I08012	09/14/16 17:06
7440-38-2	Arsenic	19.2	**1.57**	3.13	5.22	5	D	SW6010C	6I08012	09/14/16 17:06
7440-39-3	Barium	41.5	**2.61**	5.22	20.9	5	D	SW6010C	6I08012	09/14/16 17:06
7440-41-7	Beryllium	1.47	**0.522**	1.04	2.61	5	J D	SW6010C	6I08012	09/14/16 17:06
7440-43-9	Cadmium		0.522	1.04	2.61	5	U	SW6010C	6I08012	09/14/16 17:06
7440-70-2	Calcium	2270	**522**	1040	2610	5	J D	SW6010C	6I08012	09/14/16 17:06
7440-47-3	Chromium	45.4	**1.04**	2.09	5.22	5	D	SW6010C	6I08012	09/14/16 17:06
7440-48-4	Cobalt	17.8	**2.61**	5.22	6.52	5	D	SW6010C	6I08012	09/14/16 17:06
7440-50-8	Copper	16.8	**2.09**	4.17	5.22	5	D	SW6010C	6I08012	09/14/16 17:06
7439-89-6	Iron	55800	**15.7**	31.3	52.2	5	D	SW6010C	6I08012	09/14/16 17:06
7439-92-1	Lead	17.0	**0.783**	1.57	2.61	5	D	SW6010C	6I08012	09/14/16 17:06
7439-95-4	Magnesium	8170	**522**	1570	2610	5	D	SW6010C	6I08012	09/14/16 17:06
7439-96-5	Manganese	841	**1.57**	3.13	7.83	5	D	SW6010C	6I08012	09/14/16 17:06
7439-98-7	Molybdenum	6.65	**2.61**	5.22	10.4	5	J D	SW6010C	6I08012	09/14/16 17:06
7440-02-0	Nickel	33.8	**1.57**	3.13	5.22	5	D	SW6010C	6I08012	09/14/16 17:06
7440-09-7	Potassium	5010	**522**	1570	2610	5	D	SW6010C	6I08012	09/14/16 17:06
7782-49-2	Selenium		1.57	2.61	5.22	5	U	SW6010C	6I08012	09/14/16 17:06
7440-22-4	Silver		0.522	1.04	5.22	5	U	SW6010C	6I08012	09/14/16 17:06
7440-23-5	Sodium	3070	**522**	1570	2610	5	D	SW6010C	6I08012	09/14/16 17:06
7440-28-0	Thallium		1.57	2.09	4.17	5	U	SW6010C	6I08012	09/14/16 17:06
7440-62-2	Vanadium	56.2	**2.61**	5.22	6.52	5	D	SW6010C	6I08012	09/14/16 17:06
7440-66-6	Zinc	102	**2.61**	5.22	10.4	5	D	SW6010C	6I08012	09/14/16 17:06

ANALYSIS DATA SHEET

DSA02-SB12-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 11:44
% Solids: 55.29

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-16
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	23100	**22.3**	44.5	89.1	5	D	SW6010C	6I08012	09/14/16 17:10
7440-36-0	Antimony		2.23	3.56	4.45	5	U	SW6010C	6I08012	09/14/16 17:10
7440-38-2	Arsenic	16.5	**1.34**	2.67	4.45	5	D	SW6010C	6I08012	09/14/16 17:10
7440-39-3	Barium	39.0	**2.23**	4.45	17.8	5	D	SW6010C	6I08012	09/14/16 17:10
7440-41-7	Beryllium	1.23	**0.445**	0.891	2.23	5	J D	SW6010C	6I08012	09/14/16 17:10
7440-43-9	Cadmium		0.445	0.891	2.23	5	U	SW6010C	6I08012	09/14/16 17:10
7440-70-2	Calcium	2040	**445**	891	2230	5	J D	SW6010C	6I08012	09/14/16 17:10
7440-47-3	Chromium	43.9	**0.891**	1.78	4.45	5	D	SW6010C	6I08012	09/14/16 17:10
7440-48-4	Cobalt	13.2	**2.23**	4.45	5.57	5	D	SW6010C	6I08012	09/14/16 17:10
7440-50-8	Copper	16.4	**1.78**	3.56	4.45	5	D	SW6010C	6I08012	09/14/16 17:10
7439-89-6	Iron	48600	**13.4**	26.7	44.5	5	D	SW6010C	6I08012	09/14/16 17:10
7439-92-1	Lead	16.6	**0.668**	1.34	2.23	5	D	SW6010C	6I08012	09/14/16 17:10
7439-95-4	Magnesium	7390	**445**	1340	2230	5	D	SW6010C	6I08012	09/14/16 17:10
7439-96-5	Manganese	645	**1.34**	2.67	6.68	5	D	SW6010C	6I08012	09/14/16 17:10
7439-98-7	Molybdenum	3.02	**2.23**	4.45	8.91	5	J D	SW6010C	6I08012	09/14/16 17:10
7440-02-0	Nickel	31.0	**1.34**	2.67	4.45	5	D	SW6010C	6I08012	09/14/16 17:10
7440-09-7	Potassium	4620	**445**	1340	2230	5	D	SW6010C	6I08012	09/14/16 17:10
7782-49-2	Selenium		1.34	2.23	4.45	5	U	SW6010C	6I08012	09/14/16 17:10
7440-22-4	Silver		0.445	0.891	4.45	5	U	SW6010C	6I08012	09/14/16 17:10
7440-23-5	Sodium	2840	**445**	1340	2230	5	D	SW6010C	6I08012	09/14/16 17:10
7440-28-0	Thallium		1.34	1.78	3.56	5	U	SW6010C	6I08012	09/14/16 17:10
7440-62-2	Vanadium	53.4	**2.23**	4.45	5.57	5	D	SW6010C	6I08012	09/14/16 17:10
7440-66-6	Zinc	95.0	**2.23**	4.45	8.91	5	D	SW6010C	6I08012	09/14/16 17:10

ANALYSIS DATA SHEET

DSA02-SB13-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 12:34
% Solids: 37.62

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-17
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	24600	**32.7**	65.5	131	5	D	SW6010C	6I08012	09/14/16 17:15
7440-36-0	Antimony		3.27	5.24	6.55	5	U	SW6010C	6I08012	09/14/16 17:15
7440-38-2	Arsenic	18.1	**1.96**	3.93	6.55	5	D	SW6010C	6I08012	09/14/16 17:15
7440-39-3	Barium	45.4	**3.27**	6.55	26.2	5	D	SW6010C	6I08012	09/14/16 17:15
7440-41-7	Beryllium	1.25	**0.655**	1.31	3.27	5	J D	SW6010C	6I08012	09/14/16 17:15
7440-43-9	Cadmium		0.655	1.31	3.27	5	U	SW6010C	6I08012	09/14/16 17:15
7440-70-2	Calcium	3880	**655**	1310	3270	5	D	SW6010C	6I08012	09/14/16 17:15
7440-47-3	Chromium	45.1	**1.31**	2.62	6.55	5	D	SW6010C	6I08012	09/14/16 17:15
7440-48-4	Cobalt	8.87	**3.27**	6.55	8.19	5	D	SW6010C	6I08012	09/14/16 17:15
7440-50-8	Copper	9.34	**2.62**	5.24	6.55	5	D	SW6010C	6I08012	09/14/16 17:15
7439-89-6	Iron	34800	**19.6**	39.3	65.5	5	D	SW6010C	6I08012	09/14/16 17:15
7439-92-1	Lead	11.7	**0.982**	1.96	3.27	5	D	SW6010C	6I08012	09/14/16 17:15
7439-95-4	Magnesium	7930	**655**	1960	3270	5	D	SW6010C	6I08012	09/14/16 17:15
7439-96-5	Manganese	359	**1.96**	3.93	9.82	5	D	SW6010C	6I08012	09/14/16 17:15
7439-98-7	Molybdenum	10.7	**3.27**	6.55	13.1	5	J D	SW6010C	6I08012	09/14/16 17:15
7440-02-0	Nickel	29.3	**1.96**	3.93	6.55	5	D	SW6010C	6I08012	09/14/16 17:15
7440-09-7	Potassium	5690	**655**	1960	3270	5	D	SW6010C	6I08012	09/14/16 17:15
7782-49-2	Selenium		1.96	3.27	6.55	5	U	SW6010C	6I08012	09/14/16 17:15
7440-22-4	Silver		0.655	1.31	6.55	5	U	SW6010C	6I08012	09/14/16 17:15
7440-23-5	Sodium	12300	**655**	1960	3270	5	D	SW6010C	6I08012	09/14/16 17:15
7440-28-0	Thallium		1.96	2.62	5.24	5	U	SW6010C	6I08012	09/14/16 17:15
7440-62-2	Vanadium	58.9	**3.27**	6.55	8.19	5	D	SW6010C	6I08012	09/14/16 17:15
7440-66-6	Zinc	82.2	**3.27**	6.55	13.1	5	D	SW6010C	6I08012	09/14/16 17:15

ANALYSIS DATA SHEET

DSA02-SB14-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 13:14
% Solids: 33.69

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-18
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	22400	**37.1**	74.2	148	5	D	SW6010C	6I08012	09/14/16 17:19
7440-36-0	Antimony		3.71	5.94	7.42	5	U	SW6010C	6I08012	09/14/16 17:19
7440-38-2	Arsenic	13.8	**2.23**	4.45	7.42	5	D	SW6010C	6I08012	09/14/16 17:19
7440-39-3	Barium	42.0	**3.71**	7.42	29.7	5	D	SW6010C	6I08012	09/14/16 17:19
7440-41-7	Beryllium	1.13	**0.742**	1.48	3.71	5	J D	SW6010C	6I08012	09/14/16 17:19
7440-43-9	Cadmium		0.742	1.48	3.71	5	U	SW6010C	6I08012	09/14/16 17:19
7440-70-2	Calcium	3470	**742**	1480	3710	5	J D	SW6010C	6I08012	09/14/16 17:19
7440-47-3	Chromium	40.7	**1.48**	2.97	7.42	5	D	SW6010C	6I08012	09/14/16 17:19
7440-48-4	Cobalt	8.98	**3.71**	7.42	9.28	5	J D	SW6010C	6I08012	09/14/16 17:19
7440-50-8	Copper	11.8	**2.97**	5.94	7.42	5	D	SW6010C	6I08012	09/14/16 17:19
7439-89-6	Iron	43200	**22.3**	44.5	74.2	5	D	SW6010C	6I08012	09/14/16 17:19
7439-92-1	Lead	14.9	**1.11**	2.23	3.71	5	D	SW6010C	6I08012	09/14/16 17:19
7439-95-4	Magnesium	7270	**742**	2230	3710	5	D	SW6010C	6I08012	09/14/16 17:19
7439-96-5	Manganese	240	**2.23**	4.45	11.1	5	D	SW6010C	6I08012	09/14/16 17:19
7439-98-7	Molybdenum	6.27	**3.71**	7.42	14.8	5	J D	SW6010C	6I08012	09/14/16 17:19
7440-02-0	Nickel	27.3	**2.23**	4.45	7.42	5	D	SW6010C	6I08012	09/14/16 17:19
7440-09-7	Potassium	5040	**742**	2230	3710	5	D	SW6010C	6I08012	09/14/16 17:19
7782-49-2	Selenium		2.23	3.71	7.42	5	U	SW6010C	6I08012	09/14/16 17:19
7440-22-4	Silver		0.742	1.48	7.42	5	U	SW6010C	6I08012	09/14/16 17:19
7440-23-5	Sodium	12600	**742**	2230	3710	5	D	SW6010C	6I08012	09/14/16 17:19
7440-28-0	Thallium		2.23	2.97	5.94	5	U	SW6010C	6I08012	09/14/16 17:19
7440-62-2	Vanadium	58.6	**3.71**	7.42	9.28	5	D	SW6010C	6I08012	09/14/16 17:19
7440-66-6	Zinc	83.5	**3.71**	7.42	14.8	5	D	SW6010C	6I08012	09/14/16 17:19

ANALYSIS DATA SHEET

DSA02-SB15-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 13:28
% Solids: 29.79

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-19
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	23600	**41.5**	83.1	166	5	D	SW6010C	6I08012	09/14/16 17:23
7440-36-0	Antimony		4.15	6.65	8.31	5	U	SW6010C	6I08012	09/14/16 17:23
7440-38-2	Arsenic	7.20	**2.49**	4.99	8.31	5	J D	SW6010C	6I08012	09/14/16 17:23
7440-39-3	Barium	46.3	**4.15**	8.31	33.2	5	D	SW6010C	6I08012	09/14/16 17:23
7440-41-7	Beryllium		0.831	1.66	4.15	5	U	SW6010C	6I08012	09/14/16 17:23
7440-43-9	Cadmium		0.831	1.66	4.15	5	U	SW6010C	6I08012	09/14/16 17:23
7440-70-2	Calcium	4130	**831**	1660	4150	5	J D	SW6010C	6I08012	09/14/16 17:23
7440-47-3	Chromium	44.1	**1.66**	3.32	8.31	5	D	SW6010C	6I08012	09/14/16 17:23
7440-48-4	Cobalt	6.97	**4.15**	8.31	10.4	5	J D	SW6010C	6I08012	09/14/16 17:23
7440-50-8	Copper	12.3	**3.32**	6.65	8.31	5	D	SW6010C	6I08012	09/14/16 17:23
7439-89-6	Iron	30100	**24.9**	49.9	83.1	5	D	SW6010C	6I08012	09/14/16 17:23
7439-92-1	Lead	14.1	**1.25**	2.49	4.15	5	D	SW6010C	6I08012	09/14/16 17:23
7439-95-4	Magnesium	7780	**831**	2490	4150	5	D	SW6010C	6I08012	09/14/16 17:23
7439-96-5	Manganese	373	**2.49**	4.99	12.5	5	D	SW6010C	6I08012	09/14/16 17:23
7439-98-7	Molybdenum	6.73	**4.15**	8.31	16.6	5	J D	SW6010C	6I08012	09/14/16 17:23
7440-02-0	Nickel	22.8	**2.49**	4.99	8.31	5	D	SW6010C	6I08012	09/14/16 17:23
7440-09-7	Potassium	5360	**831**	2490	4150	5	D	SW6010C	6I08012	09/14/16 17:23
7782-49-2	Selenium		2.49	4.15	8.31	5	U	SW6010C	6I08012	09/14/16 17:23
7440-22-4	Silver		0.831	1.66	8.31	5	U	SW6010C	6I08012	09/14/16 17:23
7440-23-5	Sodium	15300	**831**	2490	4150	5	D	SW6010C	6I08012	09/14/16 17:23
7440-28-0	Thallium		2.49	3.32	6.65	5	U	SW6010C	6I08012	09/14/16 17:23
7440-62-2	Vanadium	54.5	**4.15**	8.31	10.4	5	D	SW6010C	6I08012	09/14/16 17:23
7440-66-6	Zinc	60.5	**4.15**	8.31	16.6	5	D	SW6010C	6I08012	09/14/16 17:23

ANALYSIS DATA SHEET

DSA02-SB16-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 13:40
% Solids: 43.22

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-20
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	24200	**28.8**	57.6	115	5	D	SW6010C	6I08012	09/14/16 17:28
7440-36-0	Antimony		2.88	4.60	5.76	5	U	SW6010C	6I08012	09/14/16 17:28
7440-38-2	Arsenic	12.9	**1.73**	3.45	5.76	5	D	SW6010C	6I08012	09/14/16 17:28
7440-39-3	Barium	37.0	**2.88**	5.76	23.0	5	D	SW6010C	6I08012	09/14/16 17:28
7440-41-7	Beryllium	1.15	**0.576**	1.15	2.88	5	J D	SW6010C	6I08012	09/14/16 17:28
7440-43-9	Cadmium		0.576	1.15	2.88	5	U	SW6010C	6I08012	09/14/16 17:28
7440-70-2	Calcium	2610	**576**	1150	2880	5	J D	SW6010C	6I08012	09/14/16 17:28
7440-47-3	Chromium	36.8	**1.15**	2.30	5.76	5	D	SW6010C	6I08012	09/14/16 17:28
7440-48-4	Cobalt	12.0	**2.88**	5.76	7.19	5	D	SW6010C	6I08012	09/14/16 17:28
7440-50-8	Copper	12.8	**2.30**	4.60	5.76	5	D	SW6010C	6I08012	09/14/16 17:28
7439-89-6	Iron	42600	**17.3**	34.5	57.6	5	D	SW6010C	6I08012	09/14/16 17:28
7439-92-1	Lead	16.9	**0.863**	1.73	2.88	5	D	SW6010C	6I08012	09/14/16 17:28
7439-95-4	Magnesium	7470	**576**	1730	2880	5	D	SW6010C	6I08012	09/14/16 17:28
7439-96-5	Manganese	333	**1.73**	3.45	8.63	5	D	SW6010C	6I08012	09/14/16 17:28
7439-98-7	Molybdenum	5.34	**2.88**	5.76	11.5	5	J D	SW6010C	6I08012	09/14/16 17:28
7440-02-0	Nickel	36.4	**1.73**	3.45	5.76	5	D	SW6010C	6I08012	09/14/16 17:28
7440-09-7	Potassium	4930	**576**	1730	2880	5	D	SW6010C	6I08012	09/14/16 17:28
7782-49-2	Selenium	1.78	**1.73**	2.88	5.76	5	J D	SW6010C	6I08012	09/14/16 17:28
7440-22-4	Silver		0.576	1.15	5.76	5	U	SW6010C	6I08012	09/14/16 17:28
7440-23-5	Sodium	12700	**576**	1730	2880	5	D	SW6010C	6I08012	09/14/16 17:28
7440-28-0	Thallium		1.73	2.30	4.60	5	U	SW6010C	6I08012	09/14/16 17:28
7440-62-2	Vanadium	44.0	**2.88**	5.76	7.19	5	D	SW6010C	6I08012	09/14/16 17:28
7440-66-6	Zinc	97.0	**2.88**	5.76	11.5	5	D	SW6010C	6I08012	09/14/16 17:28

ANALYSIS DATA SHEET

Blank

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
% Solids:

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 6H29015-BLK1

CAS NO.	Analyte	Conc. (mg/Kg wet)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	ND	2.50	5.00	10.0	1	U	SW6010C	6H29015	09/14/16 13:59
7440-36-0	Antimony	ND	0.250	0.400	0.500	1	U	SW6010C	6H29015	09/14/16 13:59
7440-38-2	Arsenic	ND	0.150	0.300	0.500	1	U	SW6010C	6H29015	09/14/16 13:59
7440-39-3	Barium	ND	0.250	0.500	2.00	1	U	SW6010C	6H29015	09/14/16 13:59
7440-41-7	Beryllium	ND	0.0500	0.100	0.250	1	U	SW6010C	6H29015	09/14/16 13:59
7440-43-9	Cadmium	ND	0.0500	0.100	0.250	1	U	SW6010C	6H29015	09/14/16 13:59
7440-70-2	Calcium	ND	50.0	100	250	1	U	SW6010C	6H29015	09/14/16 13:59
7440-47-3	Chromium	ND	0.100	0.200	0.500	1	U	SW6010C	6H29015	09/14/16 13:59
7440-48-4	Cobalt	ND	0.250	0.500	0.625	1	U	SW6010C	6H29015	09/14/16 13:59
7440-50-8	Copper	ND	0.200	0.400	0.500	1	U	SW6010C	6H29015	09/14/16 13:59
7439-89-6	Iron	ND	1.50	3.00	5.00	1	U	SW6010C	6H29015	09/14/16 13:59
7439-92-1	Lead	ND	0.0750	0.150	0.250	1	U	SW6010C	6H29015	09/14/16 13:59
7439-95-4	Magnesium	ND	50.0	150	250	1	U	SW6010C	6H29015	09/14/16 13:59
7439-96-5	Manganese	ND	0.150	0.300	0.750	1	U	SW6010C	6H29015	09/14/16 13:59
7439-98-7	Molybdenum	ND	0.250	0.500	1.00	1	U	SW6010C	6H29015	09/14/16 13:59
7440-02-0	Nickel	ND	0.150	0.300	0.500	1	U	SW6010C	6H29015	09/14/16 13:59
7440-09-7	Potassium	ND	50.0	150	250	1	U	SW6010C	6H29015	09/14/16 13:59
7782-49-2	Selenium	ND	0.150	0.250	0.500	1	U	SW6010C	6H29015	09/14/16 13:59
7440-22-4	Silver	ND	0.0500	0.100	0.500	1	U	SW6010C	6H29015	09/14/16 13:59
7440-23-5	Sodium	ND	50.0	150	250	1	U	SW6010C	6H29015	09/14/16 13:59
7440-28-0	Thallium	ND	0.150	0.200	0.400	1	U	SW6010C	6H29015	09/14/16 13:59
7440-62-2	Vanadium	ND	0.250	0.500	0.625	1	U	SW6010C	6H29015	09/14/16 13:59
7440-66-6	Zinc	0.252	**0.250**	0.500	1.00	1	J	SW6010C	6H29015	09/14/16 13:59

ANALYSIS DATA SHEET

LCS

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Matrix: Solid
Laboratory ID: 6H29015-BS1
% Solids:

CAS NO.	Analyte	Conc. (mg/Kg wet)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	101.6	**2.50**	5.00	10.0	1		SW6010C	6H29015	09/14/16 14:04
7440-36-0	Antimony	12.02	**0.250**	0.400	0.500	1		SW6010C	6H29015	09/14/16 14:04
7440-38-2	Arsenic	12.51	**0.150**	0.300	0.500	1		SW6010C	6H29015	09/14/16 14:04
7440-39-3	Barium	98.54	**0.250**	0.500	2.00	1		SW6010C	6H29015	09/14/16 14:04
7440-41-7	Beryllium	2.466	**0.0500**	0.100	0.250	1		SW6010C	6H29015	09/14/16 14:04
7440-43-9	Cadmium	6.449	**0.0500**	0.100	0.250	1		SW6010C	6H29015	09/14/16 14:04
7440-70-2	Calcium	262.8	**50.0**	100	250	1		SW6010C	6H29015	09/14/16 14:04
7440-47-3	Chromium	9.778	**0.100**	0.200	0.500	1		SW6010C	6H29015	09/14/16 14:04
7440-48-4	Cobalt	25.20	**0.250**	0.500	0.625	1		SW6010C	6H29015	09/14/16 14:04
7440-50-8	Copper	12.43	**0.200**	0.400	0.500	1		SW6010C	6H29015	09/14/16 14:04
7439-89-6	Iron	50.10	**1.50**	3.00	5.00	1		SW6010C	6H29015	09/14/16 14:04
7439-92-1	Lead	12.46	**0.0750**	0.150	0.250	1		SW6010C	6H29015	09/14/16 14:04
7439-95-4	Magnesium	248.7	**50.0**	150	250	1	J	SW6010C	6H29015	09/14/16 14:04
7439-96-5	Manganese	24.58	**0.150**	0.300	0.750	1		SW6010C	6H29015	09/14/16 14:04
7439-98-7	Molybdenum	50.80	**0.250**	0.500	1.00	1		SW6010C	6H29015	09/14/16 14:04
7440-02-0	Nickel	25.41	**0.150**	0.300	0.500	1		SW6010C	6H29015	09/14/16 14:04
7440-09-7	Potassium	248.9	**50.0**	150	250	1	J	SW6010C	6H29015	09/14/16 14:04
7782-49-2	Selenium	12.14	**0.150**	0.250	0.500	1		SW6010C	6H29015	09/14/16 14:04
7440-22-4	Silver	11.57	**0.0500**	0.100	0.500	1		SW6010C	6H29015	09/14/16 14:04
7440-23-5	Sodium	262.9	**50.0**	150	250	1		SW6010C	6H29015	09/14/16 14:04
7440-28-0	Thallium	12.84	**0.150**	0.200	0.400	1		SW6010C	6H29015	09/14/16 14:04
7440-62-2	Vanadium	24.52	**0.250**	0.500	0.625	1		SW6010C	6H29015	09/14/16 14:04
7440-66-6	Zinc	25.48	**0.250**	0.500	1.00	1		SW6010C	6H29015	09/14/16 14:04

ANALYSIS DATA SHEET

Blank

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
% Solids:

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 6I08012-BLK1

CAS NO.	Analyte	Conc. (mg/Kg wet)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	ND	2.50	5.00	10.0	1	U	SW6010C	6I08012	09/14/16 16:44
7440-36-0	Antimony	ND	0.250	0.400	0.500	1	U	SW6010C	6I08012	09/14/16 16:44
7440-38-2	Arsenic	ND	0.150	0.300	0.500	1	U	SW6010C	6I08012	09/14/16 16:44
7440-39-3	Barium	ND	0.250	0.500	2.00	1	U	SW6010C	6I08012	09/14/16 16:44
7440-41-7	Beryllium	ND	0.0500	0.100	0.250	1	U	SW6010C	6I08012	09/14/16 16:44
7440-43-9	Cadmium	ND	0.0500	0.100	0.250	1	U	SW6010C	6I08012	09/14/16 16:44
7440-70-2	Calcium	ND	50.0	100	250	1	U	SW6010C	6I08012	09/14/16 16:44
7440-47-3	Chromium	ND	0.100	0.200	0.500	1	U	SW6010C	6I08012	09/14/16 16:44
7440-48-4	Cobalt	ND	0.250	0.500	0.625	1	U	SW6010C	6I08012	09/14/16 16:44
7440-50-8	Copper	ND	0.200	0.400	0.500	1	U	SW6010C	6I08012	09/14/16 16:44
7439-89-6	Iron	ND	1.50	3.00	5.00	1	U	SW6010C	6I08012	09/14/16 16:44
7439-92-1	Lead	ND	0.0750	0.150	0.250	1	U	SW6010C	6I08012	09/14/16 16:44
7439-95-4	Magnesium	ND	50.0	150	250	1	U	SW6010C	6I08012	09/14/16 16:44
7439-96-5	Manganese	ND	0.150	0.300	0.750	1	U	SW6010C	6I08012	09/14/16 16:44
7439-98-7	Molybdenum	ND	0.250	0.500	1.00	1	U	SW6010C	6I08012	09/14/16 16:44
7440-02-0	Nickel	ND	0.150	0.300	0.500	1	U	SW6010C	6I08012	09/14/16 16:44
7440-09-7	Potassium	ND	50.0	150	250	1	U	SW6010C	6I08012	09/14/16 16:44
7782-49-2	Selenium	ND	0.150	0.250	0.500	1	U	SW6010C	6I08012	09/14/16 16:44
7440-22-4	Silver	ND	0.0500	0.100	0.500	1	U	SW6010C	6I08012	09/14/16 16:44
7440-23-5	Sodium	ND	50.0	150	250	1	U	SW6010C	6I08012	09/14/16 16:44
7440-28-0	Thallium	ND	0.150	0.200	0.400	1	U	SW6010C	6I08012	09/14/16 16:44
7440-62-2	Vanadium	ND	0.250	0.500	0.625	1	U	SW6010C	6I08012	09/14/16 16:44
7440-66-6	Zinc	0.365	**0.250**	0.500	1.00	1	J	SW6010C	6I08012	09/14/16 16:44

ANALYSIS DATA SHEET

LCS

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Matrix: Solid
Laboratory ID: 6I08012-BS1
% Solids:

CAS NO.	Analyte	Conc. (mg/Kg wet)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	102.6	**2.50**	5.00	10.0	1		SW6010C	6I08012	09/14/16 16:48
7440-36-0	Antimony	12.75	**0.250**	0.400	0.500	1		SW6010C	6I08012	09/14/16 16:48
7440-38-2	Arsenic	13.33	**0.150**	0.300	0.500	1		SW6010C	6I08012	09/14/16 16:48
7440-39-3	Barium	103.0	**0.250**	0.500	2.00	1		SW6010C	6I08012	09/14/16 16:48
7440-41-7	Beryllium	2.552	**0.0500**	0.100	0.250	1		SW6010C	6I08012	09/14/16 16:48
7440-43-9	Cadmium	6.857	**0.0500**	0.100	0.250	1		SW6010C	6I08012	09/14/16 16:48
7440-70-2	Calcium	271.6	**50.0**	100	250	1		SW6010C	6I08012	09/14/16 16:48
7440-47-3	Chromium	10.17	**0.100**	0.200	0.500	1		SW6010C	6I08012	09/14/16 16:48
7440-48-4	Cobalt	26.30	**0.250**	0.500	0.625	1		SW6010C	6I08012	09/14/16 16:48
7440-50-8	Copper	13.42	**0.200**	0.400	0.500	1		SW6010C	6I08012	09/14/16 16:48
7439-89-6	Iron	52.10	**1.50**	3.00	5.00	1		SW6010C	6I08012	09/14/16 16:48
7439-92-1	Lead	13.27	**0.0750**	0.150	0.250	1		SW6010C	6I08012	09/14/16 16:48
7439-95-4	Magnesium	252.6	**50.0**	150	250	1		SW6010C	6I08012	09/14/16 16:48
7439-96-5	Manganese	25.84	**0.150**	0.300	0.750	1		SW6010C	6I08012	09/14/16 16:48
7439-98-7	Molybdenum	53.25	**0.250**	0.500	1.00	1		SW6010C	6I08012	09/14/16 16:48
7440-02-0	Nickel	26.67	**0.150**	0.300	0.500	1		SW6010C	6I08012	09/14/16 16:48
7440-09-7	Potassium	260.1	**50.0**	150	250	1		SW6010C	6I08012	09/14/16 16:48
7782-49-2	Selenium	13.06	**0.150**	0.250	0.500	1		SW6010C	6I08012	09/14/16 16:48
7440-22-4	Silver	12.44	**0.0500**	0.100	0.500	1		SW6010C	6I08012	09/14/16 16:48
7440-23-5	Sodium	256.6	**50.0**	150	250	1		SW6010C	6I08012	09/14/16 16:48
7440-28-0	Thallium	13.76	**0.150**	0.200	0.400	1		SW6010C	6I08012	09/14/16 16:48
7440-62-2	Vanadium	25.60	**0.250**	0.500	0.625	1		SW6010C	6I08012	09/14/16 16:48
7440-66-6	Zinc	26.78	**0.250**	0.500	1.00	1		SW6010C	6I08012	09/14/16 16:48

INITIAL AND CONTINUING CALIBRATION CHECK

SW6010C

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP

SDG: 1608251
Project: Raritan Arsenal - Phase III
Calibration: 6258003
Sequence: 6I25804

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
6I25804-ICV1	Aluminum	10000	9799	98.0	ug/L	+/- 10.00%
	Antimony	1000	1011	101	ug/L	+/- 10.00%
	Arsenic	1000	1051	105	ug/L	+/- 10.00%
	Barium	1000	967.5	96.8	ug/L	+/- 10.00%
	Beryllium	1000	1019	102	ug/L	+/- 10.00%
	Cadmium	1000	1009	101	ug/L	+/- 10.00%
	Calcium	50000	52300	105	ug/L	+/- 10.00%
	Chromium	1000	962.3	96.2	ug/L	+/- 10.00%
	Cobalt	1000	953.7	95.4	ug/L	+/- 10.00%
	Copper	1000	1014	101	ug/L	+/- 10.00%
	Iron	10000	10080	101	ug/L	+/- 10.00%
	Lead	1000	963.0	96.3	ug/L	+/- 10.00%
	Magnesium	50000	47800	95.6	ug/L	+/- 10.00%
	Manganese	1000	958.9	95.9	ug/L	+/- 10.00%
	Molybdenum	1000	1007	101	ug/L	+/- 10.00%
	Nickel	1000	987.0	98.7	ug/L	+/- 10.00%
	Potassium	10000	10260	103	ug/L	+/- 10.00%
	Selenium	1000	1036	104	ug/L	+/- 10.00%
	Silver	500.0	476.8	95.4	ug/L	+/- 10.00%
	Sodium	50000	50810	102	ug/L	+/- 10.00%
	Thallium	1000	1010	101	ug/L	+/- 10.00%
	Vanadium	1000	999.2	99.9	ug/L	+/- 10.00%
	Zinc	1000	1000	100	ug/L	+/- 10.00%
6I25804-CCV1	Aluminum	10000	10020	100	ug/L	+/- 10.00%
	Antimony	1000	998.5	99.9	ug/L	+/- 10.00%
	Arsenic	1000	1040	104	ug/L	+/- 10.00%
	Barium	1000	958.6	95.9	ug/L	+/- 10.00%
	Beryllium	1000	1013	101	ug/L	+/- 10.00%
	Cadmium	1000	1008	101	ug/L	+/- 10.00%
	Calcium	50000	50430	101	ug/L	+/- 10.00%
	Chromium	1000	961.3	96.1	ug/L	+/- 10.00%
	Cobalt	1000	955.2	95.5	ug/L	+/- 10.00%
	Copper	1000	1012	101	ug/L	+/- 10.00%
	Iron	10000	9769	97.7	ug/L	+/- 10.00%
	Lead	1000	962.1	96.2	ug/L	+/- 10.00%
	Magnesium	50000	47310	94.6	ug/L	+/- 10.00%
	Manganese	1000	977.3	97.7	ug/L	+/- 10.00%
	Molybdenum	1000	993.5	99.4	ug/L	+/- 10.00%
	Nickel	1000	986.8	98.7	ug/L	+/- 10.00%

INITIAL AND CONTINUING CALIBRATION CHECK

SW6010C

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP

SDG: 1608251
Project: Raritan Arsenal - Phase III
Calibration: 6258003
Sequence: 6I25804

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
6I25804-CCV1	Potassium	10000	10290	103	ug/L	+/- 10.00%
	Selenium	1000	1030	103	ug/L	+/- 10.00%
	Silver	500.0	476.0	95.2	ug/L	+/- 10.00%
	Sodium	50000	50210	100	ug/L	+/- 10.00%
	Thallium	1000	998.0	99.8	ug/L	+/- 10.00%
	Vanadium	1000	976.7	97.7	ug/L	+/- 10.00%
	Zinc	1000	976.9	97.7	ug/L	+/- 10.00%
6I25804-CCV3	Aluminum	10000	9969	99.7	ug/L	+/- 10.00%
	Antimony	1000	995.4	99.5	ug/L	+/- 10.00%
	Arsenic	1000	1032	103	ug/L	+/- 10.00%
	Barium	1000	951.5	95.2	ug/L	+/- 10.00%
	Beryllium	1000	1016	102	ug/L	+/- 10.00%
	Cadmium	1000	1020	102	ug/L	+/- 10.00%
	Calcium	50000	50700	101	ug/L	+/- 10.00%
	Chromium	1000	986.2	98.6	ug/L	+/- 10.00%
	Cobalt	1000	957.6	95.8	ug/L	+/- 10.00%
	Copper	1000	1010	101	ug/L	+/- 10.00%
	Iron	10000	9820	98.2	ug/L	+/- 10.00%
	Lead	1000	960.4	96.0	ug/L	+/- 10.00%
	Magnesium	50000	47580	95.2	ug/L	+/- 10.00%
	Manganese	1000	972.5	97.2	ug/L	+/- 10.00%
	Molybdenum	1000	1007	101	ug/L	+/- 10.00%
	Nickel	1000	978.6	97.9	ug/L	+/- 10.00%
	Potassium	10000	10140	101	ug/L	+/- 10.00%
	Selenium	1000	1032	103	ug/L	+/- 10.00%
	Silver	500.0	475.8	95.2	ug/L	+/- 10.00%
	Sodium	50000	50170	100	ug/L	+/- 10.00%
	Thallium	1000	995.1	99.5	ug/L	+/- 10.00%
	Vanadium	1000	998.2	99.8	ug/L	+/- 10.00%
	Zinc	1000	992.2	99.2	ug/L	+/- 10.00%
6I25804-CCV4	Aluminum	10000	9924	99.2	ug/L	+/- 10.00%
	Antimony	1000	1006	101	ug/L	+/- 10.00%
	Arsenic	1000	1043	104	ug/L	+/- 10.00%
	Barium	1000	954.7	95.5	ug/L	+/- 10.00%
	Beryllium	1000	1016	102	ug/L	+/- 10.00%
	Cadmium	1000	1031	103	ug/L	+/- 10.00%
	Calcium	50000	50830	102	ug/L	+/- 10.00%
	Chromium	1000	982.8	98.3	ug/L	+/- 10.00%
	Cobalt	1000	962.6	96.3	ug/L	+/- 10.00%

INITIAL AND CONTINUING CALIBRATION CHECK

SW6010C

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP

SDG: 1608251
Project: Raritan Arsenal - Phase III
Calibration: 6258003
Sequence: 6I25804

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
6I25804-CCV4	Copper	1000	1014	101	ug/L	+/- 10.00%
	Iron	10000	9886	98.9	ug/L	+/- 10.00%
	Lead	1000	967.6	96.8	ug/L	+/- 10.00%
	Magnesium	50000	47700	95.4	ug/L	+/- 10.00%
	Manganese	1000	970.9	97.1	ug/L	+/- 10.00%
	Molybdenum	1000	1014	101	ug/L	+/- 10.00%
	Nickel	1000	984.2	98.4	ug/L	+/- 10.00%
	Potassium	10000	10300	103	ug/L	+/- 10.00%
	Selenium	1000	1046	105	ug/L	+/- 10.00%
	Silver	500.0	477.0	95.4	ug/L	+/- 10.00%
	Sodium	50000	49530	99.1	ug/L	+/- 10.00%
	Thallium	1000	1009	101	ug/L	+/- 10.00%
	Vanadium	1000	992.6	99.3	ug/L	+/- 10.00%
	Zinc	1000	1004	100	ug/L	+/- 10.00%
6I25804-CCV5	Aluminum	10000	9999	100	ug/L	+/- 10.00%
	Antimony	1000	1013	101	ug/L	+/- 10.00%
	Arsenic	1000	1051	105	ug/L	+/- 10.00%
	Barium	1000	965.9	96.6	ug/L	+/- 10.00%
	Beryllium	1000	1017	102	ug/L	+/- 10.00%
	Cadmium	1000	1038	104	ug/L	+/- 10.00%
	Calcium	50000	51170	102	ug/L	+/- 10.00%
	Chromium	1000	990.2	99.0	ug/L	+/- 10.00%
	Cobalt	1000	969.1	96.9	ug/L	+/- 10.00%
	Copper	1000	1046	105	ug/L	+/- 10.00%
	Iron	10000	10100	101	ug/L	+/- 10.00%
	Lead	1000	984.6	98.5	ug/L	+/- 10.00%
	Magnesium	50000	48010	96.0	ug/L	+/- 10.00%
	Manganese	1000	988.7	98.9	ug/L	+/- 10.00%
	Molybdenum	1000	1011	101	ug/L	+/- 10.00%
	Nickel	1000	996.1	99.6	ug/L	+/- 10.00%
	Potassium	10000	10540	105	ug/L	+/- 10.00%
	Selenium	1000	1049	105	ug/L	+/- 10.00%
	Silver	500.0	489.3	97.9	ug/L	+/- 10.00%
	Sodium	50000	50120	100	ug/L	+/- 10.00%
	Thallium	1000	1020	102	ug/L	+/- 10.00%
	Vanadium	1000	1003	100	ug/L	+/- 10.00%
	Zinc	1000	1008	101	ug/L	+/- 10.00%
6I25804-CCV6	Aluminum	10000	9884	98.8	ug/L	+/- 10.00%
	Antimony	1000	995.2	99.5	ug/L	+/- 10.00%

INITIAL AND CONTINUING CALIBRATION CHECK

SW6010C

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP
SDG: 1608251
Project: Raritan Arsenal - Phase III
Calibration: 6258003
Sequence: 6I25804

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
6I25804-CCV6	Arsenic	1000	1027	103	ug/L	+/- 10.00%
	Barium	1000	941.2	94.1	ug/L	+/- 10.00%
	Beryllium	1000	1015	102	ug/L	+/- 10.00%
	Cadmium	1000	1044	104	ug/L	+/- 10.00%
	Calcium	50000	51320	103	ug/L	+/- 10.00%
	Chromium	1000	1023	102	ug/L	+/- 10.00%
	Cobalt	1000	959.9	96.0	ug/L	+/- 10.00%
	Copper	1000	1013	101	ug/L	+/- 10.00%
	Iron	10000	10170	102	ug/L	+/- 10.00%
	Lead	1000	962.2	96.2	ug/L	+/- 10.00%
	Magnesium	50000	48370	96.7	ug/L	+/- 10.00%
	Manganese	1000	963.6	96.4	ug/L	+/- 10.00%
	Molybdenum	1000	1019	102	ug/L	+/- 10.00%
	Nickel	1000	968.2	96.8	ug/L	+/- 10.00%
	Potassium	10000	10380	104	ug/L	+/- 10.00%
	Selenium	1000	1047	105	ug/L	+/- 10.00%
	Silver	500.0	480.8	96.2	ug/L	+/- 10.00%
	Sodium	50000	50420	101	ug/L	+/- 10.00%
	Thallium	1000	1000	100	ug/L	+/- 10.00%
	Vanadium	1000	1025	103	ug/L	+/- 10.00%
	Zinc	1000	1022	102	ug/L	+/- 10.00%

CRDL STANDARD

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Instrument ID: ME-ICP
Calibration: 6258003
Sequence: 6I25804

Lab Sample ID	Analyte	True	Found	%R	Units	QC Limts
6I25804-CRL1	Aluminum	200.0	197.5	98.7	ug/L	80 - 120
	Antimony	10.00	8.108	81.1	ug/L	80 - 120
	Arsenic	5.000	5.226	105	ug/L	80 - 120
	Barium	10.00	9.655	96.6	ug/L	80 - 120
	Beryllium	2.000	1.991	99.6	ug/L	80 - 120
	Cadmium	2.000	1.973	98.6	ug/L	80 - 120
	Calcium	2000	2017	101	ug/L	80 - 120
	Chromium	4.000	3.583	89.6	ug/L	80 - 120
	Cobalt	10.00	9.872	98.7	ug/L	80 - 120
	Copper	10.00	10.12	101	ug/L	80 - 120
	Iron	100.0	92.30	92.3	ug/L	80 - 120
	Lead	3.000	3.301	110	ug/L	80 - 120
	Magnesium	3000	2984	99.5	ug/L	80 - 120
	Manganese	6.000	6.062	101	ug/L	80 - 120
	Molybdenum	10.00	9.406	94.1	ug/L	80 - 120
	Nickel	6.000	5.660	94.3	ug/L	80 - 120
	Potassium	3000	3023	101	ug/L	80 - 120
	Silver	3.000	2.894	96.5	ug/L	80 - 120
	Sodium	3000	3312	110	ug/L	80 - 120
	Thallium	8.000	8.389	105	ug/L	80 - 120
	Vanadium	10.00	8.783	87.8	ug/L	80 - 120
	Zinc	10.00	9.492	94.9	ug/L	80 - 120
6I25804-CRL2	Selenium	5.000	5.931	119	ug/L	80 - 120

BLANKS
SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP
Project: Raritan Arsenal - Phase III
Sequence: 6I25804
Calibration: 6258003

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
6I25804-ICB1	Aluminum	0.1637	50.0	200	ug/L	U	SW6010C
	Antimony	-0.7246	5.00	10.0	ug/L	U	SW6010C
	Arsenic	0.4796	3.00	10.0	ug/L	U	SW6010C
	Barium	0.09004	5.00	40.0	ug/L	U	SW6010C
	Beryllium	0.1509	1.00	5.00	ug/L	U	SW6010C
	Cadmium	-0.005130	1.00	5.00	ug/L	U	SW6010C
	Calcium	-2.960	1000	5000	ug/L	U	SW6010C
	Chromium	-0.008080	2.00	10.0	ug/L	U	SW6010C
	Cobalt	0.2933	5.00	12.5	ug/L	U	SW6010C
	Copper	1.272	4.00	10.0	ug/L	U	SW6010C
	Iron	1.940	30.0	100	ug/L	U	SW6010C
	Lead	1.310	1.50	5.00	ug/L	U	SW6010C
	Magnesium	-16.09	1000	5000	ug/L	U	SW6010C
	Manganese	0.07376	3.00	15.0	ug/L	U	SW6010C
	Molybdenum	0.3571	5.00	20.0	ug/L	U	SW6010C
	Nickel	-0.2317	3.00	10.0	ug/L	U	SW6010C
	Potassium	100.1	1000	5000	ug/L	U	SW6010C
	Selenium	1.985	3.00	10.0	ug/L	U	SW6010C
	Silver	0.4160	1.00	10.0	ug/L	U	SW6010C
	Sodium	130.6	1000	5000	ug/L	U	SW6010C
	Thallium	0.8491	3.00	8.00	ug/L	U	SW6010C
	Vanadium	-0.2000	5.00	12.5	ug/L	U	SW6010C
	Zinc	0.1432	5.00	20.0	ug/L	U	SW6010C
6I25804-CCB1	Aluminum	-30.9	50.0	200	ug/L	U	SW6010C
	Antimony	-1.02	5.00	10.0	ug/L	U	SW6010C
	Arsenic	-0.594	3.00	10.0	ug/L	U	SW6010C
	Barium	0.220	5.00	40.0	ug/L	U	SW6010C
	Beryllium	0.156	1.00	5.00	ug/L	U	SW6010C
	Cadmium	0.0212	1.00	5.00	ug/L	U	SW6010C
	Calcium	3.42	1000	5000	ug/L	U	SW6010C
	Chromium	-0.219	2.00	10.0	ug/L	U	SW6010C
	Cobalt	0.331	5.00	12.5	ug/L	U	SW6010C
	Copper	0.581	4.00	10.0	ug/L	U	SW6010C
	Iron	-0.971	30.0	100	ug/L	U	SW6010C

BLANKS
SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP
Project: Raritan Arsenal - Phase III
Sequence: 6I25804
Calibration: 6258003

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
6I25804-CCB1	Lead	2.20	1.50	5.00	ug/L	J	SW6010C
	Magnesium	-19.6	1000	5000	ug/L	U	SW6010C
	Manganese	0.0370	3.00	15.0	ug/L	U	SW6010C
	Molybdenum	0.454	5.00	20.0	ug/L	U	SW6010C
	Nickel	-0.408	3.00	10.0	ug/L	U	SW6010C
	Potassium	99.7	1000	5000	ug/L	U	SW6010C
	Selenium	0.346	3.00	10.0	ug/L	U	SW6010C
	Silver	0.463	1.00	10.0	ug/L	U	SW6010C
	Sodium	63.4	1000	5000	ug/L	U	SW6010C
	Thallium	0.0780	3.00	8.00	ug/L	U	SW6010C
	Vanadium	-0.609	5.00	12.5	ug/L	U	SW6010C
	Zinc	0.240	5.00	20.0	ug/L	U	SW6010C
6I25804-CCB3	Aluminum	-5.78	50.0	200	ug/L	U	SW6010C
	Antimony	-1.83	5.00	10.0	ug/L	U	SW6010C
	Arsenic	1.74	3.00	10.0	ug/L	U	SW6010C
	Barium	0.280	5.00	40.0	ug/L	U	SW6010C
	Beryllium	0.205	1.00	5.00	ug/L	U	SW6010C
	Cadmium	-0.0266	1.00	5.00	ug/L	U	SW6010C
	Calcium	0.880	1000	5000	ug/L	U	SW6010C
	Chromium	0.162	2.00	10.0	ug/L	U	SW6010C
	Cobalt	-0.0251	5.00	12.5	ug/L	U	SW6010C
	Copper	0.257	4.00	10.0	ug/L	U	SW6010C
	Iron	-8.14	30.0	100	ug/L	U	SW6010C
	Lead	1.01	1.50	5.00	ug/L	U	SW6010C
	Magnesium	-12.8	1000	5000	ug/L	U	SW6010C
	Manganese	0.0956	3.00	15.0	ug/L	U	SW6010C
	Molybdenum	0.423	5.00	20.0	ug/L	U	SW6010C
	Nickel	-0.330	3.00	10.0	ug/L	U	SW6010C
	Potassium	63.8	1000	5000	ug/L	U	SW6010C
	Selenium	1.40	3.00	10.0	ug/L	U	SW6010C
	Silver	-0.273	1.00	10.0	ug/L	U	SW6010C
	Sodium	10.7	1000	5000	ug/L	U	SW6010C
	Thallium	-0.226	3.00	8.00	ug/L	U	SW6010C
	Vanadium	-0.0265	5.00	12.5	ug/L	U	SW6010C

BLANKS
SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP
Project: Raritan Arsenal - Phase III
Sequence: 6I25804
Calibration: 6258003

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
6I25804-CCB3	Zinc	0.194	5.00	20.0	ug/L	U	SW6010C
6H29015-BLK1	Aluminum	-0.669	2.50	10.0	mg/Kg wet	U	SW6010C
	Antimony	-0.149	0.250	0.500	mg/Kg wet	U	SW6010C
	Arsenic	0.0816	0.150	0.500	mg/Kg wet	U	SW6010C
	Barium	0.0252	0.250	2.00	mg/Kg wet	U	SW6010C
	Beryllium	-0.0000485	0.0500	0.250	mg/Kg wet	U	SW6010C
	Cadmium	0.00694	0.0500	0.250	mg/Kg wet	U	SW6010C
	Calcium	1.37	50.0	250	mg/Kg wet	U	SW6010C
	Chromium	0.0312	0.100	0.500	mg/Kg wet	U	SW6010C
	Cobalt	-0.0115	0.250	0.625	mg/Kg wet	U	SW6010C
	Copper	-0.0222	0.200	0.500	mg/Kg wet	U	SW6010C
	Iron	-0.412	1.50	5.00	mg/Kg wet	U	SW6010C
	Lead	0.0526	0.0750	0.250	mg/Kg wet	U	SW6010C
	Magnesium	-0.178	50.0	250	mg/Kg wet	U	SW6010C
	Manganese	0.00822	0.150	0.750	mg/Kg wet	U	SW6010C
	Molybdenum	0.0361	0.250	1.00	mg/Kg wet	U	SW6010C
	Nickel	-0.00890	0.150	0.500	mg/Kg wet	U	SW6010C
	Potassium	4.61	50.0	250	mg/Kg wet	U	SW6010C
	Selenium	-0.000513	0.150	0.500	mg/Kg wet	U	SW6010C
	Silver	-0.0396	0.0500	0.500	mg/Kg wet	U	SW6010C
	Sodium	0.544	50.0	250	mg/Kg wet	U	SW6010C
	Thallium	-0.0208	0.150	0.400	mg/Kg wet	U	SW6010C
	Vanadium	-0.0141	0.250	0.625	mg/Kg wet	U	SW6010C
	Zinc	0.252	0.250	1.00	mg/Kg wet	J	SW6010C
6I25804-CCB4	Aluminum	-7.81	50.0	200	ug/L	U	SW6010C
	Antimony	-2.14	5.00	10.0	ug/L	U	SW6010C
	Arsenic	0.175	3.00	10.0	ug/L	U	SW6010C
	Barium	0.0584	5.00	40.0	ug/L	U	SW6010C
	Beryllium	-0.0536	1.00	5.00	ug/L	U	SW6010C
	Cadmium	-0.0401	1.00	5.00	ug/L	U	SW6010C
	Calcium	-4.44	1000	5000	ug/L	U	SW6010C
	Chromium	-0.528	2.00	10.0	ug/L	U	SW6010C
	Cobalt	0.102	5.00	12.5	ug/L	U	SW6010C
	Copper	-0.364	4.00	10.0	ug/L	U	SW6010C

BLANKS
SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP
Project: Raritan Arsenal - Phase III
Sequence: 6I25804
Calibration: 6258003

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
6I25804-CCB4	Iron	-3.60	30.0	100	ug/L	U	SW6010C
	Lead	1.47	1.50	5.00	ug/L	U	SW6010C
	Magnesium	-17.8	1000	5000	ug/L	U	SW6010C
	Manganese	0.152	3.00	15.0	ug/L	U	SW6010C
	Molybdenum	0.227	5.00	20.0	ug/L	U	SW6010C
	Nickel	-0.505	3.00	10.0	ug/L	U	SW6010C
	Potassium	62.6	1000	5000	ug/L	U	SW6010C
	Selenium	-0.788	3.00	10.0	ug/L	U	SW6010C
	Silver	-0.541	1.00	10.0	ug/L	U	SW6010C
	Sodium	-2.08	1000	5000	ug/L	U	SW6010C
	Thallium	0.427	3.00	8.00	ug/L	U	SW6010C
	Vanadium	-0.965	5.00	12.5	ug/L	U	SW6010C
	Zinc	0.365	5.00	20.0	ug/L	U	SW6010C
6I25804-CCB5	Aluminum	-11.4	50.0	200	ug/L	U	SW6010C
	Antimony	-1.31	5.00	10.0	ug/L	U	SW6010C
	Arsenic	0.993	3.00	10.0	ug/L	U	SW6010C
	Barium	0.144	5.00	40.0	ug/L	U	SW6010C
	Beryllium	0.0558	1.00	5.00	ug/L	U	SW6010C
	Cadmium	-0.0163	1.00	5.00	ug/L	U	SW6010C
	Calcium	0.690	1000	5000	ug/L	U	SW6010C
	Chromium	-0.190	2.00	10.0	ug/L	U	SW6010C
	Cobalt	0.0290	5.00	12.5	ug/L	U	SW6010C
	Copper	-0.417	4.00	10.0	ug/L	U	SW6010C
	Iron	-9.20	30.0	100	ug/L	U	SW6010C
	Lead	1.37	1.50	5.00	ug/L	U	SW6010C
	Magnesium	-15.8	1000	5000	ug/L	U	SW6010C
	Manganese	-0.0512	3.00	15.0	ug/L	U	SW6010C
	Molybdenum	0.562	5.00	20.0	ug/L	U	SW6010C
	Nickel	-0.792	3.00	10.0	ug/L	U	SW6010C
	Potassium	36.4	1000	5000	ug/L	U	SW6010C
	Selenium	1.62	3.00	10.0	ug/L	U	SW6010C
	Silver	-0.312	1.00	10.0	ug/L	U	SW6010C
	Sodium	8.44	1000	5000	ug/L	U	SW6010C
	Thallium	0.871	3.00	8.00	ug/L	U	SW6010C

BLANKS
SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP
Project: Raritan Arsenal - Phase III
Sequence: 6I25804
Calibration: 6258003

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
6I25804-CCB5	Vanadium	-0.728	5.00	12.5	ug/L	U	SW6010C
	Zinc	0.448	5.00	20.0	ug/L	U	SW6010C
6I08012-BLK1	Aluminum	-0.198	2.50	10.0	mg/Kg wet	U	SW6010C
	Antimony	-0.114	0.250	0.500	mg/Kg wet	U	SW6010C
	Arsenic	0.00639	0.150	0.500	mg/Kg wet	U	SW6010C
	Barium	0.0141	0.250	2.00	mg/Kg wet	U	SW6010C
	Beryllium	-0.00135	0.0500	0.250	mg/Kg wet	U	SW6010C
	Cadmium	0.00636	0.0500	0.250	mg/Kg wet	U	SW6010C
	Calcium	1.49	50.0	250	mg/Kg wet	U	SW6010C
	Chromium	0.0387	0.100	0.500	mg/Kg wet	U	SW6010C
	Cobalt	-0.00435	0.250	0.625	mg/Kg wet	U	SW6010C
	Copper	-0.0169	0.200	0.500	mg/Kg wet	U	SW6010C
	Iron	0.328	1.50	5.00	mg/Kg wet	U	SW6010C
	Lead	0.0228	0.0750	0.250	mg/Kg wet	U	SW6010C
	Magnesium	-0.760	50.0	250	mg/Kg wet	U	SW6010C
	Manganese	0.0125	0.150	0.750	mg/Kg wet	U	SW6010C
	Molybdenum	0.00956	0.250	1.00	mg/Kg wet	U	SW6010C
	Nickel	-0.0203	0.150	0.500	mg/Kg wet	U	SW6010C
	Potassium	6.61	50.0	250	mg/Kg wet	U	SW6010C
	Selenium	-0.0525	0.150	0.500	mg/Kg wet	U	SW6010C
	Silver	-0.0468	0.0500	0.500	mg/Kg wet	U	SW6010C
	Sodium	-2.66	50.0	250	mg/Kg wet	U	SW6010C
	Thallium	-0.0456	0.150	0.400	mg/Kg wet	U	SW6010C
	Vanadium	-0.0110	0.250	0.625	mg/Kg wet	U	SW6010C
	Zinc	0.365	0.250	1.00	mg/Kg wet	J	SW6010C
6I25804-CCB6	Aluminum	-23.6	50.0	200	ug/L	U	SW6010C
	Antimony	1.00	5.00	10.0	ug/L	U	SW6010C
	Arsenic	0.392	3.00	10.0	ug/L	U	SW6010C
	Barium	0.423	5.00	40.0	ug/L	U	SW6010C
	Beryllium	0.0939	1.00	5.00	ug/L	U	SW6010C
	Cadmium	0.112	1.00	5.00	ug/L	U	SW6010C
	Calcium	2.15	1000	5000	ug/L	U	SW6010C
	Chromium	0.0486	2.00	10.0	ug/L	U	SW6010C
	Cobalt	0.0616	5.00	12.5	ug/L	U	SW6010C

BLANKS
SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Instrument ID: ME-ICP
Project: Raritan Arsenal - Phase III
Sequence: 6I25804
Calibration: 6258003

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
6I25804-CCB6	Copper	-0.932	4.00	10.0	ug/L	U	SW6010C
	Iron	-9.63	30.0	100	ug/L	U	SW6010C
	Lead	1.43	1.50	5.00	ug/L	U	SW6010C
	Magnesium	-28.6	1000	5000	ug/L	U	SW6010C
	Manganese	0.0704	3.00	15.0	ug/L	U	SW6010C
	Molybdenum	0.493	5.00	20.0	ug/L	U	SW6010C
	Nickel	0.00530	3.00	10.0	ug/L	U	SW6010C
	Potassium	70.2	1000	5000	ug/L	U	SW6010C
	Selenium	-0.763	3.00	10.0	ug/L	U	SW6010C
	Silver	0.170	1.00	10.0	ug/L	U	SW6010C
	Sodium	19.1	1000	5000	ug/L	U	SW6010C
	Thallium	0.950	3.00	8.00	ug/L	U	SW6010C
	Vanadium	-0.640	5.00	12.5	ug/L	U	SW6010C
	Zinc	0.568	5.00	20.0	ug/L	U	SW6010C

ICP INTERFERENCE CHECK SAMPLE

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Instrument ID: ME-ICP
Calibration: 6258003
Sequence: 6I25804

Lab Sample ID	Analyte	True	Found	%R	Units
6I25804-IFA1	Aluminum	500000	497,010.00	99.4	ug/L
	Antimony		-3.21		ug/L
	Arsenic		-4.64		ug/L
	Barium		0.06		ug/L
	Beryllium		0.08		ug/L
	Boron		16.65		ug/L
	Cadmium		-1.33		ug/L
	Calcium	500000	501,390.00	100	ug/L
	Chromium		-0.98		ug/L
	Cobalt		-2.24		ug/L
	Copper		-0.71		ug/L
	Iron	200000	194,400.00	97.2	ug/L
	Lead		0.55		ug/L
	Magnesium	500000	460,840.00	92.2	ug/L
	Manganese		-1.69		ug/L
	Molybdenum		-0.04		ug/L
	Nickel		-1.42		ug/L
	Potassium		56.45		ug/L
	Selenium		-0.33		ug/L
	Silver		-0.51		ug/L
	Sodium		330.88		ug/L
	Thallium		-1.74		ug/L
	Tin		-5.28		ug/L
	Titanium		-19.62		ug/L
	Vanadium		1.77		ug/L
	Zinc		-0.52		ug/L
	Strontium		-2.03		ug/L
6I25804-IFB1	Aluminum	500000	504,300.00	101	ug/L
	Antimony	600.0	671.10	112	ug/L
	Arsenic	100.0	108.27	108	ug/L

ICP INTERFERENCE CHECK SAMPLE

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Instrument ID: ME-ICP
Calibration: 6258003
Sequence: 6I25804

Lab Sample ID	Analyte	True	Found	%R	Units
6I25804-IFB1	Barium	500.0	548.85	110	ug/L
	Beryllium	500.0	520.62	104	ug/L
	Boron		70.74		ug/L
	Cadmium	1000	1,061.00	106	ug/L
	Calcium	500000	506,940.00	101	ug/L
	Chromium	500.0	478.93	95.8	ug/L
	Cobalt	500.0	499.94	100	ug/L
	Copper	500.0	537.51	108	ug/L
	Iron	200000	197,910.00	99.0	ug/L
	Lead	50.00	51.55	103	ug/L
	Magnesium	500000	467,070.00	93.4	ug/L
	Manganese	500.0	480.58	96.1	ug/L
	Molybdenum		0.39		ug/L
	Nickel	1000	995.67	99.6	ug/L
	Potassium		80.10		ug/L
	Selenium	50.00	50.66	101	ug/L
	Silver	200.0	203.61	102	ug/L
	Sodium		407.63		ug/L
	Thallium	100.0	103.07	103	ug/L
	Tin		-4.76		ug/L
	Titanium		-20.15		ug/L
	Vanadium	500.0	498.17	99.6	ug/L
	Zinc	1000	1,035.60	104	ug/L
	Strontium	1000	1,060.00	106	ug/L

LCS / LCS DUPLICATE RECOVERY

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Matrix: Solid
Batch: 6H29015
Laboratory ID: 6H29015-BS1
Preparation: MET_3050B
Initial/Final: 2 g / 100 mL

ANALYTE	SPIKE ADDED (mg/Kg wet)	LCS CONCENTRATION (mg/Kg wet)	LCS % REC.	QC LIMITS REC.
Aluminum	100.0	101.6	102	74 - 119
Antimony	12.50	12.02	96.1	79 - 114
Arsenic	12.50	12.51	100	82 - 111
Barium	100.0	98.54	98.5	83 - 113
Beryllium	2.500	2.466	98.7	83 - 113
Cadmium	6.250	6.449	103	82 - 113
Calcium	250.0	262.8	105	81 - 116
Chromium	10.00	9.778	97.8	85 - 113
Cobalt	25.00	25.20	101	85 - 112
Copper	12.50	12.43	99.4	81 - 117
Iron	50.00	50.10	100	81 - 118
Lead	12.50	12.46	99.6	81 - 112
Magnesium	250.0	248.7	99.5	78 - 115
Manganese	25.00	24.58	98.3	84 - 114
Molybdenum	50.00	50.80	102	82 - 116
Nickel	25.00	25.41	102	83 - 113
Potassium	250.0	248.9	99.6	81 - 116
Selenium	12.50	12.14	97.1	78 - 111
Silver	12.50	11.57	92.6	82 - 112
Sodium	250.0	262.9	105	83 - 118
Thallium	12.50	12.84	103	83 - 111
Vanadium	25.00	24.52	98.1	82 - 114
Zinc	25.00	25.48	102	82 - 113

LCS / LCS DUPLICATE RECOVERY

SW6010C

Laboratory:	Empirical Laboratories, LLC	SDG:	1608251
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Matrix:	Solid		
Batch:	6I08012	Laboratory ID:	6I08012-BS1
Preparation:	MET_3050B	Initial/Final:	2 g / 100 mL

ANALYTE	SPIKE ADDED (mg/Kg wet)	LCS CONCENTRATION (mg/Kg wet)	LCS % REC.	QC LIMITS REC.
Aluminum	100.0	102.6	103	74 - 119
Antimony	12.50	12.75	102	79 - 114
Arsenic	12.50	13.33	107	82 - 111
Barium	100.0	103.0	103	83 - 113
Beryllium	2.500	2.552	102	83 - 113
Cadmium	6.250	6.857	110	82 - 113
Calcium	250.0	271.6	109	81 - 116
Chromium	10.00	10.17	102	85 - 113
Cobalt	25.00	26.30	105	85 - 112
Copper	12.50	13.42	107	81 - 117
Iron	50.00	52.10	104	81 - 118
Lead	12.50	13.27	106	81 - 112
Magnesium	250.0	252.6	101	78 - 115
Manganese	25.00	25.84	103	84 - 114
Molybdenum	50.00	53.25	106	82 - 116
Nickel	25.00	26.67	107	83 - 113
Potassium	250.0	260.1	104	81 - 116
Selenium	12.50	13.06	104	78 - 111
Silver	12.50	12.44	99.5	82 - 112
Sodium	250.0	256.6	103	83 - 118
Thallium	12.50	13.76	110	83 - 111
Vanadium	25.00	25.60	102	82 - 114
Zinc	25.00	26.78	107	82 - 113

PREPARATION BATCH SUMMARY

SW6010C

Laboratory: Empirical Laboratories, LLC SDG: 1608251

Client: CH2M Hill, Inc. Project: Raritan Arsenal - Phase III

Batch: 6H29015 Batch Matrix: Solid Preparation: MET_3050B

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT	FINAL VOL.
DSA05-SB29-0010	1608251-01	09/08/16 10:00	2.00	100.00
DSA05-SB30-0010	1608251-02	09/08/16 10:00	2.00	100.00
DSA05-SB31-0010	1608251-03	09/08/16 10:00	2.02	100.00
DSA05-SB32-0010	1608251-04	09/08/16 10:00	2.03	100.00
DSA01-SB01-0010	1608251-05	09/08/16 10:00	2.04	100.00
DSA01-SB02-0010	1608251-06	09/08/16 10:00	2.04	100.00
DSA01-SB03-0010	1608251-07	09/08/16 10:00	2.04	100.00
DSA01-SB04-0010	1608251-08	09/08/16 10:00	2.05	100.00
DSA01-SB05-0010	1608251-09	09/08/16 10:00	2.00	100.00
DSA01-SB06-0010	1608251-10	09/08/16 10:00	2.04	100.00
DSA01-SB07-0010	1608251-11	09/08/16 10:00	2.04	100.00
Blank	6H29015-BLK1	09/08/16 10:00	2.00	100.00
LCS	6H29015-BS1	09/08/16 10:00	2.00	100.00

PREPARATION BATCH SUMMARY

SW6010C

Laboratory: Empirical Laboratories, LLC SDG: 1608251

Client: CH2M Hill, Inc. Project: Raritan Arsenal - Phase III

Batch: 6I08012 Batch Matrix: Solid Preparation: MET_3050B

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT	FINAL VOL.
DSA01-SB08-0010	1608251-12	09/08/16 09:40	2.05	100.00
DSA02-SB09-0010	1608251-13	09/08/16 09:40	2.01	100.00
DSA02-SB10-0010	1608251-14	09/08/16 09:40	2.05	100.00
DSA02-SB11-0010	1608251-15	09/08/16 09:40	2.05	100.00
DSA02-SB12-0010	1608251-16	09/08/16 09:40	2.03	100.00
DSA02-SB13-0010	1608251-17	09/08/16 09:40	2.03	100.00
DSA02-SB14-0010	1608251-18	09/08/16 09:40	2.00	100.00
DSA02-SB15-0010	1608251-19	09/08/16 09:40	2.02	100.00
DSA02-SB16-0010	1608251-20	09/08/16 09:40	2.01	100.00
Blank	6I08012-BLK1	09/08/16 09:40	2.00	100.00
LCS	6I08012-BS1	09/08/16 09:40	2.00	100.00

ANALYSIS SEQUENCE SUMMARY

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Sequence: 6I25804
Instrument: ME-ICP
Calibration: 6258003

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Cal Standard	6I25804-CAL1	09-14-16A-001	09/14/16 09:51
Cal Standard	6I25804-CAL2	09-14-16A-002	09/14/16 09:55
Cal Standard	6I25804-CAL3	09-14-16A-003	09/14/16 09:58
Cal Standard	6I25804-CAL4	09-14-16A-004	09/14/16 10:02
Cal Standard	6I25804-CAL5	09-14-16A-005	09/14/16 10:06
Cal Standard	6I25804-CAL6	09-14-16A-006	09/14/16 10:10
Cal Standard	6I25804-CAL7	09-14-16A-007	09/14/16 10:15
Cal Standard	6I25804-CAL8	09-14-16A-008	09/14/16 10:19
Cal Standard	6I25804-CAL9	09-14-16A-009	09/14/16 10:23
Initial Cal Check	6I25804-ICV1	09-14-16B-001	09/14/16 10:58
Initial Cal Blank	6I25804-ICB1	09-14-16B-002	09/14/16 11:03
Instrument RL Check	6I25804-CRL1	09-14-16B-003	09/14/16 11:12
Instrument RL Check	6I25804-CRL2	09-14-16B-004	09/14/16 11:17
Interference Check A	6I25804-IFA1	09-14-16B-005	09/14/16 11:21
Interference Check B	6I25804-IFB1	09-14-16B-006	09/14/16 11:26
Calibration Check	6I25804-CCV1	09-14-16B-007	09/14/16 11:34
Calibration Blank	6I25804-CCB1	09-14-16B-008	09/14/16 11:39
Calibration Check	6I25804-CCV3	09-14-16C-012	09/14/16 13:51
Calibration Blank	6I25804-CCB3	09-14-16C-013	09/14/16 13:55
Blank	6H29015-BLK1	09-14-16C-014	09/14/16 13:59
LCS	6H29015-BS1	09-14-16C-015	09/14/16 14:04
DSA05-SB29-0010	1608251-01	09-14-16C-028	09/14/16 15:00
DSA05-SB30-0010	1608251-02	09-14-16C-029	09/14/16 15:05
Calibration Check	6I25804-CCV4	09-14-16D-001	09/14/16 15:18
Calibration Blank	6I25804-CCB4	09-14-16D-002	09/14/16 15:23
DSA05-SB31-0010	1608251-03	09-14-16D-008	09/14/16 15:49
DSA05-SB32-0010	1608251-04	09-14-16D-009	09/14/16 15:54
DSA01-SB01-0010	1608251-05	09-14-16D-010	09/14/16 15:58
DSA01-SB02-0010	1608251-06	09-14-16D-011	09/14/16 16:02
DSA01-SB03-0010	1608251-07	09-14-16D-012	09/14/16 16:07
DSA01-SB04-0010	1608251-08	09-14-16D-013	09/14/16 16:11
DSA01-SB05-0010	1608251-09	09-14-16D-014	09/14/16 16:15
DSA01-SB06-0010	1608251-10	09-14-16D-015	09/14/16 16:20

ANALYSIS SEQUENCE SUMMARY

SW6010C

Laboratory:	Empirical Laboratories, LLC	SDG:	1608251
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Sequence:	6I25804	Instrument:	ME-ICP
Calibration:	6258003		

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
DSA01-SB07-0010	1608251-11	09-14-16D-016	09/14/16 16:24
Calibration Check	6I25804-CCV5	09-14-16D-017	09/14/16 16:29
Calibration Blank	6I25804-CCB5	09-14-16D-018	09/14/16 16:34
Blank	6I08012-BLK1	09-14-16E-001	09/14/16 16:44
LCS	6I08012-BS1	09-14-16E-002	09/14/16 16:48
DSA01-SB08-0010	1608251-12	09-14-16E-003	09/14/16 16:53
DSA02-SB09-0010	1608251-13	09-14-16E-004	09/14/16 16:57
DSA02-SB10-0010	1608251-14	09-14-16E-005	09/14/16 17:01
DSA02-SB11-0010	1608251-15	09-14-16E-006	09/14/16 17:06
DSA02-SB12-0010	1608251-16	09-14-16E-007	09/14/16 17:10
DSA02-SB13-0010	1608251-17	09-14-16E-008	09/14/16 17:15
DSA02-SB14-0010	1608251-18	09-14-16E-009	09/14/16 17:19
DSA02-SB15-0010	1608251-19	09-14-16E-010	09/14/16 17:23
DSA02-SB16-0010	1608251-20	09-14-16E-011	09/14/16 17:28
Calibration Check	6I25804-CCV6	09-14-16E-017	09/14/16 17:54
Calibration Blank	6I25804-CCB6	09-14-16E-018	09/14/16 17:58

INITIAL CALIBRATION DATA

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Calibration: 6258003
Instrument: ME-ICP
Matrix: Water
Calibration Dates: 9/14/16 9:51 9/14/16 10:23

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Aluminum	0	0	5000	4.4398E-05	10000	4.1921E-05			500000	4.1656E-05		
Antimony	0	0	100	0.0008211	1000	8.8544E-04					10000	0.00088
Arsenic	0	0	100	0.00039	1000	0.0004393					10000	4.3082E-04
Barium	0	0	50	0.0175498	1000	0.015883	5000	0.0170954				
Beryllium	0	0	100	0.0027615	1000	0.0027488					10000	0.0026952
Boron	0	0	50	0.0000186	1000	1.752E-05					5000	1.678E-05
Cadmium	0	0	100	0.030858	1000	0.02964					10000	0.028846
Calcium	0	0	1100	9.661818E-05	50000	8.9678E-05					10000	
Chromium	0	0	100	0.0000512	1000	4.719E-05					10000	4.6764E-05
Cobalt	0	0	100	8.674299E-03	1000	0.008005					10000	0.0084034
Copper	0	0	100	0.0001019	1000	9.588E-05					10000	9.5539E-05
Iron	0	0	5100	2.231961E-05	10000	2.1734E-05			500000	2.1582E-05	10000	
Lead	0	0	100	0.00199	1000	0.0019436					10000	0.0020619
Magnesium	0	0	5100		50000	2.9542E-06			500000	3.0466E-06	10000	
Manganese	0	0	100	0.0003668	1000	3.3779E-04	10000	3.5599E-04			10000	
Molybdenum	0	0	100	0.0040234	1000	0.0040927					10000	0.0040448
Nickel	0	0	100	0.004983	1000	0.0045359					10000	0.0046652
Potassium	0	0	1000	1.374E-05	10000	2.0407E-05						
Selenium	0	0	100	0.0005597	1000	4.7159E-04					10000	4.4449E-04
Silver	0	0	20	0.0000795	500	5.312E-05	2000	5.5635E-05				
Sodium	0	0	1000		50000	3.9304E-05						
Thallium	0	0	100	0.0007969	1000	7.7289E-04					10000	7.8113E-04
Tin	0	0	50	0.0015102	1000	0.0015266					5000	0.0015354
Titanium	0	0	100	0.0002599	1000	2.5246E-04					10000	2.5077E-04
Vanadium	0	0	100	0.0000503	1000	5.158E-05					10000	5.0926E-05
Zinc	0	0	100	0.011639	1000	0.011284					10000	0.011218
Strontium	0	0	100	0.002057	1000	0.002075					10000	0.002136
Lithium (outside certification)	0	0	100	0.000006	1000	6.04E-06					10000	5.668E-06

INITIAL CALIBRATION DATA (Continued)

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Calibration: 6258003
Instrument: ME-ICP
Matrix: Water
Calibration Dates: 9/14/16 9:51 9/14/16 10:23

Compound	Level 07		Level 08		Level 09		Level 10		Level 11		Level 12	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Aluminum												
Antimony												
Arsenic												
Barium												
Beryllium												
Boron												
Cadmium												
Calcium	100000		500000	8.8248E-05								
Chromium												
Cobalt												
Copper												
Iron												
Lead												
Magnesium			100000	3.3043E-06								
Manganese												
Molybdenum												
Nickel												
Potassium	100000	2.0672E-05										
Selenium												
Silver												
Sodium	100000	3.848E-05	500000		500000	2.8532E-05						
Thallium												
Tin												
Titanium												
Vanadium												
Zinc												
Strontium												
Lithium (outside certification)												

INITIAL CALIBRATION DATA (Continued)

SW6010C

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Project: Raritan Arsenal - Phase III
Calibration: 6258003
Instrument: ME-ICP
Matrix: Water
Calibration Dates: 9/14/16 9:51 9/14/16 10:23

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
Aluminum	3.199375E-05	66.7783	19.01493	193.4511	0.9999997		0.998	
Antimony	6.46635E-04	66.81872	10.7109	187.1674	0.9999985		0.998	
Arsenic	3.1503E-04	67.01579	4.385185	169.5921	0.9999909		0.998	
Barium	1.263205E-02	66.8989	2.313225	191.3831	0.9997741		0.998	
Beryllium	2.051375E-03	66.68137	7.803715	183.4293	0.9999965		0.998	
Boron	1.3225E-05	66.90573	2.897553	143.4336	0.9999299		0.998	
Cadmium	0.022336	66.76951	1.588413	162.7482	0.999994		0.998	
Calcium	6.863605E-05	66.87908	23.36306	193.5191	0.9999977		0.998	
Chromium	3.62885E-05	66.89371	2.181613	76.34845	0.9999998		0.998	
Cobalt	6.270675E-03	66.81064	1.475635	159.7988	0.999975		0.998	
Copper	7.332975E-05	66.78561	1.236437	64.88954	0.9999999		0.998	
Iron	1.64089E-05	66.69484	149.1862	199.3276	0.9999999		0.998	
Lead	1.498875E-03	66.74569	4.763095	178.744	0.999971		0.998	
Magnesium	2.326275E-06	66.97013	335.3032	199.7191	0.9996096		0.998	
Manganese	2.65145E-04	66.81937	9.056925	160.6451	0.9999723		0.998	
Molybdenum	3.040225E-03	66.67348	59.15442	199.1912	0.9999985		0.998	
Nickel	3.546025E-03	66.87683	1.080995	164.3125	0.999989		0.998	
Potassium	1.370475E-05	70.65467	4.792637	107.7725	0.9999909		0.998	
Selenium	3.68945E-04	67.98644	2.98835	154.2312	0.9999841		0.998	
Silver	4.706375E-05	71.29097	2.998682	86.06446	0.9997578		0.998	
Sodium	2.6579E-05	69.16406	7.54359	159.5355	0.9951191		0.998	*
Thallium	5.8773E-04	66.6882	11.38936	195.4159	0.9999988		0.998	
Tin	1.14305E-03	66.67293	6.075645	187.0785	0.9999989		0.998	
Titanium	1.907825E-04	66.69907	9.710932	182.3035	0.9999999		0.998	
Vanadium	3.82015E-05	66.6807	4.987185	147.5042	0.999998		0.998	
Zinc	8.53525E-03	66.70185	7.959762	189.2864	0.9999998		0.998	
Strontium	0.001567	66.70156	1.03175	68.49214	0.9999944		0.998	
Lithium (outside certification)	4.427E-06	66.77297	2.42149	99.93841	0.9999532		0.998	

HOLDING TIME SUMMARY

SW6010C

Laboratory: Empirical Laboratories, LLC SDG: 1608251

Client: CH2M Hill, Inc. Project: Raritan Arsenal - Phase III

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
DSA05-SB29-0010	08/24/16 09:21	08/26/16 08:45	09/08/16 10:00	N/A	180.00	09/14/16 15:00	21.28	180.00	
DSA05-SB30-0010	08/24/16 09:49	08/26/16 08:45	09/08/16 10:00	N/A	180.00	09/14/16 15:05	21.26	180.00	
DSA05-SB31-0010	08/24/16 10:06	08/26/16 08:45	09/08/16 10:00	N/A	180.00	09/14/16 15:49	21.28	180.00	
DSA05-SB32-0010	08/24/16 10:36	08/26/16 08:45	09/08/16 10:00	N/A	180.00	09/14/16 15:54	21.26	180.00	
DSA01-SB01-0010	08/24/16 12:28	08/26/16 08:45	09/08/16 10:00	N/A	180.00	09/14/16 15:58	21.19	180.00	
DSA01-SB02-0010	08/24/16 12:45	08/26/16 08:45	09/08/16 10:00	N/A	180.00	09/14/16 16:02	21.18	180.00	
DSA01-SB03-0010	08/24/16 12:57	08/26/16 08:45	09/08/16 10:00	N/A	180.00	09/14/16 16:07	21.17	180.00	
DSA01-SB04-0010	08/24/16 13:12	08/26/16 08:45	09/08/16 10:00	N/A	180.00	09/14/16 16:11	21.17	180.00	
DSA01-SB05-0010	08/24/16 13:49	08/26/16 08:45	09/08/16 10:00	N/A	180.00	09/14/16 16:15	21.14	180.00	
DSA01-SB06-0010	08/24/16 14:02	08/26/16 08:45	09/08/16 10:00	N/A	180.00	09/14/16 16:20	21.14	180.00	
DSA01-SB07-0010	08/24/16 14:20	08/26/16 08:45	09/08/16 10:00	N/A	180.00	09/14/16 16:24	21.13	180.00	

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: CH2M Hill, Inc.

SDG No.: 1608251

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 5/5/2016

Analyte	Wave-length (nm)	Interelement Correction Factors for: Al	Ca	Fe	Mg	Ag
Aluminum	396.152	0.000000	1.585975	0.000043	0.000000	0.000000
Antimony	206.833	0.000027	0.000000	0.00003	0.000000	0.000000
Arsenic	189.042	-0.000019	0.000000	-0.00011	0.000000	0.000000
Barium	233.527	0.000000	0.000000	0.000004	0.000000	0.000000
Beryllium	313.042	0.000000	0.000000	0.000000	0.000000	0.000000
Cadmium	214.438	0.000004	0.003803	0.000025	0.000000	0.000000
Calcium	317.933	0.000000	0.000000	0.000000	0.000000	0.000000
Chromium	267.716	0.000000	0.000000	0.00001	0.005608	0.000000
Cobalt	228.616	0.000000	0.000000	0.000021	0.000000	0.000000
Copper	324.754	0.000003	0.000000	-0.000044	0.001001	0.000000
Iron	261.187	0.000000	0.000000	0.000000	0.000000	0.000000
Lead	220.353	-0.000208	0.000000	0.000022	0.000000	0.000000
Magnesium	279.079	0.000000	0.000000	-0.000002	0.000000	0.000000
Manganese	257.610	0.000000	0.000000	0.000022	0.000000	0.000000
Molybdenum	202.030	0.000000	0.000000	-0.000011	0.000000	0.000000
Nickel	231.604	0	0.000000	0.000025	0.002042	0.000000
Potassium	766.490	0.000000	0.000000	0.000000	0.000000	0.000000
Selenium	196.090	0.000015	-0.000251	0.00002	0.000000	0.000000
Silver	328.068	0.000000	0.000000	0.000002	0.000000	0.000000
Sodium	589.592	0.000000	0.000000	0.000000	0.000000	0.000000
Thallium	190.856	-0.000005	0.000000	0.000006	0.000000	0.000000
Vanadium	292.402	0.000000	0.000000	-0.000011	0.000000	0.000000
Zinc	206.200	0.000002	0.000827	0	0.000000	0.000000

Comments:

FORM XA-IN

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: CH2M Hill, Inc.

SDG No.: 1608251

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 5/5/2016

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		As	B	Ba	Be	Cd
Aluminum	396.152	0.000000	0.000000	0.000000	0.000000	0.000000
Antimony	206.833	0.000000	0.000000	0.000000	0.000000	0.000000
Arsenic	189.042	0.000000	0.000000	0.000000	0.000000	0.000000
Barium	233.527	0.000000	0.000000	0.000000	0.000000	0.000000
Beryllium	313.042	0.000000	0.000000	0.000000	0.000000	0.000000
Cadmium	214.438	-0.00125	0.000000	0.000000	0.000000	0.000000
Calcium	317.933	0.000000	0.000000	0.000000	0.000000	0.000000
Chromium	267.716	0.000000	0.000000	0.000000	0.000000	0.000043
Cobalt	228.616	0.000000	0.000000	0.000000	0.000000	0.000000
Copper	324.754	0.000000	0.000000	0.000000	0.000000	0.000000
Iron	261.187	0.000000	0.000000	0.000000	0.000000	0.000000
Lead	220.353	0.000000	0.000000	0.000000	0.000000	0.000000
Magnesium	279.079	0.000000	0.000000	0.000000	0.000000	0.000000
Manganese	257.610	0.000000	0.000000	0.000000	0.000000	0.000000
Molybdenum	202.030	0.000000	0.000000	0.000000	0.000000	0.000000
Nickel	231.604	0.000000	0.000000	0.000000	-0.000039	0.000000
Potassium	766.490	0.000000	0.000000	0.000000	0.000000	0.000000
Selenium	196.090	0.000000	0.000000	0.000000	0.000000	0.000000
Silver	328.068	0.000000	0.000000	0.000000	0.000000	0.000000
Sodium	589.592	0.000000	0.000000	0.000000	0.000000	0.000000
Thallium	190.856	0.000000	0.000000	0.000000	0.000000	0.000000
Vanadium	292.402	0.000000	0.000000	0.000000	0.000000	0.000000
Zinc	206.200	0.000000	0.000000	0.000000	0.001494	0.000729

Comments:

FORM XA-IN

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: CH2M Hill, Inc.

SDG No.: 1608251

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 5/5/2016

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		Co	Cr	Cu	K	Mn
Aluminum	396.152	0.000000	0.000000	0.000000	0.000000	0.000000
Antimony	206.833	0.000000	0.023282	0.000000	0.000000	0.000000
Arsenic	189.042	0.000000	0.000195	0.000000	0.000000	0.000000
Barium	233.527	0.000000	0.000000	0.000000	0.000000	0.000000
Beryllium	313.042	0.000000	0.000000	0.000000	0.000000	0.000000
Cadmium	214.438	0.000000	-0.00009	0.000000	0.000000	0.000000
Calcium	317.933	0.000000	0.000000	0.000000	0.000000	0.000000
Chromium	267.716	0.000000	0.000000	0.000000	0.000000	0.000548
Cobalt	228.616	0.000000	-0.000032	0.000000	0.000000	0.000000
Copper	324.754	0.000000	0.000000	0.000000	0.000000	0.000000
Iron	261.187	0.000000	-0.00372	0.000000	0.000000	-0.004555
Lead	220.353	0.000000	0.000000	0.0003	0.000000	0.000116
Magnesium	279.079	0.000000	0.000000	0.000000	0.000000	0.000000
Manganese	257.610	0.000000	0.000000	0.000000	0.000000	0.000000
Molybdenum	202.030	0.000000	0.000000	0.000000	0.000000	0.000000
Nickel	231.604	-0.000769	-0.000079	-0.000071	0.000000	-0.000125
Potassium	766.490	0.000000	0.000000	0.000000	0.000000	0.000000
Selenium	196.090	0.000000	0.000000	0.000000	0.000000	0.000454
Silver	328.068	0.000000	0.000000	0.000000	0.000000	0.000113
Sodium	589.592	0.000000	0.000000	0.000000	0.000000	0.000000
Thallium	190.856	0.000392	0.000203	0.000000	0.000000	0.00065
Vanadium	292.402	0.000000	-0.009679	0.000000	0.000000	-0.000271
Zinc	206.200	0.000000	0.000078	0.001561	0.000000	0.000797

Comments:

FORM XA-IN

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: CH2M Hill, Inc.

SDG No.: 1608251

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 5/5/2016

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		Mo	Na	Ni	Pb	Sb
Aluminum	396.152	0.032885	0.000000	0.000000	0.000000	0.000000
Antimony	206.833	-0.002824	0.000000	0.000000	0.000000	0.000000
Arsenic	189.042	0.002574	0.000000	0.000000	0.000000	0.000000
Barium	233.527	0.000000	0.000000	0.000000	0.000000	0.000000
Beryllium	313.042	-0.000025	0.000000	0.000000	0.000000	0.000000
Cadmium	214.438	-0.000105	0.000000	0.000000	0.000000	0.000000
Calcium	317.933	0.000000	0.000000	0.000000	0.000000	0.000000
Chromium	267.716	0.000000	0.000000	0.000000	0.000000	0.000000
Cobalt	228.616	-0.001642	0.000000	0.000049	0.000000	0.000000
Copper	324.754	0.000505	0.000000	0.000000	0.000000	0.000000
Iron	261.187	0.000000	0.000000	-0.000713	0.000000	0.000000
Lead	220.353	-0.001205	0.000000	0.000325	0.000000	0.000000
Magnesium	279.079	-0.000013	0.000000	0.000000	0.000000	0.000000
Manganese	257.610	0.000000	0.000000	0.000000	0.000000	0.000000
Molybdenum	202.030	0.000000	0.000000	0.000000	0.000000	0.000000
Nickel	231.604	-0.000442	0.000000	0.000000	0.000017	0.000051
Potassium	766.490	0.000000	0.000000	0.000000	0.000000	0.000000
Selenium	196.090	-0.000137	0.000000	-0.000022	0.000000	0.000000
Silver	328.068	-0.000046	0.000000	0.000000	0.000000	0.000000
Sodium	589.592	0.000000	0.000000	0.000000	0.000000	0.000000
Thallium	190.856	0.000023	0.000000	0.000000	0.000000	0.000000
Vanadium	292.402	-0.000106	0.000000	0.000000	0.000000	0.000000
Zinc	206.200	0.000173	0.000000	0.000024	0.000000	0.000417

Comments:

FORM XA-IN

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: CH2M Hill, Inc.

SDG No.: 1608251

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 5/5/2016

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		Se	Sn	Ti	Tl	V
Aluminum	396.152	0.000000	0.000000	0.000000	0.000000	0.000000
Antimony	206.833	0.000000	0.000000	0.000252	0.000000	0.000048
Arsenic	189.042	0.000000	0.000000	-0.00021	0.000000	0.000084
Barium	233.527	0.000000	0.000000	0.000000	0.000000	-0.003424
Beryllium	313.042	0.000000	0.000000	-0.000945	0.000000	0.000417
Cadmium	214.438	0.000000	0.000000	0.000000	0.000000	0.00003
Calcium	317.933	0.000000	0.000000	0.000000	0.000000	0.000000
Chromium	267.716	0.000000	0.000000	0.000123	0.000000	-0.000018
Cobalt	228.616	0.000000	0.000000	0.001863	0.000000	0.000000
Copper	324.754	0.000000	0.000000	-0.000635	0.000000	0.000000
Iron	261.187	0.000000	0.000000	0.000000	0.000000	0.000000
Lead	220.353	0.000000	0.000000	-0.000015	0.000000	-0.00007
Magnesium	279.079	0.000000	0.000000	0.000000	0.000000	0.000000
Manganese	257.610	0.000000	0.000000	0.000000	0.000000	0.000000
Molybdenum	202.030	0.000000	0.000000	0.000000	0.000000	-0.000155
Nickel	231.604	0.000000	0.000000	-0.000038	0.000281	-0.000098
Potassium	766.490	0.000000	0.000000	0.000000	0.000000	0.000000
Selenium	196.090	0.000000	0.000000	-0.000141	0.000000	-0.000203
Silver	328.068	0.000000	0.000000	-0.000061	0.000000	-0.00427
Sodium	589.592	0.000000	0.000000	0.000000	0.000000	0.000000
Thallium	190.856	0.000000	0.000000	-0.002366	0.000000	-0.002503
Vanadium	292.402	0.000000	0.000000	0.000682	0.000000	0.000000
Zinc	206.200	0.000000	0.000000	0.000000	0.000000	-0.000257

Comments:

FORM XA-IN

10A-IN
ICP-AES INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories, LLC Contract: CH2M Hill, Inc.

SDG No.: 1608251

ICP-AES Instrument ID: Thermo Jarrell Ashe ICAP Date: 5/5/2016

Analyte	Wave-length (nm)	Interelement Correction Factors for: Zn				
Aluminum	396.152	0.000000				
Antimony	206.833	0.000000				
Arsenic	189.042	-0.000011				
Barium	233.527	0.000000				
Beryllium	313.042	0.000000				
Cadmium	214.438	0.000000				
Calcium	317.933	0.000000				
Chromium	267.716	0.000000				
Cobalt	228.616	0.000000				
Copper	324.754	0.000000				
Iron	261.187	0.000000				
Lead	220.353	0.000000				
Magnesium	279.079	0.000000				
Manganese	257.610	0.000000				
Molybdenum	202.030	-0.000269				
Nickel	231.604	0.000063				
Potassium	766.490	0.000000				
Selenium	196.090	0.000000				
Silver	328.068	0.000000				
Sodium	589.592	0.000000				
Thallium	190.856	0.000000				
Vanadium	292.402	0.000000				
Zinc	206.200	0.000000				

Comments:

FORM XA-IN

ICP-AES AND ICP-MS LINEAR RANGES

Lab Name: Empirical Laboratories, LLC

Client: CH2M Hill, Inc. SDG: 1608251

Project: Raritan Arsenal - Phase III

ICP Instrument ID: ME-ICP Date: 01/30/2016

Analyte	Integ. Time (Sec.)	Concentration ug/L	M
Aluminum	15	500000	P
Antimony	15	25000	P
Arsenic	15	10000	P
Barium	15	5000	P
Beryllium	15	10000	P
Cadmium	15	10000	P
Calcium	15	500000	P
Chromium	15	10000	P
Cobalt	15	10000	P
Copper	15	25000	P
Iron	15	500000	P
Lead	15	25000	P
Magnesium	15	500000	P
Manganese	15	12000	P
Molybdenum	15	10000	P
Nickel	15	50000	P
Potassium	15	100000	P
Selenium	15	10000	P
Silver	15	2000	P
Sodium	15	500000	P
Thallium	15	10000	P
Vanadium	15	10000	P
Zinc	15	20000	P

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA05-SB29-0010
Lab Sample ID: 1608251-01

Sample Collection D/T : 08/24/2016 09:21
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	2.9883	mg/Kg dry	1		09/13/16 13:02		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA05-SB30-0010
Lab Sample ID: 1608251-02RE1

Sample Collection D/T : 08/24/2016 09:49
Sample Matrix: Solid

Mercury by CVAA **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	3.3251	mg/Kg dry	2	D	09/14/16 16:21		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA05-SB31-0010
Lab Sample ID: 1608251-03RE1

Sample Collection D/T : 08/24/2016 10:06
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	5.7195	mg/Kg dry	5	D	09/14/16 16:11		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA05-SB32-0010
Lab Sample ID: 1608251-04RE1

Sample Collection D/T : 08/24/2016 10:36
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	4.1521	mg/Kg dry	5	D	09/14/16 16:13		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB01-0010
Lab Sample ID: 1608251-05

Sample Collection D/T : 08/24/2016 12:28
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0119	mg/Kg dry	1		09/13/16 13:10		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB02-0010
Lab Sample ID: 1608251-06

Sample Collection D/T : 08/24/2016 12:45
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0083	mg/Kg dry	1		09/13/16 13:11		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB03-0010
Lab Sample ID: 1608251-07

Sample Collection D/T : 08/24/2016 12:57
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0060	mg/Kg dry	1		09/13/16 13:12		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB04-0010
Lab Sample ID: 1608251-08

Sample Collection D/T : 08/24/2016 13:12
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0095	mg/Kg dry	1		09/13/16 13:14		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB05-0010
Lab Sample ID: 1608251-09

Sample Collection D/T : 08/24/2016 13:49
Sample Matrix: Solid

Mercury by CVAA **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0096	mg/Kg dry	1		09/13/16 13:15		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB06-0010
Lab Sample ID: 1608251-10

Sample Collection D/T : 08/24/2016 14:02
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0038	mg/Kg dry	1		09/13/16 13:16		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB07-0010
Lab Sample ID: 1608251-11

Sample Collection D/T : 08/24/2016 14:20
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0073	mg/Kg dry	1		09/13/16 13:20		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA01-SB08-0010
Lab Sample ID: 1608251-12

Sample Collection D/T : 08/24/2016 14:35
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	-0.0099	mg/Kg dry	1		09/13/16 13:21		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB09-0010
Lab Sample ID: 1608251-13

Sample Collection D/T : 08/25/2016 09:07
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0315	mg/Kg dry	1		09/13/16 13:22		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171
Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB10-0010
Lab Sample ID: 1608251-14

Sample Collection D/T : 08/25/2016 09:19
Sample Matrix: Solid

Mercury by CVAA **Sample Note:**

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0209	mg/Kg dry	1		09/13/16 13:23		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB11-0010
Lab Sample ID: 1608251-15

Sample Collection D/T : 08/25/2016 09:55
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0161	mg/Kg dry	1		09/13/16 13:24		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB12-0010
Lab Sample ID: 1608251-16

Sample Collection D/T : 08/25/2016 11:44
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0212	mg/Kg dry	1		09/13/16 13:25		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB13-0010
Lab Sample ID: 1608251-17

Sample Collection D/T : 08/25/2016 12:34
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0169	mg/Kg dry	1		09/13/16 13:27		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB14-0010
Lab Sample ID: 1608251-18

Sample Collection D/T : 08/25/2016 13:14
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0169	mg/Kg dry	1		09/13/16 13:28		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB15-0010
Lab Sample ID: 1608251-19

Sample Collection D/T : 08/25/2016 13:28
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0149	mg/Kg dry	1		09/13/16 13:29		SW7471B

EMPIRICAL LABORATORIES, LLC

UNCENSORED METALS REPORT

Michael Zamboni
CH2M Hill, Inc.
2411 Dulles Corner Park
Herndon, VA 20171

Work Order #: 1608251

Date Reported: 9/21/2016 2:52:03PM
Date Received: 8/26/2016 8:45:00AM
Client: CH2M Hill, Inc.
Project: CH2_Raritan
PO #: 10007-7-101431

Client Sample ID: DSA02-SB16-0010
Lab Sample ID: 1608251-20

Sample Collection D/T : 08/25/2016 13:40
Sample Matrix: Solid

Mercury by CVAA

Sample Note:

Analyte	Result	Units	Dil	Qualifier	Analyzed		Method
Mercury	0.0183	mg/Kg dry	1		09/13/16 13:30		SW7471B

Data and Forms For

Mercury

Sample Extraction Data

Prep Method: MET_HG_S-SW7471B

Lab Number [Field ID]	Batch	Nominal Initial/Final	Initial [g]	Final [mL]	Dilution	% Solids	Notes	Date
1608251-01 [DSA05-SB29-0010]	6H29018	0.30/50.00	0.300	50.0	1.00	48.75		08/29/16
1608251-02RE1 [DSA05-SB30-0010]	6H29018	0.30/50.00	0.310	50.0	2.00	50.69		08/29/16

Sample Extraction Data

Prep Method: MET_HG_S-SW7471B

Lab Number [Field ID]	Batch	Nominal Initial/Final	Initial [g]	Final [mL]	Dilution	% Solids	Notes	Date
1608251-03RE1 [DSA05-SB31-0010]	6H29019	0.30/50.00	0.320	50.0	5.00	52.94		08/29/16
1608251-04RE1 [DSA05-SB32-0010]	6H29019	0.30/50.00	0.340	50.0	5.00	51.58		08/29/16
1608251-05 [DSA01-SB01-0010]	6H29019	0.30/50.00	0.320	50.0	1.00	82.51		08/29/16
1608251-06 [DSA01-SB02-0010]	6H29019	0.30/50.00	0.300	50.0	1.00	83.12		08/29/16
1608251-07 [DSA01-SB03-0010]	6H29019	0.30/50.00	0.320	50.0	1.00	83.35		08/29/16
1608251-08 [DSA01-SB04-0010]	6H29019	0.30/50.00	0.320	50.0	1.00	83.27		08/29/16
1608251-09 [DSA01-SB05-0010]	6H29019	0.30/50.00	0.320	50.0	1.00	84.84		08/29/16
1608251-10 [DSA01-SB06-0010]	6H29019	0.30/50.00	0.300	50.0	1.00	81.32		08/29/16
1608251-11 [DSA01-SB07-0010]	6H29019	0.30/50.00	0.300	50.0	1.00	83.63		08/29/16
1608251-12 [DSA01-SB08-0010]	6H29019	0.30/50.00	0.330	50.0	1.00	84.58		08/29/16
1608251-13 [DSA02-SB09-0010]	6H29019	0.30/50.00	0.310	50.0	1.00	53.37		08/29/16
1608251-14 [DSA02-SB10-0010]	6H29019	0.30/50.00	0.330	50.0	1.00	52.46		08/29/16
1608251-15 [DSA02-SB11-0010]	6H29019	0.30/50.00	0.340	50.0	1.00	46.75		08/29/16
1608251-16 [DSA02-SB12-0010]	6H29019	0.30/50.00	0.350	50.0	1.00	55.29		08/29/16
1608251-17 [DSA02-SB13-0010]	6H29019	0.30/50.00	0.300	50.0	1.00	37.62		08/29/16
1608251-18 [DSA02-SB14-0010]	6H29019	0.30/50.00	0.340	50.0	1.00	33.69		08/29/16
1608251-19 [DSA02-SB15-0010]	6H29019	0.30/50.00	0.350	50.0	1.00	29.79		08/29/16
1608251-20 [DSA02-SB16-0010]	6H29019	0.30/50.00	0.310	50.0	1.00	43.22		08/29/16

ANALYSIS DATA SHEET

DSA05-SB29-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 09:21
% Solids: 48.75

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-01
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	2.99	**0.0267**	0.0554	0.0677	1		SW7471B	6H29018	09/13/16 13:02

ANALYSIS DATA SHEET

DSA05-SB30-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 09:49
% Solids: 50.69

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-02
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	3.33	**0.0496**	0.103	0.126	2	D	SW7471B	6H29018	09/14/16 16:21

ANALYSIS DATA SHEET

DSA05-SB31-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 10:06
% Solids: 52.94

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-03
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	5.72	**0.115**	0.239	0.292	5	D	SW7471B	6H29019	09/14/16 16:11

ANALYSIS DATA SHEET

DSA05-SB32-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 10:36
% Solids: 51.58

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-04
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	4.15	**0.111**	0.231	0.282	5	D	SW7471B	6H29019	09/14/16 16:13

ANALYSIS DATA SHEET

DSA01-SB01-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 12:28
% Solids: 82.51

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-05
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0148	0.0307	0.0375	1	U	SW7471B	6H29019	09/13/16 13:10

ANALYSIS DATA SHEET

DSA01-SB02-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 12:45
% Solids: 83.12

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-06
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0156	0.0325	0.0397	1	U	SW7471B	6H29019	09/13/16 13:11

ANALYSIS DATA SHEET

DSA01-SB03-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 12:57
% Solids: 83.35

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-07
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0146	0.0304	0.0371	1	U	SW7471B	6H29019	09/13/16 13:12

ANALYSIS DATA SHEET

DSA01-SB04-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 13:12
% Solids: 83.27

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-08
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0146	0.0304	0.0372	1	U	SW7471B	6H29019	09/13/16 13:14

ANALYSIS DATA SHEET

DSA01-SB05-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 13:49
% Solids: 84.84

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-09
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0144	0.0298	0.0365	1	U	SW7471B	6H29019	09/13/16 13:15

ANALYSIS DATA SHEET

DSA01-SB06-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 14:02
% Solids: 81.32

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-10
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0160	0.0332	0.0406	1	U	SW7471B	6H29019	09/13/16 13:16

ANALYSIS DATA SHEET

DSA01-SB07-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 14:20
% Solids: 83.63

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-11
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0155	0.0323	0.0395	1	U	SW7471B	6H29019	09/13/16 13:20

ANALYSIS DATA SHEET

DSA01-SB08-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 14:35
% Solids: 84.58

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-12
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0140	0.0290	0.0355	1	U	SW7471B	6H29019	09/13/16 13:21

ANALYSIS DATA SHEET

DSA02-SB09-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 09:07
% Solids: 53.37

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-13
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	0.0315	**0.0236**	0.0490	0.0598	1	J	SW7471B	6H29019	09/13/16 13:22

ANALYSIS DATA SHEET

DSA02-SB10-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 09:19
% Solids: 52.46

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-14
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0225	0.0468	0.0572	1	U	SW7471B	6H29019	09/13/16 13:23

ANALYSIS DATA SHEET

DSA02-SB11-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 09:55
% Solids: 46.75

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-15
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0245	0.0510	0.0623	1	U	SW7471B	6H29019	09/13/16 13:24

ANALYSIS DATA SHEET

DSA02-SB12-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 11:44
% Solids: 55.29

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-16
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	0.0212	**0.0202**	0.0419	0.0512	1	J	SW7471B	6H29019	09/13/16 13:25

ANALYSIS DATA SHEET

DSA02-SB13-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 12:34
% Solids: 37.62

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-17
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0346	0.0718	0.0877	1	U	SW7471B	6H29019	09/13/16 13:27

ANALYSIS DATA SHEET

DSA02-SB14-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 13:14
% Solids: 33.69

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-18
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0340	0.0707	0.0864	1	U	SW7471B	6H29019	09/13/16 13:28

ANALYSIS DATA SHEET

DSA02-SB15-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 13:28
% Solids: 29.79

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-19
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0374	0.0777	0.0949	1	U	SW7471B	6H29019	09/13/16 13:29

ANALYSIS DATA SHEET

DSA02-SB16-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 13:40
% Solids: 43.22

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-20
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0291	0.0605	0.0739	1	U	SW7471B	6H29019	09/13/16 13:30

ANALYSIS DATA SHEET

Blank

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
% Solids:

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 6H29018-BLK1

CAS NO.	Analyte	Conc. (mg/Kg wet)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	ND	0.0130	0.0270	0.0330	1	U	SW7471B	6H29018	09/13/16 12:31

ANALYSIS DATA SHEET

Blank

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
% Solids:

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 6H29019-BLK1

CAS NO.	Analyte	Conc. (mg/Kg wet)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	ND	0.0130	0.0270	0.0330	1	U	SW7471B	6H29019	09/13/16 13:05

ANALYSIS DATA SHEET

LCS

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
% Solids:

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 6H29018-BS1

CAS NO.	Analyte	Conc. (mg/Kg wet)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	0.3602	**0.0130**	0.0270	0.0330	1		SW7471B	6H29018	09/13/16 12:32

ANALYSIS DATA SHEET

LCS

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
% Solids:

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 6H29019-BS1

CAS NO.	Analyte	Conc. (mg/Kg wet)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	0.3816	**0.0130**	0.0270	0.0330	1		SW7471B	6H29019	09/13/16 13:06

INITIAL AND CONTINUING CALIBRATION CHECK

SW7471B

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Instrument ID: ME-FIMS
SDG: 1608251
Project: Raritan Arsenal - Phase III
Calibration: 6257002
Sequence: 6I25705

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
6I25705-ICV1	Mercury	4.000	4.028	101	ug/L	+/- 10.00%
6I25705-CCV1	Mercury	2.000	2.021	101	ug/L	+/- 10.00%
6I25705-CCV9	Mercury	2.000	1.911	95.5	ug/L	+/- 10.00%
6I25705-CCVA	Mercury	4.000	3.790	94.8	ug/L	+/- 10.00%
6I25705-CCVB	Mercury	2.000	1.957	97.8	ug/L	+/- 10.00%
6I25705-CCVC	Mercury	4.000	3.956	98.9	ug/L	+/- 10.00%
6I25705-CCVD	Mercury	2.000	1.954	97.7	ug/L	+/- 10.00%

INITIAL AND CONTINUING CALIBRATION CHECK

SW7471B

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Instrument ID: ME-FIMS

SDG: 1608251
Project: Raritan Arsenal - Phase III
Calibration: 6258004
Sequence: 6I25809

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
6I25809-ICV1	Mercury	4.000	3.814	95.3	ug/L	+/- 10.00%
6I25809-CCV1	Mercury	2.000	1.850	92.5	ug/L	+/- 10.00%

BLANKS
SW7471B

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Instrument ID: ME-FIMS
Project: Raritan Arsenal - Phase III
Sequence: 6I25705
Calibration: 6257002

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
6I25705-ICB1	Mercury	-0.01577	0.0780	0.198	ug/L	U	SW7471B
6I25705-CCB1	Mercury	-0.0183	0.0780	0.198	ug/L	U	SW7471B
6I25705-CCB9	Mercury	-0.00539	0.0780	0.198	ug/L	U	SW7471B
6H29018-BLK1	Mercury	-0.00552	0.0130	0.0330	mg/Kg wet	U	SW7471B
6I25705-CCBA	Mercury	-0.0148	0.0780	0.198	ug/L	U	SW7471B
6I25705-CCBB	Mercury	-0.0129	0.0780	0.198	ug/L	U	SW7471B
6H29019-BLK1	Mercury	-0.000874	0.0130	0.0330	mg/Kg wet	U	SW7471B
6I25705-CCBC	Mercury	0.00462	0.0780	0.198	ug/L	U	SW7471B
6I25705-CCBD	Mercury	-0.0146	0.0780	0.198	ug/L	U	SW7471B

BLANKS
SW7471B

Laboratory: Empirical Laboratories, LLC
SDG: 1608251
Client: CH2M Hill, Inc.
Instrument ID: ME-FIMS
Project: Raritan Arsenal - Phase III
Sequence: 6I25809
Calibration: 6258004

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
6I25809-ICB1	Mercury	-0.0009272	0.0780	0.198	ug/L	U	SW7471B
6I25809-CCB1	Mercury	0.00302	0.0780	0.198	ug/L	U	SW7471B

LCS / LCS DUPLICATE RECOVERY

SW7471B

Laboratory:	Empirical Laboratories, LLC	SDG:	1608251
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Matrix:	Solid		
Batch:	6H29018	Laboratory ID:	6H29018-BS1
Preparation:	MET_HG_S	Initial/Final:	0.3 g / 50 mL

ANALYTE	SPIKE ADDED (mg/Kg wet)	LCS CONCENTRATION (mg/Kg wet)	LCS % REC.	QC LIMITS REC.
Mercury	0.3333	0.3602	108	80 - 124

LCS / LCS DUPLICATE RECOVERY

SW7471B

Laboratory:	Empirical Laboratories, LLC	SDG:	1608251
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Matrix:	Solid		
Batch:	6H29019	Laboratory ID:	6H29019-BS1
Preparation:	MET_HG_S	Initial/Final:	0.3 g / 50 mL

ANALYTE	SPIKE ADDED (mg/Kg wet)	LCS CONCENTRATION (mg/Kg wet)	LCS % REC.	QC LIMITS REC.
Mercury	0.3333	0.3816	114	80 - 124

PREPARATION BATCH SUMMARY

SW7471B

Laboratory: Empirical Laboratories, LLC SDG: 1608251

Client: CH2M Hill, Inc. Project: Raritan Arsenal - Phase III

Batch: 6H29018 Batch Matrix: Solid Preparation: MET_HG_S

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT	FINAL VOL.
DSA05-SB29-0010	1608251-01	08/29/16 10:19	0.30	50.00
DSA05-SB30-0010	1608251-02RE1	08/29/16 10:19	0.31	50.00
Blank	6H29018-BLK1	08/29/16 10:19	0.30	50.00
LCS	6H29018-BS1	08/29/16 10:19	0.30	50.00

PREPARATION BATCH SUMMARY

SW7471B

Laboratory: Empirical Laboratories, LLC SDG: 1608251

Client: CH2M Hill, Inc. Project: Raritan Arsenal - Phase III

Batch: 6H29019 Batch Matrix: Solid Preparation: MET_HG_S

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT	FINAL VOL.
DSA05-SB31-0010	1608251-03RE1	08/29/16 10:23	0.32	50.00
DSA05-SB32-0010	1608251-04RE1	08/29/16 10:23	0.34	50.00
DSA01-SB01-0010	1608251-05	08/29/16 10:23	0.32	50.00
DSA01-SB02-0010	1608251-06	08/29/16 10:23	0.30	50.00
DSA01-SB03-0010	1608251-07	08/29/16 10:23	0.32	50.00
DSA01-SB04-0010	1608251-08	08/29/16 10:23	0.32	50.00
DSA01-SB05-0010	1608251-09	08/29/16 10:23	0.32	50.00
DSA01-SB06-0010	1608251-10	08/29/16 10:23	0.30	50.00
DSA01-SB07-0010	1608251-11	08/29/16 10:23	0.30	50.00
DSA01-SB08-0010	1608251-12	08/29/16 10:23	0.33	50.00
DSA02-SB09-0010	1608251-13	08/29/16 10:23	0.31	50.00
DSA02-SB10-0010	1608251-14	08/29/16 10:23	0.33	50.00
DSA02-SB11-0010	1608251-15	08/29/16 10:23	0.34	50.00
DSA02-SB12-0010	1608251-16	08/29/16 10:23	0.35	50.00
DSA02-SB13-0010	1608251-17	08/29/16 10:23	0.30	50.00
DSA02-SB14-0010	1608251-18	08/29/16 10:23	0.34	50.00
DSA02-SB15-0010	1608251-19	08/29/16 10:23	0.35	50.00
DSA02-SB16-0010	1608251-20	08/29/16 10:23	0.31	50.00
Blank	6H29019-BLK1	08/29/16 10:23	0.30	50.00
LCS	6H29019-BS1	08/29/16 10:23	0.30	50.00

ANALYSIS SEQUENCE SUMMARY

SW7471B

Laboratory:	Empirical Laboratories, LLC	SDG:	1608251
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Sequence:	6I25705	Instrument:	ME-FIMS
Calibration:	6257002		

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Cal Standard	6I25705-CAL1	20160913s-001	09/13/16 09:43
Cal Standard	6I25705-CAL2	20160913s-002	09/13/16 09:44
Cal Standard	6I25705-CAL3	20160913s-003	09/13/16 09:45
Cal Standard	6I25705-CAL4	20160913s-004	09/13/16 09:46
Cal Standard	6I25705-CAL5	20160913s-005	09/13/16 09:48
Cal Standard	6I25705-CAL6	20160913s-006	09/13/16 09:49
Cal Standard	6I25705-CAL7	20160913s-007	09/13/16 09:50
Cal Standard	6I25705-CAL8	20160913s-008	09/13/16 09:51
Initial Cal Check	6I25705-ICV1	20160913s-009	09/13/16 09:53
Initial Cal Blank	6I25705-ICB1	20160913s-010	09/13/16 09:54
Calibration Check	6I25705-CCV1	20160913s-023	09/13/16 10:08
Calibration Blank	6I25705-CCB1	20160913s-024	09/13/16 10:09
Calibration Check	6I25705-CCV9	20160913s-139	09/13/16 12:29
Calibration Blank	6I25705-CCB9	20160913s-140	09/13/16 12:30
Blank	6H29018-BLK1	20160913s-141	09/13/16 12:31
LCS	6H29018-BS1	20160913s-142	09/13/16 12:32
Calibration Check	6I25705-CCVA	20160913s-155	09/13/16 12:47
Calibration Blank	6I25705-CCBA	20160913s-156	09/13/16 12:48
Calibration Check	6I25705-CCVB	20160913s-166	09/13/16 13:00
Calibration Blank	6I25705-CCBB	20160913s-167	09/13/16 13:01
DSA05-SB29-0010	1608251-01	20160913s-168	09/13/16 13:02
Blank	6H29019-BLK1	20160913s-171	09/13/16 13:05
LCS	6H29019-BS1	20160913s-172	09/13/16 13:06
DSA01-SB01-0010	1608251-05	20160913s-175	09/13/16 13:10
DSA01-SB02-0010	1608251-06	20160913s-176	09/13/16 13:11
DSA01-SB03-0010	1608251-07	20160913s-177	09/13/16 13:12
DSA01-SB04-0010	1608251-08	20160913s-178	09/13/16 13:14
DSA01-SB05-0010	1608251-09	20160913s-179	09/13/16 13:15
DSA01-SB06-0010	1608251-10	20160913s-180	09/13/16 13:16
Calibration Check	6I25705-CCVC	20160913s-181	09/13/16 13:17
Calibration Blank	6I25705-CCBC	20160913s-182	09/13/16 13:18
DSA01-SB07-0010	1608251-11	20160913s-183	09/13/16 13:20
DSA01-SB08-0010	1608251-12	20160913s-184	09/13/16 13:21

ANALYSIS SEQUENCE SUMMARY

SW7471B

Laboratory:	Empirical Laboratories, LLC	SDG:	1608251
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Sequence:	6I25705	Instrument:	ME-FIMS
Calibration:	6257002		

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
DSA02-SB09-0010	1608251-13	20160913s-185	09/13/16 13:22
DSA02-SB10-0010	1608251-14	20160913s-186	09/13/16 13:23
DSA02-SB11-0010	1608251-15	20160913s-187	09/13/16 13:24
DSA02-SB12-0010	1608251-16	20160913s-188	09/13/16 13:25
DSA02-SB13-0010	1608251-17	20160913s-189	09/13/16 13:27
DSA02-SB14-0010	1608251-18	20160913s-190	09/13/16 13:28
DSA02-SB15-0010	1608251-19	20160913s-191	09/13/16 13:29
DSA02-SB16-0010	1608251-20	20160913s-192	09/13/16 13:30
Calibration Check	6I25705-CCVD	20160913s-193	09/13/16 13:32
Calibration Blank	6I25705-CCBD	20160913s-194	09/13/16 13:33

ANALYSIS SEQUENCE SUMMARY

SW7471B

Laboratory:	Empirical Laboratories, LLC	SDG:	1608251
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Sequence:	6I25809	Instrument:	ME-FIMS
Calibration:	6258004		

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Cal Standard	6I25809-CAL1	20160914sB-001	09/14/16 15:55
Cal Standard	6I25809-CAL2	20160914sB-002	09/14/16 15:56
Cal Standard	6I25809-CAL3	20160914sB-003	09/14/16 15:57
Cal Standard	6I25809-CAL4	20160914sB-004	09/14/16 15:58
Cal Standard	6I25809-CAL5	20160914sB-005	09/14/16 16:00
Cal Standard	6I25809-CAL6	20160914sB-006	09/14/16 16:01
Cal Standard	6I25809-CAL7	20160914sB-007	09/14/16 16:02
Cal Standard	6I25809-CAL8	20160914sB-008	09/14/16 16:03
Initial Cal Check	6I25809-ICV1	20160914sB-009	09/14/16 16:04
Initial Cal Blank	6I25809-ICB1	20160914sB-010	09/14/16 16:06
DSA05-SB31-0010	1608251-03RE1	20160914sB-015	09/14/16 16:11
DSA05-SB32-0010	1608251-04RE1	20160914sB-016	09/14/16 16:13
DSA05-SB30-0010	1608251-02RE1	20160914sB-023	09/14/16 16:21
Calibration Check	6I25809-CCV1	20160914sB-024	09/14/16 16:23
Calibration Blank	6I25809-CCB1	20160914sB-025	09/14/16 16:24

INITIAL CALIBRATION DATA

SW7471B

Laboratory:	Empirical Laboratories, LLC	SDG:	1608251
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Calibration:	6257002	Instrument:	ME-FIMS
Matrix:	Solid	Calibration Dates:	9/13/16 9:43 9/13/16 9:51

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Mercury	0	0	0.2	1.439965E-02	0.5	1.425915E-02	1	1.394806E-02	2	0.0138053	4	1.458505E-02

INITIAL CALIBRATION DATA (Continued)

SW7471B

Laboratory:	Empirical Laboratories, LLC	SDG:	1608251
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Calibration:	6257002	Instrument:	ME-FIMS
Matrix:	Solid	Calibration Dates:	9/13/16 9:43 9/13/16 9:51

Compound	Level 07		Level 08		Level 09		Level 10		Level 11		Level 12	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Mercury	6	1.350032E-02	10	1.384799E-02								

INITIAL CALIBRATION DATA (Continued)

SW7471B

Laboratory:	Empirical Laboratories, LLC	SDG:	1608251
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Calibration:	6257002	Instrument:	ME-FIMS
Matrix:	Solid	Calibration Dates:	9/13/16 9:43 9/13/16 9:51

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
Mercury	1.229319E-02	40.50722	0	0	0.9992367		0.995	

INITIAL CALIBRATION DATA

SW7471B

Laboratory:	Empirical Laboratories, LLC	SDG:	1608251
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Calibration:	6258004	Instrument:	ME-FIMS
Matrix:	Solid	Calibration Dates:	9/14/16 15:55 9/14/16 16:03

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Mercury	0	0	0.2	1.283898E-02	0.5	0.0124992	1	1.251725E-02	2	1.204318E-02	4	1.178458E-02

INITIAL CALIBRATION DATA (Continued)

SW7471B

Laboratory:	Empirical Laboratories, LLC	SDG:	1608251
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Calibration:	6258004	Instrument:	ME-FIMS
Matrix:	Solid	Calibration Dates:	9/14/16 15:55 9/14/16 16:03

Compound	Level 07		Level 08		Level 09		Level 10		Level 11		Level 12	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Mercury	6	1.163333E-02	10	1.206765E-02								

INITIAL CALIBRATION DATA (Continued)

SW7471B

Laboratory:	Empirical Laboratories, LLC	SDG:	1608251
Client:	CH2M Hill, Inc.	Project:	Raritan Arsenal - Phase III
Calibration:	6258004	Instrument:	ME-FIMS
Matrix:	Solid	Calibration Dates:	9/14/16 15:55 9/14/16 16:03

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
Mercury	1.067302E-02	40.58174	0	0	0.9995204		0.995	

HOLDING TIME SUMMARY

SW7471B

Laboratory: Empirical Laboratories, LLC

SDG: 1608251

Client: CH2M Hill, Inc.

Project: Raritan Arsenal - Phase III

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
DSA05-SB29-0010	08/24/16 09:21	08/26/16 08:45	08/29/16 10:19	5.08	28.00	09/13/16 13:02	15.11	28.00	
DSA05-SB30-0010	08/24/16 09:49	08/26/16 08:45	08/29/16 10:19	5.06	28.00	09/14/16 16:21	16.25	28.00	

HOLDING TIME SUMMARY

SW7471B

Laboratory: Empirical Laboratories, LLC SDG: 1608251

Client: CH2M Hill, Inc. Project: Raritan Arsenal - Phase III

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
DSA05-SB31-0010	08/24/16 10:06	08/26/16 08:45	08/29/16 10:23	5.05	28.00	09/14/16 16:11	16.24	28.00	
DSA05-SB32-0010	08/24/16 10:36	08/26/16 08:45	08/29/16 10:23	5.03	28.00	09/14/16 16:13	16.24	28.00	
DSA01-SB01-0010	08/24/16 12:28	08/26/16 08:45	08/29/16 10:23	4.95	28.00	09/13/16 13:10	15.12	28.00	
DSA01-SB02-0010	08/24/16 12:45	08/26/16 08:45	08/29/16 10:23	4.94	28.00	09/13/16 13:11	15.12	28.00	
DSA01-SB03-0010	08/24/16 12:57	08/26/16 08:45	08/29/16 10:23	4.93	28.00	09/13/16 13:12	15.12	28.00	
DSA01-SB04-0010	08/24/16 13:12	08/26/16 08:45	08/29/16 10:23	4.92	28.00	09/13/16 13:14	15.12	28.00	
DSA01-SB05-0010	08/24/16 13:49	08/26/16 08:45	08/29/16 10:23	4.90	28.00	09/13/16 13:15	15.12	28.00	
DSA01-SB06-0010	08/24/16 14:02	08/26/16 08:45	08/29/16 10:23	4.89	28.00	09/13/16 13:16	15.12	28.00	
DSA01-SB07-0010	08/24/16 14:20	08/26/16 08:45	08/29/16 10:23	4.88	28.00	09/13/16 13:20	15.12	28.00	
DSA01-SB08-0010	08/24/16 14:35	08/26/16 08:45	08/29/16 10:23	4.87	28.00	09/13/16 13:21	15.12	28.00	
DSA02-SB09-0010	08/25/16 09:07	08/26/16 08:45	08/29/16 10:23	4.09	28.00	09/13/16 13:22	15.12	28.00	
DSA02-SB10-0010	08/25/16 09:19	08/26/16 08:45	08/29/16 10:23	4.09	28.00	09/13/16 13:23	15.13	28.00	
DSA02-SB11-0010	08/25/16 09:55	08/26/16 08:45	08/29/16 10:23	4.06	28.00	09/13/16 13:24	15.13	28.00	
DSA02-SB12-0010	08/25/16 11:44	08/26/16 08:45	08/29/16 10:23	3.99	28.00	09/13/16 13:25	15.13	28.00	
DSA02-SB13-0010	08/25/16 12:34	08/26/16 08:45	08/29/16 10:23	3.95	28.00	09/13/16 13:27	15.13	28.00	
DSA02-SB14-0010	08/25/16 13:14	08/26/16 08:45	08/29/16 10:23	3.92	28.00	09/13/16 13:28	15.13	28.00	
DSA02-SB15-0010	08/25/16 13:28	08/26/16 08:45	08/29/16 10:23	3.91	28.00	09/13/16 13:29	15.13	28.00	
DSA02-SB16-0010	08/25/16 13:40	08/26/16 08:45	08/29/16 10:23	3.90	28.00	09/13/16 13:30	15.13	28.00	

==========

Analysis Begun

Logged In Analyst: mercury **Technique: AA FIMS-MHS**
Spectrometer Model: FIMS-100, S/N B050-9550 **Autosampler Model: S10**

Sample Information File: C:\data-AA\Sample Information\20160913s.sif
Batch ID: 20160913s
Results Data Set: 20160913s
Results Library: C:\data-AA\Results\Results.mdb

==========

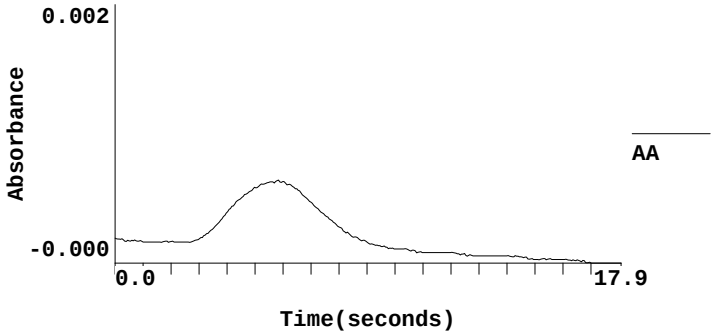
Method Loaded
Method Name: Hg CAL2 PAPERLESS S **Method Last Saved: 9/13/2016 9:21:31 AM**
Method Description: Hg CAL2

==========

Sequence No.: 1 **Autosampler Location: 1**
Sample ID: 6I25705-CAL1 **Date Collected: 9/13/2016 9:43:37 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CAL1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.00]	0.0005	0.0001	0.0005	09:44:30	Yes

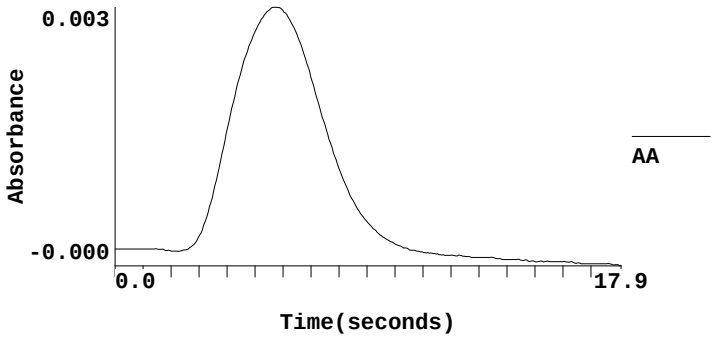


==========

Sequence No.: 2 **Autosampler Location: 2**
Sample ID: 6I25705-CAL2 **Date Collected: 9/13/2016 9:44:31 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CAL2

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.20]	0.0029	0.0106	0.0034	09:45:24	Yes



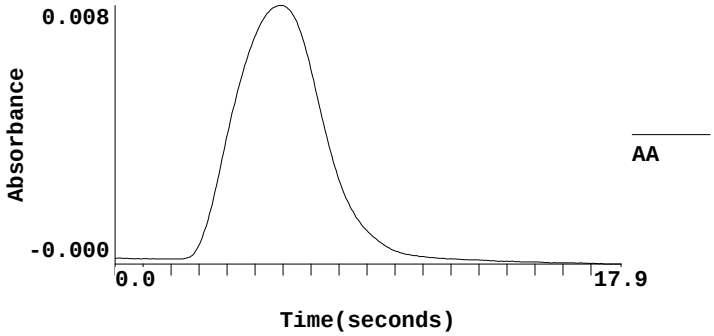
==========

Sequence No.: 3 **Autosampler Location: 3**
Sample ID: 6I25705-CAL3 **Date Collected: 9/13/2016 9:45:43 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CAL3

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored

1	[0.50]	0.0071	0.0265	0.0076	09:46:37	Yes

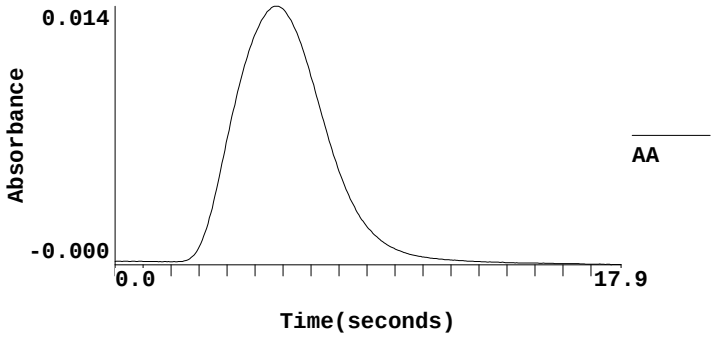


==========

Sequence No.: 4 **Autosampler Location: 4**
Sample ID: 6I25705-CAL4 **Date Collected: 9/13/2016 9:46:57 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CAL4

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[1.00]	0.0139	0.0521	0.0144	09:47:51	Yes

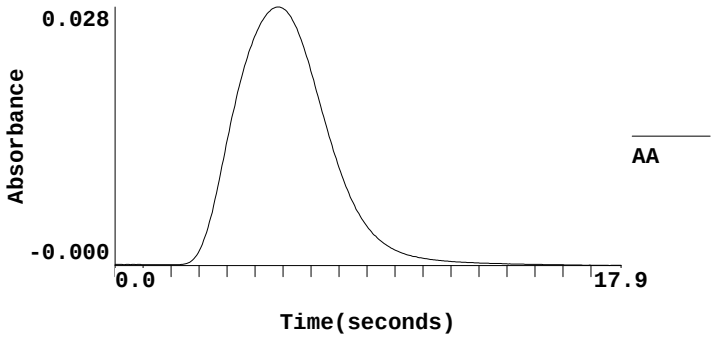


==========

Sequence No.: 5 **Autosampler Location: 5**
Sample ID: 6I25705-CAL5 **Date Collected: 9/13/2016 9:48:11 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CAL5

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[2.00]	0.0276	0.1052	0.0281	09:49:06	Yes



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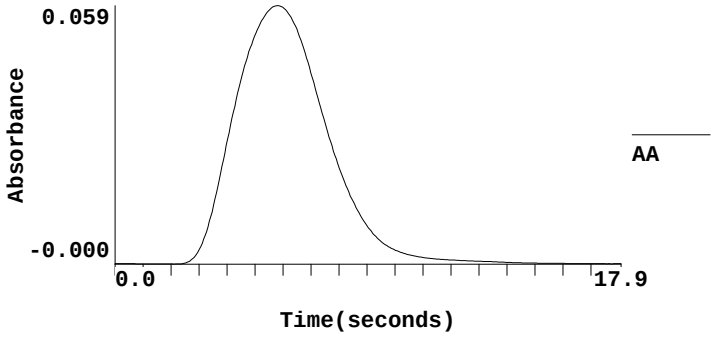
Sequence No.: 6 **Autosampler Location: 6**
Sample ID: 6I25705-CAL6 **Date Collected: 9/13/2016 9:49:26 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CAL6

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[4.00]	0.0583	0.2205	0.0588	09:50:19	Yes



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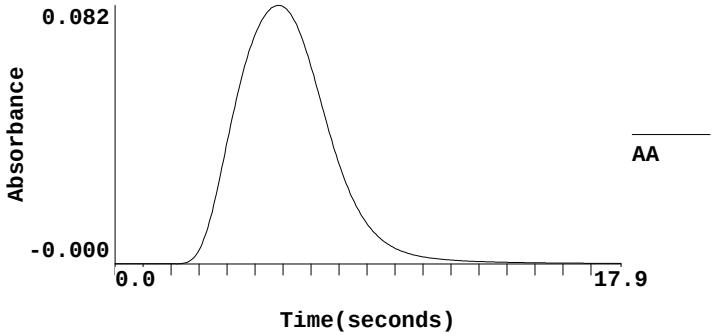
Sequence No.: 7 **Autosampler Location: 7**
Sample ID: 6I25705-CAL7 **Date Collected: 9/13/2016 9:50:38 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CAL7

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[6.00]	0.0810	0.3099	0.0815	09:51:31	Yes

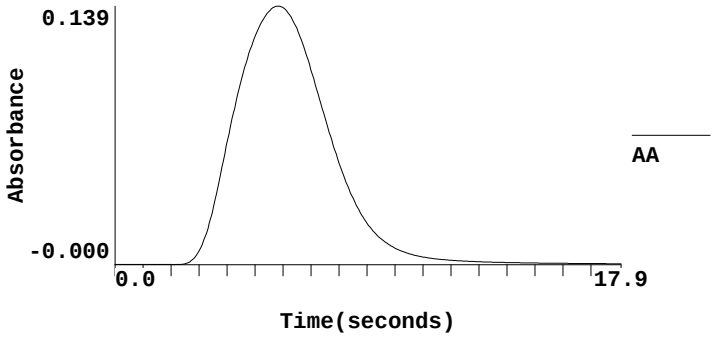


==========

Sequence No.: 8 **Autosampler Location: 8**
Sample ID: 6I25705-CAL8 **Date Collected: 9/13/2016 9:51:51 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CAL8

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[10.00]	0.1385	0.5309	0.1390	09:52:44	Yes



Calibration data for Hg 253.7 **Equation: Linear, Calculated Intercept**

	Entered Conc. ug/L	Calculated Conc. ug/L	Standard Deviation	%RSD
(Abs)				

6I25705-CAL1	0.0000	0	-0.021	----	----
6I25705-CAL2	0.0029	0.20	0.188	----	----
6I25705-CAL3	0.0071	0.50	0.495	----	----
6I25705-CAL4	0.0139	1.00	0.990	----	----
6I25705-CAL5	0.0276	2.00	1.980	----	----
6I25705-CAL6	0.0583	4.00	4.206	----	----
6I25705-CAL7	0.0810	6.00	5.849	----	----
6I25705-CAL8	0.1385	10.00	10.014	----	----

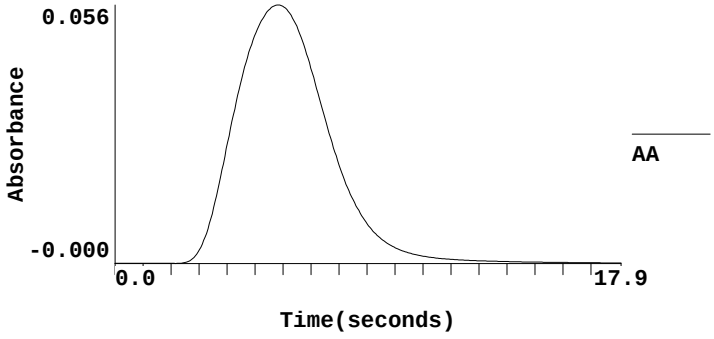
Correlation Coef.: 0.999616 Slope: 0.01380 Intercept: 0.00029

==========

Sequence No.: 9 **Autosampler Location: 9**
Sample ID: 6I25705-ICV1 **Date Collected: 9/13/2016 9:53:04 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-ICV1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	4.028	4.028	0.0559	0.2125	0.0564	09:53:57	Yes



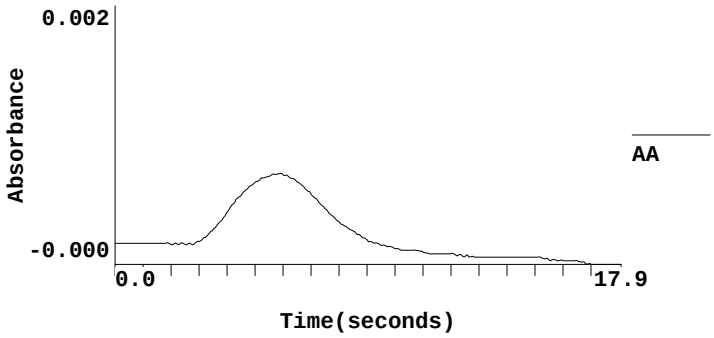
All analyte(s) passed QC.

==========

Sequence No.: 10 **Autosampler Location: 10**
Sample ID: 6I25705-ICB1 **Date Collected: 9/13/2016 9:54:17 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-ICB1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.016	-0.016	0.0001	0.0006	0.0006	09:55:11	Yes



All analyte(s) passed QC.

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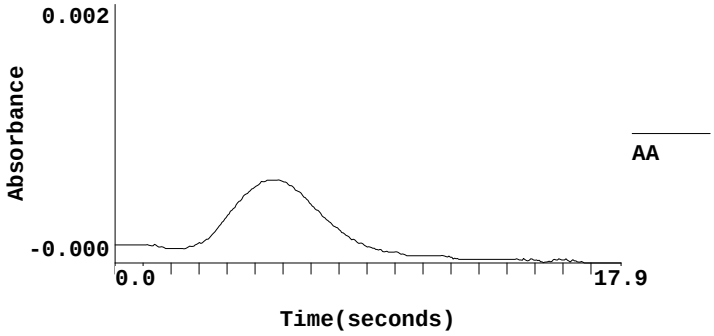
Sequence No.: 11 **Autosampler Location: 11**
Sample ID: 6I09006-BLK1 **Date Collected: 9/13/2016 9:55:12 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I09006-BLK1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.018	-0.018	0.0000	0.0006	0.0005	09:56:05	Yes



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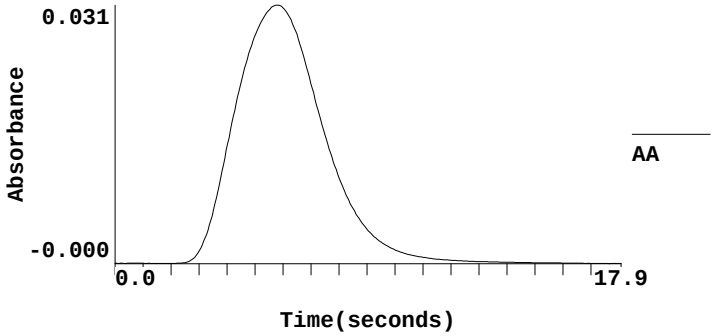
Sequence No.: 12 **Autosampler Location: 12**
Sample ID: 6I09006-BS1 **Date Collected: 9/13/2016 9:56:07 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I09006-BS1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	2.211	2.211	0.0308	0.1124	0.0313	09:56:59	Yes

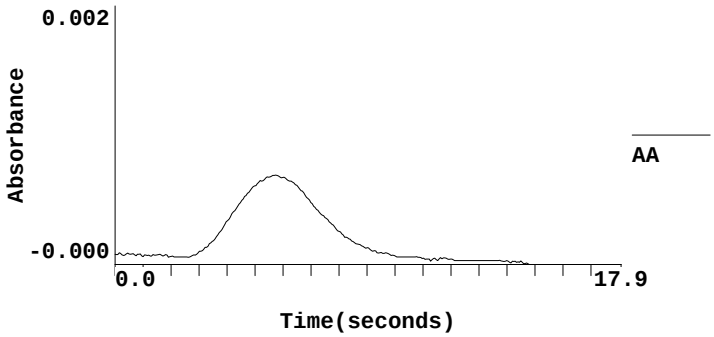


==========

Sequence No.: 13 **Autosampler Location: 13**
Sample ID: 1609019-02 **Date Collected: 9/13/2016 9:57:19 AM**
Analyst: **Data Type: Original**

Replicate Data: 1609019-02

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.011	-0.011	0.0001	0.0016	0.0006	09:58:14	Yes



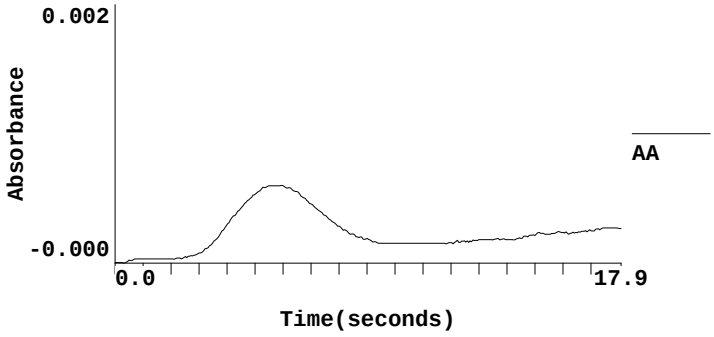
==========

Sequence No.: 14 **Autosampler Location: 14**
Sample ID: 1609020-02 **Date Collected: 9/13/2016 9:58:15 AM**
Analyst: **Data Type: Original**

Replicate Data: 1609020-02

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak

#	ug/L	ug/L	Signal	Area	Height		Stored
1	-0.014	-0.014	0.0001	0.0041	0.0006	09:59:10	Yes

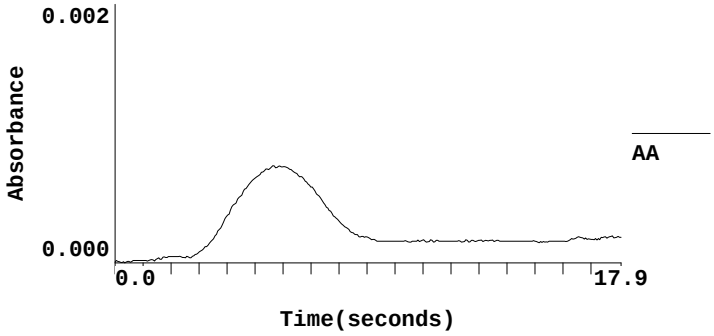


==========

Sequence No.: 15 **Autosampler Location: 15**
Sample ID: 1609021-02 **Date Collected: 9/13/2016 9:59:11 AM**
Analyst: **Data Type: Original**

Replicate Data: 1609021-02

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.002	-0.002	0.0003	0.0048	0.0008	10:00:04	Yes



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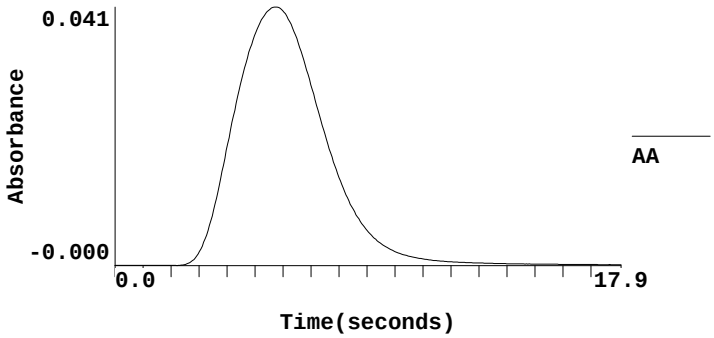
Sequence No.: 16 **Autosampler Location: 16**
Sample ID: 1609041-01 **Date Collected: 9/13/2016 10:00:05 AM**
Analyst: **Data Type: Original**

Replicate Data: 1609041-01

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	2.938	2.938	0.0408	0.1510	0.0413	10:00:58	Yes



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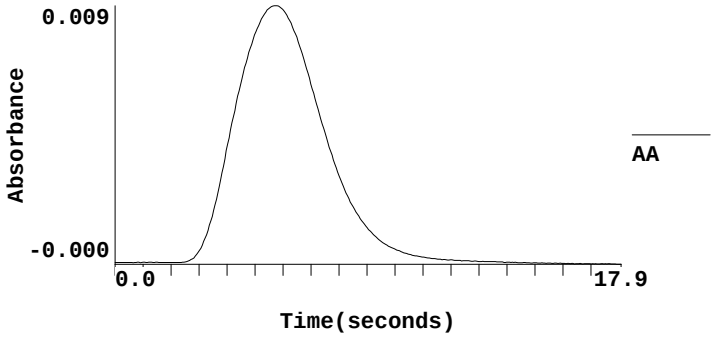
Sequence No.: 17 **Autosampler Location: 17**
Sample ID: 1609041-02 **Date Collected: 9/13/2016 10:01:17 AM**
Analyst: **Data Type: Original**

Replicate Data: 1609041-02

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.603	0.603	0.0086	0.0323	0.0091	10:02:09	Yes



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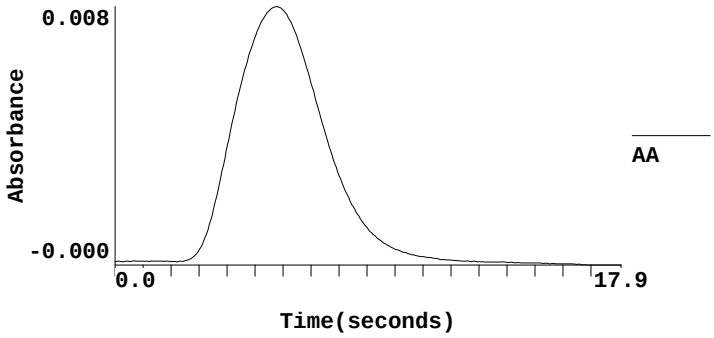
Sequence No.: 18 **Autosampler Location: 18**
Sample ID: 1609041-04 **Date Collected: 9/13/2016 10:02:29 AM**
Analyst: **Data Type: Original**

Replicate Data: 1609041-04

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.503	0.503	0.0072	0.0272	0.0077	10:03:22	Yes



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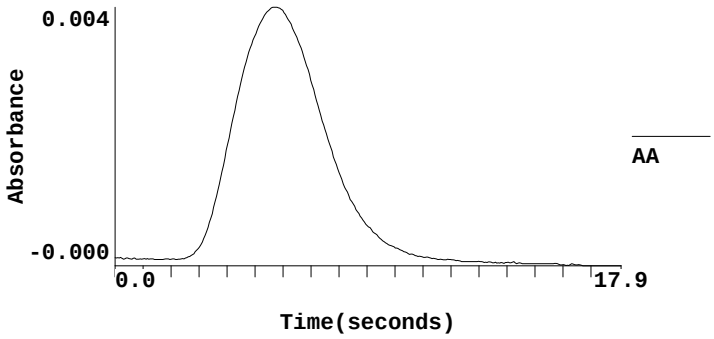
Sequence No.: 19 **Autosampler Location: 19**
Sample ID: 1609041-05 **Date Collected: 9/13/2016 10:03:42 AM**
Analyst: **Data Type: Original**

Replicate Data: 1609041-05

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.200	0.200	0.0031	0.0120	0.0036	10:04:35	Yes



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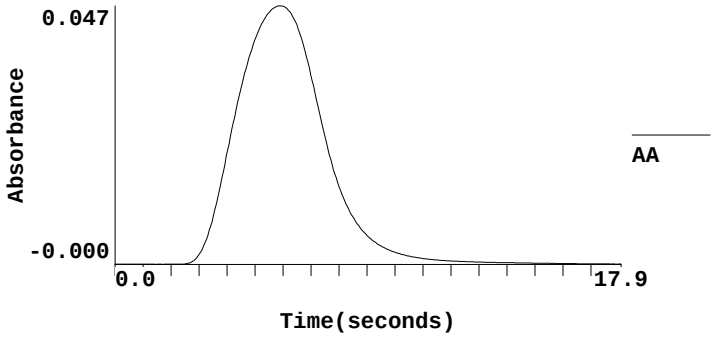
Sequence No.: 20 **Autosampler Location: 20**
Sample ID: 1609041-06 **Date Collected: 9/13/2016 10:04:54 AM**
Analyst: **Data Type: Original**

Replicate Data: 1609041-06

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	3.349	3.349	0.0465	0.1671	0.0470	10:05:47	Yes



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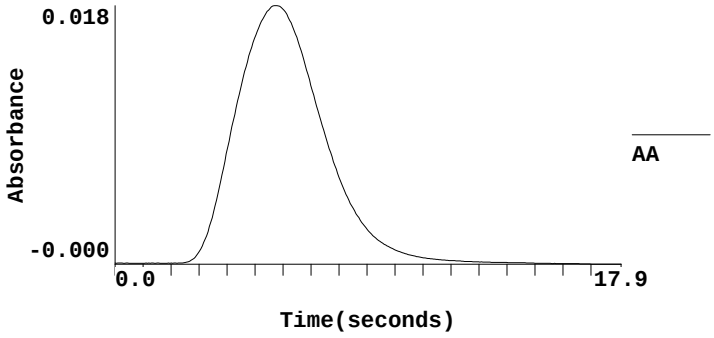
Sequence No.: 21 **Autosampler Location: 21**
Sample ID: 1609041-07 **Date Collected: 9/13/2016 10:06:07 AM**
Analyst: **Data Type: Original**

Replicate Data: 1609041-07

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	1.278	1.278	0.0179	0.0652	0.0184	10:07:01	Yes



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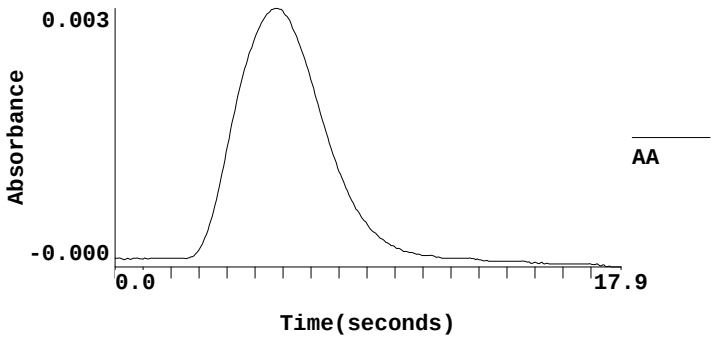
Sequence No.: 22 **Autosampler Location: 22**
Sample ID: 1609041-08 **Date Collected: 9/13/2016 10:07:21 AM**
Analyst: **Data Type: Original**

Replicate Data: 1609041-08

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.133	0.133	0.0021	0.0091	0.0026	10:08:14	Yes

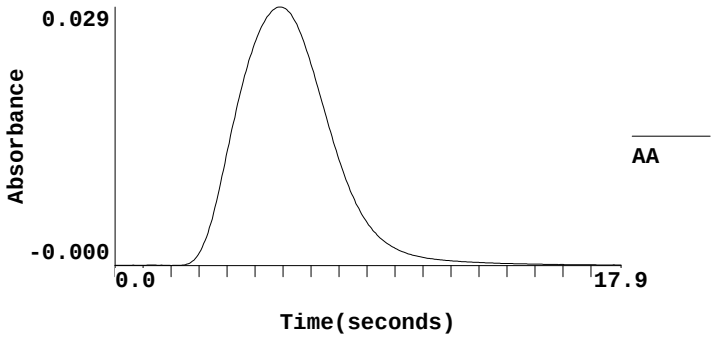


Sequence No.: 23 **Autosampler Location: 23**

Sample ID: 6I25705-CCV1 **Date Collected: 9/13/2016 10:08:34 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CCV1

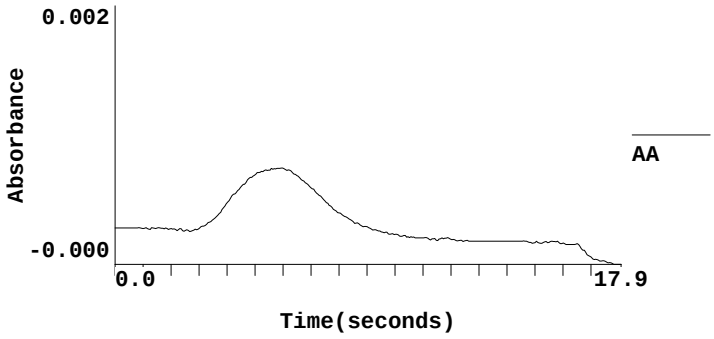
Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	2.021	2.021	0.0282	0.1091	0.0287	10:09:28	Yes



Sequence No.: 24 **Autosampler Location: 24**
Sample ID: 6I25705-CCB1 **Date Collected: 9/13/2016 10:09:49 AM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CCB1

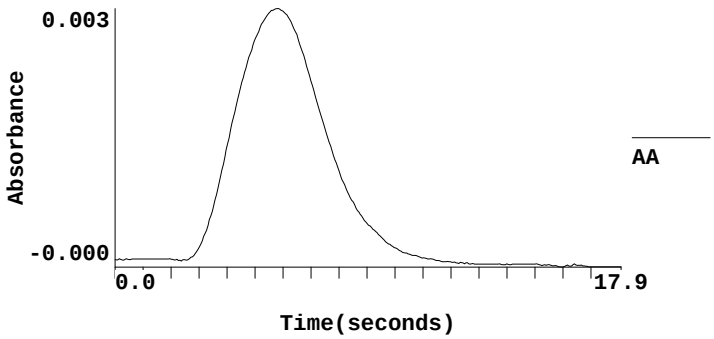
Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.018	-0.018	0.0000	0.0005	0.0005	10:10:43	Yes



Sequence No.: 25 **Autosampler Location: 25**
Sample ID: 1609041-09 **Date Collected: 9/13/2016 10:10:44 AM**
Analyst: **Data Type: Original**

Replicate Data: 1609041-09

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.153	0.153	0.0024	0.0100	0.0029	10:11:36	Yes



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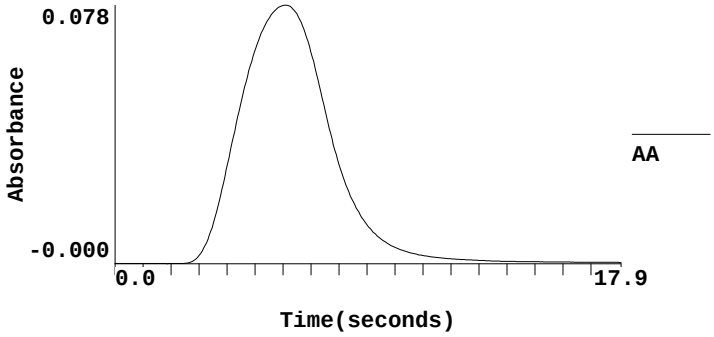
Sequence No.: 137 **Autosampler Location: 137**
Sample ID: 1609051-59RE1@5X **Date Collected: 9/13/2016 12:26:32 PM**
Analyst: **Data Type: Original**

Replicate Data: 1609051-59RE1@5X

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	5.625	5.625	0.0779	0.2908	0.0784	12:27:27	Yes



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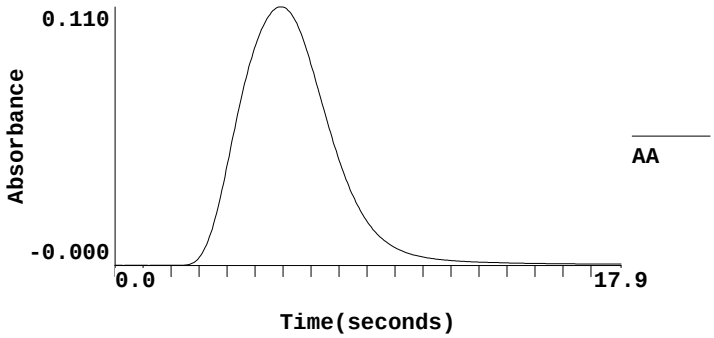
Sequence No.: 138 **Autosampler Location: 138**
Sample ID: 1609051-62RE1@2X **Date Collected: 9/13/2016 12:27:49 PM**
Analyst: **Data Type: Original**

Replicate Data: 1609051-62RE1@2X

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	7.894	7.894	0.1092	0.4120	0.1097	12:28:44	Yes



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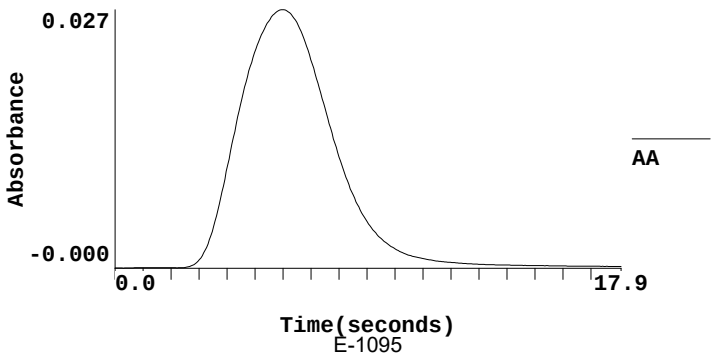
Sequence No.: 139 **Autosampler Location: 139**
Sample ID: 6I25705-CCV9 **Date Collected: 9/13/2016 12:29:05 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CCV9

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	1.911	1.911	0.0267	0.1042	0.0272	12:30:00	Yes



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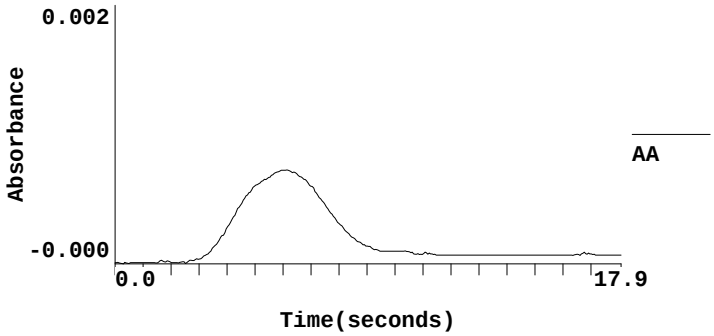
Sequence No.: 140 **Autosampler Location: 140**
Sample ID: 6I25705-CCB9 **Date Collected: 9/13/2016 12:30:22 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CCB9

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.005	-0.005	0.0002	0.0031	0.0007	12:31:16	Yes



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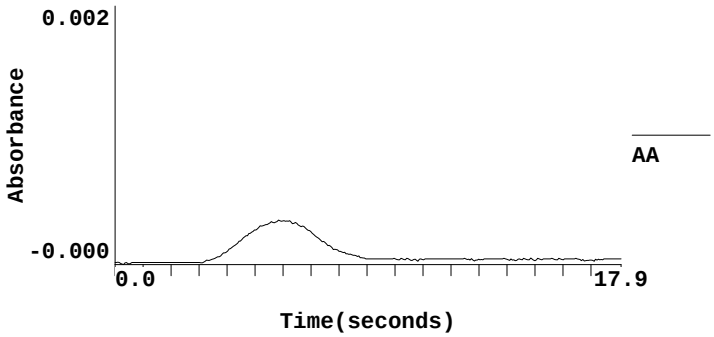
Sequence No.: 141 **Autosampler Location: 142**
Sample ID: 6H29018-BLK1 **Date Collected: 9/13/2016 12:31:18 PM**
Analyst: **Data Type: Original**

Replicate Data: 6H29018-BLK1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.033	-0.033	-0.0002	0.0013	0.0003	12:32:11	Yes



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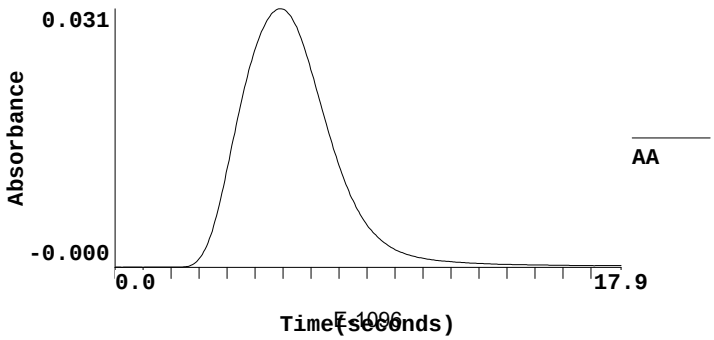
Sequence No.: 142 **Autosampler Location: 143**
Sample ID: 6H29018-BS1 **Date Collected: 9/13/2016 12:32:12 PM**
Analyst: **Data Type: Original**

Replicate Data: 6H29018-BS1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	2.161	2.161	0.0301	0.1139	0.0306	12:33:05	Yes



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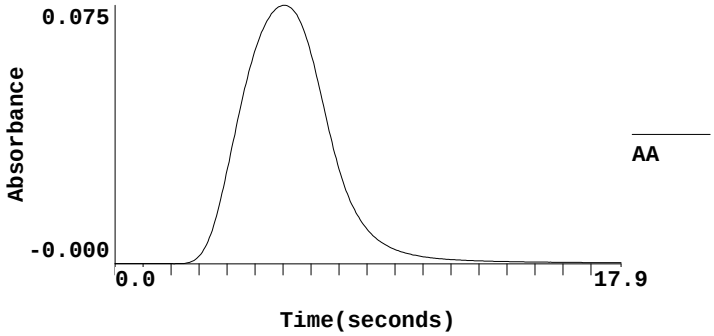
Sequence No.: 143 **Autosampler Location: 141**
Sample ID: 1609051-69RE1@10X **Date Collected: 9/13/2016 12:33:26 PM**
Analyst: **Data Type: Original**

Replicate Data: 1609051-69RE1@10X

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	5.400	5.400	0.0748	0.2738	0.0753	12:34:21	Yes



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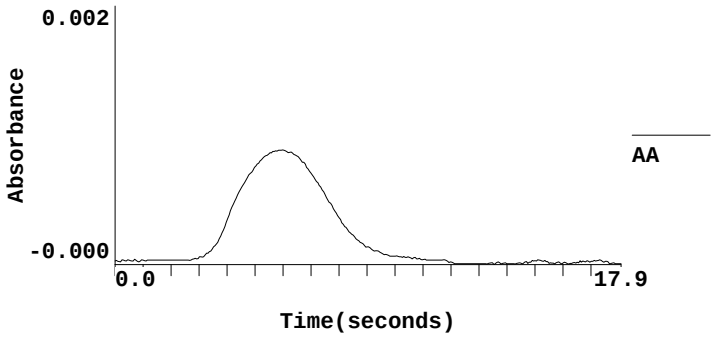
Sequence No.: 144 **Autosampler Location: 144**
Sample ID: 1608229-01 **Date Collected: 9/13/2016 12:34:43 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-01

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.005	0.005	0.0004	0.0029	0.0009	12:35:37	Yes



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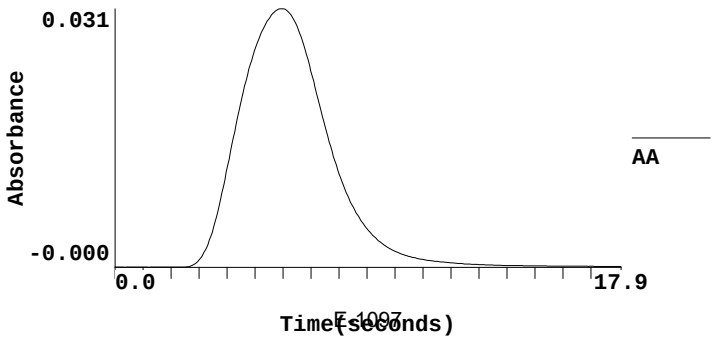
Sequence No.: 145 **Autosampler Location: 145**
Sample ID: 6H29018-MS1 **Date Collected: 9/13/2016 12:35:58 PM**
Analyst: **Data Type: Original**

Replicate Data: 6H29018-MS1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	2.194	2.194	0.0306	0.1128	0.0311	12:36:53	Yes



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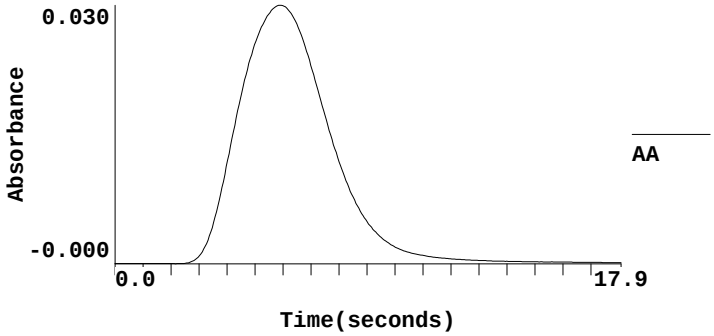
Sequence No.: 146 **Autosampler Location: 146**
Sample ID: 6H29018-MSD1 **Date Collected: 9/13/2016 12:37:14 PM**
Analyst: **Data Type: Original**

Replicate Data: 6H29018-MSD1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	2.141	2.141	0.0298	0.1126	0.0303	12:38:09	Yes



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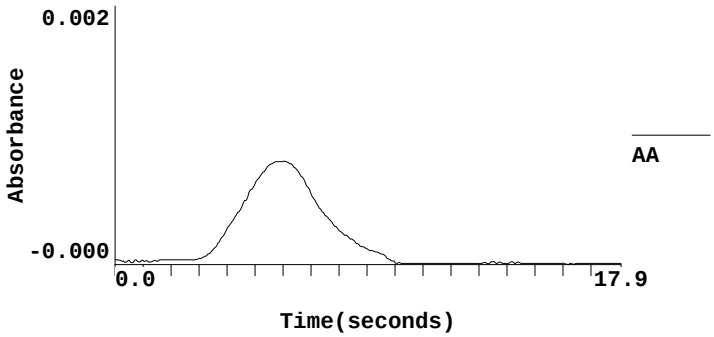
Sequence No.: 147 **Autosampler Location: 147**
Sample ID: 1608229-02 **Date Collected: 9/13/2016 12:38:31 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-02

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.001	-0.001	0.0003	0.0022	0.0008	12:39:25	Yes



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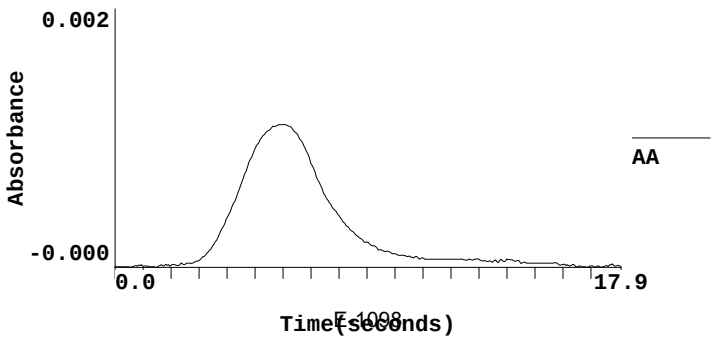
Sequence No.: 148 **Autosampler Location: 148**
Sample ID: 1608229-03 **Date Collected: 9/13/2016 12:39:27 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-03

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.023	0.023	0.0006	0.0042	0.0011	12:40:18	Yes



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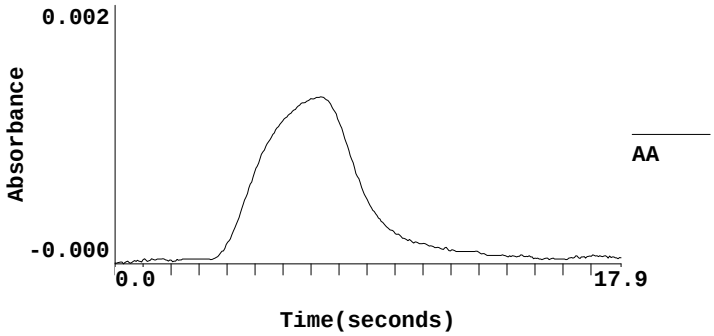
Sequence No.: 149 **Autosampler Location: 149**
Sample ID: 1608229-04 **Date Collected: 9/13/2016 12:40:40 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-04

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.036	0.036	0.0008	0.0056	0.0013	12:41:35	Yes



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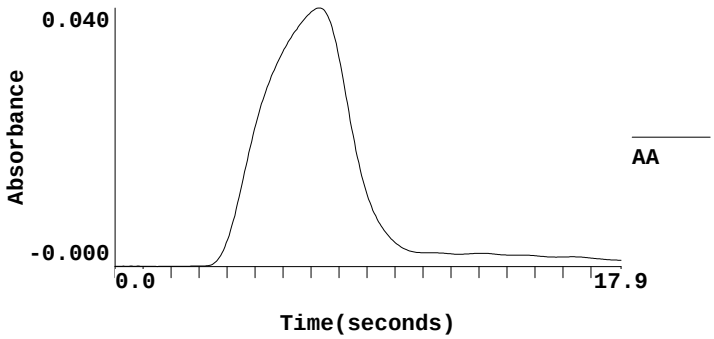
Sequence No.: 150 **Autosampler Location: 150**
Sample ID: 1608229-05 **Date Collected: 9/13/2016 12:41:56 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-05

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	2.877	2.877	0.0400	0.1587	0.0405	12:42:51	Yes



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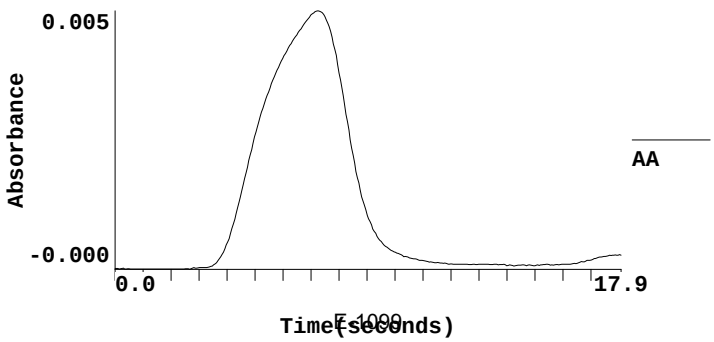
Sequence No.: 151 **Autosampler Location: 151**
Sample ID: 1608229-06 **Date Collected: 9/13/2016 12:43:12 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-06

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.295	0.295	0.0044	0.0175	0.0049	12:44:07	Yes



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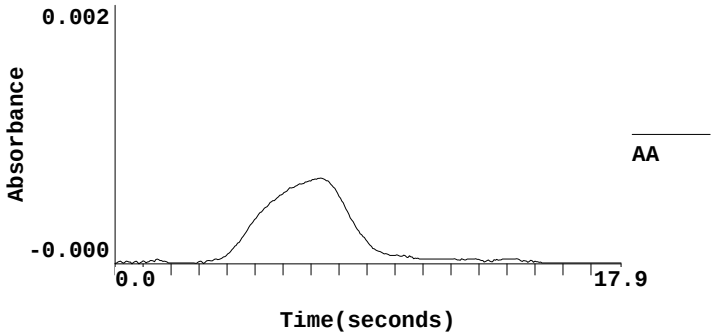
Sequence No.: 152 **Autosampler Location: 152**
Sample ID: 1608229-07 **Date Collected: 9/13/2016 12:44:29 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-07

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.010	-0.010	0.0002	0.0023	0.0007	12:45:23	Yes



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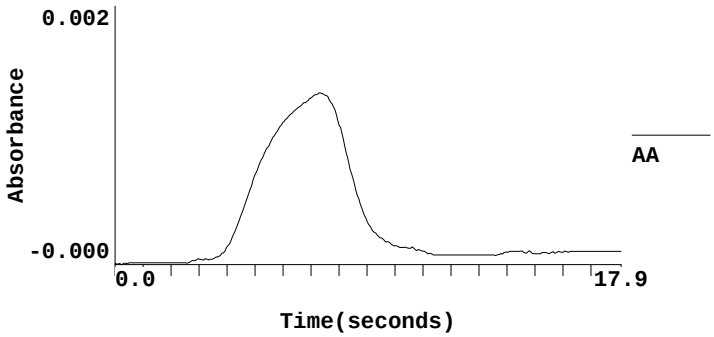
Sequence No.: 153 **Autosampler Location: 153**
Sample ID: 1608229-08 **Date Collected: 9/13/2016 12:45:25 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-08

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.039	0.039	0.0008	0.0054	0.0013	12:46:17	Yes



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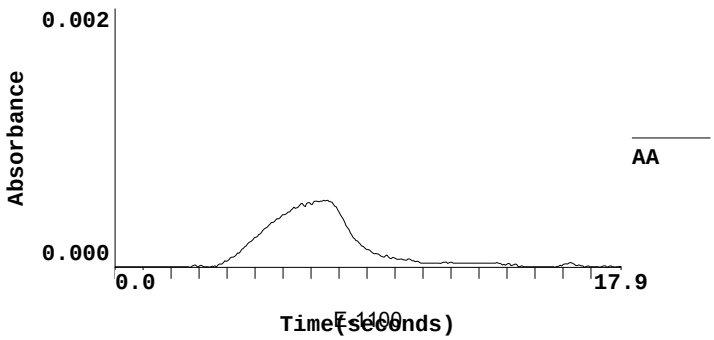
Sequence No.: 154 **Autosampler Location: 154**
Sample ID: 1608229-09 **Date Collected: 9/13/2016 12:46:39 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-09

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.020	-0.020	0.0000	0.0020	0.0005	12:47:33	Yes



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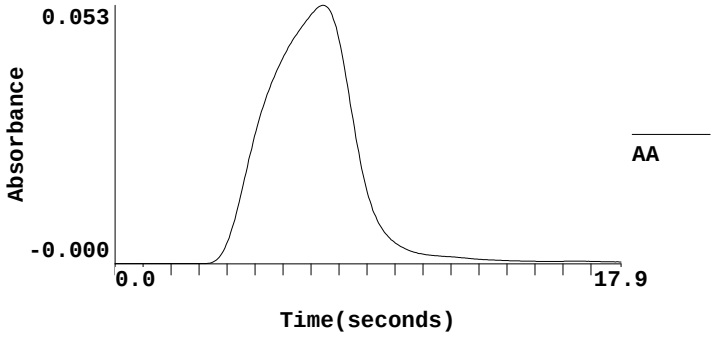
Sequence No.: 155 **Autosampler Location: 155**
Sample ID: 6I25705-CCVA **Date Collected: 9/13/2016 12:47:35 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CCVA

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	3.790	3.790	0.0526	0.1944	0.0531	12:48:28	Yes



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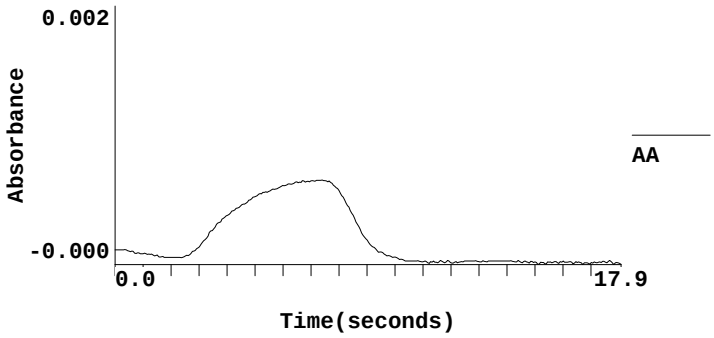
Sequence No.: 156 **Autosampler Location: 156**
Sample ID: 6I25705-CCBA **Date Collected: 9/13/2016 12:48:49 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CCBA

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.015	-0.015	0.0001	0.0018	0.0006	12:49:44	Yes



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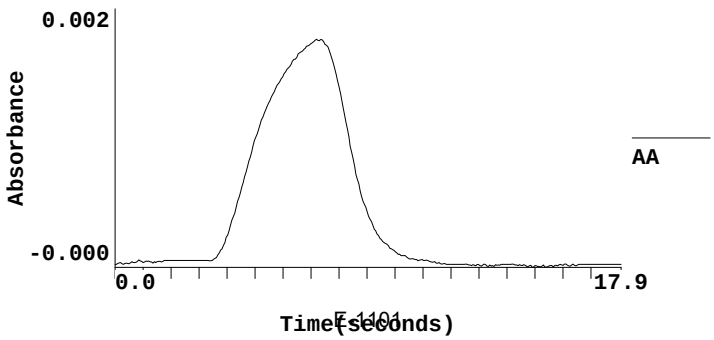
Sequence No.: 157 **Autosampler Location: 9**
Sample ID: 1608229-10 **Date Collected: 9/13/2016 12:49:45 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-10

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.070	0.070	0.0013	0.0061	0.0018	12:50:40	Yes



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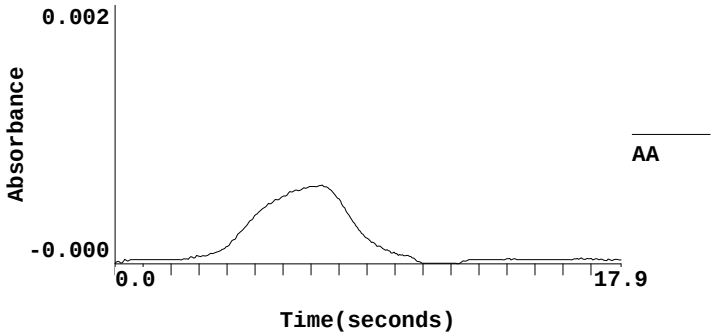
Sequence No.: 158 **Autosampler Location: 10**
Sample ID: 1608229-11 **Date Collected: 9/13/2016 12:51:00 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-11

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.013	-0.013	0.0001	0.0027	0.0006	12:51:53	Yes



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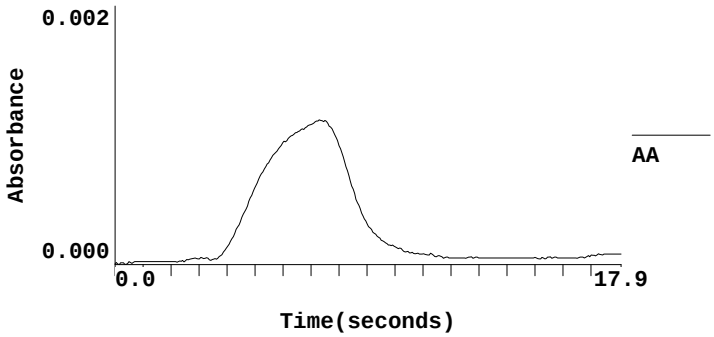
Sequence No.: 159 **Autosampler Location: 11**
Sample ID: 1608229-12 **Date Collected: 9/13/2016 12:51:55 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608229-12

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.024	0.024	0.0006	0.0047	0.0011	12:52:47	Yes



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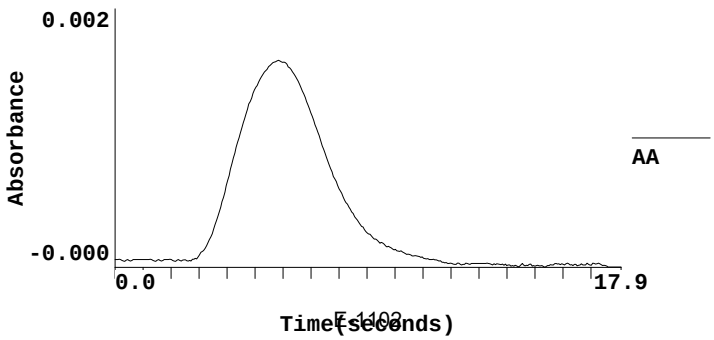
Sequence No.: 160 **Autosampler Location: 12**
Sample ID: 1608244-06 **Date Collected: 9/13/2016 12:53:08 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608244-06

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.058	0.058	0.0011	0.0054	0.0016	12:54:01	Yes



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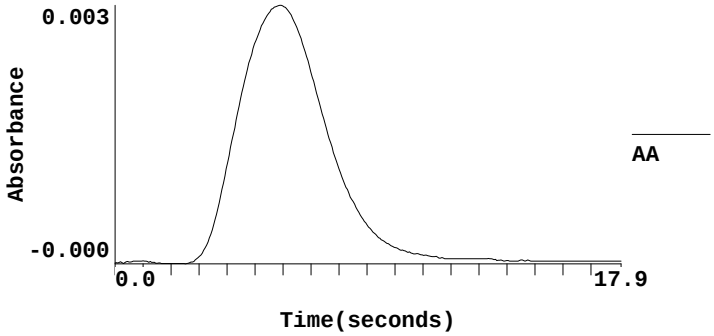
Sequence No.: 161 **Autosampler Location: 13**
Sample ID: 1608244-07 **Date Collected: 9/13/2016 12:54:22 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608244-07

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.172	0.172	0.0027	0.0116	0.0032	12:55:16	Yes



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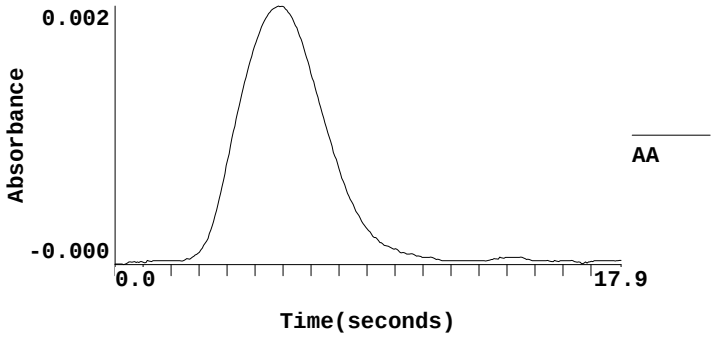
Sequence No.: 162 **Autosampler Location: 14**
Sample ID: 1608244-08 **Date Collected: 9/13/2016 12:55:37 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608244-08

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.108	0.108	0.0018	0.0084	0.0023	12:56:30	Yes



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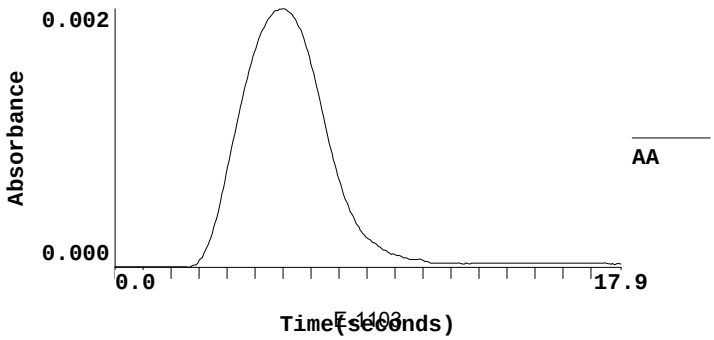
Sequence No.: 163 **Autosampler Location: 15**
Sample ID: 1608244-09 **Date Collected: 9/13/2016 12:56:49 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608244-09

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.093	0.093	0.0016	0.0077	0.0021	12:57:42	Yes



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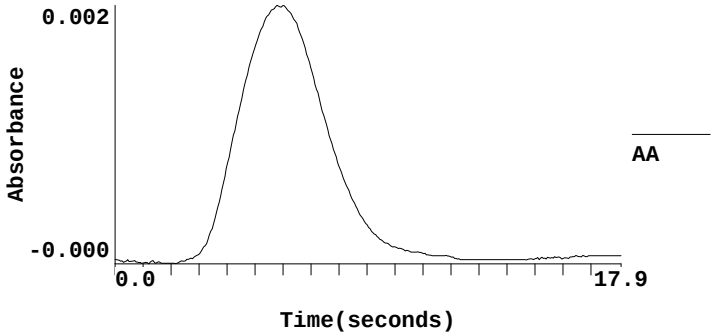
Sequence No.: 164 **Autosampler Location: 16**
Sample ID: 1608244-10 **Date Collected: 9/13/2016 12:58:01 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608244-10

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.092	0.092	0.0016	0.0074	0.0021	12:58:54	Yes



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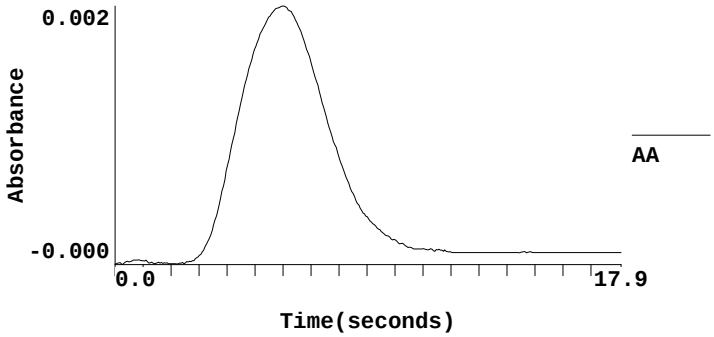
Sequence No.: 165 **Autosampler Location: 17**
Sample ID: 1608244-11 **Date Collected: 9/13/2016 12:59:13 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608244-11

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.092	0.092	0.0016	0.0083	0.0021	13:00:06	Yes



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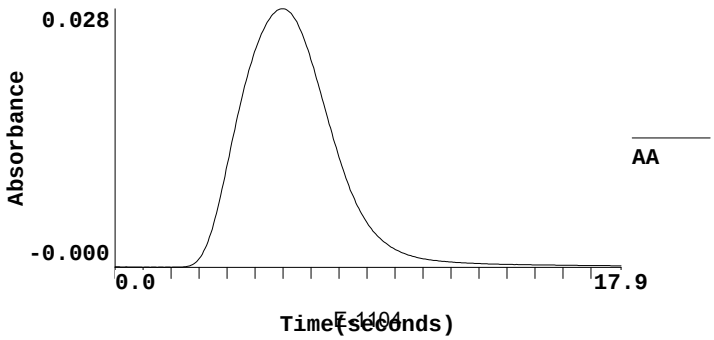
Sequence No.: 166 **Autosampler Location: 18**
Sample ID: 6I25705-CCVB **Date Collected: 9/13/2016 1:00:25 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CCVB

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	1.957	1.957	0.0273	0.1055	0.0278	13:01:18	Yes



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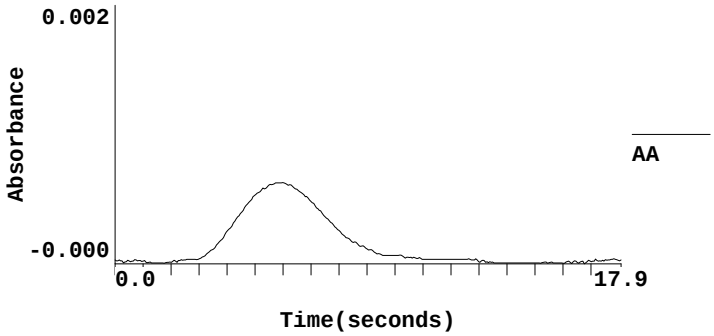
Sequence No.: 167 **Autosampler Location: 19**
Sample ID: 6I25705-CCBB **Date Collected: 9/13/2016 1:01:37 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CCBB

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.013	-0.013	0.0001	0.0022	0.0006	13:02:30	Yes



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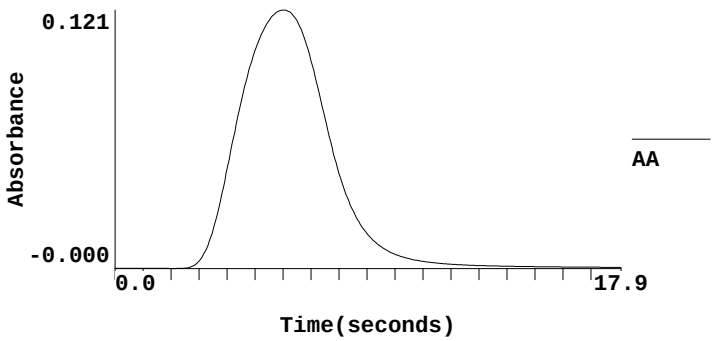
Sequence No.: 168 **Autosampler Location: 20**
Sample ID: 1608251-01 **Date Collected: 9/13/2016 1:02:32 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-01

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	8.740	8.740	0.1209	0.4459	0.1214	13:03:24	Yes



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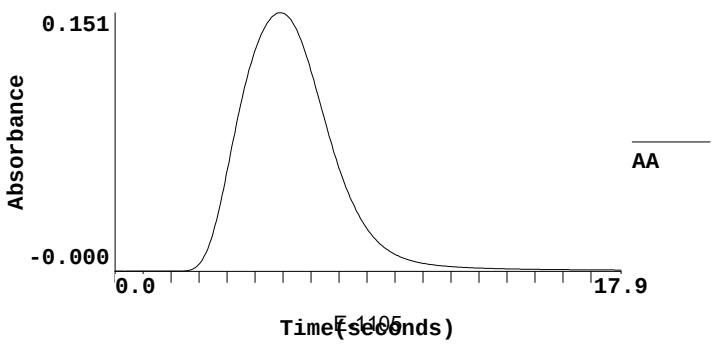
Sequence No.: 169 **Autosampler Location: 21**
Sample ID: 1608251-02 **Date Collected: 9/13/2016 1:03:44 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-02

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	10.90	10.90	0.1507	0.5646	0.1512	13:04:38	Yes



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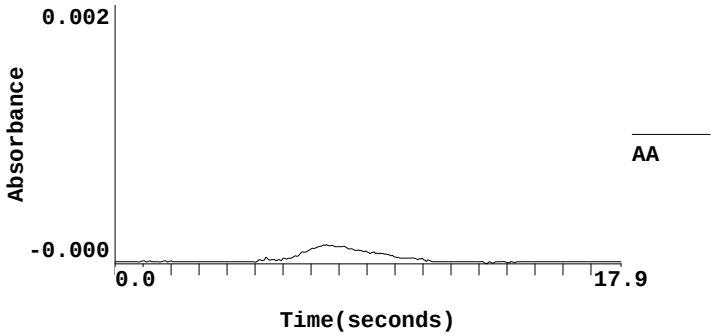
Sequence No.: 170 **Autosampler Location: 0**
Sample ID: RINSE **Date Collected: 9/13/2016 1:04:58 PM**
Analyst: **Data Type: Original**

Replicate Data: RINSE

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.049	-0.049	-0.0004	0.0001	0.0001	13:05:46	Yes



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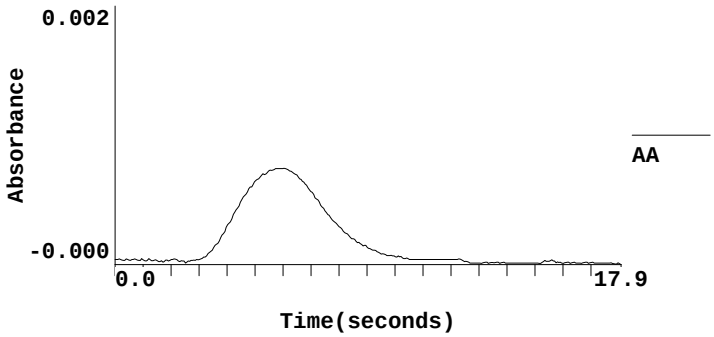
Sequence No.: 171 **Autosampler Location: 22**
Sample ID: 6H29019-BLK1 **Date Collected: 9/13/2016 1:05:47 PM**
Analyst: **Data Type: Original**

Replicate Data: 6H29019-BLK1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.005	-0.005	0.0002	0.0023	0.0007	13:06:41	Yes



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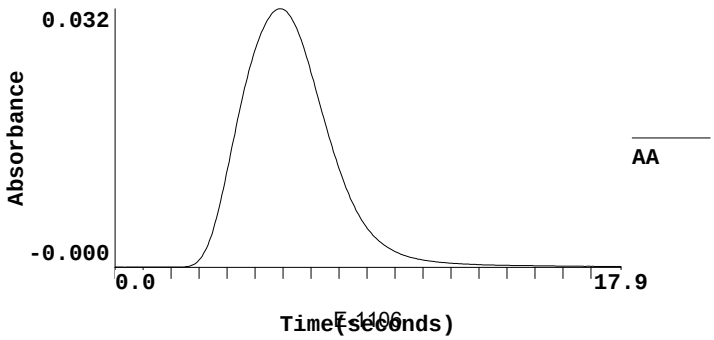
Sequence No.: 172 **Autosampler Location: 23**
Sample ID: 6H29019-BS1 **Date Collected: 9/13/2016 1:06:42 PM**
Analyst: **Data Type: Original**

Replicate Data: 6H29019-BS1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	2.289	2.289	0.0319	0.1176	0.0324	13:07:35	Yes



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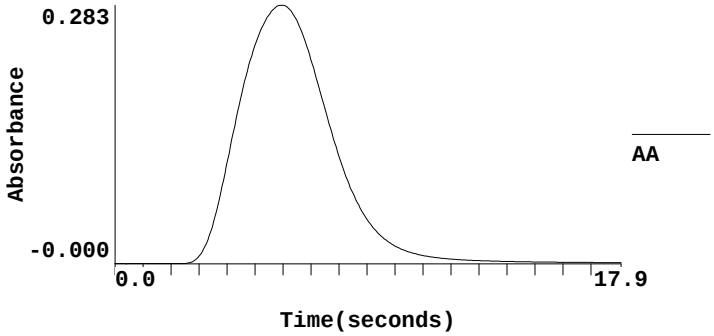
Sequence No.: 173 **Autosampler Location: 24**
Sample ID: 1608251-03 **Date Collected: 9/13/2016 1:07:55 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-03

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	20.43	20.43	0.2822	1.0656	0.2827	13:08:49	Yes



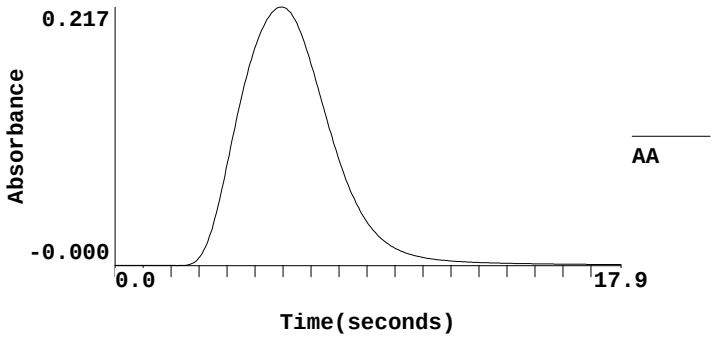
Sample concentration is greater than that of the highest standard.

==========

Sequence No.: 174 **Autosampler Location: 25**
Sample ID: 1608251-04 **Date Collected: 9/13/2016 1:09:10 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-04

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	15.69	15.69	0.2167	0.8145	0.2172	13:10:04	Yes



Sample concentration is greater than that of the highest standard.

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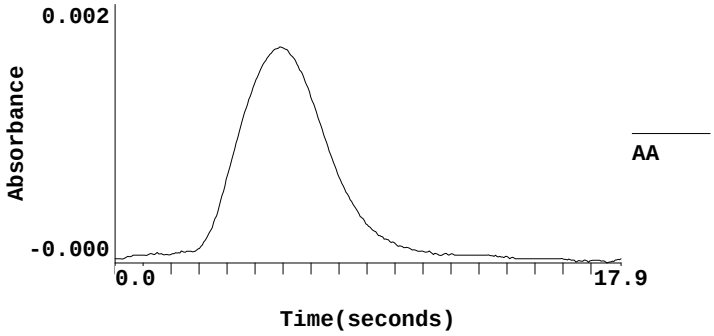
Sequence No.: 175 **Autosampler Location: 26**
Sample ID: 1608251-05 **Date Collected: 9/13/2016 1:10:25 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-05

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.063	0.063	0.0012	0.0055	0.0017	13:11:17	Yes



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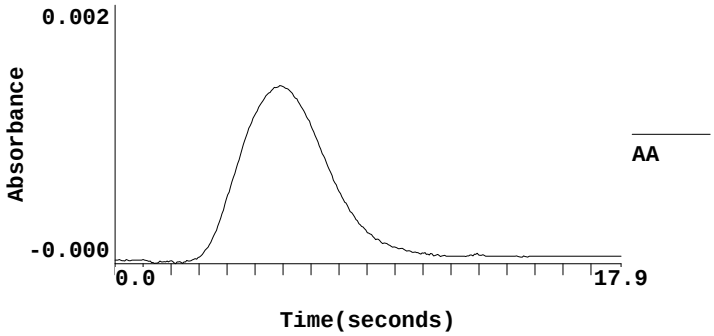
Sequence No.: 176 **Autosampler Location:** 27
Sample ID: 1608251-06 **Date Collected:** 9/13/2016 1:11:36 PM
Analyst: **Data Type:** Original

Replicate Data: 1608251-06

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.042	0.042	0.0009	0.0050	0.0014	13:12:30	Yes



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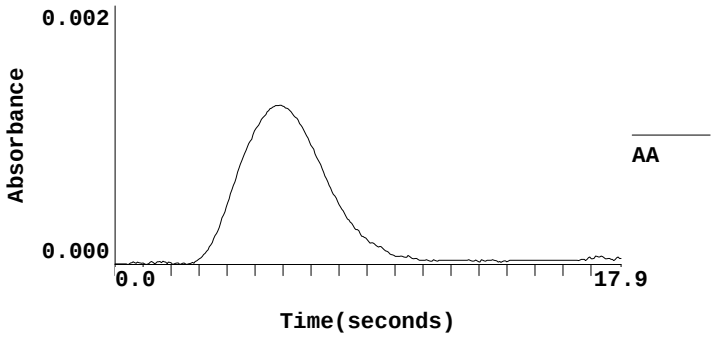
Sequence No.: 177 **Autosampler Location:** 28
Sample ID: 1608251-07 **Date Collected:** 9/13/2016 1:12:49 PM
Analyst: **Data Type:** Original

Replicate Data: 1608251-07

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.032	0.032	0.0007	0.0048	0.0012	13:13:42	Yes



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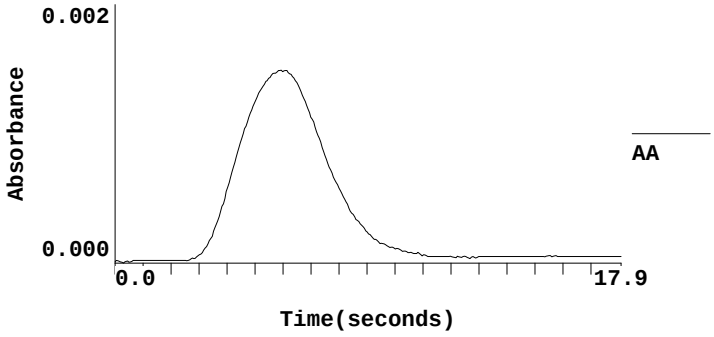
Sequence No.: 178 **Autosampler Location:** 29
Sample ID: 1608251-08 **Date Collected:** 9/13/2016 1:14:01 PM
Analyst: **Data Type:** Original

Replicate Data: 1608251-08

Repl	SampleConc	StndConc	BlnkCorr	Peak	Peak	Time	Peak

#	ug/L	ug/L	Signal	Area	Height		Stored
1	0.051	0.051	0.0010	0.0058	0.0015	13:14:54	Yes



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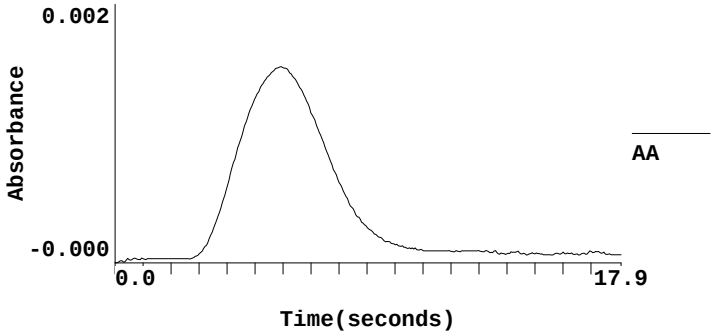
Sequence No.: 179 **Autosampler Location:** 30
Sample ID: 1608251-09 **Date Collected:** 9/13/2016 1:15:13 PM
Analyst: **Data Type:** Original

Replicate Data: 1608251-09

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.052	0.052	0.0010	0.0062	0.0015	13:16:06	Yes



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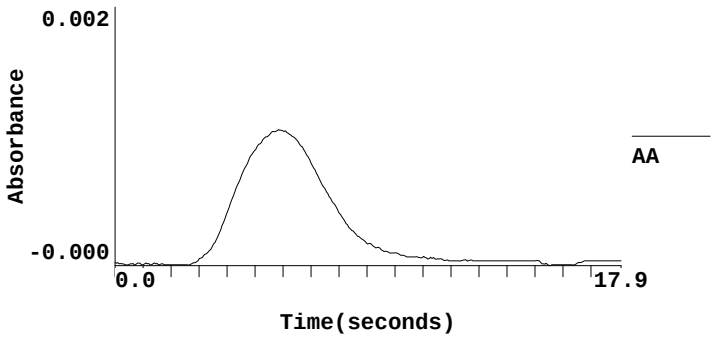
Sequence No.: 180 **Autosampler Location:** 31
Sample ID: 1608251-10 **Date Collected:** 9/13/2016 1:16:26 PM
Analyst: **Data Type:** Original

Replicate Data: 1608251-10

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.019	0.019	0.0005	0.0040	0.0010	13:17:19	Yes



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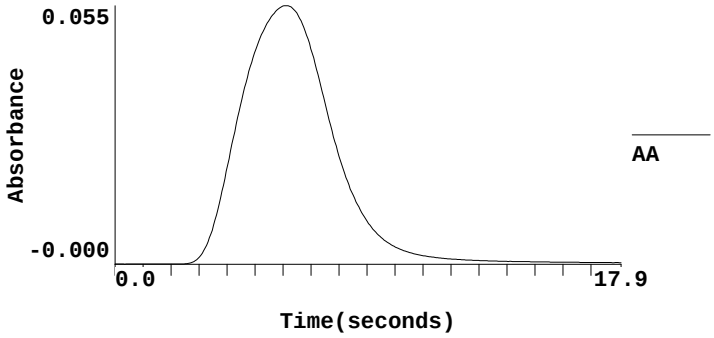
Sequence No.: 181 **Autosampler Location:** 32
Sample ID: 6I25705-CCVC **Date Collected:** 9/13/2016 1:17:38 PM
Analyst: **Data Type:** Original

Replicate Data: 6I25705-CCVC

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	3.956	3.956	0.0549	0.2094	0.0554	13:18:31	Yes



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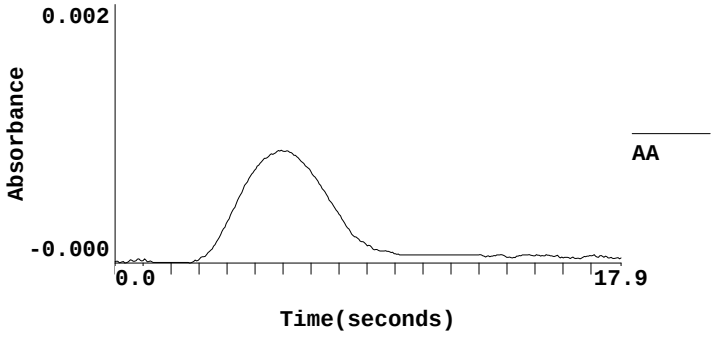
Sequence No.: 182 **Autosampler Location: 33**
Sample ID: 6I25705-CCBC **Date Collected: 9/13/2016 1:18:51 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CCBC

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.005	0.005	0.0004	0.0031	0.0009	13:19:44	Yes



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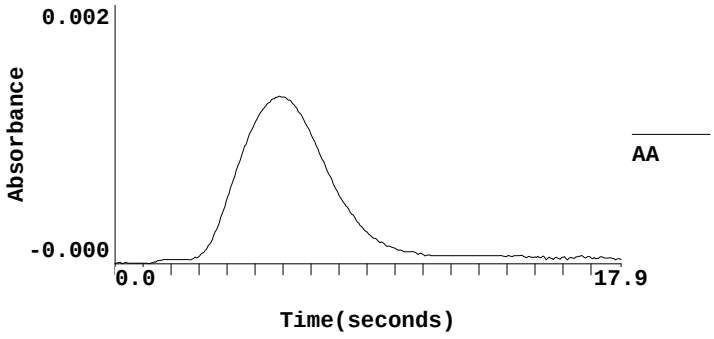
Sequence No.: 183 **Autosampler Location: 34**
Sample ID: 1608251-11 **Date Collected: 9/13/2016 1:20:04 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-11

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.036	0.036	0.0008	0.0052	0.0013	13:20:57	Yes



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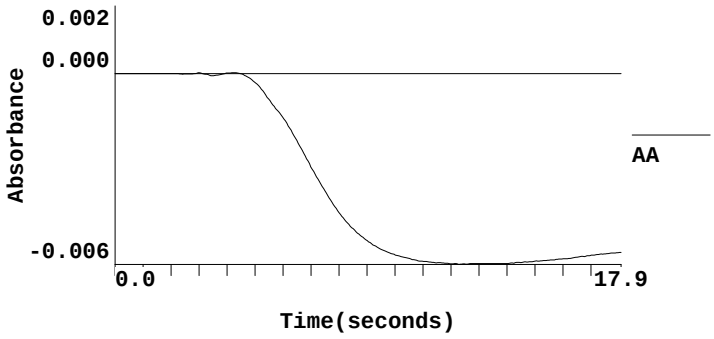
Sequence No.: 184 **Autosampler Location: 35**
Sample ID: 1608251-12 **Date Collected: 9/13/2016 1:21:13 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-12

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.055	-0.055	-0.0005	-0.0604	0.0000	13:22:11	Yes



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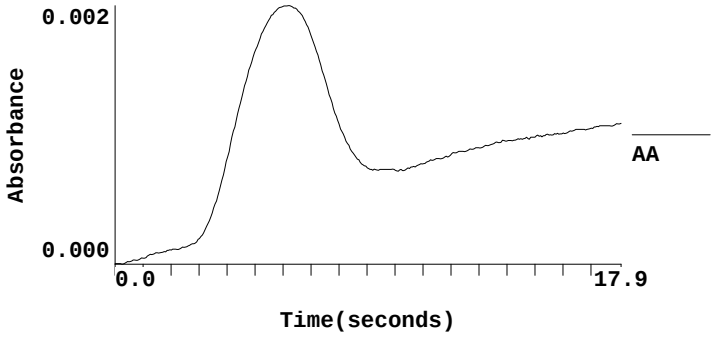
Sequence No.: 185 **Autosampler Location: 36**
Sample ID: 1608251-13 **Date Collected: 9/13/2016 1:22:12 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-13

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.104	0.104	0.0017	0.0190	0.0022	13:23:05	Yes



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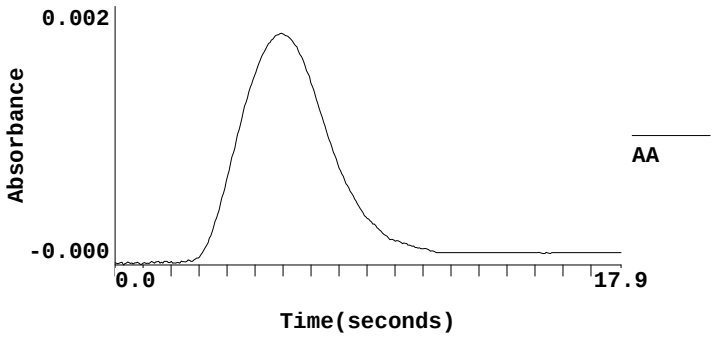
Sequence No.: 186 **Autosampler Location: 37**
Sample ID: 1608251-14 **Date Collected: 9/13/2016 1:23:26 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-14

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.072	0.072	0.0013	0.0074	0.0018	13:24:20	Yes

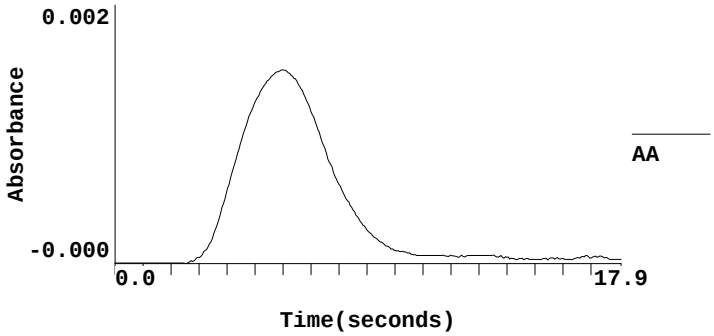


Sequence No.: 187 **Autosampler Location: 38**

Sample ID: 1608251-15 **Date Collected: 9/13/2016 1:24:41 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-15

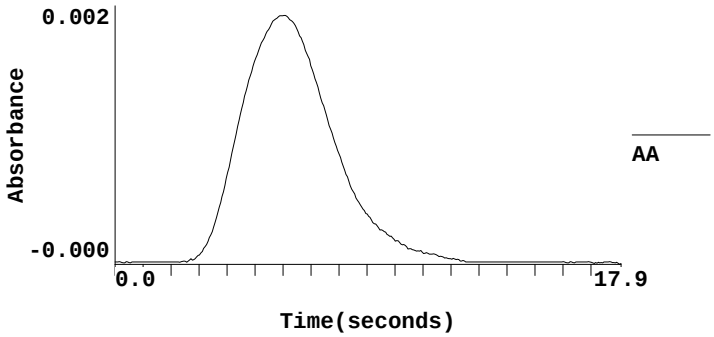
Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.051	0.051	0.0010	0.0058	0.0015	13:25:34	Yes



Sequence No.: 188 **Autosampler Location: 39**
Sample ID: 1608251-16 **Date Collected: 9/13/2016 1:25:54 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-16

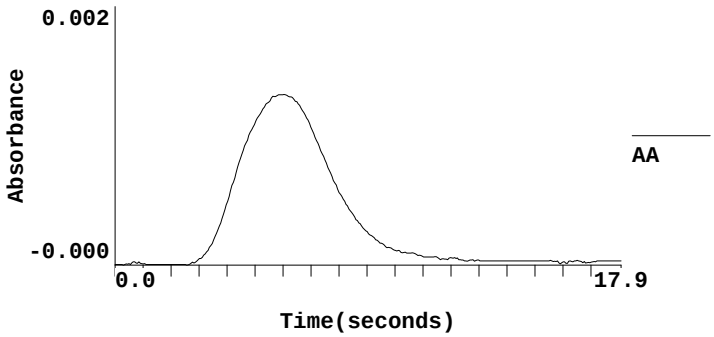
Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.082	0.082	0.0014	0.0073	0.0019	13:26:47	Yes



Sequence No.: 189 **Autosampler Location: 40**
Sample ID: 1608251-17 **Date Collected: 9/13/2016 1:27:07 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-17

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.038	0.038	0.0008	0.0052	0.0013	13:28:00	Yes



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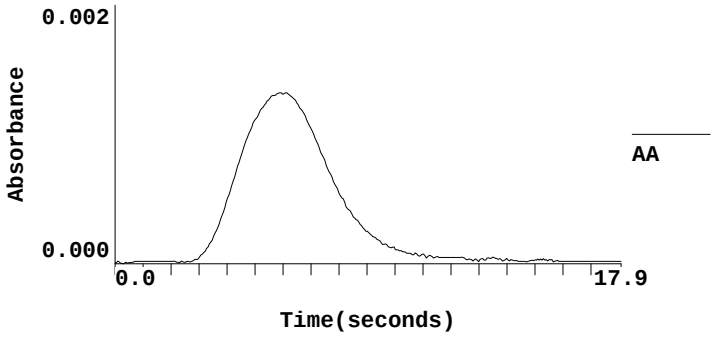
Sequence No.: 190 **Autosampler Location: 41**
Sample ID: 1608251-18 **Date Collected: 9/13/2016 1:28:20 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-18

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.039	0.039	0.0008	0.0054	0.0013	13:29:13	Yes



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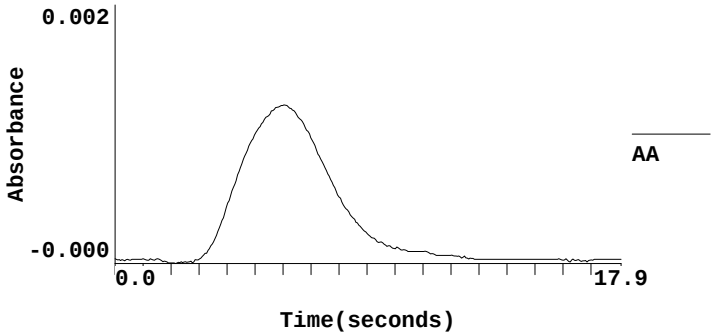
Sequence No.: 191 **Autosampler Location: 42**
Sample ID: 1608251-19 **Date Collected: 9/13/2016 1:29:33 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-19

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.031	0.031	0.0007	0.0047	0.0012	13:30:27	Yes



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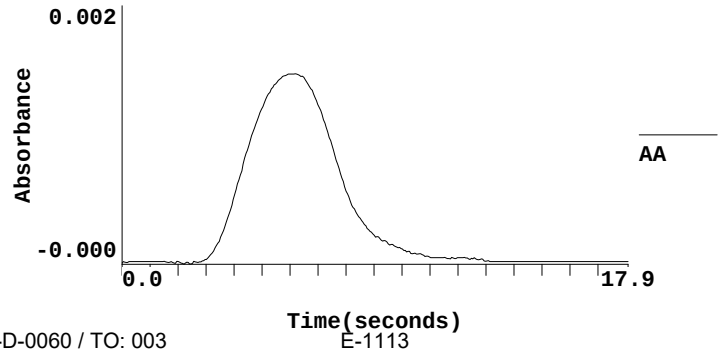
Sequence No.: 192 **Autosampler Location: 43**
Sample ID: 1608251-20 **Date Collected: 9/13/2016 1:30:46 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-20

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.049	0.049	0.0010	0.0053	0.0015	13:31:40	Yes



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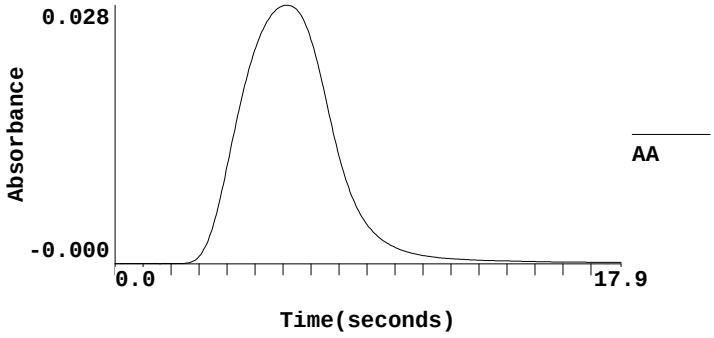
Sequence No.: 193 **Autosampler Location: 44**
Sample ID: 6I25705-CCVD **Date Collected: 9/13/2016 1:32:00 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CCVD

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	1.954	1.954	0.0273	0.1053	0.0278	13:32:53	Yes

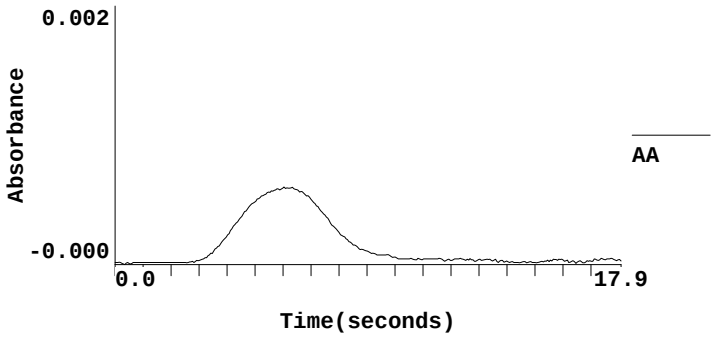


==========

Sequence No.: 194 **Autosampler Location: 45**
Sample ID: 6I25705-CCBD **Date Collected: 9/13/2016 1:33:13 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25705-CCBD

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.015	-0.015	0.0001	0.0023	0.0006	13:34:07	Yes

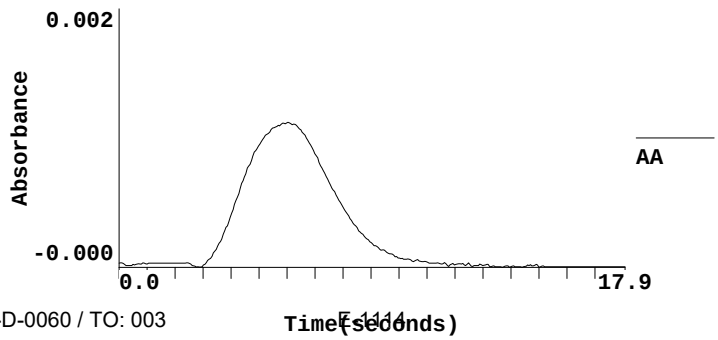


==========

Sequence No.: 195 **Autosampler Location: 46**
Sample ID: 1608252-20 **Date Collected: 9/13/2016 1:34:08 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608252-20

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.023	0.023	0.0006	0.0038	0.0011	13:35:01	Yes



==========

Analysis Begun

Logged In Analyst: mercury **Technique: AA FIMS-MHS**
Spectrometer Model: FIMS-100, S/N B050-9550 **Autosampler Model: S10**

Sample Information File: C:\data-AA\Sample Information\20160914s.sif
Batch ID: 20160914s
Results Data Set: 20160914sB
Results Library: C:\data-AA\Results\Results.mdb

==========

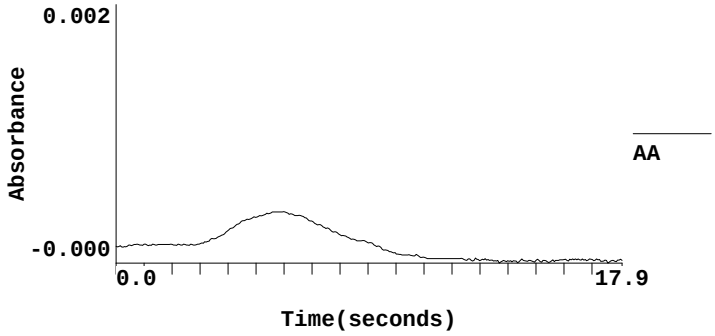
Method Loaded
Method Name: Hg CAL2 PAPERLESS S **Method Last Saved: 9/14/2016 2:47:44 PM**
Method Description: Hg CAL2

==========

Sequence No.: 1 **Autosampler Location: 1**
Sample ID: 6I25809-CAL1 **Date Collected: 9/14/2016 3:55:32 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25809-CAL1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.00]	0.0003	0.0001	0.0003	15:56:25	Yes

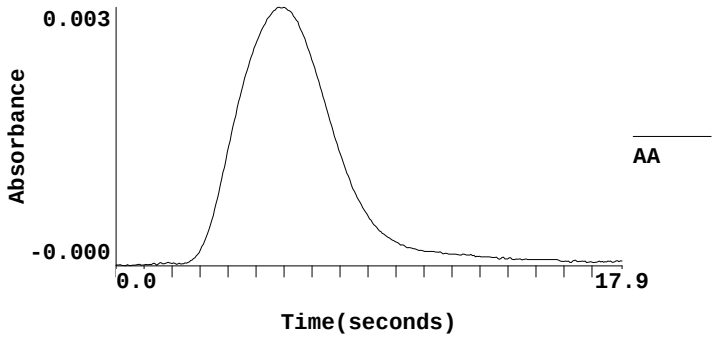


==========

Sequence No.: 2 **Autosampler Location: 2**
Sample ID: 6I25809-CAL2 **Date Collected: 9/14/2016 3:56:27 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25809-CAL2

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.20]	0.0026	0.0116	0.0029	15:57:19	Yes



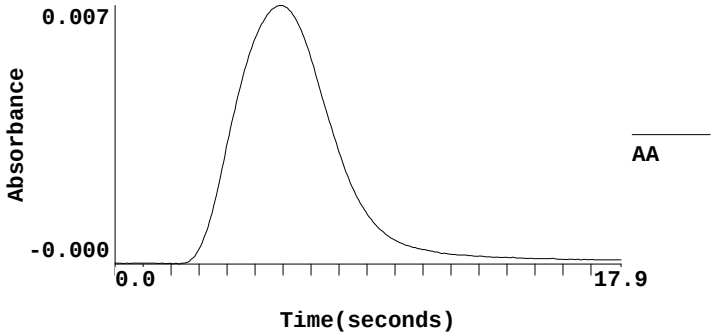
==========

Sequence No.: 3 **Autosampler Location: 3**
Sample ID: 6I25809-CAL3 **Date Collected: 9/14/2016 3:57:39 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25809-CAL3

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored

1	[0.50]	0.0062	0.0265	0.0065	15:58:32	Yes

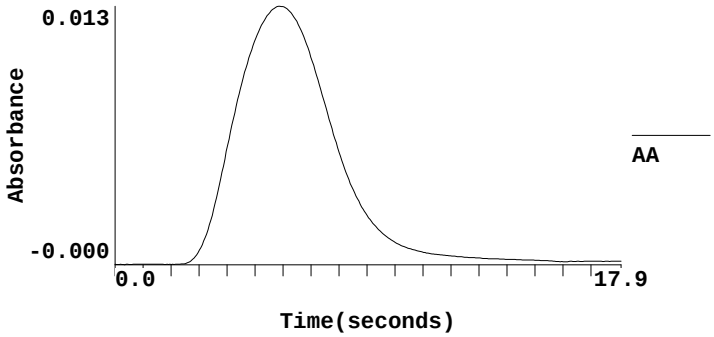


==========

Sequence No.: 4 **Autosampler Location: 4**
Sample ID: 6I25809-CAL4 **Date Collected: 9/14/2016 3:58:52 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25809-CAL4

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[1.00]	0.0125	0.0514	0.0128	15:59:46	Yes

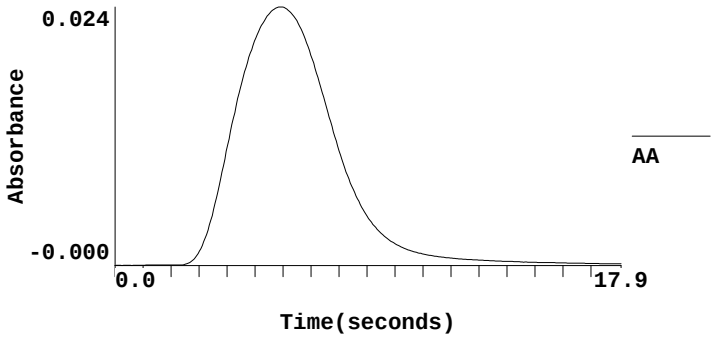


==========

Sequence No.: 5 **Autosampler Location: 5**
Sample ID: 6I25809-CAL5 **Date Collected: 9/14/2016 4:00:06 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25809-CAL5

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[2.00]	0.0241	0.0981	0.0244	16:01:00	Yes

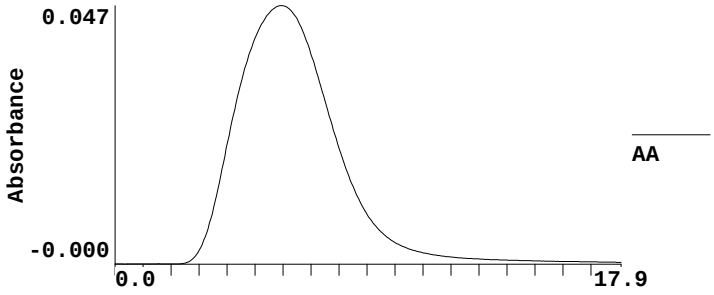


==========

Sequence No.: 6 **Autosampler Location: 6**
Sample ID: 6I25809-CAL6 **Date Collected: 9/14/2016 4:01:21 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25809-CAL6

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[4.00]	0.0471	0.1910	0.0474	16:02:13	Yes

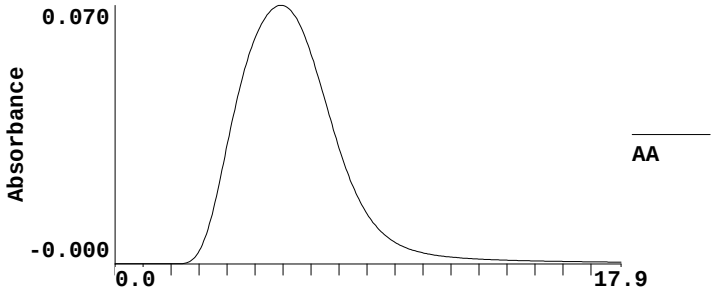


==========

Sequence No.: 7 **Autosampler Location: 7**
Sample ID: 6I25809-CAL7 **Date Collected: 9/14/2016 4:02:32 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25809-CAL7

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[6.00]	0.0698	0.2816	0.0701	16:03:25	Yes

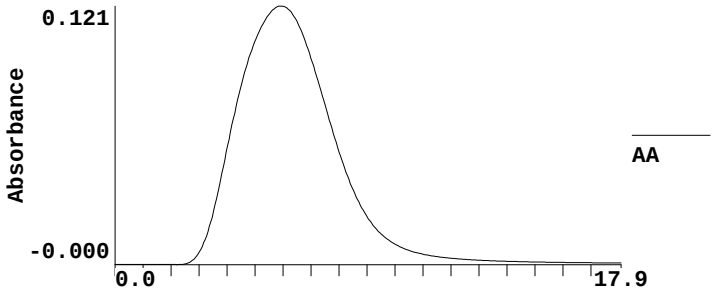


==========

Sequence No.: 8 **Autosampler Location: 8**
Sample ID: 6I25809-CAL8 **Date Collected: 9/14/2016 4:03:44 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25809-CAL8

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[10.00]	0.1207	0.4778	0.1210	16:04:37	Yes



Calibration data for Hg 253.7 **Equation: Linear, Calculated Intercept**

Mean Signal (Abs)	Entered Conc. ug/L	Calculated Conc. ug/L	Standard Deviation	%RSD

6I25809-CAL1	0.0000	0	0.000	----	----
6I25809-CAL2	0.0026	0.20	0.215	----	----
6I25809-CAL3	0.0062	0.50	0.523	----	----
6I25809-CAL4	0.0125	1.00	1.048	----	----
6I25809-CAL5	0.0241	2.00	2.017	----	----
6I25809-CAL6	0.0471	4.00	3.947	----	----
6I25809-CAL7	0.0698	6.00	5.845	----	----
6I25809-CAL8	0.1207	10.00	10.105	----	----

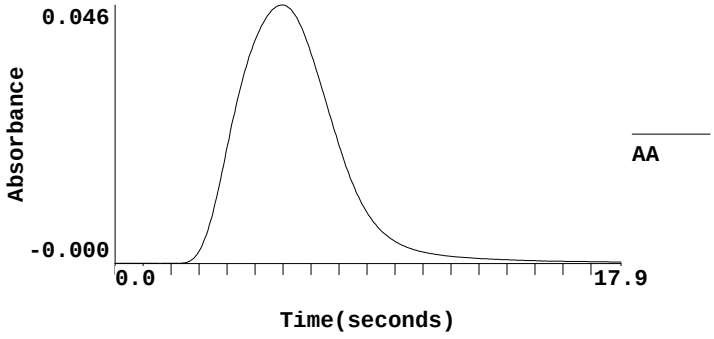
Correlation Coef.: 0.999763 Slope: 0.01194 Intercept: -0.00000

==========

Sequence No.: 9 **Autosampler Location: 9**
Sample ID: 6I25809-ICV1 **Date Collected: 9/14/2016 4:04:56 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25809-ICV1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	3.814	3.814	0.0455	0.1837	0.0458	16:05:50	Yes



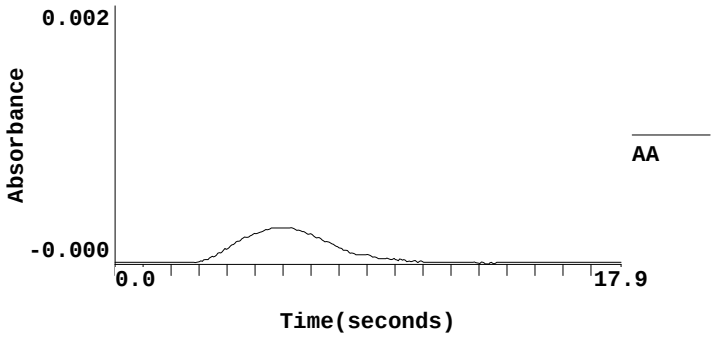
All analyte(s) passed QC.

==========

Sequence No.: 10 **Autosampler Location: 10**
Sample ID: 6I25809-ICB1 **Date Collected: 9/14/2016 4:06:09 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25809-ICB1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.001	-0.001	-0.0000	0.0010	0.0003	16:07:02	Yes



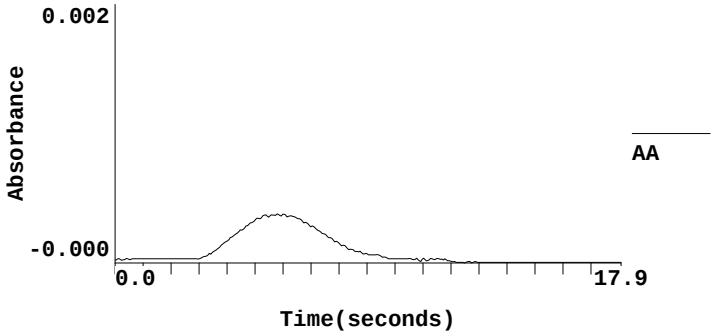
All analyte(s) passed QC.

==========

Sequence No.: 11 **Autosampler Location: 11**
Sample ID: 6I13010-BLK1 **Date Collected: 9/14/2016 4:07:04 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I13010-BLK1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.007	0.007	0.0001	0.0013	0.0004	16:07:56	Yes

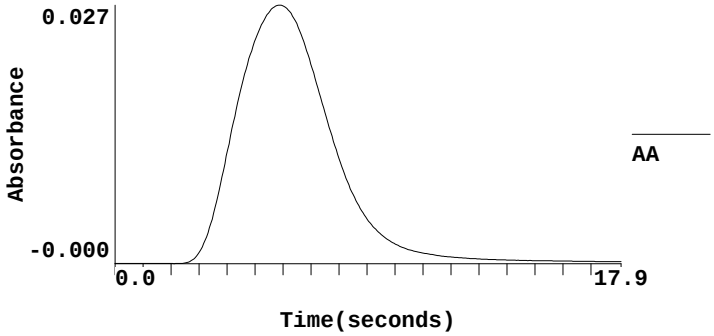


==========

Sequence No.: 12 **Autosampler Location:** 12
Sample ID: 6I13010-BS1 **Date Collected:** 9/14/2016 4:08:17 PM
Analyst: **Data Type:** Original

Replicate Data: 6I13010-BS1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	2.232	2.232	0.0267	0.1038	0.0269	16:09:11	Yes

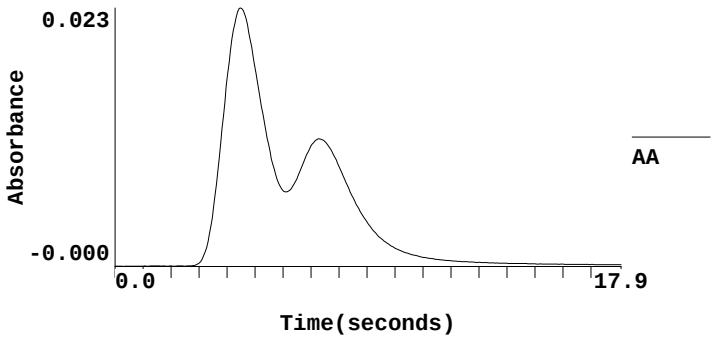


==========

Sequence No.: 13 **Autosampler Location:** 13
Sample ID: 1609051-50RE1@2X **Date Collected:** 9/14/2016 4:09:32 PM
Analyst: **Data Type:** Original

Replicate Data: 1609051-50RE1@2X

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	1.886	1.886	0.0225	0.0678	0.0228	16:10:25	Yes



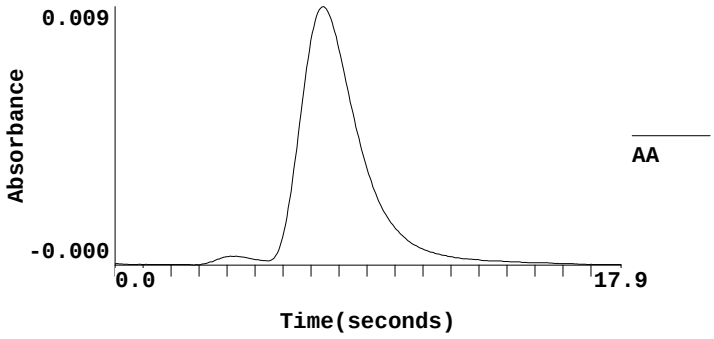
==========

Sequence No.: 14 **Autosampler Location:** 14
Sample ID: 1608251-02RE1@2X **Date Collected:** 9/14/2016 4:10:46 PM
Analyst: **Data Type:** Original

Replicate Data: 1608251-02RE1@2X

Repl	SampleConc	StndConc	BlnkCorr	Peak	Peak	Time	Peak

#	ug/L	ug/L	Signal	Area	Height		Stored
1	0.695	0.695	0.0083	0.0214	0.0086	16:11:39	Yes

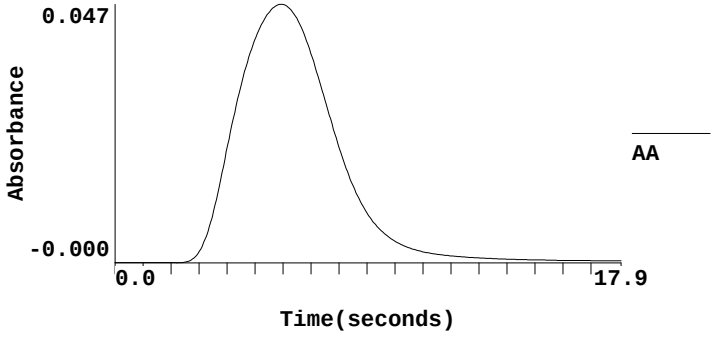


==========

Sequence No.: 15 **Autosampler Location: 15**
Sample ID: 1608251-03RE1@5X **Date Collected: 9/14/2016 4:11:58 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-03RE1@5X

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	3.876	3.876	0.0463	0.1851	0.0466	16:12:51	Yes

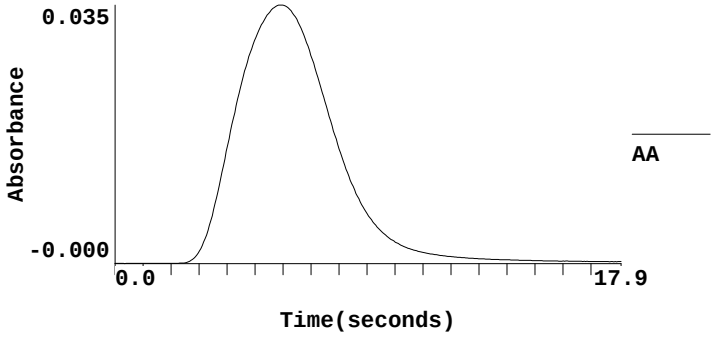


==========

Sequence No.: 16 **Autosampler Location: 16**
Sample ID: 1608251-04RE1@5X **Date Collected: 9/14/2016 4:13:10 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-04RE1@5X

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	2.912	2.912	0.0348	0.1400	0.0351	16:14:03	Yes

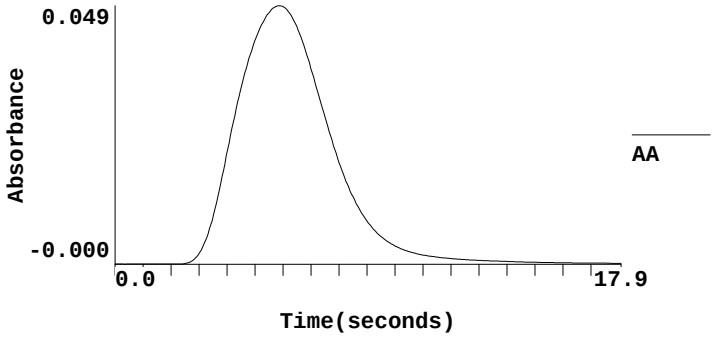


==========

Sequence No.: 17 **Autosampler Location: 17**
Sample ID: 1609059-21 **Date Collected: 9/14/2016 4:14:22 PM**
Analyst: **Data Type: Original**

Replicate Data: 1609059-21

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	4.052	4.052	0.0484	0.1846	0.0487	16:15:15	Yes

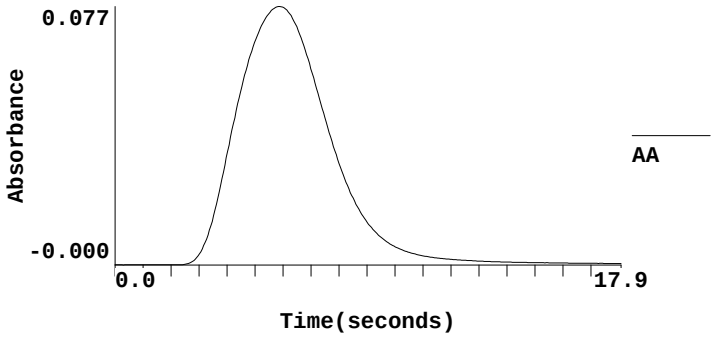


==========

Sequence No.: 18 **Autosampler Location: 18**
Sample ID: 1609059-22 **Date Collected: 9/14/2016 4:15:34 PM**
Analyst: **Data Type: Original**

Replicate Data: 1609059-22

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	6.445	6.445	0.0770	0.2931	0.0772	16:16:27	Yes



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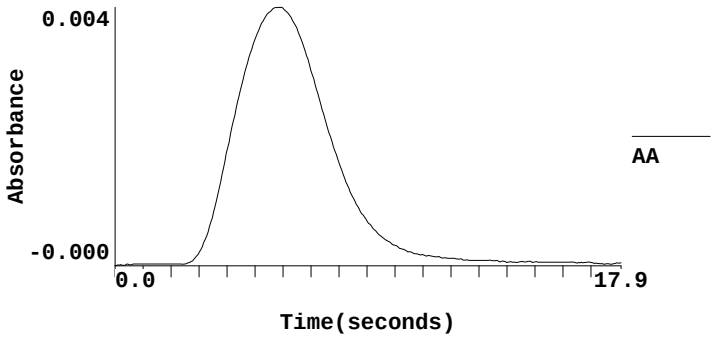
Sequence No.: 19 **Autosampler Location: 19**
Sample ID: 1609060-01 **Date Collected: 9/14/2016 4:16:46 PM**
Analyst: **Data Type: Original**

Replicate Data: 1609060-01

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.314	0.314	0.0038	0.0154	0.0040	16:17:39	Yes

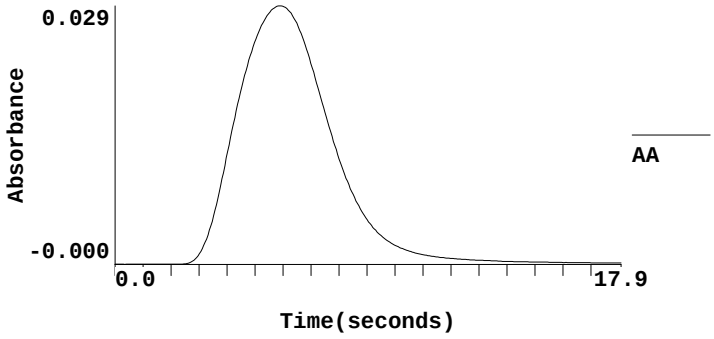


==========

Sequence No.: 20 **Autosampler Location: 20**
Sample ID: 6I13010-MS1 **Date Collected: 9/14/2016 4:17:58 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I13010-MS1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	2.441	2.441	0.0292	0.1129	0.0294	16:18:52	Yes



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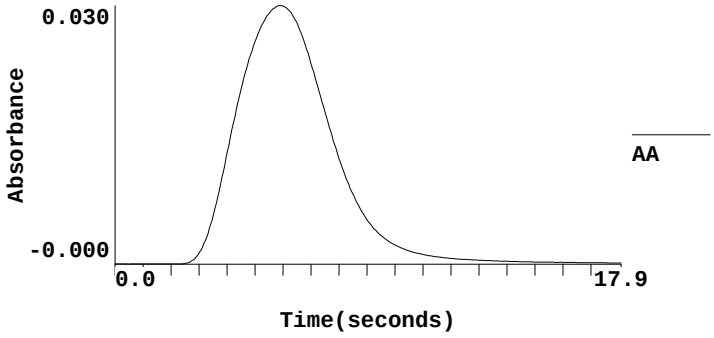
Sequence No.: 21 **Autosampler Location: 21**
Sample ID: 6I13010-MSD1 **Date Collected: 9/14/2016 4:19:12 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I13010-MSD1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	2.515	2.515	0.0300	0.1163	0.0303	16:20:05	Yes



User canceled analysis.

==========

Analysis Begun

Logged In Analyst: mercury **Technique: AA FIMS-MHS**
Spectrometer Model: FIMS-100, S/N B050-9550 **Autosampler Model: S10**

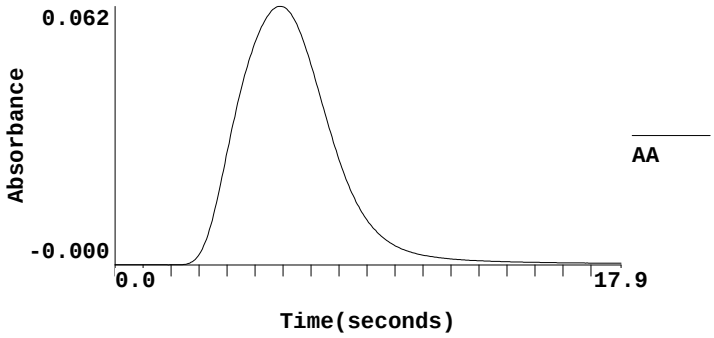
Sample Information File: C:\data-AA\Sample Information\20160914s.sif
Batch ID: 20160914s
Results Data Set: 20160914sB
Results Library: C:\data-AA\Results\Results.mdb

==========

Sequence No.: 13 **Autosampler Location: 13**
Sample ID: 1609051-50RE1@2X **Date Collected: 9/14/2016 4:20:40 PM**
Analyst: **Data Type: Original**

Replicate Data: 1609051-50RE1@2X

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	5.127	5.127	0.0612	0.2367	0.0615	16:21:34	Yes

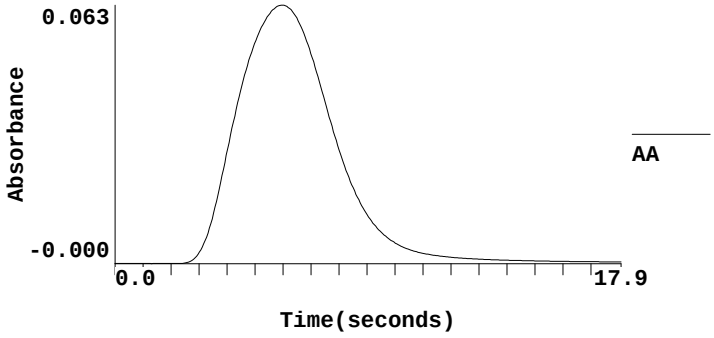


==========

Sequence No.: 14 **Autosampler Location: 14**
Sample ID: 1608251-02RE1@2X **Date Collected: 9/14/2016 4:21:55 PM**
Analyst: **Data Type: Original**

Replicate Data: 1608251-02RE1@2X

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	5.225	5.225	0.0624	0.2473	0.0627	16:22:48	Yes



User canceled analysis.

==========

Analysis Begun

Logged In Analyst: mercury **Technique: AA FIMS-MHS**
Spectrometer Model: FIMS-100, S/N B050-9550 **Autosampler Model: S10**

Sample Information File: C:\data-AA\Sample Information\20160914s.sif
Batch ID: 20160914s
Results Data Set: 20160914sB
Results Library: C:\data-AA\Results\Results.mdb

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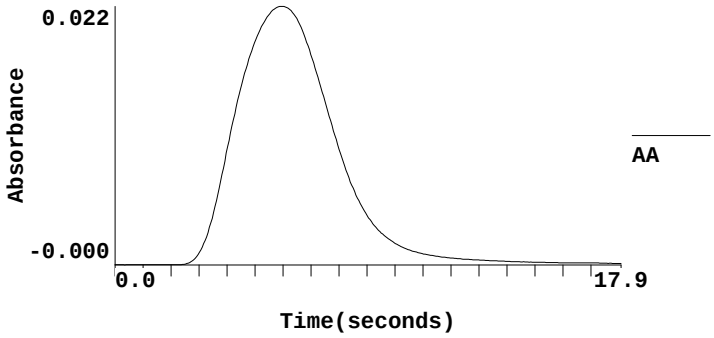
Sequence No.: 25 **Autosampler Location: 25**
Sample ID: 6I25809-CCV1 **Date Collected: 9/14/2016 4:23:30 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25809-CCV1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	1.850	1.850	0.0221	0.0892	0.0224	16:24:24	Yes



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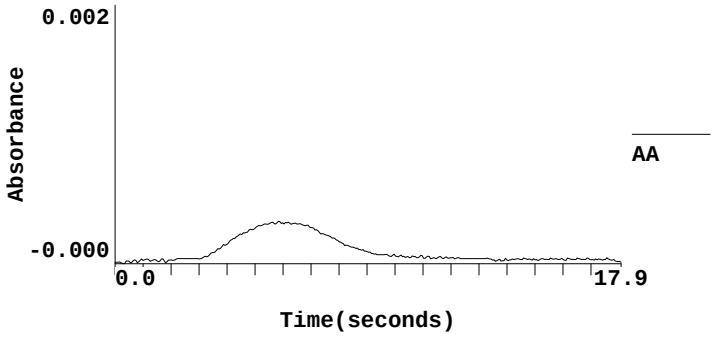
Sequence No.: 26 **Autosampler Location: 26**
Sample ID: 6I25809-CCB1 **Date Collected: 9/14/2016 4:24:44 PM**
Analyst: **Data Type: Original**

Replicate Data: 6I25809-CCB1

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.003	0.003	0.0000	0.0016	0.0003	16:25:37	Yes



User canceled analysis.

PREPARATION BENCH SHEET

6H29018

Empirical Laboratories, LLC

Printed: 9/21/2016 2:31:41PM

Instrument: ME-FIMS

Matrix: Solid **Prepared using: METALS - MET_HG_S** **(No Surrogate)**

Lab Number	Cont ID	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	PH	Comments (Sample; Analysis; Extraction)
1608251-01	A	MET_7471B_MERCURY_Q5	08/29/2016	0.30	50.00					NA	
1608251-02RE1	A	MET_7471B_MERCURY_Q5	08/29/2016	0.31	50.00					NA	Added 9/13/2016 by JDB
6H29018-BLK1		MET_7471B_MERCURY_Q5	08/29/2016	0.30	50.00					NA	
6H29018-BS1		MET_7471B_MERCURY_Q5	08/29/2016	0.30	50.00	16F0425		500		NA	

Reagents Used:

Standard	Description
16I0238	3% HCl Mercury Carrier
16I0186	Aqua Regia
16I0031	Mercury (Borosilicate Glassballs 3mm 1lb)
16H0697	NaCl-Hydroxylamine Hydrochloride (HG Reagent)
16I0035	Potassium Permanganate (KMn04)
16I0239	Stannous Chloride Mercury Reagent

PREPARATION BENCH SHEET

6H29019

Empirical Laboratories, LLC

Printed: 9/21/2016 2:31:43PM

Instrument: ME-FIMS

Matrix: Solid **Prepared using: METALS - MET_HG_S** **(No Surrogate)**

Lab Number	Cont ID	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	PH	Comments (Sample; Analysis; Extraction)
1608251-03RE1	A	MET_7471B_MERCURY_Q5	08/29/2016	0.32	50.00					NA	Added 9/13/2016 by JDB
1608251-04RE1	A	MET_7471B_MERCURY_Q5	08/29/2016	0.34	50.00					NA	Added 9/13/2016 by JDB
1608251-05	A	MET_7471B_MERCURY_Q5	08/29/2016	0.32	50.00					NA	
1608251-06	A	MET_7471B_MERCURY_Q5	08/29/2016	0.30	50.00					NA	
1608251-07	A	MET_7471B_MERCURY_Q5	08/29/2016	0.32	50.00					NA	
1608251-08	A	MET_7471B_MERCURY_Q5	08/29/2016	0.32	50.00					NA	
1608251-09	A	MET_7471B_MERCURY_Q5	08/29/2016	0.32	50.00					NA	
1608251-10	A	MET_7471B_MERCURY_Q5	08/29/2016	0.30	50.00					NA	
1608251-11	A	MET_7471B_MERCURY_Q5	08/29/2016	0.30	50.00					NA	
1608251-12	A	MET_7471B_MERCURY_Q5	08/29/2016	0.33	50.00					NA	
1608251-13	A	MET_7471B_MERCURY_Q5	08/29/2016	0.31	50.00					NA	
1608251-14	A	MET_7471B_MERCURY_Q5	08/29/2016	0.33	50.00					NA	
1608251-15	A	MET_7471B_MERCURY_Q5	08/29/2016	0.34	50.00					NA	
1608251-16	A	MET_7471B_MERCURY_Q5	08/29/2016	0.35	50.00					NA	
1608251-17	A	MET_7471B_MERCURY_Q5	08/29/2016	0.30	50.00					NA	
1608251-18	A	MET_7471B_MERCURY_Q5	08/29/2016	0.34	50.00					NA	
1608251-19	A	MET_7471B_MERCURY_Q5	08/29/2016	0.35	50.00					NA	

PREPARATION BENCH SHEET

6H29019

Empirical Laboratories, LLC

Printed: 9/21/2016 2:31:43PM

Instrument: ME-FIMS

Matrix: Solid **Prepared using: METALS - MET_HG_S** **(No Surrogate)**

Lab Number	Cont ID	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	PH	Comments (Sample; Analysis; Extraction)
1608251-20	A	MET_7471B_MERCURY_Q5	08/29/2016	0.31	50.00					NA	
6H29019-BLK1		MET_7471B_MERCURY_Q5	08/29/2016	0.30	50.00					NA	
6H29019-BS1		MET_7471B_MERCURY_Q5	08/29/2016	0.30	50.00	16F0425		500		NA	

Reagents Used:

Standard	Description
16I0238	3% HCl Mercury Carrier
16I0186	Aqua Regia
16I0031	Mercury (Borosilicate Glassballs 3mm 1lb)
16H0697	NaCl-Hydroxylamine Hydrochloride (HG Reagent)
16I0035	Potassium Permanganate (KMn04)
16I0239	Stannous Chloride Mercury Reagent

Table 1

Mercury: Circle Applicable Digestion/Spike and 0.1mL Eppendorf option then staple to bench sheet

Reminder: Make sure pipettes are verified daily at volume of use for QSM5 batches!

Soil 6H29018

Amount	Curve Standards 7471 Soil
0.0 mL	
0.05mL	Mercury 1st Source (0.2ug/mL)
0.125mL	Mercury 1st Source (0.2ug/mL)
0.25mL	Mercury 1st Source (0.2ug/mL)
0.50mL	Mercury 1st Source (0.2ug/mL)
1.0mL	Mercury 1st Source (0.2ug/mL)
1.5mL	Mercury 1st Source (0.2ug/mL)
2.5mL	Mercury 1st Source (0.2ug/mL)
Circle	0.1ml Eppendorf 948897Z or 950847
Circle	1.0mL Eppendorf 1854694 or FinnPipette 1FJ61693
	5mL FinnPipette KU04206

Amount	BS/MS/MSD Standards 7471 Soil
0.50mL	Mercury 2nd Source (0.2ug/mL)
Circle	1.0mL Eppendorf 1854694 or FinnPipette 1FJ61693
Amount	**Reagents for Digestion Soil**
2.5mL	Aqua Regia
7.5mL	Potassium Permanganate

Table 1

Mercury: Circle Applicable Digestion/Spike and 0.1mL Eppendorf option then staple to bench sheet

Reminder: Make sure pipettes are verified daily at volume of use for QSM5 batches!

Soil 6H29019

Amount	Curve Standards 7471 Soil
0.0 mL	
0.05mL	Mercury 1st Source (0.2ug/mL)
0.125mL	Mercury 1st Source (0.2ug/mL)
0.25mL	Mercury 1st Source (0.2ug/mL)
0.50mL	Mercury 1st Source (0.2ug/mL)
1.0mL	Mercury 1st Source (0.2ug/mL)
1.5mL	Mercury 1st Source (0.2ug/mL)
2.5mL	Mercury 1st Source (0.2ug/mL)
Circle	0.1ml Eppendorf 148897Z or 250847
Circle	1.0mL Eppendorf 1854694 or FinnPipette 1FJ61693
	5mL FinnPipette KU04206

Amount	BS/MS/MSD Standards 7471 Soil
0.50mL	Mercury 2nd Source (0.2ug/mL)
Circle	1.0mL Eppendorf 1854694 or FinnPipette 1FJ61693
Amount	**Reagents for Digestion Soil**
2.5mL	Aqua Regia
7.5mL	Potassium Permanganate

Sample Information Detail Report
Document Name: 20160913s

File Description
Default Sample Information File

Parameters Common to All Samples

Batch ID	20160913s
Volume Units	mL
Weight Units	g

Parameters That Vary By Sample

Sample No	A/S Location	Sample ID	Initial Sample Wt.
1	11	6I09006-BLK1	
2	12	6I09006-BS1	
3	13	1609019-02	
4	14	1609020-02	
5	15	1609021-02	
6	16	1609041-01	
7	17	1609041-02	
8	18	1609041-04	
9	19	1609041-05	
10	20	1609041-06	
11	21	1609041-07	
12	22	1609041-08	
13	23	6I25705-CCV1	
14	24	6I25705-CCB1	
15	25	1609041-09	
16	26	1609041-10	
17	27	1609041-11	
18	28	1609041-12	
19	29	1609041-13	
20	30	1609041-14	
21	31	1609041-15	
22	32	6I09006-MS1	
23	33	6I09006-MSD1	
24	34	1609041-16	
25	35	1609044-01	
26	36	1609044-02	
27	37	6I25705-CCV2	
28	38	6I25705-CCB2	
29	39	6I09022-BLK1	
30	40	6I09022-BS1	
31	41	1609051-02	
32	42	1609051-03	
33	43	1609051-04	
34	44	1609051-05	
35	45	1609051-06	
36	46	1609051-07	
37	47	1609051-08	
38	48	1609051-09	
39	49	1609051-10	
40	50	1609051-11	
41	51	6I25705-CCV3	
42	52	6I25705-CCB3	
43	53	1609051-12	
44	54	1609051-13	
45	55	1609051-14	
46	56	1609051-15	
47	57	1609051-16	
48	58	1609051-17	
49	59	1609051-26	
50	60	1609051-27	
51	61	1609051-28	
52	62	1609051-29	
53	63	6I09022-MS1	
54	64	6I09022-MSD1	
55	65	6I25705-CCV4	
56	66	6I25705-CCB4	
57	67	6I09023-BLK1	
58	68	6I09023-BS1	
59	69	1609051-30	
60	70	1609051-31	
61	71	1609051-32	
62	72	6I09023-MS1	
63	73	6I09023-MSD1	

64	74	1609051-33
65	75	1609051-34
66	76	1609051-35
67	77	1609051-36
68	78	1609051-37
69	79	1609051-38
70	80	1609051-39
71	81	6I25705-CCV5
72	82	6I25705-CCB5
73	83	1609051-40
74	84	1609051-41
75	85	1609051-42
76	86	1609051-43
77	87	1609051-44
78	88	1609051-45
79	89	1609051-46
80	90	1609051-47
81	91	1609051-48
82	92	1609051-49
83	93	6I25705-CCV6
84	94	6I25705-CCB6
85	95	6I09024-BLK1
86	96	6I09024-BS1
87	97	1609051-50
88	98	1609051-51
89	99	1609051-52
90	100	6I09024-MS1
91	101	6I09024-MSD1
92	102	1609051-53
93	103	1609051-54
94	104	1609051-55
95	105	1609051-56
96	106	1609051-57
97	107	1609051-58
98	108	1609051-59
99	109	6I25705-CCV7
100	110	6I25705-CCB7
101	111	1609051-60
102	112	1609051-61
103	113	1609051-62
104	114	1609051-63
105	115	1609051-64
106	116	1609051-65
107	117	1609051-66
108	118	1609051-67
109	119	1609051-68
110	120	1609051-69
111	121	6I25705-CCV8
112	122	6I25705-CCB8
113	123	6I09025-BLK1
114	124	6I09025-BS1
115	125	1609022-02
116	126	1609024-02
117	127	1609025-02
118	128	1609051-70
119	129	1609051-71
120	130	6I09025-MS1
121	131	6I09025-MSD1
122	132	1609051-44RE1@2X
123	133	1609051-48RE1@5X
124	134	1609051-52RE1@10X
125	135	6I09024-MS2@10X
126	136	6I09024-MSD2@10X
127	137	1609051-59RE1@5X
128	138	1609051-62RE1@2X
129	139	6I25705-CCV9
130	140	6I25705-CCB9
131	142	6H29018-BLK1
132	143	6H29018-BS1
133	141	1609051-69RE1@10X **9/13/2016 5:42:48 PM**
134	144	1608229-01
135	145	6H29018-MS1
136	146	6H29018-MSD1
137	147	1608229-02
138	148	1608229-03

139	149	1608229-04
140	150	1608229-05
141	151	1608229-06
142	152	1608229-07
143	153	1608229-08
144	154	1608229-09
145	155	6I25705-CCVA
146	156	6I25705-CCBA
147	9	1608229-10
148	10	1608229-11
149	11	1608229-12
150	12	1608244-06
151	13	1608244-07
152	14	1608244-08
153	15	1608244-09
154	16	1608244-10
155	17	1608244-11
156	18	6I25705-CCVB
157	19	6I25705-CCBB
158	20	1608251-01
159	21	1608251-02
160	0	RINSE
161	22	6H29019-BLK1
162	23	6H29019-BS1
163	24	1608251-03
164	25	1608251-04
165	26	1608251-05
166	27	1608251-06
167	28	1608251-07
168	29	1608251-08
169	30	1608251-09
170	31	1608251-10
171	32	6I25705-CCVC
172	33	6I25705-CCBC
173	34	1608251-11
174	35	1608251-12
175	36	1608251-13
176	37	1608251-14
177	38	1608251-15
178	39	1608251-16
179	40	1608251-17
180	41	1608251-18
181	42	1608251-19
182	43	1608251-20
183	44	6I25705-CCVD
184	45	6I25705-CCBD
185	46	1608252-20
186	47	6H29019-MS1
187	48	6H29019-MSD1
188	49	1608252-21
189	50	6I25705-CCVE
190	51	6I25705-CCBE

Sample No	Sample Prep. Vol.	Aliquot Volume	Diluted To Vol.
1			
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Sample Information Detail Report
Document Name: 20160914s

File Description
Default Sample Information File

Parameters Common to All Samples

Batch ID	20160914s
Volume Units	mL
Weight Units	g

Parameters That Vary By Sample

Sample No	A/S Location	Sample ID	Initial Sample Wt.
1	11	6I13010-BLK1	
2	12	6I13010-BS1	
3	13	dnr1609051-50RE1@2X	
4	14	dnr1608251-02RE1@2X	
5	15	1608251-03RE1@5X	
6	16	1608251-04RE1@5X	
7	17	1609059-21	
8	18	1609059-22	
9	19	1609060-01	
10	20	6I13010-MS1	
11	21	6I13010-MSD1	
12	13	1609051-50RE1@2X	
13	14	1608251-02RE1@2X	
14	25	6I25809-CCV1	
15	26	6I25809-CCB1	
16	22	1609060-02	
17	23	1609060-03	
18	24	1609060-04	
19	27	1609060-05	
20	28	1609060-06	
21	29	1609060-07	
22	30	1609060-08	
23	31	1609060-09	
24	32	1609060-10	
25	33	1609060-11	
26	37	6I25809-CCV2	
27	38	6I25809-CCB2	
28	34	1609060-12	
29	35	1609069-01	
30	36	1609069-02	
31	41	1609069-03	
32	25	6I25809-CCV3	
33	26	6I25809-CCB3	
34	39	6I13009-BLK1	
35	40	6I13009-BS1	
36	42	1609059-01	
37	43	1609059-02	
38	44	6I13009-MS1	
39	45	6I13009-MSD1	
40	46	1609059-03	
41	47	1609059-04	
42	48	1609059-05	
43	49	1609059-06	
44	50	1609059-07	
45	51	1609059-08	
46	52	1609059-09	
47	55	1609059-10	
48	53	6I25809-CCV4	
49	54	6I25809-CCB4	
50	56	1609059-11	
51	57	1609059-12	
52	58	1609059-13	
53	59	1609059-14	
54	60	1609059-15	
55	61	1609059-16	
56	62	1609059-17	
57	63	1609059-18	
58	64	1609059-19	
59	67	1609059-20	
60	65	6I25809-CCV5	
61	66	6I25809-CCB5	
62	68	1609059-20RE1@5X	
63	69	6I25809-CCV6	

64	70	6I25809-CCB6

Sample No	Sample Prep. Vol.	Aliquot Volume	Diluted To Vol.
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ANALYSIS DATA SHEET

DSA05-SB29-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 09:21
% Solids: 48.75

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-01
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	24200	**10.3**	20.5	41.0	2	D	SW6010C	6H29015	09/14/16 15:00
7440-36-0	Antimony	7.11	**1.03**	1.64	2.05	2	D	SW6010C	6H29015	09/14/16 15:00
7440-38-2	Arsenic	179	**0.615**	1.23	2.05	2	D	SW6010C	6H29015	09/14/16 15:00
7440-39-3	Barium	149	**1.03**	2.05	8.21	2	D	SW6010C	6H29015	09/14/16 15:00
7440-41-7	Beryllium	1.31	**0.205**	0.410	1.03	2	D	SW6010C	6H29015	09/14/16 15:00
7440-43-9	Cadmium	6.79	**0.205**	0.410	1.03	2	D	SW6010C	6H29015	09/14/16 15:00
7440-70-2	Calcium	3120	**205**	410	1030	2	D	SW6010C	6H29015	09/14/16 15:00
7440-47-3	Chromium	192	**0.410**	0.821	2.05	2	D	SW6010C	6H29015	09/14/16 15:00
7440-48-4	Cobalt	18.3	**1.03**	2.05	2.56	2	D	SW6010C	6H29015	09/14/16 15:00
7440-50-8	Copper	500	**0.821**	1.64	2.05	2	D	SW6010C	6H29015	09/14/16 15:00
7439-89-6	Iron	53900	**6.15**	12.3	20.5	2	D	SW6010C	6H29015	09/14/16 15:00
7439-92-1	Lead	290	**0.308**	0.615	1.03	2	D	SW6010C	6H29015	09/14/16 15:00
7439-95-4	Magnesium	7550	**205**	615	1030	2	D	SW6010C	6H29015	09/14/16 15:00
7439-96-5	Manganese	334	**0.615**	1.23	3.08	2	D	SW6010C	6H29015	09/14/16 15:00
7439-98-7	Molybdenum	3.77	**1.03**	2.05	4.10	2	J D	SW6010C	6H29015	09/14/16 15:00
7440-02-0	Nickel	55.3	**0.615**	1.23	2.05	2	D	SW6010C	6H29015	09/14/16 15:00
7440-09-7	Potassium	3380	**205**	615	1030	2	D	SW6010C	6H29015	09/14/16 15:00
7782-49-2	Selenium	9.78	**0.615**	1.03	2.05	2	D	SW6010C	6H29015	09/14/16 15:00
7440-22-4	Silver	7.56	**0.205**	0.410	2.05	2	D	SW6010C	6H29015	09/14/16 15:00
7440-23-5	Sodium	5190	**205**	615	1030	2	D	SW6010C	6H29015	09/14/16 15:00
7440-28-0	Thallium	1.09	**0.615**	0.821	1.64	2	J D	SW6010C	6H29015	09/14/16 15:00
7440-62-2	Vanadium	118	**1.03**	2.05	2.56	2	D	SW6010C	6H29015	09/14/16 15:00
7440-66-6	Zinc	709	**1.03**	2.05	4.10	2	D	SW6010C	6H29015	09/14/16 15:00

ANALYSIS DATA SHEET

DSA05-SB30-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 09:49
% Solids: 50.69

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-02
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	23800	**9.86**	19.7	39.5	2	D	SW6010C	6H29015	09/14/16 15:05
7440-36-0	Antimony	1.44	**0.986**	1.58	1.97	2	J D	SW6010C	6H29015	09/14/16 15:05
7440-38-2	Arsenic	67.6	**0.592**	1.18	1.97	2	D	SW6010C	6H29015	09/14/16 15:05
7440-39-3	Barium	132	**0.986**	1.97	7.89	2	D	SW6010C	6H29015	09/14/16 15:05
7440-41-7	Beryllium	1.01	**0.197**	0.395	0.986	2	D	SW6010C	6H29015	09/14/16 15:05
7440-43-9	Cadmium	0.853	**0.197**	0.395	0.986	2	J D	SW6010C	6H29015	09/14/16 15:05
7440-70-2	Calcium	1210	**197**	395	986	2	D	SW6010C	6H29015	09/14/16 15:05
7440-47-3	Chromium	145	**0.395**	0.789	1.97	2	D	SW6010C	6H29015	09/14/16 15:05
7440-48-4	Cobalt	11.2	**0.986**	1.97	2.47	2	D	SW6010C	6H29015	09/14/16 15:05
7440-50-8	Copper	411	**0.789**	1.58	1.97	2	D	SW6010C	6H29015	09/14/16 15:05
7439-89-6	Iron	52500	**5.92**	11.8	19.7	2	D	SW6010C	6H29015	09/14/16 15:05
7439-92-1	Lead	247	**0.296**	0.592	0.986	2	D	SW6010C	6H29015	09/14/16 15:05
7439-95-4	Magnesium	6150	**197**	592	986	2	D	SW6010C	6H29015	09/14/16 15:05
7439-96-5	Manganese	227	**0.592**	1.18	2.96	2	D	SW6010C	6H29015	09/14/16 15:05
7439-98-7	Molybdenum	2.32	**0.986**	1.97	3.95	2	J D	SW6010C	6H29015	09/14/16 15:05
7440-02-0	Nickel	34.7	**0.592**	1.18	1.97	2	D	SW6010C	6H29015	09/14/16 15:05
7440-09-7	Potassium	2620	**197**	592	986	2	D	SW6010C	6H29015	09/14/16 15:05
7782-49-2	Selenium	4.51	**0.592**	0.986	1.97	2	D	SW6010C	6H29015	09/14/16 15:05
7440-22-4	Silver	6.16	**0.197**	0.395	1.97	2	D	SW6010C	6H29015	09/14/16 15:05
7440-23-5	Sodium	1910	**197**	592	986	2	D	SW6010C	6H29015	09/14/16 15:05
7440-28-0	Thallium	0.709	**0.592**	0.789	1.58	2	J D	SW6010C	6H29015	09/14/16 15:05
7440-62-2	Vanadium	99.4	**0.986**	1.97	2.47	2	D	SW6010C	6H29015	09/14/16 15:05
7440-66-6	Zinc	186	**0.986**	1.97	3.95	2	D	SW6010C	6H29015	09/14/16 15:05

ANALYSIS DATA SHEET

DSA05-SB31-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 10:06
% Solids: 52.94

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-03
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	23800	**9.35**	18.7	37.4	2	D	SW6010C	6H29015	09/14/16 15:49
7440-36-0	Antimony	3.71	**0.935**	1.50	1.87	2	D	SW6010C	6H29015	09/14/16 15:49
7440-38-2	Arsenic	169	**0.561**	1.12	1.87	2	D	SW6010C	6H29015	09/14/16 15:49
7440-39-3	Barium	187	**0.935**	1.87	7.48	2	D	SW6010C	6H29015	09/14/16 15:49
7440-41-7	Beryllium	1.23	**0.187**	0.374	0.935	2	D	SW6010C	6H29015	09/14/16 15:49
7440-43-9	Cadmium	2.09	**0.187**	0.374	0.935	2	D	SW6010C	6H29015	09/14/16 15:49
7440-70-2	Calcium	2970	**187**	374	935	2	D	SW6010C	6H29015	09/14/16 15:49
7440-47-3	Chromium	215	**0.374**	0.748	1.87	2	D	SW6010C	6H29015	09/14/16 15:49
7440-48-4	Cobalt	14.4	**0.935**	1.87	2.34	2	D	SW6010C	6H29015	09/14/16 15:49
7440-50-8	Copper	634	**0.748**	1.50	1.87	2	D	SW6010C	6H29015	09/14/16 15:49
7439-89-6	Iron	48800	**5.61**	11.2	18.7	2	D	SW6010C	6H29015	09/14/16 15:49
7439-92-1	Lead	287	**0.281**	0.561	0.935	2	D	SW6010C	6H29015	09/14/16 15:49
7439-95-4	Magnesium	6950	**187**	561	935	2	D	SW6010C	6H29015	09/14/16 15:49
7439-96-5	Manganese	322	**0.561**	1.12	2.81	2	D	SW6010C	6H29015	09/14/16 15:49
7439-98-7	Molybdenum	1.75	**0.935**	1.87	3.74	2	J D	SW6010C	6H29015	09/14/16 15:49
7440-02-0	Nickel	52.5	**0.561**	1.12	1.87	2	D	SW6010C	6H29015	09/14/16 15:49
7440-09-7	Potassium	3560	**187**	561	935	2	D	SW6010C	6H29015	09/14/16 15:49
7782-49-2	Selenium	17.6	**0.561**	0.935	1.87	2	D	SW6010C	6H29015	09/14/16 15:49
7440-22-4	Silver	10.1	**0.187**	0.374	1.87	2	D	SW6010C	6H29015	09/14/16 15:49
7440-23-5	Sodium	3750	**187**	561	935	2	D	SW6010C	6H29015	09/14/16 15:49
7440-28-0	Thallium	0.631	**0.561**	0.748	1.50	2	J D	SW6010C	6H29015	09/14/16 15:49
7440-62-2	Vanadium	105	**0.935**	1.87	2.34	2	D	SW6010C	6H29015	09/14/16 15:49
7440-66-6	Zinc	435	**0.935**	1.87	3.74	2	D	SW6010C	6H29015	09/14/16 15:49

ANALYSIS DATA SHEET

DSA05-SB32-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 10:36
% Solids: 51.58

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-04
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	22900	**9.55**	19.1	38.2	2	D	SW6010C	6H29015	09/14/16 15:54
7440-36-0	Antimony	8.79	**0.955**	1.53	1.91	2	D	SW6010C	6H29015	09/14/16 15:54
7440-38-2	Arsenic	136	**0.573**	1.15	1.91	2	D	SW6010C	6H29015	09/14/16 15:54
7440-39-3	Barium	155	**0.955**	1.91	7.64	2	D	SW6010C	6H29015	09/14/16 15:54
7440-41-7	Beryllium	0.918	**0.191**	0.382	0.955	2	J D	SW6010C	6H29015	09/14/16 15:54
7440-43-9	Cadmium	3.33	**0.191**	0.382	0.955	2	D	SW6010C	6H29015	09/14/16 15:54
7440-70-2	Calcium	2550	**191**	382	955	2	D	SW6010C	6H29015	09/14/16 15:54
7440-47-3	Chromium	187	**0.382**	0.764	1.91	2	D	SW6010C	6H29015	09/14/16 15:54
7440-48-4	Cobalt	15.1	**0.955**	1.91	2.39	2	D	SW6010C	6H29015	09/14/16 15:54
7440-50-8	Copper	396	**0.764**	1.53	1.91	2	D	SW6010C	6H29015	09/14/16 15:54
7439-89-6	Iron	44700	**5.73**	11.5	19.1	2	D	SW6010C	6H29015	09/14/16 15:54
7439-92-1	Lead	294	**0.287**	0.573	0.955	2	D	SW6010C	6H29015	09/14/16 15:54
7439-95-4	Magnesium	6950	**191**	573	955	2	D	SW6010C	6H29015	09/14/16 15:54
7439-96-5	Manganese	246	**0.573**	1.15	2.87	2	D	SW6010C	6H29015	09/14/16 15:54
7439-98-7	Molybdenum	2.54	**0.955**	1.91	3.82	2	J D	SW6010C	6H29015	09/14/16 15:54
7440-02-0	Nickel	46.1	**0.573**	1.15	1.91	2	D	SW6010C	6H29015	09/14/16 15:54
7440-09-7	Potassium	3230	**191**	573	955	2	D	SW6010C	6H29015	09/14/16 15:54
7782-49-2	Selenium	6.32	**0.573**	0.955	1.91	2	D	SW6010C	6H29015	09/14/16 15:54
7440-22-4	Silver	6.41	**0.191**	0.382	1.91	2	D	SW6010C	6H29015	09/14/16 15:54
7440-23-5	Sodium	5010	**191**	573	955	2	D	SW6010C	6H29015	09/14/16 15:54
7440-28-0	Thallium	1.25	**0.573**	0.764	1.53	2	J D	SW6010C	6H29015	09/14/16 15:54
7440-62-2	Vanadium	111	**0.955**	1.91	2.39	2	D	SW6010C	6H29015	09/14/16 15:54
7440-66-6	Zinc	415	**0.955**	1.91	3.82	2	D	SW6010C	6H29015	09/14/16 15:54

ANALYSIS DATA SHEET

DSA01-SB01-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 12:28
% Solids: 82.51

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-05
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	13900	**5.94**	11.9	23.8	2	D	SW6010C	6H29015	09/14/16 15:58
7440-36-0	Antimony		0.594	0.951	1.19	2	U	SW6010C	6H29015	09/14/16 15:58
7440-38-2	Arsenic	5.61	**0.356**	0.713	1.19	2	D	SW6010C	6H29015	09/14/16 15:58
7440-39-3	Barium	15.2	**0.594**	1.19	4.75	2	D	SW6010C	6H29015	09/14/16 15:58
7440-41-7	Beryllium	0.690	**0.119**	0.238	0.594	2	D	SW6010C	6H29015	09/14/16 15:58
7440-43-9	Cadmium		0.119	0.238	0.594	2	U	SW6010C	6H29015	09/14/16 15:58
7440-70-2	Calcium	424	**119**	238	594	2	J D	SW6010C	6H29015	09/14/16 15:58
7440-47-3	Chromium	22.9	**0.238**	0.475	1.19	2	D	SW6010C	6H29015	09/14/16 15:58
7440-48-4	Cobalt	8.38	**0.594**	1.19	1.49	2	D	SW6010C	6H29015	09/14/16 15:58
7440-50-8	Copper	14.7	**0.475**	0.951	1.19	2	D	SW6010C	6H29015	09/14/16 15:58
7439-89-6	Iron	21900	**3.56**	7.13	11.9	2	D	SW6010C	6H29015	09/14/16 15:58
7439-92-1	Lead	9.92	**0.178**	0.356	0.594	2	D	SW6010C	6H29015	09/14/16 15:58
7439-95-4	Magnesium	3550	**119**	356	594	2	D	SW6010C	6H29015	09/14/16 15:58
7439-96-5	Manganese	117	**0.356**	0.713	1.78	2	D	SW6010C	6H29015	09/14/16 15:58
7439-98-7	Molybdenum	0.625	**0.594**	1.19	2.38	2	J D	SW6010C	6H29015	09/14/16 15:58
7440-02-0	Nickel	15.7	**0.356**	0.713	1.19	2	D	SW6010C	6H29015	09/14/16 15:58
7440-09-7	Potassium	1860	**119**	356	594	2	D	SW6010C	6H29015	09/14/16 15:58
7782-49-2	Selenium		0.356	0.594	1.19	2	U	SW6010C	6H29015	09/14/16 15:58
7440-22-4	Silver		0.119	0.238	1.19	2	U	SW6010C	6H29015	09/14/16 15:58
7440-23-5	Sodium	1080	**119**	356	594	2	D	SW6010C	6H29015	09/14/16 15:58
7440-28-0	Thallium		0.356	0.475	0.951	2	U	SW6010C	6H29015	09/14/16 15:58
7440-62-2	Vanadium	34.6	**0.594**	1.19	1.49	2	D	SW6010C	6H29015	09/14/16 15:58
7440-66-6	Zinc	42.0	**0.594**	1.19	2.38	2	D	SW6010C	6H29015	09/14/16 15:58

ANALYSIS DATA SHEET

DSA01-SB02-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 12:45
% Solids: 83.12

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-06
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	8880	**5.90**	11.8	23.6	2	D	SW6010C	6H29015	09/14/16 16:02
7440-36-0	Antimony		0.590	0.944	1.18	2	U	SW6010C	6H29015	09/14/16 16:02
7440-38-2	Arsenic	6.22	**0.354**	0.708	1.18	2	D	SW6010C	6H29015	09/14/16 16:02
7440-39-3	Barium	10.7	**0.590**	1.18	4.72	2	D	SW6010C	6H29015	09/14/16 16:02
7440-41-7	Beryllium	0.516	**0.118**	0.236	0.590	2	J D	SW6010C	6H29015	09/14/16 16:02
7440-43-9	Cadmium		0.118	0.236	0.590	2	U	SW6010C	6H29015	09/14/16 16:02
7440-70-2	Calcium	304	**118**	236	590	2	J D	SW6010C	6H29015	09/14/16 16:02
7440-47-3	Chromium	18.0	**0.236**	0.472	1.18	2	D	SW6010C	6H29015	09/14/16 16:02
7440-48-4	Cobalt	6.60	**0.590**	1.18	1.47	2	D	SW6010C	6H29015	09/14/16 16:02
7440-50-8	Copper	9.57	**0.472**	0.944	1.18	2	D	SW6010C	6H29015	09/14/16 16:02
7439-89-6	Iron	20200	**3.54**	7.08	11.8	2	D	SW6010C	6H29015	09/14/16 16:02
7439-92-1	Lead	8.39	**0.177**	0.354	0.590	2	D	SW6010C	6H29015	09/14/16 16:02
7439-95-4	Magnesium	3030	**118**	354	590	2	D	SW6010C	6H29015	09/14/16 16:02
7439-96-5	Manganese	71.4	**0.354**	0.708	1.77	2	D	SW6010C	6H29015	09/14/16 16:02
7439-98-7	Molybdenum		0.590	1.18	2.36	2	U	SW6010C	6H29015	09/14/16 16:02
7440-02-0	Nickel	12.8	**0.354**	0.708	1.18	2	D	SW6010C	6H29015	09/14/16 16:02
7440-09-7	Potassium	1740	**118**	354	590	2	D	SW6010C	6H29015	09/14/16 16:02
7782-49-2	Selenium		0.354	0.590	1.18	2	U	SW6010C	6H29015	09/14/16 16:02
7440-22-4	Silver		0.118	0.236	1.18	2	U	SW6010C	6H29015	09/14/16 16:02
7440-23-5	Sodium	975	**118**	354	590	2	D	SW6010C	6H29015	09/14/16 16:02
7440-28-0	Thallium		0.354	0.472	0.944	2	U	SW6010C	6H29015	09/14/16 16:02
7440-62-2	Vanadium	27.2	**0.590**	1.18	1.47	2	D	SW6010C	6H29015	09/14/16 16:02
7440-66-6	Zinc	39.0	**0.590**	1.18	2.36	2	D	SW6010C	6H29015	09/14/16 16:02

ANALYSIS DATA SHEET

DSA01-SB03-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 12:57
% Solids: 83.35

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-07
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	11700	**5.88**	11.8	23.5	2	D	SW6010C	6H29015	09/14/16 16:07
7440-36-0	Antimony		0.588	0.941	1.18	2	U	SW6010C	6H29015	09/14/16 16:07
7440-38-2	Arsenic	4.55	**0.353**	0.706	1.18	2	D	SW6010C	6H29015	09/14/16 16:07
7440-39-3	Barium	11.1	**0.588**	1.18	4.70	2	D	SW6010C	6H29015	09/14/16 16:07
7440-41-7	Beryllium	0.576	**0.118**	0.235	0.588	2	J D	SW6010C	6H29015	09/14/16 16:07
7440-43-9	Cadmium		0.118	0.235	0.588	2	U	SW6010C	6H29015	09/14/16 16:07
7440-70-2	Calcium	319	**118**	235	588	2	J D	SW6010C	6H29015	09/14/16 16:07
7440-47-3	Chromium	19.2	**0.235**	0.470	1.18	2	D	SW6010C	6H29015	09/14/16 16:07
7440-48-4	Cobalt	8.46	**0.588**	1.18	1.47	2	D	SW6010C	6H29015	09/14/16 16:07
7440-50-8	Copper	13.6	**0.470**	0.941	1.18	2	D	SW6010C	6H29015	09/14/16 16:07
7439-89-6	Iron	24200	**3.53**	7.06	11.8	2	D	SW6010C	6H29015	09/14/16 16:07
7439-92-1	Lead	8.89	**0.176**	0.353	0.588	2	D	SW6010C	6H29015	09/14/16 16:07
7439-95-4	Magnesium	3890	**118**	353	588	2	D	SW6010C	6H29015	09/14/16 16:07
7439-96-5	Manganese	94.1	**0.353**	0.706	1.76	2	D	SW6010C	6H29015	09/14/16 16:07
7439-98-7	Molybdenum	0.686	**0.588**	1.18	2.35	2	J D	SW6010C	6H29015	09/14/16 16:07
7440-02-0	Nickel	15.4	**0.353**	0.706	1.18	2	D	SW6010C	6H29015	09/14/16 16:07
7440-09-7	Potassium	1660	**118**	353	588	2	D	SW6010C	6H29015	09/14/16 16:07
7782-49-2	Selenium	0.401	**0.353**	0.588	1.18	2	J D	SW6010C	6H29015	09/14/16 16:07
7440-22-4	Silver		0.118	0.235	1.18	2	U	SW6010C	6H29015	09/14/16 16:07
7440-23-5	Sodium	767	**118**	353	588	2	D	SW6010C	6H29015	09/14/16 16:07
7440-28-0	Thallium		0.353	0.470	0.941	2	U	SW6010C	6H29015	09/14/16 16:07
7440-62-2	Vanadium	29.8	**0.588**	1.18	1.47	2	D	SW6010C	6H29015	09/14/16 16:07
7440-66-6	Zinc	48.2	**0.588**	1.18	2.35	2	D	SW6010C	6H29015	09/14/16 16:07

ANALYSIS DATA SHEET

DSA01-SB04-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 13:12
% Solids: 83.27

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-08
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	8670	**5.86**	11.7	23.4	2	D	SW6010C	6H29015	09/14/16 16:11
7440-36-0	Antimony		0.586	0.937	1.17	2	U	SW6010C	6H29015	09/14/16 16:11
7440-38-2	Arsenic	6.11	**0.351**	0.703	1.17	2	D	SW6010C	6H29015	09/14/16 16:11
7440-39-3	Barium	7.98	**0.586**	1.17	4.69	2	D	SW6010C	6H29015	09/14/16 16:11
7440-41-7	Beryllium	0.473	**0.117**	0.234	0.586	2	J D	SW6010C	6H29015	09/14/16 16:11
7440-43-9	Cadmium		0.117	0.234	0.586	2	U	SW6010C	6H29015	09/14/16 16:11
7440-70-2	Calcium	266	**117**	234	586	2	J D	SW6010C	6H29015	09/14/16 16:11
7440-47-3	Chromium	13.8	**0.234**	0.469	1.17	2	D	SW6010C	6H29015	09/14/16 16:11
7440-48-4	Cobalt	7.69	**0.586**	1.17	1.46	2	D	SW6010C	6H29015	09/14/16 16:11
7440-50-8	Copper	8.64	**0.469**	0.937	1.17	2	D	SW6010C	6H29015	09/14/16 16:11
7439-89-6	Iron	16900	**3.51**	7.03	11.7	2	D	SW6010C	6H29015	09/14/16 16:11
7439-92-1	Lead	6.40	**0.176**	0.351	0.586	2	D	SW6010C	6H29015	09/14/16 16:11
7439-95-4	Magnesium	2070	**117**	351	586	2	D	SW6010C	6H29015	09/14/16 16:11
7439-96-5	Manganese	83.2	**0.351**	0.703	1.76	2	D	SW6010C	6H29015	09/14/16 16:11
7439-98-7	Molybdenum		0.586	1.17	2.34	2	U	SW6010C	6H29015	09/14/16 16:11
7440-02-0	Nickel	10.5	**0.351**	0.703	1.17	2	D	SW6010C	6H29015	09/14/16 16:11
7440-09-7	Potassium	1490	**117**	351	586	2	D	SW6010C	6H29015	09/14/16 16:11
7782-49-2	Selenium	0.366	**0.351**	0.586	1.17	2	J D	SW6010C	6H29015	09/14/16 16:11
7440-22-4	Silver		0.117	0.234	1.17	2	U	SW6010C	6H29015	09/14/16 16:11
7440-23-5	Sodium	536	**117**	351	586	2	J D	SW6010C	6H29015	09/14/16 16:11
7440-28-0	Thallium		0.351	0.469	0.937	2	U	SW6010C	6H29015	09/14/16 16:11
7440-62-2	Vanadium	19.4	**0.586**	1.17	1.46	2	D	SW6010C	6H29015	09/14/16 16:11
7440-66-6	Zinc	32.6	**0.586**	1.17	2.34	2	D	SW6010C	6H29015	09/14/16 16:11

ANALYSIS DATA SHEET

DSA01-SB05-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 13:49
% Solids: 84.84

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-09
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	10000	**5.89**	11.8	23.6	2	~~D~~	SW6010C	6H29015	09/14/16 16:15
7440-36-0	Antimony		0.589	0.943	1.18	2	U	SW6010C	6H29015	09/14/16 16:15
7440-38-2	Arsenic	4.31	**0.354**	0.707	1.18	2	D	SW6010C	6H29015	09/14/16 16:15
7440-39-3	Barium	12.2	**0.589**	1.18	4.71	2	D	SW6010C	6H29015	09/14/16 16:15
7440-41-7	Beryllium	0.511	**0.118**	0.236	0.589	2	J ~~D~~	SW6010C	6H29015	09/14/16 16:15
7440-43-9	Cadmium		0.118	0.236	0.589	2	U	SW6010C	6H29015	09/14/16 16:15
7440-70-2	Calcium	268	**118**	236	589	2	J D	SW6010C	6H29015	09/14/16 16:15
7440-47-3	Chromium	17.5	**0.236**	0.471	1.18	2	D	SW6010C	6H29015	09/14/16 16:15
7440-48-4	Cobalt	6.72	**0.589**	1.18	1.47	2	D	SW6010C	6H29015	09/14/16 16:15
7440-50-8	Copper	12.3	**0.471**	0.943	1.18	2	D	SW6010C	6H29015	09/14/16 16:15
7439-89-6	Iron	18500	**3.54**	7.07	11.8	2	D	SW6010C	6H29015	09/14/16 16:15
7439-92-1	Lead	8.17	**0.177**	0.354	0.589	2	D	SW6010C	6H29015	09/14/16 16:15
7439-95-4	Magnesium	3190	**118**	354	589	2	D	SW6010C	6H29015	09/14/16 16:15
7439-96-5	Manganese	78.1	**0.354**	0.707	1.77	2	D	SW6010C	6H29015	09/14/16 16:15
7439-98-7	Molybdenum		0.589	1.18	2.36	2	U	SW6010C	6H29015	09/14/16 16:15
7440-02-0	Nickel	13.6	**0.354**	0.707	1.18	2	D	SW6010C	6H29015	09/14/16 16:15
7440-09-7	Potassium	1730	**118**	354	589	2	D	SW6010C	6H29015	09/14/16 16:15
7782-49-2	Selenium		0.354	0.589	1.18	2	U	SW6010C	6H29015	09/14/16 16:15
7440-22-4	Silver		0.118	0.236	1.18	2	U	SW6010C	6H29015	09/14/16 16:15
7440-23-5	Sodium	860	**118**	354	589	2	~~D~~	SW6010C	6H29015	09/14/16 16:15
7440-28-0	Thallium		0.354	0.471	0.943	2	U	SW6010C	6H29015	09/14/16 16:15
7440-62-2	Vanadium	26.0	**0.589**	1.18	1.47	2	D	SW6010C	6H29015	09/14/16 16:15
7440-66-6	Zinc	40.0	**0.589**	1.18	2.36	2	D	SW6010C	6H29015	09/14/16 16:15

ANALYSIS DATA SHEET

DSA01-SB06-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 14:02
% Solids: 81.32

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-10
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	5620	**6.03**	12.1	24.1	2	D	SW6010C	6H29015	09/14/16 16:20
7440-36-0	Antimony		0.603	0.965	1.21	2	U	SW6010C	6H29015	09/14/16 16:20
7440-38-2	Arsenic	4.88	**0.362**	0.723	1.21	2	D	SW6010C	6H29015	09/14/16 16:20
7440-39-3	Barium	8.02	**0.603**	1.21	4.82	2	D	SW6010C	6H29015	09/14/16 16:20
7440-41-7	Beryllium	0.327	**0.121**	0.241	0.603	2	J D	SW6010C	6H29015	09/14/16 16:20
7440-43-9	Cadmium		0.121	0.241	0.603	2	U	SW6010C	6H29015	09/14/16 16:20
7440-70-2	Calcium	184	**121**	241	603	2	J D	SW6010C	6H29015	09/14/16 16:20
7440-47-3	Chromium	11.0	**0.241**	0.482	1.21	2	D	SW6010C	6H29015	09/14/16 16:20
7440-48-4	Cobalt	6.89	**0.603**	1.21	1.51	2	D	SW6010C	6H29015	09/14/16 16:20
7440-50-8	Copper	5.95	**0.482**	0.965	1.21	2	D	SW6010C	6H29015	09/14/16 16:20
7439-89-6	Iron	15700	**3.62**	7.23	12.1	2	D	SW6010C	6H29015	09/14/16 16:20
7439-92-1	Lead	4.76	**0.181**	0.362	0.603	2	D	SW6010C	6H29015	09/14/16 16:20
7439-95-4	Magnesium	1600	**121**	362	603	2	D	SW6010C	6H29015	09/14/16 16:20
7439-96-5	Manganese	60.8	**0.362**	0.723	1.81	2	D	SW6010C	6H29015	09/14/16 16:20
7439-98-7	Molybdenum		0.603	1.21	2.41	2	U	SW6010C	6H29015	09/14/16 16:20
7440-02-0	Nickel	7.63	**0.362**	0.723	1.21	2	D	SW6010C	6H29015	09/14/16 16:20
7440-09-7	Potassium	1090	**121**	362	603	2	D	SW6010C	6H29015	09/14/16 16:20
7782-49-2	Selenium		0.362	0.603	1.21	2	U	SW6010C	6H29015	09/14/16 16:20
7440-22-4	Silver		0.121	0.241	1.21	2	U	SW6010C	6H29015	09/14/16 16:20
7440-23-5	Sodium	313	**121**	362	603	2	J D	SW6010C	6H29015	09/14/16 16:20
7440-28-0	Thallium		0.362	0.482	0.965	2	U	SW6010C	6H29015	09/14/16 16:20
7440-62-2	Vanadium	14.9	**0.603**	1.21	1.51	2	D	SW6010C	6H29015	09/14/16 16:20
7440-66-6	Zinc	22.9	**0.603**	1.21	2.41	2	D	SW6010C	6H29015	09/14/16 16:20

ANALYSIS DATA SHEET

DSA01-SB07-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 14:20
% Solids: 83.63

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-11
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	9190	**5.86**	11.7	23.4	2	~~D~~	SW6010C	6H29015	09/14/16 16:24
7440-36-0	Antimony		0.586	0.938	1.17	2	U	SW6010C	6H29015	09/14/16 16:24
7440-38-2	Arsenic	2.73	**0.352**	0.703	1.17	2	D	SW6010C	6H29015	09/14/16 16:24
7440-39-3	Barium	9.67	**0.586**	1.17	4.69	2	D	SW6010C	6H29015	09/14/16 16:24
7440-41-7	Beryllium	0.528	**0.117**	0.234	0.586	2	J D	SW6010C	6H29015	09/14/16 16:24
7440-43-9	Cadmium		0.117	0.234	0.586	2	U	SW6010C	6H29015	09/14/16 16:24
7440-70-2	Calcium	351	**117**	234	586	2	J D	SW6010C	6H29015	09/14/16 16:24
7440-47-3	Chromium	19.0	**0.234**	0.469	1.17	2	D	SW6010C	6H29015	09/14/16 16:24
7440-48-4	Cobalt	4.81	**0.586**	1.17	1.47	2	D	SW6010C	6H29015	09/14/16 16:24
7440-50-8	Copper	10.2	**0.469**	0.938	1.17	2	D	SW6010C	6H29015	09/14/16 16:24
7439-89-6	Iron	16700	**3.52**	7.03	11.7	2	D	SW6010C	6H29015	09/14/16 16:24
7439-92-1	Lead	7.09	**0.176**	0.352	0.586	2	D	SW6010C	6H29015	09/14/16 16:24
7439-95-4	Magnesium	2740	**117**	352	586	2	D	SW6010C	6H29015	09/14/16 16:24
7439-96-5	Manganese	111	**0.352**	0.703	1.76	2	D	SW6010C	6H29015	09/14/16 16:24
7439-98-7	Molybdenum		0.586	1.17	2.34	2	U	SW6010C	6H29015	09/14/16 16:24
7440-02-0	Nickel	12.2	**0.352**	0.703	1.17	2	D	SW6010C	6H29015	09/14/16 16:24
7440-09-7	Potassium	1660	**117**	352	586	2	D	SW6010C	6H29015	09/14/16 16:24
7782-49-2	Selenium		0.352	0.586	1.17	2	U	SW6010C	6H29015	09/14/16 16:24
7440-22-4	Silver		0.117	0.234	1.17	2	U	SW6010C	6H29015	09/14/16 16:24
7440-23-5	Sodium	471	**117**	352	586	2	J D	SW6010C	6H29015	09/14/16 16:24
7440-28-0	Thallium		0.352	0.469	0.938	2	U	SW6010C	6H29015	09/14/16 16:24
7440-62-2	Vanadium	30.1	**0.586**	1.17	1.47	2	D	SW6010C	6H29015	09/14/16 16:24
7440-66-6	Zinc	34.8	**0.586**	1.17	2.34	2	D	SW6010C	6H29015	09/14/16 16:24

ANALYSIS DATA SHEET

DSA01-SB08-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 14:35
% Solids: 84.58

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-12
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	13700	**14.4**	28.8	57.7	5	D	SW6010C	6I08012	09/14/16 16:53
7440-36-0	Antimony		1.44	2.31	2.88	5	U	SW6010C	6I08012	09/14/16 16:53
7440-38-2	Arsenic	6.63	**0.865**	1.73	2.88	5	D	SW6010C	6I08012	09/14/16 16:53
7440-39-3	Barium	18.0	**1.44**	2.88	11.5	5	D	SW6010C	6I08012	09/14/16 16:53
7440-41-7	Beryllium	0.926	**0.288**	0.577	1.44	5	J D	SW6010C	6I08012	09/14/16 16:53
7440-43-9	Cadmium		0.288	0.577	1.44	5	U	SW6010C	6I08012	09/14/16 16:53
7440-70-2	Calcium	476	**288**	577	1440	5	J D	SW6010C	6I08012	09/14/16 16:53
7440-47-3	Chromium	23.2	**0.577**	1.15	2.88	5	D	SW6010C	6I08012	09/14/16 16:53
7440-48-4	Cobalt	9.53	**1.44**	2.88	3.60	5	D	SW6010C	6I08012	09/14/16 16:53
7440-50-8	Copper	11.8	**1.15**	2.31	2.88	5	D	SW6010C	6I08012	09/14/16 16:53
7439-89-6	Iron	25800	**8.65**	17.3	28.8	5	D	SW6010C	6I08012	09/14/16 16:53
7439-92-1	Lead	11.1	**0.433**	0.865	1.44	5	D	SW6010C	6I08012	09/14/16 16:53
7439-95-4	Magnesium	4690	**288**	865	1440	5	D	SW6010C	6I08012	09/14/16 16:53
7439-96-5	Manganese	142	**0.865**	1.73	4.33	5	D	SW6010C	6I08012	09/14/16 16:53
7439-98-7	Molybdenum		1.44	2.88	5.77	5	U	SW6010C	6I08012	09/14/16 16:53
7440-02-0	Nickel	17.7	**0.865**	1.73	2.88	5	D	SW6010C	6I08012	09/14/16 16:53
7440-09-7	Potassium	2730	**288**	865	1440	5	D	SW6010C	6I08012	09/14/16 16:53
7782-49-2	Selenium		0.865	1.44	2.88	5	U	SW6010C	6I08012	09/14/16 16:53
7440-22-4	Silver		0.288	0.577	2.88	5	U	SW6010C	6I08012	09/14/16 16:53
7440-23-5	Sodium	1260	**288**	865	1440	5	J D	SW6010C	6I08012	09/14/16 16:53
7440-28-0	Thallium		0.865	1.15	2.31	5	U	SW6010C	6I08012	09/14/16 16:53
7440-62-2	Vanadium	30.5	**1.44**	2.88	3.60	5	D	SW6010C	6I08012	09/14/16 16:53
7440-66-6	Zinc	50.7	**1.44**	2.88	5.77	5	D	SW6010C	6I08012	09/14/16 16:53

ANALYSIS DATA SHEET

DSA02-SB09-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 09:07
% Solids: 53.37

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-13
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	25600	**23.3**	46.6	93.2	5	D	SW6010C	6I08012	09/14/16 16:57
7440-36-0	Antimony		2.33	3.73	4.66	5	U	SW6010C	6I08012	09/14/16 16:57
7440-38-2	Arsenic	13.2	**1.40**	2.80	4.66	5	D	SW6010C	6I08012	09/14/16 16:57
7440-39-3	Barium	45.1	**2.33**	4.66	18.6	5	D	SW6010C	6I08012	09/14/16 16:57
7440-41-7	Beryllium	1.37	**0.466**	0.932	2.33	5	J D	SW6010C	6I08012	09/14/16 16:57
7440-43-9	Cadmium		0.466	0.932	2.33	5	U	SW6010C	6I08012	09/14/16 16:57
7440-70-2	Calcium	2140	**466**	932	2330	5	J D	SW6010C	6I08012	09/14/16 16:57
7440-47-3	Chromium	47.5	**0.932**	1.86	4.66	5	D	SW6010C	6I08012	09/14/16 16:57
7440-48-4	Cobalt	15.7	**2.33**	4.66	5.83	5	D	SW6010C	6I08012	09/14/16 16:57
7440-50-8	Copper	17.8	**1.86**	3.73	4.66	5	D	SW6010C	6I08012	09/14/16 16:57
7439-89-6	Iron	42700	**14.0**	28.0	46.6	5	D	SW6010C	6I08012	09/14/16 16:57
7439-92-1	Lead	18.0	**0.699**	1.40	2.33	5	D	SW6010C	6I08012	09/14/16 16:57
7439-95-4	Magnesium	8790	**466**	1400	2330	5	D	SW6010C	6I08012	09/14/16 16:57
7439-96-5	Manganese	291	**1.40**	2.80	6.99	5	D	SW6010C	6I08012	09/14/16 16:57
7439-98-7	Molybdenum		2.33	4.66	9.32	5	U	SW6010C	6I08012	09/14/16 16:57
7440-02-0	Nickel	35.9	**1.40**	2.80	4.66	5	D	SW6010C	6I08012	09/14/16 16:57
7440-09-7	Potassium	5280	**466**	1400	2330	5	D	SW6010C	6I08012	09/14/16 16:57
7782-49-2	Selenium		1.40	2.33	4.66	5	U	SW6010C	6I08012	09/14/16 16:57
7440-22-4	Silver		0.466	0.932	4.66	5	U	SW6010C	6I08012	09/14/16 16:57
7440-23-5	Sodium	3260	**466**	1400	2330	5	D	SW6010C	6I08012	09/14/16 16:57
7440-28-0	Thallium		1.40	1.86	3.73	5	U	SW6010C	6I08012	09/14/16 16:57
7440-62-2	Vanadium	58.0	**2.33**	4.66	5.83	5	D	SW6010C	6I08012	09/14/16 16:57
7440-66-6	Zinc	111	**2.33**	4.66	9.32	5	D	SW6010C	6I08012	09/14/16 16:57

ANALYSIS DATA SHEET

DSA02-SB10-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 09:19
% Solids: 52.46

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-14
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	25100	**23.2**	46.5	93.0	5	D	SW6010C	6I08012	09/14/16 17:01
7440-36-0	Antimony		2.32	3.72	4.65	5	U	SW6010C	6I08012	09/14/16 17:01
7440-38-2	Arsenic	26.5	**1.39**	2.79	4.65	5	D	SW6010C	6I08012	09/14/16 17:01
7440-39-3	Barium	41.8	**2.32**	4.65	18.6	5	D	SW6010C	6I08012	09/14/16 17:01
7440-41-7	Beryllium	1.20	**0.465**	0.930	2.32	5	J D	SW6010C	6I08012	09/14/16 17:01
7440-43-9	Cadmium		0.465	0.930	2.32	5	U	SW6010C	6I08012	09/14/16 17:01
7440-70-2	Calcium	1780	**465**	930	2320	5	J D	SW6010C	6I08012	09/14/16 17:01
7440-47-3	Chromium	43.5	**0.930**	1.86	4.65	5	D	SW6010C	6I08012	09/14/16 17:01
7440-48-4	Cobalt	14.7	**2.32**	4.65	5.81	5	D	SW6010C	6I08012	09/14/16 17:01
7440-50-8	Copper	13.3	**1.86**	3.72	4.65	5	D	SW6010C	6I08012	09/14/16 17:01
7439-89-6	Iron	57500	**13.9**	27.9	46.5	5	D	SW6010C	6I08012	09/14/16 17:01
7439-92-1	Lead	16.0	**0.697**	1.39	2.32	5	D	SW6010C	6I08012	09/14/16 17:01
7439-95-4	Magnesium	7160	**465**	1390	2320	5	D	SW6010C	6I08012	09/14/16 17:01
7439-96-5	Manganese	314	**1.39**	2.79	6.97	5	D	SW6010C	6I08012	09/14/16 17:01
7439-98-7	Molybdenum	6.91	**2.32**	4.65	9.30	5	J D	SW6010C	6I08012	09/14/16 17:01
7440-02-0	Nickel	32.7	**1.39**	2.79	4.65	5	D	SW6010C	6I08012	09/14/16 17:01
7440-09-7	Potassium	5020	**465**	1390	2320	5	D	SW6010C	6I08012	09/14/16 17:01
7782-49-2	Selenium		1.39	2.32	4.65	5	U	SW6010C	6I08012	09/14/16 17:01
7440-22-4	Silver		0.465	0.930	4.65	5	U	SW6010C	6I08012	09/14/16 17:01
7440-23-5	Sodium	2840	**465**	1390	2320	5	D	SW6010C	6I08012	09/14/16 17:01
7440-28-0	Thallium		1.39	1.86	3.72	5	U	SW6010C	6I08012	09/14/16 17:01
7440-62-2	Vanadium	52.1	**2.32**	4.65	5.81	5	D	SW6010C	6I08012	09/14/16 17:01
7440-66-6	Zinc	96.0	**2.32**	4.65	9.30	5	D	SW6010C	6I08012	09/14/16 17:01

ANALYSIS DATA SHEET

DSA02-SB11-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 09:55
% Solids: 46.75

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-15
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	24500	**26.1**	52.2	104	5	~~D~~	SW6010C	6I08012	09/14/16 17:06
7440-36-0	Antimony		2.61	4.17	5.22	5	U	SW6010C	6I08012	09/14/16 17:06
7440-38-2	Arsenic	19.2	**1.57**	3.13	5.22	5	D	SW6010C	6I08012	09/14/16 17:06
7440-39-3	Barium	41.5	**2.61**	5.22	20.9	5	D	SW6010C	6I08012	09/14/16 17:06
7440-41-7	Beryllium	1.47	**0.522**	1.04	2.61	5	J ~~D~~	SW6010C	6I08012	09/14/16 17:06
7440-43-9	Cadmium		0.522	1.04	2.61	5	U	SW6010C	6I08012	09/14/16 17:06
7440-70-2	Calcium	2270	**522**	1040	2610	5	J ~~D~~	SW6010C	6I08012	09/14/16 17:06
7440-47-3	Chromium	45.4	**1.04**	2.09	5.22	5	D	SW6010C	6I08012	09/14/16 17:06
7440-48-4	Cobalt	17.8	**2.61**	5.22	6.52	5	D	SW6010C	6I08012	09/14/16 17:06
7440-50-8	Copper	16.8	**2.09**	4.17	5.22	5	D	SW6010C	6I08012	09/14/16 17:06
7439-89-6	Iron	55800	**15.7**	31.3	52.2	5	D	SW6010C	6I08012	09/14/16 17:06
7439-92-1	Lead	17.0	**0.783**	1.57	2.61	5	D	SW6010C	6I08012	09/14/16 17:06
7439-95-4	Magnesium	8170	**522**	1570	2610	5	D	SW6010C	6I08012	09/14/16 17:06
7439-96-5	Manganese	841	**1.57**	3.13	7.83	5	D	SW6010C	6I08012	09/14/16 17:06
7439-98-7	Molybdenum	6.65	**2.61**	5.22	10.4	5	J ~~D~~	SW6010C	6I08012	09/14/16 17:06
7440-02-0	Nickel	33.8	**1.57**	3.13	5.22	5	D	SW6010C	6I08012	09/14/16 17:06
7440-09-7	Potassium	5010	**522**	1570	2610	5	D	SW6010C	6I08012	09/14/16 17:06
7782-49-2	Selenium		1.57	2.61	5.22	5	U	SW6010C	6I08012	09/14/16 17:06
7440-22-4	Silver		0.522	1.04	5.22	5	U	SW6010C	6I08012	09/14/16 17:06
7440-23-5	Sodium	3070	**522**	1570	2610	5	~~D~~	SW6010C	6I08012	09/14/16 17:06
7440-28-0	Thallium		1.57	2.09	4.17	5	U	SW6010C	6I08012	09/14/16 17:06
7440-62-2	Vanadium	56.2	**2.61**	5.22	6.52	5	D	SW6010C	6I08012	09/14/16 17:06
7440-66-6	Zinc	102	**2.61**	5.22	10.4	5	D	SW6010C	6I08012	09/14/16 17:06

ANALYSIS DATA SHEET

DSA02-SB12-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 11:44
% Solids: 55.29

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-16
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	23100	**22.3**	44.5	89.1	5	D	SW6010C	6I08012	09/14/16 17:10
7440-36-0	Antimony		2.23	3.56	4.45	5	U	SW6010C	6I08012	09/14/16 17:10
7440-38-2	Arsenic	16.5	**1.34**	2.67	4.45	5	D	SW6010C	6I08012	09/14/16 17:10
7440-39-3	Barium	39.0	**2.23**	4.45	17.8	5	D	SW6010C	6I08012	09/14/16 17:10
7440-41-7	Beryllium	1.23	**0.445**	0.891	2.23	5	J D	SW6010C	6I08012	09/14/16 17:10
7440-43-9	Cadmium		0.445	0.891	2.23	5	U	SW6010C	6I08012	09/14/16 17:10
7440-70-2	Calcium	2040	**445**	891	2230	5	J D	SW6010C	6I08012	09/14/16 17:10
7440-47-3	Chromium	43.9	**0.891**	1.78	4.45	5	D	SW6010C	6I08012	09/14/16 17:10
7440-48-4	Cobalt	13.2	**2.23**	4.45	5.57	5	D	SW6010C	6I08012	09/14/16 17:10
7440-50-8	Copper	16.4	**1.78**	3.56	4.45	5	D	SW6010C	6I08012	09/14/16 17:10
7439-89-6	Iron	48600	**13.4**	26.7	44.5	5	D	SW6010C	6I08012	09/14/16 17:10
7439-92-1	Lead	16.6	**0.668**	1.34	2.23	5	D	SW6010C	6I08012	09/14/16 17:10
7439-95-4	Magnesium	7390	**445**	1340	2230	5	D	SW6010C	6I08012	09/14/16 17:10
7439-96-5	Manganese	645	**1.34**	2.67	6.68	5	D	SW6010C	6I08012	09/14/16 17:10
7439-98-7	Molybdenum	3.02	**2.23**	4.45	8.91	5	J D	SW6010C	6I08012	09/14/16 17:10
7440-02-0	Nickel	31.0	**1.34**	2.67	4.45	5	D	SW6010C	6I08012	09/14/16 17:10
7440-09-7	Potassium	4620	**445**	1340	2230	5	D	SW6010C	6I08012	09/14/16 17:10
7782-49-2	Selenium		1.34	2.23	4.45	5	U	SW6010C	6I08012	09/14/16 17:10
7440-22-4	Silver		0.445	0.891	4.45	5	U	SW6010C	6I08012	09/14/16 17:10
7440-23-5	Sodium	2840	**445**	1340	2230	5	D	SW6010C	6I08012	09/14/16 17:10
7440-28-0	Thallium		1.34	1.78	3.56	5	U	SW6010C	6I08012	09/14/16 17:10
7440-62-2	Vanadium	53.4	**2.23**	4.45	5.57	5	D	SW6010C	6I08012	09/14/16 17:10
7440-66-6	Zinc	95.0	**2.23**	4.45	8.91	5	D	SW6010C	6I08012	09/14/16 17:10

ANALYSIS DATA SHEET

DSA02-SB13-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 12:34
% Solids: 37.62

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-17
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	24600	**32.7**	65.5	131	5	D	SW6010C	6I08012	09/14/16 17:15
7440-36-0	Antimony		3.27	5.24	6.55	5	U	SW6010C	6I08012	09/14/16 17:15
7440-38-2	Arsenic	18.1	**1.96**	3.93	6.55	5	D	SW6010C	6I08012	09/14/16 17:15
7440-39-3	Barium	45.4	**3.27**	6.55	26.2	5	D	SW6010C	6I08012	09/14/16 17:15
7440-41-7	Beryllium	1.25	**0.655**	1.31	3.27	5	J D	SW6010C	6I08012	09/14/16 17:15
7440-43-9	Cadmium		0.655	1.31	3.27	5	U	SW6010C	6I08012	09/14/16 17:15
7440-70-2	Calcium	3880	**655**	1310	3270	5	D	SW6010C	6I08012	09/14/16 17:15
7440-47-3	Chromium	45.1	**1.31**	2.62	6.55	5	D	SW6010C	6I08012	09/14/16 17:15
7440-48-4	Cobalt	8.87	**3.27**	6.55	8.19	5	D	SW6010C	6I08012	09/14/16 17:15
7440-50-8	Copper	9.34	**2.62**	5.24	6.55	5	D	SW6010C	6I08012	09/14/16 17:15
7439-89-6	Iron	34800	**19.6**	39.3	65.5	5	D	SW6010C	6I08012	09/14/16 17:15
7439-92-1	Lead	11.7	**0.982**	1.96	3.27	5	D	SW6010C	6I08012	09/14/16 17:15
7439-95-4	Magnesium	7930	**655**	1960	3270	5	D	SW6010C	6I08012	09/14/16 17:15
7439-96-5	Manganese	359	**1.96**	3.93	9.82	5	D	SW6010C	6I08012	09/14/16 17:15
7439-98-7	Molybdenum	10.7	**3.27**	6.55	13.1	5	J D	SW6010C	6I08012	09/14/16 17:15
7440-02-0	Nickel	29.3	**1.96**	3.93	6.55	5	D	SW6010C	6I08012	09/14/16 17:15
7440-09-7	Potassium	5690	**655**	1960	3270	5	D	SW6010C	6I08012	09/14/16 17:15
7782-49-2	Selenium		1.96	3.27	6.55	5	U	SW6010C	6I08012	09/14/16 17:15
7440-22-4	Silver		0.655	1.31	6.55	5	U	SW6010C	6I08012	09/14/16 17:15
7440-23-5	Sodium	12300	**655**	1960	3270	5	D	SW6010C	6I08012	09/14/16 17:15
7440-28-0	Thallium		1.96	2.62	5.24	5	U	SW6010C	6I08012	09/14/16 17:15
7440-62-2	Vanadium	58.9	**3.27**	6.55	8.19	5	D	SW6010C	6I08012	09/14/16 17:15
7440-66-6	Zinc	82.2	**3.27**	6.55	13.1	5	D	SW6010C	6I08012	09/14/16 17:15

ANALYSIS DATA SHEET

DSA02-SB14-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 13:14
% Solids: 33.69

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-18
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	22400	**37.1**	74.2	148	5	D	SW6010C	6I08012	09/14/16 17:19
7440-36-0	Antimony		3.71	5.94	7.42	5	U	SW6010C	6I08012	09/14/16 17:19
7440-38-2	Arsenic	13.8	**2.23**	4.45	7.42	5	D	SW6010C	6I08012	09/14/16 17:19
7440-39-3	Barium	42.0	**3.71**	7.42	29.7	5	D	SW6010C	6I08012	09/14/16 17:19
7440-41-7	Beryllium	1.13	**0.742**	1.48	3.71	5	J D	SW6010C	6I08012	09/14/16 17:19
7440-43-9	Cadmium		0.742	1.48	3.71	5	U	SW6010C	6I08012	09/14/16 17:19
7440-70-2	Calcium	3470	**742**	1480	3710	5	J D	SW6010C	6I08012	09/14/16 17:19
7440-47-3	Chromium	40.7	**1.48**	2.97	7.42	5	D	SW6010C	6I08012	09/14/16 17:19
7440-48-4	Cobalt	8.98	**3.71**	7.42	9.28	5	J D	SW6010C	6I08012	09/14/16 17:19
7440-50-8	Copper	11.8	**2.97**	5.94	7.42	5	D	SW6010C	6I08012	09/14/16 17:19
7439-89-6	Iron	43200	**22.3**	44.5	74.2	5	D	SW6010C	6I08012	09/14/16 17:19
7439-92-1	Lead	14.9	**1.11**	2.23	3.71	5	D	SW6010C	6I08012	09/14/16 17:19
7439-95-4	Magnesium	7270	**742**	2230	3710	5	D	SW6010C	6I08012	09/14/16 17:19
7439-96-5	Manganese	240	**2.23**	4.45	11.1	5	D	SW6010C	6I08012	09/14/16 17:19
7439-98-7	Molybdenum	6.27	**3.71**	7.42	14.8	5	J D	SW6010C	6I08012	09/14/16 17:19
7440-02-0	Nickel	27.3	**2.23**	4.45	7.42	5	D	SW6010C	6I08012	09/14/16 17:19
7440-09-7	Potassium	5040	**742**	2230	3710	5	D	SW6010C	6I08012	09/14/16 17:19
7782-49-2	Selenium		2.23	3.71	7.42	5	U	SW6010C	6I08012	09/14/16 17:19
7440-22-4	Silver		0.742	1.48	7.42	5	U	SW6010C	6I08012	09/14/16 17:19
7440-23-5	Sodium	12600	**742**	2230	3710	5	D	SW6010C	6I08012	09/14/16 17:19
7440-28-0	Thallium		2.23	2.97	5.94	5	U	SW6010C	6I08012	09/14/16 17:19
7440-62-2	Vanadium	58.6	**3.71**	7.42	9.28	5	D	SW6010C	6I08012	09/14/16 17:19
7440-66-6	Zinc	83.5	**3.71**	7.42	14.8	5	D	SW6010C	6I08012	09/14/16 17:19

ANALYSIS DATA SHEET

DSA02-SB15-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 13:28
% Solids: 29.79

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-19
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	23600	**41.5**	83.1	166	5	~~D~~	SW6010C	6I08012	09/14/16 17:23
7440-36-0	Antimony		4.15	6.65	8.31	5	U	SW6010C	6I08012	09/14/16 17:23
7440-38-2	Arsenic	7.20	**2.49**	4.99	8.31	5	J ~~D~~	SW6010C	6I08012	09/14/16 17:23
7440-39-3	Barium	46.3	**4.15**	8.31	33.2	5	~~D~~	SW6010C	6I08012	09/14/16 17:23
7440-41-7	Beryllium		0.831	1.66	4.15	5	U	SW6010C	6I08012	09/14/16 17:23
7440-43-9	Cadmium		0.831	1.66	4.15	5	U	SW6010C	6I08012	09/14/16 17:23
7440-70-2	Calcium	4130	**831**	1660	4150	5	J ~~D~~	SW6010C	6I08012	09/14/16 17:23
7440-47-3	Chromium	44.1	**1.66**	3.32	8.31	5	~~D~~	SW6010C	6I08012	09/14/16 17:23
7440-48-4	Cobalt	6.97	**4.15**	8.31	10.4	5	J ~~D~~	SW6010C	6I08012	09/14/16 17:23
7440-50-8	Copper	12.3	**3.32**	6.65	8.31	5	D	SW6010C	6I08012	09/14/16 17:23
7439-89-6	Iron	30100	**24.9**	49.9	83.1	5	D	SW6010C	6I08012	09/14/16 17:23
7439-92-1	Lead	14.1	**1.25**	2.49	4.15	5	D	SW6010C	6I08012	09/14/16 17:23
7439-95-4	Magnesium	7780	**831**	2490	4150	5	D	SW6010C	6I08012	09/14/16 17:23
7439-96-5	Manganese	373	**2.49**	4.99	12.5	5	D	SW6010C	6I08012	09/14/16 17:23
7439-98-7	Molybdenum	6.73	**4.15**	8.31	16.6	5	J D	SW6010C	6I08012	09/14/16 17:23
7440-02-0	Nickel	22.8	**2.49**	4.99	8.31	5	D	SW6010C	6I08012	09/14/16 17:23
7440-09-7	Potassium	5360	**831**	2490	4150	5	D	SW6010C	6I08012	09/14/16 17:23
7782-49-2	Selenium		2.49	4.15	8.31	5	U	SW6010C	6I08012	09/14/16 17:23
7440-22-4	Silver		0.831	1.66	8.31	5	U	SW6010C	6I08012	09/14/16 17:23
7440-23-5	Sodium	15300	**831**	2490	4150	5	~~D~~	SW6010C	6I08012	09/14/16 17:23
7440-28-0	Thallium		2.49	3.32	6.65	5	U	SW6010C	6I08012	09/14/16 17:23
7440-62-2	Vanadium	54.5	**4.15**	8.31	10.4	5	D	SW6010C	6I08012	09/14/16 17:23
7440-66-6	Zinc	60.5	**4.15**	8.31	16.6	5	D	SW6010C	6I08012	09/14/16 17:23

ANALYSIS DATA SHEET

DSA02-SB16-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 13:40
% Solids: 43.22

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-20
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7429-90-5	Aluminum	24200	**28.8**	57.6	115	5	D	SW6010C	6I08012	09/14/16 17:28
7440-36-0	Antimony		2.88	4.60	5.76	5	U	SW6010C	6I08012	09/14/16 17:28
7440-38-2	Arsenic	12.9	**1.73**	3.45	5.76	5	D	SW6010C	6I08012	09/14/16 17:28
7440-39-3	Barium	37.0	**2.88**	5.76	23.0	5	D	SW6010C	6I08012	09/14/16 17:28
7440-41-7	Beryllium	1.15	**0.576**	1.15	2.88	5	J D	SW6010C	6I08012	09/14/16 17:28
7440-43-9	Cadmium		0.576	1.15	2.88	5	U	SW6010C	6I08012	09/14/16 17:28
7440-70-2	Calcium	2610	**576**	1150	2880	5	J D	SW6010C	6I08012	09/14/16 17:28
7440-47-3	Chromium	36.8	**1.15**	2.30	5.76	5	D	SW6010C	6I08012	09/14/16 17:28
7440-48-4	Cobalt	12.0	**2.88**	5.76	7.19	5	D	SW6010C	6I08012	09/14/16 17:28
7440-50-8	Copper	12.8	**2.30**	4.60	5.76	5	D	SW6010C	6I08012	09/14/16 17:28
7439-89-6	Iron	42600	**17.3**	34.5	57.6	5	D	SW6010C	6I08012	09/14/16 17:28
7439-92-1	Lead	16.9	**0.863**	1.73	2.88	5	D	SW6010C	6I08012	09/14/16 17:28
7439-95-4	Magnesium	7470	**576**	1730	2880	5	D	SW6010C	6I08012	09/14/16 17:28
7439-96-5	Manganese	333	**1.73**	3.45	8.63	5	D	SW6010C	6I08012	09/14/16 17:28
7439-98-7	Molybdenum	5.34	**2.88**	5.76	11.5	5	J D	SW6010C	6I08012	09/14/16 17:28
7440-02-0	Nickel	36.4	**1.73**	3.45	5.76	5	D	SW6010C	6I08012	09/14/16 17:28
7440-09-7	Potassium	4930	**576**	1730	2880	5	D	SW6010C	6I08012	09/14/16 17:28
7782-49-2	Selenium	1.78	**1.73**	2.88	5.76	5	J D	SW6010C	6I08012	09/14/16 17:28
7440-22-4	Silver		0.576	1.15	5.76	5	U	SW6010C	6I08012	09/14/16 17:28
7440-23-5	Sodium	12700	**576**	1730	2880	5	D	SW6010C	6I08012	09/14/16 17:28
7440-28-0	Thallium		1.73	2.30	4.60	5	U	SW6010C	6I08012	09/14/16 17:28
7440-62-2	Vanadium	44.0	**2.88**	5.76	7.19	5	D	SW6010C	6I08012	09/14/16 17:28
7440-66-6	Zinc	97.0	**2.88**	5.76	11.5	5	D	SW6010C	6I08012	09/14/16 17:28

ANALYSIS DATA SHEET

DSA05-SB29-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 09:21
% Solids: 48.75

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-01
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	2.99	**0.0267**	0.0554	0.0677	1		SW7471B	6H29018	09/13/16 13:02

ANALYSIS DATA SHEET

DSA05-SB30-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 09:49
% Solids: 50.69

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-02
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	3.33	**0.0496**	0.103	0.126	2	~~D~~	SW7471B	6H29018	09/14/16 16:21

ANALYSIS DATA SHEET

DSA05-SB31-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 10:06
% Solids: 52.94

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-03
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	5.72	**0.115**	0.239	0.292	5	~~D~~	SW7471B	6H29019	09/14/16 16:11

ANALYSIS DATA SHEET

DSA05-SB32-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 10:36
% Solids: 51.58

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-04
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	4.15	**0.111**	0.231	0.282	5	~~D~~	SW7471B	6H29019	09/14/16 16:13

ANALYSIS DATA SHEET

DSA01-SB01-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 12:28
% Solids: 82.51

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-05
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0148	0.0307	0.0375	1	U	SW7471B	6H29019	09/13/16 13:10

ANALYSIS DATA SHEET

DSA01-SB02-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 12:45
% Solids: 83.12

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-06
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0156	0.0325	0.0397	1	U	SW7471B	6H29019	09/13/16 13:11

ANALYSIS DATA SHEET

DSA01-SB03-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 12:57
% Solids: 83.35

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-07
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0146	0.0304	0.0371	1	U	SW7471B	6H29019	09/13/16 13:12

ANALYSIS DATA SHEET

DSA01-SB04-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 13:12
% Solids: 83.27

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-08
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0146	0.0304	0.0372	1	U	SW7471B	6H29019	09/13/16 13:14

ANALYSIS DATA SHEET

DSA01-SB05-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 13:49
% Solids: 84.84

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-09
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0144	0.0298	0.0365	1	U	SW7471B	6H29019	09/13/16 13:15

ANALYSIS DATA SHEET

DSA01-SB06-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 14:02
% Solids: 81.32

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-10
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0160	0.0332	0.0406	1	U	SW7471B	6H29019	09/13/16 13:16

ANALYSIS DATA SHEET

DSA01-SB07-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 14:20
% Solids: 83.63

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-11
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0155	0.0323	0.0395	1	U	SW7471B	6H29019	09/13/16 13:20

ANALYSIS DATA SHEET

DSA01-SB08-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/24/16 14:35
% Solids: 84.58

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-12
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0140	0.0290	0.0355	1	U	SW7471B	6H29019	09/13/16 13:21

ANALYSIS DATA SHEET

DSA02-SB09-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 09:07
% Solids: 53.37

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-13
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	0.0315	**0.0236**	0.0490	0.0598	1	J	SW7471B	6H29019	09/13/16 13:22

ANALYSIS DATA SHEET

DSA02-SB10-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 09:19
% Solids: 52.46

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-14
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0225	0.0468	0.0572	1	U	SW7471B	6H29019	09/13/16 13:23

ANALYSIS DATA SHEET

DSA02-SB11-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 09:55
% Solids: 46.75

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-15
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0245	0.0510	0.0623	1	U	SW7471B	6H29019	09/13/16 13:24

ANALYSIS DATA SHEET

DSA02-SB12-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 11:44
% Solids: 55.29

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-16
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury	0.0212	**0.0202**	0.0419	0.0512	1	J	SW7471B	6H29019	09/13/16 13:25

ANALYSIS DATA SHEET

DSA02-SB13-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 12:34
% Solids: 37.62

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-17
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0346	0.0718	0.0877	1	U	SW7471B	6H29019	09/13/16 13:27

ANALYSIS DATA SHEET

DSA02-SB14-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 13:14
% Solids: 33.69

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-18
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0340	0.0707	0.0864	1	U	SW7471B	6H29019	09/13/16 13:28

ANALYSIS DATA SHEET

DSA02-SB15-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 13:28
% Solids: 29.79

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-19
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0374	0.0777	0.0949	1	U	SW7471B	6H29019	09/13/16 13:29

ANALYSIS DATA SHEET

DSA02-SB16-0010

Laboratory: Empirical Laboratories, LLC
Client: CH2M Hill, Inc.
Matrix: Solid
Sampled: 08/25/16 13:40
% Solids: 43.22

SDG: 1608251
Project: Raritan Arsenal - Phase III
Laboratory ID: 1608251-20
Received: 08/26/16 08:45

CAS NO.	Analyte	Conc. (mg/Kg dry)	DL	LOD	LOQ	D.F.	Q	Method	Batch	Analyzed
7439-97-6	Mercury		0.0291	0.0605	0.0739	1	U	SW7471B	6H29019	09/13/16 13:30

MEMORANDUM CH2MHILL

Data Validation Summary

Raritan

TO: Mike Zamboni/WDC

Anita Dodson/VBO

FROM: Tiffany McGlynn/GNV

CC: Herb Kelly/GNV

DATE: October 21, 2016

Introduction

The following data validation report discusses the data validation process and findings for Empirical Laboratories, for Sample Delivery Group (SDG) 1608251.

Samples were analyzed using the following analytical methods:

- SW6010C Metals
- SW7471B Mercury

The samples included in this SDG are listed in the table below.

Sample Name	Matrix
DSA01-SB01-0010	Soil
DSA01-SB02-0010	Soil
DSA01-SB03-0010	Soil
DSA01-SB04-0010	Soil
DSA01-SB05-0010	Soil
DSA01-SB06-0010	Soil
DSA01-SB07-0010	Soil
DSA01-SB08-0010	Soil
DSA02-SB09-0010	Soil
DSA02-SB10-0010	Soil
DSA02-SB11-0010	Soil
DSA02-SB12-0010	Soil
DSA02-SB13-0010	Soil
DSA02-SB14-0010	Soil
DSA02-SB15-0010	Soil

Sample Name	Matrix
DSA02-SB16-0010	Soil
DSA05-SB29-0010	Soil
DSA05-SB30-0010	Soil
DSA05-SB31-0010	Soil
DSA05-SB32-0010	Soil

Data Evaluation

Data was evaluated in accordance with the analytical methods and with the criteria found in the following guidance documents: Uniform Federal Policy- Quality Assurance Project Plan Addendum for the Remedial Investigation/Feasibility Study Military Munitions Response Program Former Raritan Arsenal Edison, New Jersey CTO 003 (August 2016) and National Functional Guidelines for Superfund Organic Methods Data Review (August 2014), as applicable. The samples were evaluated based on the following criteria:

- Data Completeness
- Technical Holding Times
- Instrument Tuning
- Initial/Continuing Calibrations
- Blanks
- Internal Standards
- Laboratory Control Samples
- Matrix Spike Recoveries
- Serial Dilution
- Interference Check Sample
- Identification/Quantitation
- Reporting Limits

Overall Evaluation of Data/Potential Usability Issues

Specific details regarding qualification of the data are addressed in the sections below. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte, the validator has chosen the qualifier that best indicates possible bias in the results and qualified these data accordingly.

Data Completeness

The SDG was received complete and intact.

Technical Holding Times

According to the chain of custody records, sampling was performed on 8/24/16 and 8/25/16. Samples were received at the laboratory on 8/26/16. All sample preparation analysis was performed within holding time requirements.

Conclusion

These data can be used in the project decision-making process as qualified by the data quality evaluation process.

Please do not hesitate to contact us about this validation report.

Sincerely,



Tiffany McGlynn

Qualification Flags

Exclude	More appropriate data exist for this analyte.
R	Data were rejected for use.
UL	Analyte not detected, quantitation limit is potentially biased low.
UJ	Analyte not detected, estimated quantitation limit.
U	Analyte not detected.
B	Not detected substantially above the level reported in laboratory or field blanks.
L	Analyte present, estimated value potentially biased low.
K	Analyte present, estimated value potentially biased high.
N	Analyte identification presumptive; no second column analysis performed or GC/MS tentative identification.
J	Analyte present, estimated value.
NJ	Analysis indicates the presence of an analyte that was "tentatively identified" and the associated value represents its approximate concentration.
None	Placeholder for calculating quality control issues that do not require flagging.
=	Analyte was detected at a concentration greater than the quantitation limit.

Qualifier Code Reference

Value	Description
%SOL	High Moisture content
2C	Second Column – Poor Dual Column Reproducibility
2S	Second Source – Bad reproducibility between tandem detectors
BD	Blank Spike/Blank Spike Duplicate(LCS/LCSD) Precision
BRL	Below Reporting Limit
BSH	Blank Spike/LCS – High Recovery
BSL	Blank Spike/LCS – Low Recovery
CC	Continuing Calibration
CCBL	Continuing Calibration Blank Contamination
CCH	Continuing Calibration Verification – High Recovery
CCL	Continuing Calibration Verification – Low Recovery
DL	Redundant Result – due to Dilution
EBL	Equipment Blank Contamination
EMPC	Estimated Possible Maximum Concentration
ESH	Extraction Standard - High Recovery
ESL	Extraction Standard - Low Recovery
FBL	Field Blank Contamination
FD	Field Duplicate
HT	Holding Time
ICB	Initial Calibration – Bad Linearity or Curve Function
ICH	Initial Calibration – High Relative Response Factors
ICL	Initial Calibration – Low Relative Response Factors
IR15	Ion ratio exceeds +/- 15% difference
ISH	Internal Standard – High Recovery
ISL	Internal Standard – Low Recovery
LD	Lab Duplicate Reproducibility
LR	Concentration Exceeds Linear Range
MBL	Method Blank Contamination
MDP	Matrix Spike/Matrix Spike Duplicate Precision
MI	Matrix interference obscuring the raw data

MSH	Matrix Spike and/or Matrix Spike Duplicate – High Recovery
MSL	Matrix Spike and/or Matrix Spike Duplicate – Low Recovery
OT	Other
PD	Pesticide Degradation
RE	Redundant Result - due to Reanalysis or Re-extraction
SD	Serial Dilution Reproducibility
SSH	Spiked Surrogate – High Recovery
SSL	Spiked Surrogate – Low Recovery
TBL	Trip Blank Contamination
TN	Tune

Appendix F
ProUCL Output

Appendix F1. ProUCL Output – Surface Soil

DSAs 4, 5, and 6 RI Report, Former Raritan Arsenal, Edison, NJ

UCL Statistics for Data Sets with Non-Detects			
User Selected Options			
Date/Time of Computation	ProUCL 5.14/17/2017 3:01:00 PM		
From File	ProUCL_Input.xls		
Full Precision	OFF		
Confidence Coefficient	95%		
Number of Bootstrap Operations	2000		
Iron			
General Statistics			
Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	24800	Mean	54180
Maximum	61900	Median	56550
SD	10660	Std. Error of Mean	3371
Coefficient of Variation	0.197	Skewness	-2.79
Normal GOF Test			
Shapiro Wilk Test Statistic	0.605	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.386	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.262	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	60360	95% Adjusted-CLT UCL (Chen-1995)	56547
		95% Modified-t UCL (Johnson-1978)	59864
Gamma GOF Test			
A-D Test Statistic	2.015	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.725	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.418	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.266	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	19.07	k star (bias corrected MLE)	13.42
Theta hat (MLE)	2841	Theta star (bias corrected MLE)	4038
nu hat (MLE)	381.5	nu star (bias corrected)	268.4
MLE Mean (bias corrected)	54180	MLE Sd (bias corrected)	14791
		Approximate Chi Square Value (0.05)	231.4
Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	225.5
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	62827	95% Adjusted Gamma UCL (use when n<50)	64489

UCL Statistics for Data Sets with Non-Detects			
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.529	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.429	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.262	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	10.12	Mean of logged Data	10.87
Maximum of Logged Data	11.03	SD of logged Data	0.269
Assuming Lognormal Distribution			
95% H-UCL	65151	90% Chebyshev (MVUE) UCL	68512
95% Chebyshev (MVUE) UCL	74854	97.5% Chebyshev (MVUE) UCL	83657
99% Chebyshev (MVUE) UCL	100948		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	59725	95% Jackknife UCL	60360
95% Standard Bootstrap UCL	59485	95% Bootstrap-t UCL	58340
95% Hall's Bootstrap UCL	57426	95% Percentile Bootstrap UCL	58480
95% BCA Bootstrap UCL	57700		
90% Chebyshev(Mean, Sd) UCL	64293	95% Chebyshev(Mean, Sd) UCL	68874
97.5% Chebyshev(Mean, Sd) UCL	75232	99% Chebyshev(Mean, Sd) UCL	87722
Suggested UCL to Use			
95% Student's-t UCL	60360	or 95% Modified-t UCL	59864
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be			
reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.			
Manganese			
General Statistics			
Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	144	Mean	385
Maximum	728	Median	358.5
SD	181.9	Std. Error of Mean	57.52
Coefficient of Variation	0.472	Skewness	0.619

UCL Statistics for Data Sets with Non-Detects			
Normal GOF Test			
Shapiro Wilk Test Statistic	0.962	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.146	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.262	Data appear Normal at 5% Significance Level	
Data appear Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	490.4	95% Adjusted-CLT UCL (Chen-1995)	491.6
		95% Modified-t UCL (Johnson-1978)	492.3
Gamma GOF Test			
A-D Test Statistic	0.128	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.729	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.103	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.267	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	4.861	k star (bias corrected MLE)	3.47
Theta hat (MLE)	79.2	Theta star (bias corrected MLE)	111
nu hat (MLE)	97.22	nu star (bias corrected)	69.39
MLE Mean (bias corrected)	385	MLE Sd (bias corrected)	206.7
		Approximate Chi Square Value (0.05)	51.22
Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	48.51
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	521.6	95% Adjusted Gamma UCL (use when n<50)	550.7
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.985	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.114	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.262	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	4.97	Mean of logged Data	5.847
Maximum of Logged Data	6.59	SD of logged Data	0.499
Assuming Lognormal Distribution			
95% H-UCL	566.8	90% Chebyshev (MVUE) UCL	573
95% Chebyshev (MVUE) UCL	657.3	97.5% Chebyshev (MVUE) UCL	774.4
99% Chebyshev (MVUE) UCL	1004		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			

UCL Statistics for Data Sets with Non-Detects			
Nonparametric Distribution Free UCLs			
95% CLT UCL	479.6	95% Jackknife UCL	490.4
95% Standard Bootstrap UCL	476	95% Bootstrap-t UCL	507.2
95% Hall's Bootstrap UCL	520.7	95% Percentile Bootstrap UCL	472.3
95% BCA Bootstrap UCL	491.6		
90% Chebyshev(Mean, Sd) UCL	557.6	95% Chebyshev(Mean, Sd) UCL	635.7
97.5% Chebyshev(Mean, Sd) UCL	744.2	99% Chebyshev(Mean, Sd) UCL	957.3
Suggested UCL to Use			
95% Student's-t UCL	490.4		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
Vanadium			
General Statistics			
Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	35.1	Mean	98.57
Maximum	123	Median	101.2
SD	24.8	Std. Error of Mean	7.843
Coefficient of Variation	0.252	Skewness	-2.068
Normal GOF Test			
Shapiro Wilk Test Statistic	0.779	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.283	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.262	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	112.9	95% Adjusted-CLT UCL (Chen-1995)	106
		95% Modified-t UCL (Johnson-1978)	112.1
Gamma GOF Test			
A-D Test Statistic	1.287	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.725	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.339	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.267	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			

UCL Statistics for Data Sets with Non-Detects			
Gamma Statistics			
k hat (MLE)	11.09	k star (bias corrected MLE)	7.829
Theta hat (MLE)	8.889	Theta star (bias corrected MLE)	12.59
nu hat (MLE)	221.8	nu star (bias corrected)	156.6
MLE Mean (bias corrected)	98.57	MLE Sd (bias corrected)	35.23
		Approximate Chi Square Value (0.05)	128.6
Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	124.3
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	120	95% Adjusted Gamma UCL (use when n<50)	124.2
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.638	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.365	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.262	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	3.558	Mean of logged Data	4.545
Maximum of Logged Data	4.812	SD of logged Data	0.361
Assuming Lognormal Distribution			
95% H-UCL	128.6	90% Chebyshev (MVUE) UCL	134.4
95% Chebyshev (MVUE) UCL	150.1	97.5% Chebyshev (MVUE) UCL	171.8
99% Chebyshev (MVUE) UCL	214.5		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	111.5	95% Jackknife UCL	112.9
95% Standard Bootstrap UCL	110.9	95% Bootstrap-t UCL	109.4
95% Hall's Bootstrap UCL	107.6	95% Percentile Bootstrap UCL	109.4
95% BCA Bootstrap UCL	107.6		
90% Chebyshev(Mean, Sd) UCL	122.1	95% Chebyshev(Mean, Sd) UCL	132.8
97.5% Chebyshev(Mean, Sd) UCL	147.5	99% Chebyshev(Mean, Sd) UCL	176.6
Suggested UCL to Use			
95% Student's-t UCL	112.9	or 95% Modified-t UCL	112.1
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be			
reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.			

UCL Statistics for Data Sets with Non-Detects	
User Selected Options	
Date/Time of Computation	ProUCL 5.14/17/2017 8:23:37 PM
From File	ProUCL_Input_c.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Iron

General Statistics

Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	38300	Mean	64200
Maximum	86200	Median	64700
SD	12574	Std. Error of Mean	3976
Coefficient of Variation	0.196	Skewness	-0.396

Normal GOF Test

Shapiro Wilk Test Statistic	0.953	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.157	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.262	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	71489	95% Adjusted-CLT UCL (Chen-1995)	70208
		95% Modified-t UCL (Johnson-1978)	71406

Gamma GOF Test

A-D Test Statistic	0.41	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.725	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.178	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.266	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	26.12	k star (bias corrected MLE)	18.35
Theta hat (MLE)	2458	Theta star (bias corrected MLE)	3499
nu hat (MLE)	522.3	nu star (bias corrected)	367
MLE Mean (bias corrected)	64200	MLE Sd (bias corrected)	14988
		Approximate Chi Square Value (0.05)	323.6
Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	316.5

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	72810	95% Adjusted Gamma UCL (use when n<50)	74441

UCL Statistics for Data Sets with Non-Detects			
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.9	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.198	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.262	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	10.55	Mean of logged Data	11.05
Maximum of Logged Data	11.36	SD of logged Data	0.214
Assuming Lognormal Distribution			
95% H-UCL	73752	90% Chebyshev (MVUE) UCL	77383
95% Chebyshev (MVUE) UCL	83317	97.5% Chebyshev (MVUE) UCL	91553
99% Chebyshev (MVUE) UCL	107730		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	70740	95% Jackknife UCL	71489
95% Standard Bootstrap UCL	70241	95% Bootstrap-t UCL	70940
95% Hall's Bootstrap UCL	71618	95% Percentile Bootstrap UCL	70490
95% BCA Bootstrap UCL	69900		
90% Chebyshev(Mean, Sd) UCL	76128	95% Chebyshev(Mean, Sd) UCL	81532
97.5% Chebyshev(Mean, Sd) UCL	89031	99% Chebyshev(Mean, Sd) UCL	103762
Suggested UCL to Use			
95% Student's-t UCL	71489		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be			
reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.			
Manganese			
General Statistics			
Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	192	Mean	284.4
Maximum	566	Median	249
SD	105.8	Std. Error of Mean	33.44

UCL Statistics for Data Sets with Non-Detects			
Coefficient of Variation	0.372	Skewness	2.455
Normal GOF Test			
Shapiro Wilk Test Statistic	0.699	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.326	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.262	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	345.7	95% Adjusted-CLT UCL (Chen-1995)	367.2
		95% Modified-t UCL (Johnson-1978)	350
Gamma GOF Test			
A-D Test Statistic	0.859	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.725	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.273	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.267	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	11.03	k star (bias corrected MLE)	7.79
Theta hat (MLE)	25.78	Theta star (bias corrected MLE)	36.51
nu hat (MLE)	220.7	nu star (bias corrected)	155.8
MLE Mean (bias corrected)	284.4	MLE Sd (bias corrected)	101.9
		Approximate Chi Square Value (0.05)	128
Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	123.6
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	346.3	95% Adjusted Gamma UCL (use when n<50)	358.6
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.83	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.253	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.262	Data appear Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	5.257	Mean of logged Data	5.604
Maximum of Logged Data	6.339	SD of logged Data	0.298
Assuming Lognormal Distribution			
95% H-UCL	345.5	90% Chebyshev (MVUE) UCL	363.1
95% Chebyshev (MVUE) UCL	399.5	97.5% Chebyshev (MVUE) UCL	450.1
99% Chebyshev (MVUE) UCL	549.5		

UCL Statistics for Data Sets with Non-Detects			
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	339.4	95% Jackknife UCL	345.7
95% Standard Bootstrap UCL	336.8	95% Bootstrap-t UCL	419.5
95% Hall's Bootstrap UCL	557.3	95% Percentile Bootstrap UCL	342.4
95% BCA Bootstrap UCL	367.6		
90% Chebyshev(Mean, Sd) UCL	384.7	95% Chebyshev(Mean, Sd) UCL	430.2
97.5% Chebyshev(Mean, Sd) UCL	493.2	99% Chebyshev(Mean, Sd) UCL	617.1
Suggested UCL to Use			
95% Student's-t UCL	345.7	or 95% Modified-t UCL	350
or 95% H-UCL	345.5		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
ProUCL computes and outputs H-statistic based UCLs for historical reasons only.			
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.			
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.			
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.			
Vanadium			
General Statistics			
Total Number of Observations	10	Number of Distinct Observations	9
		Number of Missing Observations	0
Minimum	52.6	Mean	101.8
Maximum	118	Median	107
SD	18.03	Std. Error of Mean	5.703
Coefficient of Variation	0.177	Skewness	-2.669
Normal GOF Test			
Shapiro Wilk Test Statistic	0.649	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.337	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.262	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	112.2	95% Adjusted-CLT UCL (Chen-1995)	106
		95% Modified-t UCL (Johnson-1978)	111.4

UCL Statistics for Data Sets with Non-Detects			
Gamma GOF Test			
A-D Test Statistic	1.801	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.725	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.37	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.266	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	25.2	k star (bias corrected MLE)	17.71
Theta hat (MLE)	4.038	Theta star (bias corrected MLE)	5.747
nu hat (MLE)	504	nu star (bias corrected)	354.1
MLE Mean (bias corrected)	101.8	MLE Sd (bias corrected)	24.18
		Approximate Chi Square Value (0.05)	311.5
Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	304.6
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	115.7	95% Adjusted Gamma UCL (use when n<50)	118.3
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.571	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.385	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.262	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	3.963	Mean of logged Data	4.603
Maximum of Logged Data	4.771	SD of logged Data	0.23
Assuming Lognormal Distribution			
95% H-UCL	118.5	90% Chebyshev (MVUE) UCL	124.5
95% Chebyshev (MVUE) UCL	134.6	97.5% Chebyshev (MVUE) UCL	148.7
99% Chebyshev (MVUE) UCL	176.3		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	111.1	95% Jackknife UCL	112.2
95% Standard Bootstrap UCL	110.8	95% Bootstrap-t UCL	109.1
95% Hall's Bootstrap UCL	107.6	95% Percentile Bootstrap UCL	109
95% BCA Bootstrap UCL	107.9		
90% Chebyshev(Mean, Sd) UCL	118.9	95% Chebyshev(Mean, Sd) UCL	126.6
97.5% Chebyshev(Mean, Sd) UCL	137.4	99% Chebyshev(Mean, Sd) UCL	158.5
Suggested UCL to Use			
95% Student's-t UCL	112.2	or 95% Modified-t UCL	111.4

Appendix F2. ProUCL Output - Subsurface Soil

DSAs 4, 5, and 6 RI Report, Former Raritan Arsenal, Edison, NJ

UCL Statistics for Data Sets with Non-Detects
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.
Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be
reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.