ARCADIS
Infrastructure, environment, buildings

Imagine the result

US Army Corps of Engineers
Baltimore District

FINAL

Response Action Completion and Closure Report for the Northern Burning Ground

New River Unit (RAAP-044)

Radford Army Ammunition Plant
Radford, Virginia

Prepared for:
Radford Army Ammunition Plant

October 2010

ATK Armament Systems
Energetic Systems
Radford Army Ammunition Plant
Route 114, P.O. Box 1
Radford, VA 24143-0100

www.atk.com

October 15, 2010

Mr. James L. Cutler, Jr.
Virginia Department of Environmental Quality
629 East Main Street
Richmond, VA 23219

Subject: Transmittal Acknowledgement,
Final Response Action Completion and Closure Report for the Northern Burning Ground, New River Unit (RAAP-044) April 2010

Dear Mr. Cutler:

This letter is to acknowledge transmittal of the subject document that was sent to you on October 12, 2010. Enclosed is a copy of the 12 October 2010 transmittal email.

Please coordinate with and provide any questions or comments to myself at (540) 639-8658, Jerry Redder ATK staff (540) 639-7536 or Jim McKenna, ACO Staff (540) 731-5782.

Sincerely,

P.W. Holt, Environmental Manager
Alliant Techsystems Inc.

c: Karen Sismour
Virginia Department of Environmental Quality
P. O. Box 1105
Richmond, VA 23218

E. A. Lohman
Virginia Department of Environmental Quality
Blue Ridge Regional Office
3019 Peters Creek Road
Roanoke, VA 24019

10-815-150
JMcKenna

Rich Mendoza
1 Rock Island Arsenal
Attn: IMAE-CDN
Bldg 350, 3rd Fl, NW Wing, Rm 319
Rock Island, Illinois, 61299

Tom Meyer
Corps of Engineers, Baltimore District
ATTN: CENAB-EN-HM
10 South Howard Street
Baltimore, MD 21201

bc: Administrative File
J. McKenna, ACO Staff
Rob Davie-ACO Staff
P.W. Holt
J. J. Redder
Env. File

Coordination: J. McKenna

10-815-150
JMcKenna

Greene, Anne

From: McKenna, Jim
Sent: Tuesday, October 12, 2010 2:04 PM
To: Greene, Anne; Cutler,Jim; dennis.druck@us.army.mil; diane.wisbeck@arcadis-us.com; durwood willis2; Geiger.William@epamail.epa.gov; Redder, Jerome; jim spencer; Llewellyn, Tim; Lohman,Elizabeth; Mendoza, Rich; Meyer, Tom NAB02; Parks, Jeffrey N; Sismour,Karen; Timothy.Leahy@shawgrp.com; Tina_MacGillivray@URSCorp.com
Subject: FW: Radford NRU - NBG Completion Report (UNCLASSIFIED)

Importance: High

Classification: UNCLASSIFIED
Caveats: FOUO

All,

Below are the FedEx Tracking Numbers for the Final Northern Burning Ground Completion Report. As listed in the table below, many of the recipients will only be receiving revised cover pages for the report as there were no changes to the Draft Version. Please let me know if you have any questions.

Thank you for your support of the Radford AAP Installation Restoration Program.
Jim McKenna

Recipient

Copies

Fed Ex Tracking Number

James McKenna

1 Complete Hard Copy

1 Set of Replacement Cover Pages

2 CDs w/ full report

7940 0148 5000

Richard Mendoza

1 Set of Replacement Cover Pages

1 CD w/ full report

7963 3367 1737

Tom Meyer

1 Set of Replacement Cover Pages

1 CD w/ full report

7940 0149 9083

Dennis Druck

1 Set of Replacement Cover Pages

7940 0150 4800

Elizabeth Lohman

1 CD w/full report

7963 3370 1376

James Cutler

1 Complete Hard Copy

7940 0150 9515

Karen Sismour

1 Complete Hard Copy

7963 3369 5561

Susan Ryan

1 CD w/full report

7940 0149 3843

Classification: UNCLASSIFIED
Caveats: FOUO

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
Street address: 629 East Main Street, Richmond, Virginia 23219
Mailing address: P.O. Box 1105, Richmond, Virginia 23218
TDD (804) 698-4021
www.deq.virginia.gov

Douglas W. Domenech
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4020
1-800-592-5482

October 7, 2010

Mr. Jim McKenna
Radford Army Ammunition Plant
Route 114, P.O. Box 1
Radford, Virginia 24143-0100

Re: Response Action Completion Report- Northern Burning Ground-NRU

Dear Mr. McKenna:

The Virginia Department of Environmental Quality (VDEQ) has reviewed the Draft Response Action Completion and Closure Report for the Northern Burning Ground at the New River Unit (RAAP-044). VDEQ has no further comments and the report can be submitted as Final.

Please contact me at (804) 698-4498 if you have any questions or comments regarding the above site.

James L. Cutler, Jr., CPG
Federal Facilities Project Manager

cc: Paige Holt, ATK
Aziz Farahmand, VDEQ-BRRO

DEPARTMENT OF THE ARMY
US ARMY PUBLIC HEALTH COMMAND (PROVISIONAL)
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND, MD 21010-5403

MCHB-TS-REH

17 APR 2010

MEMORANDUM FOR Office of Environmental Quality, Radford Army Ammunition Plant (SJMRF-OP-EQ/Mr. Jim McKenna), P.O. Box 2, Radford, VA 24143-0002

SUBJECT: Draft Response Action Completion and Closure Report for the Northern Burning Ground New River Unit (RAAP-044), Radford Army Ammunition Plant, Virginia, April 2010

1. The US Army Public Health Command (Provisional), formerly the US Army Center for Health Promotion and Preventive Medicine, reviewed the subject document on behalf of the Office of The Surgeon General pursuant to Army Regulation 200-1 (Environmental Protection and Enhancement). We appreciate the opportunity to review the report.

2. We concur with the certification that the remedial actions achieved the Remedial Action Objectives and the site is suitable for clean closure and unrestricted future use.

3. The document was reviewed by Mr. Dennis Druck, Environmental Health Risk Assessment Program. He can be reached at DSN 584-2953, commercial (410) 436-2953 or electronic mail, dennis.druck@us.army.mil.

FOR THE COMMANDER:

JEFFREY S. KIRKPATRICK
Director, Health Risk Management

CF:
HQDA (DASG-PPM-NC)
IMCOM-NE (IMNE-PWD-E)
USACE (CEHNC-CX-ES)
USAEC (IMAE-CD/Mr. Rich Mendoza)

ATK Armament Systems
Energetic Systems
Radford Army Ammunition Plant
Route 114, P.O. Box 1
Radford, VA 24143-0100

www.atk.com

April 9, 2010

Mr. James L. Cutler, Jr.
Virginia Department of Environmental Quality
629 East Main Street
Richmond, VA 24143-0100

Subject: Transmittal Acknowledgement,
Draft Response Action Completion and Closure Report for the Northern Burning Ground, New River Unit (RAAP-044) April 2010

Dear Mr. Cutler:

This letter is to acknowledge transmittal of the subject document that was sent to you on April 6, 2010. Enclosed is a copy of the 6 April 2010 transmittal email.

Please coordinate with and provide any questions or comments to myself at (540) 639-8658, Jerry Redder ATK staff (540) 639-7536 or Jim McKenna, ACO Staff (540) 731-5782.

Sincerely,

P.W. Holt, Environmental Manager
Alliant Techsystems Inc.

c: Karen Sismour
Virginia Department of Environmental Quality
P. O. Box 10009
Richmond, VA 23240-0009

E. A. Lohman
Virginia Department of Environmental Quality
Blue Ridge Regional Office
3019 Peters Creek Road
Roanoke, VA 24019

10-815-60
JMcKenna

Rich Mendoza
1 Rock Island Arsenal
Attn: IMAE-CDN
Bldg 350, 3rd Fl, NW Wing, Rm 319
Rock Island, Illinois, 61299

Tom Meyer
Corps of Engineers, Baltimore District
ATTN: CENAB-EN-HM
10 South Howard Street
Baltimore, MD 21201

10-815-60
JMcKenna

bc: Administrative File
J. McKenna, ACO Staff
Rob Davie-ACO Staff
P.W. Holt
J. J. Redder
Env. File

Coordination: J. McKenna

10-815-60
JMcKenna

Greene, Anne

From: McKenna, Jim
Sent: Tuesday, April 06, 2010 9:42 AM
To: Greene, Anne; Cutler,Jim; dennis.druck@us.army.mil; diane.wisbeck@arcadis-us.com; Redder, Jerome; Lohman,Elizabeth; Mendoza, Rich; Meyer, Tom NAB02; Sismour,Karen; Ryan, Susan M CIV USA IMCOM; Flint, Jeremy
Subject: Draft Response Action Completion Closure Report for the Northern Burning Ground, New River Unit (UNCLASSIFIED)

Importance: High

Classification: UNCLASSIFIED
Caveats: FOUO

All,

ARCADIS will send the subject report out today to the POCs and tracking numbers below:

James McKenna	7985 4101 8840
Richard Mendoza	7985 4102 2007
Susan Ryan (San Antonio)	7934 1880 4338
Tom Meyer	7934 1880 7186
Dennis Druck	7985 4103 0233
James Cutler	7985 4103 3416
Karen Sismour	7985 4103 6286
Elizabeth Lohman	7934 1881 8893

Thank you for your support of the Radford AAP Installation Restoration Program.

Jim McKenna

Classification: UNCLASSIFIED
Caveats: FOUO

FINAL

Response Action Completion and Closure Report for the Northern Burning Ground, New River Unit (RAAP-044)

Radford Army Ammunition Plant, Radford, Virginia

October 2010

Christopher Kalinowski
Site Manager

Diane D. Wisbeck
Project Manager

FINAL
Response Action Completion and Closure Report for the Northern Burning Ground, New River Unit (RAAP-044)

Radford Army Ammunition Plant
Radford, Virginia

Prepared for:
U.S. Army

Prepared by:
ARCADIS
1114 Benfield Boulevard
Suite A
Millersville
Maryland 21108
Tel 410.987.0032
Fax 410.987.4392

Our Ref.:
GP08RAAP.4NBG

Date:
October 2010

Table of Contents

Table of Contents

Table of Contents

Table of Contents

Acronyms and Abbreviations

AEC	U.S. Army Environmental Command
ARAR	Applicable or Relevant and Appropriate Requirements
bgs	Below Ground Surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CES	Construction and Environmental Services
CFR	Code of Federal Regulations
EE/CA	Engineering Evaluation/Cost Analysis
EPC	Exposure Point Concentration
EQ	Environmental Quality Company
ft	Feet
ft msl	Feet Above Mean Sea Level
IRP	Installation Restoration Program
MMA	Main Manufacturing Area
NBG	Northern Burning Ground
NCP	National Contingency Plan
NROW	New River Ordinance Works
NRU	New River Unit
PBC	Performance Based Contract
QAPA	Quality Assurance Plan Addendum
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
QC	Quality Control
RAL	Remedial Action Level
RAO	Remedial Action Objective
RFAAP	Radford Army Ammunition Plant
RSL	Regional Screening Levels
SVOC	Semi-Volatile Organic Compound
UCL	Upper Confidence Limit
USEPA	United States Environmental Protection Agency
VDEQ	Virginia Department of Environmental Quality
VOC	Volatile Organic Compound
XRF	X-Ray Fluorescence

1. Introduction

ARCADIS U.S., Inc. (ARCADIS) has been retained by the United States Army Environmental Command (AEC) to perform Installation Restoration Program (IRP) activities at the Radford Army Ammunition Plant (RFAAP). The RFAAP facility is located in the mountains of southwestern Virginia and consists of two noncontiguous units: the Main Manufacturing Area (MMA) and the New River Unit (NRU). The MMA is located approximately 5 miles northeast of the City of Radford, in Montgomery County, Virginia. The NRU is located about six miles west of the MMA, near the town of Dublin, in Pulaski County, Virginia (Figure 1-1). The IRP activities for both the RFAAP-MMA and the NRU are being conducted as part of a Performance Based Contract (PBC) awarded to ARCADIS under contract W91ZLK-05-D-0015: Task Order 0002. The RFAAP-NRU is managed under the Comprehensive Environmental Response and Compensation Liability Act (CERCLA).

This site-specific Response Action Completion and Closure Report has been prepared to summarize the remedial activities completed at the Northern Burning Ground (NBG) area at RFAAP-NRU. This report also provides certification that the activities achieved the remedial action objectives that were outlined for the NBG in the Removal Action Work Plan (ARCADIS 2009a), the Engineering Evaluation/Cost Analysis (EE/CA) Report (ARCADIS 2009c), and the Action Memorandum for the Soil Removal Action at the Northern Burning Ground (RFAAP 2009). The following major sections are included in this report:

- Introduction;
- Remedial Action Requirements;
- Remedial Action Implementation;
- Quality Assurance/Quality Control
- Final Site Inspection;
- Construction Alterations;
- Future Requirements; and,
- Certification.

Each section discusses specific site issues leading to the completion of the remedial action activities. Data collected throughout the closure activities are summarized in tables or appended for reference as supporting documentation.

1.1 Site History

The RFAAP-NRU was established in 1940, and was originally known as the New River Ordinance Works (NROW). The NROW was incorporated into the RFAAP in 1945. The RFAAP-NRU facility operated as a bag manufacturing and loading plant for artillery, cannon, and mortar projectiles during World War II. Although active manufacturing activities at the RFAAP-NRU were reported to have ceased in the 1940's (after World War II), portions of the RFAAP-NRU are still utilized as storage facilities for operations at the MMA.

The area of the RFAAP-NRU identified as the NBG was temporarily utilized as a burning ground for the facility. Anecdotal evidence suggests that the burning operations may have been conducted to remove energetics from components used in, or impacted by, the former manufacturing activities at the site. No buildings have existed at the NBG site; burning operations were conducted directly on the ground surface.

1.2 Purpose and Objectives of Remedial Action

Based on the elevated risk levels presented by lead and chromium in soil at the NBG, a remedial action was deemed necessary for the site. In order to guide the remedial process, two primary Remedial Action Objectives (RAOs) were identified for the NBG. The first RAO was to minimize the potential for human exposure to soils containing lead and chromium at concentrations above applicable cleanup levels, thus reducing the potential for adverse health affects associated with exposure to lead and chromium in soil. The second RAO was to minimize the potential for elevated concentrations of lead and chromium in soil to migrate to un-impacted areas. Following the evaluation of the available remedial options presented within the EE/CA, a soil removal action was selected for the NBG that achieved both of the RAO's and will allow for unrestricted future development of the site. The selected removal action was excavation and off-site disposal of soils containing lead and chromium at concentrations above their respective Remedial Action Levels RALs (see Section 2.2). This removal action will be the final remedy for the NBG.

1.3 Statutory and Regulatory Authority

The removal action at the NBG was undertaken by the United States Army as part of the IRP at Radford Army Ammunition Plant. The remediation activities at the NRU are being managed under CERCLA, with the Virginia Department of Environmental Quality (VDEQ) as the lead review agency. The investigation, reporting, and remedial actions conducted at the NRU are being conducted in accordance with the requirements outlined in National Oil and Hazardous Substances Pollution Contingency Plan (aka National Contingency Plan [NCP]), 40 Code of Federal Regulations (CFR) Part 300.

The NBG site presented a relatively time-sensitive, non-complex problem that could be addressed relatively cost effectively. Based on the considerations outlined in 40 CFR 300.415(b)(2)(iv), the removal action conducted at the NBG was appropriate due to the presence of elevated levels of hazardous substances (i.e., chromium and lead) in soils that were largely at or near the surface which had the potential to migrate to adjacent soils, drainage ditch sediments, and groundwater. The removal action at the NBG complied with all Applicable or Relevant and Appropriate Requirements (ARARs) outlined in the EE/CA.

2. Remedial Action Requirements

2.1 Cleanup Levels

Based on the assessment of the available remedial alternatives for the NBG site presented in the EE/CA, excavation and off-site disposal of impacted soils was determined to be the most effective option for achieving the RAOs and protecting human health and the environment. Although the current and reasonably anticipated future use of the NBG site is military/industrial, a cost benefit analysis indicated that in this specific case it was to the ARMY's advantage to remediate to residential levels and eliminate the need for long term monitoring and/or land use controls (LUCs). In the absence of any state mandated soil clean-up levels, the United States Environmental Protection Agency's (USEPA) Regional Screening Levels (RSLs) for residential soil (USEPA 2009) were used as the Cleanup Levels for the site. The residential soil RSLs for chromium and lead are 280 mg/kg and 400 mg/kg, respectively.

2.2 Attainment of Cleanup Levels

To facilitate the evaluation of the attainment of the residential cleanup levels, Remediation Action Levels (RALs) were developed as part of the EE/CA following USEPA's *Guidance on Surface Soil Cleanup at Hazardous Waste Sites* (USEPA 2005). As defined by USEPA (2005), the RAL is the maximum concentration that may be left in place within an exposure unit such that the predicted average concentration is at or below the Cleanup Level. RALs for lead (3,000 mg/kg) and chromium (1,620 mg/kg) were established as the not-to-exceed levels for the NBG in the EE/CA.

2.3 Planned Response Action Area

The comprehensive soil sampling events completed at the site between 1997 and 2008 clearly indicated that the highest concentrations of lead and chromium at the NBG were confined to the central portion of the site. This area is believed to be where the former burning activities were completed. The planned response action area was approximately 110 ft by 70 ft, and encompassed the central portion of the site where the highest lead and chromium concentrations were historically detected (Figure 2-1). The impacts within this area were primarily confined to the interval from ground surface to approximately 1 ft below ground surface (bgs). However, lead and chromium were detected at elevated concentrations at a depth of approximately 4 ft bgs within a small (approximately 35 ft by 10 ft) portion of the site.

3. Remedial Action Implementation

The field activities for the NBG remedial action were initiated on December 7, 2009 and were completed by December 11, 2009. This section provides an outline of the project organization, and details the various activities that were completed during implementation of the remedial action at the Northern Burning Ground.

3.1 Project Organization

ARCADIS served as the prime contractor for the remedial action implementation at the NBG. ARCADIS utilized internal staff to perform the majority of the related site work, including the site preparation, excavation, confirmation sampling, and site restoration activities. However, ARCADIS did utilize the services of various subcontractors to assist with the performance of several key components, including; utility location, waste coordination, waste hauling, backfill delivery, and laboratory analytical services. Following is a list of the key personnel/subcontractors involved in the performance of the work:

- Project Manager: Diane Wisbeck (ARCADIS)
- Site Manager: Christopher Kalinowski (ARCADIS)
- Construction Crew: ARCADIS – Construction and Environmental Services (CES) Division
- Facility Work Permits: Matt Alberts (Alliant Techsystems, Inc.)
- Construction Supervisor: David Kingsley (ARCADIS)
- Confirmation Sampling: Jason Tillotson (ARCADIS)
- Utility Clearance: Mid-Atlantic Utility Locating, LLC
- Waste Coordinator: Terri Fort (Capitol Environmental Services, Inc.)
- Waste Hauler: US Bulk Transport, Inc.
- Backfill Delivery: JWB Contractors, LLC
- Laboratory Analytical Services: Empirical Laboratories, Inc.

- Health and Safety Supervisor: Christopher Kalinowski (ARCADIS)

3.2 Chronological Summary of Response Action Activities

The following table provides a daily chronology of activities that were completed during the NBG response action. Further details on the various activities completed during the response action are also provided in Sections 3-3 through 3-5.

Date	Description of Activities
7 December 2009	Mobilized personnel and equipment to the site, obtained facility work permits, performed utility location, installed silt fencing, cleared vegetation from work area, and laid out initial/planned boundaries of the excavation.
8 December 2009	Performed excavation perimeter confirmation sampling, set up truck loading and decontamination pad, improved dirt access road on the east side of the site, began excavation of lead and chromium impacted soils, loaded four (4) dump trailers for transportation to the disposal facility.
9 December 2009	Continued excavation of lead and chromium impacted soils, loaded a total of ten (10) dump trailers for transportation to the disposal facility, performed confirmation soil sampling in areas where target depth was reached.
10 December 2009	Completed excavation of lead and chromium impacted soils, loaded two (2) dump trailers for transportation to the disposal facility, completed confirmation soil sampling from excavation base and the boundaries of the expanded footprint, decontaminated equipment used in excavation activities, backfilled excavation area
11 December 2009	Seeded excavation area and put down straw ground cover, demobilized equipment and personnel from the site.
21 January 2010	Performed final site inspection.
Summer 2010	Planned abandonment of groundwater monitoring wells and removal of silt fencing from NBG site. Reseeding as necessary.

3.3 Site Preparation Activities

3.3.1 Mobilization and Work Permits

ARCADIS' field personnel and equipment were mobilized to RFAAP-NRU on December 7, 2009 for performance of the removal action activities at the NBG site. Prior to conducting any work on-site, an Area Entry Permit and a Hot Work Permit were obtained from the RFAAP Safety Department. No other permits were required for the performance of this work.

3.3.2 Subsurface Utility Clearance

Prior to initiating any intrusive activities at the site, ARCADIS' field personnel completed a preliminary site inspection along with the RFAAP Safety Department to identify any potential surface or subsurface impedances to the proposed work. ARCADIS also utilized the subcontract services of Mid-Atlantic Utility Locating, LLC, to perform utility clearance services at the site on December 7, 2009. No utilities or other subsurface impedances were identified at the site.

3.3.3 Erosion and Sediment Control

ARCADIS erected silt fencing along the northern perimeter of the excavation area to prevent sediment transport from the work area to the drainage ditch and culvert on the northern perimeter of the site. Hay bales were also placed along the drainage ditch to provide additional protection for the storm-water culvert that passes underneath the paved surface road on the north side of the NBG. The silt fencing and hay bales will be left in place until site vegetation has been re-established. The silt fencing is tentatively scheduled to be removed during the summer of 2010. The location of the silt fencing and hay bales are depicted in Figure 3-1.

3.3.4 Site Clearing

ARCADIS cleared a total of 10 trees and several small woody shrubs from the excavation footprint and surrounding area prior to initiating the excavation activities. All cleared vegetation was spread into the wooded areas surrounding the NBG site and will be allowed to decay naturally (i.e., trees were laid down in wooded areas and large branches were removed). Tree stumps outside the excavation area were cut down to

near ground surface and left in place, while tree stumps within the excavation footprint were removed during the excavation activities and disposed of with the excavated soil.

3.3.5 Truck and Equipment Access/Egress Routes and Loading/Decontamination Pad

Due to wet weather conditions and site access restrictions, the truck and equipment access/egress routes, and the truck loading/decontamination areas were revised from the locations presented in the Removal Action Work Plan (ARCADIS, 2009a). Rather than have the trucks/dump trailers (used for soil transportation to the disposal facility) utilize the dirt road that loops around the south side of the site to access the work area, the trucks/trailers were kept on the paved road on the north side of the site. A truck loading and decontamination pad constructed with 10-mil polyethylene tarps was set up on the paved road to collect any debris spilled during the truck loading process. The location of the truck loading and decontamination pad is depicted in Figure 3-2. Because the dump trailers were direct loaded and were kept on the paved surface road, minimal on-site truck cleaning/decontamination was required during the removal action. Upon completion of the excavation activities, the excavation equipment was cleaned on the decontamination pad. The decontamination materials and water were disposed of with the soil.

Due to wet soil conditions, a portion of the dirt access road on the western side of the NBG was improved with a gravel base layer to allow dump trucks transporting backfill material to the site to access the work area and to minimize the potential for tracking soil onto the paved roads. The extent of the gravel road improvements are depicted in Figure 3-2. The gravel road improvements were left in place upon completion of the site work.

3.4 Excavation and Disposal Activities

3.4.1 Pre-Excavation Survey and Boundary Confirmation Sampling

Prior to commencing the excavation activities, ARCADIS clearly marked the planned boundaries of the excavation footprint presented in Figure 2-1. The boundaries were defined based on measurements from pre-surveyed benchmark locations (i.e., Monitoring Wells NBG-MW01 and NBG-MW02). To confirm that the planned boundaries of the excavation would encompass the surface soils containing lead and chromium at concentrations above their respective RALs of 3,000 mg/kg and 1,620 mg/kg, eight soil samples (NBG-XRF001 through NBG-XRF008) were collected along the northern perimeter of the planned excavation area. These eight sample locations are depicted in Figure 3-3. As discussed in the Removal Action Work Plan, boundary

confirmation samples were not required on the southern half of the excavation due to the abundance of samples collected in that portion of the site during the historical site characterization process. The perimeter confirmation samples were analyzed on-site for lead and chromium using an Innov-X Systems™ portable XRF device that had been calibrated for soil screening.

The results from the initial perimeter confirmation samples indicated that 6 of the 8 samples (NBG-XRF001, NBG-XRF002, NBG-XRF003, NBG-XRF006, NBG-XRF007, and NBG-XRF008) had lead and chromium concentrations below their respective RALs. However, two of the samples (NBG-XRF004 and NBG-XRF005) had lead concentrations in excess of the lead RAL of 3,000 mg/kg. As shown in Figure 3-3, sample locations NBG-XRF004 and NBG-XRF005 were located near the northern tip of the planned excavation footprint.

In response to the lead detections at NBG-XRF004 and NBG-XRF005, the northern boundary of the excavation footprint was expanded approximately 6 ft to the north. The boundaries of the expanded footprint are depicted in Figure 3-3. XRF analyses conducted on three soil samples (NBG-XRF032, NBG-XRF033, and NBG-XRF036) collected along the expanded excavation boundary indicated that lead and chromium concentrations were well below their respective RALs. These results confirmed that the excavation footprint would encompass the target lead and chromium concentrations.

The results of all XRF analyses for the perimeter soil samples are presented in Table 3-1 and Figure 3-3.

In addition to the field XRF analyses, 3 of the 11 samples collected during the boundary confirmation sampling activities were submitted for laboratory analysis of lead and chromium by USEPA Method 6010B. The results from these samples, which included NBG-XRF002(0-0.5), NBG-XRF005(0-0.5) and NBG-XRF007(0-0.5) are presented along with the XRF results in Table 3-1. The laboratory analytical reports are presented in Appendix A. The analytical results indicated that the chromium concentrations in all three samples were far lower the chromium RAL of 1,620 mg/kg. The lead concentrations detected in NBG-XRF002(0-0.5) and NBG-XRF007(0-0.5) were also well below the lead RAL of 3,000 mg/kg. The lead concentration detected at NBG-XRF005(0-0.5) was higher than the RAL, which corresponds with the field XRF result for this location. As discussed above, the excavation boundary was expanded at the NBG-XRF005 sample location due to the non-complying lead concentration.

3.4.2 Excavation Activities

The excavation of the lead and chromium impacted soils at the NBG commenced on December 8 and was completed on December 10, 2009. The excavation was performed using a DEERE Model 200C-LC excavator equipped with a 48-inch wide bucket and was sequenced from south to north so that the excavator did not have to track back through areas where excavation was complete. The excavator was utilized for both excavation and truck loading, therefore, no other equipment was required during the excavation activities.

The excavation was completed to the planned 1-ft and 4-ft depth intervals shown in Figure 2-1. However, the depth of excavation was increased in two areas within the north-central portion of the excavation footprint because debris/ash from the former burning operations was encountered below ground surface during the course of excavation (see site photographs in Appendix B). XRF analyses of the debris/ash indicated that lead concentrations were in excess of the 3,000 mg/kg RAL; therefore, the depth of the excavation was increased to the bottom of the debris/ash layers in these areas. The debris/ash layers extended to a depth of approximately 2 ft bgs in one area and ranged from 2 to 3 ft bgs in the other. Field sampling confirmed that the lead and chromium concentrations at the base of the debris layers were below their respective RALs. The final depths of excavation and the approximate locations of the debris/ash, which correspond to confirmation sample locations NBG-XRF021, NBG-XRF023 and NBG-XRF026, are depicted in Figure 3-4. No other debris/ash was encountered during the course of site work.

3.4.3 Confirmation Sampling

A total of 25 sample locations (NBG-XRF009 through NBG-XRF035) were laid out within the base of the excavation for the purpose of collecting soil samples to confirm that the vertical extent of the excavation was sufficient to remove soils containing lead and chromium at levels greater than the RALs.. The first round of confirmation samples included 22 samples from the base of the 1-ft deep excavation area. XRF analysis of the excavation base confirmation samples, which represented the 1.0 to 1.5 ft bgs interval, indicated that 19 of the 22 the samples contained lead and chromium at concentrations below their respective RALs. However, as discussed in Section 3.4.2, three excavation base confirmation samples [NBG-XRF021(1-1.5), NBG-XRF023(1-1.5), and NBG-XRF026(1-1.5)] were collected within debris/ash layers uncovered during excavation and contained lead at concentrations above the 3,000 mg/kg RAL. As a result of the lead detections, the depth of excavation was increased in the vicinity

of the 3 non-complying samples to the bottom of the debris/ash layer (see Figure 3-4, which depicts the final depth of excavation).

A second round of confirmation samples were collected at sample locations NBG-XRF021, NBG-XRF023, and NBG-XRF026 once the debris/ash layers detected in these areas had been fully excavated. The depth of the excavation in the vicinity of NBG-XRF023 and NBG-XRF025 ranged from approximately 2 to 3 ft bgs; therefore the samples collected at these locations [NBG-XRF023(3-3.5) and NBG-XRF026(2-2.5)] represent the soils underneath the debris layer. The depth of the excavation near NBG-XRF021 extended to approximately 2 ft bgs; therefore the sample collected at this location [NBG-XRF021(3-3.5)] represents the 2.0 to 2.5 ft bgs interval. XRF analysis of these three samples indicated that lead and chromium concentrations were well below their respective RALs; therefore, no additional excavation was required.

The last group of confirmation soil samples were collected from the base of the small 4-ft deep excavation area located near the central portion of the excavation footprint (see Figures 2-1 and 3-4). A total of three samples [NBG-XRF016(4-4.5), NBG-XRF024(4-4.5) and NBG-XRF025(4-4.5)] were collected from the deep area, representing the 4.0 to 4.5 ft bgs interval. XRF analysis indicated that lead and chromium concentrations were well below their respective RALs in each of these three samples; therefore, no additional excavation was required in this area.

The XRF results of all 28 soil samples collected during the confirmation sampling program are presented in Table 3-2 and Figure 3-4. The results indicate that soils containing lead and chromium at concentrations greater than their respective RALS were successfully removed from the NBG site.

In addition to the field XRF analyses, 12 of the 28 samples collected during the excavation base confirmation sampling activities were split and submitted for laboratory analysis of lead and chromium by USEPA Method 6010B. The results from these samples, which included NBG-XRF010(1-1.5), NBG-XRF013(1-1.5), NBG-XRF015(1-1.5), NBG-XRF017(1-1.5), NBG-XRF020(1-1.5), NBG-XRF022(1-1.5), NBG-XRF023(3-3.5), NBG-XRF025(4-4.5), NBG-XRF028(1-1.5), and NBG-XRF031(1-1.5), are presented along with the XRF results in Table 3-2. The laboratory analytical reports are presented in Appendix A. Overall the laboratory analytical results correlated well with the XRF results for chromium and lead.

The results indicated that the chromium concentrations in all 12 samples were far lower the chromium RAL of 1,620 mg/kg, which corresponds with the XRF results. The laboratory lead results also agree with the XRF results in that the lead concentrations

detected in 10 of the 12 samples were lower than the lead RAL of 3,000 mg/kg and that lead was greater than the RAL in 2 of the samples. The two samples where the laboratory and XRF results indicated lead concentrations higher than the RAL [NBG-XRF021(1-1.5) and NBG-XRF026(1-1.5)] were collected from the debris/ash layers that were removed from the site during the excavation.

3.4.4 Transportation and Disposal

The excavated soils and decontamination materials from the NBG removal action were direct loaded onto a total of 16 plastic-lined dump trailers for transportation to the disposal facility. The waste was transported by U.S. Bulk Transport, Inc. under approved Uniform Hazardous Waste Manifests to the Environmental Quality Company (EQ) in Belleville, Michigan and disposed of at the Wayne Disposal, Inc. (Wayne Disposal) landfill facility. Wayne Disposal (EPA ID: MID 048 090 633) is a Subtitle C landfill that is fully permitted to receive RCRA hazardous waste. The soil was originally planned to be disposed of at EQ's Subtitle D landfill facility (Michigan Disposal, Inc.) after stabilization; however, due to the possible presence of low-level dioxins in the soil (as indicated by historical data), EQ elected to dispose of the material in the Subtitle C facility instead. Based on the truck weigh tickets, a total of 384.1 tons of material were disposed of at the landfill. Table 3-3, provides a summary of the shipping information on each load (i.e., manifest number, load weight, facility receipt date). Copies of the finalized waste manifests, weigh tickets, and Certificates of Disposal are provided in Appendix C.

3.5 Site Restoration

3.5.1 Backfill

Once all excavation and field confirmation sampling activities were completed, the excavated area was backfilled with common backfill material and graded to be level with the surrounding terrain. After placement and grading of the common backfill, an approximately 3-inch layer of top soil was placed throughout the excavation footprint to assist in re-vegetating the area. Both the common backfill material and the vegetative top soil were obtained from JWB Contractors, LLC of Dublin, Virginia.

Prior to delivery of the backfill material to the site, samples of both the common backfill (NBG-Backfill) and the vegetative top soil (NBG-Topsoil) were submitted for laboratory analyses to ensure that the material came from a "clean" source. The samples were analyzed for volatile organic compounds (VOCs) by USEPA Method 8260B, semi-volatile organic compounds (SVOCs) by USEPA Method 8270C, metals by USEPA

Method 6010B, pesticides by USEPA Method 8081A, and herbicides by USEPA Method 8151A.

The analytical results for the common backfill and top soil samples are summarized in Table 3-4 and laboratory analytical reports are provided in Appendix D. The data indicated that the top soil backfill contained arsenic, cobalt and manganese at concentrations slightly above the residential RSLs. Arsenic was the only constituent detected in the common backfill material at a concentration above the residential RSL. While these constituents were present at concentrations slightly higher than the RSL values, the concentrations were all below the naturally occurring background metals concentrations reported in the Facility-Wide Background Study Report (IT 2001) and thus are consistent with levels of these metals in the native soil. No other constituents were detected at concentrations above applicable residential RSLs; however, some organic compounds were detected at low concentrations in both the common backfill and the topsoil samples. However, all or the organic constituents were at concentrations below applicable residential RSLs.

The chromium concentration in the common backfill (33.mg/kg) and top soil (30.8 mg/kg) were both lower than the natural background chromium concentration (65.3 mg/kg) at the facility. The lead concentration in the common backfill material (17 mg/kg) was also below the facility-wide background lead concentration (26.8 mg/kg). The laboratory analytical results for lead from the top soil sample (37.6 mg/kg) indicated that the lead concentration was only slightly higher than the background value, but well below the 400 mg/kg clean up level for lead.

3.5.2 Vegetation

Upon completion of the backfilling activities the excavation footprint, and any other areas of RFAAP-NRU that may have been disturbed by off road vehicle traffic during implementation of the NBG response action, were heavily seeded with annual (winter) ryegrass. The ryegrass seed was sown to help re-establish a vegetative layer in the disturbed areas so as to provide soil stabilization until natural vegetation is re-established. A heavy straw layer was also placed throughout the disturbed areas to help protect the seed and to provide some measure of soil stabilization until the grass is able to grow. Pictures of the seeded and straw covered excavation footprint are presented in Appendix B.

3.5.3 Demobilization

Equipment and personnel were demobilized from the site on Friday, December 11, 2009. Prior to departing the site the crew picked up all trash from the site and made sure that the large braches were removed from the pine trees that had been cleared during the removal action. The crew also repaired several soil ruts where vehicles used in performance of the work had driven off of the narrow paved surface. Grass seed and straw were placed in these areas to help stabilize the soil.

4. Quality Assurance/Quality Control

In accordance with the quality assurance/quality control (QA/QC) procedures outlined in the Master Quality Assurance Project Plan (QAPP) (URS 2003) and ARCADIS' Quality Assurance Plan Addendum (QAPA) (ARCADIS 2008), the laboratory data collected during the performance of this site work was validated to verify data usability and to ensure compliance with the data quality objectives. This section summarizes the findings of the laboratory data validation process.

4.1 Summary of the Electronic Validation Review Report

The Electronic Validation Review Report addresses the results of the data validation effort for soil samples collected in support of the site closure at the NBG (see Appendix E). The purpose of the validation review is to determine the reliability of the chemical analyses and the accuracy and precision of information acquired from the laboratory. Data quality was assessed through the review and evaluation of field sampling activities and Quality Control (QC) samples and data associated with the chemical analytical results. An evaluation of QC samples and implications for data quality is provided in full within Appendix E. In general, only minor deficiencies were identified and the data were qualified as appropriate. Overall, the analytical data associated with this investigation event are considered quantitative and usable for the intended purpose. The validation identified only minor deficiencies with the data. The data were qualified, as appropriate, using guidance from the USEPA. One hundred percent of the results are valid for their intended purpose, as qualified by the data validation.

The laboratory data is presented in full within Appendix A.

5. Final Inspection

A final inspection of the NBG site was conducted by representatives of ARCADIS and the US Army – RAAP on January 21, 2010. Two comments were generated as a result of the site walk. The first comment was in regards to the removal of the temporary erosion control devices. It was agreed that the temporary erosion control devices will be removed from the site during the summer of 2010, once vegetation has been re-established at the site. The second comment concerned the re-vegetation efforts for the site. It was agreed that additional grass seed may be spread at the site during the spring or summer of 2010 if required to stabilize the backfilled area. The attendees at this inspection were as follows:

- James McKenna – US Army - RFAAP; and,
- Christopher Kalinowski - ARCADIS.

6. Alterations to Planned Response Action

The remedial activities for the NBG were conducted in accordance with the Removal Action Work Plan and achieved the RAOs outlined in the EE/CA for the site. The only deviations from the Work Plan involved the placement of the truck loading and decontamination area; the expansion of the horizontal and vertical extent of the excavation area. The truck loading and decontamination area was moved to the location presented in Figure 3-2 due to site access restrictions. As discussed in Section 3.4.1, the horizontal extent of the excavation was expanded slightly on the northern, boundaries based on the results of the XRF field screening conducted during the pre-excavation boundary confirmation sampling. The depth of the excavation was also increased in two discrete areas during the excavation process due to the presence of debris/ash and the detection of lead at concentrations above the RAL at the planned 1-ft depth interval. Figures 2-1 and 3-4 depict the excavation area as originally intended, and the final expanded excavation area, respectively.

7. Future Requirements

The remedial actions for the lead and chromium impacted soils have been completed at the NBG site. The results of the sampling program conducted during the excavation activities confirmed that the response action was successful at removing the site soils containing lead and chromium at concentrations above their respective RALs. Therefore, the site is suitable for clean closure and future development of the site should be unrestricted. Long term monitoring and inspection of the site will not be required.

The only future requirements for the site will include removal of the silt fencing and hay bales that were left at the site as temporary erosion control measures. The silt fencing and hay bales are scheduled to be removed from the site during the summer of 2010, once site vegetation has been re-established. ARCADIS will also re-seed the area during the spring or summer of 2010, if the seed sowed during the removal action does not establish adequate ground cover.

8. Certification

This Response Action Completion and Closure Report documents the remedial actions that were completed for the Northern Burning Ground study area at RAAP-NRU. The actions were completed as discussed in the Removal Action Work Plan for the Northern Burning Ground and achieved the Remedial Action Objectives outlined in the EE/CA and Action Memorandum for the site. No deficiencies in the work are believed to exist, nor were any documented during confirmation sampling or subsequent inspection. No additional remedial actions are required for the site. As such the site is suitable for clean closure and unrestricted future development.

9. References

ARCADIS, 2009a. Removal Action Work Plan for the Northern Burning Ground, New River Unit (RAAP-044). Radford Army Ammunition Plant, Radford, Virginia. December.

ARCADIS, 2009b. DRAFT Remedial Investigation Report, New River Unit (RAAP-044). Radford Army Ammunition Plant, Radford, Virginia, October.

ARCADIS, 2009c. Engineering Evaluation/Cost Analysis (EE/CA), Northern Burning Ground, New River Unit (RAAP-044). Radford Army Ammunition Plant, Radford, Virginia. July.

ARCADIS, 2008. DRAFT Quality Assurance Plan Addendum. Radford Army Ammunition Plant, Radford, Virginia, April.

IT Corporation (IT), 2001. Facility-Wide Background Study Report. Radford Army Ammunition Plant, Virginia. Final Report. December 2001. Delivery Order No. 0013, Contract No. DACA31-94-D-0064.

Radford Army Ammunition Plant, 2009. Action Memorandum for the Soil Removal Action at the Northern Burning Ground, New River Unit. Radford Army Ammunition Plant, Radford Virginia.

Shaw, 2003. Internal Draft New River Unit Investigation Report: BDDT, BLA, IAA, NBG, RY & WBG, Radford Army Ammunition Plant. Radford, Virginia. September.

URS, 2003. Master Quality Assurance Project Plan. Radford Army Ammunition Plant, Radford, Virginia. August.

U.S. Environmental Protection Agency (USEPA). 2005. Guidance on Surface Soil Cleanup at Hazardous Waste Sites: Implementing Cleanup Levels. Peer Review Draft. Office of Emergency and Remedial Response. EPA 9355.0-91. April.

U.S. Environmental Protection Agency (USEPA), 1999. Technical Review Workgroup for Lead Guidance Document. Rev 0. April

U.S. Environmental Protection Agency (USEPA), 1994. Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities. OSWER Directive 9355.4-12. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. July 14.

U.S. Environmental Protection Agency (USEPA), 1993, Guidance on Conducting Non-Time-Critical Removal Actions Under CERCLA, Office of Emergency and Remedial Response, Publication 9360.0-32FS, EPA/540/F-94/009, Washington, D.C.

U.S. Environmental Protection Agency (USEPA), 2009. Oak Ridge National Laboratory (ORNL) Regional Screening Levels (RSLs), December. Internet access: [http://www.epa.gov/region09/superfund/prg/]

Tables

Table 3-1: Boundary Confirmation Soil Sampling Results, Northern Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Location ID	Sample Depth (Feet)	Sample Date	Debris Present (yes/no)	XRF Screening Results		Laboratory Analytical	
				Chromium	Lead	Chromium	Lead
Original Boundary Confirmation Samples							
NBG-XRF001	0 - 0.5	12/08/09	no	<108	1,216	NA	NA
NBG-XRF002	0 - 0.5	12/08/09	no	<83	634	83.5	1,580
*NBG-XRF003**	*0 - 0.5*	*12/08/09*	*no*	*<119*	*1,417*	*NA*	*NA*
*NBG-XRF004**	*0 - 0.5*	*12/08/09*	*no*	*429*	***6,036***	*NA*	*NA*
*NBG-XRF005**	*0 - 0.5*	*12/08/09*	*no*	*<125*	***3,445***	*226*	*3,230*
NBG-XRF006	0 - 0.5	12/08/09	no	195	2,403	NA	NA
NBG-XRF007	0 - 0.5	12/08/09	no	<109	436	85.7	742
NBG-XRF008	0 - 0.5	12/08/09	no	188	1,889	NA	NA
Expanded Boundary Samples							
NBG-XRF032	0 - 0.5	12/10/09	no	<107	615	NA	NA
NBG-XRF033	0 - 0.5	12/10/09	no	<116	445	NA	NA
NBG-XRF036	0 - 0.5	12/10/09	no	<101	915	NA	NA

Screening Criteria	Chromium (mg/kg)	Lead (mg/kg)
Facility-Wide Background[1]	**65.3**	**26.8**
Remedial Action Level	1,620	3,000

Notes:

1. From Facility-Wide Background Study Report. (IT 2001)

NA - Not detected.

** The boundaries of the excavation were expanded at NBG-XRF003, NBG-XRF004, and NBG-XRF005; therefore , the soils at these locations were removed from the site.*

Table 3-2: Summary of XRF and Laboratory Analytical Results for Excavation Base Confirmation Samples
Northern Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Sample Location ID	Sample Depth (Feet)	Sample Date	Debris Present (yes/no)	XRF Screening Results (mg/kg)		Laboratory Analytical Results (mg/kg)	
				Chromium	Lead	Chromium	Lead
Shallow Area Samples (1 ft Deep Excavation)							
NBG-XRF009	1 - 1.5	12/09/09	no	<96	35	NA	NA
NBG-XRF010	1 - 1.5	12/09/09	no	<101	31	21.7	106
NBG-XRF011	1 - 1.5	12/09/09	no	<88	23	NA	NA
NBG-XRF012	1 - 1.5	12/09/09	no	<98	60	NA	NA
NBG-XRF013	1 - 1.5	12/09/09	no	<101	17	21.2	37.9
NBG-XRF014	1 - 1.5	12/09/09	no	379	1,856	NA	NA
NBG-XRF015	1 - 1.5	12/09/09	no	<99	39	17.3	40.0
NBG-XRF017	1 - 1.5	12/09/09	no	<97	48	24.2	158
NBG-XRF018	1 - 1.5	12/09/09	no	421	2,476	NA	NA
NBG-XRF019	1 - 1.5	12/09/09	no	<93	210	NA	NA
NBG-XRF020	1 - 1.5	12/09/09	no	<133	597	22.3	293
*NBG-XRF021**	*1 - 1.5*	*12/09/09*	*yes*	*128*	***6,281***	*407*	***5,920***
NBG-XRF022	1 - 1.5	12/09/09	no	<116	631	124	1,540
*NBG-XRF023**	*1 - 1.5*	*12/09/09*	*yes*	*<128*	***3,748***	*NA*	*NA*
*NBG-XRF026**	*1 - 1.5*	*12/09/09*	*yes*	*166*	***4,458***	*214*	***4,040***
NBG-XRF027	1 - 1.5	12/09/09	no	<99	29	NA	NA
NBG-XRF028	1 - 1.5	12/09/09	no	<123	902	68.3	1,230
NBG-XRF029	1 - 1.5	12/10/09	no	148	1,912	NA	NA
NBG-XRF030	1 - 1.5	12/10/09	no	<98	295	NA	NA
NBG-XRF031	1 - 1.5	12/10/09	no	117	40	24.7	94.8
NBG-XRF034	1 - 1.5	12/10/09	no	<98	356	NA	NA
NBG-XRF035	1 - 1.5	12/10/09	no	<98	422	NA	NA
Shalllow Area Samples (Base of Debris Layers)							
NBG-XRF021	2 - 2.5	12/10/09	no	<117	327	NA	NA
NBG-XRF023	3 - 3.5	12/09/09	no	147	43	23.2	59.4 J
NBG-XRF026	2 - 2.5	12/10/09	no	<83	461	NA	NA
Deep Area Samples (4 ft Deep Excavation)							
NBG-XRF016	4 - 4.5	12/09/09	no	<147	29	NA	NA
NBG-XRF024	4 - 4.5	12/09/09	no	<149	24	NA	NA
NBG-XRF025	4 - 4.5	12/09/09	no	<114	<11	22.2	66.7

Screening Criteria	Chromium (mg/kg)	Lead (mg/kg)
Facility-Wide Background[1]	**65.3**	**26.8**
Remedial Action Level	1,620	3,000

Notes:

1. From Facility-Wide Background Study Report. (IT 2001)

NA - Not detected.

** The depth of excavation was increased at NBG-XRF021, NBG-XRF023, and NBG-XRF026 to remove the debris and soil containing lead at concentrations above the 3,000 mg/kg RAL.*

Table 3-3: Waste Disposal Summary, Northern Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Manifest #	Facility Receipt Date	Facility Receipt ID	Disposal Company/Site	Load Weight (tons)
004173234JJK	12/9/2009	1180367	Environmental Quality Company / Wayne Disposal, Inc.	23.77
004173235JJK	12/9/2009	1180368	Environmental Quality Company / Wayne Disposal, Inc.	25.27
004173237JJK	12/9/2009	1180366	Environmental Quality Company / Wayne Disposal, Inc.	20.71
004173249JJK	12/9/2009	1180365	Environmental Quality Company / Wayne Disposal, Inc.	26.23
004173236JJK	12/11/2010	1180399	Environmental Quality Company / Wayne Disposal, Inc.	17.14
004173238JJK	12/11/2009	1180391	Environmental Quality Company / Wayne Disposal, Inc.	23.88
004173239JJK	12/11/2009	1180408	Environmental Quality Company / Wayne Disposal, Inc.	24.63
004173240JJK	12/11/2009	1180402	Environmental Quality Company / Wayne Disposal, Inc.	23.09
004173241JJK	12/11/2009	1180404	Environmental Quality Company / Wayne Disposal, Inc.	25.52
004173242JJK	12/11/2009	1180397	Environmental Quality Company / Wayne Disposal, Inc.	23.70
004173243JJK	12/11/2009	1180424	Environmental Quality Company / Wayne Disposal, Inc.	21.81
004173244JJK	12/11/2009	1180394	Environmental Quality Company / Wayne Disposal, Inc.	22.31
004173245JJK	12/11/2009	1180398	Environmental Quality Company / Wayne Disposal, Inc.	19.61
004173246JJK	12/11/2009	1180395	Environmental Quality Company / Wayne Disposal, Inc.	23.58
004173247JJK	12/11/2009	1180400	Environmental Quality Company / Wayne Disposal, Inc.	26.85
004173248JJK	12/11/2009	1180425	Environmental Quality Company / Wayne Disposal, Inc.	36.00
			TOTAL (tons)	**384.10**

Table 3-4: Summary of Detected Analytes in Common Backfill and Top-Soil Samples
Northern Burning Ground
New River Unit, Radford Army Ammunition Plant, Radford, Virginia

Analyte	Regional Screening Level (Residential)[1]	Facility-Wide Background Value[2]	NBG-Backfill Soil 11/24/2009	NBG-Topsoil Soil 11/24/2009
Volatile and Semivolatile Organic Compounds (mg/kg)				
Dibenzofuran	17,000 (a)	- -	ND	0.141
Methylene chloride	11	- -	0.00158	0.00209
1-Methylnaphthalene	22	- -	2.69	2.22
2-Methylnaphthalene	310	- -	3.14	2.93
Naphthalene	3.6	- -	0.613	0.479
Phenanthrene	17,000 (a)	- -	1.07	0.765
Pyrene	1,700	- -	0.212	0.179
Pesticides (mg/kg)				
alpha-BHC	0.077	- -	ND	0.000376
beta-BHC	0.27	- -	ND	0.000677
gamma-BHC	0.52	- -	ND	0.000413
Heptachlor epoxide	0.053	- -	ND	0.000593
Herbicides (mg/kg)				
Dicamba	1,800	- -	ND	0.0212
Dinoseb	61	- -	ND	0.0233
Metals (mg/kg)				
Mercury	5.6	0.13	0.0629	0.025
Aluminum	77,000	40,041	34,500	13,200
Antimony	31	- -	ND	ND
Arsenic	0.39	15.8	7.99	12.2
Barium	15,000	209	50.3	82.8
Beryllium	160	1.02	1.21	1.22
Cadmium	70	0.69	ND	ND
Calcium	NA (b)	- -	6,030	1,580
Chromium	280 (c)	65.3	33	30.8
Cobalt	23	72.3	14.1	38.1
Copper	3,100	53.5	17.7	17.4
Iron	55,000	50,962	32,600	53,400
Lead	400	26.8	17	**37.6**
Magnesium	NA (b)	- -	10,600	1,640
Manganese	1,800	2,543	343	2,030
Nickel	1,500	62.8	22.2	11.1
Potassium	NA (b)	- -	3,370	1,140
Selenium	390	- -	ND	ND
Silver	390	- -	ND	ND
Sodium	NA (b)	- -	ND	ND
Thallium	5.1	2.11	ND	ND
Vanadium	390	108	56.7	104
Zinc	23,000	202	43.5	65.6

Notes:

1. From December 2009 RSL Table (USEPA 2009)

2. From Facility-Wide Background Study Report. (IT 2001)

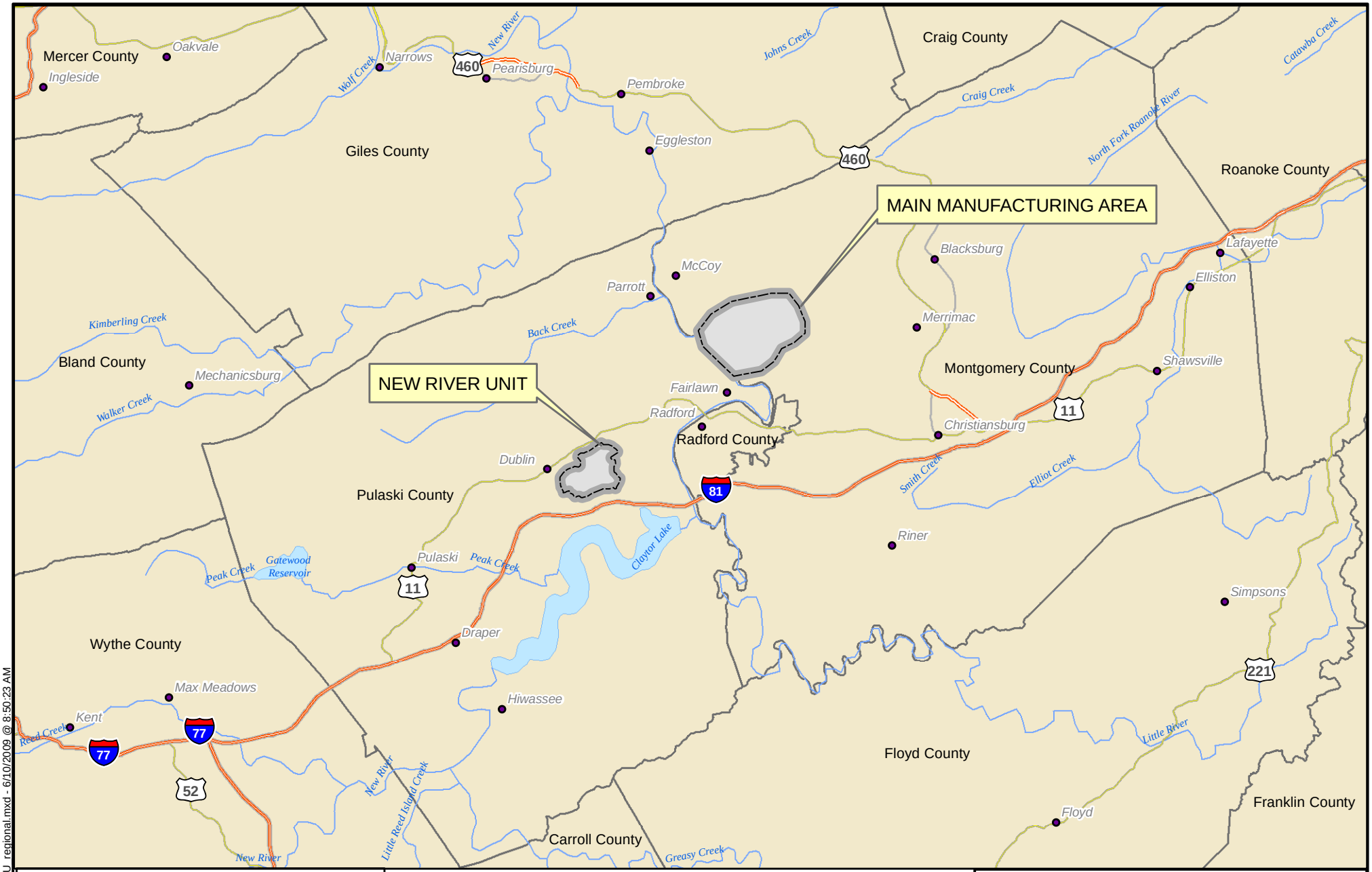
Hydrocarbon.

(b) No screening level is available (NA) as this is considered to be an essential nutrient.

ND - Not detected.

(c) total chromium is not included in the December 2009 RSL Table; therefore, value obtained from July 2009 Table.

Figures



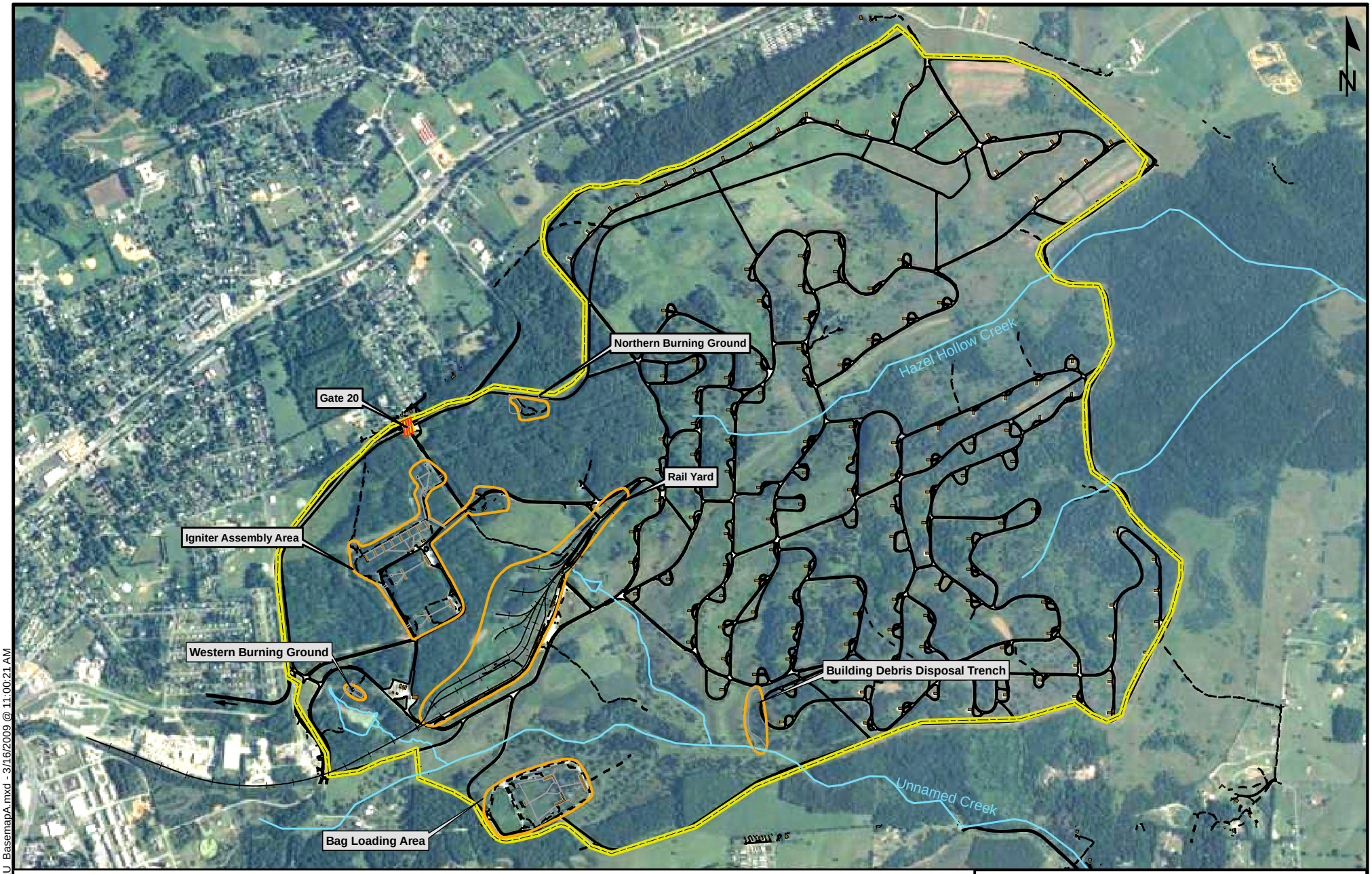
RADFORD ARMY AMMUNITION PLANT
RADFORD, VA

RFAAP - NRU
FACILITY LOCATION

ARCADIS

FIGURE
1-1

I:\Radford\GIS\ArcMap_MXD\NRU_regional.mxd - 6/10/2009 @ 8:50:23 AM



LEGEND

- SITE FEATURES
- RAIL SPUR
- SURFACE WATER
- PAVED ROADS
- DIRT ROADS
- STUDY AREA
- NRU BOUNDARY
- BUILDINGS

NOTES:

1. GIS SPATIAL LAYERS OBTAINED FROM SHAW ENVIRONMENTAL, INC. AS REFERENCED IN THEIR REPORT TITLED NRU ADDITIOANL CHARACTERIZATION SAMPLING & GROUNDWATER INVESTIGATION DATA REPORT IN OCTOBER 2007.

0 900 1,800 Feet

GRAPHIC SCALE

RADFORD ARMY AMMUNITION PLANT
RADFORD, VA

NEW RIVER UNIT STUDY AREAS

ARCADIS

FIGURE 1-2

I:\Radford\GIS\ArcMap_MXD\NRU_BasemapA.mxd - 3/16/2009 @ 11:00:21 AM

Legend

- HISTORICAL SOIL SAMPLE LOCATIONS
- GROUNDWATER LOCATIONS
- PAVED ROADS
- DIRT ROADS
- LOW AREA
- DRAINAGE DITCH
- CULVERT
- STUDY AREA
- NRU BOUNDARY

0 60 120 Feet

GRAPHIC SCALE

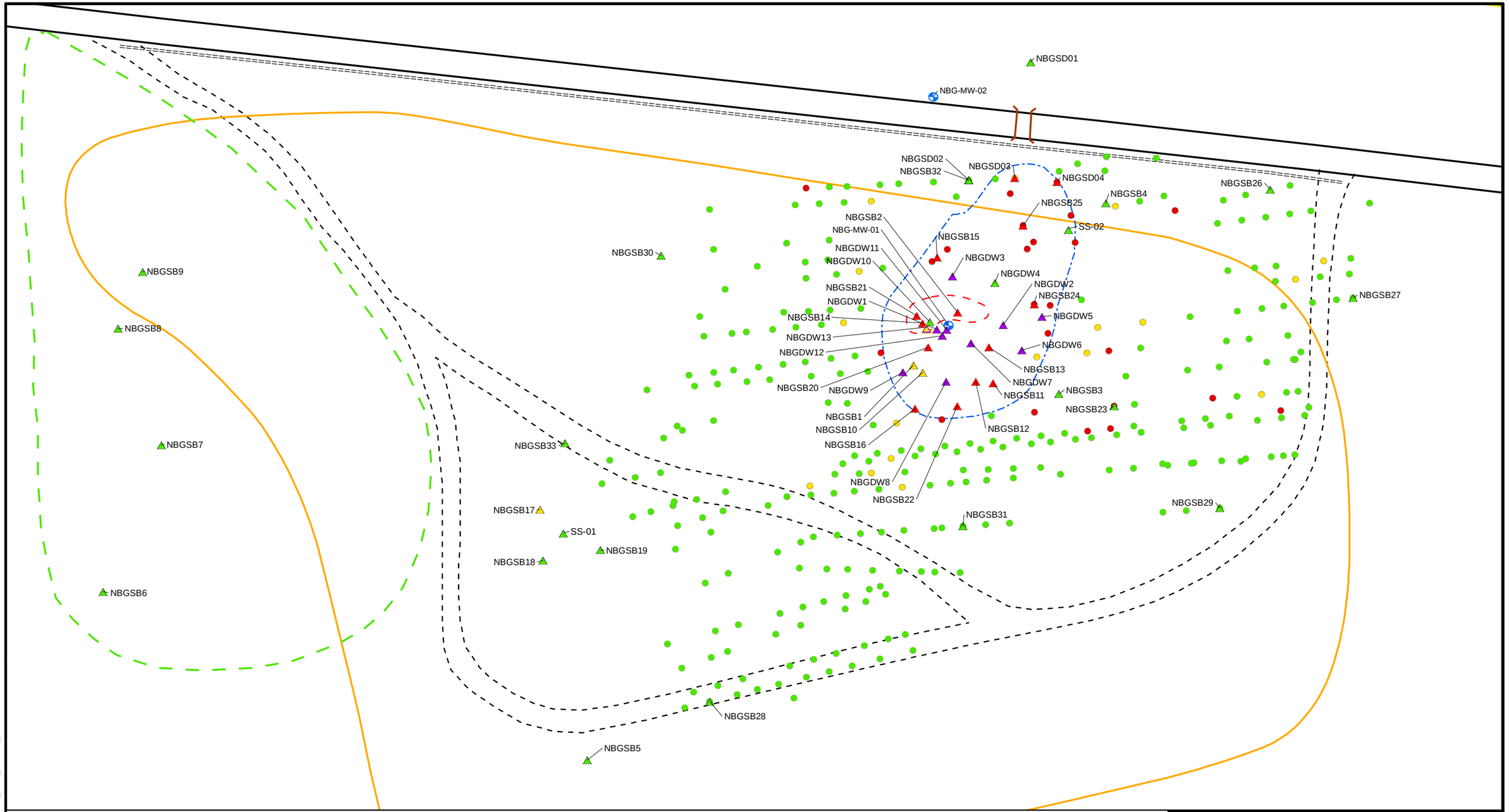
THE NORTHERN BURNING GROUND AT THE NEW RIVER UNIT
RADFORD ARMY AMMUNITION PLANT
RADFORD, VA

NORTHERN BURNING GROUND SITE LAYOUT

ARCADIS

FIGURE **1-3**

NYC: SER 4/AIT: DB: TBR LD: TBR PIC: TL
Radford (GP08RAAP.00PM)
I:\Radford\GIS\ArcMap_MXD\NRU_NBG_Basemap.mxd - 3/16/2009 @ 10:31:05 AM



Legend

HISTORICAL SAMPLE LOCATION

HISTORICAL SAMPLE LOCATION EXCEEDING RESIDENTIAL CRITERIA

HISTORICAL SAMPLE LOCATION EXCEEDING INDUSTRIAL CRITERIA

HISTORICAL INORGANIC TCLP SAMPLE

HISTORICAL XRF LEAD SCREENING RESULTS

<400 MG/KG

400 - 750 MG/KG

>750 MG/KG

GROUNDWATER LOCATIONS

PLANNED EXCAVATION TO DEPTH OF 1 FOOT

PLANNED EXCAVATION TO DEPTH OF 4 FEET

STUDY AREA

NRU BOUNDARY

LOW AREA

DRAINAGE DITCH

CULVERT

PAVED ROADS

DIRT ROADS

0 40 80 Feet

GRAPHIC SCALE

N

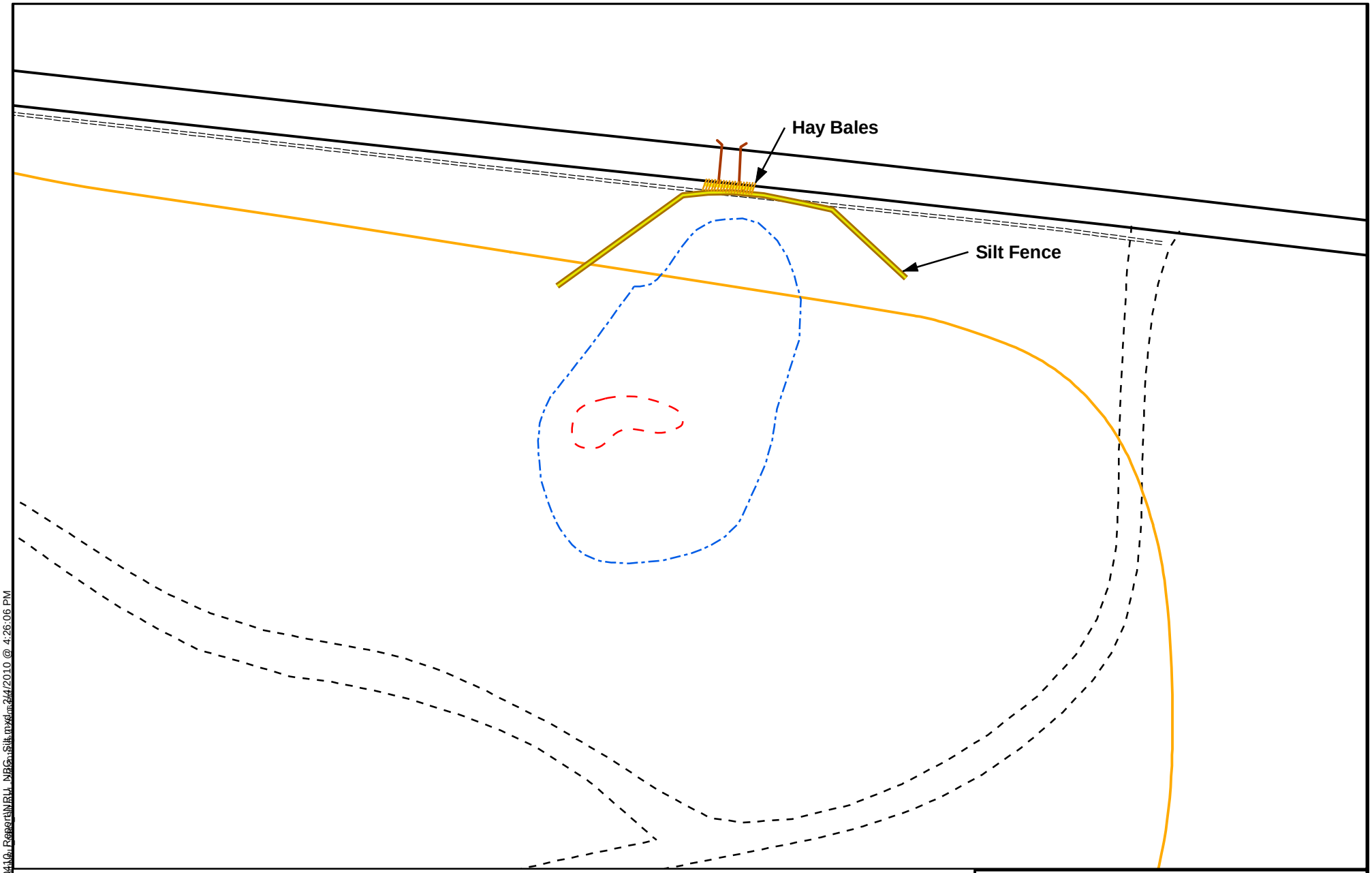
THE NORTHERN BURNING GROUND AT THE NEW RIVER UNIT
RADFORD ARMY AMMUNITION PLANT
RADFORD, VA

PLANNED RESPONSE ACTION AREA

ARCADIS

FIGURE
2-1

NYC: SER 4/AIT: DB: TBR LD: TBR PIC: TL
Radford (GP08RAAP.00PM)
I:\RadfordGIS\ArcMap_MXD\020410_Report\NRU_NBG_HistXRF_Alt3.mxd - 2/4/2010 @ 5:31:30 PM



Legend

- PLANNED EXCAVATION TO DEPTH OF 1 FOOT
- PLANNED EXCAVATION TO DEPTH OF 4 FEET
- STUDY AREA
- DRAINAGE DITCH
- CULVERT
- PAVED ROADS
- DIRT ROADS
- EXTENT OF SILT FENCING
- EXTENT OF HAY BALES

N

0 20 40 80 Feet

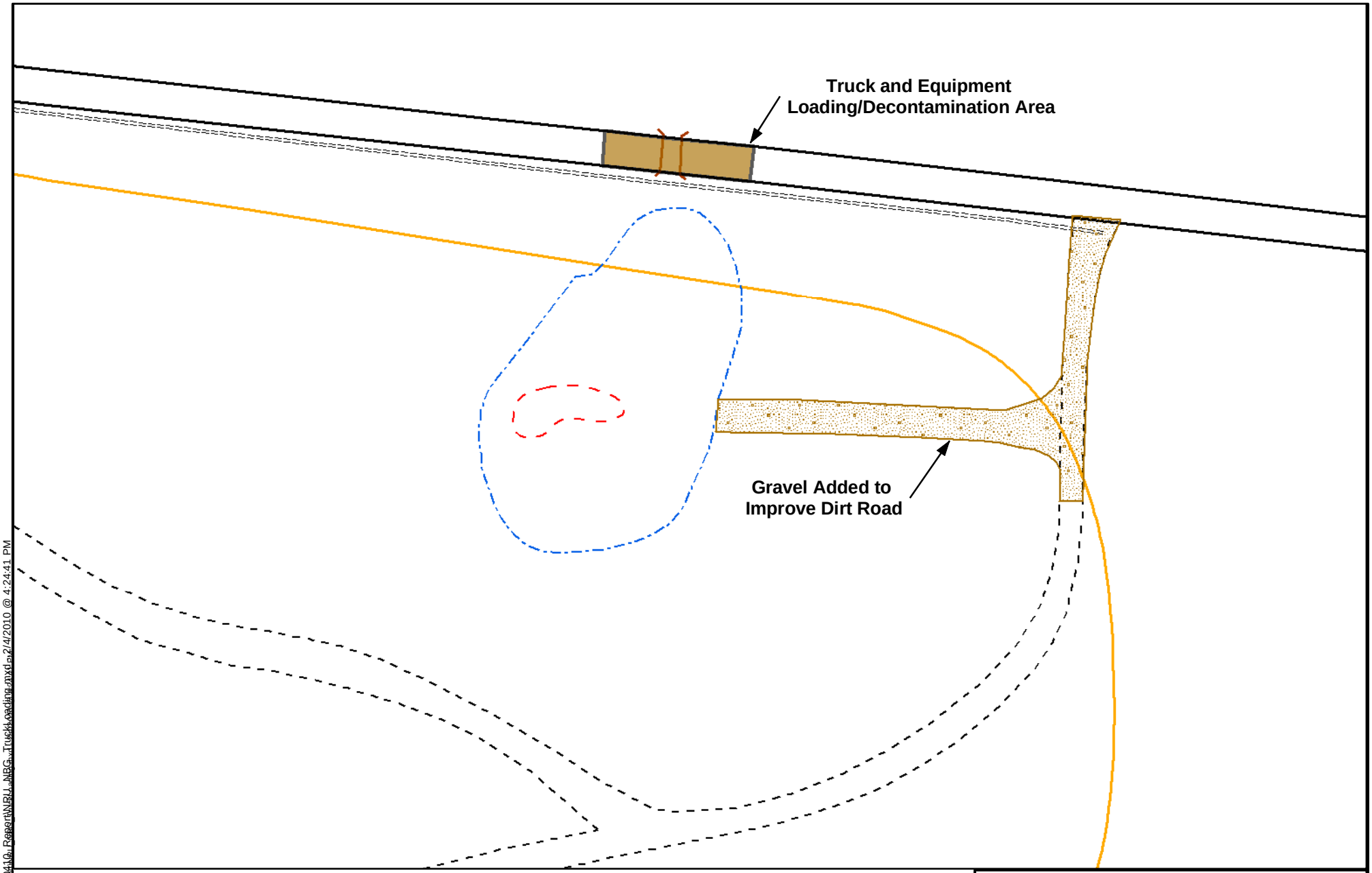
THE NORTHERN BURNING GROUND AT THE NEW RIVER UNIT
RADFORD ARMY AMMUNITION PLANT
RADFORD, VA

EROSION PROTECTION

ARCADIS

FIGURE
3-1

J:\Radford\GIS\ArcMap_MXD\20410_Report\NBG_silt.mxd 4/4/2010 @ 4:26:06 PM



Legend

- PLANNED EXCAVATION TO DEPTH OF 1 FOOT
- PLANNED EXCAVATION TO DEPTH OF 4 FEET
- STUDY AREA
- DRAINAGE DITCH
- CULVERT
- PAVED ROADS
- DIRT ROADS
- TRUCK AND EQUIPMENT LOADING/DECONTAMINATION AREA
- GRAVEL AREA

0 20 40 80 Feet

N

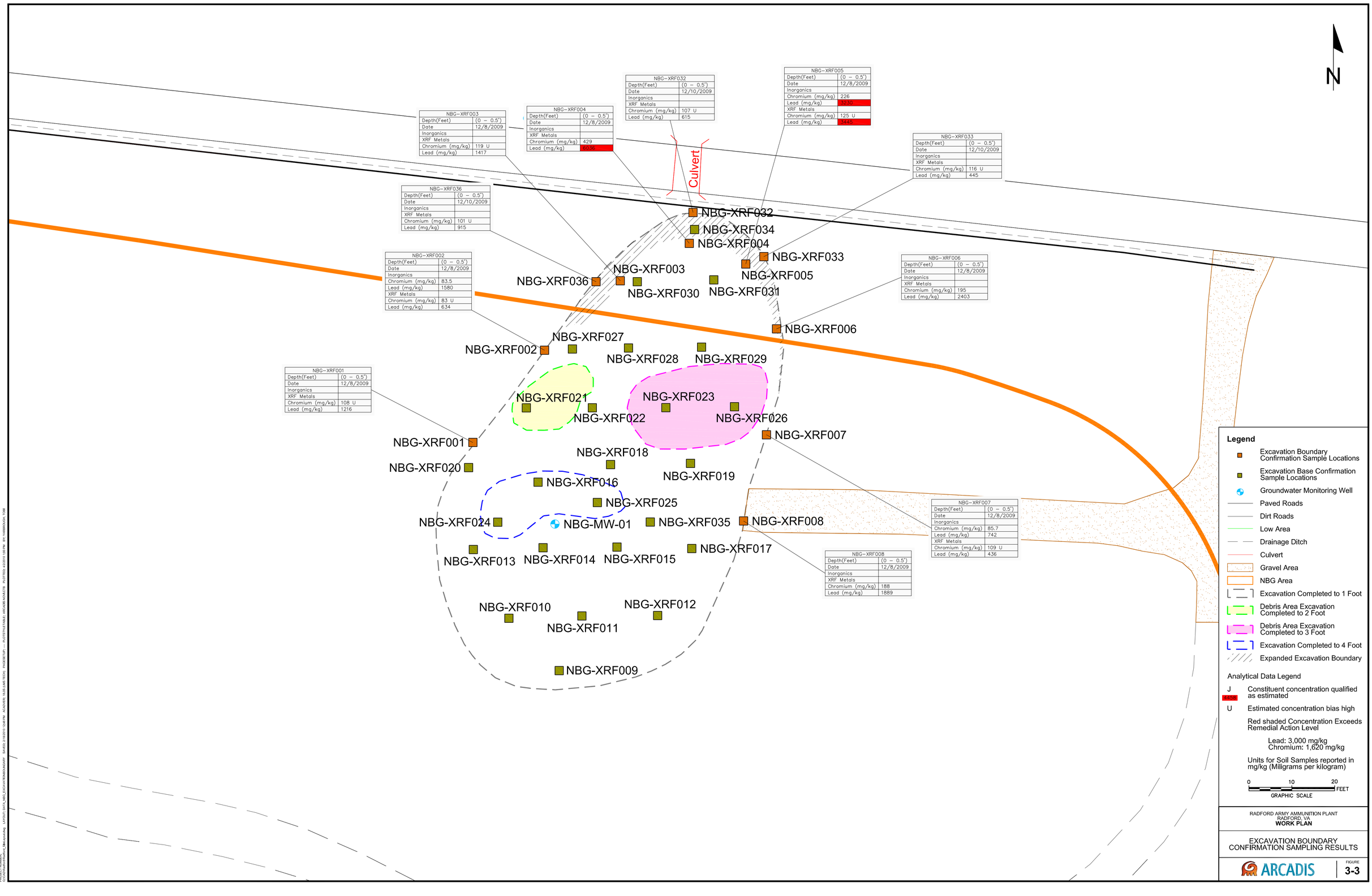
THE NORTHERN BURNING GROUND AT THE NEW RIVER UNIT
RADFORD ARMY AMMUNITION PLANT
RADFORD, VA

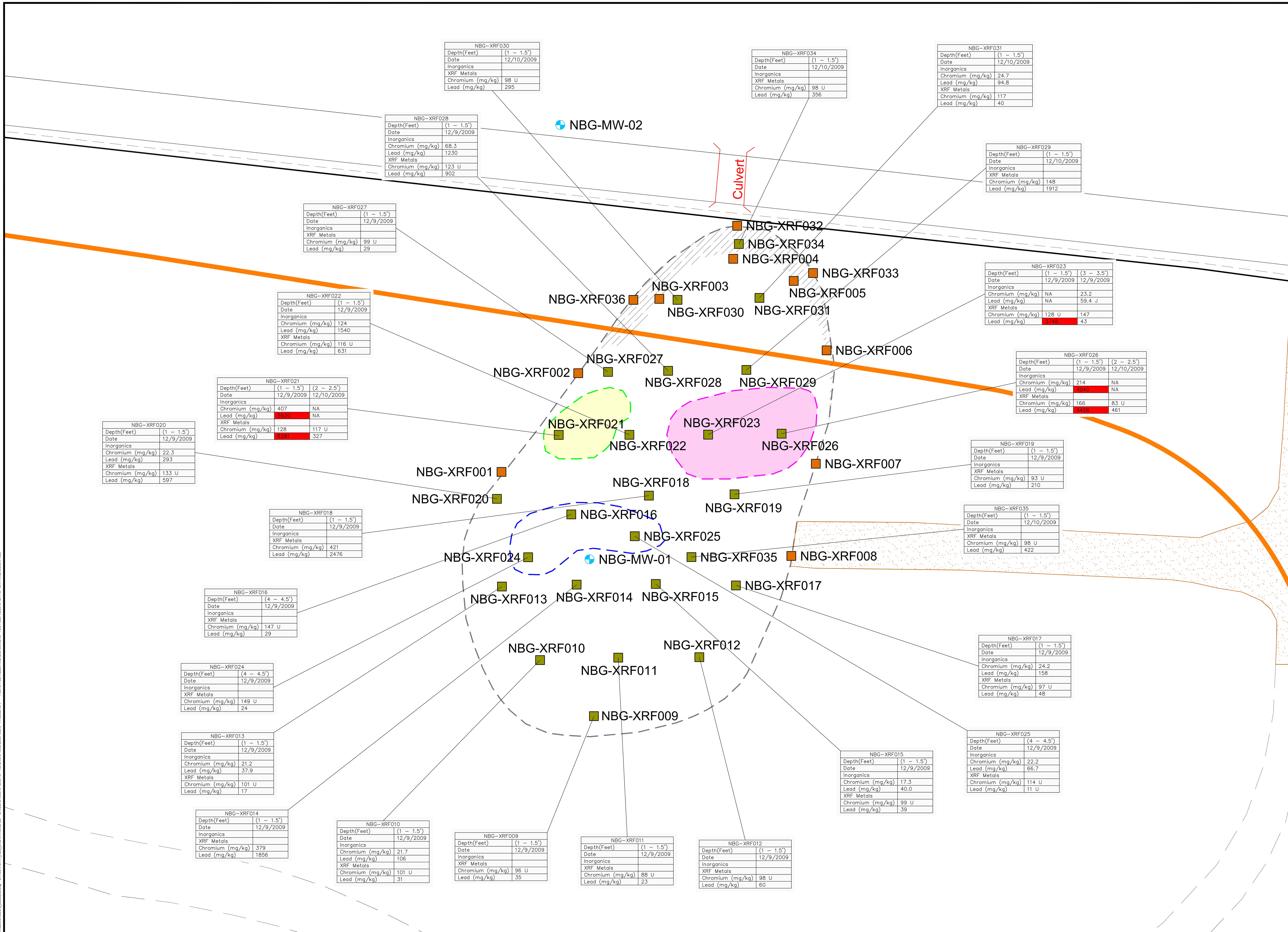
TRUCK LOADING/DECONTAMINATION PAD AND ROAD IMPROVEMENTS

ARCADIS

FIGURE
3-2

J:\Radford\GIS\ArcMap_MXD\20010_Report\NBU_NBG_v_Truck_loading.mxd 2/4/2010 @ 4:24:41 PM


N
Culvert
NBG-XRF003
Depth(Feet) (0 – 0.5')
Date 12/8/2009
Inorganics
XRF Metals
Chromium (mg/kg) 119 U
Lead (mg/kg) 1417
NBG-XRF004
Depth(Feet) (0 – 0.5')
Date 12/8/2009
Inorganics
XRF Metals
Chromium (mg/kg) 429
Lead (mg/kg) 6036
NBG-XRF032
Depth(Feet) (0 – 0.5')
Date 12/10/2009
Inorganics
XRF Metals
Chromium (mg/kg) 107 U
Lead (mg/kg) 615
NBG-XRF005
Depth(Feet) (0 – 0.5')
Date 12/8/2009
Inorganics
Chromium (mg/kg) 226
Lead (mg/kg) 3230
XRF Metals
Chromium (mg/kg) 125 U
Lead (mg/kg) 3445
NBG-XRF033
Depth(Feet) (0 – 0.5')
Date 12/10/2009
Inorganics
XRF Metals
Chromium (mg/kg) 116 U
Lead (mg/kg) 445
NBG-XRF036
Depth(Feet) (0 – 0.5')
Date 12/10/2009
Inorganics
XRF Metals
Chromium (mg/kg) 101 U
Lead (mg/kg) 915
NBG-XRF002
Depth(Feet) (0 – 0.5')
Date 12/8/2009
Inorganics
Chromium (mg/kg) 83.5
Lead (mg/kg) 1580
XRF Metals
Chromium (mg/kg) 83 U
Lead (mg/kg) 634
NBG-XRF006
Depth(Feet) (0 – 0.5')
Date 12/8/2009
Inorganics
XRF Metals
Chromium (mg/kg) 195
Lead (mg/kg) 2403
NBG-XRF001
Depth(Feet) (0 – 0.5')
Date 12/8/2009
Inorganics
XRF Metals
Chromium (mg/kg) 108 U
Lead (mg/kg) 1216
NBG-XRF007
Depth(Feet) (0 – 0.5')
Date 12/8/2009
Inorganics
Chromium (mg/kg) 85.7
Lead (mg/kg) 742
XRF Metals
Chromium (mg/kg) 109 U
Lead (mg/kg) 436
NBG-XRF008
Depth(Feet) (0 – 0.5')
Date 12/8/2009
Inorganics
XRF Metals
Chromium (mg/kg) 188
Lead (mg/kg) 1889
NBG-XRF032
NBG-XRF034
NBG-XRF004
NBG-XRF033
NBG-XRF003
NBG-XRF036
NBG-XRF030
NBG-XRF031
NBG-XRF005
NBG-XRF006
NBG-XRF027
NBG-XRF002
NBG-XRF028
NBG-XRF029
NBG-XRF021
NBG-XRF022
NBG-XRF023
NBG-XRF026
NBG-XRF007
NBG-XRF001
NBG-XRF018
NBG-XRF020
NBG-XRF019
NBG-XRF016
NBG-XRF025
NBG-XRF024
NBG-MW-01
NBG-XRF035
NBG-XRF008
NBG-XRF013
NBG-XRF014
NBG-XRF015
NBG-XRF017
NBG-XRF010
NBG-XRF012
NBG-XRF011
NBG-XRF009
Legend
Excavation Boundary Confirmation Sample Locations
Excavation Base Confirmation Sample Locations
Groundwater Monitoring Well
Paved Roads
Dirt Roads
Low Area
Drainage Ditch
Culvert
Gravel Area
NBG Area
Excavation Completed to 1 Foot
Debris Area Excavation Completed to 2 Foot
Debris Area Excavation Completed to 3 Foot
Excavation Completed to 4 Foot
Expanded Excavation Boundary
Analytical Data Legend
J Constituent concentration qualified as estimated
4458
U Estimated concentration bias high
Red shaded Concentration Exceeds Remedial Action Level
Lead: 3,000 mg/kg
Chromium: 1,620 mg/kg
Units for Soil Samples reported in mg/kg (Milligrams per kilogram)
0 10 20
FEET
GRAPHIC SCALE
RADFORD ARMY AMMUNITION PLANT
RADFORD, VA
WORK PLAN
EXCAVATION BOUNDARY
CONFIRMATION SAMPLING RESULTS
ARCADIS
FIGURE
3-3



Legend

- Excavation Boundary Confirmation Sample Locations
- Excavation Base Confirmation Sample Locations
- Groundwater Monitoring Well
- Paved Roads
- Dirt Roads
- Low Area
- Drainage Ditch
- Culvert
- Gravel Area
- NBG Area
- Excavation Completed to 1 Foot
- Debris Area Excavation Completed to 2 Foot
- Debris Area Excavation Completed to 3 Foot
- Excavation Completed to 4 Foot
- Expanded Excavation Boundary

Analytical Data Legend

J Constituent concentration qualified as estimated

4458 Estimated concentration bias high

U Red shaded Concentration Exceeds Remedial Action Level

Lead: 3,000 mg/kg
Chromium: 1,620 mg/kg

Units for Soil Samples reported in mg/kg (Miligrams per kilogram)

0 10 20 FEET
GRAPHIC SCALE

RADFORD ARMY AMMUNITION PLANT
RADFORD, VA
WORK PLAN

EXCAVATION BASE CONFIRMATION SAMPLING RESULTS

ARCADIS

FIGURE
3-4

Appendix A

Laboratory Analytical Reports from Confirmation Sampling

INORGANIC CASE NARRATIVE
Arcadis
SDG# Radford
Work Order# 0912138
December, 2009

Empirical Laboratories ID	Client ID
0912138-01	NBG-XRF002(0-0.5)
0912138-02	NBG-XRF005(0-0.5)
0912138-03	NBG-XRF007(0-0.5)
0912138-04	NBG-XRF010(1-1.5)
0912138-05	NBG-XRF013(1-1.5)
0912138-06	NBG-XRF015(1-1.5)
0912138-07	NBG-XRF017(1-1.5)
0912138-08	NBG-XRF020(1-1.5)
0912138-09	NBG-XRF021(1-1.5)
0912138-10	NBG-XRF022(1-1.5)
0912138-11	NBG-XRF025(4-4.5)
0912138-12	NBG-XRF023B(3-3.5)
0912138-13	NBG-XRF026(1-1.5)
0912138-14	NBG-XRF028(1-1.5)
0912138-15	NBG-XRF031(1-1.5)
0912138-16	NBG-XRFDUP001(3-3.5)

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 the case narrative, as verified by the following signature.

Betty DeVille
Inorganic Lab Manager

Methods:

The samples were digested ICAP metals using USEPA SW846 method 3050B and analyzed by 6010B. Note: The "U" flag on the forms indicates that the analyte is reported down to the MDL. The "J" flag indicates that the analyte result is between the laboratory MDL and the laboratory RL.

Specific Comments:

All analyses performed by the Inorganic section were completed meeting satisfactorily the corresponding specifications for Quality Control.

0912138

Empirical Laboratories, LLC

Client: Arcadis (A285)
Project: Radford Army Ammunition Plant

Project Manager: Janice Shilling
Project Number: ARC_Radford

Report To:
Arcadis (A285)
Jace'que Powell
2929 Briarpark Dr., Suite 300
Houston, TX 77042
Phone: (281) 497-6900
Fax: (000) 000-0000

Invoice To:
Arcadis (A285)
Joyce Williams
640 Plaza Drive Suite 130
Highlands Ranch, CO 80129
Phone :(720) 344-3764
Fax: (000) 000-0000

Date Due: 01/07/2010 16:00 (15 day TAT)
Received By: William Schwab
Logged In By: William Schwab
Date Received: 12/12/2009 08:45
Date Logged In: 12/14/2009 11:27

Samples Received at: 2.1°C
Custody Seals No Received On Ice Yes
Containers Intact Yes
COC/Labels Agree Yes
Preservation Confirm Yes

Analysis	Due	TAT	Expires	Comments
0912138-01 NBG-XRF002(0-0.5) [Solid] Sampled 12/08/2009 11:00 Eastern				
WC_PERCENT_SOLIDS_2540B	12/30/2009 14:00	10	12/15/2009 10:00	
MET_ICP_LOW6010B_FULL	12/30/2009 14:00	10	06/06/2010 10:00	Chk Version
0912138-02 NBG-XRF005(0-0.5) [Solid] Sampled 12/08/2009 11:05 Eastern				
WC_PERCENT_SOLIDS_2540B	12/30/2009 14:00	10	12/15/2009 10:05	
MET_ICP_LOW6010B_FULL	12/30/2009 14:00	10	06/06/2010 10:05	Chk Version
0912138-03 NBG-XRF007(0-0.5) [Solid] Sampled 12/08/2009 11:10 Eastern				
WC_PERCENT_SOLIDS_2540B	12/30/2009 14:00	10	12/15/2009 10:10	
MET_ICP_LOW6010B_FULL	12/30/2009 14:00	10	06/06/2010 10:10	Chk Version
0912138-04 NBG-XRF010(1-1.5) [Solid] Sampled 12/09/2009 14:10 Eastern				
MET_ICP_LOW6010B_FULL	12/30/2009 14:00	10	06/07/2010 13:10	Chk Version
WC_PERCENT_SOLIDS_2540B	12/30/2009 14:00	10	12/16/2009 13:10	
0912138-05 NBG-XRF013(1-1.5) [Solid] Sampled 12/09/2009 14:15 Eastern				
MET_ICP_LOW6010B_FULL	12/30/2009 14:00	10	06/07/2010 13:15	Chk Version
WC_PERCENT_SOLIDS_2540B	12/30/2009 14:00	10	12/16/2009 13:15	
0912138-06 NBG-XRF015(1-1.5) [Solid] Sampled 12/09/2009 14:20 Eastern				
MET_ICP_LOW6010B_FULL	12/30/2009 14:00	10	06/07/2010 13:20	Chk Version
WC_PERCENT_SOLIDS_2540B	12/30/2009 14:00	10	12/16/2009 13:20	

0912138

Empirical Laboratories, LLC

Client: Arcadis (A285)
Project: Radford Army Ammunition Plant

Project Manager: Janice Shilling
Project Number: ARC_Radford

Analysis	Due	TAT	Expires	Comments
0912138-07 NBG-XRF017(1-1.5) [Solid] Sampled 12/09/2009 14:25 Eastern				
WC_PERCENT_SOLIDS_2540B	12/30/2009 14:00	10	12/16/2009 13:25	
MET_ICP_LOW6010B_FULL	12/30/2009 14:00	10	06/07/2010 13:25	Chk Version
0912138-08 NBG-XRF020(1-1.5) [Solid] Sampled 12/09/2009 14:30 Eastern				
MET_ICP_LOW6010B_FULL	12/30/2009 14:00	10	06/07/2010 13:30	Chk Version
WC_PERCENT_SOLIDS_2540B	12/30/2009 14:00	10	12/16/2009 13:30	
0912138-09 NBG-XRF021(1-1.5) [Solid] Sampled 12/09/2009 14:35 Eastern				
WC_PERCENT_SOLIDS_2540B	12/30/2009 14:00	10	12/16/2009 13:35	
MET_ICP_LOW6010B_FULL	12/30/2009 14:00	10	06/07/2010 13:35	Chk Version
0912138-10 NBG-XRF022(1-1.5) [Solid] Sampled 12/09/2009 14:40 Eastern				
WC_PERCENT_SOLIDS_2540B	12/30/2009 14:00	10	12/16/2009 13:40	
MET_ICP_LOW6010B_FULL	12/30/2009 14:00	10	06/07/2010 13:40	Chk Version
0912138-11 NBG-XRF025(4-4.5) [Solid] Sampled 12/09/2009 14:45 Eastern				
WC_PERCENT_SOLIDS_2540B	12/30/2009 14:00	10	12/16/2009 13:45	
MET_ICP_LOW6010B_FULL	12/30/2009 14:00	10	06/07/2010 13:45	Chk Version
0912138-12 NBG-XRF023B(3-3.5) [Solid] Sampled 12/09/2009 14:50 Eastern				
WC_PERCENT_SOLIDS_2540B	12/30/2009 14:00	10	12/16/2009 13:50	
MET_ICP_LOW6010B_FULL	12/30/2009 14:00	10	06/07/2010 13:50	Chk Version
0912138-13 NBG-XRF026(1-1.5) [Solid] Sampled 12/09/2009 14:55 Eastern				
MET_ICP_LOW6010B_FULL	12/30/2009 14:00	10	06/07/2010 13:55	Chk Version
WC_PERCENT_SOLIDS_2540B	12/30/2009 14:00	10	12/16/2009 13:55	
0912138-14 NBG-XRF028(1-1.5) [Solid] Sampled 12/09/2009 15:00 Eastern				
MET_ICP_LOW6010B_FULL	12/30/2009 14:00	10	06/07/2010 14:00	Chk Version
WC_PERCENT_SOLIDS_2540B	12/30/2009 14:00	10	12/16/2009 14:00	
0912138-15 NBG-XRF031(1-1.5) [Solid] Sampled 12/10/2009 11:20 Eastern				
MET_ICP_LOW6010B_FULL	12/30/2009 14:00	10	06/08/2010 10:20	Chk Version
WC_PERCENT_SOLIDS_2540B	12/30/2009 14:00	10	12/17/2009 10:20	
0912138-16 NBG-XRFDUP001(3-3.5) [Solid] Sampled 12/10/2009 00:00 Eastern				
MET_ICP_LOW6010B_FULL	12/30/2009 14:00	10	06/07/2010 23:00	Chk Version
WC_PERCENT_SOLIDS_2540B	12/30/2009 14:00	10	12/16/2009 23:00	

Reviewed By

Date

ARCADIS

Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD

Page 1 of 2

0912138 Metals Summ

Project Number/Name GPOBRAAP.4 NBG, KG NBG

Project Location RAAP-NBG - NORTHERN BURNING GROUND

Laboratory EMPIRICAL

Project Manager CHRIS KALINOWSKI

Sampler(s)/Affiliation JASON TILLOTSON

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: LEAD AND CHROMIUM 6010						Remarks	Total
NBG-XRF002(0-0.5)	S	12-8-09/1100		1						0912138-01	
NBG-XRF005(0-0.5)	S	12-8-09/1105		1						-02	
NBG-XRF007(0-0.5)	S	12-8-09/1110		1						-03	
NBG-XRF010(1-1.5)	S	12-9-09/1410		1						-04	
NBG-XRF013(1-1.5)	S	12-9-09/1415		1						-05	
NBG-XRF015(1-1.5)	S	12-9-09/1420		1						-06	
NBG-XRF017(1-1.5)	S	12-9-09/1425		1						-07	
NBG-XRF020(1-1.5)	S	12-9-09/1430		1						-08	
NBG-XRF021(1-1.5)	S	12-9-09/1435		1						-09	
NBG-XRF022(1-1.5)	S	12-9-09/1440		1						-10	
NBG-XRF025(4-4.5)	S	12-9-09/1445		1						-11	
NBG-XRF023B(3-3.5)	S	12-9-09/1450		1						-12	
NBG-XRF026(1-1.5)	S	12-9-09/1455		1						-13	
NBG-XRF028(1-1.5)	S	12-9-09/1500		1						-14	
NBG-XRF031(1-1.5)	S	12-10-09/1120		1						-15	

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers

					Seal Intact?
Relinquished by: [signature]	Organization: ARCADIS	Date 12/11/09	Time 1700		
Received by: _____	Organization: _____	Date / /	Time _____		Yes No N/A
Relinquished by: [signature]	Organization: Empirical	Date 12/12/09	Time 08:45		Seal Intact?
Received by: [signature]	Organization: _____	Date 12/12/09	Time 8:45		Yes No N/A

Special Instructions/Remarks: _____

4

Delivery Method: ☐ In Person ☒ Common Carrier FED EX (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05-12/01

ARCADIS

Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD

0912138 Metals Summ

Project Number/Name GPOSRAAP.4NBG.KGNBG

Project Location RAAP-NRU-NORTHERN BURNING GROUND

Laboratory EMPIRICAL

Project Manager CHRIS KALINOWSKI

Sampler(s)/Affiliation JASON TILLOTSON

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: LEAD AND CHROMIUM 6010						Remarks	Total
NBG-XRFDU001(335)	S	———		1						0912138 -16	

Sample Matrix: L = Liquid; S = Solid; A = Air

2.1°C

Total No. of Bottles/ Containers

Relinquished by:	Organization: ARCADIS	Date 12/11/09	Time 1700	Seal Intact?	
Received by:	Organization:	Date / /	Time	Yes No N/A	
Relinquished by:	Organization: Empirical	Date 12/12/09	Time 08:45	Seal Intact?	
Received by:	Organization: CL-5	Date 12/12/09	Time 0845	Yes No N/A	

Special Instructions/Remarks:

5

Delivery Method: ☐ In Person ☒ Common Carrier FED EX (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05-12/01

EMPIRICAL LABORATORIES
COOLER RECEIPT FORM

LIMS Number: 0912138 Number of Coolers: 1 of 1

Client: Arcadis Project: RAAR Northern

Date/Time Received: 9:45 12/12/09 Date cooler(s) opened: 12/12/09

Opened By (print): Frank R. (signature):

Circle response below as appropriate

1. How did the samples arrive?: (FedEx) UPS DHL Hand Delivered
EL Courier Other:

If applicable, enter airbill number here: 3294

2. Were custody seals on outside of cooler(s)? ..... Yes (No)

How many: — Seal date: — Seal Initials: —

3. Were custody seals unbroken and intact at the date and time of arrival?	Yes	No	(N/A)
4. Were custody papers sealed in a plastic bag included in the sample cooler?	(Yes)	No	N/A
5. Were custody papers filled out properly (ink, signed, etc.)?	(Yes)	No	N/A
6. Did you sign custody papers in the appropriate place for acceptance?	(Yes)	No	N/A
7. Was project identifiable from custody papers?	(Yes)	No	N/A
8. If required, was enough ice present in the cooler(s)?	(Yes)	No	N/A

Type of Coolant: (WET) DRY BLUE NONE Temperature of Samples upon Receipt: 2.1

Dates samples were logged-in: 12/14/09

9. Initial this form to acknowledge login of sample(s): (Name): Will Schwab (Initial): WS

10. Were all bottle lids intact and sealed tightly? ..... WS	(Yes)	No	N/A
11. Did all bottles arrive unbroken?	(Yes)	(No) -	N/A
12. Was all required bottle label information complete?	(Yes)	No	N/A
13. Did all bottle labels agree with custody papers?	Yes	(No) *	N/A
14. Were correct containers used for the analyses indicated?	(Yes)	No	N/A
15. Were preservative levels correct in all applicable sample containers?	Yes	No	(N/A)
16. Was residual chlorine present in any applicable sample containers?	Yes	No	(N/A)
17. Was sufficient amount of sample sent for the analyses required?	(Yes)	No	N/A
18. Was headspace present in any included VOA vials?	Yes	No	(N/A)

If Non-Conformance issues were present, list by sample ID:

*NB6-XRF002(0-0.5) says collected at 11:00, container labels say ~~10:00~~ 10:06 CAR#:

-NB6-XRF028(14.5) container cracked in shipment! Transferred to another 6oz

ANALYSIS DATA SHEET

NBG-XRF002(0-0.5)

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Matrix: Soil
Sampled: 12/08/09 11:00
% Solids: 67.56

SDG: 0912138
Project: Radford Army Ammunition Plant
Laboratory ID: 0912138-01
Received: 12/12/09 08:45

CAS NO.	Analyte	Concentration (mg/Kg dry)	MDL	RL	Dilution Factor	Q	Method	Batch	Analyzed
7440-47-3	Chromium	83.5	0.142	0.356	1		SW6010B	9L23001	12/28/09 21:33
7439-92-1	Lead	1580	1.07	2.13	10	D	SW6010B	9L23001	12/29/09 12:08

ANALYSIS DATA SHEET

NBG-XRF005(0-0.5)

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Matrix: Soil
Sampled: 12/08/09 11:05
% Solids: 82.56

SDG: 0912138
Project: Radford Army Ammunition Plant
Laboratory ID: 0912138-02
Received: 12/12/09 08:45

CAS NO.	Analyte	Concentration (mg/Kg dry)	MDL	RL	Dilution Factor	Q	Method	Batch	Analyzed
7440-47-3	Chromium	226	0.116	0.290	1		SW6010B	9L23001	12/28/09 21:37
7439-92-1	Lead	3230	2.17	4.35	25	D	SW6010B	9L23001	12/29/09 12:13

ANALYSIS DATA SHEET

NBG-XRF007(0-0.5)

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Matrix: Soil
Sampled: 12/08/09 11:10
% Solids: 79.27

SDG: 0912138
Project: Radford Army Ammunition Plant
Laboratory ID: 0912138-03
Received: 12/12/09 08:45

CAS NO.	Analyte	Concentration (mg/Kg dry)	MDL	RL	Dilution Factor	Q	Method	Batch	Analyzed
7440-47-3	Chromium	85.7	0.122	0.306	1		SW6010B	9L23001	12/28/09 21:42
7439-92-1	Lead	742	0.184	0.367	2	D	SW6010B	9L23001	12/29/09 12:17

ANALYSIS DATA SHEET

NBG-XRF010(1-1.5)

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Matrix: Soil
Sampled: 12/09/09 14:10
% Solids: 82.25

SDG: 0912138
Project: Radford Army Ammunition Plant
Laboratory ID: 0912138-04
Received: 12/12/09 08:45

CAS NO.	Analyte	Concentration (mg/Kg dry)	MDL	RL	Dilution Factor	Q	Method	Batch	Analyzed
7440-47-3	Chromium	21.7	0.117	0.294	1		SW6010B	9L23001	12/28/09 21:47
7439-92-1	Lead	106	0.0881	0.176	1		SW6010B	9L23001	12/28/09 21:47

ANALYSIS DATA SHEET

NBG-XRF013(1-1.5)

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Matrix: Soil
Sampled: 12/09/09 14:15
% Solids: 81.95

SDG: 0912138
Project: Radford Army Ammunition Plant
Laboratory ID: 0912138-05
Received: 12/12/09 08:45

CAS NO.	Analyte	Concentration (mg/Kg dry)	MDL	RL	Dilution Factor	Q	Method	Batch	Analyzed
7440-47-3	Chromium	21.2	0.121	0.304	1		SW6010B	9L23001	12/28/09 21:51
7439-92-1	Lead	37.9	0.0911	0.182	1		SW6010B	9L23001	12/28/09 21:51

ANALYSIS DATA SHEET

NBG-XRF015(1-1.5)

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Matrix: Soil
Sampled: 12/09/09 14:20
% Solids: 78.90

SDG: 0912138
Project: Radford Army Ammunition Plant
Laboratory ID: 0912138-06
Received: 12/12/09 08:45

CAS NO.	Analyte	Concentration (mg/Kg dry)	MDL	RL	Dilution Factor	Q	Method	Batch	Analyzed
7440-47-3	Chromium	17.3	0.121	0.303	1		SW6010B	9L23001	12/28/09 21:56
7439-92-1	Lead	40.0	0.0910	0.182	1		SW6010B	9L23001	12/28/09 21:56

ANALYSIS DATA SHEET

NBG-XRF017(1-1.5)

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Matrix: Soil
Sampled: 12/09/09 14:25
% Solids: 81.69

SDG: 0912138
Project: Radford Army Ammunition Plant
Laboratory ID: 0912138-07
Received: 12/12/09 08:45

CAS NO.	Analyte	Concentration (mg/Kg dry)	MDL	RL	Dilution Factor	Q	Method	Batch	Analyzed
7440-47-3	Chromium	24.2	0.122	0.305	1		SW6010B	9L23002	12/28/09 22:47
7439-92-1	Lead	158	0.0914	0.183	1		SW6010B	9L23002	12/28/09 22:47

ANALYSIS DATA SHEET

NBG-XRF020(1-1.5)

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Matrix: Soil
Sampled: 12/09/09 14:30
% Solids: 88.20

SDG: 0912138
Project: Radford Army Ammunition Plant
Laboratory ID: 0912138-08
Received: 12/12/09 08:45

CAS NO.	Analyte	Concentration (mg/Kg dry)	MDL	RL	Dilution Factor	Q	Method	Batch	Analyzed
7440-47-3	Chromium	22.3	0.112	0.281	1		SW6010B	9L23002	12/28/09 22:52
7439-92-1	Lead	293	0.168	0.337	2	D	SW6010B	9L23002	12/29/09 12:21

ANALYSIS DATA SHEET

NBG-XRF021(1-1.5)

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Matrix: Soil
Sampled: 12/09/09 14:35
% Solids: 78.88

SDG: 0912138
Project: Radford Army Ammunition Plant
Laboratory ID: 0912138-09
Received: 12/12/09 08:45

CAS NO.	Analyte	Concentration (mg/Kg dry)	MDL	RL	Dilution Factor	Q	Method	Batch	Analyzed
7440-47-3	Chromium	407	0.124	0.309	1		SW6010B	9L23002	12/28/09 22:57
7439-92-1	Lead	5920	2.32	4.64	25	D	SW6010B	9L23002	12/29/09 12:26

ANALYSIS DATA SHEET

NBG-XRF022(1-1.5)

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Matrix: Soil
Sampled: 12/09/09 14:40
% Solids: 80.45

SDG: 0912138
Project: Radford Army Ammunition Plant
Laboratory ID: 0912138-10
Received: 12/12/09 08:45

CAS NO.	Analyte	Concentration (mg/Kg dry)	MDL	RL	Dilution Factor	Q	Method	Batch	Analyzed
7440-47-3	Chromium	124	0.123	0.308	1		SW6010B	9L23002	12/28/09 23:01
7439-92-1	Lead	1540	0.923	1.85	10	D	SW6010B	9L23002	12/29/09 12:31

ANALYSIS DATA SHEET

NBG-XRF025(4-4.5)

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Matrix: Soil
Sampled: 12/09/09 14:45
% Solids: 80.87

SDG: 0912138
Project: Radford Army Ammunition Plant
Laboratory ID: 0912138-11
Received: 12/12/09 08:45

CAS NO.	Analyte	Concentration (mg/Kg dry)	MDL	RL	Dilution Factor	Q	Method	Batch	Analyzed
7440-47-3	Chromium	22.2	0.117	0.293	1		SW6010B	9L23002	12/28/09 23:06
7439-92-1	Lead	66.7	0.0879	0.176	1		SW6010B	9L23002	12/28/09 23:06

ANALYSIS DATA SHEET

NBG-XRF023B(3-3.5)

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Matrix: Soil
Sampled: 12/09/09 14:50
% Solids: 88.63

SDG: 0912138
Project: Radford Army Ammunition Plant
Laboratory ID: 0912138-12
Received: 12/12/09 08:45

CAS NO.	Analyte	Concentration (mg/Kg dry)	MDL	RL	Dilution Factor	Q	Method	Batch	Analyzed
7440-47-3	Chromium	23.2	0.111	0.278	1		SW6010B	9L23002	12/28/09 23:11
7439-92-1	Lead	59.4	0.0834	0.167	1		SW6010B	9L23002	12/28/09 23:11

ANALYSIS DATA SHEET

NBG-XRF026(1-1.5)

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Matrix: Soil
Sampled: 12/09/09 14:55
% Solids: 78.82

SDG: 0912138
Project: Radford Army Ammunition Plant
Laboratory ID: 0912138-13
Received: 12/12/09 08:45

CAS NO.	Analyte	Concentration (mg/Kg dry)	MDL	RL	Dilution Factor	Q	Method	Batch	Analyzed
7440-47-3	Chromium	214	0.123	0.306	1		SW6010B	9L23002	12/28/09 23:15
7439-92-1	Lead	4040	0.919	1.84	10	D	SW6010B	9L23002	12/29/09 12:35

ANALYSIS DATA SHEET

NBG-XRF028(1-1.5)

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Matrix: Soil
Sampled: 12/09/09 15:00
% Solids: 81.56

SDG: 0912138
Project: Radford Army Ammunition Plant
Laboratory ID: 0912138-14
Received: 12/12/09 08:45

CAS NO.	Analyte	Concentration (mg/Kg dry)	MDL	RL	Dilution Factor	Q	Method	Batch	Analyzed
7440-47-3	Chromium	68.3	0.121	0.302	1		SW6010B	9L23002	12/28/09 23:20
7439-92-1	Lead	1230	0.453	0.906	5	D	SW6010B	9L23002	12/29/09 12:39

ANALYSIS DATA SHEET

NBG-XRF031(1-1.5)

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Matrix: Soil
Sampled: 12/10/09 11:20
% Solids: 77.61

SDG: 0912138
Project: Radford Army Ammunition Plant
Laboratory ID: 0912138-15
Received: 12/12/09 08:45

CAS NO.	Analyte	Concentration (mg/Kg dry)	MDL	RL	Dilution Factor	Q	Method	Batch	Analyzed
7440-47-3	Chromium	24.7	0.124	0.310	1		SW6010B	9L23002	12/28/09 23:25
7439-92-1	Lead	94.8	0.0929	0.186	1		SW6010B	9L23002	12/28/09 23:25

ANALYSIS DATA SHEET

NBG-XRFDUP001(3-3.5)

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Matrix: Soil
Sampled: 12/10/09 00:00
% Solids: 82.96

SDG: 0912138
Project: Radford Army Ammunition Plant
Laboratory ID: 0912138-16
Received: 12/12/09 08:45

CAS NO.	Analyte	Concentration (mg/Kg dry)	MDL	RL	Dilution Factor	Q	Method	Batch	Analyzed
7440-47-3	Chromium	21.3	0.121	0.303	1		SW6010B	9L23002	12/28/09 23:30
7439-92-1	Lead	362	0.182	0.363	2	D	SW6010B	9L23002	12/29/09 12:44

INITIAL AND CONTINUING CALIBRATION CHECK

SW6010B

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Instrument ID: ME-ICP

SDG: 0912138
Project: Radford Army Ammunition Plant
Calibration: 9364001
Sequence: 9L36401

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
9L36401-ICV1	Chromium	1000	982.0	98.2	ug/L	+/- 10.00%
	Lead	1000	997.5	99.8	ug/L	+/- 10.00%
9L36401-CCV1	Chromium	1000	1000	100	ug/L	+/- 10.00%
	Lead	1000	1014	101	ug/L	+/- 10.00%
9L36401-CCV4	Chromium	1000	984.0	98.4	ug/L	+/- 10.00%
	Lead	1000	969.5	97.0	ug/L	+/- 10.00%
9L36401-CCV5	Chromium	1000	990.2	99.0	ug/L	+/- 10.00%
	Lead	1000	983.1	98.3	ug/L	+/- 10.00%
9L36401-CCV6	Chromium	1000	985.8	98.6	ug/L	+/- 10.00%
	Lead	1000	972.1	97.2	ug/L	+/- 10.00%
9L36401-CCV7	Chromium	1000	1012	101	ug/L	+/- 10.00%
	Lead	1000	977.7	97.8	ug/L	+/- 10.00%

INITIAL AND CONTINUING CALIBRATION CHECK

SW6010B

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Instrument ID: ME-ICP

SDG: 0912138
Project: Radford Army Ammunition Plant
Calibration: 9364004
Sequence: 9L36407

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
9L36407-ICV1	Lead	1000	986.0	98.6	ug/L	+/- 10.00%
9L36407-CCV1	Lead	1000	980.7	98.1	ug/L	+/- 10.00%
9L36407-CCV2	Lead	1000	990.0	99.0	ug/L	+/- 10.00%

Metals in Water by ICP-AES - Quality Control

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9L36401											
Instrument RL Check				Prepared & Analyzed: 12/28/2009							
Chromium	4.875			ug/L	5.000		97.5	80-120			
Lead	2.842			ug/L	3.000		94.7	80-120			
Batch 9L36407											
Instrument RL Check				Prepared & Analyzed: 12/29/2009							
Lead	2.820			ug/L	3.000		94.0	80-120			

BLANKS
SW6010B

Laboratory: Empirical Laboratories, LLC
SDG: 0912138
Client: Arcadis (A285)
Instrument ID: ME-ICP
Project: Radford Army Ammunition Plant
Sequence: 9L36401
Calibration: 9364001

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
9L36401-ICB1	Chromium	-0.09331	2.00	5.00	ug/L	U	SW6010B
	Lead	-0.9421	1.50	3.00	ug/L	U	SW6010B
9L36401-CCB1	Chromium	0.163	2.00	5.00	ug/L	U	SW6010B
	Lead	0.408	1.50	3.00	ug/L	U	SW6010B
9L36401-CCB4	Chromium	-0.124	2.00	5.00	ug/L	U	SW6010B
	Lead	-0.244	1.50	3.00	ug/L	U	SW6010B
9L23001-BLK1	Chromium	0.0452	0.100	0.250	mg/Kg wet	U	SW6010B
	Lead	0.0224	0.0750	0.150	mg/Kg wet	U	SW6010B
9L36401-CCB5	Chromium	0.105	2.00	5.00	ug/L	U	SW6010B
	Lead	-0.632	1.50	3.00	ug/L	U	SW6010B
9L36401-CCB6	Chromium	0.0799	2.00	5.00	ug/L	U	SW6010B
	Lead	0.879	1.50	3.00	ug/L	U	SW6010B
9L23002-BLK1	Chromium	0.0415	0.100	0.250	mg/Kg wet	U	SW6010B
	Lead	-0.0175	0.0750	0.150	mg/Kg wet	U	SW6010B
9L36401-CCB7	Chromium	-0.0760	2.00	5.00	ug/L	U	SW6010B
	Lead	0.957	1.50	3.00	ug/L	U	SW6010B

BLANKS
SW6010B

Laboratory: Empirical Laboratories, LLC
SDG: 0912138
Client: Arcadis (A285)
Instrument ID: ME-ICP
Project: Radford Army Ammunition Plant
Sequence: 9L36407
Calibration: 9364004

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
9L36407-ICB1	Lead	-0.09231	1.50	3.00	ug/L	U	SW6010B
9L36407-CCB1	Lead	0.0269	1.50	3.00	ug/L	U	SW6010B
9L36407-CCB2	Lead	0.345	1.50	3.00	ug/L	U	SW6010B

ICP INTERFERENCE CHECK SAMPLE

SW6010B

Laboratory: Empirical Laboratories, LLC

Client: Arcadis (A285)

Instrument ID: ME-ICP

Sequence: 9L36401

SDG: 0912138

Project: Radford Army Ammunition Plant

Calibration: 9364001

Lab Sample ID	Analyte	True	Found	%R	Units
9L36401-IFA1	Chromium		-2.22		ug/L
	Lead		2.10		ug/L
9L36401-IFB1	Chromium	500.0	430.31	86.1	ug/L
	Lead	50.00	47.55	95.1	ug/L

ICP INTERFERENCE CHECK SAMPLE

SW6010B

Laboratory: Empirical Laboratories, LLC

Client: Arcadis (A285)

Instrument ID: ME-ICP

Sequence: 9L36407

SDG: 0912138

Project: Radford Army Ammunition Plant

Calibration: 9364004

Lab Sample ID	Analyte	True	Found	%R	Units
9L36407-IFA1	Lead		1.66		ug/L
9L36407-IFB1	Lead	50.00	46.12	92.2	ug/L

LCS / LCS DUPLICATE RECOVERY
SW6010B

Laboratory:	Empirical Laboratories, LLC	SDG:	0912138
Client:	Arcadis (A285)	Project:	Radford Army Ammunition Plant
Matrix:	Solid		
Batch:	9L23001	Laboratory ID:	9L23001-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.
Chromium	10.00	10.72	107	80 - 120
Lead	12.50	12.60	101	80 - 120

LCS / LCS DUPLICATE RECOVERY

SW6010B

Laboratory:	Empirical Laboratories, LLC	SDG:	0912138
Client:	Arcadis (A285)	Project:	Radford Army Ammunition Plant
Matrix:	Solid		
Batch:	9L23002	Laboratory ID:	9L23002-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.
Chromium	10.00	10.86	109	80 - 120
Lead	12.50	12.65	101	80 - 120

Appendix B

Site Photographs

Photo 1 – Silt Fence installed in northwest portion of the work area prior to excavation.

Photo 2 – Gravel added to dirt road on east side of work area.

Photo 3 – View of plastic liner being installed in dump trailer prior to loading.

Photo 4 – Debris/ash from historic burning operations encountered during excavation activities.

Photo 5 – Southern portion of excavation footprint after target depth of 1-ft bgs achieved.

Photo 6 – Central portion of site where target excavation depth was 4-ft bgs.

Photo 7 – View of excavation area during backfill activities.

Photo 8 – View of work area after grass seed and straw were placed.

Appendix C

Waste Disposal Manifests, Weigh Tickets, and Certificates of Disposal

Invoice: 40176541 Receipt 03-01 1180367 Manifest 004173234JJK

Form Approved. OMB No. 2050-0039

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: VAR 000 012 559
2. Page 1 of: 1
3. Emergency Response Phone: 800-424-9300
4. Manifest Tracking Number: 004173234 JJK

5. Generator's Name and Mailing Address: New River Storage Depot C/O Alliant Techsystems, PO Box 1 Radford, Va 24143
Generator's Phone: 540 639-7808 Attn: H. R. Blankenship
Generator's Site Address (if different than mailing address): New River Storage Depot, 0.8 mi south of Rt. 1030 & Rt. 747, Dublin, VA VA 24084
U.S. EPA ID Number: PAD 987 347 515

6. Transporter 1 Company Name: US Bulk Transport Inc (TYE)
U.S. EPA ID Number:

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address: WAYNE DISPOSAL INC. ~~Michigan Disposal Waste Treatment Plant~~, 49350 N. I-94 Service Drive, Belleville, MI 49111
U.S. EPA ID Number: 048 090 693 ~~MID 000 724 934~~
Facility's Phone: 800-592-5489

9a. HM	9b. U.S. DOT Description (Including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
X	1. RQ, NA3077, Hazardous Waste Solid, NOS (lead), 9, PGIII	001	DT	40,000	P	D008		
	2.							
	3.							
	4.							

14. Special Handling Instructions and Additional Information
1. LOG2010, WDI northern burn ground soil ERG# 171
CESI Job# ROAN-TPORT-3639-17907

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: ALLIANT TECHSYSTEMS INC BY: H.R.BLANKENSHIP, TRANSPORTATION ANALYST
Signature: H R Blankenship
Month Day Year: 12 09 09

16. International Shipments: ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit: Date leaving U.S.:
Transporter signature (for exports only):

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Nathaniel Kramer
Signature:
Month Day Year: 12 9 09
Transporter 2 Printed/Typed Name:
Signature:
Month Day Year:

18. Discrepancy
18a. Discrepancy Indication Space: ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
changes to section 8 +14 per Terri Fort @ Capitol 12/9/09 mp/tc.
18b. Alternate Facility (or Generator)
U.S. EPA ID Number:
Facility's Phone:
18c. Signature of Alternate Facility (or Generator)
Month Day Year:

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. D132. 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name: TERRI FORTNEY
Signature:
Month Day Year: 12 09 09

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

3009523

Wayne Disposal, Inc.
49350 North I-94 Service Drive, Belleville, Michigan 48111

Receipt

CAPITOL ENVIRONMENTAL - ROANOKE VA
200 BIDDLE AVE, SUITE 205
NEWARK, DE 19702

Receipt ID: 1180367
EQ Account #: 5247
Manifest / BOL: 004173234JJK
Transporter: US BULK
Date: 12/09/2009
Time In: 8:08 AM
Time Out: 12:17 PM

Line	Description Generator	Qty. Unit
1 - A	L092016WDI - New River Storage Depot- Northern Burn Ground Soil	23.770 TONS
	VAR000012559 NEW RIVER STORAGE DEPOT **Gross:** 80,680 **Tare:** 33,140 **Net:** 47,540	

NO SALVAGING ON PREMISES

CERTIFICATE OF DISPOSAL

This certificate is to verify the wastes specified on Manifest # 004173234JJK
have been properly disposed of in accordance with all local, state and federal regulations.

"Disposed of" means either: 1) Burial or 2) Processed as specified in 40 CFR et seq.

FACILITY NAME: *(Please check one)* ☐ Michigan Disposal Waste Treatment Plant (EPA I.D. # MID000724831) ☑ Wayne Disposal, Inc. (EPA I.D. # MID048090633)

ADDRESS: 49350 N. I-94 Service Drive
Belleville, Michigan 48111

PHONE NUMBER: 1-800-592-5489

FAX NUMBER: 1-800-593-5329

Authorized Signature: [signature]

THE ENVIRONMENTAL QUALITY COMPANY 49350 N. I-94 SERVICE DRIVE BELLEVILLE MICHIGAN 48111

Invoice: 40176541 Receipt 03-01 1180368 Manifest 004173235JJK

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: VAR 000 012 559
2. Page 1 of: 1
3. Emergency Response Phone: 800-424-9300
4. Manifest Tracking Number: 004173235 JJK

5. Generator's Name and Mailing Address:
New River Storage Depot C/O Alliant Techsystems
PO Box 1 Radford, Va 24143
Generator's Phone: 540 639-7668 Attn: H. R Blankenship

Generator's Site Address (if different than mailing address):
New River Storage Depot
0.9 mi south of Rt. 1030 & Rt 747
Dublin, VA VA 24084

6. Transporter 1 Company Name: US Bulk Transport Inc. (TUP) — U.S. EPA ID Number: PAD 987 347 515

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Wayne Disposal Inc. ~~Michigan Disposal Waste Treatment Plant~~
49350 N. I-94 Service Drive
Belleville, MI 48111
Facility's Phone: 800-592-5489
U.S. EPA ID Number: MID ~~000 724 831~~ 048 090 633

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	1. RQ, NA3077, Hazardous Waste Solid, NOS (lead), 9, PGIII	0 0 1	DT	~~23~~ 25 T	T	D008
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
~~1. L0928189MDI~~ northern burn ground soil ERG# 171
L092016WDI
CESI Job#ROAN-TFORT-3839-17907

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: ALLIANT TECHSYSTEMS INC BY: H.R.BLANKENSHIP, TRANSPORTATION ANALYST — Signature: [signature] — Month Day Year: 1 2 0 9 0 9

16. International Shipments: ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit: Date leaving U.S.:
Transporter signature (for exports only):

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Dave [redacted] — Signature: [signature] — Month Day Year:
Transporter 2 Printed/Typed Name: — Signature: — Month Day Year: 12 8 09

18. Discrepancy
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Changes to section 8+4 ok per Tim Fort @ Capitol 12/9/09 MP/TC
Manifest Reference Number:
18b. Alternate Facility (or Generator) — U.S. EPA ID Number:
Facility's Phone:
18c. Signature of Alternate Facility (or Generator) — Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. ~~H075~~ H132 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name: Larry Leding — Signature: [signature] — Month Day Year: 12 9 09

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.
DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

5009789

Wayne Disposal, Inc.

49350 North I-94 Service Drive, Belleville, Michigan 48111

Receipt

CAPITOL ENVIRONMENTAL - ROANOKE VA
200 BIDDLE AVE, SUITE 205
NEWARK, DE 19702

Receipt ID: 1180368
EQ Account #: 5247
Manifest / BOL: 004173235JJK
Transporter: US BULK
Date: 12/09/2009
Time In: 8:00 AM
Time Out: 12:26 PM

Line	Description Generator	Qty. Unit
1 - A	L092016WDI - New River Storage Depot- Northern Burn Ground Soil VAR000012559 NEW RIVER STORAGE DEPOT **Gross:** 83,380 **Tare:** 32,840 **Net:** 50,540	25.270 TONS

NO SALVAGING ON PREMISES

3009780

Invoice: 40176541 Receipt 03-01 1180368 Cod 00417323SJJK

CERTIFICATE OF DISPOSAL

This certificate is to verify the wastes specified on Manifest # 004173235JJK

have been properly disposed of in accordance with all local, state and federal regulations.

"Disposed of" means either: 1) Burial or 2) Processed as specified in 40 CFR et sea.

FACILITY NAME: *(Please check one)* ☐ Michigan Disposal Waste Treatment Plant (EPA I.D. # MID000724831) ☑ Wayne Disposal, Inc. (EPA I.D. # MID048090633)

ADDRESS: 49350 N. I-94 Service Drive
Belleville, Michigan 48111

PHONE NUMBER: 1-800-592-5489

FAX NUMBER: 1-800-593-5329

Authorized Signature: ____________________

THE ENVIRONMENTAL QUALITY COMPANY 49350 N. I-94 SERVICE DRIVE BELLEVILLE MICHIGAN 48111

Invoice: 40177363 Receipt 03-01 1180399 Manifest 004173236JJK

186

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number: VAR 000 012 559	2. Page 1 of: 1	3. Emergency Response Phone: 800-424-9300	4. Manifest Tracking Number: 004173236 JJK

5. Generator's Name and Mailing Address: New River Storage Depot C/O Alliant Techsystems, PO Box 1 Radford, Va 24143
Generator's Site Address (if different than mailing address): New River Storage Depot, 0.6 mi south of Rt. 1030 & Rt. 747, Dublin, VA VA 24084
Generator's Phone: 540 639-7668 Attn: H. R. Blankenship

6. Transporter 1 Company Name: US Bulk Transport Inc (INC) — U.S. EPA ID Number: PAD 987 347 516

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Wayne Michigan Disposal Waste Treatment Plant, 49350 N. I-94 Service Drive, Belleville, MI 48111 — U.S. EPA ID Number: 048 090 633 MID 000 724 831
Facility's Phone: 800-592-5489

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	1. RQ, NA3077, Hazardous Waste Solid, NOS (lead), 9, PGIII	0 0 1	DT	EST 40,000	P	D008
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
1. LD02016MBI northern burn ground soil ERG# 171 WDI
CESI Job# ROAN-TFORT-3839-17907

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: ALLIANT TECHSYSTEMS INC BY:H.R.BLANKENSHIP, TRANSPORTATION ANALYST — Signature: H.R. Blankenship — Month 12 Day 09 Year 09

16. International Shipments: ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit: ____ Date leaving U.S.: ____
Transporter signature (for exports only):

17. Transporter Acknowledgment of Receipt of Materials

	Printed/Typed Name	Signature	Month	Day	Year
Transporter 1	James Jenary	James Jenary	12	10	09
Transporter 2					

18. Discrepancy

18a. Discrepancy Indication Space: ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Changes to Sect 8 & 14 per Terri Frost @ Cap. Env. 12-9-09 Mara Poe — Manifest Reference Number:

18b. Alternate Facility (or Generator) — U.S. EPA ID Number:
Facility's Phone:

18c. Signature of Alternate Facility (or Generator) — Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. H132 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18c.
Printed/Typed Name: Terri Frost — Signature — Month 12 Day 11 Year 09

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete. DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

3015242

Wayne Disposal, Inc.
49350 North I-94 Service Drive, Belleville, Michigan 48111

Receipt

CAPITOL ENVIRONMENTAL - ROANOKE VA
200 BIDDLE AVE, SUITE 205
NEWARK, DE 19702

Receipt ID: 1180399
EQ Account #: 5247
Manifest / BOL: 004173236JJK
Transporter: US BULK
Date: 12/11/2009
Time In: 7:23 AM
Time Out: 8:58 AM

Line	Description Generator	Qty. Unit
1 - A	L092016WDI - New River Storage Depot- Northern Burn Ground Soil VAR000012559 NEW RIVER STORAGE DEPOT **Gross:** 67,320 **Tare:** 33,040 **Net:** 34,280	17.140 TONS

NO SALVAGING ON PREMISES

CERTIFICATE OF DISPOSAL

This certificate is to verify the wastes specified on Manifest # 004773636JK

have been properly disposed of in accordance with all local, state and federal regulations.

"Disposed of" means either: 1) Buried or 2) Processed as specified in 40 CFR et seq.

Wayne Disposal, Inc.
(EPA I.D. # MID048090633)

FACILITY NAME: ☐ Michigan Disposal Waste Treatment Plant
(Please check one) (EPA I.D. # MID980728311)

ADDRESS: 49350 N. I-94 Service Drive
Belleville, Michigan 48111

PHONE NUMBER: 1-800-592-5489

FAX NUMBER: 1-800-593-5329

Authorized Signature:

THE ENVIRONMENTAL QUALITY COMPANY 49350 N. I-94 SERV CE DRIVE BELLEVILLE MICHIGAN 48111

Invoice: 40176541 Receipt 03-01 1180366 Manifest 004173237JJK

#148

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: VAR 000 012 559

2. Page 1 of 1

3. Emergency Response Phone: 800-424-9300

4. Manifest Tracking Number: 004173237 JJK

GENERATOR

5. Generator's Name and Mailing Address:
New River Storage Depot C/O Alliant Techsystems
PO Box 1 Radford, Va 24143

Generator's Phone: 540 639-7669 Attn: H. R. Blankenship

Generator's Site Address (if different than mailing address):
New River Storage Depot
0.8 mi south of Rt. 1030 & Rt. 747
Dublin, VA VA 24084

6. Transporter 1 Company Name: US Bulk Transport Inc

U.S. EPA ID Number: PAD 987 347 616

7. Transporter 2 Company Name: (TNF)

U.S. EPA ID Number:

8. Designated Facility Name and Site Address:
~~Michigan~~ Envirite Disposal Waste Treatment Plant
49350 N. I-94 Service Drive
Belleville, MI 48111

Facility's Phone: 800-592-5489

U.S. EPA ID Number: 040 090 633 ~~MID 000724831~~

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	1. RQ, NA3077, Hazardous Waste Solid, NOS (lead), 9, PGIII	0 0 1	DT	221	T	D008
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information:
1. ~~L092016WDI~~ L092016WDI northern burn ground soil ERG# 171

CESI Job# ROAN-TFORT-3639-17907

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: ALLIANT TECHSYSTEMS INC BY: H.R. BLANKENSHIP, TRANSPORTATION ANALYST

Signature: H R Blankenship

Month Day Year: 1 2 / 0 9 / 0 9

INT'L

16. International Shipments: ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: James Coner

Signature: [signature]

Month Day Year: 12 / 9 / 09

Transporter 2 Printed/Typed Name:

Signature:

Month Day Year:

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

changes to Sect 8 & 14 per Teri Fort @ Cap. Env 12/9/09 Marc Pare

Manifest Reference Number:

18b. Alternate Facility (or Generator)

U.S. EPA ID Number:

Facility's Phone:

18c. Signature of Alternate Facility (or Generator)

Month Day Year:

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1. H132 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name: Tanya Conway

Signature: [signature]

Month Day Year: 12/09/09

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

3003677

Wayne Disposal, Inc.
49350 North I-94 Service Drive, Belleville, Michigan 48111

Receipt

CAPITOL ENVIRONMENTAL - ROANOKE VA
200 BIDDLE AVE, SUITE 205
NEWARK, DE 19702

Receipt ID: 1180366
EQ Account #: 5247
Manifest / BOL: 004173237JJK
Transporter: US BULK
Date: 12/09/2009
Time In: 11:29 AM
Time Out: 12:30 PM

Line	Description Generator	Qty. Unit
1 - A	L092016WDI - New River Storage Depot- Northern Burn Ground Soil VAR000012559 NEW RIVER STORAGE DEPOT **Gross:** 75,600 **Tare:** 34,180 **Net:** 41,420	20.710 TONS

NO SALVAGING ON PREMISES

CERTIFICATE OF DISPOSAL

This certificate is to verify the wastes specified on Manifest # 004173237 JJK

have been properly disposed of in accordance with all local, state and federal regulations.

"Disposed of" means either: 1) Burial or 2) Processed as specified in 40 CFR et seq.

FACILITY NAME: *(Please check one)*

☐ Michigan Disposal Waste Treatment Plant (EPA I.D. # MID980774831)

☒ Wayne Disposal, Inc. (EPA I.D. # MID048090633)

ADDRESS: 49350 N. I-94 Service Drive
Belleville, Michigan 48111

PHONE NUMBER: 1-800-592-5489

FAX NUMBER: 1-800-593-5329

Authorized Signature: Nathaniel J. Smith

THE ENVIRONMENTAL QUALITY COMPANY 49350 N. I-94 SERVICE DRIVE BELLEVILLE MICHIGAN 48111

Form # REG-PAA013-BEL

The electronic version of this document is the controlled version. Each user is responsible for ensuring that any document being used is the current version.

8/25/08

Invoice: 40177647 **Receipt 03-01 1180391** **Manifest 004173238JJK**

149

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
	VAR 000 012 559	1	800-424-9300	004173238 JJK

GENERATOR

5. Generator's Name and Mailing Address: New River Storage Depot C/O Alliant Techsystems, PO Box 1 Radford, Va 24143
Generator's Site Address (if different than mailing address): New River Storage Depot, 0.3 mi south of Rt. 1030 & Rt. 747, Dublin, VA VA 24084
Generator's Phone: 540 639-7889 Attn: H. R. Blankenship

6. Transporter 1 Company Name: US Bulk Transport Inc. (TYF) — U.S. EPA ID Number: PAD 987 347 515

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: ~~Michigan~~ Wayne Disposal Waste Treatment Plant, 49350 N. I-94 Service Drive, Belleville, MI 48111 — U.S. EPA ID Number: ~~MID 980 724 631~~ MID 048 090 633
Facility's Phone: 800-592-5489

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
X	1. RQ, NA3077, Hazardous Waste Solid, NOS (lead), 9, PGIII	0 0 1	DT	48,000	P	D008		
	2.							
	3.							
	4.							

14. Special Handling Instructions and Additional Information
1. L092016MBT northern burn ground soil ERG# 171 WPS
CESI Job# ROAN-TPORT-3639-17807

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: ALLIANT TECHSYSTEMS INC BY: H. R. BLANKENSHIP, TRANSPORTATION ANALYST — Signature: H R Blankenship — Month 12 Day 09 Year 09

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit: Date leaving U.S.:
Transporter signature (for exports only):

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: ERIC HARTMAN — Signature: Eric Hartman — Month 12 Day 09 Year 09

Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Charges to Sect 8+14 per Terri Fort @ Capitol 12/9/09 Mara Poe
Manifest Reference Number:

18b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.
H132			

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name: Michael Rolfde — Signature: Michael Rolfde — Month 12 Day 11 Year 09

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

Wayne Disposal, Inc.
49350 North I-94 Service Drive, Belleville, Michigan 48111

Receipt

CAPITOL ENVIRONMENTAL - ROANOKE VA
200 SIDDLE AVE, SUITE 205
NEWARK, DE 19702

Receipt ID: 1180391
EQ Account #: 5247
Manifest / BOL: 004173238JJK
Transporter: US BULK
Date: 12/11/2009
Time In: 6:51 AM
Time Out: 8:36 AM

Line	Description Generator	Qty. Unit
1 - A	L092016WDI - New River Storage Depot- Northern Burn Ground Soil VAR000012559 NEW RIVER STORAGE DEPOT **Gross:** 79,240 **Tare:** 31,480 **Net:** 47,760	23.880 TONS

NO SALVAGING ON PREMISES

Invoice: 401776647 Receipt 03-01 1180391 Cod 00417323BJJK

CERTIFICATE OF DISPOSAL

This certificate is to verify the wastes specified on Manifest # 00417323BJJK have been properly disposed of in accordance with all local, state and federal regulations.

"Disposed of" means either: 1) Buried or 2) Processed as specified in 40 CFR et seq.

FACILITY NAME: *(Please check one)*
☐ Michigan Disposal Waste Treatment Plant (USEPA I.D. # MID980724831)
☐ Wayne Disposal, Inc. (USEPA I.D. # MID048609683)

ADDRESS: 49350 N. I-94 Service Drive, Belleville, Michigan 48111

PHONE NUMBER: 1-800-592-5489

FAX NUMBER: 1-800-593-5329

Authorized Signature:

THE ENVIRONMENTAL QUALITY COMPANY 49350 N. I-94 SERVICE DRIVE BELLEVILLE MICHIGAN 48111

Form # REC-FM-013-BEL

The electronic version of this document is the controlled version. Each user is responsible for ensuring that any document being used is the current version.

9/25/08

Invoice: 40177363 Receipt 03-01 1180408 Manifest 004173239JJK

#119

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
	VAR 000 012 559	1	800-424-9300	004173239 JJK

5. Generator's Name and Mailing Address: New River Storage Depot C/O Alliant Techsystems, PO Box 1 Radford, Va 24143
Generator's Phone: 540 639-7669 Attn: H. R. BlankenshIp
Generator's Site Address (if different than mailing address): New River Storage Depot, 0.8 mi south of Rt. 1030 & Rt 747, Dublin, VA VA 24084

6. Transporter 1 Company Name: US Bulk Transport Inc (TUP) — U.S. EPA ID Number: PAD 987 347 515

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: ~~Michigan Disposal Waste Treatment Plant~~ Wayne Disposal Incorp. 49350 N. I-94 Service Drive, Belleville, MI 48111 — U.S. EPA ID Number: 048 090633 MID ~~988 724 031~~

Facility's Phone: 800-592-5489

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
X	1. RQ, NA3077, Hazardous Waste Solid, NOS (lead), 9, PGIII	0 0 1	DT	40,000	P	D008		
	2.							
	3.							
	4.							

14. Special Handling Instructions and Additional Information
1. ~~L092016WDI~~ northern burn ground soil ERG# 171
L092016WDI
CESI Job#ROAN-TFORT-3639-17907

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: ALLIANT TECHSYSTEMS INC BY: H.R. BLANKENSHIP, TRASNPORTATION ANALYST — Signature: H R Blankenship — Month 12 Day 09 Year 09

16. International Shipments: ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit: Date leaving U.S.:
Transporter signature (for exports only):

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Paul Bazydlo — Signature — Month 12 Day 09 Year 09
Transporter 2 Printed/Typed Name — Signature — Month Day Year

18. Discrepancy
18a. Discrepancy Indication Space: ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
changes to section 8 & 14 ok per Terri Lack @ Capitol 12/11/09 TL

18b. Alternate Facility (or Generator) — U.S./EPA ID Number
Facility's Phone:
18c. Signature of Alternate Facility (or Generator) — Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. H132 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name: Larry Leking — Signature — Month 12 Day 11 Year 09

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete. DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

3014963

Wayne Disposal, Inc.
49350 North I-94 Service Drive, Belleville, Michigan 48111

Receipt

CAPITOL ENVIRONMENTAL - ROANOKE VA
200 BIDDLE AVE, SUITE 205
NEWARK, DE 19702

Receipt ID: 1180408
EQ Account #: 5247
Manifest / BOL: 004173239JJK
Transporter: US BULK
Date: 12/11/2009
Time In: 8:47 AM
Time Out: 10:02 AM

Line	Description Generator	Qty.	Unit
1 - A	L092016WDI - New River Storage Depot- Northern Burn Ground Soil	24.630	TONS
	VAR000012559 NEW RIVER STORAGE DEPOT **Gross:** 80,700 **Tare:** 31,440 **Net:** 49,260		

NO SALVAGING ON PREMISES

CERTIFICATE OF DISPOSAL

This certificate is to verify the wastes specified on Manifest # 004173239 JJK
have been properly disposed of in accordance with all local, state and federal regulations.

"Disposed of" means either: 1) Burial or 2) Processed as specified in 40 CFR et seq.

FACILITY NAME: *(Please check one)*	☐ Michigan Disposal Waste Treatment Plant (EPA I.D. # MID000724831)	☒ Wayne Disposal, Inc. (EPA I.D. # MID048090633)
ADDRESS:	49350 N. I-94 Service Drive Belleville, Michigan 48111	
PHONE NUMBER:	1-800-592-5489	
FAX NUMBER:	1-800-593-5329	

Authorized Signature: [signature]

THE ENVIRONMENTAL QUALITY COMPANY 49350 N. I-94 SERVICE DRIVE BELLEVILLE MICHIGAN 48111

Form # REC-FM-013-BEL *The electronic version of this document is the controlled version. Each user is responsible for ensuring that any document being used is the current version.* 8/25/05

Invoice: 40177363 **Receipt 03-01 1180402** **Manifest 004173240JJK**

544-2

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: VAR 000 012 568
2. Page 1 of 1
3. Emergency Response Phone: 800-424-9300
4. Manifest Tracking Number: **004173240 JJK**

5. Generator's Name and Mailing Address: New River Storage Depot C/O Alliant Techsystems, PO Box 1 Radford, VA 24143
Generator's Site Address (if different than mailing address): New River Storage Depot, 0.5 mi south of Rt 1030 & Rt 754, Dublin, VA VA 24084
Generator's Phone: 540 639-7569 Attn H. R. Blankenship

6. Transporter 1 Company Name: US Bulk Transport Inc — U.S. EPA ID Number: PAD 987 367 515

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Wayne Disposal Inc. ~~Michigan Disposal Waste Treatment Plant~~ 49350 N. I-94 Service Drive, Belleville MI 48111 — U.S. EPA ID Number: MID 048090633 ~~MID 000 724 831~~
Facility's Phone: 800-592-5489

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	1. RQ NA3077, Hazardous Waste Solid, NOS (lead) 9 PGIII	0 0 1	DT	23T	T	D008
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information: 1-4,0020-SMEH northern burn ground soil ERG# 171
16120166WD
CES: Job# RCAN-TFCRT-3618-1753

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: ALLIANT TECHSYSTEMS INC BY: H. R. BLANKENSHIP, TRANSPORTATION ANALYST — Signature: [signature] — Month/Day/Year: 12 09 08

16. International Shipments: ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit: Date leaving U.S.:
Transporter signature (for exports only):

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: [handwritten name] — Signature: [signature] — Month/Day/Year: 12 9 09
Transporter 2 Printed/Typed Name: — Signature: — Month/Day/Year:

18. Discrepancy
18a. Discrepancy Indication Space: ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number: [illegible] 12/11/09
18b. Alternate Facility (or Generator) — U.S. EPA ID Number:
Facility's Phone:
18c. Signature of Alternate Facility (or Generator) — Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. H132 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name: Michael Rohde — Signature: [signature] — Month/Day/Year: 12 11 09

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete. **DESIGNATED FACILITY TO GENERATOR**

3014875

Wayne Disposal, Inc.
49350 North I-94 Service Drive, Belleville, Michigan 48111

Receipt

CAPITOL ENVIRONMENTAL - ROANOKE VA
200 BIDDLE AVE, SUITE 205
NEWARK, DE 19702

Receipt ID: 1180402
EQ Account #: 5247
Manifest / BOL: 004173240JJK
Transporter: US BULK
Date: 12/11/2009
Time In: 7:38 AM
Time Out: 11:26 AM

Line	Description / Generator	Qty.	Unit
1 - A	L092016WDI - New River Storage Depot- Northern Burn Ground Soil	23.090	TONS
	VAR000012559 NEW RIVER STORAGE DEPOT		
	Gross: 78,560 **Tare:** 32,380 **Net:** 46,180		
2	DIG OUT	1.000	EACH
	VAR000012559 NEW RIVER STORAGE DEPOT		

NO SALVAGING ON PREMISES

Invoice: 40177363 Receipt 03-01 1180402 Cod 004173240JJK

CERTIFICATE OF DISPOSAL

THE ENVIRONMENTAL QUALITY COMPANY 49350 N. I-94 SERVICE DRIVE BELLEVILLE MICHIGAN 48111

This certificate is to verify the wastes specified on Manifest # 004173240 JJK

have been properly disposed of in accordance with all local, state and federal regulations.

"Disposed of" means either: 1) Burial or 2) Processed as specified in 40 CFR et seq.

FACILITY NAME: (Please check one)
☐ Michigan Disposal Waste Treatment Plant (EPA I.D. # MID000724831)
☐ Wayne Disposal, Inc. (EPA I.D. # MID048090633)

ADDRESS: 49350 N. I-94 Service Drive Belleville, Michigan 48111

PHONE NUMBER: 1-800-592-5489

FAX NUMBER: 1-800-593-5329

Authorized Signature:

Form # REC-FM013-6EL

The electronic version of this document is the controlled version. Each user is responsible for ensuring that any document being used is the current version.

8/25/08

Invoice: 40177647 **Receipt 03-01 1180404** **Manifest 004173241JJK**

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: VAR 000 012 559

2. Page 1 of 1

3. Emergency Response Phone: 800-424-9300

4. Manifest Tracking Number: 004173241 JJK

5. Generator's Name and Mailing Address:
New River Storage Depot C/O Alliant Techsystems
PO Box 1 Radford, Va 24143
Generator's Phone: 540 639-7668 Attn: H. R. Blankenship

Generator's Site Address (if different than mailing address):
New River Storage Depot
0.3 mi south of Rt. 1030 & Rt. 747
Dublin, VA VA 24084

6. Transporter 1 Company Name: US Bulk Transport Inc — U.S. EPA ID Number: PAD 987 347 616

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Wayne Disposal Inc ~~Michigan Disposal Waste Treatment Plant~~
49350 N. I-94 Service Drive
Belleville, MI 48111
Facility's Phone: 800-592-5489
U.S. EPA ID Number: 048 090 633 ~~MID 000 724 831~~

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	1. RQ, NA3077, Hazardous Waste Solid, NOS (lead), 9, PGIII	0 0 1	DT	23T	P	D008
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information:
~~1. L082010MDI~~ northern burn ground soil ERG# 171
L092016WDI
CESI Job# ROAN-TFORT-3639-17907

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: ALLIANT TECHSYSTEMS INC BY: H.R. BLANKENSHIP, TRANSPORTATION ANALYST — Signature: [signature] — Month/Day/Year: 12 09 09

16. International Shipments: ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit: Date leaving U.S.:
Transporter signature (for exports only):

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Jeremy Flannini — Signature: [signature] — Month/Day/Year: 12 09 09
Transporter 2 Printed/Typed Name: — Signature: — Month/Day/Year:

18. Discrepancy
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
changes to section 8 + 14 ok per Terri Fort @ Capitol TC 12/10/09.

18b. Alternate Facility (or Generator) — U.S. EPA ID Number:
Facility's Phone:
18c. Signature of Alternate Facility (or Generator) — Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. H132 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name: Michael Rohde — Signature: [signature] — Month/Day/Year: 12 11 09

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

3016186

Wayne Disposal, Inc.

49350 North I-94 Service Drive, Belleville, Michigan 48111

Receipt

CAPITOL ENVIRONMENTAL - ROANOKE VA
200 BIDDLE AVE, SUITE 205
NEWARK, DE 19702

Receipt ID: 1180404
EQ Account #: 5247
Manifest / BOL: 004173241JJK
Transporter: US BULK
Date: 12/11/2009
Time In: 7:46 AM
Time Out: 5:41 PM

Line	Description Generator	Qty. Unit
1 - A	L092016WDI - New River Storage Depot- Northern Burn Ground Soil VAR000012559 NEW RIVER STORAGE DEPOT **Gross:** 82,880 **Tare:** 31,840 **Net:** 51,040	25.520 TONS

NO SALVAGING ON PREMISES

Invoice: 40177647 Receipt 03-01 1180404 Cod 00417324JJK

8/25/08

CERTIFICATE OF DISPOSAL

This certificate is to verify the wastes specified on Manifest # 004173241JJK

have been properly disposed of in accordance with all local, state and federal regulations.

"Disposed of" means either: 1) Burial or 2) Processed as specified in 40 CFR et seq.

FACILITY NAME: *(Please check one)*

☐ Michigan Disposal Waste Treatment Plant (EPA I.D. # MID000724831)

☒ Wayne Disposal, Inc. (EPA I.D. # MID048090633)

ADDRESS: 49350 N. I-94 Service Drive
Belleville, Michigan 48111

PHONE NUMBER: 1-800-592-5489

FAX NUMBER: 1-800-593-5329

Authorized Signature: _____

THE ENVIRONMENTAL QUALITY COMPANY 49350 N. I-94 SERVICE DRIVE BELLEVILLE MICHIGAN 48111

Form # REQ-FM-013-0803 *The electronic version of this document is the controlled version. Each user is responsible for ensuring that any document being used is the current version.*

3016170

Invoice: 40177363 **Receipt 03-01 1180397** **Manifest 004173242JJK**

192-2

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: VAR 000 012 559
2. Page 1 of: 1
3. Emergency Response Phone: 800-424-9300
4. Manifest Tracking Number: 004173242 JJK

5. Generator's Name and Mailing Address: New River Storage Depot C/O Alliant Techsystems, PO Box 1 Radford, Va 24143
Generator's Site Address (if different than mailing address): New River Storage Depot, 0.5 mi south of Rt 1030 & Rt 747, Dublin, VA VA 24084
Generator's Phone: 540 639-7668 Attn: H. R. Blankenship

6. Transporter 1 Company Name: US Bulk Transport Inc — U.S. EPA ID Number: PAD 987 347 518

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Michigan Disposal Waste Treatment Plant, 49350 N I-94 Service Drive, Belleville MI 48111 — U.S. EPA ID Number: MID 000 724 831
Facility's Phone: 800-592-5489

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	1. RQ NA3077 Hazardous Waste Solid NOS (lead) 9 PGIII	001	CM	22	T	D008
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information: 1 1092018MRI northern burn ground soil ERG# 171
CES: Job# RO-4-1FORT-3689-17907

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: ALLIANT TECHSYSTEMS INC BY: H. R. BLANKENSHIP, TRANSPORTATION ANALYST — Signature: H R Blankenship — Month Day Year: 12 08 09

16. International Shipments: ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit: Date leaving U.S.:
Transporter signature (for exports only):

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: William J [illegible] — Signature: [signature] — Month Day Year: [illegible]
Transporter 2 Printed/Typed Name: — Signature: — Month Day Year:

18. Discrepancy
18a. Discrepancy Indication Space: ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number: [illegible]
18b. Alternate Facility (or Generator) — U.S. EPA ID Number:
Facility's Phone:
18c. Signature of Alternate Facility (or Generator) — Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. H132 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name: [illegible] — Signature: [signature] — Month Day Year: 12 11 09

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete. **DESIGNATED FACILITY'S COPY**

3014693

Wayne Disposal, Inc.
49350 North I-94 Service Drive, Belleville, Michigan 48111

Receipt

CAPITOL ENVIRONMENTAL - ROANOKE VA
200 BIDDLE AVE, SUITE 205
NEWARK, DE 19702

Receipt ID: 1180397
EQ Account #: 5247
Manifest / BOL: 004173242JJK
Transporter: US BULK
Date: 12/11/2009
Time In: 7:17 AM
Time Out: 10:59 AM

Line	Description Generator	Qty. Unit
1 - A	L092016WDI - New River Storage Depot- Northern Burn Ground Soil VAR000012559 NEW RIVER STORAGE DEPOT **Gross:** 82,020 **Tare:** 34,620 **Net:** 47,400	23.700 TONS
2	DIG OUT VAR000012559 NEW RIVER STORAGE DEPOT	1.000 EACH

NO SALVAGING ON PREMISES

CERTIFICATE OF DISPOSAL

This certificate is to verify the wastes specified on Manifest # 004173242 JJK

have been properly disposed of in accordance with all local, state and federal regulations.

"Disposed of" means either: 1) Burial or 2) Processed as specified in 40 CFR et seq.

FACILITY NAME: (Please check one)

☐ Michigan Disposal Waste Treatment Plant (EPA I.D. # MID007243831)

☐ Wayne Disposal, Inc. (EPA I.D. # MID048090633)

ADDRESS: 49350 N. I-94 Service Drive Belleville, Michigan 48111

PHONE NUMBER: 1-800-592-5489

FAX NUMBER: 1-800-593-5329

Authorized Signature:

THE ENVIRONMENTAL QUALITY COMPANY 49350 N. I-94 SERVICE DRIVE BELLEVILLE MICHIGAN 48111

Form # REC-FM013-004 The electronic version of this document is the controlled version. It is the user's responsibility to ensure that any document being used is the current version. 8/25/08

Invoice: 40177363 Receipt 03-01 1180424 Manifest 004173243JJK

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number: VAR 000 012 559	2. Page 1 of: 1	3. Emergency Response Phone: 800-424-9300	4. Manifest Tracking Number: 004173243 JJK

5. Generator's Name and Mailing Address: New River Storage Depot C/O Alliant Techsystems, PO Box 1 Radford, Va 24143
Generator's Phone: 540 639-7888 Attn: H. R. Blankenship
Generator's Site Address (if different than mailing address): New River Storage Depot, 0.8 mi south of Rt. 1030 & Rt. 747, Dublin, VA VA 24084

6. Transporter 1 Company Name: US Bulk Transport Inc (HE) — U.S. EPA ID Number: PAD 987 347 615

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: ~~Michigan~~ Wayne Disposal Waste Treatment Plant, 49350 N. I-94 Service Drive, Belleville, MI 48111
Facility's Phone: 800-592-5489 — U.S. EPA ID Number: 048 090 653 MID ~~000 724 831~~

9a. HM	9b. U.S. DOT Description (Including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
X	1. RQ, NA3077, Hazardous Waste Solid, NOS (lead), 9, PGIII	0 0 1	DT	03T	P	D008		
	2.							
	3.							
	4.							

14. Special Handling Instructions and Additional Information
1. L092016HBI northern burn ground soil ERG# 171
WPI
CESI Job# ROAN-TFORT-3038-17907

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: ALLIANT TECHSYSTEMS INC BY: H.R.BLANKENSHIP, TRANSPORTATION ANALYST — Signature: H R Blankenship — Month: 12 — Day: 08 — Year: 09

INTL
16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER
17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Dave Rupert — Signature: Dave Rupert — Month: 12 — Day: 9 — Year: 09
Transporter 2 Printed/Typed Name — Signature — Month — Day — Year

DESIGNATED FACILITY
18. Discrepancy
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Change to Sect 6+14 per Tom Fort @ Capitol 12-9-09 Manifest Reference Number: Dave Pope
18b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:
18c. Signature of Alternate Facility (or Generator) — Month — Day — Year
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. H132 — 2. — 3. — 4.
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name: Michael RoHDE — Signature: Michael Rohde — Month: 12 — Day: 11 — Year: 09

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete. DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

3015898

Wayne Disposal, Inc.
49350 North I-94 Service Drive, Belleville, Michigan 48111

Receipt

CAPITOL ENVIRONMENTAL - ROANOKE VA
200 BIDDLE AVE, SUITE 205
NEWARK, DE 19702

Receipt ID: 1180424
EQ Account #: 5247
Manifest / BOL: 004173243JJK
Transporter: US BULK
Date: 12/11/2009
Time In: 11:29 AM
Time Out: 6:23 PM

Line	Description Generator	Qty. Unit
1 - A	L092016WDI - New River Storage Depot- Northern Burn Ground Soil VAR000012559 NEW RIVER STORAGE DEPOT **Gross:** 76,600 **Tare:** 32,980 **Net:** 43,620	21.810 TONS
2	DIG OUT	1.000 EACH

NO SALVAGING ON PREMISES

CERTIFICATE OF DISPOSAL

This certificate is to verify the wastes specified on Manifest # 004173243 JJK

have been properly disposed of in accordance with all local, state and federal regulations.

"Disposed of" means either: 1) Burial or 2) Processed as specified in 40 CFR et seq.

FACILITY NAME: *(Please check one)*
☐ Michigan Disposal Waste Treatment Plant (EPA I.D. # MID006723483)
☒ Wayne Disposal, Inc. (EPA I.D. # MIDX48090683)

ADDRESS: 49350 N. I-94 Service Drive Belleville, Michigan 48111

PHONE NUMBER: 1-800-592-5489

FAX NUMBER: 1-800-593-5329

Authorized Signature: _____

THE ENVIRONMENTAL QUALITY COMPANY 49350 N. I-94 SERVICE DRIVE BELLEVILLE MICHIGAN 48111

Form # REC-FRM013-REL *The electronic version of this document is the controlled version. Each user is responsible for ensuring that any document being used is the current version.* 8/25/08

Invoice: 40177363 **Receipt 03-01 1180394** **Manifest 004173244JJK**

#129

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number: VAR 000 012 559	2. Page 1 of 1	3. Emergency Response Phone: 800-424-9300	4. Manifest Tracking Number: 004173244 JJK

GENERATOR

5. Generator's Name and Mailing Address: New River Storage Depot C/O Alliant Techsystems, PO Box 1 Radford, Va 24143
Generator's Phone: 540 639-7869 Attn: H. R. Blankenship
Generator's Site Address (if different than mailing address): New River Storage Depot, 0.8 mi south of Rt. 1030 & Rt. 747, Dublin, VA VA 24084

6. Transporter 1 Company Name: US Bulk Transport Inc. — U.S. EPA ID Number: PAD 987 347 515

7. Transporter 2 Company Name: (TUF) — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: ~~Michigan~~ Wayne Disposal Waste Treatment Plant, 49350 N. I-94 Service Drive, Belleville, MI 48111
Facility's Phone: 800-592-5489 — U.S. EPA ID Number: ~~MID 000 724 831~~ 048 090 633

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	1. RQ, NA3077, Hazardous Waste Solid, NOS (lead), 9, PGIII	0 0 1	DT	22	Y	D008
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
1. L082010MDI northern burn ground soil ERG# 171
WDI
CESI Job# RCAN-TFORT-3639-17907

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: ALLIANT TECHSYSTEMS INC BY: H.R.BLANKENSHIP, TRANSPORTATION ANALYST — Signature: [signature] — Month/Day/Year: 12 08 09

INT'L 16. International Shipments: ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit: Date leaving U.S.:
Transporter signature (for exports only):

TRANSPORTER 17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: James M. Sargent — Signature: [signature] — Month/Day/Year: 12 08 09
Transporter 2 Printed/Typed Name: — Signature: — Month Day Year

DESIGNATED FACILITY

18. Discrepancy
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Changes to Section 8 & 14 Per Teri Fort @ Capitol 12-9-09 Mark Poe — Manifest Reference Number:
18b. Alternate Facility (or Generator) — U.S. EPA ID Number:
Facility's Phone:
18c. Signature of Alternate Facility (or Generator) — Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. H132 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name: — Signature: — Month/Day/Year: 12 11 09

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete. **DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)**

3015106

Wayne Disposal, Inc.
49350 North I-94 Service Drive, Belleville, Michigan 48111

Receipt

CAPITOL ENVIRONMENTAL - ROANOKE VA
200 BIDDLE AVE, SUITE 205
NEWARK, DE 19702

Receipt ID: 1180394
EQ Account #: 5247
Manifest / BOL: 004173244JJK
Transporter: US BULK
Date: 12/11/2009
Time In: 6:59 AM
Time Out: 8:44 AM

Line	Description Generator	Qty. Unit
1 - A	L092016WDI - New River Storage Depot- Northern Burn Ground Soil VAR000012559 NEW RIVER STORAGE DEPOT **Gross:** 78,160 **Tare:** 33,540 **Net:** 44,620	22.310 TONS

NO SALVAGING ON PREMISES

CERTIFICATE OF DISPOSAL

This certificate is to verify the wastes specified on Manifest # 004173244JJK

have been properly disposed of in accordance with all local, state and federal regulations.

"Disposed of" means either: 1) Burial or 2) Processed as specified in 40 CFR et seq.

FACILITY NAME: *(Please check one)*

☐ Michigan Disposal Waste Treatment Plant (EPA I.D. # MID000724831)

☒ Wayne Disposal, Inc. (EPA I.D. # MID048090633)

ADDRESS: 49350 N. I-94 Service Drive
Belleville, Michigan 48111

PHONE NUMBER: 1-800-592-5489

FAX NUMBER: 1-800-593-5329

Authorized Signature: [signature]

THE ENVIRONMENTAL QUALITY COMPANY 49350 N. I-94 SERVICE DRIVE BELLEVILLE MICHIGAN 48111

The electronic version of this document is the controlled version. Each user is responsible for ensuring that any document being used is the current version.

8/25/08

Invoice: 40177363 Receipt 03-01 1180394 Cod 004173244JJK

004173245JJK

157

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: VAR 000 012 559
2. Page 1 of: 1
3. Emergency Response Phone: 800-424-9300
4. Manifest Tracking Number: 004173245 JJK

5. Generator's Name and Mailing Address:
New River Storage Depot C/O Alliant Techsystems
PO Box 1 Radford, Va 24143

Generator's Site Address (if different than mailing address):
New River Storage Depot
0.8 mi south of Rt. 1030 & Rt. 747
Dublin, VA VA 24084

Generator's Phone: 540 639-7668 Attn: H. R. Blankenship

6. Transporter 1 Company Name: US Bulk Transport Inc.
U.S. EPA ID Number: PAD 987 347 515

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address:
~~Michigan~~ Wayne Disposal Waste Treatment Plant
49350 N. I-94 Service Drive
Belleville, MI 48111

Facility's Phone: 800-592-5489
U.S. EPA ID Number: MID ~~000 724 831~~ 048 090 635

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	1. RQ, NA3077, Hazardous Waste Solid, NOS (lead) 9, PGIII	0 0 1	DT	44000	P	D008
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
1. L0920106 ~~MDI~~ WDI northern burn ground soil ERG# 171

CESI ~~Job#~~ ROAN-TFORT-3639-17907

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: ALLIANT TECHSYSTEMS INC BY: H.R.BLANKENSHIP, TRANSPORTATION ANALYST
Signature: [signature]
Month/Day/Year: 1 2 0 8 0 9

16. International Shipments: ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Jay L. Fayzer
Signature: [signature]
Month/Day/Year: 12/10/09

Transporter 2 Printed/Typed Name:
Signature:
Month/Day/Year:

18. Discrepancy
Actual weight: 39,220 P OK per Terri Fort @ Capitol Env. as agent for generator. 12-11-09 RW

18a. Discrepancy Indication Space: ☒ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Changes to Sec. 8+14 per Terri Fort @ Capitol 12-9-09 [illegible]

Manifest Reference Number:

18b. Alternate Facility (or Generator)
U.S. EPA ID Number:
Facility's Phone:

18c. Signature of Alternate Facility (or Generator)
Month/Day/Year:

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.
h132			

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name: Michael Rohde
Signature: [signature]
Month/Day/Year: 12/11/09

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

Wayne Disposal, Inc.
49350 North I-94 Service Drive, Belleville, Michigan 48111

Receipt

CAPITOL ENVIRONMENTAL - ROANOKE VA
200 BIDDLE AVE, SUITE 205
NEWARK, DE 19702

Receipt ID: 1180398
EQ Account #: 5247
Manifest / BOL: 004173245JJK
Transporter: US BULK
Date: 12/11/2009
Time In: 7:19 AM
Time Out: 8:55 AM

Line	Description Generator	Qty. Unit
1 - A	L092016WDI - New River Storage Depot- Northern Burn Ground Soil	19.610 TONS
	VAR000012559 NEW RIVER STORAGE DEPOT	
	Gross: 74,060 **Tare:** 34,840 **Net:** 39,220	

NO SALVAGING ON PREMISES

CERTIFICATE OF DISPOSAL

0041732455JK

This certificate is to verify the wastes specified on Manifest # 0041732455JK

have been properly disposed of in accordance with all local, state and federal regulations.

"Disposed of" means either: 1) Burial or 2) Processed as specified in 40 CFR et seq.

FACILITY NAME: *(Please check one)*

☐ Michigan Disposal Waste Treatment Plant
(EPA I.D. # MID000724831)

☒ Wayne Disposal, Inc.
(EPA I.D. # MID048090633)

ADDRESS: 49350 N. I-94 Service Drive
Belleville, Michigan 48111

PHONE NUMBER: 1-800-592-5489

FAX NUMBER: 1-800-593-5329

Authorized Signature: _____

Invoice: 40177363 Receipt 03-01 1180395 Manifest 004173246JJK

196

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: VAR 000 012 559
2. Page 1 of: 1
3. Emergency Response Phone: 800-424-9300
4. Manifest Tracking Number: 004173246 JJK

5. Generator's Name and Mailing Address: New River Storage Depot C/O Alliant Techsystems, PO Box 1 Radford, Va 24143
Generator's Phone: 540 639-7669 Attn: H. R. Blankenship
Generator's Site Address (if different than mailing address): New River Storage Depot, 0.3 mi south of Rt. 1030 & Rt. 747, Dublin, VA VA 24084

6. Transporter 1 Company Name: US Bulk Transport Inc. — U.S. EPA ID Number: PAD 987 347 515

7. Transporter 2 Company Name: (TJF) — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: ~~Michigan~~ Wayne Disposal Waste Treatment Plant, 49350 N. I-94 Service Drive, Belleville, MI 48111
Facility's Phone: 800-592-5489
U.S. EPA ID Number: MID ~~000 724 831~~ 048 090 633

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	1. RQ, NA3077, Hazardous Waste Solid, NOS (lead), 9, PGIII	001	DT	22	T	D008
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
1. L092018MDT northern burn ground soil ERG# 171 WPT
CES) Job# ROAN-TFORT-3639-17907

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: H ALLIANT TECHSYSTEMS INC BY: H.R.BLANKENSHIP, TRANSPORTATION ANALYST — Signature: HR Blankenship — Month Day Year: 12 08 09

16. International Shipments: ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit: Date leaving U.S.:
Transporter signature (for exports only):

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Elden H Neifert — Signature: Elden H Neifert — Month Day Year: 12 8 09
Transporter 2 Printed/Typed Name: — Signature: — Month Day Year:

18. Discrepancy
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Changes to Section 8r 14 per Terri Fort @ Capitol 12-9-09 Mrs Poe
Manifest Reference Number:
18b. Alternate Facility (or Generator): — U.S. EPA ID Number:
Facility's Phone:
18c. Signature of Alternate Facility (or Generator) — Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. h132 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name: [illegible signature] — Signature: [signature] — Month Day Year: 12 11 09

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

3015174

Wayne Disposal, Inc.

49350 North I-94 Service Drive, Belleville, Michigan 48111

Receipt

CAPITOL ENVIRONMENTAL - ROANOKE VA
200 BIDDLE AVE, SUITE 205
NEWARK, DE 19702

Receipt ID: 1180395
EQ Account #: 5247
Manifest / BOL: 004173246JJK
Transporter: US BULK
Date: 12/11/2009
Time In: 7:04 AM
Time Out: 8:51 AM

Line	Description Generator	Qty. Unit
1 - A	L092016WDI - New River Storage Depot- Northern Burn Ground Soil VAR000012559 NEW RIVER STORAGE DEPOT **Gross:** 78,500 **Tare:** 31,340 **Net:** 47,160	23.580 TONS

NO SALVAGING ON PREMISES

CERTIFICATE OF DISPOSAL

This certificate is to verify the wastes specified on Manifest # 001732411JK have been properly disposed of in accordance with all local, state and federal regulations.

"Disposed of" means either: 1) Burial or 2) Processed as specified in 40 CFR et seq.

FACILITY NAME: (Please check one)
☐ Michigan Disposal Waste Treatment Plant (EPA I.D. # MID000725831)
☒ Wayne Disposal, Inc. (EPA I.D. # MID048090633)

ADDRESS: 49350 N. I-94 Service Drive Belleville, Michigan 48111

PHONE NUMBER: 1-800-592-5489

FAX NUMBER: 1-800-593-5329

Authorized Signature:

THE ENVIRONMENTAL QUALITY COMPANY 49350 N. I-94 SERVICE DRIVE BELLEVILLE MICHIGAN 48111

Invoice: 40177363 Receipt 03-01 1180400 Manifest 004173247JJK

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: VAR 000 012 559
2. Page 1 of: 1
3. Emergency Response Phone: 800-424-9300
4. Manifest Tracking Number: 004173247 JJK

5. Generator's Name and Mailing Address: New River Storage Depot C/O Alliant Techsystems, PO Box 1 Radford, Va 24143

Generator's Site Address (if different than mailing address): New River Storage Depot, 0.9 mi south of Rt. 1030 & Rt. 747, Dublin, VA VA 24084

Generator's Phone: 540 639-7666 Attn: H. R. Blankenship

6. Transporter 1 Company Name: US Bulk Transport Inc (THE) — U.S. EPA ID Number: PAD 987 347 516

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Wayne Disposal ~~Michigan Disposal Waste Treatment Plant~~, 49350 N. I-94 Service Drive, Belleville, MI 48111 — U.S. EPA ID Number: MID ~~000 724 831~~ 048090633

Facility's Phone: 800-592-5489

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	1. RQ, NA3077, Hazardous Waste Solid, NOS (lead), 9, PGIII	0 0 1	DT	25T	P	D008
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
1. L092016~~MDI~~ WDI northern burn ground soil ERG# 171 CESI Job# ROAN-TFORT-3639-17907

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: ALLIANT TECHSYSTEMS INC BY: H.R.BLANKENSHIP, TRANSPORTATION ANALYST — Signature: [signature] — Month Day Year: 1 2 0 8 0 9

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit: Date leaving U.S.:
Transporter signature (for exports only):

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Kenneth D. Ard — Signature: [signature] — Month Day Year: 12 08 09
Transporter 2 Printed/Typed Name: — Signature: — Month Day Year:

18. Discrepancy
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Changes to section 8 & 14 per Terri Ford @ Capitol 12/9/09 [initials]
Manifest Reference Number: — U.S. EPA ID Number:
18b. Alternate Facility (or Generator)
Facility's Phone:
18c. Signature of Alternate Facility (or Generator) — Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. H132 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name: Michael Kohde — Signature: [signature] — Month Day Year: 12/11/09

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete. DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

Wayne Disposal, Inc.
49350 North I-94 Service Drive, Belleville, Michigan 48111

Receipt

CAPITOL ENVIRONMENTAL - ROANOKE VA
200 BIDDLE AVE, SUITE 205
NEWARK, DE 19702

Receipt ID: 1180400
EQ Account #: 5247
Manifest / BOL: 004173247JJK
Transporter: US BULK
Date: 12/11/2009
Time In: 7:31 AM
Time Out: 9:07 AM

Line	Description Generator	Qty. Unit
1 - A	L092016WDI - New River Storage Depot- Northern Burn Ground Soil	26.850 TONS
	VAR000012559 NEW RIVER STORAGE DEPOT	
	Gross: 87,020 **Tare:** 33,320 **Net:** 53,700	

NO SALVAGING ON PREMISES

CERTIFICATE OF DISPOSAL

This certificate is to verify the wastes specified on Manifest # 004173247 JJK

have been properly disposed of in accordance with all local, state and federal regulations.

"Disposed of" means either: 1) Burial or 2) Processed as specified in 40 CFR et seq.

FACILITY NAME: *(Please check one)*

☒ Michigan Disposal Waste Treatment Plant (EPA I.D. # MID000724831)

☐ Wayne Disposal, Inc. (EPA I.D. # MID048090633)

ADDRESS: 49350 N. I-94 Service Drive
Belleville, Michigan 48111

PHONE NUMBER: 1-800-592-5489

FAX NUMBER: 1-800-593-5329

Authorized Signature: [signature]

THE ENVIRONMENTAL QUALITY COMPANY 49350 N. I-94 SERVICE DRIVE BELLEVILLE MICHIGAN 48111

Invoice: 40177647 Receipt 03-01 1180425 Manifest 004173248JJK

145

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: VAR 000 012 559
2. Page 1 of 1
3. Emergency Response Phone: 800-424-9300
4. Manifest Tracking Number: 004173248 JJK

5. Generator's Name and Mailing Address: New River Storage Depot C/O Alliant Techsystems, PO Box 1 Radford, Va 24143
Generator's Site Address (if different than mailing address): New River Storage Depot, 0.8 mi south of Rt. 1030 & Rt. 747, Dublin, VA VA 24084
Generator's Phone: 540 639-7669 Attn: H. R. Blankenship

6. Transporter 1 Company Name: US Bulk Transport Inc (TUF) — U.S. EPA ID Number: PAD 987 347 515

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: ~~Michigan~~ Wayne Disposal Waste Treatment Plant, 49350 N. I-94 Service Drive, Belleville, MI 48111
Facility's Phone: 800-592-5489
U.S. EPA ID Number: MID ~~000 724 831~~ 048 090 633

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	1. RQ, NA3077, Hazardous Waste Solid, NOS (lead), 9, PGIII	0 0 1	DT	48,000 EST	P	D008
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
1. L092010 ~~MDI~~ WDI northern burn ground soil ERG# 171
CESI Job# ROAN-TFORT-3039-17907

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.
Generator's/Offeror's Printed/Typed Name: ALLIANT TECHSYSTEMS INC BY: H.R.BLANKENSHIP TRANSPORTATION ANALYST — Signature: [signature] — Month Day Year: 12 08 09

16. International Shipments: ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit: Date leaving U.S.:
Transporter signature (for exports only):

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: MARK J REYNOLDS — Signature: [signature] — 12 08 09
Transporter 2 Printed/Typed Name: — Signature: — Month Day Year

18. Discrepancy: Actual weight: 72,000 P OK per Terri Fort @ Capital Env. as agent for generator 12-14-0
18a. Discrepancy Indication Space: ☒ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Changes in Sect 8 & 14 per Terri Fort @ Capitol 12-9-09 Manifest Reference Number: Mara Pore
18b. Alternate Facility (or Generator) — U.S. EPA ID Number:
Facility's Phone:
18c. Signature of Alternate Facility (or Generator) — Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. H132 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name: Michael Rohde — Signature: [signature] — 12 11 09

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete. DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

Wayne Disposal, Inc.
49350 North I-94 Service Drive, Belleville, Michigan 48111

Receipt

CAPITOL ENVIRONMENTAL - ROANOKE VA
200 BIDDLE AVE, SUITE 205
NEWARK, DE 19702

Receipt ID: 1180425
EQ Account #: 5247
Manifest / BOL: 004173248JJK
Transporter: US BULK
Date: 12/11/2009
Time In: 11:31 AM
Time Out: 5:56 PM

Line	Description Generator	Qty. Unit
1 - A	L092016WDI - New River Storage Depot- Northern Burn Ground Soil	36.000 TONS
	VAR000012559 NEW RIVER STORAGE DEPOT **Gross:** 104,760 **Tare:** 32,760 **Net:** 72,000	

NO SALVAGING ON PREMISES

Invoice: 40177647 Receipt 03-01 1180425 Cod 00417324SJJK

CERTIFICATE OF DISPOSAL

This certificate is to verify the wastes specified on Manifest # DOH73248 JJK

have been properly disposed of in accordance with all local, state and federal regulations.

"Disposed of" means either: 1) Burial or 2) Processed as specified in 40 CFR et seq.

FACILITY NAME: *(Please check one)*

☐ Michigan Disposal Waste Treatment Plant (EPA I.D. # MID000724831)

☐ Wayne Disposal, Inc. (EPA I.D. # MID048090633)

ADDRESS: 49350 N. I-94 Service Drive Belleville, Michigan 48111

PHONE NUMBER: 1-800-592-5489

FAX NUMBER: 1-800-593-5329

Authorized Signature: _____

THE ENVIRONMENTAL QUALITY COMPANY 49350 N. I-94 SERVICE DRIVE BELLEVILLE MICHIGAN 48111

Form # REC-FM-013-SBL

The electronic version of this document is the controlled version. Each user is responsible for ensuring that any document being used is the current version.

8/25/05

Invoice: 40177213 Receipt 03-01 1180365 Manifest 004173249JJK

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: VAR 000 012 559
2. Page 1 of: 1
3. Emergency Response Phone: 800-424-9300
4. Manifest Tracking Number: 004173249 JJK

5. Generator's Name and Mailing Address: New River Storage Depot C/O Alliant Techsystems, PO Box 1 Radford, Va 24143
Generator's Phone: 540 639-7668 Attn: H. R. Blankenship
Generator's Site Address (if different than mailing address): New River Storage Depot, 0.8 mi south of Rt. 1030 & Rt. 747, Dublin, VA VA 24084

6. Transporter 1 Company Name: US Bulk Transport INC TYF
U.S. EPA ID Number: PAD 987 347 615

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address: ~~Michigan Disposal Waste Treatment Plant~~ Noble Disposal Incorporated
49350 N. I-94 Service Drive
Belleville, MI 48111
Facility's Phone: 800-592-5489
U.S. EPA ID Number: 048 090 633
MID ~~000 724 824~~

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	1. RQ, NA3077, Hazardous Waste Solid, NOS (lead) 9, PGIII	0 0 1	DT	47600	P	D008
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
1. LD92010MD1 northern burn ground soil ERG# 171
LD92D16WD1
CESI Job#ROAN-TFORT-3839-17907

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgement of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: ALLIANT TECHSYSTEMS INC BY: H.R.BLANKENSHIP, TRANSPORTATION ANALYST
Signature: H.R. Blankenship
Month: 12 Day: 08 Year: 09

16. International Shipments: ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit: Date leaving U.S.:
Transporter signature (for exports only):

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: THOMAS J WHITEHILL
Signature:
Month: 12 Day: 08 Year: 09
Transporter 2 Printed/Typed Name:
Signature:
Month: Day: Year:

18. Discrepancy: Actual weight: 52460# OK per Terri Fort @ Capitol Env. as agent for generator. 12-9-09 RP
18a. Discrepancy Indication Space: ☒ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Changes to Section 8 & 14 per Terri Fort @ Capitol 12/9/09 Mara Poe
Manifest Reference Number:

18b. Alternate Facility (or Generator)
U.S. EPA ID Number:
Facility's Phone:
18c. Signature of Alternate Facility (or Generator)
Month: Day: Year:

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. H020 H132
2.
3.
4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name: Larry Lelis
Signature:
Month: 12 Day: 9 Year: 09

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

3012251

Wayne Disposal, Inc.
49350 North I-94 Service Drive, Belleville, Michigan 48111

Receipt

CAPITOL ENVIRONMENTAL - ROANOKE VA
200 BIDDLE AVE, SUITE 205
NEWARK, DE 19702

Receipt ID: 1180365
EQ Account #: 5247
Manifest / BOL: 004173249JJK
Transporter: US BULK
Date: 12/09/2009
Time In: 7:46 AM
Time Out: 12:14 PM

Line	Description Generator	Qty. Unit
1 - A	L092016WDI - New River Storage Depot- Northern Burn Ground Soil VAR000012559 NEW RIVER STORAGE DEPOT **Gross:** 84,960 **Tare:** 32,500 **Net:** 52,460	26.230 TONS

NO SALVAGING ON PREMISES

Invoice: 40177213 Receipt 03-01 1180365 Cod 00417324 9JJK

CERTIFICATE OF DISPOSAL

This certificate is to verify the wastes specified on Manifest # 004173249 JJK have been properly disposed of in accordance with all local, state and federal regulations.

"Disposed of" means either: 1) Burial or 2) Processed as specified in 40 CFR et seq.

FACILITY NAME: *(Please check one)*
☐ Michigan Disposal Waste Treatment Plant (EPA I.D. # MID980729831)
☐ Wayne Disposal, Inc. (EPA I.D. # MID048809633)

ADDRESS: 49350 N. I-94 Service Drive, Belleville, Michigan 48111

PHONE NUMBER: 1-800-592-5489

FAX NUMBER: 1-800-593-5329

Authorized Signature:

THE ENVIRONMENTAL QUALITY COMPANY 49350 N. I-94 SERVICE DRIVE BELLEVILLE MICHIGAN 48111

Form # EQCRM-013-BEL

The electronic version of this document is the controlled version. Each user is responsible for ensuring that any documents being used is the current version

8/25/08

Appendix D

Laboratory Analytical Reports for Backfill Material

INORGANIC CASE NARRATIVE
Arcadis
SDG# Radford
Work Order# 0911230
November, 2009

Empirical Laboratories ID	Client ID
0911230-01	NBG-Backfill
0911230-02	NBG-Topsoil

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 the case narrative, as verified by the following signature.

Betty DeVille
Inorganic Lab Manager

Methods:

The samples were digested ICAP metals using USEPA SW846 method 3050B and analyzed by 6010B. Mercury was digested and analyzed by 7471A. Note: The "U" flag on the forms indicates that the analyte is reported down to the MDL. The "J" flag indicates that the analyte result is between the laboratory MDL and the laboratory RL.

Specific Comments:

All analyses performed by the Inorganic section were completed meeting satisfactorily the corresponding specifications for Quality Control with the following exceptions:

I. ICAP Metals

A. Matrix Spike and Matrix Spike Duplicate (MS/MSD) Specification Limits (80 to 120%)

1. The matrix spike and the matrix spike duplicate were out of the specificaiotn limits for sodium at 123 and 122% for sample NBG-Topsoil. The post digestion spike recovery was at 108%. **All associated data are flagged with an "N" on the final report.**

NOTE: The sample matrix was spiked for all TAL metals but iron in the sample was over the linear range and required a dilution. Since iron has IECs for all other metals in the TAL list that are not reflected on the matrix spike form, and all other metals were reported from a diluted sample, those spike recoveries are not shown on the matrix spike page.

B. Laboratory Control Sample (LCS) Specification Limits (80 to 120%)

1. The laboratory control sample was out of the specification limits for barium at 121%. This impacted both samples in the SDG.

WORK ORDER

Printed: 12/11/2009 9:39:23AM

0911230

Empirical Laboratories, LLC

Client: Arcadis (A285)
Project: Radford Army Ammunition Plant

Project Manager: Janice Shilling
Project Number: ARC_Radford

Report To:
Arcadis (A285)
Jace'que Powell
2929 Briarpark Dr., Suite 300
Houston, TX 77042
Phone: (281) 497-6900
Fax: (000) 000-0000

Invoice To:
Arcadis (A285)
Joyce Williams
640 Plaza Drive Suite 130
Highlands Ranch, CO 80129
Phone :(720) 344-3764
Fax: (000) 000-0000

Date Due: 12/11/2009 16:00 (10 day TAT)

Received By: William Schwab
Logged In By: William Schwab

Date Received: 11/25/2009 08:15
Date Logged In: 11/25/2009 17:07

Samples Received at 1.7°C
Custody Seals No Received On Ice Yes
Containers Intact Yes
COC/Labels Agree Yes
Preservation Confirm Yes

Analysis	Due	TAT	Expires	Comments
0911230-01 NBG-Backfill [Solid] Sampled 11/24/2009 15:30 Eastern				
MET_TAL_GRP_S_LOW	12/08/2009 14:00	10	05/23/2010 14:30	
SGC_HERB_8151A	12/08/2009 14:00	10	12/08/2009 14:30	
SGC_PEST8081A_3546	12/08/2009 14:00	10	12/08/2009 14:30	
SMS_BNA_8270C_3546_REG	12/08/2009 14:00	10	12/08/2009 14:30	
VOC_8260B_REG	12/08/2009 14:00	10	12/08/2009 14:30	ENCORES
WC_PERCENT_SOLIDS_2540B	12/08/2009 14:00	10	12/01/2009 14:30	
0911230-02 NBG-Topsoil [Solid] Sampled 11/24/2009 14:30 Eastern				
MET_ICP_6010C_FULL	01/01/1980 00:00		11/24/2009 13:30	Added for SequenceQC in: 9L33812
MET_ICP_6010B_FULL_DIS	01/01/1980 00:00		11/24/2009 13:30	Added for SequenceQC in: 9L33812
WC_PERCENT_SOLIDS_2540B	12/08/2009 14:00	10	12/01/2009 13:30	
MET_ICP_LOW6010B_FULL	01/01/1980 00:00		11/24/2009 13:30	Added for SequenceQC in: 9L33812
MET_ICP_LOW6010B_FULL_DIS	01/01/1980 00:00		11/24/2009 13:30	Added for SequenceQC in: 9L33812
MET_TAL_GRP_S_LOW	12/08/2009 14:00	10	05/23/2010 13:30	
SGC_HERB_8151A	12/08/2009 14:00	10	12/08/2009 13:30	
SGC_PEST8081A_3546	12/08/2009 14:00	10	12/08/2009 13:30	
SMS_BNA_8270C_3546_REG	12/08/2009 14:00	10	12/08/2009 13:30	
VOC_8260B_REG	12/08/2009 14:00	10	12/08/2009 13:30	ENCORES

Reviewed By: 0911230 Metals Summ Date

0911230

Empirical Laboratories, LLC

Client: Arcadis (A285)
Project: Radford Army Ammunition Plant

Project Manager: Janice Shilling
Project Number: ARC_Radford

Analysis groups included in this work order

MET TAL GRP S LOW

MET ICP LOW6010B T. MET 7471A MERCURY

0911230 Metals Summ

ARCADIS

Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name GPOSRAAP 4 NBG KG NBG

Project Location RADFORD-NRV, VA

Laboratory EMPIRICAL LABORATORIES

Project Manager DIANE WISBECK

Sampler(s)/Affiliation CHRIS KALINOWSKI

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: VOCs-8260	SVOCs-8270	METALS-6010	PESTICIDES-8081	HERBICIDES-8151		Remarks	Total
NBG-BACKFILL	S	11-24-09/1530		X	X	X	X	X		0911230-01	
NBG-TOPSOIL	S	11-24-09/1430		X	X	X	X	X		-02	
										Total No. of Bottles/ Containers	

Sample Matrix: L = Liquid; S = Solid; A = Air

Relinquished by: [signature]	Organization: ARCADIS	Date 11/24/09	Time 2000	Seal Intact?	Yes	No N/A
Received by:	Organization:	Date / /	Time			
Relinquished by:	Organization:	Date / /	Time	Seal Intact?	Yes	No N/A
Received by: [signature]	Organization:	Date 11/25/09	Time 08:15			

Special Instructions/Remarks: 1.7°C

Delivery Method: ☐ In Person ☒ Common Carrier FEDEX (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05-12/01

EMPIRICAL LABORATORIES
COOLER RECEIPT FORM

LIMS Number: 0911230 Number of Coolers: 1 of 1

Client: Arcadis Project: Radford

Date/Time Received: **11/25/09 08:15** Date cooler(s) opened: **11/25/09**

Opened By (print): **WILLIAM SCHWAB** (signature): [signature]

Circle response below as appropriate

1. How did the samples arrive?: FedEx UPS DHL Hand Delivered
EL Courier Other: _____

If applicable, enter airbill number here: 0120

2. Were custody seals on outside of cooler(s)? ..... Yes (No)

How many: — Seal date: — Seal Initials: —

3. Were custody seals unbroken and intact at the date and time of arrival?	Yes	No	(N/A)
4. Were custody papers sealed in a plastic bag included in the sample cooler?	(Yes)	No	N/A
5. Were custody papers filled out properly (ink, signed, etc.)?	(Yes)	No	N/A
6. Did you sign custody papers in the appropriate place for acceptance?	(Yes)	No	N/A
7. Was project identifiable from custody papers?	(Yes)	No	N/A
8. If required, was enough ice present in the cooler(s)?	(Yes)	No	N/A

Type of Coolant: (WET) DRY BLUE NONE Temperature of Samples upon Receipt: 1-7°C

Dates samples were logged-in: **11/25/09**

9. Initial this form to acknowledge login of sample(s): (Name): Will Schwab (Initial): WS

10. Were all bottle lids intact and sealed tightly?	(Yes)	No	N/A
11. Did all bottles arrive unbroken?	(Yes)	No	N/A
12. Was all required bottle label information complete?	(Yes)	No	N/A
13. Did all bottle labels agree with custody papers?	(Yes)	No	N/A
14. Were correct containers used for the analyses indicated?	(Yes)	No	N/A
15. Were preservative levels correct in all applicable sample containers?	Yes	No	(N/A)
16. Was residual chlorine present in any applicable sample containers?	Yes	No	(N/A)
17. Was sufficient amount of sample sent for the analyses required?	(Yes)	No	N/A
18. Was headspace present in any included VOA vials?	Yes	No	(N/A)

If Non-Conformance issues were present, list by sample ID: _____

_____ CAR#: _____

ANALYSIS DATA SHEET

NBG-Backfill

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Matrix: Soil
Sampled: 11/24/09 15:30
% Solids: 83.65

SDG: 0911230
Project: Radford Army Ammunition Plant
Laboratory ID: 0911230-01
Received: 11/25/09 08:15

CAS NO.	Analyte	Concentration (mg/Kg dry)	MDL	RL	Dilution Factor	Q	Method	Batch	Analyzed
7439-97-6	Mercury	0.0629	0.0167	0.0423	1		SW7471A	9L02009	12/03/09 15:54
7429-90-5	Aluminum	34500	5.89	23.6	2	D	SW6010B	9L02007	12/04/09 10:57
7440-36-0	Antimony		0.589	1.77	2	U	SW6010B	9L02007	12/04/09 10:57
7440-38-2	Arsenic	7.99	0.353	0.589	2	D	SW6010B	9L02007	12/04/09 10:57
7440-39-3	Barium	50.3	0.589	4.71	2	D	SW6010B	9L02007	12/04/09 10:57
7440-41-7	Beryllium	1.21	0.0589	0.294	1		SW6010B	9L02007	12/03/09 15:13
7440-43-9	Cadmium		0.118	0.589	2	U	SW6010B	9L02007	12/04/09 10:57
7440-70-2	Calcium	6030	58.9	294	1		SW6010B	9L02007	12/03/09 15:13
7440-47-3	Chromium	33.0	0.236	0.589	2	D	SW6010B	9L02007	12/04/09 10:57
7440-48-4	Cobalt	14.1	0.589	1.47	2	D	SW6010B	9L02007	12/04/09 10:57
7440-50-8	Copper	17.7	0.589	1.18	2	D	SW6010B	9L02007	12/04/09 10:57
7439-89-6	Iron	32600	3.53	11.8	2	D	SW6010B	9L02007	12/04/09 10:57
7439-92-1	Lead	17.0	0.177	0.353	2	D	SW6010B	9L02007	12/04/09 10:57
7439-95-4	Magnesium	10600	118	589	2	D	SW6010B	9L02007	12/04/09 10:57
7439-96-5	Manganese	343	0.353	1.77	2	D	SW6010B	9L02007	12/04/09 10:57
7440-02-0	Nickel	22.2	0.589	1.18	2	D	SW6010B	9L02007	12/04/09 10:57
7440-09-7	Potassium	3370	58.9	294	1		SW6010B	9L02007	12/03/09 15:13
7782-49-2	Selenium		0.353	0.589	2	U	SW6010B	9L02007	12/04/09 10:57
7440-22-4	Silver		0.353	0.589	2	U	SW6010B	9L02007	12/04/09 10:57
7440-23-5	Sodium		58.9	294	1	U N	SW6010B	9L02007	12/03/09 15:13
7440-28-0	Thallium		0.353	0.942	2	U	SW6010B	9L02007	12/04/09 10:57
7440-62-2	Vanadium	56.7	0.589	1.47	2	D	SW6010B	9L02007	12/04/09 10:57
7440-66-6	Zinc	43.5	0.589	2.36	2	D	SW6010B	9L02007	12/04/09 10:57

ANALYSIS DATA SHEET

NBG-Topsoil

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Matrix: Soil
Sampled: 11/24/09 14:30
% Solids: 78.24

SDG: 0911230
Project: Radford Army Ammunition Plant
Laboratory ID: 0911230-02
Received: 11/25/09 08:15

CAS NO.	Analyte	Concentration (mg/Kg dry)	MDL	RL	Dilution Factor	Q	Method	Batch	Analyzed
7439-97-6	Mercury	0.0250	0.0131	0.0333	1	J	SW7471A	9L02009	12/03/09 15:55
7429-90-5	Aluminum	13200	15.7	62.7	5	D	SW6010B	9L02007	12/04/09 11:02
7440-36-0	Antimony		1.57	4.70	5	U	SW6010B	9L02007	12/04/09 11:02
7440-38-2	Arsenic	12.2	0.940	1.57	5	D	SW6010B	9L02007	12/04/09 11:02
7440-39-3	Barium	82.8	1.57	12.5	5	D	SW6010B	9L02007	12/04/09 11:02
7440-41-7	Beryllium	1.22	0.0627	0.313	1		SW6010B	9L02007	12/03/09 15:18
7440-43-9	Cadmium		0.313	1.57	5	U	SW6010B	9L02007	12/04/09 11:02
7440-70-2	Calcium	1580	62.7	313	1		SW6010B	9L02007	12/03/09 15:18
7440-47-3	Chromium	30.8	0.627	1.57	5	D	SW6010B	9L02007	12/04/09 11:02
7440-48-4	Cobalt	38.1	1.57	3.92	5	D	SW6010B	9L02007	12/04/09 11:02
7440-50-8	Copper	17.4	1.57	3.13	5	D	SW6010B	9L02007	12/04/09 11:02
7439-89-6	Iron	53400	9.40	31.3	5	D	SW6010B	9L02007	12/04/09 11:02
7439-92-1	Lead	37.6	0.470	0.940	5	D	SW6010B	9L02007	12/04/09 11:02
7439-95-4	Magnesium	1600	313	1570	5	D	SW6010B	9L02007	12/04/09 11:02
7439-96-5	Manganese	2030	0.940	4.70	5	D	SW6010B	9L02007	12/04/09 11:02
7440-02-0	Nickel	11.1	1.57	3.13	5	D	SW6010B	9L02007	12/04/09 11:02
7440-09-7	Potassium	1140	62.7	313	1		SW6010B	9L02007	12/03/09 15:18
7782-49-2	Selenium		0.940	1.57	5	U	SW6010B	9L02007	12/04/09 11:02
7440-22-4	Silver		0.627	1.57	5	U	SW6010B	9L02007	12/04/09 11:02
7440-23-5	Sodium		62.7	313	1	U N	SW6010B	9L02007	12/03/09 15:18
7440-28-0	Thallium		0.940	2.51	5	U	SW6010B	9L02007	12/04/09 11:02
7440-62-2	Vanadium	104	1.57	3.92	5	D	SW6010B	9L02007	12/04/09 11:02
7440-66-6	Zinc	65.6	1.57	6.27	5	D	SW6010B	9L02007	12/04/09 11:02

INITIAL AND CONTINUING CALIBRATION CHECK

SW6010B

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Instrument ID: ME-ICP

SDG: 0911230
Project: Radford Army Ammunition Plant
Calibration: 9338008
Sequence: 9L33812

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
)L33812-ICV1	Aluminum	10000	10030	100	ug/L	+/- 10.00%
	Antimony	1000	1014	101	ug/L	+/- 10.00%
	Arsenic	1000	985.3	98.5	ug/L	+/- 10.00%
	Barium	1000	1073	107	ug/L	+/- 10.00%
	Beryllium	1000	1022	102	ug/L	+/- 10.00%
	Cadmium	1000	1062	106	ug/L	+/- 10.00%
	Calcium	50000	50080	100	ug/L	+/- 10.00%
	Chromium	1000	998.7	99.9	ug/L	+/- 10.00%
	Cobalt	1000	1002	100	ug/L	+/- 10.00%
	Copper	1000	1011	101	ug/L	+/- 10.00%
	Iron	10000	10470	105	ug/L	+/- 10.00%
	Lead	1000	989.2	98.9	ug/L	+/- 10.00%
	Magnesium	50000	49860	99.7	ug/L	+/- 10.00%
	Manganese	1000	1029	103	ug/L	+/- 10.00%
	Nickel	1000	991.7	99.2	ug/L	+/- 10.00%
	Potassium	10000	10010	100	ug/L	+/- 10.00%
	Selenium	1000	1019	102	ug/L	+/- 10.00%
	Silver	500.0	503.7	101	ug/L	+/- 10.00%
	Sodium	50000	51020	102	ug/L	+/- 10.00%
	Thallium	1000	963.1	96.3	ug/L	+/- 10.00%
	Vanadium	1000	980.5	98.0	ug/L	+/- 10.00%
	Zinc	1000	1004	100	ug/L	+/- 10.00%
L33812-CCV1	Aluminum	10000	10070	101	ug/L	+/- 10.00%
	Antimony	1000	1038	104	ug/L	+/- 10.00%
	Arsenic	1000	1052	105	ug/L	+/- 10.00%
	Barium	1000	1068	107	ug/L	+/- 10.00%
	Beryllium	1000	1039	104	ug/L	+/- 10.00%
	Cadmium	1000	1080	108	ug/L	+/- 10.00%
	Calcium	50000	49820	99.6	ug/L	+/- 10.00%
	Chromium	1000	1006	101	ug/L	+/- 10.00%
	Cobalt	1000	1017	102	ug/L	+/- 10.00%
	Copper	1000	1026	103	ug/L	+/- 10.00%
	Iron	10000	10450	105	ug/L	+/- 10.00%
	Lead	1000	1025	103	ug/L	+/- 10.00%
	Magnesium	50000	49430	98.9	ug/L	+/- 10.00%
	Manganese	1000	1053	105	ug/L	+/- 10.00%
	Nickel	1000	1025	102	ug/L	+/- 10.00%
	Potassium	10000	10070	101	ug/L	+/- 10.00%

INITIAL AND CONTINUING CALIBRATION CHECK

SW6010B

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Instrument ID: ME-ICP

SDG: 0911230
Project: Radford Army Ammunition Plant
Calibration: 9338008
Sequence: 9L33812

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
9L33812-CCV1	Selenium	1000	1046	105	ug/L	+/- 10.00%
	Silver	500.0	507.1	101	ug/L	+/- 10.00%
	Sodium	50000	50410	101	ug/L	+/- 10.00%
	Thallium	1000	1026	103	ug/L	+/- 10.00%
	Vanadium	1000	996.0	99.6	ug/L	+/- 10.00%
	Zinc	1000	1048	105	ug/L	+/- 10.00%
9L33812-CCV2	Aluminum	10000	10340	103	ug/L	+/- 10.00%
	Antimony	1000	1076	108	ug/L	+/- 10.00%
	Arsenic	1000	1082	108	ug/L	+/- 10.00%
	Barium	1000	1082	108	ug/L	+/- 10.00%
	Beryllium	1000	1047	105	ug/L	+/- 10.00%
	Cadmium	1000	1100	110	ug/L	+/- 10.00%
	Calcium	50000	48050	96.1	ug/L	+/- 10.00%
	Chromium	1000	1000	100	ug/L	+/- 10.00%
	Cobalt	1000	1035	104	ug/L	+/- 10.00%
	Copper	1000	1074	107	ug/L	+/- 10.00%
	Iron	10000	10310	103	ug/L	+/- 10.00%
	Lead	1000	1045	104	ug/L	+/- 10.00%
	Magnesium	50000	49480	99.0	ug/L	+/- 10.00%
	Manganese	1000	1057	106	ug/L	+/- 10.00%
	Nickel	1000	1046	105	ug/L	+/- 10.00%
	Potassium	10000	10660	107	ug/L	+/- 10.00%
	Selenium	1000	1088	109	ug/L	+/- 10.00%
	Silver	500.0	513.4	103	ug/L	+/- 10.00%
	Sodium	50000	52800	106	ug/L	+/- 10.00%
	Thallium	1000	1059	106	ug/L	+/- 10.00%
	Vanadium	1000	1010	101	ug/L	+/- 10.00%
	Zinc	1000	1039	104	ug/L	+/- 10.00%
L33812-CCV3	Aluminum	10000	10280	103	ug/L	+/- 10.00%
	Antimony	1000	1056	106	ug/L	+/- 10.00%
	Arsenic	1000	1062	106	ug/L	+/- 10.00%
	Barium	1000	1066	107	ug/L	+/- 10.00%
	Beryllium	1000	1048	105	ug/L	+/- 10.00%
	Cadmium	1000	1080	108	ug/L	+/- 10.00%
	Calcium	50000	49650	99.3	ug/L	+/- 10.00%
	Chromium	1000	1028	103	ug/L	+/- 10.00%
	Cobalt	1000	1021	102	ug/L	+/- 10.00%
	Copper	1000	1044	104	ug/L	+/- 10.00%

INITIAL AND CONTINUING CALIBRATION CHECK

SW6010B

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Instrument ID: ME-ICP

SDG: 0911230
Project: Radford Army Ammunition Plant
Calibration: 9338008
Sequence: 9L33812

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
9L33812-CCV3	Iron	10000	10610	106	ug/L	+/- 10.00%
	Lead	1000	1023	102	ug/L	+/- 10.00%
	Magnesium	50000	49960	99.9	ug/L	+/- 10.00%
	Manganese	1000	1066	107	ug/L	+/- 10.00%
	Nickel	1000	1026	103	ug/L	+/- 10.00%
	Potassium	10000	10380	104	ug/L	+/- 10.00%
	Selenium	1000	1047	105	ug/L	+/- 10.00%
	Silver	500.0	514.3	103	ug/L	+/- 10.00%
	Sodium	50000	52140	104	ug/L	+/- 10.00%
	Thallium	1000	1032	103	ug/L	+/- 10.00%
	Vanadium	1000	1000	100	ug/L	+/- 10.00%
	Zinc	1000	1035	103	ug/L	+/- 10.00%
)L33812-CCVA	Aluminum	10000	9878	98.8	ug/L	+/- 10.00%
	Antimony	1000	989.9	99.0	ug/L	+/- 10.00%
	Arsenic	1000	1012	101	ug/L	+/- 10.00%
	Barium	1000	1042	104	ug/L	+/- 10.00%
	Beryllium	1000	935.1	93.5	ug/L	+/- 10.00%
	Cadmium	1000	1042	104	ug/L	+/- 10.00%
	Calcium	50000	45980	92.0	ug/L	+/- 10.00%
	Chromium	1000	932.3	93.2	ug/L	+/- 10.00%
	Cobalt	1000	967.8	96.8	ug/L	+/- 10.00%
	Copper	1000	967.0	96.7	ug/L	+/- 10.00%
	Iron	10000	9785	97.9	ug/L	+/- 10.00%
	Lead	1000	999.8	100	ug/L	+/- 10.00%
	Magnesium	50000	45300	90.6	ug/L	+/- 10.00%
	Manganese	1000	982.4	98.2	ug/L	+/- 10.00%
	Nickel	1000	985.9	98.6	ug/L	+/- 10.00%
	Potassium	10000	9981	99.8	ug/L	+/- 10.00%
	Selenium	1000	1012	101	ug/L	+/- 10.00%
	Silver	500.0	483.9	96.8	ug/L	+/- 10.00%
	Sodium	50000	47910	95.8	ug/L	+/- 10.00%
	Thallium	1000	980.2	98.0	ug/L	+/- 10.00%
	Vanadium	1000	916.7	91.7	ug/L	+/- 10.00%
	Zinc	1000	1020	102	ug/L	+/- 10.00%
L33812-CCVB	Aluminum	10000	9904	99.0	ug/L	+/- 10.00%
	Antimony	1000	1002	100	ug/L	+/- 10.00%
	Arsenic	1000	1023	102	ug/L	+/- 10.00%
	Barium	1000	1042	104	ug/L	+/- 10.00%

INITIAL AND CONTINUING CALIBRATION CHECK

SW6010B

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Instrument ID: ME-ICP

SDG: 0911230
Project: Radford Army Ammunition Plant
Calibration: 9338008
Sequence: 9L33812

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
9L33812-CCVB	Beryllium	1000	969.1	96.9	ug/L	+/- 10.00%
	Cadmium	1000	1049	105	ug/L	+/- 10.00%
	Calcium	50000	46860	93.7	ug/L	+/- 10.00%
	Chromium	1000	938.5	93.9	ug/L	+/- 10.00%
	Cobalt	1000	978.4	97.8	ug/L	+/- 10.00%
	Copper	1000	984.2	98.4	ug/L	+/- 10.00%
	Iron	10000	9736	97.4	ug/L	+/- 10.00%
	Lead	1000	1002	100	ug/L	+/- 10.00%
	Magnesium	50000	45970	91.9	ug/L	+/- 10.00%
	Manganese	1000	997.0	99.7	ug/L	+/- 10.00%
	Nickel	1000	997.5	99.8	ug/L	+/- 10.00%
	Potassium	10000	9959	99.6	ug/L	+/- 10.00%
	Selenium	1000	1019	102	ug/L	+/- 10.00%
	Silver	500.0	486.0	97.2	ug/L	+/- 10.00%
	Sodium	50000	48780	97.6	ug/L	+/- 10.00%
	Thallium	1000	994.0	99.4	ug/L	+/- 10.00%
	Vanadium	1000	934.9	93.5	ug/L	+/- 10.00%
	Zinc	1000	1017	102	ug/L	+/- 10.00%

INITIAL AND CONTINUING CALIBRATION CHECK

SW7471A

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Instrument ID: ME-FIMS

SDG: 0911230
Project: Radford Army Ammunition Plant
Calibration: 9338002
Sequence: 9L33802

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
9L33802-ICV1	Mercury	4.000	4.400	110	ug/L	+/- 15.00%
9L33802-CCV1	Mercury	4.000	4.114	103	ug/L	+/- 15.00%
9L33802-CCV2	Mercury	4.000	4.110	103	ug/L	+/- 15.00%

Metals in Water by ICP-AES - Quality Control

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9L33812											
Instrument RL Check				Prepared & Analyzed: 12/03/2009							
Barium	40.26			ug/L	40.00		101	80-120			
Manganese	15.66			ug/L	15.00		104	80-120			
Instrument RL Check				Prepared & Analyzed: 12/03/2009							
Aluminum	209.0			ug/L	200.0		104	80-120			
Antimony	13.56			ug/L	15.00		90.4	80-120			
Arsenic	4.105			ug/L	5.000		82.1	80-120			
Beryllium	5.101			ug/L	5.000		102	80-120			
Cadmium	5.038			ug/L	5.000		101	80-120			
Calcium	5074			ug/L	5000		101	80-120			
Chromium	5.140			ug/L	5.000		103	80-120			
Cobalt	11.86			ug/L	12.50		94.9	80-120			
Copper	10.04			ug/L	10.00		100	80-120			
Iron	110.4			ug/L	100.0		110	80-120			
Magnesium	4859			ug/L	5000		97.2	80-120			
Nickel	9.426			ug/L	10.00		94.3	80-120			
Potassium	4854			ug/L	5000		97.1	80-120			
Selenium	4.510			ug/L	5.000		90.2	80-120			
Silver	1.994			ug/L	2.000		99.7	80-120			
Sodium	4940			ug/L	5000		98.8	80-120			
Thallium	7.462			ug/L	8.000		93.3	80-120			
Vanadium	12.12			ug/L	12.50		96.9	80-120			
Zinc	19.10			ug/L	20.00		95.5	80-120			
Instrument RL Check				Prepared & Analyzed: 12/03/2009							
Lead	2.677			ug/L	3.000		89.2	80-120			

Mercury by CVAA - Quality Control

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9L33802											
Instrument RL Check			Prepared: 12/02/2009 Analyzed: 12/03/2009								
Mercury	0.1589			ug/L	0.2000		79.4	70-130			
Instrument RL Check			Prepared: 12/02/2009 Analyzed: 12/03/2009								
Mercury	0.1561			ug/L	0.2000		78.0	70-130			

BLANKS
SW6010B

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
SDG: 0911230
Instrument ID: ME-ICP
Project: Radford Army Ammunition Plant
Sequence: 9L33812
Calibration: 9338008

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
9L33812-ICB1	Aluminum	-0.8473	50.0	200	ug/L	U	SW6010B
	Antimony	-1.056	5.00	15.0	ug/L	U	SW6010B
	Arsenic	-0.9216	3.00	5.00	ug/L	U	SW6010B
	Barium	0.1172	5.00	40.0	ug/L	U	SW6010B
	Beryllium	-0.001090	1.00	5.00	ug/L	U	SW6010B
	Cadmium	0.2363	1.00	5.00	ug/L	U	SW6010B
	Calcium	0.1700	1000	5000	ug/L	U	SW6010B
	Chromium	0.2348	2.00	5.00	ug/L	U	SW6010B
	Cobalt	0.2270	5.00	12.5	ug/L	U	SW6010B
	Copper	0.1997	5.00	10.0	ug/L	U	SW6010B
	Iron	-0.1070	30.0	100	ug/L	U	SW6010B
	Lead	0.01638	1.50	3.00	ug/L	U	SW6010B
	Magnesium	-2.530	1000	5000	ug/L	U	SW6010B
	Manganese	0.04190	3.00	15.0	ug/L	U	SW6010B
	Nickel	-0.1469	3.00	10.0	ug/L	U	SW6010B
	Potassium	-3.100	1000	5000	ug/L	U	SW6010B
	Selenium	0.08067	3.00	5.00	ug/L	U	SW6010B
	Silver	-0.03269	1.00	5.00	ug/L	U	SW6010B
	Sodium	-5.440	1000	5000	ug/L	U	SW6010B
	Thallium	0.1471	3.00	8.00	ug/L	U	SW6010B
	Vanadium	0.1155	5.00	12.5	ug/L	U	SW6010B
	Zinc	0.1096	5.00	20.0	ug/L	U	SW6010B
9L33812-CCB1	Aluminum	23.6	50.0	200	ug/L	U	SW6010B
	Antimony	-0.696	5.00	15.0	ug/L	U	SW6010B
	Arsenic	-0.445	3.00	5.00	ug/L	U	SW6010B
	Barium	0.261	5.00	40.0	ug/L	U	SW6010B
	Beryllium	0.393	1.00	5.00	ug/L	U	SW6010B
	Cadmium	0.525	1.00	5.00	ug/L	U	SW6010B
	Calcium	25.3	1000	5000	ug/L	U	SW6010B
	Chromium	0.430	2.00	5.00	ug/L	U	SW6010B
	Cobalt	0.414	5.00	12.5	ug/L	U	SW6010B
	Copper	0.119	5.00	10.0	ug/L	U	SW6010B
	Iron	17.1	30.0	100	ug/L	U	SW6010B

BLANKS
SW6010B

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Instrument ID: ME-ICP
Sequence: 9L33812

SDG: 0911230
Project: Radford Army Ammunition Plant
Calibration: 9338008

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
9L33812-CCB1	Lead	0.516	1.50	3.00	ug/L	U	SW6010B
	Magnesium	25.4	1000	5000	ug/L	U	SW6010B
	Manganese	0.275	3.00	15.0	ug/L	U	SW6010B
	Nickel	0.429	3.00	10.0	ug/L	U	SW6010B
	Potassium	0.290	1000	5000	ug/L	U	SW6010B
	Selenium	-0.329	3.00	5.00	ug/L	U	SW6010B
	Silver	-0.0778	1.00	5.00	ug/L	U	SW6010B
	Sodium	14.7	1000	5000	ug/L	U	SW6010B
	Thallium	0.607	3.00	8.00	ug/L	U	SW6010B
	Vanadium	0.440	5.00	12.5	ug/L	U	SW6010B
	Zinc	0.607	5.00	20.0	ug/L	U	SW6010B
9L33812-CCB2	Aluminum	4.47	50.0	200	ug/L	U	SW6010B
	Antimony	-0.290	5.00	15.0	ug/L	U	SW6010B
	Arsenic	-0.553	3.00	5.00	ug/L	U	SW6010B
	Barium	0.0744	5.00	40.0	ug/L	U	SW6010B
	Beryllium	0.0260	1.00	5.00	ug/L	U	SW6010B
	Cadmium	0.262	1.00	5.00	ug/L	U	SW6010B
	Calcium	25.6	1000	5000	ug/L	U	SW6010B
	Chromium	0.190	2.00	5.00	ug/L	U	SW6010B
	Cobalt	0.0548	5.00	12.5	ug/L	U	SW6010B
	Copper	0.138	5.00	10.0	ug/L	U	SW6010B
	Iron	1.28	30.0	100	ug/L	U	SW6010B
	Lead	0.425	1.50	3.00	ug/L	U	SW6010B
	Magnesium	43.4	1000	5000	ug/L	U	SW6010B
	Manganese	0.00316	3.00	15.0	ug/L	U	SW6010B
	Nickel	-0.107	3.00	10.0	ug/L	U	SW6010B
	Potassium	54.5	1000	5000	ug/L	U	SW6010B
	Selenium	-0.367	3.00	5.00	ug/L	U	SW6010B
	Silver	-0.249	1.00	5.00	ug/L	U	SW6010B
	Sodium	837	1000	5000	ug/L	U	SW6010B
	Thallium	-0.221	3.00	8.00	ug/L	U	SW6010B
	Vanadium	-0.0989	5.00	12.5	ug/L	U	SW6010B
	Zinc	0.0154	5.00	20.0	ug/L	U	SW6010B

BLANKS
SW6010B

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Instrument ID: ME-ICP
Sequence: 9L33812

SDG: 0911230
Project: Radford Army Ammunition Plant
Calibration: 9338008

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
9L02007-BLK1	Aluminum	0.297	2.50	10.0	mg/Kg wet	U	SW6010B
	Antimony	-0.00772	0.250	0.750	mg/Kg wet	U	SW6010B
	Arsenic	-0.0722	0.150	0.250	mg/Kg wet	U	SW6010B
	Barium	0.00251	0.250	2.00	mg/Kg wet	U	SW6010B
	Beryllium	-0.000674	0.0500	0.250	mg/Kg wet	U	SW6010B
	Cadmium	0.0471	0.0500	0.250	mg/Kg wet	U	SW6010B
	Calcium	0.816	50.0	250	mg/Kg wet	U	SW6010B
	Chromium	0.0438	0.100	0.250	mg/Kg wet	U	SW6010B
	Cobalt	-0.00684	0.250	0.625	mg/Kg wet	U	SW6010B
	Copper	0.00193	0.250	0.500	mg/Kg wet	U	SW6010B
	Iron	0.504	1.50	5.00	mg/Kg wet	U	SW6010B
	Lead	0.0173	0.0750	0.150	mg/Kg wet	U	SW6010B
	Magnesium	0.00850	50.0	250	mg/Kg wet	U	SW6010B
	Manganese	0.0119	0.150	0.750	mg/Kg wet	U	SW6010B
	Nickel	-0.0202	0.250	0.500	mg/Kg wet	U	SW6010B
	Potassium	2.23	50.0	250	mg/Kg wet	U	SW6010B
	Silver	-0.00916	0.0500	0.250	mg/Kg wet	U	SW6010B
	Sodium	6.18	50.0	250	mg/Kg wet	U	SW6010B
	Thallium	-0.164	0.150	0.400	mg/Kg wet	J	SW6010B
	Vanadium	0.0000660	0.250	0.625	mg/Kg wet	U	SW6010B
	Zinc	0.249	0.250	1.00	mg/Kg wet	U	SW6010B
9L33812-CCB3	Aluminum	15.7	50.0	200	ug/L	U	SW6010B
	Antimony	-0.463	5.00	15.0	ug/L	U	SW6010B
	Arsenic	-1.47	3.00	5.00	ug/L	U	SW6010B
	Barium	0.311	5.00	40.0	ug/L	U	SW6010B
	Beryllium	0.0586	1.00	5.00	ug/L	U	SW6010B
	Cadmium	0.260	1.00	5.00	ug/L	U	SW6010B
	Calcium	6.52	1000	5000	ug/L	U	SW6010B
	Chromium	0.543	2.00	5.00	ug/L	U	SW6010B
	Cobalt	0.0413	5.00	12.5	ug/L	U	SW6010B
	Copper	0.0562	5.00	10.0	ug/L	U	SW6010B
	Iron	49.4	30.0	100	ug/L	J	SW6010B
	Lead	0.227	1.50	3.00	ug/L	U	SW6010B

BLANKS
SW6010B

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
SDG: 0911230
Instrument ID: ME-ICP
Project: Radford Army Ammunition Plant
Sequence: 9L33812
Calibration: 9338008

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
9L33812-CCB3	Magnesium	2.36	1000	5000	ug/L	U	SW6010B
	Manganese	4.30	3.00	15.0	ug/L	J	SW6010B
	Nickel	-0.0357	3.00	10.0	ug/L	U	SW6010B
	Potassium	7.68	1000	5000	ug/L	U	SW6010B
	Selenium	-1.45	3.00	5.00	ug/L	U	SW6010B
	Silver	-0.242	1.00	5.00	ug/L	U	SW6010B
	Sodium	36.2	1000	5000	ug/L	U	SW6010B
	Thallium	0.559	3.00	8.00	ug/L	U	SW6010B
	Vanadium	0.293	5.00	12.5	ug/L	U	SW6010B
	Zinc	0.225	5.00	20.0	ug/L	U	SW6010B
9L33812-CCBA	Aluminum	4.46	50.0	200	ug/L	U	SW6010B
	Antimony	-0.592	5.00	15.0	ug/L	U	SW6010B
	Arsenic	-0.585	3.00	5.00	ug/L	U	SW6010B
	Barium	0.230	5.00	40.0	ug/L	U	SW6010B
	Beryllium	0.0622	1.00	5.00	ug/L	U	SW6010B
	Cadmium	0.0628	1.00	5.00	ug/L	U	SW6010B
	Calcium	21.4	1000	5000	ug/L	U	SW6010B
	Chromium	0.348	2.00	5.00	ug/L	U	SW6010B
	Cobalt	0.143	5.00	12.5	ug/L	U	SW6010B
	Copper	-1.45	5.00	10.0	ug/L	U	SW6010B
	Iron	2.57	30.0	100	ug/L	U	SW6010B
	Lead	0.626	1.50	3.00	ug/L	U	SW6010B
	Magnesium	7.76	1000	5000	ug/L	U	SW6010B
	Manganese	0.199	3.00	15.0	ug/L	U	SW6010B
	Nickel	0.405	3.00	10.0	ug/L	U	SW6010B
	Potassium	5.57	1000	5000	ug/L	U	SW6010B
	Selenium	-1.17	3.00	5.00	ug/L	U	SW6010B
	Silver	-0.164	1.00	5.00	ug/L	U	SW6010B
	Sodium	-2.23	1000	5000	ug/L	U	SW6010B
	Thallium	0.360	3.00	8.00	ug/L	U	SW6010B
	Vanadium	-0.0934	5.00	12.5	ug/L	U	SW6010B
	Zinc	0.503	5.00	20.0	ug/L	U	SW6010B
9L02007-BLK2	Selenium	0.130	0.150	0.250	mg/Kg wet	U	SW6010B

BLANKS
SW6010B

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Instrument ID: ME-ICP
Sequence: 9L33812

SDG: 0911230
Project: Radford Army Ammunition Plant
Calibration: 9338008

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
9L33812-CCBB	Aluminum	4.70	50.0	200	ug/L	U	SW6010B
	Antimony	-0.435	5.00	15.0	ug/L	U	SW6010B
	Arsenic	-1.11	3.00	5.00	ug/L	U	SW6010B
	Barium	0.216	5.00	40.0	ug/L	U	SW6010B
	Beryllium	0.0160	1.00	5.00	ug/L	U	SW6010B
	Cadmium	0.115	1.00	5.00	ug/L	U	SW6010B
	Calcium	4.29	1000	5000	ug/L	U	SW6010B
	Chromium	0.332	2.00	5.00	ug/L	U	SW6010B
	Cobalt	0.0557	5.00	12.5	ug/L	U	SW6010B
	Copper	-0.843	5.00	10.0	ug/L	U	SW6010B
	Iron	0.808	30.0	100	ug/L	U	SW6010B
	Lead	0.0465	1.50	3.00	ug/L	U	SW6010B
	Magnesium	-10.2	1000	5000	ug/L	U	SW6010B
	Manganese	0.187	3.00	15.0	ug/L	U	SW6010B
	Nickel	0.0470	3.00	10.0	ug/L	U	SW6010B
	Potassium	2.20	1000	5000	ug/L	U	SW6010B
	Selenium	-0.0346	3.00	5.00	ug/L	U	SW6010B
	Silver	0.0433	1.00	5.00	ug/L	U	SW6010B
	Sodium	10.8	1000	5000	ug/L	U	SW6010B
	Thallium	0.0567	3.00	8.00	ug/L	U	SW6010B
	Vanadium	0.0269	5.00	12.5	ug/L	U	SW6010B
	Zinc	0.246	5.00	20.0	ug/L	U	SW6010B

BLANKS
SW7471A

Laboratory: Empirical Laboratories, LLC
SDG: 0911230
Client: Arcadis (A285)
Instrument ID: ME-FIMS
Project: Radford Army Ammunition Plant
Sequence: 9L33802
Calibration: 9338002

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
9L33802-ICB1	Mercury	-0.04352	0.480	1.20	ug/L	U	SW7471A
9L02009-BLK1	Mercury	-0.00729	0.0130	0.0330	mg/Kg wet	U	SW7471A
9L33802-CCB1	Mercury	-0.0460	0.480	1.20	ug/L	U	SW7471A
9L33802-CCB2	Mercury	-0.0419	0.480	1.20	ug/L	U	SW7471A

ICP INTERFERENCE CHECK SAMPLE

SW6010B

Laboratory: Empirical Laboratories, LLC

SDG: 0911230

Client: Arcadis (A285)

Project: Radford Army Ammunition Plant

Instrument ID: ME-ICP

Calibration: 9338008

Sequence: 9L33812

Lab Sample ID	Analyte	True	Found	%R	Units
9L33812-IFA1	Aluminum	500000	515,430.00	103	ug/L
	Antimony		2.07		ug/L
	Arsenic		0.85		ug/L
	Barium		4.02		ug/L
	Beryllium		0.16		ug/L
	Cadmium		0.57		ug/L
	Calcium	500000	479,100.00	95.8	ug/L
	Chromium		-1.60		ug/L
	Cobalt		5.14		ug/L
	Copper		-7.89		ug/L
	Iron	200000	198,060.00	99.0	ug/L
	Lead		5.42		ug/L
	Magnesium	500000	505,620.00	101	ug/L
	Manganese		0.59		ug/L
	Nickel		-9.50		ug/L
	Potassium		-28.31		ug/L
	Selenium		0.06		ug/L
	Silver		0.08		ug/L
	Sodium		58.72		ug/L
	Thallium		3.27		ug/L
	Vanadium		0.77		ug/L
	Zinc		-0.22		ug/L
9L33812-IFB1	Aluminum	500000	484,790.00	97.0	ug/L
	Antimony	600.0	659.27	110	ug/L
	Arsenic	100.0	113.38	113	ug/L
	Barium	500.0	558.15	112	ug/L
	Beryllium	500.0	451.13	90.2	ug/L
	Cadmium	1000	1,179.60	118	ug/L
	Calcium	500000	447,290.00	89.5	ug/L

ICP INTERFERENCE CHECK SAMPLE

SW6010B

Laboratory: Empirical Laboratories, LLC

SDG: 0911230

Client: Arcadis (A285)

Project: Radford Army Ammunition Plant

Instrument ID: ME-ICP

Calibration: 9338008

Sequence: 9L33812

Lab Sample ID	Analyte	True	Found	%R	Units
9L33812-IFB1	Chromium	500.0	426.93	85.4	ug/L
	Cobalt	500.0	481.47	96.3	ug/L
	Copper	500.0	496.37	99.3	ug/L
	Iron	200000	187,830.00	93.9	ug/L
	Lead	50.00	52.62	105	ug/L
	Magnesium	500000	470,380.00	94.1	ug/L
	Manganese	500.0	442.09	88.4	ug/L
	Nickel	1000	921.76	92.2	ug/L
	Potassium		4.63		ug/L
	Selenium	50.00	52.58	105	ug/L
	Silver	200.0	205.13	103	ug/L
	Sodium		132.52		ug/L
	Thallium	100.0	87.52	87.5	ug/L
	Vanadium	500.0	430.98	86.2	ug/L
	Zinc	1000	964.17	96.4	ug/L

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

SW6010B

NBG-Topsoil

Laboratory: Empirical Laboratories, LLC

SDG: 0911230

Client: Arcadis (A285)

Project: Radford Army Ammunition Plant

Matrix: Solid

Batch: 9L02007

% Solids: 78.24

Source Sample Name: **0911230-02**

ANALYTE	SPIKE ADDED (mg/Kg dry)	SAMPLE CONCENTRATION (mg/Kg dry)	MS CONCENTRATION (mg/Kg dry)	MS % REC.	Q	QC LIMITS REC.
Beryllium	3.087	1.220	4.536	107		80 - 120
Calcium	308.7	1583	2589	326		80 - 120
Potassium	308.7	1142	1660	168		80 - 120
Sodium	308.7	ND	379.8	123	N	80 - 120

ANALYTE	SPIKE ADDED (mg/Kg dry)	MSD CONCENTRATION (mg/Kg dry)	MSD % REC. #	% RPD	Q	QC LIMITS RPD	QC LIMITS REC.
Beryllium	3.180	4.671	109	2.93		20	80 - 120
Calcium	318.0	2126	171	19.7		20	80 - 120
Potassium	318.0	1579	137	4.99		20	80 - 120
Sodium	318.0	389.3	122	2.46	N	20	80 - 120

POST DIGEST SPIKE SAMPLE RECOVERY

SW6010B

NBG-Topsoil

Laboratory: Empirical Laboratories, LLC

Client: Arcadis (A285)

Matrix: Solid

Batch: 9L02007

Preparation: MET_3050B

SDG: 0911230

Project: Radford Army Ammunition Plant

Laboratory ID: 9L02007-PS1

Lab Source ID: 0911230-02

Initial/Final: 2.04 g / 100 mL

Analyte	Spike Sample Result (SSR) (ug/L)	Sample Result (SR) (ug/L)	Spike Added (SA) (ug/L)	%R	Control Limit %R
Beryllium	72.14	19.47	50.00	105	85 - 115
Calcium	30340	25260	5000	101	85 - 115
Potassium	23440	18220	5000	104	85 - 115
Sodium	5666	ND	5000	108	85 - 115

LCS / LCS DUPLICATE RECOVERY

SW6010B

Laboratory:	Empirical Laboratories, LLC	SDG:	0911230
Client:	Arcadis (A285)	Project:	Radford Army Ammunition Plant
Matrix:	Solid		
Batch:	9L02007	Laboratory ID:	9L02007-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	112.1	112	80 - 120
Antimony	12.50	13.64	109	80 - 120
Arsenic	12.50	13.13	105	80 - 120
Beryllium	2.500	2.736	109	80 - 120
Cadmium	6.250	6.798	109	80 - 120
Calcium	250.0	267.7	107	80 - 120
Chromium	10.00	10.92	109	80 - 120
Cobalt	25.00	29.03	116	80 - 120
Copper	12.50	14.42	115	80 - 120
Iron	50.00	59.30	119	80 - 120
Lead	12.50	13.50	108	80 - 120
Magnesium	250.0	260.7	104	80 - 120
Manganese	25.00	28.62	114	80 - 120
Nickel	25.00	29.19	117	80 - 120
Potassium	250.0	281.4	113	80 - 120
Selenium	12.50	12.73	102	80 - 120
Silver	12.50	13.49	108	80 - 120
Sodium	250.0	290.1	116	80 - 120
Thallium	12.50	12.90	103	80 - 120
Vanadium	25.00	27.35	109	80 - 120
Zinc	25.00	28.03	112	80 - 120

LCS / LCS DUPLICATE RECOVERY

SW6010B

Laboratory:	Empirical Laboratories, LLC	SDG:	0911230
Client:	Arcadis (A285)	Project:	Radford Army Ammunition Plant
Matrix:	Solid		
Batch:	9L02007	Laboratory ID:	9L02007-BS2
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.
Barium	**100.0**	**120.9**	**121**	**80 - 120**

LCS / LCS DUPLICATE RECOVERY

SW7471A

Laboratory:	Empirical Laboratories, LLC	SDG:	0911230
Client:	Arcadis (A285)	Project:	Radford Army Ammunition Plant
Matrix:	Solid		
Batch:	9L02009	Laboratory ID:	9L02009-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	0.3698	111	80 - 120

ORGANIC CASE NARRATIVE
Arcadis Radford
Workorder: 0911230

GC/MS Volatiles

Method: The samples were extracted/analyzed for a client specified list by USEPA SW-846 Methods 5035/8260B (Encore field sampling followed by laboratory preservation then purge and trap followed by capillary column GC/MS) for soils upon receipt to the laboratory in satisfactory condition.

Comments: The analyses for these samples were satisfactorily completed within sample holding times and met the corresponding specifications with the following notes/exceptions:

- BFB Tuning: All method tuning criteria were met.
- Initial Calibration Criteria: All method calibration criteria were met.
- Continuing Calibration Criteria: In the continuing calibration verification analyzed 12/8/09, 1,4-dioxane exceeded 20% difference with a positive bias. It was not detected in the associated samples. All other criteria were met.
- Method Blank Results: No target analytes were detected
- Surrogate Recoveries: All surrogate recoveries were within limits.
- LCS/LCSD Results: Recoveries of 1,4-dioxane exceeded limits with a positive bias. All associated samples were non-detect for 1,4-dioxane. All other recoveries were within limits.
- MS/MSD Sample Results: Not applicable.
- Internal Standard Area Counts: All internal standard area counts were within limits.
- Dilutions: All samples were analyzed without dilution.
- Manual integrations: Quantitation signals were manually integrated in order to accurately reflect the peak areas based on the technical judgment of the analyst. A listing of the manual integrations performed and reason for the integration is included with the logs. Before and after "pictures" are available where manual integrations were performed.

GC/MS Semi-Volatiles

Method: The samples were analyzed by USEPA SW-846 Methods 3546/8270C (microwave extraction followed by capillary column GC/MS) for soils upon receipt to the laboratory in satisfactory condition.

Comments: The analyses for these samples were satisfactorily completed within sample holding times and met the corresponding specifications with the following exceptions:

- DFTPP Tuning: All method tuning criteria were met.
- Calibration Criteria: All calibration criteria were met.
- Blank Results: No target analytes were detected in the method blank.
- Surrogate Recoveries: All surrogate recoveries were within limits.
- LCS results: Recovery of caprolactam exceeded the limit of 110% at 118%. All other recoveries were within limits.
- MS/MSD Sample Results: Of 130 recoveries, 7 exceeded limits with a positive bias while all relative percent differences were within limits. See form 3. Analysis of the MSD was started 12 hours 18 minutes after the associated tuning standard.
- Internal Standard Area Counts: All internal standard area counts were within limits.
- Dilutions: All samples were analyzed without dilution.

- Manual integrations: Quantitation signals were manually integrated in order to accurately reflect the peak areas based on the technical judgment of the analyst. A listing of the manual integrations performed and reason for the integration is included following this narrative. Before and after "pictures" are included with the raw data for each integration performed.

Pesticide Samples

Method: The samples were analyzed by USEPA SW-846 Methods 3546/8081A (microwave extraction followed by capillary column GC/ECD) for soils upon receipt to the laboratory in satisfactory condition.

Comments: The analyses for these samples were satisfactorily completed within sample holding times and met the corresponding specifications with the following exceptions:

- Performance Evaluation Mix: All method criteria were met.
- Initial Calibration Criteria: All method criteria were met. The multi-component analyte toxaphene was calibrated using a single point. No further calibration was required, as it was not detected in the sample.
- Continuing Calibration Criteria: All analytes were within 20% difference or exceeded with a positive bias. Results above the quantitation limit and associated to a positive bias are qualified with an "X" to indicate a potential positive bias.
- Blank Results: No target analytes were detected in the method blank.
- Surrogate Recoveries: Of 4 surrogate recoveries, at least 3 were within limits for all analyses. Exceedences were positive biases.
- LCS Results: Of 20 recoveries, 1 exceeded limits with a positive bias. See form 3.
- MS/MSD Results: Of 40 recoveries, 14 were outside limits with all relative percent differences within limits. See form 3.
- Dilutions: The samples were analyzed without dilution.
- Manual Integrations: As is necessary for all GC/LC chromatography, manual integrations were performed to correctly quantitate target analytes. A "before" chromatogram and "after" chromatogram is provided for all sample analyses to provide information regarding the manual integrations performed.

Herbicide Samples

Method: The samples were analyzed by USEPA SW-846 Methods 8151A (sonication then separatory funnel extraction followed by esterification then capillary column GC/ECD) for soils upon receipt to the laboratory in satisfactory condition.

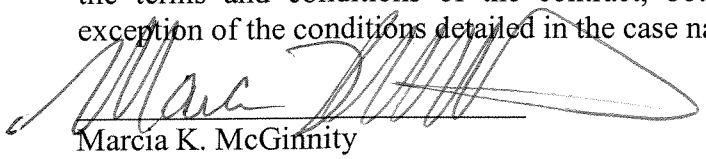
Comments: The analyses for these samples were satisfactorily completed within sample holding times and met the corresponding specifications with the following note/exceptions:

- Initial Calibration Criteria: All method criteria were met.
- Continuing Calibration Criteria: All analytes were within 20% difference.
- Blank Results: No target analytes were detected.
- Surrogate Recoveries: All recoveries were within limits.
- LCS Results: While results for dalapon were below the detection limit, recoveries were within limits. All other recoveries were within limits without qualification or exceeded with a positive bias. See form 3.
- MS/MSD Results: While results for dalapon were below the detection limit, recoveries were within limits. All other recoveries were within limits without qualification or exceeded with a

positive bias. See form 3.

- Dilutions: All samples were analyzed without dilution.
- Manual Integrations: As is necessary for all GC/LC chromatography, manual integrations were performed to correctly quantitate target analytes. A "before" chromatogram and "after" chromatogram is provided for all sample analyses to provide information regarding the manual integrations performed.

I certify that, to the best of my knowledge and based upon my inquiry of those individuals immediately responsible for obtaining the information, 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 the case narrative, as verified by the following signature.



Marcia K. McGinnity
Data Quality Manager

ANALYTICAL REPORT TERMS AND QUALIFIERS (ORGANIC)

MDL: The method detection limit (MDL) 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 MDL is determined from analysis of a sample containing the analyte in a given matrix.

EQL: The estimated quantitation limit (EQL) is defined as the estimated concentration above which quantitative results can be obtained with a specific degree of confidence. Empirical Laboratories defines the EQL to be at or near the lowest standard of the calibration curve.

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 MDL.

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.

J: The presence of a "J" to the right of an analytical result indicates that the reported result is estimated. The data pass the identification criteria indicating that the compound is present, but the calculated result is less than the EQL.

P: The associated numerical value is an estimated quantity. There is greater than a 40% difference between the two GC/HPLC columns for the detected concentrations. The higher of the two values is reported for GC unless matrix interference is apparent. The primary column results are reported for HPLC unless matrix interference is apparent.

M: The presence of an "M" to the right of an analytical result indicates that the sample matrix interfered with the quantitation of the analyte. In GC and HPLC, results are reported from the column with the lower concentration.

I: The presence of an "I" to the right of an analytical result that the presence of a qualitative interference could have caused a false positive or over estimation of the analyte. In GC and HPLC, results are reported from the column with the lower concentration.

0911230 ORG Summ

ARCADIS

Laboratory Task Order No./P.O. No. _____ **CHAIN-OF-CUSTODY RECORD** Page 1 of 1

Project Number/Name GROSRAAP 4 NBG KG NBG

Project Location RADFORD-NRU, VA

Laboratory EMPIRICAL LABORATORIES

Project Manager DIANE WISBECK

Sampler(s)/Affiliation CHRIS KALINOWSKI

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: VOCs-8260	SVOCs-8270	METALS-6010	PESTICIDES-8081	HERBICIDES-8151		Remarks	Total
NBG-BACKFILL	S	11-24-09/1530		X	X	X	X	X		0911230-01	
NBG-TOPSOIL	S	11-24-09/1430		X	X	X	X	X		-02	

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers

					Seal Intact?
Relinquished by: [signature]	Organization: ARCADIS	Date 11/24/09	Time 2000		
Received by: _____	Organization: _____	Date / /	Time _____		Yes No N/A
Relinquished by: _____	Organization: _____	Date / /	Time _____		Seal Intact?
Received by: [signature]	Organization: _____	Date 11/25/09	Time 08:15		Yes No N/A

Special Instructions/Remarks: 1. 70C

Delivery Method: ☐ In Person ☒ Common Carrier FEDEX (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05-12/01

EMPIRICAL LABORATORIES
COOLER RECEIPT FORM

LIMS Number: 0911230 Number of Coolers: 1 of 1

Client: Arcadis Project: Radford

Date/Time Received: **11/25/09 08:15** Date cooler(s) opened: **11/25/09**

Opened By (print): **WILLIAM SCHWAB** (signature): [signature]

Circle response below as appropriate

1. How did the samples arrive?: FedEx UPS DHL Hand Delivered
   EL Courier Other: _____

If applicable, enter airbill number here: 0120

2. Were custody seals on outside of cooler(s)? ..... Yes (No)

How many: — Seal date: — Seal Initials: —

3. Were custody seals unbroken and intact at the date and time of arrival?	Yes	No	(N/A)
4. Were custody papers sealed in a plastic bag included in the sample cooler?	(Yes)	No	N/A
5. Were custody papers filled out properly (ink, signed, etc.)?	(Yes)	No	N/A
6. Did you sign custody papers in the appropriate place for acceptance?	(Yes)	No	N/A
7. Was project identifiable from custody papers?	(Yes)	No	N/A
8. If required, was enough ice present in the cooler(s)?	(Yes)	No	N/A

Type of Coolant: (WET) DRY BLUE NONE Temperature of Samples upon Receipt: 1-7°C

Dates samples were logged-in: **11/25/09**

9. Initial this form to acknowledge login of sample(s): (Name): Will Schwab (Initial): WS

10. Were all bottle lids intact and sealed tightly?	(Yes)	No	N/A
11. Did all bottles arrive unbroken?	(Yes)	No	N/A
12. Was all required bottle label information complete?	(Yes)	No	N/A
13. Did all bottle labels agree with custody papers?	(Yes)	No	N/A
14. Were correct containers used for the analyses indicated?	(Yes)	No	N/A
15. Were preservative levels correct in all applicable sample containers?	Yes	No	(N/A)
16. Was residual chlorine present in any applicable sample containers?	Yes	No	(N/A)
17. Was sufficient amount of sample sent for the analyses required?	(Yes)	No	N/A
18. Was headspace present in any included VOA vials?	Yes	No	(N/A)

If Non-Conformance issues were present, list by sample ID: _____

_____ CAR#: _____

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

NBG-BACKFILL

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.V11230

Matrix: (soil/water) SOIL Lab Sample ID: 0911230-01

Sample wt/vol: 4.8 (g/mL) G Lab File ID: 1123001A

Level: (low/med) LOW Date Sampled: 11/24/09 15:30

% Moisture: not dec. 16 Date Analyzed: 12/02/09 14:59

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	MDL	RL	CONC	Q
67-64-1	Acetone	2.5	12		U
71-43-2	Benzene	0.58	6.2		U
74-97-5	Bromochloromethane	0.52	6.2		U
75-27-4	Bromodichloromethane	0.37	6.2		U
75-25-2	Bromoform	1.2	6.2		U
74-83-9	Bromomethane	0.89	6.2		U
78-93-3	2-Butanone	1.7	12		U
75-15-0	Carbon disulfide	1.6	6.2		U
56-23-5	Carbon tetrachloride	1.1	6.2		U
108-90-7	Chlorobenzene	0.42	6.2		U
75-00-3	Chloroethane	1.4	6.2		U
67-66-3	Chloroform	0.68	6.2		U
74-87-3	Chloromethane	0.64	6.2		U
110-82-7	Cyclohexane	0.66	6.2		U
124-48-1	Dibromochloromethane	0.42	6.2		U
96-12-8	1,2-Dibromo-3-chloropropane	1.5	6.2		U
106-93-4	1,2-Dibromoethane	0.53	6.2		U
95-50-1	1,2-Dichlorobenzene	0.46	6.2		U
541-73-1	1,3-Dichlorobenzene	1.0	6.2		U
106-46-7	1,4-Dichlorobenzene	0.68	6.2		U
75-71-8	Dichlorodifluoromethane	1.4	6.2		U
75-34-3	1,1-Dichloroethane	0.66	6.2		U
107-06-2	1,2-Dichloroethane	0.57	6.2		U
75-35-4	1,1-Dichloroethene	1.5	6.2		U
156-59-2	cis-1,2-Dichloroethene	1.5	6.2		U
156-60-5	trans-1,2-Dichloroethene	1.4	6.2		U
78-87-5	1,2-Dichloropropane	0.57	6.2		U
10061-01-5	cis-1,3-Dichloropropene	0.62	6.2		U
10061-02-6	trans-1,3-Dichloropropene	0.39	6.2		U
100-41-4	Ethylbenzene	0.92	6.2		U
591-78-6	2-Hexanone	2.8	12		U
98-82-8	Isopropylbenzene	1.1	6.2		U
79-20-9	Methyl acetate	2.0	6.2		U
75-09-2	Methylene chloride	0.76	6.2	1.6	J
108-87-2	Methyl cyclohexane	0.37	6.2		U
1634-04-4	Methyl-tert-butyl ether	0.39	6.2		U
108-10-1	4-Methyl-2-pentanone	0.72	12		U
100-42-5	Styrene	0.43	6.2		U
79-34-5	1,1,2,2-Tetrachloroethane	0.53	6.2		U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

NBG-BACKFILL

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.V11230

Matrix: (soil/water) SOIL Lab Sample ID: 0911230-01

Sample wt/vol: 4.8 (g/mL) G Lab File ID: 1123001A

Level: (low/med) LOW Date Sampled: 11/24/09 15:30

% Moisture: not dec. 16 Date Analyzed: 12/02/09 14:59

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	MDL	RL	CONC	Q
127-18-4	Tetrachloroethene	1.2	6.2		U
108-88-3	Toluene	1.1	6.2		U
87-61-6	1,2,3-Trichlorobenzene	0.52	6.2		U
120-82-1	1,2,4-Trichlorobenzene	0.22	6.2		U
71-55-6	1,1,1-Trichloroethane	1.1	6.2		U
79-00-5	1,1,2-Trichloroethane	0.43	6.2		U
79-01-6	Trichloroethene	1.0	6.2		U
76-13-1	Trichlorotrifluoroethane	0.68	6.2		U
75-69-4	Trichlorofluoromethane	1.2	6.2		U
75-01-4	Vinyl chloride	1.4	6.2		U
1330-20-7	Xylene(total)	0.86	6.2		U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

NBG-BACKFILL

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.V11230

Matrix: (soil/water) SOIL Lab Sample ID: 0911230-01

Sample wt/vol: 5.1 (g/mL) G Lab File ID: 1123001B

Level: (low/med) LOW Date Sampled: 11/24/09 15:30

% Moisture: not dec. 16 Date Analyzed: 12/08/09 18:26

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG MDL	RL	CONC	Q
123-91-1	1,4-Dioxane	0.58	58		U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

NBG-TOPSOIL

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.V11230

Matrix: (soil/water) SOIL Lab Sample ID: 0911230-02

Sample wt/vol: 4.9 (g/mL) G Lab File ID: 1123002A

Level: (low/med) LOW Date Sampled: 11/24/09 14:30

% Moisture: not dec. 22 Date Analyzed: 12/02/09 15:30

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	MDL	RL	CONC	Q
67-64-1	Acetone	2.6	13		U
71-43-2	Benzene	0.61	6.5		U
74-97-5	Bromochloromethane	0.54	6.5		U
75-27-4	Bromodichloromethane	0.39	6.5		U
75-25-2	Bromoform	1.3	6.5		U
74-83-9	Bromomethane	0.93	6.5		U
78-93-3	2-Butanone	1.8	13		U
75-15-0	Carbon disulfide	1.7	6.5		U
56-23-5	Carbon tetrachloride	1.1	6.5		U
108-90-7	Chlorobenzene	0.44	6.5		U
75-00-3	Chloroethane	1.4	6.5		U
67-66-3	Chloroform	0.71	6.5		U
74-87-3	Chloromethane	0.67	6.5		U
110-82-7	Cyclohexane	0.70	6.5		U
124-48-1	Dibromochloromethane	0.44	6.5		U
96-12-8	1,2-Dibromo-3-chloropropane	1.6	6.5		U
106-93-4	1,2-Dibromoethane	0.56	6.5		U
95-50-1	1,2-Dichlorobenzene	0.48	6.5		U
541-73-1	1,3-Dichlorobenzene	1.1	6.5		U
106-46-7	1,4-Dichlorobenzene	0.71	6.5		U
75-71-8	Dichlorodifluoromethane	1.4	6.5		U
75-34-3	1,1-Dichloroethane	0.70	6.5		U
107-06-2	1,2-Dichloroethane	0.60	6.5		U
75-35-4	1,1-Dichloroethene	1.6	6.5		U
156-59-2	cis-1,2-Dichloroethene	1.6	6.5		U
156-60-5	trans-1,2-Dichloroethene	1.4	6.5		U
78-87-5	1,2-Dichloropropane	0.60	6.5		U
10061-01-5	cis-1,3-Dichloropropene	0.65	6.5		U
10061-02-6	trans-1,3-Dichloropropene	0.41	6.5		U
100-41-4	Ethylbenzene	0.97	6.5		U
591-78-6	2-Hexanone	3.0	13		U
98-82-8	Isopropylbenzene	1.1	6.5		U
79-20-9	Methyl acetate	2.1	6.5		U
75-09-2	Methylene chloride	0.80	6.5	2.1	J
108-87-2	Methyl cyclohexane	0.39	6.5		U
1634-04-4	Methyl-tert-butyl ether	0.41	6.5		U
108-10-1	4-Methyl-2-pentanone	0.75	13		U
100-42-5	Styrene	0.45	6.5		U
79-34-5	1,1,2,2-Tetrachloroethane	0.56	6.5		U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

NBG-TOPSOIL

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.V11230

Matrix: (soil/water) SOIL Lab Sample ID: 0911230-02

Sample wt/vol: 4.9 (g/mL) G Lab File ID: 1123002A

Level: (low/med) LOW Date Sampled: 11/24/09 14:30

% Moisture: not dec. 22 Date Analyzed: 12/02/09 15:30

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	MDL	RL	CONC	Q
127-18-4	Tetrachloroethene	1.2	6.5		U
108-88-3	Toluene	1.1	6.5		U
87-61-6	1,2,3-Trichlorobenzene	0.54	6.5		U
120-82-1	1,2,4-Trichlorobenzene	0.23	6.5		U
71-55-6	1,1,1-Trichloroethane	1.2	6.5		U
79-00-5	1,1,2-Trichloroethane	0.45	6.5		U
79-01-6	Trichloroethene	1.1	6.5		U
76-13-1	Trichlorotrifluoroethane	0.71	6.5		U
75-69-4	Trichlorofluoromethane	1.2	6.5		U
75-01-4	Vinyl chloride	1.4	6.5		U
1330-20-7	Xylene(total)	0.91	6.5		U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

NBG-TOPSOIL

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.V11230

Matrix: (soil/water) SOIL Lab Sample ID: 0911230-02

Sample wt/vol: 5.3 (g/mL) G Lab File ID: 1123002B

Level: (low/med) LOW Date Sampled: 11/24/09 14:30

% Moisture: not dec. 22 Date Analyzed: 12/08/09 18:57

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG MDL	RL	CONC	Q
123-91-1	1,4-Dioxane	0.60	60		U

FORM I VOA

FORM 2
SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.V11230

Level:(low/med) LOW

	CLIENT SAMPLE NO.	SMC1 (DFM) #	SMC2 (DCE) #	SMC3 (TOL) #	SMC4 (BFB) #	TOT OUT
01	9L04008-BLK1	102	96	100	99	0
02	9L04008-BLK1	105	112	97	100	0
03	NBG-BACKFILL	112	120	96	105	0
04	NBG-TOPSOIL	106	106	110	100	0
05	9L04008-BLK1	102	97	99	104	0
06	9L09002-BLK1	100	100	106	108	0
07	9L09002-BLK1	103	107	108	92	0
08	NBG-BACKFILL	103	108	110	102	0
09	NBG-TOPSOIL	104	98	110	97	0
10	9L09002-BLK1	95	98	102	97	0
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

		EL QC LIMITS	SPIKE CONC (ug/Kg)
SMC1 (DFM)	= Dibromofluoromethane	(80-125)	30
SMC2 (DCE)	= 1,2-Dichloroethane-d4	(75-140)	30
SMC3 (TOL)	= Toluene-d8	(80-120)	30
SMC4 (BFB)	= Bromofluorobenzene	(80-125)	30

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogate results reported from a diluted analysis

FORM 3
SOIL VOLATILE LAB CONTROL SAMPLE

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.V11230

Matrix Spike - Client Sample No.: 9L04008-BLK1 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC #	QC. LIMITS REC.
Acetone	100.0	0.0000	90.39	90	20-160
Benzene	50.00	0.0000	46.45	93	75-125
Bromochloromethane	50.00	0.0000	40.33	81	70-125
Bromodichloromethane	50.00	0.0000	47.54	95	70-130
Bromoform	50.00	0.0000	42.90	86	55-135
Bromomethane	50.00	0.0000	51.40	103	30-160
2-Butanone	100.0	0.0000	100.3	100	30-160
Carbon disulfide	50.00	0.0000	48.52	97	45-160
Carbon tetrachloride	50.00	0.0000	45.81	92	65-135
Chlorobenzene	50.00	0.0000	44.35	89	75-125
Chloroethane	50.00	0.0000	47.58	95	40-155
Chloroform	50.00	0.0000	41.75	84	70-125
Chloromethane	50.00	0.0000	51.22	102	50-130
Cyclohexane	50.00	0.0000	54.30	109	65-140
Dibromochloromethane	50.00	0.0000	44.89	90	65-130
1,2-Dibromo-3-chloropro	50.00	0.0000	39.60	79	40-135
1,2-Dibromoethane	50.00	0.0000	42.41	85	70-125
1,2-Dichlorobenzene	50.00	0.0000	42.20	84	75-120
1,3-Dichlorobenzene	50.00	0.0000	42.87	86	70-125
1,4-Dichlorobenzene	50.00	0.0000	43.75	88	70-125
Dichlorodifluoromethane	50.00	0.0000	61.02	122	35-135
1,1-Dichloroethane	50.00	0.0000	42.86	86	75-125
1,2-Dichloroethane	50.00	0.0000	47.05	94	70-125
1,1-Dichloroethene	50.00	0.0000	40.92	82	65-135
cis-1,2-Dichloroethene	50.00	0.0000	42.31	85	65-125
trans-1,2-Dichloroethen	50.00	0.0000	43.15	86	65-135
1,2-Dichloropropane	50.00	0.0000	47.43	95	70-120
cis-1,3-Dichloropropene	50.00	0.0000	44.96	90	70-125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL VOLATILE LAB CONTROL SAMPLE

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.V11230

Matrix Spike - Client Sample No.: 9L04008-BLK1 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC #	QC. LIMITS REC.
trans-1,3-Dichloroprope	50.00	0.0000	46.38	93	65-125
Ethylbenzene	50.00	0.0000	45.95	92	75-125
2-Hexanone	100.0	0.0000	106.8	107	45-145
Isopropylbenzene	50.00	0.0000	54.20	108	75-130
Methyl acetate	50.00	0.0000	34.88	70	45-265
Methylene chloride	50.00	0.0000	35.27	70	55-140
Methyl cyclohexane	50.00	0.0000	47.98	96	65-135
Methyl-tert-butyl ether	50.00	0.0000	47.06	94	55-150
4-Methyl-2-pentanone	100.0	0.0000	117.6	118	45-145
Styrene	50.00	0.0000	44.50	89	75-125
1,1,2,2-Tetrachloroetha	50.00	0.0000	43.41	87	55-130
Tetrachloroethene	50.00	0.0000	40.11	80	65-140
Toluene	50.00	0.0000	44.18	88	70-125
1,2,3-Trichlorobenzene	50.00	0.0000	44.28	88	60-135
1,2,4-Trichlorobenzene	50.00	0.0000	43.64	87	65-130
1,1,1-Trichloroethane	50.00	0.0000	43.75	88	70-135
1,1,2-Trichloroethane	50.00	0.0000	41.66	83	60-125
Trichloroethene	50.00	0.0000	49.34	99	75-125
Trichlorotrifluoroethan	50.00	0.0000	52.43	105	60-140
Trichlorofluoromethane	50.00	0.0000	51.26	102	25-185
Vinyl chloride	50.00	0.0000	50.68	101	60-125
Xylene(total)	150.0	0.0000	120.3	80	70-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL VOLATILE LAB CONTROL SAMPLE

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.V11230

Matrix Spike - Client Sample No.: 9L04008-BLK1 Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	LCSD CONCENTRATION (ug/Kg)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Acetone	100.0	78.64	79	14	30	20-160
Benzene	50.00	49.51	99	6	30	75-125
Bromochloromethane	50.00	45.21	90	11	30	70-125
Bromodichloromethane	50.00	49.06	98	3	30	70-130
Bromoform	50.00	40.92	82	5	30	55-135
Bromomethane	50.00	51.66	103	0	30	30-160
2-Butanone	100.0	81.21	81	21	30	30-160
Carbon disulfide	50.00	47.97	96	1	30	45-160
Carbon tetrachloride	50.00	47.92	96	4	30	65-135
Chlorobenzene	50.00	45.37	91	2	30	75-125
Chloroethane	50.00	50.27	100	5	30	40-155
Chloroform	50.00	42.00	84	0	30	70-125
Chloromethane	50.00	48.25	96	6	30	50-130
Cyclohexane	50.00	50.34	101	8	30	65-140
Dibromochloromethane	50.00	44.92	90	0	30	65-130
1,2-Dibromo-3-chloropro	50.00	38.23	76	4	30	40-135
1,2-Dibromoethane	50.00	43.96	88	4	30	70-125
1,2-Dichlorobenzene	50.00	41.30	83	2	30	75-120
1,3-Dichlorobenzene	50.00	40.68	81	5	30	70-125
1,4-Dichlorobenzene	50.00	41.20	82	6	30	70-125
Dichlorodifluoromethane	50.00	57.34	115	6	30	35-135
1,1-Dichloroethane	50.00	43.44	87	1	30	75-125
1,2-Dichloroethane	50.00	46.73	93	1	30	70-125
1,1-Dichloroethene	50.00	40.39	81	1	30	65-135
cis-1,2-Dichloroethene	50.00	43.60	87	3	30	65-125
trans-1,2-Dichloroethen	50.00	41.12	82	5	30	65-135
1,2-Dichloropropane	50.00	48.94	98	3	30	70-120
cis-1,3-Dichloropropene	50.00	51.47	103	14	30	70-125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL VOLATILE LAB CONTROL SAMPLE

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.V11230

Matrix Spike - Client Sample No.: 9L04008-BLK1 Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	LCSD CONCENTRATION (ug/Kg)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
trans-1,3-Dichloroprope	50.00	43.48	87	6	30	65-125
Ethylbenzene	50.00	46.33	93	1	30	75-125
2-Hexanone	100.0	89.22	89	18	30	45-145
Isopropylbenzene	50.00	54.44	109	0	30	75-130
Methyl acetate	50.00	32.40	65	7	30	45-265
Methylene chloride	50.00	37.18	74	5	30	55-140
Methyl cyclohexane	50.00	54.38	109	12	30	65-135
Methyl-tert-butyl ether	50.00	48.76	98	4	30	55-150
4-Methyl-2-pentanone	100.0	109.0	109	8	30	45-145
Styrene	50.00	46.23	92	4	30	75-125
1,1,2,2-Tetrachloroetha	50.00	39.96	80	8	30	55-130
Tetrachloroethene	50.00	42.04	84	5	30	65-140
Toluene	50.00	45.89	92	4	30	70-125
1,2,3-Trichlorobenzene	50.00	41.02	82	8	30	60-135
1,2,4-Trichlorobenzene	50.00	41.03	82	6	30	65-130
1,1,1-Trichloroethane	50.00	44.56	89	2	30	70-135
1,1,2-Trichloroethane	50.00	39.51	79	5	30	60-125
Trichloroethene	50.00	49.46	99	0	30	75-125
Trichlorotrifluoroethan	50.00	50.18	100	4	30	60-140
Trichlorofluoromethane	50.00	51.41	103	0	30	25-185
Vinyl chloride	50.00	48.64	97	4	30	60-125
Xylene(total)	150.0	121.5	81	1	30	70-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 50 outside limits
Spike Recovery: 0 out of 100 outside limits

COMMENTS: _____

FORM 3
SOIL VOLATILE LAB CONTROL SAMPLE

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.V11230

Matrix Spike - Client Sample No.: 9L09002-BLK1 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC #	QC. LIMITS REC.
1,4-Dioxane	1000	0.0000	2070	207*	50-150

COMPOUND	SPIKE ADDED (ug/Kg)	LCSD CONCENTRATION (ug/Kg)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,4-Dioxane	1000	1663	166*	22	30	50-150

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 1 outside limits
Spike Recovery: 2 out of 2 outside limits

COMMENTS: _____

FORM III VOA

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

9L04008-BLK1

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.V11230

Lab File ID: V5BLK01 Lab Sample ID: 9L04008-BLK1

Date Analyzed: 12/02/09 Time Analyzed: 1357

Column: RTX-VRX ID: 0.25 (mm) Heated Purge: (Y/N) Y

Instrument ID: VOA5

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	9L04008-BLK1	9L04008-BS1	V5LCS01	1223
02	NBG-BACKFILL	0911230-01	1123001A	1459
03	NBG-TOPSOIL	0911230-02	1123002A	1530
04	9L04008-BLK1	9L04008-BSD1	V5LCSD01	1806
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS:

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

9L04008-BLK1

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.V11230

Matrix: (soil/water) SOIL Lab Sample ID: 9L04008-BLK1

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V5BLK01

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. 0 Date Analyzed: 12/02/09 13:57

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	MDL	RL	CONC	Q
67-64-1	Acetone	2.0	10		U
71-43-2	Benzene	0.47	5.0		U
74-97-5	Bromochloromethane	0.42	5.0		U
75-27-4	Bromodichloromethane	0.30	5.0		U
75-25-2	Bromoform	1.0	5.0		U
74-83-9	Bromomethane	0.72	5.0		U
78-93-3	2-Butanone	1.4	10		U
75-15-0	Carbon disulfide	1.3	5.0		U
56-23-5	Carbon tetrachloride	0.88	5.0		U
108-90-7	Chlorobenzene	0.34	5.0		U
75-00-3	Chloroethane	1.1	5.0		U
67-66-3	Chloroform	0.55	5.0		U
74-87-3	Chloromethane	0.52	5.0		U
110-82-7	Cyclohexane	0.54	5.0		U
124-48-1	Dibromochloromethane	0.34	5.0		U
96-12-8	1,2-Dibromo-3-chloropropane	1.2	5.0		U
106-93-4	1,2-Dibromoethane	0.43	5.0		U
95-50-1	1,2-Dichlorobenzene	0.37	5.0		U
541-73-1	1,3-Dichlorobenzene	0.84	5.0		U
106-46-7	1,4-Dichlorobenzene	0.55	5.0		U
75-71-8	Dichlorodifluoromethane	1.1	5.0		U
75-34-3	1,1-Dichloroethane	0.54	5.0		U
107-06-2	1,2-Dichloroethane	0.46	5.0		U
75-35-4	1,1-Dichloroethene	1.2	5.0		U
156-59-2	cis-1,2-Dichloroethene	1.2	5.0		U
156-60-5	trans-1,2-Dichloroethene	1.1	5.0		U
78-87-5	1,2-Dichloropropane	0.46	5.0		U
10061-01-5	cis-1,3-Dichloropropene	0.50	5.0		U
10061-02-6	trans-1,3-Dichloropropene	0.32	5.0		U
100-41-4	Ethylbenzene	0.75	5.0		U
591-78-6	2-Hexanone	2.3	10		U
98-82-8	Isopropylbenzene	0.88	5.0		U
79-20-9	Methyl acetate	1.6	5.0		U
75-09-2	Methylene chloride	0.62	5.0		U
108-87-2	Methyl cyclohexane	0.30	5.0		U
1634-04-4	Methyl-tert-butyl ether	0.32	5.0		U
108-10-1	4-Methyl-2-pentanone	0.58	10		U
100-42-5	Styrene	0.35	5.0		U
79-34-5	1,1,2,2-Tetrachloroethane	0.43	5.0		U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

9L04008-BLK1

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.V11230

Matrix: (soil/water) SOIL Lab Sample ID: 9L04008-BLK1

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V5BLK01

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. 0 Date Analyzed: 12/02/09 13:57

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	MDL	RL	CONC	Q
127-18-4	Tetrachloroethene	0.97	5.0		U
108-88-3	Toluene	0.86	5.0		U
87-61-6	1,2,3-Trichlorobenzene	0.42	5.0		U
120-82-1	1,2,4-Trichlorobenzene	0.18	5.0		U
71-55-6	1,1,1-Trichloroethane	0.90	5.0		U
79-00-5	1,1,2-Trichloroethane	0.35	5.0		U
79-01-6	Trichloroethene	0.85	5.0		U
76-13-1	Trichlorotrifluoroethane	0.55	5.0		U
75-69-4	Trichlorofluoromethane	0.95	5.0		U
75-01-4	Vinyl chloride	1.1	5.0		U
1330-20-7	Xylene(total)	0.70	5.0		U

FORM I VOA

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

9L09002-BLK1

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.V11230

Lab File ID: V5BLK01 Lab Sample ID: 9L09002-BLK1

Date Analyzed: 12/08/09 Time Analyzed: 1755

Column: RTX-VRX ID: 0.25 (mm) Heated Purge: (Y/N) Y

Instrument ID: VOA5

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	9L09002-BLK1	9L09002-BS1	V5LCS01	1649
02	NBG-BACKFILL	0911230-01	1123001B	1826
03	NBG-TOPSOIL	0911230-02	1123002B	1857
04	9L09002-BLK1	9L09002-BSD1	V5LCSD01	1928
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS:

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

9L09002-BLK1

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.V11230

Matrix: (soil/water) SOIL Lab Sample ID: 9L09002-BLK1

Sample wt/vol: 5.0 (g/mL) G Lab File ID: V5BLK01

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. 0 Date Analyzed: 12/08/09 17:55

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	MDL	RL	CONC	Q
123-91-1	1,4-Dioxane	0.50	50		U

FORM I VOA

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: NA SAS No.: NA SDG No.: SDGA83153

Lab File ID: V5BFB01 BFB Injection Date: 05/12/09

Instrument ID: VOA5 BFB Injection Time: 0929

GC Column: RTX-VRX ID: 0.25 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.0
75	30.0 - 60.0% of mass 95	45.8
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.2
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	54.9
175	5.0 - 9.0% of mass 174	4.2 (7.7)1
176	95.0 - 101.0% of mass 174	53.1 (96.8)1
177	5.0 - 9.0% of mass 176	3.8 (7.2)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	V5STD2PPB	V5STD2PPB	V5STD01	05/12/09	1000
02	V5STD5PPB	V5STD5PPB	V5STD02	05/12/09	1032
03	V5STD10PPB	V5STD10PPB	V5STD03	05/12/09	1103
04	V5STD20PPB	V5STD20PPB	V5STD04	05/12/09	1134
05	V5STD50PPB	V5STD50PPB	V5STD05	05/12/09	1205
06	V5BLK0512LCS	V5BLK0512LCS	V5ICV01	05/12/09	1236
07	V5STD100PPB	V5STD100PPB	V5STD06	05/12/09	1307
08	V5STD200PPB	V5STD200PPB	V5STD07	05/12/09	1339
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: NA SAS No.: NA SDG No.: SDGA83153

Lab File ID: V5BFB01 BFB Injection Date: 10/02/09

Instrument ID: VOA5 BFB Injection Time: 1020

GC Column: RTX-VRX ID: 0.25 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.7
75	30.0 - 60.0% of mass 95	42.5
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.0
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	100.8
175	5.0 - 9.0% of mass 174	7.7 (7.7)1
176	95.0 - 101.0% of mass 174	98.5 (97.7)1
177	5.0 - 9.0% of mass 176	7.0 (7.1)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		V5STD2PPB	V5STD01	10/02/09	1051
02		V5STD5PPB	V5STD02	10/02/09	1122
03		V5STD10PPB	V5STD03	10/02/09	1153
04		V5STD20PPB	V5STD04	10/02/09	1224
05		V5STD50PPB	V5STD05	10/02/09	1256
06	V5BLK1002LCS	V5BLK1002LCS	V5ICV01	10/02/09	1327
07		V5STD100PPB	V5STD06	10/02/09	1358
08		V5STD200PPB	V5STD07	10/02/09	1429
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.V11230

Lab File ID: SEQ-TUN1 BFB Injection Date: 12/02/09

Instrument ID: VOA5 BFB Injection Time: 1121

GC Column: RTX-VRX ID: 0.25 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	23.3
75	30.0 - 60.0% of mass 95	44.9
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.2
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	69.9
175	5.0 - 9.0% of mass 174	5.6 (8.0)1
176	95.0 - 101.0% of mass 174	68.5 (98.0)1
177	5.0 - 9.0% of mass 176	4.7 (6.9)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SEQ-CCV1	SEQ-CCV1	SEQ-CCV1	12/02/09	1152
02	9L04008-BLK1	9L04008-BS1	V5LCS01	12/02/09	1223
03	9L04008-BLK1	9L04008-BLK1	V5BLK01	12/02/09	1357
04	NBG-BACKFILL	0911230-01	1123001A	12/02/09	1459
05	NBG-TOPSOIL	0911230-02	1123002A	12/02/09	1530
06	9L04008-BLK1	9L04008-BSD1	V5LCSD01	12/02/09	1806
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.V11230

Lab File ID: SEQ-TUN1 BFB Injection Date: 12/08/09

Instrument ID: VOA5 BFB Injection Time: 1515

GC Column: RTX-VRX ID: 0.25 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	19.4
75	30.0 - 60.0% of mass 95	41.3
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	106.6
175	5.0 - 9.0% of mass 174	8.0 (7.5)1
176	95.0 - 101.0% of mass 174	105.8 (99.2)1
177	5.0 - 9.0% of mass 176	7.0 (6.6)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	V5STD100PPB	SEQ-CCV2	SEQ-CCV2	12/08/09	1618
02	9L09002-BLK1	9L09002-BS1	V5LCS01	12/08/09	1649
03	9L09002-BLK1	9L09002-BLK1	V5BLK01	12/08/09	1755
04	NBG-BACKFILL	0911230-01	1123001B	12/08/09	1826
05	NBG-TOPSOIL	0911230-02	1123002B	12/08/09	1857
06	9L09002-BLK1	9L09002-BSD1	V5LCSD01	12/08/09	1928
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.V11230

Lab File ID (Standard): SEQ-CCV1 Date Analyzed: 12/02/09

Instrument ID: VOA5 Time Analyzed: 1152

GC Column: RTX-VRX ID: 0.25 (mm) Heated Purge: (Y/N) Y

		IS1(FLB) AREA	#	RT	#	IS2(CBZ) AREA	#	RT	#	IS3(DCB) AREA	#	RT	#
	12 HOUR STD	806285		12.04		338598		15.64		373626		17.50	
	UPPER LIMIT	1612570		12.54		677196		16.14		747252		18.00	
	LOWER LIMIT	403143		11.54		169299		15.14		186813		17.00	
	CLIENT SAMPLE NO.												
01	9L04008-BLK1	819021		12.05		344345		15.64		366936		17.50	
02	9L04008-BLK1	751753		12.05		304758		15.65		313913		17.51	
03	NBG-BACKFILL	707985		12.04		299817		15.64		307750		17.50	
04	NBG-TOPSOIL	694029		12.05		268476		15.64		259586		17.50	
05	9L04008-BLK1	789241		12.04		342485		15.65		390994		17.49	
06													
07													
08													
09													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													

IS1 (FLB) = Fluorobenzene
IS2 (CBZ) = Chlorobenzene-d5
IS3 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.V11230

Lab File ID (Standard): SEQ-CCV2 Date Analyzed: 12/08/09

Instrument ID: VOA5 Time Analyzed: 1618

GC Column: RTX-VRX ID: 0.25 (mm) Heated Purge: (Y/N) Y

		IS1(FLB) AREA #	RT #	IS2(CBZ) AREA #	RT #	IS3(DCB) AREA #	RT #
	12 HOUR STD	973082	12.04	359445	15.64	352490	17.50
	UPPER LIMIT	1946164	12.54	718890	16.14	704980	18.00
	LOWER LIMIT	486541	11.54	179723	15.14	176245	17.00
	CLIENT SAMPLE NO.						
01	9L09002-BLK1	1040148	12.04	393428	15.63	437133	17.49
02	9L09002-BLK1	918037	12.04	335457	15.64	325454	17.50
03	NBG-BACKFILL	927985	12.04	318377	15.64	316051	17.50
04	NBG-TOPSOIL	947797	12.05	331473	15.64	312890	17.50
05	9L09002-BLK1	1018559	12.05	383578	15.64	419312	17.50
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 (FLB) = Fluorobenzene
IS2 (CBZ) = Chlorobenzene-d5
IS3 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: NA SAS No.: NA SDG No.: SDGA77461

Instrument ID: VOA5 Calibration Date(s): 05/12/09 05/12/09

Column: RTX-VRX ID: 0.25 (mm) Calibration Time(s): 1512 1851

LAB FILE ID: RF2: V5STDAP1 RF5: V5STDAP2 RF10: V5STDAP3
RF20: V5STDAP4 RF50: V5STDAP5

COMPOUND	RF2	RF5	RF10	RF20	RF50
Acetonitrile	0.038	0.049	0.050	0.052	0.057
Allyl chloride	0.169	0.173	0.184	0.195	0.200
Chloroprene	0.406	0.392	0.377	0.445	0.481
cis-1,4-Dichloro-2-butene	0.081	0.070	0.086	0.119	0.141
trans-1,4-Dichloro-2-butene	0.082	0.091	0.087	0.134	0.160
1,4-Dioxane	0.000	0.000	0.000	0.000	0.001
Hexane	0.493	0.511	0.523	0.572	0.641
Isobutyl alcohol	0.003	0.006	0.005	0.006	0.005
Methacrylonitrile	0.070	0.088	0.091	0.110	0.117
Propionitrile	0.015	0.022	0.020	0.020	0.021

AP-9

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: NA SAS No.: NA SDG No.: SDGA77461

Instrument ID: VOA5 Calibration Date(s): 05/12/09 05/12/09

Column: RTX-VRX ID: 0.25 (mm) Calibration Time(s): 1512 1851

LAB FILE ID: RF100: V5STDAP6 RF200: V5STDAP7

COMPOUND	RF100	RF200
Acetonitrile	0.049	0.052
Allyl chloride	0.197	0.183
Chloroprene	0.477	0.477
cis-1,4-Dichloro-2-butene	0.169	0.159
trans-1,4-Dichloro-2-butene	0.195	0.191
1,4-Dioxane	0.001	0.001
Hexane	0.582	0.620
Isobutyl alcohol	0.005	
Methacrylonitrile	0.107	0.109
Propionitrile	0.019	0.021

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: NA SAS No.: NA SDG No.: SDGA77461

Instrument ID: VOA5 Calibration Date(s): 05/12/09 05/12/09

Column: RTX-VRX ID: 0.25 (mm) Calibration Time(s): 1512 1851

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2
Acetonitrile	AVRG		4.975e-002		11.8
Allyl chloride	AVRG		0.18597783		6.4
Chloroprene	AVRG		0.43672660		10.1
cis-1,4-Dichloro-2-butene	LINR	0.00000000	0.16020482		0.996
trans-1,4-Dichloro-2-butene	LINR	0.00000000	0.18976967		0.996
1,4-Dioxane	2ORDR	0.00000000	1336.65785	-3230.1947	0.997
Hexane	AVRG		0.56308339		10.0
Isobutyl alcohol	LINR	0.00000000	5.416e-003		0.998
Methacrylonitrile	LINR	0.00000000	0.10918746		0.999
Propionitrile	AVRG		1.974e-002		10.8

AP.9

FORM VI VOA

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: NA SAS No.: NA SDG No.: SDGA18241

Instrument ID: VOA5 Calibration Date(s): 10/02/09 10/02/09

Column: RTX-VRX ID: 0.25 (mm) Calibration Time(s): 1051 1429

LAB FILE ID: RF2: V5STD01 RF5: V5STD02 RF10: V5STD03
RF20: V5STD04 RF50: V5STD05

COMPOUND	RF2	RF5	RF10	RF20	RF50
Acetone	0.163	0.102	0.091	0.102	0.094
Acrolein	0.038	0.029	0.027	0.036	0.032
Acrylonitrile	0.080	0.055	0.054	0.068	0.058
Benzene	1.228	1.058	1.082	1.338	1.166
Bromobenzene	0.966	0.844	0.928	1.002	0.920
Bromochloromethane	0.195	0.161	0.166	0.204	0.190
Bromodichloromethane	0.391	0.359	0.340	0.438	0.380
Bromoform	0.422	0.377	0.419	0.487	0.506
Bromomethane	0.290	0.227	0.240	0.278	0.276
2-Butanone	0.144	0.072	0.090	0.122	0.128
n-Butylbenzene	2.684	2.665	2.873	3.030	3.028
sec-Butylbenzene	3.230	3.462	3.571	3.911	3.636
tert-Butylbenzene	2.000	1.986	2.089	2.392	2.379
Carbon disulfide	0.866	0.789	0.718	0.901	0.872
Carbon tetrachloride	0.363	0.352	0.351	0.426	0.406
Chlorobenzene	2.274	2.187	2.158	2.366	2.355
Chloroethane	0.186	0.178	0.160	0.183	0.169
2-Chloroethyl vinyl ether	0.076	0.060	0.072	0.101	0.098
Chloroform	0.707	0.556	0.563	0.641	0.618
1-Chlorohexane	1.126	1.034	1.095	1.305	1.225
Chloromethane	0.437	0.358	0.353	0.426	0.389
2-Chlorotoluene	2.079	2.096	2.317	2.516	2.305
4-Chlorotoluene	2.201	1.860	2.102	2.436	2.346
Cyclohexane	0.468	0.424	0.496	0.522	0.470
Dibromochloromethane	0.790	0.709	0.750	0.878	0.894
1,2-Dibromo-3-chloropropane	0.132	0.120	0.119	0.130	0.132
1,2-Dibromoethane	0.671	0.647	0.612	0.715	0.728
Dibromomethane	0.188	0.183	0.171	0.208	0.186
1,2-Dichlorobenzene	1.638	1.481	1.578	1.656	1.550
1,3-Dichlorobenzene	1.776	1.596	1.655	1.846	1.796
t-Butyl alcohol	0.021	0.014	0.015	0.019	0.016
1,4-Dichlorobenzene	2.174	1.812	1.789	1.916	1.709
Dichlorodifluoromethane	0.386	0.320	0.323	0.402	0.365
1,1-Dichloroethane	0.498	0.427	0.438	0.492	0.470
1,2-Dichloroethane	0.350	0.325	0.315	0.363	0.349
1,1-Dichloroethene	0.270	0.225	0.207	0.258	0.230
cis-1,2-Dichloroethene	0.366	0.332	0.324	0.384	0.367

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: NA SAS No.: NA SDG No.: SDGA18241

Instrument ID: VOA5 Calibration Date(s): 10/02/09 10/02/09

Column: RTX-VRX ID: 0.25 (mm) Calibration Time(s): 1051 1429

LAB FILE ID: RF2: V5STD01 RF5: V5STD02 RF10: V5STD03
RF20: V5STD04 RF50: V5STD05

COMPOUND	RF2	RF5	RF10	RF20	RF50
1,2-Dichloroethene(total)	0.312	0.284	0.289	0.328	0.313
trans-1,2-Dichloroethene	0.258	0.235	0.254	0.272	0.259
1,2-Dichloropropane	0.271	0.294	0.297	0.336	0.338
1,3-Dichloropropane	0.948	0.881	0.887	1.047	0.995
2,2-Dichloropropane	0.422	0.361	0.371	0.466	0.424
1,1-Dichloropropene	0.368	0.323	0.352	0.468	0.428
cis-1,3-Dichloropropene	0.414	0.371	0.376	0.482	0.483
trans-1,3-Dichloropropene	0.641	0.648	0.741	0.938	0.931
Ethylbenzene	3.510	3.271	3.181	3.583	3.856
Ethyl methacrylate	0.524	0.540	0.590	0.685	0.786
Hexachlorobutadiene	0.708	0.610	0.662	0.723	0.696
2-Hexanone	0.313	0.338	0.357	0.439	0.459
Iodomethane	0.391	0.375	0.427	0.556	0.528
Isopropylbenzene	2.703	2.638	2.679	3.106	3.040
p-Isopropyltoluene	2.648	2.639	2.678	2.922	2.760
Methyl acetate	0.208	0.173	0.163	0.176	0.163
Methyl cyclohexane	0.428	0.427	0.439	0.540	0.479
Methylene chloride	0.897	0.418	0.334	0.342	0.274
Methyl methacrylate	0.131	0.108	0.129	0.179	0.194
4-Methyl-2-pentanone	0.202	0.174	0.173	0.229	0.224
MTBE	0.495	0.406	0.426	0.481	0.452
Naphthalene	2.132	1.476	1.624	1.847	1.775
n-Propylbenzene	3.496	3.407	3.780	4.324	4.004
Styrene	1.803	1.741	1.652	2.344	2.285
1,1,1,2-Tetrachloroethane	0.730	0.701	0.717	0.833	0.812
1,1,2,2-Tetrachloroethane	0.746	0.656	0.698	0.747	0.753
Tetrachloroethene	1.121	0.982	0.997	1.058	1.029
Tetrahydrofuran	0.078	0.044	0.050	0.051	0.054
Toluene	1.876	1.761	1.746	1.818	1.910
1,2,3-Trichlorobenzene	1.097	0.878	0.950	1.024	0.998
1,2,4-Trichlorobenzene	1.184	0.952	1.126	1.197	1.131
1,1,1-Trichloroethane	0.430	0.389	0.392	0.450	0.421
1,1,2-Trichloroethane	0.553	0.498	0.497	0.620	0.553
Trichloroethene	0.326	0.301	0.312	0.360	0.319
Trichlorotrifluoroethane	0.302	0.262	0.266	0.318	0.287
Trichlorofluoromethane	0.440	0.398	0.414	0.491	0.466
1,2,3-Trichloropropane	0.177	0.159	0.158	0.174	0.175

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: NA SAS No.: NA SDG No.: SDGA18241

Instrument ID: VOA5 Calibration Date(s): 10/02/09 10/02/09

Column: RTX-VRX ID: 0.25 (mm) Calibration Time(s): 1051 1429

LAB FILE ID: RF2: V5STD01 RF5: V5STD02 RF10: V5STD03
RF20: V5STD04 RF50: V5STD05

COMPOUND	RF2	RF5	RF10	RF20	RF50
1,2,4-Trimethylbenzene	2.543	2.453	2.610	2.771	2.412
1,3,5-Trimethylbenzene	2.344	2.269	2.479	2.715	2.667
Vinyl acetate	0.364	0.345	0.407	0.509	0.468
Vinyl chloride	0.363	0.289	0.246	0.391	0.341
m,p-Xylene	2.916	2.747	2.630	2.832	2.808
Xylene(total)	8.690	8.227	7.925	8.644	8.564
Di-Isopropyl Ether	1.042	0.915	0.973	1.128	1.129
ETBE	0.599	0.583	0.674	0.804	0.772
tert-Amyl Methyl Ether	0.701	0.558	0.540	0.638	0.607
Dibromofluoromethane	0.343	0.327	0.344	0.346	0.330
1,2-Dichloroethane-d4	0.051	0.050	0.049	0.046	0.047
Toluene-d8	2.136	2.303	2.253	2.154	2.381
Bromofluorobenzene	0.884	0.942	0.881	0.877	0.932

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: NA SAS No.: NA SDG No.: SDGA18241

Instrument ID: VOA5 Calibration Date(s): 10/02/09 10/02/09

Column: RTX-VRX ID: 0.25 (mm) Calibration Time(s): 1051 1429

LAB FILE ID: RF100: V5STD06 RF200: V5STD07

COMPOUND	RF100	RF200
Acetone	0.093	0.086
Acrolein	0.031	0.026
Acrylonitrile	0.060	0.059
Benzene	1.204	1.042
Bromobenzene	0.959	0.954
Bromochloromethane	0.192	0.182
Bromodichloromethane	0.425	0.372
Bromoform	0.543	0.568
Bromomethane	0.282	0.269
2-Butanone	0.127	0.117
n-Butylbenzene	2.850	2.443
sec-Butylbenzene	3.459	2.810
tert-Butylbenzene	2.217	1.998
Carbon disulfide	0.866	0.817
Carbon tetrachloride	0.420	0.397
Chlorobenzene	1.991	1.714
Chloroethane	0.172	0.152
2-Chloroethyl vinyl ether	0.106	0.101
Chloroform	0.605	0.565
1-Chlorohexane	1.087	0.952
Chloromethane	0.362	0.358
2-Chlorotoluene	2.244	2.085
4-Chlorotoluene	2.216	1.890
Cyclohexane	0.512	0.464
Dibromochloromethane	0.795	0.788
1,2-Dibromo-3-chloropropane	0.143	0.149
1,2-Dibromoethane	0.646	0.638
Dibromomethane	0.192	0.182
1,2-Dichlorobenzene	1.592	1.384
1,3-Dichlorobenzene	1.690	1.676
t-Butyl alcohol	0.018	0.016
1,4-Dichlorobenzene	1.541	1.352
Dichlorodifluoromethane	0.366	0.350
1,1-Dichloroethane	0.438	0.445
1,2-Dichloroethane	0.358	0.335
1,1-Dichloroethene	0.248	0.222
cis-1,2-Dichloroethene	0.389	0.361

FORM VI VOA

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: NA SAS No.: NA SDG No.: SDGA18241

Instrument ID: VOA5 Calibration Date(s): 10/02/09 10/02/09

Column: RTX-VRX ID: 0.25 (mm) Calibration Time(s): 1051 1429

LAB FILE ID: RF100: V5STD06 RF200: V5STD07

COMPOUND	RF100	RF200
1,2-Dichloroethene(total)	0.334	0.309
trans-1,2-Dichloroethene	0.278	0.258
1,2-Dichloropropane	0.326	0.291
1,3-Dichloropropane	0.876	0.840
2,2-Dichloropropane	0.449	0.426
1,1-Dichloropropene	0.454	0.417
cis-1,3-Dichloropropene	0.467	0.410
trans-1,3-Dichloropropene	0.915	0.832
Ethylbenzene	3.228	2.586
Ethyl methacrylate	0.722	0.694
Hexachlorobutadiene	0.678	0.681
2-Hexanone	0.458	0.405
Iodomethane	0.555	0.508
Isopropylbenzene	2.750	2.157
p-Isopropyltoluene	2.407	2.153
Methyl acetate	0.172	0.154
Methyl cyclohexane	0.513	0.449
Methylene chloride	0.291	0.249
Methyl methacrylate	0.193	0.190
4-Methyl-2-pentanone	0.223	0.216
MTBE	0.448	0.431
Naphthalene	1.877	1.819
n-Propylbenzene	3.658	3.024
Styrene	1.825	1.687
1,1,1,2-Tetrachloroethane	0.742	0.664
1,1,2,2-Tetrachloroethane	0.727	0.685
Tetrachloroethene	0.892	0.788
Tetrahydrofuran	0.053	0.054
Toluene	1.703	1.510
1,2,3-Trichlorobenzene	1.004	0.997
1,2,4-Trichlorobenzene	1.136	1.082
1,1,1-Trichloroethane	0.450	0.428
1,1,2-Trichloroethane	0.492	0.463
Trichloroethene	0.328	0.294
Trichlorotrifluoroethane	0.301	0.275
Trichlorofluoromethane	0.470	0.431
1,2,3-Trichloropropane	0.162	0.151

FORM VI VOA

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: NA SAS No.: NA SDG No.: SDGA18241

Instrument ID: VOA5 Calibration Date(s): 10/02/09 10/02/09

Column: RTX-VRX ID: 0.25 (mm) Calibration Time(s): 1051 1429

LAB FILE ID: RF100: V5STD06 RF200: V5STD07

COMPOUND	RF100	RF200
1,2,4-Trimethylbenzene	2.491	2.181
1,3,5-Trimethylbenzene	2.520	2.188
Vinyl acetate	0.500	0.453
Vinyl chloride	0.306	0.259
m,p-Xylene	2.266	1.712
Xylene(total)	7.002	5.507
Di-Isopropyl Ether	1.195	1.084
ETBE	0.817	0.727
tert-Amyl Methyl Ether	0.608	0.608
Dibromofluoromethane	0.347	0.316
1,2-Dichloroethane-d4	0.048	0.044
Toluene-d8	2.222	2.121
Bromofluorobenzene	0.917	0.846

FORM VI VOA

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: NA SAS No.: NA SDG No.: SDGA18241

Instrument ID: VOA5 Calibration Date(s): 10/02/09 10/02/09

Column: RTX-VRX ID: 0.25 (mm) Calibration Time(s): 1051 1429

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2
Acetone	LINR	0.00000000	8.817e-002		0.998
Acrolein	AVRG		3.143e-002		14.3
Acrylonitrile	AVRG		6.189e-002		14.6
Benzene	AVRG		1.15969595		9.2
Bromobenzene	AVRG		0.93913497		5.3
Bromochloromethane	AVRG		0.18430562		8.6
Bromodichloromethane	AVRG		0.38634915		9.0
Bromoform	AVRG		0.47469350		14.9
Bromomethane	AVRG		0.26616532		8.8
2-Butanone	LINR	0.00000000	0.11978584		0.998
n-Butylbenzene	AVRG		2.79599379		7.6
sec-Butylbenzene	AVRG		3.43982164		10.1
tert-Butylbenzene	AVRG		2.15176029		8.3
Carbon disulfide	AVRG		0.83259214		7.5
Carbon tetrachloride	AVRG		0.38767632		8.3
Chlorobenzene	AVRG		2.14944782		10.8
Chloroethane	AVRG		0.17168868		7.3
2-Chloroethyl vinyl ether	LINR	0.00000000	0.10213250		0.999
Chloroform	AVRG		0.60797242		8.9
1-Chlorohexane	AVRG		1.11788394		10.5
Chloromethane	AVRG		0.38328271		9.2
2-Chlorotoluene	AVRG		2.23457226		7.2
4-Chlorotoluene	AVRG		2.15033461		10.1
Cyclohexane	AVRG		0.47956779		6.9
Dibromochloromethane	AVRG		0.80065580		8.2
1,2-Dibromo-3-chloropropane	AVRG		0.13210715		8.4
1,2-Dibromoethane	AVRG		0.66539171		6.3
Dibromomethane	AVRG		0.18730109		5.9
1,2-Dichlorobenzene	AVRG		1.55427247		6.1
1,3-Dichlorobenzene	AVRG		1.71929684		5.2
t-Butyl alcohol	AVRG		1.703e-002		12.8
1,4-Dichlorobenzene	AVRG		1.75615514		15.0
Dichlorodifluoromethane	AVRG		0.35896206		8.5
1,1-Dichloroethane	AVRG		0.45846995		6.2
1,2-Dichloroethane	AVRG		0.34215185		5.1
1,1-Dichloroethene	AVRG		0.23719959		9.4
cis-1,2-Dichloroethene	AVRG		0.36055185		6.8

FORM VI VOA

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: NA SAS No.: NA SDG No.: SDGA18241

Instrument ID: VOA5 Calibration Date(s): 10/02/09 10/02/09

Column: RTX-VRX ID: 0.25 (mm) Calibration Time(s): 1051 1429

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2
1,2-Dichloroethene(total)	AVRG		0.30975638		5.9
trans-1,2-Dichloroethene	AVRG		0.25896091		5.2
1,2-Dichloropropane	AVRG		0.30746477		8.4
1,3-Dichloropropane	AVRG		0.92500533		8.0
2,2-Dichloropropane	AVRG		0.41704008		9.2
1,1-Dichloropropene	AVRG		0.40171491		13.6
cis-1,3-Dichloropropene	AVRG		0.42905979		11.2
trans-1,3-Dichloropropene	LINR	0.00000000	0.85487363		0.997
Ethylbenzene	AVRG		3.31658815		12.1
Ethyl methacrylate	LINR	0.00000000	0.70394267		0.998
Hexachlorobutadiene	AVRG		0.67985507		5.4
2-Hexanone	LINR	0.00000000	0.41901345		0.995
Iodomethane	LINR	0.00000000	0.51839912		0.998
Isopropylbenzene	AVRG		2.72467361		11.4
p-Isopropyltoluene	AVRG		2.60106959		9.6
Methyl acetate	AVRG		0.17290943		10.0
Methyl cyclohexane	AVRG		0.46797921		9.5
Methylene chloride	2ORDR	0.00000000	2.94325149	0.63578538	0.998
Methyl methacrylate	LINR	0.00000000	0.19079860		0.999
4-Methyl-2-pentanone	AVRG		0.20599337		11.5
MTBE	AVRG		0.44857601		7.0
Naphthalene	AVRG		1.79270322		11.5
n-Propylbenzene	AVRG		3.67059246		11.5
Styrene	2ORDR	0.00000000	0.43162839	1.456e-002	0.998
1,1,1,2-Tetrachloroethane	AVRG		0.74283743		8.1
1,1,2,2-Tetrachloroethane	AVRG		0.71598392		5.2
Tetrachloroethene	AVRG		0.98088101		11.3
Tetrahydrofuran	LINR	0.00000000	5.376e-002		1.000
Toluene	AVRG		1.76055311		7.5
1,2,3-Trichlorobenzene	AVRG		0.99252560		6.8
1,2,4-Trichlorobenzene	AVRG		1.11556143		7.3
1,1,1-Trichloroethane	AVRG		0.42292084		5.8
1,1,2-Trichloroethane	AVRG		0.52513858		10.2
Trichloroethene	AVRG		0.32005131		6.8
Trichlorotrifluoroethane	AVRG		0.28745575		7.3
Trichlorofluoromethane	AVRG		0.44415423		7.4
1,2,3-Trichloropropane	AVRG		0.16530343		6.1

FORM VI VOA

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: NA SAS No.: NA SDG No.: SDGA18241

Instrument ID: VOA5 Calibration Date(s): 10/02/09 10/02/09

Column: RTX-VRX ID: 0.25 (mm) Calibration Time(s): 1051 1429

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2
1,2,4-Trimethylbenzene	AVRG		2.49443663		7.3
1,3,5-Trimethylbenzene	AVRG		2.45476551		8.1
Vinyl acetate	AVRG		0.43517186		14.9
Vinyl chloride	2ORDR	0.00000000	2.46148664	0.80791744	1.000
m,p-Xylene	2ORDR	0.00000000	0.21241081	1.61e-002	0.999
Xylene(total)	2ORDR	0.00000000	8.17e-002	2.704e-003	0.999
Di-Isopropyl Ether	AVRG		1.06658300		9.1
ETBE	AVRG		0.71078471		13.4
tert-Amyl Methyl Ether	AVRG		0.60852190		8.6
Dibromofluoromethane	AVRG		0.33611443		3.5
1,2-Dichloroethane-d4	AVRG		4.804e-002		5.2
Toluene-d8	AVRG		2.22430730		4.3
Bromofluorobenzene	AVRG		0.89721421		3.8

FORM VI VOA

Data File: \\ELABNSH05\TARGET\chem\voa5.i\051209V5.b\V5ICVAP9.D
Report Date: 15-May-2009 09:43

Empirical Laboratories, LLC

RECOVERY REPORT

Client Name:
Sample Matrix: SOLID
Lab Smp Id: V5BLK0512LCS
Level: LOW
Data Type: MS DATA
SpikeList File: c2nds5ap9.spk
Sublist File: gm-allap9.sub
Method File: \\ELABNSH05\TARGET\chem\voa5.i\051209V5.b\VSOIL5.m
Misc Info: ;3;LCS;;;gm-allap9.sub;09D0689,09D0588

Client SDG: SDGa77461
Fraction: VOA
Client Smp ID: V5BLK0512LCS
Operator: ADM
SampleType: LCS
Quant Type: ISTD

SPIKE COMPOUND	CONC ADDED ug/Kg	CONC RECOVERED ug/Kg	% RECOVERED	LIMITS
10 Acetonitrile	500.0	586.8	117.36	75-125
23 Allyl chloride	50.00	58.57	117.14	75-125
31 Propionitrile	500.0	566.7	113.34	75-125
34 Chloroprene	50.00	61.33	122.66	75-125
39 Methacrylonitrile	500.0	540.0	108.00	75-125
47 Isobutyl alcohol	1000	1029	102.90	75-125
66 1,4-Dioxane	1000	903.4	90.34	75-125
98 trans-1,4-Dichloro	50.00	38.66	77.32	75-125
$ 46 Dibromofluorometha	30.00	36.00	120.00	75-125
$ 50 1,2-Dichloroethane	30.00	35.64	118.80	75-125
$ 77 Toluene-d8	30.00	30.94	103.13	75-125
$ 101 Bromofluorobenzene	30.00	30.67	102.23	75-125

SURROGATE COMPOUND	CONC ADDED ug/Kg	CONC RECOVERED ug/Kg	% RECOVERED	LIMITS
$ 46 Dibromofluorometha	30.00	36.00	120.00	80-125
$ 50 1,2-Dichloroethane	30.00	35.64	118.80	75-140
$ 77 Toluene-d8	30.00	30.94	103.13	80-120
$ 101 Bromofluorobenzene	30.00	30.67	102.23	80-125

VOLATILE INITIAL CALIBRATION VERIFICATION

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: NA SAS No.: NA SDG No.: SDGA18241

Instrument ID: VOA5 Calibration Date: 10/02/09 Time: 1327

Lab File ID: V5ICV01 Init. Calib. Date(s): 10/02/09 10/02/09

Heated Purge: (Y/N) Y Init. Calib. Times: 1051 1429

GC Column: RTX-VRX ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF50	CURVE AMOUNT	CCAL AMOUNT	MIN RRF	CURVE	%D	MAX %D
Acetone	0.104	0.083	100.0	94.49		LINR	-5.5	25.0
Acrolein	0.031	0.028	250.0	224.5		AVRG	-10.2	25.0
Acrylonitrile	0.062	0.052	250.0	211.5		AVRG	-15.4	25.0
Benzene	1.160	1.163	50.00	50.15		AVRG	0.3	25.0
Bromobenzene	0.939	0.871	50.00	46.37		AVRG	-7.2	25.0
Bromochloromethane	0.184	0.173	50.00	46.99		AVRG	-6.0	25.0
Bromodichloromethane	0.386	0.383	50.00	49.60		AVRG	-0.8	25.0
Bromoform	0.474	0.440	50.00	46.30	0.100	AVRG	-7.4	25.0
Bromomethane	0.266	0.261	50.00	49.01		AVRG	-2.0	25.0
2-Butanone	0.114	0.110	100.0	92.17		LINR	-7.8	25.0
n-Butylbenzene	2.796	2.654	50.00	47.46		AVRG	-5.1	25.0
sec-Butylbenzene	3.440	3.374	50.00	49.04		AVRG	-1.9	25.0
tert-Butylbenzene	2.152	2.014	50.00	46.81		AVRG	-6.4	25.0
Carbon disulfide	0.833	0.914	50.00	54.90		AVRG	9.8	25.0
Carbon tetrachloride	0.388	0.394	50.00	50.83		AVRG	1.7	25.0
Chlorobenzene	2.149	2.074	50.00	48.26	0.300	AVRG	-3.5	25.0
Chloroethane	0.171	0.178	50.00	51.98		AVRG	4.0	25.0
2-Chloroethyl vinyl ether	0.088	0.109	100.0	106.7		LINR	6.7	25.0
Chloroform	0.608	0.554	50.00	45.56		AVRG	-8.9	25.0
1-Chlorohexane	1.118	1.181	50.00	52.84		AVRG	5.7	25.0
Chloromethane	0.383	0.418	50.00	54.50	0.100	AVRG	9.0	25.0
2-Chlorotoluene	2.234	2.178	50.00	48.74		AVRG	-2.5	25.0
4-Chlorotoluene	2.150	2.109	50.00	49.04		AVRG	-1.9	25.0
Cyclohexane	0.479	0.524	50.00	54.65		AVRG	9.3	25.0
Dibromochloromethane	0.800	0.834	50.00	52.08		AVRG	4.2	25.0
1,2-Dibromo-3-chloropropane	0.132	0.113	50.00	42.75		AVRG	-14.5	25.0
1,2-Dibromoethane	0.665	0.630	50.00	47.36		AVRG	-5.3	25.0
Dibromomethane	0.187	0.172	50.00	45.98		AVRG	-8.0	25.0
1,2-Dichlorobenzene	1.554	1.490	50.00	47.94		AVRG	-4.1	25.0
1,3-Dichlorobenzene	1.719	1.588	50.00	46.18		AVRG	-7.6	25.0
t-Butyl alcohol	0.017	0.017	250.0	247.2		AVRG	-1.1	25.0
1,4-Dichlorobenzene	1.756	1.632	50.00	46.48		AVRG	-7.0	25.0
Dichlorodifluoromethane	0.359	0.430	50.00	59.91		AVRG	19.8	25.0
1,1-Dichloroethane	0.458	0.433	50.00	47.23	0.100	AVRG	-5.5	25.0
1,2-Dichloroethane	0.342	0.335	50.00	48.99		AVRG	-2.0	25.0
1,1-Dichloroethene	0.237	0.238	50.00	50.19		AVRG	0.4	25.0
cis-1,2-Dichloroethene	0.360	0.352	50.00	48.80		AVRG	-2.4	25.0

ICV VOA

VOLATILE INITIAL CALIBRATION VERIFICATION

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: NA SAS No.: NA SDG No.: SDGA18241

Instrument ID: VOA5 Calibration Date: 10/02/09 Time: 1327

Lab File ID: V5ICV01 Init. Calib. Date(s): 10/02/09 10/02/09

Heated Purge: (Y/N) Y Init. Calib. Times: 1051 1429

GC Column: RTX-VRX ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF50	CURVE AMOUNT	CCAL AMOUNT	MIN RRF	CURVE	%D	MAX %D
1,2-Dichloroethene(total)	0.310	0.304	100.0	98.07		AVRG	-2.0	25.0
trans-1,2-Dichloroethene	0.259	0.255	50.00	49.27		AVRG	-1.5	25.0
1,2-Dichloropropane	0.308	0.327	50.00	53.25		AVRG	6.5	25.0
1,3-Dichloropropane	0.925	0.909	50.00	49.15		AVRG	-1.7	25.0
2,2-Dichloropropane	0.417	0.399	50.00	47.80		AVRG	-4.4	25.0
1,1-Dichloropropene	0.401	0.422	50.00	52.56		AVRG	5.1	25.0
cis-1,3-Dichloropropene	0.429	0.437	50.00	50.88		AVRG	1.8	25.0
trans-1,3-Dichloropropene	0.806	0.889	50.00	52.02		LINR	4.0	25.0
Ethylbenzene	3.316	3.598	50.00	54.24		AVRG	8.5	25.0
Ethyl methacrylate	0.649	0.672	50.00	47.72		LINR	-4.6	25.0
Hexachlorobutadiene	0.680	0.721	50.00	53.05		AVRG	6.1	25.0
2-Hexanone	0.396	0.444	100.0	106.0		LINR	6.0	25.0
Iodomethane	0.477	0.554	50.00	53.46		LINR	6.9	25.0
Isopropylbenzene	2.725	3.364	50.00	61.74		AVRG	23.5	25.0
p-Isopropyltoluene	2.601	2.753	50.00	52.91		AVRG	5.8	25.0
Methyl acetate	0.173	0.162	50.00	46.88		AVRG	-6.2	25.0
Methyl cyclohexane	0.468	0.464	50.00	49.58		AVRG	-0.8	25.0
Methylene chloride	0.401	0.266	50.00	42.91		2ORDR	-14.2	25.0
Methyl methacrylate	0.160	0.164	50.00	42.89		LINR	-14.2	25.0
4-Methyl-2-pentanone	0.206	0.212	100.0	102.8		AVRG	2.8	25.0
MTBE	0.448	0.395	50.00	44.01		AVRG	-12.0	25.0
Naphthalene	1.793	1.638	50.00	45.68		AVRG	-8.6	25.0
n-Propylbenzene	3.670	3.308	50.00	45.05		AVRG	-9.9	25.0
Styrene	1.905	2.232	50.00	54.20		2ORDR	8.4	25.0
1,1,1,2-Tetrachloroethane	0.743	0.795	50.00	53.53		AVRG	7.1	25.0
1,1,2,2-Tetrachloroethane	0.716	0.643	50.00	44.90	0.300	AVRG	-10.2	25.0
Tetrachloroethene	0.981	0.964	50.00	49.14		AVRG	-1.7	25.0
Tetrahydrofuran	0.055	0.047	50.00	44.11		LINR	-11.8	25.0
Toluene	1.760	1.816	50.00	51.57		AVRG	3.1	25.0
1,2,3-Trichlorobenzene	0.992	0.890	50.00	44.84		AVRG	-10.3	25.0
1,2,4-Trichlorobenzene	1.115	1.034	50.00	46.34		AVRG	-7.3	25.0
1,1,1-Trichloroethane	0.423	0.393	50.00	46.44		AVRG	-7.1	25.0
1,1,2-Trichloroethane	0.525	0.483	50.00	45.97		AVRG	-8.0	25.0
Trichloroethene	0.320	0.320	50.00	50.02		AVRG	0.0	25.0
Trichlorotrifluoroethane	0.287	0.304	50.00	52.90		AVRG	5.8	25.0
Trichlorofluoromethane	0.444	0.468	50.00	52.66		AVRG	5.3	25.0
1,2,3-Trichloropropane	0.165	0.156	50.00	47.07		AVRG	-5.9	25.0

VOLATILE INITIAL CALIBRATION VERIFICATION

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: NA SAS No.: NA SDG No.: SDGA18241

Instrument ID: VOA5 Calibration Date: 10/02/09 Time: 1327

Lab File ID: V5ICV01 Init. Calib. Date(s): 10/02/09 10/02/09

Heated Purge: (Y/N) Y Init. Calib. Times: 1051 1429

GC Column: RTX-VRX ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF50	CURVE AMOUNT	CCAL AMOUNT	MIN RRF	CURVE	%D	MAX %D
1,2,4-Trimethylbenzene	2.494	2.538	50.00	50.88		AVRG	1.8	25.0
1,3,5-Trimethylbenzene	2.454	2.389	50.00	48.66		AVRG	-2.7	25.0
Vinyl acetate	0.435	0.443	100.0	101.8		AVRG	1.8	25.0
Vinyl chloride	0.314	0.349	50.00	51.14		2ORDR	2.3	25.0
Xylene(total)	7.794	7.760	150.0	138.8		2ORDR	-7.5	25.0
Di-Isopropyl Ether	1.066	1.081	50.00	50.69		AVRG	1.4	25.0
ETBE	0.711	0.774	50.00	54.48		AVRG	9.0	25.0
tert-Amyl Methyl Ether	0.608	0.569	50.00	46.76		AVRG	-6.5	25.0
Dibromofluoromethane	0.336	0.342	30.00	30.50		AVRG	1.7	25.0
1,2-Dichloroethane-d4	0.048	0.045	30.00	28.10		AVRG	-6.3	25.0
Toluene-d8	2.224	2.376	30.00	32.04		AVRG	6.8	25.0
Bromofluorobenzene	0.897	0.910	30.00	30.43		AVRG	1.4	25.0

FORM 7
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.V11230

Instrument ID: VOA5 Calibration Date: 12/02/09 Time: 1152

Lab File ID: SEQ-CCV1 Init. Calib. Date(s): 10/02/09 10/02/09

Heated Purge: (Y/N) Y Init. Calib. Times: 1051 1429

GC Column: RTX-VRX ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF100	CURVE AMOUNT	CCAL AMOUNT	MIN RRF	CURVE	%D	MAX %D
Acetone	0.104	0.088	200.0	199.1		LINR	-0.5	
Acrolein	0.031	0.024	500.0	390.1		AVRG	-22.0	
Acrylonitrile	0.062	0.049	500.0	396.6		AVRG	-20.7	
Benzene	1.160	1.071	100.0	92.37		AVRG	-7.6	
Bromobenzene	0.939	0.832	100.0	88.63		AVRG	-11.4	
Bromochloromethane	0.184	0.172	100.0	93.36		AVRG	-6.6	
Bromodichloromethane	0.386	0.403	100.0	104.4		AVRG	4.4	
Bromoform	0.474	0.469	100.0	98.76	0.100	AVRG	-1.2	
Bromomethane	0.266	0.306	100.0	114.9		AVRG	14.9	
2-Butanone	0.114	0.133	200.0	222.1		LINR	11.0	
n-Butylbenzene	2.796	2.573	100.0	92.02		AVRG	-8.0	
sec-Butylbenzene	3.440	3.105	100.0	90.27		AVRG	-9.7	
tert-Butylbenzene	2.152	1.943	100.0	90.31		AVRG	-9.7	
Carbon disulfide	0.833	0.749	100.0	89.94		AVRG	-10.0	
Carbon tetrachloride	0.388	0.396	100.0	102.2		AVRG	2.2	
Chlorobenzene	2.149	1.894	100.0	88.13	0.300	AVRG	-11.9	
Chloroethane	0.171	0.187	100.0	108.7		AVRG	8.7	
2-Chloroethyl vinyl ether	0.088	0.113	200.0	221.3		LINR	10.6	
Chloroform	0.608	0.565	100.0	92.96		AVRG	-7.0	20.0
1-Chlorohexane	1.118	2.059	100.0	184.2		AVRG	84.2	
Chloromethane	0.383	0.390	100.0	101.8	0.100	AVRG	1.8	
2-Chlorotoluene	2.234	2.004	100.0	89.70		AVRG	-10.3	
4-Chlorotoluene	2.150	1.917	100.0	89.16		AVRG	-10.8	
Cyclohexane	0.479	0.483	100.0	100.8		AVRG	0.8	
Dibromochloromethane	0.800	0.758	100.0	94.64		AVRG	-5.4	
1,2-Dibromo-3-chloropropane	0.132	0.121	100.0	91.37		AVRG	-8.6	
1,2-Dibromoethane	0.665	0.647	100.0	97.30		AVRG	-2.7	
Dibromomethane	0.187	0.187	100.0	100.1		AVRG	0.1	
1,2-Dichlorobenzene	1.554	1.354	100.0	87.12		AVRG	-12.9	
1,3-Dichlorobenzene	1.719	1.474	100.0	85.73		AVRG	-14.3	
t-Butyl alcohol	0.017	0.018	500.0	517.0		AVRG	3.4	
1,4-Dichlorobenzene	1.756	1.580	100.0	89.96		AVRG	-10.0	
Dichlorodifluoromethane	0.359	0.367	100.0	102.3		AVRG	2.3	
1,1-Dichloroethane	0.458	0.453	100.0	98.86	0.100	AVRG	-1.1	
1,2-Dichloroethane	0.342	0.328	100.0	95.97		AVRG	-4.0	
1,1-Dichloroethene	0.237	0.216	100.0	91.29		AVRG	-8.7	20.0
cis-1,2-Dichloroethene	0.360	0.340	100.0	94.23		AVRG	-5.8	

FORM 7 .
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.V11230

Instrument ID: VOA5 Calibration Date: 12/02/09 Time: 1152

Lab File ID: SEQ-CCV1 Init. Calib. Date(s): 10/02/09 10/02/09

Heated Purge: (Y/N) Y Init. Calib. Times: 1051 1429

GC Column: RTX-VRX ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF100	CURVE AMOUNT	CCAL AMOUNT	MIN RRF	CURVE	%D	MAX %D
1,2-Dichloroethene(total)	0.310	0.294	200.0	190.0		AVRG	-5.1	
trans-1,2-Dichloroethene	0.259	0.248	100.0	95.77		AVRG	-4.2	
1,2-Dichloropropane	0.308	0.314	100.0	102.2		AVRG	2.2	20.0
1,3-Dichloropropane	0.925	0.860	100.0	92.92		AVRG	-7.1	
2,2-Dichloropropane	0.417	0.408	100.0	97.76		AVRG	-2.2	
1,1-Dichloropropene	0.401	0.422	100.0	105.2		AVRG	5.2	
cis-1,3-Dichloropropene	0.429	0.439	100.0	102.2		AVRG	2.2	
trans-1,3-Dichloropropene	0.806	0.817	100.0	95.61		LINR	-4.4	
Ethylbenzene	3.316	3.192	100.0	96.25		AVRG	-3.8	20.0
Ethyl methacrylate	0.649	0.662	100.0	94.10		LINR	-5.9	
Hexachlorobutadiene	0.680	0.644	100.0	94.70		AVRG	-5.3	
2-Hexanone	0.396	0.437	200.0	208.7		LINR	4.3	
Iodomethane	0.477	0.548	100.0	105.7		LINR	5.7	
Isopropylbenzene	2.725	2.674	100.0	98.15		AVRG	-1.8	
p-Isopropyltoluene	2.601	2.330	100.0	89.58		AVRG	-10.4	
Methyl acetate	0.173	0.119	100.0	68.75		AVRG	-31.2	
Methyl cyclohexane	0.468	0.477	100.0	102.0		AVRG	2.0	
Methylene chloride	0.401	0.257	100.0	89.80		2ORDR	-10.2	
Methyl methacrylate	0.160	0.205	100.0	107.6		LINR	7.6	
4-Methyl-2-pentanone	0.206	0.254	200.0	246.9		AVRG	23.5	
MTBE	0.448	0.451	100.0	100.6		AVRG	0.6	
Naphthalene	1.793	1.608	100.0	89.71		AVRG	-10.3	
n-Propylbenzene	3.670	3.274	100.0	89.19		AVRG	-10.8	
Styrene	1.905	1.994	100.0	105.4		2ORDR	5.4	
1,1,1,2-Tetrachloroethane	0.743	0.740	100.0	99.65		AVRG	-0.4	
1,1,2,2-Tetrachloroethane	0.716	0.621	100.0	86.70	0.300	AVRG	-13.3	
Tetrachloroethene	0.981	0.899	100.0	91.62		AVRG	-8.4	
Tetrahydrofuran	0.055	0.055	100.0	102.4		LINR	2.4	
Toluene	1.760	1.678	100.0	95.34		AVRG	-4.6	20.0
1,2,3-Trichlorobenzene	0.992	0.914	100.0	92.07		AVRG	-7.9	
1,2,4-Trichlorobenzene	1.115	1.035	100.0	92.79		AVRG	-7.2	
1,1,1-Trichloroethane	0.423	0.416	100.0	98.44		AVRG	-1.6	
1,1,2-Trichloroethane	0.525	0.491	100.0	93.52		AVRG	-6.5	
Trichloroethene	0.320	0.315	100.0	98.39		AVRG	-1.6	
Trichlorotrifluoroethane	0.287	0.272	100.0	94.66		AVRG	-5.3	
Trichlorofluoromethane	0.444	0.448	100.0	100.8		AVRG	0.8	
1,2,3-Trichloropropane	0.165	0.155	100.0	94.00		AVRG	-6.0	

FORM 7
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.V11230

Instrument ID: VOA5 Calibration Date: 12/02/09 Time: 1152

Lab File ID: SEQ-CCV1 Init. Calib. Date(s): 10/02/09 10/02/09

Heated Purge: (Y/N) Y Init. Calib. Times: 1051 1429

GC Column: RTX-VRX ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF100	CURVE AMOUNT	CCAL AMOUNT	MIN RRF	CURVE	%D	MAX %D
1,2,4-Trimethylbenzene	2.494	2.262	100.0	90.67		AVRG	-9.3	
1,3,5-Trimethylbenzene	2.454	2.193	100.0	89.36		AVRG	-10.6	
Vinyl acetate	0.435	0.326	200.0	149.9		AVRG	-25.0	
Vinyl chloride	0.314	0.294	100.0	95.65		2ORDR	-4.3	20.0
Xylene(total)	7.794	7.016	300.0	302.3		2ORDR	0.8	
Di-Isopropyl Ether	1.066	1.162	100.0	109.0		AVRG	9.0	
ETBE	0.711	0.830	100.0	116.8		AVRG	16.8	
tert-Amyl Methyl Ether	0.608	0.648	100.0	106.5		AVRG	6.5	
Dibromofluoromethane	0.336	0.346	30.00	30.93		AVRG	3.1	
1,2-Dichloroethane-d4	0.048	0.048	30.00	30.09		AVRG	0.3	
Toluene-d8	2.224	2.147	30.00	28.96		AVRG	-3.5	
Bromofluorobenzene	0.897	0.866	30.00	28.96		AVRG	-3.5	

FORM 7
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.V11230

Instrument ID: VOA5 Calibration Date: 12/08/09 Time: 1618

Lab File ID: SEQ-CCV2 Init. Calib. Date(s): 05/12/09 05/12/09

Heated Purge: (Y/N) Y Init. Calib. Times: 1512 1851

GC Column: RTX-VRX ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF100	CURVE AMOUNT	CCAL AMOUNT	MIN RRF	CURVE	%D	MAX %D
Acetonitrile	0.050	0.156	1000	3143		AVRG	214.3	20.0
Allyl chloride	0.186	0.124	100.0	66.48		AVRG	-33.5	20.0
Chloroprene	0.436	0.439	100.0	100.5		AVRG	0.5	20.0
cis-1,4-Dichloro-2-butene	0.118	0.198	100.0	123.5		LINR	23.5	20.0
trans-1,4-Dichloro-2-butene	0.134	0.224	100.0	118.1		LINR	18.1	20.0
1,4-Dioxane	0.000	0.002	2000	3485		2ORDR	74.2	20.0 +
Hexane	0.563	0.523	100.0	92.91		AVRG	-7.1	20.0
Isobutyl alcohol	0.005	0.009	2000	3336		LINR	66.8	20.0
Methacrylonitrile	0.099	0.156	1000	1432		LINR	43.2	20.0
Propionitrile	0.020	0.019	1000	945.7		AVRG	-5.4	20.0

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

NBG-BACKFILL

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.B11230

Matrix: (soil/water) SOIL Lab Sample ID: 0911230-01

Sample wt/vol: 15.0 (g/mL) G Lab File ID: 1123001

% Moisture: 16 decanted: (Y/N) N Date Sampled: 11/24/09 15:30

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted:11/30/09

Concentrated Extract Volume: 1000.0(uL) Date Analyzed: 12/04/09 17:10

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	MDL	RL	CONC	Q
83-32-9	Acenaphthene	32	400		U
208-96-8	Acenaphthylene	23	400		U
98-86-2	Acetophenone	49	400		U
1912-24-9	Atrazine	34	400		U
120-12-7	Anthracene	32	400		U
100-52-7	Benzaldehyde	66	400		U
56-55-3	Benzo(a)anthracene	44	160		U
205-99-2	Benzo(b)fluoranthene	38	160		U
207-08-9	Benzo(k)fluoranthene	47	400		U
191-24-2	Benzo(g,h,i)perylene	84	400		U
50-32-8	Benzo(a)pyrene	27	160		U
92-52-4	1,1'-Biphenyl	35	400		U
111-91-1	bis(2-Chloroethoxy)methane	37	400		U
111-44-4	bis(2-Chloroethyl)ether	49	400		U
108-60-1	bis(2-Chloroisopropyl)ether	61	400		U
117-81-7	Bis(2-ethylhexyl)phthalate	43	400		U
101-55-3	4-Bromophenyl-phenylether	31	400		U
85-68-7	Butylbenzylphthalate	36	400		U
105-60-2	Caprolactam	80	400		U
86-74-8	Carbazole	43	400		U
106-47-8	4-Chloroaniline	57	400		U
59-50-7	4-Chloro-3-methylphenol	33	400		U
91-58-7	2-Chloronaphthalene	38	400		U
95-57-8	2-Chlorophenol	49	400		U
7005-72-3	4-Chlorophenyl-phenylether	37	400		U
218-01-9	Chrysene	37	400		U
53-70-3	Dibenz(a,h)anthracene	72	160		U
132-64-9	Dibenzofuran	29	400		U
91-94-1	3,3'-Dichlorobenzidine	38	400		U
120-83-2	2,4-Dichlorophenol	22	400		U
84-66-2	Diethylphthalate	40	400		U
105-67-9	2,4-Dimethylphenol	26	1600		U
131-11-3	Dimethylphthalate	36	400		U

FORM I SV

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

NBG-BACKFILL

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.B11230

Matrix: (soil/water) SOIL Lab Sample ID: 0911230-01

Sample wt/vol: 15.0 (g/mL) G Lab File ID: 1123001

% Moisture: 16 decanted: (Y/N) N Date Sampled: 11/24/09 15:30

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted:11/30/09

Concentrated Extract Volume: 1000.0(uL) Date Analyzed: 12/04/09 17:10

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	MDL	RL	CONC	Q
84-74-2	Di-n-butylphthalate	36	400		U
534-52-1	4,6-Dinitro-2-methylphenol	26	1600		U
51-28-5	2,4-Dinitrophenol	160	1600		U
121-14-2	2,4-Dinitrotoluene	29	400		U
606-20-2	2,6-Dinitrotoluene	45	400		U
117-84-0	Di-n-octylphthalate	32	400		U
206-44-0	Fluoranthene	64	400		U
86-73-7	Fluorene	31	400		U
118-74-1	Hexachlorobenzene	42	400		U
87-68-3	Hexachlorobutadiene	39	400		U
77-47-4	Hexachlorocyclopentadiene	73	400		U
67-72-1	Hexachloroethane	47	400		U
193-39-5	Indeno(1,2,3-cd)pyrene	55	160		U
78-59-1	Isophorone	34	400		U
91-57-6	2-Methylnaphthalene	42	400	3100	
91-20-3	Naphthalene	39	400	610	
95-48-7	2-Methylphenol	46	400		U
106-44-5	4-Methylphenol	32	400		U
88-74-4	2-Nitroaniline	38	1600		U
99-09-2	3-Nitroaniline	56	1600		U
100-01-6	4-Nitroaniline	120	1600		U
98-95-3	Nitrobenzene	41	400		U
88-75-5	2-Nitrophenol	26	400		U
100-02-7	4-Nitrophenol	97	1600		U
86-30-6	N-Nitrosodiphenylamine (1)	38	400		U
621-64-7	N-Nitroso-di-n-propylamine	66	400		U
87-86-5	Pentachlorophenol	40	1600		U
108-95-2	Phenol	43	400		U
129-00-0	Pyrene	48	400	210	J
95-94-3	1,2,4,5-Tetrachlorobenzene	120	400		U
95-95-4	2,4,5-Trichlorophenol	32	400		U
88-06-2	2,4,6-Trichlorophenol	42	400		U

(1) - Cannot be separated from Diphenylamine

FORM I SV

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

NBG-TOPSOIL

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.B11230

Matrix: (soil/water) SOIL Lab Sample ID: 0911230-02

Sample wt/vol: 15.0 (g/mL) G Lab File ID: 1123002

% Moisture: 22 decanted: (Y/N) N Date Sampled: 11/24/09 14:30

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted:11/30/09

Concentrated Extract Volume: 1000.0(uL) Date Analyzed: 12/04/09 17:46

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	MDL	RL	CONC	Q
83-32-9	Acenaphthene	34	430		U
208-96-8	Acenaphthylene	25	430		U
98-86-2	Acetophenone	52	430		U
1912-24-9	Atrazine	36	430		U
120-12-7	Anthracene	35	430		U
100-52-7	Benzaldehyde	71	430		U
56-55-3	Benzo(a)anthracene	46	170		U
205-99-2	Benzo(b)fluoranthene	40	170		U
207-08-9	Benzo(k)fluoranthene	50	430		U
191-24-2	Benzo(g,h,i)perylene	90	430		U
50-32-8	Benzo(a)pyrene	29	170		U
92-52-4	1,1'-Biphenyl	38	430		U
111-91-1	bis(2-Chloroethoxy)methane	40	430		U
111-44-4	bis(2-Chloroethyl)ether	52	430		U
108-60-1	bis(2-Chloroisopropyl)ether	66	430		U
117-81-7	Bis(2-ethylhexyl)phthalate	46	430		U
101-55-3	4-Bromophenyl-phenylether	33	430		U
85-68-7	Butylbenzylphthalate	38	430		U
105-60-2	Caprolactam	86	430		U
86-74-8	Carbazole	46	430		U
106-47-8	4-Chloroaniline	61	430		U
59-50-7	4-Chloro-3-methylphenol	36	430		U
91-58-7	2-Chloronaphthalene	41	430		U
95-57-8	2-Chlorophenol	52	430		U
7005-72-3	4-Chlorophenyl-phenylether	39	430		U
218-01-9	Chrysene	40	430		U
53-70-3	Dibenz(a,h)anthracene	77	170		U
132-64-9	Dibenzofuran	31	430	140	J
91-94-1	3,3'-Dichlorobenzidine	40	430		U
120-83-2	2,4-Dichlorophenol	24	430		U
84-66-2	Diethylphthalate	43	430		U
105-67-9	2,4-Dimethylphenol	27	1700		U
131-11-3	Dimethylphthalate	39	430		U

FORM I SV

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

NBG-TOPSOIL

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.B11230

Matrix: (soil/water) SOIL Lab Sample ID: 0911230-02

Sample wt/vol: 15.0 (g/mL) G Lab File ID: 1123002

% Moisture: 22 decanted: (Y/N) N Date Sampled: 11/24/09 14:30

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted:11/30/09

Concentrated Extract Volume: 1000.0(uL) Date Analyzed: 12/04/09 17:46

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	MDL	RL	CONC	Q
84-74-2	Di-n-butylphthalate	39	430		U
534-52-1	4,6-Dinitro-2-methylphenol	28	1700		U
51-28-5	2,4-Dinitrophenol	170	1700		U
121-14-2	2,4-Dinitrotoluene	31	430		U
606-20-2	2,6-Dinitrotoluene	48	430		U
117-84-0	Di-n-octylphthalate	34	430		U
206-44-0	Fluoranthene	68	430		U
86-73-7	Fluorene	33	430		U
118-74-1	Hexachlorobenzene	44	430		U
87-68-3	Hexachlorobutadiene	42	430		U
77-47-4	Hexachlorocyclopentadiene	78	430		U
67-72-1	Hexachloroethane	50	430		U
193-39-5	Indeno(1,2,3-cd)pyrene	59	170		U
78-59-1	Isophorone	36	430		U
91-57-6	2-Methylnaphthalene	45	430	2900	
91-20-3	Naphthalene	41	430	480	
95-48-7	2-Methylphenol	49	430		U
106-44-5	4-Methylphenol	34	430		U
88-74-4	2-Nitroaniline	41	1700		U
99-09-2	3-Nitroaniline	60	1700		U
100-01-6	4-Nitroaniline	130	1700		U
98-95-3	Nitrobenzene	44	430		U
88-75-5	2-Nitrophenol	28	430		U
100-02-7	4-Nitrophenol	100	1700		U
86-30-6	N-Nitrosodiphenylamine (1)	41	430		U
621-64-7	N-Nitroso-di-n-propylamine	70	430		U
87-86-5	Pentachlorophenol	43	1700		U
108-95-2	Phenol	46	430		U
129-00-0	Pyrene	51	430	180	J
95-94-3	1,2,4,5-Tetrachlorobenzene	130	430		U
95-95-4	2,4,5-Trichlorophenol	34	430		U
88-06-2	2,4,6-Trichlorophenol	44	430		U

(1) - Cannot be separated from Diphenylamine

FORM I SV

FORM 2
SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.B11230

Level:(low/med) LOW

	CLIENT SAMPLE NO.	S1 (2FP)#	S2 (PHL)#	S3 (NBZ)#	S4 (FBP)#	S5 (TBP)#	S6 (TPH)#	S7 #	S8 #	TOT OUT
01	9K30917-BLK1	55	65	62	83	67	87			0
02	9K30917-BLK1	56	58	66	77	77	83			0
03	NBG-BACKFILL	54	58	72	83	78	78			0
04	NBG-TOPSOIL	52	55	65	69	66	73			0
05	NBG-TOPSOILM	54	57	67	80	77	85			0
06	NBG-TOPSOILM	52	58	62	76	72	84			0
07										
08										
09										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

		EL QC LIMITS	SPIKE CONC (UG/KG)
S1 (2FP)	= 2-Fluorophenol	(35-105)	6700
S2 (PHL)	= Phenol-d6	(40-100)	6700
S3 (NBZ)	= Nitrobenzene-d5	(35-100)	3300
S4 (FBP)	= 2-Fluorobiphenyl	(45-105)	3300
S5 (TBP)	= 2,4,6-Tribromophenol	(35-125)	6700
S6 (TPH)	= Terphenyl-d14	(30-125)	3300

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate results reported from a diluted analysis

FORM 3
SOIL SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.B11230

Matrix Spike - Client Sample No.: 9K30917-BLK1 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONCENTRATION (UG/KG)	LCS CONCENTRATION (UG/KG)	LCS % REC #	QC. LIMITS REC.
Acenaphthene	3333	0.0000	2849	85	45-110
Acenaphthylene	3333	0.0000	3016	90	45-105
Acetophenone	3333	0.0000	1768	53	35-110
Atrazine	3333	0.0000	3033	91	55-105
Anthracene	3333	0.0000	2552	76	55-105
Benzaldehyde	3333	0.0000	985.6	30	10-160
Benzo(a)anthracene	3333	0.0000	3100	93	50-110
Benzo(b)fluoranthene	3333	0.0000	3301	99	45-115
Benzo(k)fluoranthene	3333	0.0000	3162	95	45-125
Benzo(g,h,i)perylene	3333	0.0000	3940	118	40-125
Benzo(a)pyrene	3333	0.0000	2678	80	50-110
1,1'-Biphenyl	3333	0.0000	2641	79	45-110
bis(2-Chloroethoxy)meth	3333	0.0000	2565	77	45-110
bis(2-Chloroethyl)ether	3333	0.0000	2362	71	40-105
bis(2-Chloroisopropyl)e	3333	0.0000	1502	45	20-115
Bis(2-ethylhexyl)phthal	3333	0.0000	2891	87	45-125
4-Bromophenyl-phenyleth	3333	0.0000	2890	87	45-115
Butylbenzylphthalate	3333	0.0000	3048	91	50-125
Caprolactam	3333	0.0000	3947	118*	50-110
Carbazole	3333	0.0000	2845	85	45-115
4-Chloroaniline	3333	0.0000	2591	78	10- 95
4-Chloro-3-methylphenol	3333	0.0000	2851	86	45-115
2-Chloronaphthalene	3333	0.0000	2690	81	45-105
2-Chlorophenol	3333	0.0000	2489	75	45-105
4-Chlorophenyl-phenylet	3333	0.0000	2843	85	45-110
Chrysene	3333	0.0000	3006	90	55-110
Dibenz(a,h)anthracene	3333	0.0000	3746	112	40-125
Dibenzofuran	3333	0.0000	2644	79	50-105

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.B11230

Matrix Spike - Client Sample No.: 9K30917-BLK1 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONCENTRATION (UG/KG)	LCS CONCENTRATION (UG/KG)	LCS % REC #	QC. LIMITS REC.
3,3'-Dichlorobenzidine	3333	0.0000	2835	85	19-130
2,4-Dichlorophenol	3333	0.0000	2883	86	45-110
Diethylphthalate	3333	0.0000	3106	93	50-115
2,4-Dimethylphenol	3333	0.0000	2666	80	30-105
Dimethylphthalate	3333	0.0000	3216	96	50-110
Di-n-butylphthalate	3333	0.0000	2774	83	55-110
4,6-Dinitro-2-methylphe	3333	0.0000	3491	105	30-135
2,4-Dinitrophenol	3333	0.0000	3706	111	15-130
2,4-Dinitrotoluene	3333	0.0000	2805	84	50-115
2,6-Dinitrotoluene	3333	0.0000	3389	102	50-110
Di-n-octylphthalate	3333	0.0000	2935	88	40-130
Fluoranthene	3333	0.0000	3076	92	55-115
Fluorene	3333	0.0000	2922	88	50-110
Hexachlorobenzene	3333	0.0000	3173	95	45-120
Hexachlorobutadiene	3333	0.0000	2813	84	30-110
Hexachlorocyclopentadie	3333	0.0000	2186	66	10-110
Hexachloroethane	3333	0.0000	2203	66	35-110
Indeno(1,2,3-cd)pyrene	3333	0.0000	3699	111	40-120
Isophorone	3333	0.0000	2446	73	45-110
2-Methylnaphthalene	3333	0.0000	2694	81	40-110
Naphthalene	3333	0.0000	2515	75	40-105
2-Methylphenol	3333	0.0000	2316	69	40-105
4-Methylphenol	3333	0.0000	2080	62	40-105
2-Nitroaniline	3333	0.0000	2130	64	45-120
3-Nitroaniline	3333	0.0000	3148	94	25-110
4-Nitroaniline	3333	0.0000	3248	97	35-115
Nitrobenzene	3333	0.0000	2373	71	40-115
2-Nitrophenol	3333	0.0000	3164	95	40-110

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.B11230

Matrix Spike - Client Sample No.: 9K30917-BLK1 Level: (low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONCENTRATION (UG/KG)	LCS CONCENTRATION (UG/KG)	LCS % REC #	QC. LIMITS REC.
4-Nitrophenol	3333	0.0000	1993	60	15-140
N-Nitrosodiphenylamine	3333	0.0000	2656	80	50-115
N-Nitroso-di-n-prop.(1)	3333	0.0000	1780	53	40-115
Pentachlorophenol	3333	0.0000	2845	85	25-120
Phenol	3333	0.0000	2154	65	40-100
Pyrene	3333	0.0000	3004	90	45-125
1,2,4,5-Tetrachlorobenz	3333	0.0000	2551	76	50-150
2,4,5-Trichlorophenol	3333	0.0000	3041	91	50-110
2,4,6-Trichlorophenol	3333	0.0000	2672	80	45-110

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 1 out of 65 outside limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.B11230

Matrix Spike - Client Sample No.: NBG-Topsoil Lab Sample ID: 0911230-02

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONCENTRATION (UG/KG)	MS CONCENTRATION (UG/KG)	MS % REC #	QC. LIMITS REC.
Acenaphthene	3945	0.0000	3049	77	45-110
Acenaphthylene	3945	0.0000	3588	91	45-105
Acetophenone	3945	0.0000	2589	66	35-110
Atrazine	3945	0.0000	3362	85	55-105
Anthracene	3945	0.0000	3633	92	55-105
Benzaldehyde	3945	0.0000	1225	31	10-160
Benzo(a)anthracene	3945	0.0000	3994	101	50-110
Benzo(b)fluoranthene	3945	0.0000	3807	96	45-115
Benzo(k)fluoranthene	3945	0.0000	3727	94	45-125
Benzo(g,h,i)perylene	3945	0.0000	5945	151*	40-125
Benzo(a)pyrene	3945	0.0000	3250	82	50-110
1,1'-Biphenyl	3945	0.0000	3422	87	45-110
bis(2-Chloroethoxy)meth	3945	0.0000	3204	81	45-110
bis(2-Chloroethyl)ether	3945	0.0000	3148	80	40-105
bis(2-Chloroisopropyl)e	3945	0.0000	1708	43	20-115
Bis(2-ethylhexyl)phthal	3945	0.0000	3339	85	45-125
4-Bromophenyl-phenyleth	3945	0.0000	2640	67	45-115
Butylbenzylphthalate	3945	0.0000	3445	87	50-125
Caprolactam	3945	0.0000	5754	146*	50-110
Carbazole	3945	0.0000	3408	86	45-115
4-Chloroaniline	3945	0.0000	2889	73	10- 95
4-Chloro-3-methylphenol	3945	0.0000	3060	78	45-115
2-Chloronaphthalene	3945	0.0000	3415	86	45-105
2-Chlorophenol	3945	0.0000	3073	78	45-105
4-Chlorophenyl-phenylet	3945	0.0000	3588	91	45-110
Chrysene	3945	0.0000	3680	93	55-110
Dibenz(a,h)anthracene	3945	0.0000	5328	135*	40-125
Dibenzofuran	3945	141.5	3572	87	50-105

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.B11230

Matrix Spike - Client Sample No.: NBG-Topsoil Lab Sample ID: 0911230-02

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONCENTRATION (UG/KG)	MS CONCENTRATION (UG/KG)	MS % REC #	QC. LIMITS REC.
3,3'-Dichlorobenzidine	3945	0.0000	3264	83	19-130
2,4-Dichlorophenol	3945	0.0000	3796	96	45-110
Diethylphthalate	3945	0.0000	3790	96	50-115
2,4-Dimethylphenol	3945	0.0000	3308	84	30-105
Dimethylphthalate	3945	0.0000	3466	88	50-110
Di-n-butylphthalate	3945	0.0000	3345	85	55-110
4,6-Dinitro-2-methylphe	3945	0.0000	3593	91	30-135
2,4-Dinitrophenol	3945	0.0000	3586	91	15-130
2,4-Dinitrotoluene	3945	0.0000	3460	88	50-115
2,6-Dinitrotoluene	3945	0.0000	2861	72	50-110
Di-n-octylphthalate	3945	0.0000	3080	78	40-130
Fluoranthene	3945	0.0000	3665	93	55-115
Fluorene	3945	0.0000	2940	74	50-110
Hexachlorobenzene	3945	0.0000	3398	86	45-120
Hexachlorobutadiene	3945	0.0000	3896	99	30-110
Hexachlorocyclopentadie	3945	0.0000	2174	55	10-110
Hexachloroethane	3945	0.0000	2530	64	35-110
Indeno(1,2,3-cd)pyrene	3945	0.0000	5370	136*	40-120
Isophorone	3945	0.0000	2790	71	45-110
2-Methylnaphthalene	3945	2933	5197	57	40-110
Naphthalene	3945	479.7	3540	78	40-105
2-Methylphenol	3945	0.0000	2730	69	40-105
4-Methylphenol	3945	0.0000	2528	64	40-105
2-Nitroaniline	3945	0.0000	2559	65	45-120
3-Nitroaniline	3945	0.0000	3066	78	25-110
4-Nitroaniline	3945	0.0000	3442	87	35-115
Nitrobenzene	3945	0.0000	2513	64	40-115
2-Nitrophenol	3945	0.0000	3758	95	40-110

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.B11230

Matrix Spike - Client Sample No.: NBG-Topsoil Lab Sample ID: 0911230-02

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONCENTRATION (UG/KG)	MS CONCENTRATION (UG/KG)	MS % REC #	QC. LIMITS REC.
4-Nitrophenol	3945	0.0000	1976	50	15-140
N-Nitrosodiphenylamine	3945	0.0000	4026	102	50-115
N-Nitroso-di-n-prop.(1)	3945	0.0000	2233	57	40-115
Pentachlorophenol	3945	0.0000	3740	95	25-120
Phenol	3945	0.0000	2522	64	40-100
Pyrene	3945	179.0	3779	91	45-125
1,2,4,5-Tetrachlorobenz	3945	0.0000	3384	86	50-150
2,4,5-Trichlorophenol	3945	0.0000	3478	88	50-110
2,4,6-Trichlorophenol	3945	0.0000	3264	83	45-110

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.B11230

Matrix Spike - Client Sample No.: NBG-Topsoil Lab Sample ID: 0911230-02

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	MSD CONCENTRATION (UG/KG)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Acenaphthene	3945	2964	75	3	30	45-110
Acenaphthylene	3945	3510	89	2	30	45-105
Acetophenone	3945	2575	65	0	30	35-110
Atrazine	3945	3154	80	6	30	55-105
Anthracene	3945	3445	87	5	30	55-105
Benzaldehyde	3945	1176	30	4	30	10-160
Benzo(a)anthracene	3945	3741	95	6	30	50-110
Benzo(b)fluoranthene	3945	3644	92	4	30	45-115
Benzo(k)fluoranthene	3945	3273	83	13	30	45-125
Benzo(g,h,i)perylene	3945	5133	130*	15	30	40-125
Benzo(a)pyrene	3945	3036	77	7	30	50-110
1,1'-Biphenyl	3945	3106	79	10	30	45-110
bis(2-Chloroethoxy)meth	3945	2808	71	13	30	45-110
bis(2-Chloroethyl)ether	3945	2790	71	12	30	40-105
bis(2-Chloroisopropyl)e	3945	1630	41	5	30	20-115
Bis(2-ethylhexyl)phthal	3945	3316	84	1	30	45-125
4-Bromophenyl-phenyleth	3945	2749	70	4	30	45-115
Butylbenzylphthalate	3945	3459	88	0	30	50-125
Caprolactam	3945	5307	134*	8	30	50-110
Carbazole	3945	3332	84	2	30	45-115
4-Chloroaniline	3945	2428	62	17	30	10- 95
4-Chloro-3-methylphenol	3945	2915	74	5	30	45-115
2-Chloronaphthalene	3945	3085	78	10	30	45-105
2-Chlorophenol	3945	2959	75	4	30	45-105
4-Chlorophenyl-phenylet	3945	3007	76	18	30	45-110
Chrysene	3945	3632	92	1	30	55-110
Dibenz(a,h)anthracene	3945	4882	124	9	30	40-125
Dibenzofuran	3945	3233	78	10	30	50-105

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.B11230

Matrix Spike - Client Sample No.: NBG-Topsoil Lab Sample ID: 0911230-02

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	MSD CONCENTRATION (UG/KG)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
3,3'-Dichlorobenzidine	3945	2887	73	12	30	19-130
2,4-Dichlorophenol	3945	3235	82	16	30	45-110
Diethylphthalate	3945	3333	84	13	30	50-115
2,4-Dimethylphenol	3945	3046	77	8	30	30-105
Dimethylphthalate	3945	3267	83	6	30	50-110
Di-n-butylphthalate	3945	3217	82	4	30	55-110
4,6-Dinitro-2-methylphe	3945	3439	87	4	30	30-135
2,4-Dinitrophenol	3945	3735	95	4	30	15-130
2,4-Dinitrotoluene	3945	3296	84	5	30	50-115
2,6-Dinitrotoluene	3945	2997	76	5	30	50-110
Di-n-octylphthalate	3945	3189	81	3	30	40-130
Fluoranthene	3945	3545	90	3	30	55-115
Fluorene	3945	3005	76	2	30	50-110
Hexachlorobenzene	3945	3374	86	1	30	45-120
Hexachlorobutadiene	3945	3642	92	7	30	30-110
Hexachlorocyclopentadie	3945	1798	46	19	30	10-110
Hexachloroethane	3945	2385	60	6	30	35-110
Indeno(1,2,3-cd)pyrene	3945	4815	122*	11	30	40-120
Isophorone	3945	2747	70	2	30	45-110
2-Methylnaphthalene	3945	5168	57	0	30	40-110
Naphthalene	3945	3487	76	2	30	40-105
2-Methylphenol	3945	2546	64	7	30	40-105
4-Methylphenol	3945	2512	64	1	30	40-105
2-Nitroaniline	3945	2240	57	13	30	45-120
3-Nitroaniline	3945	2909	74	5	30	25-110
4-Nitroaniline	3945	2811	71	20	30	35-115
Nitrobenzene	3945	2452	62	2	30	40-115
2-Nitrophenol	3945	3210	81	16	30	40-110

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.B11230

Matrix Spike - Client Sample No.: NBG-Topsoil Lab Sample ID: 0911230-02

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	MSD CONCENTRATION (UG/KG)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
4-Nitrophenol	3945	1902	48	4	30	15-140
N-Nitrosodiphenylamine	3945	3974	101	1	30	50-115
N-Nitroso-di-n-prop.(1)	3945	2214	56	1	30	40-115
Pentachlorophenol	3945	3480	88	7	30	25-120
Phenol	3945	2489	63	1	30	40-100
Pyrene	3945	3825	92	1	30	45-125
1,2,4,5-Tetrachlorobenz	3945	3301	84	2	30	50-150
2,4,5-Trichlorophenol	3945	3325	84	4	30	50-110
2,4,6-Trichlorophenol	3945	2960	75	10	30	45-110

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 65 outside limits
Spike Recovery: 7 out of 130 outside limits

COMMENTS: _____

FORM 4
SEMIVOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

9K30917-BLK1

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.B11230

Lab File ID: K30917B1 Lab Sample ID: 9K30917-BLK1

Instrument ID: BNA1 Date Extracted: 11/30/09

Matrix: (soil/water) SOIL Date Analyzed: 12/04/09

Level:(low/med) LOW GPC Cleanup: (Y/N) N Time Analyzed: 1225

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	9K30917-BLK1	9K30917-BS1	K30917L1	12/04/09
02	NBG-BACKFILL	0911230-01	1123001	12/04/09
03	NBG-TOPSOIL	0911230-02	1123002	12/04/09
04	NBG-TOPSOILM	0911230-02MS	1123002M	12/04/09
05	NBG-TOPSOILM	0911230-02MSD	1123002S	12/04/09
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS:

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

9K30917-BLK1

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.B11230

Matrix: (soil/water) SOIL Lab Sample ID: 9K30917-BLK1

Sample wt/vol: 15.0 (g/mL) G Lab File ID: K30917B1

% Moisture: 0 decanted: (Y/N) N Date Sampled: _____

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted:11/30/09

Concentrated Extract Volume: 1000.0(uL) Date Analyzed: 12/04/09 12:25

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG MDL	RL	CONC	Q
83-32-9	Acenaphthene	26	330		U
208-96-8	Acenaphthylene	20	330		U
98-86-2	Acetophenone	41	330		U
1912-24-9	Atrazine	28	330		U
120-12-7	Anthracene	27	330		U
100-52-7	Benzaldehyde	55	330		U
56-55-3	Benzo(a)anthracene	36	130		U
205-99-2	Benzo(b)fluoranthene	32	130		U
207-08-9	Benzo(k)fluoranthene	39	330		U
191-24-2	Benzo(g,h,i)perylene	70	330		U
50-32-8	Benzo(a)pyrene	23	130		U
92-52-4	1,1'-Biphenyl	29	330		U
111-91-1	bis(2-Chloroethoxy)methane	31	330		U
111-44-4	bis(2-Chloroethyl)ether	41	330		U
108-60-1	bis(2-Chloroisopropyl)ether	51	330		U
117-81-7	Bis(2-ethylhexyl)phthalate	36	330		U
101-55-3	4-Bromophenyl-phenylether	26	330		U
85-68-7	Butylbenzylphthalate	30	330		U
105-60-2	Caprolactam	67	330		U
86-74-8	Carbazole	36	330		U
106-47-8	4-Chloroaniline	48	330		U
59-50-7	4-Chloro-3-methylphenol	28	330		U
91-58-7	2-Chloronaphthalene	32	330		U
95-57-8	2-Chlorophenol	41	330		U
7005-72-3	4-Chlorophenyl-phenylether	31	330		U
218-01-9	Chrysene	31	330		U
53-70-3	Dibenz(a,h)anthracene	60	130		U
132-64-9	Dibenzofuran	24	330		U
91-94-1	3,3'-Dichlorobenzidine	31	330		U
120-83-2	2,4-Dichlorophenol	19	330		U
84-66-2	Diethylphthalate	34	330		U
105-67-9	2,4-Dimethylphenol	21	1300		U
131-11-3	Dimethylphthalate	30	330		U

FORM I SV

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

9K30917-BLK1

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.B11230

Matrix: (soil/water) SOIL Lab Sample ID: 9K30917-BLK1

Sample wt/vol: 15.0 (g/mL) G Lab File ID: K30917B1

% Moisture: 0 decanted: (Y/N) N Date Sampled: _____

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted:11/30/09

Concentrated Extract Volume: 1000.0(uL) Date Analyzed: 12/04/09 12:25

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	MDL	RL	CONC	Q
84-74-2	Di-n-butylphthalate	30	330		U
534-52-1	4,6-Dinitro-2-methylphenol	22	1300		U
51-28-5	2,4-Dinitrophenol	130	1300		U
121-14-2	2,4-Dinitrotoluene	24	330		U
606-20-2	2,6-Dinitrotoluene	38	330		U
117-84-0	Di-n-octylphthalate	27	330		U
206-44-0	Fluoranthene	54	330		U
86-73-7	Fluorene	26	330		U
118-74-1	Hexachlorobenzene	35	330		U
87-68-3	Hexachlorobutadiene	33	330		U
77-47-4	Hexachlorocyclopentadiene	61	330		U
67-72-1	Hexachloroethane	39	330		U
193-39-5	Indeno(1,2,3-cd)pyrene	46	130		U
78-59-1	Isophorone	28	330		U
91-57-6	2-Methylnaphthalene	35	330		U
91-20-3	Naphthalene	32	330		U
95-48-7	2-Methylphenol	39	330		U
106-44-5	4-Methylphenol	26	330		U
88-74-4	2-Nitroaniline	32	1300		U
99-09-2	3-Nitroaniline	47	1300		U
100-01-6	4-Nitroaniline	100	1300		U
98-95-3	Nitrobenzene	34	330		U
88-75-5	2-Nitrophenol	22	330		U
100-02-7	4-Nitrophenol	81	1300		U
86-30-6	N-Nitrosodiphenylamine (1)	32	330		U
621-64-7	N-Nitroso-di-n-propylamine	55	330		U
87-86-5	Pentachlorophenol	34	1300		U
108-95-2	Phenol	36	330		U
129-00-0	Pyrene	40	330		U
95-94-3	1,2,4,5-Tetrachlorobenzene	100	330		U
95-95-4	2,4,5-Trichlorophenol	27	330		U
88-06-2	2,4,6-Trichlorophenol	35	330		U

(1) - Cannot be separated from Diphenylamine

FORM I SV

FORM 5
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: EMPIRICAL LABS Contract:

Lab Code: EL Case No.: NA SAS No.: NA SDG No.: SDGA17287

Lab File ID: SEQ-TUN1 DFTPP Injection Date: 11/04/09

Instrument ID: BNA1 DFTPP Injection Time: 0825

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	42.8
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	67.0
70	Less than 2.0% of mass 69	0.2 (0.3)1
127	40.0 - 60.0% of mass 198	46.5
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.9
275	10.0 - 30.0% of mass 198	17.2
365	Greater than 1.0% of mass 198	1.76
441	Present, but less than mass 443	7.8
442	Greater than 40.0% of mass 198	51.8
443	17.0 - 23.0% of mass 442	10.3 (19.9)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	BNACALA1.0PP	SEQ-CAL2	SEQ-CAL2	11/04/09	0923
02	BNACALA2.0PP	SEQ-CAL3	SEQ-CAL3	11/04/09	0959
03	BNACALA5.0PP	SEQ-CAL4	SEQ-CAL4	11/04/09	1035
04	BNACALA10.0P	SEQ-CAL5	SEQ-CAL5	11/04/09	1112
05	BNACALA20.0P	SEQ-CAL6	SEQ-CAL6	11/04/09	1148
06	BNACALA40.0P	SEQ-CAL7	SEQ-CAL7	11/04/09	1224
07	BNACALA50.0P	SEQ-CAL8	SEQ-CAL8	11/04/09	1301
08	BNACALA60.0P	SEQ-CAL9	SEQ-CAL9	11/04/09	1338
09	BNACALA80.0P	SEQ-CALA	SEQ-CALA	11/04/09	1414
10	BNACALA100.0	SEQ-CALB	SEQ-CALB	11/04/09	1542
11	BNACALB1.0PP	SEQ-CALD	SEQ-CALD	11/04/09	1730
12	BNACALB2.0PP	SEQ-CALE	SEQ-CALE	11/04/09	1807
13	BNACALB5.0PP	SEQ-CALF	SEQ-CALF	11/04/09	1843
14	BNACALB10.0P	SEQ-CALG	SEQ-CALG	11/04/09	1919
15	BNACALB20.0P	SEQ-CALH	SEQ-CALH	11/04/09	1955
16					
17					
18					
19					
20					
21					
22					

FORM 5
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: EMPIRICAL LABS Contract:

Lab Code: EL Case No.: NA SAS No.: NA SDG No.: SDGA17287

Lab File ID: SEQ-TUN2 DFTPP Injection Date: 11/04/09

Instrument ID: BNA1 DFTPP Injection Time: 2103

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	44.6
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	68.0
70	Less than 2.0% of mass 69	0.2 (0.3)1
127	40.0 - 60.0% of mass 198	48.4
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	7.0
275	10.0 - 30.0% of mass 198	16.9
365	Greater than 1.0% of mass 198	1.87
441	Present, but less than mass 443	7.4
442	Greater than 40.0% of mass 198	48.4
443	17.0 - 23.0% of mass 442	9.6 (19.8)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	BNACALB50.0P	SEQ-CALJ	SEQ-CALJ	11/04/09	2126
02	BNACALB60.0P	SEQ-CALK	SEQ-CALK	11/04/09	2202
03	BNACALB80.0P	SEQ-CALL	SEQ-CALL	11/04/09	2238
04	BNACALB100.0	SEQ-CALM	SEQ-CALM	11/04/09	2313
05	ICV1-50PPM	SEQ-ICV1	SEQ-ICV1	11/04/09	2349
06	ICV1A-50PPM	SEQ-ICV3	SEQ-ICV3	11/05/09	0101
07	ICV2A-50PPM	SEQ-ICV4	SEQ-ICV4	11/05/09	0137
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 5
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: EMPIRICAL LABS Contract:

Lab Code: EL Case No.: NA SAS No.: NA SDG No.: SDGA20495

Lab File ID: SEQ-TUN3 DFTPP Injection Date: 11/09/09

Instrument ID: BNA1 DFTPP Injection Time: 1353

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	40.5
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	65.2
70	Less than 2.0% of mass 69	0.2 (0.3)1
127	40.0 - 60.0% of mass 198	45.8
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	7.0
275	10.0 - 30.0% of mass 198	17.1
365	Greater than 1.0% of mass 198	1.82
441	Present, but less than mass 443	7.7
442	Greater than 40.0% of mass 198	49.0
443	17.0 - 23.0% of mass 442	9.9 (20.1)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	ICV5-50PPM	SEQ-ICV5	SEQ-ICV5	11/09/09	1415
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 5
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.B11230

Lab File ID: SEQ-TUN1 DFTPP Injection Date: 12/04/09

Instrument ID: BNA1 DFTPP Injection Time: 1012

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	30.3
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	52.8
70	Less than 2.0% of mass 69	0.1 (0.2)1
127	40.0 - 60.0% of mass 198	44.0
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.8
275	10.0 - 30.0% of mass 198	17.9
365	Greater than 1.0% of mass 198	1.84
441	Present, but less than mass 443	8.0
442	Greater than 40.0% of mass 198	52.6
443	17.0 - 23.0% of mass 442	10.1 (19.1)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	DRO50PPM	SEQ-CCV2	SEQ-CCV2	12/04/09	1114
02	9K30917-BLK1	9K30917-BLK1	K30917B1	12/04/09	1225
03	9K30917-BLK1	9K30917-BS1	K30917L1	12/04/09	1301
04	NBG-BACKFILL	0911230-01	1123001	12/04/09	1710
05	NBG-TOPSOIL	0911230-02	1123002	12/04/09	1746
06	NBG-TOPSOILM	0911230-02MS	1123002M	12/04/09	2155
07	NBG-TOPSOILM	0911230-02MSD	1123002S	12/04/09	2230
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.B11230

Lab File ID (Standard): SEQ-CCV3 Date Analyzed: 12/04/09

Instrument ID: BNA1 Time Analyzed: 1034

		IS1 (DCB) AREA #	RT #	IS2 (NPT) AREA #	RT #	IS3 (ANT) AREA #	RT #
	12 HOUR STD	1207059	5.39	3979822	6.72	2144585	9.81
	UPPER LIMIT	2414118	5.89	7959644	7.22	4289170	10.31
	LOWER LIMIT	603530	4.89	1989911	6.22	1072293	9.31
	CLIENT SAMPLE NO.						
01	9K30917-BLK1	1227707	5.39	3977013	6.71	2169962	9.80
02	9K30917-BLK1	1224442	5.39	3483754	6.71	2045059	9.81
03	NBG-BACKFILL	1132711	5.39	2761753	6.72	1482892	9.83
04	NBG-TOPSOIL	1016312	5.39	2576735	6.72	1554185	9.82
05	NBG-TOPSOILM	984986	5.39	2628695	6.72	1389053	9.83
06	NBG-TOPSOILM	924909	5.39	2647145	6.72	1471874	9.83
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.B11230

Lab File ID (Standard): SEQ-CCV3 Date Analyzed: 12/04/09

Instrument ID: BNA1 Time Analyzed: 1034

		IS4 (PHN) AREA	#	RT	#	IS5 (CRY) AREA	#	RT	#	IS6 (PRY) AREA	#	RT	#
	12 HOUR STD	3396112		13.56		2092833		21.19		1491215		25.25	
	UPPER LIMIT	6792224		14.06		4185666		21.69		2982430		25.75	
	LOWER LIMIT	1698056		13.06		1046417		20.69		745608		24.75	
	CLIENT SAMPLE NO.												
01	9K30917-BLK1	3314884		13.55		2042081		21.17		1656101		25.25	
02	9K30917-BLK1	3277615		13.56		1927013		21.19		1278321		25.25	
03	NBG-BACKFILL	2388956		13.58		1719271		21.18		1324749		25.25	
04	NBG-TOPSOIL	2553794		13.58		1697700		21.18		1297191		25.25	
05	NBG-TOPSOILM	2336993		13.58		1511560		21.19		1203353		25.25	
06	NBG-TOPSOILM	2301374		13.59		1338309		21.19		985085		25.25	
07													
08													
09													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

FORM 6
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: EL Case No.: NA SAS No.: NA SDG No.: SDGA86373 SI

Instrument ID: BNA1 Calibration Date(s): 11/04/09 11/04/09

Column: FUSED SILICA ID: 0.25 (mm) Calibration Time(s): 0923 2313

LAB FILE ID: RF1: SEQ-CAL2 RF2: SEQ-CAL3 RF5: SEQ-CAL4
RF10: SEQ-CAL5 RF20: SEQ-CAL6

COMPOUND	RF1	RF2	RF5	RF10	RF20
Acenaphthene	1.011	1.105	1.113	1.110	1.159
Acenaphthylene	1.355	1.460	1.608	1.541	1.649
Acetophenone	1.761	1.874	1.894	1.791	1.786
Aniline	2.100	2.284	2.257	2.310	2.168
Anthracene	0.894	0.980	1.017	1.054	1.030
Benzoic acid			0.081	0.146	0.237
Benzo(a)anthracene	0.949	0.917	0.983	1.010	1.053
Benzo(b)fluoranthene	0.857	0.898	1.052	1.132	1.121
Benzo(k)fluoranthene	0.806	0.964	1.046	1.143	1.170
Benzo(g,h,i)perylene	0.523	0.434	0.465	0.516	0.578
Benzo(a)pyrene	0.677	0.731	0.813	0.913	0.949
Benzyl alcohol	0.831	0.836	0.941	0.988	0.997
bis(2-Chloroethoxy)methane	0.551	0.581	0.568	0.558	0.562
1,1'-Biphenyl	1.378	1.480	1.572	1.540	1.589
bis(2-Chloroethyl)ether	1.503	1.665	1.666	1.618	1.566
bis(2-Chloroisopropyl)ether	3.044	3.324	3.104	3.059	2.725
Bis(2-ethylhexyl)phthalate		0.942	1.100	1.244	1.330
4-Bromophenyl-phenylether	0.185	0.194	0.208	0.209	0.212
Butylbenzylphthalate		0.715	0.820	0.930	0.963
Carbazole	0.734	0.820	0.885	0.856	0.890
4-Chloroaniline	0.425	0.449	0.506	0.514	0.576
Caprolactam		0.082	0.130	0.116	0.113
4-Chloro-3-methylphenol	0.256	0.316	0.339	0.355	0.381
2-Chloronaphthalene	1.062	1.133	1.119	1.099	1.130
2-Chlorophenol	1.315	1.435	1.429	1.445	1.369
4-Chlorophenyl-phenylether	0.511	0.541	0.537	0.511	0.550
Chrysene	0.870	0.918	0.933	0.950	0.990
Dibenz(a,h)anthracene	0.408	0.416	0.392	0.430	0.525
Dibenzofuran	1.507	1.586	1.661	1.612	1.668
1,3-Dichlorobenzene	1.405	1.527	1.480	1.495	1.465
1,4-Dichlorobenzene	1.270	1.352	1.346	1.382	1.358
1,2-Dichlorobenzene	1.230	1.367	1.340	1.338	1.317
2,4-Dichlorophenol	0.239	0.282	0.306	0.327	0.347
2,6-Dichlorophenol	0.218	0.273	0.299	0.301	0.316
Diethylphthalate	1.250	1.319	1.423	1.419	1.445
2,4-Dimethylphenol	0.411	0.417	0.437	0.442	0.414
Dimethylphthalate	1.216	1.299	1.376	1.368	1.412

FORM 6
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: EL Case No.: NA SAS No.: NA SDG No.: SDGA86373

Instrument ID: BNA1 Calibration Date(s): 11/04/09 11/04/09

Column: FUSED SILICA ID: 0.25 (mm) Calibration Time(s): 0923 2313

LAB FILE ID: RF1: SEQ-CAL2 RF2: SEQ-CAL3 RF5: SEQ-CAL4
RF10: SEQ-CAL5 RF20: SEQ-CAL6

COMPOUND	RF1	RF2	RF5	RF10	RF20
Di-n-butylphthalate	1.236	1.400	1.562	1.639	1.639
4,6-Dinitro-2-methylphenol			0.023	0.048	0.088
2,4-Dinitrophenol			0.009	0.029	0.067
2,4-Dinitrotoluene	0.149	0.187	0.294	0.345	0.412
2,6-Dinitrotoluene	0.149	0.204	0.268	0.287	0.326
1,2-Diphenylhydrazine	1.154	1.233	1.222	1.249	1.234
Di-n-octylphthalate			2.086	2.585	2.634
Fluoranthene	0.800	0.830	0.866	0.928	0.971
Fluorene	1.055	1.163	1.158	1.195	1.226
Hexachlorobenzene	0.234	0.224	0.237	0.240	0.237
Hexachlorobutadiene	0.153	0.176	0.182	0.189	0.182
Hexachlorocyclopentadiene	0.116	0.120	0.141	0.163	0.188
Hexachloroethane	0.680	0.703	0.735	0.744	0.708
Indeno(1,2,3-cd)pyrene	0.376	0.342	0.415	0.442	0.544
Isophorone	0.694	0.812	0.912	0.928	0.912
2-Methylnaphthalene	0.557	0.591	0.621	0.646	0.654
1-Methylnaphthalene	0.484	0.544	0.522	0.533	0.555
4-Methylphenol	1.061	1.320	1.298	1.362	1.342
3-Methylphenol	1.095	1.320	1.298	1.362	1.342
Naphthalene	0.954	1.059	1.084	1.085	1.081
2-Methylphenol	1.162	1.297	1.297	1.354	1.352
2-Nitroaniline	0.316	0.378	0.465	0.495	0.492
3-Nitroaniline	0.202	0.228	0.271	0.306	0.366
4-Nitroaniline	0.166	0.145	0.142	0.192	0.267
Nitrobenzene	0.411	0.476	0.485	0.453	0.471
2-Nitrophenol		0.173	0.188	0.206	0.232
4-Nitrophenol			0.153	0.215	0.280
N-Nitroso-di-methylamine	1.074	1.269	1.111	1.190	1.135
N-Nitrosodiphenylamine	0.418	0.469	0.528	0.537	0.521
N-Nitroso-di-n-propylamine	1.092	1.226	1.145	1.080	1.013
Pentachlorophenol				0.083	0.118
Phenanthrene	0.899	0.967	0.960	1.006	1.010
Phenol	1.813	1.929	1.828	1.963	1.858
Pyrene	1.299	1.510	1.482	1.561	1.561
Pyridine	1.804	1.956	1.917	1.945	1.897
1,2,4,5-Tetrachlorobenzene	0.286	0.291	0.320	0.332	0.336
1,2,4-Trichlorobenzene	0.312	0.329	0.333	0.338	0.348

FORM VI SV

FORM 6
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: EL Case No.: NA SAS No.: NA SDG No.: SDGA86373

Instrument ID: BNA1 Calibration Date(s): 11/04/09 11/04/09

Column: FUSED SILICA ID: 0.25 (mm) Calibration Time(s): 0923 2313

LAB FILE ID: RF1: SEQ-CAL2 RF2: SEQ-CAL3 RF5: SEQ-CAL4
RF10: SEQ-CAL5 RF20: SEQ-CAL6

COMPOUND	RF1	RF2	RF5	RF10	RF20
2,4,5-Trichlorophenol	0.262	0.335	0.384	0.393	0.430
2,4,6-Trichlorophenol	0.204	0.300	0.357	0.378	0.401
1,4-Dioxane	0.768	0.764	0.797	0.819	0.839
2-Fluorophenol	1.502	1.752	1.711	1.760	1.645
Phenol-d6	1.823	2.048	1.976	2.048	1.939
Nitrobenzene-d5	0.476	0.534	0.538	0.463	0.504
2-Fluorobiphenyl	1.204	1.290	1.386	1.360	1.351
2,4,6-Tribromophenol	0.064	0.069	0.098	0.115	0.123
Terphenyl-d14	0.716	0.809	0.835	0.884	0.932

FORM 6
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: EL Case No.: NA SAS No.: NA SDG No.: SDGA86373

Instrument ID: BNA1 Calibration Date(s): 11/04/09 11/04/09

Column: FUSED SILICA ID: 0.25 (mm) Calibration Time(s): 0923 2313

LAB FILE ID: RF40: SEQ-CAL7 RF50: SEQ-CAL8 RF60: SEQ-CAL9
RF80: SEQ-CALA RF100: SEQ-CALB

COMPOUND	RF40	RF50	RF60	RF80	RF100
Acenaphthene	1.024	1.053	1.093	1.036	0.925
Acenaphthylene	1.388	1.425	1.472	1.407	1.300
Acetophenone	1.498	1.456	1.469	1.312	
Aniline	1.900	1.923	1.856	1.683	1.701
Anthracene	0.990	0.992	1.013	0.941	0.908
Benzoic acid	0.251	0.272	0.318	0.315	0.322
Benzo(a)anthracene	1.016	1.068	1.058	1.081	1.102
Benzo(b)fluoranthene	1.147	1.190	1.213	1.313	1.238
Benzo(k)fluoranthene	1.174	1.216	1.199	1.349	1.288
Benzo(g,h,i)perylene	0.507	0.587	0.549	0.590	0.625
Benzo(a)pyrene	0.942	1.003	1.074	1.075	1.075
Benzyl alcohol	0.919	0.959	0.964	0.923	0.890
bis(2-Chloroethoxy)methane	0.469	0.465	0.486	0.432	0.400
1,1'-Biphenyl	1.446	1.443	1.455	1.340	1.214
bis(2-Chloroethyl)ether	1.356	1.338	1.334	1.160	1.079
bis(2-Chloroisopropyl)ether	2.195	2.049	1.972	1.701	
Bis(2-ethylhexyl)phthalate	1.336	1.400	1.236	1.422	1.465
4-Bromophenyl-phenylether	0.204	0.215	0.219	0.222	0.216
Butylbenzylphthalate	0.955	1.017	0.913	1.089	1.180
Carbazole	0.862	0.849	0.929	0.875	0.826
4-Chloroaniline	0.463	0.462	0.502	0.442	0.414
Caprolactam	0.107	0.111	0.115	0.110	0.112
4-Chloro-3-methylphenol	0.317	0.332	0.354	0.318	0.303
2-Chloronaphthalene	1.028	1.080	1.110	1.055	1.011
2-Chlorophenol	1.292	1.196	1.248	1.097	1.020
4-Chlorophenyl-phenylether	0.523	0.556	0.572	0.573	0.545
Chrysene	0.932	1.016	0.992	1.002	1.051
Dibenz(a,h)anthracene	0.471	0.563	0.564	0.560	0.610
Dibenzofuran	1.523	1.524	1.578	1.460	1.441
1,3-Dichlorobenzene	1.362	1.343	1.334	1.190	1.063
1,4-Dichlorobenzene	1.230	1.214	1.245	1.082	1.011
1,2-Dichlorobenzene	1.170	1.186	1.164	1.034	0.928
2,4-Dichlorophenol	0.318	0.303	0.338	0.310	0.296
2,6-Dichlorophenol	0.290	0.299	0.334	0.298	0.284
Diethylphthalate	1.315	1.361	1.375	1.337	1.250
2,4-Dimethylphenol	0.355	0.347	0.376	0.330	0.312
Dimethylphthalate	1.296	1.340	1.314	1.311	1.245

FORM VI SV

FORM 6
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: EL Case No.: NA SAS No.: NA SDG No.: SDGA86373

Instrument ID: BNA1 Calibration Date(s): 11/04/09 11/04/09

Column: FUSED SILICA ID: 0.25 (mm) Calibration Time(s): 0923 2313

LAB FILE ID: RF40: SEQ-CAL7 RF50: SEQ-CAL8 RF60: SEQ-CAL9
RF80: SEQ-CALA RF100: SEQ-CALB

COMPOUND	RF40	RF50	RF60	RF80	RF100
Di-n-butylphthalate	1.523	1.479	1.491	1.411	1.234
4,6-Dinitro-2-methylphenol	0.120	0.133	0.150	0.155	0.163
2,4-Dinitrophenol	0.106	0.137	0.168	0.178	0.194
2,4-Dinitrotoluene	0.402	0.419	0.446	0.433	0.441
2,6-Dinitrotoluene	0.303	0.330	0.349	0.353	0.353
1,2-Diphenylhydrazine	1.059	0.988	0.988	0.896	0.807
Di-n-octylphthalate	3.044	3.229	2.623		
Fluoranthene	0.915	0.915	0.976	0.926	0.848
Fluorene	1.144	1.207	1.244	1.186	1.138
Hexachlorobenzene	0.226	0.236	0.239	0.242	0.252
Hexachlorobutadiene	0.170	0.180	0.184	0.168	0.162
Hexachlorocyclopentadiene	0.183	0.210	0.234	0.219	0.207
Hexachloroethane	0.646	0.640	0.648	0.574	0.559
Indeno(1,2,3-cd)pyrene	0.461	0.534	0.530	0.562	0.591
Isophorone	0.756	0.728	0.836	0.768	0.733
2-Methylnaphthalene	0.571	0.585	0.625	0.539	0.480
1-Methylnaphthalene	0.491	0.498	0.527	0.461	0.439
4-Methylphenol	1.187	1.249	1.279	1.118	1.037
3-Methylphenol	1.187	1.249	1.279	1.118	1.037
Naphthalene	0.909	0.867	0.913	0.746	
2-Methylphenol	1.169	1.204	1.258	1.188	1.149
2-Nitroaniline	0.465	0.453	0.486	0.461	0.452
3-Nitroaniline	0.352	0.393	0.428	0.399	0.411
4-Nitroaniline	0.278	0.299	0.360	0.342	0.336
Nitrobenzene	0.401	0.375	0.406	0.354	0.343
2-Nitrophenol	0.232	0.231	0.261	0.244	0.239
4-Nitrophenol	0.265	0.295	0.314	0.301	0.275
N-Nitroso-di-methylamine	0.934	0.950	0.890		
N-Nitrosodiphenylamine	0.500	0.497	0.530	0.492	0.502
N-Nitroso-di-n-propylamine	0.842	0.814	0.845	0.774	0.723
Pentachlorophenol	0.137	0.145	0.157	0.162	0.165
Phenanthrene	0.988	0.991	1.004	0.942	0.887
Phenol	1.616	1.587	1.561	1.374	1.256
Pyrene	1.507	1.545	1.330	1.695	1.699
Pyridine	1.708	1.694	1.701	1.571	1.557
1,2,4,5-Tetrachlorobenzene	0.308	0.316	0.339	0.299	0.271
1,2,4-Trichlorobenzene	0.313	0.318	0.338	0.309	0.289

FORM VI SV

FORM 6
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: EL Case No.: NA SAS No.: NA SDG No.: SDGA86373

Instrument ID: BNA1 Calibration Date(s): 11/04/09 11/04/09

Column: FUSED SILICA ID: 0.25 (mm) Calibration Time(s): 0923 2313

LAB FILE ID: RF40: SEQ-CAL7 RF50: SEQ-CAL8 RF60: SEQ-CAL9
RF80: SEQ-CALA RF100: SEQ-CALB

COMPOUND	RF40	RF50	RF60	RF80	RF100
2,4,5-Trichlorophenol	0.396	0.437	0.440	0.452	0.434
2,4,6-Trichlorophenol	0.389	0.416	0.430	0.420	0.404
1,4-Dioxane	0.749	0.763	0.744	0.687	0.671
2-Fluorophenol	1.430	1.342	1.285		
Phenol-d6	1.692	1.645	1.573	1.337	
Nitrobenzene-d5	0.438	0.409	0.438	0.388	0.364
2-Fluorobiphenyl	1.221	1.234	1.263	1.210	1.112
2,4,6-Tribromophenol	0.133	0.132	0.143	0.140	0.139
Terphenyl-d14	0.967	1.003	0.884	1.139	

FORM VI SV

FORM 6
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: EL Case No.: NA SAS No.: NA SDG No.: SDGA86373

Instrument ID: BNA1 Calibration Date(s): 11/04/09 11/04/09

Column: FUSED SILICA ID: 0.25 (mm) Calibration Time(s): 0923 2313

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2
Acenaphthene	AVRG		1.06284152		6.3
Acenaphthylene	AVRG		1.46066854		7.6
Acetophenone	AVRG		1.64909400		13.0
Aniline	AVRG		2.01828543		11.7
Anthracene	AVRG		0.98192517		5.3
Benzoic acid	2ORDR	0.12321304	3.34219057	-0.5325076	0.996
Benzo(a)anthracene	AVRG		1.02364724		5.8
Benzo(b)fluoranthene	AVRG		1.11611668		13.0
Benzo(k)fluoranthene	AVRG		1.13565422		14.0
Benzo(g,h,i)perylene	AVRG		0.53752343		11.2
Benzo(a)pyrene	LINR	0.00000000	1.05770635		0.996
Benzyl alcohol	AVRG		0.92473242		6.2
bis(2-Chloroethoxy)methane	AVRG		0.50716725		12.8
1,1'-Biphenyl	AVRG		1.44566742		7.9
bis(2-Chloroethyl)ether	AVRG		1.42849220		14.6
bis(2-Chloroisopropyl)ether	2ORDR	0.00000000	0.22792103	0.10183793	0.998
Bis(2-ethylhexyl)phthalate	AVRG		1.27512350		13.1
4-Bromophenyl-phenylether	AVRG		0.20853771		5.5
Butylbenzylphthalate	AVRG		0.95351456		14.4
Carbazole	AVRG		0.85263644		6.2
4-Chloroaniline	AVRG		0.47534389		10.3
Caprolactam	AVRG		0.11067848		11.3
4-Chloro-3-methylphenol	AVRG		0.32715264		10.5
2-Chloronaphthalene	AVRG		1.08273095		4.0
2-Chlorophenol	AVRG		1.28452001		11.4
4-Chlorophenyl-phenylether	AVRG		0.54199820		4.1
Chrysene	AVRG		0.96539168		5.6
Dibenz(a,h)anthracene	2ORDR	1.899e-002	2.00693431	-0.2463653	0.998
Dibenzofuran	AVRG		1.55600942		5.0
1,3-Dichlorobenzene	AVRG		1.36631772		10.6
1,4-Dichlorobenzene	AVRG		1.24910110		9.8
1,2-Dichlorobenzene	AVRG		1.20761982		11.9
2,4-Dichlorophenol	AVRG		0.30656766		10.0
2,6-Dichlorophenol	AVRG		0.29130539		10.5
Diethylphthalate	AVRG		1.34935597		5.1
2,4-Dimethylphenol	AVRG		0.38441605		12.0
Dimethylphthalate	AVRG		1.31765363		4.5

FORM VI SV

FORM 6
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: EL Case No.: NA SAS No.: NA SDG No.: SDGA86373

Instrument ID: BNA1 Calibration Date(s): 11/04/09 11/04/09

Column: FUSED SILICA ID: 0.25 (mm) Calibration Time(s): 0923 2313

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2
Di-n-butylphthalate	AVRG		1.46154006		9.9
4,6-Dinitro-2-methylphenol	2ORDR	0.16252585	6.90456966	-2.9810031	0.997
2,4-Dinitrophenol	2ORDR	0.22338235	6.44651440	-3.7969989	0.990
2,4-Dinitrotoluene	LINR	0.00000000	0.43440198		0.998
2,6-Dinitrotoluene	LINR	0.00000000	0.34658681		0.996
1,2-Diphenylhydrazine	AVRG		1.08311538		14.6
Di-n-octylphthalate	AVRG		2.70041527		14.8
Fluoranthene	AVRG		0.89752410		6.6
Fluorene	AVRG		1.17184057		4.6
Hexachlorobenzene	AVRG		0.23676557		3.3
Hexachlorobutadiene	AVRG		0.17459508		6.4
Hexachlorocyclopentadiene	2ORDR	0.00000000	4.86095632	-0.4072599	0.992
Hexachloroethane	AVRG		0.66364076		9.5
Indeno(1,2,3-cd)pyrene	2ORDR	1.16e-002	2.09215650	-0.2790025	0.998
Isophorone	AVRG		0.80804350		10.6
2-Methylnaphthalene	AVRG		0.58683980		9.0
1-Methylnaphthalene	AVRG		0.50541876		7.4
4-Methylphenol	AVRG		1.22535151		9.6
3-Methylphenol	AVRG		1.22880659		9.2
Naphthalene	AVRG		0.96646467		12.4
2-Methylphenol	AVRG		1.24321184		6.3
2-Nitroaniline	AVRG		0.44636107		12.6
3-Nitroaniline	2ORDR	0.00000000	2.70296877	-0.2860563	0.997
4-Nitroaniline	2ORDR	0.00000000	3.46706704	-0.6969726	0.993
Nitrobenzene	AVRG		0.41752872		12.4
2-Nitrophenol	AVRG		0.22302425		12.7
4-Nitrophenol	2ORDR	0.10509973	2.70371589	0.96455740	0.993
N-Nitroso-di-methylamine	AVRG		1.06926336		12.5
N-Nitrosodiphenylamine	AVRG		0.49942652		7.1
N-Nitroso-di-n-propylamine	2ORDR	-1.04e-002	0.94403214	0.23852993	0.998
Pentachlorophenol	LINR	0.17596574	0.17673923		0.998
Phenanthrene	AVRG		0.96542045		4.5
Phenol	AVRG		1.67859697		14.2
Pyrene	AVRG		1.51900735		8.6
Pyridine	AVRG		1.77503937		8.5
1,2,4,5-Tetrachlorobenzene	AVRG		0.30989782		7.4
1,2,4-Trichlorobenzene	AVRG		0.32279108		5.5

FORM VI SV

FORM 6
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: EL Case No.: NA SAS No.: NA SDG No.: SDGA86373

Instrument ID: BNA1 Calibration Date(s): 11/04/09 11/04/09

Column: FUSED SILICA ID: 0.25 (mm) Calibration Time(s): 0923 2313

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2
2,4,5-Trichlorophenol	AVRG		0.39635192		14.8
2,4,6-Trichlorophenol	LINR	1.543e-002	0.41585612		0.998
1,4-Dioxane	AVRG		0.76017709		6.9
2-Fluorophenol	AVRG		1.55324382		12.2
Phenol-d6	AVRG		1.78691664		13.6
Nitrobenzene-d5	AVRG		0.45516119		13.0
2-Fluorobiphenyl	AVRG		1.26310883		6.7
2,4,6-Tribromophenol	LINR	0.00000000	0.13850672		0.998
Terphenyl-d14	AVRG		0.90768440		13.4

FORM VI SV

FORM 6
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: EL Case No.: NA SAS No.: NA SDG No.: SDGA863735

Instrument ID: BNA1 Calibration Date(s): 11/04/09 11/04/09

Column: FUSED SILICA ID: 0.25 (mm) Calibration Time(s): 0923 2313

LAB FILE ID: RF1: SEQ-CALD RF2: SEQ-CALE RF5: SEQ-CALF
RF10: SEQ-CALG RF20: SEQ-CALH

COMPOUND	RF1	RF2	RF5	RF10	RF20
Atrazine	0.169	0.179	0.203	0.204	0.210
Benzidine		0.502	0.513	0.596	0.671
Benzaldehyde	1.391	1.374	1.442	1.346	1.378
3,3'-Dichlorobenzidine	0.264	0.273	0.278	0.284	0.319
2,3,4,6-Tetrachlorophenol			0.102	0.155	0.210
2-Chloroacetophenone	0.572	0.628	0.678	0.688	0.694
2-Chlorobenzalmalononitrile	0.279	0.299	0.307	0.326	0.327

FORM VI SV

FORM 6
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: EL Case No.: NA SAS No.: NA SDG No.: SDGA86373

Instrument ID: BNA1 Calibration Date(s): 11/04/09 11/04/09

Column: FUSED SILICA ID: 0.25 (mm) Calibration Time(s): 0923 2313

LAB FILE ID: RF40: RF50: SEQ-CALJ RF60: SEQ-CALK
RF80: SEQ-CALL RF100: SEQ-CALM

COMPOUND	RF40	RF50	RF60	RF80	RF100
Atrazine		0.211	0.220	0.221	0.212
Benzidine		0.750	0.719	0.742	0.724
Benzaldehyde		1.176	1.196	1.147	1.075
3,3'-Dichlorobenzidine		0.328	0.344	0.387	0.354
2,3,4,6-Tetrachlorophenol		0.227	0.255	0.266	0.269
2-Chloroacetophenone		0.610	0.637	0.637	0.571
2-Chlorobenzalmalononitrile		0.297	0.288	0.301	0.276

FORM VI SV

FORM 6
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: EL Case No.: NA SAS No.: NA SDG No.: SDGA86373

Instrument ID: BNA1 Calibration Date(s): 11/04/09 11/04/09

Column: FUSED SILICA ID: 0.25 (mm) Calibration Time(s): 0923 2313

COMPOUND	CURVE	COEFFICENTS A0	COEFFICENTS A1	%RSD OR R^2
Atrazine	AVRG		0.20324921	8.8
Benzidine	LINR	0.00000000	0.72953254	0.998
Benzaldehyde	AVRG		1.28057399	10.3
3,3'-Dichlorobenzidine	AVRG		0.31460741	13.4
2,3,4,6-Tetrachlorophenol	LINR	0.12687530	0.28002550	0.997
2-Chloroacetophenone	AVRG		0.63498709	7.2
2-Chlorobenzalmalononitrile	AVRG		0.29992935	6.1

FORM VI SV

SEMIVOLATILE INITIAL CALIBRATION VERIFICATION

Lab Name: EMPIRICAL LABS Contract:

Lab Code: EL Case No.: NA SAS No.: NA SDG No.: SDGA86373

Instrument ID: BNA1 Calibration Date: 11/04/09 Time: 2349

Lab File ID: SEQ-ICV1 ✓ Init. Calib. Date(s): 11/04/09 11/04/09

Init. Calib. Times: 0847 2313

COMPOUND	$\overline{RRF}$	RRF50	CURVE AMOUNT	CCAL AMOUNT	MIN RRF	CURVE	%D	MAX %D
Aniline	2.018	2.100	50.00	52.02		AVRG	4.0	25.0

ICV SV

SEMIVOLATILE INITIAL CALIBRATION VERIFICATION

Lab Name: EMPIRICAL LABS Contract:

Lab Code: EL Case No.: NA SAS No.: NA SDG No.: SDGA86373

Instrument ID: BNA1 Calibration Date: 11/05/09 Time: 0101

Lab File ID: SEQ-ICV3 ✓ Init. Calib. Date(s): 11/04/09 11/04/09

Init. Calib. Times: 0847 2313

COMPOUND	$\overline{RRF}$	RRF50	CURVE AMOUNT	CCAL AMOUNT	MIN RRF	CURVE	%D	MAX %D
Acenaphthene	1.063	1.128	50.00	53.08		AVRG	6.2	25.0
Acenaphthylene	1.460	1.442	50.00	49.36		AVRG	-1.3	25.0
Acetophenone	1.649	1.460	50.00	44.28		AVRG	-11.4	25.0
Anthracene	0.982	0.991	50.00	50.48		AVRG	1.0	25.0
Benzoic acid	0.243	0.292	50.00	50.94		2ORDR	1.9	25.0
Benzo(a)anthracene	1.024	1.069	50.00	52.24		AVRG	4.5	25.0
Benzo(b)fluoranthene	1.116	1.143	50.00	51.20		AVRG	2.4	25.0
Benzo(k)fluoranthene	1.136	1.120	50.00	49.29		AVRG	-1.4	25.0
Benzo(g,h,i)perylene	0.537	0.658	50.00	61.20		AVRG	22.4	25.0
Benzo(a)pyrene	0.925	1.002	50.00	47.36		LINR	-5.3	25.0
Benzyl alcohol	0.925	0.960	50.00	51.92		AVRG	3.8	25.0
1,1'-Biphenyl	1.446	1.362	50.00	47.11		AVRG	-5.8	25.0
bis(2-Chloroethoxy)methane	0.507	0.482	50.00	47.57		AVRG	-4.8	25.0
bis(2-Chloroethyl)ether	1.428	1.543	50.00	54.01		AVRG	8.0	25.0
bis(2-Chloroisopropyl)ether	2.575	2.160	50.00	54.30		2ORDR	8.6	25.0
Bis(2-ethylhexyl)phthalate	1.275	1.475	50.00	57.82		AVRG	15.6	25.0
4-Bromophenyl-phenylether	0.208	0.242	50.00	58.08		AVRG	16.2	25.0
Butylbenzylphthalate	0.954	1.134	50.00	59.47		AVRG	18.9	25.0
Carbazole	0.853	0.885	50.00	51.91		AVRG	3.8	25.0
4-Chloroaniline	0.475	0.430	50.00	45.24		AVRG	-9.5	25.0
Caprolactam	0.111	0.110	50.00	49.49		AVRG	-1.0	25.0
4-Chloro-3-methylphenol	0.327	0.336	50.00	51.29		AVRG	2.6	25.0
2-Chloronaphthalene	1.083	1.053	50.00	48.64		AVRG	-2.7	25.0
2-Chlorophenol	1.285	1.237	50.00	48.16		AVRG	-3.7	25.0
4-Chlorophenyl-phenylether	0.542	0.562	50.00	51.87		AVRG	3.7	25.0
Chrysene	0.965	1.032	50.00	53.47		AVRG	6.9	25.0
Dibenz(a,h)anthracene	0.494	0.644	50.00	58.97		2ORDR	17.9	25.0
Dibenzofuran	1.556	1.481	50.00	47.59		AVRG	-4.8	25.0
1,2-Dichlorobenzene	1.207	1.320	50.00	54.68		AVRG	9.4	25.0
1,3-Dichlorobenzene	1.366	1.449	50.00	53.04		AVRG	6.1	25.0
1,4-Dichlorobenzene	1.249	1.345	50.00	53.85		AVRG	7.7	25.0
2,4-Dichlorophenol	0.307	0.325	50.00	52.99		AVRG	6.0	25.0

SEMIVOLATILE INITIAL CALIBRATION VERIFICATION

Lab Name: EMPIRICAL LABS Contract:

Lab Code: EL Case No.: NA SAS No.: NA SDG No.: SDGA86373

Instrument ID: BNA1 Calibration Date: 11/05/09 Time: 0101

Lab File ID: SEQ-ICV3 Init. Calib. Date(s): 11/04/09 11/04/09

Init. Calib. Times: 0847 2313

COMPOUND	$\overline{RRF}$	RRF50	CURVE AMOUNT	CCAL AMOUNT	MIN RRF	CURVE	%D	MAX %D
Diethylphthalate	1.349	1.539	50.00	57.03		AVRG	14.1	25.0
2,4-Dimethylphenol	0.384	0.332	50.00	43.21		AVRG	-13.6	25.0
Dimethylphthalate	1.318	1.495	50.00	56.74		AVRG	13.5	25.0
Di-n-butylphthalate	1.461	1.653	50.00	56.54		AVRG	13.1	25.0
4,6-Dinitro-2-methylphenol	0.110	0.135	50.00	49.70		2ORDR	-0.6	25.0
2,4-Dinitrophenol	0.111	0.140	50.00	49.54	0.050	2ORDR	-0.9	25.0
2,4-Dinitrotoluene	0.353	0.474	50.00	54.57		LINR	9.1	25.0
2,6-Dinitrotoluene	0.292	0.388	50.00	56.04		LINR	12.1	25.0
Di-n-octylphthalate	2.700	2.924	50.00	54.14		AVRG	8.3	25.0
1,2-Diphenylhydrazine	1.083	1.093	50.00	50.46		AVRG	0.9	25.0
Fluoranthene	0.898	0.948	50.00	52.79		AVRG	5.6	25.0
Fluorene	1.172	1.184	50.00	50.53		AVRG	1.0	25.0
Hexachlorobenzene	0.237	0.249	50.00	52.65		AVRG	5.3	25.0
Hexachlorobutadiene	0.175	0.198	50.00	56.60		AVRG	13.2	25.0
Hexachlorocyclopentadiene	0.178	0.262	50.00	61.85	0.050	2ORDR	23.7	25.0
Hexachloroethane	0.664	0.712	50.00	53.66		AVRG	7.3	25.0
Indeno(1,2,3-cd)pyrene	0.480	0.613	50.00	58.03		2ORDR	16.1	25.0
Isophorone	0.808	0.924	50.00	57.16		AVRG	14.3	25.0
2-Methylnaphthalene	0.587	0.560	50.00	47.68		AVRG	-4.6	25.0
1-Methylnaphthalene	0.505	0.492	50.00	48.72		AVRG	-2.6	25.0
4-Methylphenol	1.225	1.265	50.00	51.60		AVRG	3.2	25.0
2-Methylphenol	1.243	1.219	50.00	49.02		AVRG	-2.0	25.0
3-Methylphenol	1.229	1.265	50.00	51.46		AVRG	2.9	25.0
Naphthalene	0.966	0.866	50.00	44.80		AVRG	-10.4	25.0
2-Nitroaniline	0.446	0.416	50.00	46.65		AVRG	-6.7	25.0
3-Nitroaniline	0.336	0.392	50.00	50.26		2ORDR	0.5	25.0
4-Nitroaniline	0.253	0.315	50.00	50.24		2ORDR	0.5	25.0
Nitrobenzene	0.418	0.426	50.00	51.06		AVRG	2.1	25.0
2-Nitrophenol	0.223	0.254	50.00	57.05		AVRG	14.1	25.0
4-Nitrophenol	0.262	0.288	50.00	48.12	0.050	2ORDR	-3.8	25.0
N-Nitroso-di-methylamine	1.069	0.981	50.00	45.89		AVRG	-8.2	25.0
N-Nitrosodiphenylamine(1)	0.499	0.606	50.00	60.73		AVRG	21.4	25.0
N-Nitroso-di-n-propylamine	0.955	0.930	50.00	56.42	0.050	2ORDR	12.8	25.0
Pentachlorophenol	0.138	0.152	50.00	49.95		LINR	-0.1	25.0
Phenanthrene	0.965	0.945	50.00	48.95		AVRG	-2.1	25.0
Phenol	1.678	1.569	50.00	46.74		AVRG	-6.5	25.0

(1) Cannot be separated from Diphenylamine

SEMIVOLATILE INITIAL CALIBRATION VERIFICATION

Lab Name: EMPIRICAL LABS Contract:

Lab Code: EL Case No.: NA SAS No.: NA SDG No.: SDGA86373

Instrument ID: BNA1 Calibration Date: 11/05/09 Time: 0101

Lab File ID: SEQ-ICV3 Init. Calib. Date(s): 11/04/09 11/04/09

Init. Calib. Times: 0847 2313

COMPOUND	$\overline{RRF}$	RRF50	CURVE AMOUNT	CCAL AMOUNT	MIN RRF	CURVE	%D	MAX %D
Pyrene	1.519	1.591	50.00	52.37		AVRG	4.7	25.0
Pyridine	1.775	1.637	50.00	46.12		AVRG	-7.8	25.0
1,2,4,5-Tetrachlorobenzene	0.310	0.296	50.00	47.76		AVRG	-4.5	25.0
1,2,4-Trichlorobenzene	0.323	0.349	50.00	54.04		AVRG	8.1	25.0
2,4,5-Trichlorophenol	0.396	0.416	50.00	52.53		AVRG	5.1	25.0
2,4,6-Trichlorophenol	0.370	0.415	50.00	50.48		LINR	1.0	25.0
1,4-Dioxane	0.760	0.794	50.00	52.19		AVRG	4.4	25.0
2-Fluorophenol	1.553	1.316	100.0	84.74		AVRG	-15.3	25.0
Phenol-d6	1.787	1.617	100.0	90.48		AVRG	-9.5	25.0
Nitrobenzene-d5	0.455	0.409	50.00	44.97		AVRG	-10.0	25.0
2-Fluorobiphenyl	1.263	1.188	50.00	47.04		AVRG	-5.9	25.0
2,4,6-Tribromophenol	0.116	0.134	100.0	96.87		LINR	-3.1	25.0
Terphenyl-d14	0.908	0.984	50.00	54.21		AVRG	8.4	25.0

SEMIVOLATILE INITIAL CALIBRATION VERIFICATION

Lab Name: EMPIRICAL LABS Contract:

Lab Code: EL Case No.: NA SAS No.: NA SDG No.: SDGA86373

Instrument ID: BNA1 Calibration Date: 11/05/09 Time: 0137

Lab File ID: SEQ-ICV4 Init. Calib. Date(s): 11/04/09 11/04/09

Init. Calib. Times: 0847 2313

COMPOUND	$\overline{RRF}$	RRF50	CURVE AMOUNT	CCAL AMOUNT	MIN RRF	CURVE	%D	MAX %D
Atrazine	0.203	0.223	50.00	54.90		AVRG	9.8	25.0
Benzaldehyde	1.280	1.165	50.00	45.51		AVRG	-9.0	25.0
Benzidine	0.652	0.797	50.00	54.61		LINR	9.2	25.0
3,3'-Dichlorobenzidine	0.314	0.363	50.00	57.68		AVRG	15.4	25.0
2,3,4,6-Tetrachlorophenol	0.212	0.269	50.00	53.15		LINR	6.3	25.0

ICV SV

FORM 7
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.B11230

Instrument ID: BNA1 Calibration Date: 12/04/09 Time: 1034

Lab File ID: SEQ-CCV3 Init. Calib. Date(s): 11/04/09 11/21/09

Init. Calib. Times: 0923 1640

COMPOUND	$\overline{RRF}$	RRF50	CURVE AMOUNT	CCAL AMOUNT	MIN RRF	CURVE	%D	MAX %D
Acenaphthene	1.063	1.022	50.00	48.10		AVRG	-3.8	20.0
Acenaphthylene	1.460	1.456	50.00	49.86		AVRG	-0.3	
Acetophenone	1.649	1.184	50.00	35.88		AVRG	-28.2	
Atrazine	0.203	0.219	50.00	53.89		AVRG	7.8	
Anthracene	0.982	0.953	50.00	48.51		AVRG	-3.0	
Benzaldehyde	1.280	0.886	50.00	34.58		AVRG	-30.8	
Benzo(a)anthracene	1.024	1.120	50.00	54.70		AVRG	9.4	
Benzo(b)fluoranthene	1.116	1.158	50.00	51.87		AVRG	3.7	
Benzo(k)fluoranthene	1.136	1.159	50.00	51.03		AVRG	2.0	
Benzo(g,h,i)perylene	0.537	0.737	50.00	68.56		AVRG	37.1	
Benzo(a)pyrene	0.925	1.049	50.00	49.58		LINR	-0.8	20.0
1,1'-Biphenyl	1.446	1.363	50.00	47.16		AVRG	-5.7	
bis(2-Chloroethoxy)methane	0.507	0.400	50.00	39.48		AVRG	-21.0	
bis(2-Chloroethyl)ether	1.428	1.288	50.00	45.09		AVRG	-9.8	
bis(2-Chloroisopropyl)ether	2.575	1.436	50.00	29.49		2ORDR	-41.0	
Bis(2-ethylhexyl)phthalate	1.275	1.178	50.00	46.20		AVRG	-7.6	
4-Bromophenyl-phenylether	0.208	0.221	50.00	53.03		AVRG	6.0	
Butylbenzylphthalate	0.954	0.912	50.00	47.82		AVRG	-4.4	
Caprolactam	0.111	0.144	50.00	65.31		AVRG	30.6	
Carbazole	0.853	0.875	50.00	51.32		AVRG	2.6	
4-Chloroaniline	0.475	0.420	50.00	44.14		AVRG	-11.7	
4-Chloro-3-methylphenol	0.327	0.299	50.00	45.69		AVRG	-8.6	20.0
2-Chloronaphthalene	1.083	1.046	50.00	48.31		AVRG	-3.4	
2-Chlorophenol	1.285	1.096	50.00	42.65		AVRG	-14.7	
4-Chlorophenyl-phenylether	0.542	0.519	50.00	47.89		AVRG	-4.2	
Chrysene	0.965	0.938	50.00	48.60		AVRG	-2.8	
Dibenz(a,h)anthracene	0.494	0.704	50.00	63.81		2ORDR	27.6	
Dibenzofuran	1.556	1.476	50.00	47.45		AVRG	-5.1	
3,3'-Dichlorobenzidine	0.314	0.398	50.00	63.31		AVRG	26.6	
2,4-Dichlorophenol	0.307	0.311	50.00	50.74		AVRG	1.5	20.0
Diethylphthalate	1.349	1.320	50.00	48.92		AVRG	-2.2	
2,4-Dimethylphenol	0.384	0.298	50.00	38.70		AVRG	-22.6	
Dimethylphthalate	1.318	1.433	50.00	54.40		AVRG	8.8	
Di-n-butylphthalate	1.461	1.362	50.00	46.59		AVRG	-6.8	
4,6-Dinitro-2-methylphenol	0.110	0.165	50.00	58.42		2ORDR	16.8	
2,4-Dinitrophenol	0.111	0.212	50.00	66.70	0.050	2ORDR	33.4	
2,4-Dinitrotoluene	0.353	0.435	50.00	50.09		LINR	0.2	

FORM VII SV

FORM 7
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: EMPIRICAL LABS Contract: ARCADIS RADFORD

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ARC.B11230

Instrument ID: BNA1 Calibration Date: 12/04/09 Time: 1034

Lab File ID: SEQ-CCV3 Init. Calib. Date(s): 11/04/09 11/21/09

Init. Calib. Times: 0923 1640

COMPOUND	$\overline{RRF}$	RRF50	CURVE AMOUNT	CCAL AMOUNT	MIN RRF	CURVE	%D	MAX %D
2,6-Dinitrotoluene	0.292	0.422	50.00	60.88		LINR	21.8	
Di-n-octylphthalate	2.700	2.386	50.00	44.19		AVRG	-11.6	20.0
Fluoranthene	0.898	0.921	50.00	51.30		AVRG	2.6	20.0
Fluorene	1.172	1.137	50.00	48.53		AVRG	-2.9	
Hexachlorobenzene	0.237	0.249	50.00	52.61		AVRG	5.2	
Hexachlorobutadiene	0.175	0.168	50.00	48.01		AVRG	-4.0	20.0
Hexachlorocyclopentadiene	0.178	0.194	50.00	46.16	0.050	2ORDR	-7.7	
Hexachloroethane	0.664	0.591	50.00	44.50		AVRG	-11.0	
Indeno(1,2,3-cd)pyrene	0.480	0.728	50.00	67.40		2ORDR	34.8	
Isophorone	0.808	0.645	50.00	39.94		AVRG	-20.1	
2-Methylnaphthalene	0.587	0.569	50.00	48.49		AVRG	-3.0	
Naphthalene	0.966	0.798	50.00	41.30		AVRG	-17.4	
2-Methylphenol	1.243	1.143	50.00	45.97		AVRG	-8.0	
4-Methylphenol	1.225	0.914	50.00	37.28		AVRG	-25.4	
2-Nitroaniline	0.446	0.373	50.00	41.84		AVRG	-16.3	
3-Nitroaniline	0.336	0.464	50.00	58.83		2ORDR	17.7	
4-Nitroaniline	0.253	0.366	50.00	57.57		2ORDR	15.1	
Nitrobenzene	0.418	0.342	50.00	40.92		AVRG	-18.2	
2-Nitrophenol	0.223	0.255	50.00	57.16		AVRG	14.3	20.0
4-Nitrophenol	0.262	0.211	50.00	35.48	0.050	2ORDR	-29.0	
N-Nitrosodiphenylamine(1)	0.499	0.540	50.00	54.09		AVRG	8.2	20.0
N-Nitroso-di-n-propylamine	0.955	0.612	50.00	34.08	0.050	2ORDR	-31.8	
Pentachlorophenol	0.138	0.170	50.00	55.14		LINR	10.3	20.0
Phenol	1.678	1.378	50.00	41.05		AVRG	-17.9	20.0
Pyrene	1.519	1.416	50.00	46.60		AVRG	-6.8	
1,2,4,5-Tetrachlorobenzene	0.310	0.306	50.00	49.30		AVRG	-1.4	
2,4,5-Trichlorophenol	0.396	0.436	50.00	54.96		AVRG	9.9	
2,4,6-Trichlorophenol	0.370	0.429	50.00	52.18		LINR	4.4	20.0
2-Fluorophenol	1.553	1.139	100.0	73.32		AVRG	-26.7	
Phenol-d6	1.787	1.299	100.0	72.69		AVRG	-27.3	
Nitrobenzene-d5	0.455	0.383	50.00	42.06		AVRG	-15.9	
2-Fluorobiphenyl	1.263	1.209	50.00	47.87		AVRG	-4.2	
2,4,6-Tribromophenol	0.116	0.123	100.0	88.80		LINR	-11.2	
Terphenyl-d14	0.908	0.987	50.00	54.38		AVRG	8.8	

(1) Cannot be separated from Diphenylamine

FORM VII SV

ANALYSIS DATA SHEET

NBG-Backfill

Laboratory:	Empirical Laboratories, LLC			SDG:	0911230
Client:	Arcadis (A285)			Project:	Radford Army Ammunition Plant
Matrix:	Soil	Laboratory ID:	0911230-01	File ID:	009R0901.D
Sampled:	11/24/09 15:30	Prepared:	12/01/09 11:00	Analyzed:	12/02/09 20:32
Solids:	83.65	Preparation:	EXT_3546	Dilution:	1
Batch:	9L01006	Sequence:	9L33706	Calibration:	9310003
Instrument:	GL-ECD4				

CAS NO.	COMPOUND	CONC. (ug/Kg dry)	MDL	MRL	Q
72-54-8	4,4'-DDD		0.203	0.801	U
72-55-9	4,4'-DDE		0.203	0.801	U
50-29-3	4,4'-DDT		0.203	0.801	U
309-00-2	Aldrin		0.132	0.395	U
319-84-6	alpha-BHC		0.132	0.395	U
5103-71-9	alpha-Chlordane		0.132	0.395	U
319-85-7	beta-BHC		0.132	0.395	U
319-86-8	delta-BHC		0.132	0.395	U
60-57-1	Dieldrin		0.203	0.801	U
959-98-8	Endosulfan I		0.132	0.395	U
33213-65-9	Endosulfan II		0.203	0.801	U
1031-07-8	Endosulfan sulfate		0.203	0.801	U
72-20-8	Endrin		0.203	0.801	U
7421-93-4	Endrin aldehyde		0.203	0.801	U
53494-70-5	Endrin ketone		0.203	0.801	U
58-89-9	gamma-BHC (Lindane)		0.132	0.395	U
5566-34-7	gamma-Chlordane		0.132	0.395	U
76-44-8	Heptachlor		0.132	0.395	U
1024-57-3	Heptachlor epoxide		0.132	0.395	U
72-43-5	Methoxychlor		0.132	0.395	U
57-74-9	Chlordane (tech)		0.681	2.03	U
8001-35-2	Toxaphene		13.2	39.5	U

SYSTEM MONITORING COMPOUND	ADDED (ug/Kg dry)	CONC (ug/Kg dry)	% REC	QC LIMITS	Q
Tetrachloro-m-xylene	19.92	16.78	84.2	30 - 120	
Tetrachloro-m-xylene [2C]	19.92	13.04	65.4	30 - 120	
Decachlorobiphenyl	19.92	18.08	90.8	35 - 140	
Decachlorobiphenyl [2C]	19.92	17.42	87.4	35 - 140	

* Values outside of QC limits

ANALYSIS DATA SHEET

NBG-Topsoil

Laboratory:	Empirical Laboratories, LLC			SDG:	0911230
Client:	Arcadis (A285)			Project:	Radford Army Ammunition Plant
Matrix:	Soil	Laboratory ID:	0911230-02	File ID:	010R1001.D
Sampled:	11/24/09 14:30	Prepared:	12/01/09 11:00	Analyzed:	12/02/09 20:50
Solids:	78.24	Preparation:	EXT_3546	Dilution:	1
Batch:	9L01006	Sequence:	9L33706	Calibration:	9310003
Instrument:	GL-ECD4				

CAS NO.	COMPOUND	CONC. (ug/Kg dry)	MDL	MRL	Q
72-54-8	4,4'-DDD		0.217	0.856	U
72-55-9	4,4'-DDE		0.217	0.856	U
50-29-3	4,4'-DDT		0.217	0.856	U
309-00-2	Aldrin		0.141	0.422	U
319-84-6	alpha-BHC	0.376	0.141	0.422	JPM
5103-71-9	alpha-Chlordane		0.141	0.422	U
319-85-7	beta-BHC	0.677	0.141	0.422	PX
319-86-8	delta-BHC		0.141	0.422	U
60-57-1	Dieldrin		0.217	0.856	U
959-98-8	Endosulfan I		0.141	0.422	U
33213-65-9	Endosulfan II		0.217	0.856	U
1031-07-8	Endosulfan sulfate		0.217	0.856	U
72-20-8	Endrin		0.217	0.856	U
7421-93-4	Endrin aldehyde		0.217	0.856	U
53494-70-5	Endrin ketone		0.217	0.856	U
58-89-9	gamma-BHC (Lindane)	0.413	0.141	0.422	JPX
5566-34-7	gamma-Chlordane		0.141	0.422	U
76-44-8	Heptachlor		0.141	0.422	U
1024-57-3	Heptachlor epoxide	0.593	0.141	0.422	
72-43-5	Methoxychlor		0.141	0.422	U
57-74-9	Chlordane (tech)		0.729	2.17	U
8001-35-2	Toxaphene		14.1	42.2	U

SYSTEM MONITORING COMPOUND	ADDED (ug/Kg dry)	CONC (ug/Kg dry)	% REC	QC LIMITS	Q
Tetrachloro-m-xylene	21.30	17.92	84.1	30 - 120	
Tetrachloro-m-xylene [2C]	21.30	19.04	89.4	30 - 120	
Decachlorobiphenyl	21.30	19.16	89.9	35 - 140	
Decachlorobiphenyl [2C]	21.30	16.89	79.3	35 - 140	

* Values outside of QC limits

12/10/09

SURROGATE STANDARD RECOVERY AND RT SUMMARY

SW8081A

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Sequence: 9L33706

SDG: 0911230
Project: Radford Army Ammunition Plant
Instrument: GL-ECD4
Calibration: 9310003

Surrogate Compound	Spike Level	% Recovery	Recovery Limits	RT	CCV RT	RT Diff	RT Diff Limit	Q
Calibration Check (9L33706-CCV1) ug/L				Lab File ID: 004F0401.D		Analyzed: 12/02/09 19:00		
Tetrachloro-m-xylene	100.0	104	80 - 120	4.219		4.2190	+/-0.030	*
Tetrachloro-m-xylene [2C]	100.0	82.5	80 - 120	3.506		3.5060	+/-0.030	*
Decachlorobiphenyl	100.0	123	80 - 120	10.049		10.0490	+/-0.030	*
Decachlorobiphenyl [2C]	100.0	120	80 - 120	8.525		8.5250	+/-0.030	*
Blank (9L01006-BLK1) ug/Kg wet				Lab File ID: 007F0701.D		Analyzed: 12/02/09 19:55		
Tetrachloro-m-xylene	16.67	99.4	70 - 125	4.218	4.219	-0.0010	+/-0.030	
Tetrachloro-m-xylene [2C]	16.67	77.7	70 - 125	3.506	3.506	0.0000	+/-0.030	
Decachlorobiphenyl	16.67	127	55 - 130	10.053	10.049	0.0040	+/-0.030	
Decachlorobiphenyl [2C]	16.67	121	55 - 130	8.526	8.525	0.0010	+/-0.030	
LCS (9L01006-BS1) ug/Kg wet				Lab File ID: 008F0801.D		Analyzed: 12/02/09 20:14		
Tetrachloro-m-xylene	16.67	102	70 - 125	4.218	4.219	-0.0010	+/-0.030	
Tetrachloro-m-xylene [2C]	16.67	78.7	70 - 125	3.506	3.506	0.0000	+/-0.030	
Decachlorobiphenyl	16.67	118	55 - 130	10.05	10.049	0.0010	+/-0.030	
Decachlorobiphenyl [2C]	16.67	115	55 - 130	8.524	8.525	-0.0010	+/-0.030	
NBG-Backfill (0911230-01) ug/Kg dry				Lab File ID: 009F0901.D		Analyzed: 12/02/09 20:32		
Tetrachloro-m-xylene	19.92	84.2	30 - 120	4.217	4.219	-0.0020	+/-0.030	
Tetrachloro-m-xylene [2C]	19.92	65.4	30 - 120	3.505	3.506	-0.0010	+/-0.030	
Decachlorobiphenyl	19.92	90.8	35 - 140	10.051	10.049	0.0020	+/-0.030	
Decachlorobiphenyl [2C]	19.92	87.4	35 - 140	8.525	8.525	0.0000	+/-0.030	
NBG-Topsoil (0911230-02) ug/Kg dry				Lab File ID: 010F1001.D		Analyzed: 12/02/09 20:50		
Tetrachloro-m-xylene	21.30	84.1	30 - 120	4.219	4.219	0.0000	+/-0.030	
Tetrachloro-m-xylene [2C]	21.30	89.4	30 - 120	3.506	3.506	0.0000	+/-0.030	
Decachlorobiphenyl	21.30	89.9	35 - 140	10.05	10.049	0.0010	+/-0.030	
Decachlorobiphenyl [2C]	21.30	79.3	35 - 140	8.525	8.525	0.0000	+/-0.030	
Matrix Spike (9L01006-MS1) ug/Kg dry				Lab File ID: 011F1101.D		Analyzed: 12/02/09 21:09		
Tetrachloro-m-xylene	21.30	87.9	70 - 125	4.218	4.219	-0.0010	+/-0.030	
Tetrachloro-m-xylene [2C]	21.30	148	70 - 125	3.506	3.506	0.0000	+/-0.030	*
Decachlorobiphenyl	21.30	105	55 - 130	10.05	10.049	0.0010	+/-0.030	
Decachlorobiphenyl [2C]	21.30	82.5	55 - 130	8.523	8.525	-0.0020	+/-0.030	
Matrix Spike Dup (9L01006-MSD1) ug/Kg dry				Lab File ID: 012F1201.D		Analyzed: 12/02/09 21:27		
Tetrachloro-m-xylene	21.30	89.6	70 - 125	4.218	4.219	-0.0010	+/-0.030	
Tetrachloro-m-xylene [2C]	21.30	107	70 - 125	3.508	3.506	0.0020	+/-0.030	
Decachlorobiphenyl	21.30	91.5	55 - 130	10.051	10.049	0.0020	+/-0.030	
Decachlorobiphenyl [2C]	21.30	77.2	55 - 130	8.523	8.525	-0.0020	+/-0.030	

SURROGATE STANDARD RECOVERY AND RT SUMMARY

SW8081A

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Sequence: 9L33706

SDG: 0911230
Project: Radford Army Ammunition Plant
Instrument: GL-ECD4
Calibration: 9310003

Surrogate Compound	Spike Level	% Recovery	Recovery Limits	RT	CCV RT	RT Diff	RT Diff Limit	Q
Calibration Check (9L33706-CCV2) ug/L				Lab File ID: 019F1901.D		Analyzed: 12/02/09 23:37		
Tetrachloro-m-xylene	100.0	112	80 - 120	4.218	4.219	-0.0010	+/-0.030	
Tetrachloro-m-xylene [2C]	100.0	92.9	80 - 120	3.506	3.506	0.0000	+/-0.030	
Decachlorobiphenyl	100.0	119	80 - 120	10.05	10.049	0.0010	+/-0.030	
Decachlorobiphenyl [2C]	100.0	121	80 - 120	8.525	8.525	0.0000	+/-0.030	*

LCS / LCS DUPLICATE RECOVERY

SW8081A

Laboratory:	Empirical Laboratories, LLC	SDG:	0911230
Client:	Arcadis (A285)	Project:	Radford Army Ammunition Plant
Matrix:	Solid		
Batch:	9L01006	Laboratory ID:	9L01006-BS1
Preparation:	EXT_3546	Initial/Final:	15 g / 5 mL

ANALYTE	SPIKE ADDED (ug/Kg wet)	LCS CONCENTRATION (ug/Kg wet)	LCS % REC.	QC LIMITS REC.
4,4'-DDD	33.33	37.59	113	30 - 135
4,4'-DDD [2C]	33.33	34.02	102	30 - 135
4,4'-DDE	33.33	38.46	115	70 - 125
4,4'-DDE [2C]	33.33	34.00	102	70 - 125
4,4'-DDT	33.33	44.14	132	45 - 140
4,4'-DDT [2C]	33.33	40.14	120	45 - 140
Aldrin	33.33	34.02	102	45 - 140
Aldrin [2C]	33.33	26.73	80.2	45 - 140
alpha-BHC	33.33	34.00	102	60 - 125
alpha-BHC [2C]	33.33	25.44	76.3	60 - 125
alpha-Chlordane	33.33	35.35	106	65 - 120
alpha-Chlordane [2C]	33.33	28.06	84.2	65 - 120
beta-BHC	33.33	35.38	106	60 - 125
beta-BHC [2C]	33.33	25.66	77.0	60 - 125
delta-BHC	33.33	38.27	115	55 - 130
delta-BHC [2C]	33.33	28.15	84.5	55 - 130
Dieldrin	33.33	34.86	105	65 - 125
Dieldrin [2C]	33.33	28.56	85.7	65 - 125
Endosulfan I	33.33	33.43	100	15 - 135
Endosulfan I [2C]	33.33	35.06	105	15 - 135
Endosulfan II	33.33	35.09	105	35 - 140
Endosulfan II [2C]	33.33	27.81	83.4	35 - 140
Endosulfan sulfate	33.33	36.29	109	60 - 135
Endosulfan sulfate [2C]	33.33	30.82	92.5	60 - 135
Endrin	**33.33**	**45.78**	**137**	**60 - 135**
Endrin [2C]	33.33	37.26	112	60 - 135
Endrin aldehyde	33.33	29.11	87.3	35 - 145
Endrin aldehyde [2C]	33.33	28.67	86.0	35 - 145
Endrin ketone	33.33	33.11	99.3	65 - 135
Endrin ketone [2C]	33.33	27.26	81.8	65 - 135

LCS / LCS DUPLICATE RECOVERY

SW8081A

Laboratory:	Empirical Laboratories, LLC	SDG:	0911230
Client:	Arcadis (A285)	Project:	Radford Army Ammunition Plant
Matrix:	Solid		
Batch:	9L01006	Laboratory ID:	9L01006-BS1
Preparation:	EXT_3546	Initial/Final:	15 g / 5 mL

ANALYTE	SPIKE ADDED (ug/Kg wet)	LCS CONCENTRATION (ug/Kg wet)	LCS % REC.	QC LIMITS REC.
gamma-BHC (Lindane)	33.33	34.62	104	60 - 125
gamma-BHC (Lindane) [2C]	33.33	25.98	77.9	60 - 125
gamma-Chlordane	33.33	35.35	106	65 - 125
gamma-Chlordane [2C]	33.33	28.72	86.2	65 - 125
Heptachlor	33.33	38.30	115	50 - 140
Heptachlor [2C]	33.33	28.02	84.0	50 - 140
Heptachlor epoxide	33.33	34.28	103	65 - 130
Heptachlor epoxide [2C]	33.33	27.51	82.5	65 - 130
Methoxychlor	33.33	43.08	129	55 - 145
Methoxychlor [2C]	33.33	38.46	115	55 - 145
Chlordane (tech)		1.70 U	0	50 - 150
Chlordane (tech) [2C]		1.70 U	0	50 - 150
Toxaphene		33.0 U	0	50 - 150
Toxaphene [2C]		33.0 U	0	50 - 150

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

SW8081A

NBG-Topsoil

Laboratory: Empirical Laboratories, LLC

Client: Arcadis (A285)

Matrix: Solid

Batch: 9L01006

% Solids: 78.24

SDG: 0911230

Project: Radford Army Ammunition Plant

Source Sample Name: **0911230-02**

ANALYTE	SPIKE ADDED (ug/Kg dry)	SAMPLE CONCENTRATION (ug/Kg dry)	MS CONCENTRATION (ug/Kg dry)	MS % REC.	Q	QC LIMITS REC.
4,4'-DDD	42.61	ND	41.57	97.6		30 - 135
4,4'-DDE	42.61	ND	44.78	105		70 - 125
4,4'-DDT	42.61	ND	49.31	116		45 - 140
Aldrin	42.61	ND	36.11	84.8		45 - 140
alpha-BHC	42.61	0.3757	37.75	87.7		60 - 125
alpha-Chlordane	42.61	ND	38.26	89.8		65 - 120
beta-BHC	42.61	0.6769	38.81	89.5		60 - 125
delta-BHC	42.61	ND	38.96	91.4		55 - 130
Dieldrin	42.61	ND	38.55	90.5		65 - 125
Endosulfan I	42.61	1.233	37.56	85.3		15 - 135
Endosulfan II	42.61	ND	33.30	78.1		35 - 140
Endosulfan sulfate	42.61	0.3213	38.06	88.6		60 - 135
Endrin	42.61	ND	54.18	127		60 - 135
Endrin aldehyde	42.61	ND	26.69	62.7		35 - 145
Endrin ketone	42.61	ND	34.30	80.5		65 - 135
gamma-BHC (Lindane)	42.61	0.4135	38.51	89.4		60 - 125
gamma-Chlordane	42.61	0.2900	39.26	91.5		65 - 125
Heptachlor	42.61	ND	43.00	101		50 - 140
Heptachlor epoxide	42.61	0.5573	38.14	88.2		65 - 130
Methoxychlor	42.61	ND	44.99	106		55 - 145
Chlordane (tech)		ND	2.17 U	0		50 - 150
Toxaphene		ND	42.2 U	0		50 - 150

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY
SW8081A

NBG-Topsoil

Laboratory: Empirical Laboratories, LLC
SDG: 0911230
Client: Arcadis (A285)
Project: Radford Army Ammunition Plant
Matrix: Solid
Batch: 9L01006
% Solids: 78.24
Source Sample Name: **0911230-02**

ANALYTE	SPIKE ADDED (ug/Kg dry)	SAMPLE CONCENTRATION (ug/Kg dry)	MS CONCENTRATION (ug/Kg dry)	MS % REC.	Q	QC LIMITS REC.
4,4'-DDD [2C]	42.61	ND	30.77	72.2		30 - 135
4,4'-DDE [2C]	42.61	ND	33.94	79.7		70 - 125
4,4'-DDT [2C]	42.61	0.4490	39.15	90.8		45 - 140
Aldrin [2C]	42.61	0.2740	27.45	63.8		45 - 140
alpha-BHC [2C]	42.61	2.445	26.21	55.8	N	60 - 125
alpha-Chlordane [2C]	42.61	0.8893	27.12	61.6	N	65 - 120
beta-BHC [2C]	42.61	0.3305	24.70	57.2	N	60 - 125
delta-BHC [2C]	42.61	0.2668	26.98	62.7		55 - 130
Dieldrin [2C]	42.61	6.859	29.58	53.3	N	65 - 125
Endosulfan I [2C]	42.61	ND	33.13	77.7		15 - 135
Endosulfan II [2C]	42.61	ND	25.63	60.2		35 - 140
Endosulfan sulfate [2C]	42.61	ND	25.40	59.6	N	60 - 135
Endrin [2C]	42.61	ND	34.40	80.7		60 - 135
Endrin aldehyde [2C]	42.61	ND	20.35	47.8		35 - 145
Endrin ketone [2C]	42.61	ND	24.50	57.5	N	65 - 135
gamma-BHC (Lindane) [2C]	42.61	0.2242	26.45	61.5		60 - 125
gamma-Chlordane [2C]	42.61	ND	27.50	64.5	N	65 - 125
Heptachlor [2C]	42.61	1.014	30.83	70.0		50 - 140
Heptachlor epoxide [2C]	42.61	0.5932	27.87	64.0	N	65 - 130
Methoxychlor [2C]	42.61	ND	35.57	83.5		55 - 145
Chlordane (tech) [2C]		ND	2.17 U	0		50 - 150
Toxaphene [2C]		ND	42.2 U	0		50 - 150

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

SW8081A

NBG-Topsoil

Laboratory: Empirical Laboratories, LLC
SDG: 0911230
Client: Arcadis (A285)
Project: Radford Army Ammunition Plant
Matrix: Solid
Batch: 9L01006
% Solids: 78.24
Source Sample Name: **0911230-02**

ANALYTE	SPIKE ADDED (ug/Kg dry)	MSD CONCENTRATION (ug/Kg dry)	MSD % REC. #	% RPD	Q	QC LIMITS RPD	QC LIMITS REC.
4,4'-DDD	42.61	39.83	93.5	4.27		30	30 - 135
4,4'-DDE	42.61	43.67	103	2.51		30	70 - 125
4,4'-DDT	42.61	47.35	111	4.05		30	45 - 140
Aldrin	42.61	36.12	84.8	0.0243		30	45 - 140
alpha-BHC	42.61	37.75	87.7	0.00317		30	60 - 125
alpha-Chlordane	42.61	37.48	88.0	2.05		30	65 - 120
beta-BHC	42.61	38.64	89.1	0.443		30	60 - 125
delta-BHC	42.61	40.31	94.6	3.42		30	55 - 130
Dieldrin	42.61	38.00	89.2	1.46		30	65 - 125
Endosulfan I	42.61	36.72	83.3	2.26		30	15 - 135
Endosulfan II	42.61	32.57	76.4	2.20		30	35 - 140
Endosulfan sulfate	42.61	38.79	90.3	1.91		30	60 - 135
Endrin	42.61	52.49	123	3.18		30	60 - 135
Endrin aldehyde	42.61	27.34	64.2	2.37		30	35 - 145
Endrin ketone	42.61	32.91	77.3	4.14		30	65 - 135
gamma-BHC (Lindane)	42.61	39.21	91.1	1.79		30	60 - 125
gamma-Chlordane	42.61	38.46	89.6	2.08		30	65 - 125
Heptachlor	42.61	43.34	102	0.787		30	50 - 140
Heptachlor epoxide	42.61	37.90	87.7	0.628		30	65 - 130
Methoxychlor	42.61	41.89	98.3	7.13		30	55 - 145
Chlordane (tech)		2.17 U	0			30	50 - 150
Toxaphene		42.2 U	0			30	50 - 150

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

SW8081A

NBG-Topsoil

Laboratory: Empirical Laboratories, LLC
SDG: 0911230
Client: Arcadis (A285)
Project: Radford Army Ammunition Plant
Matrix: Solid
Batch: 9L01006
% Solids: 78.24
Source Sample Name: **0911230-02**

ANALYTE	SPIKE ADDED (ug/Kg dry)	MSD CONCENTRATION (ug/Kg dry)	MSD % REC. #	% RPD	Q	QC LIMITS RPD	QC LIMITS REC.
4,4'-DDD [2C]	42.61	29.53	69.3	4.12		30	30 - 135
4,4'-DDE [2C]	42.61	34.20	80.3	0.786		30	70 - 125
4,4'-DDT [2C]	42.61	39.13	90.8	0.0666		30	45 - 140
Aldrin [2C]	42.61	27.25	63.3	0.738		30	45 - 140
alpha-BHC [2C]	42.61	26.48	56.4	1.01	N	30	60 - 125
alpha-Chlordane [2C]	42.61	27.30	62.0	0.644	N	30	65 - 120
beta-BHC [2C]	42.61	24.61	57.0	0.362	N	30	60 - 125
delta-BHC [2C]	42.61	27.93	64.9	3.45		30	55 - 130
Dieldrin [2C]	42.61	30.72	56.0	3.80	N	30	65 - 125
Endosulfan I [2C]	42.61	33.45	78.5	0.965		30	15 - 135
Endosulfan II [2C]	42.61	26.11	61.3	1.86		30	35 - 140
Endosulfan sulfate [2C]	42.61	27.01	63.4	6.16		30	60 - 135
Endrin [2C]	42.61	32.73	76.8	4.99		30	60 - 135
Endrin aldehyde [2C]	42.61	21.24	49.8	4.26		30	35 - 145
Endrin ketone [2C]	42.61	24.38	57.2	0.470	N	30	65 - 135
gamma-BHC (Lindane) [2C]	42.61	26.81	62.4	1.38		30	60 - 125
gamma-Chlordane [2C]	42.61	28.10	66.0	2.16		30	65 - 125
Heptachlor [2C]	42.61	29.99	68.0	2.77		30	50 - 140
Heptachlor epoxide [2C]	42.61	27.97	64.3	0.367	N	30	65 - 130
Methoxychlor [2C]	42.61	34.16	80.2	4.06		30	55 - 145
Chlordane (tech) [2C]		2.17 U	0			30	50 - 150
Toxaphene [2C]		42.2 U	0			30	50 - 150

PREPARATION BATCH SUMMARY

SW8081A

Laboratory: Empirical Laboratories, LLC SDG: 0911230

Client: Arcadis (A285) Project: Radford Army Ammunition Plant

Batch: 9L01006 Batch Matrix: Solid Preparation: EXT_3546

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT	FINAL VOL.
NBG-Backfill	0911230-01	12/01/09 11:00	15.00	5.00
NBG-Topsoil	0911230-02	12/01/09 11:00	15.00	5.00
Blank	9L01006-BLK1	12/01/09 11:00	15.00	5.00
LCS	9L01006-BS1	12/01/09 11:00	15.00	5.00
NBG-Topsoil	9L01006-MS1	12/01/09 11:00	15.00	5.00
NBG-Topsoil	9L01006-MSD1	12/01/09 11:00	15.00	5.00

ANALYSIS DATA SHEET

Blank

Laboratory:	Empirical Laboratories, LLC			SDG:	0911230
Client:	Arcadis (A285)			Project:	Radford Army Ammunition Plant
Matrix:		Laboratory ID:	9L01006-BLK1	File ID:	007R0701.D
Sampled:		Prepared:	12/01/09 11:00	Analyzed:	12/02/09 19:55
Solids:		Preparation:	EXT_3546	Dilution:	
Batch:	9L01006	Sequence:	9L33706	Calibration:	9310003
Instrument:	GL-ECD4				

CAS NO.	COMPOUND	CONC. (ug/Kg wet)	MDL	MRL	Q
72-54-8	4,4'-DDD		0.170	0.670	U
72-55-9	4,4'-DDE		0.170	0.670	U
50-29-3	4,4'-DDT		0.170	0.670	U
309-00-2	Aldrin		0.110	0.330	U
319-84-6	alpha-BHC		0.110	0.330	U
5103-71-9	alpha-Chlordane		0.110	0.330	U
319-85-7	beta-BHC		0.110	0.330	U
319-86-8	delta-BHC		0.110	0.330	U
60-57-1	Dieldrin		0.170	0.670	U
959-98-8	Endosulfan I		0.110	0.330	U
33213-65-9	Endosulfan II		0.170	0.670	U
1031-07-8	Endosulfan sulfate		0.170	0.670	U
72-20-8	Endrin		0.170	0.670	U
7421-93-4	Endrin aldehyde		0.170	0.670	U
53494-70-5	Endrin ketone		0.170	0.670	U
58-89-9	gamma-BHC (Lindane)		0.110	0.330	U
5566-34-7	gamma-Chlordane		0.110	0.330	U
76-44-8	Heptachlor		0.110	0.330	U
1024-57-3	Heptachlor epoxide		0.110	0.330	U
72-43-5	Methoxychlor		0.110	0.330	U
57-74-9	Chlordane (tech)		0.570	1.70	U
8001-35-2	Toxaphene		11.0	33.0	U

SYSTEM MONITORING COMPOUND	ADDED (ug/Kg wet)	CONC (ug/Kg wet)	% REC	QC LIMITS	Q
Tetrachloro-m-xylene	16.67	16.57	99.4	70 - 125	
Tetrachloro-m-xylene [2C]	16.67	12.94	77.7	70 - 125	
Decachlorobiphenyl	16.67	21.23	127	55 - 130	
Decachlorobiphenyl [2C]	16.67	20.20	121	55 - 130	

[k] Values outside of QC limits

ANALYSIS DATA SHEET

NBG-Backfill

Laboratory:	Empirical Laboratories, LLC			SDG:	0911230
Client:	Arcadis (A285)			Project:	Radford Army Ammunition Plant
Matrix:	Soil	Laboratory ID:	0911230-01	File ID:	013F1301.D
Sampled:	11/24/09 15:30	Prepared:	12/02/09 09:50	Analyzed:	12/04/09 16:05
Solids:	83.65	Preparation:	EXT_8151	Dilution:	1
Batch:	9L01005	Sequence:	9L34314	Calibration:	9342007
Instrument:	GL-ECD3				

CAS NO.	COMPOUND	CONC. (ug/Kg dry)	MDL	MRL	Q
93-76-5	2,4,5-T		2.99	5.98	U
93-72-1	2,4,5-TP (Silvex)		2.99	5.98	U
94-75-7	2,4-D		29.9	59.8	U
94-82-6	2,4-DB		29.9	59.8	U
75-99-0	Dalapon		74.7	149	U
1918-00-9	Dicamba		2.99	5.98	U
120-36-5	Dichloroprop		29.9	59.8	U
88-85-7	Dinoseb		14.9	29.9	U
94-74-6	MCPA		2990	5980	U
7085-19-0	MCPP		2990	5980	U

SYSTEM MONITORING COMPOUND	ADDED (ug/Kg dry)	CONC (ug/Kg dry)	% REC	QC LIMITS	Q
2,4-Dichlorophenylacetic acid	119.5	103.1	86.3	30 - 120	
2,4-Dichlorophenylacetic acid [2C]	119.5	96.00	80.3	30 - 120	

* Values outside of QC limits

ANALYSIS DATA SHEET

NBG-Topsoil

Laboratory:	Empirical Laboratories, LLC		SDG:	0911230	
Client:	Arcadis (A285)		Project:	Radford Army Ammunition Plant	
Matrix:	Soil	Laboratory ID:	0911230-02	File ID:	016R1601.D
Sampled:	11/24/09 14:30	Prepared:	12/02/09 09:50	Analyzed:	12/04/09 17:21
Solids:	78.24	Preparation:	EXT_8151	Dilution:	1
Batch:	9L01005	Sequence:	9L34314	Calibration:	9342007
Instrument:	GL-ECD3				

CAS NO.	COMPOUND	CONC. (ug/Kg dry)	MDL	MRL	Q
93-76-5	2,4,5-T		3.20	6.39	U
93-72-1	2,4,5-TP (Silvex)	11.3	3.20	6.39	P
94-75-7	2,4-D		32.0	63.9	U
94-82-6	2,4-DB		32.0	63.9	U
75-99-0	Dalapon		79.9	160	U
1918-00-9	Dicamba	15.3	3.20	6.39	P
120-36-5	Dichloroprop		32.0	63.9	U
88-85-7	Dinoseb		16.0	32.0	U
94-74-6	MCPA		3200	6390	U
7085-19-0	MCPP		3200	6390	U

SYSTEM MONITORING COMPOUND	ADDED (ug/Kg dry)	CONC (ug/Kg dry)	% REC	QC LIMITS	Q
2,4-Dichlorophenylacetic acid	127.8	117.3	91.7	30 - 120	
2,4-Dichlorophenylacetic acid [2C]	127.8	81.08	63.4	30 - 120	

* Values outside of QC limits

LCS / LCS DUPLICATE RECOVERY

SW8151A

Laboratory: Empirical Laboratories, LLC
Client: Arcadis (A285)
Matrix: Solid
Batch: 9L01005
Preparation: EXT_8151

SDG: 0911230
Project: Radford Army Ammunition Plant
Laboratory ID: 9L01005-BS1
Initial/Final: 10 g / 10 mL

ANALYTE	SPIKE ADDED (ug/Kg wet)	LCS CONCENTRATION (ug/Kg wet)	LCS % REC.	QC LIMITS REC.
2,4,5-T	20.00	22.77	114	45 - 135
2,4,5-T [2C]	**20.00**	**28.03**	**140**	**45 - 135**
2,4,5-TP (Silvex)	20.00	19.87	99.3	45 - 125
2,4,5-TP (Silvex) [2C]	20.00	20.39	102	45 - 125
2,4-D	200.0	189.2	94.6	35 - 145
2,4-D [2C]	200.0	181.6	90.8	35 - 145
2,4-DB	200.0	173.0	86.5	50 - 155
2,4-DB [2C]	200.0	168.5	84.3	50 - 155
Dalapon	**500.0**	~~125 U~~ 53.56	~~0~~ 10.7	**10 - 110**
Dalapon [2C]	**500.0**	~~125 U~~ 52.32	~~0~~ 10.5	**10 - 110**
Dicamba	20.00	15.21	76.1	55 - 110
Dicamba [2C]	20.00	15.19	76.0	55 - 110
Dichloroprop	200.0	238.6	119	75 - 140
Dichloroprop [2C]	200.0	237.6	119	75 - 140
Dinoseb	100.0	40.10	40.1	5 - 130
Dinoseb [2C]	100.0	36.44	36.4	5 - 130
MCPA	20000	19000	95.0	30 - 115
MCPA [2C]	20000	18080	90.4	30 - 115
MCPP	20000	19320	96.6	35 - 135
MCPP [2C]	20000	19400	97.0	35 - 135

WL
12/10/04

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY
SW8151A

NBG-Backfill

Laboratory: Empirical Laboratories, LLC
SDG: 0911230
Client: Arcadis (A285)
Project: Radford Army Ammunition Plant
Matrix: Solid
Batch: 9L01005
% Solids: 83.65
Source Sample Name: **0911230-01**

ANALYTE	SPIKE ADDED (ug/Kg dry)	SAMPLE CONCENTRATION (ug/Kg dry)	MS CONCENTRATION (ug/Kg dry)	MS % REC.	Q	QC LIMITS REC.
2,4,5-T	23.91	ND	34.16	143	N	45 - 135
2,4,5-TP (Silvex)	23.91	ND	24.61	103		45 - 125
2,4-D	239.1	ND	210.3	87.9		35 - 145
2,4-DB	239.1	ND	216.1	90.4		50 - 155
Dalapon	597.7	ND	80.24	13.4		10 - 110
Dicamba	23.91	ND	19.49	81.5		55 - 110
Dichloroprop	239.1	ND	278.1	116		75 - 140
Dinoseb	119.5	ND	41.15	34.4		5 - 130
MCPA	23910	ND	22270	93.1		30 - 115
MCPP	23910	ND	22720	95.0		35 - 135

ANALYTE	SPIKE ADDED (ug/Kg dry)	MSD CONCENTRATION (ug/Kg dry)	MSD % REC. #	% RPD	Q	QC LIMITS RPD	QC LIMITS REC.
2,4,5-T	23.91	30.19	126	12.3		30	45 - 135
2,4,5-TP (Silvex)	23.91	22.22	92.9	10.2		30	45 - 125
2,4-D	239.1	201.2	84.2	4.39		30	35 - 145
2,4-DB	239.1	193.8	81.1	10.9		30	50 - 155
Dalapon	597.7	~~149 U~~ 71.54	~~0~~ 12.0	11.4	~~N~~	30	10 - 110
Dicamba	23.91	17.36	72.6	11.5		30	55 - 110
Dichloroprop	239.1	264.7	111	4.94		30	75 - 140
Dinoseb	119.5	36.35	30.4	12.4		30	5 - 130
MCPA	23910	20400	85.3	8.74		30	30 - 115
MCPP	23910	21320	89.2	6.37		30	35 - 135

12/10/09

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY
SW8151A

NBG-Backfill

Laboratory: Empirical Laboratories, LLC
SDG: 0911230
Client: Arcadis (A285)
Project: Radford Army Ammunition Plant
Matrix: Solid
Batch: 9L01005
% Solids: 83.65
Source Sample Name: **0911230-01**

ANALYTE	SPIKE ADDED (ug/Kg dry)	SAMPLE CONCENTRATION (ug/Kg dry)	MS CONCENTRATION (ug/Kg dry)	MS % REC.	Q	QC LIMITS REC.
2,4,5-T [2C]	23.91	5.229	27.94	95.0		45 - 135
2,4,5-TP (Silvex) [2C]	23.91	ND	25.28	106		45 - 125
2,4-D [2C]	239.1	ND	211.8	88.6		35 - 145
2,4-DB [2C]	239.1	ND	201.5	84.3		50 - 155
Dalapon [2C]	597.7	~~ND~~ OK ND	~~149 U~~ 74.68	~~0~~ 12.5	~~N~~	10 - 110
Dicamba [2C]	23.91	ND	18.09	75.7		55 - 110
Dichloroprop [2C]	239.1	ND	272.0	114		75 - 140
Dinoseb [2C]	119.5	ND	38.32	32.1		5 - 130
MCPA [2C]	23910	ND	21610	90.4		30 - 115
MCPP [2C]	23910	ND	22290	93.2		35 - 135

ANALYTE	SPIKE ADDED (ug/Kg dry)	MSD CONCENTRATION (ug/Kg dry)	MSD % REC. #	% RPD	Q	QC LIMITS RPD	QC LIMITS REC.
2,4,5-T [2C]	23.91	28.97	99.3	3.63		30	45 - 135
2,4,5-TP (Silvex) [2C]	23.91	23.77	99.4	6.19		30	45 - 125
2,4-D [2C]	239.1	202.4	84.6	4.53		30	35 - 145
2,4-DB [2C]	239.1	189.8	79.4	5.96		30	50 - 155
Dalapon [2C]	597.7	~~149 U~~ 71.63	~~0~~ 12.5	4.17	~~N~~	30	10 - 110
Dicamba [2C]	23.91	17.35	72.6	4.18		30	55 - 110
Dichloroprop [2C]	239.1	264.8	111	2.67		30	75 - 140
Dinoseb [2C]	119.5	34.08	28.5	11.7		30	5 - 130
MCPA [2C]	23910	20000	83.7	7.73		30	30 - 115
MCPP [2C]	23910	21410	89.6	4.01		30	35 - 135

WL
12/10/09

PREPARATION BATCH SUMMARY

SW8151A

Laboratory: Empirical Laboratories, LLC
SDG: 0911230
Client: Arcadis (A285)
Project: Radford Army Ammunition Plant
Batch: 9L01005
Batch Matrix: Solid
Preparation: EXT_8151

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT	FINAL VOL.
NBG-Backfill	0911230-01	12/02/09 09:50	10.00	10.00
NBG-Topsoil	0911230-02	12/02/09 09:50	10.00	10.00
Blank	9L01005-BLK1	12/02/09 09:50	10.00	10.00
LCS	9L01005-BS1	12/02/09 09:50	10.00	10.00
NBG-Backfill	9L01005-MS1	12/02/09 09:50	10.00	10.00
NBG-Backfill	9L01005-MSD1	12/02/09 09:50	10.00	10.00

ANALYSIS DATA SHEET

Blank

Laboratory: Empirical Laboratories, LLC SDG: 0911230

Client: Arcadis (A285) Project: Radford Army Ammunition Plant

Matrix: Laboratory ID: 9L01005-BLK1 File ID: 011R1101.D

Sampled: Prepared: 12/02/09 09:50 Analyzed: 12/04/09 15:11

Solids: Preparation: EXT_8151 Dilution:

Batch: 9L01005 Sequence: 9L34314 Calibration: 9342007 Instrument: GL-ECD3

CAS NO.	COMPOUND	CONC. (ug/Kg wet)	MDL	MRL	Q
93-76-5	2,4,5-T		2.50	5.00	U
93-72-1	2,4,5-TP (Silvex)		2.50	5.00	U
94-75-7	2,4-D		25.0	50.0	U
94-82-6	2,4-DB		25.0	50.0	U
75-99-0	Dalapon		62.5	125	U
1918-00-9	Dicamba		2.50	5.00	U
120-36-5	Dichloroprop		25.0	50.0	U
88-85-7	Dinoseb		12.5	25.0	U
94-74-6	MCPA		2500	5000	U
7085-19-0	MCPP		2500	5000	U

SYSTEM MONITORING COMPOUND	ADDED (ug/Kg wet)	CONC (ug/Kg wet)	% REC	QC LIMITS	Q
2,4-Dichlorophenylacetic acid	100.0	86.96	87.0	30 - 120	
2,4-Dichlorophenylacetic acid [2C]	100.0	81.82	81.8	30 - 120	

* Values outside of QC limits

Appendix E

Laboratory Data Validation Review

RADFORD ARMY AMMUNITION PLANT
ELECTRONIC VALIDATION REVIEW REPORT
SDG 0912138

Analytical data was evaluated in accordance with applicable USEPA SW-846 method requirements, "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review" (July 2002), "USEPA Region III National Functional Guidelines for Organic Data Review" (September 1994), "USEPA Region III National Functional Guidelines for Inorganic Data Review" (June 1995), site-specific requirements defined in *Radford Master Work Plan* (URS, 2003), and site-specific requirements defined in the *Quality Assurance Plan Addendum* (Arcadis, 2008). The validation presented in this review was performed at the RAAP defined Level I.

The data review summarized in this report includes a review of all sample collection documentation and the electronic data validation of the analytical data housed in the project database. Sample collection documentation included sample collection logs and chains of custody. The electronic data validation was performed utilizing the EQuIS Data Qualification Module (DQM). DQM checks for the following parameters:

- Holding times and preservation;
- Blank contamination;
    1. Method blanks,
    2. Trip blanks,
    3. Equipment blanks;
- Matrix spike and Duplicate sample recovery;
- Matrix Spike and Matrix Spike Duplicate relative percent differences;
- Laboratory Control Sample and Duplicate recovery;
- Laboratory Control Sample and Duplicate relative percent differences;
- Surrogate recovery (organic analyses only); and
- Field duplicate relative percent difference.

Manually review was performed on the following items:

- Sample dilutions and reporting limits;
- Case Narratives; and
- Total versus dissolved metals concentrations.

Reviewed data was generated by Empirical Laboratories. Data qualifiers were applied electronically to the database with any additional qualifiers added manually. A summary of the data as amended by data qualifiers is included with the original hard copy reports. The attached table summarizes the data that were qualified due to QC deficiencies. The table indicates compounds/analytes qualified based on electronic and manual validation. Refer to the associated method section of the validation checklist for a detailed explanation of qualification. All other data in this SDG are considered usable as reported.

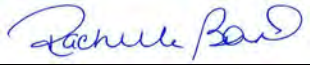
The following list of data qualifiers and definitions were applied in accordance with qualification criteria defined in the above guidance documents:

UB Compound/analyte detected in blank or associated blank, qualified as a non-detect at listed value.

J The analyte was positively identified, but the associated numerical value is the approximate concentration of the analyte in the sample.

UJ The analyte was not detected above the reporting limit; however, the reported quantitation limit is approximate and may, or may not represent the actual limit of quantitation necessary to accurately and precisely measure analyte in the sample.

R The sample result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria; and the presence or absence of the analyte cannot be verified.

DQM RUN BY:	Rachelle Borne	01/26/10
REVIEW PERFORMED BY:	Rachelle Borne	01/26/10
SIGNATURE:		01/26/10
PEER REVIEW:		1/28/10

The following samples were included in this SDG:

SDG	Sample ID	Sample Date	Parent sample
0912138	NBG-XRF002(0-0.5)	12/8/2009	
0912138	NBG-XRF005(0-0.5)	12/8/2009	
0912138	NBG-XRF007(0-0.5)	12/8/2009	
0912138	NBG-XRF010(1-1.5)	12/9/2009	
0912138	NBG-XRF013(1-1.5)	12/9/2009	
0912138	NBG-XRF015(1-1.5)	12/9/2009	
0912138	NBG-XRF017(1-1.5)	12/9/2009	
0912138	NBG-XRF020(1-1.5)	12/9/2009	
0912138	NBG-XRF021(1-1.5)	12/9/2009	
0912138	NBG-XRF022(1-1.5)	12/9/2009	
0912138	NBG-XRF023B(3-3.5)	12/9/2009	
0912138	NBG-XRF025(4-4.5)	12/9/2009	
0912138	NBG-XRF026(1-1.5)	12/9/2009	
0912138	NBG-XRF028(1-1.5)	12/9/2009	
0912138	NBG-XRF031(1-1.5)	12/10/2009	
0912138	NBG-XRFDUP001(3-3.5)	12/9/2009	NBG-XRF023B(3-3.5)

ANALYTICAL DATA PACKAGE DOCUMENTATION
GENERAL INFORMATION

	Reported		Performance Acceptable		Not
	No	Yes	No	Yes	Required
1. Sample results		X		X	
2. Parameters analyzed		X		X	
3. Method of analysis		X		X	
4. Sample collection date		X		X	
5. Laboratory sample received date		X		X	
6. Sample analysis date		X		X	
7. Copy of chain-of-custody form signed by lab sample custodian		X		X	
8. Narrative summary of QA or sample problems provided		X		X	

QA - quality assurance

Comments:

All samples were reported on a dry weight basis.

METALS

Items Reviewed	DQM Deficiency		Qualification Applied	
	No	Yes	No	Yes
1. Holding times	DQM		DQM	
2. Reporting limits	M		M	
3. Blanks				
A. Method blanks	DQM		DQM	
B. Equipment blanks	NA		NA	
5. Laboratory control sample (LCS) A. LCS accuracy (%R)	DQM		DQM	
B. LCS duplicate (LCSD) %R	NA		NA	
C. LCS/LCSD precision (RPD)	NA		NA	
6. Matrix spike				
A. Matrix spike (MS) %R	NA		NA	
B. Matrix spike duplicate (MSD) %R	NA		NA	
C. MS/MSD RPD	NA		NA	
7. Total vs. dissolved	NA		NA	
8. Field duplicate sample RPD		DQM		DQM

M – Manual Review %R - percent recovery RPD - relative percent difference DQM – Data Qualification Module

Comments:
This section presents a discussion of any additions or changes to the electronic data validation for compounds analyzed utilizing Methods 6010B and 7470A.

2. Several samples required dilutions for lead.

8. Sample location NBG-XRFDUP001(3-3.5) was collected as a field duplicate of NBG-XRF023B(3-3.5) The RPD for lead was above the control limit. The parent and the duplicate are qualified as estimated for lead.

DATA VALIDATION QUALIFICATION SUMMARY

Sample ID	Parameter	Result	Units	Qualifier	Reason
NBG-XRFDUP001(3-3.5)	Lead	362.0	mg/kg	J	FD RPD
NBG-XRF023B(3-3.5)	Lead	59.4	mg/kg	J	FD RPD

Qualifier Definitions:

J – Result is considered to be estimated at the value reported.
UJ – Result is considered not detected but estimated due to QC deficiencies.
UB – Non-detect at the Reporting Limit or at the concentration reported if greater than the RL due to associated blank contamination.
R – Result is qualified as unusable, data point is rejected.

Explanation/Notes: